

MAY, 1910

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

SUMMER COTTAGE AND BUNGALOW NUMBER

MAY 5 1910

Partial Contents

HOW TO PLAN AND BUILD A SUMMER COTTAGE

Practical and Timely Helps with Photos,
Floor Plans and Details of Several Ingen-
ious, Original and Satisfactory Cottages

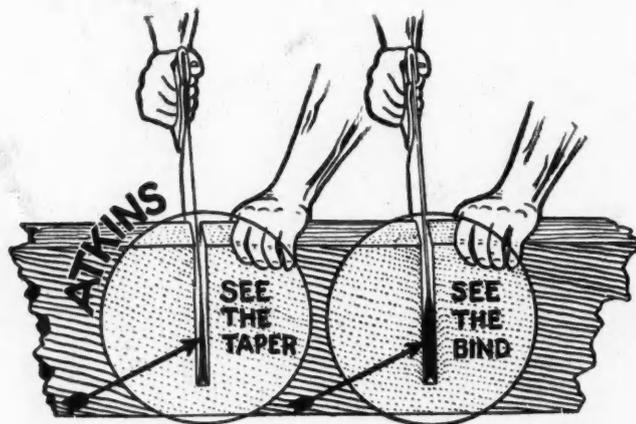
MODERN HEATING AND VENTILATING

Warm Air Furnace Heating

BUILDING PLANS AND DESIGNS

Full Set Working Drawings of Modern House
Farm Building Plans and School House Designs

PRACTICAL CARPENTRY—HOUSE PLANNING
MODERN BUILDING CONSTRUCTION



Look Here, Mr. Carpenter!

See the big difference between the ordinary "thin-back" saw and the Atkins "taper-ground" saw! It's easy to see why the Atkins cuts faster, easier and straighter.

The ordinary "thin-back" saw has a little bevel along the back to make it *look* thin.

The rest of the blade is of uniform thickness, except that the teeth are spread out ("set") so as to cut a path wider than the blade.

If you don't give the teeth plenty of "set," the blade doesn't have elbow room, and sticks in the wood.

But the more "set" the teeth have, the harder the saw runs. And there you are!

With the Atkins, it's different.

The blade is thickest at the tooth-edge and thinnest at the back. And it tapers *all the way* from tooth-edge to back.

Almost no "set" on the teeth is needed, because the tooth-edge is the widest part of this tapering blade.

The result is that wherever the teeth go, the rest of the blade follows without a struggle. No "buckling!" No "binding!"

You can easily see why the Atkins ought to be just what it is—

The easiest running, fastest cutting, easiest guided saw you ever put through a board!

The Atkins Perfection Handle makes it still easier. Takes the strain off the wrist and gives your whole body an easier position. But you can have the old-style handle if you prefer.

Better Than Razor Steel

Silver Steel is our own secret formula, and it is gas-tempered by our own secret process. Both these secrets

have been carefully guarded in the Atkins factory for over 50 years.

No such steel was ever used in any other make of saw, the world over. It's better steel than you'll find in most of the high-grade razors.

And it's a peculiar steel. Holds its sharp edge longer than any other, needs less filing, and yet files very easily. Doesn't rust easily, either!

ATKINS

Silver Steel

S A W S

Trial Offer

Go to your dealer and select an Atkins Silver Steel Saw. Be sure the blade says "Silver Steel"—that's our best saw. Take that saw and try it! If it isn't the best saw you ever touched, take it back to the dealer and he will refund your money.

Now, Mr. Carpenter, if you want to know which is really the best saw, there's the way to find out, without risking a cent.

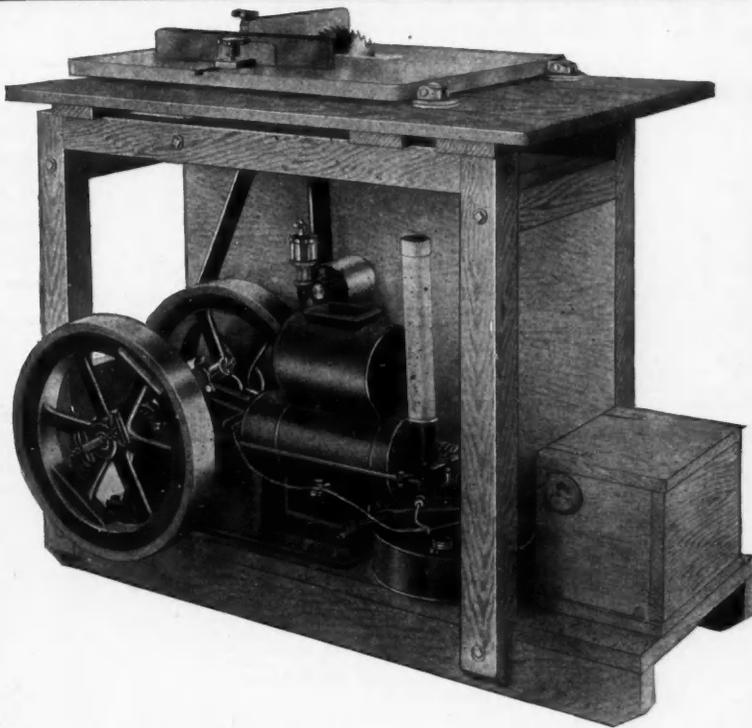
FREE To Carpenters

Write us today (enclosing 10 cents in stamps to cover postage), and we will send you free a good strong Nail Apron, our Carpenter's Time Book, and another mighty handy booklet, "Saw Sense" Address our Carpenter's Department.

E. C. Atkins & Co., Inc. Indianapolis, Indiana

Largest Exclusive Saw Manufacturers in the World

If your dealer doesn't handle Atkins Saws, or hasn't the particular saw you wish, ask him to order it for you from the wholesale house. He should be glad to do this—it's no trouble—and he will do it promptly if you make the request.

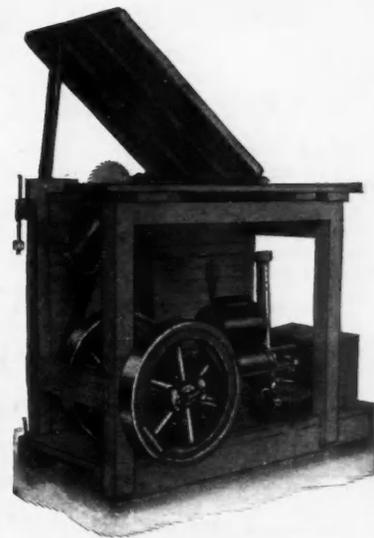


DON'T
WAIT

until the last minute; send us your order now. We can ship same day we receive the order and you will have the outfit when you want it.

A turn of the crank
saves four men's pay

This portable saw rig complete, carries a jointer head, dado head, emery wheel, rip saw and cross cut saws, and is complete in every detail.



Don't Wait until our large
Spring Rush *Order Now*

Inter-State Equipment & Engineering Co.

1775 OLD COLONY BLDG.

CHICAGO, ILL.

WATER
FIRE
AND
LIGHT
-NING
PROOF



"TITELOCK" METAL SHINGLES
ARE THE "EASIEST AND QUICKEST" SHINGLES TO LAY

EMBOSSED
"MILCOR"
CORNICES

VENTILATING
"TORPEDO"
SKYLIGHTS

"TITELOCK"
Painted Tin Shingles are Superior to Wood
Galvanized Shingles are Superior to Slate
Copper Shingles are Superior to Tile
Leading Architects always Specify
them because they make the
Best Roof Covering
Send for Samples and Booklet

EAVES TROUGH,
CONDUCTOR PIPE,
ELBOWS, RIDGE
ROLL SHEET METAL
ROOFING AND SIDING
SEND FOR PRICE LIST

"Invisible Joint"
STEEL CEILINGS
SEND FOR CATALOG

MILWAUKEE CORRUGATING CO.
MILWAUKEE, WIS. KANSAS CITY, MO.

MONITOR SASH LOCKS



(PATENTED)

NEVER BREAK

BECAUSE THEY ARE MADE OF VERY HEAVY GAUGE METAL AND PERFECTLY CONSTRUCTED

If the upper sash drops, the Monitor "Never Break" Sash Lock will pick it up from lower point than any other, adjust the sashes perfectly, prevent all vibration and lock securely, so it cannot be opened from the outside.

MADE IN TWO SIZES AND ALL FURNISHED BY

The Champion Safety Lock Co.

Geneva, Ohio

DON'T PUT SASH WEIGHTS IN YOUR WINDOWS—THEY ARE OUT OF DATE

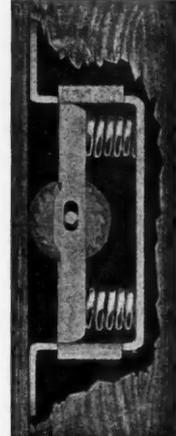
The "AUTOMATIC" SASH HOLDER

The "Automatic" Sash Holder is the new, modern, up-to-date device that dispenses with cumbersome sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in place.

Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

A sample set of four sent, postpaid, for \$1.20. Ask your dealer, or write to us direct.

Automatic Sash Holder Company
277 Broadway, New York City.

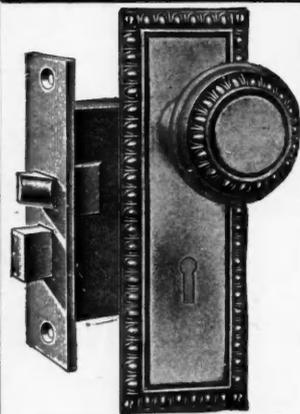


HAVE YOU

our No. 4 Builders hardware catalogue and net price list? If not, why not? **IT'S FREE**—to contractors and material men.

No. 5311 Old Copper Inside Lock—as per cut Per Dozen Sets **\$5.00.**

REHM HARDWARE CO.
1501 Blue Island Ave.
CHICAGO



CASSENS IDEAL EAVES TROUGH

TAKES WATER ONLY

The Ideal completely overcomes the disadvantages of the old style open gutter. It satisfactorily catches and carries away the water that falls on your roof. Its use insures clean, healthful cistern water. Leaves, trash, gravel, etc., cannot enter it. Neither can birds build nests in it. Therefore it is never clogged.

Ice Will Positively Not Break Down the Trough

A unique and important feature of the IDEAL is that it will not fill with snow and ice. When it sleets the small opening (about one-eighth inch) is quickly closed. This prevents the bursting of the trough, also of the down spout. When it thaws the ice melts, and the entrance opens automatically before the water from the roof reaches it.

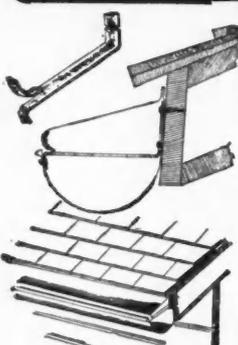
The Ideal can now be erected with a Wire Hanger if face-board has mouldings.

Special Propositions to Contractors, Builders and Architects

Write for free booklet

CASSENS MFG. CO.

Edwardsville, Ill.

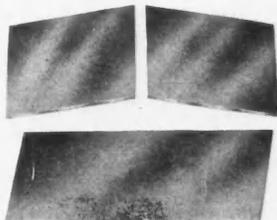


CASSENS IDEAL EAVES TROUGH
PAT. NOS. 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100

THE "DAISY" FLOOR SCRAPER

"The One That Does"

Does What?



BLADES

SCRAPES FLOORS

Perfectly
Rapidly
Easily
With Shearing Cut
Right Up to Base Board
In Any Corner or Angle
With or Across Grain

ALL THIS WE GUARANTEE

CLAMPS

Your blade is clamped to machine instantly.

BLADES ARE NOT SLOTTED

and can be used down to a fraction of an inch.

These Clamps are the most effective blade holding device manufactured.



CLAMP

EDGE TURNING DEVICE



OUR "DAISY" WONDER

This is entirely new. Turns any edge desired—in a second or two. Anyone can operate this and get a perfect edge.

FILING DEVICE

Files blades accurately every time. It can't do other wise. It saves blades, files and time. The edge turning and filing device can be attached to any work bench or saw-horse with two screws.



FILING DEVICE

SHEARING CUT

is always made with the "Daisy" Floor Scraper. **Single shearing cut**, (one blade) for truing up floor perfectly and **double shearing cut** (two blades) for finishing. You always have a

large bearing surface on the floor.

"THE DAISY"

Can't jump or chatter. It leaves floor as TRUE AS PLATE GLASS

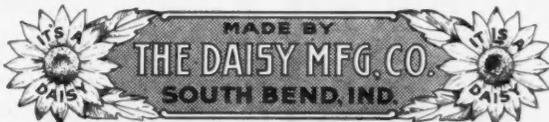
SIMPLY WONDERFUL—WONDERFULLY SIMPLE

Our new catalog is just off the press.

Explains everything thoroughly.

Yours on request.

The Sign of the Daisy



The Sign of Excellence

SCRAPING OLD FLOORS

IF YOU have ever tried to scrape an old floor you surely have encountered many difficulties, the main one was that the blade would not take hold, owing to the fact that the weight over the scraper blade was not heavy enough. To overcome this difficulty I have added an extra weight attachment to my ACME SCRAPER as shown below.



This extra weight adds 40 pounds pressure over the cutting edge of blade and will force the knife into the hardest wood surface. As this additional weight is only required while scraping old floors or some special grades of new hard wood floors, it is so constructed that it can be attached or removed in a few seconds time.

Send for my new booklet (just off the press) which gives full detailed description of the best floor scraping equipment on the market. Remember that I send the complete ACME FLOOR SCRAPING OUTFIT to any responsible party on a WEEK'S FREE TRIAL at my expense.

Write today and get all the particulars.

JOS. MIOTKE
247 LAKE ST.
MILWAUKEE, WISCONSIN

Doesn't chatter or leave waves

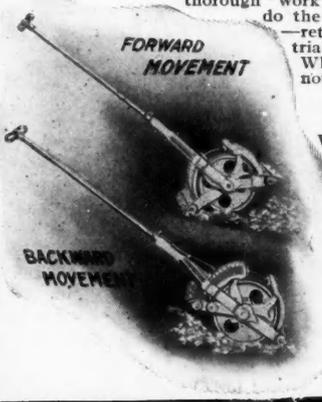
because the blade holder is attached to a flexible frame by half-ball-and-socket bearings which absolutely prevent this. Blades can be quickly adjusted at any angle for perfect work on any kinds of wood—maple, oak, yellow pine, fir—it makes no difference what; and either blade can be instantly set for forward or backward movement. You can push as well as you can pull.

The WEBER DOUBLE ACTING Floor Scraper

will give you more real scraper value than any other you can buy. I've studied scraper making 20 years—not by watching others, but by actually handling the machine myself—and I know what it will do. But I want you to give it a

FREE TRIAL

Place it in competition with any other you wish—give it a thorough "work out"—and if it doesn't do the best work you ever saw—return it to me and the trial won't cost you a cent. Whether you keep it or not—



I pay the freight

Write for complete catalog; also price list—but don't buy a scraper until you have seen a Weber in action.

John F. Weber,
President,

WEBER MFG. CO.,
670 71st Avenue
West Allis, Wis.

ACKERMANN Floor Scraper

If you are a carpenter, builder or contractor you need the **Ackermann Floor Scraper**. If you want a machine to **scrape floors** the Ackermann means more to you than a "machine on trial." We have given more attention to the **working** parts than the selling points. We keep improving the machine—not the way to sell it. **But—** you can use an Ackermann Floor Scraper at our **expense**. We ship at our expense to **prove** the machine is what you want. And, if you can show that the Ackermann does not do **more** work, **easier** work and **better** work than other floor scrapers, you **get the machine free**.

J. B. Ackermann Co.
100 Pearl Street
GRAND RAPIDS,
MICH.



Knife Sharpening Device

A new feature is the Ackermann New Knife Sharpener—which insures a sharp edge all the time and which works automatically. It means a big saving in time and labor.

The request brings the machine to your shop for you to use free.

Triple "A" Spring-Driven Floor Smoother

THIS LETTER is convincing.

G. W. DEWEY
CONTRACTOR & BUILDER

Mackinac Island, Mich., Feb. 11, 1910.

TRIPLE "A" MACHINE CO., 112 Clark St., Chicago.

Gentlemen:—Enclosed please find check in payment for the Triple "A" Floor Smoother you sent me on trial.

I have used the machine two days and find it is all you recommend it to be. I scraped a floor which was laid and stained last year and I enclose a shaving with the varnish on it as I take it off the first time over. My old — — — floor scraper would not cut through the varnish. There is no other scraper I know of that will cut half as heavy a shaving as the Triple "A". It is the easiest running and does the most and best work of any floor scraper I have ever seen. Respectfully yours,
G. W. DEWEY.



The machine you will eventually buy. Sent on free trial anywhere.

WHEN ordinary floor scrapers fail use the Triple "A" Spring Driven.

It is the result of wide experience and mechanical skill.

It combines adjustability, weight and power and the power costs nothing.

The saving in time and effort makes it absolutely the most economical Floor Smoother now in use.

It is the only machine powerful and heavy enough to scrape a varnished floor.

Those who have used the Spring Driven Floor Smoother positively refuse to go back to the old "Man-killer."

The Triple "A" will finish your floors perfectly and do it easier and in half the time required by ordinary floor scrapers.

The Triple "A" Spring Floor Smoother is right. Get the right Machine and your floor scraping trouble will end.

TRIPLE "A" MACHINE CO.

112 So. Clark Street
CHICAGO, - ILL.

TRY BEFORE YOU BUY

Let us send you the "LITTLE GIANT" Floor Scraper—Freight Prepaid. Absolutely FREE of any expense to you whatever

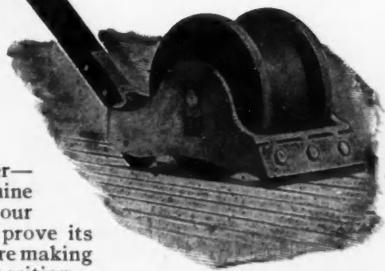
A request from you brings the "Little Giant" Floor Scraper to your door—you send no money and we pay all expenses. After you have given it a fair trial and have tested it as thoroughly as you know how, and have found it satisfactory, pay for it. If you do not think it is the best floor scraper made, return it.

TRY IT ON YOUR OWN FLOOR

You can try the "Little Giant" Floor Scraper on your own floor and the trial costs you nothing. All that we ask is that you give it a fair trial. You be the judge and jury. Every carpenter and contractor can afford to invest in one as the time and money saved will pay for the machine in a very short time. By using the "Little Giant" Floor Scraper you will be in a position to estimate much lower than your competitor and therefore have more work. Can you afford to be without this machine?

25,000
"Little
Giant"
Floor Scrapers

are in use throughout this country and abroad. These were purchased because they were better; because they did more work—did it quicker, cleaner and cheaper—than any other machine made. So great is our faith in its ability to prove its worth to you that we are making the above liberal proposition.



Write us for our Special Price

Hurley Machine Company

31 South Clinton Street, CHICAGO
1011 Flatiron Building, NEW YORK
73 First Street, SAN FRANCISCO

Only Perfect Floor Surfacing Machine

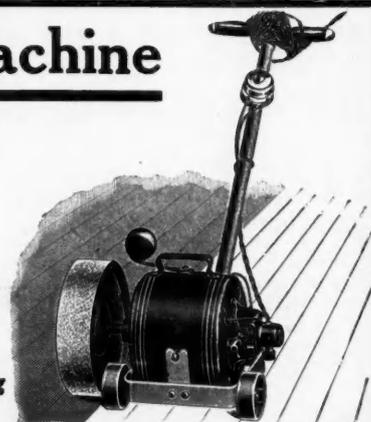
Will do perfect work on any kind of floor, whether even or uneven. Recommended by the best architects and contractors.

A BOY CAN OPERATE IT.

Sold on absolute guarantee. Price, complete with motor switch and 50 feet electric cord ready to connect with light socket, \$125.00.

Write for further information.

MARSH COMPANY, 970 Old Colony Building CHICAGO, ILL.



CARPENTERS and BUILDERS!

Do not Buy a Floor Scraper without first trying

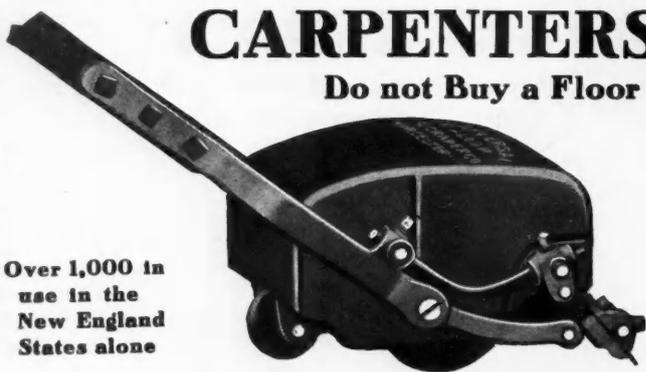
THIS HIGH - GRADE MACHINE

Shipped on Approval at Our Expense

Adjustable Blade Holder

Rubber Bumpers

Over 1,000 in use in the New England States alone

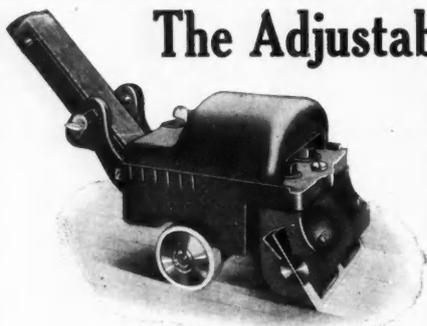


"Held to its work by muscles of steel."

Universal Floor Scraper Co.

Rooms 1323-25 Williamson Bldg., Cleveland, O. 110 EXCHANGE STREET, WORCESTER, MASS.

The Adjustable IS THE BEST



Sidney N.Y., 3-30-10
H. P. Didriksen:
Received the scraper O. K. We had an old hand using it who has handled all the other kinds, and he says this is the best one he has ever used. We showed it to another contractor last night and it pleased him very much. Enclosed find check for forty dollars.

Yours truly,
Hall & Howland

LET ME TELL YOU ALL ABOUT IT

H. P. Didriksen, South Bend, Ind.

The Black Hawk Floor Scraper

Simplest, Cheapest and Best on the Market

Weight, 75 lbs.



Also Attachments for Floor Scrubbing, Wax Polishing, Tile Rubbing, at Small Extra Cost. Put on in an instant.

Retails at \$18.00.

Enameled dark blue and gold.



Made in three sizes: 8x18 8x15 and 8x12 in. Roller.

Perfect Results Are Easily Obtained By Using Schlueter Rapid Floor Surfacer

This machine is built on the only correct principle. It is guaranteed to be **The Best** machine with which to produce an even, smooth surface on any kind of large or small wood floor, old or new, hard or soft, and in all buildings: Residences, Stores, Factories, Bowling Alleys, Roller Skating Rinks, Reception and Dance Halls, Etc.

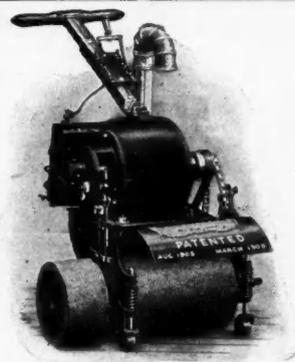
The **Schlueter** will remove all joints or warped edges, and oil, wax, lime stains, or the "muck" from skate wheels, in a most satisfactory manner.

Earning capacity, \$20.00 to \$35.00 per day!

Send for prices and **Free Trial Proposition.**

M. L. SCHLUETER, Chicago, Ill.

103 N. Canal Street



Edge Roller easily adjusted to either side.

The American Floor Surfacing Machine

is the original and only two-roll, self-propelling, dust collecting machine protected by U. S. and Foreign patents, and the only one that will satisfactorily surface any kind of a wood floor and has been in general use by contractors, hardwood floor companies and others for over 6 years.

Its work is rapid, regular, smooth and even, because the power that drives the rolls propels the machine at the same ratio of speed.

Its work has established the standard for surfaced floors, and the only machine whose work is specified by leading architects and meets the requirements of contractors, owners and hardwood floor companies for finely finished, smooth, even floors.

It has surfaced and polished millions of square feet of the finest floors in America and Europe.

Don't be fooled with an imitation, but get a machine that does work in paying quantities, and can be operated in small rooms.

The only one whose construction is guaranteed and sold on its merits.
Write for our book "Surfacing Floors as a Business."

Manufactured by

The American Floor Surfacing Machine Co., Toledo, Ohio.



ROLLING PARTITIONS



Use our Rolling Partitions to subdivide rooms.

Ventilated Wardrobes

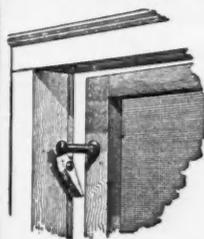
Space-saving and sanitary for modern schools.

WINDOW BLINDS

of all kinds; also

ADJUSTABLE SHADES

HENRY B. DODGE CO., 108 LaSalle Street, Chicago, Illinois



Silent Screen Door

Avoid the nerve-racking slam of the screen door. Stop its banging and jarring—by using

"Dime"

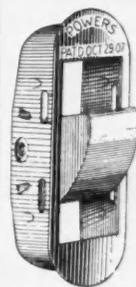
Screen Door Check

At your hardware or house furnishing store, or mailed for 12 cts. in stamps by

Caldwell Mfg. Co., 15 Frank St., Rochester, N. Y.

Straight-grained cedar that cuts like cheese; smooth, tough leads that make clean-cut, strong marks—that's the way Dixon's Carpenter Pencils are described. Send 16c for generous sample lot 183 J.

**JOSEPH DIXON CRUCIBLE CO.,
JERSEY CITY, N. J.**

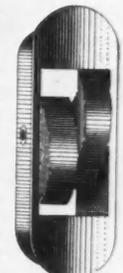


No. 1. Single Cam Lock

A PAIR TO DRAW TO

Just what you have been looking for. Not only locks window, but when desired takes the place of sash weights.

No. 1 on upper sash, No. 2 on lower. On balanced windows, use No. 1. Mortised in jamb, just above and below meeting rails. Send card today for catalogue and prices, giving dealer's name.



No. 2. Double Cam Lock

Powers Burglar-Proof Sash Lock Co.

Hastings, Neb.



Unlocking Key



THE HAVEN FLOOR PLANER

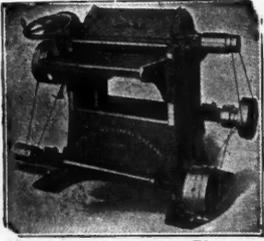
HERALDS THE NEW ERA IN FLOOR SCRAPING

Eliminates all defects found in other floor machines. Does away with the man-killing toil of the heavy-weight machine. Makes floor scraping simple and agreeable. It embodies the mechanical principles of the plane. Planes and scrapes floor at one operation. Does better work than most hand work. "Wavy" floors prevented. Most rapid scraper on the market.

Be an agent in your locality for the floor planer of the future.

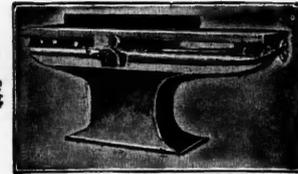
Particulars on request.

THE HAVEN MFG. CO. : : RACINE, WIS.



Chicago No. 35 Pony Planer

Machines for Contractors



Chicago Hand Jointer
8, 12 and 16 in.

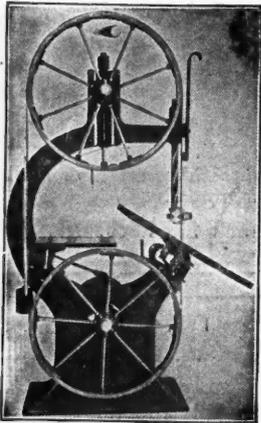
Every carpenter and builder can afford to invest in one, or more, of these machines. From our stock of 500 new and rebuilt machines contractors can obtain sufficient machinery to make them independent of local mills and their attendant delays and high charges.

Stop paying somebody else profit—put it in your own pocket. Be in a position to estimate under competitors. You can do this by installing your own machinery. All our machinery is of special construction to secure fine finished surfaces and to reduce sandpapering to a minimum.

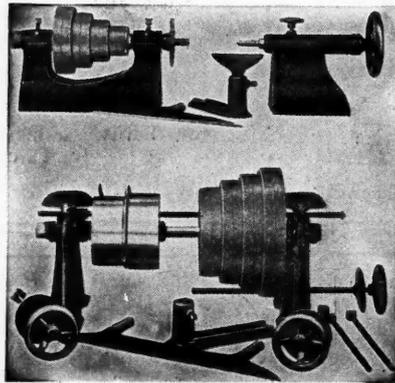
Prices are lower than you think. Send today for our monthly list of rebuilt machines (free to carpenters and builders).

Chicago Machinery Exchange

7-11 No. Canal Street, CHICAGO



Chicago No. 1 Band Saw
27, 32 and 36 in.



Wood Turning Lathe and Countershaft
16 and 20 in.



Chicago No. 10 Tilting Table
Improved Variety Saw Bench



"A Bit Of Utility"

Guided by its circular rim—instead of its centre—the Forstner Labor-Saving Auger Bit will bore any arc of a circle, and can be guided in any direction.

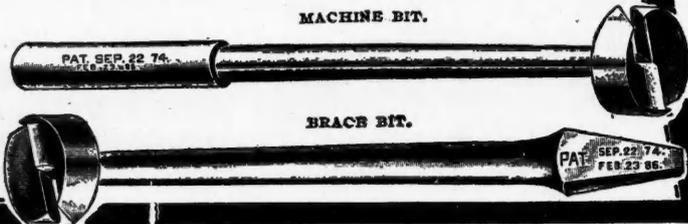
Doesn't matter how hard the wood is, no consequence whether it is full of knots, or the grain awkward to negotiate. The Forstner Bit works with equal smoothness under any condition and leaves a true polished surface on every job.

Unequaled for Delicate Work

Supersedes chisels, gauges, scroll-saws, or lath tools combined, for all kinds of delicate work. Cabinet and pattern makers and carpenters are enthusiastic because they do more work than other bits and cost no more.

We can offer something special in the matter of price on sets packed in a sensible box. Send today for particulars and catalog.

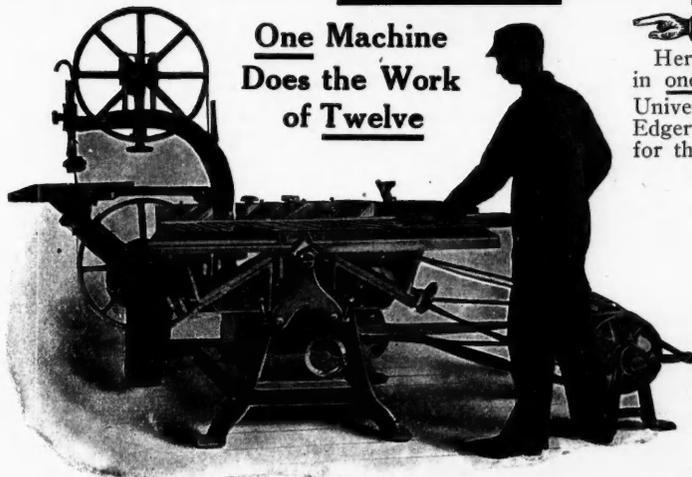
The Progressive Mfg. Co.
Torrington, Conn.



MACHINE BIT.

BRACE BIT.

A Complete Machine Shop For the Price of One Machine



**One Machine
Does the Work
of Twelve**

Two-Side Edger, Moulder and Matcher

Here's one of the twelve machines which are combined in one. The illustration shows the No. 14 "FAMOUS" Universal Woodworker being operated as a Two-Side Edger, Moulder and Matcher. No machine made expressly for the purpose could do better work.

Here are the 12 Machines in 1

- 1—A 12-inch Jointer.
- 2—Saw Table with Saw Arbor that may be raised and lowered.
- 3—Two-side Power-feed Molder and Edger.
- 4—Band Saw.
- 5—Complete Single Spindle Shaper.
- 6—Pony Planer.
- 7—Power-Feed Sander.
- 8—Boring Machine.
- 9—Hollow Chisel Mortiser.
- 10—Standard Single End Tenoner.
- 11—Emery Grinder.
- 12—Felloe Rounder.

This illustration shows our No. 14 "FAMOUS" Universal Woodworker with raising and lowering Saw Arbor, Jointer, Shaper, Boring Machine and Band Saw. No changes have to be made to operate the Woodworker as any of the above machines.

THE "FAMOUS" UNIVERSAL WOODWORKER

Tremendous interest has been aroused among carpenters, builders and woodworkers throughout America by this wonderful machine. It is the Universal Woodworker. No other piece of wood-working machinery made has the adaptability, the durability or the simplicity of construction and operation.



Every Woodworker Needs One

As a business proposition listen to this:

You recognize the value of woodworking machinery, so consider how many machines you need. Probably your work may require three, or five, or nine—any number. But your capital is limited. You cannot afford to buy a dozen machines although you may need a dozen.

Then why not install a machine that will do the work of twelve?—that is a Power-Feed Planer one day, a Drum Sander the next day, a Band Saw the next day, and so on! You have one piece of machinery and one investment. That's machine-shop commonsense.

SIDNEY TOOL CO., Sidney, Ohio



Ask About Special Offer

We are making a special "30-day" proposition that we think will interest all users of woodworking machinery.

Power Feed Planer

Accompanying illustration shows the No. 14 "FAMOUS" Universal Woodworker being operated as a Power-Feed Planer. This is just as good in every way as the regular pony planer. But one or two minutes is required to make this attachment ready for operation. You simply pull the front tables back three inches, lower same about $\frac{1}{2}$ inch, on the attachment, put in the two screws to hold attachment to front table, put on the belt and—that's all. It's easier to do it than to tell how. With this attachment the woodworker can be arranged to do all kinds of power-feed moulding, beading, grooving, dadoing, sanding, or any kind of special work. The in-feed roll is underneath and feeds the stock, holding it firmly against the upper table of the planing attachment, thus making it possible for the operator to do any kind of perfect moulding.

Send for Catalog

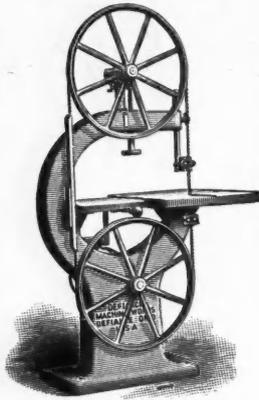
You ought to have a catalog. It explains the construction of this wonderful machine in detail and is free upon request. Send for it today

"DEFIANCE" WOOD-WORKING MACHINERY

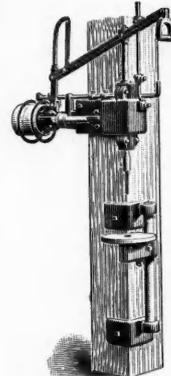
For Manufacturing

Automobile Wheels and Bodies, Carriage and Wagon Hubs, Spokes, Rims and Wheels, Wagons, Carriages, Shafts, Poles, Neck Yokes, Single Trees, Hoops, Handles, Spools, Bobbins, Insulator Pins, Balusters, Table Legs, Oval Wood Dishes and for General Woodwork.

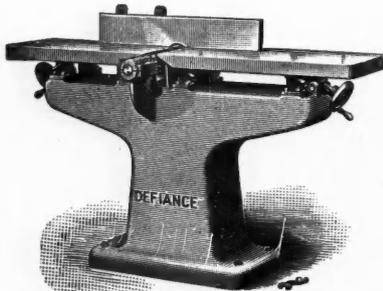
Invented and Built By
The Defiance Machine Works
Defiance, Ohio



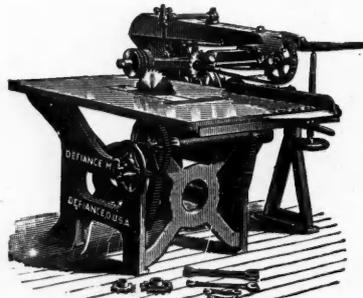
28" Band Saw



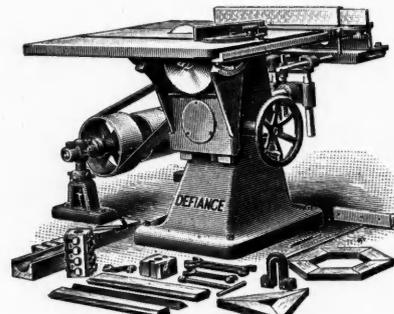
No. 15 Post Borer



12" Hand Planer and Jointer



No. 3 Power Feed Rip Saw



No. 8 Variety Saw

**Planing
Matching
Ceiling
Flooring
Novelty Siding
Mouldings**

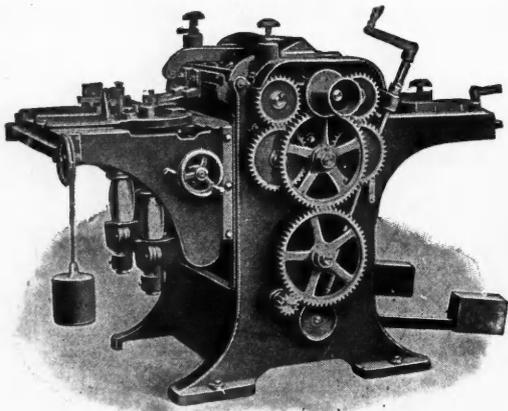
We make the best line of medium size Planer, Matcher and Mouldings on the market. When you buy a Cordesman-Rechtin Planer, Matcher and Moulder you are assured on four points:

- 1st—That you are getting the latest and most improved machine built.
- 2nd—That you are getting a well designed, well made machine, and one that won't give you any sort of trouble.
- 3rd—That you are getting a machine that will do good work and lots of it.
- 4th—That you are getting a machine that is fully guaranteed.

We make four different sizes and styles of these machines. One of these is sure to meet your requirements.

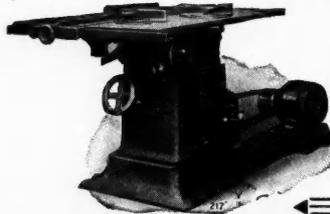
Write for circulars giving full particulars

The Cordesman-Rechtin Co.
Cincinnati, Ohio



ROTHMOTORS

for individual driving of woodworking Machines give very economical operating cost. Ask **ROTH** for information.



**ROTH BROS.
& CO.**

1422 W. Adams Street
CHICAGO, ILL.

N. Y. Office: 136 Liberty St.

PARKS' COMBINATION WOODWORKING MACHINES

Make a Complete and Economical Operating Mill for Carpenters and Contractors Take our No. 410 for instance—here is a Combination of Three

Machines in One—

A Table Circular Saw
A Six-inch Jointer and
Boring or Routing
Attachment

Ready for Instant Use
No line shafts and large
amount of floor space
required.

SIMPLE—STRONG and Ready-to-Go
—with little power. We deliver on
short notice.

Prices and Catalogue on Request.
Parks Ball Bearing Machine Co.
Fergus and C. H. & D. Ry.
CINCINNATI, O.

Originators of the Circular Saw,
Band Saw and Jointer Combination,
also Foot and Hand Power Machines.

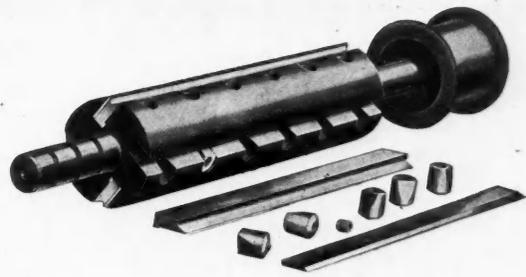
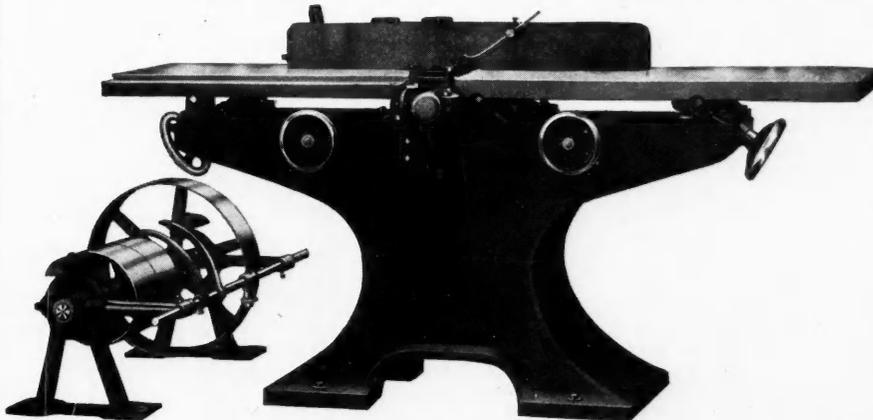
BOURNIVAL & CO., St. Barnabe, P. Q., Agents Canada

Protect Your Fingers

BY USING A CRESCENT Jointer with Safety Head

The knives in CRESCENT safety heads are made of high speed steel which will hold an edge longer and turn out better finished and more accurate work than can be done on a common jointer with ordinary knives.

You may crowd the machine to the limit and the quality of the work will be just the same as though you hadn't crowded it a bit.



OOOOO

The price of these splendid machines is very reasonable considering the high quality of the machines and the enormous amount of work they are capable of turning out.

OOOOO

Send for catalog giving complete description. It tells about our elegant line of Band Saws, Saw Tables, Jointers, Borers, Shapers, Planers, Planer and Matchers, Pole Rounders, Disk Grinders, Variety Wood Workers.

THE CRESCENT MACHINE CO.

224 Main Street

Leetonia, Ohio, U. S. A.

A WHOLE WOOD-SHOP IN ITSELF

Are You Looking For a Machine That Will

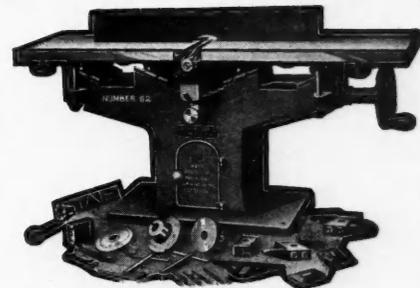
Plane out of wind; surface straight or tapering; rabbet door frames; rabbet and face inside blinds; joint; bevel; gain; chamfer; plow; make glue joints; square up bed posts, table legs and newels; raise panels, either square, bevel or ogee; stick beads; work circular mouldings; rip; cross-cut; tenon; bore; rout; rabbet; joint and bead window blinds; work edge mouldings, etc? If so, write for illustrated circular Sheet No. 1-G. It shows two large half-tone photographs and contains full description of our No. 62 Universal Woodworker, together with a number of illustrations of the work done on this machine.

WRITE TODAY.

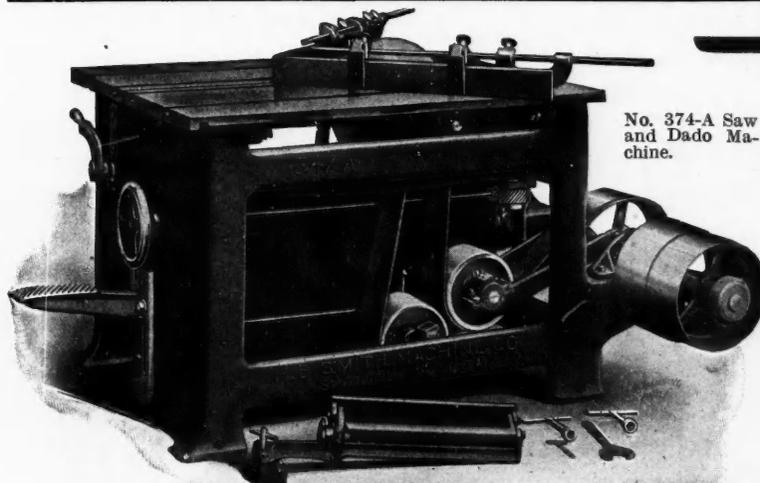
J. A. FAY & EGAN CO.,

545-565 West Front Street

CINCINNATI, OHIO



No. 62 Universal Woodworker.



No. 374-A Saw and Dado Machine.

New Combination Saw Bench

The annexed cut represents our New Combination Saw and Dado Machine, which is substantially constructed, possessing every necessary adjustment for doing all classes of work.

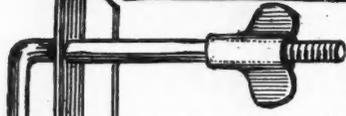
Saw brought into the work by Foot Treadle, leaving both hands free to handle the materials.

Table fitted with cross-cutting and slitting gauges.

For further particulars, address

H. B. Smith Machine Co., Smithville, N. J.

NEW YORK - CHICAGO - ATLANTA - MEMPHIS



This hook can be inserted or removed through a one-inch hole bored in the sheathing; it hooks around the studding instead of going through it. Where it is desired to plaster inside before scaffold is down, a piece of 2" x 4" turned flatwise may be used to fill in.

Made of best quality angle steel, strictly first-class and fully tested. Arms are notched and brace riveted fast in such a way that the strain is carried entirely on the solid metal instead of on the rivets.

4 ft. brackets $1\frac{1}{4}" \times 1\frac{1}{4}" \times \frac{3}{16}"$
 5 ft. brackets $1\frac{1}{2}" \times 1\frac{1}{2}" \times \frac{3}{16}"$

Prompt Shipments Guaranteed.

If you wish to try a pair, before ordering in quantity, write for terms of special trial offer.

THE TAYLOR STEEL SCAFFOLD BRACKETS

LAST A LIFETIME

A single pair of the 4 ft. brackets has carried a ton of steel 24 hours without even springing.

Quick - Acting, Self - Locking Screw Clamps. Ask for catalogue showing 21 different styles.

Do you know about our improved gripping device, and the special grade of steel we use?




JAMES L. TAYLOR MFG. CO., Bloomfield, N. J. U. S. A.

The Folding Scaffold Brackets



These brackets are easily placed in position or removed. Require very little space for storage or for transportation and are perfectly safe. If you are interested in frame buildings you cannot afford to be without them. Will pay for themselves in a short time. We guarantee them to give satisfaction.

Write for prices and further information

MANI MANUFACTURING CO.
 R. R. No. 3. Box 112 PEORIA, ILL.

This DUMB WAITER

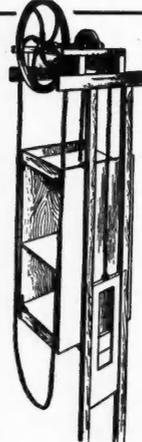
complete ready to erect for - **\$18.50**

**SELF RETAINING MACHINE
 HARDWOOD CAR
 SECTIONAL WEIGHT
 ROPE, GUIDES, HARDWARE,**

knocked down and shipped with the only complete directions for erecting ever issued

SEND FOR SPECIAL PAMPHLET

R. M. Rodgers & Co.
 174 Washington Av., BROOKLYN, N. Y.



PERFECTION ELEVATORS

ARE

"BUILT TO STAND THE TEST"

Dumb Waiters, Carriage, Store Elevators, Sidewalk Hoists, Etc., Etc.

Our Elevators are noted for their EASY RUNNING and SERVICE-ABLE QUALITIES. They are practically self-contained, and can be erected by any carpenter in a few hours. We furnish plans for erecting.

PRICES \$19.00 AND UPWARD according to the kind, size, lift and capacity of the Waiter or Elevator.

State your requirements and we will give you our lowest money-saving estimate. **BETTER VALUES** for money than found elsewhere.

SIDNEY ELEVATOR MFG. COMPANY, SIDNEY, OHIO



The GRIMM WOODWORKER

PORTABLE

NINE MACHINES IN ONE

- 8" or 10" Rip Saw
- 8" or 10" Cross Cut Saw
- 6" Dado Head
- 4" Jointer
- 10" Sander
- Moulder, 8 prs. Knives
- Jig Saw, 3 Blades
- Boring Machine, 3 Bits
- 2 Emery Wheels

All, or your choice of attachments furnished! Every machine carefully tested before leaving factory Ready to start as soon as uncrated



Type A
Ready to Rip, Size, Joint or Straighten

Weight, 350 lbs. Height, 33". Table Top, 29"x38". Angle Iron Legs. Oak Girders.

IN THE SHOP OR ON THE JOB Complete Power Plant and Mill—Always Ready for Use with one Turn of Fly Wheel 4 h. p., 4 cycle, air cooled Gasoline Engine "built in" does the work

Uniform speed under all loads Cost of operation less than 3 cents per hour Does the work of five men

You will be able to figure lower on your contracts after you have purchased a Grimm Woodworker. The building season is on. Your order should be with us **Now**. Our six months' guarantee against imperfection in material and workmanship goes with every machine; and your order is subject to your rejection of machine if it doesn't prove satisfactory after a seven days' trial.

Write today for our attractive Booklet and Prices

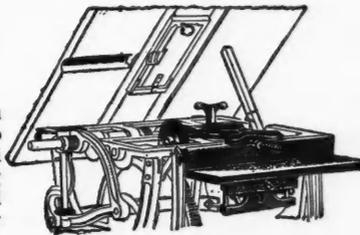
Manufactured by
GRIMM MFG. CO.
Buffalo, N. Y.

LITTLEFIELD & CLARK
General Sales Agents

46 Erie, St.
BUFFALO, N. Y.

When You Are Rushed With Work

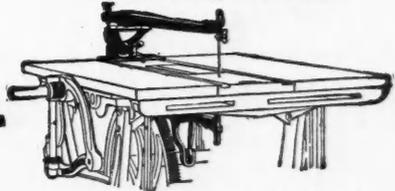
And can't get all of the help you need, then get a "Union" Combination Saw, which will do work equal to 3 additional good men and will do better work than is possible when using hand tools; the saving of 3 men's wages will soon pay for the machine and means larger profits for you.



"Union" Boring Attachment.



"Union" Moulding Attachment.



"Union" Scroll Saw Attachment.

No. 5 "Union" Saw

Combination Self-Feed Rip and Cross-Cut

is suitable for various kinds of work—ripping (up to 3½ inches thick), cross-cutting, mitering, etc., and, with additional attachments, rabbeting, grooving, dadoing, boring, scroll-sawing, edge-moulding, beading, etc. Almost a complete workshop in one machine.

Send for Catalog "A," fully describing our complete line of foot, hand and light power wood-working machinery.



No. 5 "Union" Combination Self-Feed Rip and Cross-Cut Saw

The Seneca Falls Mfg. Co.

218 Water St., Seneca Falls, N. Y., U. S. A.

(114)

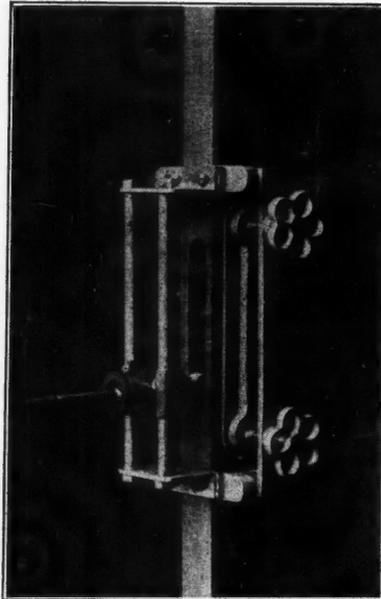
JUST WHAT YOU NEED

NICHOLLS LOCK MORTISER

The best mortiser on the market. Very light. Convenient to carry with you. Always ready for instant use. A practical machine for practical mechanics.

\$4.50

Three Bushings FREE with each mortiser, $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{1}{2}$ inch. Others furnished to order. This machine must be seen to be appreciated. Why not order one NOW?



