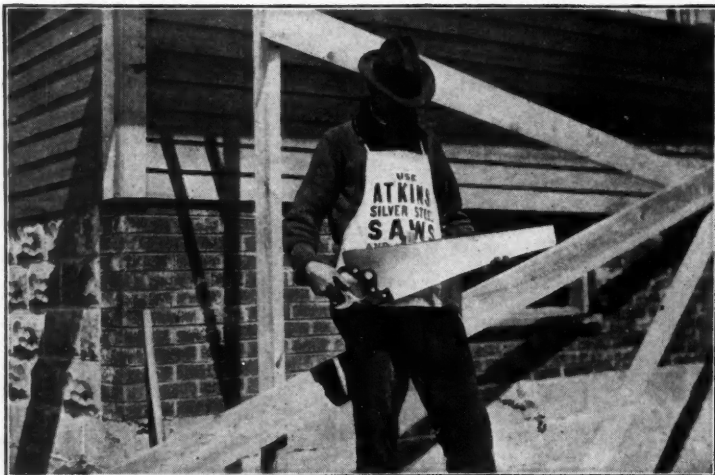




THI  
A25

# Atkins Silver Steel

# Saws in Service



**T**HEY'RE on the job where good Saws are relied on to save time and energy.

ATKINS SILVER STEEL SAWS radiate satisfaction. Maximum production can be secured, as frequent filing and refitting is unnecessary. They are Taper Ground, by ATKINS exclusive process, and run easier, with less set, cutting faster than any Saw made. They are backed by our Guarantee of Absolute Satisfaction.

Complete your equipment with ATKINS SILVER STEEL SAWS—the results will warrant your investment. Get them from your dealer.

*An Atkins Nail Apron, Monthly Time Book and "Saw Sense" Booklet sent on receipt of ten cents.*

**E. C. ATKINS & CO., Inc.**

*Established 1857*

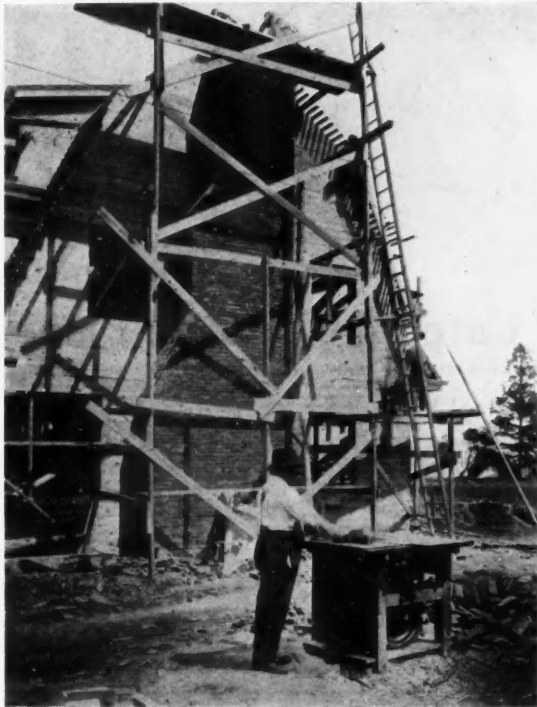
**The Silver Steel  
Saw People**

**INDIANAPOLIS, IND.**

*L. E. K. [unclear]*

# An Unusual Record

## Backed up by REAL FACTS



"EVEREADY" Saw Rig on G. E. Dodge's Job

### Read the Contractor's Own Story

from "The Daily Advocate" Stamford, Conn.  
July 5, 1916

G. E. DODGE  
Carpenter and Builder

Sound Beach, Conn., March 14, 1917.

Oshkosh Mfg. Co., Oshkosh, Wis.

Gentlemen: Replying to your letter, I built the house in the photograph in 30 days by using the EVEREADY. I started excavating May 31st, 1916, and finished the job complete July 1st. The tenant moved in July 5th. From the time I started framing there were 24 working days.

The EVEREADY enabled me to complete this house in one month. Because I had the EVEREADY I could use up all scrap lumber. This saved me considerable. I did not have enough waste lumber to pay to cart away at the end of the job.

I used to have a lot of waste lumber from 2 to 6 feet long. Now I put these on the EVEREADY and saw them into all sizes necessary for blocking, bridging and furring. I don't order lumber for bridging any more. The EVEREADY averages better than two extra men day in and day out right through my jobs.

I am very pleased with your machine and you may send anyone to me, and if I can't show them in 10 minutes where they can save money by the sue of the EVEREADY, I'll pay their expenses to Stamford.

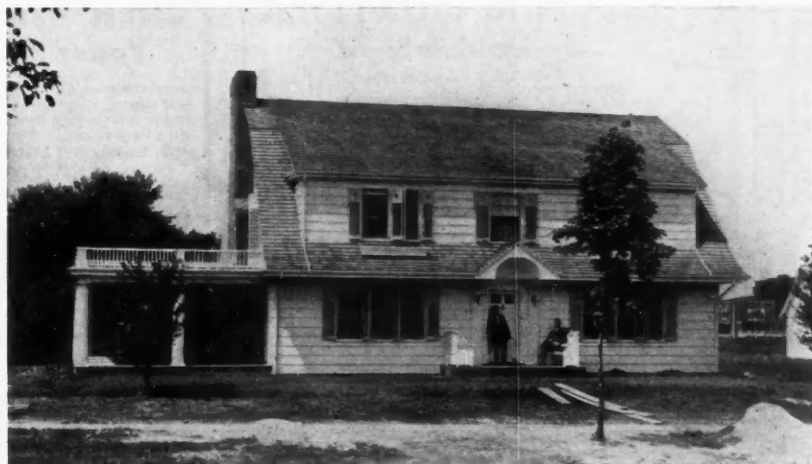
Very truly yours,  
G. E. DODGE.

**Quick Work on Southfield Point.**  
A demonstration of what can be done by modern contractors, with modern machinery, in building good, modern houses rapidly, is to be seen at Southfield Point. On May 31, the Southfield Point Company signed a contract with G. E. Dodge of Sound Beach, general contractor, to erect a house of colonial design, to cost about \$10,000. The building was to be completed on July 1. It will be occupied by a New York family for the summer this week.  
Mr. Dodge had for sub-contractors William Williams, mason and plasterer; Miller & Son, plumbers, and other local men. The building, which was constructed from the excavation throughout in one month's time, less three days lost because of inclement weather, is a beautiful one, containing oak floors, distinctive bath-room equipment, burned-oak Mr. Dodge has the contract for another building, to cost \$15,000, directly across the street from this one, and will start it next week. It will be finished Sept. 1, he says.  
Another \$15,000 house is being erected at the Point by Peter Cameron, a New Rochelle contractor.

## An example of what a man can accomplish with the "EVEREADY" SAW RIG

You can duplicate this performance on your own jobs and build up a reputation for speed unheard of in your vicinity. You can save the price of the "EVEREADY" on one job—this is not a mere statement, but we can prove it by hundreds of unsolicited testimonials from prominent contractors.

We will send one on trial to any responsible contractor. If it does not do as we say we will cheerfully take it back at our expense.



The house completed ready to occupy in 24 working days

## OSHKOSH MANUFACTURING COMPANY

67 Amber Street, OSHKOSH, WIS.

CHICAGO  
605 S. Dearborn St.

← On display and in stock →

NEW YORK  
140 West 38th St.

Liberty Bonds will be taken in exchange for any Machinery purchased from our Company

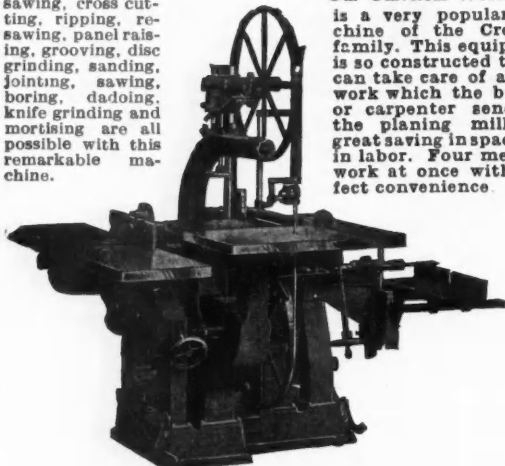
L. E. H. / 10/15

## You Will Be Interested In Our Catalogue

Even though you may not be in the market right now for any of the Crescent Woodworking Machinery you will find this compact little catalogue of interest to you.

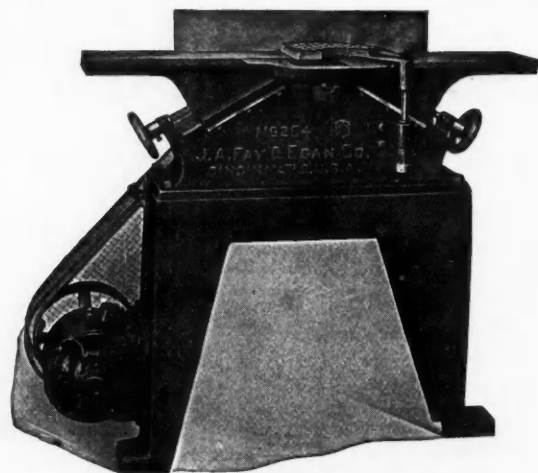
Every carpenter or builder who takes an interest in high grade machinery will find our 1916 catalogue well worth reading. It is a small book of 143 pages, convenient in size for filing or slipping into one's pocket. There are 143 pages replete with splendid illustrations and practical information on the use of various types of Crescent Woodworking Machines. Let us send you this catalogue.

Such work as band sawing, cross cutting, ripping, re-sawing, panel raising, grooving, disc grinding, sanding, jointing, sawing, boring, dadoing, knife grinding and mortising are all possible with this remarkable machine.



**Our Universal Woodworker** is a very popular machine of the Crescent family. This equipment is so constructed that it can take care of all the work which the builder or carpenter sends to the planing mill — at great saving in space and in labor. Four men can work at once with perfect convenience.

**The Crescent Machine Co.**  
224 Main St. Leetonia, Ohio

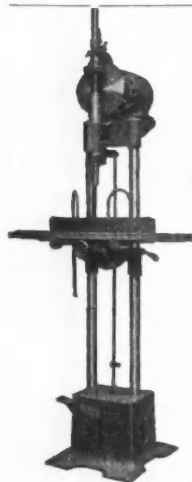


## —a really practical Carpenter's Hand Planer

—bench or pedestal—with or without motor

**DON'T** buy a toy, get a real machine: 6½-inch safety head, thin air hardened steel knives, adjustable bevel fence, removable steel lips, rabbeting arm, pedestal that gives your feet clearance; easy to keep clean under the machine; a practical time-saver and money-maker. Write for Bulletin H-7.

**J. A. Fay & Egan Company**  
545-565 W. Front St., Cincinnati, O.



## SUPERIOR HOLLOW CHISEL ELECTRIC MORTISER and Multiple Speed Boring Machine

Made in three styles, also belt drive. Just the machine for the general jobbing shop, as well as sash and door mills, cabinet and furniture work. For fast work, quick and accurate adjustments and cheapness of power, these machines can't be beat. Address all inquiries to

**WARREN W. MORSE**  
Hopkins, Minn.

## CARPENTERS

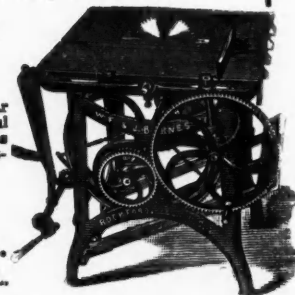
In these days of close competition need the best possible equipment, and this they can have in

### Barnes' Hand and Foot Power Machinery

Our new foot and hand power Circular Saw No. 4, the strongest, most powerful and in every way the best machine of its kind ever made. For ripping, cross cutting, boring and grooving.

SEND FOR OUR  
NEW CATALOGUE

**W. F. & John Barnes Co.**  
74 RUBY ST. ROCKFORD, ILL.

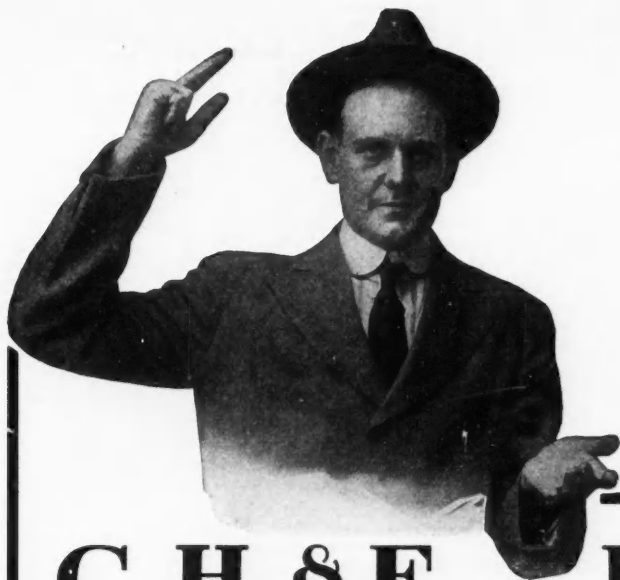


Write for catalogue showing full line of Wood Working Machinery for Carpenters and Builders. Also Bargains in second hand Machinery.



**CHICAGO MACHINERY EXCHANGE**

1215-1223 WASHINGTON BOULEVARD  
CHICAGO, ILLINOIS



# Uncle Sam says:

When I buy, I buy the best, and when I order, I want the goods quick.

### Read this from headquarters:

C. H. & E. MANUFACTURING Co., Inc.

"Your proposal to deliver six of your No. 8 Portable Saw Rigs complete with gasoline engine and attachments, immediate shipment, is hereby accepted."

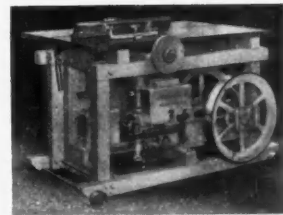
(Signed) MAJOR HARTMANN.

Ordered Monday, shipped Thursday.

## C. H. & E.

## Portable Saw Rigs

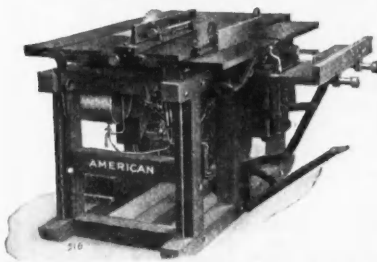
We are the pioneers in the manufacture of Portable Saw Rigs, with power built in and directly under the table. We manufacture six different sizes. We know and Uncle Sam knows that we make the best. Don't be fooled into buying cheap rigs—buy a C.H.&E. rig that is manufactured complete by us—engine, table and all attachments. Immediate shipment.



**C. H. & E. Manufacturing Co., Inc.**  
322 Mineral Street MILWAUKEE, WIS.

PUT AN

# "AMERICAN"



### ON YOUR PAY ROLL

It will prove to be a steady, reliable, profitable worker — always ready, always in first-class condition, equal to the hardest jobs—a money-maker for you from start to finish. Send for Bulletin 67.

**American Saw Mill Machinery Co.**

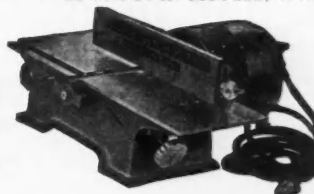
1360 Hudson Terminal  
NEW YORK

## Wallace Bench Planer

"We are building a five-room bungalow and have made our own window sashes, casings and all other Planer work on the Wallace Bench Planer. It has stood the strain in handsome fashion, and I am more than pleased with it."

—So says F. H. McCrea, Weatherford, Okla.

Motor or  
Belt Driven  
4 in. Knives  
18 in. Long



Portable  
Weighs  
50 Lbs.  
Low Price

Write for Descriptive Folder

**J. D. Wallace & Co.** 1405 W. Jackson Blvd.  
CHICAGO

## HOISTS

Attention Contractors & Builders



Labor is getting scarcer and more expensive every day. It will be to your advantage to get

**A RELIABLE ERIE HOIST** to do your heavy lifting. Not an expense but a good investment.

Write for booklet.

**Erie Clutch & Pulley Co.**  
26th & Holland St., Erie, Penna.

## Parks Planing Mill Combination

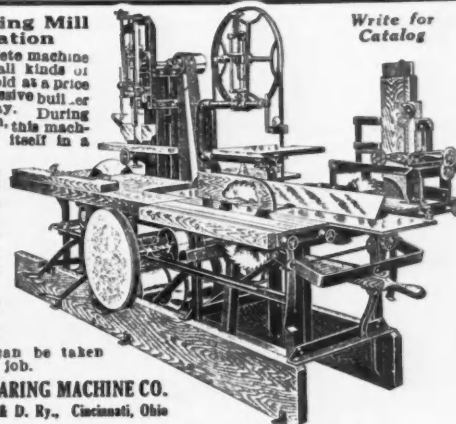
The most complete machine for getting out all kinds of mill work, and sold at a price which any progressive miller can afford to pay. During the slack season, this machine will pay for itself in a couple weeks.

Rip saw, 12" Jointer, 22" Band saw. Swing out of saw, Shaper.

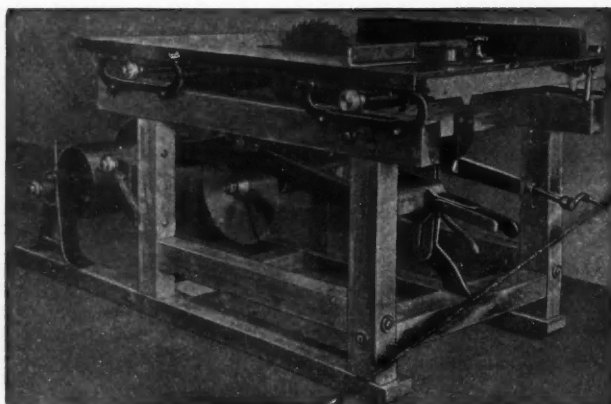
Upright mortiser, Tenoner, Sand disk. All ready for instant use without having to make any changes.

Machine can be furnished with long bases with engine mounted in rear so it can be taken right out on the job.

**PARKS BALL BEARING MACHINE CO.**  
Fergus St. & C. H. & D. Ry., Cincinnati, Ohio



Write for Catalog

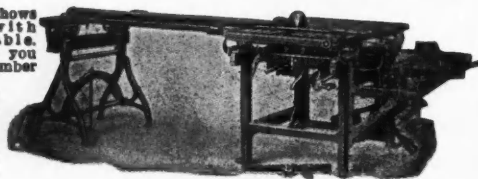


**NOW IS THE TIME TO GET A  
BEACH  
DOUBLE ARBOR RIP AND CUT-OFF MACHINE**

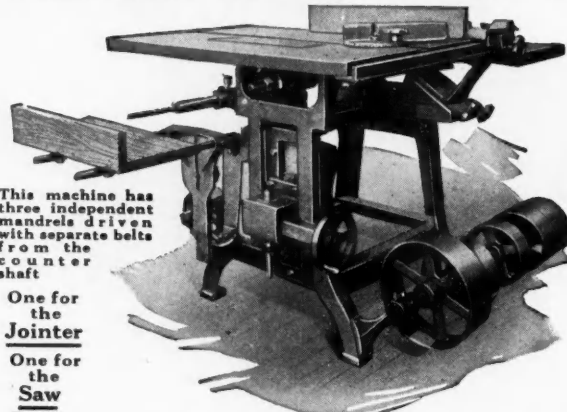
Get this money-maker on the job. This portable woodworker will handle all your fine sawing, as well as your dimension stuff. Either gasoline engine or electric motor drive. Has our patented rolling table, making it the most efficient machine on the market. Don't delay—make this year the most profitable and successful of your career. Write for descriptive catalogue.

**BEACH MFG. CO., Montrose, Pa.**

This view shows extension with rolling table. This allows you to handle lumber up to 20 ft. and slides easily with 1000 lbs. weight in it. Locks instantly for ripping or beveling.



**The "Standard" Contractors' Universal Woodworker No. 1 B**



This machine has three independent mandrels driven with separate belts from the counter shaft

One for the Jointer

One for the Saw Table

One for the Boring Attachment

Abernathy, Texas, Feb. 12, 1917.  
Standard Machine Tool and Supply Co.,  
Kansas City, Mo.

Dear Sirs:—I looked over several catalogues of woodworkers before I selected the No. 1 "B." but I thought when I selected it that it would be the best and handiest machine, and after using it for 3 months I am of the same opinion, for it sure is all right and does fine work.  
Yours truly, H. E. RANTZ.

**Five Machines at the Price of One**

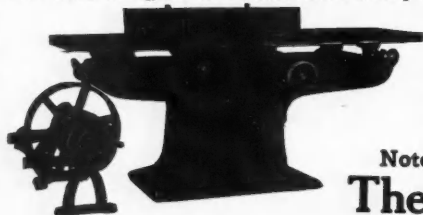
Joints, rip saw table, cut off saw table, boring attachment, drum sander, emery grinder. Does planing, jointing, rabbeting, moulding, gaining, dadoing, ripping, cutting off, mitering, boring, routing, grinding, sanding.

Write for catalogue and prices on our full line of up-to-date wood-working machinery.

**Standard Machine Tool & Supply Co.**  
First and Main - Kansas City, Mo.  
Established 1896

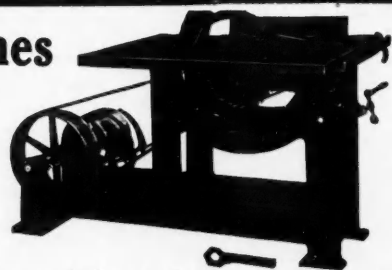
**Silver's New Woodworking Machines**

are improved right up to present-day requirements. They include SAW TABLES, JOINTERS, SWING SAWS, BAND SAWS, etc. They are constructed so as to make every operation as easy as can be, and save so much time and labor over other methods, that modern Carpenters and Builders are glad to install them and profit thereby.



Silver's Machines are high-pressure machines, built extra strong and rigid to withstand the severest service. They are made in a wide range of sizes and patterns: Jointers, 8, 12, 16, 20, 24-in. Band Saws, 20, 26, 32, 36-in. Swing Saws, 6½, 7, 7½, 8-ft. lengths. Saw Tables, two styles.

Note cuts shown and send for our Printed Matter, which gives full details  
**The Silver Mfg. Co., 345 Broadway, Salem, Ohio**



**Bicknell's Combination Jointer, Saw, Sticker and Rabbeting Machine No. 105**

84 Inch Table  
Slotted Steel Heads  
Instant Adjustment of Attachment

Write for Catalogue

**BICKNELL MFG. AND SUPPLY CO.**  
JANESVILLE, WIS.



**Miller's Lock Mortiser TWO MINUTES**

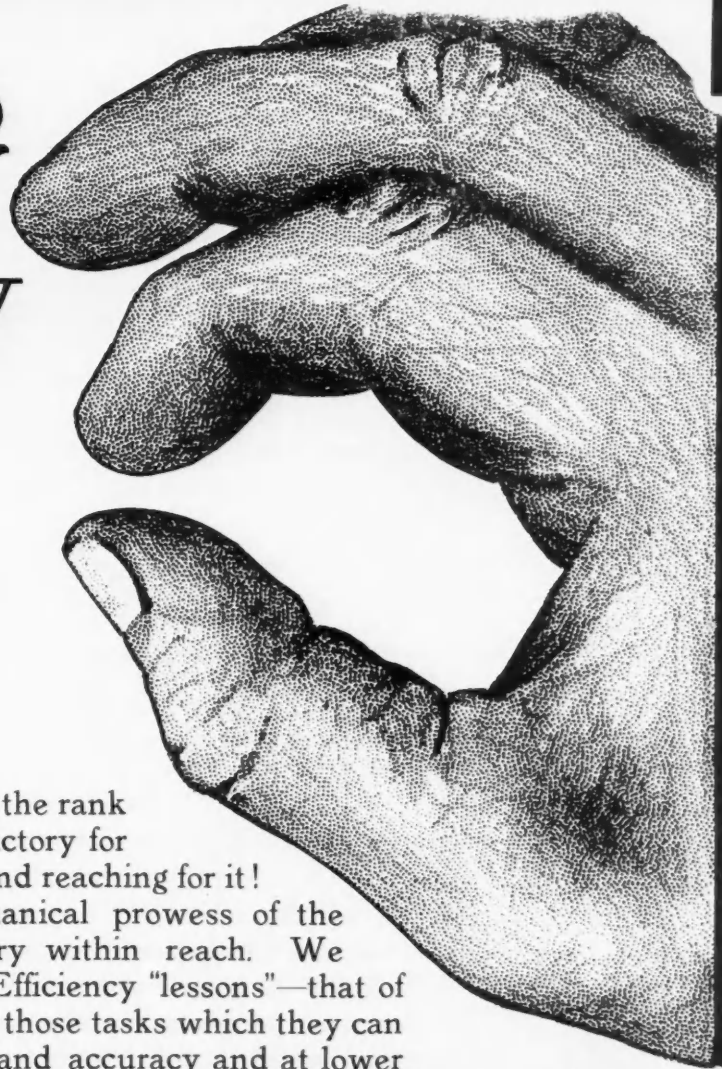
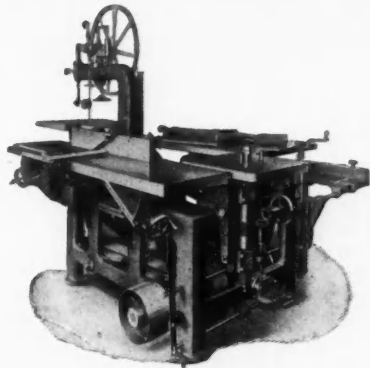
Will cut an opening in a door for a mortise lock  
**IMPROVED AND UP-TO-DATE**  
cuts true, in any kind of wood for any size lock from ½" to 1½" thick. Easy to operate; durable in construction. Builders use it everywhere.



Sent subject to trial.

**A. W. Miller Mfg. Co.**  
Silverdale, Calif. 1-1 Cincinnati, Ohio  
Our Butt Mortiser and Rule Gauge for 75c, Postpaid

# Reaching ....for.... Victory



Every effort is being put forth by the rank and file of our Nation to gain Victory for Democracy. We are straining and reaching for it! And it is the wonderful mechanical prowess of the Yankee people that puts victory within reach. We have learned the greatest of all Efficiency "lessons"—that of permitting a machine to perform those tasks which they can accomplish with greater speed and accuracy and at lower cost than when wrought by hand alone. **Use more machines now!** You will both release some men for more important service—and effect a healthy economy in your own business.

## **Sidney Famous Woodworkers Have Enlisted in the President's Service Army!**

Why don't you send the coupon and see how these machines will line up along side you and help you save labor without slowing up your business?

Every man who reaches out—who earnestly searches—for ways and means to conserve the labor supply and individual resources is also rendering his country a service. You ought to take this opportunity to carefully investigate the "**Famous**" line of woodworking machines.

---

**THE SIDNEY TOOL CO.**  
SIDNEY, OHIO

Gentlemen:—

Send Catalog No. 12

Name .....

Address .....  
(June)

# Put your address on this sample package

—tear off and mail to us  
and we will at once send you the  
real package containing samples and  
literature on our



## Protective Materials

We want every Builder to know the purpose and possibilities of these materials. There is a Protective Material for every form of construction and one or more of them can be used on every job at a distinct advantage to you.



Penetim in a wonderful flame proof wood preservative. Recent tests have proven the superior fireproof qualities of cedar shingles treated with Penetim over other forms of roofing.

Penetim repels insects and boring worms and greatly prolongs the life of any wooden constructions that is to be subjected to water or moisture. It is inexpensive and can be freely applied whenever desired.



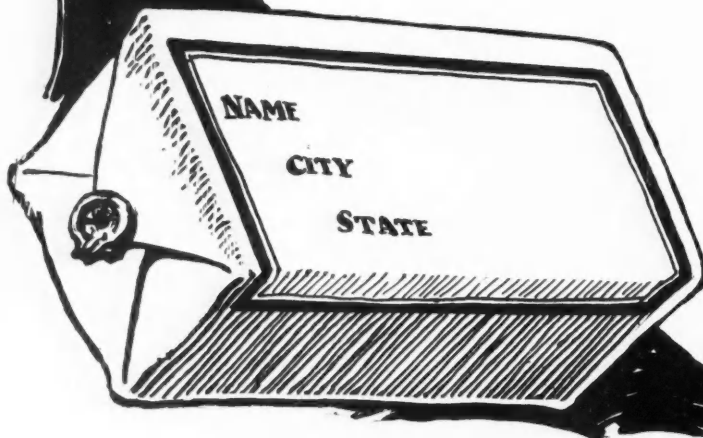
Sta Dri is unequalled as a waterproofing for stucco, cement or concrete. It is the first preparation on the market that will not discolor the lightest surface.

It penetrates deeply into the pores of stucco and is absolutely permanent in all kinds of weather. Its cost is slight and it can be easily applied with either spray or brush.

Sta Dri will at once make your work permanent and increase your earnings.

Rusteline a non-corrosive paint for all metals, positively prevents rust. Cretoline greatly improves concrete floors and prevents efflorescence in brick work.

Trackoline is used by all the big railroads as a weed killer. It is very inexpensive and is the ideal weed killer for drives, walks or gutters around estates or small towns.

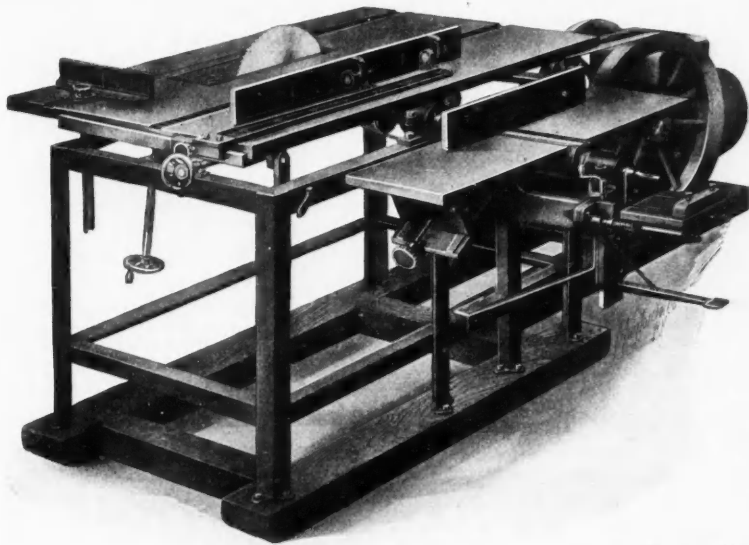


Don't fail to mail this coupon at once. It will put you in touch with a means of materially increasing your earnings. Mail it now.

### Protective Material Corp.

51 East 42d Street  
New York City





## Pointing the way to Production

The cost of production is the governing factor in fixing net earning power, and the fact is that some builders are still moving along at a snail's pace, handicapped by too much production expense.

The HERCULES WOODWORKER will put money in your pocket by reducing milling costs. It has the advantage of four separate and distinct machines, combined, each retaining its individual value, and AT THE PRICE OF ONE.

Combined with the saw table is an 8-inch jointer, operated in the same way as an ordinary jointer is operated—right handed—the natural way.

Seven Days' Trial

**Machinery Merchants, Inc.**

Distributors

50 Church St.

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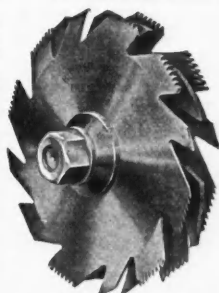
::

New York



Local Agents Wanted

Manufactured by  
**Hercules Machine Company**



Patented Nov. 29, 1892.  
Feb. 10, 1910.

## For Your Saw Rig Huther Bros. Dado Head

will cut perfect grooves, any width, with or across grain. It consists of two outside cutters and enough inside cutters to make the desired cut.

The Head comes to you ready to use and guaranteed to do your work satisfactorily.

Ten days' free trial at our expense.

This cutter head can be used on the saw table. Knives are adjusted by headless set screws and are held by dovetailed slides and bolts. Runs like a solid cutter. Any shape knives made to order.

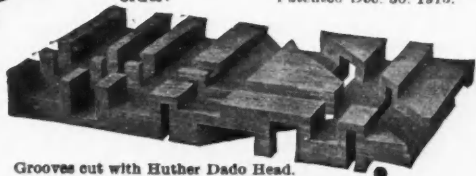


Patented Dec. 30, 1915.



Showing position of cutters on mandril.

Our No. 34 Catalog sent on request, describes full line of tools for saw rig.



Grooves cut with Huther Dado Head.

**HUTHER BROS. SAW MFG. CO.**  
1101 University Ave. Rochester, N. Y., U. S. A.

## "YANKEE" Plain Screw Drivers

STANDARD No. 90  
CABINET - No. 95

They cannot loosen in the handle, in use or abuse. You have our guarantee.



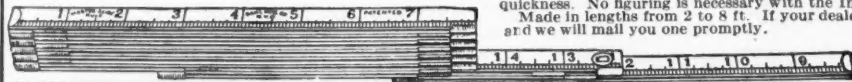
They are durable as the high grade steel that composes them, and will render faithful service for generations. The comfortable handle and various lengths of blades make them suitable for all classes of work.

Your Dealer Can Supply

Let us send you a "YANKEE" Tool Book.

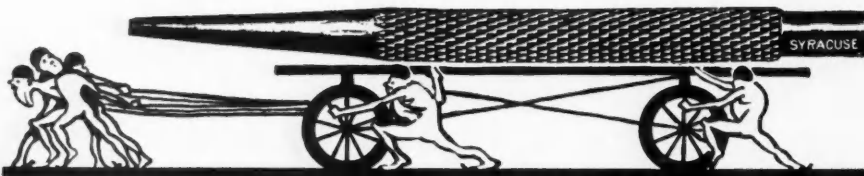
**North Bros. Mfg. Co.**  
Dept. A, Philadelphia, Pa.

# Interlox Rule-insures accuracy-no figuring



The Interlox Master Slide rule is for carpenters—contractors—builders who want accuracy and quickness. No figuring is necessary with the Interlox—just read off the measurement. Made in lengths from 2 to 8 ft. If your dealer can't supply you, send 20c a lineal foot (in U.S.A.) and we will mail you one promptly.

**Dahl Manufacturing Co.**  
51 E. 42d St., New York City, N. Y.



**10¢** buys this fine nail set. You will be glad you ordered it when you find how serviceable it is. Best steel—accurately cupped—tested on steel. Another style is No. 1, with square shaped body, which prevents its rolling away. Costs 12c.

**Syracuse Twist Drill Co.**  
SYRACUSE, N. Y.

# Sand's Aluminum Levels

## Always Tell the Truth

The standard of accuracy. And not only the most accurate—but easiest to read, even in the dark. Never rusts—cannot warp, split or crack—and are easily handled. The lightest levels made—strong and durable because the greatest strength is placed where most needed. Ask your dealer to show you these levels, and also write for our new catalog.

**J. SAND & SONS** Originators of Aluminum Levels 1023 - 29 Rivard Street, Detroit, Michigan



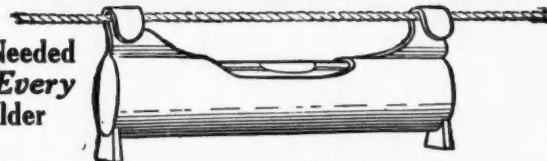
## Now Comes a New One-- The "White" Convertible Level

For many years "White" levels have been standard equipment for thousands of contractors. For many years these accurate, substantial, easily-used instruments have given unvarying satisfaction. Now comes a new one, the "White" convertible level—more substantial—more durable—more dependable than ever—more able accurately to serve the contractor—a triumph. Let us send it to you for free trial without obligation.

**DAVID WHITE CO., Inc.**  
419 E. Water St., Milwaukee, Wis.

## The Simplex Aluminum Line Level

is Needed by Every Builder



This two-inch level takes the place of the usual sixteen-foot straight edge. It saves time and labor and is positively accurate on lines stretched from one to forty feet.

Just stretch a line between the two points, attach the Level—that's all! Suitable for use by carpenters, builders, contractors, bricklayers, masons and architects. Can also be used as a pocket level. Made of aluminum, fitted with a proved level glass. Only weighs one-fourth of an ounce.

### FITS THE VEST POCKET

If your dealer is out of stock send us 50c and the Simplex Level comes to your door prepaid. We will also send free tool catalog.

**Mechanics Specialty Co., 421 Wood Street, Pittsburgh, Pa.**



It's well worth the small cost of a good Level to know your work is error-proof. A mistake may be costly.

## Get a KOLESCH Builders' Level

It isn't an expense—it's an investment—one that pays big. Kolesch Levels are built right. They are light in weight, will stand hard usage and are reasonable in price.

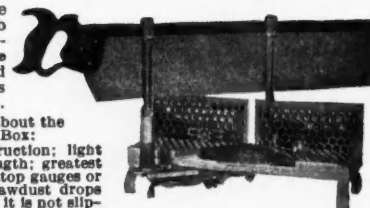


**KOLESCH & COMPANY**  
138 Fulton Street, NEW YORK

## A Mitre Box Bargain

IN order to extend the sale of Honey-comb Mitre Boxes we are offering a box at wholesale price to carpenters and builders in communities where we have no dealers.

Consider these points about the Honey-comb Mitre Box:  
Unexcelled design in construction; light weight without loss of strength; greatest range of places for moving stop gauges or duplicate length gauges; sawdust drops through box out of the way; it is not slippery and will not mar the finest work; saw is elevated in such a way as to be free from bearings or guides; the highest grade materials and workmanship used throughout.



Snap this up! Get this high-grade mitre box at an extremely reasonable figure

Let us send you further information on the Honey-comb. Get our prices and Circular "A"

**Rockford Mitre Box Co., 99 Forbes St., Rockford, Ill.**



## Builder's Level

A high grade instrument especially designed for contractors and architects. Excellent equipment for leveling walls, laying out angles, giving lines and levels for buildings, grading streets, drains, etc. Made of best phosphor-bronze and bell metal. Write for our booklet describing Beckmann Levels.

THE L. BECKMANN COMPANY, 500 Adams St., Toledo, Ohio

**G & B** TWO LEVELS IN ONE  
**TRANSIT** Has all the features of a Builder's Transit and Architect's Level. Durable, accurate and economical. You can use the G & B under all conditions. A quality instrument for \$67.50. Write for circular "B."  
**LEVELS** Geier & Bluhm -:- Troy, N.Y.

### HERE'S WHAT YOU NEED

The American Combined Level and Grade Finder With Compass



Side View.

For Contractors, Carpenters, Masons, Bricklayers, Surveyors, etc.



Top View.

It is simple, accurate, easily understood. Shows its true slant on any line or grade in degrees, inches and percentages. Write at once for Agency, has over 300 testimonials, booklet, and introducing prices.

EDWARD HELB - Box 255, Railroad, Pa.



## The Phillips Slide Rule

enables many equations in Civil, Mechanical and Electrical Engineering to be solved with **greater rapidity and accuracy** than possible with any other rule. It is of wide range and precision.

$$65^2 \div (51 \times 85)$$

can be solved with **one slide movement**. Try it on **your** rule. Equipped with frameless indicator—all figures always visible.

Send for Circular "A-2"

**Eugene Dietzgen Co.**

Manufacturers

Chicago New York San Francisco  
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## Checking Up Progress

Good work requires frequent testing to insure accuracy in progress; and skilled carpenters know by experience that they can do their best work with



# Starrett Tools

From use on the simplest operation in squaring up stock to the laying out and measuring of complicated joints and framing jobs, these tools have proved their efficiency. The line includes for carpenters steel tapes, rules, squares, levels, marking gages, builder's combination tools, etc.

**Starrett Combination Square.** Here is one tool in particular that every carpenter should have—it is really five tools in one—a rule, square, level, bevel, and depth gage.

These and all other Starrett Tools are for sale at good hardware stores.



Send for free catalog No. 216, describing 2100 styles and sizes of fine tools.



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 The World's Greatest Toolmakers  
 Athol, Mass.

42-563

## Are you with the big majority?

A recent canvass of hardware stores again verified the fact that by far the greatest number of saws sold to mechanics are

# DISSTON SAWS



This means that most of the men who are in a position to *know*—whose reputation and success demand that they use the best—are using the saw that has been acknowledged best for three-quarters of a century. Are you one of these men?

*As a mechanic our Handbook "S" will interest you. Send for it; it's free.*

Henry Disston & Sons, Inc.



Philadelphia, U. S. A.

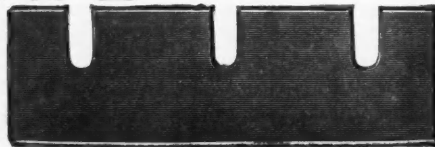


We make  
blades for  
any make  
of scraper

### Floor Scraper Blades

Cut faster, hold their edge longer than any other scraper blade in the world—*money back guarantee.*

**Fox Supply Co.**  
Dept. A Brooklyn, Wis.



## SOLVE YOUR LABOR PROBLEMS

*By Surfacing Your Floors*

### "The American Universal Way"

The American Universal will cut at least **FIVE MEN** off of your pay roll. Let us tell you all about this wonderful machine and our

**FIVE DAYS' TRIAL**

American Floor  
Surfacing Machine Co.

515 S. St. Clair St.  
Toledo, Ohio

The Oldest Concern in  
the Business



## EFFICIENCY WINS!

What kind of efficiency do you believe in?

Three men do the work of one, or, one man capable of doing the work of three?

In floor scraping the Triple "A" SPRING DRIVEN Floor Smoother is "A Three To One Proposition."



Wherever the Triple "A" can be used Two-Thirds of the cost is saved.

If you are an efficiency contractor, you will lose no time in ordering a Triple "A."

Write us today, and we will tell you how the Triple "A" will treble your profits in its particular line of service.

**TRIPLE "A" MACHINE CO.,** Room 318, 4101 Ravenswood Ave., Chicago, Ill.

## Stop Making "Borderwork"

around your baseboards—which results when you use a narrow edge roll attachment, as its work is uneven and looks different from the rest of the room when finished. Get the same uniform work right up to baseboards that you do throughout the room by using

### The Improved Type Automatic Ball-Bearing Electric Floor-Surfacing Machine

The sanding roller is mounted so one end extends just beyond the side of the machine—easily adjustable to either side so that the wall all around the room can be reached. And the Little Automatic Electric Surfacing Machine (shown below) is a wonder for removing old varnish from desk tops, tables, counters, etc., as well as for dressing up new work.

**FREE TRIAL OFFER** on either of these machines. Write today for full information.

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356-358 W. Madison Street Dept. D Chicago, Illinois  
Phone Franklin 4160



**What Does It Mean To Own A Weber Floor Scraper?**

**More Value For Your Money**

**Better Results**

The Weber Double Acting Floor Scraper does quick work on all kinds of hardwood floors. If better floor scrapers are built **Weber** will build them.

Order NOW for delivery in 15 to 20 days.

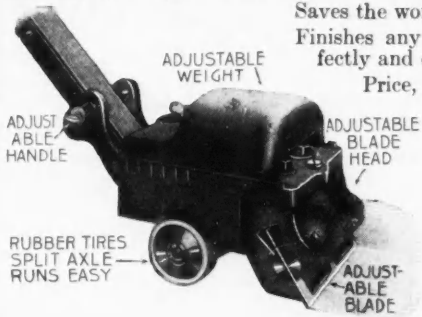
**WEBER MFG. CO.** Office: 684-686 73rd Ave. WEST ALLIS, WIS.  
FACTORY: 670 71st Ave.



**DID'S MONEY-BACK-IF-YOU-WANT-IT FLOOR FINISHER**

Saves the work of three men. Finishes any wood floor perfectly and quickly.

Price, only \$24.50, cash with order.



Money back any time it fails to satisfy you.

**H. P. DIDRIKSEN**  
COLUMBUS, OHIO  
1826 Summit Street

**The IMPROVED Rapid Floor Surfacer**

will surface right up to the wall or base-board without the use of Edge Roller. Just the machine you would want for surfacing all kinds of wood floors, whether old or new. Will smooth down rapidly and easily all joints or warped edges. Perfect results guaranteed. More than 20,000 of our machines now in use. Guaranteed against defect in material and workmanship for five years.

Send for our Free Trial Offer. It will interest you.

**M. L. Schlueter**

Made in several sizes 225-27 W. Illinois St., Chicago, Ill.



**A POPULAR PRICED STEEL TAPE**

**LUFKIN "BANNER"**

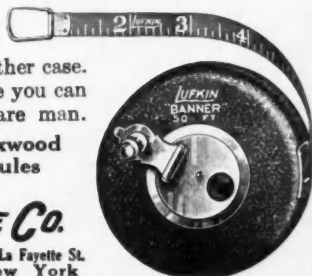
Accurate, standard size steel line 25 to 100 ft., put up in metal lined auto leather case. A tool you need at a price you can afford. Ask your hardware man.

Measuring Tapes, Boxwood and Spring Joint Rules

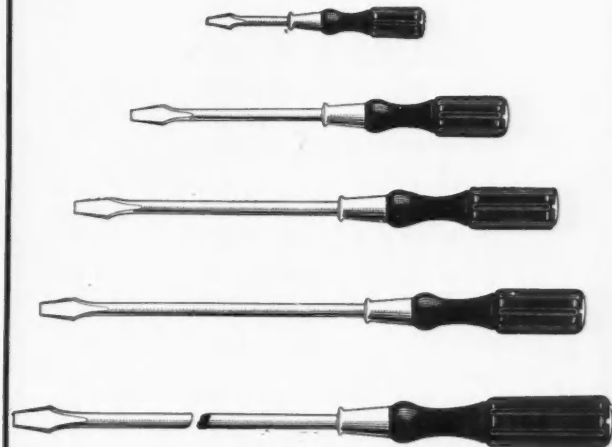
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**THE LUFKIN RULE CO.**

Saginaw, Mich. 106 La Fayette St. New York



**Stanley Tools**



**"HURWOOD" Screw Drivers**

Unsurpassed for Strength and Durability

Blade, Shank and Head are one piece of special steel. Two patented projecting wings under the head together with a rivet which passes through the ferule, handle and shank, securely fastens the Blade in the Handle, preventing its turning.

The Blades are finely tempered and well finished.

The Handles are polished and stained black.

Many styles and sizes from which to make your selection.

Carried by All Hardware Dealers

**STANLEY RULE & LEVEL CO.**  
NEW BRITAIN, CONN. U.S.A.

## Pullman Unit Sash Balance

Cheaper Than Weights and Cords

PULLMAN Unit Sash Balances should take the place of cords, weights and pulleys in every new building large or small, residence, factory, school building, etc., etc., because they cost less and last longer, are fire-proof and give a much neater appearance to the window.

All Pullman Balances are made entirely of pressed steel. This construction makes the Balance lighter, stronger and practically noiseless.

Pullman Unit Sash Balances save space, permit of much narrower mullions, thus giving more lighting area.

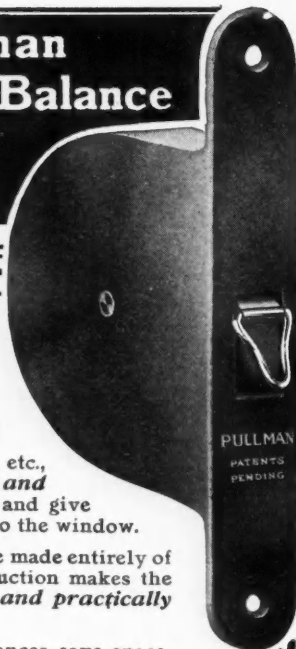
### OVER SIX MILLION IN USE

Recommended by hundreds of Architects. Approved by the Fire Underwriters' Laboratories and may be used in fire-proof buildings.

Write for illustrated descriptive catalog with blue print.

PULLMAN MFG. COMPANY, 10 Industrial Street, ROCHESTER, N.Y.

**Pullmanize Your Windows**



## You Should Own This Roll



## LEBANON "Z" TWIST AUGER BITS

NINE clean-cutting bits that bore from 40 to 60 per cent faster than all others.

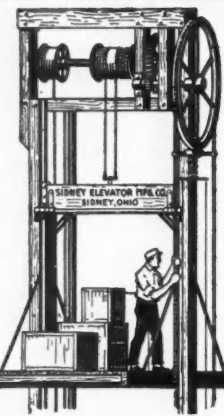
The more you use Lebanon High Speed Bits the more you will be convinced that their construction is well-nigh perfect. They never clog.

Made of special analysis steel. Lebanon Bits bore rapidly, accurately, and leave clean chipless holes behind them.

These good points spell GOOD BITS. You had better try a set. Inquire of your dealer or write

THE LEBANON MACHINE COMPANY  
LEBANON, NEW HAMPSHIRE

A. Z. BOYD CO. E. B. STANDART  
126 Chambers St., New York 89-20 59 W. Lake St., Chicago



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Will reduce your handling expense, and speed up your work.

Our machines are easily installed from our complete plans and instructions which are sent with each elevator.

### The Reasonable Cost Will Interest You

Write us today, stating requirements, giving style of machine wanted, size of platform and number of feet travel, and we will quote a money saving price on equipment to serve you well.

SIDNEY ELEVATOR MFG. WORKS  
SIDNEY, OHIO

## DUMBWAITER COMPLETE \$19.50 READY TO INSTALL

Includes all necessary material, not knocked down—machine, machine timbers, bolts, boxes, car, counterweight, ropes, guide ways, etc., all ready to set in hatchway and erection instructions. Length up to 20 feet. All material guaranteed. Money back if not satisfactory. Write for further particulars.

Highwood Dumbwaiter Co., Grand Ave., Leonia, N. J.



CARPENTERS WANTED AS AGENTS  
New is the time to act. Big Money Ready Seller.  
SANITARY AUTOMATIC DUMBWAITER  
saves carrying food to and from cellar. Perfectly ventilated; screened openings; finished inside with durable white enamel. Keeps food perfectly. Top lies flush with kitchen floor. You can walk over it. Operates with push button or lever. Also furnished as a Refrigerated dumbwaiter. Assembled complete ready to install. Three hours' time places them in actual operation in old and new homes. \$16.00 apiece; \$15.75 apiece in one third dozen lots. Write for complete information.  
York Automatic Dumbwaiter Works, 639-645 W. Market St., York, Pa.



## THE COLUMBIA DUMBWAITERS ELEVATORS

CELLAR HOISTS  
JUMPER DISAPPEARING DUMBWAITERS  
CHAIN HOISTS, CRANES AND TROLLEYS  
SEND FOR CATALOGUE

J. G. SPIEDEL, Reading Pa.



## KIMBALL ELEVATORS PASSENGER AND FREIGHT

We manufacture an improved line of Electric, Hand or Belt Power Elevators, Dumbwaiters, Hatch Gates, etc. Send for full information.

Address 1000 9th Street  
KIMBALL BROS. CO., Council Bluffs, Iowa

## STOP THOSE RATTLING WINDOWS

Do away with sash weights, cords, pulleys and pocket frames and save money by using AUTOMATIC SASH HOLDERS

Proved by Use—Unexcelled for windows without pocket frames. Excellent for new windows.



Send for circular and prices, or \$1.00 for trial set prepaid; state approximate weight of sash.

HARDWARE SALES CO., Inc. 52 Church St., New York

## Sedgwick Hand-Power Dumbwaiters and Elevators

Manufactured by Specialists and guaranteed. Send for Catalog and information.  
SEDGWICK MACHINE WORKS 132 LIBERTY ST. NEW YORK

# Bishops Refined "Greyhound" Steel Saw—A Masterpiece

Of the Saw Maker's Art. We are proud of its quality and guarantee it to cut faster and run easier in all kinds of wood, to hold its sharpness and set longer than any other good saws.

**It's the Your-Money-Back-If-Not-Satisfied Saw**

*30 Days' Trial Will Prove Our Guarantee*

The "Greyhound" is the result of years of experimenting to originate a purity of steel with fine grain and tough body.



Made in both Straight and Skew Back

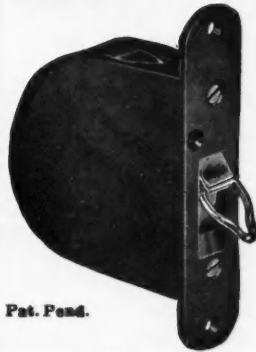
Length Each	18	20	22	24	26	28	inches Net
	\$2.85	\$3.00	\$3.15	\$3.30	\$3.50	\$3.65	

Packed One in a Box



**GEO. H. BISHOP & COMPANY**  
LAWRENCEBURG, IND.

## Caldwell Sash Balances Uniform Mortises



Pat. Pend.

For use in all classes of new work. Box frames unnecessary. Mortises cut at mill reduces cost of installing. Counterbalance sashes perfectly unaffected by atmospheric conditions. Cheapest method for modernising old window, as alterations in sashes and frames are not necessary. Sashes should be weighed before ordering.

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**CALDWELL MFG. CO.**  
2 Jones St. Rochester, N. Y.

## ORDER-MADE SCREENS LAST LONGER---LOOK BETTER

Contractors, builders and material dealers make money—order from factory. Quick shipments. All kinds of door and window screens made-to-order. Our special facilities insure better quality at lowest possible prices.

Write for Illustrated Catalog and Prices

**STANDARD SCREEN CO.**  
1848-58 Hastings Street, Chicago, Illinois

# BARTON TOOLS

The steel capped double plane iron illustrated is one of the celebrated Barton Tools. For many years these tools have been known for their unequalled, keen, hard, smooth-cutting edges. Barton Tools last a lifetime and give satisfaction to the end. Ask your dealer to show you our tools or send direct for catalogs and free story book—True Stories. Specify "Carpenters Catalog."

**MACK & COMPANY** 100 BROWNS RACE  
ROCHESTER, N. Y.

**WHY** not use the particular size, shape and grade of pencil or crayon suited to your work? You will find it among

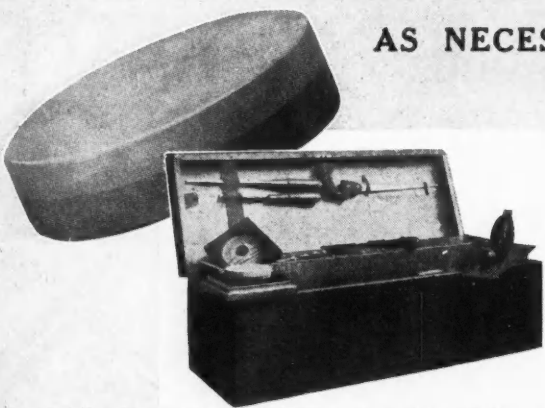
## Dixon's Pencils

Send us the name of your dealer from whom you purchase pencils and crayons together with sixteen cents (\$0.16) in stamps and we will send our liberal sample assortment No. 183-J, as illustrated.

Made in Jersey City, N. J.  
by the

**Joseph Dixon Crucible Co.**







AS NECESSARY AS A SAW OR A HAMMER  
IN YOUR TOOL KIT

# Carborundum Sharpening Stones

Quick, clean-cutting stones, that bring the edge to the tool with just a few strokes. **AND THEY CUT THE EDGE ON THE TOOL—THEY DON'T MERELY RUB IT ON** Every stone positively uniform in grit and hardness, holds its shape, shows long life. The round Carborundum Combination Bench Stones for general tool sharpening, the beveled edge slips for touching up gouges, carving bits, etc.—the extra hard, extra fine Carborundum stones for that finer edge for your finer tools.

EVERY STONE IS GUARANTEED  
ASK YOUR HARDWARE DEALER

**THE CARBORUNDUM COMPANY**  
NIAGARA FALLS, N. Y.







**See This Trademark?**

Do you want an adze that will last twice as long as the cheap adze? Ask your dealer for White Adze. Watch for this trademark. Write us if your dealer won't get them for you.

**The L. & I. J. White Co.**  
10 Columbia St., Buffalo, N. Y.

1853  1917

**Chisels**

Fine Beveled Edge  
Shank and Socket

**Tang and Socket  
Butt Chisels**

Plain and Beveled Edges

Send for illustrated Catalog

**Buck Bros., Millbury, Mass.**



## Carpenter's Tool Trunk

**Handy—Practical—Economical**  
Just the thing in which to carry your tools.

It can be carried anywhere—like a suitcase. Keeps your tools in good shape, and lasts a lifetime. Made of basswood, covered with enameled steel. Has a steel binding, and is lined with paper. Locks and bolts are of brass. Contains drawer for small tools and an arrangement for holding steel square, level and three saws. Size 32 inches. Price \$7.00. If your dealer doesn't handle this "Handy Tool Trunk", we will credit you with 50¢ for giving us his name when you order your chest. Simply send us his name and your check for \$6.50 and we will send you chest at once.

**F. ENDEBROCK  
TRUNK CO.**  
1417 South 14th, ST. JOSEPH, MO.



When you think of tools, think of

## "Red Devil" Carpenter's Tools

and you will have tools worthy of your skill. The "Red Devil" trade mark on Auger Bits, Screw-drivers, Mitre Boxes, Pincers, etc., means satisfaction.

To be obtained from dealers. If not, write for circular matter.

**Smith & Hemenway** 106 Chamber St.  
New York City



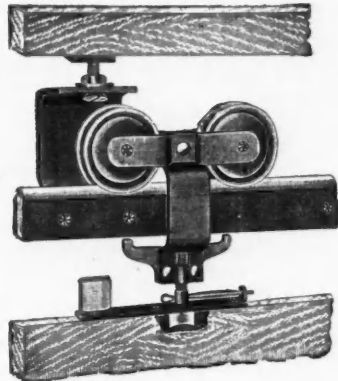


# Dix Noiseless Door Hanger

See that select hard maple Strip



Reinforced by high carbon steel bars

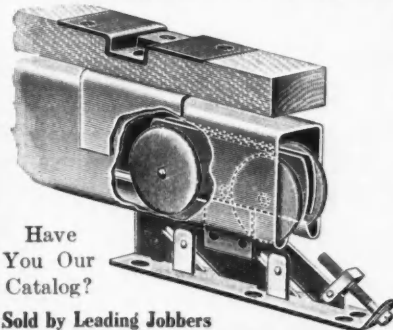


That's What makes them ABSOLUTELY NOISELESS



**DIX MANUFACTURING CO.**  
BALTIMORE, MD., U. S. A.

## LANE'S TROLLEY



Have You Our Catalog?

Sold by Leading Jobbers

### PARLOR DOOR HANGERS AND TRACK

With bicycle quality ball-bearings and patented side adjustment of track (readily accessible after it is hung) makes it impossible for door to scrape or bind.

**LANE BROS. COMPANY**  
Poughkeepsie, N. Y.

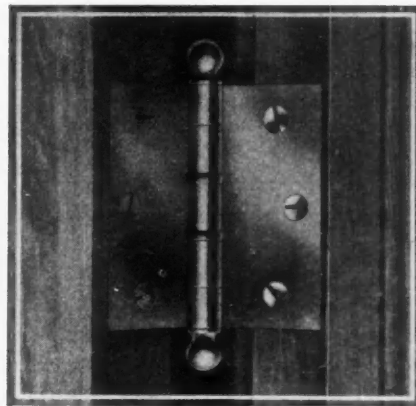
## Say Shelby "CHIEF"

When You Talk About FLOOR HINGES

*"The hinge without woes,  
As the wise carpenter knows."*



Manufactured by  
The Shelby Spring Hinge Co., Shelby, O.  
Sold Everywhere



No. 2742—Wrought Steel Anti-Friction Butt with Non-Rising Pins

# McKINNEY

## Wrought Steel Hardware

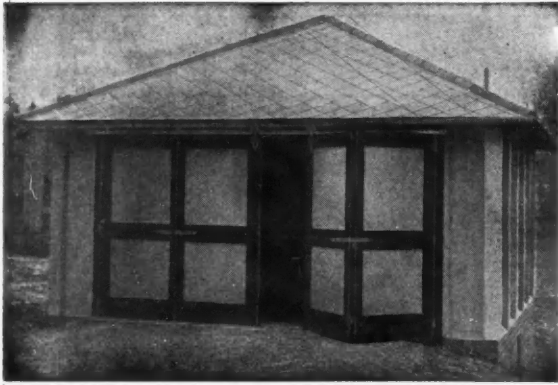
Architects and builders who select finishing hardware with an eye single to the owner's satisfaction specify McKinney Wrought Steel Butts for all doors from basement to roof. The exceptionally high quality of McKinney Wrought Steel Hardware never varies—you can always depend upon it.

A butt that is very popular with builders is the Anti-friction No. 2742 shown above. It has two washers of special metal, accurately fitted at the two middle joints to reduce friction at the wearing surfaces and thus prevent sagging and binding. This butt is made of wrought steel particularly suited for the purpose and comes in all standard sizes and in any finish desired to match other hardware.

*Whether building or remodeling homes or public buildings you'll find the McKinney Builders' Catalog "A-11" helpful in selecting finishing hardware. Send for your copy now.*

**McKINNEY MFG. CO.**

Pittsburgh, Pa.



# TOPPING

for *quick action*

Your client wants garage doors that will operate easily, that will stay in position when opened, and will lock compactly when closed.

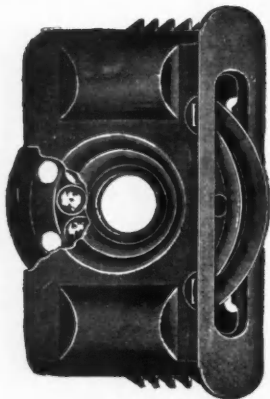
He wants "quick action" garage doors so he won't have to be annoyed by fumbling around at night trying to open or close them.

Topping Folding Garage Door Hangers eliminate garage door nuisances and insure easy manipulation. There is an automatic locking device to hold the door firmly when open and another automatic lock—in the middle of the door—which locks the door tightly when closed. The latch and chain arrangement quickly releases the door when it is open.

You won't find a better garage door hanger equipment on the market. Try this Topping article on your next job. Each set neatly boxed with full instructions for fitting. All necessary hardware included in each set.

Ask your dealer or write us direct.

**Safety Door Hanger Company**  
306 Topping Bldg., Ashland, Ohio



No. 10 Ball Bearing

## "Grand Rapids"

**Ball Bearing  
ALL STEEL  
Sash Pulleys**

**Fasten Automatically  
No Nails—No Screws  
Just Bore Four Holes**

The automatic saw tooth fastening feature and the simple and easily made mortise will save in labor enough to pay for the pulleys.

The bearing contains eleven ¼-inch Solid Steel Balls running in lubricant, insuring a noiseless, easy running wheel under any load.

**NOISELESS—EVERLASTING**

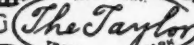
Write for **FREE** Samples

Fifty Different Styles

**Grand Rapids Hardware Co.**

Manufacturers

158 Eleventh Street - Grand Rapids, Mich.

QUICK ACTING  SELF LOCKING

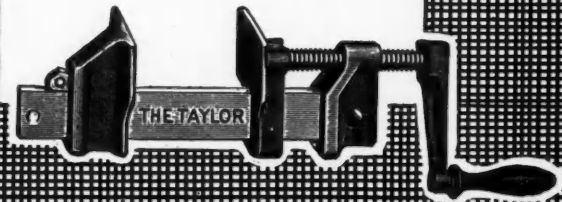
## Clamps

**An Investment  
Not an Expense**

The quickest and strongest clamps made. That's why they're the standard in U. S. Government Works and in such concerns as General Electric Co., Singer Sewing Machine Co., Victor Talking Machine Co., etc.

*We can PROVE it in your own shop. Write today.*

**James L. Taylor Mfg. Co.**  
Poughkeepsie, N. Y.



### Nicholls Reinforced End Rivet Trowel

Pat. Apld. For

Blade will not Buckle or Crack  
at end of Mounting



Flexible Piece under end of Mounting bends with blade, therefore rivets will not pull loose.

Three Rivets to hold instead of one.

Made of Finest Quality Crucible Spring Steel. Fully Guaranteed

Ask your Dealer for these and if he should not have them order direct from us. Price \$2.50

NICHOLLS MFG. CO. Ottumwa, Iowa

### C. G. HUSSEY & CO. Pittsburgh, Penna.

MANUFACTURERS  
OF

## COPPER

In Sheets, Plates, Rolls

CORRUGATED COPPER CONDUCTOR PIPE



Copper Nails, Copper Rivets, Conductor Pipe, Eaves Troughs, Elbows, Shoes, Mitres, Soldering Coppers, Gaskets, Etc.

### FRESH AIR AND PROTECTION!

#### The Ives Window Ventilating Lock



A Safeguard for Ventilating Rooms, allowing windows to be left open at the top, the bottom, or both top and bottom, with entire security against intrusion.

Descriptive circular mailed on application.

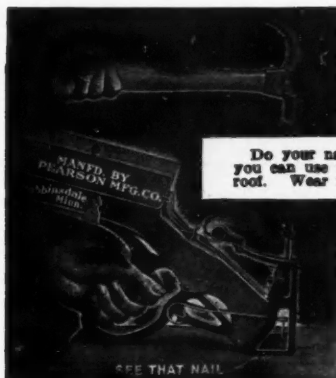
### THE H. B. IVES CO.

SOLE MANUFACTURERS

NEW HAVEN - - - CONNECTICUT

PAYS FOR ITSELF  
ON THE FIRST JOB

#### The Pearson Automatic Shingle Nailer



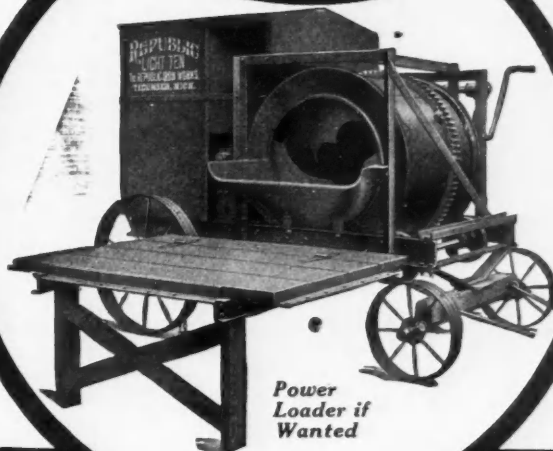
Do your nailing fast—faster than ever before, you can use this Pearson's Nailer on any pitch roof. Wear mittens, gloves, etc. This "Hand Nailer" is the only Nailer—throw nails in by the handful—then start nailing. Nails easily driven through tin or quite heavy sheet iron.

These nailers are made in two sizes—The BLUE Nailer for 3d. common No. 14 gauge wire nails. The RED Nailer for 3d. galvanized No. 13 gauge 1 1/4-inch wire nails.

The regular price is \$7.00, but if you order from this ad, we will send it prepaid parcel post for \$5.00. This offer is liable to be withdrawn, so act now.

PEARSON MFG. CO. - ROBBINSDALE, MINN.

## Republic



Power Loader if Wanted

4 Sizes

### THE GREATEST MIXER VALUE EVER OFFERED

A Full Sack—Ten-Foot Size At a Five-Foot Price

Not too large for small jobs, nor too small for the big ones. A mixer that combines the larger capacity and longer wearing qualities of the larger machines with the low price, lighter weight and ease of moving of the smaller machines.

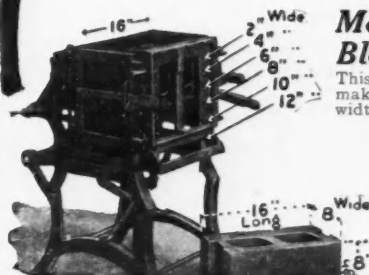
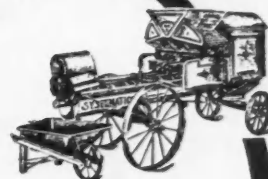
The low charging position will save much labor; the large 26" opening permits of easy cleaning and rapid loading, and the sturdy construction gives a Mixer strong enough to stand hard usage and rough roads.

This sturdy, compact Mixer has many up-to-date labor saving and money making features you ought to know about, and you will want to take advantage of the large saving in price. Do not fail to get a catalog and full particulars.

REPUBLIC IRON WORKS  
Tecumseh Box 445 or 112 Patterson St. Michigan

Concrete Mixers of All Kinds

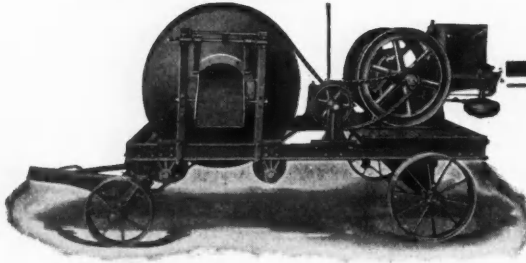
Price \$50 and up  
Don't Fail to Get Our Prices  
Write Your Own Terms and Guarantee



#### Monarch Block Machine

This well known rapid machine makes blocks any length or width, including silo blocks. It contains many superior features you ought to know.

**\$197<sup>00</sup>** is our price until July 1st



We cannot guarantee to sell our big 5-foot mixer for this price after July 1st, 1917.

If you are anticipating heavy work this summer—if you are in the market for reliable mixing equipment, you cannot afford to overlook this exceptional bargain. This is a high grade mixer. Fine steel drum construction; thorough mix by three distinct, constant mixing operations which are independent and opposed to each other; discharges directly into barrows or forms; uses less fuel; has bigger capacity; requires minimum of attention. If you are familiar with the Interstate Mixer, your business sense will tell you "Here is a good buy." If you are not familiar with the Interstate machine let us send you complete specifications.

*Let us tell you more. Write for our interesting book entitled "The Mixer Where the Dollar Does Its Duty"*

**Interstate Equipment Co., 1745 Ernsperger St., South Bend, Ind.**

## BABY GRAND

*Just right  
for your small work*

**L**IGHT, easy to move about and operating at a small expense the Baby Grand is the ideal machine for the block plant, sidewalk or foundation work and all small work.

Mr. C. P. Bowlesby, proprietor of the Sterling Concrete Co., Sterling, Illinois, writes as follows:—

"Gentlemen:—

After using one of your Baby Grand Mixers for a year, I am convinced that it is a great labor saver and money maker.

During the season I ran out enough material to make \$2500.00 worth of blocks at a very small expense; no outlay for repairs, just gasoline which was less than ten dollars.

Anyone that is in need of a machine will not miss it to get a Grand. This small machine I have will mix 6 yds. an hour and do the work well."

**HALL HOLMES MFG. COMPANY**  
466 Oak Street, JACKSON, MICHIGAN



The Baby Grand cuts your operating expenses to a minimum. Write for prices and full description.

SEND FOR CATALOGS

## Northwest BUILDING MATERIAL EXHIBIT

1917

What are you going to build this year?

A Garage? **LOOK**  
A Bungalow? **Before You Build**  
A House?  
Apartments?  
A Church? **EVERYTHING**  
A Hotel? that enters into building construction, including heat, light, ventilation, decoration  
A School? —as well as the materials  
A Hospital? that make the structure and the methods of application—  
A Factory? for a little job or the biggest building—is on free view at the  
A Skyscraper?

### Permanent Building Exhibit

whether you are owner, architect, contractor or sub-contractor for all or any part of any building, you can't afford to build without inspection of the world's latest and best as shown in the

**200 Exhibits on One Big Floor**

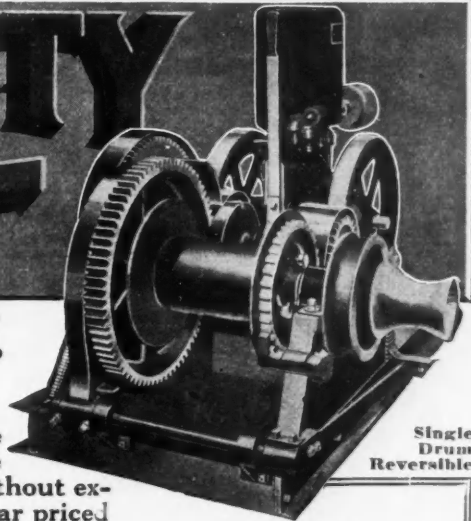
It's FREE to See

**Northwest Building Material Exhibit**  
Entire Fourth Floor, First National Soo Line Bldg.  
Minneapolis, Minnesota

*look before you build*

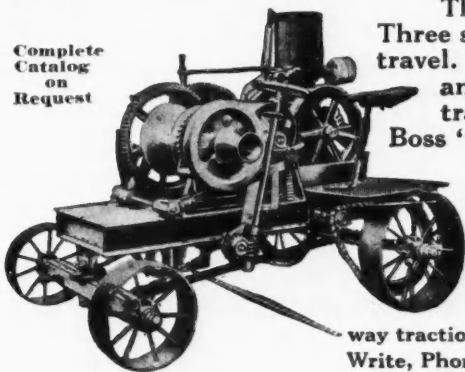
# HEAVY DUTY CONTRACTORS HOIST

Equipped with Hyatt Roller Bearings. Gasoline, Kerosene or Electric Power—reliable as steam—\$5 to \$10 a day cheaper to operate.



Single Drum Reversible

Complete Catalog on Request

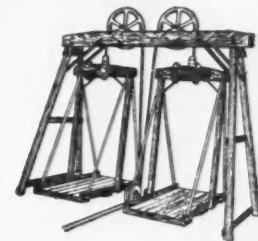


Three sizes—6-8-10 H. P. Three speeds—100-150-200 ft. rope travel. Safety Ratchet, Extra Sheave and Niggerhead furnished without extra charge. Also the popular priced Boss "Handy" Hoist.

## Combination Hoist and Back Filler

Single Drum Reversible Hoist with Safety Ratchet, Sheave and Niggerhead. Hoist Stationary. Reversing Sheave under Drum permits working from either side. One way traction if desired.

Write, Phone or Wire today. Prompt deliveries from stock carried in all large cities. Write nearest office.



BUILT OF OAK Material Elevator, Single or double cage.

The American Cement Machine Co Inc  
Keokuk Iowa  
THE 300000 HP ELECTRIC CITY

BRANCH OFFICES—New York, Philadelphia, Pittsburgh, Baltimore, Richmond, Cambridge, Mass.; Indianapolis, Chicago, New Orleans, Minneapolis, Seattle, Spokane, Los Angeles, San Francisco, Cleveland, St. Louis, Louisville.

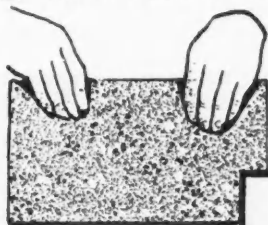
GET OUR LOW PRICES ON MIXERS-PAVERS-GROUTERS-PUMPS

## GRANITE FACE YOUR CEMENT BLOCKS

WITH the Gibler Sheet Facing Process you can put new life and greater profits into your cement block business. Cost of production but slightly more.

The Gibler Process of Granite Facing is simple but effective—a patented process. The Gibler Facing Machine makes it easy—insures success—pays back its cost first month in crushed granite saved. Machine is strong, well built—will last a lifetime.

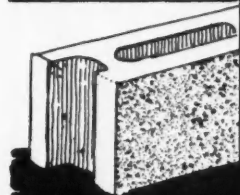
Right to use this wonderful glue-paper-granite facing method goes with every machine. Full working directions furnished.



As a special introductory offer we will ship this \$18.00 machine to you for only \$15.00. Terms \$5.00 down—balance C. O. D. 10 days. This gives you a ten-day trial. Money returned if not fully satisfied.

Send your order today to

**B. F. GIBLER**  
MAUSTON, WISCONSIN



SPECIAL 30 DAY PRICE \$15.00



## Have you watched a Blystone in operation?

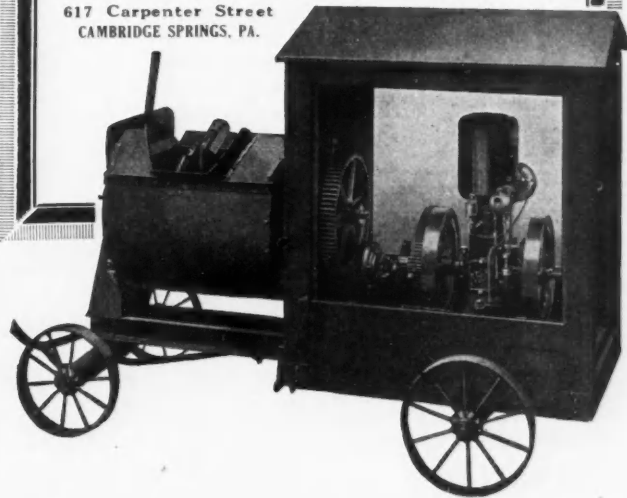
They are unlike any other made. The Patent Reverse Spiral Arrangement of the mixing blades is found only on the Blystone.

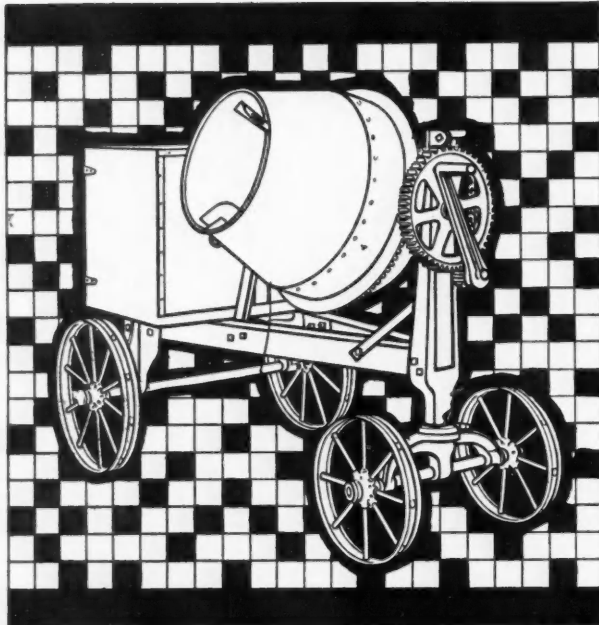
With this arrangement the batch is carried from one end of the drum to the other twice with every revolution of the shaft and shoveled over forty-four times each minute. The Blystone mixes successfully concrete, mortar, hardwall or the old fashioned hair plaster.

WRITE FOR OUR CATALOG

**BLYSTONE MANUFACTURING CO.**

617 Carpenter Street  
CAMBRIDGE SPRINGS, PA.





**I**N the concrete machinery industry, the makers of Winner Mixers have been real trail-makers. They have blazed the way time after time with new ideas, new ways and new methods.

The big **WINNER LINE**, from the Two to the Nine, shows the effects of experience, efficiency, inventive genius and workmanship.

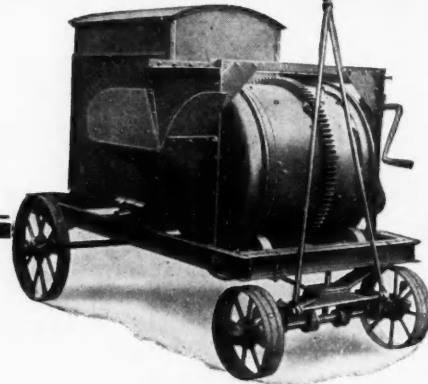
If you want a concrete mixer that's **BUILT** on the square from the ground up, a concrete mixer that's sold on a fair square kind of plan, and a mixer that will turn out the biggest, squarest day's work you ever heard of—buy the Winner.

*Write for literature and prices, let us tell you WHY Winner Mixers make good.*

**The Cement Tile Machinery Co.**  
45 Rath St. Waterloo, Iowa

Write **STEWART MFG. CO.**, 127 Rath Street, Waterloo, Iowa, for a copy of literature describing the **STEWART UNI-TRUCK**

# LANSING No 5



## Designed for the Average Builder

This "half sack" batch mixer does the work of an all around contractor, such as sidewalk curbing and foundation work with the least possible expense. The first cost is small, it costs but little to run and is easily moved from job to job. Don't fail to investigate the No. 5 before buying. Send for our catalogue No. 202. Many other sizes.

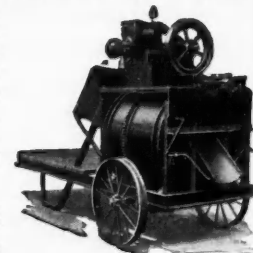


22 Cedar Street, Lansing, Mich.

CHICAGO	167-169 West Lake Street
NEW YORK	288-289 West Street
BOSTON	78 Cambridge (Charlestown District)
PHILADELPHIA	Corner North American and Willow
MINNEAPOLIS	517-519 North Third Street
KANSAS CITY	1413-1415 West Tenth Street
SAN FRANCISCO	338-348 Brannan Street

## Labor-Saving Archers

**FOUR** men do the work of seven or eight if you supply them with an **ARCHER MIXER**. Archers, the original end-discharge mixers, deliver the mix direct into the forms. No wheelers needed. Easily moved, rapid mixing and quick discharge make Archers the most economical mixers. Two sizes, half and one bag. Write for catalog and spring prices.



**ARCHER IRON WORKS**  
2436 W. 34th Place CHICAGO

## CONCRETE PORCHES

**ATTRACTIVE  
EVERLASTING  
INEXPENSIVE  
EASY SELLING**



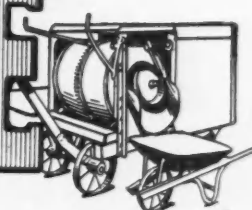
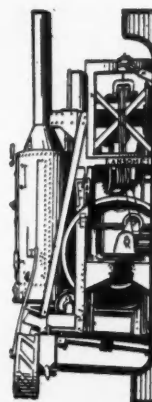
### Big Profit Makers

Concrete porches cost less to build than those of wood—and pay the builder a bigger profit. They sell easily—every home owner prefers concrete to wood for porches. Dunn Molds make porch building easy, and call for an insignificant investment for the entire outfit. Write for bulletin "Ornamental Molds."

**W. E. DUNN MFG. CO.**  
415 24th St., Holland, Mich.

**MOLDS SOLD ON 15 DAYS' TRIAL**

# RANSOME



Registered U. S. Patent Office

*Well Mixed  
Concrete for  
Permanence—  
Ransome  
for better  
mixing*

(Member National  
Association Mixer  
Manufacturers)

The Ransome Bantam Mixer line, from the Ransome Bantam Junior to the Ransome Bantam Paver is the most efficient line of mixers ever produced. The Ransome Bantam is practically the American Standard. It means rapidity, efficiency, long life, low original cost, and economic operation. No waste and no time lost. Write for particulars.

**RANSOME CONCRETE MACHINERY CO., 115 Broadway, New York City**  
Agents in every large City

Factories: Dunellen, New Jersey and Reading, Pa.

## DUNN CONCRETE MIXERS

### Do the Concreting Yourself

With a handy, medium-sized, easily-operated mixer like the Dunn No. 1, you can do your own concreting for foundations, walks, curbing, bridges, culverts, floors, etc.

The Dunn Mixer is the most efficient of the popular tilting drum type, with ample capacity to handle all work that building contractors have. Five big patented features have made it supreme in thorough mixing ability, speed, convenience and ease of operation. Quantity production makes it possible for us to offer low prices and immediate delivery. Agents wanted.

**W. E. DUNN MFG. CO., 415 24th St., Holland, Mich.**



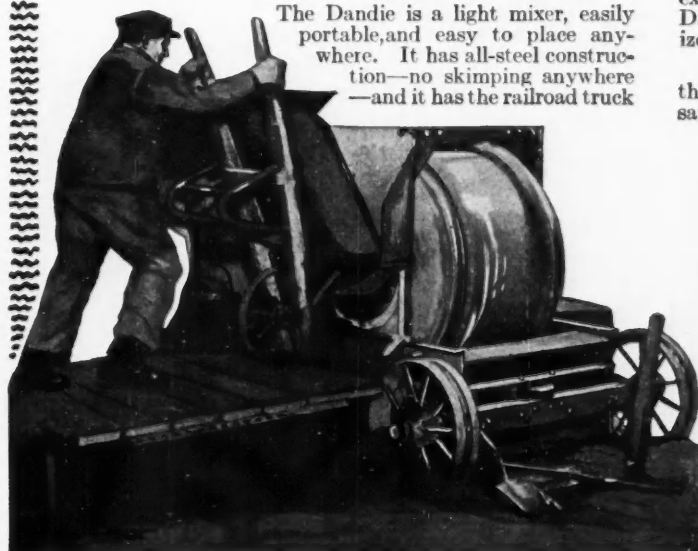
**SOLD ON 15 DAYS' TRIAL**

# — Get the Price —

**H**ERE is a record-making value in a low charging concrete mixer—a mixer that steps right out of its price-class, both in money-making features and durable construction. You can't judge this mixer by its low price. It means dollars saved and dollars made to answer this advertisement.

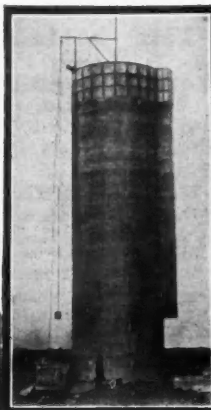
### DANDIE MIXER

The Dandie is a light mixer, easily portable, and easy to place anywhere. It has all-steel construction—no skimping anywhere—and it has the railroad truck



principle of drum roller construction which, with the smooth rolling action of the double gear drive means extra durability throughout every part of the mixer. No other mixer in the Dandie price-class has the same fast easily regulated discharge. You can discharge a handful as easily as the whole batch. The astonishing low price for the value is only possible because it is built by the largest exclusive manufacturers of mixers in the world. The Dandies are built in big quantities, every part standardized and the price kept down.

Write today for booklet series D-42, which gives you the details about the remarkable value. It means dollars saved and more dollars made if you answer this advertisement today.



Five cu. ft. and 10 cu. ft. capacities. May be equipped with low charging platform, power side loader, feed spout and batch hopper, also automatic water measuring tank and hoist for silo work, etc.

**KOEHRING  
MACHINE  
COMPANY**

Milwaukee Wisconsin



## A No-Lost-Motion mixer for the efficient product plant

The Frank Mixer is the logical equipment for the busy plant that must have a mixer which requires a minimum of attention and which produces a mix of uniform quality in a short time.

The Frank Mixer can be located conveniently near the forms where the mix can be discharged onto a platform where it can be shovelled directly into the form. The open drum makes loading easy and also enables the foreman to watch the batch mix—to see it and feel it so he find out, quickly, when the batch is thoroughly mixed.

## Frank Mixers used on any job

Frank Mixers are not confined to product plant work. They are designed to handle all kinds of work; mortar and plaster as well as concrete; sidewalk and floor construction; general farm work, country road building,—in fact, any job where a dependable, easily operated efficient mixer is required.

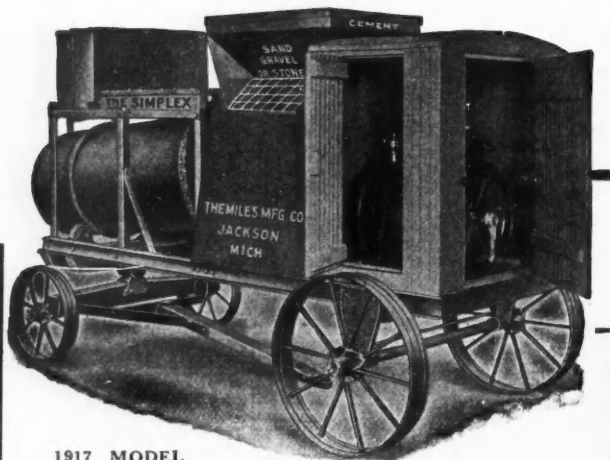
**And the cost!** The extreme simplicity in the construction of the Frank Mixer—the few working parts are made of the best material—enables us to place this machine on the market at a price much lower than most mixing equipments. You can see for yourself, in studying the accompanying illustrations, the perfect simplicity and sound practicability of this mixer. It never gets out of order—easy to clean as a pail.

Let us send you Particulars

## Frank Manufacturing Company

241 Century Building

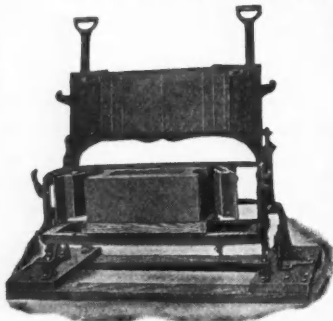
Des Moines, Iowa



1917 MODEL

## The SIMPLEX Improved Mixer

Continuous Batch Mix, Low Down, Steel Frame, Heavy Construction, Positive Feed



**“THE MILES”  
No. 5, Down Face  
Wet Concrete Block  
Machine  
Makes Stone**

In Lengths 4, 6, 8, 10, 12, 16,  
18, 20, 22, 24 inches.  
In Widths 4, 6, 8, 10, 12 inches.  
In Height 4, 6, 8 inches.

Also Angle Stone, Circle Stone, Gable  
Stone, Hollow or Solid Stone

THE CONTRACTORS' FRIEND

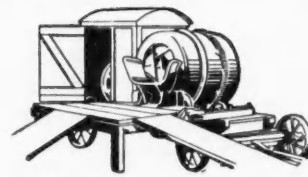
Simple, Strong and Rapid  
**LOWEST IN PRICE**

Write for New 1917 Catalog

THE MILES COMPANY, 309 E. Franklin St., Jackson, Mich.

## “THE STANDARD” Low-Charging Concrete Mixer

Cuts Costs—Increases Production



Contractors all over the country have found that “The Standard” Low-Charging Mixer actually reduces concrete costs one-third.

Our latest catalogue (just off the press) is full of interesting pictures and data. Write to our nearest office today for your copy.

Ask for Catalogue No. 44

Complete line of Contractors' Equipment, Hoists, Pumps, Engines, etc.

## The Standard Scale & Supply Co.

PITTSBURGH  
1631 Liberty Avenue  
CHICAGO  
163 N. May Street

NEW YORK  
145 Chambers Street  
CLEVELAND  
1547 Columbus Road

PHILADELPHIA  
523 Arch Street  
BALTIMORE  
409 N. Gay Street





# Here's a "Man's Size" Mixer At a "Boy's Size" Price---

**Geo. C. Sheldon  
says:**

*"Your paying for a Sheldon Mixer all the time you go without one."*

*"It costs \$1.20 a cu. yd. to mix concrete by the old, slow, back-breaking hand and shovel method. The Sheldon will do it for less than 70c—a net saving of 50c on every cu. yd. A saving of 2½c a wheelbarrow load or 5c a batch. Doesn't this prove you're paying for a Sheldon all the time you do without one?"*

**Read This Letter**

Gentlemen: The little mixer I bought of you has run night and day in the silo building season. In all has used up 2200 bbls. of cement without a bad mix. It is so much better for country work than the big mixer that I have used it on a county bridge that had 123 cubic yards of concrete in it.

W. J. LOYD,  
Scottsboro, Alabama.

**Nos. 1 and 2 Sheldon**

Ready built as shown. To be run by hand. Power attachment can be supplied any time at small extra cost. Good for the small jobs where speedy work isn't so essential.

No. 1—Wooden Barrel Drums \$23.00  
No. 2—Steel Barrel Drum \$28.50



Sheldon Mfg. Co.,  
Box 1003X  
Nehawka, Neb.

Send me without any obligation on my part your catalog and special offer. Your No. ... Mixer would come nearest to filling the bill for my work.

Name.....  
Town.....State.....  
P. O. Box or St. No.....

**Mail  
Coupon**

A CONTRACTOR came into my factory the other day and said he wanted to look over my mixers. Said he'd seen my ads in the Carpenter and Builder (now American Builder) for years, but thought we had only a little hand machine, "not big enough for a man." This spring he landed some good sized jobs and, as labor was scarce, decided to rig up a machine himself—when he met a man who told him about my machines. Result: He came right up to my factory, looked my machines over, and bought one of my No. 6 complete power machines on skids, which he said was just right for his work.

Now, this little incident opened my eyes. Made me think there might be other contractors who had the same wrong idea about my mixers not being "full man size." If you

are one of them and not in a position to come to my factory to see the machine for yourself, I'll make you this absolutely "open and shut" offer.

## Try a Sheldon On Your Next Concreting Job -- Free

Don't send me one cent. Just put the money in your own bank where it is absolutely under your own control, and try the machine for 30 days entirely at my risk.

Give it the toughest test you can think of. Keep track of the amount of work it will turn out compared to hand mixing. Note the kind of work it does and compare it with the work of mixers costing ten times as much.

Yes, sir, I want you to give it a test that you yourself will admit is hardly fair to expect of any machine. Then if it doesn't stand up to every single test, if at the end of 30 days you think you can possibly afford to be without a Sheldon as a partner in your business, just crate it up and deliver it to the railroad, take the bill of lading to your banker and get your money back and no questions

will be asked. My machine has simply got to make good for you on your jobs and it will do it if you will only give it the chance. It is doing it right today for hundreds of contractors, carpenters and builders which is proof positive it will do it for you. At any rate, I'll take all the risk. Just send for one of my machines shown and described below and put it to this test. Do it now!

## Why Dig Up \$200, \$300 or \$500 for a Mixer?

You can get a genuine Sheldon Batch Mixer for less money than any other of equal merit—yes, even half the price—or less than half. And the Sheldon, any style you buy, will stand right up alongside any other mixer at double the price, do just as much work, do it just as well (or even better) and last just as long.

It's easy to move, easy to handle, easy to transport, easy to run, easy on repairs and easy on your pocket-book—first cost and upkeep both. In fact, you can buy the Sheldon Iron Parts with which is furnished, free blue print plans and build your own mixer, for only \$11.50. Or, you can buy the complete machines shown here at the prices quoted.

The Sheldon has a mixing capacity of 2½ cubic feet (2 wheelbarrow loads) to a batch. Will keep 1 to 6 men busy—depends on number you want to work. Will save the labor of 1 to 3 men. Pays for itself on your first small job. Select one of the outfits shown below and try it on your next job 30 days at my risk. Write for catalog and our special offer. Mail the coupon.

**Nos. 3 and 4 Sheldon**  
Power outfit on wooden frame as shown. A good, strong, durable outfit for any work.  
No. 3—Wooden Barrel Mixer Drum . . . \$32.00  
No. 4—Steel Barrel Mixer Drum . . . \$37.50



## Write for Catalog and Special Offer

Make me show you what the Sheldon is like. My catalog will tell you a lot—but nothing like putting a machine to actual work on your next concreting job, so take me up on my offer today. Or, write me sure for my catalog and special offer. Address

GEO. C. SHELDON, President  
Sheldon Man'g. Co., Box 1003X, Nehawka, Nebr.

**Nos. 5 and 6 Sheldon**  
Mounted on skids. Ideal outfit for contracting work. Easily portable from one part of job to another. Price without engine.

No. 5—Wooden Barrel Mixer \$34.50  
No. 6—Steel Barrel Mixer . . . 40.00  
Price with 2 h. p. Stover Engine  
No. 5X—Wooden Barrel Mixer Drum . . . \$84.50  
No. 6X—Steel Barrel Mixer Drum . . . 90.00  
Webster Oscillating Magneto for engine, \$7.50, extra.



Engines F. O. B. Nearest Stover Warehouse

**Nos. 7 and 8 Sheldon**

Mounted on steel wheel trucks. My best outfit. Easily portable. Price without engine  
No. 7—Wooden Barrel . . . \$44.50  
No. 8—Steel Barrel Drum, 50.00  
Price with 2 h. p. Stover Engine  
No. 7X—Wooden Barrel \$94.50  
No. 8X—Steel Barrel . . 100.00



All Prices—MIXERS F. O. B. Factory—Nehawka, Nebr.



**IDEAL CINCINNATUS BATCH MIXER**  
Capacity 45 Cu. Yds. Daily      Running Expense 50c

## Which is Best?

Do you still mix your concrete by slow and expensive methods?

Do you still worry about getting enough men to handle that foundation or sidewalk job?

Don't do it! Use the

## IDEAL CINCINNATUS NO. 5 BATCH MIXER

It is compact and easily handled. It does thorough work and is reliable. You run the wheelbarrows up on to the loading platform and dump directly into the mixer.

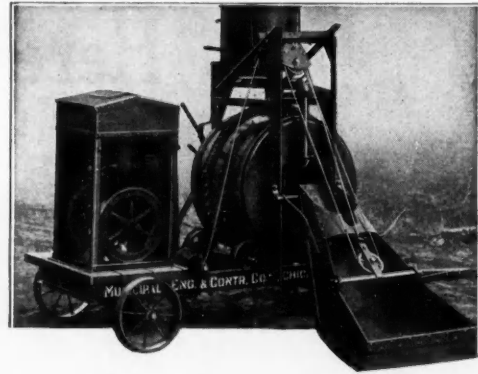
Cincinnati Mixers are made in many sizes and equipments for every contracting purpose.

Catalog No. 27 covers them all. Send for it.

**Ideal Concrete Machinery Co.**  
1308 MONMOUTH AVE  
CINCINNATI OHIO

WINDSOR  
ONT., CAN.

Five Men. Daily Output 45 Cu. Yds. Total Wages \$12.50



## The Price is Cheap

Nothing Else About the Austin Drum is Cheap

There Couldn't Be—It's Austin Built

Building a small, low price drum mixer offers only one manufacturing opportunity—that is superior construction.

A drum mixer is always a drum mixer—you can't make it individual in any way but one—that is by putting more enduring workmanship and material per dollar of price into it.

This is what Austin has done. An Austin Drum Mixer has all the features of any other drum mixer and it has in addition the maximum of enduring construction per dollar of price.

Write for Bulletin 7-D, which gives full details

**Municipal Engineering & Contracting Co.**



New York Office: 20 Church Street

Main Office:

Railway Exchange Building, Chicago

## Power!



If you are intending to mobilize powerful dependable equipment for your summer drive let us inform you regarding the Eureka No. 10 Batch Mixer. Here is strength—accessibility—simplicity of working parts—reliability. Here is an equipment that will stand continuous rough usage for years to come. Machines of this type have been used on such big contracts as the New York Public library, the Ford Motor Company's plant, the General Hospital in Cincinnati, Ohio, and the L. & N. Railway Terminal Station at Memphis, Tenn. This

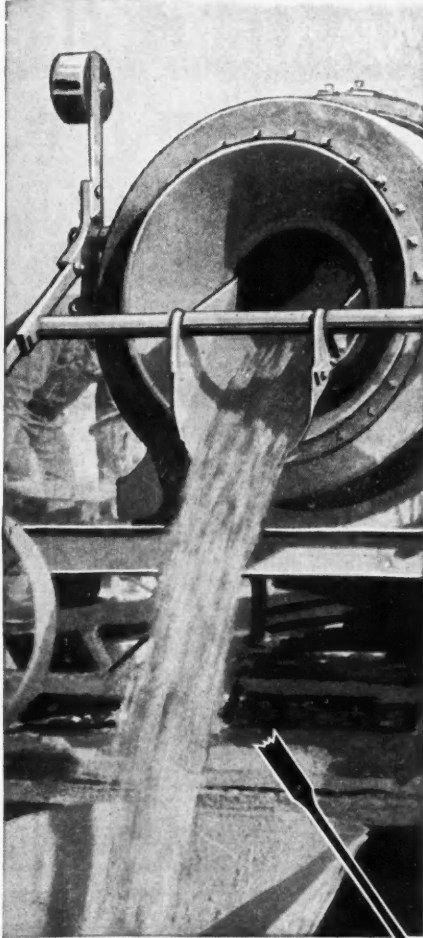
is a machine for big work. It will stand the racket. It has long life.

Write for our special bulletin

Send for our circular on the Eureka Batch Mixer No. 10, which describes the advantages and gives complete specifications.



**Eureka Machine Company**  
103 Handy Street      LANSING, MICH.



### What Peter Kiewit's Sons Told Zack and Also Us

First, Zack had no interest in the Smith Mixerette except as it represented a news item for his paper.

Zack states that Peter Kiewit's Sons told him that they poured 45 cu. yds. in 9 1/2 hours for the first day's run—that they had other and larger Smith-Chicago mixers, but due to the labor situation it was more economical to use the Smith Mixerette on this class of work—the work referred to being a \$67,000.00 school building in Omaha, Nebr.

So much for Zack. Here is what they wrote us:



What is the answer? Just this. A Smith Mixerette will make money for you on your work. Fill out the coupon below and send for our big NEW catalog describing the Smith Mixerette and the other Smith-Chicago Mixers.

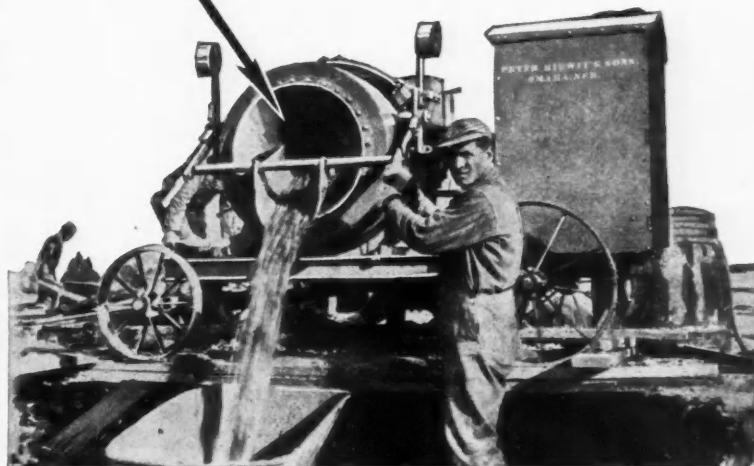
# SMITH MIXERETTE

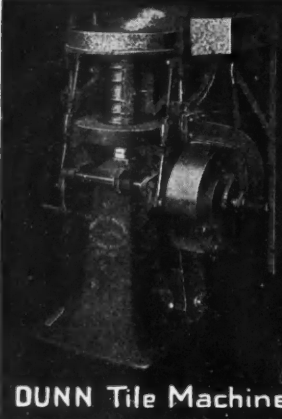
## Send for the NEW CATALOG

Without any obligation on my part, mail me a copy of your NEW Catalog No. 116-G, showing the Smith Mixerette.

Name.....  
Address.....  
City.....  
State.....

**The T. L. Smith Co.**  
3123-G Hadley Street  
MILWAUKEE, WISCONSIN





# MAKE MONEY MAKING TILE

## An Urgent Need of Drain Tile

Big crops are necessary to the nation's welfare. This demands intensive farming—farm drainage—drain tile. Clay tile is hard to get because of freight delays and expensive because of coal prices. **Farmers are anxious to buy all the CEMENT tile that can be made.**

Complete tile-making equipment can be installed for a small investment. No experience is necessary. Materials are plentiful, easy to get and cheap. The market is enormous. Profits are large. We offer real cooperation that insures success. Get posted NOW. Write for book "Cement Drain Tile."

**W. E. DUNN MFG. CO., - 415 24th St., Holland, Mich.**

**DUNN Tile Machine** **SOLD ON 15 DAYS' TRIAL.**

# Packard

## LOW CHARGER

The "Easy to clean," Patented "High Speed" Mixing and Discharge Action is one of the few that **successfully and fast** handles

**STIFF CONCRETE FOR CURBS, GUTTER AND SIDEWALK WORK**

Get our astonishingly low prices on these sturdy, built-of-steel mixers—also our Terms. 6 and 11-ft. sizes—also with Loaders. Quick deliveries from stock carried in all large cities. Write nearest office.

**The American Cement Machine Co Inc**  
Keokuk Iowa  
THE 300,000 HP ELECTRIC CITY


BRANCH OFFICES—New York, Philadelphia, Pittsburgh, Baltimore, Richmond, Cambridge, Mass.; Indianapolis, Chicago, New Orleans, Minneapolis, Seattle, Spokane, Los Angeles, San Francisco, Cleveland, St. Louis, Louisville.



**11-Ft. Size One Full Bag (No Splitting Sacks)**

Get Big Catalog 6-9-11-15-22 Foot Sizes

### PAVERS-GROUTERS-HOISTS-BACK FILLERS



## It's Free!

—This big twenty-four page book with an answer to all your concrete problems—is free.

—The Concrete Dope Book tells you—oh! send for your copy today, then you can see for yourself.

*Just say, send me the Dope Book—and we will do the rest.*

**The Cement Tile Machinery Co.**  
44 Rath Street      Waterloo, Iowa

# KELLY

**ORDER DIRECT**  
and save  
**50 to 100**  
**\$\$\$**

By dealing direct with the contractor and builder we can sell you the Kelly mixer at a saving of \$50 to \$100 without cheapening the machine in any way.

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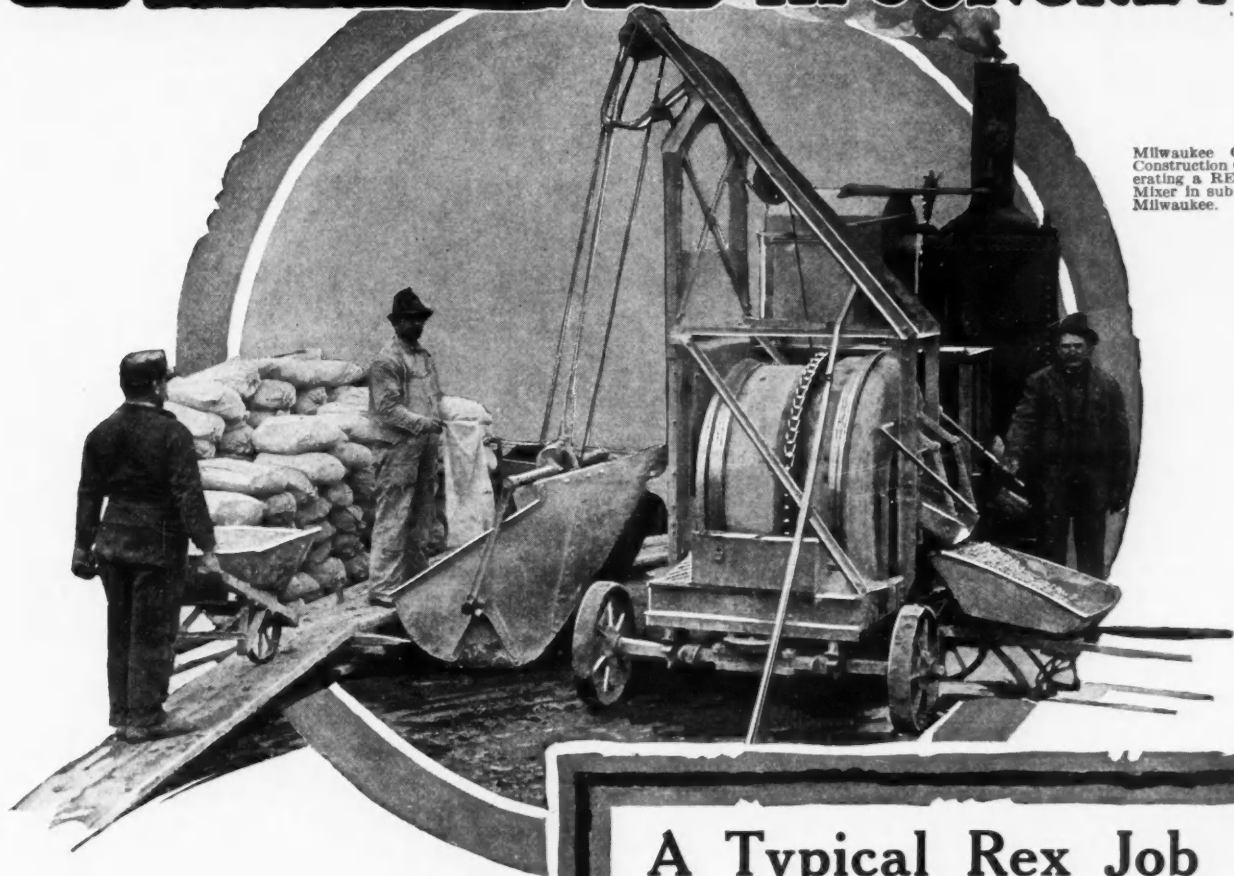
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# REX MIXER

For PERMANENCE  
in CONCRETE



Milwaukee General Construction Co. operating a REX 14-S Mixer in suburbs of Milwaukee.

## A Typical Rex Job

On the sidewalk shown here the contractors kept the REX in the middle of the street and mixed concrete for the walks on both sides of the street as they went along.

Time-and-money-saving ways of working like this are typical of the owners of REX Mixers and Pavers. **Best** equipment naturally leads to better, more economical methods of doing work.

Let us send you the REX Catalog showing the complete line of REX Mixers and Pavers. In it you will find the right mixer for the right job.

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Makers of

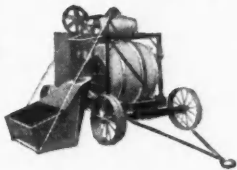
Rex Chains for elevating, conveying and transmission purposes  
Sprocket Wheels—Gears  
Shaft Couplings and Collars

Malleable Elevator Buckets  
Rex Paving Mixers  
Rex Concrete Mixers  
Rex Travelling Water Screens

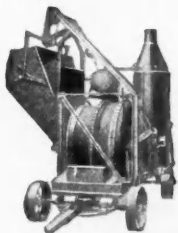
Write for interesting Booklet on any of these



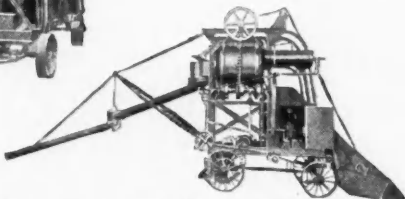
REX 4-S Capacity 4 cu. ft. wet mix. Power Plant—3 H.P. Novo Gasoline Engine.



REX 7-S with Power Loader and Automatic Water Tank. Capacity 7 cu. ft. wet mix. Power Plant—6 H.P. Novo Gasoline Engine, 5 H.P. Steam Engine and 6 H.P. Boiler, or 5 H.P. Electric Motor.



REX 14-S with Power Loader and Water Tank. Capacity 14 cu. ft. wet mix. Power Plant—9 H.P. Steam Engine and 10 H.P. Boiler, 10 H.P. Novo Gasoline Engine or 10 H.P. Electric Motor.



REX 7-E Paver—the "One Man Paver." Capacity 7 cu. ft. wet mix. Power Plant—8 H.P. Novo Gasoline Engine. Reversible traction drive, Water tank, power loader, discharge and traction easily handled by one man.

## Get a Jaeger BIG-AN-LITTLE and add units as you need them

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The Jaeger Units will make it fit to do any big work that might turn up.

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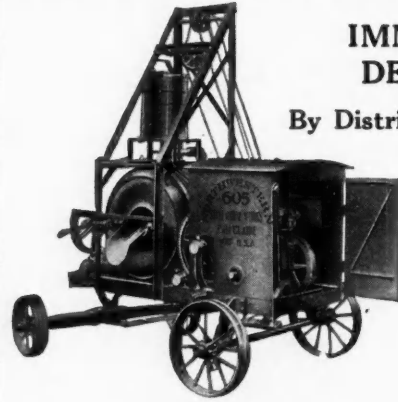
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318 W. Rich St., Columbus, Ohio



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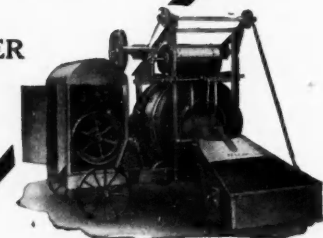
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Study the reasons for WONDER preferment by the largest contractors—those who **have to know** all kinds. Your investment is only a matter of degree— it's as necessary for the small as for the large contractor to **buy right**.

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Day by day, house by house, town by town, the orders for Asbestos Shingles keep steadily growing, as more and more home-builders learn their economy, durability, beauty and protection.

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gles as a profitable side line. And because not every builder is an experienced salesman, we are ready to go the limit in helping you. The plan we tested out last year with such marked success has been improved and expanded; we're prepared to come right into your town and help you sell—and we bear all the cost.

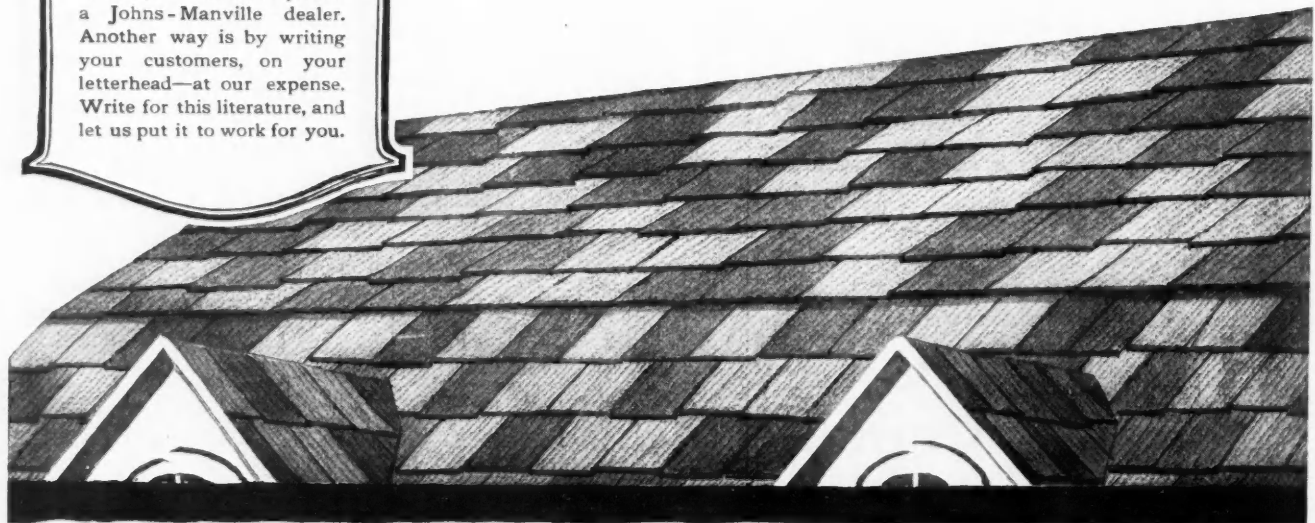
You owe it to yourself to get the details of this money-making plan—and there's still time to profit on this year's work. Just write and ask us for complete information on our dealer proposition.

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*10 Factories—Branches in 55 Large Cities*

### One of the ways we help

is by supplying attractive, printed selling helps for your own use—interesting to any builder, invaluable to you as a Johns-Manville dealer. Another way is by writing your customers, on your letterhead—at our expense. Write for this literature, and let us put it to work for you.





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## A Profitable Roofing Line for Dealers

If our shingle proposition interests you—and we're pretty sure it will—why not go further and sell Johns-Manville Asbestos Ready Roofing, too? Then, with the selling help we'll give you, you can figure on practically every roofing job in the neighborhood, and pick up many a profitable contract.

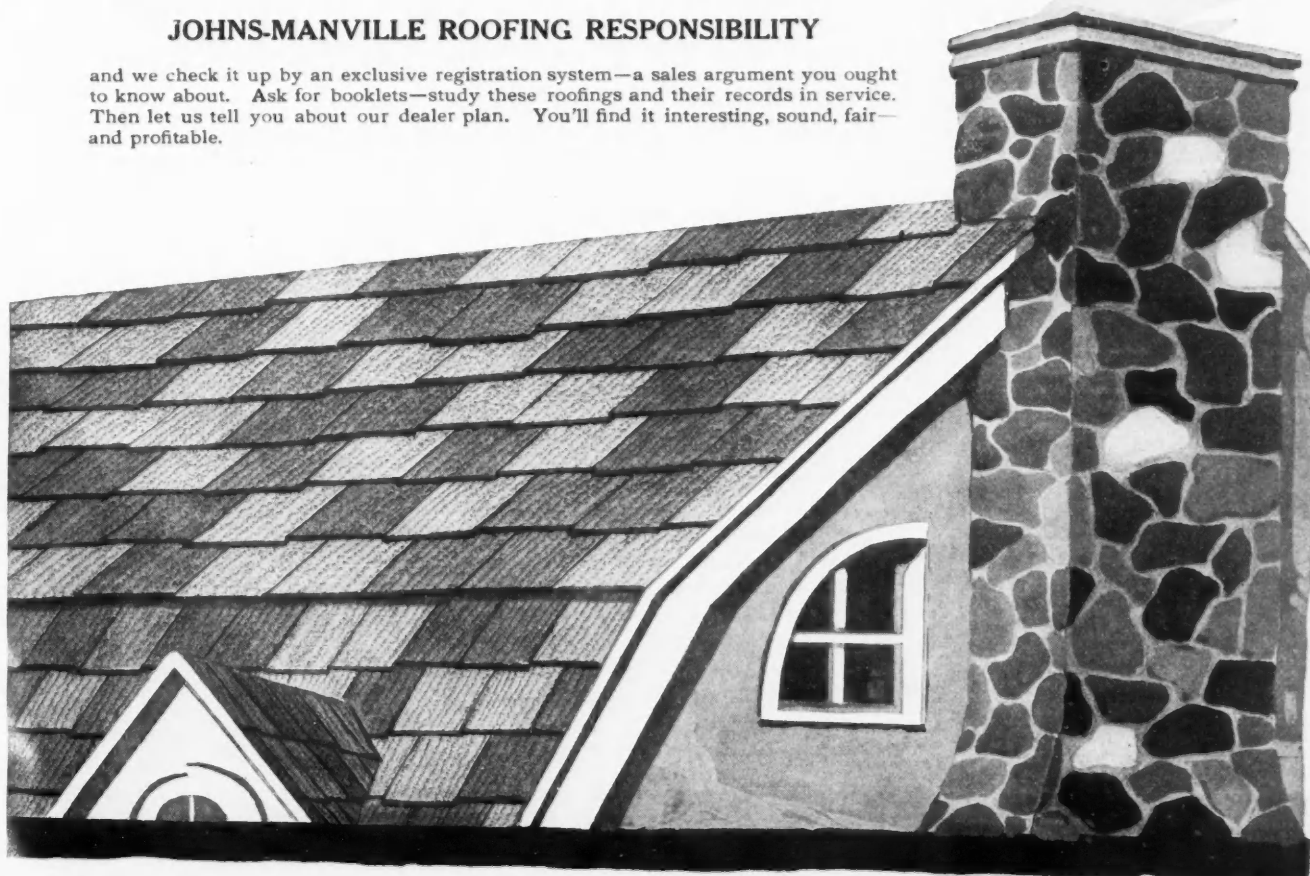
Johns-Manville Asbestos Ready Roofing, composed of layers of pure Asbestos felt cemented with natural asphalts, is a durable light-weight roofing supplied in rolls. Being all mineral, it is practically untouched by rust or rot, requires little if any repair, and is in the highest degree fire-resistant. Furnished complete, ready to lay, with Johns-Manville Roofing Clamps.

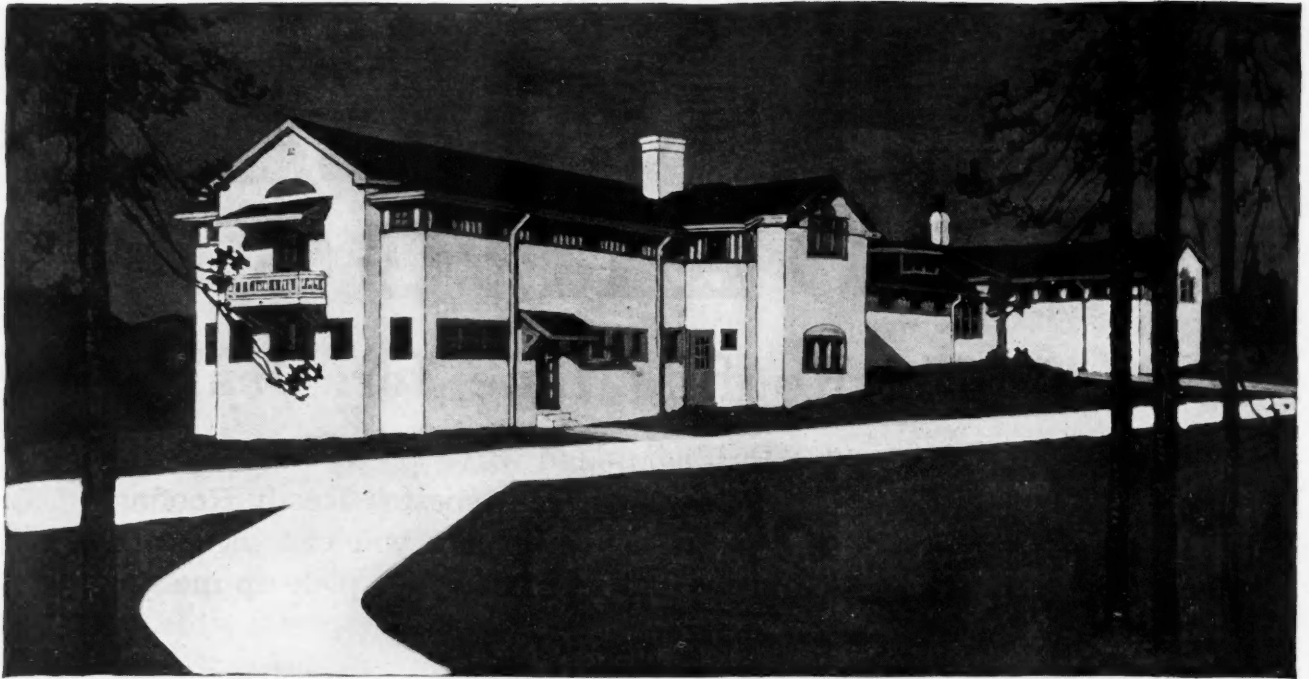
For jobs where first cost counts heaviest or the service is relatively lighter, round out your line by stocking Johns-Manville "rubber-type" roofings—"Regal" and "Service"—and our asphalt strip shingles.

You can be sure that every Johns-Manville Roof will live up to our promises of service, because each is backed by

### JOHNS-MANVILLE ROOFING RESPONSIBILITY

and we check it up by an exclusive registration system—a sales argument you ought to know about. Ask for booklets—study these roofings and their records in service. Then let us tell you about our dealer plan. You'll find it interesting, sound, fair—and profitable.





Cincinnati Golf Club House

Architects, Elzner &amp; Anderson

## A Stucco "Job" That Lasts

Look at the illustration below of Bishopric Board. Note how the Stucco is dovetailed into the lath. The Stucco and Bishopric Board are practically *welded together* into one solid piece. The Stucco *can't* let go—it's *clinched* to the lath. The lath are creosoted, imbedded in Asphalt Mastic on a background of heavy fibre-board. Nails through each and every lath hold the Stucco Board firmly to the frame-work.

Bishopric Board *can't* sag and crack the stucco. The fibre-board, Asphalt Mastic and creosoted lath give absolute protection against heat and cold, wind and weather. They form a construction that is water-proof, vermin-proof and sound-proof.

Bishopric Board is making Stucco finish more popular. It is providing a background that is *dependable*—

that prevents unsightly cracks and breaks and that *gives added life* to the entire structure.

That is why Bishopric Board was chosen for the Cincinnati Golf Club House shown above—why architects, contractors, builders and owners all over the country, who take the trouble to investigate its merits, specify and use Bishopric Board.

### The Bishopric Manufacturing Co.

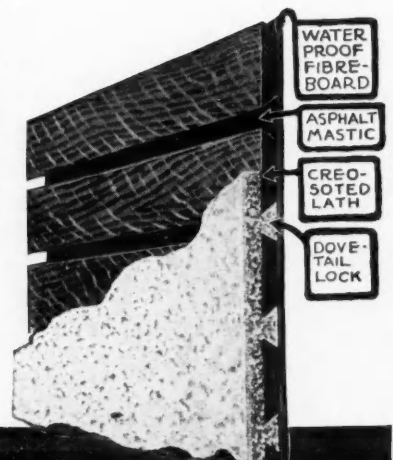
903 Este Ave.

Cincinnati, O.



Write for our free book, "Built on the Wisdom of Ages," illustrating homes, apartments, factory and public buildings finished in stucco on Bishopric Board. It contains letters from architects, builders and users, and extracts from reports of scientific tests. It also gives full instructions for making a stucco mixture that will last. With this book we send free samples of Bishopric Board.

Write *today*, investigate for yourself, be convinced.



# Short Talks With Our Subscribers

## Busy Season—Quick Action

**O**UR front cover this month is a timely editorial. It presents at a glance the essence of the present building situation.

Builders have a patriotic duty this spring to build quickly. There must be no avoidable delays.

Factory additions are needed by the thousand; new industrial plants are being laid out; shipbuilding yards are being rushed to completion; the housing of workmen and their families in these industrial towns is an urgent necessity; the construction of training camps and barracks for a million men must be undertaken at once; and the building of new grain storage houses, root cellars, live stock barns and food storage warehouses on a nation-wide scale is both a patriotic and a business necessity.

All of which means full steam ahead for the building industry. This is the busy season, and there must be quick action.

### Manufacturers and Dealers are Prepared

Our front cover drawing suggests a state of affairs that is in line with the facts. The concerns advertising in the AMERICAN BUILDER are ready to make quick shipments of any building materials, supplies or contractors' equipment required by our readers. AMERICAN BUILDER advertisers believe in *service*. A telegram or special delivery letter will hustle them right onto the job. They are ready to meet instantly any and all requirements made of them.

Our advertisers believe in quick action, and are ready to help along the busy season.



### Remodeling of Dwelling Houses Required by Proposed State Building Law

Practically every building in the State of Pennsylvania will have to be repaired quite extensively if a state-wide building law recently reported by a special commission is enacted by the legislature. One part of the proposed law covers dwelling houses, "prior erected" as well as "hereafter erected." For the former, many provisions are made that call for extensive reconstruction or improvement work. A specimen is section 720, which specifies that incombustible fire stops must be built in above the foundation walls to the height of the first floor, a practice not common in the older dwelling houses of frame construction.

The clause reads:

a. Buildings of class IIIc prior erected shall be made rat-proof in the following manner: The void or space usually left open between the under side of the floor of the first story and the top of the foundation wall and between the joist set upon the foundation wall shall be filled in compactly with stone, cement or concrete.

b. There shall be no opening or openings in the first floor which may lead into concealed spaces in the walls or partitions above.

A clause immediately following provides that all cellars in existing houses must have concrete floors laid in them. As the law is not restricted to buildings in towns or other organized communities, but relates to cities, boroughs and townships, an enormous amount of rush work would be required if the act were passed.

Yours sincerely,

EDITOR AMERICAN BUILDER.

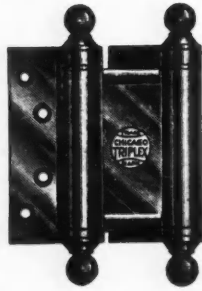
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A SUGGESTION**

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



**Chicago "Triplex"  
Spring Butts**

offer this advantage to you. The appearance, durability and finish of this article are unsurpassed, and in consideration of prices that are conservative in respect to value, the up-to-date builder cannot afford to risk his reputation for goods that are unsatisfactory.

Send for Catalogue C 32. It illustrates and describes the most complete line of Spring Hinges manufactured.

**Chicago Spring Butt Company.**

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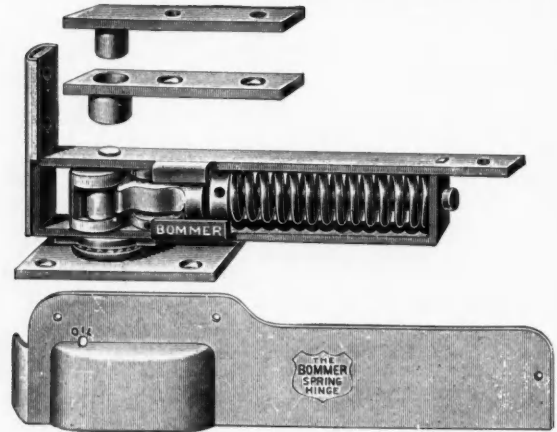


NEW YORK

**BOMMER**

**Floor Surface Spring Hinge**

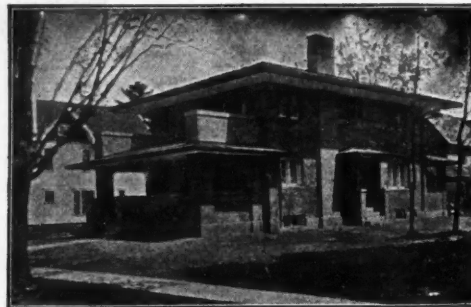
Double or Single Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

**Bommer Bros., Manufacturers, Brooklyn, N.Y.**



Stained with Cabot's Stucco Stain  
Percy D. Bentley, Architect, La Crosse, Wis.

**Smoky, Dusty Stucco Houses**

look dirty and discouraging. They can be transformed into cheerful and attractive habitations at small expense by tinting them with

**Cabot's Stucco Stains**

(Waterproof)

The tints are rich and natural—don't look "painty"—and they are easily and quickly applied, and lasting. Anyone can put them on. They are not like the thick and heavy coatings, and therefore spread farther, go on easier and cannot crack or peel off. They make the stucco rainproof, so that it is protected from dampness, freezing and crumbling. Artistic coloring is the one thing needed to make stucco houses good to look at, and Cabot's Stucco Stains do the work perfectly. Send for Color-card and Catalog—Free.

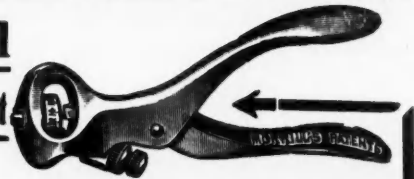
**Samuel Cabot, Inc., Manfg. Chemists, Boston**  
1133 Broadway, New York 24 W. Kinzie St., Chicago

Cabot's Shingle Stains, Heat and Cold-proof "Quilt", Old Virginia White, Waterproofings, etc.

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All master carpenters are using this Saw Set. In one operation it takes out the wrong set and puts in the right one. Write for FREE booklet "Saw Points". It tells how to properly joint, set and file hand saws.

**CHAS. MORRILL**

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NEW YORK

**BUILDERS' HARDWARE**



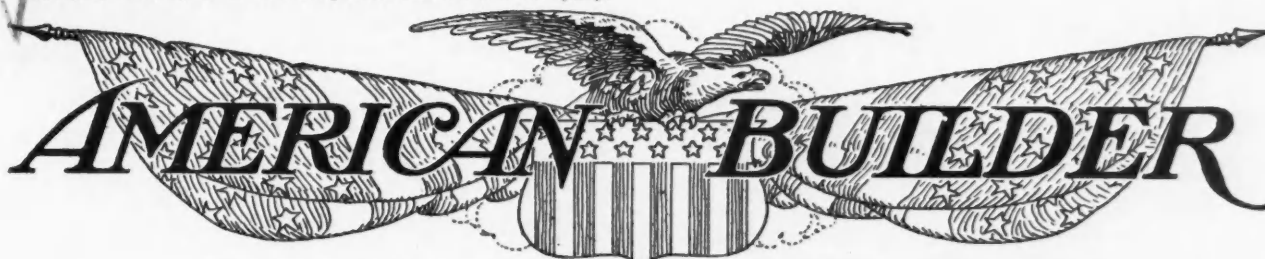
No. 546—1½ in. Ant. Cop. Fin. Spring Hinge. Per set.....\$1.10  
Weight per set, 4 lbs.

No. 6—Builders' Hardware Catalog sent free. On account of market conditions, we are unable to issue net price list. Send us your hardware list for quotation.

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VOL. XXIII

June, 1917

No. 3

**The Building Situation---Build Now!**

**B**UILDING operations thruout the country continue with but little abatement, the first quarter of this year showing a loss of only a fraction of one per cent as compared to 1916, while 1916 displayed a great gain over 1915. Hoggson Brothers, the New York and Chicago builders, announce that they started active operations in April on five buildings for banks alone in different sections.

The impression is gaining strength that while present costs of materials entering into the construction of buildings appear to be high, the prospects are for prices to go to still higher levels. The American Architect points out that inasmuch as a dollar will buy only three-fourths as much of any commodity as it would three years ago, the cost of building is in practically the same ratio to former costs.

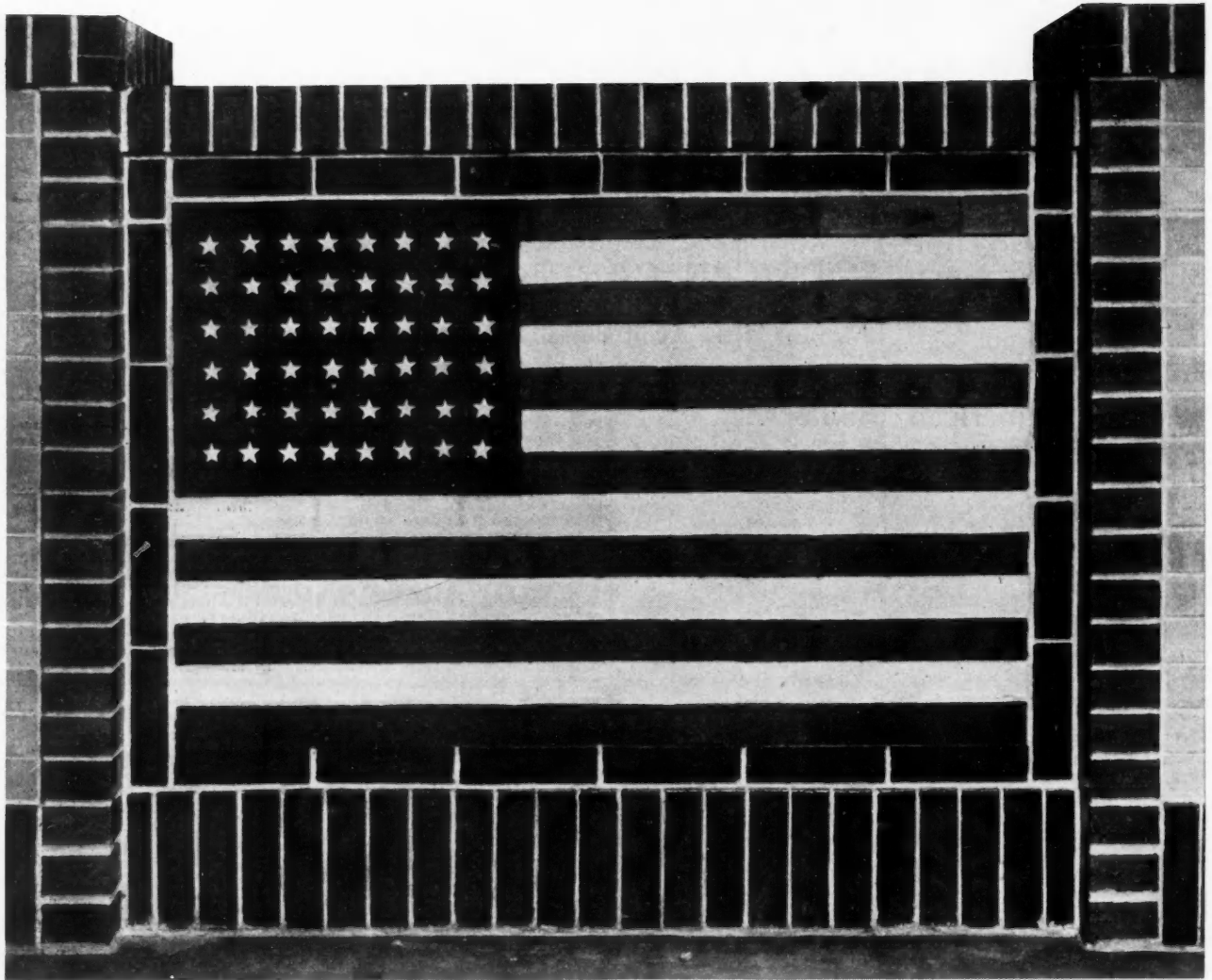
"It is possible to enumerate one reason after another in favor of the contention that present prices are low—not high," declares that paper. "If owners can be made to see that the really pertinent comparisons of costs are with the future rather than the past, building cannot fail to take on greater activity. Viewed in this light, present prices for building materials actually appear to be bargain prices."

Authorities for the most part seem agreed that the chances for building material prices to take a drop are quite remote, whether hostilities continue for some

time or whether peace should come within the near future. It is argued that the after-war demand on our industrial resources will be infinitely greater than they have been. France has just recently closed a contract involving two hundred million francs, most of which sum is to be spent in America for building materials to be used in the reconstruction of important buildings in cities in the vicinity of Verdun, the Argonne and the heights of the Meuse.

The danger of a cessation of building activities does not lie so much in the impression that prices are too high as it does in an attempt to carry the economy idea to harmful lengths. Nothing could be more injurious than indiscriminate delaying of plans for building. This would create an industrial situation that would be far-reaching in its evil effects.

The government is actually carrying on a campaign against the holding up of industrial activities, Howard E. Coffin, of the advisory commission of the Council of National Defense, declaring that "waste is bad, but an indiscriminating economy is worse. Unemployment and closed factories brought about thru fitful and ill-advised campaigns for public and private economy, will prove a veritable foundation of quicksand for the serious work we have on hand. We need prosperity in war time even more than when we are at peace. Business depressions always are bad, but doubly so when we have a fight on our hands. The declaration of war



This Flag is Made Entirely of Enamel Brick and Mortar, Even the Stars Being Made by a Ceramic Process. The Beauty of the Display Can Hardly be Realized from the Photograph Since the Colors Are Needed to Bring Out the True Force and Sentiment Which It is Intended to Express. It Occupies a Prominent Position in the Chicago Sales Office of the Hydraulic Press Brick Co.

can have no real evil effect on business. What bad effects are apparent are purely psychological and largely of our own foolish making. We need more business, not less. There is real danger in hysteria. Indiscriminate economy would be ruinous. Now is the time to open the throttle."

Two years ago the prospective builder was urged to "Build Now" to secure the advantage of low prices and to give employment to idle labor. Today he is urged to "Build Now" so as to keep skilled labor employed, to keep the wheels of industrial activity going, and to take advantage of present prices, lest he be forced to pay even more if he delays.



#### Corporations May Be Architects

THE Supreme Court of Illinois recently handed down a decision that is of considerable interest in connection with the question whether a corporation may do architectural work. Under the Illinois law governing the practice of architecture, every architect, in order to practice his profession, must have a license from the State Board of Architectural Examiners. A sentence in Section 5 of the law reads:

"No stock company or corporation shall be licensed to practice architecture, but the same may employ licensed architects."

It was doubtless the idea of the architects of the state, in securing the passage of the licensing bill, that this section would maintain architecture as a personal profession and act as a barrier against the growing tendency for professional business to fall into the hands of corporations.

In accordance with this idea, the State Board of Architectural Examiners brought suit against the Rodgers Co., of Chicago, which performed the architectural work in the building of a church at Niles, Ill. The trial court held that the corporation had transgressed the law; but the case was carried to the Supreme Court of the state, which has now ruled that corporations may practice architecture, provided they employ a regularly licensed architect to do the work. The court declared that "making contracts for services to be performed by an architect and collecting the compensation therefor is not practicing architecture."

The court further declared that the purpose of the statute was not to protect architects by limiting the work to those architects who possess a license, but to protect the public against incompetent architects.

# “The ‘Makings’ Are Here For a Big Building Boom if You Can Take CARE Out of the Scare”

—THE MAN FROM THE LUMBER YARD

There never was a time when cool-headed sanity was more needed than today. We hope every reader will consider carefully what THE MAN FROM THE LUMBER YARD has to say.  
EDITOR.

**D**ID you ever go swimming about this time of year? Do you remember how you stood on the bank shivering, putting first one foot in, then the other? Possibly you would be there yet if one of the other chaps hadn't pushed you in. How nice and warm it was after that first shock!

Well, our country is undergoing that shock at this particular minute.

No one pushed Uncle Sam into this fracas. He went in deliberately. He wasn't any more excited than you would be in rescuing a drowning cat from the river. Only, our dear Uncle is saving a principle worth fighting for. He may get his feet wet—may bark his shins—may lose his hat—but this will be only incidental. As to how soon Uncle Sam gets out, and what will be his condition after it is all over, depends on you and me!

Almost everyone knows Frank Crane, the writer. I generally swallow what he offers without question. But I dissent from a suggestion emanating from him to the effect that during the war women should wear black only, that no social gatherings for amusement be held, and every church be hung in mourning. Do you

know that such surroundings would eventually dry up the output of dairies or produce sour milk? We know the effect that surroundings have on the kine. Don't let us forget the effect of environment on the human kind.

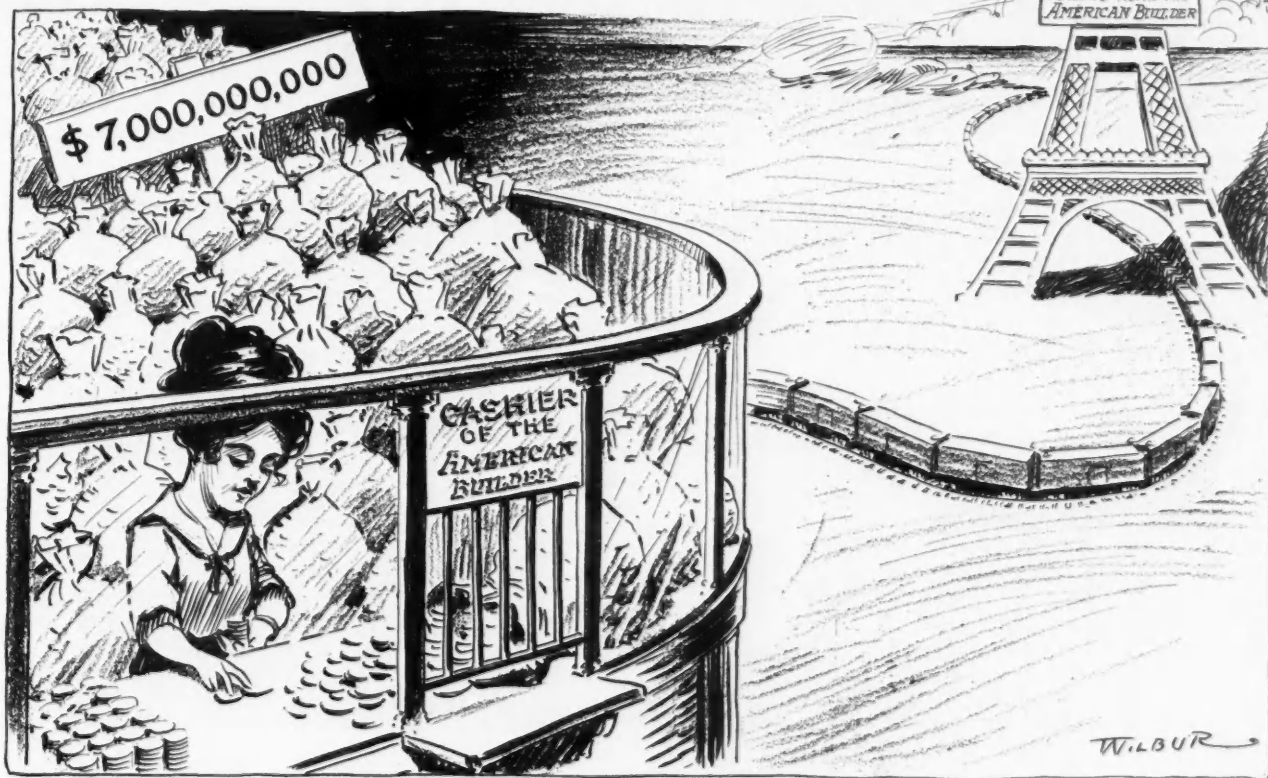
I want my wife to be sympathetic, but I don't want to find a funeral in the house every night I come home. Nor does any other man.

It wouldn't get us anywhere. It isn't worry we want, but WORK.

Let no one be deceived. This war is not for a month, nor six, but for years. It may be filling our daily press with long lists of casualties when the babies of 1920 are born.

### Hogs, Hens and Humans

Don't waste time in regrets, but bend every energy in helping to win.



The Man From the Lumber Yard Figures that it Would Take Our Cashier Over 200 Years to Count the Extra Money that Will Be Spent Mostly for Wages in the Near Future. He Also Says that it Would Take Seventeen Trains of 30 cars Each to Haul It. This Huge Sum Does Not Belong to the American Builder, as Might Be Inferred by this Drawing, Nevertheless a Large Part of it Will Be Spent in the Building Field and Become the Property of Our Readers.

The man who makes every nail count without waste is doing "a bit."

Every man who drives a nail without splitting the board, who utilizes the scrap in order not to cut into a new board, is helping to win the war. Especially is he a patriot who makes possible better protection to food-stuffs in granary or warehouse. And equally is he a patriot who gives better living conditions to cattle and children, to hogs, hens and humans.

I arrange these five classes in this way so you will "listen."

It goes without argument that hogs should be properly housed because they are worth big money. But Uncle Sam must depend on his humans not only during the war, but after.

#### Cut One End to Patch the Other

A contractor friend of mine in the city of Brotherly Love, where untold quantities of ammunition are being made, tells of needing a 12-foot plank for the plasterers to use when wheeling in mortar. Being busy on another part of the building, he told his Irish helper to fix it up. Returning in about fifteen minutes he found him sawing a two-foot piece off of a ten-foot plank and was informed that "it was just so short on the other end."

Equally unwise is the alarmist who would stop every activity not DIRECTLY connected with the war.

#### American Adjustment

I met a man some ten years ago who had had heavy financial reverses by reason of a trusted partner who had gambled away the firm's money. He told me that it would take him ten years to get back on his feet. He did not waste time in self-pity, which is like an ingrowing toe nail—the more it grows the more it hurts. He simply bent every energy to his job and found joy in his sacrifices. Today he is as whole as ever and has forgotten his sacrifices.

The "Makings" are here for a big building boom if you can take CARE OUT OF the scare.

We must become accustomed to the thought of war.

The first house we lived in after our marriage chanced to be on a favorite route to a cemetery, and there were from three to six funeral processions passing the house daily.

At first my wife was very much depressed, but shortly she got her poise and could go about her work with a song, regardless of passing hearses. She was, and is, most tender hearted; but she was, and is, a common sense American who adjusts herself to conditions. So must everyone adjust to changing conditions, as the cogs in your machine adjust when you shift gears.

#### Enervating Economy

There is a tendency to get hysterical and moody that must be checked, and at once, if we don't want to get jarred.

The damage that war can do would be as nothing compared to the evil results of a false system of drastic economy, which would throw hundreds of thousands out of employment and would force a reduction of wages. The standard of living is none too high. If the wage goes down as the necessities of life go up, the standard of living will sink below the safety line.

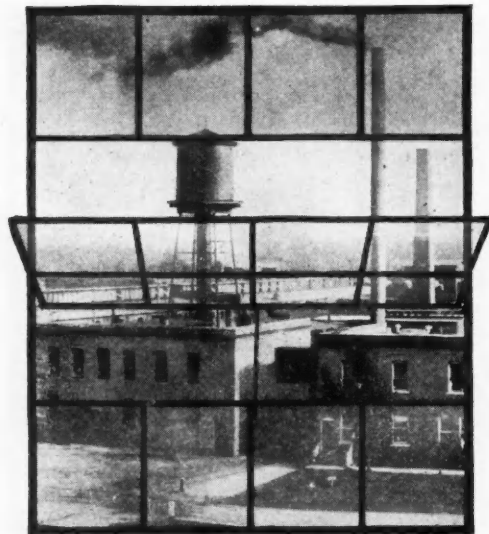
That would mean taking strength out of the arms and courage out of the hearts that have to fight America's battles of war and commerce.

#### Saved a Dollar's Worth of Grain—Lost a Hundred Chickens

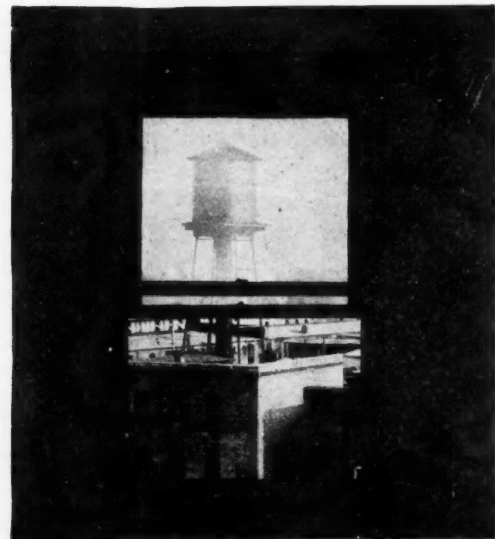
We don't want less patriotism, but we do want less emotionalism. We don't want less willingness to sacrifice, but we do want more sanity in service.

There are many things worse than dying. There are millions of us willing to die if deaths would gain anything. Remember, it is worth a great deal more to our

(Continued to page 116.)



It's a pleasure to work behind real windows like this.



Dark, gloomy interiors result when the ordinary factory window is used.

At this Time Industrial Efficiency Must Be Developed to the Zenith of Its Possibility. Strained Eyes Do Not Contribute to Industrial Efficiency. Contractors and Builders Should Miss No Chance to Exercise their Influence in Placing Modern Sash in All Industrial Buildings Which Their Work Brings Them in Contact With.



# An Unusual Remodeling Job

ONE STORY COTTAGE JACKED UP TO BECOME THE SECOND FLOOR OF LARGE RESIDENCE

By Allen P. Child

**T**HE most usual way to enlarge a house is to build on additions or to add a second story, but a cottage in Kansas City was recently converted into a two-story dwelling by raising the first story and building another one on the foundations.

The contract was handled by Mr. A. C. Warren of Kansas City, who managed, in person, all the details of raising and building. Mr. Warren has had an extensive experience in remodeling and rebuilding of residences, but this was the first structure remodeled in this particular manner.

Mr. Warren says that the most important feature of the work was in seeing that the building was

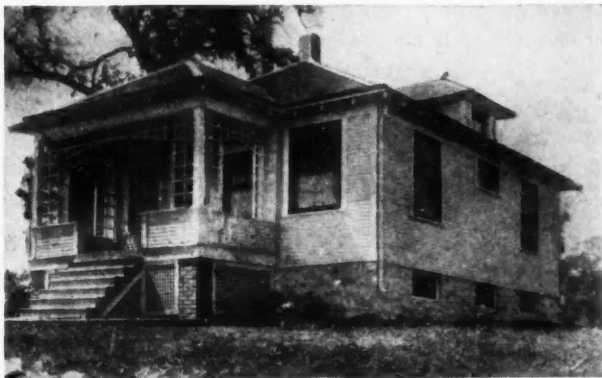
secured by placing corner posts and studs and boxing diagonally.

It was necessary to leave the jacks in place till the chimneys were built up, altho the weight of the building rested on the jacks about three days.

The family continued to live in the house during all the time it was in process of lifting and remodeling and no injuries to furniture or family were experienced. None of the plaster was cracked or loosened in the raising process.

Mr. Warren said that there was no part of the job which was harder or easier than he had anticipated.

(Continued to page 112.)



The Cottage as it Was Before Remodeling Work Was Started.

properly loaded. Four cribs were built under the building. So as to equalize the weight, three carrying timbers supported the cross needles. They also served to carry the chimneys. Two jacks were placed on each crib and the building was raised till the cribs were built to the floor level.

Sills and joists were placed on the foundations, two joists at each crib were left out and placed after cribs were removed. A rough flooring was laid right over the cribs and cut out around the jacks. This flooring served to tie cribs and foundation together and made the building safe while it was being raised.

The cribs were then raised, care being taken that the building did not get out of line with the foundations. Mr. Warren found it easier to keep it going straight than to have to shift it after reaching the required height.

By the time the building was up to the proper height the studs, as well as the sills and joists, were framed. In two hours after the building was jacked up it was



Arrangement of the Remodeled House Showing How the Old First Floor Plan Became the New Second Floor Plan Without a Great Deal of Alteration.



View of Remodeled House in Which the Original First Floor Has Become the Second Floor. A Family Continued to Live in the House While the Work Was Being Done.

# Hollow Metal Windows Approved by Underwriters Laboratories

THE GROWING USE AND POPULARITY OF THIS FIREPROOF BUILDING SPECIALTY

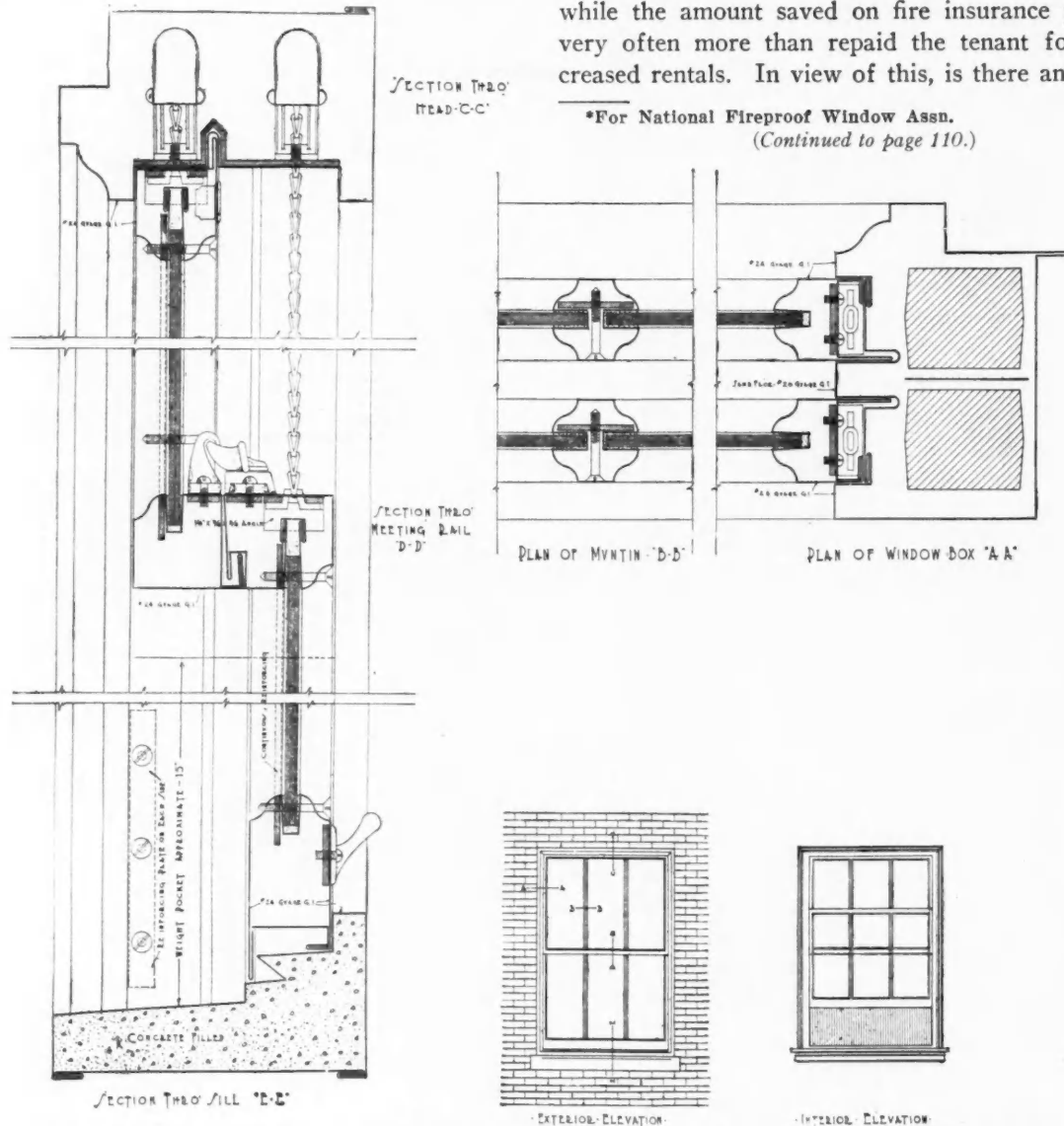
By John J. Grace\*

PROBABLY no industry has witnessed greater advancement during the past few years than the art of fireproof construction as applied to the modern commercial building. As a result, hundreds of buildings in all sections of the country, that were formerly a source of good revenue to their owners and were considered desirable investments for many more years, have become "White Elephants." The tenants have moved into new modern buildings, and in most cases "To Let" signs still adorn the front show windows, there being no demand for the old dark and unsanitary non-fireproof commercial building. This change has probably been more marked in New York City than any other locality. In the downtown business section there has been a general exodus in almost every

line of trade to new up-town modern buildings.

What has induced old concerns to leave fixed business centers and risk the loss of trade which has taken years to establish? The main reason is, it was impossible to keep abreast of alert competitors and remain in buildings with solid brick side walls that made their sales and workrooms dark and gloomy. In the newer buildings hollow metal fireproof windows in the fronts and side walls of the buildings admitted all the light and air requisite to make their interiors bright and healthful for their employes and inviting to their customers, who made purchases because the goods looked more attractive under the better light and surroundings. The fire exposure was not increased because the automatic closing devices, wire glass and fireproof qualities of the windows gave adequate fire protection, while the amount saved on fire insurance premiums very often more than repaid the tenant for the increased rentals. In view of this, is there any wonder

\*For National Fireproof Window Assn.  
(Continued to page 110.)



Double Hung Hollow Metal Window—"Type A," Approved by Underwriters Laboratories. Scale (Except Elevations), 3 Inches Equal 1 Foot.

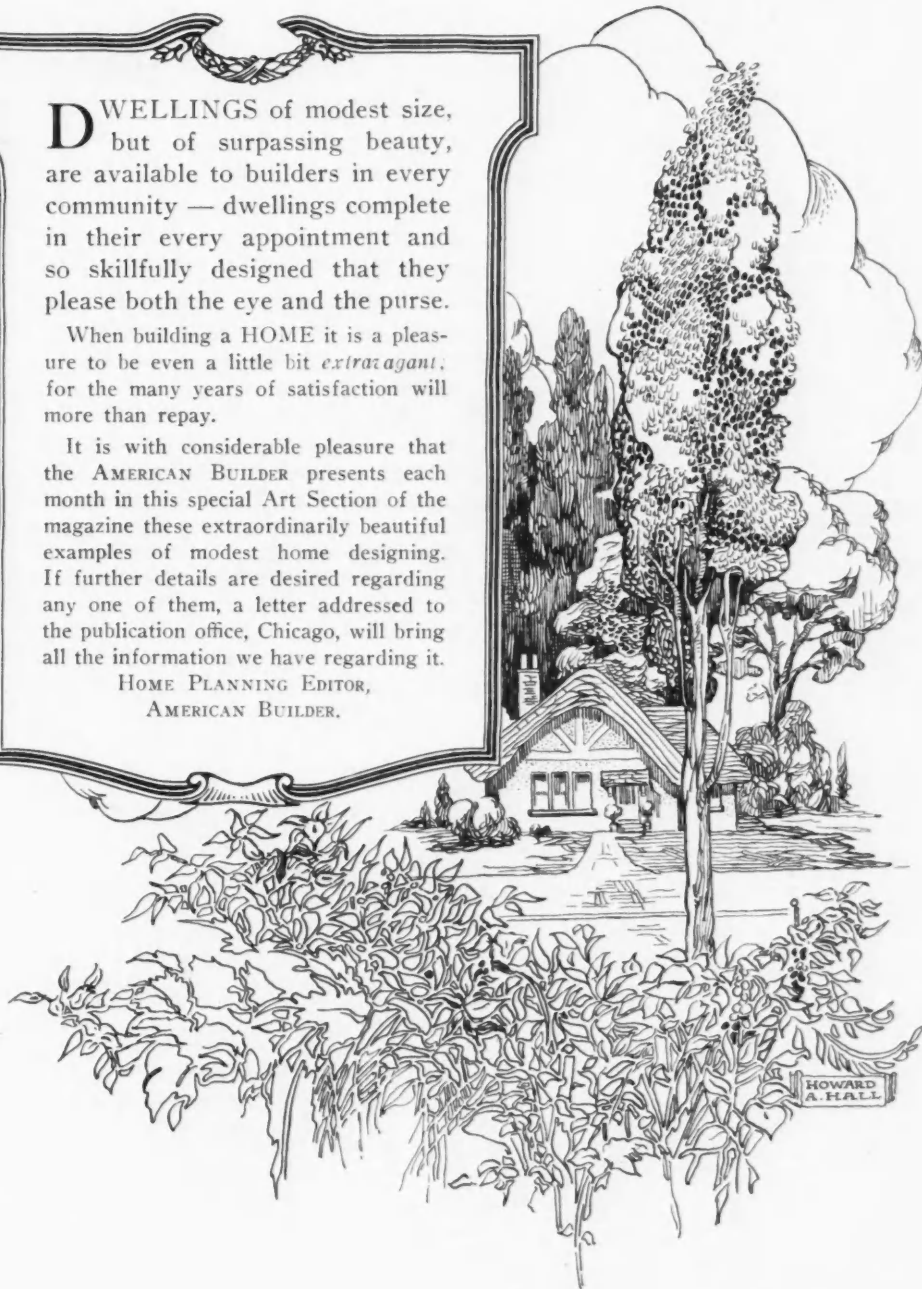
# A PORTFOLIO *of* BEAUTIFUL HOMES

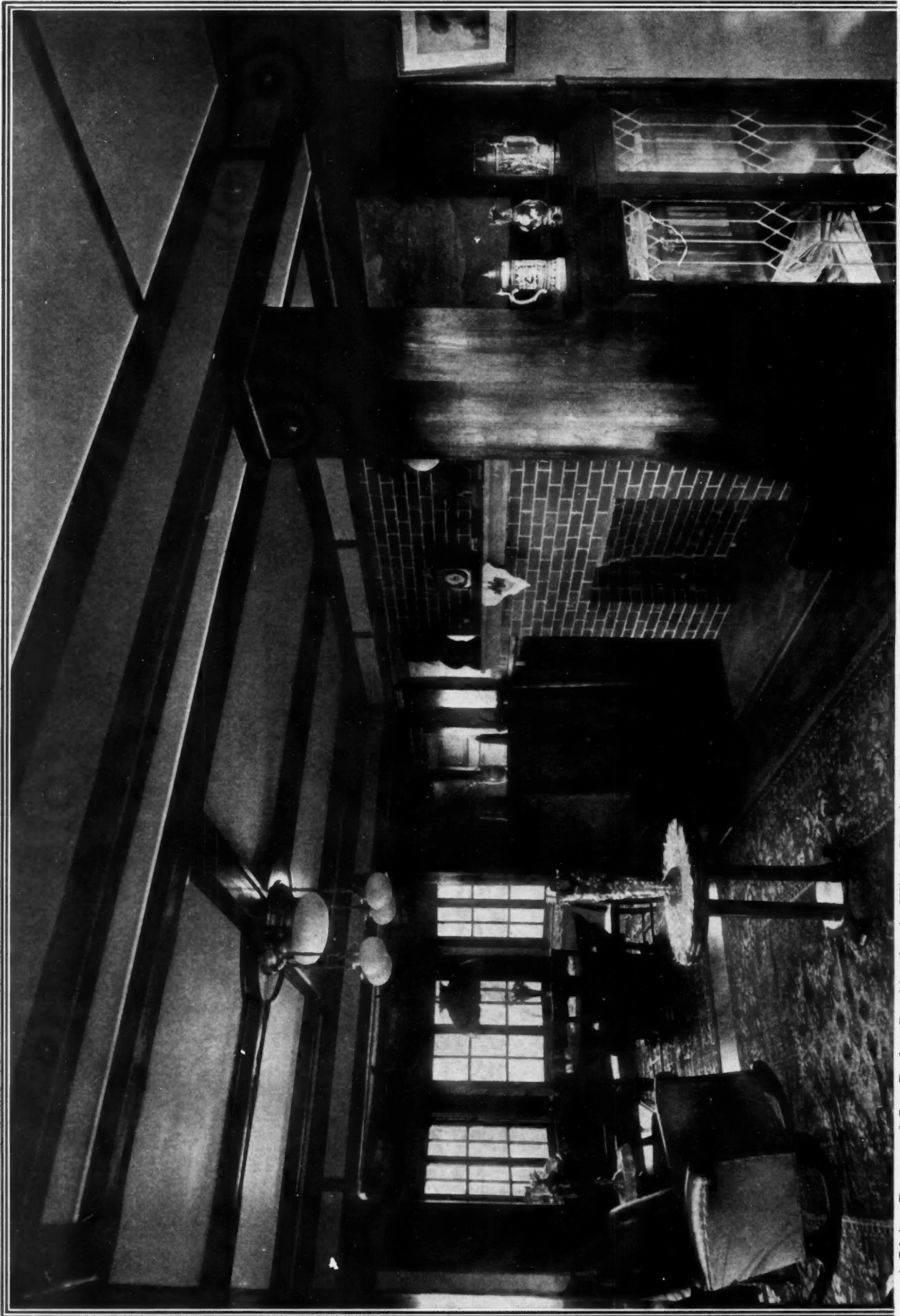
**D**WELLINGS of modest size, but of surpassing beauty, are available to builders in every community — dwellings complete in their every appointment and so skillfully designed that they please both the eye and the purse.