Absolutely no expense for future repairs. Use your own brace and bits, any size mortise you desire. Fibre Bushings for bit guides, no danger of dulling or injuring bits.

PREPAID

GUARANTEED to be perfectly satisfactory and all that we claim or your money refunded. Send for catalogue and mention this paper. You cannot afford to be without our machine.

For Sale by all Leading Hardware Dealers, or Direct from
SAX-NICHOLLS-COHN CO. (Incorporated) Sole Manufacturers **FAIRFIELD, IOWA**

If You Have Power

You cannot afford to use any but the

Grand Rapids All-Steel Sash Pulleys

and the Grand Rapids Mortising Bit. Bores mortise at one punch. Used in common boring machines. We make boring machines too. Write for sample pulleys and prices.

Grand Rapids Hardware Co.

35 Pearl Street,
 GRAND RAPIDS, MICH.

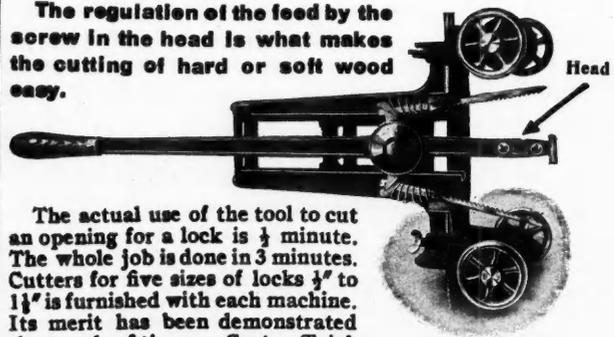


Miller's Lock Mortiser

IS SCIENTIFIC

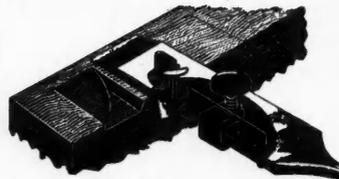
The regulation of the feed by the screw in the head is what makes the cutting of hard or soft wood easy.

The actual use of the tool to cut an opening for a lock is $\frac{1}{2}$ minute. The whole job is done in 3 minutes. Cutters for five sizes of locks $\frac{3}{8}$ to $1\frac{1}{2}$ is furnished with each machine. Its merit has been demonstrated thousands of times. *Sent on Trial.*



Butt Mortiser

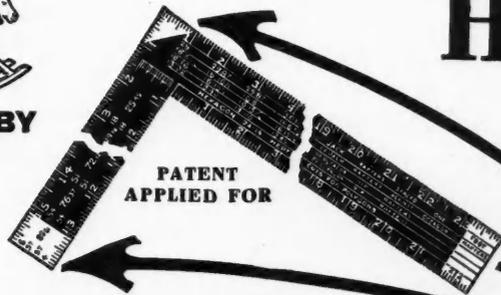
Cuts the seats for butt hinges in doors, jambs and other work. It does the work in one-third the time and makes a neat, clean, accurate job. Price, including rule gauge, 75 cents.



A. W. Miller Mfg. Co.

Western Office
 RIVERSIDE, CALIF.

Main Office
 CINCINNATI, OHIO.



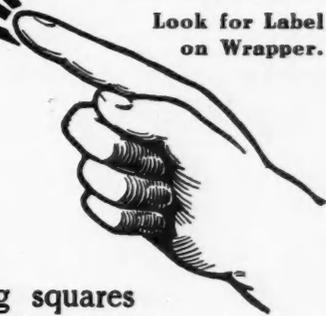
HARDENED CORNERED SQUARES

Now Manufactured by a secret process . . . ALL OUR OWN . . .

Look for Label on Wrapper.

YOU CARPENTERS know in measuring the length of timber, you mark with the corner of your square. Now how long is your old soft cornered square going to last on a sandy rough board. Then try to make an accurate

measurement from that corner. We harden the corners of all our framing squares also Nos. 100-1-2 and 3 standard squares. Our squares are made without a weld.

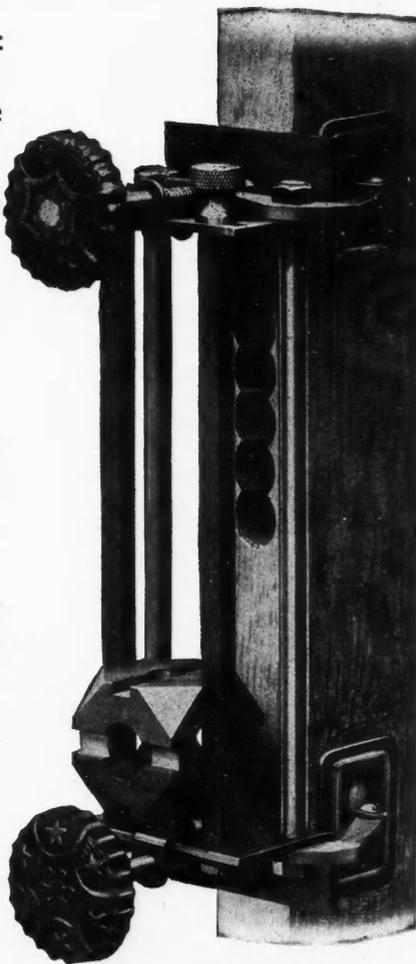


It will mortise anything from 3/4 to 2 3/4 inches thick.

Guide Block can be changed instantly to any of the different size holes.

Guide Blocks for other size holes can be furnished.

IT WEIGHS 3 1/4 POUNDS



PATENT APPLIED FOR

OUR TRUE MORTISE GUIDE

You can't bore a slanting hole in mortising a door for a lock, with our true mortise guide. The kind of wood has no effect on bit. *Made in one size only No. 20, Satin Nickle Finish.*

Price **3.25** Delivered

No Extra Bushings to Get Lost. We have one guide block which will take in 1/2, 3/4 and 1 5/8 Auger.

FREE

A miniature square as a Watch Charm.

No adjusting to get center of door. It always comes central.

MANUFACTURED ONLY BY

NICHOLLS MFG. Co.

Ottumwa, Iowa

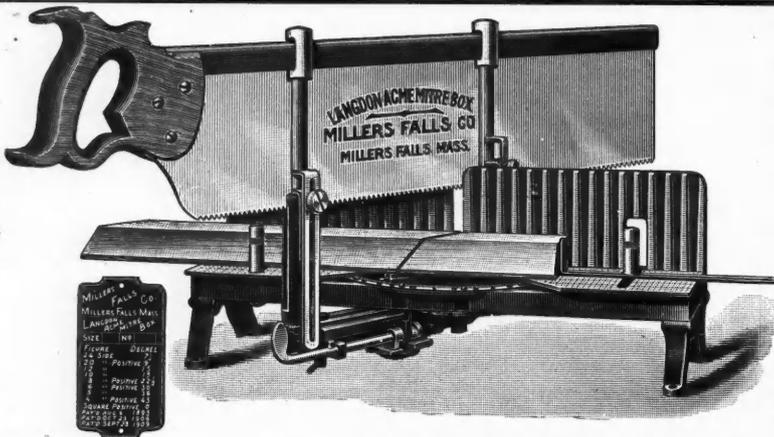
NICHOLLS MFG. CO., OTTUMWA, IOWA.

Gentlemen:—Please send me one of your Miniature Square Watch Charms.

Name _____

Town and State _____

**THIS
IS
THE
MITRE
BOX
YOU
WANT**



It's a LANGDON ACME and is made in three sizes put up with varying lengths of saws.

The advantage over other styles are too numerous to mention in this advertisement, but our pocket catalogue tells the whole story. You can have one of the catalogues by asking for it. It illustrates our full line of tools.

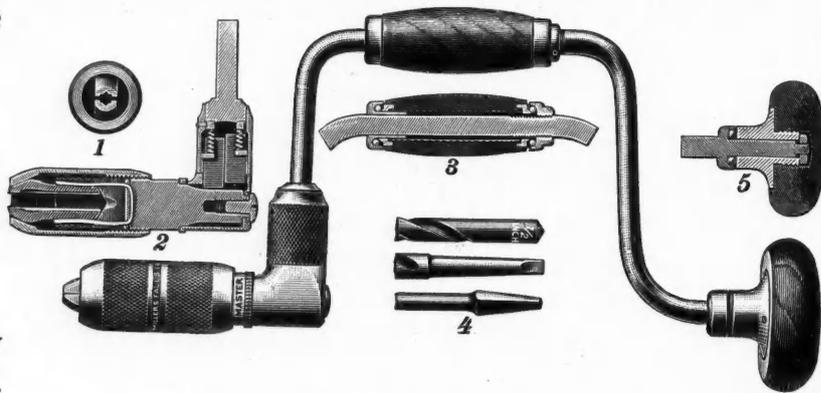
Millers Falls Company
28 Warren St., New York, N. Y.

The Master Bit Brace

is our latest product in this line of tools. It has a ball bearing head, ball bearing center handles, covered ratchet, and chuck that holds securely all sorts of shapes. In producing this Brace we have endeavored to make it a perfect tool in every particular. Sample it and decide for yourself whether we have succeeded or not.

Our new catalogue describes this Brace in detail. Ask for one.

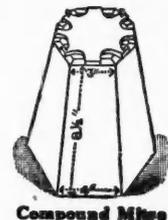
Millers Falls Company
28 Warren St., New York, N. Y.



Dorn's Revolving Mitre Box

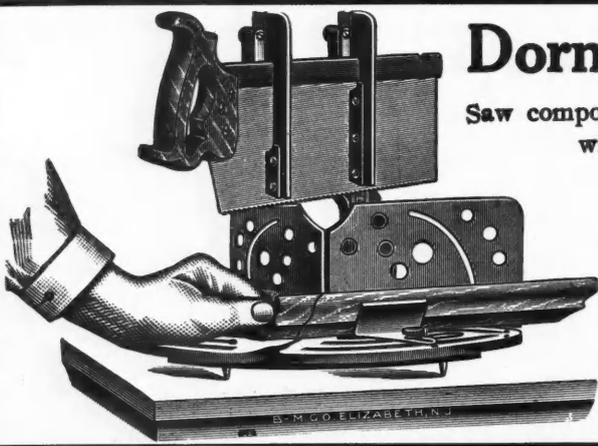
Saw compound as well as plain mitres any width with a back saw 4 inches wide

**SEND FOR BOOKLET
IT TELLS THE STORY**



MANUFACTURED BY

Braunsdorf-Mueller Company
1093 E. Grand Street, ELIZABETH, N. J.



COMPO-BOARD

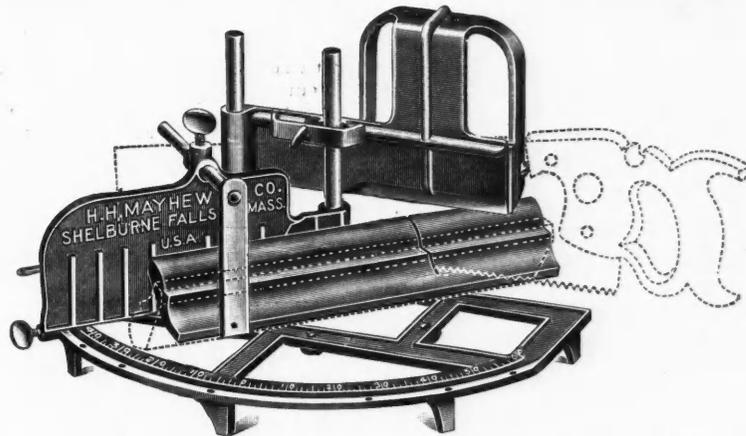
A substitute for Lath and Plaster. Can be put on by any Carpenter. It is Warmer, more Durable, Quicker and more Easily Applied. Manufactured all 4 ft. wide, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17 and 18 ft. long.

For Sample, Price and full Description, Write

Northwestern Compo-Board Co.
4800 Lyndale MINNEAPOLIS, MINN.



MAYHEW 60° MITRE BOX



This box embodies more distinctive features than any other made.
 Designed for Simplicity, Accuracy, and Durability.
 Strictly a right hand tool for mitering.
 Box embodies a new feature in reversing the principle commonly used on other boxes.
 Any of three saws may be used—Panel—Hand or Back saw.
 Saw guide adjustable for any thickness of saw.

Extreme mitre to 60° without makeshift. May be used as a stationary or pivot box by use of the pin posts.
 In mitering duplicate cuts there is no restriction on length.
 Will cut compound mitre.
 Parts take down into space 10x10x4 inches.
 Weight 15 lbs. complete.
 Box contains full directions for use

PRICE EACH, \$10.00

H. H. MAYHEW COMPANY, SHELburne FALLS, MASS.

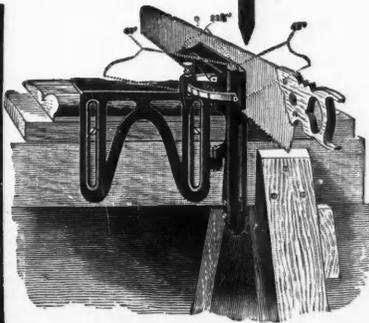
"SEAVEY" MITRE BOX

Cuts Any Angle

Meets Every Requirement

Special Offer

On return of this "Ad" and \$2.00 one of these Mitre Boxes will be shipped to any reader of "Carpenter & Builder." Offer good for 30 days from date of issue.



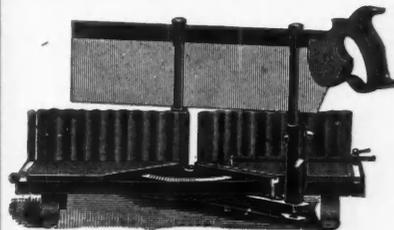
Portable—Can be carried in the Tool Kit

Weighs 2 Pounds

SMITH & HEMENWAY CO.
 108 Duane St. New York City

GOODELL MITRE BOX

Made of STEEL - Cannot Break



First in Quality and Improvements
 Automatic Stops for holding up saw.
 Corrugated Backs Graduated.
 Gauge for duplicate cuts and many other features.
 Send for Circular "C"

GOODELL MFG. CO., Greenfield, Mass.

Self-Setting Planes are no like other planes. Why not try one, and if it is not worth to you twice its cost, return it at our expense and we will return you the amount you paid us,

THE BEST IS THE CHEAPEST.
 None Cheap but the Best.
 All Want the Best.
 Sent on 30 Days' Trial as per Circular if Dealers do not keep it.



and the trial will not cost you a nickel. During May, 1910, we will receive this advt. as \$1.00 if the balance of the list price of a plane and 10 addresses of plane users, no matter where they live, is sent us from where the Self-Setting Planes are not sold.

If you send only the ten addresses, no matter where they live, we will send you circulars and a carpenter's hard, tough pencil. If you send a two-cent stamp we will send you another pencil. May 1, 1910.

GAGE TOOL CO., Vineland, N. J.

THE "LIGHTNING" AUGER BIT

WARRANTED



WARRANTED

It will bore through any kind of wood in common use about twice as quickly as the best and fastest heretofore on the market. The worm has a double thread terminating in two cutting points.

The double thread with the specially formed twist secures its double quick work without increase of power. Only by actual test can the great advantages of the lightning bit be fully realized. Secure from your dealer or sent by mail. Price postpaid.

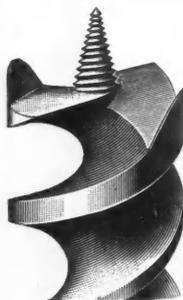
| | | | | | | | | | | | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| \$0.28 | .28 | .28 | .28 | .32 | .34 | .38 | .42 | .50 | .50 | .55 | .55 | .62 | .62 | .73 | .73 | .85 |

TOWER & LYON CO., 95 Chambers Street, New York, N. Y.

CARPENTERS KNOW

that the best Bit to use is the

RUSSELL JENNINGS



RUSSELL JENNINGS BITS

are made from selected crucible steel. Every operation is performed by men of long experience. Only perfect bits are put on the market. They are known to be the best obtainable.

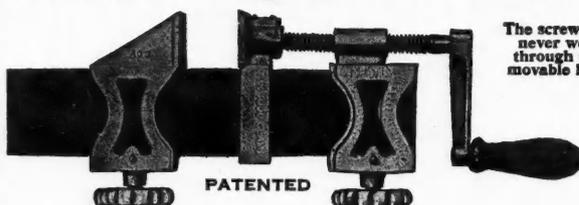
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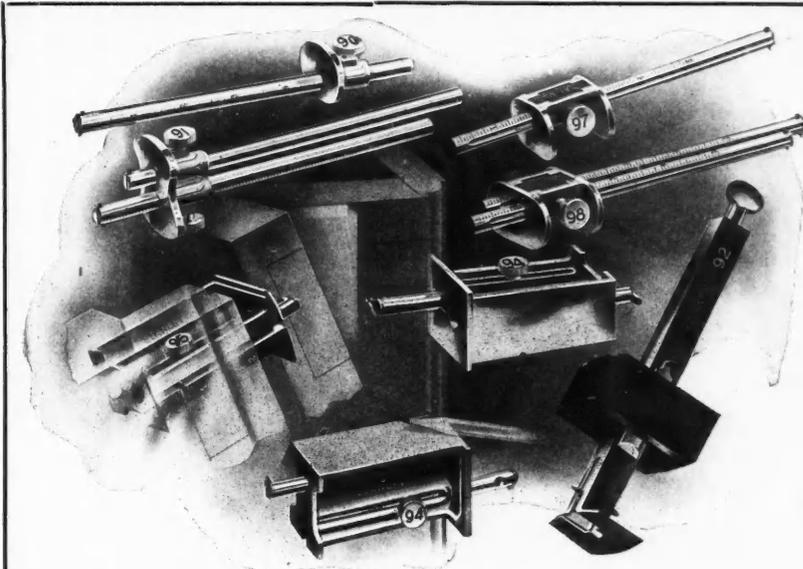
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Manufacturing Hollow Mortising and Wood Boring Bits and Tools



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For complete description write for Catalog H.

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It has two steel bars—to one are affixed two steel cutters for use when gauging for doors with rabbeted jambs—this bar may be reversed for gauging from the casing (whether of the moulded form or flat), on doors which have a strike strip nailed on after the door is hung.

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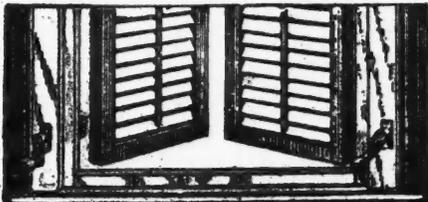
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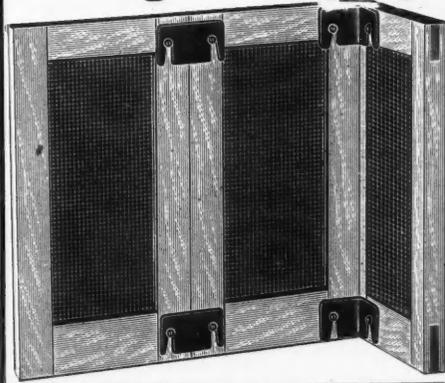
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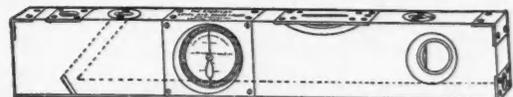
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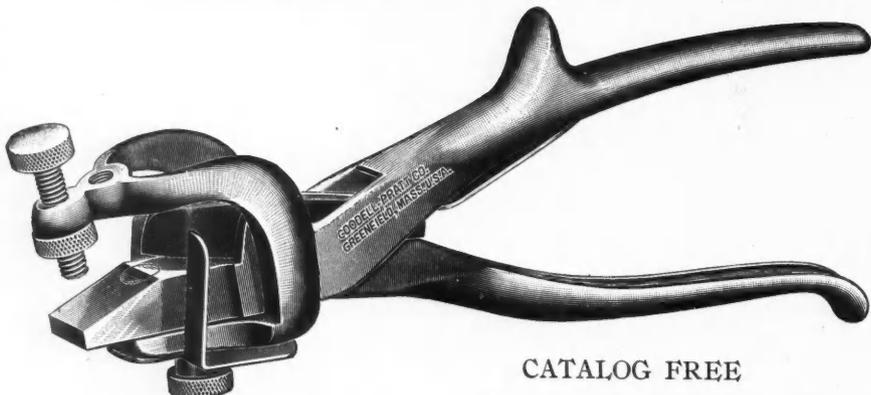
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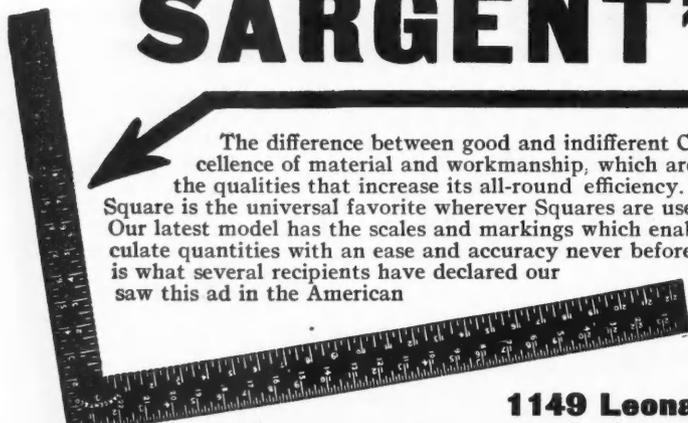
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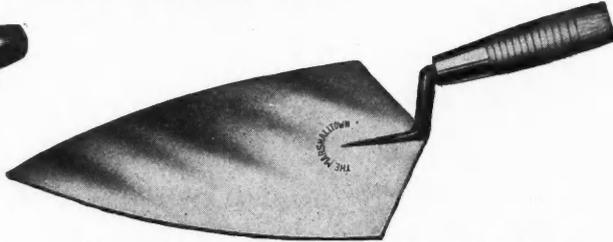
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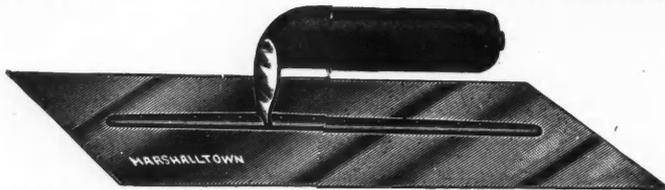
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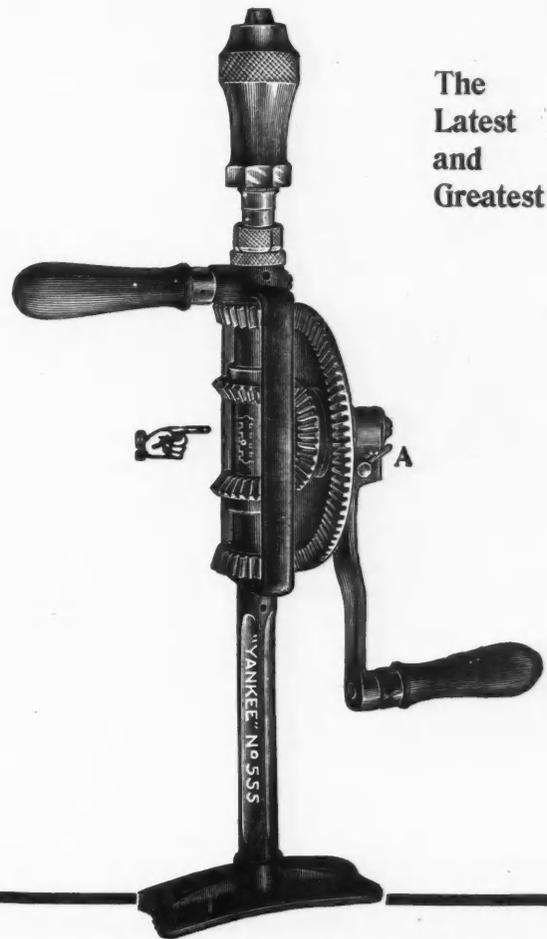
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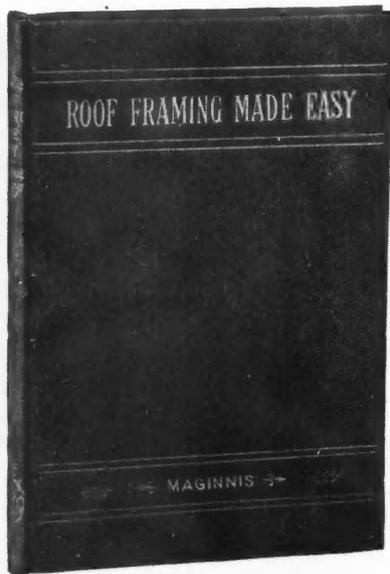
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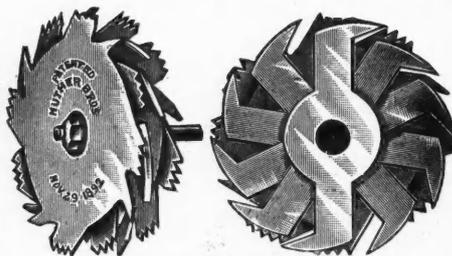


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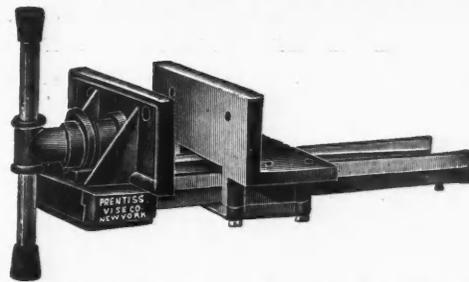
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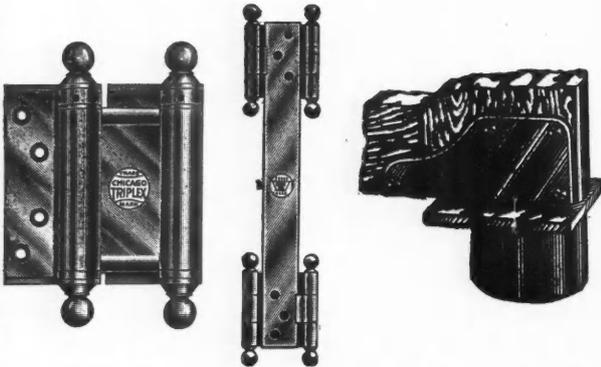
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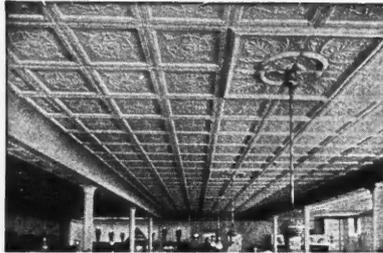
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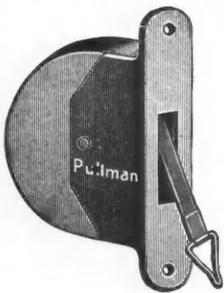
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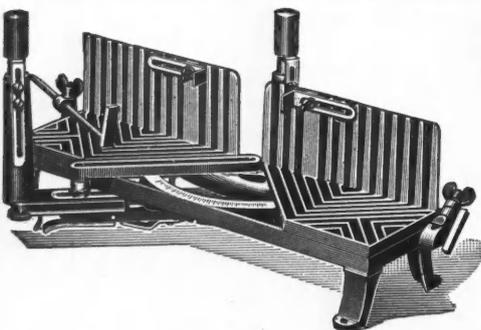


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Beware of the Flies

FLIES are really dangerous. This fact is admitted by doctors and scientists of all nations.

The Chicago Board of Health in its circular of July 27, 1908, states the case strongly as follows, and it should be seized upon as vitally important by the carpenters and builders who are in just the position to do good along this line—and furnish the screens!

"Fly screens are recognized by the health department as one of the most efficient preventatives of diarrheal diseases and typhoid fever.

"They should be put in early in fly time and used continuously until snow flies.

"Keep the fly out of your house and away from your

food and sickness will be greatly lessened.

"Screen your windows. Begin now in your warfare against flies. You cannot begin too soon. This precaution may save your life."

No matter how clean the neighborhood, alleys, etc., the fly will find some filth and as likely as not, decaying animal matter which sticking to its wings and gummy feet, will get into your house and be deposited as deadly poison in your food. The best precaution is to fit all windows and doors on every job with good screens and see that the same are hung before the flies come.

Without proper screens fly time is more to be feared than war time.

Forestry Without State Interference Urged

IN ADDRESSING the National Lumber Manufacturers' Association recently at New Orleans Henry S. Graves, the new chief forester, discussed the problem of private forestry and proposed a plan for a general test by southern lumbermen of the practicability of forestry on their own holdings.

"The more I study into this subject of private forestry," said Mr. Graves, "the more I am convinced that what is needed is not immediate legislation but an immediate beginning of the practical operation of forestry, and I am convinced that the results of such a beginning will be conclusive evidence that American lumbermen are fully capable of meeting the conservation problem both from the standpoint of the permanent requirements of the lumber trade and from that of the continued prosperity of the public at large."

Forester Graves held that for most large owners to introduce forestry immediately over their entire holdings would not be practical from a business standpoint, because this would involve making a considerable investment in the dark. It could not be told now either what forestry would cost them or what it would bring them. Further, a preliminary working out of the exact methods of cutting and fire protection needed should be obtained. Therefore Mr. Graves proposed: (1) That those lumbermen who are interested in this matter make an immediate test of the practice of forestry

on their holdings; (2) that this be regarded as a beginning with a view of ascertaining the possibility of forestry, rather than an attempt to establish an organized system of forestry over his entire holdings; (3) that to accomplish this object they associate themselves together either through their trade associations, or by a new association, in order that through co-operation and partnership the expenses of forestry may be reduced to a minimum; (4) that each owner set aside from 1,000 to 10,000 acres as a practical demonstration ground; (5) that there be employed by the association a forester to direct the technical work, his salary and expenses to be properly prorated among all the members; (6) that each owner employ such local guards or rangers as are necessary to carry out the fire regulations, restrictions of cuttings, etc.

Mr. Graves warned the lumbermen that if they did not themselves move in the matter they were likely to find the public taking action to prevent the impoverishment of states through forest destruction. "There is no question," he said, "that there is a strong tendency toward state legislation looking to some kind of restriction on private lands. Bills have actually been introduced in state legislatures having in view legal restrictions as to how the timber should be cut. The American people, when aroused to the need of a given reform, are impatient to have it accomplished at once. My own program would be for the private owners to recognize that they have a responsibility to handle the property so that it will not result in an impoverishment of a state, and that the state should recognize its responsibility to aid the private owners in carrying out the necessary conservative management."

♣ Court Costs in Accident Suits

A MEMBER of the Minnesota commission to secure information on an accident compensation law, has been investigating the number of cases brought in the courts of Hennepin county during 1908 and 1909, for personal injury. It is found that there were 348 personal injury cases, and 570 other civil cases. Of the 348 injury cases, the plaintiffs in 100 cases were successful in securing verdicts, their awards amounting to \$79,209. It is estimated that the costs of the courts, the juries, with the court attaches for the proportionate amount of the total cases, aggregates \$79,334, or \$125 more than the verdicts secured. The court costs include the salaries of two judges, two stenographers, two deputy sheriffs, and two deputy clerks, with miscellaneous expenses such as care of the juries, extra meals for them and other items. Of the 248 who failed to secure verdicts, some received such nominal verdicts that they are disregarded. Some of the verdicts were for \$25 and up to \$100, and many were below \$500.

This showing indicates what a waste of time and money the present system involves, and there is no one, outside the attorneys who prosecute or defend the cases, that can be said to profit in the slightest by it.



Texas Philosophy

"Many a man," remarked the homegrown philosopher, "spends his courting-days in telling a girl that he is unworthy of her, and his married life in proving it."

His Reading

"Do you read all the books you buy?"

"No," answered Mr. Cumrox; "my leisure is used up in reading the advertisements that persuade me to buy them."—*Washington Star*.

Gems of Indexing

The following are to be found in the catalogue of the Squantum Corners Public Library:

Bacon, Its Preparation.

" on Inductive Reasoning.

Lead Poisoning.

" Kindly Light.—*Leslie's Weekly*.

He Overlooked the Judge

Two lawyers before a probate judge got into a wrangle. At last one of the disputants losing control over his emotions, exclaimed to his opponent:

"Sir, you are I think, the biggest ass I ever had the misfortune to set eyes on."

"Order! Order!" said the judge, gravely. "You seem to forget that I am in the room."

Oratory

The chairman of the school committee was addressing a meeting at the teachers' institute.

"My friends, the schoolwark is the bulhouse of civilization; I mean—ah——"

The chairman here became slightly chilled.

"The bulhouse is the schoolwark of civ——"

An invisible smile began to make itself felt.

"The warkhouse is the bulschool of——"

He was evidently twisted.

"The schoolbul is the housewark——"

An audible snigger spread itself over the faces of the audience.

"The scowse hool——"

He was getting wild. So were his hearers. He mopped perspiration, gritted his teeth, and made a fresh effort.

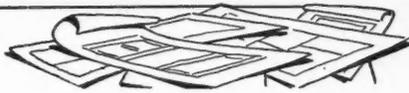
"The schoolhouse, my friends——"

A sigh of relief went up. Ah-h-h! Now he has got his feet under him again. He gazed suavely round. The light of triumphant self-confidence was enthroned upon his brow.

"Is the wulbark——"

And that was all.

DETAILS of CONSTRUCTION AND FINISH



CHARLES P. RAWSON



Cornice Framing—Fireplace Design

WORKING DETAILS OF TWELVE SIMPLE CORNICES FOR FRAME BUILDING—PRACTICAL FIREPLACE WITH BEAUTIFUL BRICK MANTEL—ALL DRAWINGS TO SCALE

IN ACCORDANCE with a request from one of our readers we present this month, the details for twelve cornices in wood, such as are commonly used in domestic architecture. The details cover a large variety of styles and methods of construction. Figures 2, 8, 9 and 10 are details of open timber cornices which have been largely used since the bungalow gained popularity. This type of cornice is capable of great variations in treatment ranging from the plainest and cheapest as shown in Fig. 2 to the more elaborate and costly work as shown in Fig. 10.

In cheap work the show rafters are simply main roof rafters extended; but in better work they are often of better material sawed to pattern and set at a different angle; this gives the roof a slight curve as in Fig. 8. This curve should not be too great however, as it then defeats its own end by becoming a vulgarity rather than a refinement in design. Pieces sawed to pattern and nailed to the rafters as in Fig. 10, give a very pleasing effect in elaborate bungalow construction. It is sometimes desirable that an extra lining under the roof boards be nailed next to the rafters as in Fig. 8. This, of course is omitted on the main roof.

Figures 6 and 7 show details of box cornices which are usually employed only when the building has a hip roof. Fig. 6 is adaptable with a slight change to masonry buildings. Figures 1, 3, 4, 5, 7, 11 and 12 are details of cornices with soffit closed.

Gutters are usually made or lined with tin, galvanized iron or copper, tin being the cheapest while copper is the best and most expensive. Galvanized iron gutters such as shown in Figures 2, 3, 4, 5, 9, 10 and 11 are largely used in frame buildings at the present time. They are not only durable but comparatively inexpensive. They may or may not be lined. The size and pitch of gutters may be much less than is commonly supposed and a gutter similar to that in Fig. 4 has been satisfactorily used when placed perfectly level. As a rule an accurate and uniform fall of 2 inches in 50 feet is ample. Many architects design large gutters to prevent clogging with snow and ice; but the advantage to be gained is doubtful as a large gutter clogs almost as quickly as a small one and thaws out much more slowly. Conductors or "down-spouts" should

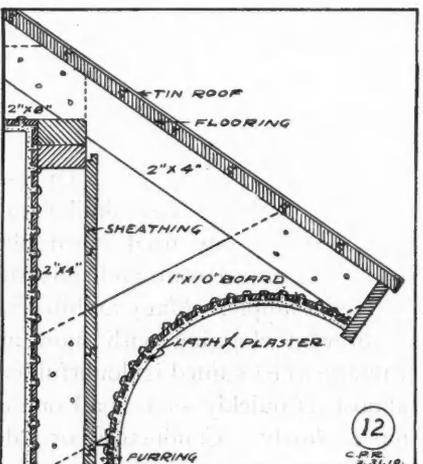
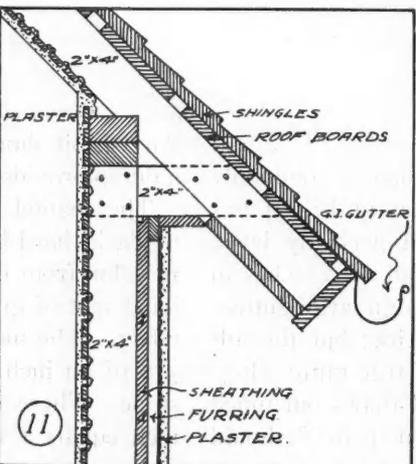
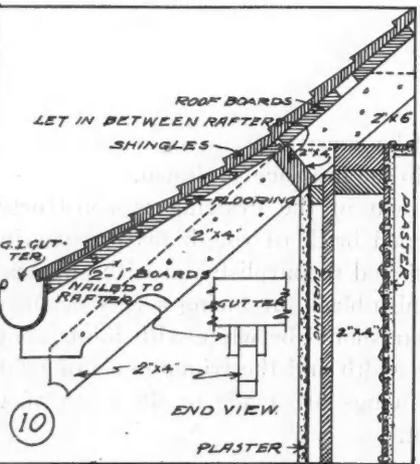
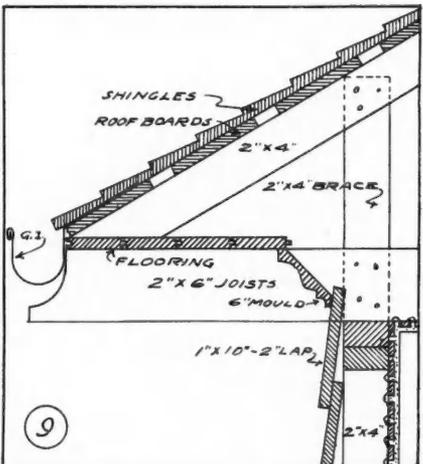
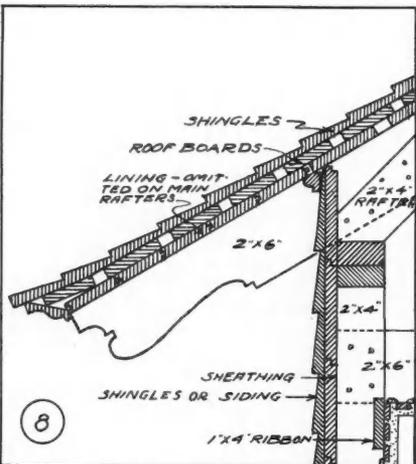
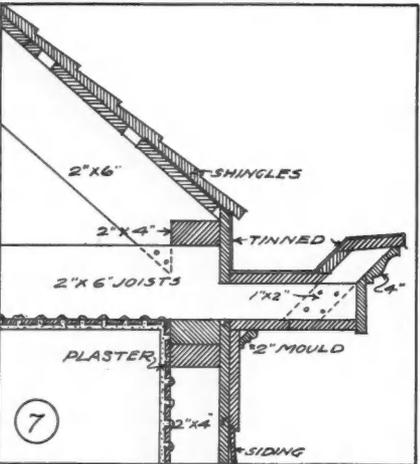
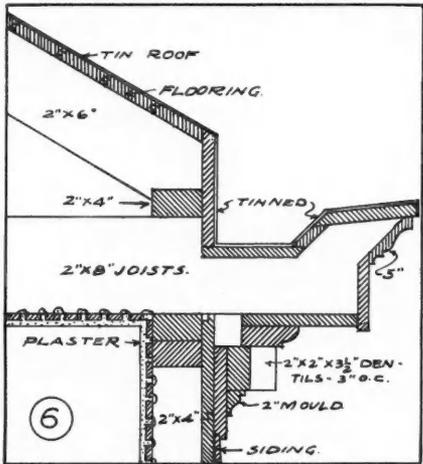
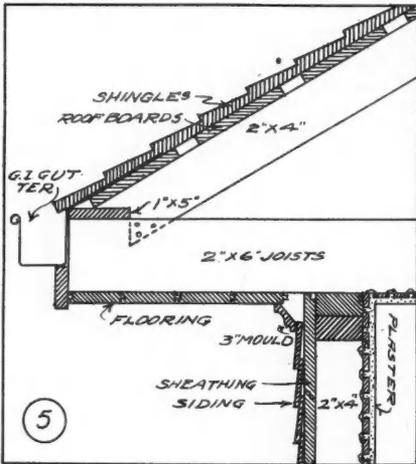
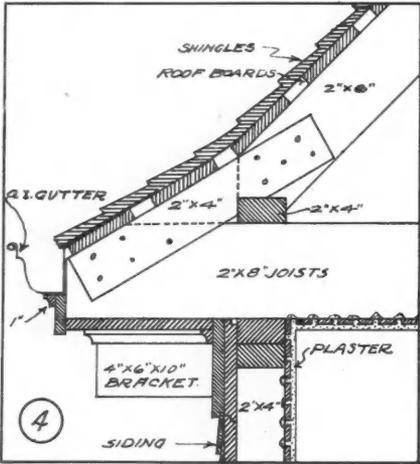
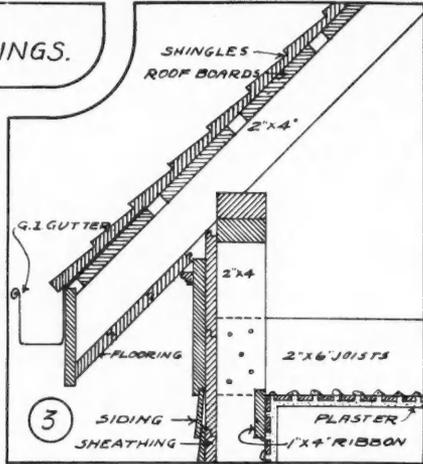
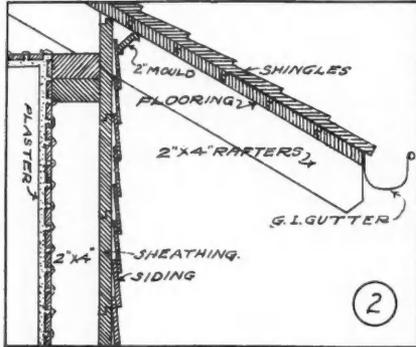
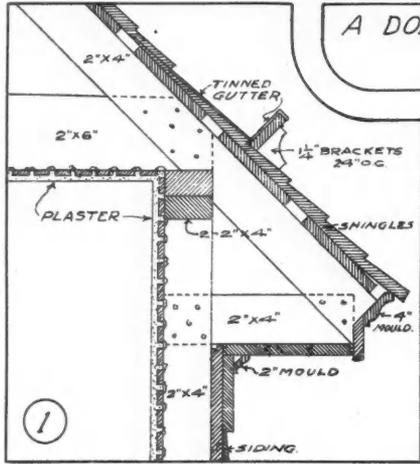
be made of the same material as gutters and should be either rectangular or octagonal in section rather than round. In applying shingles to a roof, less than one-third of the length of the shingle should be exposed to the weather and eaves should be always started with two full courses of shingles. Shingles on sides of buildings may be laid more to the weather than those on roofs. All these cornice details are drawn to the scale of $\frac{3}{4}$ inch equals 1 foot.

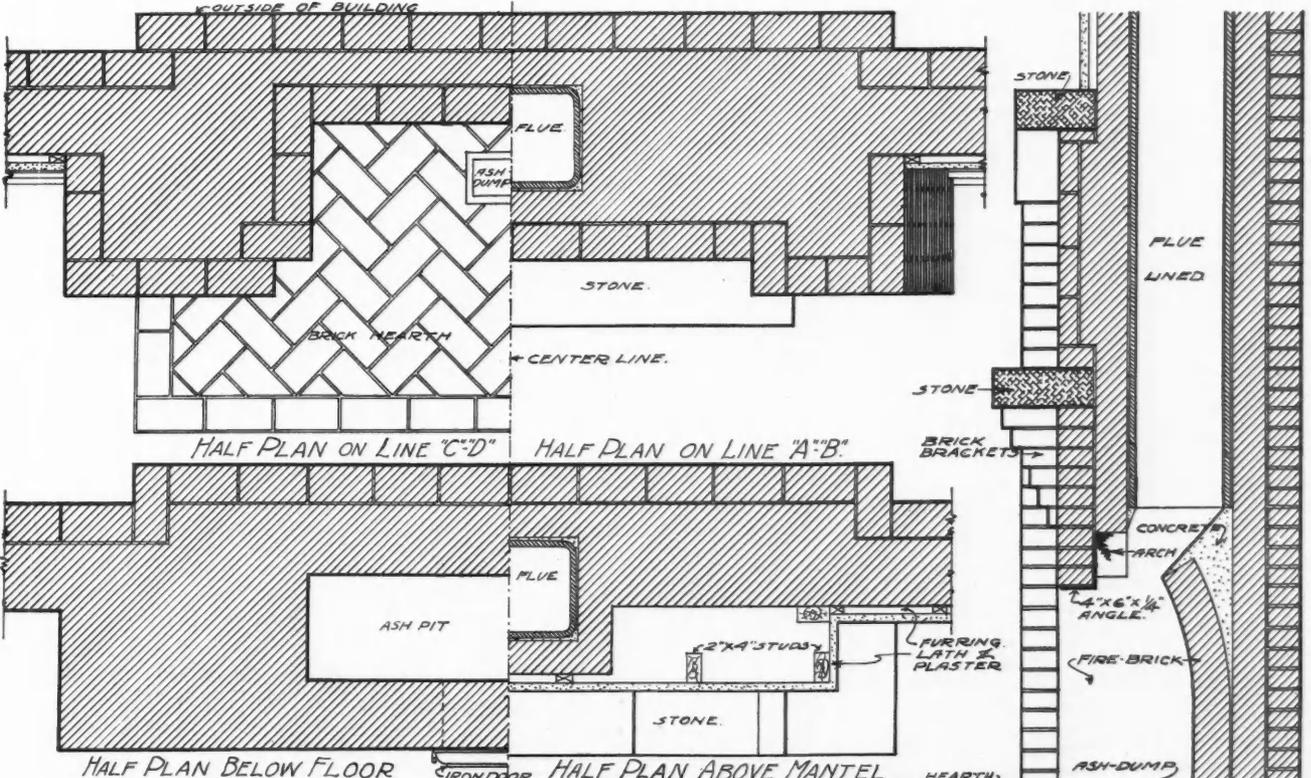
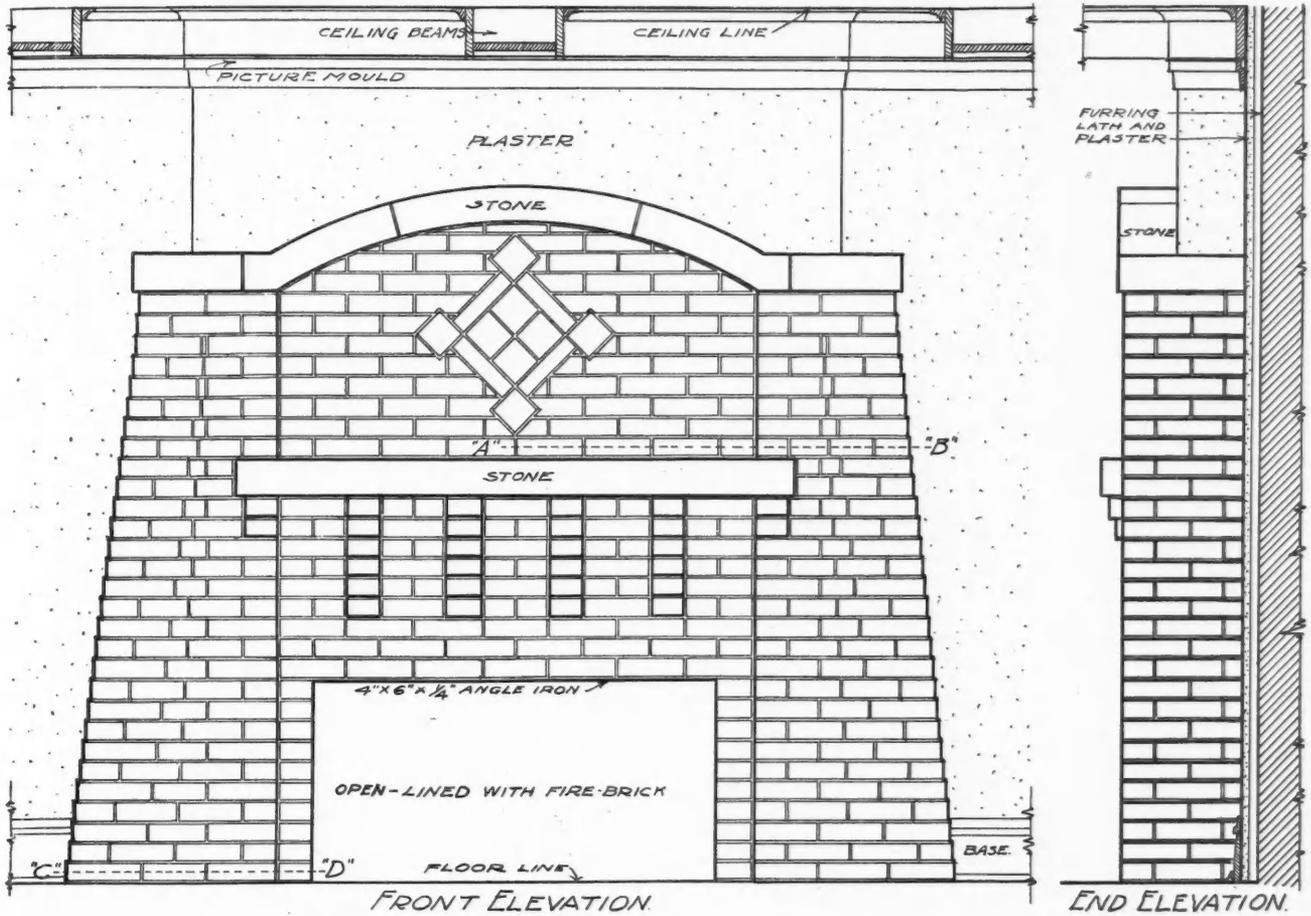
Fireplace Construction and Mantel Design

An attractive brick fireplace and mantel for a large living room or hall is shown in the accompanying drawings. A properly constructed fireplace should give a maximum amount of heat into the room and should not smoke. We have endeavored to show the very best construction for a fireplace of this kind. Experience seems to indicate that the area of the flue should be from about one-twelfth to one-tenth that of the fireplace opening. The throat should always extend across the full width of the opening as near the front as possible, and should be gradually contracted to the normal size directly over the middle of fireplace; then if necessary it may be deflected to one side or the other. If gathered directly to one side of the throat the draft would be stronger on the side nearest to the flue, and the fireplace would probably smoke at the other side. In the throat of many fireplaces a patented, cast iron tip or slide damper is built in. This will regulate the draft or permit the flue to be closed entirely and is very satisfactory if properly set. The flue should be lined from the throat to the chimney cap with a terra-cotta flue lining carefully set in cement with the joints made perfectly smooth on the inside. An ash pit should be constructed in the basement and a dump provided in the fireplace as shown.

The mantel shown in the drawing is constructed of dark, hard-burned brick of rough texture varying in color from dark red to purplish red with an occasional spot of greenish black producing a very beautiful effect. The mortar should be white with joints about $\frac{3}{8}$ of an inch in width and the trimming is of white stone. These drawings are made to the scale of $\frac{1}{2}$ inch equals 1 foot.

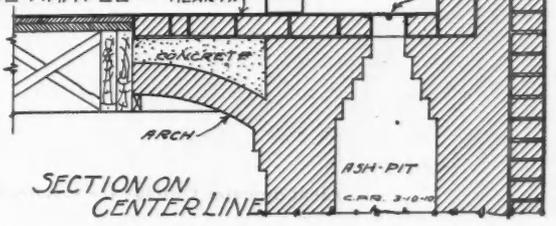
A DOZEN SIMPLE CORNICES FOR FRAME BUILDINGS.
SCALE: 3/4 INCH = 1 FOOT.

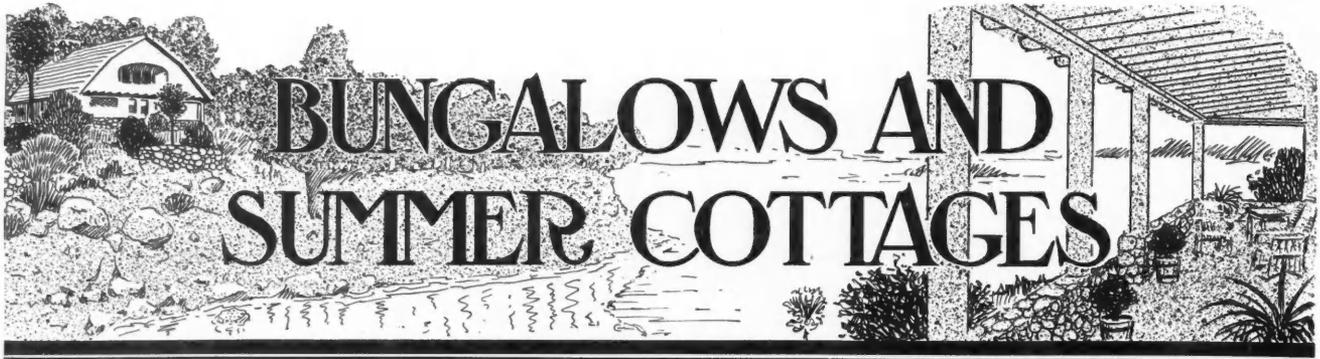




-DETAILS OF BRICK MANTEL-
SCALE 1/2" = 1 FOOT.

NOTE:
DIMENSION LINES ARE NOT GIVEN AS EXACT SIZE IS DETERMINED BY SIZE OF BRICKS USED. EACH "FACE BRICK" IS SHOWN BUT COMMON BRICK USED FOR BACKING ARE SHOWN IN SOLID MASS.





Suggestions for Design, Arrangement, Construction and Finish

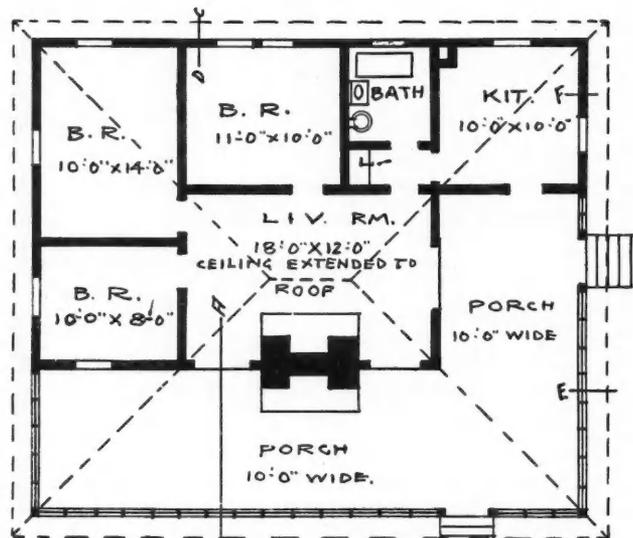
PRACTICAL AND TIMELY HELPS FOR ANYONE BUILDING A SUMMER BUNGALOW OR COTTAGE.

IN A general way it is understood that summer cottage building differs in several important respects from the accepted practice for ordinary residence work. At this time of the year, when the warm weather looms up ahead and the wise ones begin to plan for vacation time, it is in order to briefly point out some of these leading features of rustic summer building and to present some suggestions and designs that should help the carpenter when called on to do this kind of work.

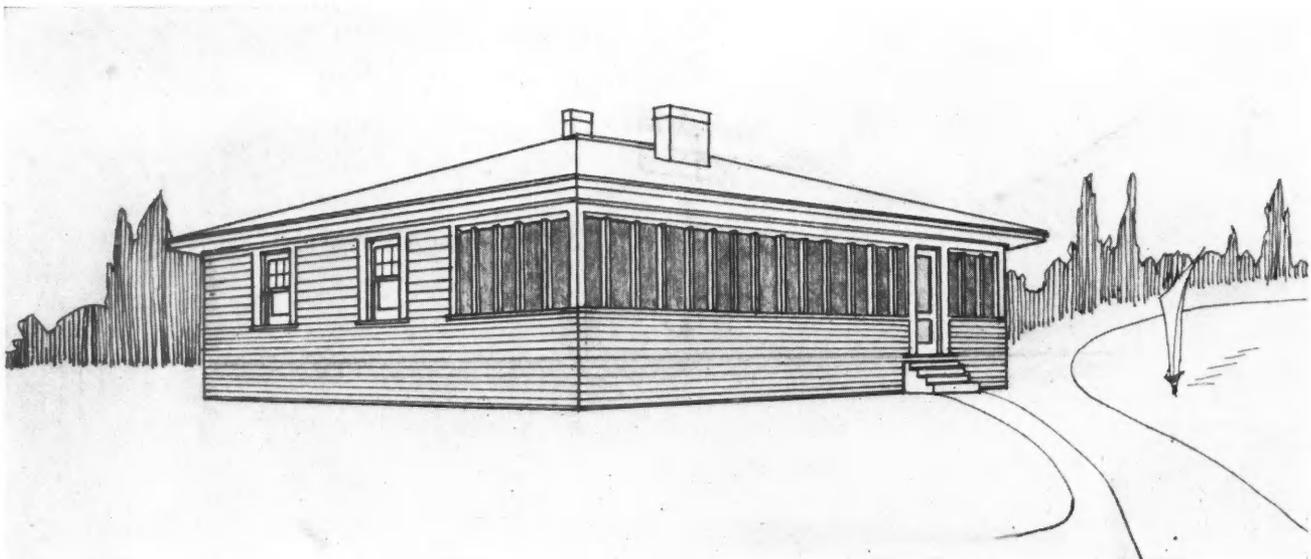
The points to be considered in summer bungalow or cottage building naturally group themselves under four main divisions as indicated by the heading, above; design, arrangement, construction, finish. And it is well to consider them in that order.

The location and surroundings of a summer cottage should determine its style and general outward appearance. So first study the building site. The rounding crest of a knoll is the ideal spot, assuring good drainage away from the building and keeping it free from dampness even when built down close to the ground. Accordingly for such a site a one-story cottage with the floor only two steps above the ground

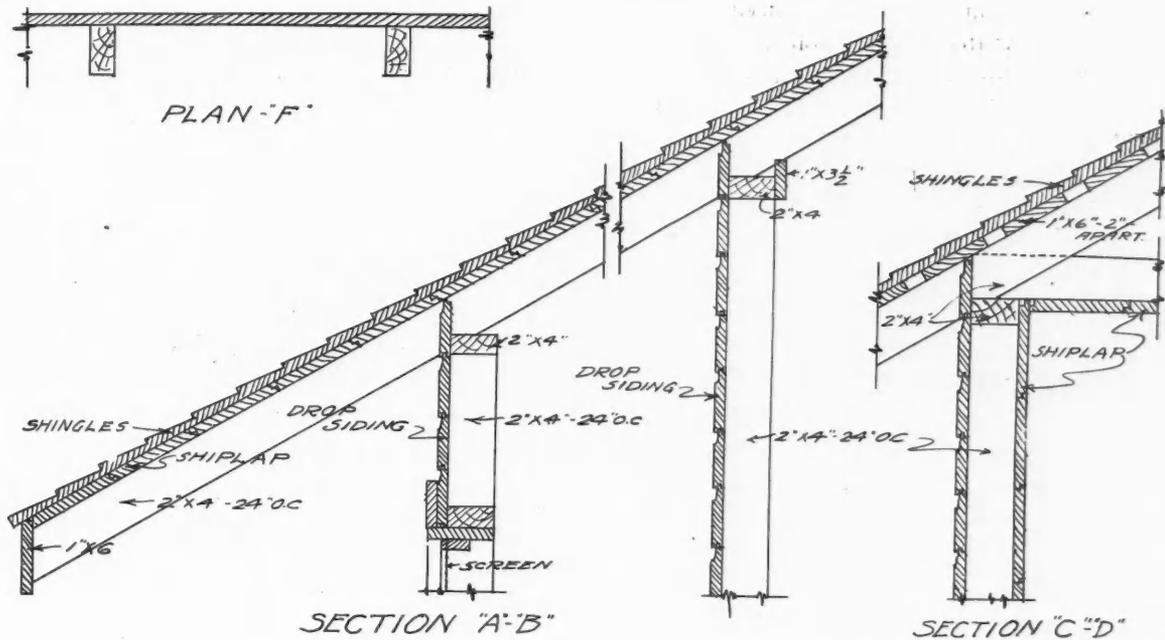
and with a low, broad roof is suitable. This is the popular lake-resort cottage, and is usually given a comfortable, rustic look by having the side walls shingled or covered with rough, stained boards. For



Floor Plan of Cottage, 34 by 40 feet



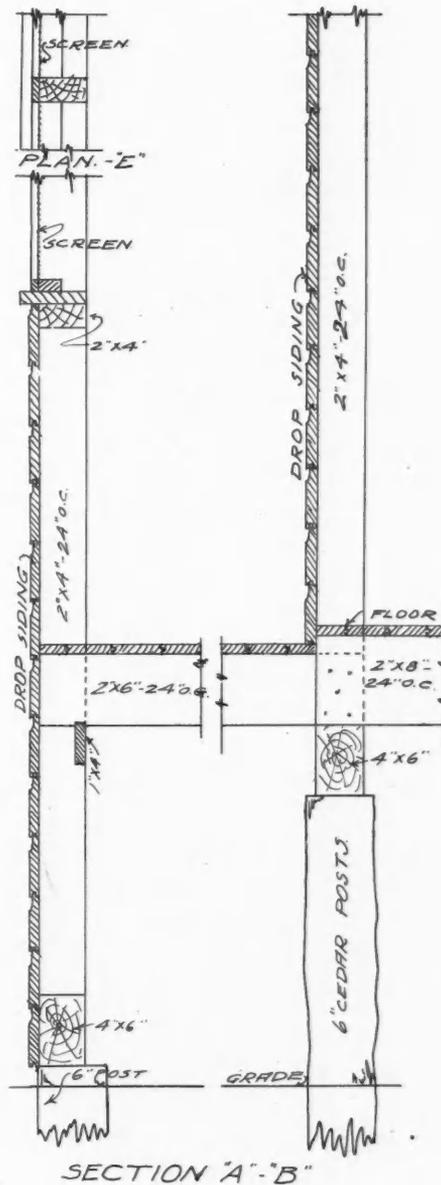
Ideal Summer Cottage for Comfort and Convenience at Low Cost—\$1100 Finished Complete



a hilly site, on the other hand, as in mountain resorts, level spaces of any great size are scarce and two-story "cottages" are accordingly more economical to put up; and when covered with slab siding, pole rafters showing, have a rustic appearance harmonizing well with the natural surroundings. But no matter where located summer cottages should be designed to look easy and comfortable; they are essentially unconventional, being built more for use than for looks. For this reason the simple, straightforward designs are the best and anything elaborate is out of place.

As far as the arrangement of space inside the summer cottage is concerned three things should be provided; a good, roomy porch—preferably screened in—for hammocks and rockers and general outdoor living when the weather is right; a good, big living or assembly room—can also be used as dining-room and should have a good practical wood grate for use on the rainy days and chilly evenings; and third, plenty of sleeping accommodations. A favorite arrangement for some of the larger cottages is to have a central living hall, with high ceiling formed by the roof, and small bedrooms on each side in a double tier, the upper ones reached from a balcony. If, in addition to these three things, suitable closet space and bathroom with good plumbing can be provided, all the comforts of an expensive city home are secured.

The construction of a cottage for warm weather use only does not need to be anywhere near so thorough and solid as that ordinarily employed for houses. Cedar posts are the accepted foundation materials; drop siding is used alone without sheathing and building paper; and the inside face of the walls is left unceiled except sometimes in bedrooms, bath, etc., where "shiplap" or beaded ceiling is employed. The accompanying drawings show some details of construction of the first summer cottage design. They may be



taken as fairly typical. It will be noticed that in this design the ridge of the hip roof comes exactly at the center of the living-room, the ceiling of which is

anyone building a summer cottage this season.

A Two Story Bungalow

Bungalows are with us to stay. Beautiful in lines,

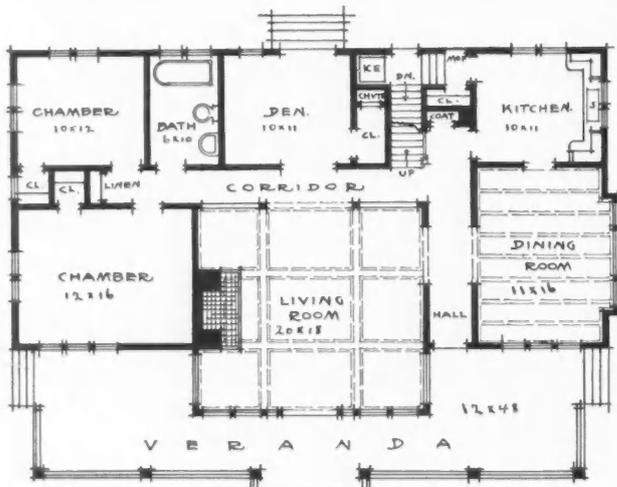


Artistic Shingled Bungalow Built for Chas. S. Taylor at Chautauqua, N. Y., Cost \$5,500, O. S. Lang, Buffalo, N. Y., Architect

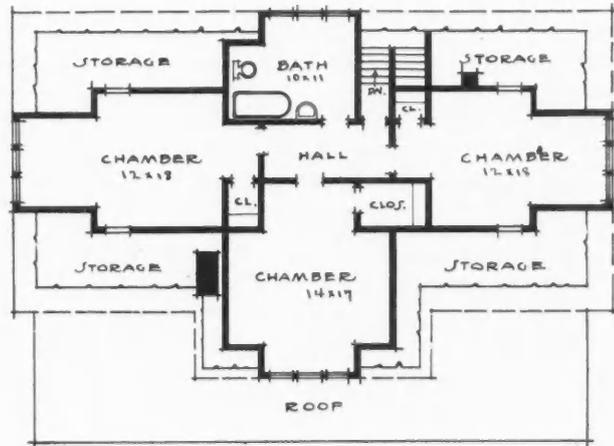
formed by the "shiplap" roof boards with the rafters showing.

The interior finish of summer cottages and bungalows, as well as many points of their exterior finish and design, can best be told by photographs of the finished work that has proved successful. The accom-

panying views should be interesting and valuable in this connection as showing some beautiful examples of rustic finish. The arrangements and general building schemes embodied should also be very useful to



First Floor Plan



Second Floor Plan

panying views should be interesting and valuable in this connection as showing some beautiful examples of rustic finish. The arrangements and general building schemes embodied should also be very useful to

appear squatty; it should have for a site, a lot set well above the street; if possible, upon a distinct hill; and one large enough to give it individuality upon the street; a corner is preferable, and if possible, with a

bungalow on the lot next to your lot. The setting and surroundings will make or spoil it; plenty of trees and shrubbery, carefully placed, together with harmonious tinting on the exterior, will make a beautiful home of a bungalow, with little outlay.

Many people say, "I like the effect of a bungalow, but I must have a deep, light cellar under the whole house, and I *must* sleep upstairs." The accompanying bungalow, by Architect O. S. Lang, was planned and built to fill these requirements; for while it seems to be only a one-story building, and a typical bungalow; yet it has a full height basement, sitting 3 feet above the ground; and by working in four well-balanced dormer windows in the roof, it gives three splendid sleeping-rooms and a bathroom on the second floor. The house appears lower than it really is; this effect is gained by building the roof with a 4-foot overhang, forming the cornice; and by the horizontal bands in the shingle work, gained by spacing the shingles alternately 7 inches and 2 inches, and by carrying the shingle work down to grade line. The basement concrete wall extends only 4 inches above the grade line.

The interior is very plain, but artistic; great care being exercised to have it all well balanced. The living-room, dining-room, den and hall are finished in quartered oak for trim and floors, the trim being finished in a brown Mission, the floors nearly natural, all rubbed down to a dull finish and waxed. The beam

ceilings in the main rooms add character to the finish, and give the low-ceiling effect desired in this order of building. The second floor is finished in cypress with yellow pine floors.

The fireplace in the living-room is built from boulders, gathered from the nearby fields. They are laid with a hammered face, and a black, flush joint.

The dimensions of this bungalow are 53 by 34 feet, not including the veranda. It cost complete \$5,500, which may be itemized as follows:

| | Material | Labor |
|-----------------------------------------------|----------|---------|
| Excavating | | \$ 100 |
| Masonry, chimneys..... | \$ 50 | 40 |
| Cement and concrete work..... | 150 | 125 |
| Lumber | 1,200 | |
| Millwork | 1,100 | |
| Plastering | 130 | 170 |
| Painting, exterior..... | 25 | 35 |
| Painting and decorating, interior.... | 60 | 90 |
| Plumbing and fixtures, contract..... | | 480 |
| Lighting, wiring and fixtures, contract | | 230 |
| Heating, hot air furnace..... | 150 | |
| Hardware | 125 | |
| Glass | 95 | |
| Carpenter work | | 1,145 |
| Total | \$3,085 | \$2,415 |
| Total material and labor..... | | \$5,500 |



Living Room with Mission Trim and Rough Stone Fireplace—Shingled Bungalow at Chautauqua



Inviting Summer Cottage of Japanese Flavor Near Manchester, Mass.. Roberts and Hoare, Architects

Summer Cottage of Japanese Flavor

A notable addition to the fine estate at Old Neck, Manchester, Mass., owned by Mrs. C. A. Munn of Washington, D. C., is the charming bungalow built recently from plans of Messrs. Roberts & Hoare, architects, of Manchester. It stands well back in a stretch of smooth shaven lawns, the approach being by a path of English stepping-stones in the center of

a wide grass walk. Within the inclosed porch are cosy, built-in seats, and on either side are small, nicely finished rooms; the one on the right is the kitchenette, where cooking is done by electricity, and the one on the left is the bathroom, equipped with the best open plumbing.

To the right and left of this inclosed front portion are uncovered verandas. The one on the right is pro-



A Good Porch Cozy-Corner Idea—Mrs. A. C. Munn's Summer Cottage

vided with an adjustable awning and fitted with comfortably cushioned seats.

The exterior finish of this cottage is of shingles,

at Nanepashemet, in Massachusetts, is the interesting little bungalow of Mr. Charles W. Parker, the well-known architect of Boston and Marblehead. It stands



Interior of the Munn Summer Cottage, Presenting a very Rich Effect though with Exposed Roof Framing

stained a soft moss-green, with trim painted white, and the roof is likewise shingled, but left unstained.

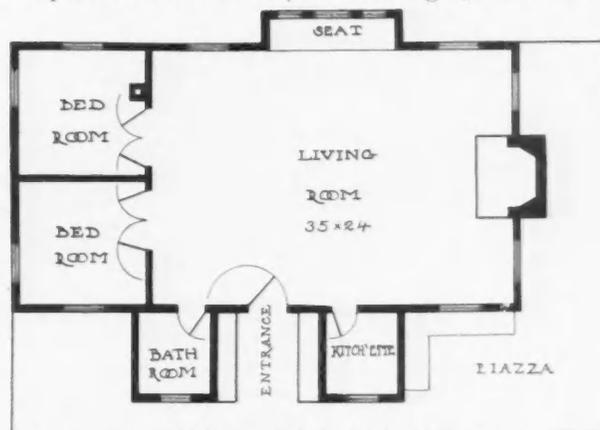
The entrance door opens into a large apartment open to the roof, which serves the two-fold purpose of living-room and billiard-room. It is finished in North Carolina maple stained to imitate cypress, and the wall space above the high wainscot is hung with a frieze of green burlap, edged at the ceiling with a deep wooden cornice. The floor is of hard pine, stained and polished. A feature of the room is the great brick fireplace arranged at one end, which is sufficiently deep to burn a five-foot log. At one side of the room, beneath the bow window, is a built-in seat, 2 feet in width, below which is a series of lockers for the storage of hammocks and rugs.

The bungalow is lighted throughout with electricity, and its cost complete was \$4,000. Much cheaper materials could be just as well used in its construction, reducing the cost one-half.

Picturesque Sea-Side Lodge

Crowning a rugged hill not far from the Causeway

upon what was formerly a bit of rough pasture land, overrun with a tangle of briars and savins, now transformed into a delightful little garden. It commands a superb view of old ocean on the right, while at the



Floor Plan of Japanese Cottage

rear it overlooks the waters of Marblehead Harbor, and in the distance, the quaint old seaport town of Marblehead, with its crooked, straggling streets, while



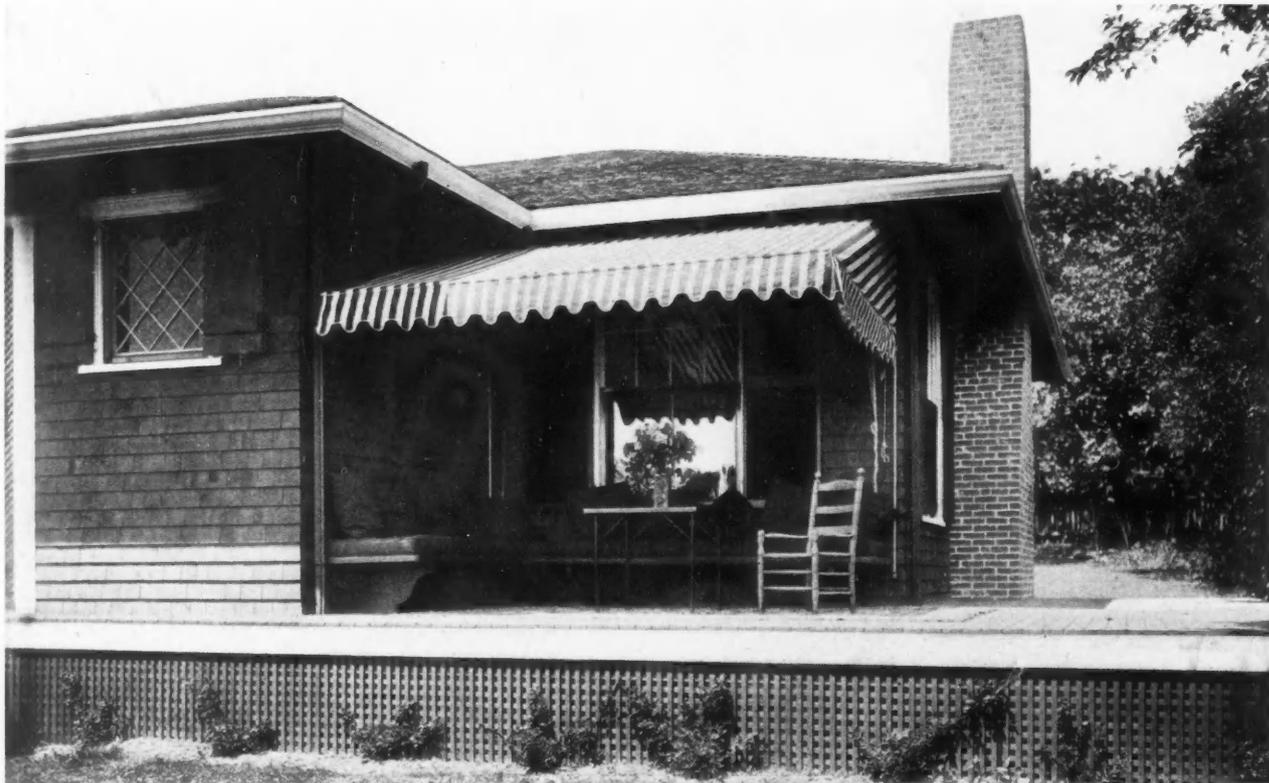
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stained a soft moss-green, with trim painted white, and the roof is likewise shingled, but left unstained.

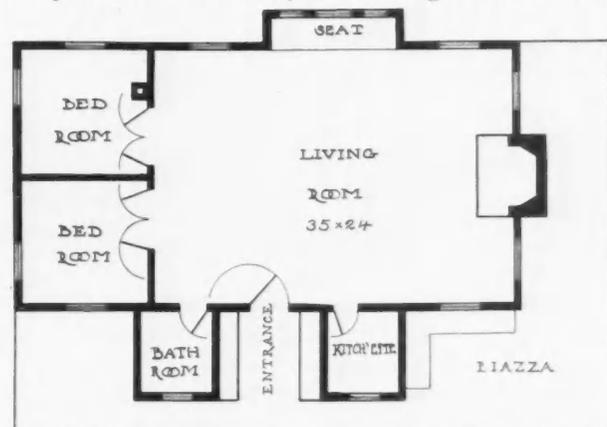
The entrance door opens into a large apartment open to the roof, which serves the two-fold purpose of living-room and billiard-room. It is finished in North Carolina maple stained to imitate cypress, and the wall space above the high wainscot is hung with a frieze of green burlap, edged at the ceiling with a deep wooden cornice. The floor is of hard pine, stained and polished. A feature of the room is the great brick fireplace arranged at one end, which is sufficiently deep to burn a five-foot log. At one side of the room, beneath the bow window, is a built-in seat, 2 feet in width, below which is a series of lockers for the storage of hammocks and rugs.

The bungalow is lighted throughout with electricity, and its cost complete was \$4,000. Much cheaper materials could be just as well used in its construction, reducing the cost one-half.

Picturesque Sea-Side Lodge

Crowning a rugged hill not far from the Causeway

upon what was formerly a bit of rough pasture land, overrun with a tangle of briars and savins, now transformed into a delightful little garden. It commands a superb view of old ocean on the right, while at the



Floor Plan of Japanese Cottage

rear it overlooks the waters of Marblehead Harbor, and in the distance, the quaint old seaport town of Marblehead, with its crooked, straggling streets, while

just to the front lies the fashionable summer colony of Nanepashemet.

The exterior finish is of shingle, painted white, and the deep, overhanging roof, which is thickly set with electric lights, is also shingled and stained red. Two

of the room, and to the right a broad window seat serves as storage place for bedding. Shelves have been fitted between the timbers of the framing, and make handy receptacles for books and bric-a-brac, while narrow shelves arranged above the door and window



Little Seaside Lodge of Chas. W. Parker, Architect, of Boston, at Nanepashemet, Mass.

large chimneys, one located at the side and the other at the rear of the bungalow, are interesting features, and are constructed of fieldstone picked up nearby.

The interior finish is of cypress, selected, planed and shellacked, and no sheathing is used. The entrance

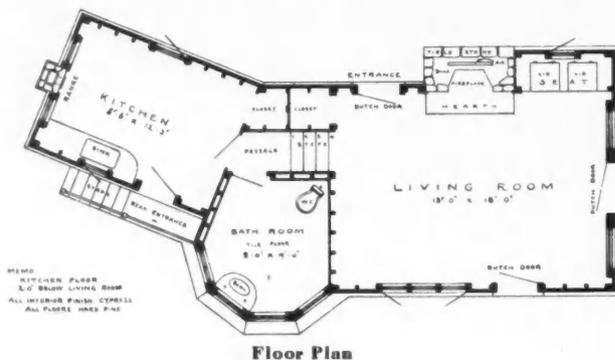
frames, serve to display several choice bits of china and pottery. All the furniture is either Mission or Colonial, and the comfortable couch arranged at one side serves as a bed by night, thus doing away with the necessity of a separate bedroom.

From the farther end of the room opens a small hallway, leading by a short flight of stairs to a passage-way, which connects with the bathroom, kitchen, and china closet, all located 2 feet below the level of the living-room. The bathroom is fitted up with the best open plumbing, and has a shower bath. The walls and ceiling are painted with white enamel, and the floor of white tile slopes slightly towards the center to allow the water to run off through the outlet which is provided. The kitchen is completely equipped, and the heating apparatus is a ship stove, which connects with the boiler to supply abundant hot water.

The house complete cost \$2,500, but if less expensive materials were used, it could easily be built for \$1,500.

Cottage by Author of "The Purple Cow"

A very interesting small house is the charming cottage (page 42) built for Mr. H. H. Haynes at Scituate, Massachusetts, at a cost of \$3,000. It was designed by Mr. Gelette Burgess, the well-known writer, who



door opens directly upon the living-room which is open to the rafters. The walls are painted white, and the floor is of hard pine wood, highly polished. Mirrors are set into the side of the wall, between the windows, increasing its apparent length, and Dutch doors open from each of three sides. A massive fireplace, constructed of fieldstone, occupies a position at one side

is a warm personal friend of Mr. Haynes. Mr. Burgess has for many years been interested in the study of architecture, and from early boyhood has delighted to contrive effects in cardboard, but the designing of this cottage was his first attempt at real house building.

The house stands on the crest of a sloping stretch of rough pasture land, overlooking the waters of Scituate Harbor, and the surrounding country. It is built close to the ground with a broad porch extending across the front and sides. The exterior fin-

the living-room. The one at the left is used as the dining-room; the one at the right for a music room. This is on a level two steps higher than the living-room. Directly back of the living-room fireplace is the kitchen connecting with the pantry, and servant's room.

On the second floor are five good-sized bedrooms, cypress sheathed, as well as a large bathroom, equipped with best open plumbing.

In every particular the house is ideal, and its many interesting and space-saving features make it worthy



Interior of the Parker Cottage with Rustic Trim and Dutch Doors

ish is cypress shingles, left to weather, with trim and blinds green painted.

The interior is sheathed up to the plate rail in cypress tinted a soft moss green, and the beams of the second story floor have been left exposed and stained to harmonize. A special feature of this interior is the fireplace with deep built-in closets on each side. They are finished on a level with the chimney mantel, and directly above are rows of shelves for books, lighting fixtures, etc., the whole forming a clever space-saving device, ingeniously contrived.

On either side of the fireplace are wing-like extensions, entirely distinct from, and yet a part of,

of more than passing consideration. It stands as a tribute to what can be accomplished by careful planning and little expense, and its harmonious and compact arrangement satisfies the demands of the successful small house.

Small Shingled Cottage

A small shore bungalow built on Scituate Beach, Massachusetts, last year for \$1,200 is also shown. (page 44.) This bungalow is 37 feet long and 21 feet 6 inches wide and is very well built, having hardwood floors throughout and hard pine beaded sheathing inside. It is set on cedar posts strongly braced; and the

space between grade and sill is sheathed up. The outside walls are covered with shingles stained, with painted trim. The pantry has case for china, shelves, cupboard and drawers. Kitchen has two cupboards and enameled iron sink. Fireplace in living-room is of brick with brick mantel corbelled out. Chambers are

try. It needs only a little personal inspection to become thoroughly satisfied that the manner in which the majority of wells are constructed is not satisfactory.

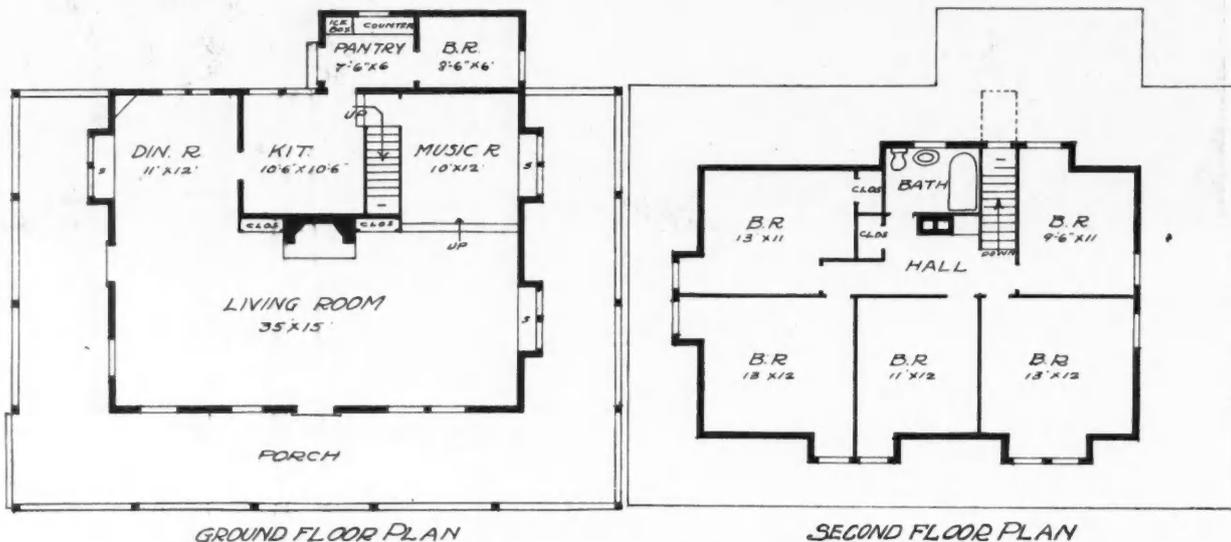
The position of the well is usually decided, first, by its convenience to the dwelling-house, and in many



Summer Cottage of H. H. Haynes at Scituate, Mass., Designed by Gelette Burgess

fitted with neat bunks, two in each chamber. All inside work is stained; chambers and living-room a light green, dining-room, a warm brown, kitchen, natural.

cases personally visited, the well was found to be placed within 6 feet to 10 feet from such dwelling-house. Often pigstyes were adjoining; at least, in one or two instances the pump was fastened to the pigstye



Rural Wells

Water is frequently obtained by digging into the ground at a convenient spot and to the required depth, such depth being very variable and depending entirely on the geological formation of the surrounding coun-

try, while the cesspool was not more than 20 yards distant.

Thus the impurities from the soil, from defective drains, and cesspools, readily gain access to the well and foul the purer water.

It is therefore not surprising to find that the majority of wells for farmhouses and in villages yield water which—to make a plain statement—is always liable at any time to become the means of spreading disease.

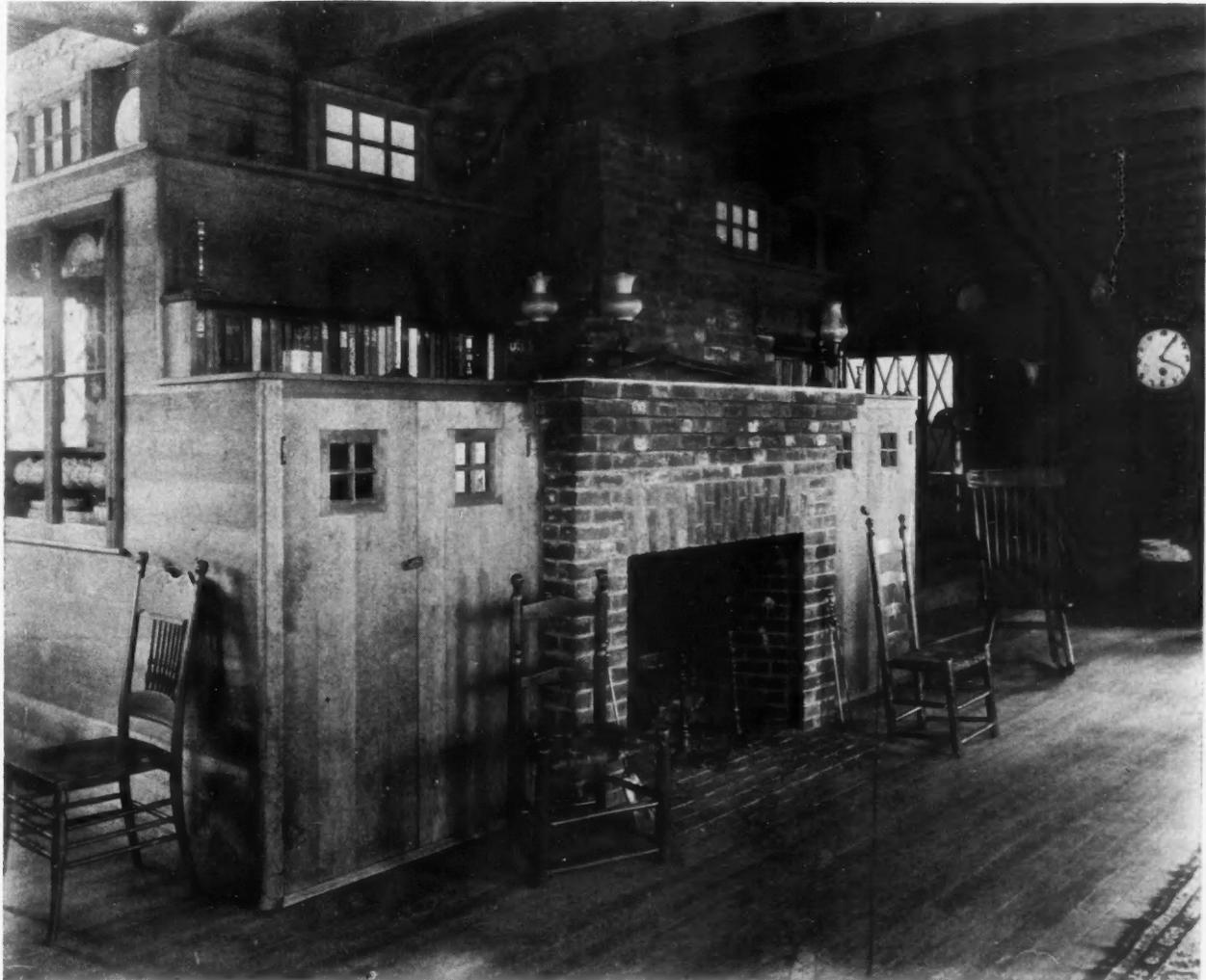
It is astounding to listen to the ignorant speeches and to witness the apathy of some farmers, especially should the water from their well be abundant in quantity. To them it is an excellent supply, quality being a secondary consideration.

These farmers, however, should they be dairy farm-

houses in many villages, without their becoming polluted. It therefore becomes necessary to sink wells of a greater depth, this depth depending on the geological formation of the ground.

Deep Wells

A deep well is one which is sunk through an impervious strata until a water-bearing strata is reached. In the construction of such a well practically no water is able to enter except from near the bottom. In this manner it must of necessity pass through a con-



Interior View in Haynes Cottage, Showing Many Fine Ideas for Interior Trim

ers, are occasionally alarmed by the visit of the sanitary officer or the medical officer of health from a neighboring town. Then, when the question of a fresh water supply is suggested, and afterwards demanded, these farmers, although indifferent and scornful at first, often prove loudest in their praises when a new and perfectly pure water supply has been obtained, thanks to the skill and energy of the sanitary engineer.

The water supply to many farms and villages is from shallow wells, and it has already been explained how the water in these ordinary surface wells is readily polluted; at least, it is a difficult matter to sink surface wells in connection with farmhouses, or the

siderable thickness of ground, thus becoming thoroughly filtered and purified as it finds its way into the well.

In excavating such a well it will be obvious that the sides must be lined or steined to keep out the water from the pervious subsoil. In some cases bricks were used for this purpose, the whole of the brickwork being lined with cement.

A much better method is to use cast or wrought iron cylinders for lining the upper portion of the well in order to keep out the subsoil water. It must be borne in mind, however, that the cost of sinking these wells, as compared with boring, is so excessive that

nearly all deep wells are now bored, for not only is the cost much less, but as the bore-hole is lined with wrought iron the possibility of contamination is reduced to a minimum. S. BARLOW BENNETT.



Three Million Matches Struck Every Minute

By the end of the brief minute taken to read these paragraphs the nations of the civilized world will have

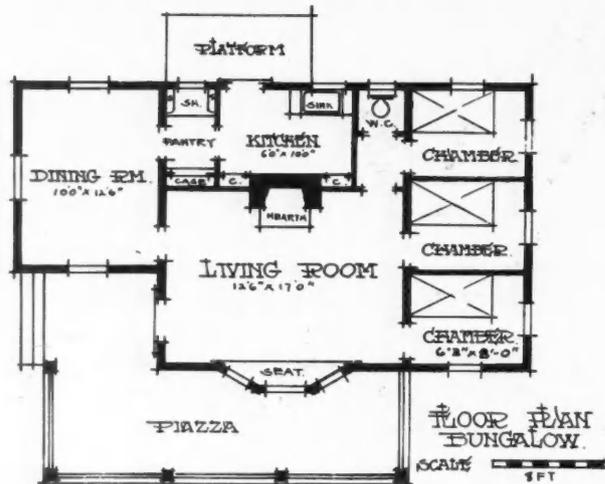
other material ignited by friction is only recognized when the average smoker tries to contemplate his predicament if he had to go back to the time when he had to coax a spark from a tinder box. Of course, the answer is, he would smoke a great deal less because of the difficulty in getting a light, or else, on the other hand, smoke continuously in order to keep alive the fire at the end of his stogie or Havana, pipe



Small Shingled Cottage at Scituate Beach, Mass., Cost \$1,200; W. F. Barlow, Jr., Brockton, Mass., Architect

struck three million matches. This is the average for every minute of the twenty-four hours of the day. Fifteen hundred billion is the enormous number for the entire year, and those living under the American

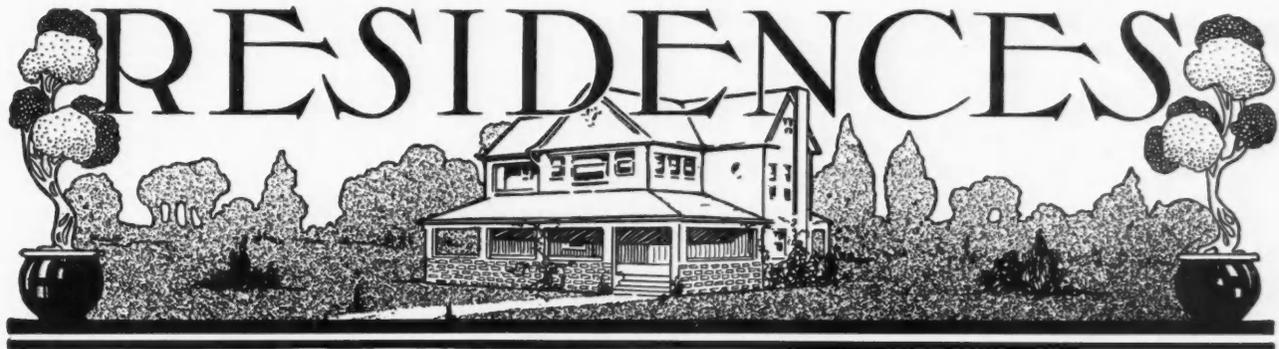
or cigarette, as the case might be. Small and insignificant as it is, the match demands perhaps as much attention in the choice of the wood going into its manufacture as any other forest product. Only the choicest portions of the best trees are suitable. Sapwood, knotty or cross-grained timber will not do. Instead of being a by-product of other articles of manufacture the little match is turned out at hundreds of mills over the country where the by-products are bulky objects like doors, sash, shingles, siding, posts, and cordwood. The pines, linden, aspen, white cedar, poplar, birch and willow are the most suitable match timbers.



flag are said to be responsible for the consumption of one-half of this amount.

The importance of the industry which turns out the little splinters of wood tipped with sulphur or some

The matchmakers—not the matrimonial kind—are already finding that the amount of choice timber available is dwindling. Forest conservation, if applied to the holdings of the match companies, like it is on Uncle Sam's national forests in the west, will do much to make the supply sufficient for a longer number of years than would be the case if the old-time wasteful lumbering methods of a few years ago should continue. The rapid increase in stumpage prices is one of the chief factors in encouraging the wise use of the forests where suitable match timber is available.



Plans for Small Plastered House

COMPLETE SET OF ARCHITECT'S DRAWINGS FOR A VERY ATTRACTIVE CEMENT PLASTERED SEVEN-ROOM HOUSE

A RESIDENCE that will appeal to a great many as just about what they would like to build—being of moderate size and cost, yet of distinctive design and conveniently arranged—is illustrated herewith, the complete set of architect's drawings being shown, all drawn to scale and reproduced at good size so as to be of practical use for building.

This house is 33 feet wide by 24 feet 6 inches, has

first floor. The central hall is also good, with living-room and dining-room opening on either side. The kitchen is slightly cut into by the stair landing, but the low ceiling there in the rear is probably less objectionable than it would be anywhere else in the house.

Small conveniences mark the difference in house planning between just a place to live and a real home. The clothes chute from second floor bathroom down



Very Attractive Cement Plaster House of Small Size Designed for Mr. J. F. Brown, Chicago

four rooms on the main floor and three rooms and bath upstairs. An especially desirable feature of the arrangement is that it provides a bedroom on the

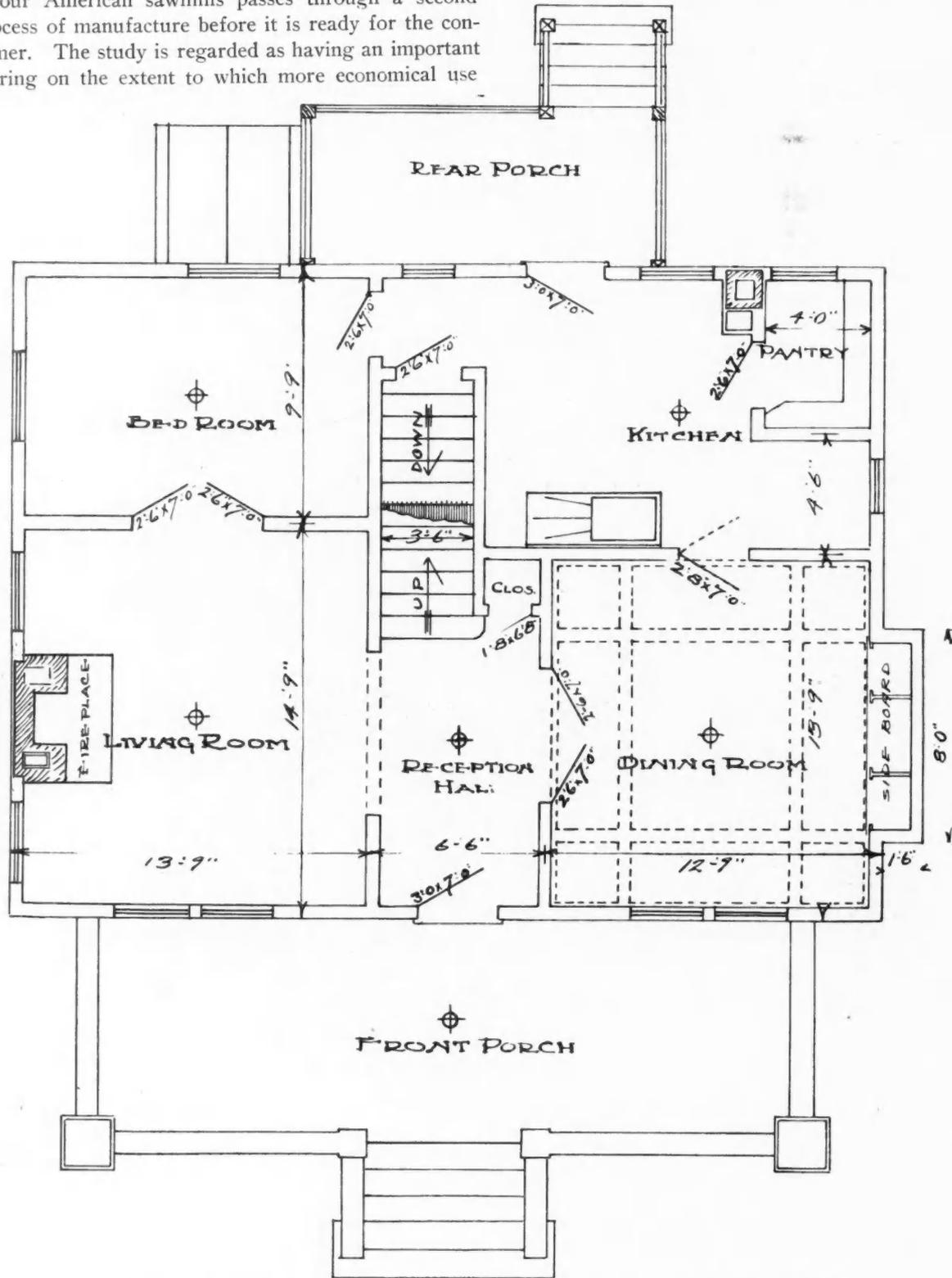
to the basement laundry is one of these small provisions that is a great saver of steps. Other desirable features will be found in the plans which follow.

Rough and Finished Lumber

The U. S. Department of Agriculture in connection with a study of the wood-using industries of various states is learning what part of the rough lumber output of our American sawmills passes through a second process of manufacture before it is ready for the consumer. The study is regarded as having an important bearing on the extent to which more economical use

it into a more highly finished and more valuable product.