When building a HOME it is a pleasure to be even a little bit *extraragant*, for the many years of satisfaction will more than repay.

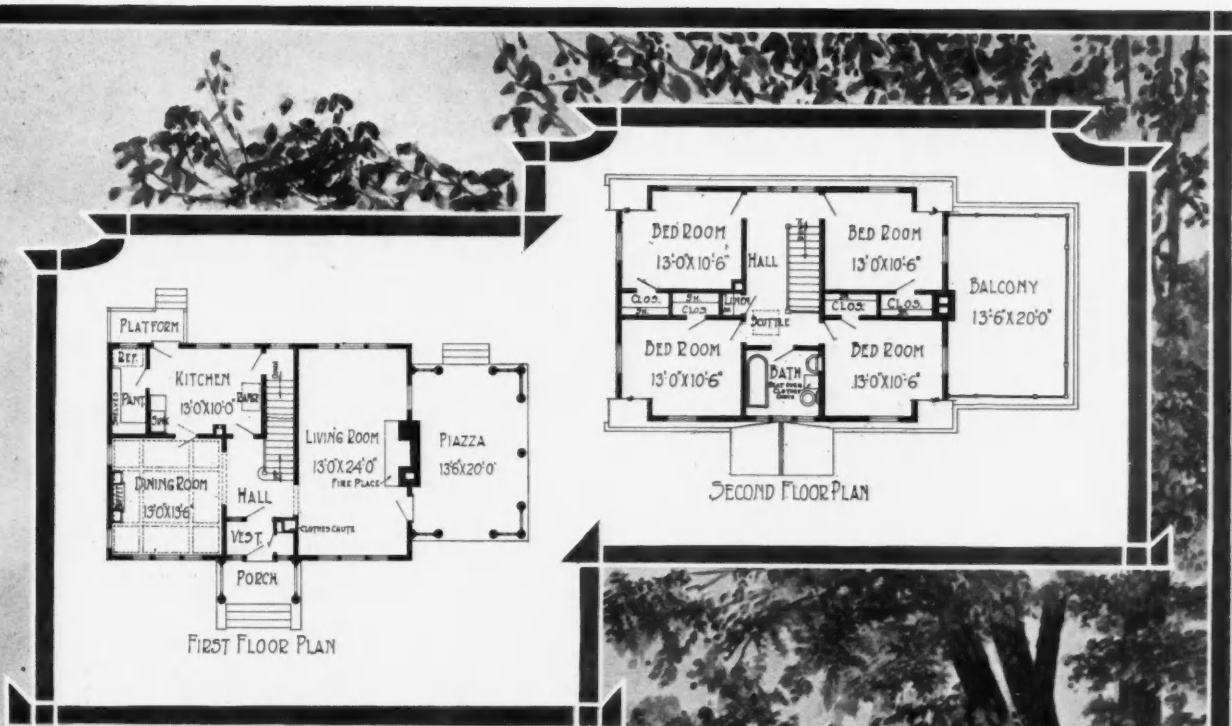
It is with considerable pleasure that the AMERICAN BUILDER presents each month in this special Art Section of the magazine these extraordinarily beautiful examples of modest home designing. If further details are desired regarding any one of them, a letter addressed to the publication office, Chicago, will bring all the information we have regarding it.

HOME PLANNING EDITOR,  
AMERICAN BUILDER.





A Living Room and Sun Parlor Combination in Which Massive Colonnades, Colonial Type Wall Seats and Built-In Bookcases Have Been Used Effectively. The False Beams of the Ceiling Are Effective in Balancing the Trim in the Lower Parts of the Room. All of the Panels are Wallboard, making this an excellent Example of Quality Wallboard Use. The Fireplace is Simple in Design But it Fits Perfectly Into the Surroundings.

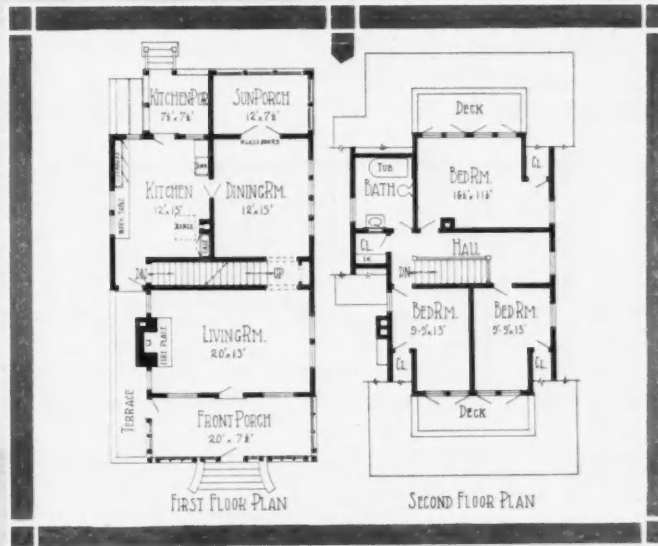


**GAMBREL ROOF HOUSE WITH EXCELLENT ROOM ARRANGEMENT.** This Dutch Colonial House is the Home of C. E. Bogardus, Stamford, Connecticut. It Was Designed by Frank M. Ellsworth, Architect. Attention is Called to the Arrangement of Rooms, Which is Excellent. Notice Especially That Each Bedroom Has Windows in Two Walls. Bedrooms are Entirely Independent of One Another. Size of House, 36 Feet by 25 Feet.

Wallboard Use. The Fireplace is Simple in Design But it Fits Perfectly Into the Surroundings.

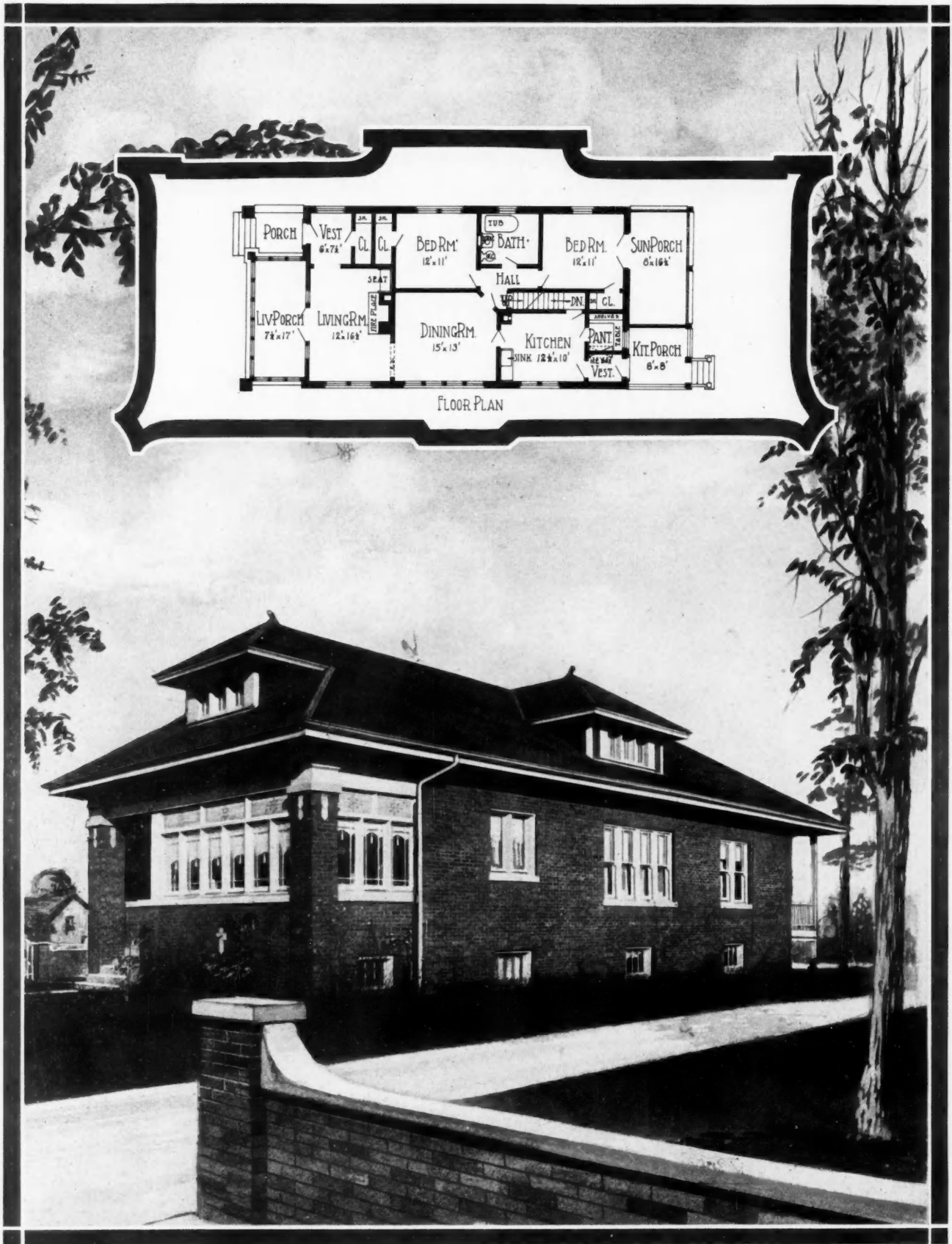


A Pleasant Dining Room is an Important Part of the Best Homes. The White Enamel Finish of This Dining Room is Responsible for the Effectiveness of the Lighting. Good Furniture Always Shows Off to Advantage in a Room Finished Pure White.



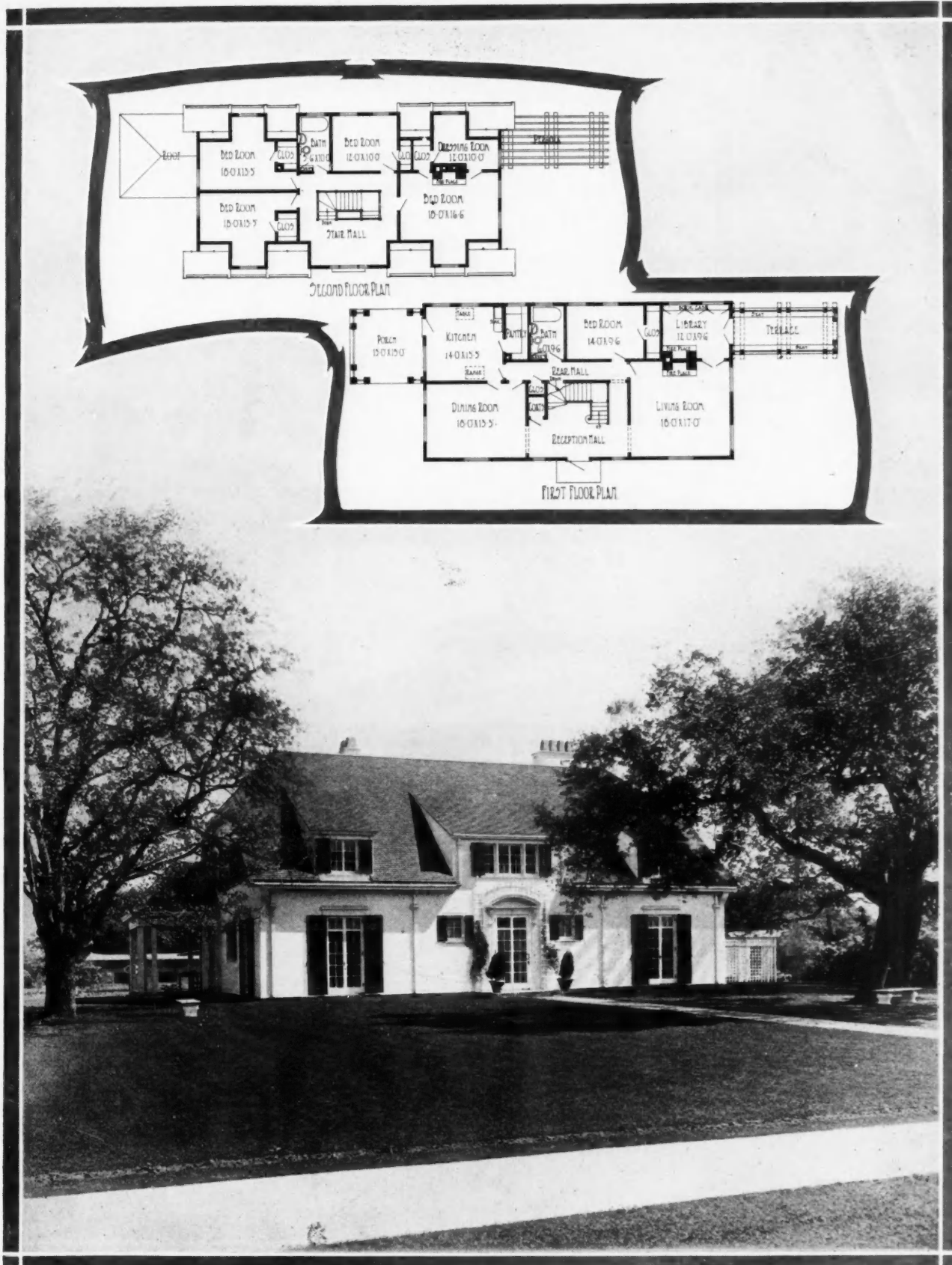
**B**EAUTIFUL HOUSE OF THE STORY-AND-A-HALF TYPE. This Residence at Manhattan Beach, Long Island, was Designed by R. B. Fields, Architect. The House is Well Proportioned and Cleverly Arranged. The External Appearance is Largely Dependent Upon the Roof, Which is Characterized by Graceful Curves and Trim Lines. The Location of the Kitchen, Dining Room and Sun Parlor is Out of the Ordinary. Size of House, 26 Feet 6 Inches by 33 Feet.

Lighting. Good Furniture Always Shows Off to Advantage in a Room Finished Pure White.

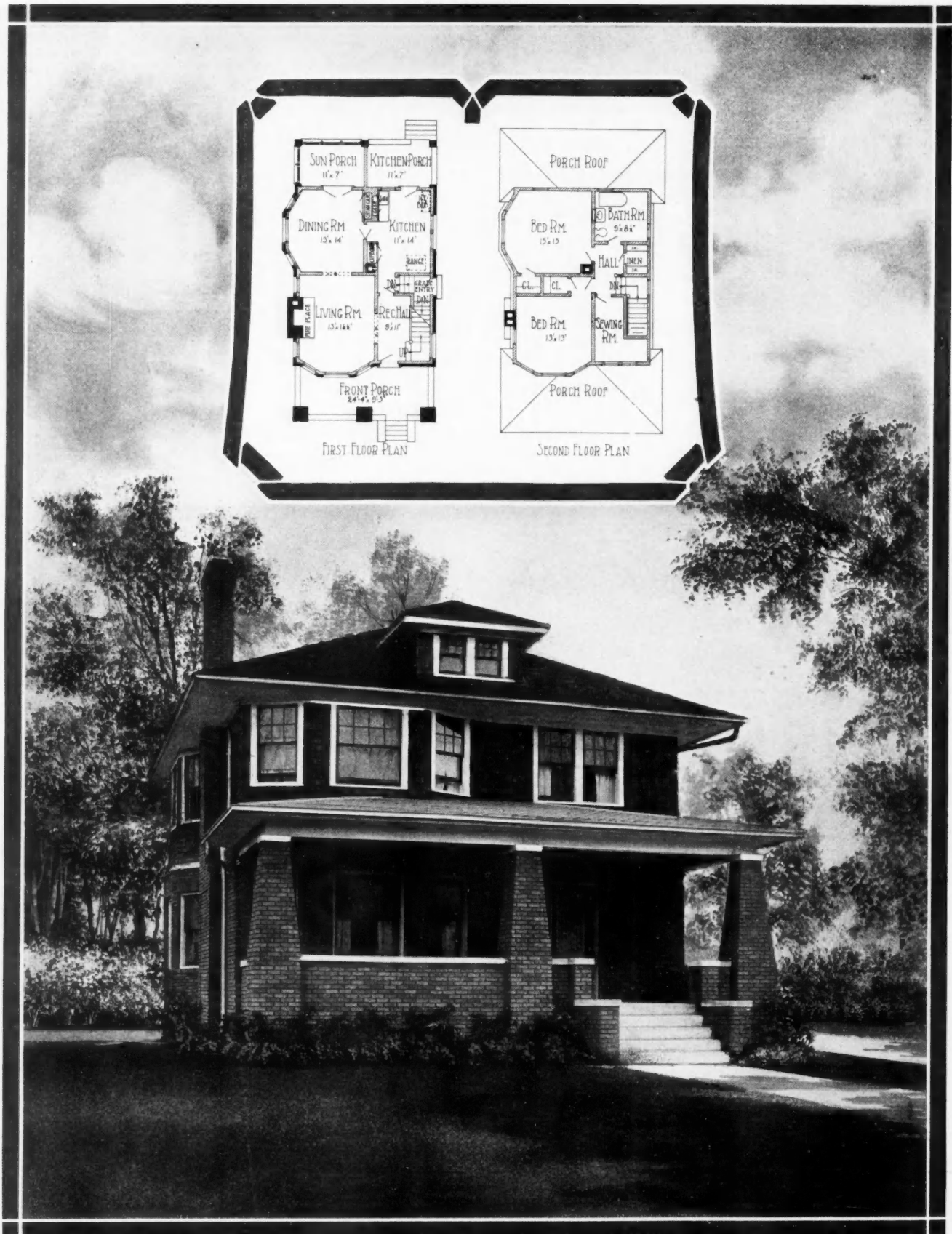


**NEAT NARROW LOT BRICK RESIDENCE.** This Beautiful Little Brick House Has Been Designed Especially for a Narrow Lot. Its Arrangement Includes Many Features Which Will be Recognized as Distinctly Modern. The Living Porch is One of These Features. Among the Other Desirable Features are the Vestibule, Fireplace Seat, Pantry and Sun Porch. Every Detail Contributes to the Comfort of the Occupants. Size of House, 47 Feet by 26 Feet 6 Inches.





**L**ARGE STUCCO HOUSE OF COLONIAL STYLE. For Those Who Admire the Colonial Type of Architecture, the Pure White Walls and Deep Green Shutters Have a Necessary Place in Practically Every Design. The Dignity of This Residence, Which is Built at Oak Knoll, Pasadena, California, is Felt as Its Most Forceful Characteristic. Space is Available in Its Interior for Large Halls Which Are Effective in Houses Having Sufficient Space to Allow Their Use. The Kitchen and Dining Room Are Separated From the Living Rooms. Size of House, 56 Feet 6 in. by 28 Feet.



**H**OUSE SIDED WITH BRICK AND SHINGLES. This Modern Residence Has Been Given a Pleasing Appearance by the Use of Face Brick and Shingles in Finishing the Walls. The House is Not of a Radical Type, But it is of a Type Which Has Been Extremely Popular and Will Continue to be so. The Interior is Divided More or Less Definitely From Front to Back on Each Floor, Resulting in an Efficient Arrangement of Rooms. Notice Particularly the Sun Parlor, Rear Porch and Reception Hall on First Floor and Sewing Room on Second Floor. Size of House, 24 feet by 31 feet.



## Noon Hour Talks by the Boss Carpenter

### Talk No. 59---New Series No. 16. Trussed Beams

THE BOSS TELLS HOW TO DESIGN A SMALL TRUSSED BEAM CARRYING A UNIFORMLY DISTRIBUTED LOAD

“ONE of our members,” said the Boss, “was encouraged by the manner in which we handled his friend’s problem last time we were together and has asked us to consider the design of the trussed beam shown in Fig. 16A. He states that this beam is one of a series spaced 12 feet apart on centers. The distance between the centers of the supports at the walls is 30 feet, and the height from center of tie to center of strut is 2 feet 6 inches, as shown. The load is uniformly distributed along the length of the tie beams and is brought to them by joists spaced evenly along the beams on each side of the truss. The amount of the dead and live load is to be taken as 60 pounds per square foot of surface supported by the joists.

“The tie beam consists of two timber members placed side by side as shown in the section of Fig. 16A, while the slanting timber struts are placed between the tie beams and securely bolted at the ends. The vertical tie rod is of steel with ends threaded for adjustment. The timber to be used is either yellow pine or Douglas fir.

“Our problem will be to find the size of the tie beams, slanting struts, center steel tie bolt, and the number of 2-in. diameter steel bolts to be used in the joints at the walls.

“The total tension in the lower pair of beams will be found by multiplying one-half of the total load carried by one truss by one-half the length of the beam between wall supports and dividing by the vertical distance between the center of the tie beam and center of slanting strut taken at the center of the span.

The load is in pounds and all distances are in feet or fractions of feet.

“The total load on one truss is  $30 \times 12 \times 60 = 21,600$  pounds. One-half the distance between wall

supports is  $\frac{30}{2} = 15$  feet. The vertical distance

between center of tie beam and center of slanting strut is  $2\frac{1}{2}$  feet, as shown in Fig. 16A. Therefore, the total tension in the pair of lower beams is found to be

$$\frac{21,500}{2} \times \frac{15}{2\frac{1}{2}} = 64,800 \text{ pounds.}$$

If 1,200 pounds per square inch is used as the working strength of yellow pine or Douglas fir, the area of section in the two beams needed to withstand tension

alone will be  $\frac{64,800}{1,200} = 54$  square inches. If a 12-inch

depth of the beam is used, a thickness of  $4\frac{1}{2}$  inches would be needed for the two beams.

“Since these two lower beams will also be subjected to a bending action between the wall and the center tie rod due to the loads from the joists supported in these lengths, the width must be increased to take care of these additional stresses. If we assume that the maximum bending moment due to the load is approximately  $\frac{1}{10} Wl$ , where  $W$  is the load on the beam from the wall to the center of the span in pounds and  $l$  is one-half the length of the beam in feet, we can apply our regular beam formula using  $p$  as 1,600 pounds per square inch and 12 inches as  $h$  in  $I =$

(Continued to page 134.)

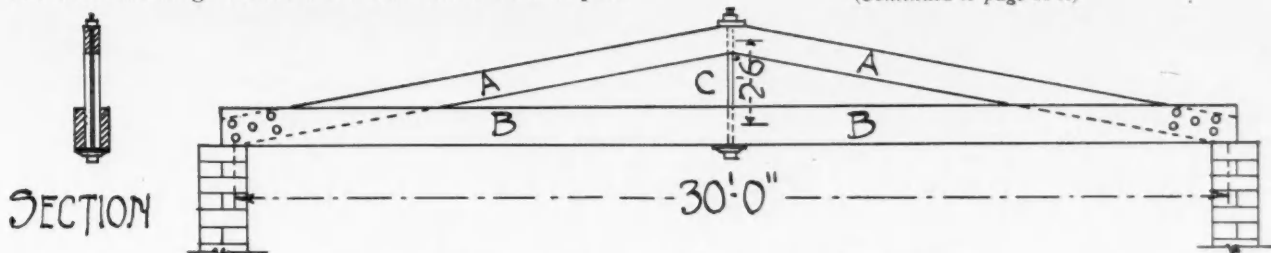


Fig. 16A. A Trussed Beam for Uniformly Distributed Load.



## Building a Brick House of Hollow Tile

MANY PLEASING, PRACTICAL AND EFFECTIVE RESULTS OBTAINED BY COMBINING THESE TWO FIRED-CLAY BUILDING MATERIALS.

By J. J. Cosgrove

IT used to be that a masonry wall was a masonry wall. It might have been of brick, or it might have been of stone. The brick might have been laid up in any one of many bonds, or the stone ashlar laid in any one of several patterns; but so long as the wall was of brick or of stone, it was solid clear thru, and was a brick or a stone wall, as the case might be. Only this and nothing more.

Now there are so many different types of building walls that the general contractors of the larger cities are differentiating between them, and many contractors and builders have blueprints on the walls of their offices showing how walls for different purposes can be built, where certain types are desirable on account of cost, and still others to be preferred for appearance, strength or some other quality.

It is an unfortunate fact that in many localities any

type of wall that is faced with brick and backed with other material is known as a "brick veneer" wall. Unfortunate, I say, for the name creates a bad impression, for the word "veneer" as generally used conjures up in the mind something flimsy and cheap, while as a matter of fact masonry walls *faced* with brick are among the best.

In the facing of hollow-tile walls there are several methods each of which has some peculiar advantage which recommends it for special purposes or materials. Some of the types are stronger than the others and are used when great loads must be carried; others are used more for economy than for strength and are suitable for walls of ordinary buildings which carry only nominal weights; still others are suitable where a greater range of patterns is desired worked into the bond of the face brick.

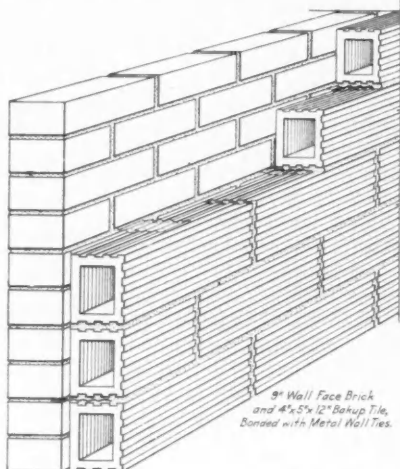


Fig. 1. Most Simple Type of Brick and Tile Wall with Metal Tie Bond for 9-Inch Wall.

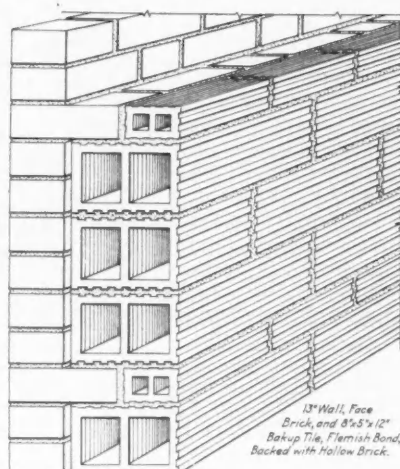


Fig. 2. Wall in Which Every Seventh Course is Alternate Header and Stretcher Course.

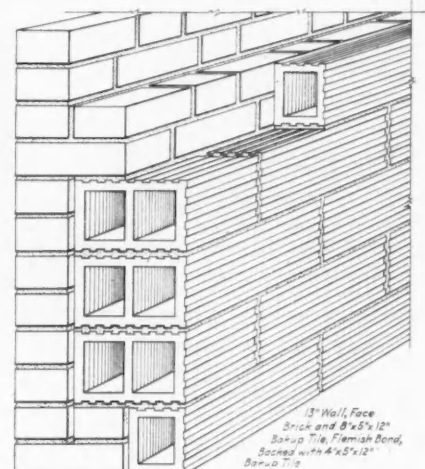


Fig. 3. Intimately Bonded Brick and Tile Wall Using Backup Tile in Place of Hollow Brick.

The simplest hollow-tile wall with brick facing is the 9-inch wall bonded with metal wall ties. Instead of the metal wall ties, a masonry tie can be had by making every seventh course a row of headers, or a row of alternate headers and stretchers. This form of construction is suitable only for walls of ordinary buildings of a story in height, but provides a very warm building, perfectly dry, and ready for plastering on the inside without furring and lathing.

In the 13-inch wall we have an ideal construction in which the hollow-tile and the face brick are intimately bonded together, thereby forming a wall of great strength, lightness and all the other good qualities which recommend this type of building. The Flemish Bond is used for the brick facings, and backup tile which are laid horizontally like brick, used for the interior of the wall.

A variation of the 13-inch wall is a similar wall backed with backup tile in the usual way, but using

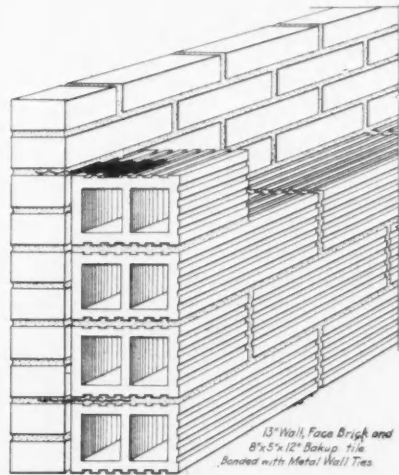


Fig. 4. The 13-Inch Wall Bonded with Metal Ties in Place of Masonry Bond.

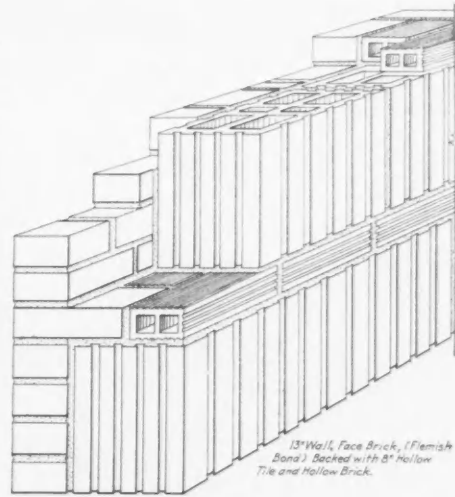
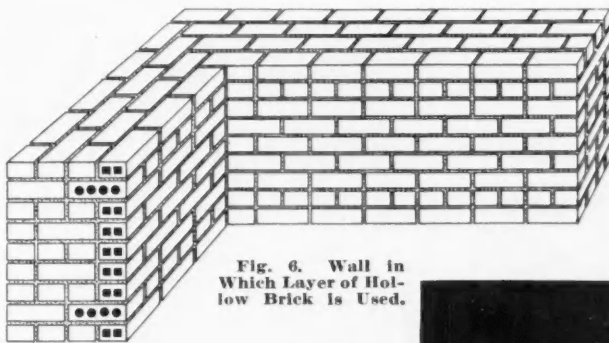


Fig. 5. Type of Wall Used to Carry Heavy Loads. Bonded Every Fifth Course, Backed with Hollow Brick.

Closely allied to combination walls of brick facings and hollow tile backing, are walls with tile furring to take the place of furring and lath; and walls having an inside layer of hollow brick. In the latter type of construction, as shown in the accompanying illustration, the hollow bricks are of the size of ordinary bricks, and the cells thru them are of necessity small. Owing to this small size the weight of the wall is greater, and the moisture and heat retarding qualities much less than in a wall having inside courses of either backup tile laid on side; ordinary hollow-tile blocks laid on end; or interlocking tile laid on side and interlocking.

Special headers of hollow brick are made with the cells running from edge to edge instead of from end to end, so that when laid in a wall the surface presents

(Continued to page 112.)



4 by 5 by 12 backup tile at the header courses instead of the smaller size filler. Walls of the backup tile with brick facings are sometimes bonded together with metal wall ties. This does not make so solid a construction, however, as when courses of headers bond the two layers of wall together.

So far, I have described walls in which backup tile—or tile laid on their sides—are used. When a real strong bearing wall is required, hollow-tile building blocks with vertical webs and cells, and bonded every fifth course with a Flemish bond, will be found very satisfactory. Hollow brick are used at the header courses to level up the next course of hollow tile to rest upon.



Combination Face Brick and Hollow Tile Wall in Course of Construction, Showing Setting of Basement Window Frames.

## An Umbrella for the Cattle

STOCKMAN WOODS' "CRAZY IDEA" AND HOW IT WORKED OUT AS IOWA'S MOST ECONOMICAL AND PERMANENT STOCK FEEDING BARN

By Matt L. King

IT IS a big one, big enough to cover 300 head—122 ft. in diameter. It is covered with asbestos and the ribs are made of 2x8's. There is a wall around it to keep the wind out as well as the rain off.

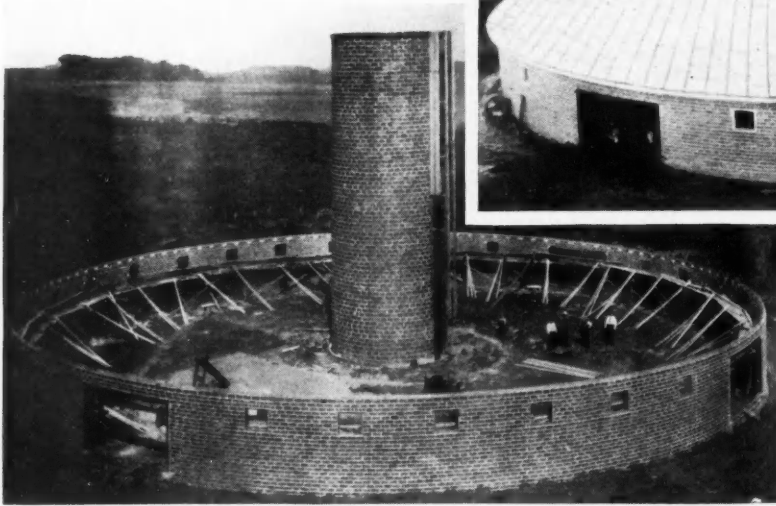
Think of it. Three hundred steers in a permanent shelter at a cost of less than \$10 per head. This sounds pretty economical; but is the actual case of the building shown on this page.

It is a covered, walled barnyard. The wall is 122 ft. in diameter and 12 ft. high with a silo in the center. There isn't a single pillar or post under the roof. A hay rack wagon can be turned around any place in the barn without even going around the silo. This wall, 383 ft. in circumference, has not a crack or a check in it. There is some steel in the foundation and some steel is laid in the wall.

The roof is quite flat. There is no storage space for hay, as the idea was to secure a covered barnyard and to allow for total collection of bedding and

not bad, but a surplus of ventilators under control is always a good plan.

It is 51 ft. from the outer wall to the wall of the silo, which is 20 ft. in diameter and 60 ft. high. The rafters of the two outer spans are 2"x8"x18'. The outer span of rafters extends from the wall, over which it projects 18" to the first circle of purlines. These purlines are made up of two 2x10's spiked together, requiring 24 to go around the circle. More 18-ft. rafters extend to an inner circle of 24 lighter purlines. Where these purlines join a steel plate is placed below them and an I bolt comes down thru the joint and the steel plate. The

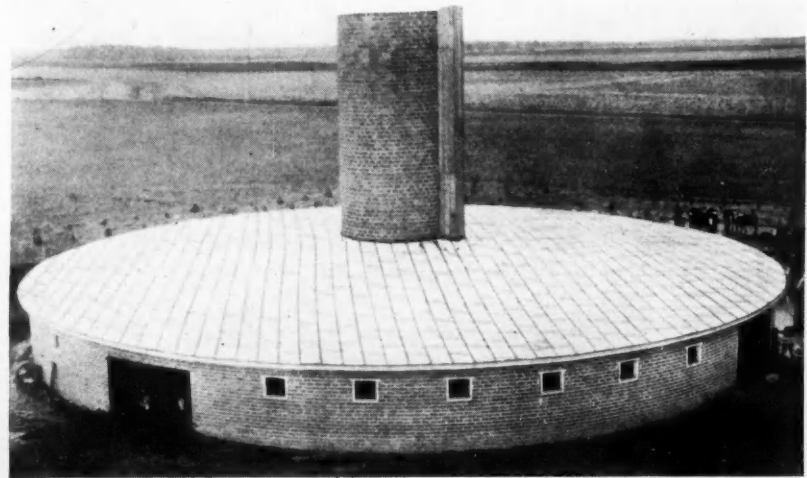


Tile Work Completed on Cattle Shelter, Feeding Barn and Silo.

manure thruout the winter and still have plenty of head room. At present the thickness of this accumulation for the winter ranges from 3 to 5 ft. and will help raise corn to feed the allies next summer.

In addition to cattle there are 200 hogs housed in this same building. The hay rack is 4 ft. wide and 200 ft. long, besides 14 bunks 4x18 ft.

The 4x4 silo chute has been utilized as a ventilator; but is far from sufficient. Within the next few weeks we will furnish him sketches for 8 additional ventilators to be distributed over the roof. These will be supplied with dampers, so that the next bunch of cattle that comes into this barn will be provided with more ventilation. The ventilating conditions in this barn are



The Completed Structure, Showing Roof Covered with Asbestos Roofing and Silo Projecting Above it at the Center.

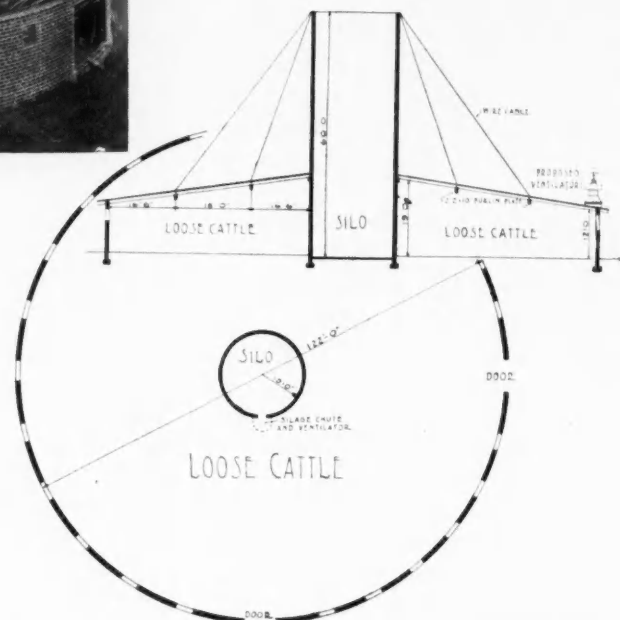


Diagram Giving Dimensional Data Regarding Covered and Walled Barnyard and Also Showing Method of Supporting the Roof Without Posts.

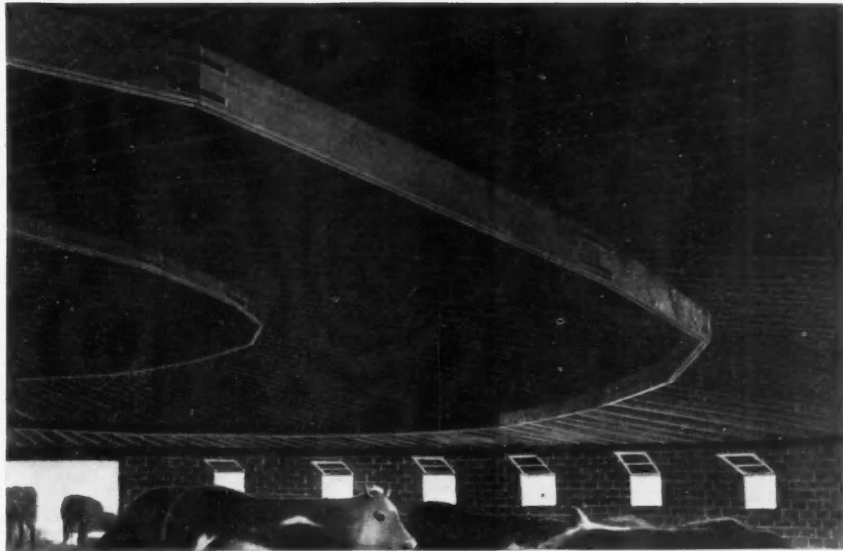
I bolt is provided with long threads and nuts for truing up the roof. To the upper end of the I bolt, which is above the roof, is attached  $\frac{3}{4}$ -inch steel galvanized wire cables.

These cables extend to the top of the silo, where they hook to rods that pass over the silo. The cables are secured at each end by means of ordinary telephone guy wire clamps. The inner circle of purlins is supported by a similar set of lighter cables, also extending to the top of the silo. So far there has been no difficulty arising from expansion or contraction.

The roof is entirely stable and very satisfactory. Slope of roof is about 1 foot in 7. The covering of the roof shows white and is asbestos coated prepared roofing. After passing of the I bolts thru, this roof was made weather-proof by means of heavy asphalt pitch. The most difficult part of the water-proofing was found in flashing at the silo. The silo had been built before the barn was. Consequently there was no opportunity to put flashing in the mortar joints.



This View Shows Supporting Cables from Roof to Top of Silo.



Interior View, Showing the Two Lines of Purlins Which Are Held Up by the Cables Shown in View Below.

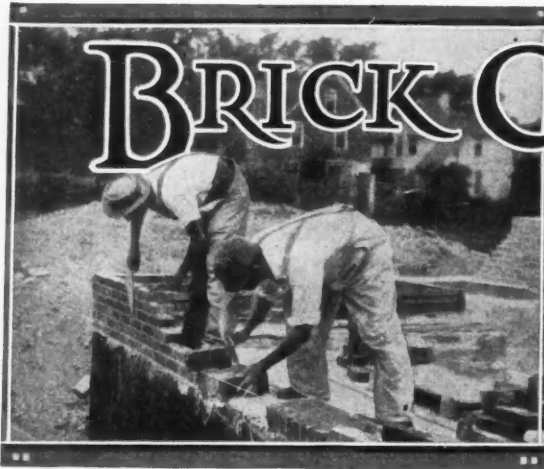
After some little scratching of his head the owner decided that since the asphalt or any other kind of preparation he had would not hold the flashing permanently to the silo wall, he would arrange for something that would hold it, so he put a No. 3 wire, which is a  $\frac{1}{4}$ " rod, completely around the silo and the flashing, or rather, ends of the roofing. He arranged a small turn buckle with which to tighten this wire and the result was that the roofing was drawn up to the silo and stayed. A little asphalt, run between roofing and silo above the wire, was necessary to make this water-proof, but the job is entirely satisfactory. The roof is entirely tight and steady in any wind that has struck it so far. We predict that when this roof comes off there will be a lot of other buildings uncovered in the neighborhood.

Considerable of the lumber that went into this building was purchased at \$18. The cost of manufacturing hollow blocks has increased a great deal, also steel, cement and labor have gone up, so that detailed figures on the cost of this form would not be of much value now. The rafters at the wall are spaced a little more than 2 ft. apart. The sheathing is solid matched 1" lumber. To the inner end of every other rafter of the outer set is nailed one of the rafters of the next inner set, so there are one-half as many rafters between the two circles of purlins as between the outer circle and the wall.

In the neighborhood the same old story went the rounds. Herman Wood had gone crazy. Good friends of his and well wishing neighbors talked to him about it until he almost lost faith in his own idea. The writer was called in to consult in the matter and was asked among other things to design the cable system.

Also Mr. Wood had been told so often that the silo would not carry the weight that he was a little concerned about that also. It was such a pleasure to

(Continued to page 140.)



# BRICK CONSTRUCTION

## for Modern Carpenters and Builders



### Details of Brick Construction

REMAINING TWO OF A SERIES OF FOUR DETAIL PLATES SHOWING METHOD OF BUILDING UP FOUR DIFFERENT TYPES OF WALL HAVING A FACE BRICK EXPOSED SURFACE, TOGETHER WITH DOOR AND WINDOW DETAILS. FIRST TWO PLATES APPEARED IN THE MAY AMERICAN BUILDER.

#### Plate 3. Face Brick Applied Directly Over Studs Without Sheathing

THE man who admires a face brick home but fears the cost of constructing it need not despair. The type of construction shown in Plate 3 has been developed for minimum cost and the results which have been obtained are an indication that when it is used, the cost of construction need be no higher than for equally high grade building with other materials.

Since sheathing is not used, it is necessary to brace the frame of the building in some other way. A line of bridging is, therefore, placed midway between floors and between second floor and plate. The frame of the building before the brick veneer is built up is very similar to that of a building which is to be finished with stucco. Building paper or felt can be placed over

the studs before the veneering is started.

The sills are laid on the common brick backing carried up from the concrete foundation wall to approximately 2 inches below the bottoms of the first floor joists. The face brick are carried on up from the basement wall, a distance of about 1 inch being allowed between the inside of the brick and outside of studs to provide sufficient room for the boxes for window weights. Metal ties are used to secure the brick to the frame of the building, these ties being placed every fourth course at every stud. The veneer is supported above all window and door openings by angle irons.

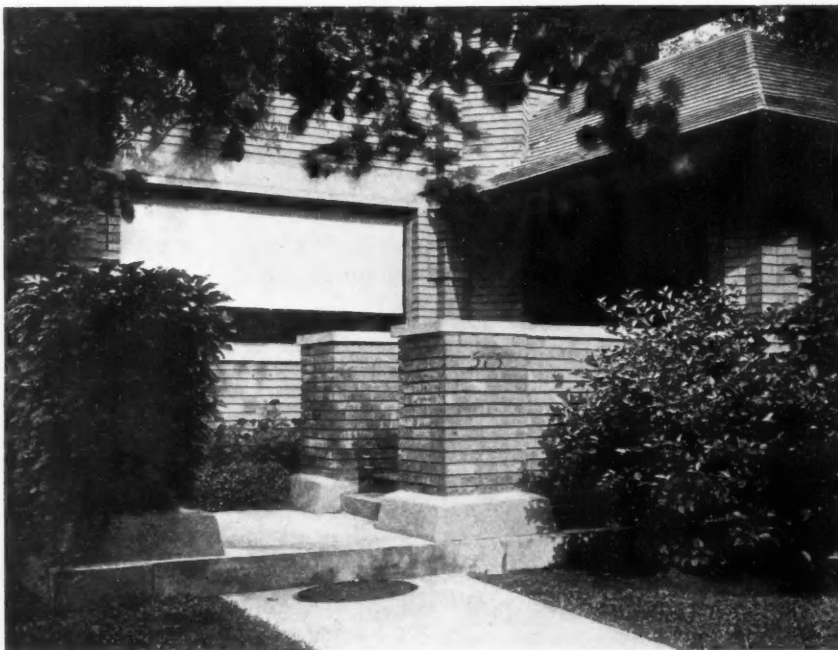
There are several methods of calking between the brick and the window and door frames. One of the oldest methods is to use oakum. Various other substances are used for calking, all of them being placed as the brick are carried up. Another and more modern method is to provide the insulation at the time of placing the staff bead. Felt is usually used between the staff bead and the brick, but there are special methods of applying the insulation which are intended to save time in this operation.

With the exception of the difference in size, the window and door framing is the same as used in frame buildings. Interior plastering is done over lath nailed to the studs.

#### Plate 4. Face Brick Backed with Common Brick

The all-brick wall, used in a great many large buildings today and favored by many for small commer-

(Continued to page 140.)



A Beautiful Face Brick Porch Entrance in Which the Horizontal Joint Between Brick Has Been Emphasized and the Vertical Joint Subordinated.



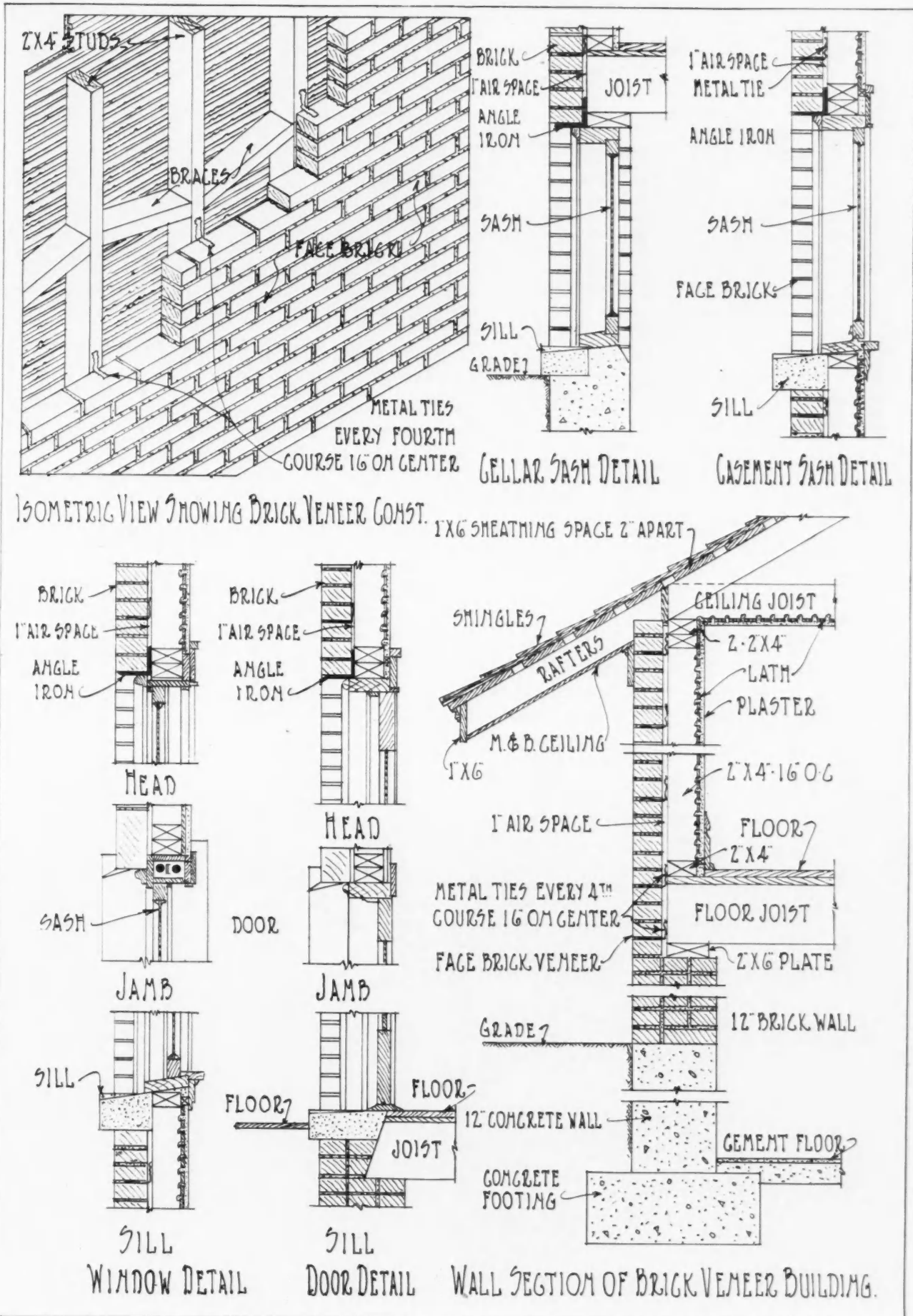


Plate 3.—Details of Wall Construction, Including Window and Door Details of Face Brick Veneer Over Braced Wood Frame Without Sheathing. The Least Expensive Face Brick Construction for Residences and Other Small Buildings.

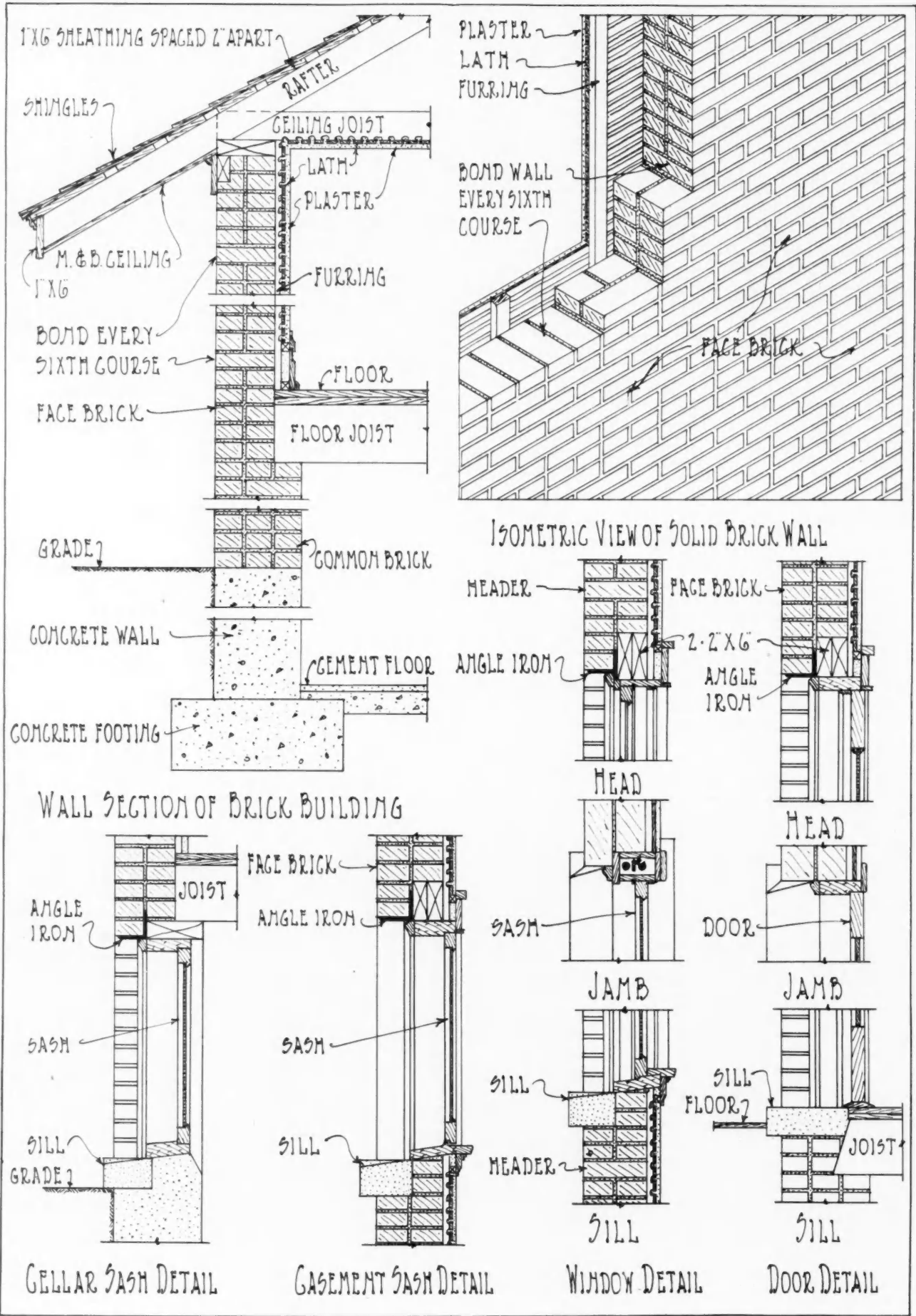


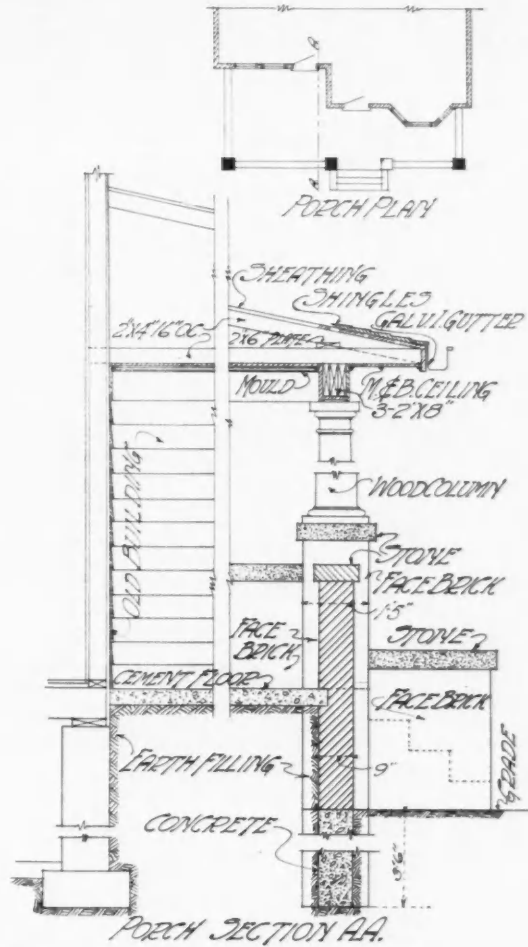
Plate 4.—Structural Details of the All-Brick Wall Type of Construction in Which a Masonry Bond is Used Between the Face Brick Outer Courses and the Common Brick Backing.



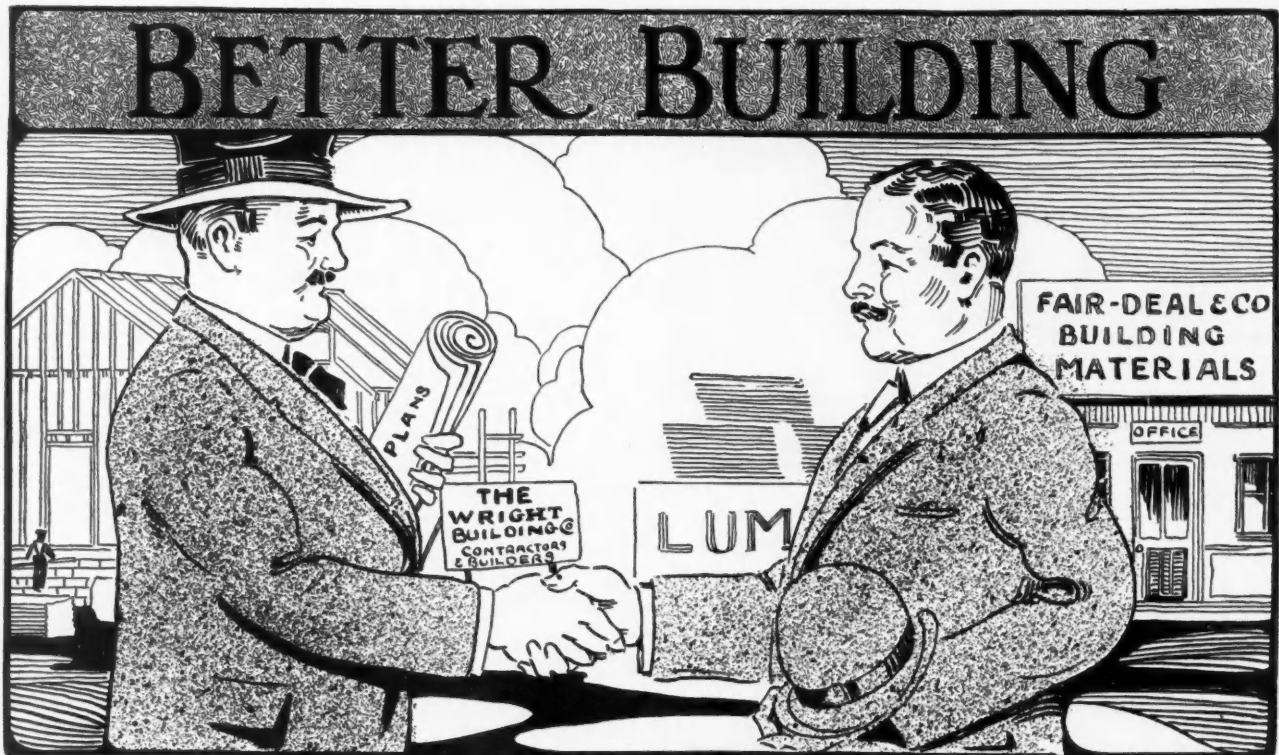
The Residence of M. W. Butler Now Has a Small Wooden Porch and a Stoop at the Two Front Doors.

**A New Brick Porch**

MORE effective than writing "Welcome" on the door mat is the construction of an artistic face brick porch on the old home. Costs more? Surely, but well worth it! Among other things, and in addition to the value of the investment as an improvement on the property, the porch furnishes an out-door living room which is not merely pleasant, but which is really useful during the warmer months. Fitted with screens which may be replaced with storm sash, the porch serves as a shield from winter winds, effecting a saving in fuel. The illustrations show the transformation which might be made in the house of M. W. Butler, St. Regis Falls, N. Y.



A Modern Face Brick Porch Entirely Across the Front of the House Shown Above Completely Transforms Its Appearance and Adds to the Comfort and Value of the Home.



*Dealer-Contractor Good-Will Best for Building*

## Rural Trade Worth Going After

ONE ILLINOIS FARMER USES 2,000 SACKS OF CEMENT PER YEAR ON MORTGAGED FARM

**R**URAL trade offers one of the largest opportunities for building material dealers and contractors. Statistics show that about 53% of the nation's population lives on farms and that 52% of the country's buying power is in farmers' hands. These facts prove the wisdom of going after the farmer, and the following example further substantiates this statement.

An inventory of cement used for farm jobs has a surprisingly large total, and when it is remembered that nearly every farm is in need of concrete improvements, the total becomes worthy of consideration.

For instance, a La Salle County, Ill., farmer owning a 300-acre tract which carried a mortgage and on which

the original improvements had worn out or decayed, spent two seasons in rebuilding with concrete. During this time he used the following quantities of cement:

### Two Years' Cement Requirements of an Illinois Farm

KIND OF IMPROVEMENT	Number of Sacks of Cement Used
Large round stock tank, including foundation and small pavement around it.....	100
Hog-dipping tank and approach.....	20
Barn foundation and walls for barn 100 by 100 feet, including corn, cattle and feeding barn....	800
Approaches to barn and small doorway pavements	100
Floor over entire barn area.....	1,100
Barnyard pavement and feeding floors, 100 by 100 feet .....	900



Horse Barn and Implement Shed of the Idaho Industrial Training School, J. T. Humphries, Superintendent, Anthony, Idaho. The Horse Barn is 120 Feet Long by 40 Feet Wide and the Implement Shed is 84 Feet Long by 30 Feet Wide. These Buildings and Several Others at the School Are Built of Concrete Blocks.

Basement floor for the house.....	80
New porches and well curbings.....	120
Foundations, walls and floor for hen house.....	80
Sidewalks .....	100
Fence posts .....	200
Large silo .....	400
Corn crib foundation and floor.....	200
Small culvert across creek.....	80
Small troughs and tanks .....	80
<b>Total .....</b>	<b>4,360</b>

When this construction was completed, the foundation, walls and floor of a large granary, machinery shed and stock shelter were yet to be improved. In all probability the next few years will see another large silo built, additional fence posts made and a manure pit added. A new house will be built and a concrete driveway constructed as soon as the adjacent highway is improved. Even without these improvements the total of 4,360 sacks (1,090 barrels) is five or six carloads, with prospects of from 80 to 200 sacks a year for years to come.

The instance cited is not a case of expensive improvements made on the farm of a hobby-riding millionaire, but on one that carried a mortgage and that had to show a profit. This shows the possible application of concrete on the average farm and suggests the opportunities in store for dealers and contractors in farm trade.



### Furnishing What the Specifications Call for or the Why of Trade Marked Lumber

By Robert H. Brooks

**T**HAT a reliable contractor prefers to employ building materials of established merit almost goes without saying. That he should be able to secure such materials readily and beyond a doubt is also self-evident. To assure himself that he is buying proven quality, he must know the commodity by some name, brand, or identification which represents the manufacturer's faith, reputation or guarantee in the goods. Hence, trade-marked lumber.

Lumber was too long a bulk commodity of unknown origin, that is, so far as the contractor was concerned. Its initial appearance was in the dealer's yard or "on track." Beyond either of these points its actual source and the men responsible for its manufacture and quality were shrouded in the hazy unknown of "Down South," or "Out West," or "Up North." It was because of this fact that unscrupulous middlemen and dealers were able to take the architect's or engineer's contract to furnish structural timbers for example, of a specified quality, substitute an inferior wood of less cost and poor quality and in seven cases out of ten succeed in completing the contract with such.

But now all this has changed. The responsible lumber manufacturer, tired of seeing his product sold in combination with that of irresponsible concerns. Moreover, he saw his own meritorious stock suffering in reputation because another inferior but generally simi-

lar product was being sold as exactly the same thing, namely lumber, timber or one of the many pines, of which there are numerous species in each variety.

"Therefore," said he to his equally outraged neighbor, "We fellows are chumps. Here we have the best lumber for certain uses which can be produced, but the fellow who uses it cannot be sure of getting it. Let us put our name on it so that once it becomes known, the users will come back for more."

These two neighboring manufacturers represent the various lumber producing associations whose members are today standing behind their product with an association trade mark or an individual brand, or both.



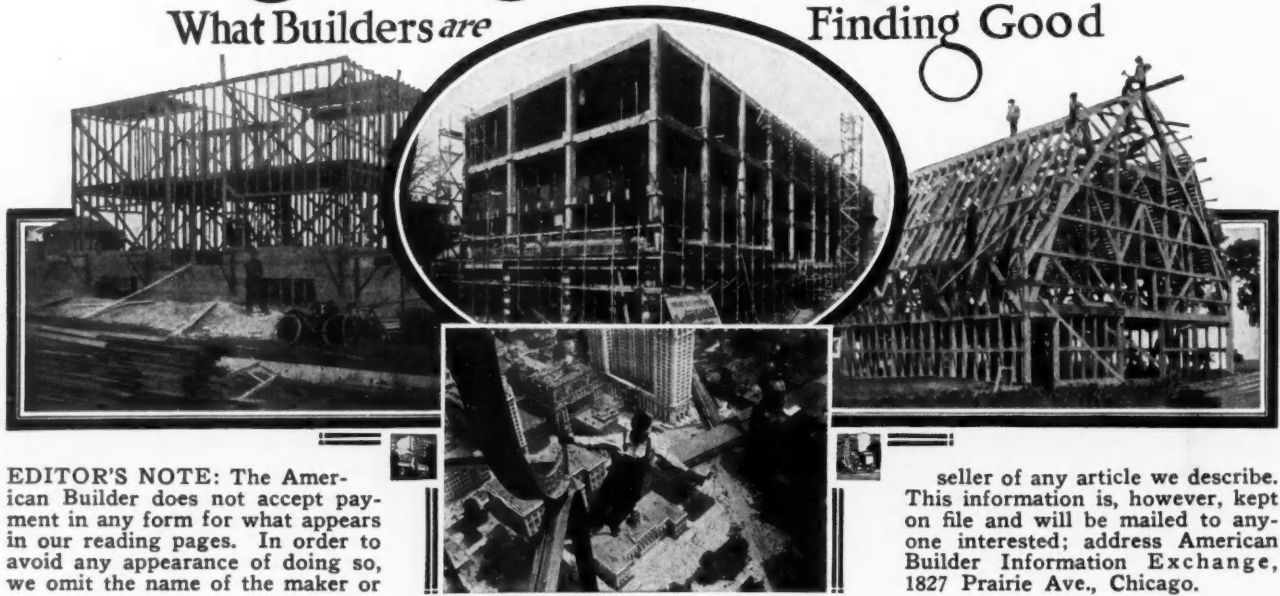
The Herman Parker House, an Example of the Old Colonial Type of Architecture, Standing in Connecticut as Testimony of the Endurance of Good Wood Construction.

Having progressed thus far in awakening the dormant spirit of merchandising, the next logical step was to advertise these brands. As a result, there are a number of lumber publicity campaigns now being conducted on a national scale.

The responsible lumber dealer has welcomed this publicity for two reasons—it has shown him that the manufacturer who brands his product can be relied upon to ship dependable lumber and it has put the lumber which the dealer handles before the people of the dealer's community so that he can say in his local advertising copy or sales talk, "I handle this wood you have been reading about. Let me show you some of it." Trade-marked stock, therefore, is no longer mere "lumber," but each variety is a specific wood for a specific purpose. The contractor, therefore, may today go to the dealer and fill his requirements with the definite certainty that he will get what he buys.

# OUT ON THE JOB

What Builders are Finding Good



**EDITOR'S NOTE:** The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or

seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

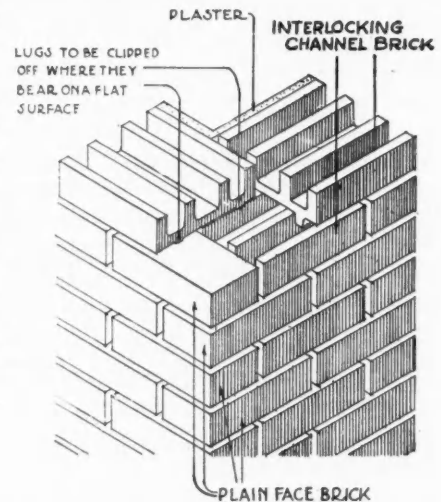
## Beautiful House Built of Interlocking Channel Brick

The Dutch Colonial house shown in the accompanying illustration is an interesting structure, both from the standpoint of beauty and also from a structural viewpoint. The building was erected at Newtonville, Mass., and was designed by George H. Sidebottom, architect.

The material used in the construction of the walls of this house is a type of interlocking channel brick such as is shown in the detail accompanying. This brick is made in a wide range of reds and golden buffs and the beauty of the finished wall surface must, therefore, be seen to be fully appreciated.

In the wall, the interlocking channel brick, as here used, results in the formation of twin walls of solid 3-inch material

connected by webs at each course, there being a 2-inch horizontal air space between these walls as well as a vertical air space the width of the joint between brick horizontally. The interior plastering is done directly on the brick wall.



Detail Showing Method of Building a Corner in Interlocking Channel Brick Wall.



Distinctive Dutch Colonial House, Walls Built of Interlocking Channel Brick.

The strength of this type of construction is surprisingly high. Because there are no continuous mortar joints thru the wall built of this brick, moisture does not strike thru. Solid brick of the same color are used around windows, doors, etc., and a small amount of waterproofing is used on the inside to seal the joints at such places. These walls are also very low in heat transmission, resulting in a saving of fuel. There are several other qualities of the interlocking channel brick construction which make it a commendable material when judged from the standards of sanitation, fire risk, maintenance and depreciation, cost and security of investment.

These brick are made in the form of a tile, two of the brick, as used in the wall, being formed together.

## Making the Porch an Outdoor Living Room

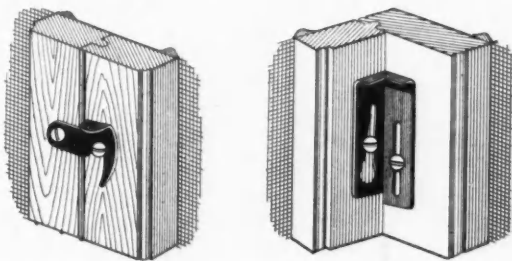
The full value can hardly be obtained from a porch which is not equipped so that it may be used as an outdoor living room during the pleasant weather. The expense of fitting up a porch so that it may be so used is hardly comparable with the value which may be obtained from it after the work is completed. Builders may easily work up a profitable busi-



The Comfort of a Large Screened Veranda During the Summer Weather is Surely a Sufficient Return for the Investment in Screens.

ness in their spare time by giving the facts and figures regarding the screening proposition to the home owners in their neighborhood. The new house should be fitted at the time of building.

The illustrations show an installation of screens on a large porch and two fittings used by one large manufacturer of porch screens, to form the corner and the flush joints. These devices are simple and strong and the joints formed are



Fittings for Flush and Corner Joints Which Hold the Screens Securely in Place, But Make Putting Up and Taking Down Easy Operations.

perfectly tight. The veranda screens on which these fittings are furnished come in sections, made of 1 1/8-inch white pine, tongued and grooved flush and corner joints, which are held together with the special fittings mentioned. The sections are of a size which will be convenient in handling and in storage.



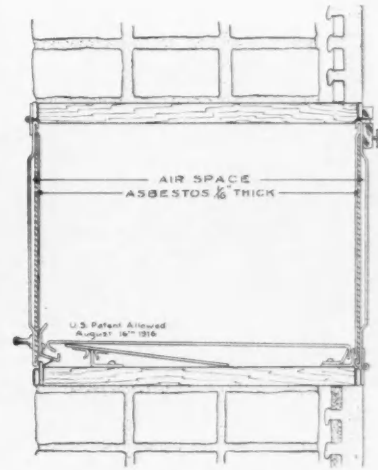
## Keeping the Delivery Boy out of the Kitchen

Every housewife is willing and anxious to eliminate the tracking of dirt into her kitchen by the delivery boy. She does not like to stay at home waiting for the delivery of groceries or meat, but often she does not care to have these articles stand out on the porch or in the hall until she returns. Clearly there is need for some means of delivering food-stuffs which will not necessitate the entrance of the delivery boy into the kitchen and which will make it possible for safe delivery to be brought about when the house is locked.

It is to meet this need that the wall and door cabinets have been devised. To the housewife who is having her first

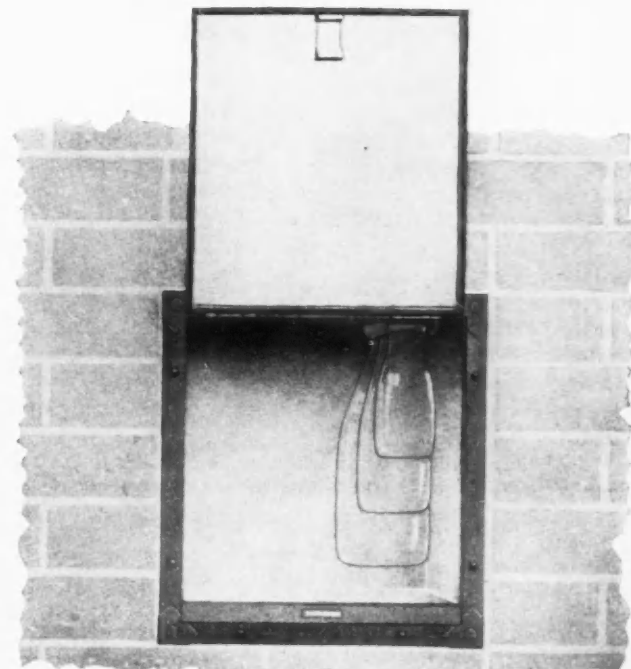
experience in the use of these cabinets, they are found to rapidly pass from the class of mere convenience into that of real necessity. Their popularity is becoming evident in modern residences, flats and apartment buildings.

There are certain features which a high-grade wall or door cabinet should have. It should be so constructed that when any article is placed in the cabinet and the door closed, it will be automatically locked. When this article is removed from the inside, the door should be released so that further deliveries may be made. The cabinet should be insulated so that a reasonable amount of protection is given its contents from the effects of temperature. Such articles as empty milk bottles must be placed in the cabinet for the delivery boy to remove, and provision must be made so that these bottles may be placed in the cabinet without locking the door.



Section of Wall Cabinet, Showing Mechanism Which Locks the Outside Door When Articles Are Placed on the False Bottom.

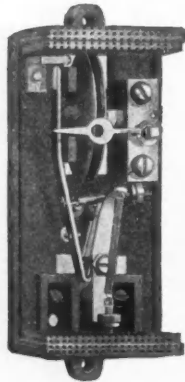
Cabinets are being made with one and more compartments. The top, bottom, sides and partitions are being made of two sheets of steel with air space and insulating lining for doors and inside walls. In outside walls these parts are sometimes replaced by cypress wood because of its advantages in temperature insulation and long life. Installations in old buildings are most easily made in the doors, the work, in this case, being comparatively simple. In wall installations the outer case of the cabinet is furnished the builder who sets this frame securely and tightly into the wall, the remainder of the cabinet being completed with the finishing of the house.



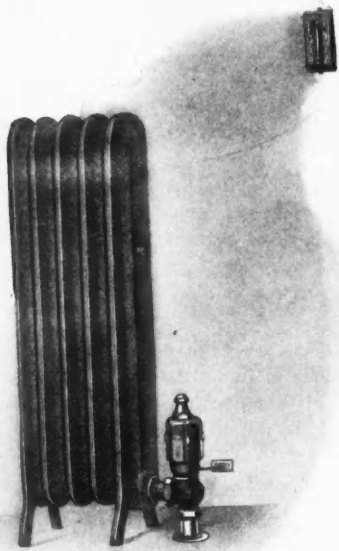
Empty Milk Bottles Are Hung in a Rack so That the Door to Cabinet Will Not be Locked by Their Weight on the False Bottom.

### Theromostatic Heat Regulating Sytem

Any heating plant which is to give satisfactory service must be capable of furnishing heat in the correct amount, this amount being governed by conditions in the room, thus making possible the maintenance of an even temperature. The plant itself cannot given this sort of service without control, and it is almost impossible to obtain satisfactory service by hand control, the result being wasted fuel and uneven temperature. A thermostatic regulating system, which is entirely automatic in its operation, is one method by which an even temperature may be maintained. The principal parts of such a system are shown in the illustration. The regulation of temperature is accomplished by the actuation of an electro-magnetic valve on the radiator, the con-



Electric Thermostat Which Controls Radiator Valve to Equalize Room Temperature to Given Value.



The Thermostat and Electro-Magnetic Radiator Valve Are Connected Only by Electric Wires.

trol of this valve being centered in an electric thermostat.

The thermostat may be located in any convenient place. It consists of a small metal diaphragm containing a small amount of a volatile liquid. This diaphragm expands and contracts with change in temperature. It actuates a metal strip, thereby opening and closing the electric circuit. The thermostat may be set at any desired temperature over a possible range of 30 degrees.

The electro-magnetic valve takes the place of the ordinary inlet valve on the radiator. The valve and thermostat are connected by wires. The operating current, which is so small as to be hardly perceptible, is obtained from the lighting circuit. A number of the valves may be operated by one thermostat. The valves may be closed by hand by means of a key, in order to make repairs or in case the room is to be unoccupied.

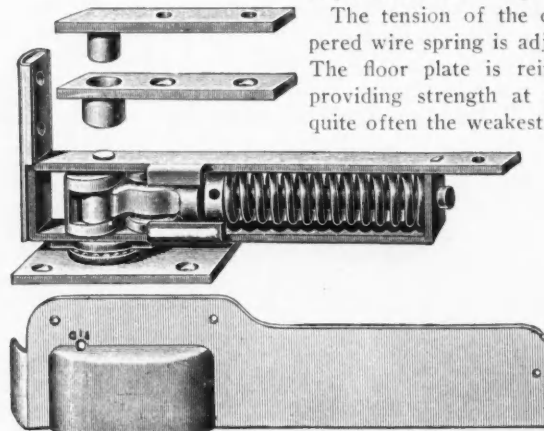
Since the regulation of temperature is thru the direct control of the amount of steam used in the radiators, there is a minimum of fuel used in order to obtain any desired result.



### Floor Surface Spring Hinge

An improved spring hinge of the ball bearing, horizontal compression type is shown in the accompanying illustration. This hinge is easily applied to the bottom corner of the door and to the surface of the floor. The back edge of the door is rounded and no hanging strip is required. The hinge

has a positive hold-back when the door is swung to 90 degrees, so that the door will not close suddenly when it is required to remain open.



A Ball Bearing, Horizontal Compression Type Floor Surface Spring Hinge.

The tension of the oil tempered wire spring is adjustable. The floor plate is reinforced, providing strength at what is quite often the weakest part of

this type of hinge. The weight of the door is carried on hardened tool steel ball bearings contained in an enclosed steel ball race.



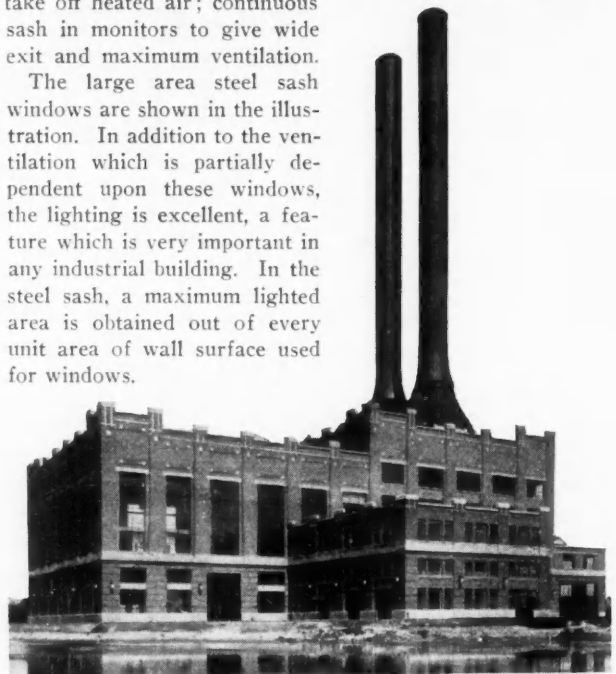
### Steel Sash and Natural Ventilation Used in Large Power House

The new power plant of the Detroit Edison Company, shown in the accompanying illustration, embodies the most advanced principles of power house construction. The plant was designed by the company's own engineers and erected by the company.