In the United States waste in the woods, the mill, and the factory is so great that two-thirds of what was



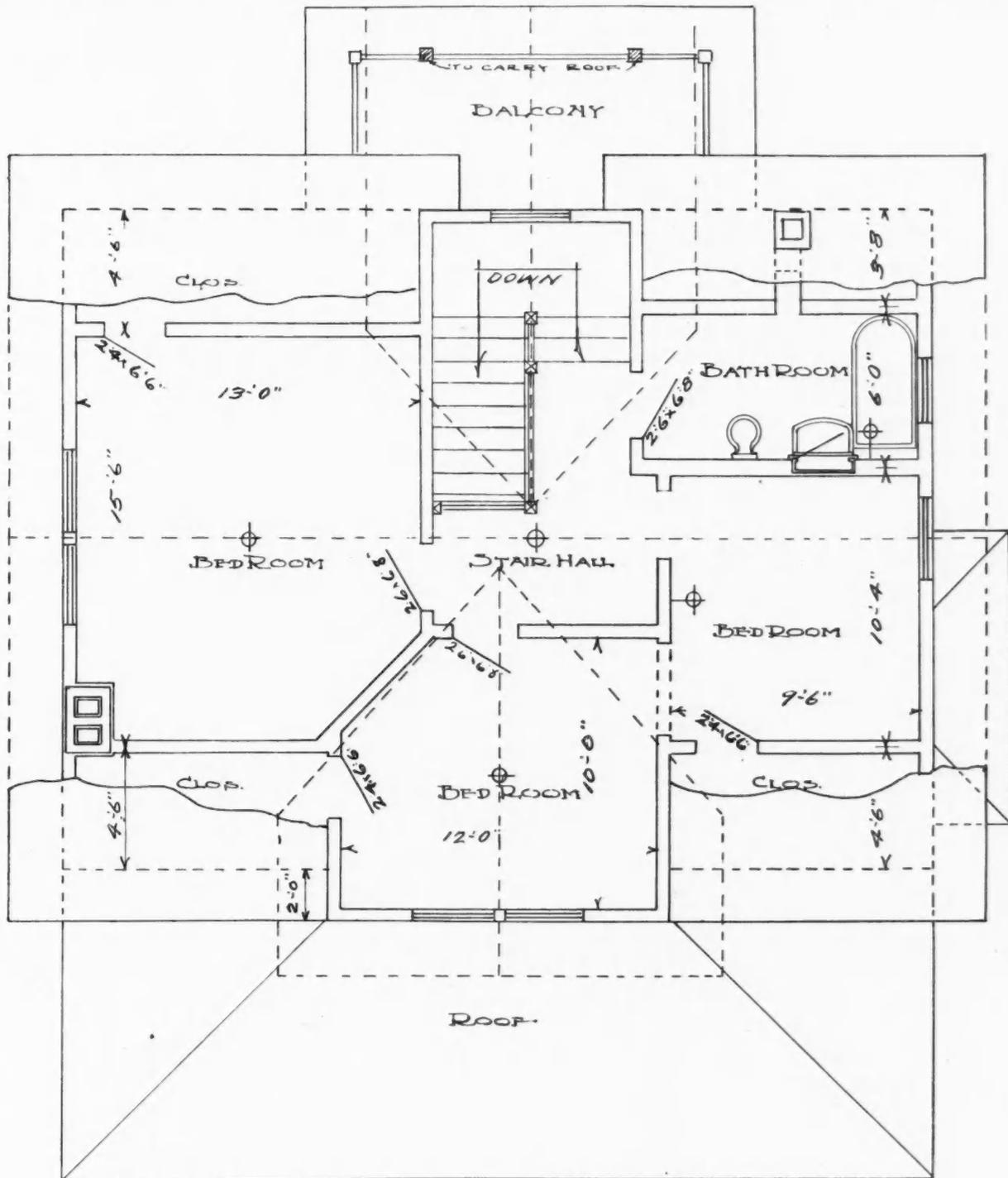
FIRST FLOOR PLAN—HOUSE, PAGE 45

of our forest resources can be brought about. So far, the results obtained show that more than five-eighths of the rough lumber sawed is to be counted as the raw material for other industries which convert

in the tree is lost on the way to the consumer. The heaviest part of this loss takes place in the sawmills. Much of this mill waste is unavoidable under present conditions, but the greater the demand for the product

and the higher its value, the better will economy pay. Waste in manufacture is very small compared with that at the sawmill. Study of the demands of the wood-using industries may be a means of finding out

ters, was classed as rough lumber; that made into flooring, finish, siding, sash, doors, frames, panels, stairs, boats, vehicles, boxes, baskets, turnery, woodenware, cooperage, musical instruments, farm imple-



SECOND FLOOR PLAN—HOUSE, PAGE 45

how the mill may profitably market a part of what now goes to the burner in sawdust, slabs, and trimmings.

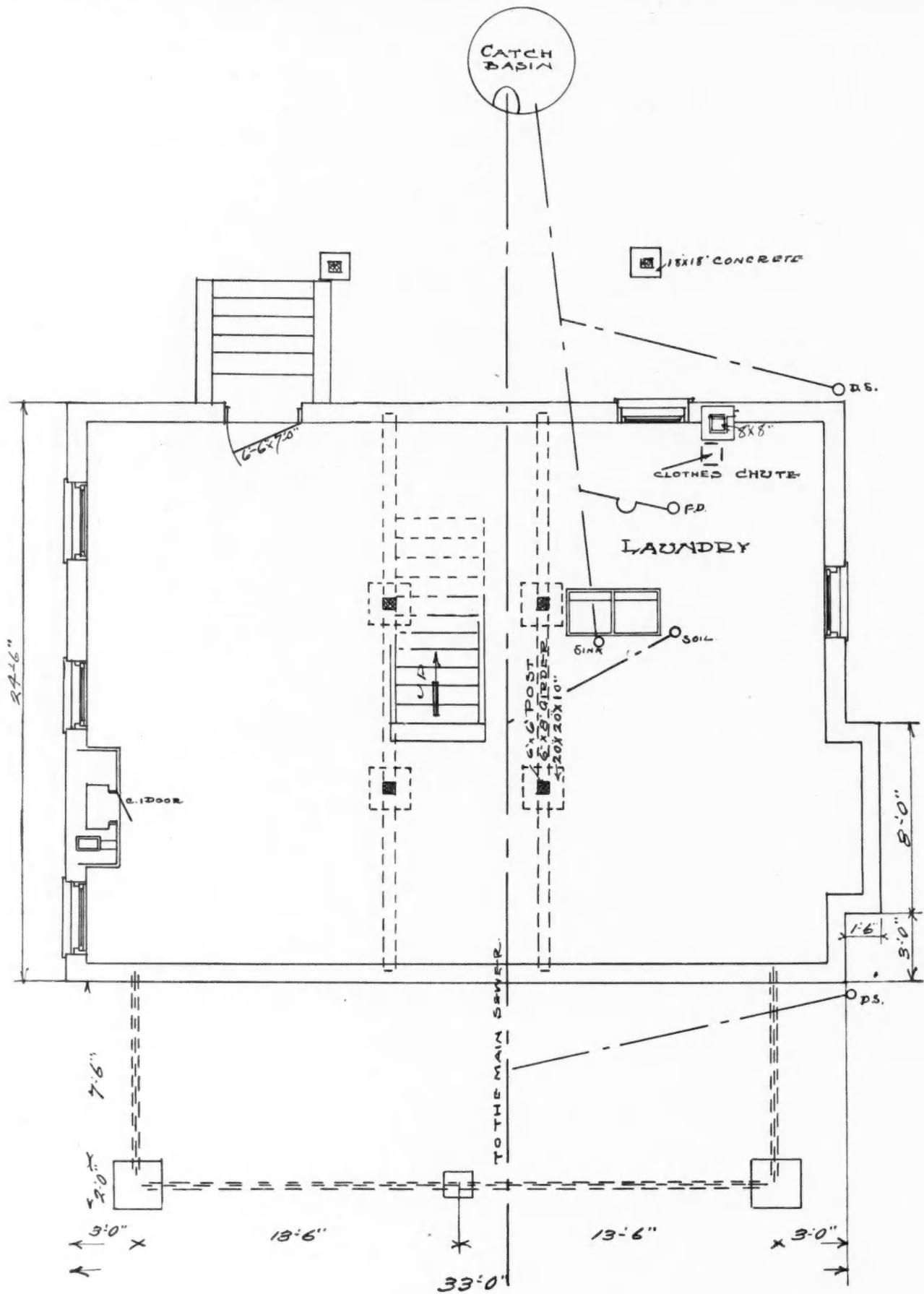
In making up the figures, lumber used as bridge timbers, house frames, farm fences, trestles, board walks, walls and similar classes of structures, with only such cutting and fitting as is given it by carpenter-

ments, furniture, spools, handles, and like forms, was placed in the class of finished lumber.



For Discolored Cement Walls

The following method of painting a cement wall was described at a recent convention of Canadian master painters. The building had become discolored in places



FOUNDATION AND BASEMENT PLAN—HOUSE, PAGE 45

and the joints were of a different color from the surface of the blocks. Two parts of Portland cement,

the material was applied, and then kept dry for a day, in order to make the cement wash adhere to the cement surface. The wash was applied with ordinary white-



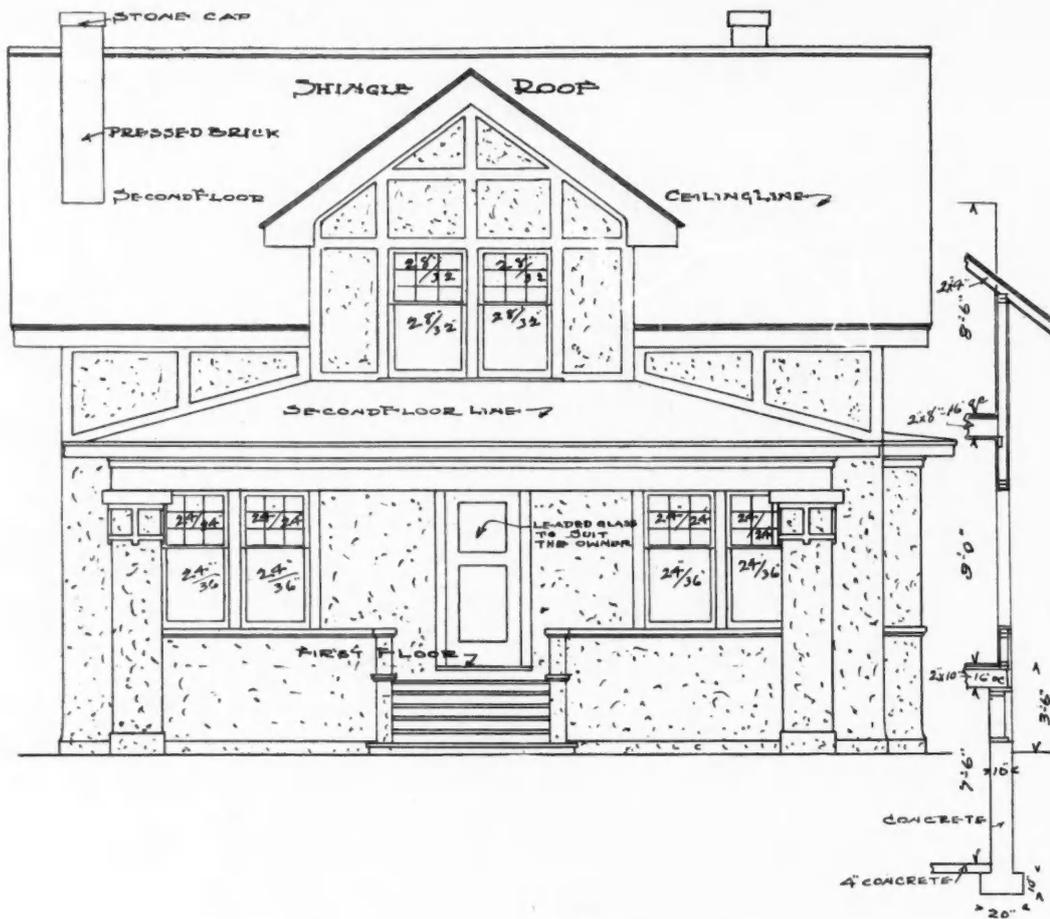
LEFT SIDE ELEVATION



RIGHT SIDE ELEVATION—HOUSE, PAGE 45

with water to the consistency of thin paint or a thick whitewash. The wall was well wetted before the application of this paint, and kept constantly wet while

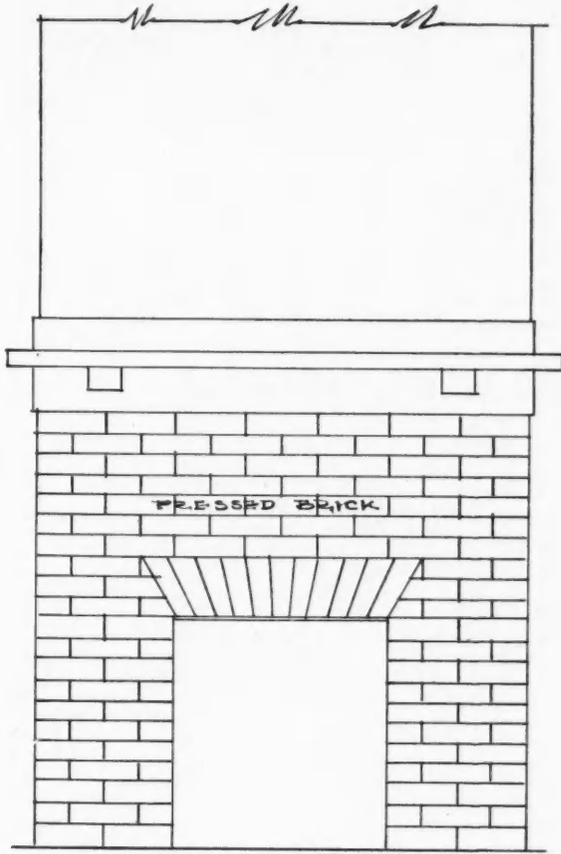
wash or calcimine brushes and a man was kept busy playing a spray on it while the work was being done. The whole secret lay in keeping the wall constantly wet.



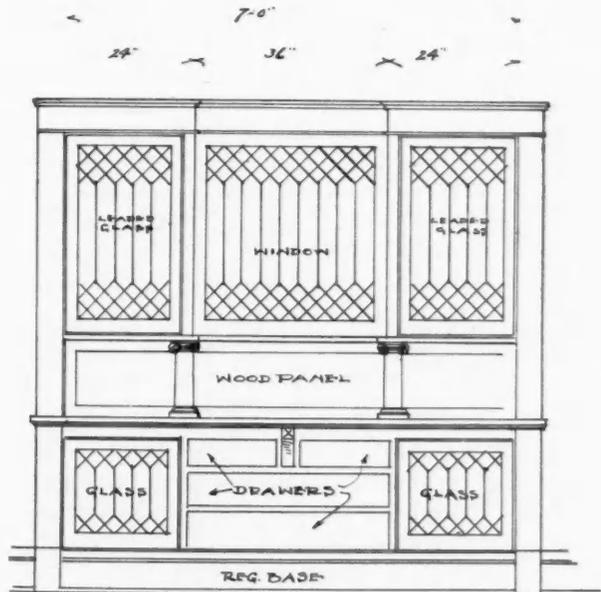
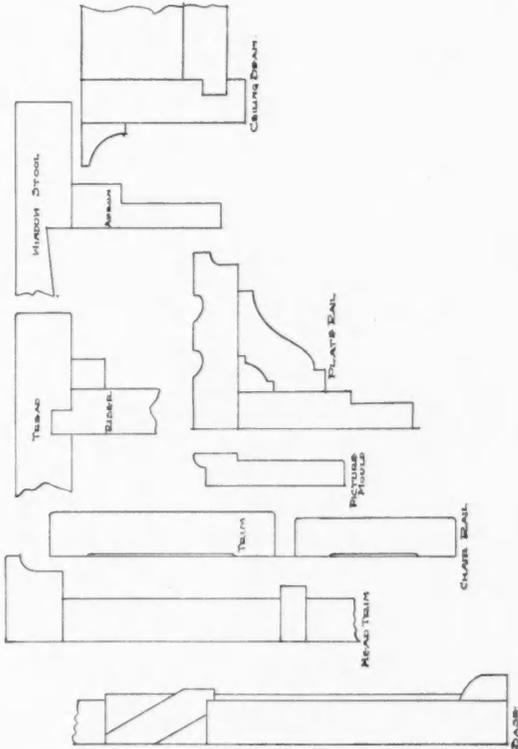
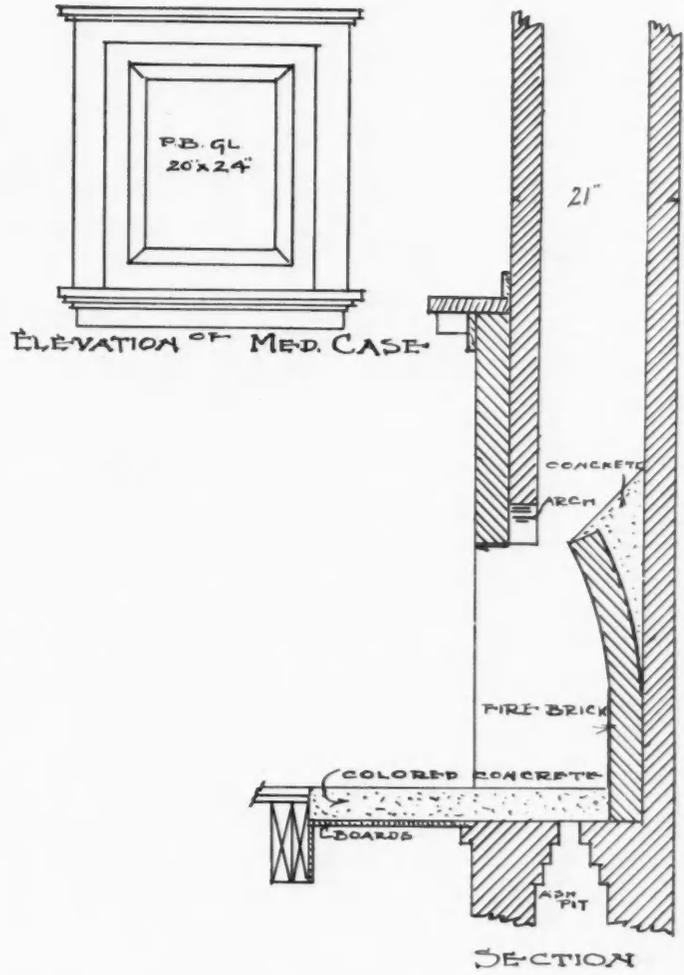
FRONT ELEVATION



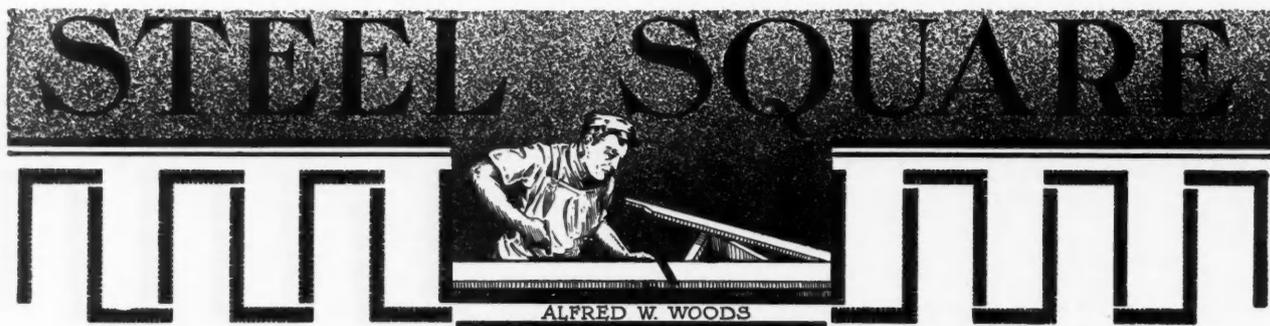
REAR ELEVATION—HOUSE, PAGE 45



ELEVATION OF MANTEL



ELEVATION OF SIDE BOARD



Problems of Roof Framing Solved

FIFTH ARTICLE—THE GENERAL RULE FOR FINDING THE LENGTHS AND CUTS OF RAFTERS FOR ANY SHAPED CORNER, REGULAR OR IRREGULAR

IN OUR last article we showed what part the miter of a corner plays in the framing of the rafters to work with that corner. If the rafters are of the same pitch on both sides of the hip, then the miter is regular, and the one set of figures on the steel square answers for the side cuts of the jack rafters for either side; also the angle formed by the blade and tongue respectively with the straight edge of the timber furnishes the plan or basis from which the other angles are obtained. If the rafters on one side of the hip are steeper than on the other, then the roof is irregular, and the cuts and lengths of the rafters are developed from the two angles that compose the quadrant of 90 degrees, as shown in Figs. 8 and 9 of our last article. For the equal pitch roof, the angles are equal each being 45 degrees. But in unequal pitches the run

did it thoroughly understands his work and business.

Say boys, isn't that the best kind of knowledge to have? Knowledge that is practical and useful and not something that some "Professor," who doesn't know any better tells you to use so and so and the result will be correct, saying that you do not have to know why it is so—just follow the rule and everything will be lovely! That kind of advice will do to give to some people, but not to the readers of the AMERICAN CARPENTER AND BUILDER. They are after the facts and that is what we want to give them—that is what we are here for.

Now then, we will illustrate the foregoing by showing the layout of two buildings, one with four and the other with five sides; yet what we say of one applies alike to the other.

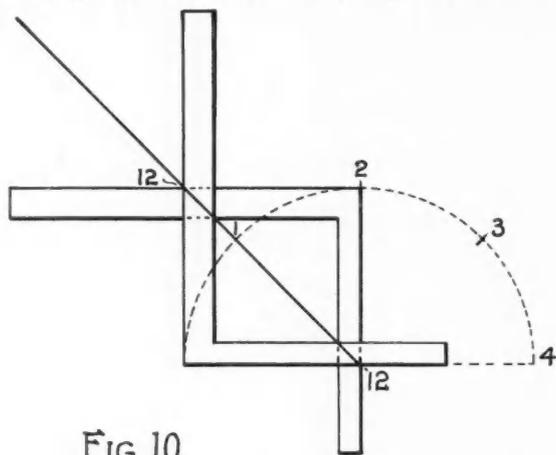


FIG. 10.

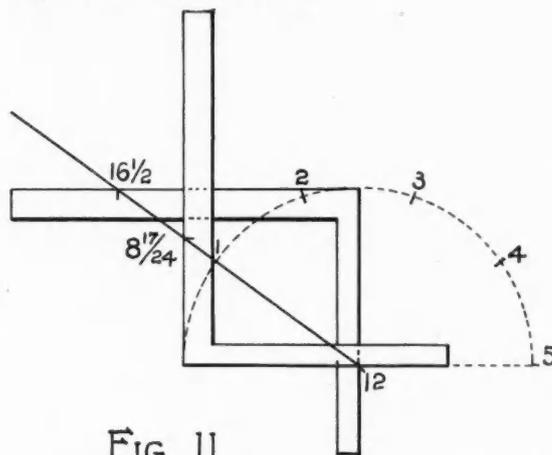


FIG. 11.

of the hip, being at the dividing line of the two angles, veers to the side on which the common rafters are the steeper; and the angles formed by it and the plate of the respective sides furnish the plan from which the lengths and cuts of the rafters are obtained. This applies to a corner of any conceivable shape; and when the student understands this one point, he has at once mastered what he may have failed to accomplish after reading volumes on the subject of roof framing and he will have that information stored away where he can draw on it and apply it at will to the steel square and the steel square to the timber; and after the timbers are set up in place they will show that the mechanic who

In Figs. 10 and 11 are shown a semi-circle, one is divided into four and the other into five equal parts. Now by placing two squares as shown, with 12 on the tongue at the center of the semi-circle and by drawing a line from this point cutting the first division, this line will be found to intersect the blade at 12 on both squares in Fig. 10 and at $8 \frac{17}{24}$ and $16 \frac{1}{2}$ in Fig. 11. In the former, either square gives the miter for the square corner, and in the latter for the pentagon; this is illustrated in Figs. 12 and 13 respectively. It will be noticed that the angles are identical, except that in the latter, the base and altitude of one of the angles is longer than the other.

Now the point we wish to bring out is that these angles are the same shape as the plan from which the lengths and cuts of the rafters are developed, as will be seen by referring to Figs. 14 and 15. The angles formed by A B C in these illustrations are in the same ratio as used in the former figures to obtain

give the side cut of the jack. Take A E (the tangent distance from the corner to the intersection with the first common rafter line) on one side of the square and A D' (length of the hip) on the other and the latter will give the side cut of the hip. As the jack rafter is a part of the common rafter, its length may be found by dividing the common rafter (B D) into as many spaces plus one as there are to be jack

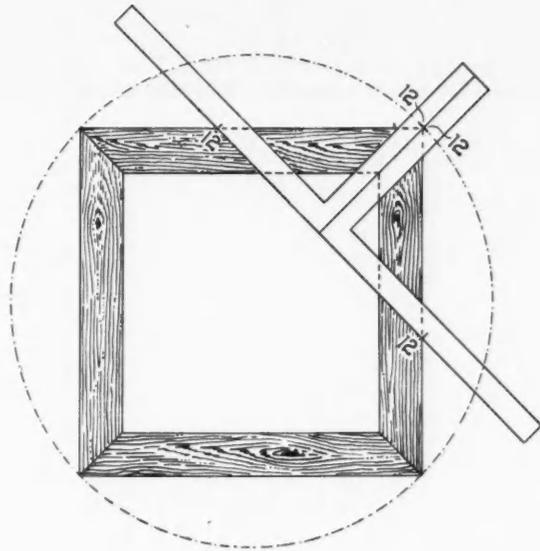


FIG. 12.

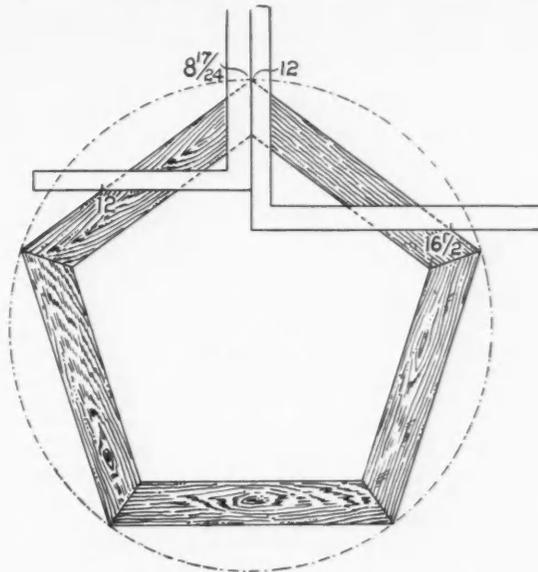


FIG. 13.

the miter. A B (the base) represents the distance from the foot of the common rafter to the corner of the plate; B C (the altitude) represents the run of the common rafter; A C (the hypotenuse) represents the run of the hip; C D represents the given rise for the common rafter and C D' the same for the hip; B D represents the length of the common rafter and B D' the length of the hip.

rafters from the common rafter to the corner of the plate. In these examples there are three spaces—consequently there will be two jacks, and their lengths are B a and B b, the distance B to a being the common difference. The dotted lines show their relative parts from the elevation to the plan.

As for the cuts, it is taken for granted that everybody knows that the run and rise of the rafters will give the seat and plumb cuts, so we will not dwell

We hope that we have succeeded in making this general rule idea clear so that it can be readily applies as the occasion demands. In the foregoing we have shown equal lengths of sides in the building,

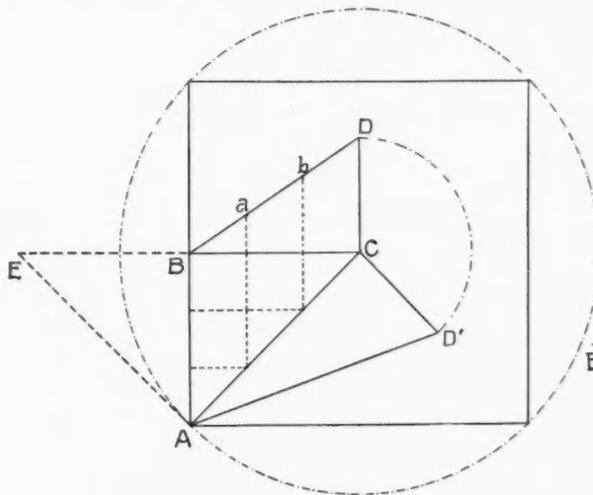


FIG. 14.

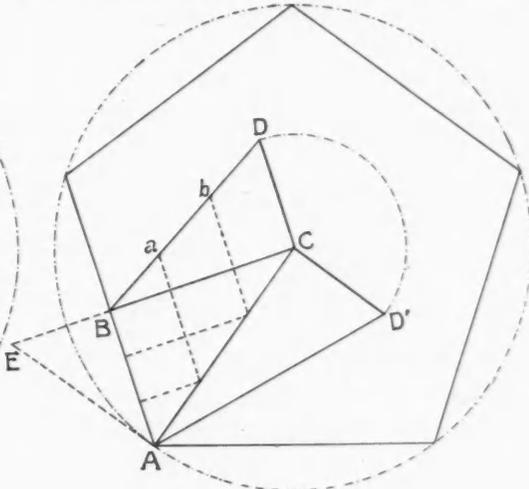


FIG. 15.

on that point; but the side cuts not being so well understood, may be found as follows:

but that does not necessarily follow that the rule will not work on irregular shaped buildings. Lay out a plan of the rafters for the different corners, as at A B C in the above illustrations and proceed as above described.

Take A B (distance of first common rafter from corner) on one side of the square and B D (length of common rafter) on the other, and the latter will

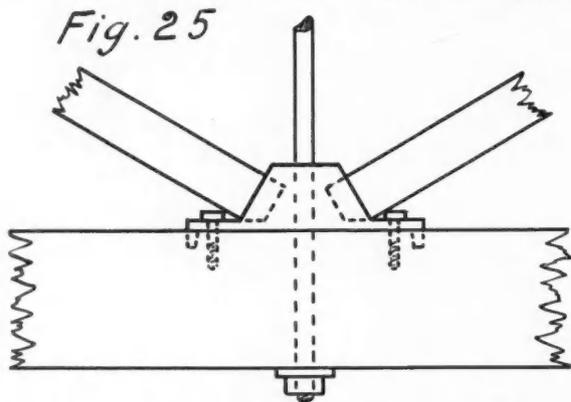


Joints in Heavy Timber Framing

THIRD ARTICLE—CAST IRON SHOES AND SEATS FOR TIMBER TRUSS JOINTS—USE OF STEEL RODS FOR TENSION MEMBERS

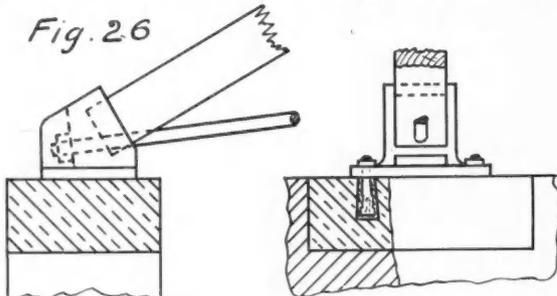
By T. B. Kidner

THE use of cast iron in forming the joints in structures of timber framing is now very general, chiefly because the bearing surfaces at the ends of the timbers can be cut square, thus doing away



with oblique shoulders and weak points which must occur when the joints are formed in the wood itself.

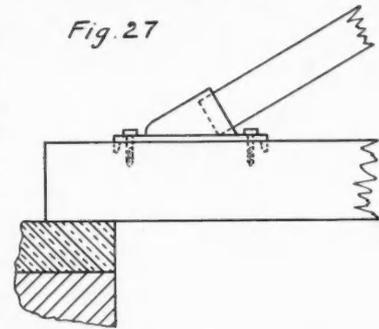
One of the most familiar examples of the use of cast iron in this connection is in the case of oblique struts and other members in bridge and roof trusses. Fig. 25 shows a shoe to receive two oblique struts, and it will be noticed that the casting is formed so that the struts are bearing at right angles on their ends; thus having the double effect of saving labor in cutting and giving the most effective bearing for a piece of timber. Another important advantage in the case of work exposed to the weather, such as in bridge trusses, is that rot is much less likely to occur when an



iron joint is used. It is well known that timber bridges exposed to the action of the weather always fail by the rotting of the parts about the joints. The straight,

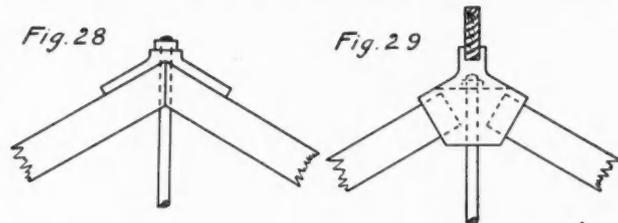
exposed portions of the timber speedily dry after rain or snow, but the joints become thoroughly soaked and dry out so slowly that rot is bound to occur, but not nearly so much when iron joints are used.

The use of iron tie rods in roof trusses necessitates the use of an iron shoe at the foot or bearing end of the principal rafter or raking member. Such shoes are usually somewhat of the form shown in Fig.



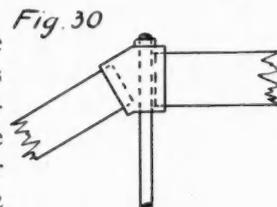
26 and are provided with flanges on each side, by means of which the shoe is held in place by a couple of rag bolts set in the stone template or bearing block.

Occasionally, iron foot blocks are also used on a wooden tie-beam, as shown in Fig. 27, because of the



advantages before mentioned which this plan has over that of forming the joint wholly in the wood. The lag screws serve to hold the shoe down firmly, but the real thrust is resisted by the lugs on each end of the shoe, which are sunk into the top of the beam as shown in the illustration.

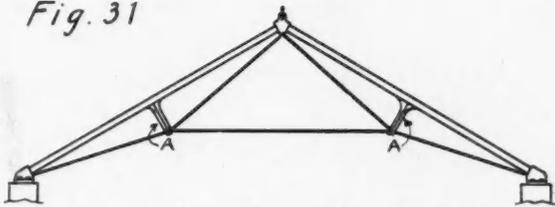
The use of iron rods for the tension members of trusses is becoming more and more general and necessitates the use of iron connections at other parts of a truss besides the tie-beam.



The substitution of an iron king-bolt in place of a wooden post in the ordinary king-post truss is an example of this. Instead of the joint shown in

Fig. 14 (in the February number) an iron shoe of one of the two varieties shown in Figs. 28 and 29, is employed at the apex of the truss.

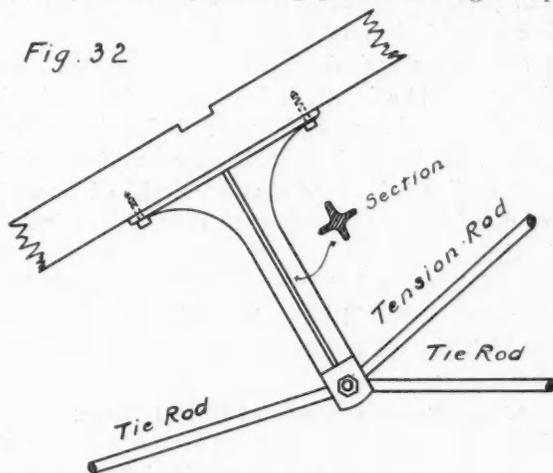
A similar change is made in the joint at the head
Fig. 31



of the queen-post, in a truss of that description, when an iron queen-bolt is substituted for the wooden queen-post, shown in Fig. 15 in the February number of this series of articles. Fig. 30 shows the usual form of shoe used, and it will be noted that the labor in cutting the ends of the timbers is reduced to a minimum, the ends being square in each case.

Light trusses of the form shown in Fig. 31 are much used in present day building practice, being inexpen-

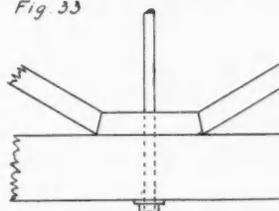
Fig. 32



sive, strong and easily put together. In such trusses, the iron connections illustrated in Figs. 26 and 29 are used at the foot and ridge respectively, and for the short struts, or compression members (A A in Fig. 31) a cast iron piece is employed. A typical cast iron strut for use in this position is shown in Fig. 32, the cross section of the strut being especially designed to form a stiff, unbending member.

In some cases, the question of the cost of the cast iron shoes is a serious consideration, for, while iron

Fig. 33

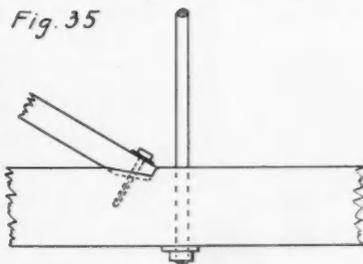


rods can be obtained anywhere without difficulty, it may not pay to go to the trouble of making a pattern for castings if only a few are required. Under such circumstances it is usual to employ a wood block, such as is shown in Fig. 33, which is the joint at the foot of a king-bolt with the two raking struts abutting

against a short block, through which the king-bolt passes into and through the tie beam.

Fig. 34 shows a similar arrangement at the foot of a queen-bolt, the only difference being that instead of a short block, a long straining sill is employed, which reaches across the center panel of the truss to the other queen-bolt and strut.

Fig. 35



An alternative joint, shown in Fig. 35, is sometimes used in this position, but is not nearly as good a joint as Fig. 34 affords.



How to Waterproof Canvas

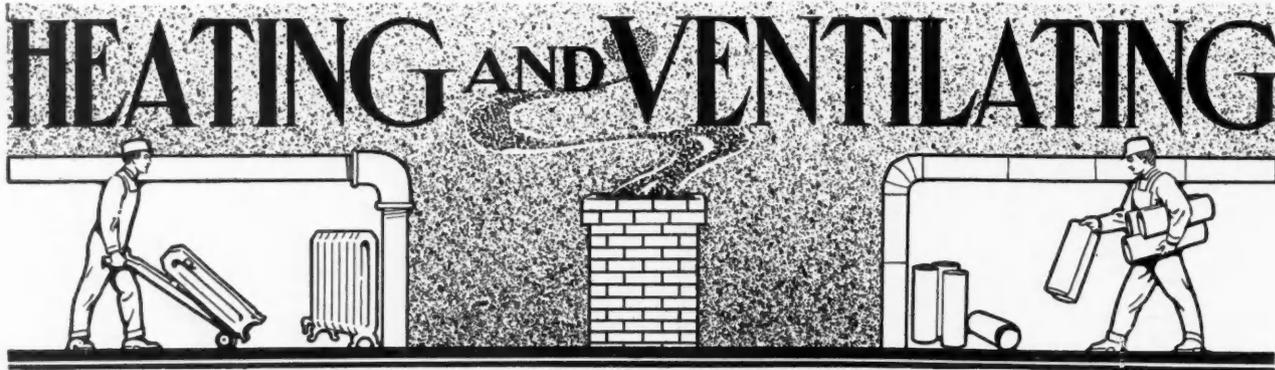
The method used by the British navy yards for waterproofing and painting canvas so it will not become stiff and crack is as follows: One ounce of yellow soap and $\frac{1}{2}$ pint of hot water are mixed with every 7 pounds of paint you wish to use. The mixture is applied to the canvas with a brush. This is allowed to dry for two days and then a coat of the same paint without the soap is laid on. When this last coat is dry the canvas may be painted any color desired. After three days of drying the canvas may be folded up without sticking together, and, of course, it is waterproof. The canvas waterproofed in this manner makes an excellent covering for portable canoes and canvas boats. The color mixture for the soap and second application is made from 1 pound of lampblack and 6 pounds of yellow ochre; both of oil; the finish coat may be any color you wish.

When no paint is to be used on the canvas it may be waterproofed with a mixture made from soft soap dissolved in hot water, and a solution of iron sulphate added. Iron sulphate, or ferrous sulphate, is the green vitriol. The vitriol combines with the potash of the soap, and the iron oxide is precipitated with the fatty acid as insoluble iron soap. This precipitate is then washed, dried and mixed with linseed oil and applied to the canvas. This will render the cloth waterproof, and at the same time the material is quite flexible and not inclined to crack.



The Age of Trees

Inquiry as to the general age attained by trees having been made to the Forest Service, it was stated that the ordinary pine tree attained 700 years as a maximum span of life; the silver fir, 425 years; the larch, 275 years; the red beech, 245 years; the aspen, 210 years; the birch, 200 years; the ash, 170 years; the elder, 145 years, and the elm, 130 years. The heart of the oak begins to rot at about the age of 300 years. Of the holly, it is said that there is a specimen 410 years old near Ascheffenburg, Germany.



Warm Air Furnace Heating

RECOMMENDED PRACTICE FOR INSTALLING WARM AIR HEATING SYSTEMS—THEIR SPECIAL ADVANTAGES FOR HEATING AND VENTILATING RESIDENCES ECONOMICALLY AND WELL

THE health and comfort—and, we might also say, the peace of mind—of the inmates of a building, depend to a very large extent on the adoption of a proper system for heating and ventilating the structure. This is true of the small house as well as of the large, of the skyscraper as well as the bungalow, and of the concrete house as well as that built of stone or brick or wood or other structural material. An efficient and economical installation for warming the structure equally, and at the same time keeping it constantly furnished with an adequate supply of fresh air—for these two functions are very closely related—is a matter of vital importance. Every home-builder and home-owner, everyone engaged in or interested in building construction, should understand at least the elementary principles involved in the selection and mechanical installation of a good heating and ventilating system.

Time was, and that not so long ago, when the builder gave little or no attention to the proper heating of a structure until every other part of it had been provided for. Now, however, the question "How shall I heat the building?" or "What type of apparatus shall I use?" is considered along with those relating to the other features that enter into the construction of the building, and the heating plant is arranged for as soon as the building plans are matured.

Build Warm

In providing for the installation of a modern heating apparatus, there are some features of building construction which should have the careful attention of the builder. The colder the climate, the greater the necessity for constructing the building in such a manner as will enable it effectively to resist the cold weather. The small additional sum required to make all parts of the structure tight, sound, and capable of resisting and excluding the cold, is, in a comparatively short time, more than refunded in the saving on fuel bills, to say nothing of the satisfaction of having a warm and comfortable home at all times, regardless of varying climatic conditions.

Air is a good insulator; and in building outside walls, provision should be made for "dead" air spaces.

If of frame construction, the outer wall should be lathed and plastered tightly on the inside. The studding should be sheathed outside and the sheathing carefully covered with a good quality of building paper. A poor grade of paper is useless at any price. This surface should then be tightly and securely covered with shingles, matched siding, or clapboards. In a particularly cold climate, it is well to sheath the inside of the studding and "furr out" before lathing and plastering. Brick walls should in every instance be "furred out" on the inside; and in cold climates the use of double windows and storm doors is particularly advisable.

The efficiency and the economical operation of the heating apparatus will depend largely on the accuracy with which the above suggestions have been carried out.

Advantages and Abuse of Hot-Air Heating

There are sound and substantial reasons why the warm air furnace has so long retained its supremacy as a heating medium.

The advantage over steam or hot water or stoves is a pure, fresh warmed air (when the fresh air inlet is taken from out of doors) that in a properly constructed apparatus transforms the Arctic temperature without to a June day's balmy atmosphere within. Another great advantage is that no large, unsightly radiators cumber the room, take up valuable space, destroy carpets, spoil floors, and gather quantities of dirt and dust. And lastly, the cost is less than by any other system.

But heating with a warm air furnace has suffered at the hands of its friends as well as of its enemies. The fact that, unlike steam or hot water, it will still work even when poorly installed, or that a cheapened construction, omitting many of the essential features of a good furnace and using inferior material, does not entirely overcome its usefulness instead of being considered as it should be as a favorable argument is actually brought forward to condemn its use.

Cheap competition work incidental to large building operations where several houses or groups of houses are erected collectively in rows or in pairs and offered

for sale by the builders—"operation work," as it is called—has resulted in the placing of thousands of furnaces too small in capacity to operate properly, and of so cheap a construction as to be practically worthless after a few seasons' use.

The cold air box may be omitted entirely, or, as is true in a large number of instances, be very poorly

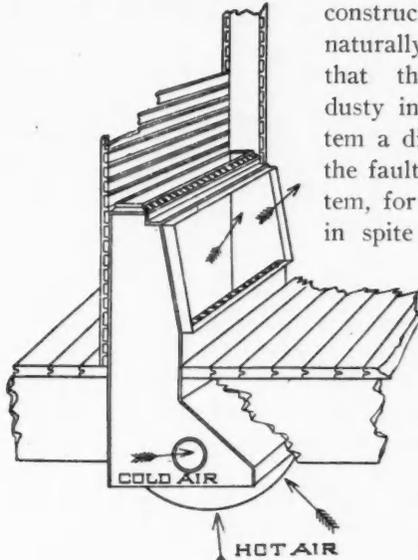


Fig. 1—Wall Prepared for Side Wall Register (Double Pipe.)

constructed, and there will naturally be complaints that the registers are dusty inlets and the system a dirty nuisance, but the fault is not in the system, for it works (heats) in spite of the defective air. While if a warm air furnace of the right size to properly warm the building is correctly installed, the air supplied will be healthful and pleasant.

The proper preparation of a building for the installation of a furnace begins with the foundation, as the chimney for the use of the apparatus should be located in such a position that the furnace may be set well towards the north and west sides of the cellar or basement. The furnace should be placed in this position in order to have the shorter warm-air pipes serve the colder part of the house, as it is extremely difficult to force warm air towards the north or west through piping of exceptional length.

Size of Furnace Required

Under ordinary conditions the furnace should be set not more than six feet distant from the chimney flue. It is far better, however, to double the length of the smoke pipe in order to be able to locate the furnace toward the west or north, than it is to double the length of the hot-air pipes, if either one of these two contingencies arises.

Having determined upon the installation of a furnace, the first thing to consider is the size necessary. For arriving at this conclusion, there are several methods that can be adopted. We shall assume that it is desired to have an apparatus of sufficient capacity to heat all rooms (excepting the kitchen) to 70 degrees F. in zero weather. An excellent rule formulated by Mr. Charles S. Prizer, is as follows:

"Find the cubic feet of space in room by multiplying the length by the width, and this product by the height. To the actual cubic feet of space in the room, add 75 cubic feet for each square foot of glass surface (outside doors to be figured as glass), and 8 cubic feet for each square foot of outside or exposed wall surface. For either a northern or

western exposure, add 10 per cent to the glass surface and 10 per cent to the wall surface. For either a southern or eastern exposure, deduct 10 per cent from the exposed glass and wall surface. Should double doors or storm doors be used, count outside doors as exposed wall instead of exposed glass surface. Add together the figures for all rooms to be heated, and the total will be the *equivalent cubic feet* of space to be provided for by the furnace."

This rule, it will be observed, takes into account the various exposures of each and every room. In the event of the house being located in a section where a temperature of 10 to 12 degrees above zero is the extreme degree of cold weather, 10 per cent may be deducted from the "equivalent cubic feet." For locations where the extreme degree of cold weather is 10 degrees below zero, add 10 per cent to the equivalent cubic feet; for 20 degrees below zero, add 15 per cent; and for 30 degrees below zero, add 20 per cent.

Select a furnace having one square inch of grate area for each 150 equivalent cubic feet of space to be heated.

Location and Size of Registers and Flues

Registers should be located along or in the inner walls of each room. All cellar pipes should have an upward pitch of not less than one inch to the foot, and as much more as possible.

There is no exception to this rule. Never mind if the bay window is at the opposite side of the room; get the warmed air into the room with just as short a pipe and as few bends as practicable. Formerly it was considered good practice to use floor registers for all first-floor rooms, and wall registers for the rooms above the first floor. However, the recent introduction of the improved side-wall register has changed this former idea. By the use of this type of register in a 3 or 4 inch wall,

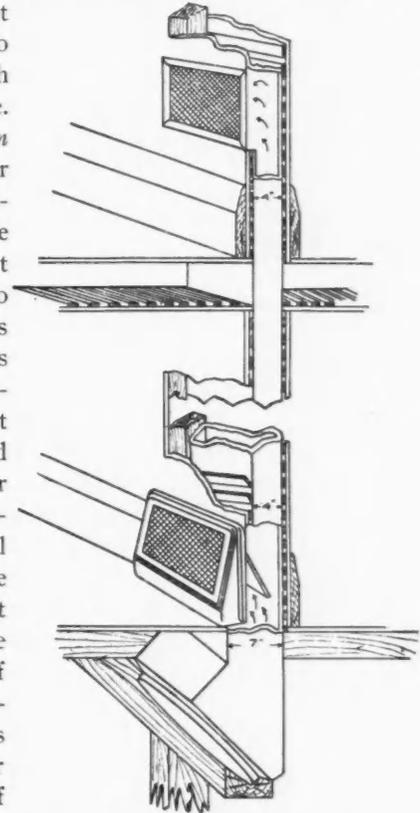


Fig. 2—Stack Supplying First and Second-Floor Registers

opening for a flue at least 7 inches deep is obtained by cutting out 2 inches of the floor. This, altogether with the space of 1 inch occupied by lath and plaster, gives a flue 3 inches deeper than the studding, and allows the placing of an effective register for warming first-floor rooms. In a similar manner a single flue can also be made to heat a first and a second floor room,

thus simplifying the piping system and lessening the number of pipes in the cellar.

There is much to be said derogatory to the use of the floor register. It is a dust and dirt collector; it frequently interferes with the desired placing of furniture and often necessitates the cutting of carpets. All these adverse conditions are obviated by using the side wall register. Fig. 1 shows the wall prepared and the opening cased ready for the insertion of the cast-

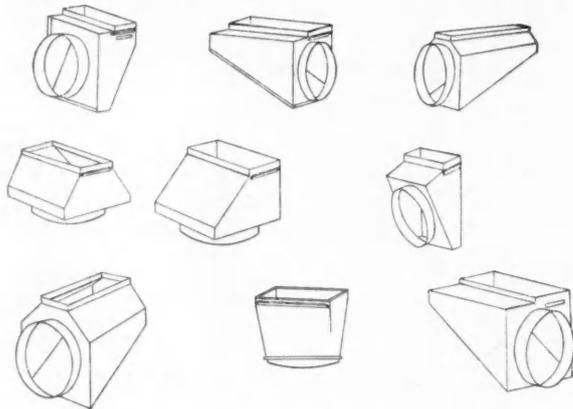


Fig. 3—Correct Forms of "Boots"

iron register frame. Fig. 2 shows a stack supplying the first and second floor registers. The double "safety" wall piping is used in both these figures. Note that by this arrangement, as cited above, the depth of the flue supplying the first floor is 7 inches. A baffle-plate divides the flow of warm air, furnishing each floor with its proper proportion of heat.

The fitting at the bottom of a stack, or vertical duct, supplying a register, is termed a *boot*. The round pipe in basement conveying hot air from the furnace is connected to a boot which must be so arranged as to receive the full volume of this round pipe and distribute it to the riser with the least possible amount of friction. A variety of designs are therefore necessary to answer suitably certain requirements, and Fig. 3 shows a number of correct forms.

The fitting at the top of a riser or flue is termed a *flue-head* or *register box*. These are made in a form to supply a single register, or they may be so arranged as to be suitable for supplying registers on opposite sides of the partition.

In the running of all furnace piping, abrupt bends and acute angles should be avoided, so that the heat-carrying pipes may offer the least possible amount of friction or resistance to the flow of warm air through them.

All hot-air pipes should be covered with asbestos-paper, or, better, with asbestos air-cell covering. Another type of furnace piping, especially desirable for partition piping, being required by law in some cities, is called *safety pipe*, and is of double construction with an air space between the two layers of metal. A small opening through the outer pipe in the boot admits cellar air.

The accompanying table will give the measurements

of registers necessary for supplying certain sizes of rooms, the sizes of flues (vertical pipes), and the sizes of the round pipe in the basement conveying warm air from the furnace to the boot. In all cases where two or more rooms are heated from one pipe, this pipe must have sufficient capacity to carry the required amount of warm air for all rooms served by it, according to the information given in the table.

SIZES FOR FURNACE PIPES AND REGISTERS.

| Size of Room (Cubic Feet of Space) | Size of Room (Floor Space if 10 Ft. Ceiling) | Size of Round Pipe in Cellar | Size of Register and Register Boxes | Area of Open Space in Register (Bars Removed) |
|------------------------------------|----------------------------------------------|------------------------------|-------------------------------------|-----------------------------------------------|
| 500 | 6x 8 | 7 in. | 6x 8 in. | 35 sq. in. |
| 850 | 8x10 | 8 in. | 8x10 in. | 45 sq. in. |
| 1,000 | 9x11 | 8 in. | 8x12 in. | 55 sq. in. |
| 1,250 | 10x12½ | 9 in. | 9x12 in. | 60 sq. in. |
| 1,650 | 12x14 | 9 in. | 10x12 in. | 70 sq. in. |
| 2,000 | 12x17 | 10 in. | 10x14 in. | 80 sq. in. |
| 2,300 | 14x17 | 12 in. | 12x15 in. | 115 sq. in. |
| 2,600 | 15x18 | 12 in. | 12x17 in. | 120 sq. in. |
| 3,000 | 15x20 | 14 in. | 14x20 in. | 156 sq. in. |
| 4,000 | 20x20 | 16 in. | 16x24 in. | 210 sq. in. |
| 5,400 | 20x27 | 18 in. | 20x24 in. | 270 sq. in. |
| 7,000 | 20x35 | 20 in. | 21x29 in. | 340 sq. in. |

Cold Air Supply

No hot-air furnace will do its work properly unless provided with an adequate cold-air supply. In the cheap form of installation, it is invariably noted that the furnace is supplied with basement air through a fretwork base of the furnace. Aside from showing poor practice, this method creates an unhealthful condition. Air from outside the building itself should be used; and the necessary supply should, if possible, be admitted from the north or northwest sides. A cellar

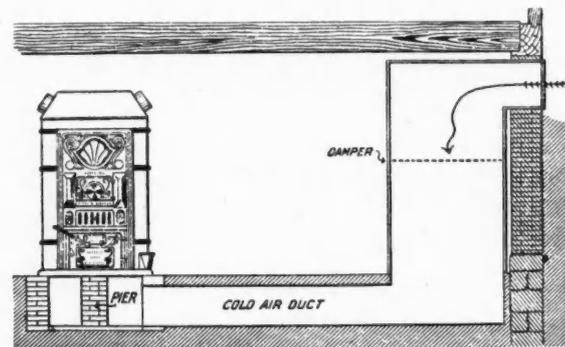


Fig. 4—Arrangement of Cold-Air Reservoir and Duct

window may be utilized for the purpose. Just inside the cellar window or other similar suitable opening, the cold-air duct should be enlarged to about three times the required capacity. From the bottom of this duct the connection with the furnace may be made, the pipe running either below the floor of the cellar or above it, according to circumstances surrounding the installation. This large duct forms a reservoir for the accumulation of cold air, and this reserve supply prevents prevailing high or variable winds from interfering with the steady flow of air to the furnace. Fig. 4 will illus-

trate this idea. The outside entrance to the opening should be protected with a coarse wire screen fastened in a permanent manner.

In size, the cold-air duct should have three-fourths of the area of all heat pipes leading from the top casing. For example, let us assume a job having:

| | |
|-----------------------------------------|-------------|
| One 8-inch heat pipe, capacity..... | 50 sq. in. |
| Two 9-inch heat pipes, capacity..... | 126 sq. in. |
| Three 10-inch heat pipes, capacity..... | 234 sq. in. |

Total410 sq. in.
Here the total area of the heat pipes is 410 square inches. Three-fourths of this total capacity is 307 square inches; therefore the dimensions of the cold-air duct should be 12 times 25 inches or 300 sq. inches.

Whether the furnace should be set over a pit or whether the air supply should be connected at the ash-pit level is a matter of divided opinion. If set over a pit, the heating contractor should make sure that there is no liability of water filling it, as that would shut off the supply of air. He must also see that the connecting duct is carefully laid, and either bricked or cemented on the bottom and sides, with a dust-tight cover. It is also advisable to have a suitable manhole through which one can enter the duct, so as to occasionally clean out any accumulated dust or other refuse.

If a duct above the basement or cellar floor is used, it should by all means connect directly at the back of the furnace. This insures a more even distribution of the air to all the pipes.

One further word of caution—Do not take the fresh air supply from a point liable in any way to contamination by sewer, drain or stable air. Neither is it wise to take it through an inlet that opens into a narrow passage between two buildings, or between a house and a tight board fence. The winds circulate through such passages with high velocities, and often act on the air within the heater, as the jet of air in an atomizer does upon the liquid in the bottle, simply syphon it out.

A very successful method of warm air heating takes no fresh air from without, but circulates the air within the building by means of one or more ducts leading from the heated rooms back to the base of the furnace.

The enthusiastic advocate of this method cannot emphasize the ventilating features of warm air heating, but he is safe in saying that it is just as sanitary as direct heating by either steam or hot water.

The practice common in many sections of taking the air supply from the cellar cannot be too strongly condemned. No one would think of sleeping or eating in the cellar, yet many thoughtlessly are taking the cellar air with its attendant dust and contamination and, after heating it, using it as the living atmosphere of the occupied apartment.

Doctors and scientific experts all agree that a constant supply of fresh air is absolutely necessary. With a good warm air furnace of ample size and properly located, a constant supply of pure, fresh air is furnished at all times and every room and hall is well heated.

COURT DECISIONS AFFECTING BUILDERS



BUILDING CONTRACT NOT COMPLETED UNTIL PAINTING IS DONE.—Where the painting, which was included in a contract to build a house, was not finished when such house was destroyed by fire, the contract was not completed, and the house was not ready for delivery, so as to render the owner liable on the contract.

Annis vs. Saugy, Rhode Island Supreme Court, 74 Atlantic Reporter 813.

LIABILITY OF CONTRACTOR'S SURETY.—A provision in a building contract that on completion of the work to the satisfaction of the owner's engineer and before final payment the contractor shall give satisfactory evidence that all bills and claims against the contractor that might remain as a lien against the work are fully paid was for the protection of the owner, but did not impose on him the obligation to require satisfactory evidence of the absence of such claims and lien, and his failure to call for such evidence on payment to the contractor was not a breach of the contract, relieving the contractor's surety from liability for the amount of a mechanic's lien which the owner was compelled to pay.

Alexandria Water Company vs. National Surety Company, Supreme Court of Pennsylvania, 73, Atlantic, 952.

PAYMENT FOR BUILDING MATERIALS FOR UNCOMPLETED STRUCTURE.—In an action to recover the balance alleged to be due on a contract by which the plaintiff agreed to furnish and deliver to the defendants certain building materials, in part specially manufactured and framed, to be used in the construction of four three-story frame houses, it appeared that the plaintiff was not required to put any part of the material in place in the building. He was to receive for the material \$3,000, of which \$1,000 was to be paid "when standing trim is up," \$1,000 "when buildings are complete," and \$1,300 the balance, "30 days thereafter." All the material was delivered and accepted. The first installment only was paid, and the action was to recover the amount of the other two installments. The buildings were never completed. After the last of the material was delivered work was suspended on the buildings, defendants filed a mechanic's lien and a mortgage on the premises was foreclosed, and the premises sold. The court held that the plaintiff was entitled to recover, notwithstanding the express provision of his contract, postponing the payment of these two installments until the completion of the buildings. The defendants had failed to complete the buildings within reasonable time, and if such failure was owing to a foreclosure of a mortgage that was a matter of which the plaintiff was not responsible.

N. Y. Appellate Div., 119 Supp., 765.



White Enamel for Interior Trim

THE USE OF WHITE ENAMEL FINISH AND PROPER WOODS FOR IT—NECESSARY REQUISITES FOR GOOD WORK, BOTH RUBBED AND POLISHED

By Clyde E. Horton

WHITE enamel is probably the most popular of all woodwork finishes, very few dwellings being erected nowadays without at least one or two rooms finished in this style. Its popularity is no doubt largely due to the ease with which such woodwork can be made a part of the general color scheme of any room. Then again it is sanitary, perhaps not any more sanitary than many other finishes but it seems to be so, because white enamel demands cleanliness. Few of us can know all the ins and outs of white enamelling but there are many points which should be more generally known in order that thoroughly satisfactory work may be assured.

If the real cause of the trouble with the white enamel woodwork was always known the wood itself would be found at fault in many cases. Of course there are other difficulties which may develop, possibly an insufficient number of undercoats causes the trouble, or the quality of the enamel itself may be so poor that in spite of satisfactory wood and good undercoats inferior results are secured. There are three important requi-

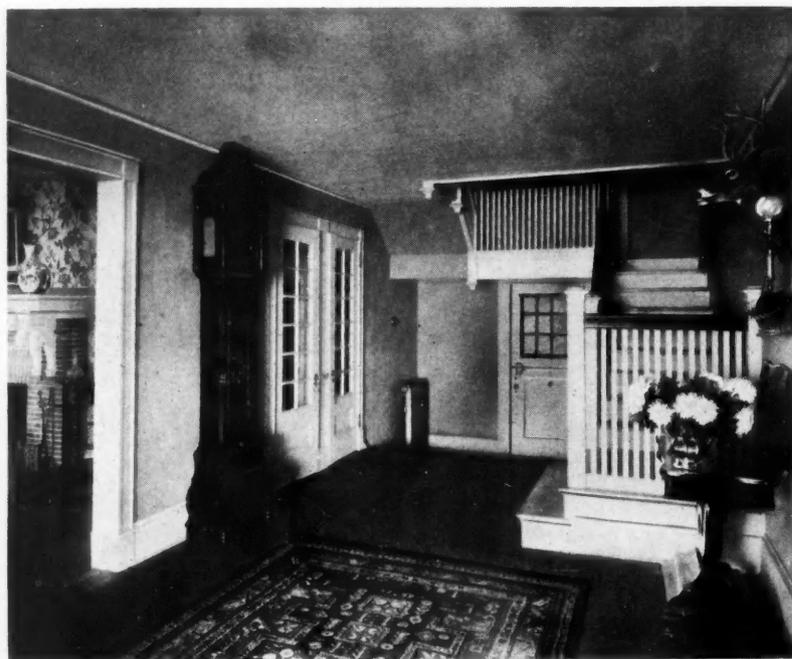
sites entering into white enamel woodwork, any one of which will easily ruin the finished result. First, the wood itself; second, the undercoats; and third, the enamel. The subject is much simplified by dividing it into these three parts.

Suitable Woods for White Enamelling

It very frequently happens that the painter is called upon to produce a white enamel finish on some wood which is entirely unsuited for such work. This is indeed unfortunate, but these conditions cannot be entirely eliminated until the home builder is brought to realize that only certain kinds of wood are satisfactory for white enameled work. As long as such conditions exist the painter must make the best of it. He must be resourceful enough to produce a fairly satisfactory white enamel job on certain kinds of wood, not fitted at all for such work.

The ideal wood for white enamelling is birch. This wood finishes to excellent advantage. It is hard and has no prominent grain. It is strong in color and contains no pitch or rosin. Wood which is to be white enameled must be of course properly finished and sanded. Birch meets with all of these requirements admirably, and the question of expense is the only one which should ever debar this wood.

White wood and poplar come next in the list. Both of these woods are quite satisfactory for white enamelling. They have no prominent grain, they can be sanded satisfactorily, and do not contain pitch or rosin. They are also light in color. It is therefore possible to work up a good foundation with the undercoatings and avoid any possibility of yellow streaks after the work has been completed and allowed to stand for a year or two. The painter is frequently called upon to produce white enameled work over white pine, and can do so to a fair degree of satisfaction. White pine has some of the quali-



White Enamel With Mahogany in Fine Colonial Residence

ties of whitewood, poplar and birch. It is light in color and does not carry a very heavy grain. Yellow pine, spruce, cypress or fir would never be chosen by the painter for good quality white enameling. These woods do not finish up satisfactorily, they contain more or less pitch or rosin, and in most cases the strong ridgy grain is not easily smoothed over by the undercoating. On these woods a first coat of shellac is always desirable.

The Undercoat

There are nearly as many different kinds of material used for enamel undercoatings as there are ways and systems of manipulating them. Every painter has his own particular way of building up an enamel foundation. The condition of the wood varies to such an extent that the painter requires a material peculiarly adapted to these many conditions. The painter must know his material and its peculiarities. Some woods are more porous than others and great care is necessary in the manipulating of any undercoat materials.

Many grades of white lead and linseed oil ranging from the most inferior to the best quality have been used for this work. None of them however, have been found quite as satisfactory as special white enamel undercoatings, such as is now being made by the big paint manufacturers. A material of this sort is far superior to lead oil, because of its better color and much finer grinding. At the same time it has vastly better working qualities. It flows out and flattens to better advantage and gives greater elasticity and durability, thus making a more satisfactory foundation for the following coats of enamel. No less than three coats should ever be used in the building up of a suitable foundation, and the best of white enamel work will have four, five and six coats, each one carefully flowed on and sanded down smooth. This foundation is equally as important as the final enamel coat.

The Enamel

In the finishing of exclusive clubs, hotels and all handsomely appointed public buildings, as well as the finest residences, there is a large demand for a higher grade of white enamel finish than can be produced with the standard white enamels intended for use in structures of the average type. In work of this character nothing will more completely thwart the whole scheme of interior decoration than enamel of poor quality. On the other hand there is probably no other finishing material that will lend so much to the finished appearance of any structure as white enamel of a rich full finish in just the proper tone of pure white, ivory or cream.

It is essential that white enamels have perfect working, flowing and drying qualities and produce a full surface and lustre that stays permanently white without tendency to crack, mar readily or perish. The tendency to turn yellow has been one of the manufacturers greatest problems. In order that white enamel for exterior purposes may be durable, it must

necessarily be slow in drying. It will not dry hard in less than four days, and on account of its great elasticity, it should not be rubbed until bone dry.

Interior Gloss, Rubbed and Polished Finishes

For much of the interior work the painter requires an enamel which will produce a full gloss surface or which can be very lightly rubbed. An enamel of this character can dry dust free in ten to twelve hours,



Effective Use of White Enameled Trim

hard in two days and can be rubbed lightly in five or six days. It must dry with a full rich lustre, and must of course work and flow perfectly, in order that all brush marks may be eliminated.

Two coats of this material must be used in order that a satisfactory rubbed or polished finish may be produced. Exceptional care must be taken with the drying of each coat, as well as the sanding of the first coat, preparatory to the application of the finished coat. This material is particularly adapted for use on fine interiors, and high class ornamental and decorative work, which usually requires rubbing or both rubbing and polishing. On account of having quick, hard drying qualities, an enamel of this character is capable of taking and holding a high polish. Such a material will not successfully endure exterior exposure, and should never be used for such purposes. It should dry dust free in three hours, hard in twenty-four hours, ready for rubbing in seventy-two hours, and be safely polished the following day.

In producing the dull finish only one coat of the enamel will be found necessary. Extra precautions should be taken with the undercoat, because of the fact that this final finish is left as applied. Material of this sort, in order to give perfect satisfaction, must

work very freely and flow out perfectly, so that when it dries promptly with a hard, rich, flat finish, its surface will be smooth and perfect without any brush marks whatsoever. The best dull finish enamels will flat out perfectly when properly applied.

No finished work is ever satisfactory without its various parts are equally satisfactory. The painter must scrutinize the wood carefully in the first place. If it is not properly sanded and finished he should not hesitate in refusing to apply his material over it. The

painter must necessarily stand responsible for the work and it is therefore most important that every possible safeguard be taken advantage of. Most important of all he must select thoroughly high-grade materials manufactured by a reputable concern. He must necessarily become familiar with those materials. It is not only necessary that the wood, the undercoat and the enamel be of superior quality, but also that the manufacturer and the painter himself stand up in the high plane of good quality.

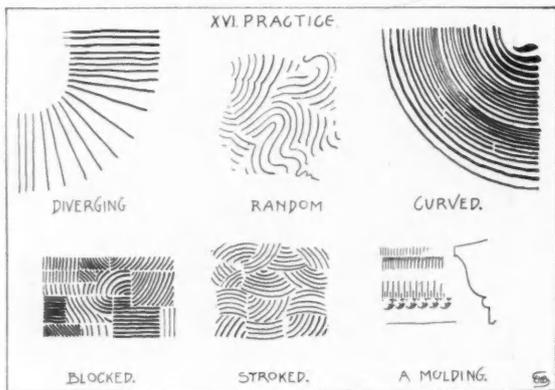
Pen Sketching Simplified

THIRD AND LAST OF A SERIES OF LESSONS TEACHING THE ART OF SKETCHING IN SUCH A WAY THAT EVERYONE CAN LEARN AND PROFIT BY IT

By Conrad H. B. Schaefer

SKETCHING from nature increases our powers of observation. As a result those in charge of work see more, which increases their efficiency as superintendents and overseers.

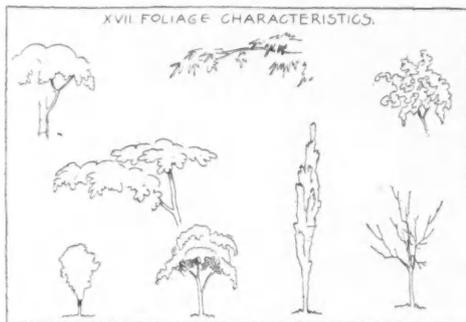
XVI. Practice enables one to make a great variety



EXERCISE c.

of shading lines with ease. This causes a picture to look more interesting. Diverging lines, random lines and circular shading, see Fig. XVI, are the most difficult to render.

Different ways of representing various surfaces become established by appropriateness. The leaving of white lines as in mortar joints is effective. In



NATURE.

shading mouldings, the space is too narrow for the lines to be drawn lengthwise. Short cross lines are used. A dot represents the shady side of a bead.

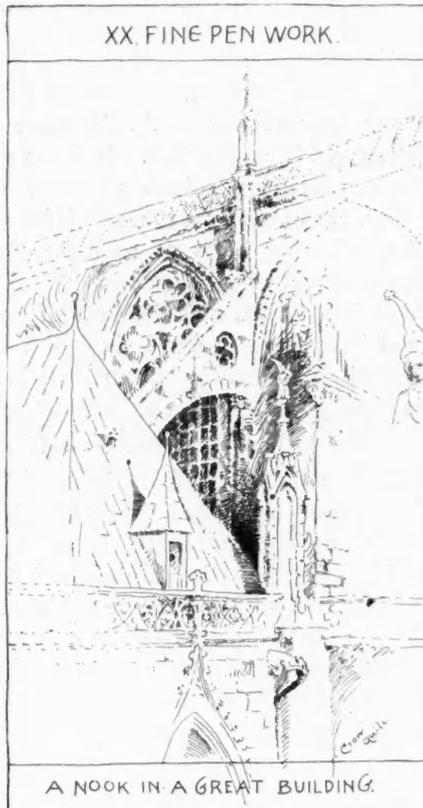
By practice one learns to perceive from the fingers

the straightness of movement that is necessary, the frequency of marks and gradual changes of action needed. Old time draughtsmen referred to this expertness by drawing a picture of a hand with an eye in the palm.

XVII. Undoubtedly sketching from nature is one of the most pleasant branches of the work. It is not a difficult accomplishment to acquire if one simplifies the work. First

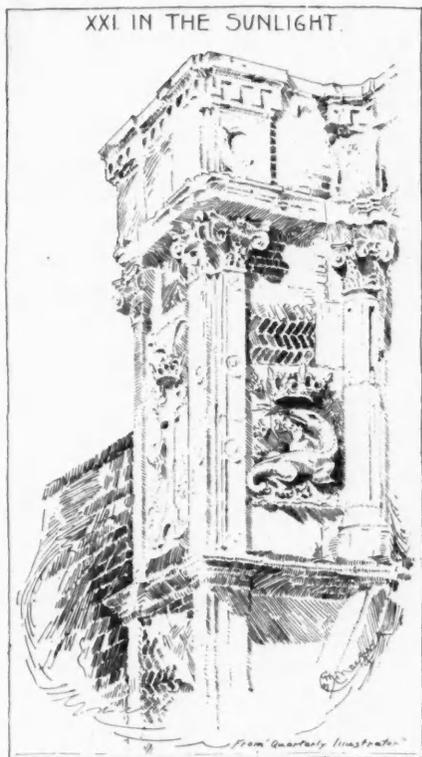
notice the general outline, see Fig. XVII. Divide a landscape into foreground, middle distance and distance. In the former leaves may be represented in groups of three and with heavy marks. In the middle ground the outline of the foliage should be picked out, and in the distance a fine line employed. The foreground of a grass field should be shaded in patches, not all over flatly, but as seen. Tree trunks are darkest beneath the spreading boughs. Some familiar detail of branch or stone will make the entire shading look distinguishable.

XVIII. It is important to show the character of an object. The variety of a tree, strength, age, use and purpose of a material are essential qualities. The old book, Fig. XVIII, with its flexible leaves and



CATHEDRAL.

thumbed corners, tells a story of life. These are features that often escape notice in a photograph but which an artist may make plain.



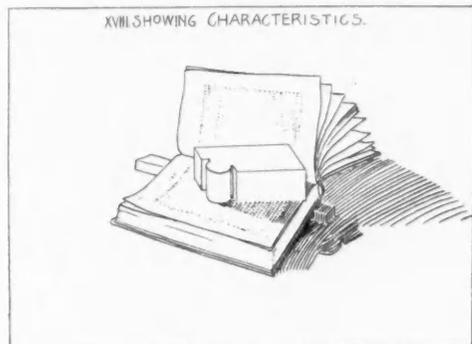
CHIMNEY.

be established for guidance in this way. The curve will then look wrong until you have it right.

XX. This nook, Fig. XX, was drawn with a small steel crow quill on smooth American linen paper. It is often satisfactory to simply indicate the outlines as the drawing approaches the margin.

A ball pointed pen may be used for broad lines. Rough surfaced paper gives a sketchy appearance to stiff lines.

XXI. The chimney from Blois, Fig. XXI, Italian Renaissance, shows the value of white lines. The

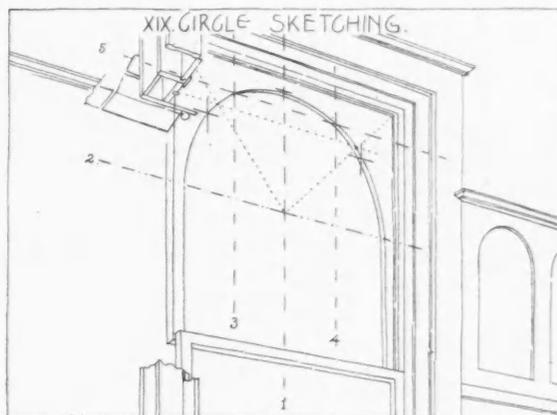


CHARACTER.

brick work, the mouldings, the panels, the carving, the roof tiles, are all distinctly shown by shading in the best place rather than by delineating everything throughout, which would make the picture look dark and dull.

XIX. Circles are the most difficult to draw. A few simple rules will enable one to draw them well. First draw them as if they were square then quarter the square diagonally as shown in the example, Fig. XIX. The curve should intersect this diagonal line at the same perspective height on both sides. Or one may divide the arch into sash lights and apply the same rule. Several points may

The drawing was first sketched in pencil from a photograph and then inked in. The result is less mechanical in appearance than when drawn over



WINDOW HEAD.

the solar prints which are made to fade away and leave the ink work.

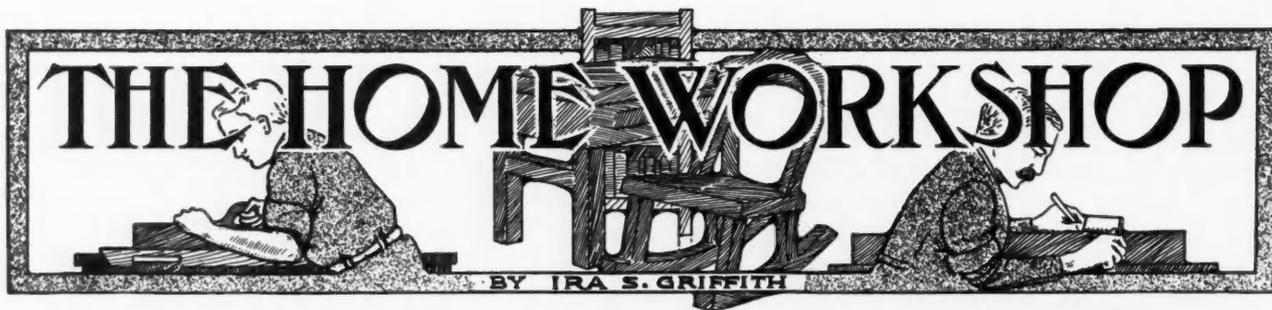
XXII. Illustrating the events of life undoubtedly requires the highest proficiency in art work. It involves figure drawing and the indication of movements as well as of expression. It brings into play one's memory, the ability to group and a knowledge of environment and history.

All the lessons are summed up in this last scene, an Italian balcony in the middle ages. The figure expresses the haste and expectation of the moment..

XXII. EXPRESSION.



BOOK ILLUSTRATION.



Two Good Pieces of Handicraft Work

HOW TO MAKE A LEG-REST AND A MISSION SETTLE—COMPLETE DETAILED INSTRUCTIONS TOGETHER WITH STOCK BILLS AND WORKING DRAWINGS

A VERY simple but useful piece of furniture is the leg-rest shown in the accompanying picture.

It is especially suitable for placing before a Morris chair and when the top is covered with padded leather allows one to assume a reclining position with the greatest degree of comfort. The rest shown was made of soft wood and stained—oak will be more appropriate however.

There will be required the following pieces:

STOCK BILL FOR LEG-REST

Sides, 2 pieces, 1 by 10 $\frac{3}{4}$ by 18 $\frac{1}{2}$ inches, S-4-S.

Top, 1 piece, 1 by 10 $\frac{3}{4}$ by 18 $\frac{1}{2}$ inches, S-4-S.

Stretchers, 2 pieces, 1 by 2 $\frac{1}{2}$ by 23 inches, S-4-S.

Keys, 1 piece, $\frac{1}{2}$ by $\frac{3}{4}$ by 12 $\frac{1}{2}$ inches, S-4-S.

This bill specifies stock exact in width and thickness. It is possible to save money by ordering the stock millplaned on two sides only. In this case add one-quarter of an inch to width specified above.



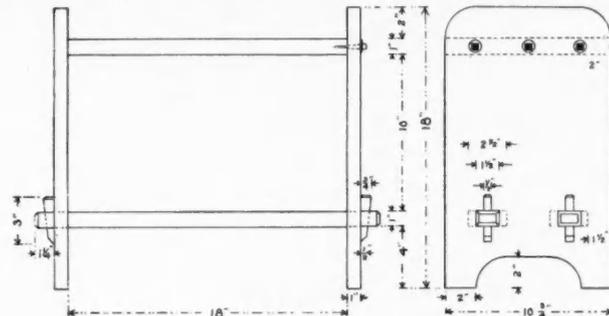
Leg-Rest

Begin work by squaring the different pieces to the sizes indicated in the drawing. Lay out the mortises in the uprights and cut them. Then lay off the tenons on the ends of the stretchers and work them to size.

It will be found easier to put on the finish of stain and filler before putting the parts together. The wax, however, should be put on afterward.

A good finish is obtained as follows: See that all

the parts are thoroughly scraped and sandpapered, then apply a coat of Filipino water stain. Wipe this off before it has had time to soak in much, using old cloths or waste. Sandpaper this after it has hardened using number 00 paper and follow with a coat of black paste filler. After the filler has hardened put on sev-



LEG REST.

eral coats of black floor wax. In this finish the highlights will show dark mossy green on a field of black, the general tone being dark.

How To Make The Mission Settle

The Mission settle should be made of oak. The one shown in the illustration was made of quarter-sawn white oak. The stock bill is as follows, the thicknesses and widths being specified exact.

STOCK BILL FOR MISSION SETTLE

Posts, 4 pieces, 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ by 40 $\frac{1}{2}$ inches, S-4-S.

Front and back rails, 2 pieces, 1 by 5 $\frac{1}{2}$ by 59 inches, S-4-S.

Back rail, 1 piece, 1 $\frac{1}{4}$ by 3 $\frac{1}{2}$ by 59 inches, S-4-S.

Back rail, top of, 1 piece, $\frac{3}{4}$ by 1 $\frac{1}{2}$ by 59 inches, S $\frac{1}{4}$ -4-S.

Moulding under top, 1 piece, $\frac{1}{2}$ -inch cove, 59 inches.

Back rail, 1 piece, 1 by 2 $\frac{1}{2}$ by 59 inches, S-4-S.

Side rails, 2 pieces, 1 by 5 $\frac{1}{2}$ by 26 $\frac{1}{2}$ inches, S-4-S.

Side rails, 2 pieces, 1 $\frac{1}{8}$ by 3 $\frac{1}{2}$ by 26 $\frac{1}{2}$ inches, S-4-S.

Side rails, top of, 2 pieces, $\frac{3}{4}$ by 1 $\frac{1}{2}$ by 26 $\frac{1}{2}$ inches, S-4-S.

Moulding under top, 2 pieces, $\frac{1}{2}$ -inch cove, 26 $\frac{1}{2}$ inches.

Side rails, 2 pieces, 1 by 2 $\frac{1}{2}$ by 26 $\frac{1}{2}$ inches, S-4-S.

Slats for back and sides, 13 pieces, $\frac{1}{2}$ by 5 by 13 $\frac{3}{4}$ inches, S-4-S.

Seat frame, 2 pieces, 1 $\frac{1}{2}$ by 2 $\frac{1}{2}$ by 58 inches, S 4-S.

Seat frame, 2 pieces, 1 $\frac{1}{2}$ by 2 $\frac{1}{2}$ by 25 inches, S-4-S.

It will be noted that the design as drawn is a little out of the ordinary in its construction. The experienced worker will be able to work it out as planned. The amateur may make the construction simpler by planning to have the slats of back and sides extend vertically instead of slanting.

The posts should first be cut to length and the ends shaped as shown. The lower ends are to be chamfered on their arrises slightly to prevent slivering. The top ends are to be sloped to $1\frac{3}{4}$ inches with the tops rounded.

Next lay out the mortises for the rails. To make certain that these are laid out on the proper sides and have the proper positions relative to one another, stand the posts upright as they are to be in the finished pieces and mark the approximate locations of the mortises, using a pencil. The faces should be turned in. They are more likely to be true than the other surfaces and for this reason are more likely to make good fitting joints when the tenons are inserted. After this has been done the posts may be laid on the bench side by side and the ends of the mortises marked accurately with knife and try-square. The sides of the mortises may now be gauged.

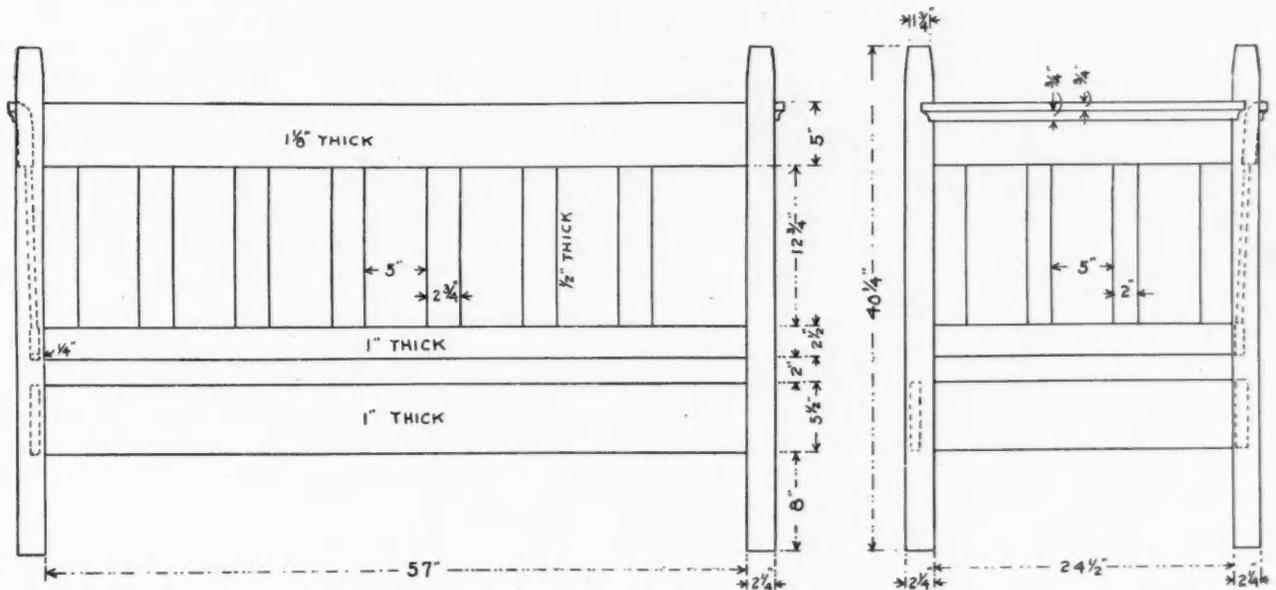
The tenons of the rails may be laid out and cut. In laying out and cutting the mortises in the edges of the rails into which the slats are to be placed, do not shoulder the ends of the slats but cut the mortises in the rails large enough to admit the whole end of the slats. It is a difficult thing to cut and fit so many pieces as is required in the shouldering and tenoning of these slats. In setting the whole ends in the rails any unevenness in the lengths of the slats is equalized

easily. The sides of the mortises must be cut carefully, however, so that they shall fit snugly to the sides of the slats.



Mission Settle

The manner of assembling the top rail is shown in the drawing and photograph clearly. The upper part is to be fastened to the rail with finishing nails and glue. The heads of these are to be set and covered with a putty colored to match the rest of the finish. A better way is to raise the grain where the nails are to be inserted, using a V-tool. After the nail has been driven this sliver can be bent back to its place and glued in such a way as not to show the nail at all. The cove



MISSION SETTLE

moulding is to have its ends "returned." The simplest way to do this on this small piece is to miter and glue the two parts at each end.

Put the ends of the settle together first using good hot glue and after the glue on these has hardened sufficiently remove the clamps and put the back and front rails in place.

The easiest way to make the seat is to fasten cleats to the insides of the front and back rails with screws. To these cleats may be fastened the seat slats. The mill-bill calls for a different construction of seat. This is made by making a strong frame, mortising the parts together, and weaving a bottom on this frame out of heavy cane. A cushion of Spanish roan skin of a color to match the finish of the wood will make a very satisfactory piece.

The finish described for the leg rest will be suitable for this piece as well.

There will probably be enough leather and filling left from making the settle cushion to make a covering for the top of the leg rest. Ornamental nails will be needed to fasten the leather to the edges of the top.

✦ **Mind Reading for the Carpenter**

That men fail in running small job shops is not so often due to inferior workmanship as to inaptness at mind-reading, the inability to tell, from what a customer says, what he wants. Some customers can express their wants literally and exactly, but very many cannot.

One of the most educative jobs I ever did, says a correspondent writing to the "*Woodworker*," was for a lady who, in the days of my apprenticeship, ordered of me a set of shelves for her cellar. She wanted "just rough boards, roughly nailed together." She got exactly what she ordered; but I think she put in the better part of the balance of her life ridiculing that job. It was a bum job, not on account of my inability to do a better one, but on account of my failure to realize that her desire to get a low price led her to lay more stress than she realized on the roughness desired.

There is always a tendency in this direction, though but few intend to deceive. Most people, through a perfectly natural desire to get their work done as cheaply as possible, and through ignorance of mechanical terms and values, will order a cheaper job than they really want.

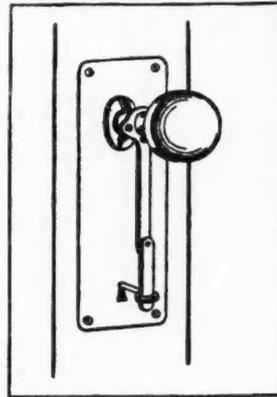
It is not true that one should always put his best workmanship into a job, for the successful jobber does his work, as nearly as may be, in the way his customer desires. If a woman wants a box to cover with cloth, it would be absurd to put in the same material and workmanship that one would if it were intended to be decorated with burned work. It is doubtless better to err in the way of doing the work too well than to turn out an unworkmanlike job. A good job is always a standing advertisement and exerts a "pull" long after the price is forgotten. Of course, one cannot afford to do work at a loss, even for advertising purposes

(he will get enough of that sort of thing unintentionally); but if he cannot afford to do a reasonably good job for the price to be had, better turn it away. Reasonably good work does not mean putting a piano finish on a wash bench, but rather workmanship and material adapted to the requirements of the job.

'Tis an interesting game, after one gets in the way of it, to study the personality of each customer and to decide, from what he says, what he wants. It is comparatively easy to do satisfactory work for a mechanic, who knows what he wants and how to tell it, but it is a different matter to satisfy the average man or woman. It takes a good mechanic and a good judge of character to win best two out of three at the game.

✦ **Improved Key Guard**

People who lock their bedroom doors to keep burglars out do not always feel safe even then. Expert knights of the jimmy have a way of pushing the key out from the outside and picking the lock, or of grasping the butt end of the key with thin pliers and turning it in the lock. To frustrate their efforts in this direction a Washington man has designed a key-fastener which is as much protection as a big iron bar. This fastener is a thin but strong metal strip in two parts, the lower part shorter than the upper, and attached to the latter



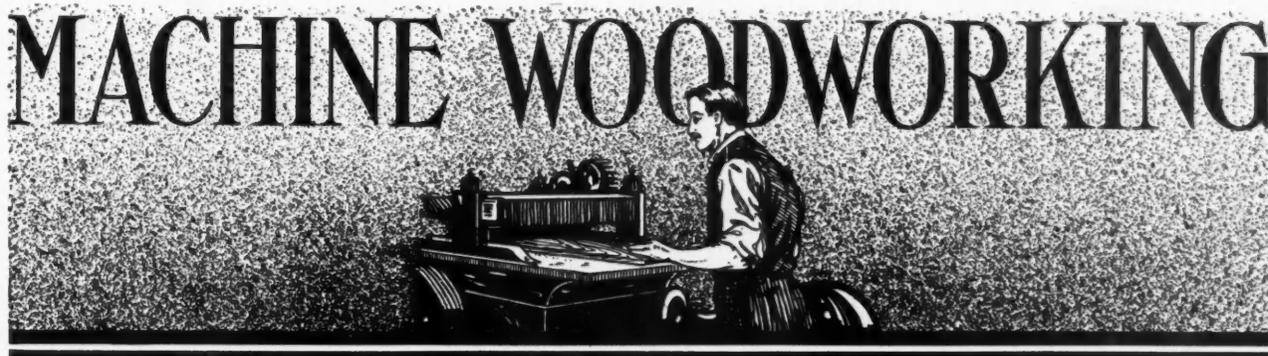
Burglar Proof Guard

pivotally. The upper section is made to fit over the handle of the door, so that when it hangs down the lower section passes through the ring of the key and not only prevents the latter from being pushed out from the outside, but from being turned. From the room side the short section of the fastener can readily be withdrawn from the key ring and so is no bother. This is an improved form of the well-known "hair pin" guard. With such a device on the door the most nervous woman may sleep in peace.

✦ **Lime is Most Dangerous Cargo**

Lime is said to be the most dangerous cargo with which a vessel may be intrusted, for when it catches fire, which it not infrequently does, despite the greatest precautions against the admission of water into the hold, it is practically impossible to extinguish it. The only method possessing any value whatever in this event is to stop every crack of the hold with soap, so that no air may reach the lime. But often this will not stop the fire, which will burn for weeks, till the vessel at last sinks beneath the waves.

When a vessel loaded with lime takes fire, it is sure death to go below.—*Harper's Weekly*.



A Few More Knife Combinations

THIRD AND LAST OF A SERIES OF ARTICLES ON THE USE OF MOULDER KNIFE COMBINATIONS—SOME DIFFICULT THOUGH COMMON PATTERNS EXPLAINED

By Charles Cloukey

IT WOULD seem that the subject of knife combinations could never grow stale to the moulder man, for it is an ever-present problem with him to turn out his patterns of mouldings with the least amount of grinding possible. As has been intimated before, he should have a good assortment of hollows and rounds, straights and bevels which will work on any pattern which they will fit.

In Fig. 14 is shown a combination for making a heavy stair rail and the illustration is for a two-run method. Old sticker men need not be told that it is folly to make a full set of knives for every pattern of moulding, especially the big ones having short runs. It takes less time to run the stock through the second

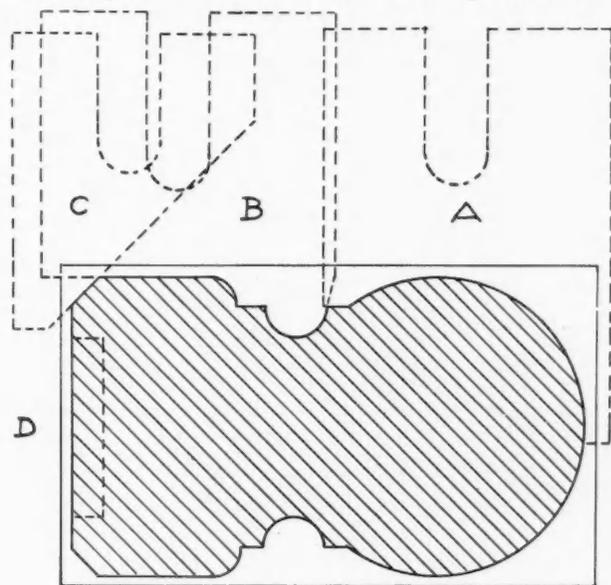


Fig. 14

time than it does to set up the other side to run it all at once, and then there is the saving of the bits and the time to grind them.

Returning to Fig. 14 it will be seen that the rail is intended to be run on its side, the knife A cutting half way over the top, and the knife D cutting the plow for the fillet and balusters in the bottom of the

rail. It will also become apparent that the knives A, B and C cut the pattern for the side, as shown by their arrangement. Whether the finishing cut on the bottom of the rail is made during the first or second run depends somewhat upon the condition of the stock to be run or upon the taste of the operator. If the stock has been jointed and sized before coming to the sticker the finishing cut may be left until the second time through, which will be some help if the plow in the bottom of the rail is made with the inside head. It sometimes occurs that in order to use some knives in stock the arrangement assumes an arbitrary shape and we have no choice about running the top or bottom to the inside; but a study of the figure will show that if the top of the rail is the inside of the machine, the first cut will not interfere with putting it through the second time and still preserve the alignment of the several members of the moulding. An inspection of the bottom of the rail will show that the surfacing knife cuts clear across the face of the moulding so that if an eighth of an inch should be cut off during the first run, there would be that much of an offset in the cross-section of the moulding, provided the bottom was run next the fence. Now when this becomes necessary the remedy is to take a strip of smooth wood, about as wide as the face of wood to be run against the fence, and plane it to the thickness of the surfacing cut of the side head, and make it long enough to reach back to the inside head. Now saw away a strip from the edge of this piece nearly to the end and cut it off so that there will be a lug on the end, the object of which is to hook against the front end of the bed of the machine and keep the fillet from feeding through with the stock. When this is inserted by the side of the piece from which a cut has been taken, it will keep it cut to its original position so that the section of the moulding will show a balanced arrangement of the members.

Fig. 15 illustrates a set-up for the same rail as Fig. 14, with the additional difference that it is arranged to cut the whole pattern at a single run through the

machine. If this should be a stock pattern so that large quantities of the same size and shape are required, it would be economical to fit up for the single run.

Studying the figure, we find that the top of the rail

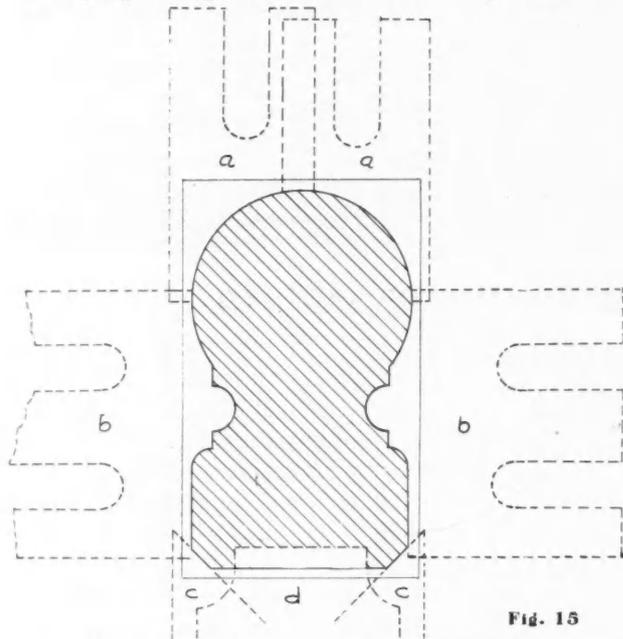


Fig. 15

is made by means of two quarter-round knives, *a* and *a*, and could be made with a full round knife, although the latter will continually grow larger with wear, and unless it is persistently ground along its whole edge will soon become unfit for use on this particular pattern. The quarter round knives can always be

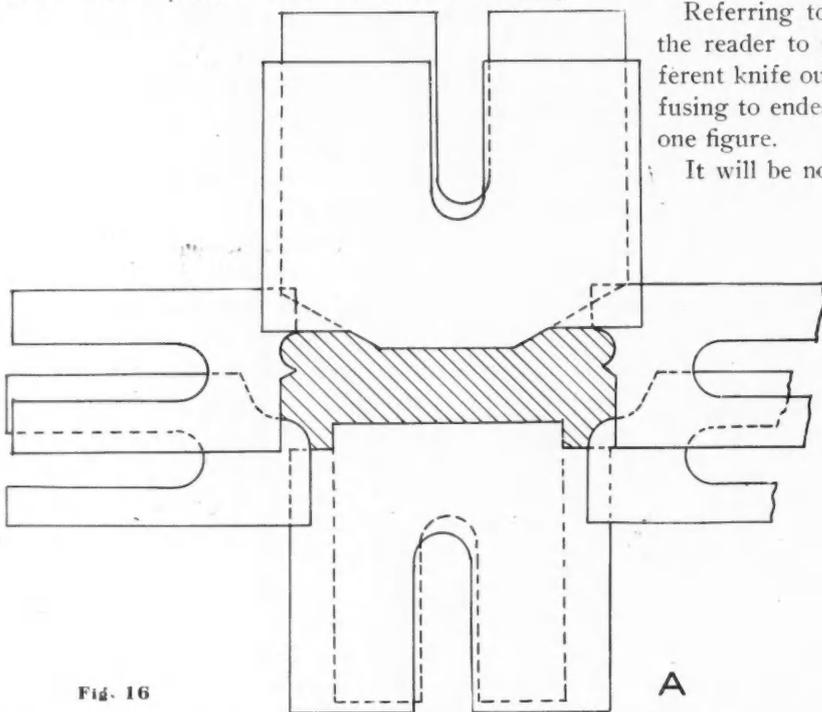


Fig. 16

brought to place, and while it requires more care in setting, they may be used on any other job having a quarter round detail of that size. In this run there is no separation of the knife cutting the side below the center of the head of the pattern, although it may be

made up of smaller members, such as the side head will hold. The knives *b* and *b* are rather large; but as the setting of the side is not so easy as the top, it will help some in that way to have them solid. On the bottom head are the surfacer which should balance *d* and the level cutters *c* and *c*, which should have each a balancer of its own. For the reason of good balancing, the moulder man should have a good assortment of bevel cutters, among them some as narrow as may be, and allow for the bolt slot and strength besides.

Fig. 16, A, shows one of the patterns that most moulder men do not particularly love. It is not so difficult, but there are eight or more cutters to a small moulding, and then it must be made so as to fit together with its mate, both together being a pair of astragals for sliding door. Fig. 16, A, shows the arrangement and also suggests the system of balancing, but this latter requirement any good operator can manage in various ways. Perhaps I may tell about a few of them soon.

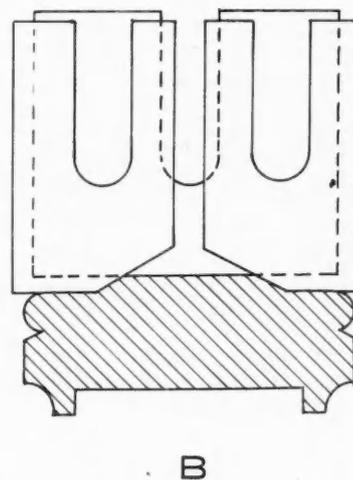
Fig. 16, B, shows the cut of the face side of the male member of the pair of astragals, and it is designed that the one straight knife shall balance the two bevel cutters. The balance of the setting would be like Fig. 16, A.

The shaded part of Fig. 17 is the cross-section of greenhouse rafter, and is one of the set-ups which the moulder man would gladly sidestep if it were possible.

The runs on this kind of work are usually of considerable length, and it will pay any large shop to fit up a set of knives to do this detail.

Referring to the drawing, it will be necessary for the reader to pay close attention to the way the different knife outlines are shown, as it is somewhat confusing to endeavor to show nine cutters at work all in one figure.

It will be noticed that the moulding is tipped down



A

B

to an angle of 45 degrees, and in order to hold it and feed it through the machine in this position a shallow trough is made use of, as shown by the lightly shaded part under the moulding. This should be made of smooth, hard wood, extending the full length of the

machine, and the side and bottom heads set up to it after it is in, so that the cutters will cut away the sides and bottom of the trough at their respective positions in order to make the necessary cut in the moulding and at the same time have the trough strong enough to serve its purpose.

One of the difficulties in running this pattern is the tendency of the stock to halt in the trough on account of excessive friction, but this can usually be overcome by using hard oil or axle grease in the trough and a spur feed in the upper corner, where the glass rabbit comes in the rafter, as shown at *a*.

In making this setting the operator must not forget to make allowance for the thickness of the trough

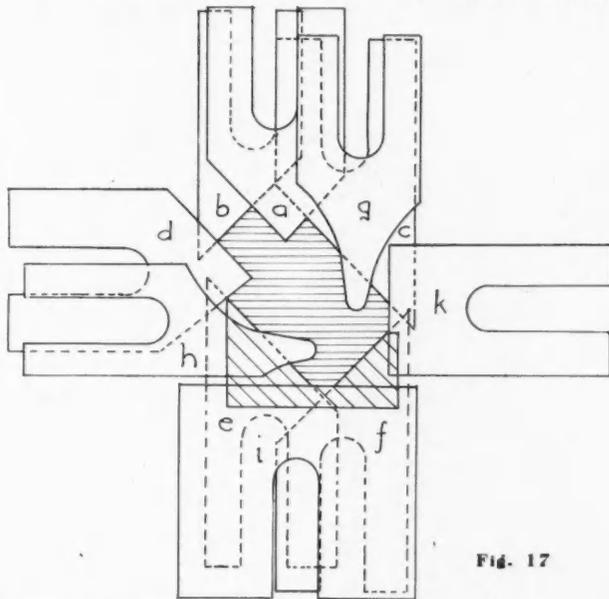


FIG. 17

when making his knife projections for the bottom and outside cuts. The top and inside are the same as usual. The faces that are usually cut with straight knives are worked in this case with bevel cutters, as shown at *a*, *b* and *c* on the top head, *d* on the outside, and *e* and *f* on the bottom head.

The two gutters are cut by *g* on the top head and *h* on the outside head. The straight knives *i* and *k* cut the bevels on the lower corners of the rafters. Some factories leave the bottom of the rafters square, and in such cases the use of the bottom head might be dispensed with entirely, provided the inside head will swing a cutter long enough to make the same cut from the side as the knife *f* does from the bottom.

It will be noticed that the arrangement of the knives as shown in the figure are as they would appear when the operator is looking at the set-up from the front of the machine.

Perhaps another word in regard to the trough may not be amiss, for some men might not foresee that the moulding will not fit the same channel that accommodates the blank stock, and that after the stock passed each cutter it will be about $\frac{1}{8}$ inch smaller on that side. This may be provided for before the set-up is made or it may be delayed until the knives have cut through the trough, as already suggested. Some $\frac{1}{8}$ -inch thick

strips of hardwood tacked onto the inner face of the trough will do the business and enable the pressure bar to hold the stock gently yet firmly until it drops clear of the machine.