Natural ventilation is used thruout the plant, Mr. H. H. Esseltyn, Chief Construction Engineer of the company, having made a special study of the question of natural ventilation and its solution as worked out by prominent engineers of the United States and Europe.

In the application of the conclusions drawn from his investigation, the design included the use of large areas of window walls, adequately and scientifically equipped with ventilators; monitors installed over turbines and boiler room to take off heated air; continuous sash in monitors to give wide exit and maximum ventilation.

The large area steel sash windows are shown in the illustration. In addition to the ventilation which is partially dependent upon these windows, the lighting is excellent, a feature which is very important in any industrial building. In the steel sash, a maximum lighted area is obtained out of every unit area of wall surface used for windows.



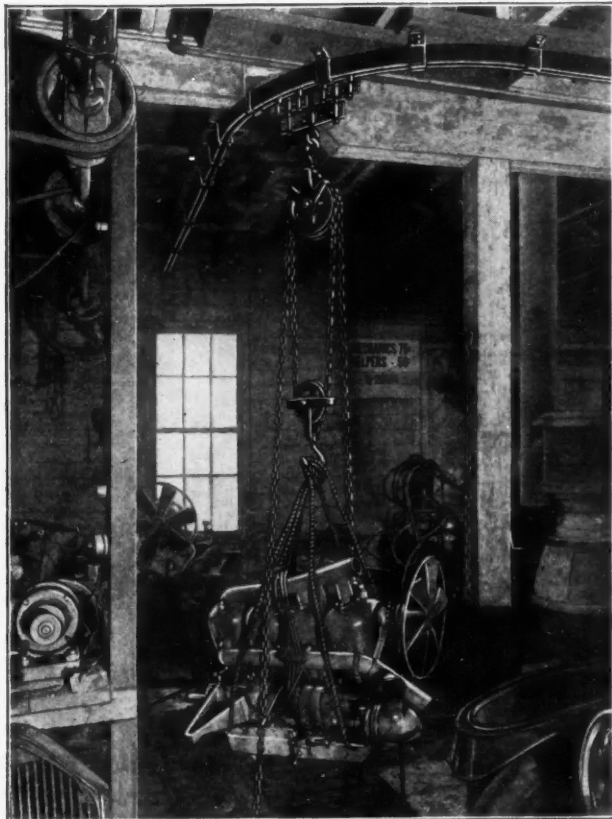
View Showing Steel Sash Windows in New Power Plant of Edison Company in Which Natural Ventilation is Used.



## Modern Material and Merchandise Handling

Efficient production requires efficient methods of handling the product in every stage from the raw material to the finishing operation. What is true of the original manufacturing process is also true of subsequent repairing operations. The automobile industry has caused the development of a large number of specialized methods of manufacture. Some of these methods have been adapted to the work of repairing and overhauling automobiles in garages and repair shops thruout the country.

Perhaps one of the most interesting developments, from the builder's standpoint, is that of the overhead carrying equipment used to handle materials and parts in a large num-



Simple Installation of Overhead Carrier System in Automobile Repair Shop.

ber of manufacturing and repairing plants. A simple installation of this sort is shown in the interior view of a garage on this page. With this carrier it is possible for one man to handle practically the heaviest object which it is necessary to move from one part to another of this shop. The system, at reduced labor expense, greatly facilitates the handling of engines, rear axle assemblies, transmissions and other heavy units.

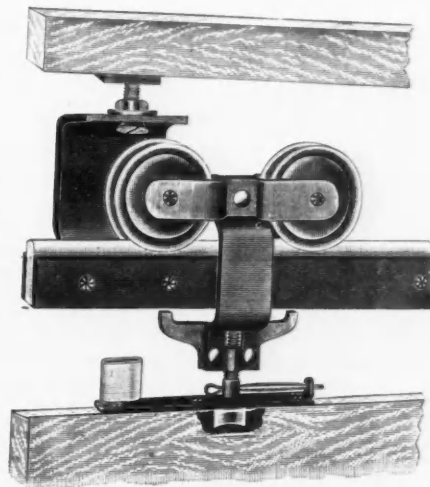
Builders will easily recognize from the illustration the ease with which the system may be installed in any garage and the convenience, economy and long life of the equipment is quite evident. The system has been highly developed and may be applied with a great deal of flexibility. There are two and three-way switches, turn-tables and cross-overs to make the track meet all conditions. There are rigid and swivel carriers with different numbers of wheels capable of carrying loads varying up to 3000 pounds. Traveling cranes and jib cranes may be used with the system to advantage. In short, by consultation with the engineers of the company manufacturing this equipment, the builder may install in any

industrial building or garage which he erects, an overhead carrying system which will economically handle any materials or parts which must be moved thru the building.



## Noiseless Door Hanger

The door hanger shown in the accompanying illustration is notable for its noiseless operation. This characteristic is due largely to the construction of the rail and the wheels. The rail used is composed of a strip of select hard maple reinforced on both sides by high carbon steel bars. The tread of the rail is convex, which assures easy operation at all times, since there is no opportunity for any obstruction to lodge upon it. The construction of the rail is such that very little space is required between studding for its installation.



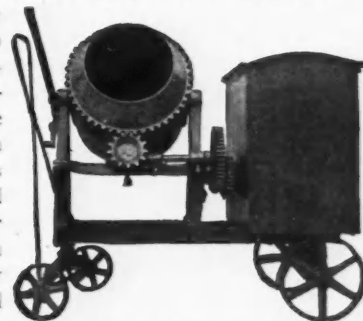
Sliding Door Hanger with Fibre Wheels and Hard Maple Rail Tread.

The wheels consist of vulcanized fibre fastened between steel discs. The hanger is built of steel and is very simple and strong. Rail spacing lugs prevent the wheels from derailing. Adjustments on both the rail and the hanger are in sight so that the door is easy to adjust.



## Light Weight Concrete Mixer

The small, light weight mixer has an important place in the field of concrete construction. Nearly every building contractor has a number of small jobs on which a small mixer is the most satisfactory sort of equipment. For such work as sidewalks, basements, floors and foundations, the light mixer which can be moved around by two men has many advantages. Its appeal is almost universal. The small contractor with limited means who has been doing work by hand or the large contractor who has small jobs on which it would not pay to move a big mixer, will find the small machine a splendid and profitable investment.



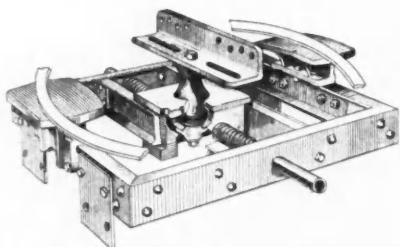
Light Weight Mixer Which Can Easily be Moved About by Two Men.

The machine shown in the accompanying illustration is a mixer of this class. It can easily be moved about by two men and yet it is capable of turning out a large day's work if necessary, handling up to 35 yards of mixed material per day. The drum operates on ball bearings, making it very smooth and light running and requiring little power. Reverse action is used for discharging, which makes it very speedy in handling dry materials. It effectively handles either a very wet or a dry mix, including brick mortar.

### Shock Absorbing Fifth Wheel Connection

By the use of a converted pleasure car and a semi-trailer, attached by means of a fifth wheel connection, a twenty horsepower car may be used to haul 5-ton loads. An outfit of this sort is shown in the accompanying illustration.

The shock-absorbing fifth wheel connection is mounted on the frame of the converted pleasure car directly above the axle of the truck attachment. The fifth wheel consists of a solid frame with two cross members, between which the sliding carriage of the universal motion mechanism is mounted. This carriage is held in the center of the frame by means of two



Shock Absorbing Fifth Wheel, Showing Springs Holding Sliding Carriage in Place.

springs in slight compression. The semi-trailer is attached to the fifth wheel by means of an angle, which carries the ball of a ball and socket joint, the socket being in the carriage mentioned. A circle is mounted on the under side of the semi-trailer frame at the front. In rounding corners and in



Converted Ford Car with Semi-Trailer Attached by Means of Shock Absorbing Fifth Wheel.

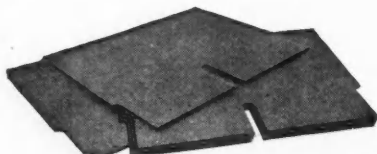
running on uneven ground, this circle comes in contact with one or the other of two broad-faced rub-irons bolted to the fifth wheel frame. The possibility of tipping the semi-trailer is eliminated in this way.



### Double Shingles Save Time and Nails

There are many things to be considered before an intelligent selection of a roof can be made. Beauty is a desirable qualification, but not necessarily essential. Durability, however, is of great importance. The roof which will "stand up" for years is surely the kind of roof which every man wants on his building.

In the manufacture of roofing materials, some notable developments have been brought about. The twin or double shingle, a number of which are shown in the accompanying illustration, is one of the interesting developments. In laying this type of shingle a great deal of time and large quantity



A Number of Double Shingles, Showing How the Individual Shingle Shapes Are Cut Into the Sheets.

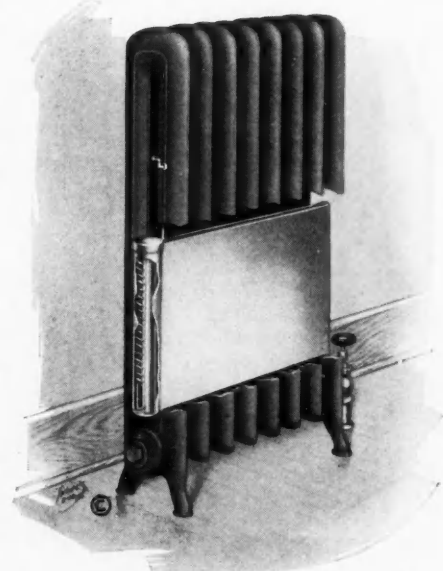
of nails are saved over what is required for the single, irregular width shingle. The shingle illustrated consists of five layers requiring six processes in its construction. The materials, from the under to the upper face of the shingle are, respectively, felt saturated with a waterproofing material, a coating of binding and waterproofing compound, a layer of crushed rock, a second layer of the compound and a top layer of crushed slate. The materials are pressed together, forming a shingle which does not curl, split or dry out. The crushed slate gives the roof surface a soft color in either red or green.



### Air Moistener with Automatic Supply Valve

Ventilating and heating engineers have for some time been co-operating with physicians in the matter of humidity regulation. It is a well known fact that a temperature of 65 degrees, with the proper amount of moisture content in the air, makes the room more healthful and more comfortable than a temperature of 75 degrees with dry air. In perfecting devices for supplying the proper moisture content, the designers have, at the same time, bettered conditions of living and effected a saving in the amount of fuel required.

The air moistener shown in the accompanying illustration is a handy device which is used in connection with either steam or hot water radiators.



The Air Moistener with Automatic Supply Valve Maintains Proper Humidity as Long as Radiator is in Operation.

When once installed it requires no further attention because of the automatic supply valve which is combined with the moistener. The supply of water is taken directly from the radiator, if the system is hot water; if it is a steam system, the water is obtained by condensation in the coil shown in the illustration.

From the supply valve or condensing coil the water passes into the copper container, which fits between the columns of the radiator. The container is open at the top, permitting the evaporation of the water and its passage as vapor into the atmosphere of the room. The automatic supply valve constantly supplies a sufficient amount of water for evaporation while the system is in operation.

Because of this supply of water which is constantly being drawn from the system, the circulation of water in the radiator is aided, in the hot water system, and the air valve, in the steam system, is unnecessary, since the air moistener serves the same purpose without any noise.

From the standpoint of health, this air moistener is interesting especially in regard to the kind of water which is evaporated. Of course, the water which comes into the hot water radiator has just passed thru the heater, as the steam has just passed thru the boiler, and since the air moistener draws its supply from the radiator, only pure, sterilized water is evaporated into the air of the room.

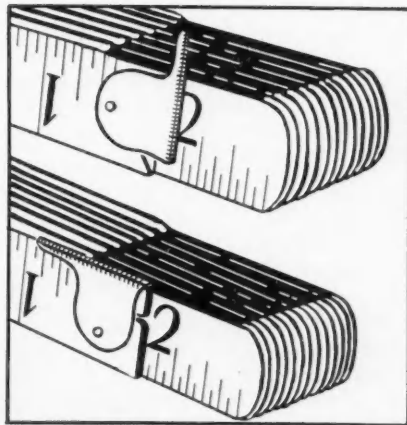
# WHAT'S NEW?



## End Hook Attachment on Spring Joint Rule

One manufacturer of spring joint wood rules has recently placed on the market the end hook attachment shown in the illustration on rules

4 to 8 feet long. Every builder has at some time felt the need of an end hook rule, especially in the longer sizes. The use of such a rule saves time and promotes accuracy. It is often possible for one man to make all necessary measurements with the end hook rule where it would require two men at least part of the time with either the tape or the ordinary spring joint rule.

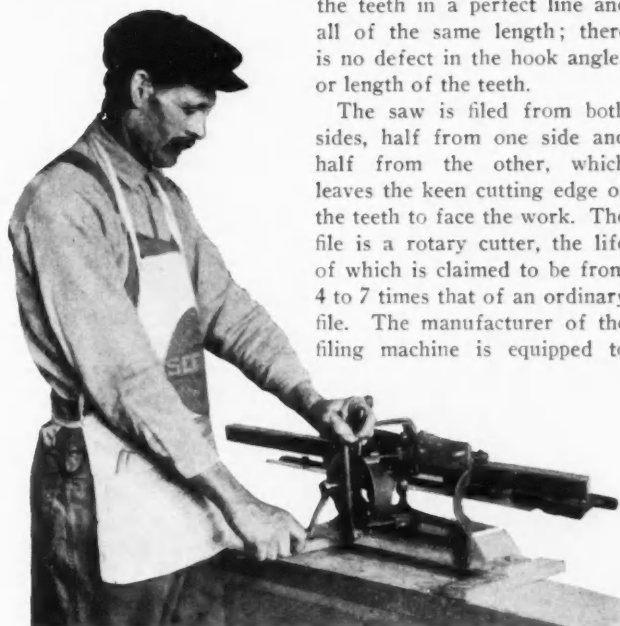


Spring Joint Rule with Folding End Hook.

## Automatic Saw Filing Machine

A machine which will file any hand saw, stiff or limber back, with any number of teeth from 4 to 12 per inch, is shown in the accompanying illustration. It requires no skill to operate the machine and the work done by the saw after being filed is accurate and clean cut. The reason for this is that a saw filed on the machine has all the cutting points of the teeth in a perfect line and all of the same length; there is no defect in the hook angles or length of the teeth.

The saw is filed from both sides, half from one side and half from the other, which leaves the keen cutting edge of the teeth to face the work. The file is a rotary cutter, the life of which is claimed to be from 4 to 7 times that of an ordinary file. The manufacturer of the filing machine is equipped to



A Machine Which Accurately Files Stiff or Limber Back Saws Having Any Number of Teeth from 4 to 12 Per Inch.

resharpen the files, this operation being possible several times before a new cutter is necessary.

The machine weighs about 25 pounds and can be secured to any work bench or other solid base with four wood screws. If desired, a base is furnished so that the machine may be used anywhere. Since the saw is clamped only at the point where the file strikes the blade, all the jar that grates on the nerves is removed, making it possible to work in the house without annoyance to anyone.

## New Furnace with Non-Clogging Radiator

The furnace shown in the illustration has, among other features, a type of radiator which is self-cleaning, there being no chance for it to become clogged with soot in burning soft coal. This type of radiator is also suitable for burning hard coal, coke and wood.

The furnace is constructed so as to be used for either a single-register or pipeless furnace, or pipes can be run from the hood as in the regular pipe furnace. The triangular bar grate is used and the grates are shaken by means of a crank inserted thru a peekhole in the ash-pit door. The fire-pot is all cast while the radiator is constructed of cast base and top and with heavy steel drum.



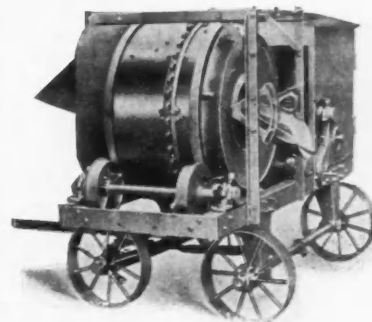
View of Furnace, Showing Diving Flue and Self-Cleaning Radiator.

## New End Discharge Mixers

One of the large manufacturers of concrete mixers has recently added two end discharge mixers to their line. These machines are notable for their compactness. Their respective capacities are 5 and 10 cubic feet of mixed concrete. The smaller of these mixers is shown in the accompanying illustration.

The machines are primarily for paving alleys, subways and bridge footings, but they are adapted to many other uses. The machines may be turned practically within their own length, and are, on this account, easy to handle in close quarters.

This manufacturer calls attention to the increasing use of mixers for mortar. Time and labor are saved by the use



Compact 5-Foot End Discharge Concrete Mixer.

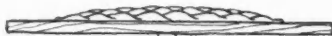
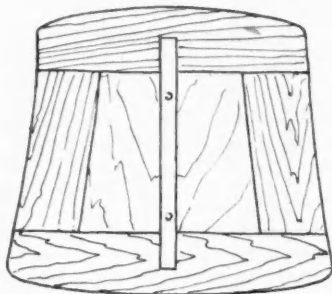
of mixers, since it is possible for one man to prepare enough mortar for about twelve brick-layers when the machine is used. When mixing mortar with a machine it is necessary to slake the lime twenty-four hours in advance, the most general practice being to use two boxes for this purpose, slaking and emptying alternately.



### Easily Attached Chair Seat

The chair seat shown in the accompanying illustration can be quickly attached to any chair having an open seat frame. It is simply necessary to tighten two bolts in order to attach it to a chair having a cane or cobbler seat or to a Vienna bent-wood chair.

A good quality of filling is used under Morocco grained imitation black or brown Spanish leather, either plain or tufted. The seat bottom is made of three-ply wood veneer stock. The manufacturers guarantee that the seats will not slip in any way when attached.



Chair Seat is Attached to Frame by Two Bolts and a Cleat.

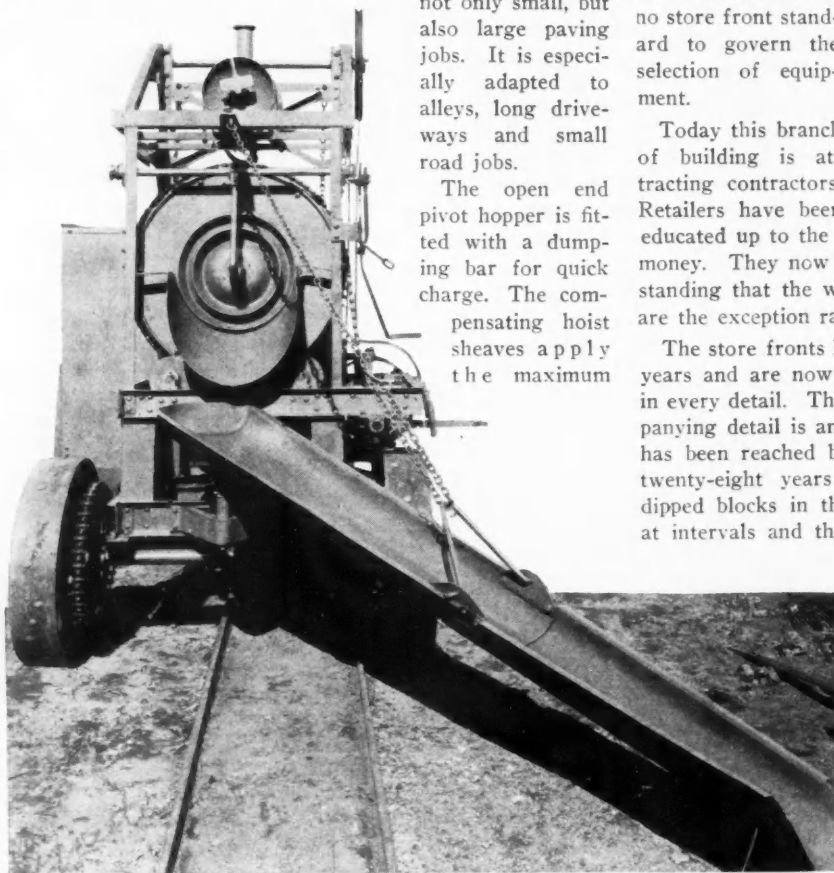


### Efficient Light Paving Outfit

The machine shown in the accompanying illustration is one of the recent developments in the concrete mixer field. It is a one-bag batch paver which is capable of handling not

only small, but also large paving jobs. It is especially adapted to alleys, long driveways and small road jobs.

The open end pivot hopper is fitted with a dumping bar for quick charge. The compensating hoist sheaves apply the maximum



New Paving Mixer, Showing Discharge End with 10-Foot Distributing Chute in Place.

speed as the hopper approaches the vertical position. An automatic knock-out prevents damaging the hopper and permits the operator to turn his attention to other duties. An automatic water measuring tank facilitates quick and efficient operation.

The distributing chute is 10 feet in length and is fitted with an intermediate gate to facilitate even spread of the concrete. The mixer end is 3 feet 11 inches above the ground, permitting a steep slope for the chute. Power is furnished by a 6-horsepower engine. Self-traction is provided. The traction gear drives thru a suitable friction clutch; the reverse gear thru a countershaft, driving each rear wheel by means of chains and sprockets. A band brake controls the speed on grades.



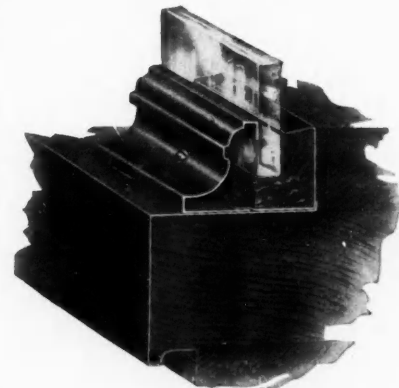
### Modern Store Fronts Are Profitable

The installation of store fronts has come to be one of the noticeable improvements found in all parts of the country during recent years. The most interesting feature of this country-wide improvement is that contractors are making a very substantial profit on the work.

There was a time when most builders were not interested in store front work because of the general lack of a fixed idea on the part of the retailers. Not so long ago it was difficult to make sufficient profit on the construction of a store front to pay for the time and work. Changes in plans were numerous and there was no store front standard to govern the selection of equipment.

Today this branch of building is attracting contractors. Retailers have been educated up to the understanding that good store fronts cost money. They now undertake this work with the full understanding that the work will cost money. Cheap store fronts are the exception rather than the rule.

The store fronts have been developed over a period of many years and are now representative of high-grade construction in every detail. The sill construction illustrated in the accompanying detail is an example of the state of perfection which has been reached by one manufacturer of store fronts after twenty-eight years of development. Notice the creosote-dipped blocks in the back section. These blocks are placed at intervals and they actually protect the glass. Because of the creosoting treatment, they last indefinitely. The simplicity of this sill construction as indicative of the like quality found in all parts of the store fronts last developed by this firm.



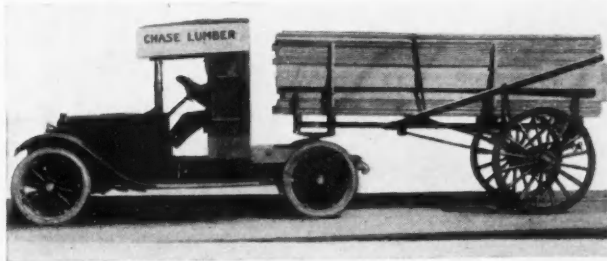
This Detail of Sill Construction Indicates the Simplicity and Strength of Modern Store Front Construction.



State forests with a total of over 3,600,000 acres have been established in thirteen states. Of these New York has the largest forests, which comprise 1,826,000 acres; Pennsylvania is second with 1,008,000 acres, and Wisconsin third with 400,000 acres.

**Tractor Semi-Trailer Hauls Heavy Loads**

The accompanying illustration shows the method used by the C. P. Chase Lumber Company, Springfield, Mass., for hauling lumber in quantities up to 5500 pounds, which is the weight of the load shown. This tractor semi-trailer was made from a 1915 touring car from which the tonneau was removed, a cab placed on the frame for the driver and a lumber wagon coupled to it by means of a patented device which allows a rocking movement between the wagon and



Touring Car Used with Wagon Gear as Tractor-Trailer by Means of Rocking Fifth Wheel Connection.

car but prevents tipping of the wagon on uneven roads and in rounding curves rapidly.

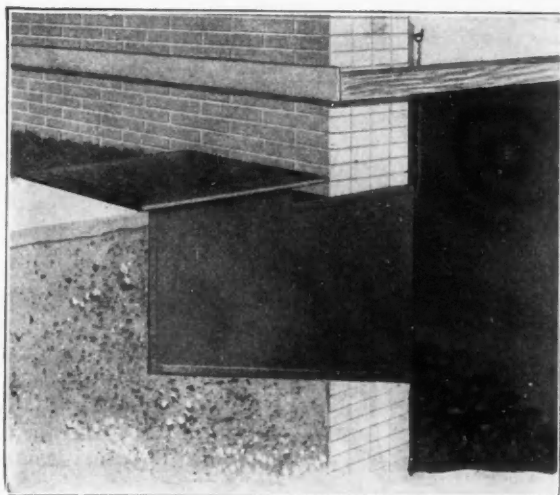
By means of this coupling device it is possible for light runabouts to easily handle a ton, about one-third resting over the rear axle and the remainder being drawn behind in the trailer. Larger cars can be converted into tractors to draw two or three tons. If the hundreds of thousands of used cars in the country were put in service as tractors, using the present horse-drawn wagons as trailers, the horses would be released for the farms where there is dire need of them at this time.



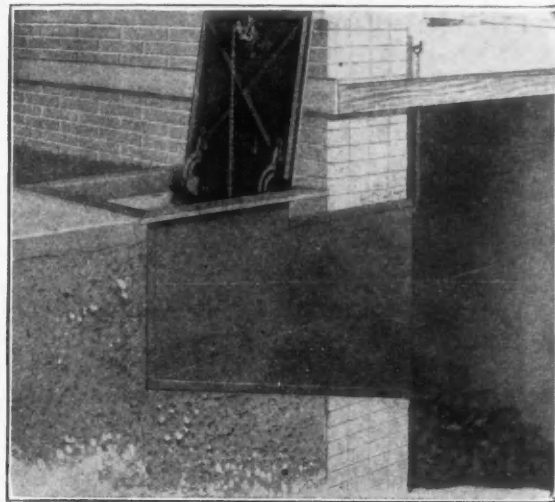
**Well Designed Grade Line Coal Chute**

The grade line coal chute shown in the accompanying illustrations has several commendable qualities. The body of the chute is constructed of sheet steel, the door is of cast iron and the hinges are of malleable iron. The hinges are of special design insuring long life. They are enclosed and may be kept in a bath of oil which prevents rust, while their strength is sufficient so that there is little danger of their ever being broken.

The locking arrangement is such that the chute is very convenient in use. To open, the chain shown in the illustration is pulled up 1/2 inch from either the first floor or basement. The coal man can then open the door. When the



The Neat Iron Door of This Grade Line Coal Chute Locks Automatically When Closed by the Coal Man.



Pulling the Chain Up One-half Inch from the Inside of the Building Releases the Coal Chute Doors.

door is closed it locks automatically. The doors are square and are made either 20 or 27 inches in size.



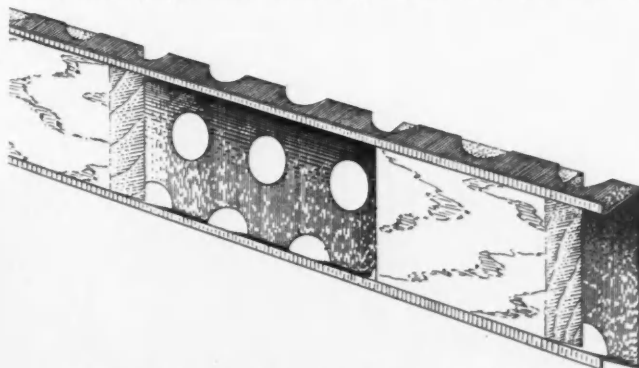
**Concrete Floor Penetrating Treatment**

A liquid concrete floor treatment is now on the market which has the peculiar property of being able to force itself into the concrete to a depth of at least one-half inch. The surface of the concrete treated with this material is impervious to dampness, is dustproof, alkali-proof and non-slippery. In its deep penetration the liquid bonds itself to the concrete and will last as long as the floor is used. The properties given the concrete by this treatment are desirable in practically every building which has concrete floors.



**Metal Screed with Adjustable Wood Plugs**

The device shown in the illustration serves as a screed in placing plaster or concrete on flat surfaces and at the same time provides for the placing of grounds wherever desired for nailing moulds, rails, sleepers, base, trim and such like. The wood plugs have a face 1/4 inches wide and may be



Wood Plugs May be Moved Along the Metal Channel to Any Point Desired.

moved to any desired position along the length of the metal channel.

To use this screed, stick the metal channel to the wall or rough concrete floor and move plugs to desired position. Then plaster in flush with the edge of channel. As many plugs may be used as desired. The stock length is 10 feet and 750 plugs are furnished with each 1000 lineal feet of the screed.

**Easily Installed Hoghouse Skylight**

One of the principal characteristics of the hoghouse skylight shown in the accompanying illustration is its ease of installation. It is so designed that very little work is required to set it in place, and no putty is required to make it waterproof.

The style shown in the illustration is one of four, each of which is made in three sizes. The window is made of high grade galvanized iron and the workmanship is of the quality which may be expected of a firm which has had 25 years' experience in the manufacture of skylights for every purpose. The ventilating feature included in two of the styles and shown in the illustration consists of an opening device which holds the window clear of the curb at the bottom. The ventilating window is hinged to the curb at the top.



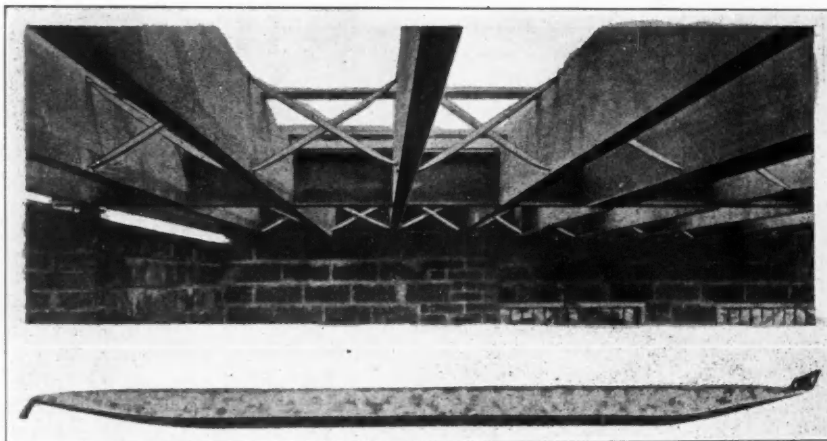
Hoghouse Skylight with Metal Curb and Flashing Ready to be Installed on Roof.

**Metal Bridging for Wood Joists**

The metal bridging shown in the accompanying illustration is made from a blank of sheet metal so stamped that it resists bending, and provided with nailing flanges turned at the correct angle for easy nailing. Nails are driven directly into the joists, thus saving time and insuring a solid anchorage.

A further saving is effected by the fact that this bridging requires no sawing, no mitering and no measuring. It comes ready to use in the size required for any depth or spacing of joists ordinarily used in building construction. Sizes are made for 10, 12 and 14-inch joists spaced 12, 16 and 24 inches on centers. The sizes are based on joists 1 7/8 inches thick, but the bridging will work satisfactorily on joists 1 3/4 or 2 inches thick.

Another of the important advantages of the metal bridging is the small space needed for hauling and storing. One thousand pieces of the bridging are packed in two small wood crates, each only 5 by 12 by 16 1/2 inches, for 10-inch

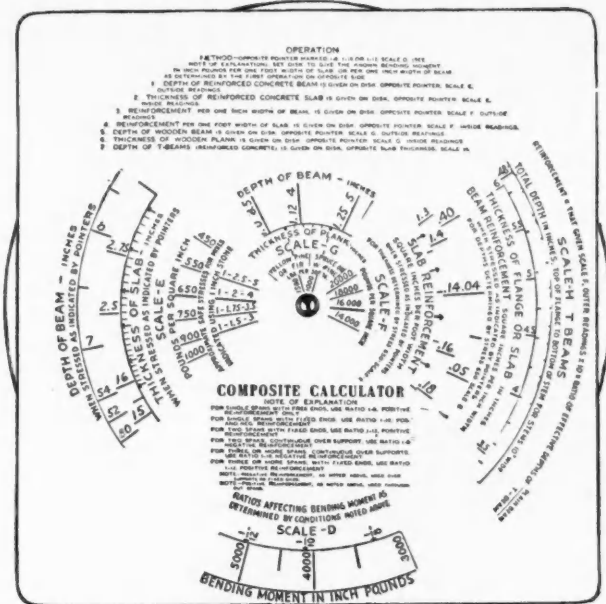


Floor System Using Wood Joists with Metal Bridging and a Closer View of Bridging Which is Stamped from a Single Blank of Metal.

joists spaced 12 inches on centers. The same number of pieces of wood bridging for similar joists and spacing would make a column six inches wide by about 12 inches long in cross section and practically 36 feet in height.

**Handy Calculator for Reinforced Concrete and Wood Members**

The calculator shown in the accompanying illustration is capable of a wide range of design and checking calculations resulting in a saving of time and trouble. Among other results which are determinable in design calculations are the following: Size of reinforced concrete plain and tee beams, thickness of slabs, reinforcement for plain and tee beams and slabs, size of various kinds of wooden beams, and thickness of wooden planks and boards.



Calculator Which Enables Operator to Make Rapid Determination of Beam Dimensions and Reinforcement and Check Loading and Dimensional Values for These Members in Concrete and Wood.

The calculator may also be used for checking the safe load which a given size of beam or slab will carry, for comparing the relative sizes of plain and tee concrete beams, for taking into effect the action of built-in beams of one span as well as the continuous action of several spans, for directly comparing the relative size of concrete shapes with those of various kinds of wood and for multiplying and dividing as on the ordinary slide rule with the additional advantage that the result is pointed off. All computations for concrete are based upon the Joint Committee recommendations, using the Straight Line formula.

The American Builder Information Exchange will be pleased to furnish on request the name and address of the parties responsible for any of the interesting novelties or improvements described in these columns.

# Concrete Construction



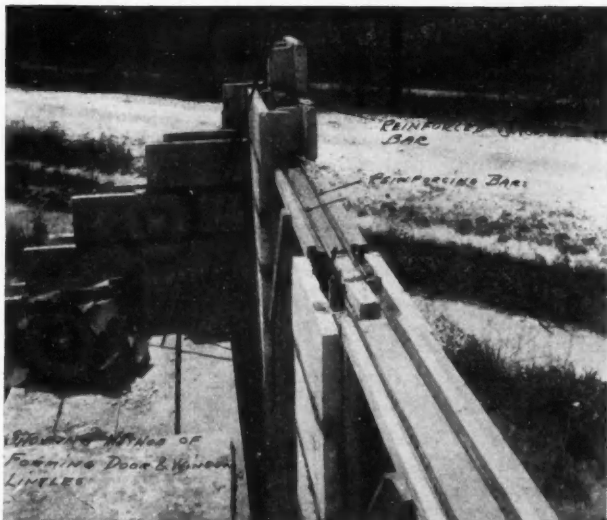
## The All-Concrete House

By H. Colin Campbell

CONCRETE construction has long been recognized as representing wise investment or security when typified in industrial buildings. It has not, however, received the consideration which it deserves from this standpoint in residence construction. Probably there are a number of satisfactory reasons

buildings has led to many extensions of its use in home building. Many persons, however, are still misinformed as to what really constitutes a concrete house. In the minds of many the stucco house—cement plaster on frame construction—is a concrete house. Few of the possibilities of concrete as a structural material are realized unless it is used consistently. Unless the concrete house is all concrete, it is a concrete house only in name.

Probably the greatest drawback to the execution of



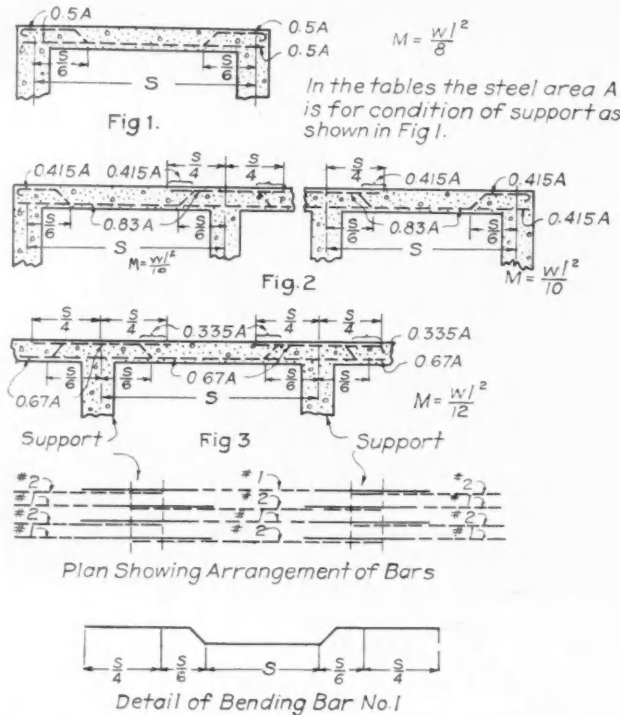
Detail View During Construction of Concrete House, Showing Corner Construction and Method of Forming Window and Door Lintels.

why this is so, principal among which may be the one that in residence construction concrete is still so new a material that builders who have been accustomed, in the past, to building with other materials have not yet qualified themselves to design or execute concrete construction.

The industrial building is usually the product of combined architectural and engineering talent. The ordinary house, however, has more often than not been the expression of the builder rather than the architect. The widespread adoption of concrete in industrial



A Beautiful Small Residence Built of Concrete Blocks.



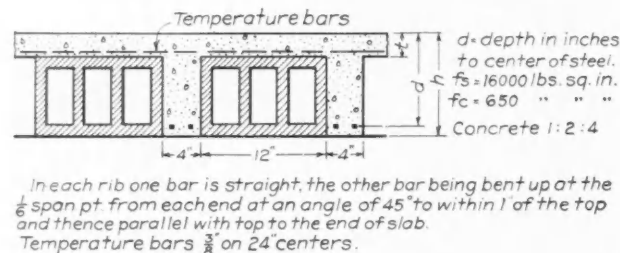
Half the bars are straight and extend over supports at each end. Half the bars are bent at  $\frac{1}{6}$  point and go in top at  $\frac{1}{4}$  pt. in adjoining span.

Conditions of Supports For Slabs and Beams.

the all-concrete house is inability of many willing builders to design floor systems. As an aid to this, the accompanying tables and sketches will be found of value.

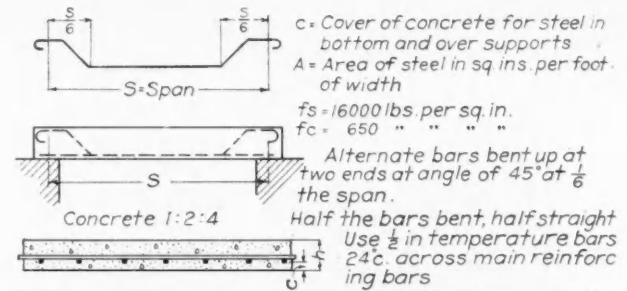
Several of our well-known industrial towns, notably Gary, Ind., are concrete built.

With the increasing cost of materials and labor and the consequent increase in cost of building, concrete no longer suffers the handicap of being more expensive than other materials; in fact even in the past this handicap did not really prevail. The increased cost of concrete construction was often due to inexperience on the part of the contractor who bid higher than necessary to safeguard himself. The elimination of maintenance, such as painting and other annual repairs that are required for frame construction will, in any local-



Span in feet	12	14	16	18	20
h - Inches	5½	6½	7½	8½	10
d - "	4½	5½	6½	7½	8½
t - "	1½	1½	1½	1½	2
Tile - "	4x12x12	5x12x12	6x12x12	7x12x12	8x12x12
A Sq. ins. per rib	0.429	0.480	0.565	0.670	0.785

Concrete and Clay Tile Floors for Residences—One-Way Reinforcement.



Span in feet	3	4	5	6	8	10	12	14	16	18	20
h - inches	3	3	3	3	3½	4½	5½	6½	7½	9½	10½
C - "	½	½	½	½	½	½	½	½	½	1	1
A. sq. ins.	0.38	0.67	1.05	1.50	2.37	3.29	4.06	5.00	5.95	7.30	8.40

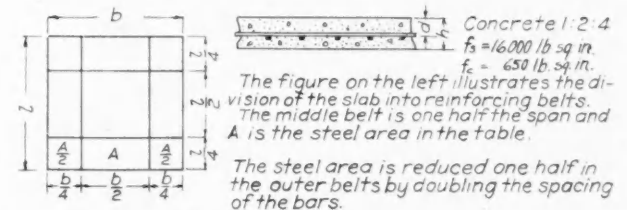
Concrete Floors for Residences—One-Way Reinforcement.

ity, soon offset any slight increase of first cost that may prevail. The all-concrete house being fireproof need not be insured. Here again is real profit from the investment standpoint. Being as nearly permanent as we know how to build today, the concrete house is practically imperishable security for the investor, speculator or owner.



Patching Concrete Floors

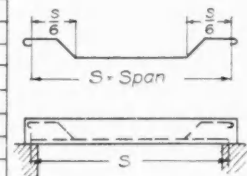
Mr. W. P. Anderson, president of The Ferro Concrete Construction Co., states that his company often uses a method of patching concrete floors which is much cheaper and requires far less time than the method commonly used. Mr. Anderson's method requires the use of a mastic material made from a mixture of asbestos fiber and rubber gum. This mixture is applied with a trowel after thoroly cleaning the damaged surface. Very little cutting of the old concrete is necessary, other than to break off loose particles. The gum can be worked to a feather edge so that it will readily join with the undamaged concrete surface and eliminate the under-cutting required with the old style of patch.



Limit of two-way  $\frac{l}{b} = 1.5$   
 When  $\frac{l}{b} > 1.5$  use one-way reinforcement

In placing steel bars, the bars across span  $b$  are below the bars across span  $l$ .

b	A	l	A	d	h
in feet	Sq. in.	in feet	Sq. in.	inches	inches
8	0.108	8	0.108	2½	3
8	0.161	10	0.084	"	"
10	0.147	10	0.147	2½	3½
10	0.206	12	0.145	"	"
12	0.207	12	0.207	3	4
12	0.277	14	0.185	"	"
12	0.318	16	0.106	3½	4½
14	0.237	14	0.237	4	5
14	0.305	16	0.224	"	"
14	0.376	18	0.164	"	"
16	0.290	16	0.290	4½	5½
16	0.366	18	0.273	"	"
16	0.410	20	0.212	5	6
18	0.365	18	0.365	"	"
18	0.433	20	0.353	"	"
20	0.431	20	0.431	5½	6½



Concrete Floors for Residences—Two-Way Reinforcement.



# Fundamentals of Reinforced Concrete Design

## In Three Parts Part 3

A TREATISE PREPARED AS A SHORT COURSE FOR MANUAL TRAINING AND VOCATIONAL TEACHERS

By Ernest McCullough

Chief Engineer, Fireproof Construction Bureau, Portland Cement Association.

### Bond

Experiments have shown that 70 pounds per square inch is a safe allowance for bond in order that the steel and concrete may act together. The coefficient of expansion of the two materials is practically the same, so we need not fear a separation under extreme variations in temperature.

Assuming the two materials to act together and the safe bond stress is 70 pounds per square inch, what length of embedment is necessary for a bar 1 inch square stressed 16,000 pounds per square inch?

The 1-inch square bar has 4 square inches of surface for each inch of length.

$$\frac{16,000}{4 \times 70} = 57.142 \text{ inch embedment required.}$$

Four 1/2-inch square bars have the same area as one 1-inch square bar, but the surface = 4 (4 x 1/2) = 8 square inches and the length of embedment

$$\frac{16,000}{8 \times 70} = 28.57 \text{ inches}$$

When a large bar having sufficient area to carry the tension is found to be deficient in bonding area, smaller bars may be used. The stress is the maximum tensile stress in the reinforcement at the point of maximum bending moment, and the reinforcement each side of this point must be long enough for bond.

### Bending up Steel

The bending moment decreases toward the supports and when a number of bars are used they may gradually be decreased in number, always allowing not less than two to go the full length in the bottom. The other bars are turned up a short distance past the point where they are no longer needed for direct tension, being carried to within an inch of the top of the beam on an angle of 45 degrees or less, and thence horizontally to the supports. Half the steel area may thus be bent up at 0.23 of the span from the support, one-half the remainder at 0.15 of the span and one-half of the remainder at 0.10 of the span. These rules are closely approximate and apply only to uniformly loaded beams. Exact rules are given in text-books. Bent up steel assists in reinforcing the web or body of the beam and thus strengthens the beam against failure by shear.

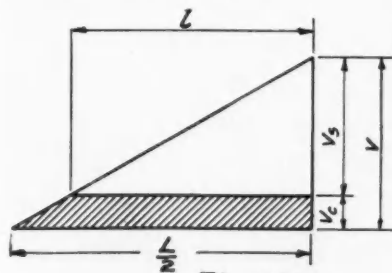


Fig. 13

A Unit Vertical Slice of a Beam.

### Stirrups

Stirrups should be fastened to the tension steel, not merely looped around it. They should extend far enough above the neutral axis to develop bond. The stress in the stirrups is tension and it is equal to the tension in the concrete multiplied by the ratio of deformation at the instant the concrete cracks, when the whole stress is immediately taken by the steel. The stress used for stirrups should not exceed 75 per cent of the stress in the tension reinforcement.

Figure 13 represents a unit vertical slice of a beam.

- $V$  = total vertical shear at any section.
- $w$  = load in pounds per lineal foot.
- $L$  = span of beam in feet.
- $b$  = breadth of beam in inches.
- $d$  = depth to center of steel in inches.
- $j$  = moment arm (percentage of  $d$ ).
- $v$  = unit shear.
- $v_c$  = unit shear carried by concrete.
- $v_s$  = unit shear carried by steel.
- $l$  = distance in inches to point where concrete alone can carry the shear.

$T'$  = total tension of horizontal shear due to shear carried by the steel.

- $D_t$  = diagonal tension at neutral plane.
- $f_s$  = unit tensile steel stress.
- $A_w$  = area of web steel =  $A_b + S_a$ .
- $A_b$  = area of bent up bars.
- $S_a$  = area of stirrup steel.

Then (for uniformly loaded beams)—

$$(1) V = \frac{wL}{2} \text{ at supports} = \frac{wL}{2} - wx \text{ at any point distant } x, \text{ from support.}$$

(See Fig. 11.)

$$(2) v = \frac{V}{jdb} \text{ (max. 120 lb.)} \quad (3) v_s = v - v_c \text{ (} v_c = 40 \text{ lb. per sq. in.)}$$

$$(4) l \text{ (in ins.)} = \frac{6v_c L}{v} \quad (5) T' = \frac{Lv_s b}{2}$$

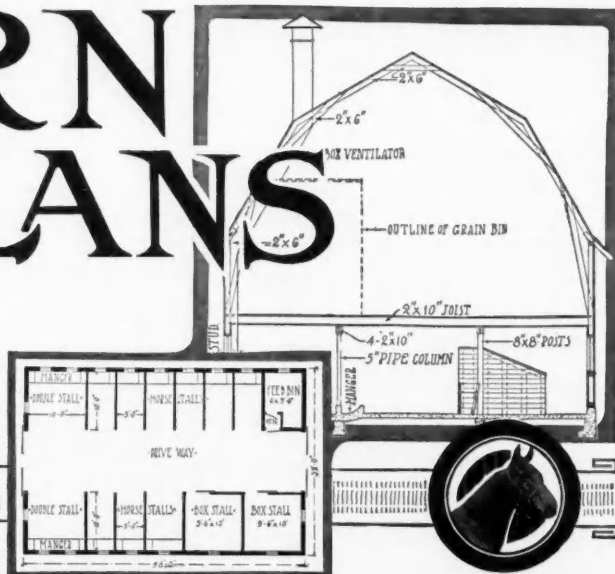
$$(6) D_t = \frac{T'}{\sqrt{2}} = 0.707T' \quad (7) A_w = \frac{D_t}{f_s}$$

$$(8) S_a = A_w - A_b$$

The stirrups should be equal in area and the intervals should increase by increments of 50 per cent or logarithmically, the greatest interval being equal to  $d$ . The area of steel in the bent up bars should be neglected when it is more than 0.15L from the supports,

(Continued to page 130.)

# MODERN BARN PLANS



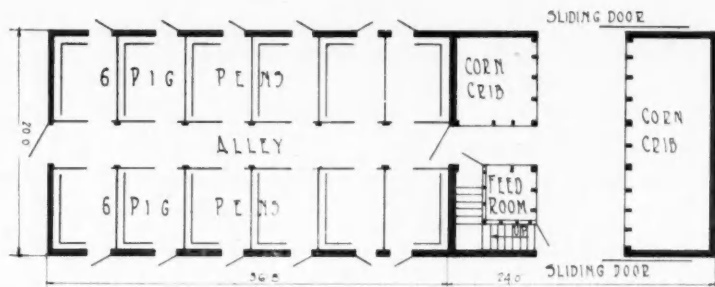
## Hog House With Attached Corn Crib

In order that minimum of time and labor may be required in caring for the hogs, the building shown in the accompanying illustrations has been designed. This structure is a combined hog house and corn crib so arranged that every possible facility for feeding the stock has been provided.

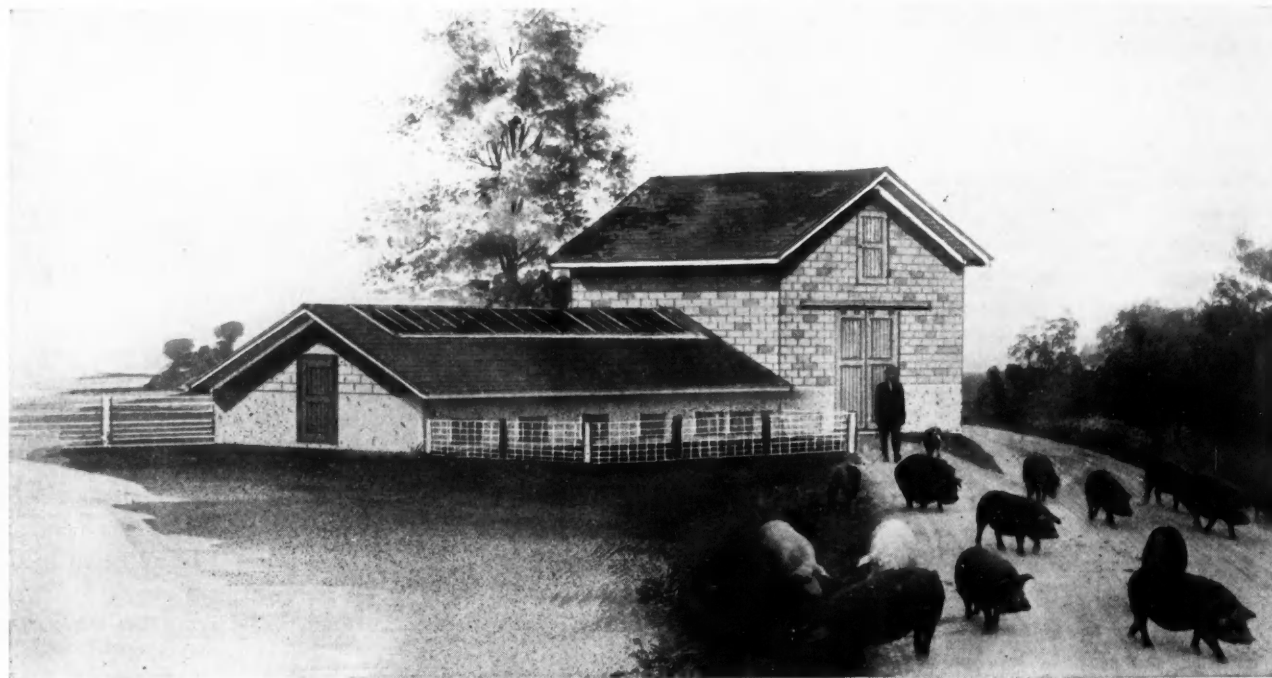
The foundation walls are of concrete, which material has been carried up in the side walls to the plates in the hog house, above which elevation the walls of the corn crib and the gables of the hog house are built of hollow tile blocks. In order that proper ventilation may be provided in the corn crib, a special ventilating tile block is used in the walls of this part of the building. There is a small feed room in the corn crib near the entrance to the central alley in the hog house.

An abundance of sunshine is admitted to the pig pens thru two sets of windows, one in the side walls and the other in the roof. The latter set may be of the ventilating type which will provide the best conditions possible for housing the animals. Pens

are of a size such that each will accommodate five or six pigs, which is as many as should be kept together. Gates are provided in the pens next to the central alley so that the animals may be easily moved from one pen to another. The side wall windows are hinged at the side and are also used as gates to the yard. Pens should be fitted with guards and false wood floors built in the form of racks so that the hogs will not be required to lie in contact with the cold concrete floor. The floor racks are easy to clean.



Plan of Combined Hog House and Corn Crib.



Combined Hog House and Corn Crib of Concrete and Hollow Building Tile Blocks Capable of Housing From Sixty to Seventy-five Animals in the Best Possible Conditions and with a Minimum Amount of Labor.



A Model Small Cow Stable Which Has Been Combined with a Hay Barn and Equipped with Silo and Feed Bins in Such a Manner That the Stock May be Very Easily and Carefully Taken Care of.

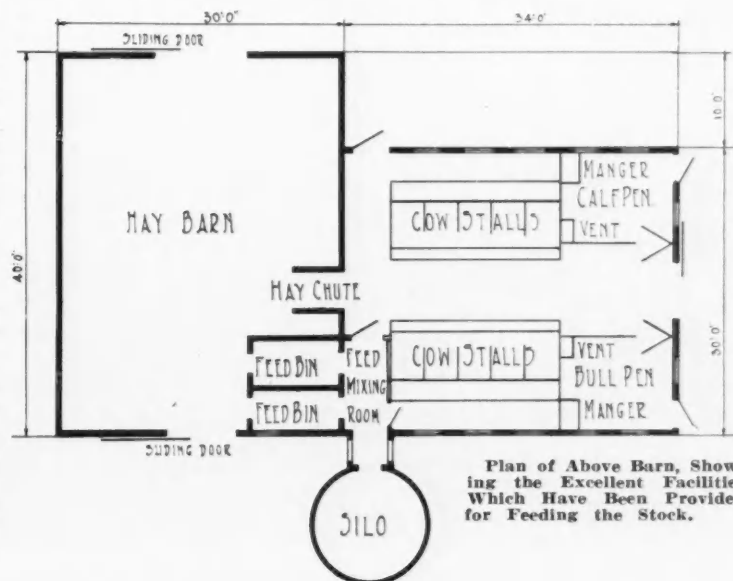
**Combined Cow Stable and Hay Barn**

A building in which a small herd of high bred cattle may be taken care of in the manner which their value makes advisable, is shown on this page. The stable ell contains stalls for ten cows, a pen for calves and a bull pen. The stalls are arranged so that the animals face out. Modern sanitary equipment should be provided in the stable. Because of the size and layout of this building, it would hardly be necessary to install special equipment for handling feed and roughage.

The silo is located at the junction of the two parts of the building, at the end of a passage which is intended for a feed mixing room. There are two feed bins built into the hay barn along one side of this passage. The feed alley for one set of stalls is entered directly from the feed mixing room. At the end of the central passage in the stable, the hay chute is located. The facilities for feeding which are provided in this building could hardly be improved upon.

The structural details of the building follow the latest methods of farm building construction. Concrete foundations are used thruout. The foundation walls are carried up far enough from grade so that the wood framing members will not be effected by moisture. The stable is framed out of light plank with light trussed gable roof set upon the plate mounted on wall studs. The hay barn is framed with plank, the roof being of the self-supporting type in which the mow space is unobstructed by cross members.

Lighting and ventilating are adequately taken care of in the stable. There are twelve large windows and a metal ventilator is installed on the roof. Air admitted along the walls of the stable is exhausted from the center of the building so that a constant supply of fresh air is delivered at the heads of the cows. Air vents terminate in the calf and bull pens. The feed mixing room is lighted by two windows in the walls of the passageway between it and the silo.



Plan of Above Barn, Showing the Excellent Facilities Which Have Been Provided for Feeding the Stock.



# Model Home Designs

## Interesting Treatment for a Bungalow

A well proportioned combination of concrete, stone, rustic siding and art glass gives to this bungalow an exceptionally attractive appearance.

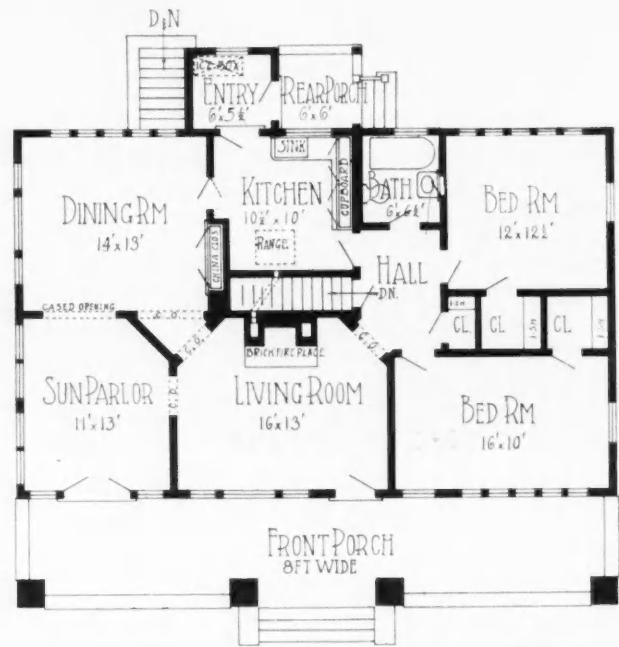
This home is intended for a lot that lies well above the street level and will show to best advantage when so located. A large plat of ground is necessary to set it off to the best possible advantage, for the beauty of this house, like that of all others, is enhanced by tastefully arranged shrubbery, which forms the setting for the jewel.

The piers and porch rails are built of white art cement blocks. White sandstone or white field stone could be used, but a dark material would detract from the appearance of the building. If locally available the stone might be used economically.

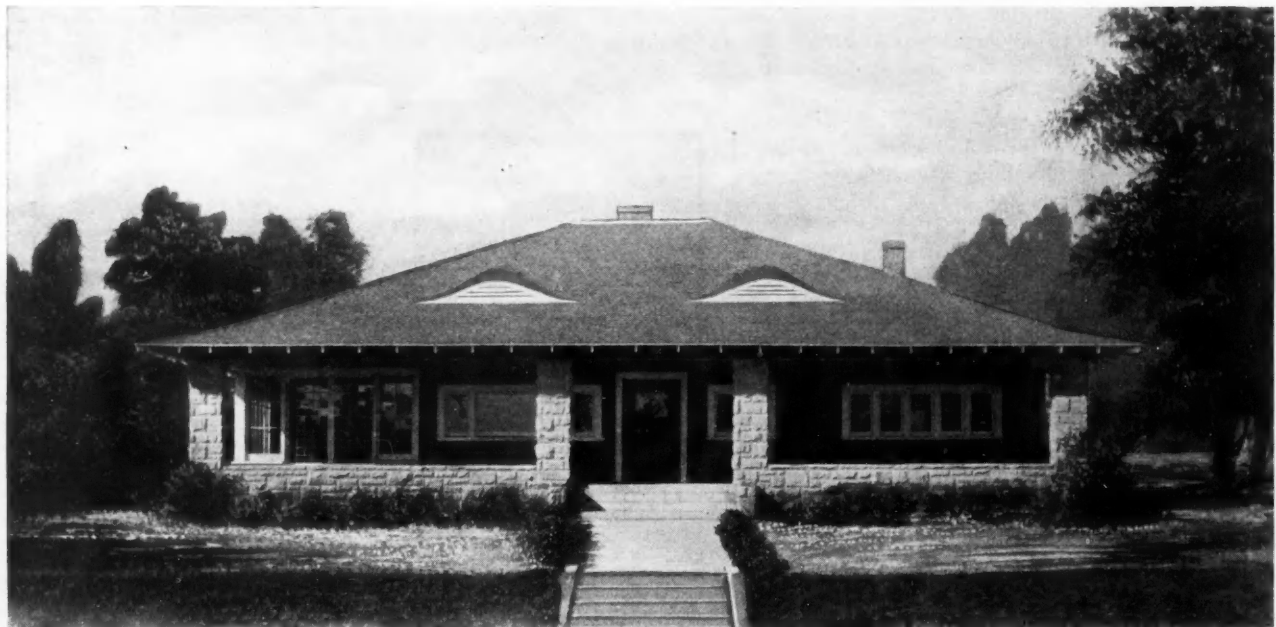
The oval dormers break up the wide expanse of roof and add to the beauty of the picture.

The long front porch is an added attraction and comfort. In warm weather it will prove a pleasant alternative to the sun parlor.

A good combination of reds, or red and brown, for shingles and rustic siding with the trim in white, as shown, would constitute a tasty treatment of the exterior. The color treatment of the roof should be regulated by the surroundings; the old rule—red with, green without, trees, being applicable in this case.



Floor Plan of Bungalow Shown Below. Size, 45 Feet by 27 Feet 6 Inches.



This Bungalow Presents a Striking Appearance and Embodies Several Ideas in Design Which Are Decidedly Unusual

**This Type Found Popular in West**

The type of home shown in the accompanying illustration has been found popular in Bozeman, Mont., by G. A. Ensinger, contractor and builder, who planned and built the home illustrated last year. He reports having sold five houses of this type last year and finds that they are very practical and economical from every standpoint.

As a matter of fact, the design embodies everything that could be wished for in the way of pleasing appearance in addition to the characteristics just mentioned. The hip roof bungalow type depends for its appearance upon just the right pitch of the roof surface and upon just the right placing of dormers, chimneys and other relieving breaks in these surfaces. The design here shown seems to have been carefully studied out with respect to the effect which the roof produces. There is no evidence of monotonous roof surface, the vertical dimensions are perfectly balanced and the decorative treatment is very appropriate and effective.

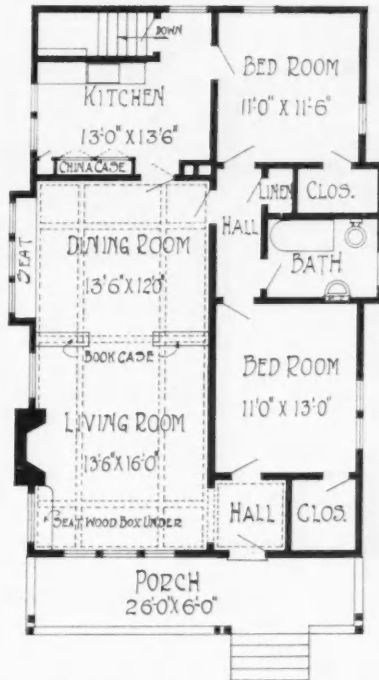
The walls are finished with beveled siding and are broken up with bays, the outside-built chimney and numerous windows. The exterior trim is simple but the effect which it produces is very pleasing. The extension of the porch frieze entirely around the house is an effective treatment. The method of constructing the porch rail and the plain square column roof support above the porch are noticeable features of the front exterior. It will be noticed that the foundation wall is extended up far enough above grade so that generous-sized basement windows may be used. This house has a basement under all parts except the

porch. Especial attention was given the location of the furnace, which was placed directly under the bathroom so that heat radiated from it in the basement would prevent the freezing of pipes leading to the bath room. The large windows make the basement a well lighted and easily

room may be reached. A cased opening is used into the living room, which has a beamed ceiling in common with the dining room. The ceiling effect is also carried out into the hall. The fireplace is centered in the outside wall of the living room and a seat with removable top exposing a box beneath, is built into the corner from the fireplace to the front wall of the house. A bookcase colonnade divides the living room and the dining room. In the dining room bay there is a built-in seat below the three large windows.

The kitchen is generous in size, well lighted and arranged to provide convenience in the handling of the work in this part of the house. The china case is handy to the dining room. A double-acting door is provided between the dining room and kitchen. The cellar stair is reached from the kitchen.

A central wall separates the part of the house so far described from the sleeping rooms and bath. The arrangement of bed rooms is the one which is best adapted to bungalow construction. The bath is placed between the two bedrooms and a hall is extended between them, making the bed rooms independent of one another. The hall connects with the dining room. The bedroom closets are of generous size and a small linen closet is provided in the hall.



Floor Plan of the Ensinger Bungalow.

ventilated part of the house, giving it the value from a service viewpoint which the basement of a one-story house should have.

The interior arrangement is commendable for its convenience and comfortable simplicity. Entrance from the front porch is into a small hall from which either the living room or the front bed

“You understand your duties thoroly, don't you?” said the station master to the new train caller.

“Yes, sir; certainly, sir.”

“And you know your way to announce?”

“Well, sir, I wouldn't go so far as to say that, but I know my weight to a pound or so.”



Perspective View of the Type of Bungalow Which G. A. Ensinger, Contractor and Builder, Has Found Popular in Bozeman, Mont.

### A Massive Type Bungalow with Concrete Porch

A notable feature in this bungalow is its massive and plain exterior appearance. The heavy braces supporting the eaves, the eaves extending well out and the heavy porch pillars all help to bring out a more massive and low flat type of bungalow. The chimney built on the outside has its effect and with the other features makes the house very distinctive and original.

This design shows an interior well in keeping with the exterior. All the features tending to bring out a massive and open appearance have been embodied in the design of the interior. The living room is exceptionally large and the front door enters directly into it. The fireplace on the outer wall is of massive design. There are bookcases built on either side of the fireplace with high windows above. These, with the bookcases, not only help to bring out a more artistic appearance of the fireplace, but also add to the general homelike spirit and attractiveness of the entire room.

A cased doorway connects the dining and living rooms. This is sufficiently wide so that a good view of the dining room can be had from the living room. It makes either of the rooms have a larger appearance and still is not such that the dining room and living room appear to be one room. The beamed ceiling in the

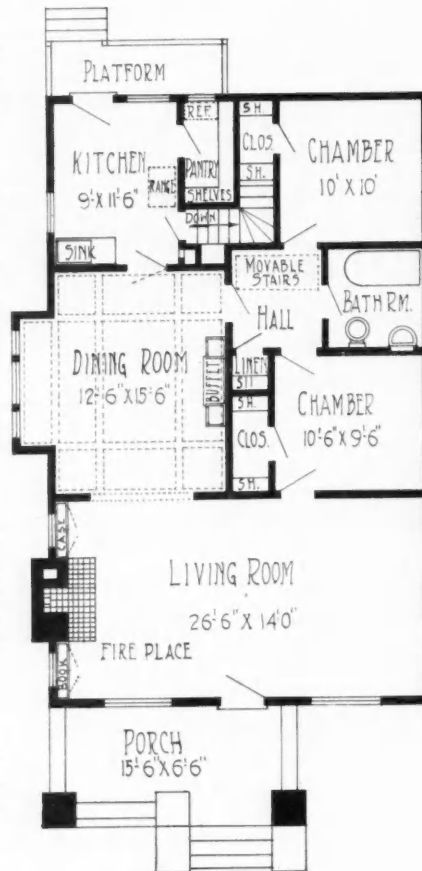
dining room is a thing which adds to quaintness, a thing desired by the bungalow builder. The bay window

has three windows which makes a very light room, and the buffet built on the opposite side of the room from the bay window is usually looked on with much favor by the housewife.

The kitchen is convenient in that it is entered directly from the dining room. It is sufficiently large and has a very spacious pantry. One nice feature of the pantry is that it is large enough to accommodate the refrigerator and is so arranged that the refrigerator can be placed next to the outside wall of the house. This makes it possible to fill the refrigerator with ice from the outside thru a door which need have no lock. It does away with the dirt tracked in when filling the box.

The hall from which the bathroom and chambers radiate is well located and a linen closet opens off from it. This location of the linen closet makes it handy, for it is only a few steps from the dining room, either chamber and the bath, the three principal places where linen is used.

The large closets asked for by many home builders are present in both of the chambers. There is also a convenient attic in which things may be stored. It is entered by movable stairs in the hall ceiling. When it is desired to use these stairs they are simply pulled down, and when they are up and not in use the stairs are only noticeable as a panel in the ceiling.



Bungalow Floor Plan. Size, 27 Feet 6 Inches by 43 Feet.



The Ornamental Details of This Little Bungalow Are Interesting. Concrete Has Been Used Effectively in the Porch and Chimney Construction.



# How to Layout a Stair with Winders

By Morris Williams  
Lesson 8

Note: Lessons 1 to 6 appeared in the issues of AMERICAN BUILDER July to December, 1916, and Lesson 7 in April, 1917.

**T**HE plan of the stairway shown in Fig. 47 was sent to the editor as a query from John Webb, Woodstock, Canada, accompanied with a request of an explanation pertaining to the methods of laying out all the detail items of construction.

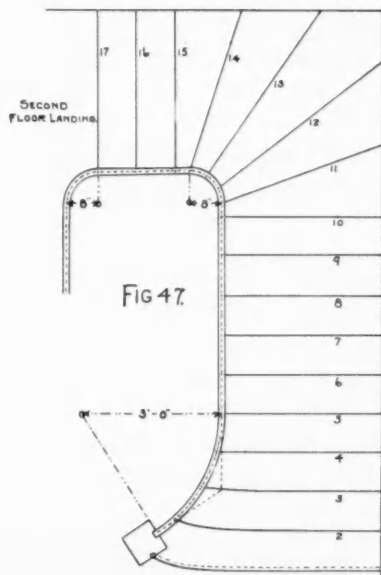


Fig. 47. The Plan of the Stairway.

The handrail as shown consists of 3 different curves; the bottom one less than a quadrant, the other two full quadrants, but different in that one is placed between two flights and the other at a landing, the first containing three winders and the other none.

Regarding the bottom curve, we need say but very little, having already shown how to lay out such a rail and bend the stair stringer.

However, it may be better just to run over briefly the method to lay out the rail and do so by the same operation, as we have already explained.

Let Fig. 48 represent its plan and elevation. Point C' in the elevation is fixed at the height of 5 risers from the floor line because we find the same to be contained in the plan curve.

Thru this point draw the pitch of the straight rail

and prolong it as shown to M. From A in the plan draw a line to N and therefrom the line N M square to the pitch.

To lay out the face mould, transfer the pitch line D' C' B' M', as shown, to Fig. 49, and draw a line from M' perpendicular to it as

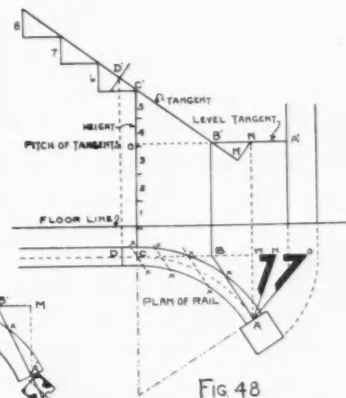


Fig. 48. Development of the Bottom Curve Tangents.  
Fig. 49. The Face Mould for the Bottom Curve Wreath.

shown to A' and connect B' A', which will be the bottom level tangent in its correct position upon the face mould, the other will be the line from B' to C' continued to D'.

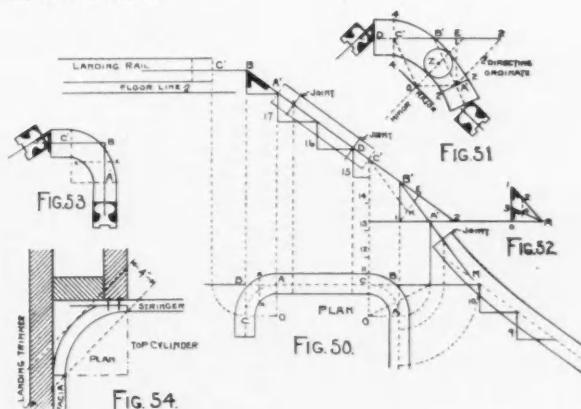


Fig. 50. Elevation of the Steps and Pitch of the Tangents for the Two Quadrant Curves.  
Fig. 51. Face Mould for the Wreath Over the Intersecting Quadrant Between the Two Flights.  
Fig. 52. The Twisting Bevels.  
Fig. 53. Face Mould for the Top Quadrant.  
Fig. 54. Plan of the Top Cylinder.

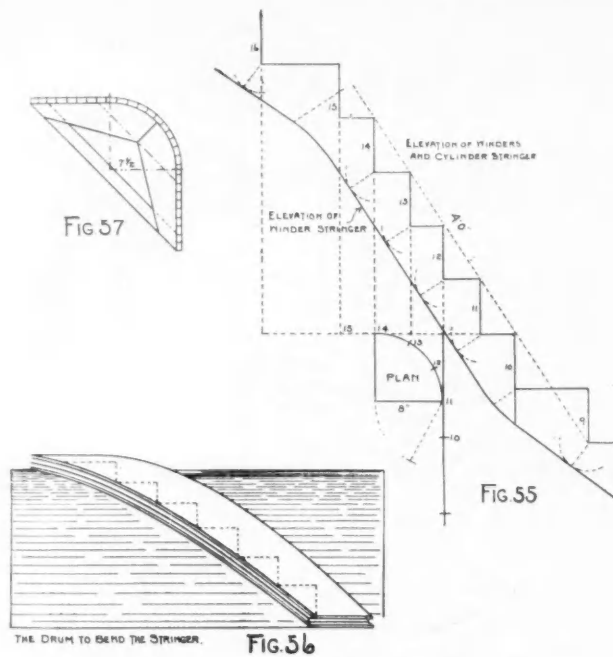


Fig. 55. Elevation of the Winders and Cylinder Stringer.  
 Fig. 56. Showing How the Stringer Is Bent Upon a Drum.  
 Fig. 57. The End of the Drum.

Now divide the tangent  $B' C'$  into three equal divisions and thru the points draw the lines shown parallel to the level tangent  $B' A'$ .

Mark the dots  $x, x$ , etc., upon these lines at distances from the tangent  $B' C'$  to correspond to those shown upon the level lines across the plan rail in Fig. 48 and thru the points trace the face mould curves. The twisting bevels are found as shown in Fig. 48. Make  $WN$  equal  $MN$  and  $WO$  equal the height from  $O$  to  $C'$ . Both are to be applied directed towards the inside of the wreath, as shown in Fig. 49.

In Fig. 50 is shown the plan and elevation of the two quadrants. Thru point  $C'$  in this figure, the pitch of the straight rail is shown continued through  $B'$  to 2 and from  $B'$  a line is drawn through  $A'$  to cut the pitch of the bottom straight rail in  $M$ , indicating the need of an easement in the straight rail at this point.

The face mould for the wreath of the bottom quadrant is shown in Fig. 51.

The line  $DC' B' E^2$  has been transferred from Fig. 50, there shown bearing the same reference letters. From  $E$  drop a perpendicular line and from  $B'$  with the length of the bottom

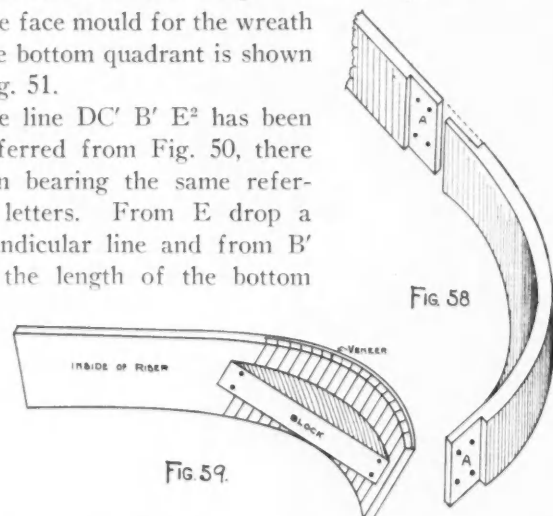


Fig. 58. Showing the Stringer After Bending and the Method of Fastening to the Straight Stringer.  
 Fig. 59. Showing Inside of the Riser Kerfed and Blocked.

tangent  $B' A'$ , Fig. 50, cut it in  $A'$  as shown.

The face mould tangents are the lines  $C' B'$  and  $B' A'$ .

By drawing lines parallel to them, as shown, to intersect in  $O$  a line drawn thru  $O$  parallel to  $A'^2$  will be the minor axis and another thru  $O$  square to the minor will be the major axis. Measure from  $O$  to  $Z$  upon the minor a distance equal the plan radius  $OA$ ,

(Continued to page 124.)



### A Breakfast Nook

Designed by Ralph W. Ermeling, Architect

WE are all looking for labor-saving devices, and the modern housewife, with small children especially, who does most of her own housework, will welcome anything that will save time and labor. A breakfast nook or alcove is a real advantage in providing a place where the simple morning meal may be served with less effort than in the dining room. The nook with its table also provides a play space for the small child within eyesight of its mother working in the kitchen.

In the house whose breakfast room is illustrated here the pantry projected into the kitchen, leaving a space approximately 9 by 7 feet as a part of the kitchen connecting with the dining room. This space has been made into a breakfast room or nook with a china case built in at the other side of the passageway.

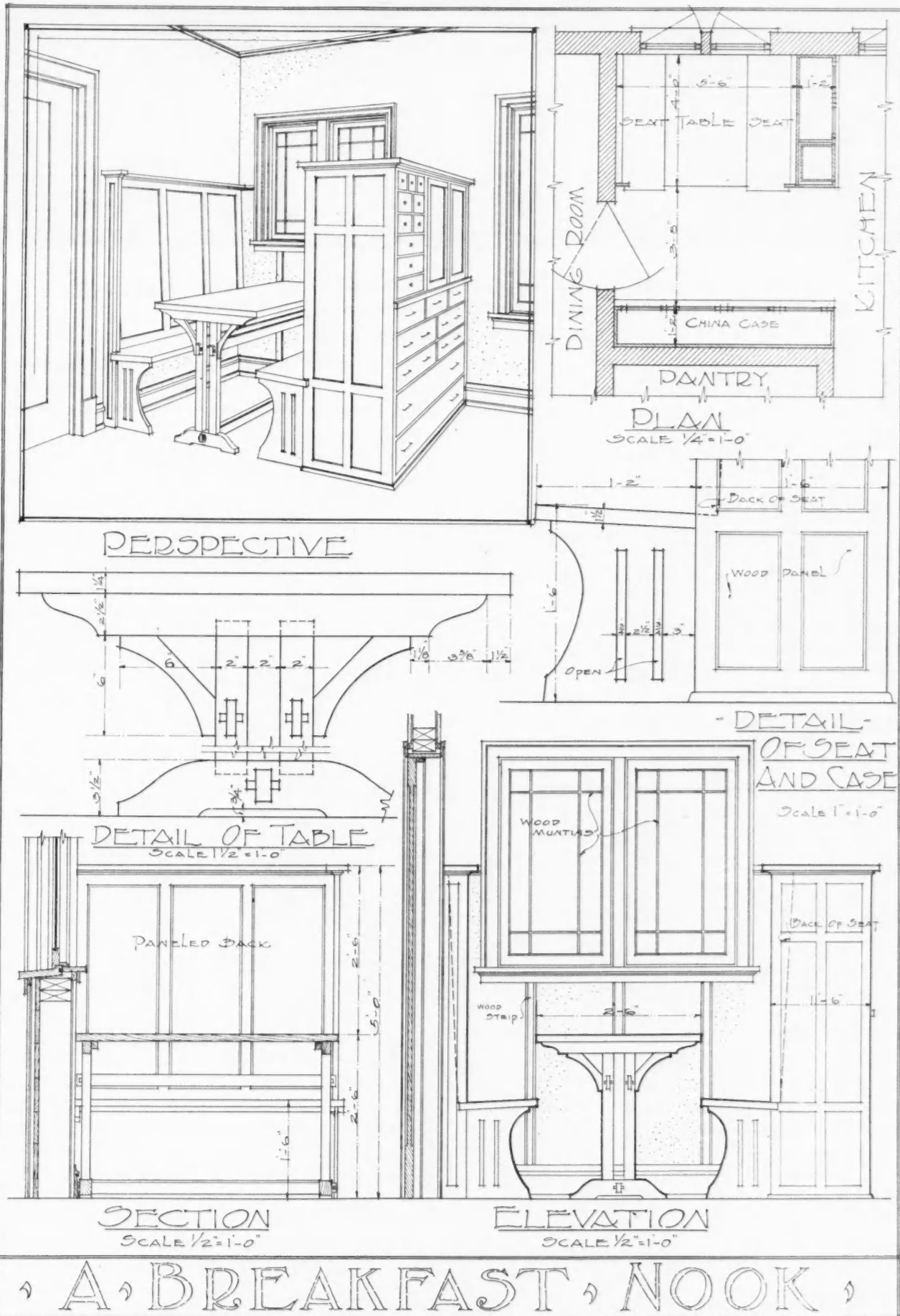
The table is movable. It is simple and stout in construction. The seats are built-in, of the same sturdy type, yet all are graceful in design. The back of the seats are paneled and carried to a height of 5 feet. The back of the seat on the side away from the wall has been converted into a kitchen cabinet with long drawers below for towels and aprons, smaller ones above for kitchen utensils, and the upper part devoted to small drawers, and shelves behind closed doors which are used for food of the canned and package variety.

The case at the side of the passageway is for dishes and pans and is conveniently placed at the door into the dining room. It has an open space with shelf which can be used for serving and for quick storage of used dishes from the dining room.

The construction of the seats and table is of plain heavy stock and might be made at home by any one handy with tools. The two upright members of the table are dovetailed into the top and bottom horizontal rails, and the small cross beams under the table used for stiffeners are tenoned and held with wood pins.

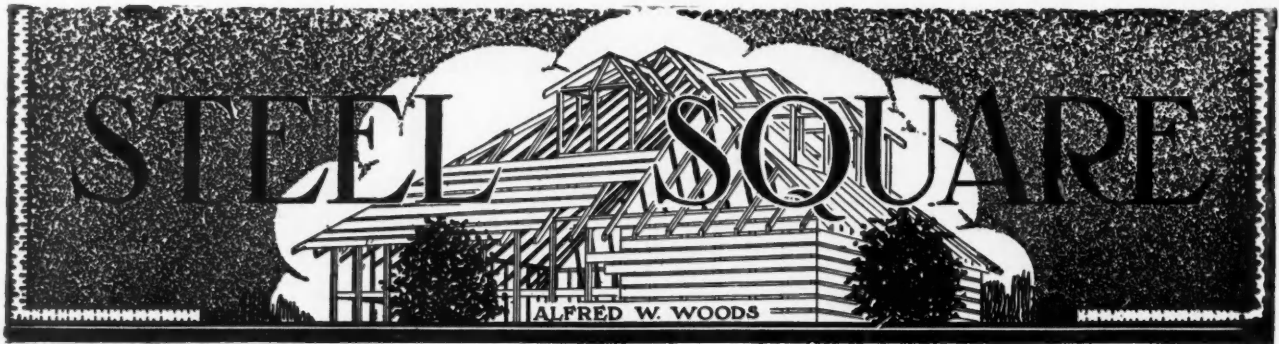
The paneling is carried around the wall and all of the woodwork and wall are painted an old ivory color with a flat non-gloss paint, excepting the tops of the table, seats and case, which are stained a rich green color and varnished. This makes an agreeable contrast with the light painted surfaces and is easy to keep clean. There are high double casement windows over the table. A flower box on the window sill with ferns or blooming plants would complete the nook.





# ' A BREAKFAST NOOK '

Architect's Drawing Giving Perspective Sketch, Floor Plan and Details of a Very Interesting Breakfast Alcove Formed by Kitchen Cabinet. Designed by Ralph W. Ermeling, Architect.



## Problems of Roof Framing Solved

THE FUNDAMENTALS OF STEEL SQUARE PRACTICE—TERMS DEFINED

By A. W. Woods

THE following article is intended for the younger men and for those who want to make a start in the study of the steel square as a roof framing tool. It is presented in simple language and will develop the essentials of the subject in a logical way.

The following are the common terms with their meanings:

*Span.*—The first thing to be considered is the span. It has reference to the gable or that part of the building over which the common rafters are to be placed, regardless of deck.

*Run.*—The run is equal to one-half the width of the span, unless the roof contains a deck. In that case, deduct the width of the deck from that of the span; the run will be one-half of the remainder. It is sometimes called the base of the rafter.

*Rise.*—The rise comprises that portion of space on a plumb line directly under the comb, or highest point on the measurement line of the rafter, to a point level with the plate on which it rests. Its height regulates the slope given the roof and determines the pitch, as  $\frac{1}{4}$ ,  $\frac{1}{3}$ ,  $\frac{1}{2}$ , etc., or the proportion between the rise and the span.

*Pitch.*—The pitch represents the slope given the roof, as before mentioned, and is the slope of the common rafter. This completes the triangle formed by the run and the rise.

These three terms, "run," "rise" and "pitch," name the parts of a right-angled triangle. Knowing the lengths of the first two, the length of the third (common rafter) is found by extracting the square root of the sum of the squares of the first two. This method is the one most used by engineers in steel construction. But in ordinary roof framing, where wood is employed, absolute accuracy in lengths is not essential, as a frac-

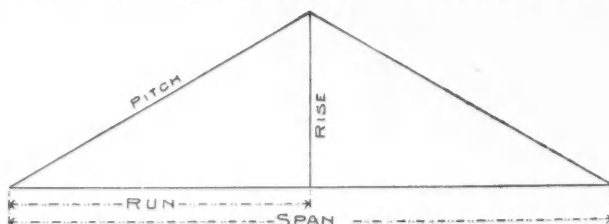


FIG. 1.

tion of an inch or so in the rise is not noticeable so long as the other members are framed on the same basis.

Therefore, the usual way of obtaining the lengths of the rafters is by scale; that is, letting inches represent feet on the blade of the steel square for the rise and on the tongue for the run of the roof; and the length taken diagonally across from these points will represent the length of the common rafter. By using the side of the square that is divided into twelfths of an inch, the divisions will represent inches in the measurement of the actual rafter. So, in laying out work, great care should be observed as to accuracy in applying the square, because the variation of  $\frac{1}{12}$  inch in the run or rise, amounts to a full inch, and more in the length of the rafter.

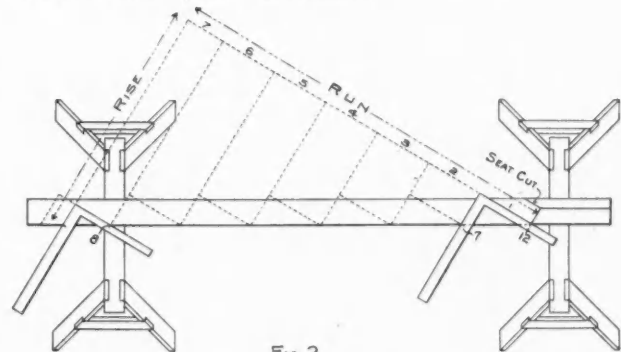


FIG. 2.

In Fig. 1 is shown a simple diagram of the parts that must be known before laying out the rafter.

Another method quite generally used is to take the rise on the steel square for 1 foot run of the common rafter. It does not matter which member of the square this is taken on, but for reasons which we will explain later, let the measurement taken on the tongue represent the run. Suppose the rise is 7 inches to the foot; the figures then would be 12 on the tongue and 7 on the blade. These figures will give the seat and plumb cuts. Now, say the span is 13 feet 4 inches, the run being one-half this amount, namely, 6 feet 8 inches; the square is placed seven times at 12 and 7 along the upper edge of the rafter (which is supposed to be straight for a pattern). We say seven times, because there are six and a fraction of a foot in the run. At

(Continued to page 126.)



## Protective Materials for Permanency

FIRST OF A SERIES OF ARTICLES ON PAINTS, STAINS AND VARNISHES, AND THEIR USE

By Ralph G. Waring

Specification Engineer

**N**OW that this new department has been established for our contracting friends, perhaps a few explanations of our ideas and plans will be in order, since this is the introduction to a Paint, Stain and Varnish Series for all who undertake to build with the fundamental principle of PERMANENCY as their foundation.

The writer has been actively engaged for some years on the subject of paint, stains and varnishes, both as a chemist and engineer, with the intent and purpose of ascertaining the fundamental principles underlying both phases of the subject, as well as the most practical methods of writing specifications.

### Difficulties Which Contractors Face

Contracting experience with the specifications from architects proved beyond any doubt that here lay the biggest cause for the majority of poor work done, especially on new construction.

Specifications were written to impress the contractor with the vast knowledge of the architect; others written so rigidly as to be beyond all the limits of practicability; some so loosely constructed as to make the cut-throat type of contractor grin with delight at their "wide-open" clauses, and the worst type of all, and quite the most frequent at that, is that class of specifications

from the architect who insists on *his* way, much to the despair of the master workman who realizes that some of the methods called for are not at all correct; materials entirely unsuited to the work in hand—and yet he must "stand for the job" when all is said and done.

### Shortcomings of the Architectural Profession

At the same time I want to make it clear that I am not censuring the architect as a professional man. He simply must fill an impossible number of callings to handle the class of work his business demands. Some phase of his training must be wholly, or perhaps partially, neglected simply because of the limits of human

endurance. Unfortunately the last end of the whole business of construction, the protective and decorative phase has been the one where, as a profession, architects have had to let up. Their business has been to consider location, adaptability of design to location and business, construction and materials best suited to the purpose at hand, and last of all the protection and decoration of the finished work.

### Shortcoming of the Master Painters

Again the master painter and his men come in for their proper share of censure. Some men of the old school who have served their time "in the old country" are so pig-



Ralph G. Waring, Specification Engineer, in His Laboratory.

headed as to be above any suggestions of improvement in their methods or the use of better materials. Men who have not served their "time," or who have recently bought their card outright, quite frequently "know it all." As a group, however, I have found that the master painters and their men do *try* to do a good job, for in all common sense it is the only safe thing they can hope to do, to insure another job elsewhere. True, they often meet the man who is too niggardly to let the master painter do a first-class job, and really the worst proposition any of us can come up against is the owner who is too "tight" to let us do an honest piece of work because of his false ideas of economy. There is only one safe plan with such and that is, let him strictly alone. You cannot satisfy him, you cannot honestly commend yourself except at the expense of your own pocket book, and a mediocre job is no advertisement for anyone.

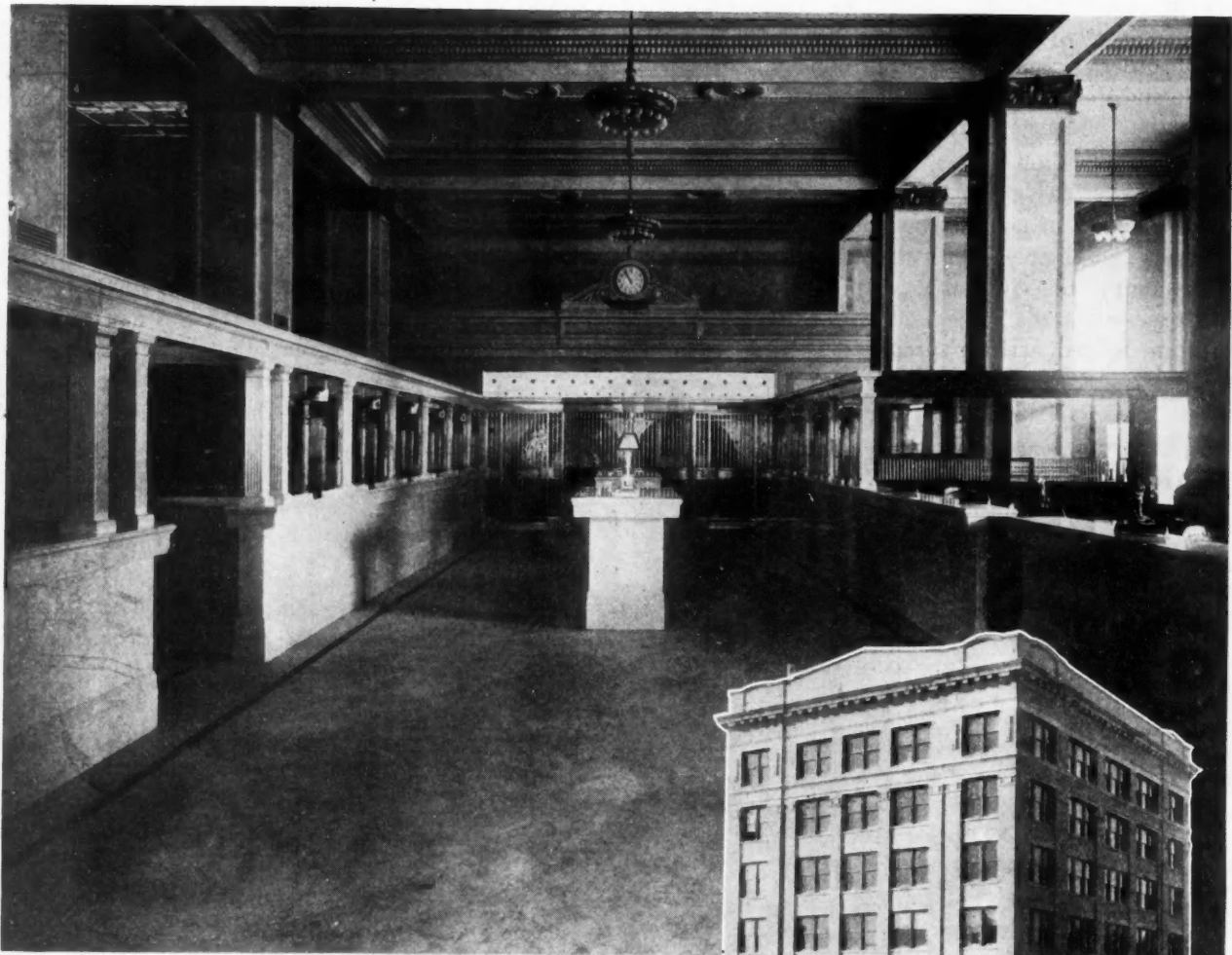
Experience has shown that these constitute some of

the fundamental difficulties which obstruct the path of the conscientious contractor, and because of this and other knowledge the writer has built up his present business of engineering in an endeavor to supply the missing link between the owner, architect and contractor. He does not wish to assume the credit for any vast store of knowledge or any startling store of methods. He does, however, insist on the use of common sense; materials accurately tested and analyzed; correctly applied, and paid for at a reasonable "live-and-let-live" profit. As one of his men was overheard to say on the job a short time ago, regarding a clause in the specifications, "Why, even the lady of the house understands what it means and I couldn't dodge it if I wanted to—which I don't."

#### Offer of the Laboratory and Service

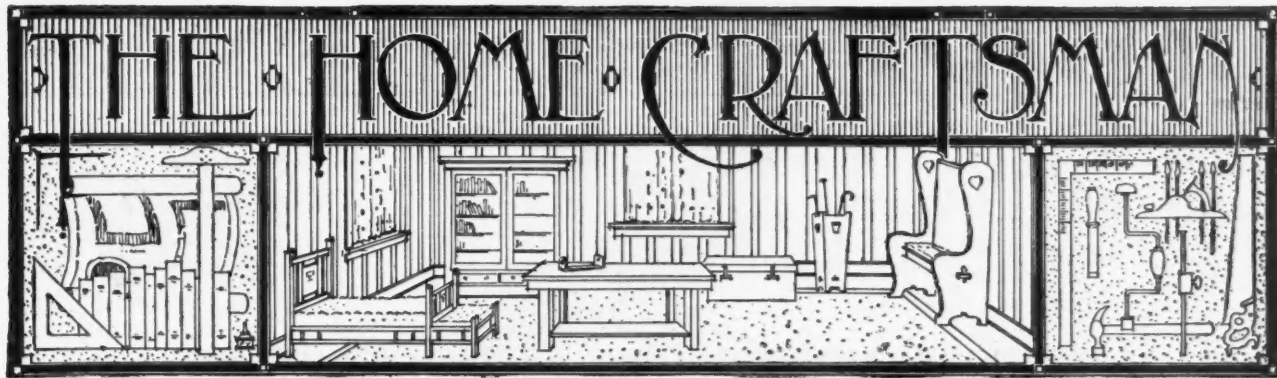
It is our purpose, then, to treat with fundamentals; build our operations on methods with a foundation

(Continued to page 142.)



**T**HE new Security National Bank Building at Sioux Falls, S. Dakota, an interior and exterior view of which is shown here, was finished early this year. It is a six-story steel frame building, 66 by 88 feet, situated in the heart of the business section. In the exterior walls, gray Georgian granite, Bedford stone and gray pressed brick have been used. The walls, floor and ceiling of the vestibule are of marble. The floor of the main lobby is of Tennessee marble. In the lobby, a low dividing rail, two public writing desks and the cornices are of Tavernelle marble, quarried in Northern Italy. Wood trim is mahogany and grille work is of bronze. Modern offices on upper floors are in red gum, natural finish. Halls have tile floors and marble wainscoting. Fridstein and Kerr, architects, of Chicago, designed the building, and O. H. Olson, contractor, of Clearwater, Minnesota, erected it.

—O. J. REES



## How to Make a Home Craft Electric Lamp

By Edward H. Crussell

**A**LTHO the small electric candlestick shown in the accompanying photo and sketches may be considered more ornamental than useful, there are one or two items in connection with it that are worthy of note.

The amount of material required is so small as to be insignificant and may consist of some especially prized small piece of particular color, figure, or sentiment, or of small scraps that would, in the ordinary course of events, find their way into the fuel box.

There is nothing difficult in the construction of this article and it may serve to use up part of a wet day this coming winter, or it may be used as an interesting model for manual training classes, grades 8 and 9.

It may be used in the sick room or boudoir with success and forms satisfactory decoration for the piano. And to sum up, it may suggest a tasteful and inexpensive present for the Christmas holidays.

Fig. 1 is an elevation of the candlestick drum to scale and with the principal dimensions marked. The original was made of quartered oak and in order to get a piece thick enough for the stem, two pieces of  $\frac{7}{8}$ -inch material were glued together. This was the first thing done, in order to give the glue a chance to set, and while it was doing so all the other parts were prepared.

Nearly all of the work on this model consists of the planing and squaring of small blocks, and altho it is probable that

most of the readers know the correct way of doing this, it can do no harm if we insert a short description for the benefit of those who do not.

Let us take the base; the piece from which it is to be cut should be from  $\frac{1}{4}$  to  $\frac{1}{2}$  inch wider than the finished size and should have one edge dressed straight and square. Mark the correct length on this piece, allowing for planing, square, and saw carefully to the lines. How much you will need to allow for planing will depend exactly upon how well you can do your sawing. Now, with a chisel, bevel the two corners of the piece on the waste side, as shown in Fig. 2, being careful not to cut into the true width of the block; fix the block in the vise and plane the ends of it, pushing the plane toward the beveled corners, as shown by the arrow in Fig. 2. Set the plane very fine and, with the beveled corners to prevent splintering, you will find the end grain planes almost as easily as the side grain. After both ends have been planed, gauge and dress the block to the correct width, as shown by the dotted line in Fig. 2.

To bevel the blocks after they have been squared, plane the side bevels first and the ends afterwards. The bevels on the side help, when planing those on the end, in the same manner as did those we cut on the corners of the blocks with a chisel.

The small handle of the lamp is  $\frac{3}{4}$ -inch thick. It may be cut with a coping saw to the size and shape shown in Fig. 1 and finished with file and sandpaper. The two small pieces that hold up the shade are made to the size shown and with all the pieces prepared, we are ready to fit them together.

(Continued to page 108.)

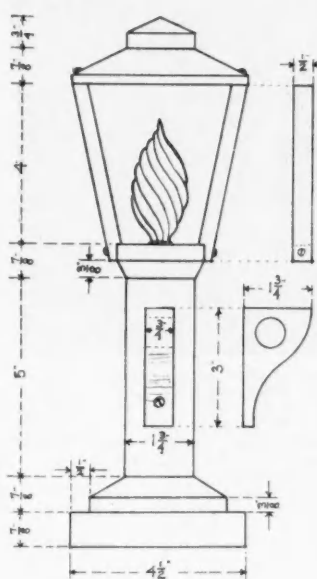


Fig. 1. Detail of Electric Candlestick.

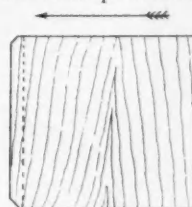


Fig. 2. Showing Method of Squaring Small Blocks.

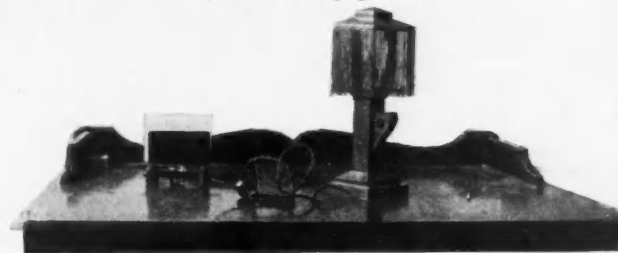


Fig. 3. Electric Candlestick with Extension Cord and Attachment Plug.

# CORRESPONDENCE



**Questions Answered and Ideas Exchanged.**

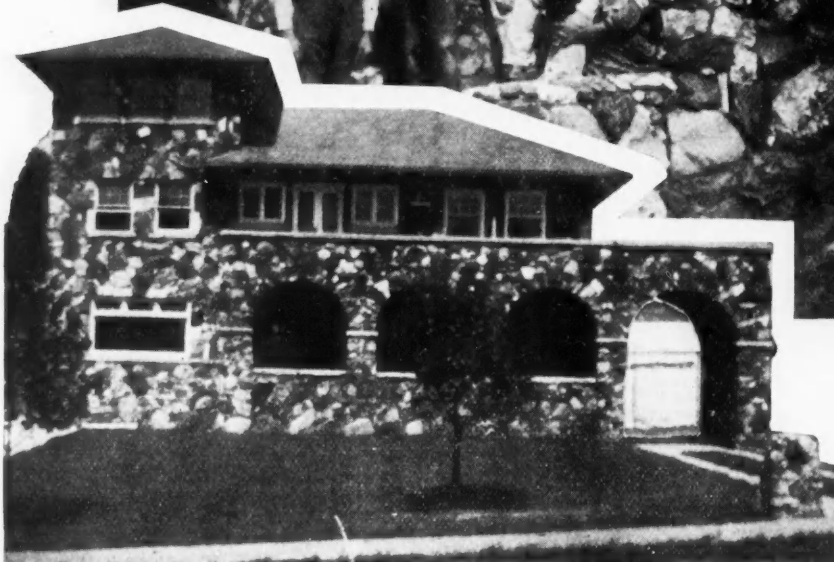
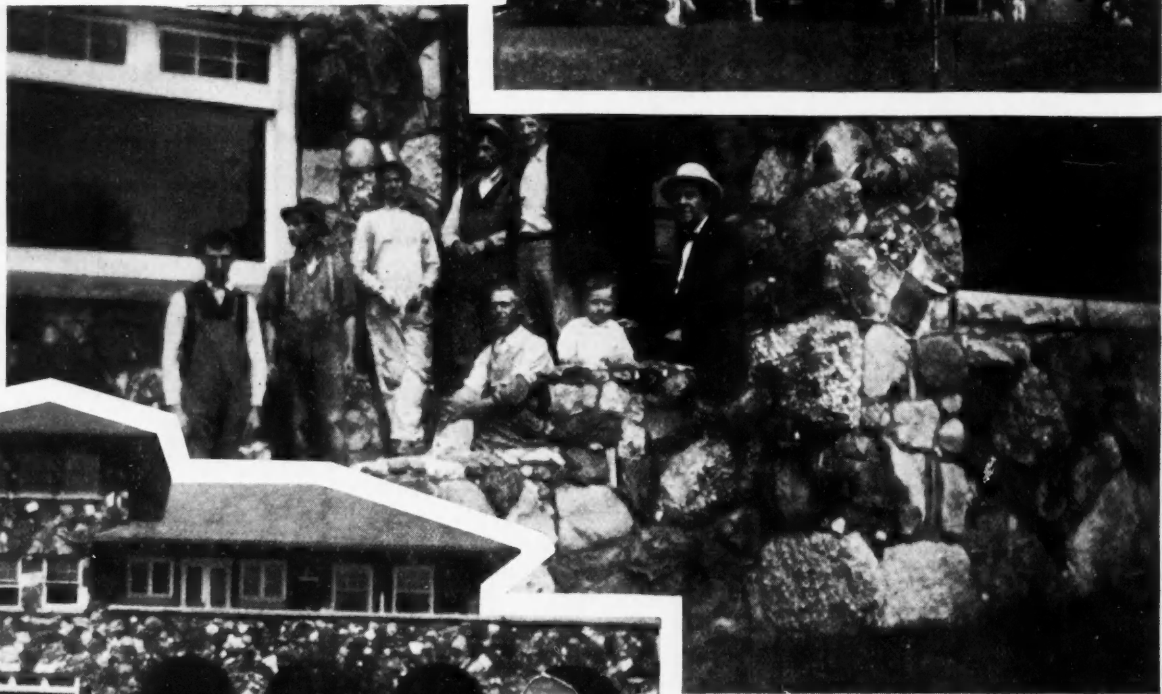
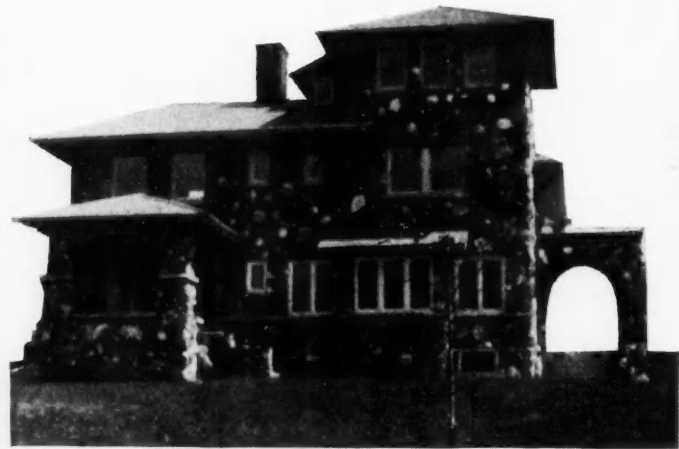
**Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders**

## A Truly Cosmopolitan House

To the Editor: Punxsutawney, Pa.

I am enclosing my renewal subscription to AMERICAN BUILDER and snapshots of a home built by D. F. Brown of this city. John McGee and myself were foremen on the work, which was started June 10, 1915, and finished August 28, 1916. This house is built of cased stone, shells, glass and pebbles gathered promiscuously from all parts of the world. There are stones from almost every state in the Union, also small specimens from almost all foreign countries, including ores, quartz and odd formations of unique shape and design. The pictures show in a general way what the house looks like, but the original, located on East Mahoning Street, must be seen to be appreciated.

J. G. SPRANKLE.



Above—End View of the "Cosmopolitan" House at Punxsutawney, Pa. Below—The Crew Who Built and Finished the House. J. C. Sprankle, Foreman, is on the Extreme Left and D. F. Brown, Owner, is Sitting with His Back Against the Porch Column.

View Showing Front of House Built from Materials Gathered from All Parts of the World.

# 600% Increase in Two Years

THREE times as many garages were equipped with STANLEY Garage Hardware during 1916 as in 1915. The sales this year to date are more than double the sales for the same period last year. This means that during the past two years the popularity of STANLEY Garage Hardware has increased six hundred per cent.

What has been the cause of this remarkable increase? The fact that, in use, STANLEY Garage Hardware has made good each claim we made for it. Practically every architect who has once tried it has been so well pleased with the results that he is now recommending STANLEY Garage Hardware to his clients and is specifying it, by catalog, name and number, on all his garages.

If you do not regularly specify STANLEY Garage Hardware and will only try it out on your next garage, the experience of others proves that you, too, will join the growing ranks of architects who are recommending STANLEY Garage Hardware to all their garage building clients.

The leading builders' hardware dealers everywhere now carry STANLEY Garage Hardware in stock. They can show you samples and give you prompt delivery.

You will find STANLEY Garage Hardware illustrated and described on pages 738 to 741 of your 1917 Sweet's Architectural Catalog. If you have not yet received this, write us today. A copy of THE Stanley Garage Hardware Catalog will be sent you by return mail.

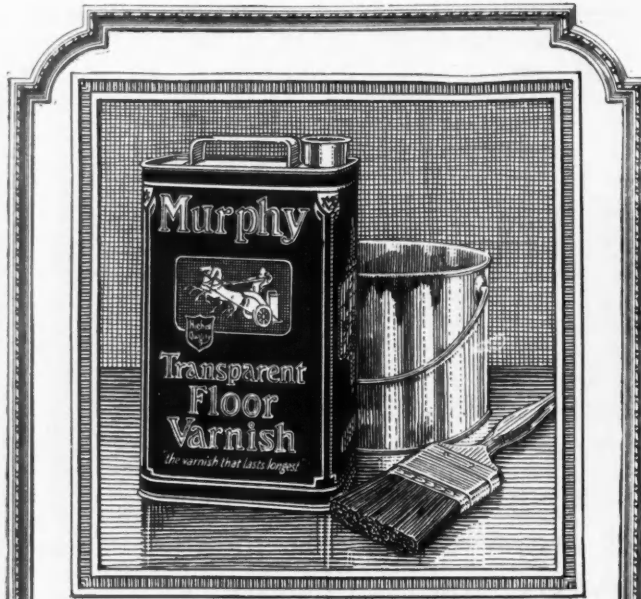
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The Stanley Works

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New Britain, Conn., U. S. A.

Manufacturers of Stanley Garage Hardware



The new Murphy Can

## Good Varnish is cheapest

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covers so much more surface than ordinary varnish that it costs you less. Without any extra expense to yourself or to him, you can give your customer floors that are beautiful, sanitary and easy to care for—floors that stay looking like new month after month.

We are telling the public, in the leading magazines and weeklies, that it takes good floor varnish to do justice to floors, to protect them and keep them at their best. You'll find your customers ready and willing to pay for a good varnish job.

May we send you prices of our house finishing products?

## Murphy Varnish Company

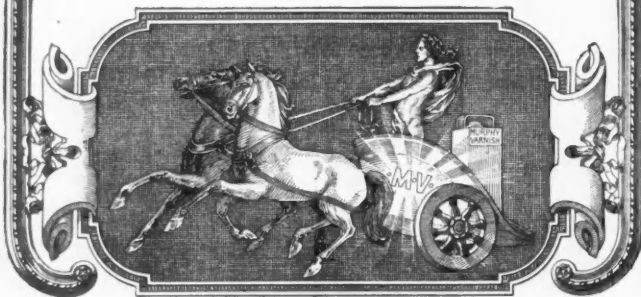
Franklin Murphy, jr., President

Newark New Jersey

Chicago Illinois

Dougall Varnish Company, Ltd., Montreal, Canadian Associate

A N A



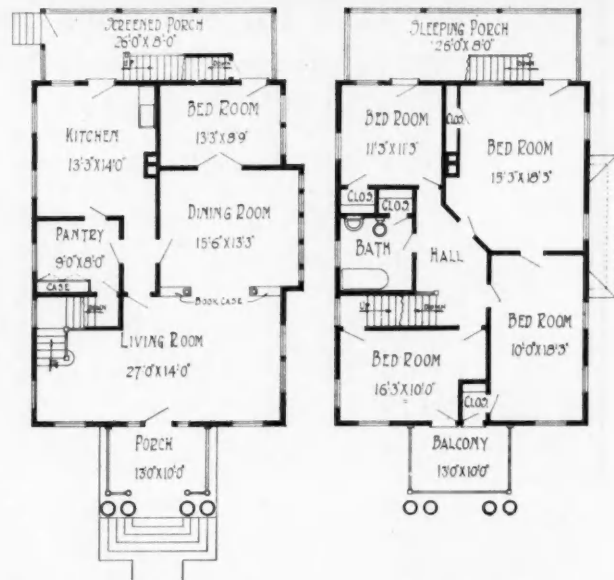
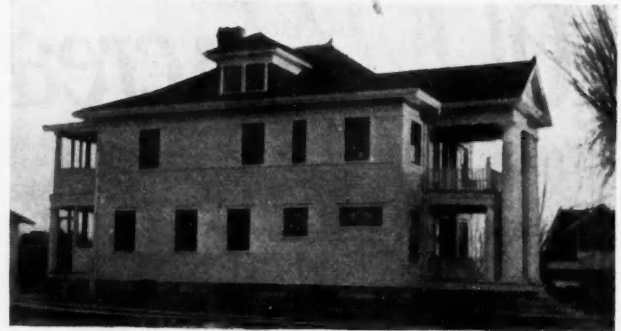
WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

## Big House for \$4,000

To the Editor:

Elsberry, Mo.

I am enclosing photo of a residence I have just finished for Mr. T. J. Devaney of this city, at a cost of \$4,000, including heat and plumbing. This is an 8-room house, bath, pantries,



Photographic View and Floor Plans of \$4,000 House Built by J. J. Temple at Elsberry, Mo.

closets and sleeping porches. All drawn and built by myself. Hardwood finish and floors thruout.

Good luck and best wishes for AMERICAN BUILDER.

J. J. TEMPLE,  
Architect and Builder.



## How Do You Glaze a Wood Drain Board?

To the Editor:

Fillmore, Utah.

In some parts of California sinks with wooden drain boards made out of sugar pine are very popular owing to the fact that a better opportunity is thus afforded for building in bins, drawers, etc. Is there not some way to glaze or enamel the wood so as to make it sanitary?

Trust I may get suggestions relative to this point.

O. L. PETERSON.



## Two Good Questions

To the Editor:

Pierpont, S. D.

I have a shop and do cabinet work and furniture repairing in the winter time. I have made myself a home-made drum sander to be run by power, but have trouble in fastening the sandpaper on. Can you state how it should be fastened, and also can you tell me how to put quicksilver on the back of looking glasses, as several have wanted me to repair theirs?

J. C. HASTINGS,  
Contractor and Builder.



# ARKANSAS SOFT PINE

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THIS BOOK WILL HELP  
Solve Your Painting and  
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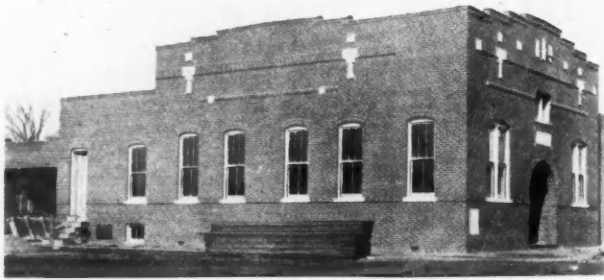
**Arkansas Soft Pine Bureau**  
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LITTLE ROCK, ARK.



### A Village Hall

To the Editor: Brighton, Ill.  
I will enclose view of our new Village Hall I built here last fall (J. I. Rinaker, Springfield, architect).

W. I. GILLHAM.



Village Hall at Brighton, Ill., Built by W. I. Gillham and Designed by J. I. Rinaker, Architect, of Springfield.

### Stretches Two Screens at Once

To the Editor: West Helena, Ark.

Noticing a friend's pickup on stretching screen wire with a scratch awl, I have one that beats the scratch awl. I lay two screens on work bench, top ends together, tack one screen to one corner, then draw tight. Then I tack the bottom and both ends all the way across and then raise one end of screen, slip a little block about the thickness of a rule  $\frac{3}{8}$  inches, between both sides, let the screen lie back on the bench, put on screen mould after tacking both ends and middle of the screens.

I find that this method is quicker than stretching one screen at a time, and while you waste a strip of screen about one inch wide to two screens, you more than make up for the loss in time saved.

Hoping this will lighten some fellow's labor on his next job of screens, I am,  
A. E. BEELER.



### Nails Required for Oak Flooring

To the Editor: Stockton, Kan.  
What kind of a nail is used to nail  $\frac{3}{8}$ -inch oak flooring and how many pounds per thousand feet?

E. C. KEWLEY.

*Answer*—In laying  $\frac{3}{8}$  by  $2\frac{1}{2}$ -inch oak flooring, nails are usually spaced 12 inches apart. Either one of two sizes may be used, depending upon the quality of the rough flooring. If 4-penny finishing nails are used, 9 pounds are required per thousand feet of flooring. If 5-penny finishing nails are used, 13 pounds are required per thousand feet of flooring.

EDITOR.



### Uses Side of Grinder Wheel

To the Editor: Fillmore Mo.  
I got a Keen Kutter tool grinder with 5-inch wheel. I turn the tool on the side of the wheel to straighten it. I would not want any larger one.  
TELL DOWNS.



### Kill Flies and Save Lives

Kill at once every fly you can find and burn his body. Observers say that there are many reasons to believe there will be more flies this season than for a number of years. The killing of just one fly NOW means there will be billions and trillions less next summer. Clean up your own premises; see and insist that your neighbors do likewise. Especially clean "out-of-the-way-places" and every nook and cranny. Flies will not go where there is nothing to eat, and their principal diet is too filthy to mention.

FREE  
SAMPLE



Now---while the price of Varnish and Shellac is advancing---use

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A New and Wonderful Wood Finish

Quick drying and full bodied like Shellac. Glossy, smooth, and tough as Lacquer. Less expensive and more durable than Varnish. Takes the place of all three. Proof against water, acid, alcohol, ammonia, heat, everything. Dries in two hours. A fresh coat can be applied and sand papered each day. Three coats do the work of one coat of Shellac and two of varnish. The fourth day, if a high gloss is not desired, DEGRAH can be rubbed with pumice and water or oil to a wonderful satin finish.

Make Your Own White Enamel and Save Money

DEGRAH is also put up in a very pale consistency as an enamel varnish. By merely adding zinc ground in oil to it you can make the most beautiful white enamel you ever used. Easy to work, smooths out like glass, has the appearance of porcelain, can be rubbed to a dull finish if desired. Only one man is required to do a DEGRAH enameling job. DEGRAH shows no lap or brush marks and the work can be stopped and started as often as necessary. If you want a sample of DEGRAH WHITE ENAMEL let us know. We manufacture and sell it that way, too. Don't fail to write and learn all about this marvelous product.

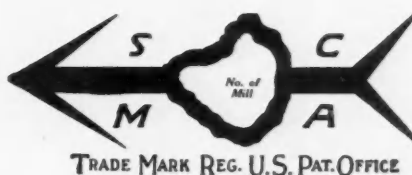
KEYSTONE VARNISH COMPANY

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Sheets shown are 8 feet long

## This Metal Lath Saves Work and Time

Owners today are insisting on modern homes of **strong, permanent construction**. By using our metal lath products, you can supply such structures, and at the same time save the owners time, material and labor expense.

Use **Hy-Rib and Rib Lath**—and you save forms, stiffening channels and labor. Two coats of plaster can be used instead of three. The metal lath is so stiff and rigid that supports may be placed a greater distance apart—saving in the cost of supports and the labor and time necessary to attach the lath. Moreover, streaked and cracked plaster is prevented.



Hy-Rib furnished in four depths of ribs and various gauges

### HY-RIB

A steel sheathing, stiffened by rigid deep ribs. Manufactured from a single sheet of steel. Its use is decidedly simple. The easily handled sheets are fastened to the supports and the plaster or concrete applied. No forms, stiffening channels nor wiring required.

Begin now to build with Hy-Rib and Rib Lath. The line is complete, including Diamond Lath, Channels, Studs, Corner Beads, Base Screeds, etc.

Write today for free copy of Hy-Rib Handbook with specifications, tables, illustrations, etc. Very valuable to builders. Address Dept. H-44.

### RIB LATH

A superior metal lath with beaded ribs that span between the studs, making it exceptionally stiff and rigid and permitting the wider spacing of studs. Provides a perfect clinch for plaster and prevents cracking or streaking. Saves time, labor and material in erection.

## Trussed Concrete Steel Co.

YOUNGSTOWN, OHIO  
Representatives in Principal Cities



## Statement of the Ownership, Management, Circulation, etc., Required by the Act of Congress of August 24, 1912

of AMERICAN BUILDER, published monthly at Chicago, Ill., for April 1, 1917.

State of Illinois )  
County of Cook ) SS.

Before me, a Notary Public in and for the State and county aforesaid, personally appeared E. L. Hatfield, who, having been duly sworn according to law, deposes and says that he is the Business Manager of the AMERICAN BUILDER, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 443, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher, American Carpenter & Builder Co., Chicago, Ill.  
Editor, Wm. A. Radford, Chicago, Ill.

Managing Editor, Bernard L. Johnson, Chicago, Ill.

Business Manager, E. L. Hatfield, Chicago, Ill.

2. That the owners are: (Give names and addresses of individual owners, or, if a corporation, give its name and the names and addresses of stockholders owning or holding 1 per cent or more of the total amount of stock.)

Wm. A. Radford, Chicago, Ill.

H. M. Radford, Chicago, Ill.

Roland D. Radford, Chicago, Ill.

E. L. Hatfield, Chicago, Ill.

Geo. W. Ashby, Berwyn, Ill.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: (If there are none, so state.)

There are no bonds, mortgages or other securities outstanding against the American Carpenter & Builder Co.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest, direct or indirect, in the said stock, bonds, or other securities than as so stated by him.

5. That the average number of copies of each issue of this publication sold or distributed, through the mails or otherwise, to paid subscribers during the six months preceding the date shown above is: (This information is required from daily publications only.)

E. L. HATFIELD, Business Manager.

Sworn to and subscribed before me this 2nd day of April, 1917.

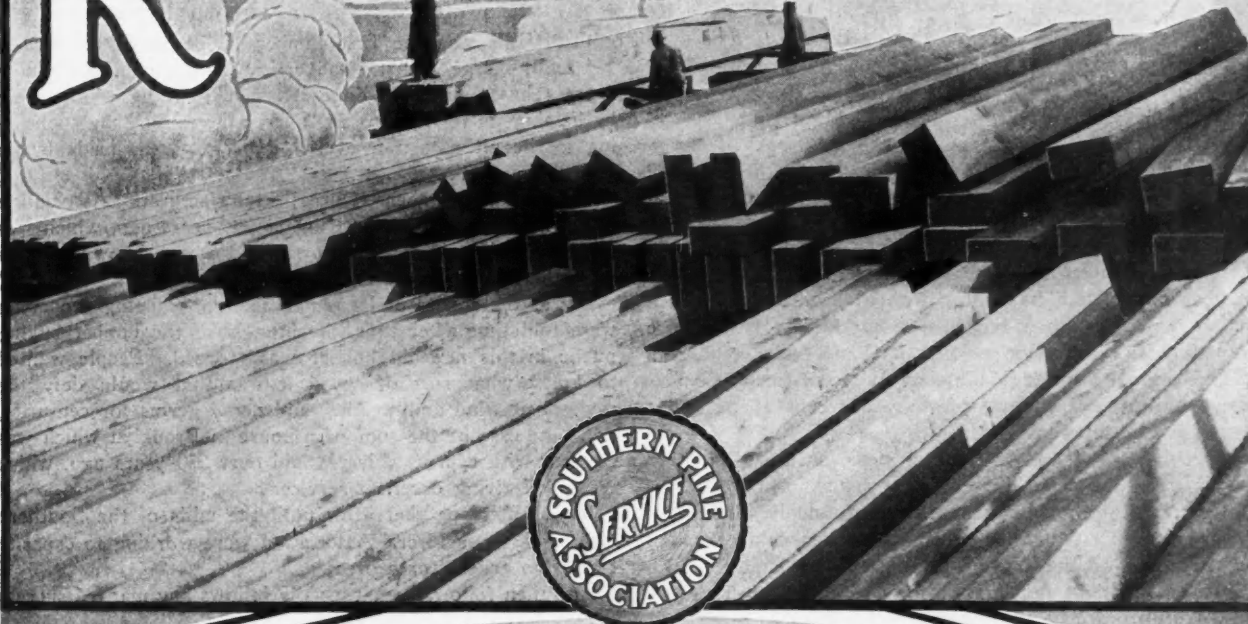
J. W. DUSENBERRY.

(SEAL)

(My commission expires Feb. 11, 1919.)

# Ready to Build?

HERE'S THE MATERIAL!



## There Is Danger In Delay!

If you are planning a new Factory, Foundry, Mill, Warehouse, Shop, Storeroom—any structure that will lend itself to Standard Mill Construction design—RIGHT NOW is the time to place your order for material. The immediate future demand for desirable building material promises to be unprecedented—next week, next month, you may be disappointed. Do not delay—place your order now for

### *Southern Yellow Pine*

*"The Wood of Service"*

guaranteed by the manufacturers to conform in every respect to the requirements of the Density Rule, formulated by the Government Forest Service and adopted as Standard by the Southern Pine Association, the American Society For Testing Materials, The United States Navy, etc.

**THIS IS YOUR OPPORTUNITY to get highest grade Southern Yellow Pine in all forms required for erecting the most Economical, Flexible and Serviceable type of industrial building. Hadn't you better take advantage of it?**

Our new book, "Mill Construction," an authoritative and comprehensive work on modern building, is yours for the asking—mailed promptly on request.

**Southern Pine Association**

2063 Interstate Bank Building

New Orleans, La.



## NEWS OF THE FIELD

### Lumber Interests Respond to War Call

The lumber industry is rapidly mobilizing for war in furtherance of the pledge of loyalty made by the national association at its April meeting. Following are recent developments:

The Southern Pine Association has sent a committee to Washington to arrange for sale of lumber to the government for wooden ships, barracks, etc.

The Northern Hemlock and Hardwood Manufacturers' Association of Wisconsin and Michigan has decided to provide the government with its lumber without profit and named a committee to prepare a schedule of production cost before proceeding to Washington to offer its lumber to Uncle Sam.

The National Lumber Manufacturers' Inter-Insurance Exchange has decided to invest twenty per cent of its funds in the government war bonds.

Douglas fir producers are taking steps, as are all lumber organizations, to utilize their cut-over lands for the production of crops to provide food for America and its allies.

Fear in the East that the proposed wooden ship campaign for the relief of the submarine blockade by building 2,000 wooden ships might fail because of a lack of lumber, is entirely overturned by this statement by Secretary R. S. Kellogg

of the National Lumber Manufacturers' Association:

"All information I have indicates lumber in all necessary sizes and quantities much more available and reasonable in price than steel. Many sawmills in South and West can supply necessary stock quickly, also many shipbuilding plants are located in those sections. Two thousand wooden ships would require only three to five per cent of one year's production of lumber."



### Cypress Trade-Mark Winning Big

THEIR SLOGAN, "SAFE BUYING MEANS EASY SELLING," PROVES GREAT MARKET AID TO RETAILERS

CYPRESS was the first lumber to be exploited thru a really large general advertising campaign, and now cypress has "gone and done it again"—and is winning big by helping its retailers to an "automatic market" by sponsoring to the ultimate user every piece of cypress made by an Association mill.

When the Southern Cypress Manufacturers' Association began a campaign of advertising a few years ago, which was to exploit the virtues of cypress, little was known of this venerable wood by present-day lumber users.

But as the stories of its remarkable rot-resisting properties were told time after time, the interest of the lumber buying public in this new-old lumber was aroused. People wanted to know what sort of wood it was that would defy the ravages of wind and weather and decay germs for centuries, as in the case of the roof of a house in Brooklyn which was covered with cypress shingles laid over 250 years ago, which were still giving excellent service.

It was not long thereafter until the mills of the Southern Cypress Manufacturers' Association were working to capacity to fill the orders for cypress.

And then followed what usually follows any marked success

(Continued to page 96.)



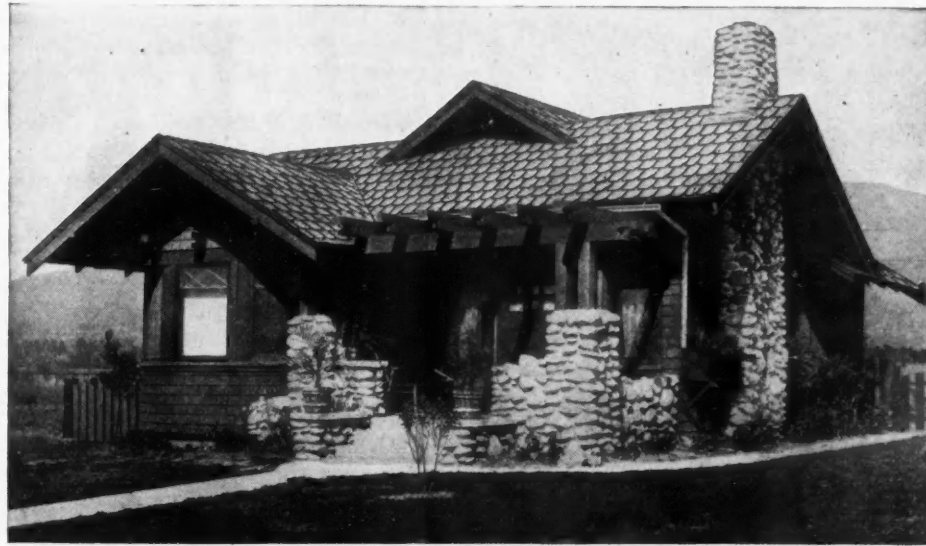
"BEAUTIFUL  
birch  
for  
BEAUTIFUL  
WOODWORK"

### Getting Yours?

Every good carpenter knows that by boosting "Beautiful **birch**" he is boosting his own game. Every **birch** job is an advertisement for the man that did it and the price of **birch** lets you figure to get the job.

Our advertisements have a circulation of a million and a half a month. Everybody wants **birch**. You want them to have it. So do we. Very well, let's work together. FREE—Sample panels in several finishes here for you to show. Also a book you ought to read yourself. We'll send both free to you and to any list of your customers up to 25 names. Get yours. Get it today.

Northern Hemlock & Hardwood Manufacturers' Association  
201 F. R. A. BUILDING, OSHKOSH, WIS.



## We Create the Demand— You Reap the Profits

### ARE YOU GOING TO BE THE LUCKY MAN?

We develop the roofing business in your city, and all *you* have to do is to take the orders, do the work and make a good big profit.

We interest and convince your prospects with illustrated literature to the extent that he is 90 per cent sold before you call on him.

You don't need a lot of money to go into this ART CRAFT proposition. Only a very small investment is necessary. Your money is not tied up.

# Art Craft Roof

*Red*

*Green*

*Silver-Gray*

The only roof that nails right over old roof or direct to boards.

Art Craft roof is applied in strips, but the effect is that of individual shingles or tile as shown in above illustration.

Art Craft is a guaranteed material. It must give satisfaction. It can't leak or rip off. It costs only half as much as a shingle roof and is many times better.

Art Craft will improve the looks of any home, whether it be a mansion or humble cottage.

Don't delay in sending this coupon for big samples and complete information about Art Craft Roof and our plan for putting contracts into your hands. Your profit is sure and liberal. Send the coupon today—NOW.

The Reckitt Corporation,  
Dept. T-2, Chicago, Ill.

Send me samples and complete information about Art Craft and your plan for giving me contracts.

Name .....

Address .....

**THE RECKITT CORPORATION**

76th and Ashland Ave.

**CHICAGO**





# Beautiful and Permanent as well as Fireproof

AMBLER ASBESTOS BUILDING LUMBER cannot be equaled as an absolutely fireproof interior finish. The natural gray color is pleasing and permanent. It can, however, be painted and grained if preferred, to match the owner's "color scheme", although no "preservative" is ever needed.

## *Ambler Asbestos Building Lumber*

is made of concrete, reinforced with long Asbestos fibres; it is absolutely fireproof, and like all concrete improves with age.

Comes in convenient sizes; can be fit into place by any carpenter; is light, strong, handy; never needs repairs.

Adaptable to almost any purpose. As pictured it is used for artistic interior work in a bathroom, at the same time fireproofing and obviating the danger where hair curlers, alcohol lamps, etc., are used.

*Write now for more facts,  
samples and prices*

**KEASBEY & MATTISON CO.**

Dept. B-1                      AMBLER, PA.

MANUFACTURERS OF

**AMBLER** Asbestos Shingles,  
Asbestos Corrugated  
Roofing and Siding, 85% Magnesia  
Pipe and Boiler Covering and Asbestos  
Building Lumber. **EVERYTHING  
IN ASBESTOS.**

*Interior view of bathroom in residence of T. H.  
Hamilton : 214 South 17th Street, Harrisburg, Pa.*



### New Firm in East to Market Berger Products

A. D. Mellor and A. Hamburger, formerly Manager Contract Department and Chief Engineer, respectively, for the National Fireproofing Company, New York City, have resigned their positions to open an office at 103 Park Ave., New York, on May 1st, under the name of Mellor & Hamburger, to market the sheet metal building materials of The Berger Manufacturing Company requiring engineering services. Both are well known in the concrete and reinforcing steel business in the East. They will make lump-sum bids for Berger's metal lumber; and corrugated steel cores, metal lath and reinforcing bars required for long span floors, and prepare complete detail drawings for use in the field. They will also furnish specifications and quotations for water-proofings, dampproofings, concrete floor hardeners and technical paints.



### Devoe and Raynolds Consolidated

On April 19, 1917, a new company was organized under the laws of the state of New York, with the title of Devoe & Raynolds Co., Inc. This company on the above date acquired the companies of F. W. Devoe and C. T. Raynolds Co. of New York and Devoe & Raynolds Co. of Illinois.

The capital stock of the new company is five million dollars, of which one million is preferred and four millions are common, thus enabling the new company to increase its manufacturing facilities, and to inaugurate improvements that will give a better distributing service to its customers.

The general offices of the new company are at 101-103 Fulton St., New York. The officers are C. C. Barrett, Pres.; E. H. Raynolds, 1st Vice-Pres.; Dr. I. W. Drummond, 2nd Vice-Pres.; G. A. Meyer, Treas., and W. H. Phillips, Sec'y and General Manager, with assistant treasurers and assistant

secretaries in New York and Chicago.

This business was established in New York in 1754 by Wm. Post and has been continued in an unbroken line of succession to the present day. During these 163 years the business has continued to grow and now assumed country-wide proportions, with offices and salesrooms in New York, Chicago, Buffalo, New Orleans, Kansas City, Denver and Minneapolis, factories in New York, Brooklyn, Chicago and Newark, N. J., and well stocked warehouses in Pittsburgh, Boston, Houston and Savannah.



### Fireproofing Paint Discovered

The Paint Manufacturers Association of the United States, and the National Lumber Manufacturers Association believe that the secret of how to make a paint that will render shingles almost unburnable has been discovered, or at least a prepared paint produced that closely approximates absolute fireproofing. A series of tests made at the laboratory of Dr. Hermann von Schrenk, before representatives of both associations, showed that the new fire-resistant paint, devised by Dr. Gardner of the Institute of Industrial Research gives wonderful results. Dr. von Schrenk has devised a strong fire test which burns thru a new, first-class untreated cedar shingle roof every time it is applied. Roof sections, composed of the same kind of shingles, covered with the new paint proved resistant to this extreme test.

It is planned to license any paint manufacturer to use the new formula. But in order that the product may be kept uniformly up to standard, proper means will be devised for the purchase of samples of the paint in the open market at regular intervals thruout the country, and their subjection to uniform tests as to both physical and chemical characteristics. Failure will mean loss of license.

(Continued to page 100.)

## The Sign of Superiority →

*on Black and Galvanized Sheets and Terne Plates.*



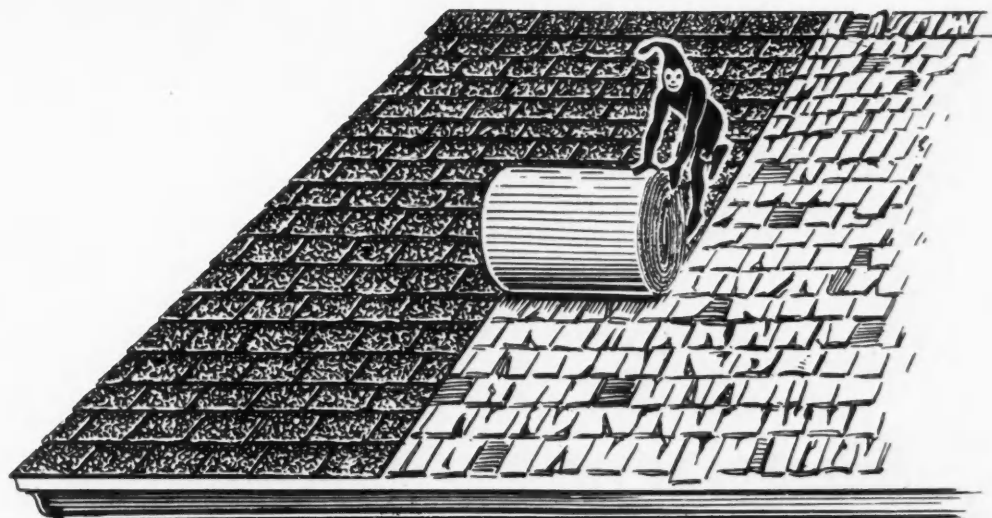
The added durability and service of these products has been fully substantiated by the most exacting service tests, also by actual experience of buyers and users. We unhesitatingly recommend *Keystone* quality as superior to any other products on the market. Demand *Apollo-Keystone Galvanized for Cornices, Roofing, Etc.*

## American Sheet and Tin Plate Company

GENERAL OFFICES: Frick Building, PITTSBURGH, PA.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis  
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City  
Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle



# A New FLEX-A-TILE Roll Shingle!

*Made to Lay Vertically from Peak to Eaves*

You lay it right alongside your ladder—a whole sheet at a time—without shifting. This new and easier method of applying Roll Shingle saves much time, yet gives the same beautiful individual shingle effect as the first FLEX-A-TILE Roll Shingle.

In the new style Roll the shingles face *endways* instead of across the Roll. That is its only difference. Gives a roof of real FLEX-A-TILE Asphalt Shingles, with butts ex-

posed, size 5x10 inches. No paint or imitation pattern of any kind is used. Yet laying is as economical as with any roll roofing.

### — Lay Over Old Shingles —

FLEX-A-TILE Roll Shingle gives full satisfaction when laid over old shingles. Simply nail through new and old material alike. Its rich, fadeless colors of red and green give an old house a new lease of beauty and usefulness.

### — Write for Samples —

You can get a lot of roofing contracts this summer simply by showing prospects actual samples of FLEX-A-TILE Roll Shingle and telling them the facts. Write for samples and complete particulars today.

FLEX-A-TILE quality materials make the Roll Shingle thoroughly water and weather-proof and **strongly resistant to fire**. Approved by Chicago Board of Fire Underwriters. Put up in 32-inch wide rolls—108 square feet in each roll. Packed with nails and cement.

**DEALERS:** This new FLEX-A-TILE Roll Shingle offers big selling possibilities. Become the FLEX-A-TILE dealer in your territory. Write us for proposition.

## The Heppes-Nelson Roofing Company

Dept. F-1010, Kilbourne Ave.  
Chicago, Ill.

Factories: Chicago, Minneapolis and in New Jersey

Dept. E-414, Marshall St., N. E.  
Minneapolis, Minn.

FLEX-A-TILE Slab Shingles

No-Tar Asphalt Paint

FLEX-A-TILE Roll Roofings

## —it's Points like these that make "MORGAN" Supreme wherever Doors are Sold and Hung

The exclusive All White Pine Core, the patented Wedge-Dowel Construction, the extra thick, specially selected veneers and the iron-clad guarantee put Morgan Doors in a class by themselves.

**MORGAN DOORS**

### Superior in Quality, Elegance, Workmanship and Service

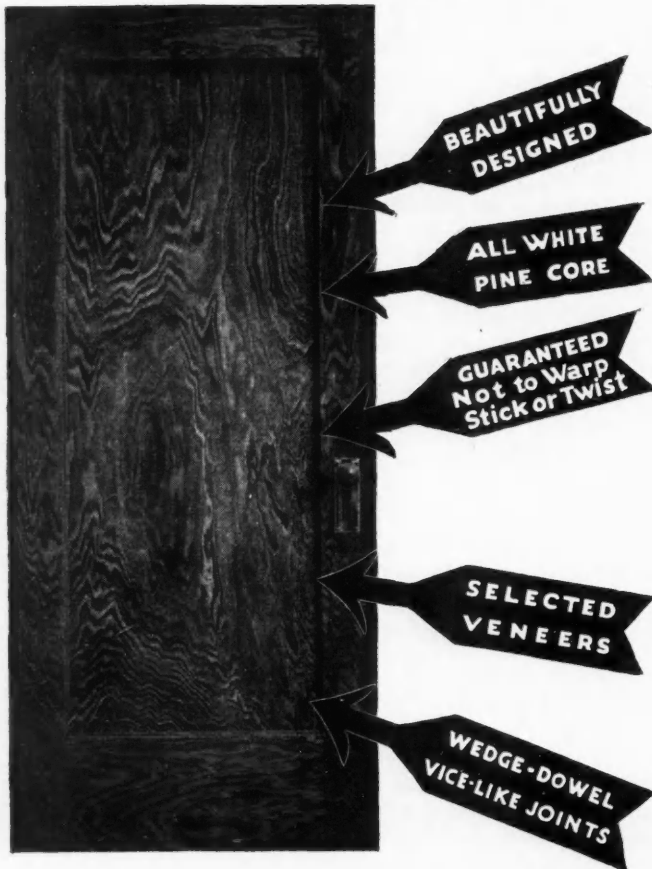
That's why there are no "come-backs" when you install Morgan Doors. You don't have to go back to rehang and retrim. You're *through* when the job is done—your reputation is safe.

Your dealer can supply you promptly with Morgan Doors because of our unmatched service.

If you haven't a copy of the *Morgan Millwork Handbook* send for one. It's full of information you need.

**MORGAN SASH & DOOR CO.**  
Dept. C-75 CHICAGO, U. S. A.

Morgan Co., Oshkosh, Wisconsin    Morgan Millwork Co., Baltimore



(Continued from page 98.)

The cost will be no more than that of other first-class brands of linseed oil paints, suitable for exterior use.

O. T. Swan, of Oshkosh, Wis., who represented the Northern Lumber Manufacturers, said that the discovery would eventually mean much to the great timber producing states and to the home builder, who is now debarred from inexpensive construction by city fire ordinances.



#### Large Addition to Goodell-Pratt Co. Plant

The new addition to the machine shop which is being erected for the Goodell-Pratt Company by the Alberthaw Construction Co. of Boston, is nearing completion.

The new building will be four stories in height, and of reinforced concrete construction thruout. It is to be 58 by 260 feet, with a four-story ell 58 by 110 feet. This will increase the floor area of this growing concern by about 86,072 sq. ft.

It is estimated that the total cost of the building will approximate \$135,000. J. R. Worcester & Co., of Boston, are the architects.



#### Developments in Kellastone Business

During the past year the manufacturers of Kellastone have outgrown their previous facilities. The National Kellastone Company's factory has been moved from Argo to Waukegan, Ill., and has been much enlarged. Their executive offices have been recently moved to more spacious and elegantly appointed offices in the Mallers Building, Chicago.

The entire floor space in these offices has been covered with Kellastone composition flooring, a product which has been developed in connection with the Kellastone stucco business. The color used is cheerful yet subdued, and the material almost entirely deadens sound, giving an unusual environment of quietness and elegance.



#### Economy and Worth By W. W. Du Pre

The buyer who sees the advantage of the thing purchased, instead of the cost, is the gainer. The real object of anything is to render service that will be the most profitable to the buyer. The persons who have succeeded to the greatest degree have invariably been those who looked beyond first cost and measured results. An obligation far greater than debt is to buy something that renders poorer service than a competing article of greater price. It is something that piles up and multiplies, and that wipes out the original saving time and time again.

No article is ever sold for less than it is worth. There's a reason back of every bargain. There's a shadow back of every low-cost argument.

Economy is not holding money in one's hand, or keeping it in a bank balance. The dollars invested in goods of merit will bulge the balance. And the dollars stinted will shrink that balance. This is true because no article is purchased entirely for today. First cost is the admittance ticket to something or other—economy or waste.

If we need a thing, we need the best of its kind.

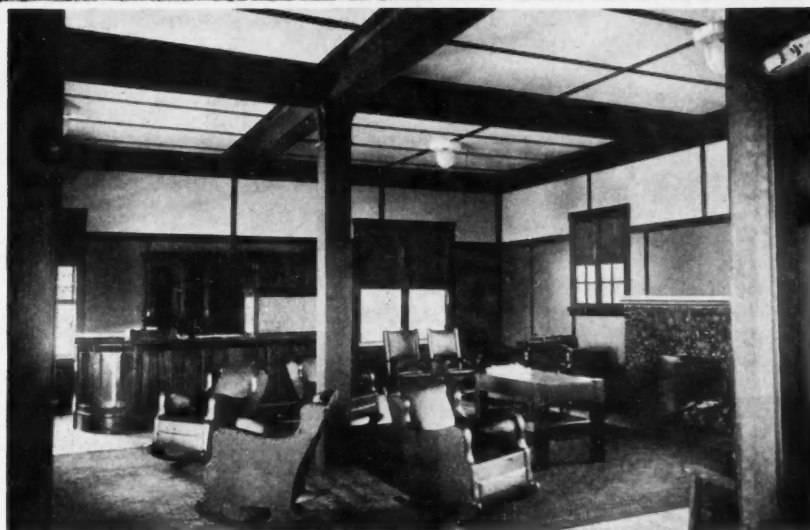
If we really need it, we cannot afford anything but the best.

The blindness toward value and the single-sightedness of the dollar in hand are factors that make buyers defraud themselves.

Cheapness begets cheapness. False economy is the twin of hard luck. Worth costs money because it costs the most to produce—it delivers the highest-class service.

*Real economy is found in worth!*

# You Can Point With Pride To a Job Like This



If it is finished in—

## Cornell-Wood-Board

Its superior construction is attracting the attention of the building public who are demanding Cornell-Wood-Board in place of ordinary wall board.

When you recommend Cornell you stamp yourself as up to date. Show your prospectives the distinctive panel suggestions (which we draw upon request) possible by the use of Cornell-Wood-Board and in nearly every case you will land the job.

Cornell-Wood-Board nails direct to the studding or right over old walls. Decorates perfectly with paint or kalsomine. Lasts as long as the building. A remarkable resistant of cold, moisture and fire.

Cornell Department of Design will draw up distinctive panel. Suggestions with cost estimate for any room or rooms if you will send dimension sketches or blue prints. You are not obligated by this service. In writing, mention the American Builder.

**Cornell Wood Products Company**  
C. O. FRISBIE, President  
173-175 West Jackson Boulevard Chicago

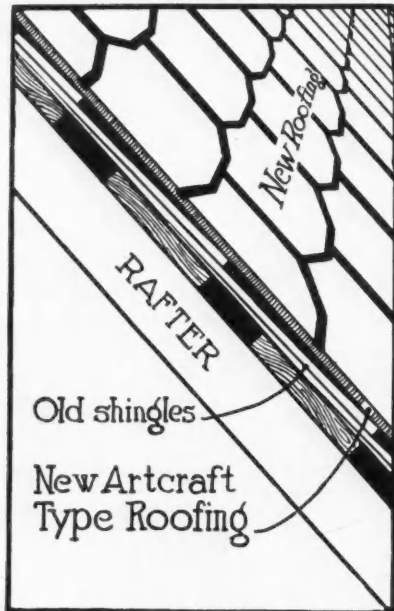
**COUPON**  
**Cornell Wood Products Co.**  
 Dept. T-3  
 CHICAGO, ILL.

Please send me sample and complete information—or send Panel Suggestions as per dimensions enclosed. I am placed under no obligations by this service.

Name.....  
 .....  
 Address.....  
 .....

### High Grade Roof Laid Over Old Shingles

In every community there are a number of houses having old shingle roofs badly in need of repair. A patchwork of new and old shingles can hardly be tolerated on the roof



How to Renew an Old Roof at Slight Trouble and Expense.

of any residence. There is every reason why it should not be tolerated. A high grade roofing material is now on the market which can be laid directly over the old shingles,

resulting in a beautiful new roof of non-fading red, green or silver gray. The material is not high in cost and, of course, with this method of laying, the installation expense is low.

This material is laid in sheets. On the exposed surface there are individual tile shapes formed by a process of applying the tile pattern with hot asphalt paint. This asphalt penetrates thru to the base material, making the design permanent.

The possibility of using a material of this kind over the old shingles suggests a business which might be worked up by builders. When it is possible for the builder to place a roof having permanency, beauty and low price as its distinctive features directly over the old shingles, thus eliminating the cost of tearing off the shingles, there are certain to be a number of home owners in any community who will be ready to have the work done.



### Cement Show Bungalow Contest Winners

The winners in the Cement Show Bungalow Contest, which was held at the last Mid-West Cement Show, March 6th to 10th, 1917, are announced as follows: First prize, cement block stucco bungalow, won by Frank S. Selby, Omaha, Neb.; second prize, rustic pergola, won by Enoch Olsen, Wahoo, Neb.; third prize, molded bird bath, won by James Milota, Jr., Omaha, Neb.; fourth prize, white waterproof lawn vase, won by Marguerite Buggy, Omaha, Neb.; fifth prize, rustic bird bath, won by Mrs. Grant Parsons, Omaha, Neb.; sixth prize, twenty-yard fence posts, won by Mrs. S. H. Rumel, Omaha, Neb.



A wood specimen found in glacial drift and estimated by the Wisconsin state geologist to be approximately half a million years old has been identified by the Forest Products Laboratory of the Forest Service as spruce.



Multiply this job by hundreds and you have the possibilities for profitable Beaver Board business in your locality.



You can't expect Beaver Board results unless this trade-mark is on the back of the board you buy.

### Six thousand feet of Beaver Board was used over the old plaster walls in this home

This is the residence of Mr. O. D. Green, 615 Washington St., Marietta, Ohio. All the old plaster walls and ceilings were replaced with Beaver Board, securing a splendid modernized effect throughout the whole house.

"A good profitable job" made possible by Beaver Board. Think of the equally profitable jobs in your town. New buildings, old buildings, repair jobs and endless other contract work demands Beaver Board.

Write for literature and full particulars about the splendid free design and decoration service which the Beaver Board Companies extends its friends in the building trade.

**THE BEAVER BOARD COMPANIES, 136 Beaver Road, Buffalo, New York**  
Branches in Boston, New York, Baltimore, Cleveland, Detroit, Chicago, Minneapolis, Kansas City, San Francisco. *Manufacturers also of Beaver Greenboard and Beaver Blackboard*

# BEAVER BOARD

FOR BETTER WALLS & CEILINGS



This illustration shows why Neponset Twin Shingles are called "the roofing development of the twentieth century." First there is a heavy sheet of tough, fibrous felt (made in our own mills). Second, this felt is thoroughly soaked with everlasting asphalt. Third, a layer of crushed stone is deeply imbedded in this sheet under enormous pressure. Fourth, another layer of Neponset Compound is applied over the crushed stone. Fifth, a layer of crushed slate gives the Neponset Twin Shingle its attractive surface of red or green.

# NEPONSET TWIN SHINGLES

(Patent applied for)

are the most sturdily constructed shingles of their kind on the market today. Contractors and home owners by the thousands know this. They are willing to pay a slightly higher price for Neponset Twin Shingles because they know that the extra wear due to the two extra processes more than offsets additional cost.

If you are interested in learning the profit-making possibilities of Neponset Twin Shingles, write for full information and price list.

**BIRD & SON,** (Established 1795) Dept. C, East Walpole, Mass.  
Chicago    New York    Washington    Canadian Office and Plant: Hamilton, Ont.



H. J. MACKENZIE  
Architect

Distinctive  
residences and  
homes are built with



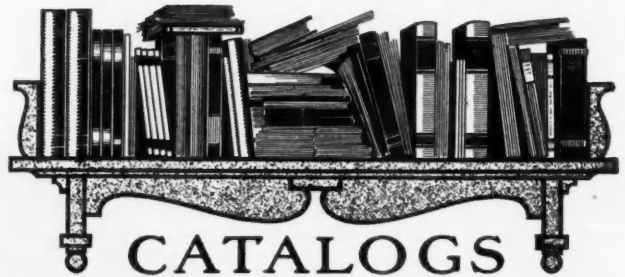
# MIDLAND TERRA COTTA

MIDLAND  
TERRA COTTA  
COMPANY

1515 Lumber Exchange  
Chicago



Detail of  
portico



## CATALOGS BULLETINS & BOOKS RECEIVED

The following literature, dealing with subjects of interest to builders, has recently been sent in:

"**Repairing and Building**" is the title given a booklet 9 by 6 inches, 30 pages, illustrated in black and colors, covering the line of Neponset roofings, wall board and building papers manufactured by Bird & Son, East Walpole, Mass.

"**Practical Homes**" contains thirty designs, including prize winning and honorable mention drawings submitted in competition at Second National Complete Building Exposition, March, 1917. The book is being distributed by Society Advocating Fire Elimination, 356 Leader-News Building, Cleveland, Ohio. Price, one dollar.

"**An Early Italian Expression**" is the subject of Serial No. 1, Volume 1, issued by the Architectural Service Department of Standard Varnish Works, 90 West Street, New York City, 2600 Federal Street, Chicago, or 55 Stevenson Street, San Francisco. There are ten pages, 8½ by 11 inches, beautifully illustrated.

**Construction details, showing Kawneer Store Front Construction**, are presented in Catalog H of the Kawneer Manufacturing Company, Niles, Mich. This catalog contains sixteen full-page detail plates, 8 by 10½ inches, showing various features in half size.

"**Color Tones in Stucco**" is the title of a book of twenty pages, 8½ by 11 inches, published by the Atlas Portland Cement Company, 90 Broad Street, New York City. Ten beautiful color plates show effects obtained by mixing colored aggregates with Atlas White cement and white sand. The information contained is especially valuable to architects.

"**Information for Home Builders**" is a beautifully illustrated booklet of sixteen pages, 8 by 11 inches, published by the Atlas Portland Cement Company, in which the subject of materials for home construction has been treated in a thoroly comprehensive manner. Anyone contemplating the construction of a home, no matter what type, will find it a valuable treatise.

**Economy Hoists and Engines** manufactured by the Northwestern Steel & Iron Works, Eau Claire, Wis., are illustrated and described in a small leaflet of four pages just issued by the company.

"**Storage Batteries Simplified**," by Victor W. Page, is one of the recent books of the Norman W. Henley Publishing Company, 2, 4 and 6 West Forty-fifth Street, New York City. It contains 244 pages, 5 by 7½ inches, well illustrated. Price, \$1.50.

**Knapp Metal Specialties** are fully illustrated and described in the 1917 Catalog, 8½ by 11 inches, forty pages, of the Knapp Brothers Manufacturing Company, 2419 West Fourteenth Street, Chicago, Ill. The list of specialties includes bases, covers, moulds, grounds, casings, beads and studs.

The course in engineering and drafting professions

(Continued to page 106.)





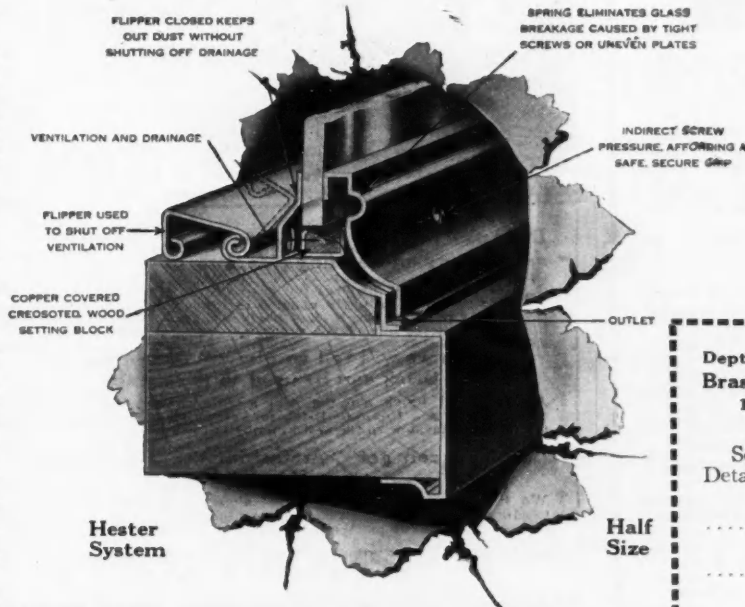
**A better Store Front, for less money**

**Brasco**

Hester Hollow Metal System  
Brasco System

**Remember the Name**

THE STORE FRONT MAKES THE BUILDING. It designates its value and for this reason you should insist on Brasco. Thousands of buildings are worth a great deal more today than they ordinarily would have been simply on account of the Brasco Front installed. Let us send you the names of satisfied users. You save money and get a better front.



Even if you haven't any store front work now, get a set of these details for your files so you'll have them when you want them. They cost you nothing, and their value is inestimable when you're designing a store building. Tear off the coupon and mail it in today so you'll have these details on file.

**Coupon**

Dept. A. B.  
Brasco Manufacturing Co.  
1451-5 Michigan Ave.  
Chicago, Ill.

Send me, without charge or obligation, a Brasco Detail Folio of the Hester System.

.....

.....

.....

**Catalogs, Bulletins and Books Received**

*(Continued from page 104.)*

offered by the Columbia Correspondence School, Philadelphia, Pa., are described in their 112-page catalog, 6 by 9 inches, illustrated with line drawings, photographic and blueprint reproductions.

"Tool Book No. 13," of Goodell-Pratt Company, Greenfield, Mass., illustrates and describes in 432 pages, 3 3/4 by 5 1/2 inches, a very complete line of tools, including many recent additions to the Goodell-Pratt line.

Thatcher boilers, ranges and furnaces are illustrated and described in the 1917 catalog, seventy pages, 8 by 10 1/2 inches, of the Thatcher Furnace Company, 133 West Thirty-fifth Street, New York City, and 134 West Lake Street, Chicago, Ill.

The "Wonder" line of contractors' equipment, including concrete mixers, builders' hoists, trench pumps and back-fillers, manufactured by the Waterloo Cement Machinery Corporation, Waterloo, Iowa, is presented in their new catalog, forty-eight pages, 8 by 10 inches, illustrated.

"Beautiful Boats and How to Care for Them" is the title given a booklet of sixteen pages, 5 by 7 inches, illustrated in colors, published by the Murphy Varnish Company, Chicago, Ill., and Newark, N. J.

"The Evolution of Cooking and Heating" is an interesting history by H. H. Manchester contained in a booklet of thirty-six pages, 5 by 8 inches, illustrated with quaint and curious drawings, published by the Fuller & Warren Company, Troy, N. Y.

The Monitor Line of Sheet Metal Goods is illustrated and described in Catalog B, twenty-four pages, 10 by 6 3/4 inches, of the Lichty Metal Products Company, Waterloo, Iowa.

**Uses 150,000 Sq. Ft. of Cornell Board**

In the construction of the booths and the decorative effects at the Coliseum, Chicago, for the National Music Show over 150,000 square feet of Cornell Wood Board were used. The committee in charge of the construction



Coliseum Furnished with Wall Board Booths for Music Show.

of the booths decided upon this board after looking over various materials that could be used in this work. They decided upon it because of its remarkable strength and at the same time the ease with which it could be handled and decorated.

As the entire construction work of this exhibition is made up of wood board and plate glass, the finished appearance of the huge arena was that of a permanently built series of rooms, rather than the usual fragile appearance that labels exhibitions of this nature.



**Build With Belden Brick**

—On the basis that brick houses make for a higher standard of construction and therefore more good work and more profit to you.  
—With the knowledge that once you are familiar with brick construction that you can make more money building brick houses than any other kind.

—With the absolute conviction that "Belden Brick" represent the biggest value you can buy and that we are prepared to give you the kind of service you want.

We appeal to you to investigate carefully brick house construction.

**Direct from the Manufacturer**

We have dealers in hundreds of cities and towns in the United States and Canada at the present time. We ask you to write for samples and prices and the name of our nearest dealer. Belden Brick are made in five modern factories and come in all colors, shapes and sizes, and in most textures, rough and smooth. We have the very brick you are looking for, be it house, bungalow, garage, theater, store, bank, church, school, library or office building.

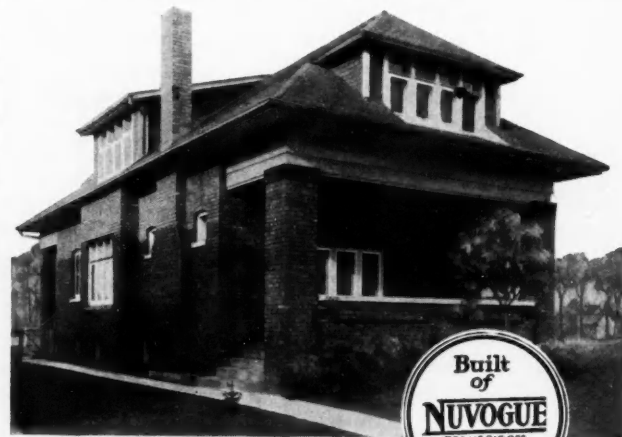
**THE BELDEN BRICK CO. Est. 1893 Canton, Ohio**

Five Plants at Canton, Somerset, Uhrichsville, Port Washington

=====USE THIS COUPON NOW=====

Belden Brick Company, Canton, Ohio  
Gentlemen:—We are favorable to the use of brick for many purposes and would like to know more about your product. We are figuring on building (use this line if anything definite).....

We buy thru (give name of dealer).....  
Name.....Address.....



**Drop us a line and tell us what you are figuring on building this Spring**

HUNDREDS of progressive contractors are finding that brick construction is as easily handled as frame; and it has many advantages—the principal one is, that it gives your client a more permanent home and relieves him of the continual expense of painting and upkeep.

**Then we will tell you how "Artfashioned" Brick can be used to advantage**

Artfashioned Brick are made in a wide range of colors and textures. There is a Nuvogues Brick for every style of architecture—from the modest bungalow to the best building in town.