If a moulder man makes his first set-up on this moulding in half a day's time, he will do well, but once having got his knives in the proper place he should never take them off before making a template or card for each head, showing the exact position of each cutter, so that he should be able to make the second setting in half an hour instead of half a day. Do not depend upon a sample piece to slip into the machine and set the knives to, for it is an abominable practice to attempt upon the plainer patterns.

It sometimes happens that these rafters have to be made out of lumber already dressed two sides to thickness, and in that case the cutters *c* and *e* may be dispensed with. Also the thin strip should be put in the whole length of the bottom, so as to bring the finished line to the same place as in the case of rough stock. The necessity of this occurs on account of using the templates of cards with the record of the previous settings, for if the set-up was made the same as for rough stock, each member would be approximately an eighth of an inch too high up on the moulding, and it is just as easy to put on the extra slip as it is to take the one off that is already on the back end of the trough.

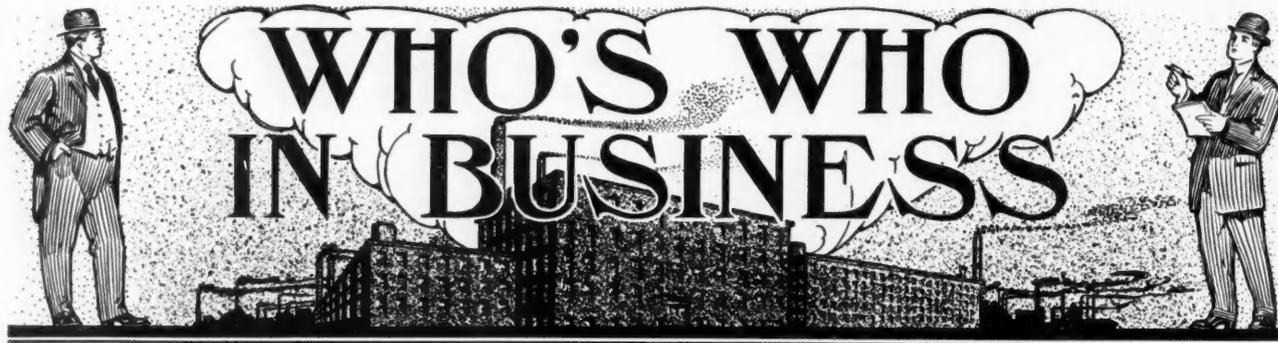
End rafters which have the rabet and gutter on but one side may be run in the same trough by throwing off the outside head and the straight knife from the bottom head. As the end rafters are usually made of thicker lumber, it will be necessary to move the trough out from the inside of the machine and lower the bed until the gutter and rabet knives cut at the proper places and depth.

+

Split or Rived Shingles

In commenting upon the fact that the outside walls of bungalows are occasionally covered with cypress shingles which are split or rived instead of sawn, a writer makes the point that while the cost is very much greater than where other kinds of shingles are used the expense is justified by reason of the more attractive effects produced. "The sawn shingle," he says, "is apt to get a dingy, weather-beaten look under the action of sun and wind, unless some treatment such as oil or stain is given to it in the beginning. But the rived shingle has exactly the surface of the growing tree from which the bark has been peeled, or, to be more exact, of the split surface of a trunk from which a bough has been torn, leaving the wood exposed.

"This smooth natural surface takes on a beautiful color quality under the action of the weather, as the color of the wood itself deepens and shows as an undertone below the smooth, silvery sheen of the surface, an effect which is entirely lost when this natural glint is covered with the 'fuzz' left by the saw."



Men at the Head of the Sherwin-Williams Co.

THE story of the birth and growth of the Sherwin-Williams Company begins with the year 1866 when Mr. H. A. Sherwin opened a small retail paint store in Cleveland, O. The methods were sound and the business was built firmly on a quality basis with the result that the little store soon grew and rapidly expanded. New departments were added, necessitating larger quarters and new buildings were constructed to accommodate the increasing trade. In 1870 Mr. Sherwin formed a partnership with Mr. E. P. Williams whose personality, great energy, and determination were most valuable assets in the early struggles of the company.

In 1873 they established a small paint factory. This venture was a distinct success from the start, the business growing by leaps and bounds. New buildings were added and a traveling force was organized with enthusiastic men who went out on the road with a high-grade line of products and maintained a strict adherence to quality arguments, a policy that has since been maintained.

The present continental system of handling and distributing Sherwin-Williams paints and varnishes dates back as far as 1882. During that year a warehouse was established in Chicago, but it was later found advisable to manufacture goods in that city, so a second factory was built in Chicago in 1888. Offices and warehouses had already been established in many of the other cities both east and west.

In 1895 a business connection was made with the

Walter H. Cottingham Company, of Montreal, Can., which company became the sole manufacturers of Sherwin-Williams paints and varnishes in Canada. In 1896 this company was merged with the Sherwin-Williams Company and it became the Canadian factory with headquarters in Montreal. Within three years the Canadian business had increased enormously. Since this merger the business of this company has increased generally with such strides that two new factories were established to keep pace with it. One was in Newark, N. J., and the other in London, England.

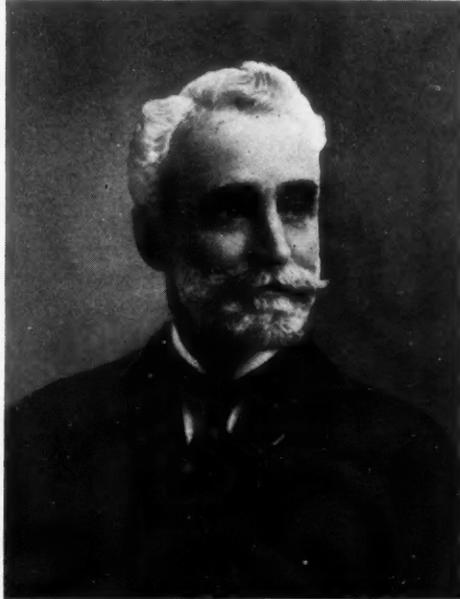
Mr. Walter H. Cottingham, president of the Sherwin-Williams Company, was born in Omeeme, Ont., on Jan. 8, 1866, and spent the early days of his youth there. At the age of 15 years he was underclerk in the retail hardware establishment of McKee and Davidson, Peterboro, Ont. The resolution to become chief executive of an establishment that ranks foremost in the paint and varnish world of two countries and is a leading factor in

many others had not as yet perhaps entered into his calculations. But he dreamed of future prominence and power with the enthusiasm of youth that has never left him. With that same enthusiasm he also bundled up nails and weighed out putty. Mr. Cottingham has on occasion put on paper his rules of life, in which he pays tribute to imagination as an integral element of success. "Factories of air must precede factories of brick" he says, and "warehouses exist first in the imagination." Montreal, with its greater field for



WALTER H. COTTINGHAM
President Sherwin-Williams Company

operation attracted him, and it was during the first five years he spent in that city working with a commission merchant in hardware and paint that he gathered his first knowledge of the paint business. In 1887 he launched out on the troubled seas of com-



S. P. FENN
Vice-Pres. and Treas. Sherwin-Williams Co.

merce as an independent maker of gold paint and other specialties. Failure and shipwreck were predicted for him and his enterprise. He received much advice, by far the larger part of which was to stay on shore where it was safe. But Mr. Cottingham made his own paint; he knew what was in it, and consequently could sell it without misgiving. His stock of enthusiasm was inexhaustible, and his faith in his proposition was strong.

At the age of 25 Mr. Cottingham was a miniature captain of industry. He was interested in some five different concerns, all of which were more or less active and prominent. It then occurred to him that he was distributing his eggs in too many baskets, so he gathered them all into one, and devoted his energy to watching that basket. He established the Walter H. Cottingham Paint Company, which grew and flourished under his focused attention. He secured the selling agency for the Sherwin-Williams line of goods among others. This had not been long in operation when he saw the possibility of handling a high-grade product in Canada, and he applied to the Sherwin-Williams Company for the exclusive representation in Canada. His proposition was accepted, and in 1896 the Walter H. Cottingham Company was merged with the Sherwin-Williams Company and in 1898 Mr. Cottingham was appointed general manager of the entire company to which in 1903 was added the title and responsibility of vice-president. In 1908 he was made president and holds that position today, as well as being one of the foremost business men in the United States.

Mr. S. P. Fenn, vice-president and treasurer, besides being one of the oldest in service of the Sherwin-Williams officers, having joined the company in its early days as accountant, is today one of its most active and enthusiastic officials. Mr. Fenn has proven himself an able financier, and has piloted the company through many times of stress as well as of prosperity. He is a man who has always stood for the best in business and in society, and has always lent a helping hand to those about him in need of his assistance and encouragement. In 1908 in addition to his duties as treasurer, the title of vice-president was added when Mr. Cottingham was made president.

Mr. Fenn's career does not stand out as a very eventful one as he has remained near the top and grown with the business. He has nevertheless been an untiring worker, and early riser, and has been a tower of strength and inspiration to the young men about him, desirous of making the most of their business careers. Mr. Fenn's activities stand out prominently outside the business as well as within it, chief among which is the presidency of the Cleveland Y. M. C. A.

The career of Mr. Adrian D. Joyce with the Sherwin-Williams Company has been one of rapid advancement. He began work with the company in 1902 as a salesman in the Central States. He left the company for a short time, but returned later to take charge of the large city sales work. He was later given another territory and in 1905 was appointed to manage the large Southwestern division with head-



A. D. JOYCE
Gen'l. M'gr. Sales and Distribution, Sherwin-Williams Co.

quarters in Kansas City. His work was so satisfactory that a new district was created embracing many states and Mr. Joyce was made district manager. This position he held until 1908 when he was called to Cleveland to be assistant general manager. Later on Mr.

Joyce was made general manager of sales and distribution which position he holds today, having charge of all of the American sales departments, being executive head of the advertising department, the traffic department, etc. Mr. Joyce is a man of the highest type, exceedingly energetic, a keen observer of human nature, and a man esteemed by all associated with him, both outside and within the company.

In 40 years the Sherwin-Williams Company under the leadership of the energetic business men at its head has developed into enormous proportions. Its facilities include five paint factories, five varnish and Japan factories, two dry color works, two linseed oil

mills and three lead and zinc mines and smelters. Within the past few years, two new branches, the insecticide department and the white lead department have been added, giving the company a decided leadership in the paint and varnish business of the world.

Industrial betterment has played an important part in the work of the Sherwin-Williams Company; reading rooms, rest rooms, clubs, a benefit association and numerous other things have helped build up a most agreeable environment for the many loyal employees each one of whom has some part to play in the manufacture or distribution of the paints that "Cover the Earth."

Thomas P. Egan—President J. A. Fay & Egan Co.

REPRESENTATIVE men are portraits of their surroundings, paintings of their city, state or country, and the difference in their prominence or relief lies mainly in the background of each.

Cincinnati has many types among her representative men. There are some who owe their influence to political power; others whose connections with wealth and family setting pushed them forward; and still others who have had greatness thrust upon them, as it were. Finally there are those who owe their prominence largely to themselves alone, to their native spirit, indomitable will and aggressive character; who came up mid poverty and adversity, who were compelled to constantly fight their way along, who were conquerors from boyhood. One of these, perhaps the most representative, is Mr. Thomas P. Egan, president of J. A. Fay and Egan Company.

The biography of Mr. Egan would make an interesting chapter, the reading of which would inspire the ambitious youth to strong endeavor, and hold out hope to the boy who has nothing but strength of character for an asset. It would be interesting indeed, to explore the background and see the lights and shadows which throw the picture into its peculiar prominence and relief. We regret that we can only glance hurriedly over it.

As a boy we find him attending school in the city of Hamilton, Ontario—and spending his vacation in a dry goods house at \$2.00 per week. As a youth we find him setting out for the States, where he thought greater opportunities awaited him. He was mechanic-

ally inclined, and at an early age we find him working in the shop of the John Steptoe Company. An accident which rendered manual labor impossible to him, sent him into the office of the firm where he became successively bookkeeper, manager and traveling representative. In 1874 we find him starting a business of his own, which grew so rapidly that in 1893, less than twenty years later, it consumed the old well-known machinery house of J. A. Fay & Co., forming the present firm, J. A. Fay and Egan Company.

The commercial rise of the J. A. Fay and Egan Company had its beginning in the year 1830, when Mr. J. A. Fay began the manufacture of wood-working machinery for his own use in a planing mill at Keene, N. H. Seeing the great

need of wood-working machinery in the world, he soon began to manufacture it for sale; and found it, of course, a worthy enterprise. Mr. Fay went to Cincinnati, Ohio, in the early 30's and started the business of J. A. Fay & Co., which soon grew to large proportions.



THOMAS P. EGAN

In 1874 Mr. Thomas P. Egan left the business of Steptoe, McFarland and Company, where he had acted in the capacity of salesman for several years, and started in a small way the business of the Egan Company. This company grew so rapidly that in ten years it was an equal rival of J. A. Fay & Co. In 1893 the two companies united under one name, J. A. Fay and Egan Company. In the years since, great strides have been made in its commercial importance, until to-day it is easily the largest concern of its kind in the world.

The business of the J. A. Fay and Egan Company, both domestic and foreign, is done entirely through its own representatives. While the preponderance of its trade is domestic, its export trade is greater than all the other wood-working machinery concerns combined.

Both the domestic and foreign trade of this firm arose largely from the demand created for its machines, by advertising in the trade journals of this country and Europe. It would be hard indeed, to-day, to find a trade paper, worthy of the name, which does not contain an advertisement of the Fay and Egan Company. Besides the trade journal advertising, four catalogues are issued annually, one each in English, German, French and Spanish.

While the enormous plant of the J. A. Fay and Egan Company now comprises three squares, it was recently found necessary, in order to take care of its constantly increasing trade, to erect another six-story building, 100 by 200 feet, which is now completed and used as a ware house and shipping department. It is at all times filled with machinery from cellar to dome ready for shipment. Building property is scarce in the neighborhood where the plant is now located, in the thickest of the business district of Cincinnati. This fact has led the company to purchase a large tract of land at Bond Hill, six miles from the city, on which, when it can no longer expand in its present location, they intend to erect a magnificent plant, where its continued growth will not be retarded.

The dominant force that has made possible this great commercial enterprise, the greatest of its kind in the world, is the personality of its president, Mr. Thomas P. Egan. This gentleman though to-day over 60 years of age, is very active in business. No man of 30 has more of the freshness of life than he. No business problem worries him. He sizes up a situation in a moment and is ready with an answer, which is invariably the right one. He has that rare power of handling men, especially in the sales department; in this respect he is a genius.

Mr. Egan has always been the active spirit of his own business and while he is ever engaged in its multitudinous affairs, he has shown the spirit of a good citizen by always trying to do his share toward the advancement of his city, industry or country. He was first to conceive and organize the now vastly important body known as the National Association of Manufacturers, and his private correspondence will

show that he was first among the members of this organization to suggest a permanent tariff commission which is now being agitated by that body. Mr. Egan has done much to advance the export trade in machinery lines and has been active in the citizens' organizations of his own city. The latest testimony to his character, which was fittingly bestowed, was when he was elected president of the Chamber of Commerce. His term expired a short time ago, and the success of his administration was acknowledged by the fact that he was proffered the unanimous nomination for the second term, but refused it. Mr. Egan has lately been much talked of for mayor of his own city, but he has repeatedly refused to have his name considered in connection with that office. Nevertheless, his friends believe he would make an able executive.



Worms in Finished Millwork

"Veneers" recently received this inquiry from one of the largest building material concerns in the country. "We have a new question confronting us, which has only recently come to notice, in the way of worms working into finished product, such as hardwood veneered doors. Have you had any reference to a matter of this kind previously from any one manufacturing furniture—that is, veneered or any other article along that line? We would appreciate information bearing on this subject."

The matter was referred to a prominent veneer manufacturer of long experience, who said he had never heard of worms appearing in the finished product. He had, however, seen worms in ash veneer three or four months after the stock had been boiled and cut. A veneer user of long and varied experience never heard of worms in finished veneer.

A third experienced man replied: "Replying to your question in reference to worms working in veneered doors, in all my experience I never had this occur on any work. Have known worms to work in ash, and some oak, when this lumber was stuck up outdoors for seasoning, but after same went through the drying process, such as most of the modern factories use at present, these worms never showed up in the finished work. It might be possible that parties having this trouble have been using door veneers sawed out of lumber and that this stock was not put through a process of kiln-drying, hence the worms were alive; or that eggs were still in the lumber and hatched afterward."



One gallon of mixed paint will cover from 25 to 30 square yards of stone work; 50 to 70 square yards on wood work; 80 to 90 square yards on iron work; and 40 to 50 square yards on plaster.

One pound of mixed paint will cover wood four yards for the first coat, six yards on the second coat, and seven yards on the third or fourth coat.



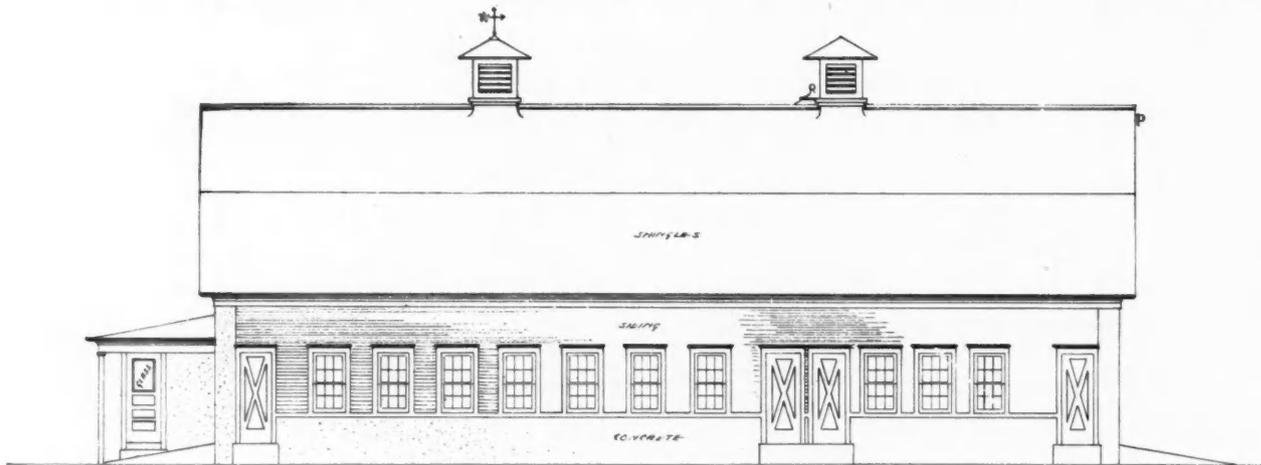
Plans For Dairy Barn

WORKING DRAWINGS OF A MODEL DAIRY BARN FOR TWENTY-FOUR COWS—PROPER SIZE SILO FOR HERD OF THIS NUMBER

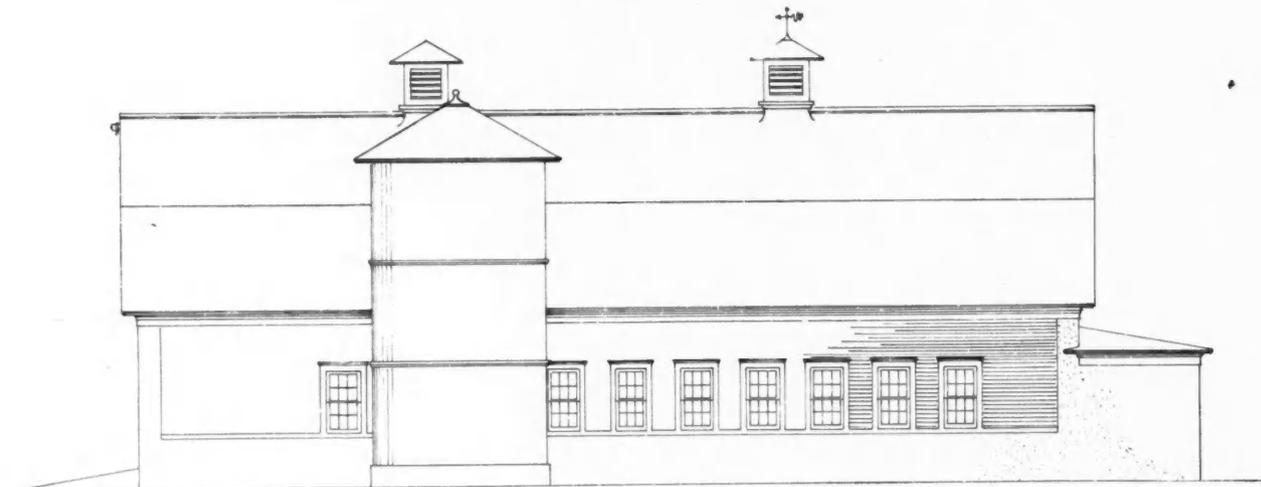
THE accompanying drawings show a barn designed for 24 cows, allowing also ample room for calf pen and box stalls for bull and cows, also space for feedroom, milkroom, silo, etc. The amount of space allowed for the various purposes will meet the usual requirements, and the arrangement can be readily adopted to the needs of any particular case. The side walls are built of concrete (or stone) up

to the window sills, the balance of the barn being frame. The end walls are constructed of concrete up to the stable ceiling. A partition extends across the barn so that the cow stable can be entirely shut off from the rest of the barn.

One of the weakest points in barn planning is the small amount of window space ordinarily allowed. This design provides for approximately six square

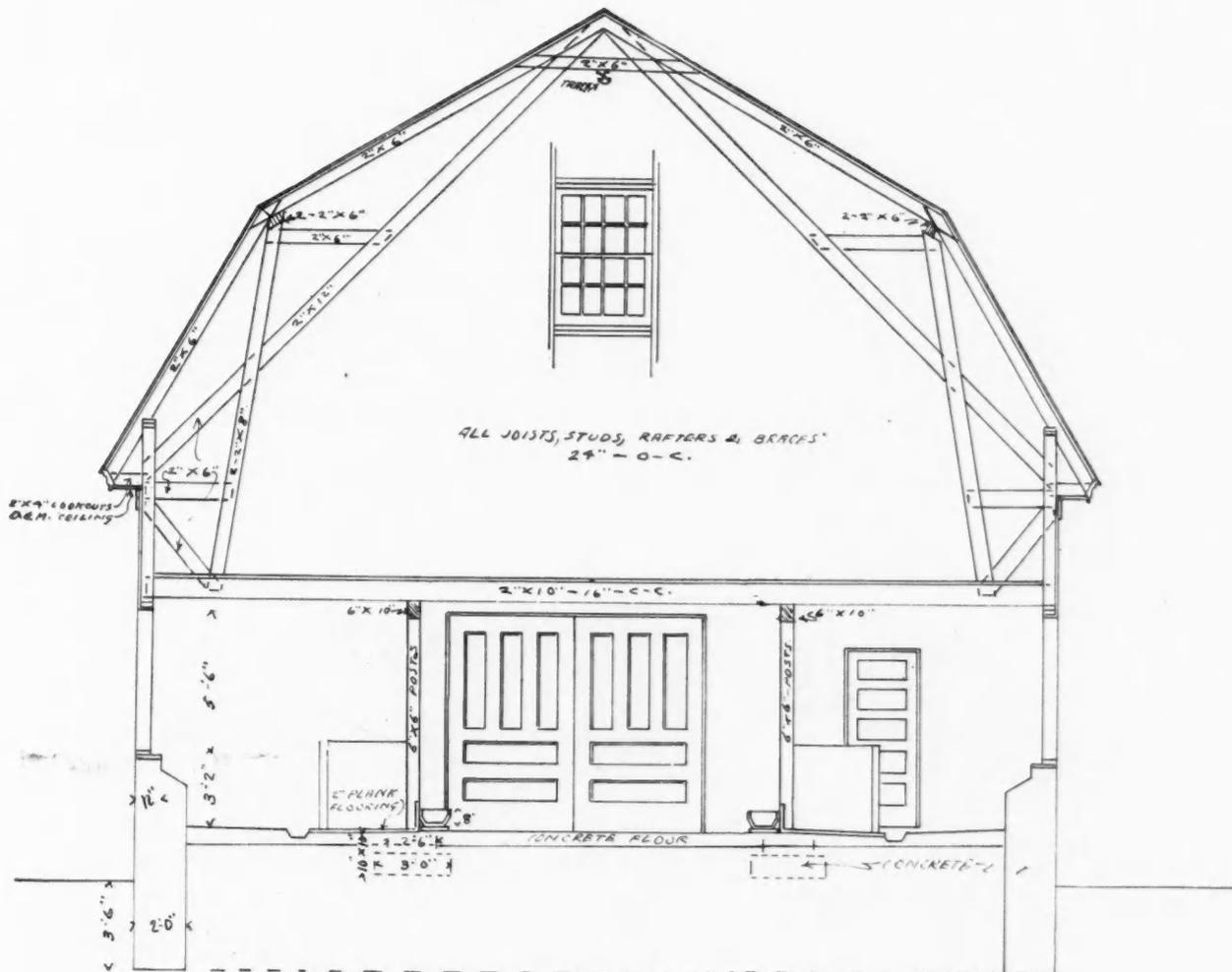
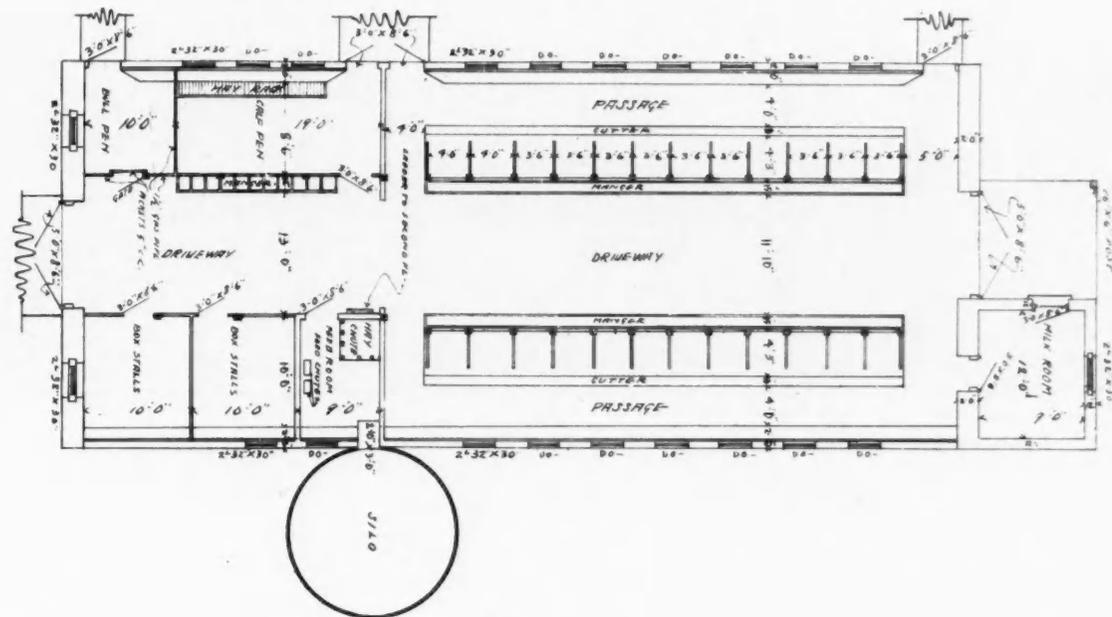


FRONT ELEVATION



REAR ELEVATION

FIRST FLOOR PLAN



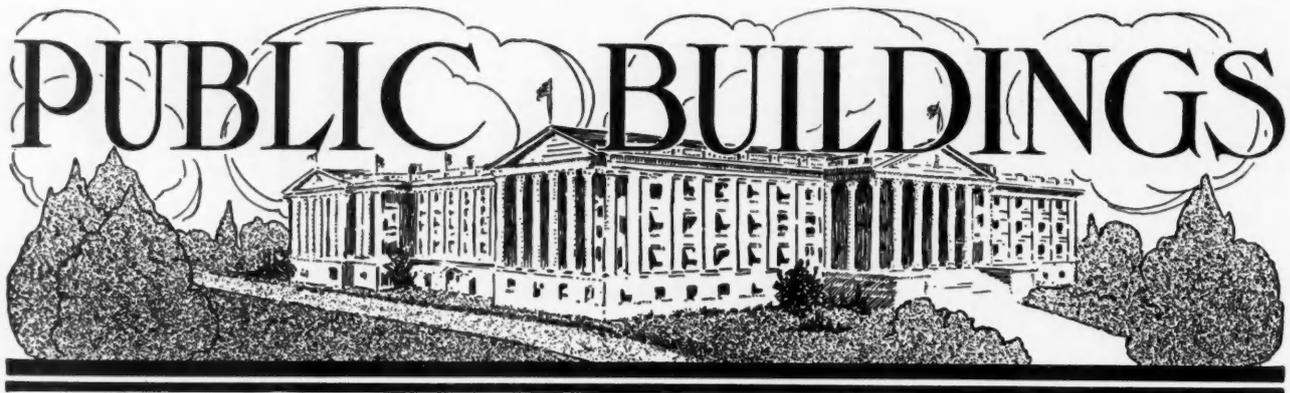
SECTION

feet for each cow, the sliding sash used, extending to the ceiling giving extra good lighting.

The plan shows the stalls to be 3 feet 6 inches wide, which is as narrow as should be allowed. The depth is indicated as 4 feet 3 inches; but this may be varied

according to the size of the cows. The gutter is 10 inches wide and 6 inches deep.

The silo is 14 feet in diameter and 32 feet high, having a capacity of 110 tons. This will provide silage for 24 animals for 6 to 8 months.



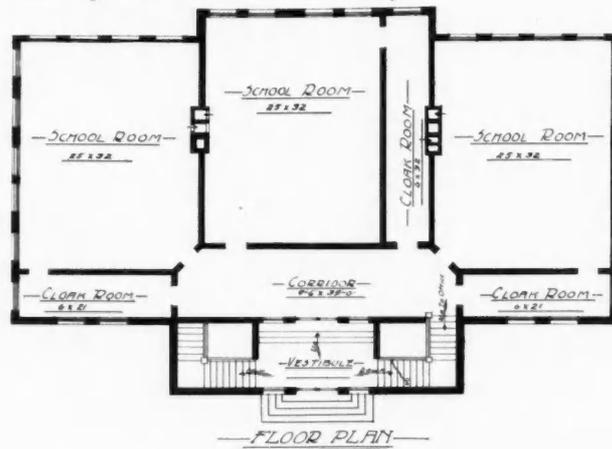
A Three-Room Village School

PERSPECTIVE AND FLOOR PLAN OF A WELL DESIGNED SCHOOL BUILDING OF MEDIUM SIZE FOR VILLAGE OR COUNTRY

LAST month we presented in this department a two-room school of modern design and substantial construction, such as are being put up today in the progressive country districts. This month we show one that is slightly larger—containing three good classrooms besides cloak halls, and with a principal's office, 9 by 16 feet in size, on a second floor over the entrance. A school house of this size and style would be very desirable for a village district or where two country districts are united into one school. The large well-lighted basement provides nicely for the needs of such a case, furnishing dinner-rooms, etc.

This school building is designed to be substantial and enduring, being composed of first quality brick and stone and having no fussy ornamentation to get into disrepair. A structure of this kind is to be rec-

ommended since it would be a permanent investment and improvement to a community.



Small School Building for Village or Country, G. W. Ashby, Chicago, Architect

CORRESPONDENCE



Rustic Cottage Work

To the Editor:

Saranac Lake, N. Y.

I would like to ask of you if you know of any way to estimate rustic work. We have lots of this kind of work here in the Adirondack mountains for rich parties. Their "cottages" are built out of logs of spruce or cedar, and many of them cost a good deal of money. The logs and braces, look-outs, rafters, hips and large rafters, railing and balusters are all of round rustic with bark on. All have to be coped together in the best manner. The stairs are built with strings made of rustic logs 14 and 15 inches through and grooved out to receive half logs for treads. The logs are half peeled so as to leave bark outside and peeled inside. The bark must not be bruised off on any account. Some of these camps here cost as much as \$150,000. Yet I dare say there is not a contractor that knows of any method to figure or estimate this kind of work mechanically. For instance, a man can saw and fit four timber braces while he is sawing and coping one rustic brace. I have done lots of this work and understand it all, yet know of no method to estimate the work.

If you or some of the brother carpenters know of any method to figure and estimate the work on rustics I would like to see it in the AMERICAN CARPENTER AND BUILDER.

J. A. WASHER.



Tackle for Barn Raising

To the Editor:

Malcolm, Iowa.

I see by the March issue, that one of my brother subscribers is asking for information in regard to raising barns and hoisting heavy timbers. I am not much of an artist, but am sending you a rough sketch of a system that I have used very successfully. It consists of a heavy iron ring and hook which should be made of about $\frac{3}{4}$ -inch iron; the hook should be heavier—not less than 1 inch. The one that I have is $6\frac{1}{2}$

bolt through them, near the ring, they can be carried around and used for lifting heavy timbers and joist. I find that a three-pulley tackle is the handiest in the work I have been doing and should be large enough to take $\frac{3}{4}$ -inch rope, of which I use about 150 feet.

I also have a way of my own of tying the foot of the timbers. It works on the principle of a hinge and the rope never pulls tight.

In barn work, I have discarded the old mortise and tenon system of framing sills and now bore holes and use a piece of gas pipe about 4 or 5 inches long. A. D. DOUGLASS.



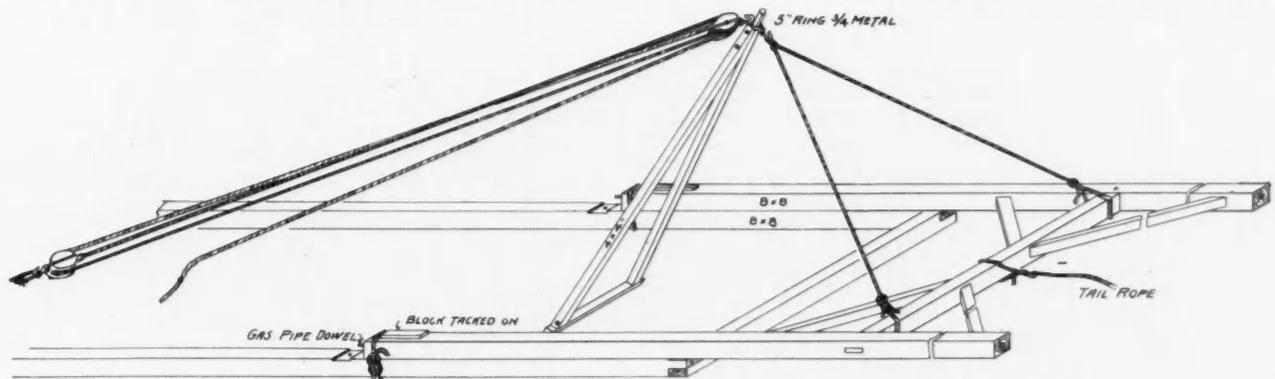
Rotting Sills and Shingling

To the Editor:

Marshalltown, Iowa.

I do not wish to be construed as criticising the reply of J. R. Wright to George Novotny as to rotting sills and shingling, in the October number. I just wish to add a few suggestions. As to rotting sills the foundation walls ought never to project beyond the sills or framework. This will allow the sheathing, stripping and siding to project beyond both sill and wall. By this method the water never gets under the sill but drops from the siding to the ground. And let me say right here to you builders, never put a water-table for a base around a house, no matter how expensive the building. For a water-table causes as much trouble as a leaky roof. It always rots the sill at top of water-table.

Now as to shingling. I agree with Mr. Wright except the nailing about one inch above the line of the following course. For that is just the spot where shingles always begin to rot and the nails rust off. It is much better to nail from 2 to $2\frac{1}{2}$ inches above line of following course for reason above given. I prefer an iron cut nail for shingles to all others. I know there are great claims made for the galvanized nail but they do not come up to the old fashioned iron cut nail.



inches in diameter and is made to slip over the ends of two 4 by 4 inch poles, sharpened as shown in the drawing. It will be readily seen that the poles used for this jack, or derrick, should be long enough to raise the timbers to an angle of about 45 degrees before they slip out of the ring. With just a little experience, one will be able to adjust them to perfection and will use them for nearly everything. By placing a

I have taken off roofs that had been shingled 25 years with the iron cut nail and the majority of the nails were still in good condition, and I have seen the wind whip off shingles that had been nailed with wire nails only 3 years before.

Now as to siding the base of a house instead of putting on a water-table, a great many jobs are ruined by nailing the first siding flat against the sheathing instead of using a strip

5/16 of an inch thick by about one inch wide at bottom edge of siding. Never let your building paper come down to bottom edge of siding or sheathing; it should be up a full half-inch, as otherwise it is liable to absorb moisture by capillary attraction.

J. G. WEATHERBY.

How to Lay a Shingled Diamond

To the Editor:

Tuckahoe, N. Y.

About staining shingles, I would like to know how to mix green stain, and do not understand just what quality and quantity to use for one thousand.

I would also like to have drawings for a singled diamond and an explanation of the proper way to go about this kind of work.

JOHN F. BRENNAN.

Answer: A good shingle stain may be made by using pure white lead in oil, and strong chrome green in oil, raw timber and a little lampblack, mixed until you have the desired shade, thinning with boiled linseed oil and a little japan. To a quart of this paint, add for dipping purposes, five quarts creosote oil, and for application with the brush, mix one quart of the oil paint and three quarts of creosote oil. A common estimate is that three and one-half gallons of stain will be sufficient for one thousand shingles, dipping two-thirds of the shingle.

The accompanying sketch shows how to lay a shingled diamond. The method of doing this is as follows: In shingling a gable use ordinary dimension shingles up to the point where you wish to start the diamond. Then in the next course, which is numbered "4" on the drawing, put in one pointed shingle, "A," which comes down over the shingles in course "3." Then in laying course "5" put in two pointed shingles, "B," which come down over the shingles in course "4." In course "6" lay the three pointed shingles, "C," which come down over course "5" and then lay the shingles, "F," sawed with one beveled side overlapping the two outside shingles, "C." Continue courses "7" and "8" in the same manner, and run the balance of the work through in the regular way.

EDITOR.

Blue Printing

To the Editor:

Hartford, Conn.

I cannot get very clear lines in blue printing, and cannot find out where the trouble is. I use Higgins' India ink and have tried common black ink for tracing, but can not seem to get clear white lines.

THOMAS ANDREWSSEN.

Answer: It may be that your paper was exposed to the light before being used for blue printing. This paper should only be subjected to a very dim light, and then only for a very short time when placing in the frame for blue printing. After it is in the frame, and the back clamped tight into the frame, it can be exposed to bright light, but not before. It may be that you exposed the paper to the action of the light too long, or possibly not long enough. You should always use India ink, and expose the paper until when you open the back of the frame, it appears of a dark bronze color.

If you have made good heavy lines on your tracing, and

if the paper has not been previously exposed to light, upon washing the paper, the white lines will come out very nicely. There is one point which you may have neglected; the tracing should be pressed very firmly against the blue print paper, so as to make perfect contact between the two. This is necessary for good prints.

EDITOR.

Stave Silo

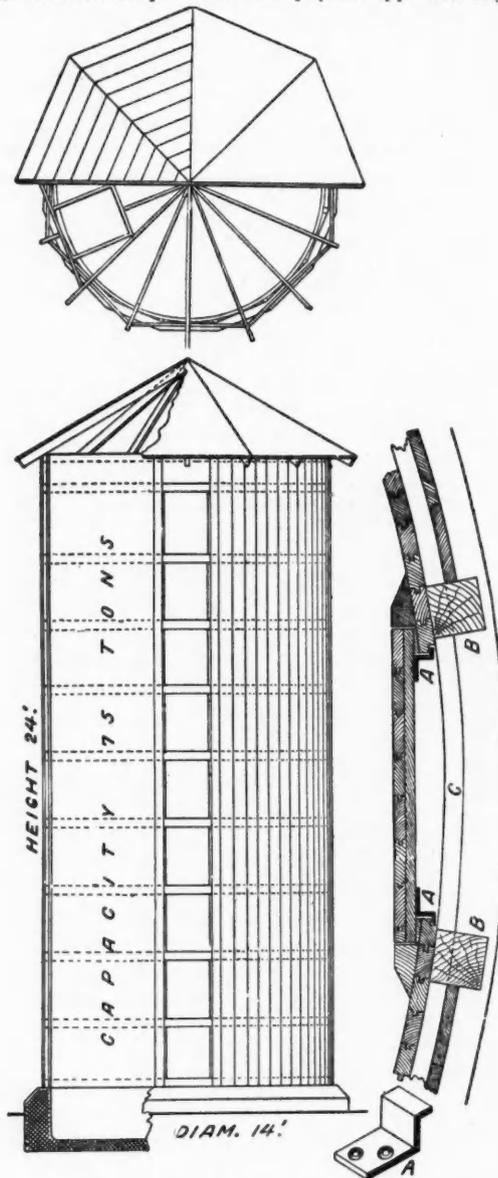
To the Editor:

DeWitt, Neb.

I would like to ask if the editor or some reader of the AMERICAN CARPENTER AND BUILDER will please give some good plans and information in regard to building silos, principally frame silos, as concrete seems to be objectionable in some ways. If you would please give the best plans and methods it would be highly appreciated in this locality.

FRANK LAKE.

Answer: The accompanying drawings show a 75-ton stave silo with wooden hoops. This is a popular type and ought to



serve your purpose very nicely. Four thicknesses of tough 1/2-inch lumber are used in building up the three or four hoops nearest the bottom, and three thicknesses for the rest of the hoops. The lining is of 3/8-inch matched lumber. The construction of doors is shown at the side of this figure. A, A, A are iron clips bolted to the door; B, B are the door posts; C is the wooden hoop.

EDITOR.

Wants Brick Bake Oven

To the Editor: Yuma, Tenn.
 Will some one give me a detail plan of a small bake oven, say about the size for 30 or 40 loaves—one built out of brick?
 J. J. SCOTT.

Brick Veneering

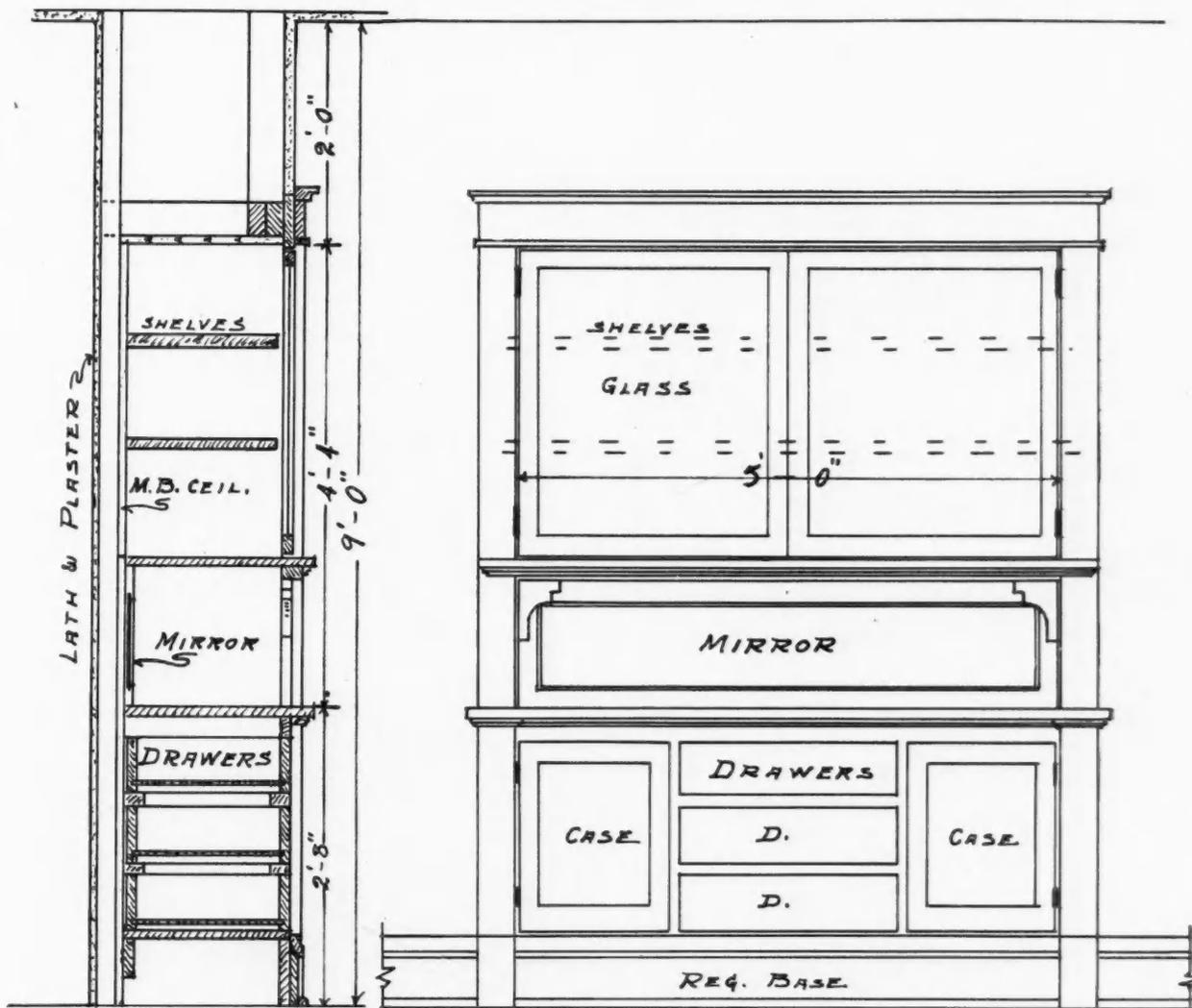
To the Editor: Fort William, Ont.
 I have a frame house 26 by 28 feet, 18 feet high to the roof that I am thinking of veneering with red brick. Would it be practical to fill in between the brick and boards solid with mortar? Would it be as warm and healthy as if there was a small air space? Now most bricklayers, when they are veneering a house, take up a brick and just put on a little bit of mortar, about a quarter of an inch, to make it look right from the face—and that is all it ever gets.

China Case in Partition

To the Editor: Corning, Iowa.
 Will you give me instructions in regard to building china closet in wall, face of it to be flush with partition on dining-room side, and back of it to project into kitchen.

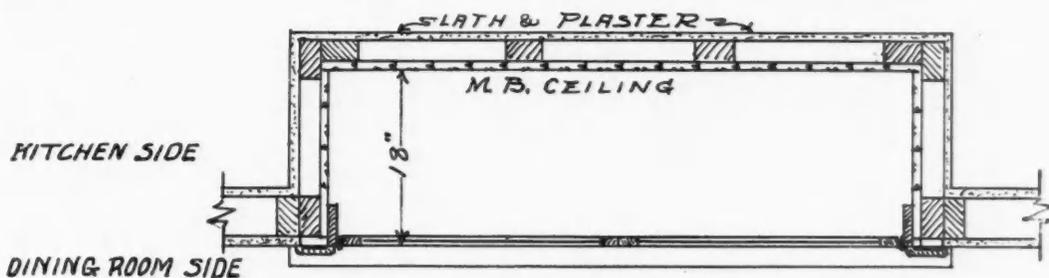
A. STEPHENS.
 Answer: The accompanying detail shows the arrangement for such a case, and requires no explanation. EDITOR.

I would like to have you put it before the readers of the AMERICAN CARPENTER AND BUILDER and get their opinion on these points. Also what is the best way to hold the brick onto the boards?
 FRED GAYTON.



SECTION

ELEVATION OF CHINA CLOSET



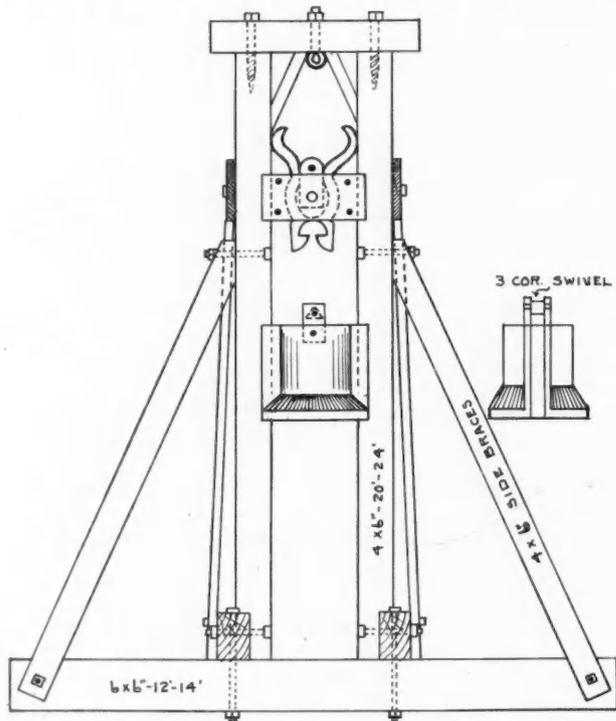
PLAN OF CHINA CLOSET

How to Make a Pile Driver

To the Editor:

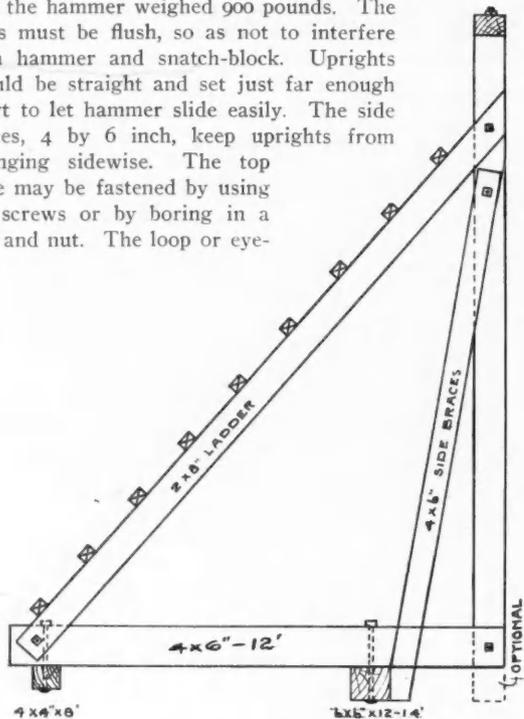
Fossum, Minn.

The cut of the driver is not to scale, but as dimensions are given, I trust it will do to build from. One like it was built



FRONT VIEW OF DRIVER

right on the place where used, in fact, they must be, unless "taken down" for transport. The size of uprights depends on width of slide in hammer; this one used a 4 by 6 inch. I was told the hammer weighed 900 pounds. The bolts must be flush, so as not to interfere with hammer and snatch-block. Uprights should be straight and set just far enough apart to let hammer slide easily. The side braces, 4 by 6 inch, keep uprights from springing sidewise. The top plate may be fastened by using lag screws or by boring in a bolt and nut. The loop or eye-



SIDE VIEW OF DRIVER

bolt at center is for pulley, which should come as near top as possible to make sure that snatch-block trips, and these parts must be strong if the hammer is heavy.

The snatch-block is made of two pieces, best of hardwood

for wear; is bolted together and must slide very easily. The jaws are not easy to make, because they have to be made of half thickness in center, so as to be straight for each other above and below block. The clevis in center is of flat iron and is outside of jaws, but inside of block, using same bolt.

The trip braces need not be heavy, 2 by 4's laid flat at a steep pitch are alright.