**You can get "Artfashioned" Brick from your Local Dealer**

We have hundreds of lumber dealers in the Middle West now handling "Artfashioned" Brick. If your local dealer does not carry our line ask him to write us. We prefer to furnish it through his yard.

BOONE BRICK TILE & PAVING CO., Manufacturers of Artfashioned Brick, Boone, Iowa  
Sales Offices all through the Middle West

**MADE IN IOWA!**



Hy-tex Residence, Saint Louis

A man's business success is determined by the advantage he takes of his opportunities. The contractor who limits the material with which he builds, limits his opportunities.

**Hy-tex**  
The Standard of Quality in Brick

The brick department of the American Builder is showing you in a thorough and practical way how to use brick. And any Hy-tex office in the country is ready to help you work out your brick problems. Hy-tex Service is on a par with Hy-tex Quality and the wide range of Hy-tex color tones and textures.

## Hydraulic-Press Brick Company

Saint Louis

Branch Offices: Baltimore, Chicago, Cleveland, Davenport, DuBois, Pa., Indianapolis, Kansas City, Minneapolis, Omaha, Philadelphia, Roseville, Ohio, Toledo, Washington

*Largest Manufacturers of Face Brick in the World*

### Send for these Booklets

"Hy-tex Brick" tell you the many advantages in building with brick, and something about the completeness of the Hy-tex line and the benefits you can derive from Hy-tex Service.

"Suggestions for Small Hy-tex Homes"—shows the possibilities of brick in small homes. It is illustrated with perspectives and floor plans of small brick houses.

**Mail the Coupon NOW**

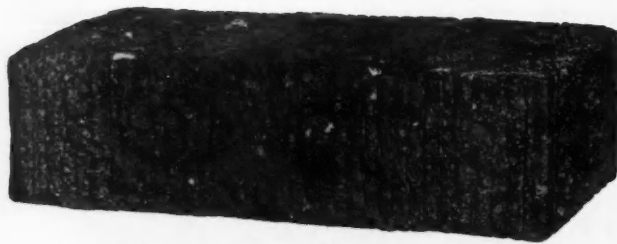
Hydraulic-Press Brick Co.  
St. Louis, Missouri

Send me "Hy-tex Brick" and "Suggestions for Small Hy-tex Homes."

Name.....

Street.....

City..... State.....



### ALLIANCE MULTI-COLOR RUFF BRICK

EXCEL ALL OTHER BRICK as to beauty of coloring. The chromatic scale of colors runs through the beautiful rough-texture faces, most of the individual brick showing on the face of each brick three or four or more of the seven primary colors or their shades—gun-metals, wines, chocolates, browns, ox-blood reds, bluish tones and multi-colors.

Mr. Dealer: If you want the best seller among the many brick made today ask for the agency for Alliance Multi-Color Ruff Brick—beautiful rough-texture and all the colors of the rainbow. Samples and prices on request.

The ALLIANCE BRICK CO., 25 South Linden Ave., Alliance, Ohio

### Shackelford Brick and Hollow Tile

Made of Iowa's Best Shale

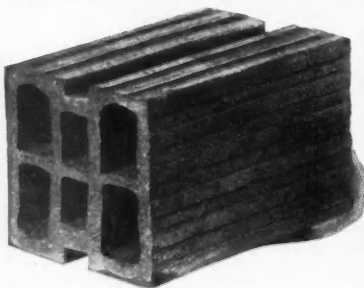
Shackelford common brick and hollow tile are made of Iowa's best shale, and always give entire satisfaction. They are in wide demand throughout the Central West. We would be glad to have your inquiry.

**Our Lumberman's Special** is a brick that hundreds of lumber dealers are carrying to decided advantage. If you carry chimney and foundation brick get in touch with us at once—we have something of interest for you.

SHACKELFORD BRICK CO., Des Moines, Ia.

### "HEAVY DUTY" INTERLOCKING TILE

The STRENGTH of BRICK and the DRYNESS of TILE are combined in Vigo American Heavy Duty Interlocking Tile to make a BETTER wall than solid brick and at two-thirds the cost.



We also manufacture Fire-proofing, Building, Arch, Partition and Drain Tile, Hollow Brick and other shale products. Send for our literature.

VIGO-AMERICAN CLAY COMPANY  
7th and Ohio Sts., TERRE HAUTE, IND.

### "Practical Homes"

A Plan Book Containing Thirty Plans and Elevations of Houses

Built During Past Three Years

This selection includes all prize-winning and mention designs from National Building Show, New York, Competition . . . . **\$1.00** Post paid

S-A-F-E, 356 Leader-News Bldg., Cleveland, O.

### How to Make a Home Craft Electric Lamp

(Continued from page 85.)

First, however, we need the extension cord and attachment plug, and the special candelabra receptacle shown in Fig. 3. These may be procured at any electrical supply house. They are intended to fit inside our imitation porcelain candle and are especially made to fit the style of small candelabra globe shown in Fig. 1.

The hole that is bored in the small cap block to take the receptacle should be a tight sliding fit, and the receptacle should be pushed into it from the underside until it comes just flush with the top. A  $\frac{3}{8}$ -inch hole is bored down thru the stem and a connecting hole bored thru one side of the base at right angles with it for the passage of the cord.

The stem is then fixed to the base with glue and two long screws, and the small cap is fixed on top of the stem with two 2-inch brads. The heads of the brads are cut off just before they are driven home and the brads are set with a very fine nailset so that they may be easily hidden.

The handle is fastened with glue and a round-head screw, as shown. There is also a dowel in the upper portion which is made from a small brad. The brad is first driven into the handle the necessary distance. The head is then cut off and after filing a point on the projecting portion it is easily pressed into its proper place in the stem.

The bead fringe is fastened to the underside of the top of the shade with glue and 2-ounce steel wire tacks. To avoid confusion of lines, the bead fringe is not shown in Fig. 1, but may be seen in the photo. The supports of the shade are fastened with round-head screws.

Some variations in the style of the lamp may be employed. It may be constructed without the shade, and indeed the writer is of the opinion that it looks better without the shade when unlighted, tho the lighted lamp looks better with it.

It may be made slightly shorter and used as a regular candlestick without the electric fittings. Or it may be made shorter again and fitted with the porcelain imitation candle, socket and globe mentioned in the foregoing.

Finally, it may be fitted with the regular electric lamp socket and globe and supplied with a silk or paper shade, which is supported from the lamp globe itself by means of a wire frame.

The lamp looks best with a filled and wax finish, directions for which have appeared several times in these columns.



#### Forest Note

Balsa wood, found in Central America, is said to be the lightest known wood. It is lighter than cork and has an average specific gravity of only .104.

## More Than Fireproof

Summer Heat Proof  
Winter Cold Proof  
Damp and Decay Proof

# DENISON INTERLOCKING TILE

(Trade-Mark)

This tile affords the best possible fire protection, but it goes much further than that.

It builds a wall, honey-combed with separate air cells, which completely break all connections between inside and outside surfaces of the wall. Even the mortar joints are on different levels with insulating air spaces between. The wall is heat, cold and moisture proof.

The webs or partitions in the tile are always in perfect alignment over each other and the tile interlock and bond together, making a wall amply strong without the use of steel.

Denison Interlocking Tile is more than fireproof.

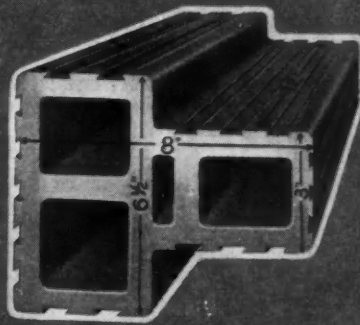
*Write for special information on the type of building you are interested in.*

## Denison Interlocking Tile Corporation

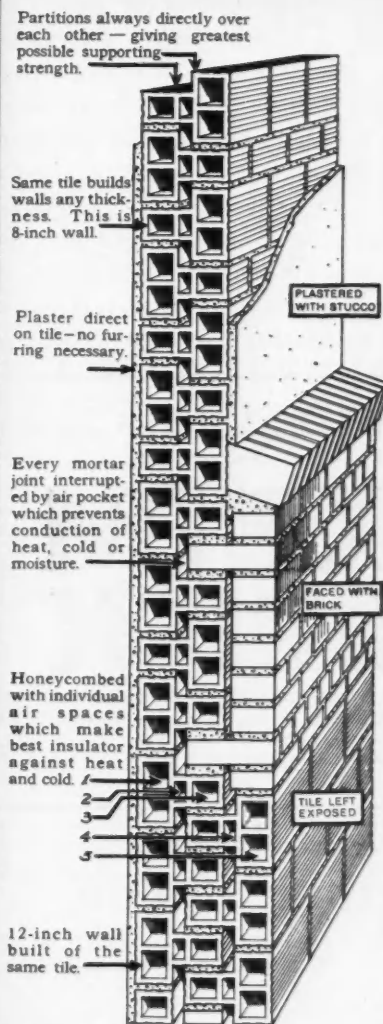
CLEVELAND, OHIO

Thirty-one  
Factories

Eighty-nine  
Sales Offices



This unit builds all desirable thicknesses of wall. See drawing below.



Santa Fe Depot  
San Diego, Cal.  
Balaswell & Brown, Architects  
Simpson Construction Co., Contractors

### Hollow Metal Windows Approved

(Continued from page 42.)

why old buildings were vacated, or any reason why all new buildings should not be equipped with this type of window, which has long since passed the experimental stage?

In the early period of their manufacture, in many cases, the hollow metal fireproof windows were clumsily made and not weather-tight or storm-proof, but the introduction of machinery and prolonged study on the part of the leading manufacturers have enabled them to turn out a product that is now absolutely weather-tight, while the severe tests they have undergone in the large conflagrations in Baltimore, San Francisco, Rochester and other cities unquestionably prove their fire-resisting qualities. Buildings that were thus equipped were saved and the tenants enabled to continue their business, while others, less fortunate, were driven out until new structures could be erected.

This high degree of efficiency and success is, in a large measure, due to the co-operation and standard set for their manufacture by the Underwriters' Laboratories, who have tested hundreds of windows and know by experience the essential features required to make them weather-tight as well as fire-resisting when severely attacked. Every manufacturer, in order to secure approval and the right to label his window, must submit a sample which is subjected to a test of about 1,600 degrees of heat, and rapid cooling by a seven-

eighths inch stream of water under sixty pounds pressure. If it remains intact after this severe test, it is approved, but all windows must be manufactured in strict accordance with this sample, and the Underwriters maintain an inspection bureau whose representatives visit the shops while they are in process of manufacture.

The only safe procedure for an architect or owner who requires a window that is really fireproof is to have the specifications call for all windows to bear the Underwriters' label, which is the hall mark of good mechanical construction, honest workmanship and materials that can be relied upon to accomplish the purposes for which fireproof windows are installed—namely, to save the building from destruction when attacked by fire.

The same rule applies to the purchase of fireproof windows that obtains in nearly every line of business. Where quality and reliability are requisite, the price should not be the only determining factor.

Up to the present time all windows exceeding five feet in width and nine feet in height required I beams or concrete mullion reinforcement. Within the past few weeks, as a result of the recent manufacturers' conference at the Chicago Laboratories, a sample window ten feet wide and twelve feet high, without any reinforcements of any kind, was tested. It stood up so well that the manufacturers confidently hope they will soon secure label indorsement on all windows up to that size, without any reinforcement.

### The Keim Brick & Tile Company

Makers of

# KEIM BRICK

**DISTINCTIVE TEXTURE—CONVINCINGLY BEAUTIFUL**

Plant: Mapleton, Ohio. Offices: Louisville, Ohio

Selling Agencies in All Principal Cities

Write for our new folder showing our line in full range of colors and textures.

### Rockford Hollow Tile

A SAFE and fireproof material for low-cost permanent construction. Rockford Hollow Building Tile is especially adapted to the construction of farm buildings.

We shall be glad to give the Builder any information or help relative to Hollow Tile Construction. Get in touch with us now. We sell only to the Contractor or dealer.

Rockford Building Tile is sold to the building public only when there is no contractor or dealer. We protect the dealers price always.

Write today for further information and prices.

Rockford Brick & Tile Co., Rockford, Iowa

WITHOUT OUR ESTIMATE YOU HAVE NO COMPETITION

### The Whitacre-Greer Fireproofing Co.

Manufacturers of

**HOLLOW TILE FIREPROOFING  
and BUILDING BLOCK**

**Waynesburg, Ohio**

Chicago Office:  
538 South Dearborn St.

Pittsburgh, Office:  
7136 Jenkins Building

FIREPROOFING MADE OF PURE FIRE CLAY

# TILEBAK

(Hollow Clay Tile)

Covered with STUCCO or

## HOMESTEAD FACE BRICK

Makes ideal construction for Residences, Schools, Churches,  
Banks, Garages, Theatres, etc. *It's Fire-Proof*

Send for Descriptive Pamphlets

The Barkwill-Farr Company <sup>Nine Modern  
Plants</sup> Cleveland, O.



## GF No. 10 Integral Waterproofing Paste Insures Watertight, Permanent Construction

Why plan to make your new building fireproof, yet take no steps to make it waterproof? Ground water stealing through the foundations or moisture creeping through the walls may undermine the health of occupants, ruin perhaps thousands of dollars' worth of goods or furnishings and damage the structure itself.

You can't guarantee that these things won't happen, unless you waterproof your building throughout.

The easiest, most efficient and economical way to do it is to use an Integral waterproofing while you are building. A good material is GF No. 10 Integral Waterproofing, a smooth white paste which is dissolved in the water for mixing the concrete,

and which is carried with the water to every part of the concrete mass.

GF No. 10 Integral Waterproofing Paste throughout the entire mass of concrete renders the walls of every little pore permanently water-repellent.

GF No. 10 Integral Waterproofing Paste is used extensively in concrete foundation, walls and floors; in the finish coat of cement stucco; for mortar joints in brick or stone construction in building swimming pools and tunnels. It is also used in repairing leaks in structures already built.

GF No. 10 is only one of the 23 GF Products for waterproofing, damp-proofing and protecting concrete.

If you do not have a copy of our Waterproofing Handbook, let us send it. Waterproof practices for almost every condition are covered in it. Our Waterproofing Service Department is ready to confer with you on special problems, without charge or obligation.

### THE GENERAL FIREPROOFING COMPANY - Youngstown, Ohio

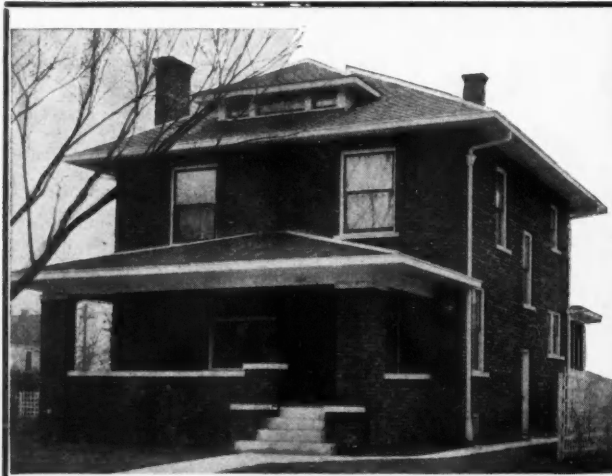
*Members of Associated Metal Lath Manufacturers*

**Branch Offices: New York City, Chicago, Philadelphia, San Francisco, Kansas City, Atlanta, Cincinnati, Buffalo, Utica**

**The best dealer in your town has GF Products in stock**

*Manufacturers of the following GF Products:*

<p><b>Self-Sentering</b> For Concrete Roofs and Floors</p> 	<p><b>Herringbone Rigid Metal Lath</b> For Stucco and Interior Plastering</p> 	<p><b>Steel-Tile</b> Steel Forms for Concrete Floors and Roofs</p> 	<p><b>Waterproofing</b> For Protecting and Harden- ing All Concrete</p> 	<p><b>Trussit</b> For Solid Par- titions and Curtain Walls</p> 
<b>Self-Sentering</b>	<b>Herringbone</b>	<b>Steel-Tile</b>	<b>Waterproofing</b>	<b>Trussit</b>



**LET US SEND YOU THE FLOOR PLANS OF THIS HOME**

**W**E would like to show you how you can build homes like this at a cost practically the same as for frame.

No more handsome or lasting homes are built than those constructed of our "Navajo" or "Brocade" Brick.

The building public is becoming more and more familiar with the many advantages of brick construction—durability, low cost of upkeep, even temperature and the economy in heating. More brick homes are being built than ever before.

Kansas Buff Brick is made in a variety of textures and colors to suit every purpose. We have sales offices in all the principal cities of the middle west and will gladly give you the name of your nearest dealer.

**Mail the Coupon Now**

It will bring you our portfolio showing "Brocade," "Navajo" and our other bricks in their natural colors, also complete information and your nearest dealer's name.

**Kansas Buff Brick Mfg. Co.**  
BUFFVILLE, KANSAS

Kansas City Buff Brick Mfg. Co.,  
Buffville, Kans.

Gentlemen:—

Please send me, without obligation, the free floor plans, your brick catalog and the name of my nearest dealer.

Name.....

City.....

State.....

**Building a Brick House of Hollow Tile**

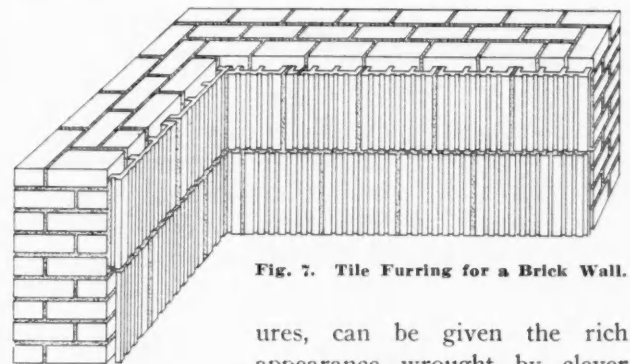
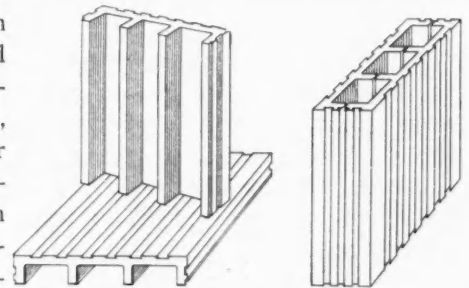
*(Continued from page 53.)*

an unbroken plane free from cell holes, as would be the case if ordinary hollow brick were used.

Old brick walls can be furred with fireproof material, or new walls of brick treated in the same way so as to comply with fire and building laws, by using a special furring tile on the interior of the walls, as shown in the illustration. The furring tile as delivered to the job are double, but scored with deep grooves along the end shells and the webs, so they can easily be split apart. They are then laid by the brick-layer, end on end, against the inside of the brick or stone wall, and plaster applied to the surface, the plaster being held in place by the deep dovetail grooves scored in the face of the half tiles.

In this article I have treated the subject of combination walls built of hollow tile and brick from the builders' rather than from the architects' point of view, or from the structural rather than from the artistic stand-

point. Much can be said from the latter viewpoint, however, for a wall of hollow tile with all its economic fea-



**Fig. 7. Tile Furring for a Brick Wall.**

tures, can be given the rich appearance wrought by clever bricklaying when laying the brick units in pretty designs and patterns. The two materials work and blend well together. They are being used in combination more and more every day, and it will be well to paste the illustrations accompanying this article in your shops or offices, where the masons and bricklayers in your employ can see them and thus keep posted as to the trend of the times. ❖

**An Unusual Remodeling Job**

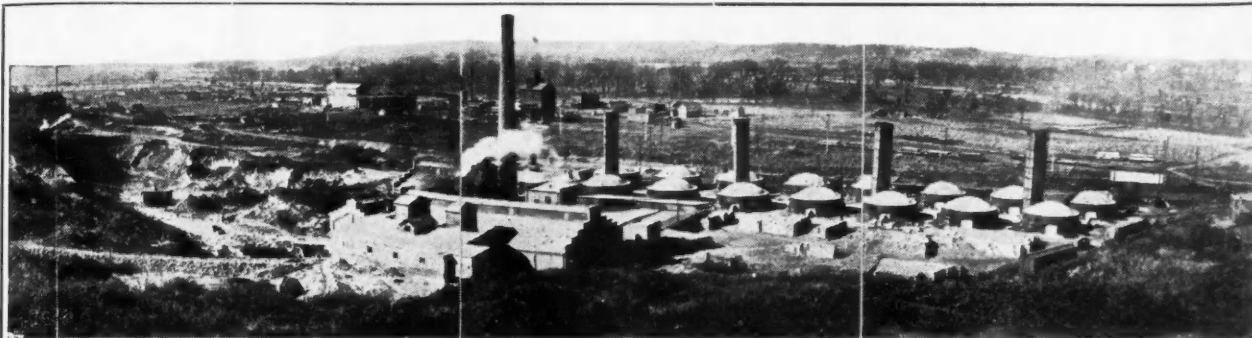
*(Continued from page 41.)*

He considers that good judgment and knowledge of mechanics are sufficient to insure success in this sort of remodeling. He is a staunch believer in "Safety First," and will not take a chance on anything.

The cost of the original house was \$1,750, and the

*(Continued to page 116.)*





## Get Samples and Prices of the Best Face Brick and Hollow Clay Building Tile Made in Iowa

If your local lumber or building material dealer does not carry the Capital Clay line in stock write us for samples and prices and give us his name. Do not go ahead with your spring building operations until you have figured with us. Our plant is operated solely on strictly impervious face brick and hollow face building tile made of famous Iowa's shale—we are specialists in their manufacture and samples of our product will convince you.

### HAWK-TEX FACE BRICK AND BUCKSKIN HOLLOW BLOCKS

HAWK-I-TEX Face Brick are made in various textures and distinctively beautiful color combinations. BUCKSKIN Blocks, made in the standard sizes, are produced from a very high grade shale, and furnished either vitrified or medium burned. Their superiority is evidenced by an official laboratory test, which we will mail upon request.

**OF SPECIAL INTEREST TO LUMBER AND BUILDING MATERIAL DEALERS:** We want local lumber and building material dealers in every city, town and hamlet in the Middle West to carry the Capital Clay line—much good territory still open and under a Special Dealers' Plan that will interest you—write at once.

**CAPITAL CLAY COMPANY, Factory Sales Office in all cities of the Middle West, DES MOINES, IOWA**

----- Mail This Coupon for Samples and Prices -----

**CAPITAL CLAY COMPANY, Des Moines, Ia.**

Please send us samples and quote prices on Face Brick ( ) and Hollow Tile ( ) If tile give size \_\_\_\_\_

We expect to build the following \_\_\_\_\_

My dealer is \_\_\_\_\_ My name is \_\_\_\_\_ My address is \_\_\_\_\_

LET US TELL YOU ABOUT THESE BEAUTIFUL FACE BRICK

### "VINE-WOVE"

A Vine-like texture is woven into the surface of these brick.

### "PERSIANTEX"

The soft, deep nap of a Persian Textile has long characterized these brick

These Lines are made in both Red and Buff

Write for Illustrated Descriptive Circular

**ACME BRICK CO., Cayuga, Ind.**

Factory Sales Offices in all Principal Cities

We want local lumber dealers to carry the Acme line—Write us

## High Grade Face Brick

Afghan Matt—Afghan Vertical Ruff

**Mr. Contractor:** We have an interesting set of pictures of houses, bungalows and public buildings, built of these beautiful brick, we would like to send you free. Please tell us what you are planning to build this spring.

**Mr. Dealer:** Hundreds of good dealers now carry our line. We want more of them. Write us for our dealers' special plan.

**CRAWFORDSVILLE SHALE BRICK CO.**

Factory Sales Offices in all Principal Cities of Middle West  
CRAWFORDSVILLE, IND.



## Build with Beaver Brick

Beauty and permanence of construction can be obtained with this brick at a cost but slightly greater than for frame.

Well burned face brick is universally recognized as the most beautiful and durable building material in existence, and the advantages of brick construction are many.

¶ Brick homes are practically indestructible. Insurance rates are low and the cost of upkeep such as painting and repairs are reduced to a minimum.

¶ Houses of brick maintain an even temperature at all times. Cool in summer and warm in winter.

Beaver Brick is made in a variety of colors and textures. Beaver Clay, Turkestan Vertex and Volcanic Extreme Rough Texture represent the best in facing brick. Our catalog shows them in their natural colors.

Write Today

BEAVER CLAY MFG. CO., NEW GALILEE, PA  
SALES OFFICES IN ALL CITIES

# Non-Breakable—



Picture moldings, plate rails, baseboards, hardwood flooring, built-in cupboards, bookcases and the like, must have accurate, close-fitting joints to look well at all. To accomplish this an *accurate* Mitre Box is absolutely essential.

The Goodell-Pratt All-Steel Mitre Box is just such a box. For many years, the name Goodell-Pratt has stood for tools of the highest grade, and this new product is fully up to the standard to which is due this reputation for fine quality. As implied in the name, every single part is steel, and thus breakage and repair expense are absolutely eliminated. The frame is built like a bridge truss, and strongly riveted.

## GOODELL PRATT

1500 GOOD TOOLS

# For It's All-Steel

This Mitre Box is made with the utmost care and it will retain its accuracy after years of daily use.

It is made in five sizes, all having the same width or capacity; the difference is in the size of the saw, which varies from 24 x 4 to 30 x 6. When fitted in our factory with Disston back-saws, these All-Steel Mitre Boxes are guaranteed; but they can be obtained without saws, if desired. All sizes have a capacity of 10½ inches at right angles and 7¼ inches at Mitre.

The lever that carries the saw can be swung 45° either right or left from the center, and locked at any angle. It locks automatically at the more usual angles; angles are indicated on a graduated arc. The saw guides are extra long; insuring rigidity and accuracy when the saw is in the raised position. There are stops on the guides that can be set so the saw will cut to any desired depth.

Angles less than 45° are possible through the use of an Extra Angle Attachment at the left side of the box. The steel bottom plates are scored to prevent the work from slipping. At the right side there is a length gauge for cutting duplicate

pieces up to 20 inches in length.

The automatic screw-driver shown below is a strong, practical tool operating as an automatic or a ratchet screw-driver, either right or left hand, or as an ordinary stationary screw-driver. The spiral groove slants at an angle of 20°, so that *this tool will do heavier work than any other* of its class. The long slant insures great power with plenty of speed. Complete with three interchangeable blades, this tool costs \$1.60.

*For more information about the 1500 Good Tools send for the Complete Catalog.*

**GOODELL-PRATT COMPANY**

*Toolsmiths*

Greenfield, Mass.

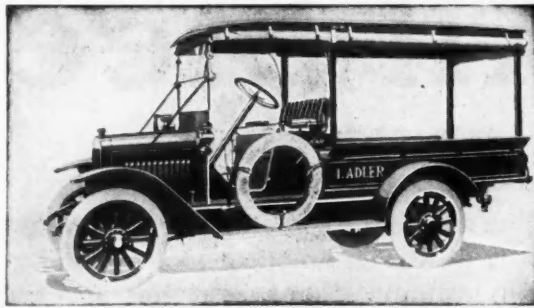
#### Partial List of Goodell-Pratt Tools

Drills	Bit-Braces	Grinders	Gauges
Levels	Vises	Squares	Saw Sets
Screw-drivers	Hacksaws	Calipers	Micrometers



# GOODELL PRATT

## 1500 GOOD TOOLS



**Dependability is what Carpenters and Builders Demand in the trucks they buy**

**A**ND TRUCK dependability is possible only with reliable frame, axles, springs, brakes, motor and other structural parts.

In KisselKar Trucks carpenters and builders find that the Kissel built-in quality gives an unusual durability seldom found in motor trucks.

The Kissel-built engine is power insurance for every grade—the perfected worm drive rear axle is traction insurance on every road, while the other Kissel mechanical superiorities and features are insurance of dependability under all road conditions.

More KisselKar Trucks are now being used in the carpentering and building trade than ever before. Let us send you data and information on how they are making good for other carpenters and builders in all parts of the country.

**Kissel Motor Car Company**  
Hartford, Wis. U. S. A.

*The matchless Kissel-built motor, and perfected worm drive rear axle are guaranteed with every KisselKar Truck.*

*KisselKar Truck branches, display rooms and service stations in all principal cities and towns.*

*Five sizes--from Light Delivery up. Chassis prices \$1085 to \$3750.*

**KISSELKAR  
TRUCKS**

(Continued from page 112.)

cost of the addition was about \$1,650. The plans for the house were drawn by Mr. Thomas A. Blue, the owner of the property. He states that the remodeling has been satisfactory in every particular and that no accidents of any type marred the steady progress of the work. He can give no definite reason why he wanted the house remodeled in this particular manner other than the idea that it could be done.

A stairway to the second floor was cut thru a part of the original kitchen and the whole room divided into two bedrooms. The front and rear porches of the original house have been retained and make pleasing as well as useful features.



**The Man from the Lumber Yard**

(Continued from page 40.)

cause to have a million of the enemy to realize defeat than a million of our own bunch. Nothing would serve the Teuton better than for our economic fabric to go to pieces.

I note a disposition in some quarters to act like a neighbor of mine. This was back in the days when I was keeping books in my father's lumber yard.

The grass-hoppers made a clean sweep of everything in that section. There wasn't a green thing in our town, save the house and picket fence of Widow O'Riley, who always kept them painted green in honor of St. Patrick.

A neighbor of ours had a great bunch of chickens. They practically kept him.

He was a flighty sort of fellow, as was his wife, also. When the grain question became acute he started in to economize by shutting off feeding his chickens. My father noticed a dozen dead chickens thrown out into the ally and investigated.

He found that the man had figured that the grass-hoppers were destroying everything and it was better for the chickens to starve than for him.

It didn't take long for my father to open his eyes to the absurdity of his action. This man lost fully one hundred chickens and saved possibly a dollar's worth of grain.

Whenever anybody in that community wanted to illustrate an inconsistency they always referred to Mr. . . . . . starving his chickens to save grain.

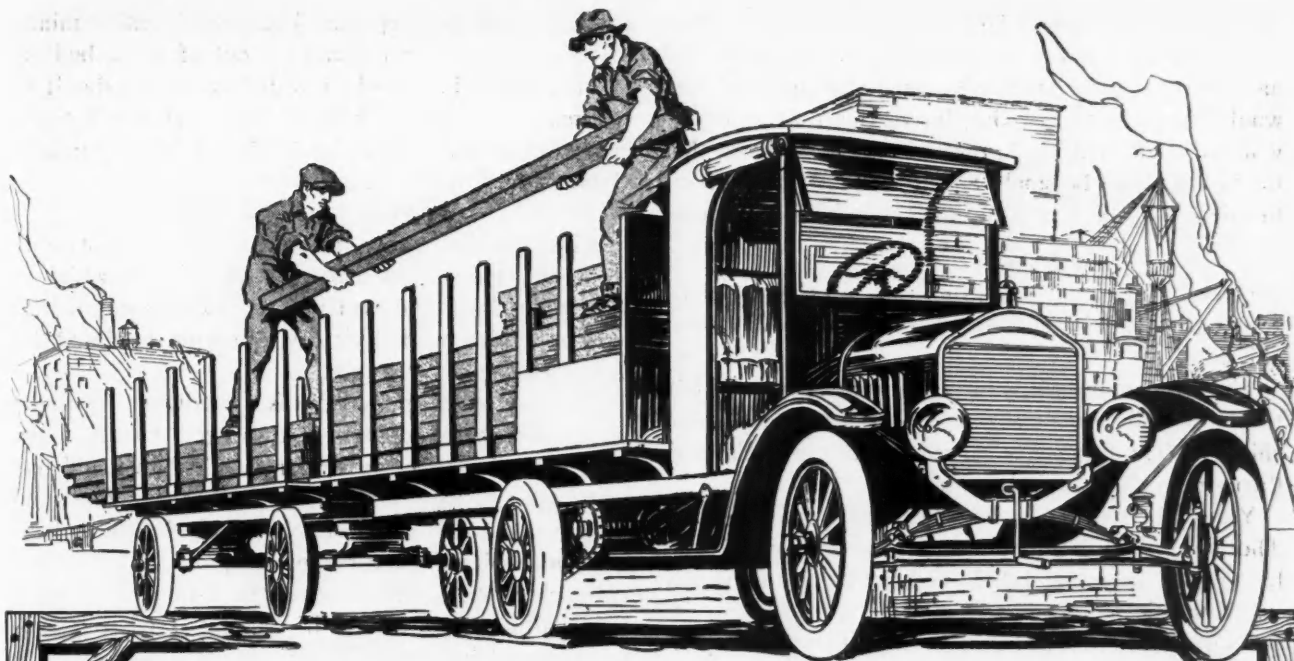
This is so absurd that it is almost unbelievable; but it is no more absurd than the hysteria of economy that some people are preaching without practicing and others are quietly practicing.

Five hundred thousand are being mobilized. That is one out of every two hundred.

Don't overlook the one hundred and ninety-nine.

There is no question but that this half a million will have to be followed soon as our mines and mills can supply material for equipping, by another half million, and possibly later on this million by still another, for there will be no turning until the war is won.

(Continued to page 118.)



## Greatest Hauling Efficiency in the World

Read this letter. It is an example of what lumber concerns, contractors, and building supply houses all over the country are doing with Smith Form-a-Trucks.

**"In unloading lumber from car we attach a wagon to the rear axle of Smith Form-a-Truck. This gives us a chance to haul any length of lumber. In this way we have hauled 4 tons, and very easily. We put a platform on our truck and load same up to 3,500 pounds and haul this load wherever we go. A lumber dealer who would give Smith Form-a-Truck a trial would not do without one."** J. E. Wiess Lumber Company, Sioux City, Iowa.

Smith Form-a-Trucks every day are making hauling records no other truck or horse system of hauling can even remotely approach. It is the only logical, economical hauling system in the world today. Thousands upon thousands of large and small firms in every line of business have awakened to the wonderful efficiency of this truck.

### World's Lowest Hauling Cost

Now sell your horses. The actual cash saving will pay for Smith Form-a-Truck. The wonderful speed of Smith Form-a-Truck, 12 to 15 miles an hour under load, will enable you to make quick deliveries—frequent loads—keep loaders busy—save extra drivers' wages—cut insurance cost and your investment in equipment.

### Strong—Powerful—Dependable

Smith Form-a-Trucks will haul loads as heavy as trucks costing several times its price. Over the same roads—just as far. And for at least  $\frac{2}{3}$  its cost.

Combined with Ford, Dodge Bros., Maxwell, Chevrolet, Buick or Overland power plants Smith Form-a-Truck attachment makes a fully guaranteed one-ton truck. Not an ounce of weight is carried by the Ford rear axle. It merely acts as a jack shaft. Ninety per cent of the load is carried by the Smith Form-a-Truck special, strong rear axle. The Smith Form-a-Truck frame telescopes the chassis frame, making a double

construction. This is the strongest construction principle known to engineers.

### \$8 for Repairs

Smith Form-a-Truck repair cost is the lowest on record. The first Smith Form-a-Truck made is still in service. It has already travelled 20,000 miles, carrying an average load of 2,050 pounds. Yet, after this tremendous ruling service, its total repair cost was only \$8.

### Lowest Maintenance Known

Figure your yearly horse drawn delivery cost. Then compare it with these amazing Smith Form-a-Truck figures. 27,000 Smith Form-a-Truck users are paying less than 8c per ton mile, exclusive of drivers' wages. They are getting the remarkable tire mileage of 6,000 to 8,000 miles. Records show 12 to 18 miles per gallon of gasoline 52 weeks in the year. They are making quick deliveries with 12 to 15 miles per hour in all parts of the country.

This is the amazing delivery service you must secure to take the expense out of hauling. Smith Form-a-Truck low hauling cost has revolutionized delivery service.

### Get Experts' Figures

Write now. Our transportation engineers know your hauling problems. Let them tell you what a Smith Form-a-Truck will save you in actual cash.

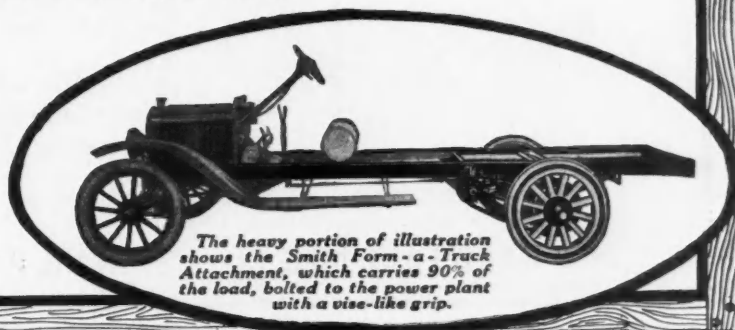
## SMITH MOTOR TRUCK CORPORATION

Manufacturers of Smith Form-a-Truck  
Executive Offices and Salesroom: Smith Form-a-Truck Building,  
Michigan Boulevard at 16th Street, CHICAGO

# Smith Form-a-Truck

# \$350

F. O. B. CHICAGO



The heavy portion of illustration shows the Smith Form-a-Truck Attachment, which carries 90% of the load, bolted to the power plant with a vise-like grip.

(Continued from page 116.)

My son may never come home. As his wife and mother work with moist eyes and trembling lips, they would not have it otherwise, for there are many things worse than dying. God grant he may come back, that the toll of death be small, and that those who do have to grieve may be buoyed by the thought of duty done.

#### The Home Line Defense

Uncle Sam must look after the front rank—must feed our own boys and help supply the needs of our allies.

The more butting-in you do in what isn't your job, the more you throw the monkey-wrench into the machinery. The more you carry of someone else's load, the more you incapacitate yourself.

Your job is to look after the "home defense line." Thousands of children are growing up enemic and pale, because of improperly balanced feedings and poorly ventilated sleeping rooms.

Every time you make it possible for that boy of twenty to have better air in school, work shop or home you are doing a humane act just as much as the giving of a glass of water, and you are building Uncle Sam's resources.

#### Producing Power

Do you know what our prime personal duties are? If I am wrong drop me a postal card, for I want to get it right. I believe they are (1) building good healthy

bodies; (2) equipping those bodies with active minds that make people, not dummies, out of these bodies; (3) put spirits in those bodies that are aggressive if in command, obedient if in the ranks, but at all times masterful of self. With that kind of producing power, Uncle Sam is invincible.

#### Ask Your Wife About It

It is a good thing to be made to consider the price of foodstuffs, to have to make a study of that which is most nourishing and will put the most strength into your body, the greatest vitality into your mind and the most "pep" into your children.

That is one thing my wife is a crank on. But the beautiful thing about it is that she gets results. Our table is costing us no more per month than it did five years ago and we are having better health. The good woman that cooks my meals would be pleased to hear from your wife if she cares to write.

Let her state (a) number in family, (b) ages, (c) health, (d) condition of teeth, (e) what is generally served for breakfast, dinner and supper.

Don't hesitate, leave it to the women to get acquainted.

#### Uncle Sam's Purse

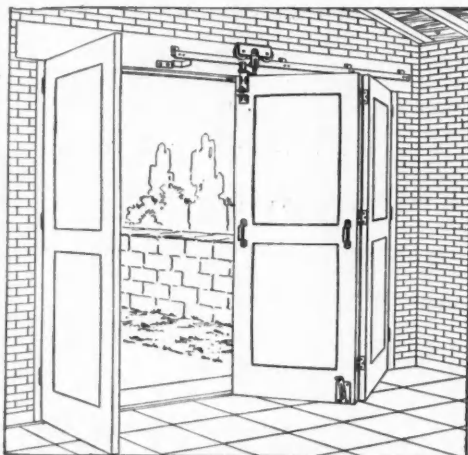
Canada suffered a considerable period of depression when she entered the war. The quota which was rushed to the front was enormously heavy as compared to ours. She was an infant in finance com-

(Continued to page 120.)

## Garage Doors Equipped With Sharon No. 23 Can't Sag

and will swing open and closed with a smoothness and ease that makes the most used part of the garage a constant source of pleasure.

It holds up the far end of the doors, closes them into the casement like the front door of a house and seals the opening. Takes the doors out of the way and gives the use of the full width of entrance.



Patents Pending

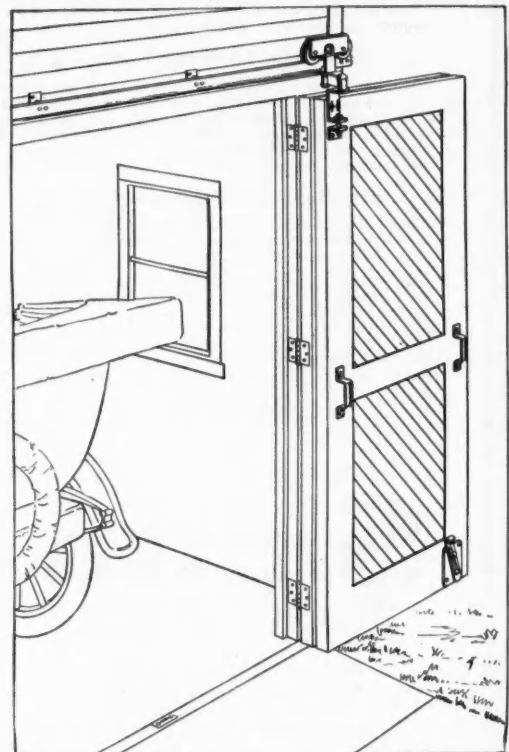
### Universal

to the inside or outside of the building

To right or left hand doors

To openings of any width and

As easily applied to the old doors as to the new.



Patents Pending

A card will bring you description and how to get one

**SHARON HARDWARE MFG. CO. : SHARON, PA.**

## Get in Line for Permanent Roofs

By using nails that will last as long as the shingles you lay. Get

# Zinclad

## SHINGLE NAILS

For every shingle roof—These nails will last a generation and are really the cheapest when measured by the years of service they give on the roof.

Zinclad Shingle Nails are sold by dealers in 32 states. If not sold in your city write us direct for samples and prices.

**W. H. MAZE COMPANY**  
PERU, ILLINOIS



## Beware of Imitations of G & B PEARL Wire Cloth—

**T**HE great demand G & B PEARL Wire Cloth has created through its remarkable wear-qualities, has brought a flood of imitations and substitutes on the market. These other screen materials may *look* a little like PEARL—at first—but they don't, can't and won't stand up in use or wear anywhere near as long as genuine G & B PEARL screens.

Spend a little time making sure you're getting genuine G & B PEARL so as to avoid spending a lot of time later in painting and repairing screens. Look for the two Copper Wires in the Selvage and the Round Tag which appear on every roll of real G & B PEARL.

There never was a better looking—better wearing screen material made the G & B PEARL Wire Cloth. It's cheapest in the long run because it lasts and does away with everlasting repairs and requires no painting.



*There's a retailer near you who sells and recommends G & B PEARL for permanently screening doors, windows and porches. See him or write us direct for samples and literature. Address Dept. A.*

**The Gilbert & Bennett Mfg. Co.**  
New York    Georgetown, Conn.    Chicago    Kansas City

*Pearl is made in two weights—regular and extra heavy  
The best Hardware Dealer in your city sells PEARL*

(Continued from page 118.)

pared to us. Today she is enjoying a material prosperity never before touched in her history. We start in where she now is. Do you know that your Uncle Sammy owns one-sixteenth of all the land in the world and has in his purse one-fourth of all the cash?

We are so rich that our new war indebtedness is a mere flea-bite. Even at 4 per cent it means an annual burden to each of us of only \$1.40.

### What Seven Billions Extra Earnings Mean

Then, on top of these facts please consider this pertinent fact, that over and above the ordinary revenues there will be paid out in the next year some seven billions of dollars, much of which will go for wages, either thru the medium of the farm, or factory, or mine.

Yes, a big lump of these earnings will eventually go for automobiles. Fine raiment will get quite a percentage.

How much will go into better homes, better housings for stock and for grain?

But do you know how much seven billions of dollars is? I began thinking about it, but had no way to gage it; I went into a bank and asked to see a pile of silver dollars. The banker kindly let me measure a stack of ten, which showed exactly one inch. You can figure it out if you are curious to know how high seven billion dollars would reach if piled one on top of the other.

You may not know that the Eiffel Tower in Paris is a thousand feet high, but it is.

Well, if you built a thousand towers one on top of the other, your seven billions of dollars would be higher than fifty such pyramids.

I never get tired from carrying my money, but I find that fifteen trains of thirty 36-foot freight cars, each carrying thirty tons, would be required to carry this sum of seven billions if in silver dollars.

I never became expert in counting money, but I believe I could count three silver dollars a second or 180 a minute, which would be 108,000 in a day of ten hours.

You would sleep without rocking if you kept up that speed, day in and day out. But to count the seven billions of money you would have to put in the ten hours per day, six days in the week for each of the fifty-two weeks for over two hundred years.

What vision do you see in this?

I know that there is less of dissipation and debauchery today than ever before in our history. Temperance and serenity are growing with all. One good thing about the war is that more people are doing serious thinking than ever before.

### A Vision of Building

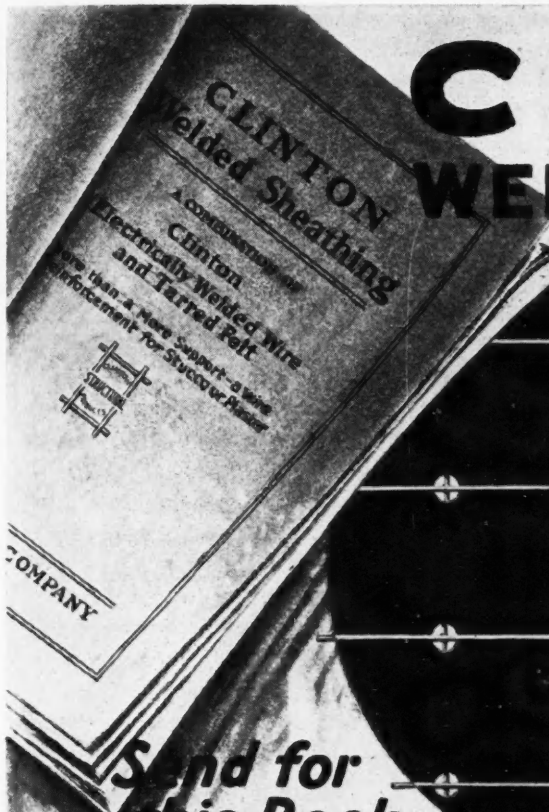
Suppose a third of this "extra" money goes to help the unfortunate of the world and for frivolities, and suppose another third went for what might be classed

(Continued to page 122.)



# CLINTON WELDED SHEATHING

more than a mere support a wire reinforcement for Stucco or plaster. —

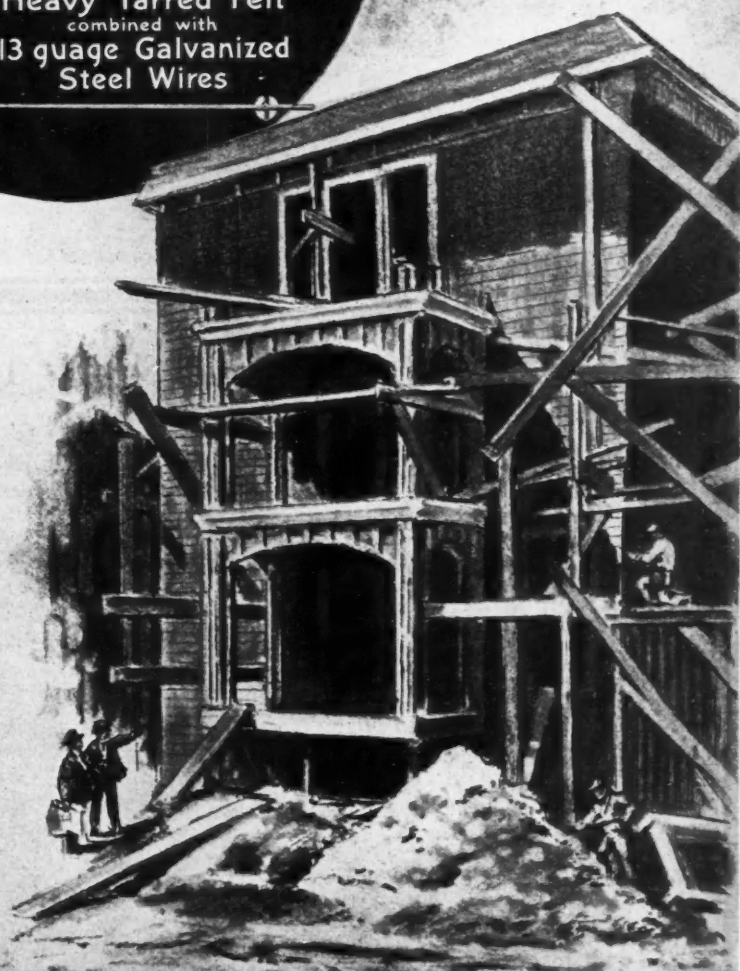


Send for this Book

Heavy Tarred Felt  
combined with  
13 gauge Galvanized  
Steel Wires

If you are interested in the application of plaster and stucco in the most economical and durable manner, let us send you our book telling about this wonderful lathing material, the speed with which the plaster can be applied, the firm backing it affords, the saving of mortar on the scratch coat, and above all its superiority over types of metal lath.

Our book proves all that we claim by tests and facts, and we want you to have a copy.



CLINTON WIRE CLOTH CO.

CLINTON, MASS.

BOSTON

NEW YORK

CHICAGO

FIRST WEAVERS OF WIRE BY POWER IN THE WORLD

(Continued from page 120.)

as necessities. There will still be enough left over to build a MILLION HOMES fit for any of his MAJESTY, the American Citizen.

Have you enough imagination to picture a million new homes? Think of the proud owners and the happy children.

#### Due the Child

The AMERICAN BUILDER is not the place to discuss psychology, but you can tell the difference in the children of home-owners and renters.

You, Mr. Builder, are working for your country, and the betterment of the race in future generations when you urge HOME building on the attention of the people of your community.

#### High Prices

Are you met with the reply that prices are too high?

Ask when they will be lower, ask when a bushel of wheat, a hog, or a horse, would buy more than they will today. Everyone knows that prices will not be lower during the war.

Let me tell you something else. Prices will not be lower for many years after the war.

History tells us of the boom of prices after the war of 1861. That war was a mere fly-speck. Were this war to close today, we would have all Europe to rehabilitate.

We will have Russia to supply with tools, implements and manufactured goods to the extent never

dreamed of in the development of our great West. They have 165,000,000 people; unlimited acreage; they need to be shown HOW.

All this will have to be done with a lessened force of labor, paid a wage never heard of before.

Set a date of ten years after the ending of hostilities for the first of any prices lower than today's. Many machines are being sold today, because of fierce competition of makers, at less money than they can be produced if the material had to be bought today. These will be higher in price, not lower.

#### Don't Be a Germ Carrier

Our doubts are traitors, and by fearing to attempt, make us lose the good we often might win. From my way of thinking, no day is a good day for gambling. There is no doubt in my mind that this is an excellent day for cool-headed conservative aggressiveness. And, contrarywise, this is not a day for the calamity howler to rock the boat. One man running amuck in a crowd may cause a whole bunch to become demoralized, and one man in a community can tie up the purse strings of many an enterprise.

Some men are regular germ-carriers and inoculate every one they touch with the poison of fear.

#### Get Together With the Other "Fellow"

Team work can go anywhere. Team work can tear down the mountains and cast them into the sea. The farmer, the miner, the mechanic and the builder must

(Continued to page 124.)

## Our Free Plans Will Help You—

**Meadows**  
TRADE MARK REGISTERED

Don't figure on any crib or granary without consulting our Free Plans. They will show you how to get greatest capacity at least expense by installing Meadows Inside Stationary Cup Elevators.

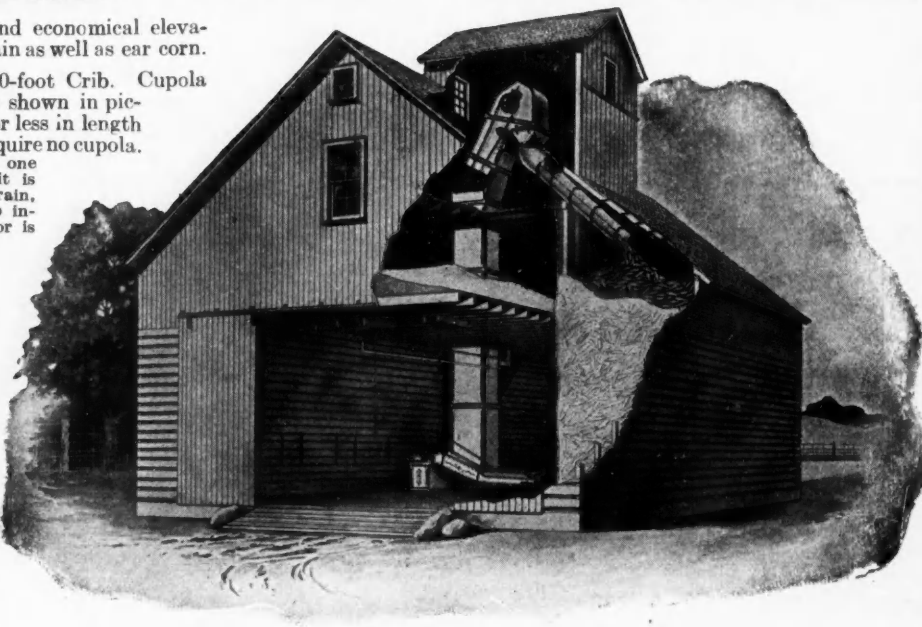
The most convenient and economical elevators, carrying small grain as well as ear corn.

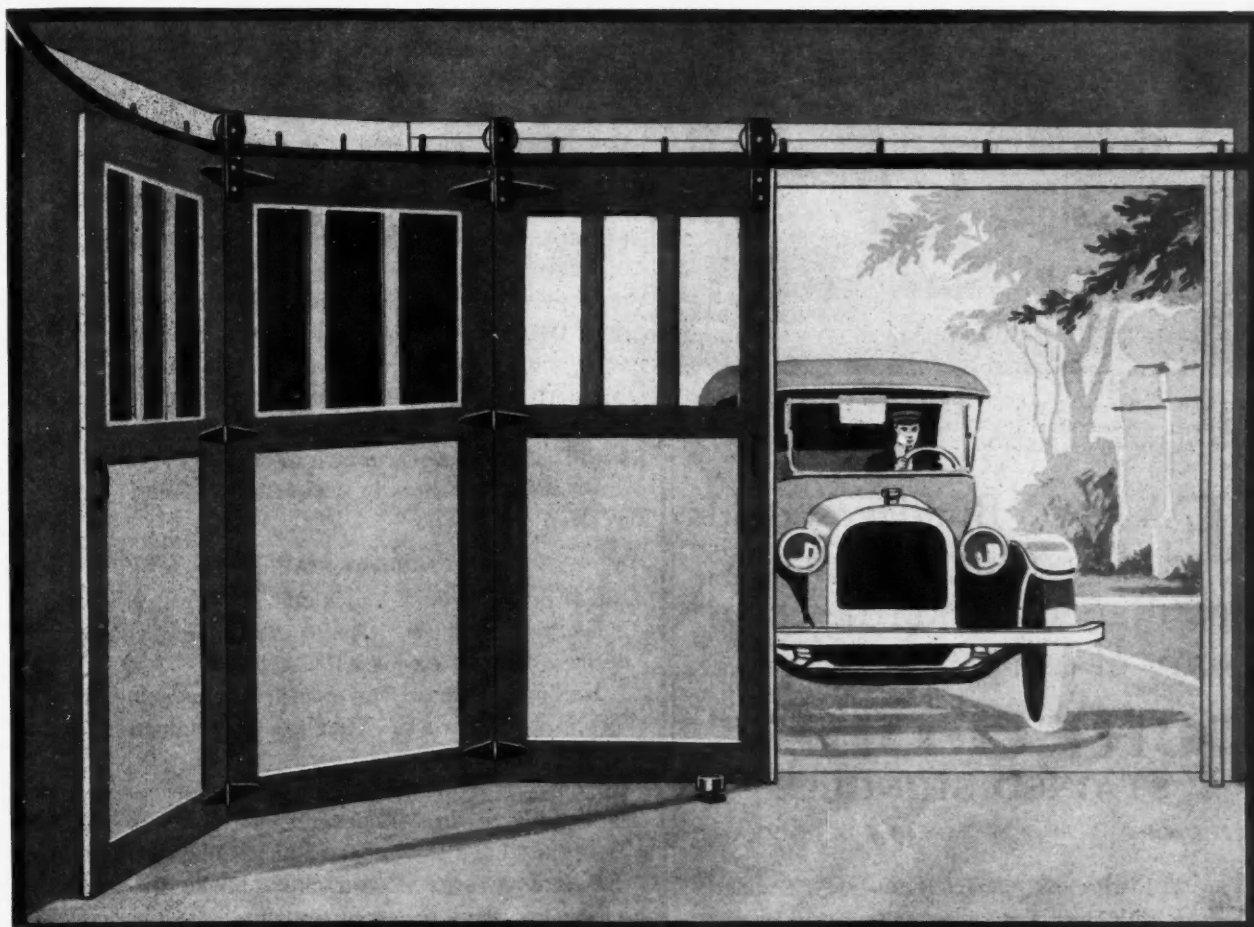
The picture shows a 40-foot Crib. Cupola need not be as large as shown in picture; the cribs 36 feet or less in length with half-pitch roofs require no cupola.

Elevator is confined to one side of driveway. No pit is necessary for dumping grain, just a hole 16 inches deep into which boot of elevator is set. The wagon jack is entirely overhead, fastened to the joists.

But write in today for our free Crib and Granary plans, catalogs and large posters telling all about our outfits and their application. Valuable information for the builder, and writing for it obligates you in no way.

**Meadows**  
**Mfg. Co.**  
Pontiac, Illinois





# LOUDEN GARAGE DOOR HANGER

(Patented May 30, 1916)

**CARPENTERS AND BUILDERS:** With the Louden Garage Door Hanger you don't have to build any unsightly obstruction out in the yard for the door to slide on. It operates entirely within the garage and makes satisfied users because it

#### HAS SPECIAL FEATURES OF CONVENIENCE

possessed by no other garage door hanger. The Louden-Hung Garage Door saves several feet of garage space, because it is a three panel door which hugs the corner closely when being opened and lies flat against the wall when not in use. When closed it fits snug and tight. There is a door within a door—a big door for the car—a small door for the man, all in one, an exclusive Louden feature. Hung on swiveled roller bearing trolleys, the Louden door moves easily—a child can open or close it.

#### FITS ANY STYLE OR SIZE OF GARAGE—EASY TO PUT UP

The Louden Hanger is made for a six, eight, ten, or twelve foot garage door, as desired. Track has brackets riveted on and is easy to put up. Small box contains all the fittings, including trolleys, straphinges, floor stay rollers, door handles, nails, screws, hasp and staple, as well as full directions for putting every piece in place. This makes building the door a simple job.

#### MOST POPULAR GARAGE DOOR HANGER ON THE MARKET

Thousands are being sold every day. Your dealer probably handles the Louden Hanger. If not, write us his name and we will see that you are supplied.

*Illustrated booklet telling all about the Louden Hanger sent on request. Write for it.*

## The Louden Machinery Co.

1867

5513 Court St., Fairfield, Iowa

1917



Architect, Edward C. Smith, Poughkeepsie, N. Y., for George I. Lumb. "Dixie-White" "CREO-DIPT" Stained Shingles on dormer side walls. "CREO-DIPT" moss-green shingles on roof.

**EVERY** Builder should consider the quality, permanence and true economy of using

## "CREO-DIPT" STAINED SHINGLES

17 Grades      16, 18, 24-inch      30 Colors

In the first place, CREO-DIPT Stained Shingles increase the value of the houses you build—especially **if you are building houses to sell.**

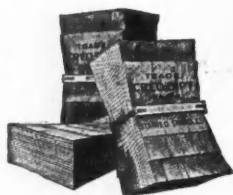
Besides, you cannot afford to stain on the job—even if you try to get results with "cheapened" stains.

Our volume of business is such we command the best shingles obtainable.

By a special process of our own, we grind earth pigments twice in pure linseed oil and refined Creosote to insure even stains and lasting colors.

**Many remarkable examples of "CREO-DIPT" side walls and "CREO-DIPT" thatched roofs are presented in a new book "Thatch Roofs".**

When you write we will appreciate you telling us if you have our book of "CREO-DIPT" Homes and Sample Colors on Wood.



**CREO-DIPT CO., Inc.**  
STANDARD STAINED SHINGLE CO.

1028 Oliver St.  
No. Tonawanda, N. Y.

Factory in Chicago for West

(Continued from page 122.)

co-operate as smoothly as the four wheels of a motor truck.

As I walked down State street, Chicago, several days since, I was impressed with the difficulties confronting the passage of street cars.

Collision with pedestrians and vehicles had to be avoided. Passengers getting on and off had to be cared for, yet each car made its passage with injury to none. There was perfect unison between the two eyes, two hands and a brain in front, and the two eyes, two hands, and brain behind. It is up to you, Mr. Builder, to take the initiative in organizing the constructive forces of your community. Talk it over with the other men who are interested. You and they can stabilize business to a wonderful extent. Don't go to sleep on the job.

### Influence—Affluence

The man of good red blood doesn't live who does not crave influence. As to how much affluence he desires, depends on his wife.

Neither of these can come thru wishing, nor by luck, nor hard work. They can be obtained by audacity plus intelligence.

Doing only the thing that intelligence says is the sane thing to do will never carry you into affluence. You must have the audacity of a Columbus going out into strange seas if you climb above the mediocre. These are days of readjustments. If you would be on top, remember the formula

AUDACITY + PLUCK + INTELLIGENCE.

Yours truly,

THE MAN FROM THE LUMBER YARD.



### Stair Building Explained

(Continued from page 80.)

Fig. 50, and upon it draw a circle the width of the plane rail.

Make the width of the mould at the end  $C'$  equal twice the length of 1-2 shown upon the long edge of the bevel in Fig. 52, and at the end  $A$  twice the length of 3-4 shown upon the long edge of the other bevel in the same figure. To draw the curves bend a lath to touch the circle on the minor and the points 2-2-4 at  $A'$  and  $C'$  on both sides. The remainder of the mould to the ends will be straight and are known as shanks.

The twisting bevels shown in Fig. 52 are found as follows: Make the base  $O-A$  equal the plan radius  $O-A$ , Fig. 50, and the heights  $O-3-1$  equal  $1-K-E$  across the pitch tangents in the same figure.

Observe that the point  $K$  in Fig. 50 has been found by drawing a line from  $C'$  parallel to the bottom tangent  $B'-A$ .

The face mould for the top quadrant connecting with the landing is shown in Fig. 53, the length of its tangents having been found as shown at the very top in Fig. 50, where tangent  $C'-B'$  is shown to be level, align-

(Continued to page 126.)



Gedney Farm Hotel, White Plains, N. Y.,  
Kenneth M. Murchison, Architect

## Why Was Bayonne Roof and Deck Cloth Chosen?

When the contractors faced the problem of covering the roofs and porches of the Gedney Farm Hotel, they decided on

### BAYONNE Roof and Deck Cloth

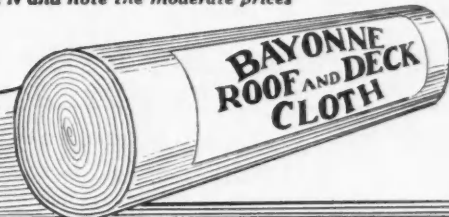
They wanted a material lighter than metal—something which could be put on easily, to last for years—in all kinds of weather.

They wanted canvas, but they knew that ordinary roofing canvas would not do. They were afraid to risk the buckling and cracking which always result from laying canvas on wet paint. They knew the expense and trouble of laying canvas that way.

Bayonne Roof and Deck Cloth proved to be exactly what they wanted. Its special process of manufacture made it "different." It had no pores to be filled with paint after laying. It had "body." They laid it on dry boards—and then painted it. And there are no bubbles, no cracks, no ridges on this Bayonne-covered structure. It has stood every test of wear and weather. It gives real service wherever service is needed.

Note the remarkable texture of samples in FREE Price Book N and note the moderate prices

**JOHN BOYLE & Co., Inc.**  
112-114 Duane St., 70-72 Reade St., New York City  
St. Louis Branch: 202-204 Market Street



## WATERPROOF PLASTERGON WALL-BOARD



(See how this 10-foot panel stands straight without bending. Send for actual photo.)

### Beautifies Interiors

The new and up to date panel effects produced with WATERPROOF Plastergon Wall Board give an air of beauty and individuality that cannot be duplicated with any other wall or ceiling building material.

And the effectiveness of the panel scheme is enhanced considerably by the rich and serviceable surfaces produced with one or two coats of any oil or water color tint.

The result is not only beautiful but modern, sanitary and inexpensive.

#### Your Safeguard in Buying (No. 12)

"I just finished my six room bungalow with Plastergon Wall Board exclusively, and I find that any room can be easily made to have a beautiful appearance by panelling and stripping.

O. B. OVERHOLZER, Architect,  
Riverside, Iowa."

Samples and our "Contractors' Practical Working Guide" sent free. Send the name of your Lumber or Builders' Supply Dealer. Write today.

**Plastergon Wall Board Co.**  
1 Philadelphia Ave., Buffalo, N. Y.



### Quiet, Comfortable and Cozy

within, although the storm rages without

CON-SER-TEX is a specially treated high grade cotton fabric particularly well adapted for roofing and porch covering. It will not stretch, crack nor blister. No more noise and rattle when the elements let loose. No more leaky spots nor repair bills after the storm has passed. CON-SER-TEX preserves the coziness and safety of the home during the storm.

Every carpenter, builder and owner should send for our new illustrated booklet, "Roofing Facts and Figures." It proves the many advantages of "CON-SER-TEX" Canvas Roofing.

**WILLIAM L. BARRELL & CO.**  
8 Thomas Street New York City  
CHICAGO DISTRIBUTOR  
Geo. B. Carpenter & Co., 430-40 Wells Street  
CALIFORNIA DISTRIBUTORS  
Waterhouse & Price Co., Los Angeles  
The Pacific Building Material Co., San Francisco

(Continued from page 124.)

ing with the level landing rail and tangent B'-A', having the same pitch as that of the flight rail.

Because of the level tangent, the angle at B' upon the face mould will be a right angle, and the tangent B'-C' a directing ordinate.

By drawing the same number of ordinates parallel with it as the number drawn across the plan quadrant, Fig. 50, the face mould is completed by the same operation as in Fig. 49 and Fig. 51.

The only twisting bevel required for this wreath is shown at B' in Fig. 50, and is to be applied towards the outside as shown at the end C of the face mould, Fig. 53.

A method to connect the stringer and landing fascia to the cylinder is shown in Fig. 54, the cylinder having been prepared out of a piece of plank 4 inches thick, its convex side alone being worked to the cylinder curve.

A different method to prepare the cylinder for the quadrant between the two flights is shown in Fig. 55. Here we have the elevation of the 5 winders and a step at each end marked on a thin board to be bent over a drum, as shown in Fig. 56. How the drum is constructed is shown in Fig. 57. The boards are fastened to the drum by pressing them to it with cleats, which are nailed or screwed to the drum and left upon it for the glue to set. When taken off, it will stay bent in the form shown in Fig. 58, ready for the cutting to hold the treads and risers. It is connected to the stringers at both ends as shown at A and A.

The inside of a riser is shown in Fig. 59, indicating the method of bending by kerfing, and probably is the most common and serviceable for such risers as are shown at the bottom of this stairway.



**Problems of Roof Framing[Solved]**

(Continued from page 82.)

the last or seventh placing of the square, mark along the tongue and draw in the square till the figure 8 rests at the edge of the rafter and a line drawn along the blade will represent the proper line for the plumb cut, provided there is no ridge piece. If there is a ridge piece, one-half of the thickness of the piece should be deducted from the run by slipping the square over that much further to allow for same. Thus the length is indirectly obtained without further measurement.

In Fig. 2 is shown the layout of this rafter on the trestles ready to cut. The dotted lines show how the run and rise is taken care of in the manipulation of the square.

**The Relation of the Hip Rafter to Common Rafters**

We will now continue using the same example in connection with the corresponding hip, and in doing so we will again show the layout of the common rafter as in the previous article, but this time with the layout as it would appear with the corresponding hip.

The first thing to know is the size of the building and the pitch of the desired roof. Knowing this, the dimension of the plan is at once fixed and forms the

(Continued to page 128.)

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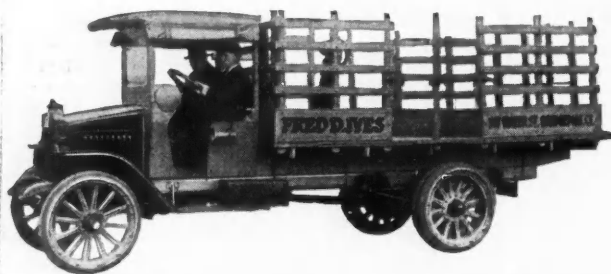
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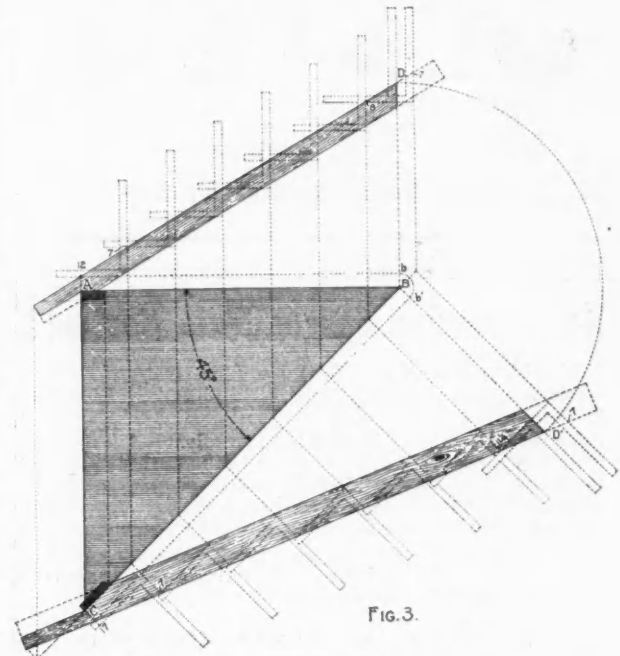


WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

(Continued from page 126.)

base from which to work. The experience framer does this work mentally and applies his square to the timbers intelligently without having to resort to a diagram to first find the figures to use to obtain the desired results. But not so with the novice; he has to be shown and for that reason we are going to try to make this work plain.

The critic, we trust, will therefore pardon us for elaborating on simple things, because it isn't meant for him; he doesn't need it; it's for the other fellow who has not been in the harness so long. So, going back to the illustration, we first call attention to the plan. It is the shaded part in the form of a right angled triangle, because the subject is a square cornered building. A B represents the run of the common rafter, A C the tangent, or the distance that the common rafter rests from the corner of the plate. B C represents the run of the hip and rests at an angle of 45 degrees from the run of the common rafter, because the pitch on either side of the hip is of



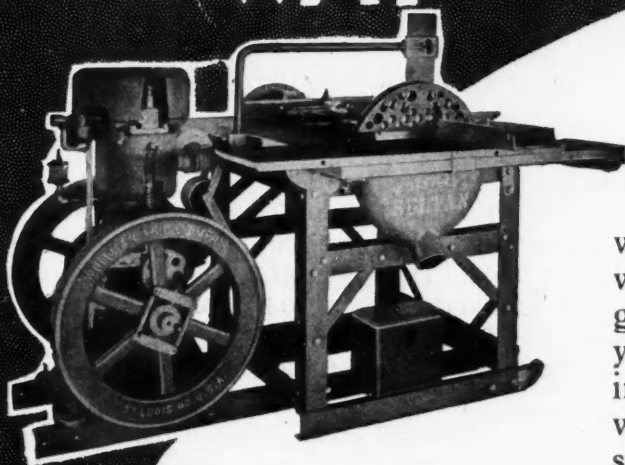
the same slope. B D represents the rise given the roof. Now, as the run of the common rafter in this example is 6 feet 8 inches and the rise 7 inches to the foot, the square is placed seven times at 12 and 7. At the last placing of the square, and after marking along the tongue, the square is moved back along this line till the 8-inch mark rests at the edge of the rafter and the blade will give the proper plumb cut. This is plain enough and we trust everybody understands the work up to this point.

If there is to be a tail to the rafter to form the cornice, then square down on a plumbline directly under the starting point, to the depth desired for the tail as at A. This line should be at right angles to the tongue as shown in the illustration. Then slide the

(Continued to page 130.)



# DRAWS TRADE YOUR WAY



**Y**ES, *The Sultan Saw Rig Outfit* is a money maker for you—it saves time and labor. No disappointments—no jobs held up on account of slow mill work. The Sultan is on the job when and where you want it. Regardless of the amount of mill work you have, you are naturally interested in the quickest and most economical way to accomplish it. The Sultan solves this problem.

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have years of experience in back of them. Thousands of Sultans are in use today—have stood the test of time under all conditions and are still rendering perfect service. Read the following description—note the many exclusive features—then mail the coupon for our special low price and our new catalog of Sultan Builders' Equipment.

The Sultan Saw Rig is made from a good grade of gray iron and the surface is finished perfectly. The frame is made of heavy angle iron, hot riveted together, thus insuring perfect rigidity, but light in weight.

The cross cut saw and rip saw is provided with a gravity blower to carry away all sawdust from the engine. The size of the table top is 41½ inches by 36 inches, built of iron entirely, to give long life and continuous service. The rip and cross cut guides slide in iron grooves, the rip gauges being adjustable so that lumber can be ripped and planed on the bevel. Belt tightener is fastened to bottom of frame and is so situated to permit easy adjustment at will. The saw has jointer head, dado or groover head boring outfit, sanding disc emery wheel, and jig saw if desired, but we do not recommend a jig saw because they are not practical from an economical standpoint.

The engine we build for this saw is a special 5-horse power, high speed, 4-cycle water cooled unit engine, and it is low in height to accommodate table.



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Please send special low prices, also your new catalog of Sultan Builders' Equipment.

Name .....  
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(Continued from page 128.)

square down the edge of the rafter without change of figures till the tongue touches the desired depth on the plumbline, and mark along the tongue. This line will represent the seat cut of the common rafter, as shown at A. Proceed in the same manner for the hip as shown at C, placing the square on the edge of the rafter as many times as for the common rafter, but at 17 and 7 instead of 12 and 7. The reason of this is clearly illustrated by the dotted lines from one rafter to the other. The run of the hip has a gain of 5/12 over the run of the common rafter. This added to one foot, as shown on the tongue of the square for the common rafter, brings it to 17 for the hip rafter. In other words, 17 is the diagonal for one foot square and is therefore a fixed number for the hip, the same as 12 is for the common rafter, and remains 17 for any pitch given the roof. The square is placed the same number of times on the hip as for the common rafter, but at the last placing it is slipped back till 11 1/4 inches rests at the edge of the rafter, because that is practically equal to the diagonal of 8 inches square. The 3 1/4 inches difference represents the 5/12 gain that the run of the hip has over that for the common rafter. The deduction for the ridge piece is obtained in the same manner as before mentioned for the common rafter; but in this, one-half of the diagonal thickness of the ridge piece should be allowed for instead of one-half of its thickness.

**Fundamentals of Reinforced Concrete Designs**

(Continued from page 73.)

for the maximum shear is at the edge of the support at either end. When four stirrups are used at each end, the first will be 1/4d from the support; the second 1/2d from the first; the third 3/4d from the second and the fourth d from the third.

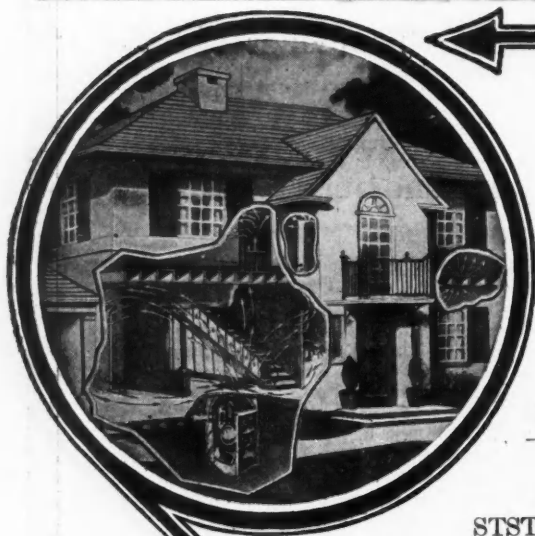
**Reinforcing a Circular Tank**

In a round tank the only stress is tension, being equal to  $\frac{wd}{2}$ , in which  $w$  = weight (pressure).  $d$  = diameter.

The tension is figured for strips 1 ft. wide, the weight used being the weight of the liquid at the depth of the strip. The weight of 1 cu. ft. of water being 62.5 lb.,  $w$  at the depth of 10 ft. is 625 lb. At 15 ft. the weight is 937.5 lb.

The stress to be used in the steel cannot exceed  $f_s$  or large cracks will open. The concrete shell should be designed to carry all the stress with an assumed safe unit tensile stress. Steel should be used to carry all the tensile stress. This combination fixes the unit stress in the steel as equal to  $n f_c$  until something causes the tank wall to crack, after which all the tension is carried by the steel with the assumed fiber stress  $f_s$ .

(Continued to page 132.)



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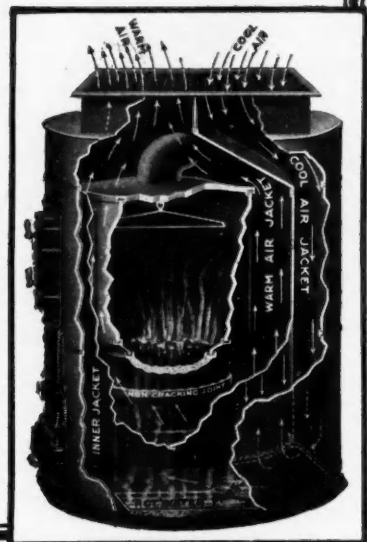
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You can conscientiously recommend the Holland Warm Air Furnace. You know, because you have given the subject of heating plants close study, that warm, moist air, such as is supplied by a Holland Furnace, is the most healthful heat that can be had. You know that it costs less to install a warm air furnace than any other kind of a heating plant, and is most economical to operate. Our Holland Service Home Comfort Insurance-Bond is the strongest guarantee ever given with any heating plant.

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Free heating plans. Send your floor plans. Holland Furnaces are not installed by dealers. We have our own special representatives who have made a study of the Holland Furnace, and who make a regular business of installing

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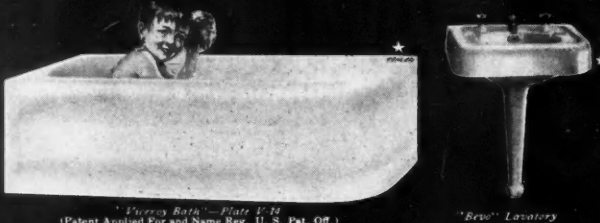
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Kohler, Wis.

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Pittsburgh Atlanta Detroit  
Indianapolis Chicago  
St. Paul St. Louis Houston  
San Francisco Los Angeles  
Seattle London

(Continued from page 130.)

Owing to the difficulties encountered in construction no tank wall should have a thickness of less than 6 in., regardless of the theoretical thickness found by computation.

Example: Give the proper thickness of wall and amount of steel required for a circular tank 20 ft. in diameter at a depth of 14 ft., using a 1:2:3 concrete.

$$T = \frac{wd}{2} = \frac{14 \times 62.5 \times 20}{2} = 8,750 \text{ lb.}$$

Use a tensile stress of 12,000 lb. per sq. in. in the steel in order to care for possible mistakes in connecting ends of bars. Clamps should not be used. The best method is to have the ends of the bars overlap a length of not less than 40 times the thickness. The overlapping ends should not be in contact, but should be separated to leave a space of about twice the thickness of the bars so the concrete may surround the steel.

$$A_s = \frac{8750}{12000} = 0.729 \text{ sq. in. (area of steel).}$$

Use three 1/2-in. sq. bars, giving an area of 0.75 sq. in.

A safe tensile stress for well made 1:2:3 concrete

$$\text{is } 175 \text{ lb. per sq. in. Area of concrete} = \frac{8750}{175}$$

$$= 50 \text{ sq. in. The theoretical thickness of the wall is } \frac{12}{12}$$

= 4.166 in., for the strip is 12 in. wide. The thickness, for reason given, should be not less than 6 in., so the actual area will be 72 sq. in.

The area of the concrete is 72 sq. in. minus area of steel = 72 - 0.75 = 71.25 sq. in.

The ratio of deformation for 1:2:3 concrete is 12, so the steel is equivalent to a concrete area of 12 × 0.75 = 9 sq. in.

$$\text{Adding: } 71.25 + 9 = 80.25 \text{ sq. in.}$$

The average stress is 8,750 ÷ 72 = 121.53 lb. per sq. in., and the stress on the concrete is 8,750 ÷ 80.25 = 109.03 lb. per sq. in.

The stress in the steel, when both materials are carrying tension, is 12 × 109.03 = 1308.36 lb. per sq. in.