The 6 by 6 inch foundation timber, 12 or 14 feet long, is set back a couple feet or so, to allow room for hammer, and to this the side braces are fastened. The 4 by 6 inch cross timbers, 12 feet long, are gained into uprights at bottom (or if you prefer the uprights to reach down more, then make the gain accordingly; but such ends might be in the way, too, if long). Then bolt on the 4 by 6 cross timbers square out from 6 by 6 foundation timber; center the 4 by 6 inch foundation timber, 8 feet long, and bolt at outer end, leaving ends of 4 by 6 to project to each side. The ladder part is of 2 by 8's with 2 by 4 inch rungs set about 16 inches apart, nailed on.

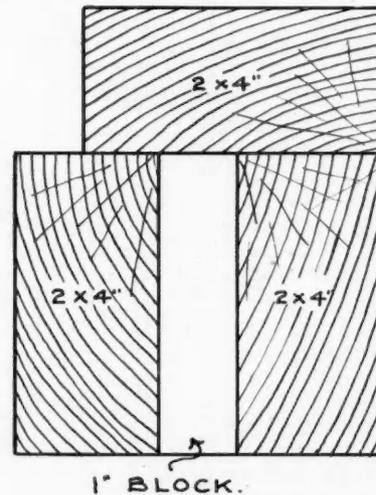
A. O. STIEN.

Another Corner Post

To the Editor:

Lomax, Ill.

I notice in a recent number of the AMERICAN CARPENTER AND BUILDER an illustration of corner post framing and thought perhaps it might help some one to tell how I frame corner posts. I select straight pieces of studding and nail



1" BLOCK.

them together with 1-inch blocks placed between them. The blocks are placed about 2 or 3 feet apart. Then I nail a stud on the edge flush with one side, which will form a rabbet, as shown in the illustration.

GEO. F. MOORE.

Suggestion and a Question

To the Editor:

Jerome, Idaho.

I am always anxious to get the AMERICAN CARPENTER AND BUILDER, and always read very carefully the correspondence pages.

I see in the March number that Mr. Roscoe F. Metcalfe takes exceptions to Mr. Geo. H. Rieveley's method of corner post framing as given in the December number. I beg the privilege of offering another method which seems to me to be better than either. The fault of the first has been explained so I will take up the second method and offer my objections to it. It will, in the first place, take a special order in the material bill; there is more material used than necessary, and greater still, is the probability of getting twisted bad timber unless a special effort is made to go and select the material. I place two common straight studding edges up on the horses on which I lay the third flatwise. I spike the top one onto the edge of one of the bottom ones, leaving the edge of the top one even or flush with the face of the

bottom one. Then I spread the bottom ones apart until the projection by the top one is 1 inch, leaving the remaining edge to spike into. When this is done the corner is done, and there is a studding on each side of the angle set the same as the studding in the walls, leaving a full edge on one side to nail lath on and 1 inch on the other for the same purpose. This method can be as well employed on larger studding as on 2 by 4 stock.

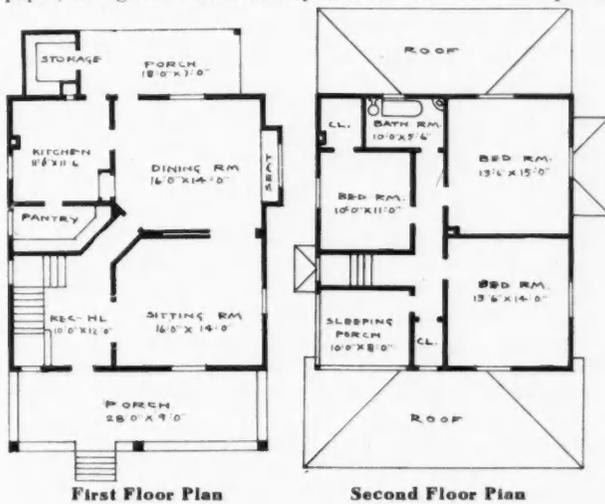
I would like to ask if it is good policy in framing outside door openings where the exit is onto a porch, to leave the sill out, making the floors even with simply a threshold under the door? I have seen this done a great deal and have used the method myself. Would like to know what some of the other "Chips" think of it.

M. L. PARSONS.

There Have Been Many

To the Editor: Portland, Ore.

As I have been a subscriber of your paper for over two years and have never seen a house from the west in the paper, thought I would send you one. Enclosed find picture



House at Oakland, Ore., Cost \$1,850

and floor plans. There is no basement, as they do not build them in that location. This house was built in October, 1908, at a cost of \$1,850 complete. It was designed by myself and built by Deardorff & Miller at Oakland, Ore.

J. W. DEARDORFF.

Fireless Cookers

To the Editor: Greenleaf, Oregon.

Seeing Chas. E. Otto's request in regard to a fireless

cooker, I submit the following for your correspondence department.

A fireless cooker is readily constructed by making a double box, the inside being suitable size for the vessels intended to use, and the outside enough larger to allow a filling of from 4 to 6 inches of sawdust. Make the top extend same height as the rest of the extra size, and make a pillow filled with sawdust to fit over the top, before putting on a tight fitting wood cover. This makes the simplest satisfactory rig I know of.

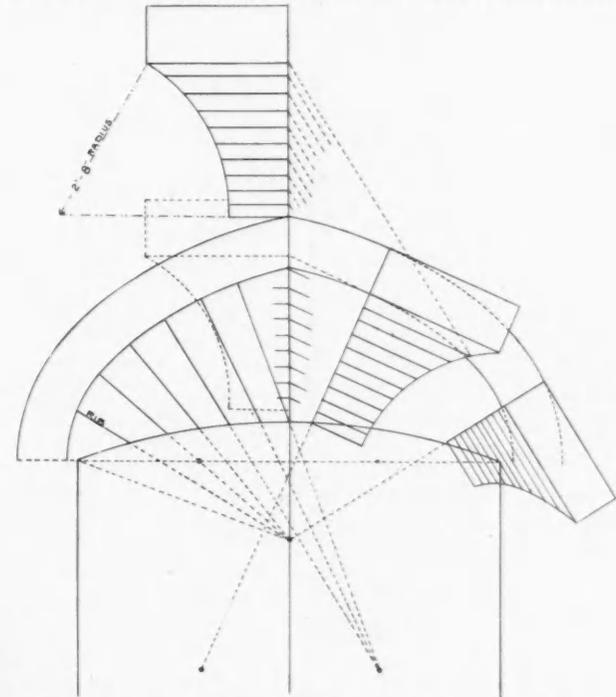
An emergency rig that is fine is simply a coal-oil box, or something of like nature, filled with sawdust, and the food in one or two Mason jars, buried in the sawdust. This will finish cooking food, or keep food hot from one meal to another, nicely, but it is a nuisance to have to dig out a hole each time, to put the jars in.

MARION P. WHEELER.

Another Rib Finder

To the Editor: Rossie, N. Y.

Enclosed find a sketch that I think, if drawn out full size, will help Mr. O. B. Fetters out of his trouble. This method of reducing brackets and mouldings is too well known to most carpenters to need any explanation. To avoid as much as possible a confusion of lines, I have shown only two reduced ribs.



The rib shown at the top with 2 feet 8 inches radius is the center rib, from which the other ribs are to be formed. The dotted lines show the different positions they would occupy in order to intersect with right-angled lines drawn on reduced ribs.

J. B. MALOY.

Mortar for Fireplace Tiles

To the Editor: Convent, La.

Mr. Edg. J. C. Horn wants a mixture for mounting tile on slabs—a proposition not clear to me, but I will give him a mixture for mounting tiles on hearth and also one for facing. The instructions given are for loose tiles.

First, tiles should be soaked about one hour in clear water, then taken out to drip. The mixture for the hearth is 1 part Portland cement and 2 parts clean sharp sand; and mixture for the facing is 1 part Portland cement, 1 part slack lime and 1 part sand. This is commonly known as bastard mortar. You can try this with reliance.

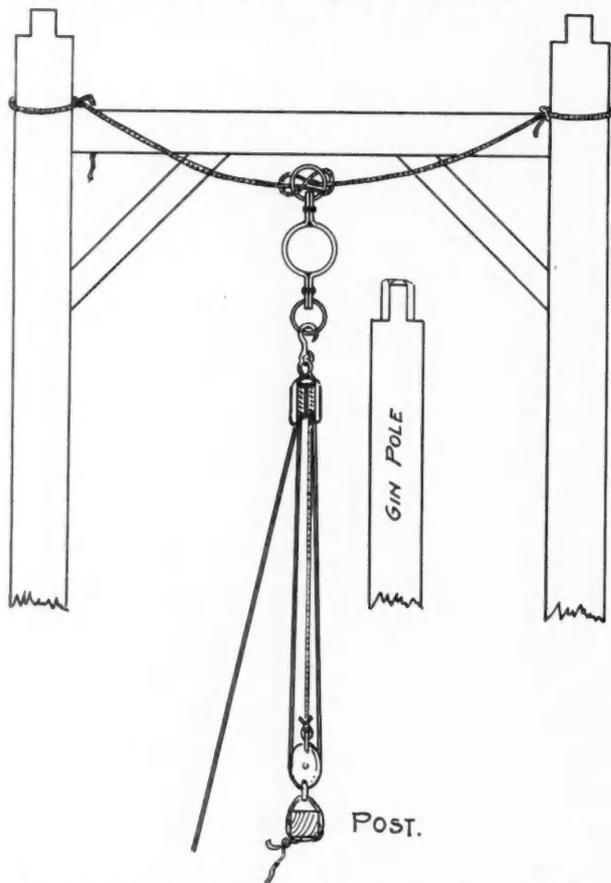
B. P. TUREAUD.

A Barn Raising Rig

To the Editor:

Miles, Iowa.

I am a charter member of the AMERICAN CARPENTER AND BUILDER, and would not be without it. We are all getting new ideas from others since we never get too old to learn. Recently I noticed a question asked by brother chip, Oliver B. Extrom, of Varna, Ill., for an economical method of raising timbers in erecting barns, or other buildings. I am sending a rough sketch of my outfit. The ring for pin or gin-pole is $3\frac{1}{2}$ inches inside and is made of $\frac{1}{2}$ by $1\frac{1}{4}$ inch band iron and is made in two pieces, bolted together. The other rings are made of $\frac{3}{4}$ -inch round iron and welded after being run through the holes of the large ring, and must be large enough to work easily. The top of gin-pole should be made small enough so that when the bent is raised up above it, it will readily slip out of the large ring; and the rest of the way the bent, or timbers, are handled by the ropes. I use a jack



with crank on both sides and with this, two men will pull up a large bent of 8 by 8 or 10 by 10 inch timbers. I use either 1 or $\frac{7}{8}$ inch best rope, except for bull-rope, which should be not less than $1\frac{1}{4}$ -inch. I have a large hook made of 1-inch iron to hook into large ring the same as for double block. I never use a team for raising purposes because they are not steady enough to hold if anything should go wrong. A good jack is safe, and if made secure, the raising process will be sure.

V. DENICK.

Ventilating Coolers

To the Editor:

Pasadena, Cal.

I am a charter member of the AMERICAN CARPENTER AND BUILDER and in renewing my subscription I want to ask if any of the brother carpenters or builders have had experience with ventilating coolers and cooling closets. If so, let us hear from them.

I find many good points in the correspondence and enjoy the paper more and more.

A. J. SPINDT.

Cinder Concrete

To the Editor:

Ft. Wayne, Ind.

Can you tell me if cinders mixed with sand and cement will make a good strong block, and whether it is being much used? What are the proper proportions for the mixture?

T. F. WEST.

Answer: The use of cinders for such work where the blocks are to be used in any place which requires any considerable strength can not be recommended. Cinder concrete is not considered to be of great practical use, excepting for very light loads, and for fire-proofing purposes. Even then, care should be taken to see that all particles of fine coal are absent from the mixture. For fireproofing purposes, the mixture is 1:2:4 cement, sand and cinders.

EDITOR.



Aesthetic Boston Criticises

To the Editor:

Boston, Mass.

I noticed in a recent issue of the AMERICAN CARPENTER AND BUILDER an invitation to its readers to contribute their criticisms or suggestions on any subject which they thought would add to the usefulness of the paper.

The magazine has received many well-deserved "boosts," but if any criticisms have been made few have found their way into print.

I hope that will be the fate of this one, if you class it as such.

So, to begin with, Mr. Editor, I am going to suggest that you be a little more particular about the designs you publish or, better still, that you have them commented upon by a competent architect, and the *bad* as well as the good features pointed out and brought to the attention of your readers.

I am afraid that if something of this sort is not done you will soon find that you are filling the whole land with buildings of small convenience and, in many cases, absolutely no beauty.

I have in mind especially the floor plans and photograph, published in the January issue, of the house built by Mr. S. J. Palmer, the design for which, so he proudly states, he obtained from the pages of the AMERICAN CARPENTER AND BUILDER!

Now you know very well that the elevation of this house is not good, owing principally to the clumsy porch and the two thin, lonely-looking little columns, while the first floor plan is the worst I ever saw with the main hall leading directly into a bedroom and the bathroom so situated that every one must cross this main hall to reach it.

Another example of very inappropriate design is the Methodist church in the same issue, by Woods & Corder I believe.

It is well that they put such a plain label on its front elevation, as otherwise no passerby would ever mistake it for anything else than a fine little classic postoffice or a Carnegie library.

I could go still further, for I believe that even Mr. Ashby sometimes loses sight of the aesthetic in the practical requirements of his school houses. Certainly no one could accuse him of being a "Beaux Arts" man.

On the whole the AMERICAN CARPENTER AND BUILDER is a great credit to you, and of course you make it as practical as you can that it may be of the greatest use to us carpenters and builders, but is it well to entirely ignore the other side?

WALLACE HINCKLEY.



Wants to Know About Glue Moulds

To the Editor:

Battle Creek, Mich.

Can you tell me how to make the soft glue or gelatine that they use for moulds in making staff work? I want to try it in cement work.

WILL CARLIDGE.

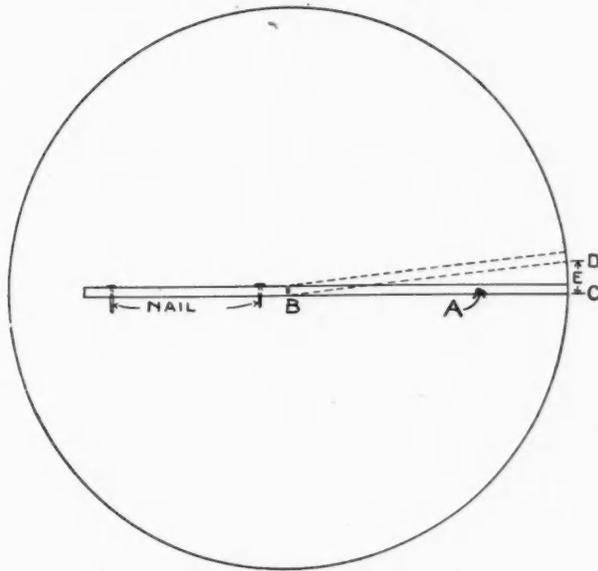
How to Kerf a Board for a Circle

To the Editor:

Raymond, Kan.

Having been a reader of your valuable and highly prized journal for sometime, and having lately taken advantage of the liberal offer for "Cyclopedia of Construction," I will say that I have been at the business in different capacities for over 45 years, and will in few days attain to three score and ten, but have not lost my nerve and still can tell when a building is plumb, square and level.

Thinking some of the boys might be interested in knowing how to spring a board inside a circle, I send a diagram of the way I have done it for many years. Take exact diameter of circle, with tram on floor or table, then strike exact thickness of stuff to be bent for inner circle; take a strip of same thickness as stuff to be sprung (A in diagram), make a saw



cut so that it will bend easily but not break. Place this saw cut at center B and straight across circle C; nail lightly in two places to hold in position. Make mark across by strip at C, then bend the strip until saw cut is closed snug but not too tight. Mark across at D, leaving distance E between the two marks; measure this with compass and step off the board that is to be sprung. Saw across at each step with a square cut, deep enough so that it will bend easily but not break, using same saw that was used to saw strip.

I hope that this may be of use to some young man just starting the business.

H. SEEVER.



Staff Work

To the Editor:

Galveston, Texas.

Can you give me any information about how to make staffwork castings in plaster of Paris, or how to make the mould in wax or gelatine.

ED F. DREWA.

Answer: From an article published in the *Engineering Record*, we learn regarding staff castings that the staff for the World's Fair buildings was made on the grounds at Jackson Park, Chicago, in the following manner:

The ingredients were simply plaster of Paris, or Michigan plaster, water and hemp fiber. Hemp was used to bind together and add strength to the cast, and the New Zealand fiber was preferred, as both the American and Russian fibers were found to be too stiff. The first step in making staff ornaments is the creation of a clay model. The model is heavily coated with shellac, and a layer of clay separated from the model by paper is put on its face and sides. This layer of clay is oiled or greased and a heavy coating of plaster and hemp is put over it. The thickness of this coating is de-

pendent upon the size of the model; sometimes it is 5 or 6 inches thick and contains heavy battens of wood to strengthen it. In less than twenty-four hours this coating is hard and is taken off the clay covering the model. The coating thus removed is called the box. After this the clay is removed from the model and the model is thoroughly oiled. The box is oiled and put over the model, leaving the space between model and box, formerly taken up by the clay coating, a free space. Holes have previously been made in the box, and over a large center hole (sometimes over two or three for large pieces) a plaster funnel is placed. Through these funnels is poured molten gelatine, which fills every space, air being allowed to escape through small holes in the box. In from twelve to twenty-four hours the box is again removed, placed hollow side up, and the now hardened gelatine is removed from the clay model and placed in the box, which it fits perfectly. The clay model has now served its purpose, for the gelatine, which has become a matrix of the cast desired, is used in the further stages of the work. In case of large moulds the gelatine matrix is sometimes cut into as many as eight pieces. All these, of course, join perfectly in the box and are cast from it as if from a single matrix. The gelatine mould is washed a number of times with a strong solution of water and alum, and after oiling is ready for the operation of casting.

The plaster for the staff is thoroughly stirred in water, and the hemp, cut into lengths of from 6 to 8 inches, is bunched loosely, saturated with the plaster and put in the molds in a layer of about 1 inch in thickness. Succeeding handfuls of hemp are thoroughly interwoven with the preceding, the hemp being expected to fill in all the corners of the cast. When the mold is filled the back is smoothed over by hand, and later the cast is removed from the mold. The time consumed from starting a cast to removing it from the mold is about twenty-five minutes for a cast 5 feet by 2 feet 6 inches in size. After the removal of the cast care must be exercised that it does not collapse nor lose its form by warping, either in standing it up or in laying it down. During the summer months a cast of the dimensions given will dry thoroughly in about thirty-six hours and is then ready for application. In the winter months there is danger of casts freezing before they are dry, and in that event they are apt to go to pieces when warm weather comes. A good workman can make as many as seventy-five casts in one mould, and then the gelatine is remelted and a new mold made of it, the box being good for use for an indefinite length of time. In making pilasters or mouldings, etc., not ornamental or under-cut, plaster and wood molds are often used, the latter material being especially preferred, owing to its durability. EDITOR.



Use of Old, Lumpy Cement

To the Editor:

St. Charles, Ill.

Where cement has been stored for some time and allowed to become lumpy, I have read that it has greatly lost its strength and is not safe to be used for important work. Can the cement, which is in the same bags, but not in lumps, be used for any kind of work? If used for cement floors, curbs, etc., should it be mixed in larger proportions than if same were fresh?

CARL ESCHERICH.

Answer: We do not believe that such cement should be used for any work where great wear is likely to come. While parts of the cement in bags of this kind may not be ruined, it is hard to tell just how much dependence can be placed in such material. It might be all right to use such cement in work like massive foundations, or where a fairly lean mixture is allowable, but on account of the doubt which may always exist in regard to the reliability of the material, it would be better to specify first-class material for important work. In other words, we would not care to use such cement where any dependence was to be placed in it. EDITOR.



"Specs" for Cement Construction and Waterproofing

We have received from the Trussed Concrete Steel Company, Detroit, Mich., a copy of their complete specifications, just off the press, covering reinforced concrete, Hy-Rib and Rib-Lath construction, and water-proofing concrete. We understand that this company have also issued these specifications abridged, to cover only water-proofing and stucco work.

These specifications have been prepared with greatest care and embody the very best practice in work of this kind. They should be invaluable to every architect, engineer and builder who specifies materials. They will be sent free on request to readers of the AMERICAN CARPENTER AND BUILDER.

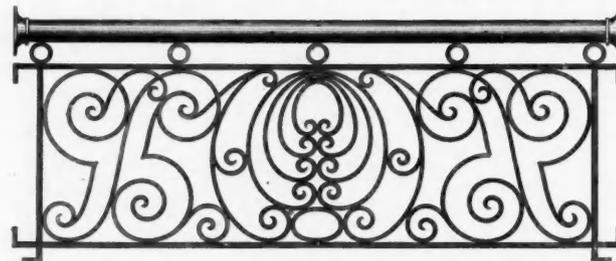
Square Diehl

Carpenters and builders who are looking after practical things in builders hardware specialties would do well to keep their eyes on the Diehl Novelty Company's line as they have the reputation of putting out the most practical line of hardware specialties on the American market. Their goods are all that is claimed for them and even more. They are strong, durable and practical and strictly up-to-date. The Diehl Novelty Company, Sheboygan, Wis., have built up a business said

to be unsurpassed by any other hardware specialty company in the country, and Mr. Diehl is ever ready to give his customers square treatment.

Ornamental and Structural Iron

The Dow Wire & Iron Works of Louisville, Ky., have put in new machinery and increased their capacity for structural



NO. 130. BALCONY RAILING

and for ornamental iron work. Their business has grown very considerably in this direction. They seem to know how to serve the contractors with good work, and promptly. They issue a catalog on ornamental work that every builder should secure, and it can be had for the asking.

THIS wonderful success is due to the correct Architectural design in all its details. In the development of the Kawneer System we, first of all, created the "Kawneer Principle." This principle coupled with correct Architectural lines has given it the stamp of superiority. The ventilation and drainage sash gives a free circulation of air directly against the inner surface of the glass, the only possible means of eliminating frost and sweat. All glass is set from the outside and is held in place with a spring friction grip. This device not only provides for glass expansion and contraction, retaining it tightly at all times, but takes up inequalities in thickness also. The sash sets directly against wood, brick, stone, cement or iron. Corner and division bars are small and inconspicuous. They are strong and afford perfect protection to glass edges. Sill and jamb mouldings are correctly designed and easy to install.

"ITS THE SAME AS KAWNEER."

Imitators of the Kawneer System will from time to time advance this argument in favor of their construction. We congratulate them upon their judgment in emulating the best. Kawneer System was the original store front construction to embody, the principle of setting glass in metal. Before its introduction such a thing was believed impossible. It shall be our constant endeavor to so design and manufacture Kawneer material that it will always be the standard construction toward which others will strive.

KAWNEER MFG. CO., HOME OFFICE: NILES, MICHIGAN

BRANCH OFFICES: Chicago New York Philadelphia Kansas City St. Louis Milwaukee Detroit Cincinnati
Pittsburg Indianapolis Lincoln, Neb. San Francisco Spokane Minneapolis Sioux City, Ia.
Los Angeles London, Ont. Portland Houston Syracuse, N. Y.
Denver Atlanta Vancouver, B. C. Seattle Des Moines, Ia. Washington, D. C. SEE DETAILS IN SWEET'S INDEX.

May we
supply Book
of Details
No. 2.
It will
contain
complete
information.



ENAMELASTIC A High Grade White Enamel

A WHITE ENAMEL to be good, must have perfect working, flowing, and drying qualities and at the same time produce a surface and lustre that will stay white permanently without any tendency to crack, mar or perish. Enamelastic has just these qualities, is easy working and flowing, has great opacity, is firm yet very elastic drying, and produces a pure, clean-tone white which holds its color, and makes a full, rich finish. It represents the very highest quality enamel that it is possible to secure from the combination of selected raw materials and perfect facilities for manufacturing high grade paint and varnish products. The line includes:

Enamelastic Exterior—For high class exterior decorative work, entrances, store fronts, yachts, etc.

Enamelastic Interior—For high grade interior work, where it is desired to leave the surface in a dull gloss or lightly rubbed finish.

Enamelastic Hard Drying Interior (pure white)—An intensely white enamel, specially adapted for use on fine interior work where a rubbed or polished effect is desired.

Enamelastic Hard Drying Interior (snow white)—This is the same as Hard Drying Interior above, except that it is what is generally termed a bluish white.

Enamelastic Dull Finish Interior—For producing a rubbed effect without the necessity of rubbing. It is pure white and intended especially for use as a finishing coat.

This line is well worth the investigation of every master painter, decorator and contractor and can be used with the absolute assurance of securing satisfactory results in the finishing of exclusive clubs, hotels, etc., as well as on the finest residences. Write for our booklet on Enamelastic.



THE SHERWIN-WILLIAMS CO.

PAINT AND VARNISH MAKERS
612 CANAL ROAD, CLEVELAND, O.



Hupmobile Wins Favor

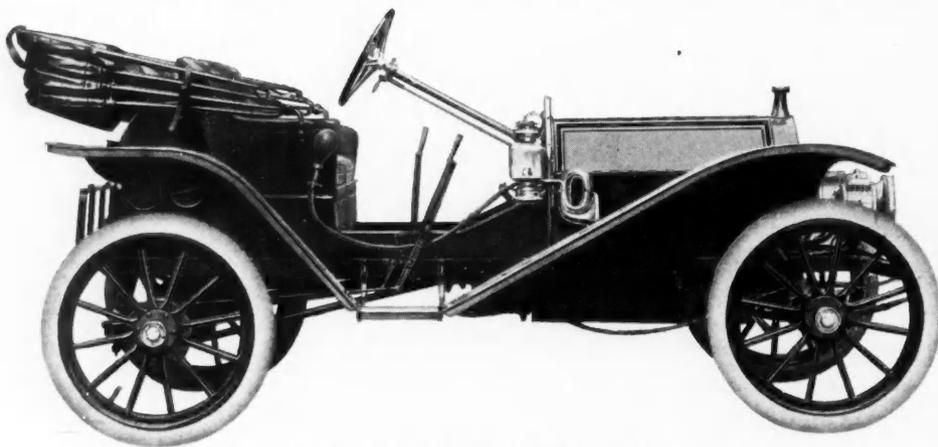
During the year that it has been before the public, the Hupmobile—the car built by the Hupp Motor Car Company of Detroit—has attained a remarkable popularity with all classes. This is doubtless due to the fact that this snappy little car has repeatedly shown its mettle, and its ability, not only to do all that can be reasonably expected of a larger car, but in repeated instances to carry itself and passengers safely through situations in which larger cars would have been helpless.

The Hupmobile was a sensation of magnitude when it made its first appearance. Several worthy features contributed to its eager reception. One of these was that it was the first small car that, in design and appearance, retained the perfect proportions and beauty that distinguish the larger cars. Another was that it was the first car offered under a thousand dollars equipped with a four-cylinder engine, and a sliding gear transmission—another characteristic of the more costly cars.

Simplicity is the keynote of the Hupmobile, mechanically. The 20-horsepower engine (four cylinders) is free from complicating features, such as commutator, fan, water pump, etc. The fixed-spark Bosch magneto disposes of the commutator, and also eliminates batteries, for the car is started on the magneto—a system, by the way, which has found much favor among European builders, particularly those of France. The thermo-syphon system of water circulation and cooling is employed, the water circulating without the aid of a pump. The flywheel is fan-bladed, performing the two functions of a governor for the engine and a fan to assist cooling. The engine is of the L-head type—having all the valves on one side operated by a single cam shaft.

Control of the motor is through a hand throttle at the steering wheel and a foot accelerator, and correspondingly simple. The clutch is of the multiple disc clutch running in oil.

The car has two speeds, forward and reverse, and is equipped with two sets of brakes, acting on the rear hubs—one operated by foot pedal, the other by side hand lever. The



4 cylinder, 20 H.P. 1910 Hupmobile

transmission, as has been said, is of the selective sliding gear type.

So much for the mechanical construction of the Hupmobile.

The builders and owners of the Hupmobile, in various parts of the country, have not hesitated to lay down for it tasks of the severest and most trying character. It has climbed mountains in the highest and roughest ranges of the continent—in California, Colorado, New England, and only recently

ascended the famous Stone mountain of Georgia under its own power and without assistance. Stone Mountain is about a mile high, and it is said that no horse ever climbed to the top. By ascending its steep face the Hupmobile earned the distinction of going where no other motor car has ever gone.

Perhaps the most daring and spectacular of the Hupmobile's achievements of the past year was the trip of three of these cars from Detroit to New York, during the severest part of the last winter. These cars left Detroit two days after Christmas, before the Christmas blizzard had fairly subsided, and reached New York ten days later, having fought for practically every inch of the way and many times breaking their own trail through the deep drifted snow.

This seems to establish the Hupmobile's ability to travel



Miles of Road like this Covered by Hupmobile on Detroit-New York Winter Runs

under the most discouraging conditions—and that such conditions were the rule is shown in the accompanying picture.

The Hupmobile enters as thoroughly into the business hours of many of its owners as it does into the hours of leisure. In scores of cities it is used by business men, salesmen, etc. The fact that it is not a large car, and the further fact that it is sturdily built, simple to operate and handle in crowded streets, and "nimble on its feet," make a strong appeal to the busy man of affairs and the man whose work calls him hither and thither.

To illustrate this point a quotation may be made from a letter recently received by the Hupp Motor Car Company. W. R. Vann, a traveling salesman of Terre Haute, Ind., writes that he drove a Hupmobile throughout the winter, averaging a thousand miles per month. Mr. Vann says he encountered rain, snow and mud, but at no time did the Hupmobile fail him; and he was able to get from 22 to 25 miles per gallon of gasoline, although it carried himself, baggage, etc.

A Watch Charm Free

Just as a sample of the good things to be found all through the advertising pages of the AMERICAN CARPENTER AND BUILDER we want to call attention to the offer being made this month by the Nicholls Manufacturing Company. They are sending free a neat little watch charm, a miniature square, to all carpenters and builders who will write for it. Look for their ad. on another page of this issue.

Amatite B ROOFING

The Roof for Hard Use!

PROBABLY no ready roofing but Amatite would give any satisfaction under such conditions of exposure as on the roof of the American Sanitary Works, Washington, N. J. The smoke of the railroad and from the factory's own stack, the heat and the fumes incident to the manufacture of sanitary ware, especially the heat of the kilns, all combined to test a roofing to the utmost.

In 1905 this factory was roofed with Amatite—15,000 square feet of it. Four years later the manufacturers write us as follows:

"Washington, N. J., June 17, 1909.

Dear Sirs:—We have used your Amatite Roofing for the last four years and are pleased to recommend same, as we think it is the most durable roofing of its kind in the market today. We placed it on a dry kiln about four years ago, which is a severe test on any roofing material, and it has given perfect satisfaction. Having built a new kiln this year we used the same material. We have also used it on the addition to our factory which was built this year

Yours very truly,
AMERICAN SANITARY WORKS.
H. A. MAYO, Asst. Treas."

Undoubtedly any ordinary ready roofing would have required painting at least every year under these conditions. Amatite, however, *never requires painting* because it has a mineral surface which is better and more durable in every way than paint could possibly be.

That is the way a roof *ought* to be made. A roofing which has to be painted every little while so that it will not leak is no roof at all. Any kind of paper or cloth could be used for a roof if you were content to paint it often enough and thick enough. The paint on ordinary roofings constitutes the real roof.

Next time you need a roofing, remember that it is now possible to buy Amatite, which *needs no painting*. Remember also that Amatite, despite its "no-paint" feature, costs no more than other ready roofings.

Free sample on request.

BARRETT MANUFACTURING COMPANY

NEW YORK CHICAGO BOSTON PHILADELPHIA ST. LOUIS CLEVELAND
CINCINNATI MINNEAPOLIS PITTSBURG NEW ORLEANS
KANSAS CITY LONDON, ENG.

Reinforced Concrete Bridges

The Supervisors in Bond, Jasper and Jefferson counties, Illinois, have come to the conclusion that the taxpayers should not be asked to pay for and maintain iron and wood bridges when concrete structures offer the same advantages in first cost and require no repairs. After comparing the bids on a number of different bridges, it was found that the concrete bid is generally lower than the iron and steel figure and the officials believe that even if concrete bridges should cost more to build, their construction is economical in the end.

An interesting little booklet just received from the Knickerbocker Company, Jackson, Mich., illustrates several stages in the construction of the Love Ford bridge built over the Embarras river, Jasper county, Ill., by the Newton Engineering and Construction Company, Newton, Ill. S. A. Conner, secretary of the company, is county surveyor in Jasper county and has done much to bring the reinforced concrete arch to the attention of the other public officials. Last season Mr. Conner superintended the construction of seventeen reinforced concrete bridges in his neighborhood, which is a pretty fair record for one year.

The bridge consists of two arches, each 70 feet clear waterway. The nearest railroad station is Falmouth, two miles east, whence the cement and steel were hauled. All the sand and gravel were obtained near the bridge site. That for the foundation was wheeled directly from the bar to the mixers. Much of the grout was shoveled from the mixers to its place. When this was not convenient it was wheeled to place. The material for the center pier was elevated by means of a runway and wheelbarrows.

The gravel for the remaining part of the bridge was hauled in wagons and scrapers and deposited near either end of the bridge. Two No. 9 Coltrin mixers were used, one at each end, mounted with rotary pumps which drew water from the river by means of hose supplied with foot valve. The grout

was wheeled from the mixers to place by way of runways built for this purpose.

After the abutments and pier were completed to the springing line, the centering was erected for the arches, 2-inch by 6-inch pine was used for centering and arch floor.

Home labor was employed at \$1.50 per day, except experienced form setters who received \$2.50 per day and board; teams, \$3.00 per day. The total labor cost, including the hauling of material and removing lumber to the contractor's yard at Newton, was \$1,750. The contract price was \$4,000.

The contractor did not take this contract with the expectation of making a profit, but to show the people what may be done with concrete.

Valuable Book on Metal Ceiling Work

The new catalogue issued by the Kanneberg Roofing and Ceiling Company, of Canton, Ohio, thoroughly covers the selling, ordering and erecting of metal ceilings and side walls.

Heretofore the carpenter and builder was at a loss to know just how to go about the selling of ceilings and ordering the stock. The Kanneberg Company are handling ceilings through thousands of carpenters and builders throughout the country, because they have made easy this part of the work.

The carpenter who is awarded the contract for a building in which metal ceiling is specified simply looks over the catalog and selects a design, then he refers to the page giving full details for the measurements and then again to the special page giving instructions for ordering.

The ceiling designs are arranged according to style or classification and no trouble whatever would be experienced by the uninitiated in making selection or putting a job through from the Kanneberg catalogue.

If blue prints or specifications are sent this company, special layouts are made out for the carpenter and builder, show-



The Best Kind of Fire Protection

Fire-proof construction is better fire protection to a building than any amount of fire insurance. By covering buildings with J-M ASBESTOS ROOFING it will protect them from fire at no extra cost. It has the highest fire resisting properties, because made of a fire-proof, indestructible mineral—Asbestos. No other roofing on the market offers such protection as

J-M Asbestos Roofing

Other ready roofings are made of wool felt, ragstock, paper, shoddy, coal tar and other highly inflammable materials, which are an actual menace to a building instead of a protection. J-M ASBESTOS is the "cheapest-per-year" roofing, because it requires no coating or painting to preserve it. The first cost is the only expense. It resists fire, rot, rust and wear, and is the only *permanently durable* prepared roofing. Adapted to all climates and weather conditions.

Write nearest branch for Samples and Catalog—or simply write your name and address on the margin of this advertisement and mail it to us

H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos and Magnesia Products,

ASBESTOS

Asbestos Roofings, packings, Electrical Supplies, Etc.

Baltimore
Boston
Buffalo
Chicago

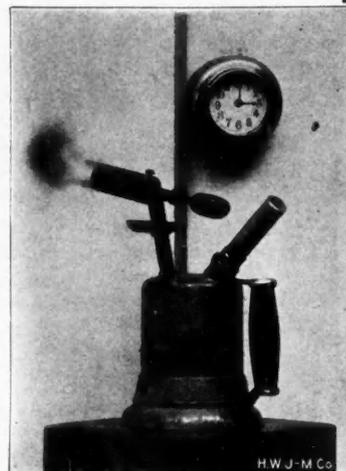
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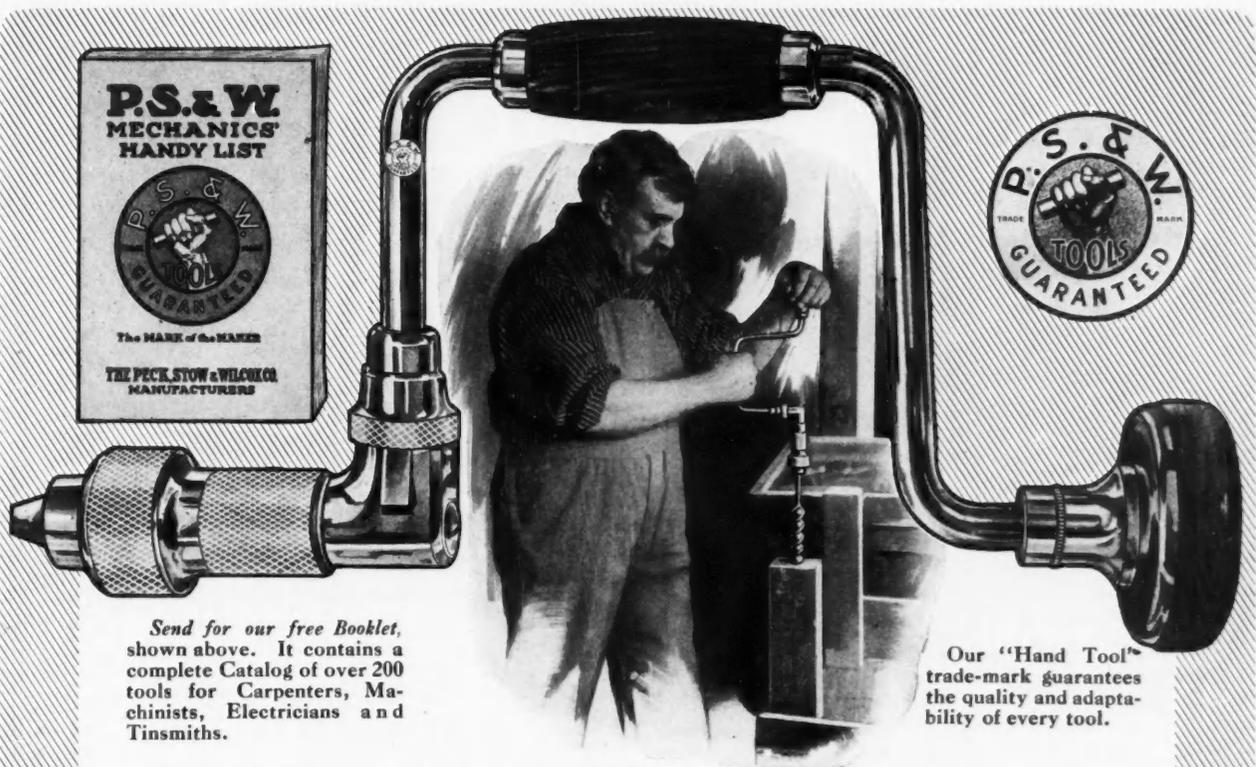
New Orleans
New York
Philadelphia
Pittsburg

San Francisco
Seattle
St. Louis

(891)



In this test the flame of a powerful blow-torch was placed within two inches of J-M Asbestos Roofing. At the end of fifty minutes the roofing was not burned or injured, being only slightly blackened with smoke.



Send for our free Booklet, shown above. It contains a complete Catalog of over 200 tools for Carpenters, Machinists, Electricians and Tinsmiths.

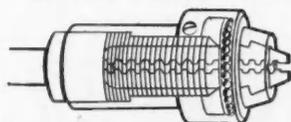
Our "Hand Tool" trade-mark guarantees the quality and adaptability of every tool.

The Ball-bearing Chuck is the Strongest Gripping Device Ever Put on a Brace

It is the greatest improvement ever made in brace construction. It tightens and releases more easily, and has a firmer grip on any type of shank than the chuck of any other brace. The *only* brace made with this patented chuck is the P. S. & W.

SAMSON BRACE

What the Chuck Will Do



Tenpenny nails, held in this chuck, have been bored through solid oak.

Five-sixteenths inch rods with one end in a vise have been twisted by the Samson to the breaking point.

You can tighten it with the bare hand to a firmer grip than you can get on any other chuck with the help of a vise.

No matter how firm the grip, it releases so easily that a child could do it.

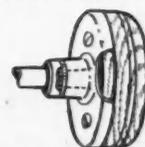
"No Other Brace Would Do That"

The following speaks for itself. It is an extract from a letter by a man who writes from practical experience.

"I purchased one of your Samson Braces about two weeks ago and like it better than any Brace I ever used. I hardly expected it would hold a straight shank drill, only 1-6 inch in diameter, but it did grip it perfectly. No other brace that I have used would do that."

J. R. REEDY,
132 E. Kossuth St.,
Columbus, O.

The Steel Clad Head



The head has dust-proof steel ball-bearings.

It is securely protected from splitting by a steel cap, surrounding the head to a height of $\frac{3}{8}$ of an inch.

The Alligator Jaw is another good feature of the Samson Brace. It adjusts itself perfectly to suit the shape of the drill shank. The spring cannot be broken by jamming in the drill.

Don't forget that the SAMSON is but one of a large line of P. S. & W. Braces and other Guaranteed Tools for Carpenters.

The Peck, Stow & Wilcox Co.
MANUF'RS of the Largest Line of Mechanics' Hand Tools Offered by Any Maker

Established 1819—Five Large Factories

Address Correspondence to 22 Murray Street, New York City

ing just where each piece of ceiling is to be laid; and the sections are numbered in detail. It is simply impossible to make a mistake from these instructions in putting up ceiling.

The carpenter and builder more and more every day is called upon to handle metal ceilings or side walls in his business and it is well for every reader of the *AMERICAN CARPENTER AND BUILDER* to write and ask for this new catalogue and their present low quotations.

Hess Furnace Improvement

The Hess Warming and Ventilating Company, Chicago, has perfected a system for welding the seams of its furnace radiators, to supersede the older method of riveting.

This system will be applied hereafter to all furnaces made by this company, which guarantees its furnaces absolutely free from leakage of gas or dust for all time, for, unlike cemented joints, welded seams can never open from expansion and contraction.

In joining the radiator plates they are first clamped strongly together. Intense heat is applied where the plates meet, and the steel melts like wax, the plates fusing together in solid and continuous union, making of the radiator practically one piece of seamless steel.

While the welding of plates is more costly than riveting, no change in prices will be made, the Hess Company priding itself upon the fact that there has been no advance in its prices for furnaces in ten years, past, each advance in raw material being met by improved equipment or improved methods of manufacture, which, thus far, have been sufficient to offset the advancing cost of materials.

Slate for Roofs

James Carew, the master builder of his day (1602), held slate as a roofing material in great esteem:

"In substance, thinne," he wrote, "in colour, faire; in

waight, light; in lasting, strong."

Over three hundred years later—that is to say, only a few years ago—Samuel Hughes, C. E., expressed the opinion of the well-informed members of the building profession when he wrote into his report:

"Slate is surely to come into extensive use where great strength and durability are required. In these qualities slate may challenge comparison with any building material in the world."

In other words, for good looks, lightness with strength, elegance of appearance, and durability with thinness, three hundred odd years of invention, experience and progress have produced nothing superior as a roofing material to that which was best in the time of Queen Elizabeth.

This is the test of "time," which the old saying declares, "proves all things whether they be of good or evil."

In appearance, sea green and purple slate is the most orderly, modern and aristocratic of all roofing materials. It lacks the top-heaviness of tile, the "cheapness" of tin or galvanized iron, and the slip-shod make-shift appearance of paper and patent roofing.

Professor A. P. Jamison, M. E., Purdue University, considers a slate roof as a valuable asset on a building. "A good slate roof," he says, "is a fine covering. It looks well, is a protection against fire, it is cleanly and it lasts a lifetime."

Felt, shingles and iron costs less; tin, copper, lead and tile, much more in the beginning—but this does not tell the complete story. Copper, costing five times as much, lasts only one-third as long. Shingles, costing two-thirds as much, are only one-seventh as durable as a good sea green or purple slate.

In the older countries slate has already won its place as a roofing material. Sea green and purple slate, which may be procured from the American Sea Green Slate Company, of



USE THE ENTIRE SURFACE FOR SHARPENING

The Carborundum Sharpening Stone for carpenters is round. It is just the right shape and size to allow for the rotary motion required in sharpening a carpenter's tools—

It not only does its work better and quicker but the stone wears down evenly—there is no unused surface—

And—It's a Carborundum Stone—which means it is the **best** Sharpening Stone on earth—

Price \$1.00.

Ask your Hardware Dealer—or send \$1.00 to

THE CARBORUNDUM COMPANY
NIAGARA FALLS, N. Y.

"RICHMOND" *Efficiency*

THAT element which distinguishes the RICHMOND Heating System from all others is the efficiency with which all parts, from boiler to radiator, faultlessly perform the work for which they are intended. The specification of RICHMOND fixtures precludes any suggestion of an error in your judgment.

And, after installation, you will understand why the owners and users of RICHMOND goods join with us in proclaiming that RICHMOND means superiority.

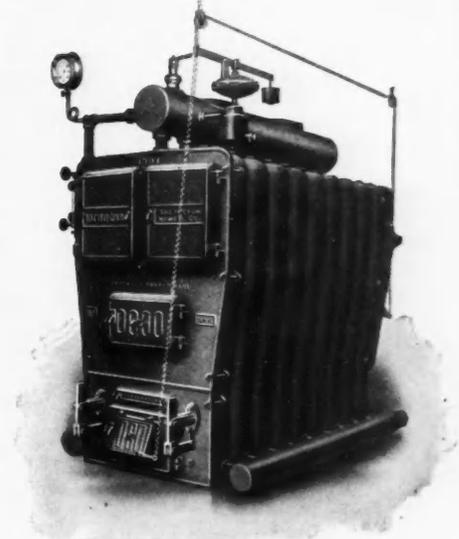


PLATE 42-9-S
RICHMOND Square Sectional Waterbase Steam Boiler. (Also made for Hot Water Heat.)

"RICHMOND"

Steam and Hot Water Boilers Radiators

RICHMOND Boilers, in every detail, embody the requirements of the perfect house-heating boiler. The heating surface is so placed that both the flame and heated gases strike it at right angles, thereby utilizing the maximum amount of heat. In the interior surface all parts are so arranged that they are easily accessible for cleaning, thus securing the highest efficiency of the heating surface. Every inch of fire surface in RICHMOND Boilers is so backed by water that it readily absorbs the full heat and circulates it through the hollow double walls of the boiler and on through the piping to every part of the system. Because water surrounds every portion of the surfaces with which fire or heated gases come in contact, and because the construction is such that the greatest amount of surface is so placed as to be in contact with the fire or heated gases, the RICHMOND Boiler is the most economical on the market in fuel consumption, easiest to operate, and of the highest heating efficiency. It is also practically indestructible.

Send for Catalogue BR

THE M^cCRUM-HOWELL CO.

Two Factories at Uniontown, Pa.
One at - - - Norwich, Conn.
One at - - - Racine, Wis.

Park Ave. and 41st St., New York City

Address in the West Cameron Schroth Cameron Co. 189 Michigan St., Chicago, Ill.

Granville, N. Y., is even now a favorite in the United States and is rapidly gaining popularity.

Architects, carpenters and builders are requested to write the American Sea Green Slate Company, Granville, N. Y., for free information on slate roofing which will add to their business and increase their profits.

Send Them Your Address

In the interest of better roofs all those engaged in building are urged to read the Cortright Metal Shingle Advocate each month. They will find it highly entertaining and instructive and well worth while. We are informed that the "Advocate" will be sent free to any reader of the AMERICAN CARPENTER AND BUILDER who will send his address to the Cortright Metal Roofing Company, Philadelphia.

Efficiency of Montross Metal Shingles

Careful comparisons are said to show that Montross metal shingles are less expensive, more durable, and more surely fire and storm proof than slate, tile, wood shingles and other roofing materials. The matter of first cost is settled by comparing prices. Frost or extreme heat is apt to crack and split slate or tile; they are easily broken by any hard object being thrown against them; besides they are hard to replace. Wood shingles no longer give satisfaction as they are made of cheap lumber and soon wear out; besides being an easy prey to fire and lightning. Montross metal shingles are not affected by any of these causes in the least.

Montross metal shingles are not soldered, but are nailed to the roof boards; with the further advantage of a telescopic side-lock, allowing for the necessary contraction and expansion of the metal. Neither will they rattle in high winds. They are galvanized or painted after they are embossed, leaving no unprotected crevices to rust out. They will last

the life of the building, if given a coat of good oil paint every few years. They have been manufactured over 21 years and have withstood the most severe rain, hail and snow storms, showing themselves to be fire and lightning proof, inexpensive and artistic.

The advantages said to be offered by Montross metal shingles over other kinds of roofings are: Lessened first cost; superior durability; real protection against fire, lightning and storms; convenience in laying; beautiful and practical embossed designs; and light weight. A serious consideration of these advantages will prove to you their superiority as a permanent, dependable roofing.

Every reader interested in roofing matters should write the Montross Metal Shingle Company, Camden, N. J., for one of their complete catalogues, giving many illustrations and testimonials, prices and valuable information. Write for your copy today.

Can You Afford to Keep on Guessing?

The Bradt Publishing Company emphasize this month in their ad. that only accurate estimating can bring success, and they offer a few pointed suggestions on this subject of vital interest to every builder. They point out the importance of simple, reliable, practical, systematic methods together with rapidity in their use. The builder who does an average amount of business must sacrifice a great deal of time from his work if he employs the old tedious methods of estimating, or else he must utilize all his time after the regular day's work is over. The question is, "Can he afford to do it?" The worried and sleepless nights put in by many builders are chiefly due to their not being sure of their ground when tendering a bid on a job.

For mastering this important part of the builder's work the Bradt Publishing Company have recently placed upon the

EVERY BUILDER

should know what a good roofing GAL-VA-NITE really is. We want you to get samples and details and to be fully acquainted with the roofing facts shown in our book—"The Inside Of An Outside Proposition."

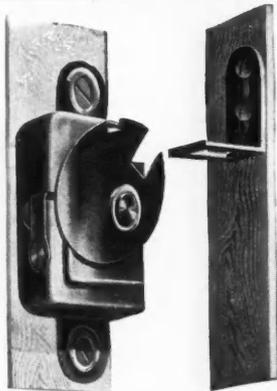
In order that you may become thoroughly familiar with the advantages of GAL-VA-NITE ROOFING we want you to let us send you our CONTRACTOR'S ESTIMATE BOOK FREE

The busiest builders use GAL-VA-NITE—the triple asphalt-coated, mica-plated ROOFING. It gives satisfaction every time—in any climate—on any kind of a building. Needs no paint—first cost—last cost.

Let us send you samples and our celluloid covered estimate book—something every builder needs. Address Dept Z.

Union Roofing & Mfg. Co.