If, for any reason, the concrete cracks, the steel will carry all the tension with a stress of 12,000 lb. per sq. in. Cracks may occur where an occasional poorly mixed batch of concrete was deposited; where construction joints are defective; where forms were removed too roughly; thru ice pressure; by reason of excessive temperature changes; frequent and sudden changes in pressure due to quick filling or emptying of water; thru defective foundations. When the steel stress is not permitted to exceed 12,000 lb. per sq. in. the only effect of cracking will be to throw the entire tension on the steel.

NOTE—Copies of this article in pamphlet form may be had free on request from the Portland Cement Association, 111 W. Washington Street, Chicago.—EDITOR.

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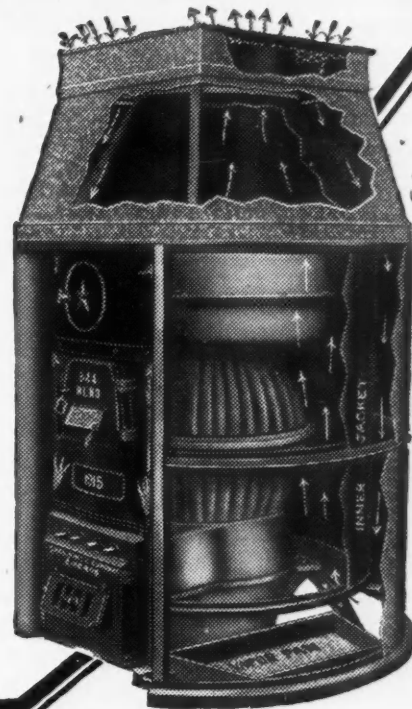
**Hero Furnaces** are Economical, both as to the original price and the cost of installation, and are giving the best of satisfaction to their many users.

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Eliminate all these possibilities at the start by having a reliable engine.

### THE "NEW-WAY" ENGINE GOES AND GOES RIGHT

Direct cooled, throttle governed, high tension built in magneto, splash system of lubrication, dust proof, oil tight crank case, high grade carburetor, are just a few of the features, that make the "NEW-WAY" a better engine for your work.

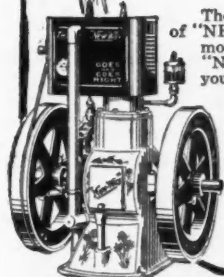
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Built in 1 to 12 H. P. Both vertical and horizontal.

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Send for prices and Catalog B-4.

**Canton Foundry & Machine Co.**  
CANTON, OHIO

### An Umbrella for the Cattle

(Continued from page 55.)

answer this question that I delayed the answer for a few minutes to give opportunity for a few questions and some rapid calculations. After finding that he planned to feed 300 head of 1,500 lb. cattle in the barn, my reply was that he could put all of the cattle up on top of the roof and then if he could get ten times that many cattle up there without any of the weight being supported by the wall there might be some question as to the strength of the silo.

After figuring out all of the details Mr. Wood summed the whole matter up in one question: "Matt, do you think it is all right?" I answered by saying, "I would be glad to hang my hammock to any rafter and sleep there any time you say." This was triumphantly repeated to some of the "doubting Thomases" of the neighborhood. One of the replies was typical of the opinion of all. This man replied, "Well, may be so, but it would be his last sleep."

We asked Herman about the profit in the cattle. He only smiled. The gains have been rapid and he bought them at 7c last fall. You know as much about his profit as I do. Look at the last market report.

In addition to this season's profits there are many more to come. The roofing material is good for a long term of years. So long as it protects the lumber the decay of the latter will be practically nil. At that, the roof will give way fully a century before anything hurts

the wall or the silo, both built of hollow tile.

If any of the AMERICAN BUILDER readers find a man in the neighborhood who wishes to try out this "sure thing" we will be glad to furnish plans and detailed specifications, either direct or in the columns of this paper. Everyone should of course understand that service is the only thing they get direct, as the material comes thru the dealer.



### Design of Trussed Beams

(Continued from page 51.)

1/12 bh<sup>3</sup> as explained in our last talk.

$$\text{"Filling in the formula } \frac{pI}{e} = M = 1/10 Wl, \text{ we have}$$

$$\frac{1,600 \times 1/12 b \times 12 \times 12 \times 12}{6} = 1/10 \times \frac{21,600}{2} \times 15 \times 12$$

Solving, we have

$$38,400 b = 194,400$$

$$b = 5 \text{ inches (approx.)}$$

Adding this width of 5 inches to the width 4½ inches that we obtained from our tension calculation, we get 9½ inches as the total width of the two beams. Therefore, we can use two 6 by 12-inch beams for the lower part of the truss.

"Since this will make quite a wide truss, we might use two 4-inch by 14-inch beams instead. Substituting a 14-inch depth in the above calculations instead of

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Seven Distinct Advantages  
not possessed by other makes



are opened from First Floor by slight pull of chain saving house-wife tiresome trip to basement and crawling over dirty coal bin. Can also be opened from basement.

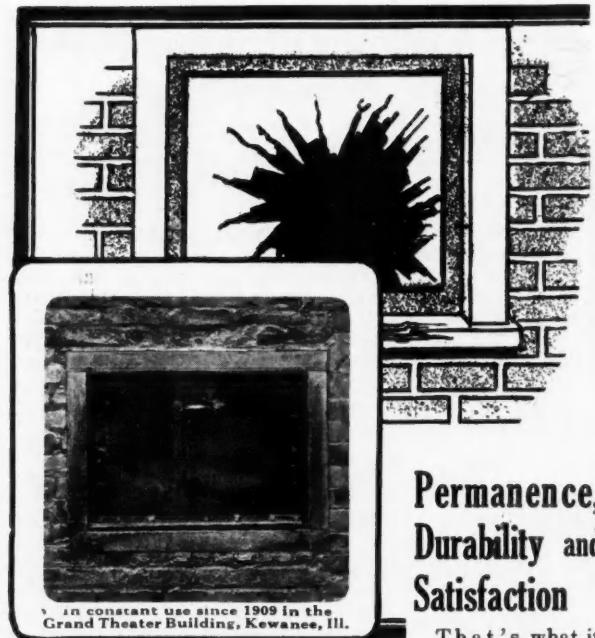
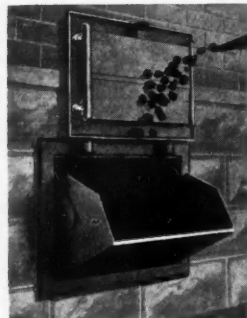
The coal man then lifts the door to a vertical position where it locks against side of house affording ample protection to siding. A metal shield automatically covers glass in door. At the same time a metal hopper revolves to a position where it will best protect foundation and lawn and affords one-third larger opening than in ordinary coal chutes.

When coal man leaves he simply pushes hopper into place at top of chute and closes door which locks automatically and positively. Hopper rests at top of Chute when not in use and does not obstruct light. Will not rust out and window can be used for other purposes.

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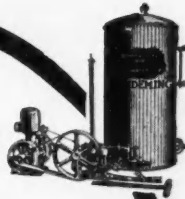
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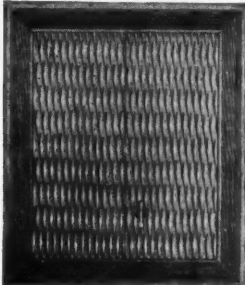
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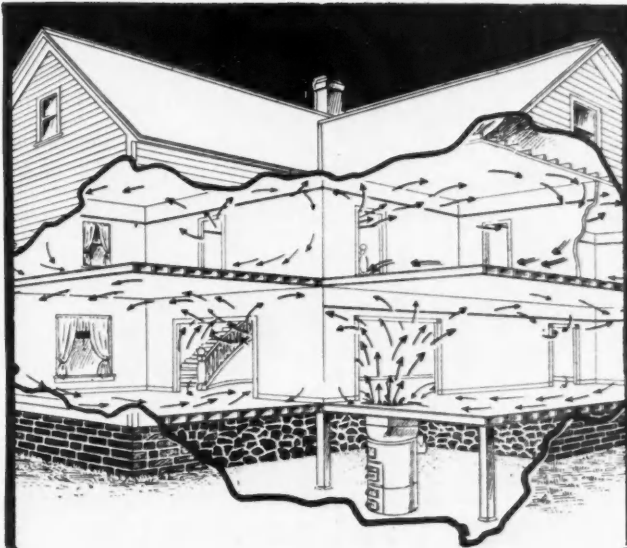
The door opens vertically against the side of the house and locks automatically on closing. It can be easily opened by a chain from any part of the basement.

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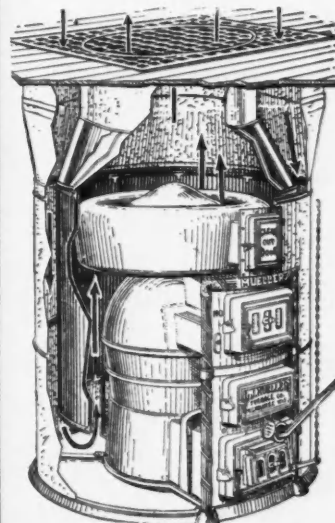


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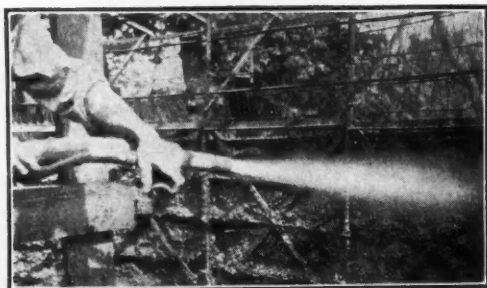


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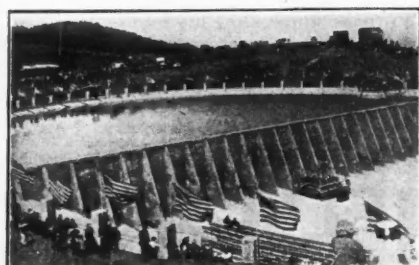
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A. R. Roberts, 727 Traders Bank Building, Toronto, Ont., Canada

(Continued from page 134.)

the 12-inch size used shows this new size to be safe.

"The slanting struts are in compression. The amount of this compression in each strut will be found by multiplying one-half the load on the truss by the length of one of the slanting struts in feet and dividing by the vertical distance from the center of slanting strut to center of beam as before.

"The length of the slanting strut will be found by the formula

$$A^2 = B^2 + C^2,$$

where B is one-half the length of the beam and C is the 2-foot 6-inch dimension shown in Fig. 16A.

Solving, for A<sup>2</sup> we have

$$A^2 = (15 \times 15) + (2\frac{1}{2} \times 2\frac{1}{2}) = 231.25$$

$$A = 15.2 \text{ feet.}$$

"The total compression in one strut will be 21,600 15.2

$\frac{21,600}{2} \times \frac{15.2}{2\frac{1}{2}} = 65,600$  pounds. If 1,200 pounds per square inch is used as a working value for the compressive strength of wood, we can find the size of timber needed by using the Winslow column formula:

$$\frac{\text{Total compressive load}}{d^2} = C \left[ 1 - \frac{L}{80d} \right]$$

where  $d$  is the side dimension of a square section in inches,  $C = 1,200$  pounds per square inch, and  $L$  is the length of the slanting strut in inches.

"Filling in the formula with our values, we have

$$\frac{65,600}{d^2} = 1,200 \left[ 1 - \frac{15.2 \times 12}{80d} \right]$$

$$65,600 = 1,200 d^2 - \frac{1,200 \times 15.2 \times 12 \times d}{80}$$

$$54.6 = d^2 - 2.28d$$

$$54.6 + (1.14)^2 = d^2 - 2.28d + (1.14)^2$$

Taking the square root of both sides of the equation, we have

$$7.5 = d - 1.14$$

$$d = 8.64 \text{ inches.}$$

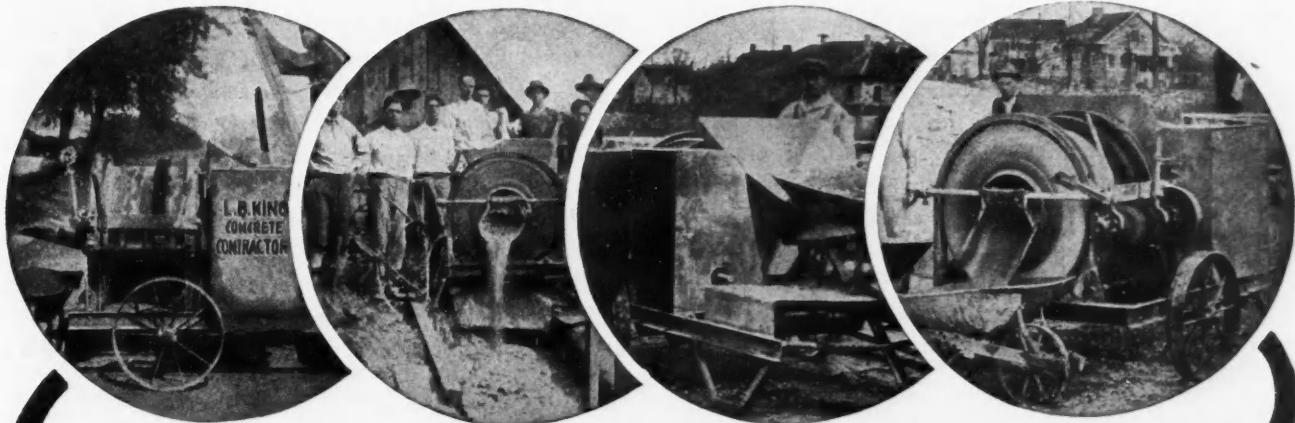
The nearest commercial size in timber will be a 10-inch by 10-inch stick, which is really 9 1/2 by 9 1/2 inches when surfaced on four sides.

"If it is desired to keep the total width of the truss as small as possible, it will be better to use an 8-inch by 12-inch size of timber for these slanting struts instead of the 10-inch by 10-inch size. This will make the total width of the truss 16 inches. This width is found by adding together the width of the two 4-inch by 14-inch tie beams and the 8-inch by 12-inch slanting strut.

"The center vertical tie rod is of steel fitted with washers and nuts at the ends. The total pull in this rod is found to be five-eighths of the total load on the truss when the lower tie beams are each in one piece thruout their length, or one-half of the total load when the tie beams are jointed over the center ver-

(Continued to page 138.)





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(Continued from page 136.)

tical tie. If we consider that the total pull is  $\frac{1}{2} \times 21,600 = 10,800$  pounds, we know that the area of the circular rod taken at the bottom of the screw threads multiplied by the safe unit working stress for steel must be equal to this total pull. Since the area of a circular section is  $.7854d^2$ , where  $d$  is the diameter of the circle in inches, our equation will be as follows:

$$10,800 = .7854d^2 \times 16,000,$$

where 16,000 pounds per square inch is the working strength of steel in tension. Solving for the diameter we have

$$d^2 = .86, \text{ or } d = .93 \text{ inches.}$$

This means that a 1-inch diameter steel rod would be about the size to use for this vertical tie.

"The number of bolts needed at the ends of the slanting struts may be found by the following procedure. First, find the resistance to crushing of the wood in the holes the bolts pass thru. Then find the strength of one bolt in bending. Knowing the total thrust in one of the struts and the strength of one bolt in crushing and bending, we can find the number of bolts needed.

"The total thrust in the slanting member will cause the bolts to have a bearing in 8 inches thickness of wood at the two ends, and an 8-inch thickness at the center. The resistance of the wood under one bolt will be found by multiplying the diameter of the bolt in inches by the thickness of the wood in inches, and

then by the safe unit crushing strength for wood. For wood having a unit crushing strength of 1,200 pounds per square inch the resistance to crushing under a 2-inch diameter bolt will be

$$2 \times 8 \times 1,200 = 19,200 \text{ pounds.}$$

Since the total thrust in the slanting member is 65,600 pounds, we would need to use four bolts in each end of the truss to resist crushing.

"The allowable bending moment in a 2-inch diameter steel bolt under a working stress of 16,000 pounds per square inch for steel is found from the formula

$$\frac{pI}{e} = M, \text{ as follows:}$$

$$16,000 \times \frac{3.1416}{64} \times 2 \times 2 \times 2 \times 2$$

$$= 12,600 \text{ inch pounds.}$$

2

—

2

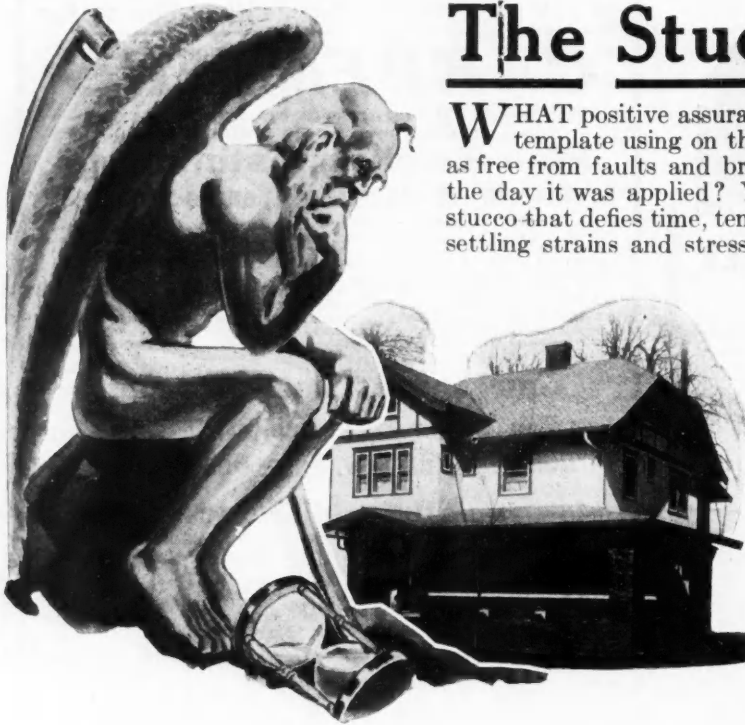
The total bending moment to be resisted by the bolts will be found by multiplying the total thrust in the slanting strut by the distance in inches between the centers of the lower tie beams and dividing by 12. This amount is found to be

$$65,600 \times 12$$

$$= 65,600 \text{ inch pounds.}$$

12

Since the allowable bending moment for one bolt is 12,600 inch pounds, at least five bolts will be needed at each end of the truss to hold the members in place."



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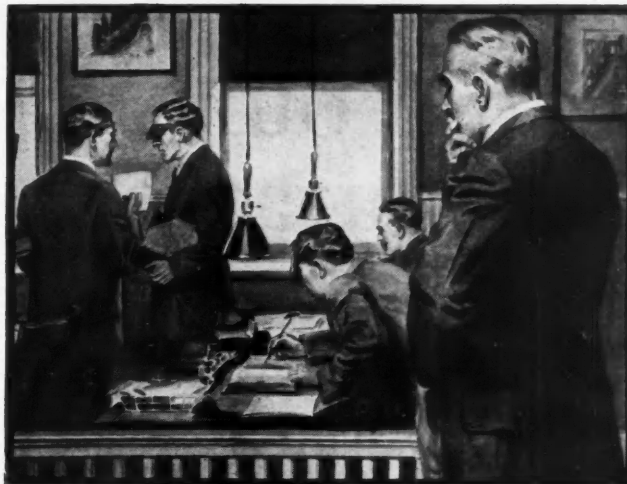
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## Details of Brick Construction

(Continued from page 56.)

used either as the outer course material of the wall and bonded into the common brick backing or used as a veneer over the common brick wall, which is designed to carry the load by its own strength. In the latter case the face brick and common brick are held together by metal ties. The object of building the wall in this way is to minimize the quantity of face brick required and it is not used when the extra cost of common brick balances the cost of the first mentioned method of construction.

The plate shows only the common-brick-backed wall in which the face brick are required to carry part of the load and are therefore bonded every sixth course into the common brick. The wall shown is suitable for a one-story building. The floor joists are set on the basement wall at the top of which the wall thickness is reduced from 12 inches to 8 inches.

The plastering is shown over wood lath which are nailed to furring strips which, in turn, are nailed to blocks set in the brick wall. The outer face brick courses are supported above window and door openings with angle irons, while the common brick backing is supported with wood lintels consisting of two 2 by 6-inch members. The wood lintels together with lugs form method of securing the window and door frames in the wall.

In all of these plates the brick are shown laid common bond. In any of the four methods of construction, it is possible to use any of the special bonds without any material difference in the architectural details. The use of a special bond incurs an added expense in laying the brick, but in the case of a veneered wall, there are no more brick used, as a rule, than in the common bond. There is, of course, the greater risk of waste in breaking brick for special bond, but the careful bricklayer eliminates this waste and, by using care in breaking brick for headers, he is able to finish his special bond wall with practically the same number of brick as would be used if only those brick were broken which are required for the corners.

The mortar used is important from the standpoint of appearance. In the old red brick wall it is thought necessary to hide the joints, which were made as narrow as possible and finished smooth and flush with the brick surface. Since the advent of the modern rough texture face brick this practice has changed. The mortar joint is now used to enhance the beauty of the brick surface and no attempt is made to conceal it. Several colors are used for the mortar, depending upon the color of the brick. The most common colors are black, buff and gray-white. Joints are usually about  $\frac{3}{8}$  of an inch in width, but in some of the most artistic examples of brickwork in this country and abroad, joint widths have varied up to as much as  $1\frac{1}{4}$  inches.

(Continued to page 142.)

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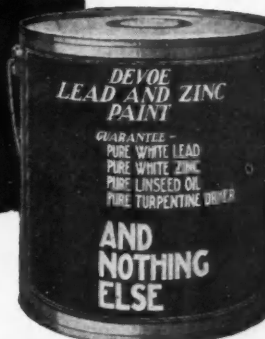


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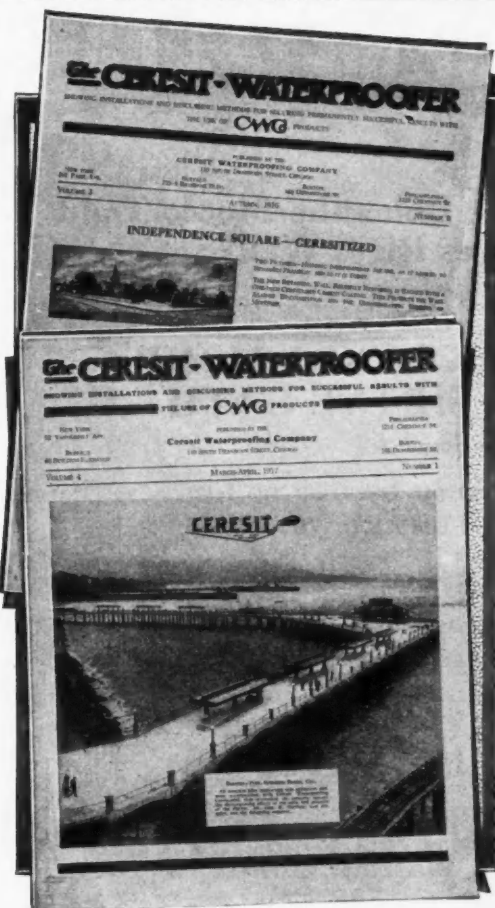
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Every job you do demands these things, and we help you show your customers that there is no need for water penetration in any kind of construction. You can get as many copies as you need for distribution, with envelopes if you like for mailing.

A few pounds of Ceresit Waterproofing Compound per cubic yard of concrete gives absolute and permanent waterproofness. It's easy and inexpensive to use, and every contract puts you in line for bigger and more profitable work.

Send your business card or letterhead for the last two issues of "The Ceresit Waterproofer" and your name will go on our mailing list for future issues.

The time to write is **now**.

**Ceresit Waterproofing Co.**  
910 Westminster Building CHICAGO

(Continued from page 140.)

Some of the best effects have been obtained by emphasizing the horizontal joints and subordinating the vertical joints. In one of the favorite special walls, two stretchers are placed close together in the Flemish bond with a brick-colored narrow joint between, giving the effect of the old Roman brick, which was approximately 18 by 6 by 2 inches in size. With a properly colored mortar, the most satisfactory joint is, no doubt, one having a rough surface flush with the brick. The deep-struck joint often foster destructive action of frost. There are several kinds of tooled joints used which are effective in special cases. In selecting the joint it is well to remember that the texture of the brick and the mortar should correspond. With a rough texture brick, the rough texture joint looks best, and vice versa.



### Protective Materials for Permanency

(Continued from page 84.)

called Permanency; compounded with high-grade materials and applied with common sense—and the proper brushes. The laboratory is at your disposal; your problems are requested in all sincerity, for this is to be a co-operative proposition for us all and our "round table" discussions of ways and means thru questions asked is the best way for us all to get down to the things which are making us lose sleep, and then settle them in the best and most sensible manner. Service is

our motto and password and service in the best and broadest sense of the word is what we desire to render thruout this series to follow. It is yours to use, and don't forget the parable of the talents. Don't be the man who did not try to use the chances offered him for self-improvement.

### Difficulties of Producing Work Under Slovenly Conditions

A finished product is no better than it looks, and sometimes is a great deal worse, for I have often heard it said: "It takes a good painter to make a good carpenter." When we have put our brains, time and money into a job on the constructive end, why in the name of all reason are we told to "slap on the paint and let it go at that"? Why does the owner come around and make life miserable for the master painter by forcing him to do his floor and door varnishing before the carpenters are out of the way and the decorator is still hanging his curtains, etc.?

The time has come when the man who undertakes the finishing contract must insist on having his share of time; that all carpenter work shall be done; all dust and refuse removed from the premises; the house warmed and dried out with the furnace, especially in the spring and summer, and that no painting or finishing shall be undertaken until these requirements are fulfilled. The protective value of the material alone should pay for its initial outlay and cost of labor. It should have an earned increment, however, in beauty

(Continued to page 144.)

**SYKES EXPANDED CUP METAL LATH**

It Holds the Stucco Tight  
It Insures Rigid Wall  
It Is a Backbone—specify

**SYKES EXPANDED CUP METAL LATH**

(Self-Furring)

Sykes gives economy in application because no furring strips are required; this saves 5c to 10c a square yard.

Sykes gives further economy by the long life it assures. There is extra weight in Sykes Expanded Cup Metal Lath—as compared with others of same gauge—because Sykes is cut with wider strands.

Best for Interior as well as Stucco Work. Saves labor and material. Endorsed by U. S. Government for Post Office work, and by architects and contractors.

**Free Booklet** Specifications for Stucco on Metal Lath. Write—

**Sykes Metal Lath and Roofing Company**  
504 River Road, Warren, Ohio



**C**URTIS Woodwork is so known and desired by home planners that it is unprofitable for lumber dealers not to know the selling plan, with its guarantees and on-time delivery.

Send for catalog with all designs, plans and specifications.

THE CURTIS COMPANIES, Clinton, Iowa

1866  
**CURTIS**  
**WOODWORK**

"The Permanent Furniture for Your Home"



*Use nails that you know*

That is, order nails proven to be dependable by long service in actual use.

Nails coated with zinc dross, lead or other cheap alloys are offered to the trade as honest-to-goodness nails, but the only real galvanized nails are coated with zinc.

M.I.F. Zinc Coated Nails are galvanized in pure molten zinc and every pore and grain of the nails is filled with pure metal.

M.I.F. nails will hold wood work in place indefinitely. The only kind you should buy if you want a real rust-proof nail.

**Malleable Iron Fittings Co.**  
Branford, Conn.

**Every Country Home You Build Needs Electricity**

**T**HE Uni-Lectric Outfit fulfills the big demand for electric light and power in the rural districts. It also gives contractors **light** for night work on rush jobs.

It is a complete, compact unit, consisting of a patented high speed engine direct connected to a modern high speed generator. Has **no belts—no batteries**. Delivers 110-volt direct current in ample capacity for both light and power. The entire outfit fully guaranteed.

We have a proposition of special interest to Carpenters and Builders who will recommend this outfit to those for whom they are building new homes. Write us today for full details.

**Waterman Motor Co.**

152 Mt. Elliott Ave., Detroit, Mich.



**Reduces Hauling Costs**

The Martin Semi-Trailer attached to a Ford or other runabout by means of a Martin Rocking Fifth Wheel converts the runabout into a 1-ton truck. Easily handled, backed and turned in narrow quarters. Stands up at a speed of 20 miles an hour without straining the car's mechanism.

**Martin Semi-Trailer**

With Fifth Wheel **\$225**  
COMPLETE ::::: \$225

This is what Fred T. Ley & Co., Inc., General Contractors, at Springfield, Mass., say of the Martin Semi-Trailer:

"We are very well pleased with our Ford Trailer, which we are using for general trucking purposes from our Springfield storehouse.

About the first trip that this truck did was to take a load of 3000 pounds from here to one of our jobs in Hartford, Connecticut; included in the load were some thirty foot ladders which we could not have shipped through the freight house, owing to their length.

We delivered this load to our work in Hartford fully as cheap as it would have been had we trucked the load to the freight house, paid trucking here, freight to Hartford, and trucking from Hartford freight house to our job, and we had the equipment on the work the morning after it was ordered.

This is only one of many instances wherein this outfit is proving itself valuable to us for a ton truck."

WRITE US FOR FULL PARTICULARS

**Martin Rocking Fifth Wheel Co.**

21 Main Street SPRINGFIELD, MASS.



## FREE OUR CATALOG H

**Y**OU may know one or two prospects who are thinking of modernizing their store fronts at this time. Very well—why don't you write for our Catalog "H," which contains all necessary sectional details for the proper installation of an up-to-date Kawneer Store Front. This catalog will surely be of great help to you in your store-front work.

### Kawneer STORE FRONTS

are found everywhere and everyone is giving maximum service and satisfaction; 56,000 retail merchants, scattered all over the United States, are today conducting profitable business behind a Kawneer Store Front.

An efficient sales organization is maintained by us to assist everyone interested in our products. We will analyze your client's merchandizing problem and will suggest and help you in all matters pertaining to your store-front work.

At our Home Office we are maintaining an efficient Engineering Department, which at all times is at your service.

Let us co-operate.

**Kawneer Mfg. Co. - Niles, Mich.**

#### COUPON

Please send me a copy of Catalog "H."

.....

.....

.....

(Continued from page 142.)

and quality in addition to its protective function. But paint cannot be applied to green plaster walls without future trouble. Varnish cannot dry in a humid atmosphere, nor can it be applied in a first-class manner in a room the air of which is charged with lint and dust, as so often has been attempted. Such work is full of nibs or dust specks, and to rub such work under weeks of drying is to guarantee it to be full of holes, the direct result of "pulling out." The same unclean condition will apply to the handling of paints and enamels. The work will not be smooth; it will not please the eye, and, above all, it will cost beyond all estimation to bring it up to the right standard of quality. There are certain methods, definite materials and proper tools which must be used to produce results of quality, be it "cheap work" or "rubbed work;" for, strange as it may seem, quality can show itself appreciably in both classes.

#### The Value and Limitation of Mixed Paints

Since these items should all be given a definite and more detailed treatment, we shall handle them carefully in our series to follow; but for our present issue of introduction we must consider that paints of quality as a rule cannot be paddled "ready mixed" out of a pail with any idea of getting permanent results, principally because a formula suited to one locality is entirely inadequate in another district with its different conditions of heat and cold, humidity, gases from manufacturing plants, etc. A formula which guarantees 50% white lead, 50% zinc oxide, 90% linseed oil, 10% turps, and nothing else, does not signify that that paint is worth very much except in a few restricted localities, principally near the seashore; and yet such material is on the market in enormous quantities, utterly unsuited to the great majority of painting work, inside or out. Naturally the "ready-mixed" people claim that no man can hope to mix a batch as smooth as their powerful machinery. Granted. Cement is ground dust fine, but it does not make good oil paint. Until the manufacturers get down to the idea of testing materials for permanency in many localities and make several grindings suited to the conditions of those areas, no ready-mixed paint will ever compete with the properly mixed home product made from properly tested materials.

#### Anti-Rust Paints

A number of anti-rust paints for structural work are on the market at the present time; a few are good, most are worthless. Every contractor who values his reputation for permanent results had best make up his own material as fast as he needs it, since, generally speaking, this class of paint should not be left standing in the batch tub for any length of time, or it will harden prematurely. Some materials accelerate corrosion and therefore should not be brought into contact with the metallic surface. Other materials possess inhibitive

(Continued to page 146.)





# Pass on, Mr. Repair Man!

For years and years—  
This RU-BER-OID Roof will need no repairs.

For RU-BER-OID is sparkproof, rotproof, rust-proof and weatherproof.

It contains nothing that can crack, warp, melt or leak.

Many imitations LOOK like RU-BER-OID. Ask your dealer to show you the *genuine*, with the "Ru-ber-oid Man" on the roll.

Made in Slate Gray, Tile Red and Copper Green.

**THE STANDARD PAINT CO.**  
587 Woolworth Building, New York  
BOSTON CHICAGO

Also makers of Ru-ber-oid Shingles and Impervite Waterproofing for Concrete



Pronounced "RU" as in RUBY  
**RU-BER-OID**  
ROOFING  
COSTS MORE - WEARS LONGER  
MADE BY THE STANDARD PAINT COMPANY, NEW YORK BOSTON CHICAGO  
Look for the "Ru-ber-oid Man" on every roll of genuine Ru-ber-oid

# NOVO

REG. U.S. PAT. OFF. **ENGINES and OUTFITS**

NO LANK  
NO FAN  
NO FREEZING  
TROUBLE

Over 75 different kinds of power outfits, each the handiest, most economical source of power known. Write for our book

"The Engine for Every Purpose"

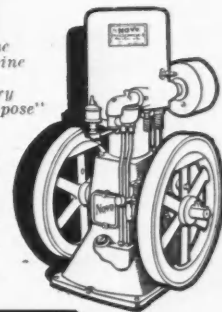
"Reliable Power"

It tells you the advantages of standardizing power with Novo Engines. You'll find it worth reading.

## NOVO ENGINE CO.

Clarence E. Bement, Sec. & Gen. Mgr.  
704 Willow St., Lansing, Mich.

Furnished to operate on gasoline, kerosene, alcohol or distillate; 1-15 H. P.



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### Learn to Estimate and Draw Your Own Plans

Carpenters, Bricklayers, Contractors, etc., a few hours of your spare time daily will soon make you a capable draftsman and architect.

*Are you interested in these subjects?*  
Architectural, Structural, Sheet Metal Drafting, Building Construction, Re-inforced Concrete, Contracting and Building, Plan Reading, Estimating, etc.

Our catalog gives full details of the courses covering the subjects. Write for it today. Take a step in the right direction, and turn your spare time to a valuable purpose.

Columbia Correspondence School, Dept. C, Philadelphia, Pa.



## Cuts Cost of New Work

COMPO-Board is the one wall lining that can be used in new jobs without liability of buckling and cupping between studding. Its core of wood gives it strength to withstand a strain of 650 pounds nailed on studding with 16" centers.

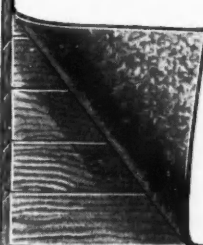
It has proved its low cost, strength and highly satisfactory service in school class rooms where blackboards are essential, on ocean-going steam ships as lining for state-rooms, saloons, etc., and in many other places where it has successfully withstood terrific strain.

It is elastic enough to be bent or shaped, without breaking, to meet a variety of conditions—such as curved ceilings, alcoves, store window display backgrounds, etc.

If you would be **modern** in your ideas about building, you owe it to yourself to get acquainted with Compo-Board.

Write for free sample and interesting booklet.

**The Compo-Board Co.,**  
5777 Lyndale Ave. N.,  
Minneapolis - Minnesota



## Fiberlic Wall Board

## Fiberlic Wood Grain Panels

The material from which it is made, the fact that the pulp is chemically cleansed and that the *fibre lengths* give the finished product that *natural reinforcement* that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic from strong, permanent, economical and sanitary construction.

**MacAndrews & Forbes Company**  
200 Fifth Avenue, New York City  
Factory: Camden, N. J.

(Continued from page 144.)

properties, for which reason their direct application to the iron is desirable.

The chief concern of the structural iron worker has to deal with the priming coat. The pigment composition of the succeeding coats is not so important and may vary according to the color desired. As a matter of fact, for finish coat work a paint that is satisfactory for wood surfaces will be found equally satisfactory for iron and steel. Economical practice consists in having two paints—a primer and a finish—and when three coats are applied, as experience has shown is valuable on new work, the second coat may be made from the primer and finish stock, gallon for gallon, plus a quart of turpentine.

The pigment red lead has been used for many years as a primer on structural iron work. It has a number of disadvantages, however, which count against it, chief among which is a tendency to settle rapidly in the pail, requiring almost constant stirring, and the ability to harden in the pail. If kept in closed containers, it will become rock hard in six months. It also has the provoking disadvantage of sagging soon after application, even when well brushed out. A new material has been developed with inhibitive ratings greatly in excess of those of red lead. This is known as American vermilion; and at the end of a five-year test on steel at Atlantic City has an inhibitive ratio of 75 as against 40 for red lead. Basic lead chromate, as this material is

more properly called, possesses inherent physical properties which will actually produce a less costly paint than red lead, even tho the chromate has greater initial cost. In addition to its physical properties and inhibitive value, it produces a paint of proper consistency with better hiding qualities (opacity) than a red lead paint of the same consistency. It will weigh but half as much as the latter paint, with consequent reduction in cost. At the same time it will cover 30% more surface; will keep indefinitely in a closed can without settling out or hardening. From a standpoint of economy, it is not necessary to use the basic lead chromate straight, but it can be satisfactorily extended with some material as asbestine (magnesium silicate) up to 25% without impairing any of the qualities of the pigment.


#### Specifications for Chromate Paint

A satisfactory specification for such material for painting structural iron work is as follows:

1. Color pigment should consist of 75% basic lead chromate extended with 25% chemically inert material (asbestine).
2. The vehicle should consist of 90% pure raw linseed oil and 10% combined volatile and drier (7:3).
3. The paint should weigh 12½ pounds per gallon.

This mixture has good consistency, excellent brushing qualities and body enough to permit lengthening with a small quantity of volatile material if necessary.

(Continued to page 148.)



**This Test**  
proves that  
**Moisture**  
cannot  
injure—

**CAREY**  
**Ceil-Board**  
SUPERSEDES PLASTER FOR  
WALLS  
AND CEILINGS

A New Haven Builder says:  
"The writer has made comparative tests of various ceil and wall boards to determine which would absorb the least moisture, with the result that your Ceil Board 'won out.'"

*A. J. Frothingham*

This test shows that a good sized drop of ink remained on the broken edge of a piece of Ceil Board for 1 hour and 35 minutes.

Write for samples of fine finishes, booklets and "Special Service" proposition for builders.  
**THE PHILIP CAREY COMPANY**  
1021 Wayne Ave., Lockland Cincinnati, Ohio



**Hurry it up!**

**Order!**

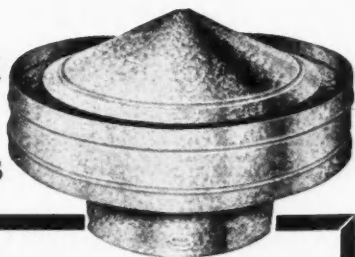
**WE CAN** assure you prompt delivery on a Miami Trailer if we get your order in good season. This Miami Trailer was designed and built for Contractors and Builders. Body of Ohio Oak, steel lined, double end gate dropping to floor level which permits the hauling of material up to twenty feet in length. Special shock absorbing draw bar which protects your machine from all sudden shocks and vibration. Special constructed chassis that insures perfect trail with car. The busy season is here and we are in position to make immediate shipments. Ask for prices and complete description of fourteen different models.

**Miami Trailer Company**      **Troy, Ohio**



**FULL  
VENTILATOR  
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IF IT'S A WILLIS



**PRACTICAL — DURABLE — ECONOMICAL**

Willis Ventilators are backed by twenty-five years of successful ventilating experience. We have incorporated in the Willis every modern feature consistent with Guaranteed Good Service; and have retained all the time-tried and proven features which distinguish the Willis as a RELIABLE Ventilator.

Simple Construction; nothing to get out of order. Very Durable; manufactured from heavy gauge heavily galvanized iron. Prices very reasonable assuring you a good profit. Carried in stock for prompt shipment. Made in several styles and sizes to care for your particular requirements.

Our new 180 page, handsomely illustrated Catalog will be sent Free to any interested Builder upon request. This Catalog covers our entire line of well-known Sheet Metal Products.

DEPT. "B"

**WILLIS MFG. CO., Galesburg, Ill.**

**House Movers's Supplies**

We are builders of original La Plant house-moving tools—designed by a practical house-mover and acknowledged the best in the world. Our All-Steel Giant House-Moving Truck, Little Wonder Truck and Invincible Capstan make house-moving easy, practical, profitable.

Capacity 45 Tons  
30 Days'  
Free Trial  
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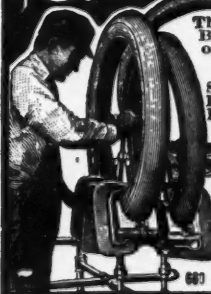


**FREE**  
Successful House-Moving Contractor. Special Magazine for house-movers. Write for it now.

Write for catalog showing full line and special starting plan. We will show you how to increase your income with a small investment.

Write now for Catalog "B"  
**La Plant-Choate Mfg. Co.**  
620 Eastlark Court  
Cedar Rapids, Iowa

**\$3,000.00 IN ONE YEAR**



This Bunch of Tires Will Make Several Dollars Profit

Make it repairing automobile tires. Punctures and blow-outs are common. Tires need retreading and vulcanizing.

**EACH AUTO SOLD MEANS MORE TIRES TO MEND.**

Auto tire repair field a hundred times bigger and better than old bicycle days. Johnson, Tex., writes, "I made as high as \$18 profit in one day." Investigate today. Ask for FREE catalog.  
**Haywood Tire & Equipment Co.**  
603 CAPITOL AVE. INDIANAPOLIS, IND.

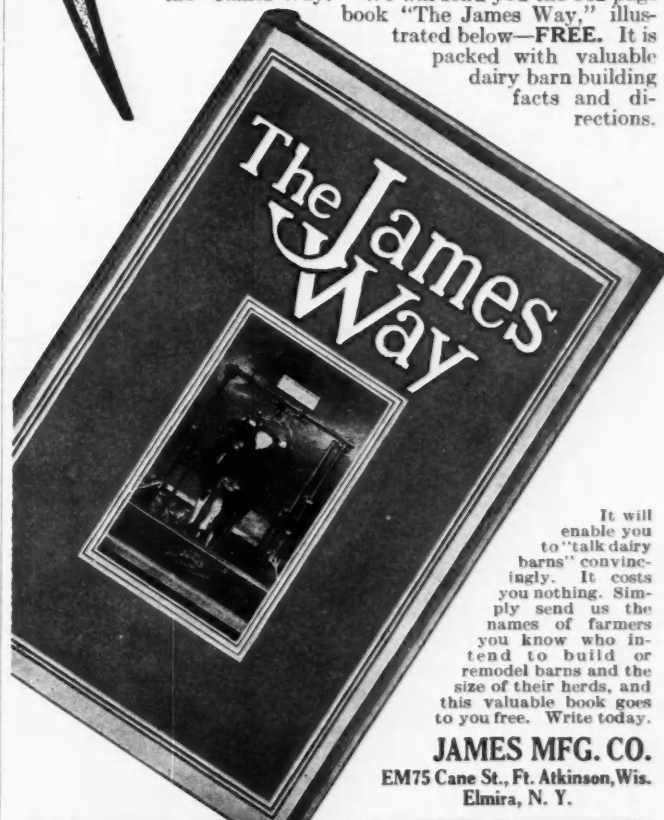
**Erecting  
Good  
Dairy Barns  
Brings  
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Profits  
To  
Builders**



Dairy barns so built and equipped that they make for more milk, better milk, cleaner milk—and less work for the dairyman, are in big demand. Dairymen all through the land are either erecting new and better barns or are remodeling their old ones.

James Barns and James Equipment are known to these dairymen. We advertise heavily in farm and dairy papers.

We will be glad to cooperate with you and help you land contracts for building barns in your vicinity the "James Way." We will send you the 312 page book "The James Way," illustrated below—FREE. It is packed with valuable dairy barn building facts and directions.



It will enable you to "talk dairy barns" convincingly. It costs you nothing. Simply send us the names of farmers you know who intend to build or remodel barns and the size of their herds, and this valuable book goes to you free. Write today.

**JAMES MFG. CO.**  
EM75 Cane St., Ft. Atkinson, Wis.  
Elmira, N. Y.

## You Can Take Hills On High Without A Knock

**I**F you will keep your motor free from carbon. That knocking in your engine—the difficulty you have climbing hills—poor pick-up—lack of power—noisy motor—pre-ignition—in fact 80% of engine trouble is caused by carbon. Clean it out

with

### JOHNSON'S CARBON REMOVER

and your engine will run like it did the first 500 miles, quietly and full of "pep". And your gasoline consumption will drop from 12% to 20%.

#### You Can Do It Yourself

For 25c—five minutes' time—and with no labor you, yourself, can remove all carbon deposits. Simply pour an ounce of Johnson's Carbon Remover into each cylinder—allow it to remain from two to twelve hours and then drive your car 10 or 15 miles. You will be surprised at the wonderful improvement.

#### How It Works

Johnson's Carbon Remover does not eat the carbon, but releases it from the metal and softens it into a jelly-like, inflammable mass. Then, as the engine is operated, the mass burns, pulverizes and is blown out with the exhaust in powder form.

#### Use It Every 1,000 Miles

If you will use Johnson's Carbon Remover at regular intervals, giving carbon no chance to accumulate, you will automatically eliminate most valve trouble and your engine will always be at its highest efficiency.

If your dealer cannot supply you with Johnson's Carbon Remover use attached coupon.



**S. C. JOHNSON & SON, Dept. A B 6 Racine, Wis.**  
I enclose \$1.00 for which please send me by prepaid express enough Johnson's Guaranteed Carbon Remover to thoroughly clean an ordinary four-cylinder motor 4 times.

NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
CITY & STATE \_\_\_\_\_  
MY DEALER IS \_\_\_\_\_

Made and Guaranteed by  
**S. C. JOHNSON & SON**  
Racine, Wisconsin, U.S.A.

(Continued from page 146.)

#### Fireproofing Paints

In this day of iron and concrete construction, fireproofing qualities in our building materials are of paramount importance. At the same time, chemists and engineers are working constantly to produce that happy medium—a fireproof wood. Several processes have been markedly successful, but all follow the same fundamentals—soluble chemical salts which do not affect the cellular structure of the wood; definite ranges of heat according to the material being treated, and definite pressures for each kind of wood. A general example of this procedure is the following:

Ammonium phosphate, 100 gm.; boracic acid, 10 gm.; water, 1000 gm. This material is forced into pine at 212 pounds with a temperature of 162 degrees Fahrenheit.

A microscopic examination of a cross section of this impregnated wood reveals the fact that the individual cells are lined with glass-like crystals, whereas an untreated specimen does not show any such condition. It is these crystals, possessing of themselves an extremely high melting point, which make the wood proof against the destructive forces of fire. With the knowledge of these basic conditions at hand, it will be readily understood why so many of the so-called "fireproof paints" are of little, if any, value. No paint can be applied with a brush, even in an infinite number of coats, which will penetrate to the innermost cells of a 7/8-inch casing, for example. It is merely a surface-producing material and so, handling the situation as charitably as we can, such paints should be called *fire retardent*, instead of fireproof.

#### Discussion of Patented Fireproof Paints Formula of Fireproof Wood

Unfortunately, a very great percentage of "fireproof paints" which I have analyzed and tested are either worthless or else contain materials injurious to the cellulose of the wood itself. For instance, many paints compounded under "secret" formulae comprise such materials as magnesium or sodium silicates (water glass) with casein or glue in solution as a binder. These products are much used, but have an almost negligible protective value. Worst of all, the silicates are quite unstable (that is, proof against chemical change) and are most injurious to the wood fiber, causing grain disintegration in some instances.

A formula which can be used as a *retardent*, however, which does not have any injurious action on the cellulose, and which does not otherwise affect the staining or finishing of the wood, is as follows:


Ammonium sulphate .....	135 gm.
Borax .....	15 gm.
Boric acid .....	5 gm.
Water .....	1,000 gm.

Apply hot in two coats.

It must be remembered, however, that strictly speaking, wood as in casings, for example, ceases to be fireproof with the above material when over-coated with varnish or shellac, as these products will flash when hot

(Continued to page 150.)

**Caldwell  
Galvanized Tanks**



For temporary uses or where a low-priced tank is required, we recommend a Caldwell Galvanized.  
It costs less than wood and gives good service for several years.  
For more permanent installations, we recommend a Caldwell Cypress or Heavy Steel.  
*Send for Catalogue*

**W. E. CALDWELL CO.**  
INCORPORATED  
1990 Brook Street  
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TANKS  
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TOWERS

**ANCHOR BLOCKS**

YOUR  
LOGICAL  
BUILDING  
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Continuous Air - Space Keeps Out Frost and Moisture. Made by the Wet Process Anchor Automatic Tampers. Built to fit any block machine. Write for Big Catalog and Special Offer to Contractors & Lumber Dealers

**ANCHOR CONCRETE STONE CO.**  
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**Get FREE Plans  
of this Modern Crib with the Famous  
National Giant Inside  
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**Used  
With or  
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Cupola**

**The  
Latest,  
Best and Most  
Sensible Inside  
Machine Ever Invented**

Carpenter-Contractors drop us a postal, please, and we'll be glad to tell you how to make big extra profits by recommending and installing our **National Giant Bucket Elevators** in your crib jobs.

The "National Giant" has more desirable features for you to base your recommendation upon and more sensible features for the FARMER than can be found on any other make of inside grain elevator. Why? Because on cribs 28x38 ft. or less, with half pitch roof, it is not necessary to have a cupola. Saves the farmer money. When cupola is necessary, we can save the farmer from \$15 to \$30 with the National Giant. Ask us why, please. We also save the farmer the cost of digging a pit, and on the length of elevator required. The "National Giant" leaves the corn on the cob, where it belongs; more money in the farmer's pocket.

**Get Full Details of Proposition  
to Carpenter-Contractors**

Ours is a good proposition for you and the farmer. It will pay you to look into it. It will bring in more business, greater profits for you. One satisfied customer will bring you many more crib jobs. Write us today—we will give you full details and assist you in any way with plans, specifications, etc. Write now for full details.

**Portable Elevator Mfg. Co.,** 854 East Grove St.  
BLOOMINGTON, ILL.

**No Ice Needed—in Winter  
Filled From the Outside in Summer**

**The Herrick Outside Icing Refrigerators**  
*Most Popular for Modern Homes*

Saves more ice, gives more space in the kitchen and does away with the tracking of floors.

This refrigerator requires no ice in the winter. It is cooled by cold air. The Herrick is so constructed that a compartment may be opened from the outside of the house. Cold air thus enters the opening, forces circulation and keeps the contents of the refrigerator cold and pure.

And we furnish FREE PLANS showing how the Herrick saves a great deal of kitchen space by being built into the wall so that only the front is visible. The housewife will appreciate this saving just as much as the ice-saving feature. And here is another point equally important: The Herrick does away with the annoyances of the iceman's visits to the kitchen and the soiling of the floors by his always muddy feet and dripping ice. Any woman who takes pride in a tidy kitchen will not only be interested in—but will demand the Herrick.

No progressive builder can afford to be without information on this modern convenience. Suggest it to your customers before they suggest it to you. It will add to your reputation as a conscientious, up to the minute builder and will get you more jobs. Write for our free plans and our complete catalog.



**HERRICK  
DRY AIR SYSTEM  
REFRIGERATOR**

The Herrick is Approved by Good House Keeping and New York Tribune Institutes

**Herrick Refrigerator Company, Waterloo, Iowa**



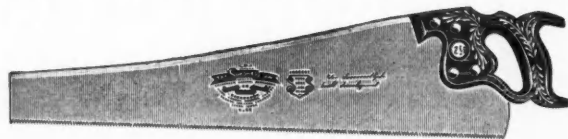
**Uncle Si Says:—**

“Here’s a great **SAW**. My father used it, and I’m **still** using it. Goes through a board fast and true, and doesn’t tire me all out trying to force it. Hangs and feels just right, and **stays** sharp.

“It’s one of those—

**Simonds Saws**

“You can’t own one and be dissatisfied.”



The one shown is our Popular Model Simonds Blue Ribbon Saw, Price \$3.00.

**A**FTER all is said and done, the saw you’ll buy will be determined by price, reputation and the general “feel” of it.

Simonds are as low in price as is consistent with “saw satisfaction.” For years these saws have been in the hands of the best builders. They are known to carpenters all over the country as being good, dependable, durable saws.

And when you get a Simonds in your hands you can appreciate why they are universally used. They fit right into your “scheme of sawing,” because they are made so. The next time you are in your dealer’s ask him to show you a Simonds. And **now**, while you think of it, write for our “Carpenter’s Guide.” It is full of practical, interesting information.

**Simonds Mfg. Company**

“The Saw Makers”—Established 1832  
**FITCHBURG, MASS.**

Five Factories

Eleven Branches



(Continued from page 148.)

enough to blister. The wood itself, however, may not catch fire under these conditions.

**Creosote as a Paint**

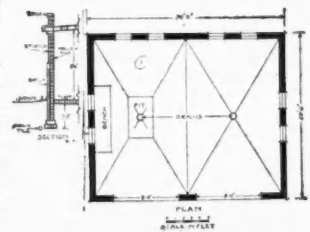
Creosote—a splendid material for permanency—has been used with increasing frequency in late years principally in the impregnation of piles, mine timbers, railroad ties, telephone poles, paving blocks and shingles. Its use is governed, however, by certain factors: pressure, temperature and dryness of the material being treated. The wood is first completely kiln dried, then placed in tanks, from which the air is afterwards exhausted and then replaced by creosote oil, under heavy pressure and definite temperatures. A definite amount of oil is absorbed per cubic foot of timber, these amounts varying with the different species.

It will be seen from the above that creosote oil cannot be efficiently used by the brush method, altho such a temporary surface treatment will retard decay in such timbers as fence posts, sleepers, joists, sills for barns or other structures. It is objectionable, however, when used in house construction, as this strong-smelling oil is volatilized slowly but constantly. Creosote oils from different tars also present different conditions for painting; some will work successfully with a few pigments, others will break down the colors and bleed thru in a very short time. When there is no necessity for saving the rain water, creosoted shingles are exceedingly valuable, supplying good colors for a long period.



**CHEAP---AND FIREPROOF**

Here is a roomy garage for two cars that you can build economically with Hollow Tile. Face it with brick for artistic results. Use Hollow Tile for floors and roof. Then you will have a garage that will last like the pyramids. The cost will be little more than for a burnable structure that requires paint every little while.



**Mail This Coupon**

**Get Your Free Copy of “THE GARAGE BOOK”**

Permanent Buildings Society,  
Clapp Block, Des Moines, Iowa.

Gentlemen: Send me a copy of your new “Garage Book,” showing various designs in fireproof construction. I will be glad to know more about building permanently at low cost.

Name .....

Address .....

This new book shows many plans for Fireproof Garages—all practical, economical, easy to build. Gives material required for each design. We have nothing to sell. Your local dealer will supply material. Write

Permanent Buildings Society,  
Clapp Blk., Des Moines, Ia.



**THIS IS THE HAMMER WITH THE PEDIGREE**

OF COURSE IT'S A

**GERMANTOWN MASTER BUILDER**

Expert workmen the country round know and use this hammer. The finest possible quality in material, design and workmanship. Octagon shaped handle of second growth hickory, ideal hardness, and a claw that will grip all size nails with a grip that holds. Positively the **only** hammer for the workman who wants the BEST. Three sizes, Nos. 745, 11 oz., 746, 16 oz., 747, 20 oz., at \$1.50 each.

**Price \$1.50**

**Germantown Tool Works**  
PHILADELPHIA, PA.  
Branch: 62 East Lake Street, Chicago



**A Better Price for Your Building**

—better rentals, satisfied tenants, absence of flies, germ-breeding garbage cans and unsanitary refuse—when you install

**The Incinerite**  
IT SOLVES THE PROBLEM

Now in daily use in thousands of homes, apartments, hospitals and institutions. Destroys all waste matter by incineration, burning artificial, natural or gasoline gas. The **original** gas-fired incinerator.

Send for booklet, "The Invisible Garbage Man," describing and picturing various models, installations, etc. Blue prints showing installations of Wall Type Incinerite on request.

**E. C. STEARNS & CO.**  
112 Oneida Street SYRACUSE, N. Y.

**For All Buildings Requiring Clear Floor Space**

use  
**LATTIS-TRUSS**

Strongest, Most Durable, Cheapest Wood Truss Known




**McKEOWN BROS.**  
EXCLUSIVE BUILDERS OF THE LATTIS TRUSS ROOF

Built upon the Site of the Job

**Especially Adapted to Garages.**  
Estimates Furnished

112 W. ADAMS ST. CHICAGO

Patented 1907 and 1910



**THE LITTLE GIANT BRICK MACHINE**

Removing the Brick

The Brick Machine that is being sold everywhere. REASON it makes good all the time. You make the brick with a saving of one-fifth of your material. You save cost of lumber for pallets. REASON brick are removed on level ground or any level surface, without breaking a brick. You make the brick with wetter material. REASON brick are pushed out of machine, instead of being pulled out. You make the rock face brick so perfect you can lay up porch columns without mortar. Special prices to mail order buyers.

**LAGRANGE SPECIALTY CO. - - LAGRANGE, IND.**

**Famous Chief Cellar Windows Will Not Stick, Warp or Rot**

The solution of the cellar window problem—a modern, 20th Century Cellar Window made right for service. Made of steel-window, casing and all. No rotting, shrinking or swelling. Fits perfectly all the time. Trouble proof, easy to open and close, leak-proof and fire-proof. Will not rust. Nothing about it to wear out. Fitted with special, inside steel latch—cannot be opened from outside except by breaking the glass. Glass held in place without putty—can be replaced in minute's time.

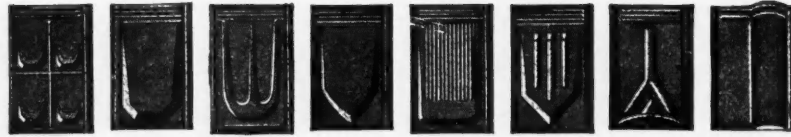
Chief Cellar Windows will please your customers. Cost no more than wooden windows—last twice as long. Can be painted any color desired or left unpainted. Give more service and better service. Write for complete description, prices and terms.

**SHRAUGER & JOHNSON**  
410 Walnut St.  
Atlantic, Iowa



## WALTER'S & COOPER'S METAL SHINGLES

*The  
Shingles  
That  
Last*



*The  
Shingles  
That  
Last*

The Most Complete Line of Designs

The Best Quality Workmanship and Finish

Made in Painted Tin or Genuine Re-dipped Galvanized Tin

SOLD AT THE RIGHT PRICE

May we send you full-size samples and prices?

**NATIONAL SHEET METAL ROOFING CO.** 339-345 GRAND STREET  
JERSEY CITY, N. J.

## REYNOLDS SHINGLES—

Make the Roof *Distinctive*—The beautiful, permanent coloring of natural rock, slate, etc., bring out to the full the values for the architect and builder. They are uniform in size, lay flat on the roof, are fire-safe (approved by the Underwriters Laboratories) and are the most economical roof to buy and to lay. Contractors who have used Reynolds shingles endorse them as being

**BEAUTIFUL, DURABLE and ECONOMICAL**

*Manufactured only by*

**H. M. REYNOLDS ASPHALT SHINGLE COMPANY**

*"Originators of the Asphalt Shingle"*

GRAND RAPIDS, MICHIGAN



## CORTRIGHT METAL SHINGLES

*(The Standard Since 1887)*

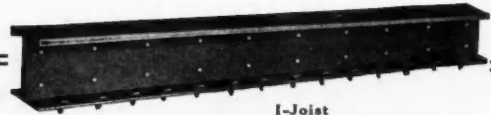
withstand intense heat, cold, dampness, without curling, splitting, cracking or warping. Their use means true economy.

¶Cortright Roofing lasts indefinitely without repairs. It resists fire.

¶Builders who recommend Cortright Metal Shingles have powerful sales arguments—backed by 30 years of Cortright service. Cortrights are easy to sell. And they are *easier* and *quicker* to lay. Cortright Metal Shingles mean satisfied customers and good profits.

*Write NOW for details.*

**Cortright Metal Roofing Co.**  
Philadelphia—Chicago



I-Joist

## Are You Building Fireproof?

WHY erect your buildings of flimsy wood construction, which offers fuel for fire and deteriorates as time goes by, when

**BERGER'S**

*Metal Lumber*

(Patented)

makes a fireproof and indestructible construction? The extra cost is more than offset by the safety, strength, permanency, and lower insurance rates.

Easily and quickly erected in any building. Replaces wood piece for piece.

*Send for Bulletin No. 12 A. B.*



**The Berger Mfg. Co., Canton, Ohio**

Branches: Boston New York Philadelphia Chicago  
St. Louis Minneapolis San Francisco Los Angeles  
Export Dept: Berger Building, New York City, U. S. A.



# HORNET MANTELS

The salability of any house is doubled when you show the purchaser the beauty and comfort of

## Hornet Mantels

They add 100% to any interior. The model shown here gives an idea of our line and prices. It is offered in selected Oak or Birch, Mahogany finish, Piano Polish. Stands 7 feet high. Note beveled mirror, enameled tile and grate.

**Priced at Only \$29.00**

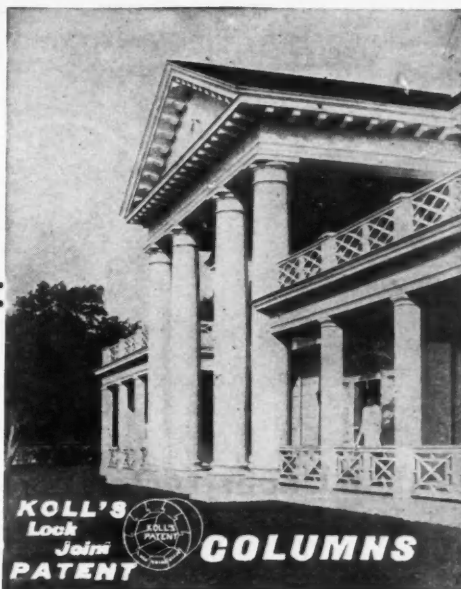
Study our full line of Gas Logs, Fire-sets and Screens in helpful catalog. Gives directions for installing. Get this book for future reference.

**Hornet Mantel Co.**  
1147 Market Street  
St. Louis, Mo.

Below:-  
One of 40  
styles  
shown in  
Our Big  
FREE Catalog



*World's Largest Mantel House*



## Used for Porches, Pergolas and Interior Use

Catalogue "U-40" contains very useful information about Exterior and Interior Columns, will be sent to those who want it for 10 cents in stamps

**HARTMANN-SANDERS CO.**

*Sole Manufacturers*  
2155-2187 Elston Ave. Chicago  
New York Office, 6 East 39th St.

Note.—We have unexcelled facilities for the manufacture of special porch materials; to architect's details. Send us your list and plans for estimates.

## Don't Guess! Be Sure!

The new seventh edition of **The Lightning Estimator** teaches you the ins and outs of the most vital part of your business. Thousands of these books are being used by live wire contractors and builders all over the country. Learn to estimate an ordinary house job in an hour and be sure you are right. Simple, accurate, reliable. All labor given in hours so that prices can be adjusted to any part of the country. Get busy right now, as this is a temporary price for only 30 days, and mail sixty cents (money order only) to address below.

## Bradt Publishing Co.

1260 Michigan Ave. Jackson, Mich.



for \$25.<sup>00</sup>

We are offering this handsome Bookcase Colonnade for a limited time, at a special price of \$25.00, delivered at your station, all charges prepaid.

Here is a real bargain!

Pedestals 2 feet wide—3 feet, 6 in. high. Six inch columns round or square.

We have many attractive designs in Grilles, Parlor Columns, Colonnade Openings, Consols and Sideboards. Send for our Catalogue No 35.

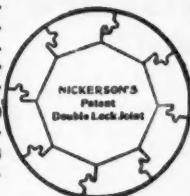
## CHICAGO GRILLE WORKS

Loomis and 21st Sts. CHICAGO, ILL.

## THE BEST COLUMNS

for Porch, Interior and Pergola use the **NICKERSON Patent DOUBLE LOCK JOINT** THEY CANNOT COME APART

We Specialise on Detail-work. "Vignola" is our Standard for proportions when Architect's details are not furnished.



Clinch you Trade by giving them the very best Columns. Ours have the best Construction and correct shape.

All kinds of interior trim to detail. Write for Catalogue No. 4.

**NICKERSON MFG. CO.**  
KNOXVILLE - - TENNESSEE  
Members Knoxville Builders' Exchange

## SPANISH TILE ROOFING

MADE IN

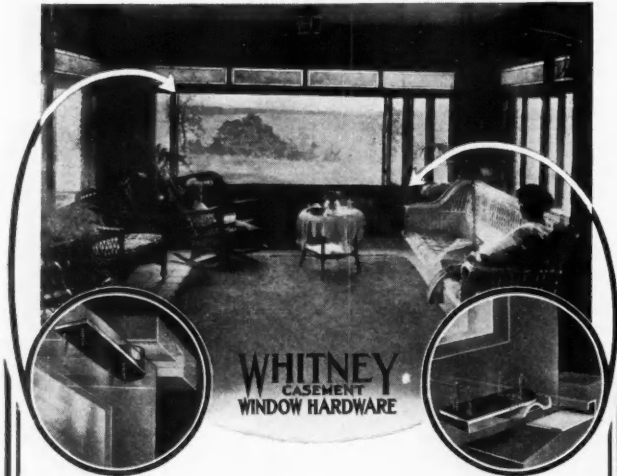
## GALVANIZED STEEL PAINTED

Stamped in plates of 10 Tile each, 16 plates covering one square. Storm and dust proof joints. Easily and securely laid.

Write for catalogue showing full details of this roof. Prices quoted on application.

## THE W. H. MULLINS CO.

214 Franklin Street, Salem, Ohio



**See that Unobstructed View!**

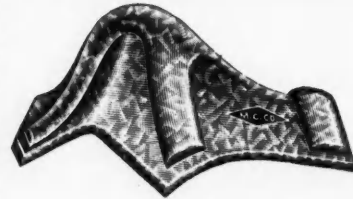
Your customers will appreciate casement windows that can be opened out like that in their homes. They can have them, if you install their casement windows with **Whitney Window Hardware**.

Casements so installed always open easily and quietly, do not interfere with screens—open outward, out of the way—can be easily moved to any point in the opening, are self-adjusting, affording perfect control of ventilation, and are weather-proof when closed. They have proved satisfactory in all types of buildings—in all climates.

We manufacture only the patented Whitney Window Hardware and screen fittings—use any style sash you wish. If you cannot get the sash locally, we will quote you on your requirements complete, f. o. b. Minneapolis.

Whitney Window Hardware is sold by dealers everywhere. If your dealer doesn't have it—send us his name. Interesting portfolio of artistic casement window designs and full information sent upon request.

**Whitney Window Corporation** 309 South Fifth St. Minneapolis, Minn.



No. 160 Hip Finial

**"AMERICAN" METAL ROOF TRIMMINGS**

Made of Galvanized Iron or Copper Sheets



No. 159 Hip Starter and No. 157 Hip Finial  
This is positively the finest line of Gable and Hip Metal Finials, Ridging, Hip Finishes and Hip Starters on the Market.

High grade workmanship. Reasonable in price. Ask for circular describing complete line.

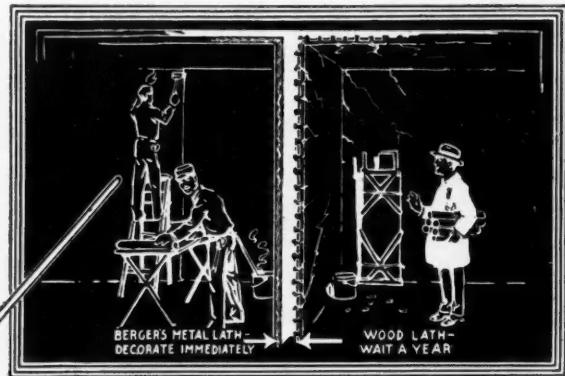
**Milwaukee Corrugating Co.**  
Branch at Kansas City, Mo. Milwaukee, Wis.

*Blackboard talks by the professor*



No. 3—

**"Decorate Immediately"**



"HERE'S a big feature you should not overlook in your building operations. As you know, it is necessary with wood lath and plaster to wait a year for settlement to take place and then patch up the cracks before decorations can be applied. But by plastering on

**Berger's Expanded Metal Lath**

you can decorate, fresco or paper immediately after the plaster is dry, because there will be no cracks in the plaster. This feature will appeal strongly to the building owner because he can plan his decorations so that the structure can be fully completed before being occupied. Besides permitting prompt decorating and preventing cracking of plaster, Berger's Expanded Metal Lath is fire resisting, adds strength to the walls, is vermin proof and muffles sound."

Send for Booklet F. A. B.

**The Berger Mfg. Co., Canton, Ohio**

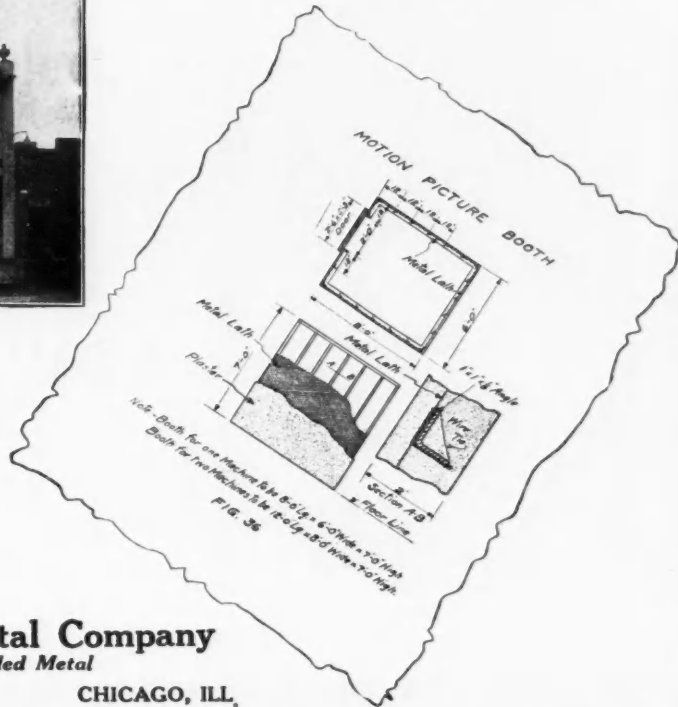
Branches: Boston New York Philadelphia Chicago St. Louis Minneapolis, San Francisco Los Angeles  
Export Dept.: Berger Building, New York City, U. S. A.





**Regent Theatre, Syracuse, N. Y.**

*E. A. Howard & Son, of Syracuse  
Architects*



KNO-BURN Expanded Metal Lath was used in this attractive theatre. The accompanying detail shows how metal lath is used in constructing the booth for containing the machine and its operator.

**North Western Expanded Metal Company**

*Manufacturers All Types of Expanded Metal*

903 Old Colony Building

CHICAGO, ILL.



**What Did the Contractor Forget?**

He forgot to make that **extra Profit**, by equipping the barn he had just built with **Lightning** protection.

**Some other man will come along and get that job**, and make that Profit—because the owner will not long trust a fine new barn, filled with valuable stock and feed, to the chances of **Lightning**.

We help you get the business and show you how to handle it.

**Shinn Mfg. Company**

W. C. Shinn, President

General Offices: 1635 Monadnock Bldg. Chicago, Ill.

Factories: Niles, Mich.; Windsor, Ontario  
Warehouses: Lincoln, Neb.; Minneapolis, Minn.

**COLUMNS**  
*Either Make or Mar*

If they are wood columns they are absolutely certain to mar because of checking, splitting, rotting, which sooner or later occurs.

**UNION METAL COLUMNS**

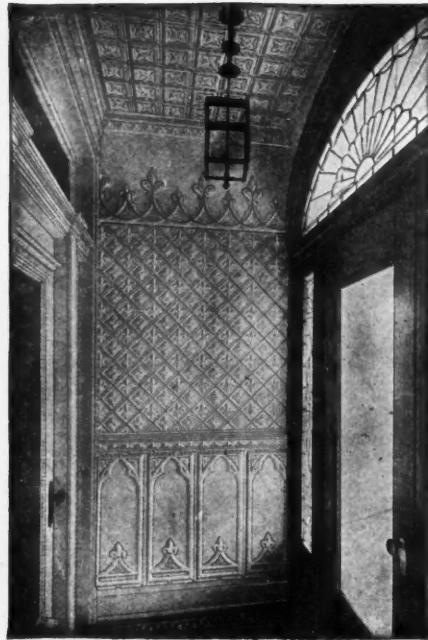
*"The Ones That Last A Lifetime"*

will last as long as the house itself and remain as stately and beautiful as when first erected.

The shafts are open hearth steel, coated with spelter and protected with a priming coat of special Sherwin-Williams' Paint.

Write for Booklet No. 81.

**The Union Metal Mfg Co.**  
Canton, O.



**Largest Manufacturers of Metal Ceilings, Metal Shingles, Steel Roofing and Siding in the World.**

## Here's a Real Business Building Opportunity

Edward's Metal Ceilings and Walls represent big profit possibilities to **one** good live Agent in every locality. Hundreds are making big money right now. You can, too, if you will.

### Big Demand—Big Profits

The demand for Edward's Metal Ceilings and Walls isn't coming—it's **here now!** Thousands of home owners and home builders are reading our advertisements in the leading magazines.

## EDWARDS' METAL Ceilings and Walls

We **must** have more agents. Territory going fast. Our product is **right**. Our prices are **right**. Don't delay a minute. Write for all the facts N-O-W! Ask for new Ceiling Catalog—**its free**.

### The Edwards Mfg. Co.

"The Sheet Metal Folks"

401-417 Eggleston Avenue, Cincinnati, Ohio

New York Office: 81-83 Fulton St. Branch Office and Warehouse:  
1625-1627 Pacific Ave., Dallas, Texas.

## USE THE Kanneberg

### FREE SERVICE For Builders

A ceiling design of Steel for a butcher shop would be hardly suitable for a bank or a theatre, yet if only a few designs are available such a mistake is liable to happen. To prevent such errors we offer Kanneberg Service Free of charge to suggest appropriate designs in harmony with the surroundings at the most reasonable prices. We do not need an architect's drawing—the roughest sort of a layout will do. Send us a drawing of your next job and let us show you the possibilities of Decorative Sheet Metal. It won't cost you a cent or obligate you in any way.

"Decorative Stamped Metal" is the name of our large handsomely illustrated 114 page Book on Steel Ceilings. Your Free Copy is waiting for you.

We also manufacture Metal Shingles, Roofing, Store Fronts, Skylights, Ventilators, in fact everything in Sheet Metal.

The Kanneberg  
Roofing and  
Ceiling Co.  
29-31  
Robin Ct.,  
S. E.  
Canton,  
Ohio

Come to Us for  
Everything in Sheet Metal

IN these days of high rentals, space is valuable—especially so in thickly populated districts. You can increase the rental income of the buildings you erect by installing

**BERGER'S  
Radian**

### Sidewalk Lights

which will flood otherwise dark basements with an abundance of bright daylight.

Lazalite Glass, used exclusively in this system, gives maximum illumination and a scientific distribution of the light rays.

The double reinforced construction gives remarkable strength and the interlocking steel forms provide easy and speedy installation.

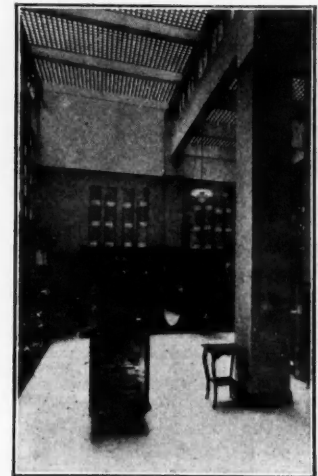
The Easy Replace feature assures permanency, as it permits broken glass to be easily replaced in a practical and watertight manner.

Send for Blueprints and  
Technical Catalog T. A. B.



### The Berger Mfg. Co., Canton, Ohio

Branches: New York, Boston, Philadelphia, Chicago, St. Louis, Minneapolis, San Francisco, Los Angeles  
Export Dept.: Berger Bldg., New York City, U. S. A.



Brown-Marx Bldg., Birmingham, Ala.

# MFMA

This trademark on flooring is a  
**GUARANTY**  
of *Quality*  
and standard grades

← *Your guaranty of quality*

This trade-mark on Maple, Beech and Birch

## Flooring

guarantees you the best flooring possible to make, and *uniformity* in grades you can depend upon in future years. Sold thru dealers only. MFMA trade-mark appears on all flooring made by members of the



**FREE**  
"Ten Reasons Why Retail Lumbermen Should Handle Maple Flooring"  
Write for it.

Maple Flooring Manufacturers' Association, Stock Exchange Bldg. Chicago  
Handle MFMA Flooring and get the benefit of MFMA sales help and consumer advertising

To The Standard Paint Co., New York.

The **Impervite Stucco** work is the best job in the County, not a hair-crack in the whole building.

*Carbon Cement Block Company.*

To The Standard Paint Co., Chicago.

We tried everything to overcome water seeping through the **cellar wall**. Are now using the room for pianos and there is no sign of dampness.

*Bell Brothers Music Company.*

To The Standard Paint Co., New York.

The **pit goes twenty-five feet below water level**. It was originally waterproofed with ten layers of tar and felt, which failed. The **Impervite** system was decided on and a  $\frac{1}{2}$ " inside facing was applied in 1912 and has been absolutely successful.

*Isaac Hopper Sons, Inc.*

To The Standard Paint Co., Boston.

We ordered 5000 lbs. of **Impervite** for plastering several reservoirs. We have had no leaks, we have had no cracks and it has held on a stone wall where we very often had trouble in being able to hold the cement plaster.

*Frederick & Bradenbaugh.*



### Easy, Quick Business For You Laying Asbestone

ASBESTONE, the original artificial stone, laid like mortar over wood or concrete, costs only a little more than wood.

Each installation sells another. Laid in Winter or Summer.

Interesting literature furnished you free, giving full detailed instructions, showing each operation, illustrated by photographs, of actual method employed in laying ASBESTONE.



#### Get Into Business for Yourself

Don't wait until tomorrow; tomorrow never comes and yesterday is gone, so write today for full particulars and how it's done.

**Franklyn R. Muller & Co.**

764 Madison St.

Waukegan, Ill.

For Everlasting Stucco and Interior Plaster, make inquiry regarding our **EVERLASTICK STUCCO**

### Fire Place Damper with Heat Deflector Plate

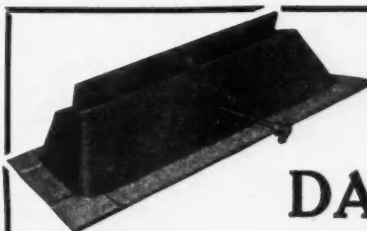
Try it before you buy it

Write for circular



Our catalogue "N" shows a full line of Fire Place Fixtures

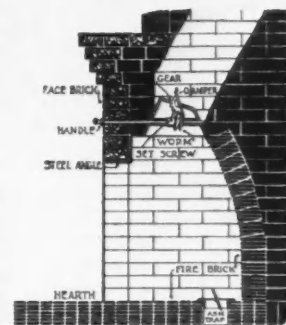
**HEITLAND GRATE & MANTEL CO.**  
No. 136 N. Fifth St. Quincy, Ill.



### Improved Fire place DAMPERS

Stover Dampers make the building of fireplaces easy. The labor saved by their use reduces the cost considerably.

Catalog 1590-X describes these and other new style dampers in detail, gives valuable suggestions as to fireplace construction and shows a large assortment of other fireplace fixtures.



If you build fireplaces, send for this catalog. *It's free.* We manufacture builders' and household hardware, windmills, feed mills, gasoline engines.

#### Stover Mfg. & Engine Co.

725 East Street

Freeport, Illinois

STOVER MFG. & ENGINE CO., 725 East St., Freeport, Ill.

Send us Catalog 1590-X.

NAME .....  
BUSINESS .....  
CITY ..... STATE .....



The old fashioned barn, with its cupola was simply "aired" not really VENTILATED at all. Carpenters and builders now recommend

**"GLOBE"  
VENTILATORS**

because they are not only the most efficient and the most scientifically constructed, but they improve the appearance of all kinds of barns.

Always in stock in all sizes for immediate shipment. For information and catalogue, please address Department F.

**GLOBE VENTILATOR CO.**  
TROY, N.Y.

**Fire Protection**

No one thing is a greater protection against the spontaneous combustion of heating hay and fodder stored in close barns, than a steady upward and outward flow of pure air through a

**Buckeye Ventilator**

These ventilators are practical fire insurance—recognized as genuine fire protection by everyone who has had experience with them.

Proper ventilation is also essential to perfect animal health, quick fattening and large milk flow. More than this the very life of the building itself is prolonged by proper ventilation.

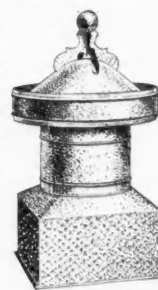
**Buckeye Ventilators ventilate properly.** There is no better system known. Why not specify them to your customers and friends? The opportunity here is a large one—the profits to you eminently satisfactory.

Write us for our proposition—it will interest you.

**The Thomas & Armstrong Co.**  
126 Union St. London, Ohio



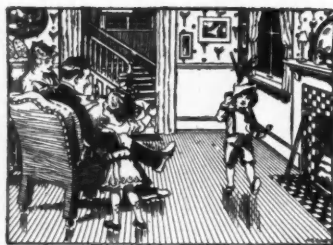
Cupola for Barns and other Farm Buildings.



Ventilators for Factories, Warehouses, etc.

**Beautiful Oak Floors — Everywhere WHY??**

**BECAUSE—**



- Oak Flooring by right of superior merit and conquest is "America's Best Flooring".
- Women prefer Oak Flooring for the reason it is rich and cheerful in color, and offers unlimited possibilities to give the home that coveted touch of elegance.
- Oak Flooring is Distinctive, Beautiful and Substantial, three very vital reasons why so much Oak Flooring is in use today.
- Service and satisfaction are assured if Oak Floors are used.
- Of all the hardwood flooring in use today, Oak stands pre-eminent for color, texture and durability.
- Keeps the "For Rent" and "For Sale" signs off of the property. Landlords know what is best in flooring.

See our Page 758—1916 Sweet's Catalog. Write for Booklet—"America's Best Flooring."

**Oak Flooring Service Bureau, 1603 Union Trust Building CINCINNATI, OHIO**



**MONITOR CUPOLAS**

**ARE:** Made in all sizes and for all purposes. Reliable at all times and in all weather. Storm and bird proof, will not rust nor become dilapidated. Made only from the best grades of materials and are furnished with pure gold leafed weather vanes. Shipped with base all put together in the factory, which makes them easy to erect, and they always go up straight and true.

The best Cupola for the OWNER, for the AGENT or for the CONTRACTOR, and the price is right.

We are making a special proposition to contractor agents in territory where we are not already represented. Write for particulars and catalog.

**Lichty Metal Products Co.**  
Station A, Waterloo, Iowa

**CHIEF ALL-STEEL CUPOLA**

New-improved, scientifically designed ventilating cupola for all buildings. Up-to-date in design, material and construction. Used and approved on hundreds of farms. Made of heavily galvanized steel with base strongly braced. Can't rust, rot, or blow off. Absolutely storm-proof and bird's-nest proof.

**Easy to Install—Sure to Please Your Customers**

Chief Cupola saves time and labor installing—base bolts directly to roof and cupola bolts to the base. Only six bolts needed. Meets all requirements—insures adequate ventilation—satisfies all users. Write for full description, prices, etc.

**Shrauger & Johnson Co.**  
430 Walnut Street, Atlantic, Iowa



## Royal Ventilators



Farmers know the value of ventilation. Put **Royal Ventilators** on every barn you build and you have done your best. They give satisfaction and please clients.

The **Royal** will stand any strain; proof against storms, leaks, birds and insects; exerts a steady up-pull on foul air and introduces fresh air without down-draft. Double Cone an efficient feature.

Made for every purpose. Will please in construction, appearance, efficiency and price. Send for our Catalog.

**ROYAL VENTILATOR CO.**  
417 Locust St. Philadelphia, Pa.

## GET ALL THE PROFIT

Shipped Ready to Install

Easy to Erect



Your reputation and future orders depend upon the equipment you recommend. Don't take a chance. Get the present and future profit by recommending and equipping the barns you build with

### O-K Cupolas

Every one you erect adds to your reputation. They solve the barn ventilation problem and sell themselves. **O-K Cupolas** are neat in appearance. Bird, storm, rust and rot proof. Made of heavy galvanized steel. Cost no more than the ordinary kind.

Special Prices to Contractors and Builders where we are not represented

Write for full particulars on this and other money-making specialties

**Phillip Bernard Co.**  
2400 Floyd Ave. Sioux City, Iowa



## V & B Tools

### Patented Square Head Nail Set

Will not roll



Cup Pointed—Points 1/32, 2/32, 3/32, 4/32, 5/32  
Every Nail Set Guaranteed

Ask your dealer for V & B No. 100. . . . . Price 15c each

### Patented All Steel Wood Chisel

Will not break or take a set—can be used with a hammer. Use it for prying and ripping. Save your Wooden Handle Chisel. It cuts, too.



Sizes	1/2	3/8	3/4	1	1 1/4	1 1/2
Price	\$ .65	.70	.80	90	1.00	1.10

If your dealer cannot supply you, write us

We manufacture the Vaughan's Vanadium Nail Hammer. Price \$1.50.

## Vaughan & Bushnell Mfg. Co.

Makers of Fine Tools

2114 Carroll Ave. : : : Chicago, Ill.



## INSURE BIGGER PROFITS!

**DON'T** tie up good money in Scaffold Brackets that you can't use on every kind of job. "Reliable" are the **ONLY** Brackets used as readily on brick and stucco work as on frame.

Contractors write us daily that their "RELIABLE" Brackets are used daily while other brackets lie idle.

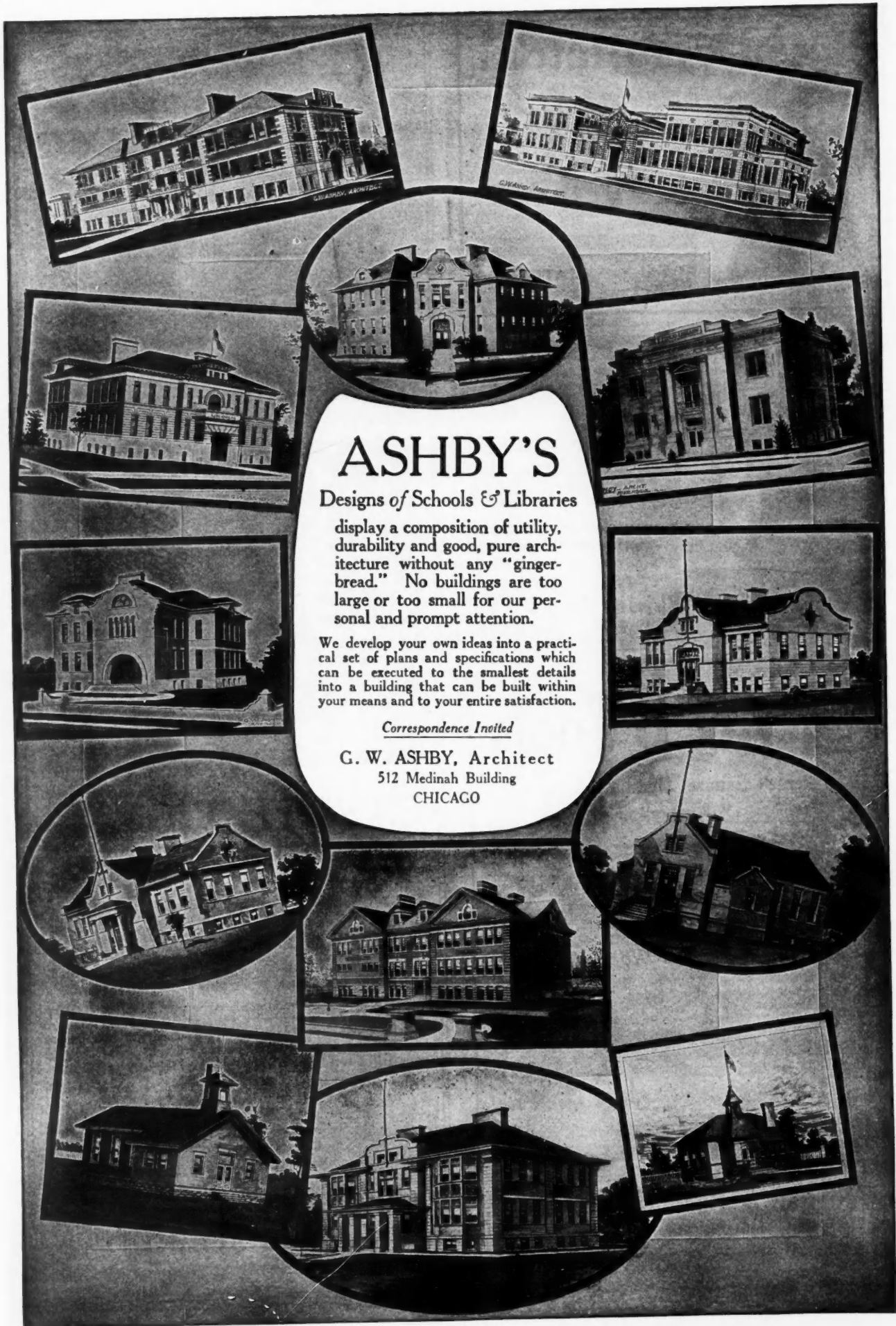
Hung in a few seconds with a hammer and four nails. Scaffold the entire house in ten minutes and commence the real money making work of actual building. Just as easy to remove. Simply lift them off the nails, drive in nails and not a scratch is left to spoil the looks of the job.

Painters use them regularly. More convenient and safe and much less tiresome than a ladder.

For laying asphalt or other shingles there is nothing better than the "RELIABLE" ROOFING BRACKET.

The "Up-to-date" dealer in your city handles "Reliable" Brackets. If you can't find them in your town write us for prices, giving your dealer's name.

**Elite Manufacturing Co.**  
Dept. C Ashland, Ohio



# ASHBY'S

Designs of Schools & Libraries

display a composition of utility, durability and good, pure architecture without any "gingerbread." No buildings are too large or too small for our personal and prompt attention.

We develop your own ideas into a practical set of plans and specifications which can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.

*Correspondence Invited*

G. W. ASHBY, Architect  
512 Medinah Building  
CHICAGO



# Simplicity

CONTRACTORS who remodel store fronts demand a construction that is simple—it must be easily installed, strong and moderate in price. Building practical store front construction for 28 years has developed our organization to handle each order promptly and with accuracy.

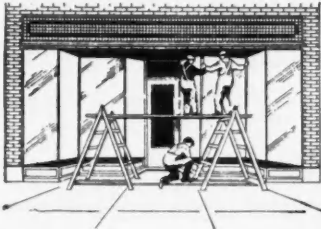
**Desco**  
METAL  
STORE FRONTS

SOLD DIRECT TO YOU

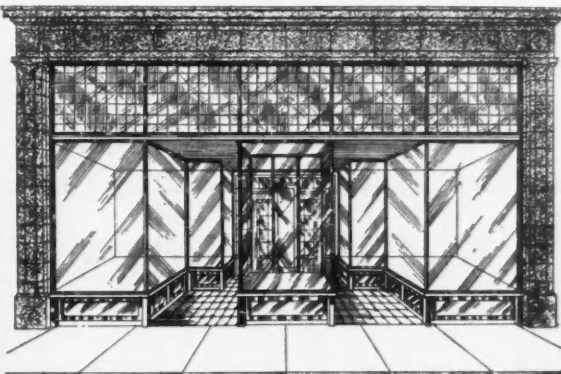
We have no branches, no salesmen—we sell direct to you. Cutting the usual enormous cost of selling enables us to save you money. And you'll find "Desco" thoroughly practical, attractive and a time-saver on installation. Be sure to get details and prices. Go after this big business—we'll help you close your prospects.

See 1917 Sweet's Catalog

**DETROIT SHOW CASE CO.**  
491 Fort Street, West  
DETROIT, MICHIGAN



# Broken Glass—No



You have used copper store front construction and have had trouble with broken glass.

## Use Zouri key-set

—the only modern construction and you will avoid all trouble.

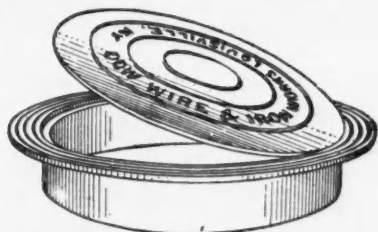
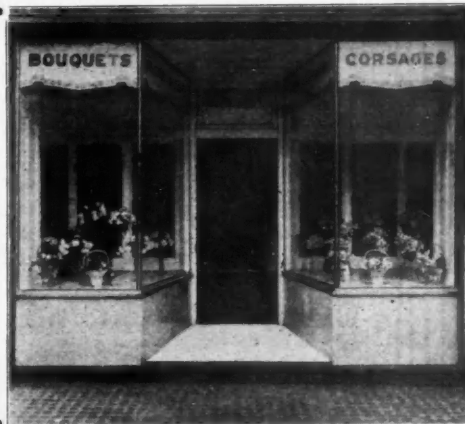
**Zouri Drawn Metals Co.**  
1803-1843 East End Ave., CHICAGO HEIGHTS, ILL.

# There's Money in Store Fronts IF YOU BUILD THEM THE "COULSON WAY"

There's a big field in this line of work. Probably you are not doing as much of it as you could. We furnish the construction all ready to set in place. It is easily installed. By using it you obtain an attractive, substantial and durable store front and a safe setting for the glass.

Ask for blue prints, prices, etc., for your guidance.

**J. W. COULSON & CO.**  
95-107 West Spring Street COLUMBUS, OHIO

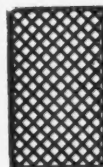


## BUILDERS' IRON WORK

Window Guards, Elevator Enclosures, Elevator Cabs, Hangers, Ornamental Iron, etc., etc., etc.

**DOW WIRE & IRON WORKS (Inc.)** Louisville, Ky.

# Wire Window Guards



Counter Railings  
Elevator Enclosures  
Tubular Hand Rails  
Brass and Bronze Work

**DON'T FAIL**  
to get our catalog and full information for your own benefit!

**The Cincinnati Mfg. Co., Cincinnati, Ohio**



No. 10 "A"  
For Concrete or  
Mortar

## WHEELBARROWS

are subjected to harder service than any other item of a contractor's equipment and as they have a very important duty to perform, they demand careful attention as a buying problem.

Successful contractors know the value of good wheelbarrows, and they know also that no other barrow is "JUST AS GOOD" as the

# Sterling

They know that Sterling Wheelbarrows please the men because they wheel easy.

That the trays are designed to carry larger loads, and are properly balanced.

That Sterling barrows stand up under the hard service and increase the tonnage handled each day.

### Get Complete Information

covering this complete line of contractors' wheelbarrows and carts.

Write now for Catalogue No. 19

**STERLING WHEELBARROW CO.**  
MILWAUKEE WISCONSIN



No. 6 "A"  
For Stone, Sand  
or Brick

## It's There WHEN You Want It—



The Bessler Movable Stairway is the only stairs that can be folded up into the ceiling, leaving the lower

floor entirely clear. It is designed to do away with the stationary, space-devouring stairway to attics and lofts, as well as to half stories in bungalows. When needed a light tug on a chain brings it down when stairs are easily rolled down the panel on to the floor. When not in use it is swung up into the ceiling out of the way.

This cut shows Stairway half way up to ceiling. Spring barrels and counter balance do the work. You merely direct it.

### IT IS THERE WHEN YOU WANT IT OUT OF THE WAY WHEN NOT IN USE

So easy and simple that a child can operate it. It costs less than a stationary stairway—bear that in mind. And just think of the space it saves in the valuable lower rooms. Architects, contractors and home builders are invited to get in touch with



Stairway folded in ceiling.

**The Bessler Movable Stairway Co.**  
AKRON, OHIO



## SILVER LAKE A Sash Cord

The Best Cord adds nothing to the cost of a house, is guaranteed to wear twenty years, and your client is saved the annoyance and expense of replacing broken cord. Made in all sizes to fit all pulleys. Silver Lake A is printed on every foot of cord. Guaranteed full lengths.

Don't Blame the Window Put in the Right Sash Cord FIRST!

SILVER LAKE CO., Newtonville, Mass.



### Good Profits

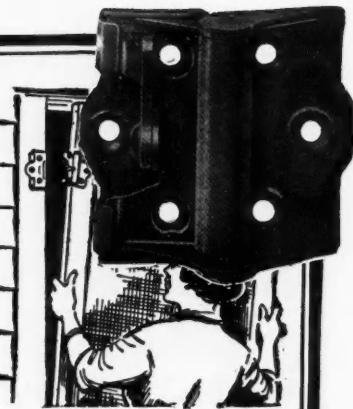
and satisfied customers are assured if you use

### Jiffy Screen and Storm Door Hinges

Save time, temper and expense. No screws to bother with after door is hung.

Write for Prices and Free Sample

**ROCK CITY MFG. CO.**  
Wabash, Ind.



*Doubles room utility*



*Either closed or open, the Sorlien leaves the ceiling complete*

# SORLIEN CEILING BED

Any good carpenter can install the Sorlien Ceiling Bed in either an old or new building. It costs from 50% to 90% less to install than any other disappearing bed. When installed, the Sorlien is completely opened in 10 seconds, without strapping, folding or standing on end. Write for Sorlien Catalogue today. The Sorlien sells for \$40.00, F. O. B. Minneapolis.

**Sorlien Ceiling Bed Company**  
410 Sixth Ave. South Minneapolis, Minn.

## Carpenters, Builders, Attention!

You owe it to yourself, as well as to the property owner for whom you are working, to see that his buildings are adequately equipped with proper protection from loss by lightning. His confidence in your judgment will make it easy for you to secure this additional work.

The Barnett System of Guaranteed Lightning Protection is the easy way to more profits on the same job. Our rods are in big demand and there is a big profit in selling them. They are made of pure copper cable, with attractive fixtures that are easily put on any building.



Why not equip yourself to take advantage of the opportunities for this work which are continuously arising? Let us show you the way to more profits on the same job.

**FREE -- Cable Samples, Price List and Catalog. Write for them today.**

**JOS. L. A. BARNETT & CO.**  
RIVERSIDE, IOWA

## Winthrop Tapered Asphalt Shingles Only Kind Tapered Like Wood

E. S. Lindsey, Contractor and Builder, Parnassus, Pennsylvania, writes:



"I am very much pleased with the Tapered Shingles I purchased from you. They seem to appeal to the general public. I would like to have the agency for them."

Just ask for a sample shingle. See how tough, how pliable and how durable it is. See how easy to lay it is. See what a beautiful roof it will make--red, green or slate black. Then you will understand why we receive letters like the above.

**THE BECKMAN-DAWSON COMPANY**  
Asphalt Shingles  
Factory: Argo, Ill. 1413 Y. M. C. A. Bldg., Chicago, Ill.

# Typewriter Sensation

## GREATEST TYPEWRITER BARGAIN EVER OFFERED

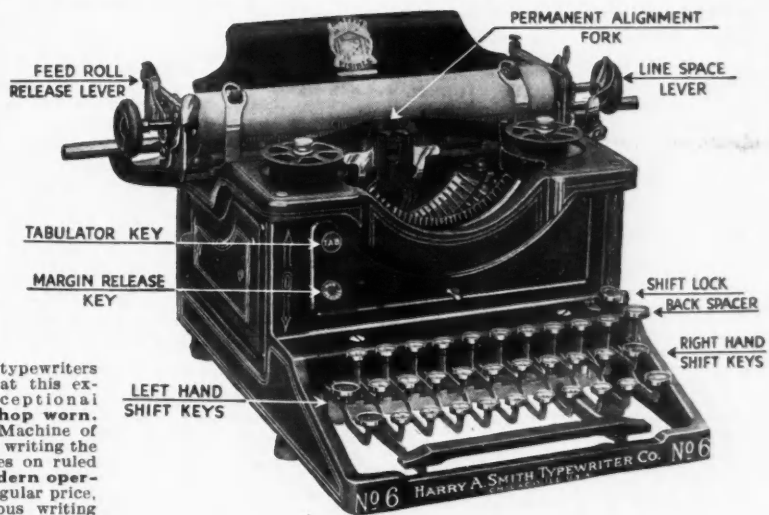
Only \$2.00 a month until the bargain price of \$34.15 is paid and the machine is yours. This startling offer has astounded the typewriter world. Absolutely the greatest typewriter bargain ever offered. For a short time only I offer a limited number of these standard reconstructed

**VISIBLE MODEL No. 6** typewriters at this exceptional price. Perfect machines, not damaged or shop worn. Complete outfit, cover, tools, instructions, etc. Machine of standard size, keyboard of standard arrangement writing the full 84 characters, tabulator, back spacer, writes on ruled lines; in fact, every late style feature and modern operating convenience, at less than a third of the regular price, and each letter visible as printed and all previous writing completely visible at all times.

**FREE TRIAL NO RISK** You Take My brand new Model No. 6 offer for but \$34.15--and only \$2 per month. I won't let you buy this typewriter before you see it. I want you to be absolutely convinced that this is the greatest typewriter bargain ever offered. If you have the slightest use for a typewriter you should accept this amazing offer. You cannot equal this wonderful value anywhere. When the typewriter arrives deposit with the express agent \$6.15 and take the machine for five days' trial. If you are convinced that it is the best typewriter you ever saw, keep it and send me \$2.00 a month until my bargain price is paid. If you don't want it, return to the express agent, receive your \$6.15 and he returns the machine to me. I will pay the return express charges. This machine is guaranteed just as if you paid \$100.00 for it.

**ONLY 100 TYPEWRITERS** There is no time to lose. Fill in the coupon and mail it today sure. The typewriter will be shipped promptly. There is no red tape--no solicitors--no collectors--no chattel mortgage. It is simply understood that I retain title to the machine until the full \$34.15 is paid. You cannot lose. It is the greatest typewriter opportunity you will ever have.

**HARRY A. SMITH 300-231 N. Fifth Ave. CHICAGO, ILL.**



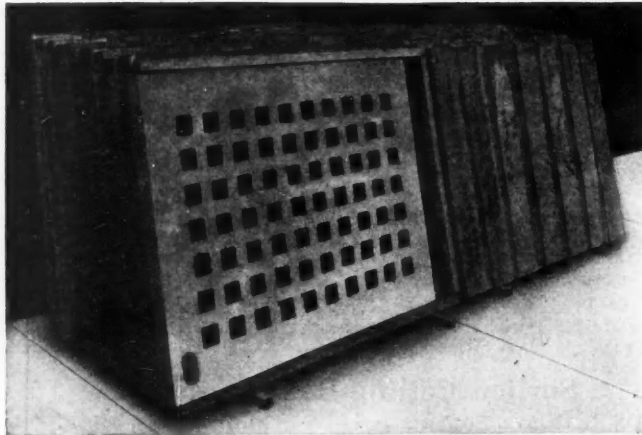
-----TEAR OUT--MAIL TODAY-----

**HARRY A. SMITH**  
300-231 N. Fifth Ave., Chicago, Ill.

Ship me your Model No. 6 F. O. B. Chicago, as described in this advertisement. I will pay you the \$28.00 balance of the SPECIAL \$34.15 purchase price at the rate of \$2.00 a month. The title to remain in you until fully paid for. It is understood that I have five days in which to examine and try the typewriter. If I choose not to keep it I will carefully repack it and return it to the express agent. It is understood that you give the standard guarantee for one year.

NAME .....

ADDRESS .....



## Labor is Scarce!

Make quick work of your sidewalk light installation by using American 3-Way factory finished SLABS

FORMS, staging, high-priced cement finishers and the attendant muss and trouble is eliminated when

American 3-Way Factory Finished Sidewalk Light Slabs are used. You merely take the slab out of the crate, slip it into its seat in the sidewalk and caulk the joint. ¶ All our lenses are made of specially annealed LAZALITE GLASS with plastic malleable coating on side walls to take care of expansion. ¶ We have several shapes and sizes based on the 3-Way principle.

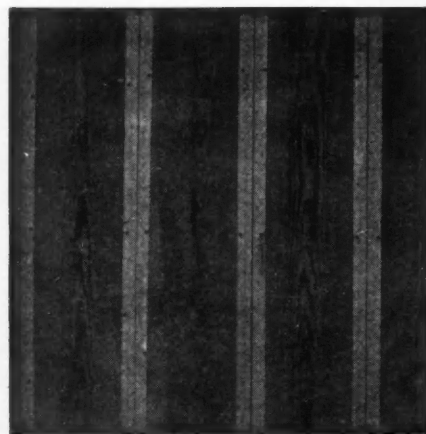
ASK FOR CATALOGUE 16-L

### American 3-Way Prism Company

Manufacturers of Prism Products, Sidewalk Doors, Coal Hole Covers

Main Office and Factory: LA PORTE, IND.

Branch Office and Factory: Spring and Wooster Sts., New York, N. Y.



## METALLIC BATTEN STRIPS

PRACTICAL—EVERLASTING—ECONOMICAL

These Batten Strips of Galvanized Metal will never warp, split, or draw away from the boards. Offer no obstruction to sliding doors. Allow for expansion and contraction of the siding. Made in 6, 7, 8, 9 and 10 foot length with interlocking joint. Easily cut; no waste. Nailed directly to siding with small nails.



End view showing joint closed. A perfect fitting Batten at all times, in all weathers. Beautifies any building.



End view showing joint open. Provides for expansion or contraction of the siding so nails will not work loose.

Metallic Batten Strips make strong, neat joints. They make the building wind-proof, weather-proof and rat-proof. Also valuable for lining grain bins or wagon boxes.

Write for Free Sample and see for Yourself  
**METALLIC BATTEN COMPANY** Owensville, Indiana

## Strong, Neat and Lasting Corners

are the kind every house owner wants, and the kind that are made by using

### KEES METAL Building Corners



They give the popular mitre corner effect without the slow, expensive work of beveling. Cost less than corners finished any other way—look better and never spread open. Now made for both lap and drop siding. Samples sent on request.

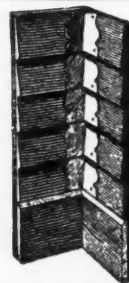
If you wish we will also send samples of Kees Siding Clips, which make tight joints where siding joins casings or corner strips.

Box 552 **ED. KEES** MFG. CO. BEATRICE, NEB.

Let us send you free samples of Kees-Gossett Window Screen Hangers.

## Chief Metal Building Corners

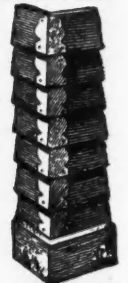
Warp-Proof—Rust-Proof—Fit Anywhere



They make a corner with the smoothness and neat appearance of a "mitred corner" and save the time and labor of beveling down the siding. Made of heavy galvanized steel. Fit any corner—inside or outside and make a smooth corner that does not hold dust or moisture. Cannot warp or split, and prevents warping of the siding.

Chief Corners protect buildings from injury and are practically indestructible. Furnished ready perforated for nailing to the siding. Put on easily and quickly. Can be painted any color or left unpainted as desired.

Write for free sample and full information

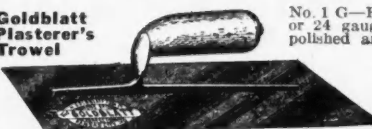


**SHRAUGER & JOHNSON** :-: 430 Walnut St. ATLANTIC, IOWA

**Our Motto**  
**Better Tools**  
*at*  
**Lower Prices**

**We Sell Direct to the User. One Profit  
 One Price—One Quality, THE BEST**

**Goldblatt  
 Plasterer's  
 Trowel**



No. 1 G—Finishing Trowel, made of 22 or 24 gauge best trowel steel, highly polished and etched. Mounting extends within one inch of each end of blade, and has ten large rivets. Three sizes—11 inch, 11½, 12 inch. Low, medium and high mounts (price \$2.00).

**Goldblatt's Tile Markers**



Most practical and best plasterer's Tile Marker made. Price 40c.

**Tool Bags  
 Valise Shape**

Made of heavy canvas, hand sewed to hoop steel frame. Has lock, 2 straps, inside pocket, leather trimmed; 5 sizes, \$1.75 to \$2.60. 16 to 24 inches long.



**Guaranteed  
 Plumb Rules**



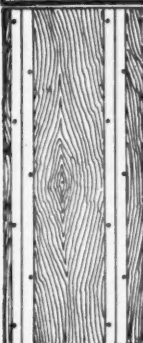
\$2.40, \$3.00 and \$5.00.  
 You take no risk in ordering Goldblatt Tools. All our Tools guaranteed. Write for Illustrated Catalog and SAVE MONEY.

**H. GOLDBLATT TOOL CO.**

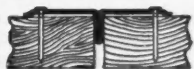
Largest Exclusive Tool Makers for Plasterers,  
 Masons, Cement Workers and Tile Layers

212 E. 15th Street KANSAS CITY, MO.

**Wind-Proof—Rain-Proof—Rot-Proof  
 Chief Galvanized Iron Barn Bats**



Make your buildings tight. Chief Galvanized Steel Strips fill the cracks between boards and make strong, neat, weather-proof joints. Keep out vermin. Cannot rot, warp or split like wooden batten. Always fit. Allow for contraction and expansion of boards without loosening nails. Furnished in 6-7-8-9-10 ft. lengths with interlocking joints. Write for full information.



Shows end view of Chief Batten with joint closed. Sliding expanded. Note position of the batten in the crack.



Shows end view of Batten with the joint open and sliding contracted. Chief Battens automatically accommodate expansion and contraction.

**SHRAUGER & JOHNSON**  
 430 Walnut St. :: Atlantic, Ia.



Trade **SIMPLEX** Mark  
 Reg. U. S. Pat. Office

**ROOFING NAILS**

**FOUR NAILS at PRICE OF ONE**  
 When You Buy Them  
**ONE NAIL in place of FOUR**  
 When You Drive Them

**BECAUSE** the Simplex has four times the head area of an ordinary roofing nail—hence four times the holding power, as head area is the all-important point in laying prepared roofing or sheathing papers.

Demand Simplex Nails from your hardware dealer. Don't buy prepared roofing unless Simplex Nails are packed in the rolls. FREE samples sent on receipt of request accompanied by dealer's name.

**H. B. Sherman Mfg. Co. Battle Creek, Mich.**

ICED from the OUTSIDE



**Complete Your Plans**

The plans for any building are not complete unless you have provided for scientific refrigeration. It is just as important as the heating and plumbing systems and means much to the comfort and satisfaction of the owner and occupants. Your buildings will be equipped with the most efficient refrigerating system if you specify

**McCRAY SANITARY Refrigerators**

There is a McCray—either in stock sizes or made to order for every type of building from the finest hotel or public building to the smallest bungalow. When you put them in your plans, arrange for outside icing and specify the finish that will match the interior trim.

They may be arranged for either ice or mechanical refrigeration. The linings of white opal glass, enamel or odorless wood are the cleanest and most sanitary known. Food is kept fresh, cool and free from spoiling by the McCray patented system of refrigeration. All odors and impurities are carried away through the water-sealed drain and trap.

McCray refrigerators are recognized as the standard for refrigerator efficiency.

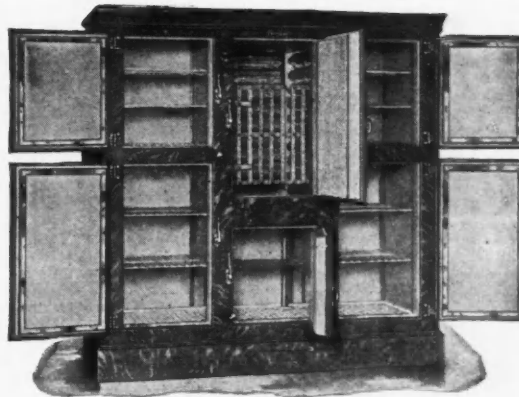
**Free Plan Service**

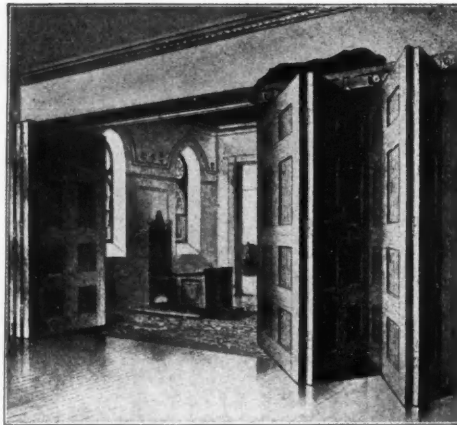
We will be glad to furnish you with suggestions, blue prints and specifications of refrigerators for any style or size building. We maintain trained architectural draftsmen and give you this service without cost.

Get these catalogs and complete your files.  
 No. 92 for Residences. No. 51 for Hotels, Clubs, Institutions. No. 70 for Grocers. No. 62 for Meat Markets and General Storage. No. 74 for Florists.

**McCray Refrigerator Co.**  
 760 Lake Street Kendallville, Indiana

Agencies in all principal cities





## R-W Accordion Door Hardware

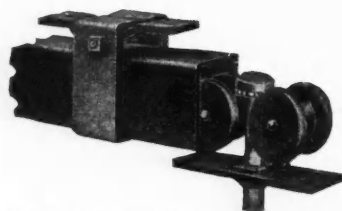
for sliding partitions in schools, churches, clubs and other public edifices

### Benefits the Builder's Business

Every dollar invested in R-W Hardware for sliding partitions not only pays a handsome stock dividend of **service** to the owners of the building, but earns a high rate of interest in **favorable public opinion** for the builder who installs it.

Sold by the Best Hardware Trade Everywhere

Write for interesting illustrated book, "Sliding Door Hardware for Parallel, Accordion and Flush Door Partitions." Sent without obligation.



No. 135 R-W Auditorium Door Hanger

## Richards-Wilcox Manufacturing Co.

SAN FRANCISCO  
LOS ANGELES  
NEW YORK  
CHICAGO

AURORA, ILLINOIS, U.S.A.

Richards-Wilcox Canadian Co. Ltd. London, Ont.

PHILADELPHIA  
MINNEAPOLIS  
BOSTON  
ST. LOUIS

"A hanger for any door that slides"



## In every summer cottage you build

### —you can install, at a profit, a Ro-San Indoor Closet



Every building—home, cottage, store or office—that has no sewer connection needs this modern sanitary indoor closet. Absolutely odorless. Act as our agent—this fixture sells easily to your customers—good Profit. Hundreds of carpenters represent us. We also distribute through builders the

**Ro-San Washstand**  
Provides Running Water, Hot or Cold, Without Plumbing. Every housewife wants one. Convenient, sanitary. Sells readily with little effort. Carry this work along with your regular business. Ask for terms to agents.

Absolutely Odorless

Rowe Sanitary Mfg. Co., 601 Sixth St., Detroit, Mich.

## Make Your Basements WATER TIGHT

by using Bitu-Mortar Waterproofing Compound. Liquid, for waterproofing cement coatings—powder for waterproofing mass concrete—dampproofing, for interior surfaces of masonry walls. Inexpensive and everlasting. Write for our catalog.

The Bitu-Mortar Waterproofing Co., Inc.



Engineers, Contractors and Manufacturers  
340-344 East 27th Street

New York, N. Y.

## 1/3 SAVED

BUY DIRECT

GET FREE BOOK

### INSTALL YOUR OWN PLUMBING AT LOW COST

Get our Handy Man Book. Every builder and contractor needs it. Shows new home improvements and everything in guaranteed plumbing and heating supplies exclusively at wholesale prices. Any handy man can install with our free, easy installing plans and instructions with the help of our Service.



**CUT TO FIT HEATING PLANTS**  
Our 40 years' experience enables us to furnish heating plants, CUT TO FIT, bathroom outfits, etc., with new, original, easy installing features, combining quality, economy, simplicity and ease of installation.

Our \$500,000.00 plants behind our guarantee. WRITE TODAY.  
THE HARDIN-LAVIN CO. 40 years at 4532-42 Cottage Grove Ave. Chicago

## PARK STEP FORMS

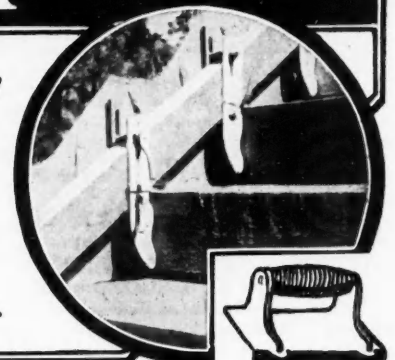
—make step building easy!

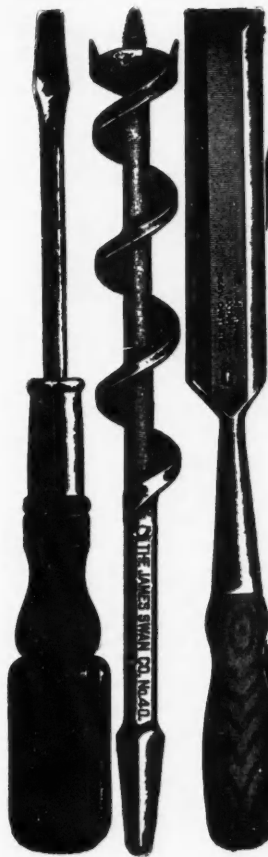
Cuts your cost of production in half. Easily adjustable to any dimension, shape or pitch of flight.

Once assembled, the Park Form needs only adjustment.

The Park Edger is made of the best bronze and is especially fitted for this work.

Write today for our Catalog.  
H. L. PARK CO.  
Reading, Mass.





When you want tools of any kind — tools that you can bank on to be just the kind and quality you want them to be, insist on the Swan Trade Mark.



It's a plain guide to all that is best in carpenters' tools and your assurance that you are dealing with an old, reliable firm that makes tools as good and solid as its reputation.

Awarded the Medal of Honor at the Panama-Pacific Exposition, in the Manufacturer's Building.

ASK FOR CATALOG  
The  
JAMES SWAN CO.  
Seymour,  
Conn.

**LISTEN!** TO WHAT YOUR NEIGHBOR HAS TO SAY ABOUT **MYERS** HAY UNLOADING TOOLS AND DOOR HANGERS

Are you going to need a new Hay Unloading Outfit this Summer? If so, now is the time to get acquainted with the Myers Line of Hay and Grain Unloading Machinery. Don't wait until the last minute and then get caught without ample facilities to handle your crops quickly and easily. Time will count for more than ever this season and labor will be scarce.

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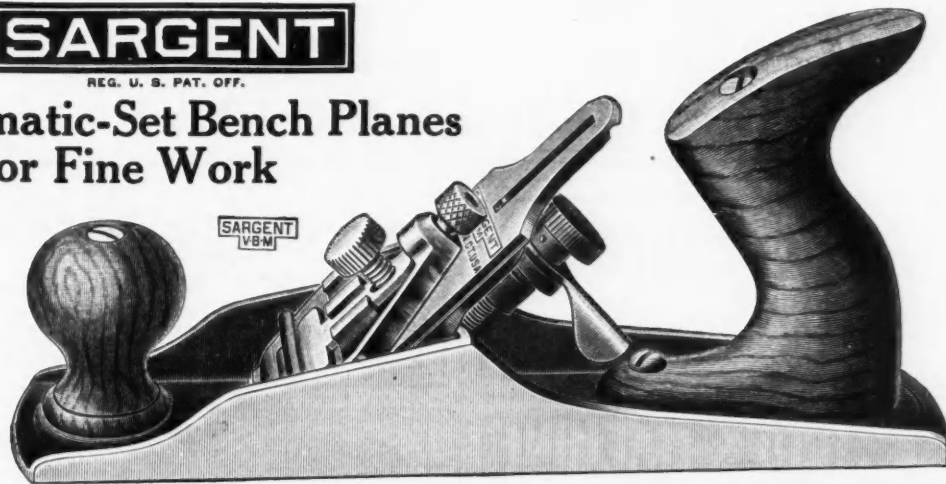
**F. E. MYERS & BRO.**

ASHLAND, OHIO  
Ashland Pump and Hay Tool Works  
MILWAUKEE, CEDAR RAPIDS, ST. LOUIS, HARRISBURG, ALBANY

**SARGENT**

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**Automatic-Set Bench Planes  
Best for Fine Work**



Sargent Automatic-Set Bench Planes are best by trial and by the recommendation of America's best mechanics. They will do work requiring a finer degree of accuracy than any other plane on the market.

These Planes are made in six sizes with both smooth and corrugated bottoms.

The great interest in these Planes on the part of tool-users shows that the advantages and points of superiority—solidity, compactness, simplicity, ease of adjustment and, most of all, the automatic-set feature—are apparent to mechanics.

Catalog of Planes, with full information about these Automatic-Set Bench Planes, will be sent free on request.

**SARGENT & COMPANY**

51 WATER STREET

NEW HAVEN, CONN.

# A STOCK FIREPROOF DOOR

Manufactured by the  
**A. C. Chesley Co., Inc., of New York**  
**FIREPROOF DOORS**  
**Metal and Metal Covered**

Before automobiles were known we were making fireproof doors, and as the car of the past has been improved so have we improved our door until now we are in a position to furnish a door that cannot fail to please the most critical. It is strong, clean, and mechanically made of metallic construction in designs of popular demand, using no imitation pressed work, and is very easy to install. It is not held together with iron edged bands necessitating special hardware. We use no nails, bolts, screws or rivets, in the construction of our door to deface it in any way, and by the use of improved machinery we are able to manufacture at a minimum cost.



**Standard  
 Sizes in  
 Stock of  
 All Designs**

These doors are carried in stock so as to avoid delay and can be ordered from catalog and price list.

**Agents  
 Wanted**

Write for Booklet and Price Lists—also our Agent's Proposition.

**The A. C. Chesley Co. Inc.**  
 275 Rider Ave., New York

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Forty thousand building contractors, dealers in building materials, architects and carpenters are reading these advertising pages every month. Make your products better known to these buyers by continuous, persistent, memory-refreshing advertising.

**KEEP YOUR FLAG FLYING!**

## The *Atlas* Concrete Mixer

Made in 5 sizes and many styles. Prices \$48.00 and up. Send for Circular.

**"CONCRETE FACTS"**

ATLAS ENGINEERING COMPANY  
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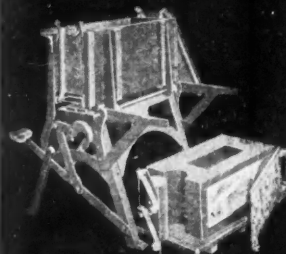


## THE WOOD WORKER'S FRIEND

Get directions for building table and operating our Jointers. This information is valuable to wood workers. We manufacture 20 styles and sizes. Try a Jointer Head 30 days, if you are not pleased, return at our expense. Get prices. Manufactured by **WHISLER MFG. COMPANY, Gibson, Iowa**

## CEMENT BLOCK MACHINE

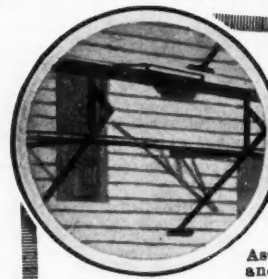
**SOLD ON  
 15 DAYS' TRIAL**



### Make Your Own Blocks

The Dunn has a capacity of 150 blocks a day—ample for average requirements. Simplifies block making; remarkably easy to operate; makes a wide range of sizes; built rugged to stand hard service. Write for Block Machine Bulletin.

**W. E. DUNN MFG. CO.**  
 415 24th St., Holland, Mich.



—The key to Confidence

## "Safety First"

### SCAFFOLDS

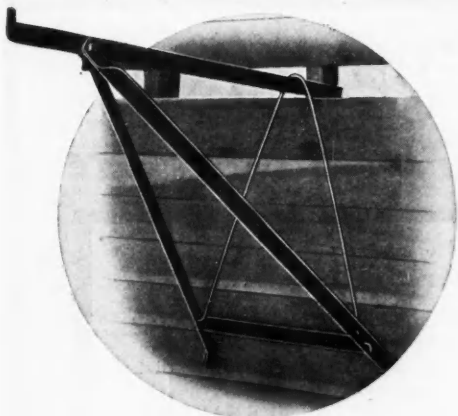
Assure absolute protection to yourself and your workmen. You cannot fall off.

They can be attached as fast as one man can hand them to another man, as there are no holes to bore or nails to drive. It is not even necessary to have your building sheathed. Equipped with tool shelf. Folds up flat for storing.

Write for catalog and trial proposition.

**John Faragher, 811 So. Brooks St., Madison, Wis.**





—"saves lots of time, besides material"—

—"when in need of more will certainly get 'Trouble-Savers'"—

—"highly satisfied with them"—

—"just the thing"—

—"I think there are none better on the market"—

—"I am well pleased with my 'Trouble-Savers'"—

—"they avoid the damage and annoyance of nails"—

—"check enclosed speaks for itself"—

—"found them perfectly satisfactory"—

—"it is my intention to add to my stock of 'Trouble-Savers' until I am fully equipped"—

These are some of the approving comments contained in the many letters we receive regarding our Trouble-Saver Bracket illustrated here.

"Trouble-Saver" Carpenter Brackets are bound to come to your attention sooner or later because, being the most economical and time-saving device of its kind on the market, it is coming into universal use and some dealer or carpenter will eventually recommend it to you.

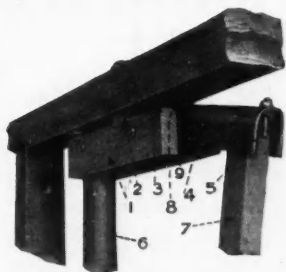
With "Trouble-Savers" on the job—no danger from weak scaffolds—a day's scaffolding (the old way) in ten minutes—lumber, nail and labor items practically eliminated from your scaffolding expense.

We will ship direct to you or through your dealer, as you prefer.

## The Steel Scaffolding Co.

Evansville, Indiana

## For Up-to-Date Barns---Wilder Patent Steel-Latch Cattle Stanchions



Study Wilder Construction

Wise contractors insist upon them. All hardwood—except the patented steel latch. Comfortable, noiseless and easy to adjust. Won't rust, rock or loosen at the joints.

1—Cross-bolted top block; won't split. 2—Top one of the two pins on which stanchion revolves when closed. 3—Cast lug; holds stanchion rigid when open. 4—High carbon rustless steel latch. 5 and 8—Stop bolt and steel clip which limit width of opening. 6—Stationary upright. 7—Movable upright. 9—String piece; mortised for cast lug.

Automatically rigid when open—swings freely when latched. Opened or closed without removing gloves. **Write for full information.**

**WILDER-STRONG IMPLEMENT COMPANY**  
Box K  
MONROE, MICHIGAN

**BANKRUPT  
PRICE**

**\$47.50**

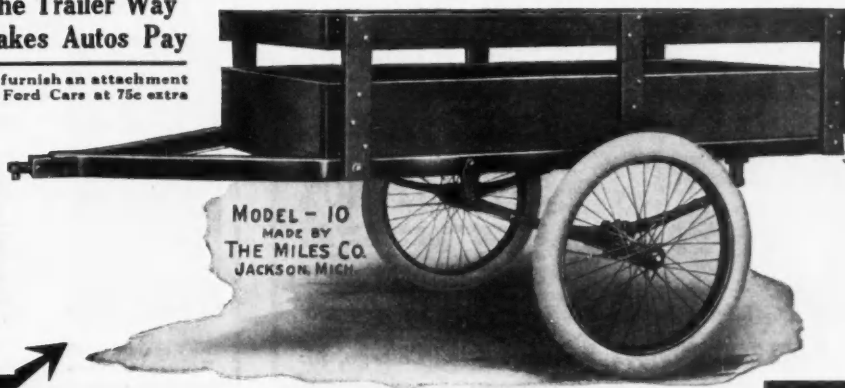
**The Trailer Way  
Makes Autos Pay**

We furnish an attachment  
for Ford Cars at 75c extra


F. O. B. Jackson, Mich.

OUR MODEL 10 Auto Trailer, with 2" solid rubber tires, steel wheels, ball-bearing axle, automobile channel frame, heavy springs, and shackles, drop forge spring links, our famous all-way coupling, combination rack and delivery body 42"x70"x15" deep. Finished in a handsome Brewster green. Can you beat it? No. And neither could we if we had not bought the material from a large Automobile Company—at bankrupt prices!

**THE MILES COMPANY**  
309 E. Franklin St. Jackson, Mich.



MODEL - 10  
MADE BY  
THE MILES CO.  
JACKSON, MICH.



# The Great Bell

## -original Pipeless Furnace

**Father of Them All**

We have thousands in use. Sizes, styles and prices to suit all. \$38.00 to \$94.00.

Made for the building where a furnace is needed, but where the cost has been prohibited.

The GREAT BELL PIPELESS FURNACE will heat any one or two-story building in the most efficient manner with the least effort and the lowest relative cost. While **Cost** is secondary to **Service** in this furnace, our methods of production and sales have reduced the cost so low that no builder can afford to overlook our proposition.

And we guarantee our furnaces to be and do all we claim for them in both catalog and correspondence. Write for our catalogs, describing the various styles, prices and specifications of the Great Bell Furnaces.

**American Bell & Foundry Co.**  
27 Cody Street, Northville, Mich.



### The Superior Heating Boiler for Hot Water Vapor or Steam

The Modern Method of heating your residence. Insures comfort in every corner of the house in the coldest zero weather.

**It Will Pay You to investigate this Boiler before buying.**


*Our Estimates and Plans are Free*

"A Complete Line of Plumbing and Heating Material"

**DUPLEX MANUFACTURING CO.**  
Send for Free Catalog SUPERIOR, WISCONSIN

Many a Contractor is Richer and More Popular thru Specifying

## Andrews Hot-Water Heating



Andrews special, built-to-fit-the-job, ready to screw together heating systems are in use in over 2200 cities and towns of this country. Best material and Andrews famous steel boilers. Save fuel. Get our estimate and special contractors' proposition.

**BIG BOOK FREE**

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When in the market for Plumbing, Heating and Pneumatic Waterworks Supplies and you wish to

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on every article, write for my free illustrated Catalog. The only house that sells first-class guaranteed goods at wholesale prices direct. Shipments are promptly made from a very complete stock.

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### The Only Modern, Sanitary STEEL Medicine Cabinet



or locker, finished in snow-white, baked everlasting enamel, inside and out. Beautiful beveled mirror door. Nickel plate brass trimmings. Steel or glass shelves.


**Costs Less Than Wood**

Never warps, shrinks nor swells. Dust and vermin proof, easily cleaned. Should be in Every Bath Room. Four styles—four sizes. To recess in wall or to hang outside. Send for illustrated circular.

**HESS, 920L Tacoma Bldg., CHICAGO**

The Recessed Steel Medicine Cabinet. Makers of Steel Furnaces Free Booklet

## Cut Coal Cost 1/2 to 2/3 Guaranteed

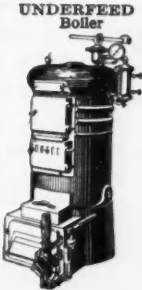


**Cut-Out View of UNDERFEED Furnace**

Yes, absolutely guaranteed. Over 40,000 Williamson UNDERFEED Furnace and Boiler users are enjoying UNDERFEED saving and comfort season after season.

**Free Book Tells How**

A postal brings it to any carpenter, builder or contractor. Book pictures and explains it all. Write for it NOW and learn how you can guarantee this great saving to your customers.



**UNDERFEED Boiler**

**The Williamson Heater Co.**  
617 Fifth Ave. Cincinnati, O.

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**SAVE MONEY BUY NOW**

**HEAVY DUTY KEROSENE ENGINES** save You Money. They are safer to operate than gasoline engines and you can operate them at half the cost of gasoline. Kerosene costs about 10 to 12 cents, gasoline over twice that. **HEAVY DUTY ENGINES** work as well on Gasoline as on Kerosene, use whichever fuel you prefer, you are not bound to use Kerosene if you don't want to, as the **HEAVY DUTY** works better on Gasoline than any other Gasoline engine, but it also works on Kerosene which a Gasoline engine will not do. Save money, get more power and better results. Buy the **HEAVY DUTY Kerosene engine**. We have not as yet made an advance in price but there will be an advance about May 1st. Buy now, save the extra cost. **SPECIAL PRICE IF YOU ARE THE FIRST BUYER IN YOUR LOCALITY. CATALOG FREE.**

A. CONSOLIDATED GASOLINE ENGINE CO., 202 Fulton Street, New York City



## BOVEE'S PIPELESS CENTRAL HEATING SYSTEM AND OTHER FURNACES



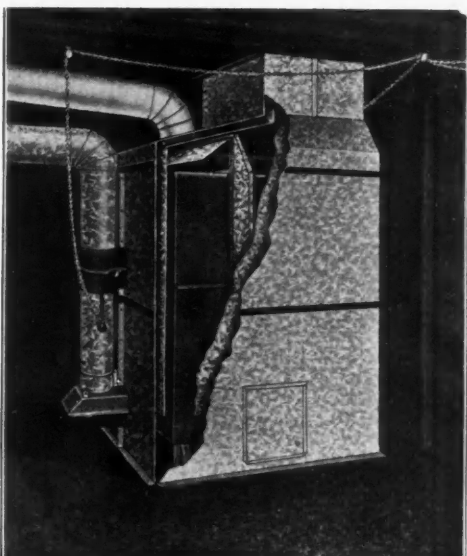
Every home can now have a **first-class high-grade heating system** in an old house as well as new. Heats as much as **three large stoves**. Costs but little more than a good stove.

We furnish either our **UPRIGHT FURNACE** for burning hard coal, soft coal or wood; or our **HORIZONTAL FURNACE** with large doors 16x16 inches for burning 4-foot wood or soft coal.

Either style furnace furnished in any size necessary to heat the house.

**UNUSUAL SYSTEM WITH PIPING TO EACH ROOM FURNISHED WHEN DESIRED.** Write for our three color catalogue, free.

**BOVEE FURNACE WORKS**  
210 Eighth St. Waterloo, Iowa



## The Hess Welded Steel Pipeless Furnace


is efficient, economical, and in every way satisfactory for heating cottages, bungalows and single large rooms, such as churches, schools, stores, etc. We do not consider it the best type for heating houses where there are a number of detached rooms to be heated separately. For such houses we recommend our regular *pipe* furnace. **We have improved the pipeless method**, however, so that it is perfectly adapted to heat the "pipeless" way, and also to heat one or two detached rooms by means of an extension of the heat chamber and separate pipes for such detachable rooms. This improvement is indicated in the cut, and a patent has been allowed upon it. It is entirely satisfactory and places the **Hess Pipeless Furnace** in a class by itself.

Write us for a solution of your heating problems, and our estimate for your work. We make special terms to contractors, and enjoy the patronage of very many in all sections of the United States, whose repeated orders indicate the satisfaction they receive from Hess Furnaces.

**Hess Warming & Ventilating Company**  
1220 Tacoma Building, Chicago, Ill.

P.S.—The furnace supply this year will be below normal. Material is scarce, railroad service is slow, mechanics are joining the army and this combination of circumstances leads us to urge our friends to anticipate their furnace wants and orders early.

**Self-Riveting  
But Adjustable**



*Ankyra Ankor Bolts*

**EVERYONE** who sells to the building trades should know something about the materials that are used in the construction of buildings. That is especially true of the fixtures, which are always the most vulnerable parts of a building.

When fastened in the ordinary way, fixtures are prone to loosen easily, or if they have to be removed for any reason it is difficult to put them back in the same place and have them stay *tight* permanently—unless they are fastened with

**Ankyra Ankor Bolts**

They are self-riveting, but so adjustable that the fixture may be removed and replaced at will with the assurance that it will remain tight until deliberately removed.

In recommending them to your customers you may be sure the first sale will develop repeat orders. Anykras save time; they fit equally well in solid masonry, lath and plaster, hollow tile or *any* other wall.

As a part of our co-operation with the dealer, Ankyra advertising to the building trades is referring prospects to the dealers.

**ANKYRA MANUFACTURING CO.**  
151 Berkley Street, Wayne Junction  
PHILADELPHIA, PA.

# Learn to Be a Draftsman and Draw Your Own Plans

By means of these two books the contractor, builder or carpenter can advance by easy steps from the first principles of drafting room practice to the complete work of an architect's office, including drawing to scale, tracing, detailing, lettering, rendering, designing, etc. He can combine the work of the architect and builder. He will learn not only how to plan the structure, but how to lay out the work, specify the materials and finish, make the contracts, and take complete charge. A complete set of plans with every dimension, all sizes of windows, doors, etc., is shown in these books. This serves as a guide as it shows the process from the preliminary sketch to the finished plan.

Radford's "**Mechanical Drawing**" is a book of 272 pages, with 165 illustrations, and a supplement showing perspective views and floor plans of 41 brick, cement and frame residences.

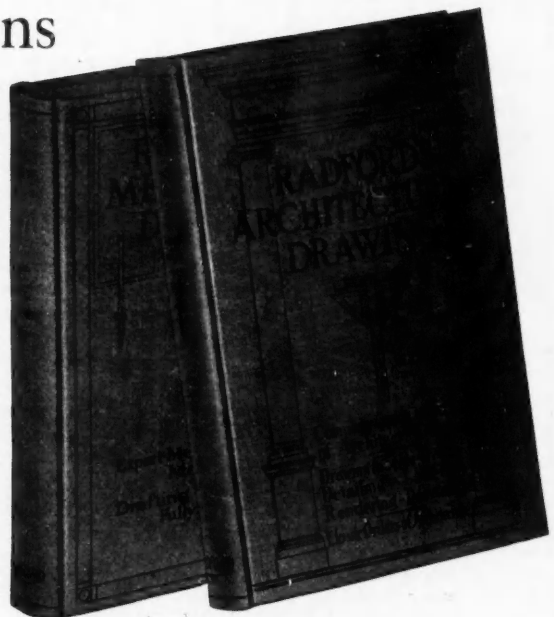
Radford's "**Architectural Drawing**" is a book of 304 pages, with 147 illustrations and a supplement showing perspective views and floor plans of 41 brick, cement and frame residences.

Each book is printed on high-grade paper, bound in cloth, is 6x9 inches and has a beautiful illuminated cover.

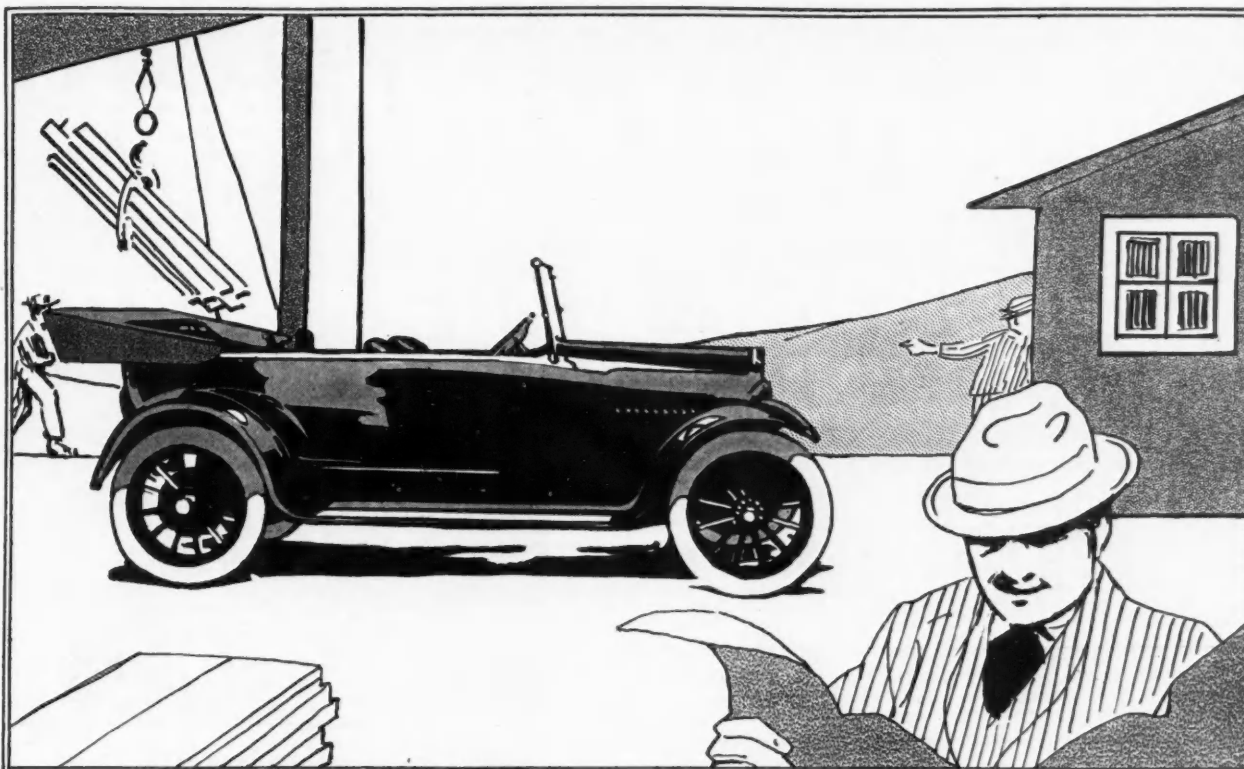
## Don't Depend on Another Man's Brains

Develop your own ideas. Be in a position where you can work a customer's hazy suggestions into a tastefully arranged, complete plan, showing all dimensions.

One of these books and a year's subscription to the American Builder for only \$2.00, the regular price of the magazine alone. Both volumes and a year's subscription for \$3.00.



**American Builder,** 1827 Prairie Ave.  
CHICAGO



## *The CASE 40 for Busy Builders*

**T**HERE is *permanent construction* in the Case "40" just as there is permanency in the Case Company as an institution. Since Jerome I. Case started in the manufacturing business, 75 years ago, our organization, through its strict adherence to a high standard of excellence, has steadily grown in the confidence of users of Case equipment.

The Case "40" is but one of a long line of machines—such as tractors, road graders, rock crushers and road rollers for contractors. It is reliable, it serves the needs of the busy contractor who must have a dependable machine to get about town in. The Case "40" is a 100,000 mile car.

This car sells for \$1190.

The Case "40" is a busy man's car. It is always ready to take you there and back, Mr. Contractor. Doesn't that mean you? Let us send you a complete description by mail. Ask for literature on the Case "40".

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C. L. PARKER, PATENT ATTORNEY. Formerly member Examining corps, U. S. Patent Office. McGill Bldg., Washington, D. C. Pamphlet of instructions sent upon request.

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TEN SKELETON DOOR KEYS, all different. 50c prepaid. Premium with two sets. Sample 10c. ERNEST BENNING-HOFEN, Anderson, Ind.

CARPENTER'S time sheets, order books, contract blanks, letter heads, bill heads. Samples and copy of Bookkeeping Hints for Mechanics free. HADDON SPECIALTY CO., Box 449, Haddon Heights, N. J.

BUILDERS WANTED—Last week the citizens appealed to the Chamber of Commerce for 1000 houses. Today a large manufacturer asks for 700 more, and four big plants to break ground in the next few weeks. \$700 cottages rent for \$15 to \$20. To reliable builders we will furnish lots and loan money to put up the buildings. This is the great Calumet Region. Over 400 million dollars have gone into factories here during the past 10 years, and it is estimated 100 million will go into new plants during the next 15 months. Our banks are full of money. Address BETZ, Personal, Hammond, Ind.

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FOR SALE—Triple A Floor Scraper. Cheap. Practically new. RAY M. LAIRD, Cresson, Pa.

FOR SALE—Upright Boring Machine, \$50.00. A few other machines. Send for list. J. L. LUCAS & SON, 3 Fox St., Bridgeport, Conn.

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**BURNS KEROSENE  
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one just as well as the other; or the two mixed. Make their own gas. 300 to 600 C. P. at 1/4c an hour. Family or Business use.

Write for Complete Illustrations  
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1 DOZ.  
15¢

1 GROSS  
\$1.00

*These Pins are used for supporting movable shelves in Book Cases. Cannot fall out or sag down. The best shelf pin made. Easily put in place by any one.*

Send for free sample to **J. D. JOHNSTON,**  
NEWPORT, R. I.

Indestructible Carpenters' Tool Cases Stronger than any wooden chest, much lighter, holds tools better, much easier to carry. Same shape as a suitcase when folded and carried like one. Made of 3-ply veneer, covered with heavy canvas and painted. Edges and corners are bound and reinforced with steel. Two brass catches and locks. Contains a place for every tool. Two sizes—\$1 in. for 26-in. saws; \$3 in. for 36-in. saws. Will last a lifetime. Write for booklet and prices now.  
Wedell & Boers, 157 Jefferson Ave., Detroit, Mich.



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in the AMERICAN BUILDER, write us and we will try to get it for you.

### Faster Shingling—More Money

Carpenters and Builders! That's what it means when you use a

### Sayre Shingling Hatchet

with Positive Gauge—Get One Today!

Gauge is positive—cannot slip. Clamps on with screw—is readily changed. Unequaled for fast shingling. Ask for No. 144 made (with oval head, 160 points) price, prepaid, \$2.00. Also with flat head, No. 44, 81 points, milled. Price, \$2.00, prepaid.

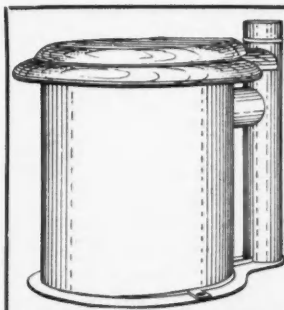
J. E. Coates, Prairie Du Chien, Wis., writes: "Never had a tool that I got so much good out of and wouldn't be without one for \$10.00."

We also make a complete line of lathing hatchets. Sayre Shingling or Lathing hatchets are the best your money can buy.

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See  
That  
Gauge



### No. 45 Wonderful "Single Bowl" Indoor Chemical Closets

are Absolutely Odorless, easily installed and easy to operate. Chemical is very efficient and entirely harmless to the skin.

Write for Catalogue.

WM. PHILLIPS & CO.  
Northville, Mich.

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SAMSON CORDAGE WORKS, BOSTON, MASS.

### Driver Agents Wanted



Five Pass., 34.7 H. P.  
32x3 1/2 Tires

Drive and demonstrate the Bush Car. Pay for it out of your commissions on sales, my agents are making money. Shipments are prompt. Bush Cars guaranteed or money back.

Write at once for my 48-page catalog and all particulars.  
Address J. H. Bush, Pres.  
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BUSH MOTOR COMPANY  
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allows the air to circulate between the porch column and the floor, keeping both perfectly dry and preventing rot.

Have your architect specify from page 958 of Sweet's catalog or write for circular "G."  
S. CHENEY & SON, Manlius, N. Y.



### DON'T ORDER Lignine (Wood) Carvings UNBREAKABLE—INVESTIGATE

Send postal for free sample and catalog. One cent investment, saves dollars. Let us prove this.

ORNAMENTAL PRODUCTS COMPANY  
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**On Your Own Terms.**  
30 Years of success in making and selling high-grade engines enables me now to sell direct to the user on practically his own terms. Any worthy, creditable man anywhere in the U. S. can accept my offer, and be sure of a reliable engine at direct from factory prices.

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WITTE

### High-Grade ENGINES

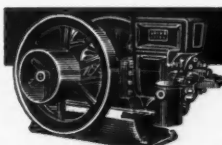
are made in sizes 2, 3, 4, 6, 8, 12, 16 and 22 H.P. —Kerosene or Gasoline. Particularly adapted for farm and shop. Hundreds in use in every state. My Free Book, "How To Judge Engines," explains fully what you should know before buying.—ED. H. WITTE, Pres.

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Are powerful, durable, reliable. Designed and constructed by master engine builders for hard, continuous, heavy-duty service. Use any fuel. Develop way above rated h. p. Easy to start—no cranking. Heavy weight, large bore, long strokes, low speed, wide bearings. All sizes at wholesale prices. From 1 1/2-4 to 16 h. p. portable, stationary, saw runs, etc. Sold on five selling plans, cash or time. Big Free catalog for post.  
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## KEROSENE ENGINES OTTAWA LATEST DESIGN

Durable, Powerful, Reliable, Massive. Built to last; to do hard, heavy work. Uses Cheapest Fuel. Pulls 25 to 50 per cent over rated H.P. 3 Months Trial. Easy Terms. Sizes 1 to 22 H.P. Easy to Start. No Cranking. No batteries. 18-Year Guarantee. Most practical engine ever built. Engine book free. A Postal brings it. Write today.

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Wood and iron, with adjustable saw guides. Suitable for any cross cut or back saw. Insures perfect mitres. Carefully made. Several styles. Prices very reasonable. Write for circular.



Olmsted's  
Tool Grinder and Sharpener  
No foot power required. Guide rests for tools, etc. Requires no skill for operating—does rapid work. Ask for further particulars.  
L. H. OLMSTED'S SON - - - Hasbrouck Heights, N. J.



## "A Bit of Utility"

FORSTNER BITS are DIFFERENT from all other wood boring tools. Being guided by the outer rim they may be turned in any direction. The work is left smooth and polished.

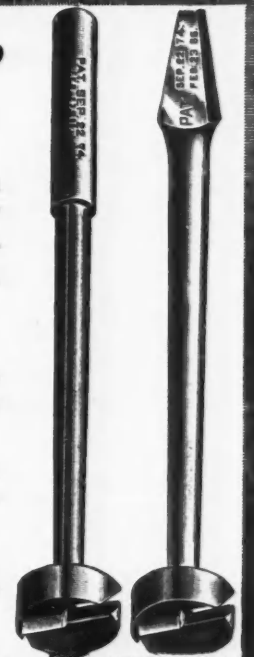
### Unequaled for Delicate Work

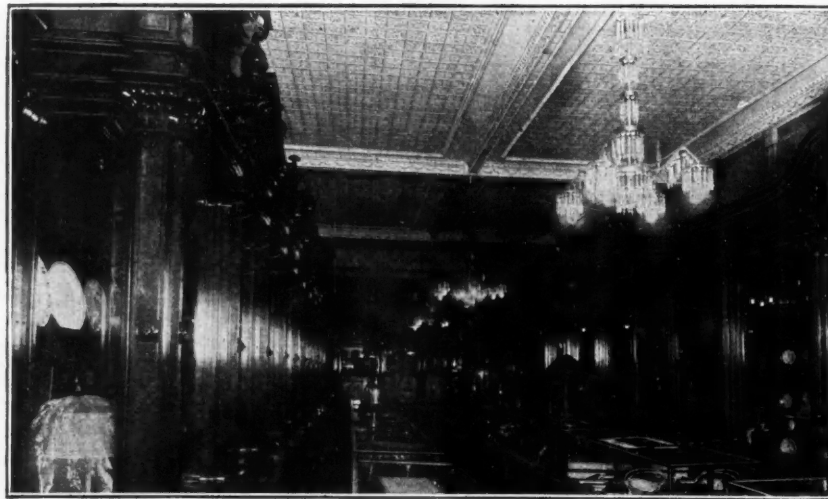
Practical for use as gouges or chisels, suitable for scalloping, fancy scrolls, twists, columns, newels, ribbon mouldings, mortising, etc.

Cabinet and pattern workers are enthusiastic over them. They do more work and cost no more than other bits.

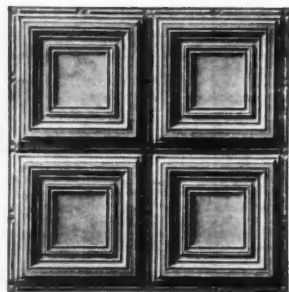
We can offer something **SPECIAL** in the way of **PRICE**. Write for catalog and particulars.

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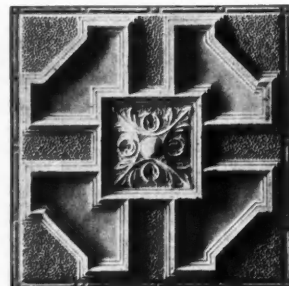




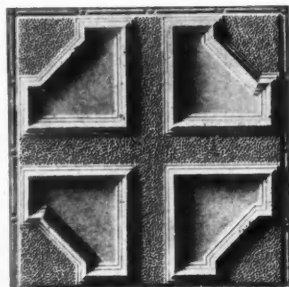
*THE illustration shows Berger's "Classik" Steel Ceilings installed in a jewelry store. The wide range of designs in these ceilings make them adaptable for any interior—store, house, theatre, church, school, garage, etc.*



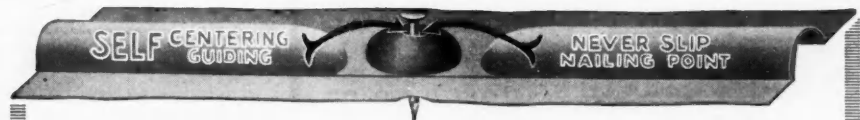
Colonial Panel—No. 4055



Stucco Plate—No. 4064



Stucco Plate—No. 4065



**BERGER'S**  
*Classik*  
STEEL CEILINGS

## The Bead and Button Construction Makes Erection Easy and Speedy

**O**UR bead and button construction has so many advantages over the lock joint construction that we have decided to discontinue the lock joint on all "Classik" Ceilings. Our reasons after long experience with both:

The **lock joint construction** is not self-aligning, therefore takes longer to erect and is much harder for the workmen to handle than the bead and button construction. Frequently the tongue of a plate becomes bent over in transit, and the groove into which the tongue fits is jammed down. This makes additional work in straightening the tongue and opening the groove.

When necessary, at some future time, to remove a panel to provide for lighting fixtures, etc., the lock joint plate must be cut. With the bead and button construction, a panel can be easily taken out by simply removing the nails.

The **bead and button construction** is absolutely true, so that in lapping one over the other, the plates fit perfectly—eliminating the possibility of dust sifting thru and causing black streaks at joints; also tamping and calking of joints which takes extra time and makes an unsightly job.

The top of the nailing point is depressed, forming a self-centering, self-guiding and never-slip nailing point, which acts as a guide for the erector and increases speed in erection.

All plates are uniformly square—after the first plate is set in place, the others will automatically line up.

The bead and button construction makes a better job and saves you 25% to 40% in cost of erection.

Send Now for "Classik" Book D. A. B.

## The Berger Manufacturing Company, Canton, O.



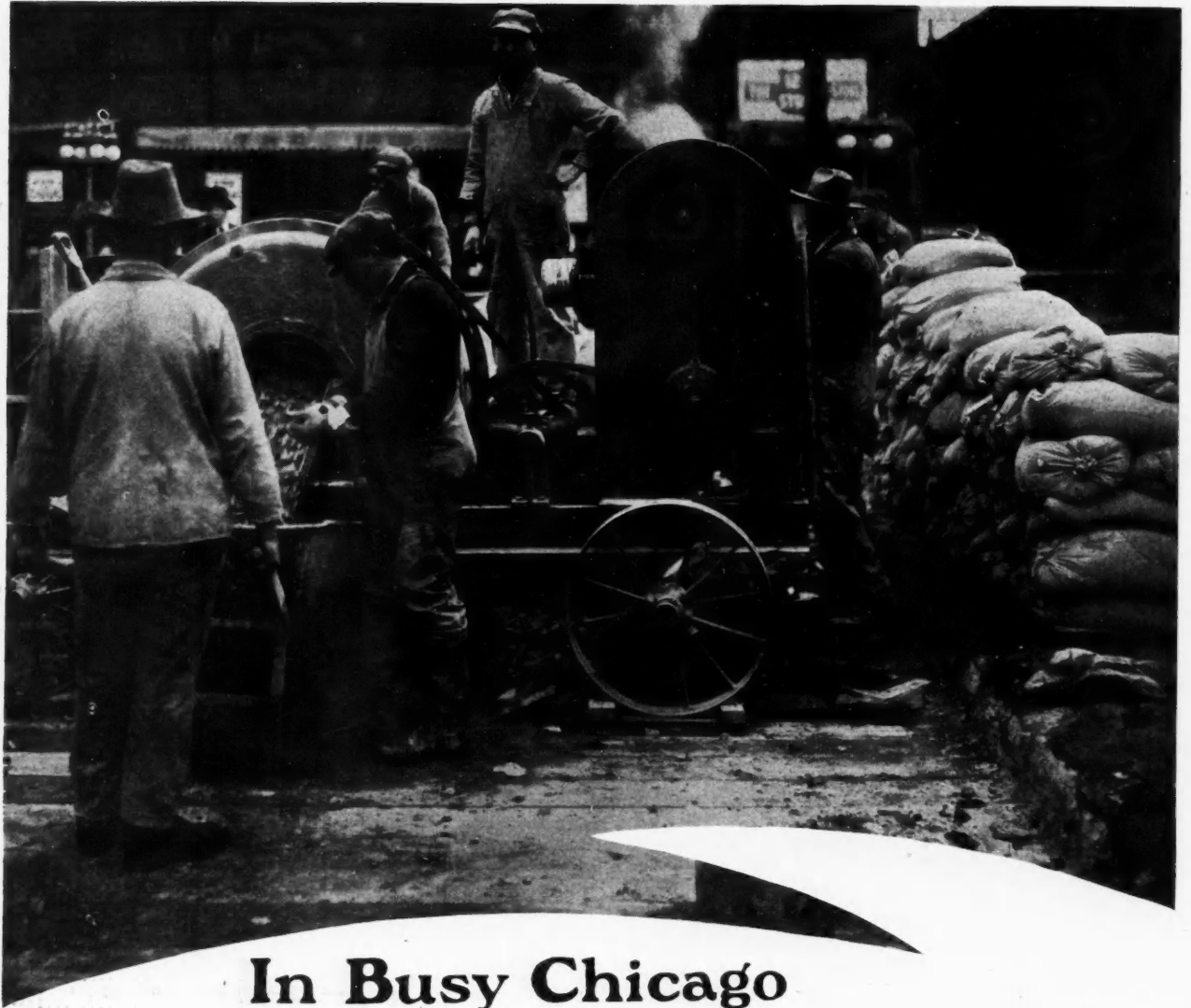
Branches: Boston New York Philadelphia Chicago  
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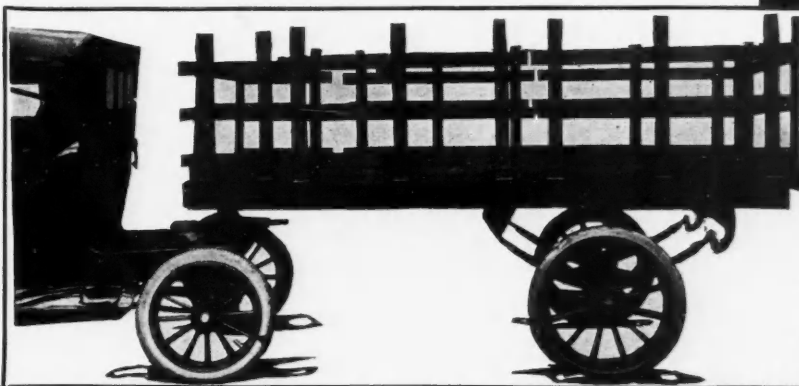
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**TRAILER**  
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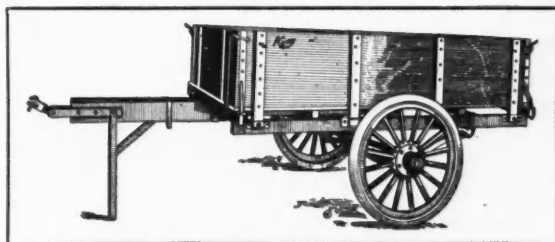
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Tread	56"	56"	56"
Height	43"	43"	46"
Tires	34" x 3 1/2"	36" x 5"	36" x 6"
Springs	42" x 2 1/2"	42" x 3"	48" x 3 1/2"
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Bearings	Roller	Roller	Roller

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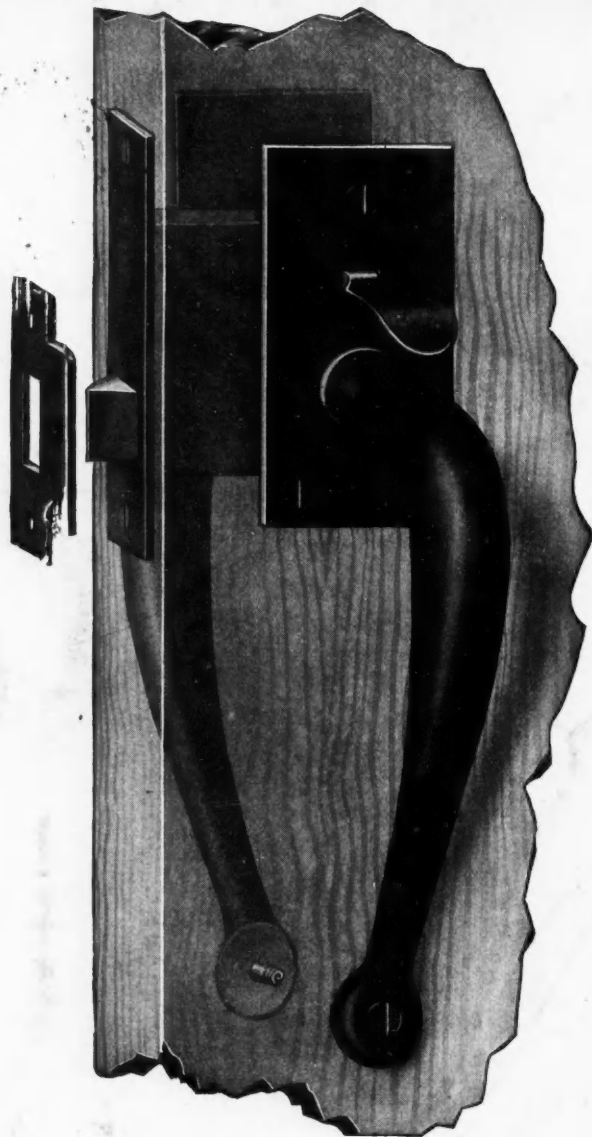
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