1109 E. 7th Street, St. Paul, Minnesota



The No. 21 Watrous Screen Door Catch

**The Latest and Best Thing in Screen Door Catches
THE CATCH WITH THE POSITIVE LOCK**

The case comes flush on door jamb. The strike is adjustable. Needs no templet. A child can set it without making a mistake. A light trip and a strong hold. Positive lock does away with necessity for hook-and-eye, or other fastener.

Sells at Sight

THE E. L. WATROUS MFG. CO., DES MOINES, IOWA



JOHNSON'S

Business Getters

FREE



**This Set of Wood Panels —
14 Natural, Standard Colors—
Will Get Contracts for You.**

WE want you to have this complete set of Wood Panels showing Johnson's Wood Dye in its 14 shades. We'll gladly send them free because they will prove to you beyond doubt that Johnson's Wood Dye produces better results than any other wood-coloring material made.

Also, they will get you the business in competition with any other set of panels or color card ever put out.

They show the real colors on the real wood—colors of life and richness. And you are safe in contracting to match any shade—Johnson's Wood Dye never varies.

Johnson's Color Panels and Guide Book Always in Demand

In every city and town the best trade is coming to depend more and more on Johnson's Wood Finishing Materials and the Johnson Suggestions for interior decorations.

You will find our book, "The Proper Treatment for Floors, Woodwork and Furniture," Edition A. C. B. 5, equally helpful to you and to your trade. Beautifully illustrated in natural colors from life—complete in color scheme suggestions, and valuable information on all kinds of wood finishing work. Tells about the matchless results possible by the use of Johnson's Wood Dye, Johnson's Under-Lac, Johnson's Prepared Wax and other wood finishing specialties.

Cut out Coupon now to remind you, fill in your name and address and send by next mail, or mail postal if more convenient. Remember this business-getting outfit is absolutely free — All yours for the asking.

S. C. Johnson & Son

Racine, Wisconsin

"The Wood Finishing Authorities"

S. C.
JOHNSON
& SON
Racine, Wis.

I accept your offer of a set of Johnson's Wood Panels; also a copy of your text book—"The Proper Treatment of Floors, Woodwork and Furniture," Edition A. C. B. 5.

PLEASE USE THIS COUPON — CUT ON DOTTED LINE

Name.....

Address.....

.....



Look for this trade mark etched on every saw.

**Simonds Saws
are the Best—**

**and They ARE
the Best**



A fair trial by any fair minded carpenter. That's all that is necessary to prove our claim of high quality in Simonds Saws. You want a saw that has the right temper, holds its cutting edge, hangs right, saws true and has a well shaped handle correctly set on the blade. These are the points to be considered when you buy a hand saw. Points essential to a good saw. Points that will be found in Simonds Saws.

Made of Simonds Steel

Simonds Steel is made in a Simonds Steel mill exclusively for saws. We make any size or point, straight or skew back, hand, panel, or rip saw also compass keyhole and back saws. Tell us what saw you want and we will send address of Hardware Dealer near you handling Simonds Saws and will also send you a free copy of Simonds Carpenter Guide.

SIMONDS MFG. CO.
FITCHBURG, MASS.

Chicago New York New Orleans Montreal
San Francisco Portland Seattle London

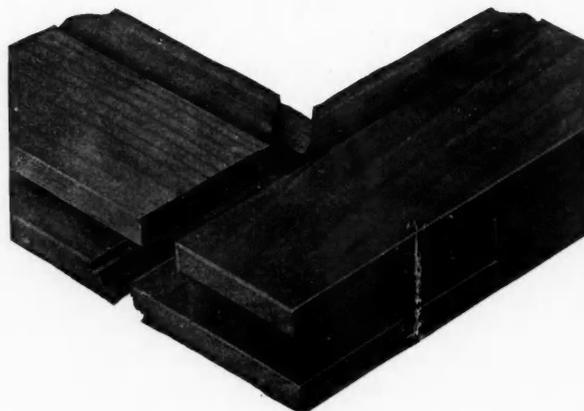
market the sixth edition of the "Lightning Estimator." It is written by a successful contractor from experience, not from theories. It shows the labor and material required for each part of the work, as well as the prices; so that the methods can be made to apply to any scale of prices in any locality. It not only covers carpentry for house work but also walls, brick work, plastering, concrete work, cisterns, chimneys, etc.; so that the carpenter builder can learn to estimate these branches of the work and be able to handle them the same as the carpentry work—thus saving several sub-contractors' profits. This edition has many valuable pointers for the concrete block builder and setter. The book is bound in cloth and handsomely illustrated.

The Bradt Publishing Company conclude their ad. this month by asking if any builder can afford to do himself the injustice of longer being without their methods of estimating. We might add that this concern has advertised in every issue of this journal, and we know them to be reliable.

Strong and Durable Corner

The Standard Screen Company, 1848-1850 West 14th street, Chicago, in offering their line of fly screens and screen doors for residences, apartment houses, hotels, clubs, hospitals, schools, and all places requiring ventilation, call particular attention to the high quality of the goods, especially the strong and rigid construction of the corners. The arrangement is shown in the accompanying illustration.

Examine it closely. It is claimed to be the best made—to last a lifetime. Notice how the parts fit into each other.



All their window screen frames are made with this special corner joint, tenoned and grooved, the strongest and most rigid corners known.

You will observe that rails lap over stiles. This prevents the splitting of grooved edges so common with most screens. It is an admitted fact that the corner of a window screen is the part which first gives away, and it is stated positively that the corner joint illustrated here, which is used on all their sliding screens, is the most durable screen corner on the market, and the strongest which is possible to make. It cannot be broken by ordinary usage.

Readers of the AMERICAN CARPENTER AND BUILDER will do well to write the Standard Screen Company for their 1910 illustrated catalogue which will be sent free.

New "National" Catalog

The National Manufacturing Company, Sterling, Ill., have issued their 1910 catalogue of builder's hardware. Wishing to give their customers as faithful a reproduction of their goods as possible, in order to assist them in selecting goods, they have had articles in their line reproduced in half-tone engravings showing them as true to the original as possible. The full explanatory notes accompanying the illustrations will assist materially in reaching a conclusion as to the merits of

EVERYMAN'S THE BRUSH RUNABOUT CAR \$485

**There is absolutely no limit to the usefulness of the BRUSH
It is adapted to hundreds of business uses, as well as pleasure**

No matter what your occupation or profession, it will pay you to thoroughly investigate this wonderful car. Find out what it is doing for thousands of merchants, physicians, contractors, engineers, lawyers, salesmen, artisans—in fact, for men (and women) in almost all walks of life.

If you investigate carefully, you will find that the BRUSH is not an imitation nor an adaptation of any other automobile—all other low-priced cars are. They have all the complications of the big car, but the parts are necessarily so small that they cannot stand the hard knocks.



You will find in the BRUSH a car so simple in design that all parts can be made strong enough to stand as hard usage as any automobile in existence.

You will find the best of materials, each piece selected for the function it has to perform. You will find the workmanship on the vital parts—the parts that prove the real value of an automobile—as good as on cars selling for ten times as much. True, you will not find as much show and polish on the outside; but show and polish won't make the car run—and that is what interests you.

Don't misunderstand by this statement that the BRUSH isn't well finished. In this respect it compares favorably with the high-priced cars, but we want to impress on you especially the care we take with the parts that make the car go when you push the lever.

Please don't get the idea that you are getting more automobile if you pay even \$200 or \$300 more for a big car cut down in size to sell at a comparatively low price. You will get more parts, 'tis true—also a lot of trouble and expense.

After finding out all about the BRUSH, apply the results of your investigation to your everyday life. Figure out in dollars and cents what it would mean to you to own an absolutely dependable little motor car which you can operate for *one cent a mile or even less*.

The BRUSH knows no class, recognizes no competition. It is being used by men who make less than \$1,000 a year, by men whose annual income is more than \$25,000 a year, and by companies whose yearly profits are more than \$1,000,000. It is truly EVERYMAN'S CAR.

Literature and name of nearest dealer on request.

Write TO-DAY

BRUSH RUNABOUT COMPANY, 381 Baltimore Ave.,
DETROIT, MICH.

Licensed under Selden Patent

I Can Succeed



"What other men have accomplished through I. C. S. help, I can accomplish. If the I. C. S. have raised the salaries of these men, they can raise MY salary. If others have won out through I. C. S. help, I can win out. To me, I. C. S. means 'I Can Succeed.'"

Get the "I-Can-Succeed" spirit; for the I. C. S. can raise your salary—whether you are a dollar-a-day man or a dollar-an-hour man; a long-hour man or a short-hour man; a young man or an old man; an inside man or an outside man; or whether you live in Europe, Asia, Africa, America, or Australia.

On an average, 300 students every month voluntarily report bettered positions and increased salaries as the direct result of I. C. S. help. During January the number was 427. Through I. C. S. help Failures have become Successes. Through I. C. S. help men already in good positions have advanced to still better positions. A responsible position is awaiting you. To learn all about it, mark and mail the attached coupon.

If you can read and write, the I. C. S. will go to you and train you in spare time for a well-paid position in the line of work you like best. I. C. S. students do not have to leave home nor lose even an hour from work. I. C. S. Courses are prepared especially to suit the requirements of those having to get their technical education in spite of difficulties. The I. C. S. way makes everything clear and simple. To mark and mail the attached coupon will cost you nothing but postage and will place you under absolutely no obligation. **Send the coupon now.**

International Correspondence Schools
Box 910, SCRANTON, PA.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position before which I have marked X.

| | | |
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| Architect Arch'l Draftsman Contractor & Build. Building Inspector Structural Eng. Struct'l Draftsman Plum. & Heat. Con. Supt. of Plumbing Form. Steam Fitter Plumbing Inspector Heat and Vent. Eng. | Estimating Clerk Civil Engineer Surveyor Mining Engineer Mechanical Eng. Mechan'l Drafts'n Stationary Eng. Electrical Engineer Elec.-Light. Supt. Elec.-Rail'y Supt. Concrete Engineer | Poultry Farmer Foreman Machinist Sh.-Met. Pat. Drfts. Textile Expert Bookkeeper Stenographer Advertising Man Window Trimmer Illustrator Civ. Service Exams. Chemist |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

Name _____

Street and No. _____

City _____ State _____

the goods. This catalogue, together with a complete net price-list apply to this catalogue, will be gladly mailed on request to all readers of the AMERICAN CARPENTER AND BUILDER.

Ferro-Lithic Plates

The constant demand for light weight and consequent low dead load in concrete construction has lead the Berger Manufacturing Company, of Canton, Ohio, to produce the Ferro-Lithic interlocking system of concrete reinforcement. The Ferro-Lithic plates of this system are plates whose cross-section shows a continued series of alternate dovetails, as shown in Fig. 1. Because of this shape it is possible to concrete and plaster directly upon the steel plate in the manner shown in Fig. 2.



Fig. 1—Ferro-Lithic Plate Ready to Lay

Ferro-Lithic steel plates were originally designed for combined centering and reinforcing of concrete to meet the demand for a permanent, fireproof concrete roof. The application of these plates has been extended into other fields and they are now extensively used for centering and reinforcing of concrete slabs for flat and arched floors, for sidings of buildings, lining of coal bunkers, sidewalk construction, etc., etc. They are applicable to either reinforced concrete frames or structural steel frames, the better application being to the structural steel framing.

The Ferro-Lithic interlocking system of concrete slabs for roofs, floors, sides, etc., etc., is especially suitable for buildings exposed to smoke, acid fumes, gases, condensation or moisture; such as found in various manufacturing plants, chemical works, collieries, rolling mills, galvanizing plants, plating works, foundries, power houses, train sheds, breweries, round houses, etc., etc.

By reason of the continued row of dove-tails in cross-section, the plate serves both as centering and reinforcing, as the bare plate itself is sufficiently rigid to support the concrete, (see Fig. 1), and the dove-tails on the top hold the concrete in place while the dove-tails on the under side of

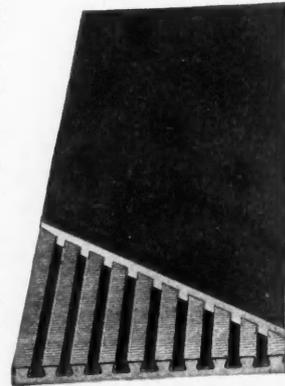


Fig. 2—Ferro-Lithic Plate Concreted on Top, Plastered Underneath

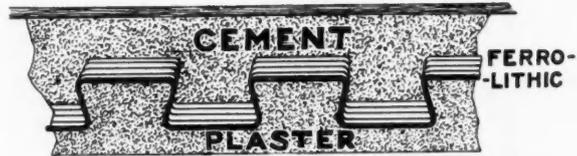
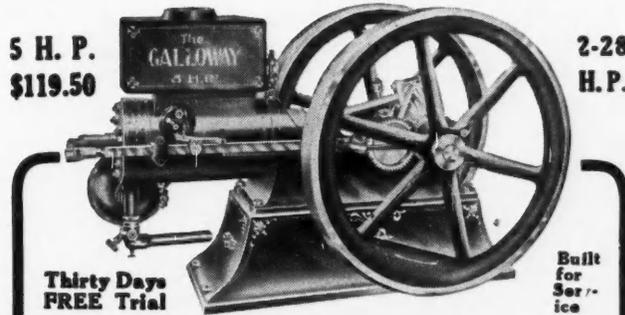


Fig. 3—Cross Section of Complete Roof Slab

the plate hold the plaster in place; (see Figs. 2 and 3). No centering other than the plate itself is necessary, but it is well to brace the plate, usually at the center of the span, while the concrete is being installed and until same is thoroughly set.

Ferro-Lithic steel plates are made of gauges 22, 24 and 26 and depths of 1/2, 5/8 and 3/4 inches. The standard plate is the No. 24 gauge plain, unpainted, with dove-tails 1/2 inch deep.

The effective covering width of the 1/2-inch depth plate



5 H. P.
\$119.50

2-28
H. P.

Thirty Days
FREE Trial

Built
for
Service

The Galloway Gasoline Engine

Owned and made exclusively by the
William Galloway Co., Waterloo, Iowa.

will run your shop at several times its present capacity and enable you to take lots of jobs that you have to turn down now because you have not the capacity.

Only four things to do:

Turn on the switch, turn on the oil, turn on the gasoline give the fly wheel a start, and the Galloway will go right along all day without further attention. It is ideal power for a small shop, and it's got the capacity to take care of your growing needs.

The Galloway has been classed as a standard, high-grade engine for fifteen years. Over 4,000 in use in Iowa alone. Thousands in every other State and Territory.

If you try the Galloway engine, you will find that it is not overspeeded. Remember, the bore and stroke count, and you don't have to drive your engine faster than you ought to drive it to get the rated horse power. Rated by actual brake tests.

On the larger sizes, if it is not entirely convenient for you to pay all cash, we will take your note for the balance at the regular rate of interest for six months.

The price given is for the five-horse power only, but we make these engines in seven sizes.

Ask for free information on stationary and portable gasoline engines from two to twenty-eight horse power. We make the best, and we price them at a reasonable figure. Write today.

The William Galloway Co.

1145 Galloway Station

WATERLOO, IOWA



\$25.85

For this elegant, massive selected oak or birch, mahogany finished mantel.

"From Factory to You"

Price includes our "Queen" Coal Grate with best quality enameled tile for facing and hearth. Gas Grate \$2.50 extra. Mantel is 82 inches high, 4 feet wide. Furnished with round or square columns, full length or double as shown in cut. Dealer's price not less than \$40.

"Reputation and Quality Count"

CENTRAL MANTELS

are distinctive in workmanship, finish and style. Twenty years' experience enables us to know and satisfy the needs of those who want mantels of quality, different from the rest. We build all styles—Colonial to Mission.

CATALOGUE FREE—Will send our 112 page catalogue, the finest ever issued, free, to carpenters, builders, and those building a home

CENTRAL MANTEL COMPANY,

1247 Olive Street,

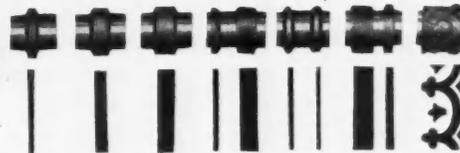
St. Louis, Mo.

Saves
TIME

STRIPING SO EASY

When You Use

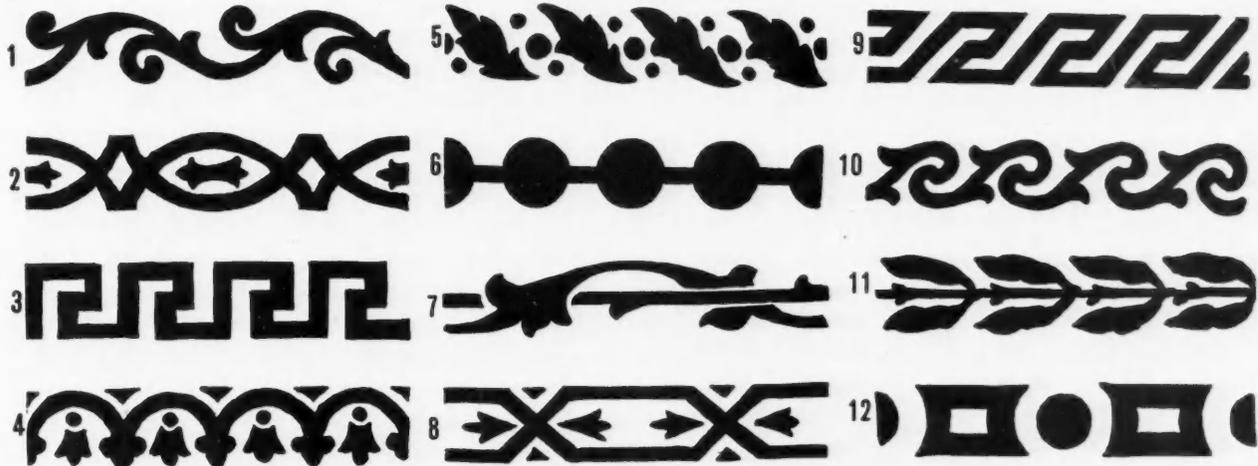
Painters' and Decorators' Striping and Stencil Wheel



Saves
MONEY

Price of complete outfit consisting of machine and 10 plain and ALL the here illustrated designs one to twelve Ornamental Roller Designs

\$5.00
And 25c postage



CHAS. R. UEBELMESSER CO. BAYSIDE, NEW YORK CITY, N. Y.



A Few Points on Estimating

Upon estimating the cost correctly depends your success. If you guess, nine times in ten you are too high or too low. If you sit down and take off every item separately it takes too much time. It means a great risk of omissions on account of interruptions or overlooking something because you have so many items and figures to handle. The need of a system in taking off quantities is one cause of omissions also. Do you neglect your business many times because you have a job to figure? Do you worry and lie awake nights? Most builders bid too low for fear of losing the job? If they knew just what the job was worth they would not want it for any less. If you want to adopt a system that is easy, simple, accurate, reliable and practical, the **NEW SIXTH EDITION** of *The Lightning Estimator* will teach you.

You Need the Lightning Estimator

This method shows you the actual time and material involved in each part of your work, but so cleverly combined and systematized that a large job may be estimated in a very short time and omissions are almost impossible. Shows you how to dissect and analyze unfamiliar work in order to get at the cost. By showing time and material required as well as prices you may adjust this method to any scale of prices in any part of the country. Written by a successful builder from actual experience, not theory. Valuable hints for the concrete block maker and setter. The carpenter builder who sublets everything but the carpenter work can learn how to estimate the walls, brickwork, concrete work, chimneys, plastering, etc., so that he can handle this work by the day himself and save the subcontractors' profits.

Now is the Time to Become a Master Builder

If you are a journeyman here is your opportunity to become a master builder and if an old timer, a chance to get new ideas and become more proficient; if you know it all, pass it along.

This edition is bound in cloth and is amply illustrated, a feature that has been overlooked in most books on this subject. Can you afford to hesitate? Will you do yourself justice and send one dollar today and get on the road to success?

BRADT PUBLISHING CO.

1260 Michigan Avenue

JACKSON, MICH.

is 20 inches; of the $\frac{5}{8}$ -inch depth, 18 inches; and of the $\frac{3}{4}$ -inch depth, 16 $\frac{1}{2}$ inches.

All depths and gauges can be furnished in any length up to and including 10 feet, and can be furnished cut to size or formed into special shape, such as may be required for cornice work. They can be curved for segmental arch construction in No. 24 gauge and depths of $\frac{1}{2}$ and $\frac{5}{8}$ inches, and no other size or gauge can be curved.

The Tested Car

One of the motor trade papers, in search of a model automobile factory from which to write an article about tests and inspection, selected the Rambler plant. This because every separate piece of Rambler material, each separate product of the labor of each Rambler mechanic, and every finished article in the Rambler factory must attain to a certain high standard of quality or it is rejected.

Because it is more difficult to detect flaws in a completed engine and a completed chassis, than to discover weaknesses in separate parts, one entire building—covering floor space equivalent to one-half the floor area of the original Rambler factory—is devoted to motor and chassis testing alone.

Seventeen dynamos are here arranged on seventeen concrete stands, each stand making a complete unit, with necessary cooling apparatus and means to carry off the exhaust gases.



Engines Being Tested in New Rambler Factory

When a motor is completed in the engine assembly department, it is picked up on a traveling crane, carried to the testing department, and located on one of these testing stands, where it is first limbered up and then tested to establish its horsepower rating, and to detect its most insignificant faults, before it is placed in the car.

First, the dynamo turns the engine while the new parts are being thoroughly limbered, preparatory to running the engine under its own power. Then the operation is reversed. The engine is started and it drives the dynamo. This operation continues for many hours, until the engine is thoroughly worked in, and scientific tests show that it is delivering its rated horsepower.

Every engine is closely watched during this process, and if trouble of any kind, such as a knocking bearing, noisy gears or valves, becomes apparent, the difficulty is immediately remedied. Before it leaves this stand, the engine must run without vibration and without noise.

These seventeen stands are constantly busy, while in addition, there is one reserve stand for experimental purposes.

After an engine is assembled in the chassis, it is returned to this department, and a rear wheel test is taken. The car is securely clamped on two immense rollers, from which a dynamo is driven by means of a chain. The power delivered

Andrews Heating Co.

MANUFACTURERS, CONTRACTORS and ENGINEERS

HEATING

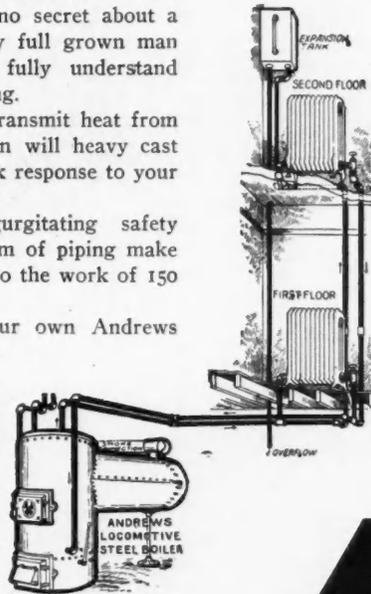
Andrews Systems of Heating are built upon principles that appeal to the common sense of the purchaser. There is no secret about a heating plant that any full grown man or woman can not fully understand without special training.

A steel boiler will transmit heat from fuel more rapidly than will heavy cast iron. That gives quick response to your fire.

The Andrews regurgitating safety valve and group system of piping make 100 feet of radiation do the work of 150 feet by other system.

You can install your own Andrews heating plant or hire a carpenter or handy man to do it. It isn't any more difficult than screwing a nut on a bolt or setting up a stove and stove pipe.

Our book tells. Send for it.



Andrews Heating Co.

MANUFACTURERS, CONTRACTORS and ENGINEERS

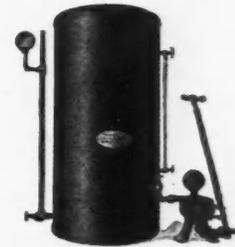
WATER SUPPLY

Andrews Air Pressure Water Supply gives to a country home or farm house the essential convenience of city water. You can have running hot and cold water in your house using the Andrews air tight tank in the basement or the ground outside.

This is filled by the use of a pump, worked either by gasoline engine, windmill or hand power, the water being delivered under pressure. It has all the advantages of an overhead tank, but it never freezes, never runs over, and the pressure is usually sufficient to throw water over the house, thus making ample fire protection.

It costs so little that no man building a country home can afford not to have an Andrews Water Supply.

Our Book Tells. Send for it.

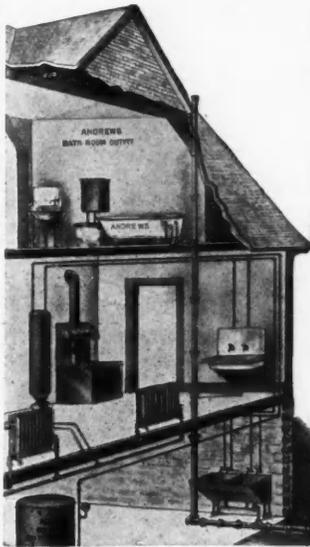


4

PLUMBING

The Andrews Plumbing Equipment for a house is now made so that no plumber is needed. The pipes are all screwed together and the fixtures are easy to set up. This saves the excessive cost of the proverbial "plumber's bill." The Andrews Plumbing Equipment, shown in the illustration, is so reasonable in price and so dependable in quality that no home owner can afford not to know all about it.

Our book tells. Send for it.



SEPTIC TANK

The Andrews System of Sewage Disposal is by Septic Tanks, as shown in the illustration. Cesspools are no longer tolerated by sanitary science. They are the cause of much sickness but the Septic Tank is a scientific method of sewage disposal in which the bacteria that cause disease destroy the dangerous elements in the sewage and in the end destroy themselves.

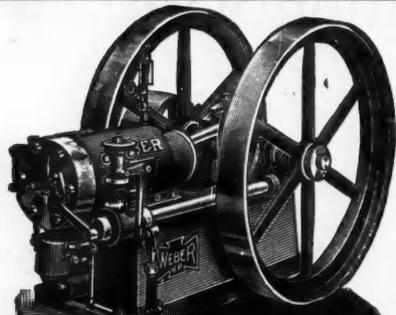
All this is fully and satisfactorily explained in our Book. Send for it.

72 Pages Portfolio—over 300 fine Illustrations—Every Page Worth Reading. Tells you How to Make your Home "Modern," Comfortable and Sanitary.

We Print a Book Called

"Andrews 4 Systems" Free

1116 Heating Bldg.,
Minneapolis.



The Engine of Reliable Records

Getting the most engine for your money, Mr. Carpenter, does not mean buying the cheapest. It is securing an engine that will give reliable results year in, year out—speed must be steady and uniform—absolute interchangeability of parts assured—actual power must equal rating. Every requirement of the man who wants a simple, reliable, powerful engine is met by the

Weber Gas or Gasoline Engine

Some of its special features are—underground gasoline reservoir for main gasoline supply—gasoline pump, pumping supply to engine; surplus returning to reservoir—electric igniter—heavy and rigid construction (see cut)—a perfect control governor by which the operator can change speed instantly—all parts easy of access and guaranteed interchangeable.

Sold Under Our Absolute Guarantee

It will pay you to find out just how much a Weber Engine will increase the capacity of your shop and at an actual saving of cost in operation. Write us today for our new illustrated catalog and allow us to send a list of the inexpensive time saving, labor saving shop machinery you can operate with a Weber.

Sheffield Gas Power Co.
127 Winchester Place Kansas City, Mo.

Let it Furnish Power for You

is determined from an indicator connected to the dynamo. This test detects any possible error in assembly, any difficulty in transmission or axle, and assures uniform results at the rear wheels.



Rear Traction Testing

All Rambler parts are made from the raw material in the Rambler factory, and to make sure that the material comes up to specifications, it is all tested in the Rambler laboratory connected with the motor testing department.

The facilities are such as to permit thorough and accurate physical and chemical tests.

Such exacting manufacturing requirements are responsible for the superiority of the Rambler.

It is only through years of successful manufacturing experience that Thomas B. Jeffery & Co., have learned what tests will most surely disclose variations from this required standard. These tests have in this factory been most successfully applied.

Chicago Millwork Supply Company's 1910 Catalog Ready for Distribution

The new catalogue of the Chicago Millwork Supply Company is just off the press. It is exceptionally complete, illustrating and quoting net prices on sash, doors, blinds, porch work, stair work, grilles, mantels, wood carpet, hardwood flooring, builders' hardware, art glass, wall board, roofing and building specialties of every description.

This company guarantees every item to be exactly as represented. If not, money is refunded immediately. Hundreds of contractors throughout the United States have found that it pays to buy "from manufacturer direct," not only because of the money-saving possibilities, but because of the high class of material furnished.

Copy of this new catalogue, No. 27 B, will be sent on request to all who are interested in quality millwork and building specialties. Address Chicago Millwork Supply Company, 961-967 West Twentieth street, Chicago, Ill.

Of Interest to Material Dealers

J. A. & W. Bird & Co. of Boston, Mass., manufacturers of Rex Flintkote roofing, have devised a new selling plan for Rex Flintkote dealers which is bound to make a very large increase in the sales of their roofing.

The plan consists in the installation of a complete "Roofing Department" in the store of every Rex Flintkote dealer—so arranged that aside from a little personal attention, it will almost run itself.

Those who have inspected the plan, including the large traveling sales force of J. A. & W. Bird & Co., as well as their numerous dealers, are most enthusiastic in their expectation



The Universal Sash Bar

Makes any angle, allows for setting of building, keeps windows from frosting.

Standard Store Front Construction of the World

Glass set from the outside

Write for latest catalogue

Voltz Manufacturing Co.
1101-1103 S. 8th St. St. Joseph, Mo.

Build up your reputation with BEAVER BOARD Walls and Ceilings



BEAVER BOARD offers a big opportunity to a good carpenter to build up a reputation for fine work and get all the business he can attend to.

A BEAVER BOARD wall or ceiling looks so well and wears so well that it always leads a lot of other people to try it for themselves.

The first thing they want to know is "Who's the man that put it up?" That's how one BEAVER BOARD job leads to another.

WHAT BEAVER BOARD IS AND HOW TO PUT IT UP.

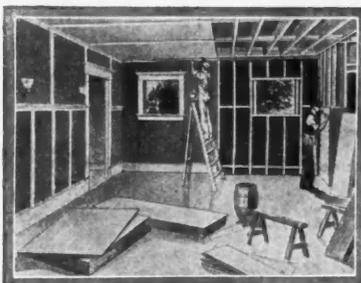
BEAVER BOARD is made of selected woods, reduced to fibrous form and pressed into panels with pebbled mat surface.

It is made in panels to be used for walls and ceilings in every type of building, new or remodeled. It takes the place of lath, plaster and wall-paper.

The panels are nailed on to the studding with Beaver Flathead Nails for edges and Beaver Bunghead Nails for the centers.

They can be put on over an old wall without removing plaster. A big business can be done in remodeling old rooms in this way.

The panels are fitted around doors and windows and brought down to floor behind base-board.



Putting up BEAVER BOARD in a New Room.

WHY EVERYONE HAS SOME USE FOR BEAVER BOARD

Because with BEAVER BOARD you can furnish a whole house, club, hotel or any other building with walls and ceilings that are economical and good looking.

Because with BEAVER BOARD you can change a bare, useless attic into comfortable rooms. You can divide up a cellar and make it dry and serviceable. You can make over an old barn or out-building into a play-house, work-shop, gymnasium, etc.

Because BEAVER BOARD doesn't crack, deadens sound, is slow-burning and makes a house warmer in winter, cooler in summer.

Because many useful and ornamental things that people like to have round the house can be made out of BEAVER BOARD without much expense.



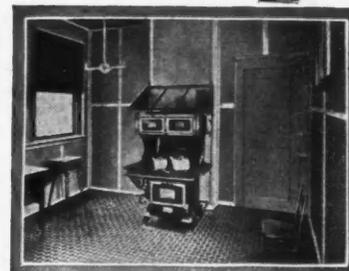
A Finished BEAVER BOARD Living-room.

Beaver Board is sold by hardware, lumber, paint, wall-paper and builders' supply dealers and decorators everywhere. For your protection, every panel is stamped on the back with the BEAVER BOARD Trade-mark.

Write for Beaver Board Booklets. If you will give us the name of your dealer, we shall be glad to send free booklets telling all about BEAVER BOARD and how to use it. Also plans and specifications for the different articles that can be made out of it, with estimate of cost. Here's a big chance for a good workman to do a good business.

The BEAVER COMPANY of BUFFALO

OFFICES AND WAREHOUSE, 130 BEAVER ROAD.
Mills and Factory, Beaver Falls, N. Y. Canadian Factory, Ottawa, Ont.



A Finished BEAVER BOARD Kitchen.



AN EDWARDS METAL SPANISH TILE ROOF

COSTS NO MORE THAN A GOOD TIN ROOF

Artistic and Ornamental in appearance and is positively guaranteed to be Fire, Lightning, Rain, Storm and Wind proof.

Its extreme lightness (about one-eighth that of slate), durability and moderate cost commend it to those wishing something out of the ordinary in roofing.

Manufactured from best quality Worcester Grade Terne Plate, furnished painted or galvanized (galvanized after being formed) size 10 x 14 inches.

Descriptive Booklet sent free on request

The Edwards Manufacturing Co.

"The Sheet Metal Folks"

401-417 Eggleston Ave.

Cincinnati, Ohio

for excellent results. The local dealer is made a part of the selling force of this concern and an active local campaign is kept up in his behalf.

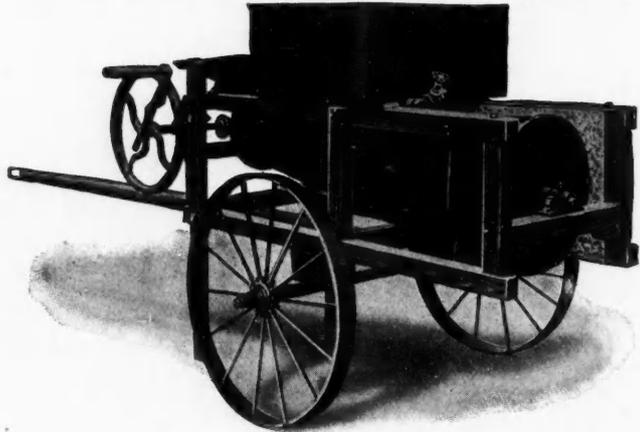
Rex Flintkote roofing is being more widely advertised than ever, and a big volume of new business is reported.

Perfection Concrete Mixer

"Time, labor and money saver." That is the slogan of the famous Perfection concrete mixer made by the Sidney Elevator Manufacturing Company of Sidney, Ohio. We have described many mixers that are making good among concrete workers and we now take pleasure in describing this one.

There are two cranks for turning, one of them being hidden from view in the illustration. The cranks are adjustable and can be made with a long or short sweep, to suit the conditions and the one operating the machine.

While it is arranged so that two men can operate the machine, only the power of one man is ordinarily required, the



extra crank handle being very convenient so that the operator may be permitted to stand on the side away from any dust which may be blown, should the wind be blowing violently.

One of the necessary requirements for good concrete work is good mixing, and this machine has proven to be far superior in that respect to anything we have ever seen.

One man turning and one man shoveling have mixed, with one of these machines, forty-five cubic yards of concrete in ten hours, and this was not a test for capacity either, but only one of many days of work.

It has a wide range of capacity, depending on speed of mixer, and the amount of feed. It can be operated by two to eight men, with equal efficiency.

It will mix as much concrete as many much larger mixers, and not only do it better, but with much less expense, both in first cost and cost of operating.

For cement walks, curb and gutter, foundation, and in fact all kinds of cement and concrete work, no better nor more economical mixer is made.

The machine is made throughout in a good and workman-like manner, and of the very best of materials.

The frame is made of well seasoned hard wood, well braced and bolted together.

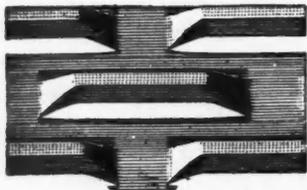
The wheels are large and are excellent for traveling on the road. They are strong and will stand lots of hard knocking and usage, and their large size permits of them straddling a trench. Besides they hold the frame up high enough so that the mixed products can be dumped directly into a wheelbarrow, which can be placed underneath.

The mixer can be hitched to and drawn behind a wagon.

The water tank is made of strong galvanized steel plate, well riveted, and is very substantial.

The trough under the mixing arms or cylinder is constructed of heavy galvanized steel plate, and is surmounted on stiff and rigid iron brackets, which in turn are strongly fastened

SYKES METAL LATH



that can be plastered on either side—cannot be applied wrong because both sides are alike.

We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose.

The top illustration shows Trough Lath, bottom cut depicts Cup Lath.

NO PICKLED LATH

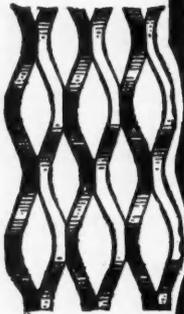
Sykes Lath is absolutely guaranteed not to have been pickled in an acid bath. This means that the weight and thickness is not reduced and is less susceptible to rust. Requires no furring out from studs because it is self furring.

It has been approved by U. S. Government and by leading architects, carpenters and builders throughout the country. In fact, when we say it is the best ever made we are simply stating a proven fact.

Samples and prices mailed upon request.

Sykes Metal Lath & Roofing Co.

NILES, OHIO



BISHOPRIC WALL BOARD

Cheaper and Better Than Lath and Plaster

YOU DON'T HAVE TO WAIT for good building weather when you use Bishopric Wall Board. This substitute for lath and plaster is made of kiln-dried, dressed lath, imbedded in hot Asphalt Mastic under pressure of 500 pounds to the



Applied
Dry,
Winter or
Summer

square inch, surfaced with sized cardboard and cut at the factory into 4x4 ft. sheets, of uniform thickness ($\frac{3}{8}$ inch), which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap or other decoration.

It is applied dry; is guaranteed not to swell, shrink, warp, crack, flake or blister; is clean, sanitary and odorless; is proof against moisture, cold, heat, and vermin; saves fuel in winter and keeps out summer heat; also deadens sound. Is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.



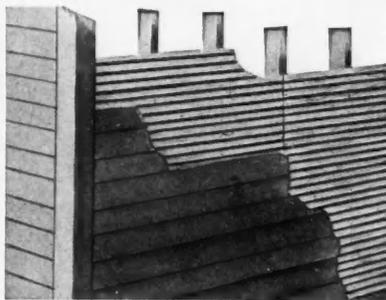
Importance of Lath The lath forms a perfect binder—a guarantee against warping or twisting out of shape. Furthermore, insures perfect adhesion when nailed to studding. Beware of cheap imitations. Bishopric Wall Board is protected by U. S. patents. Prosecution will follow infringement.

PRICE AND SHIPMENT FROM NEAREST POINT: Crate of 16 sheets, covering 256 sq. ft. of surface, \$6.40 or \$2.50 per 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, O., or Alma, Mich.

Saves labor. Does away with building paper. Cheaper than lumber.

BISHOPRIC SHEATHING

Proof against heat, cold, moisture and vermin. Patented.



Made of the same materials used in Bishopric Wall Board and same way, though finish is not necessarily so smooth, therefore costs less. It is nailed to studding on outside of the building, with lath and Asphalt Mastic exposed. Over this you nail weather-boarding. This gives solid sheathing with dead air space between Sheathing lath and siding. Ideal material for cement exterior or stucco work. Cement firmly adheres to lath and Asphalt Mastic, making a solid, smooth exterior. For factory or residence, this form of cement construction is the cheapest and best known.

Bishopric Sheathing is cheaper than lumber; is free from holes and rough spots; is nailed to studding in half the time required for lumber; does away with expense of buying and applying building paper; is proof against heat, cold, dampness, frost, wind and vermin. Being a non-conductor, it keeps the building cooler in summer and saves fuel in winter. It is used with excellent results as a lining for dairy barns, poultry houses, driving stables or other outdoor buildings.

PRICE AND SHIPMENT: Crate of 16 sheets, covering 256 sq. ft. of surface, \$5.12, or \$2 per square of 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, Ohio, or Alma, Mich. We ship from nearest point.

Requires No Paint or Other Coating. Handsome and Durable.

BISHOPRIC ROOFING

Standard Quality, Bishopric Asphalt Mastic Roofing will not dry out; therefore requires no paint. The asphalt composition is toughened and perpetuated by an exclusive process, which converts asphaltum into Asphalt Mastic. May be exposed direct to weather in any climate without danger of softening, drying out, cracking or crumbling. The only asphalt roofing with successfully stands the direct exposure test.

Made of pure woolen felt, coated on both sides with pure Asphalt Mastic and flaked mica, making a neat, clean, artistic, durable roof, which never needs paint. Absolutely proof against cold, heat, moisture, wind and weather; will not crack, curl or break; wholly unaffected by climatic conditions. Will reduce fire insurance. Easily laid.

PRICES: Freight prepaid East of the West Line of Minnesota, Iowa, Missouri, Oklahoma and Texas:

3-ply . . \$2.50 per square of 108 sq. ft.
2-ply . . \$2.25 per square of 108 sq. ft.
1-ply . . \$1.75 per square of 108 sq. ft.

Write for descriptive booklet and samples of Bishopric Wall Board, Bishopric Sheathing and Bishopric Roofing—all sent free.



The Mastic Wall Board & Roofing Mfg. Co., 24 E. Third St., Cincinnati, O.

to the frame. The shafts are of the best cold-rolled steel, which run in anti-friction adjustable boxes, thus reducing friction to a minimum.

Adjustable legs are provided for the front of the machine. They can be raised up out of the way when the machine is being transported or moved. These legs are also intended to give the proper pitch to the machine when it is in operation.

The cylinder is composed of semi-spiral steel blades.

The water sprinkler is regulated with a globe valve, within convenient reach of the operator, so that concrete may be wet to any consistency desired.

Importance of Proper Saw Fitting

Speaking of complaints—a man called at the Disston Saw Works some time ago, carrying a Disston handsaw. He seemed very much aggrieved and complained bitterly about their sending out such a saw as the one he had.

"Why," he said, "it will not cut wood, in fact it will not cut anything."

This struck the Disston folks as being rather curious for in their seventy years of sawmaking, some millions of saws have been made and sold by them. Upon examining the saw, however, the cause of the difficulty was readily apparent. The Disston representative casually asked the visitor if he thought the saw would cut iron. "No, of course it won't," said the visitor emphatically.

Asked if he could wait a few minutes, he said he could. Disston's man took the saw out in the shop, had it specially filed to cut iron—(notice the specially filed part)—brought the same saw back, took the visitor to the machine shop, got a piece of iron bar about two inches in diameter, placed it in a vise, tightened it up, put the saw to work and in short order neatly sawed the bar in two without any trouble whatever, and the teeth were still in fair condition.

The visitor was utterly amazed. "Well," said he, "I

wouldn't have believed it."

After an explanation of the trouble—simply a matter of the condition of the teeth in the saw—he asked: "Can you put it in proper condition for sawing wood?"

"Yes."

"Well, do it and I will never complain about a Disston saw again."

The majority of users do not know or give little thought to the fact that to obtain the best results in any particular class of work the saw must be specially toothed and filed for the sawing to be done.

Years of experimenting have determined just what shape or space, angle and bevel should be given to the teeth, as well as the amount of set best suited for this or that class of sawing; that the tooth best adapted for sawing soft woods is not at all suitable for cutting hard woods. Of course, the work could be done after a fashion, but the result would not be as good as that obtained by the use of a saw properly toothed for its particular purpose. You can take a rip saw and crosscut with it, but note the difficulty.

In line with this it may be noted that even a saw blade made for cutting soft metals is not at all adapted for sawing the harder metals, nor will a saw made for sawing wood stand the work of cutting a combination of wood and metal without injury to the points of the teeth, thereby spoiling it for further use in making a clean, sweet cut in wood. A saw that is "fitted-up" for sawing wood has the teeth filed with a bevel back and front, given a proper set, enabling it to do fast cutting. A handsaw for sawing metal has no set on the teeth but is ground for clearance and filed straight across the front of the tooth, while to a limited extent it would cut wood but not in a manner that a mechanic desires. In other words it is not adapted for wood cutting and its temper also is different from that of a wood cutting saw.

It is for these very reasons that various patterns of saws are

Inspect a KAHN SYSTEM Building

and learn the advantages of a building that cannot burn down or wear out; that is proof against fire and decay; that saves insurance and is most sanitary. The building itself is our strongest argument to you and is the real reason for our record of over 4000 important buildings.



HY-RIB

is one of the
KAHN SYSTEM
products

A Steel Sheathing, extensively used for ROOFS, SIDINGS, FLOORS, PARTITIONS, CEILINGS, FURRING, etc., in buildings of all kinds. Your own men or local contractor can apply it. Simply set up the **HY-RIB** sheets, apply the cement mortar and the slab is complete. No centering or studs required. Write us before you build. **HY-RIB** catalog free.

TRUSSED CONCRETE STEEL CO.

644 Trussed Concrete Building, Detroit



Buy The BEST EDGE TOOLS

That Money Can Buy *guaranteed perfect, in quality, shape, material and temper.*

Save yourself time and money by avoiding the necessity of continually sharpening your chisels, gouges, and other Edge Tools.

BUY WHITE'S EDGE TOOLS, they require the least amount of care and save enough in grinding to pay for themselves. If not at dealers, write us.



Dep't-A

The L. & I. J. White Co.
Buffalo, N. Y.

ASBESTOS "CENTURY" SHINGLES

"The Roof that Outlives the Building"

What roofing *could* the architect or builder recommend if not Asbestos "Century" Shingles?

Dense and elastic sheets of asbestos fibro-cement, formed and compacted under hydraulic pressure.

Weather-proof—Dampness matures the cement. Elasticity defies changes of temperature—even continuous freezing and thawing.

Fire-proof—Asbestos and cement do not support combustion.



Asbestos "Century" Shingle Roof—Residence of Mrs. William Edgar, Newport, Rhode Island; John Melville, Newport, Contractor

Accident-proof—Asbestos fibres reinforce the cement in every direction.

Uniform in size and shape. Easily and quickly laid. Need *no painting* for appearance or preservation and *no repairs*.

The first cost is the final cost.

Three attractive colors—Newport Gray (silver gray), Slate (blue black) and Indian Red. Numerous shapes and several sizes. Ask your Roofer for new quotations. Write for Booklet "Everlasting 1910."

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania

Standard the World Over



APOLLO BEST BLOOM

Galvanized Sheets

Are giving good and substantial service in every clime. Everywhere a galvanized sheet can be used, there Apollo excels. Always uniform, tough, pliable, easy to work, dependable—these are the acme of good sheet making, and are adapted to all forms of sheet metal construction. Gauges 10 to 30 inclusive. Send for Weight Card.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DI STRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh Portland San Francisco St. Louis

The right protection

You ought to have roofs made of the real, natural waterproofer — Trinidad Lake asphalt — on every building you construct.

Genasco Ready Roofing

is made of Trinidad Lake asphalt. It protects against rain, snow, sun, air, heat, cold, and fire because it doesn't crack, rot, rust, or blow off; and it lasts longer than any other roofing. That's the roofing that saves you time, labor, and money

The Kant-leak Kleet

is the greatest fastener ever invented for ready roofing. Keeps seams absolutely water-tight without cement. Supplied in rolls of Genasco when specified.

Write for samples and the Good Roof Guide Book. Ask your dealer for Genasco, and look for the hemisphere trade-mark. Mineral or smooth surface. A written guarantee — if you think it necessary.

THE BARBER ASPHALT PAVING COMPANY

Largest producers of asphalt, and largest manufacturers of ready-roofing in the world.



PHILADELPHIA

New York San Francisco Chicago

Cross-section, Genasco Smooth-surface Ready Roofing





M. P. DURABLE FLOOR VARNISH

Price \$2.50 per gallon; Quarts 73c each

Exhaustive tests conducted during many years show this varnish to be the most durable and elastic Floor Varnish on the market. It is impervious to water and does not mar nor scratch white. It is light in color, thus preserving the natural beauty of the grain. It can be used with equally good results over painted or grained surfaces. It dries hard in from 15 to 24 hours, and can be rubbed and polished or left in the gloss.

For sale by paint dealers everywhere. If not at yours, we will send by prepaid express upon receipt of price. Full descriptive price list upon application.

THE GLIDDEN VARNISH CO.
Makers of High Grade Varnishes for all purposes
GLIDDEN BLDG., CLEVELAND, OHIO

GLIDDEN'S

GREEN LABEL VARNISHES

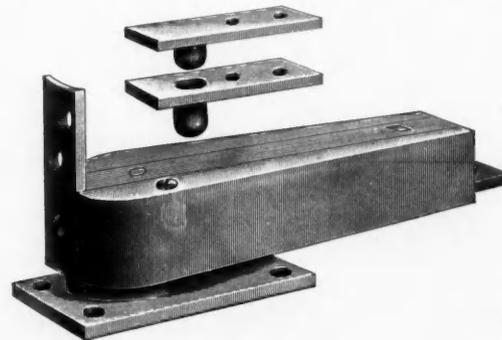
made and especially toothed for the different kinds of work. Experience in this line is the best teacher. Take a saw fitted up for sawing wood, try it on a piece of metal. No matter what kind of a saw it may be, or whose make, it positively will not do as good work afterwards in sawing wood without being re-fitted.

Simonds Adds Woodworking Plant

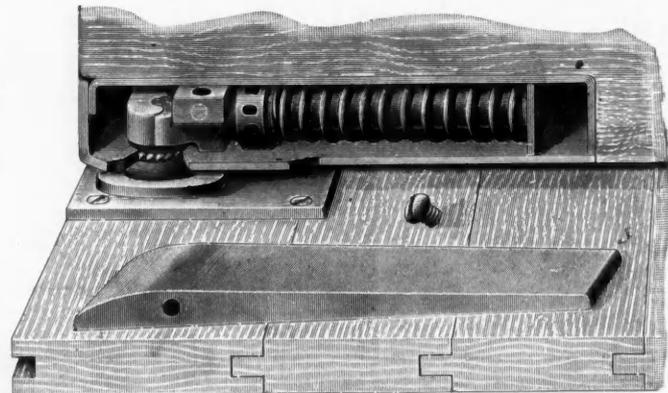
The Simonds Manufacturing Company have added to their Fitchburg, Mass. plant by the purchase of a factory once used by the Rolling Machine Company. It adjoins the present plant of the Simonds Company and adds about 25,000 square feet of space most conveniently located. The substantial brick building now on the ground will be remodeled and fitted throughout with complete equipment for the manufacture of all kinds of saw handles and wood saw frames. The woodworking departments of the Simonds Manufacturing Company which have heretofore been located at different places will be brought together in the new factory. The wood-saw business of the Simonds Company has grown to such an extent that it demands more room to take care of further increases which trade indications now promise. The news of the plan to install a Simonds woodworking plant was naturally welcomed by the city of Fitchburg, Mass., as it will mean good employment for more skilled mechanics and a corresponding increase in local business activity.

Shelby "Chief" Double Acting Floor Hinge

In offering the "Chief" floor hinge the Shelby Spring Hinge Company, Shelby, Ohio, point out that the objection to many



of the floor hinges heretofore placed upon the market has been that it was necessary to cut a large hole into the floor to receive the hinge, and as all the working parts were put in this hole beneath the floor, water and dampness could not be



prevented from destroying the mechanism of the hinge, also that where iron beams come near the surface of the floor, it was impossible to use them at all.

To overcome many of these objectionable features has been the constant aim and study of this company—resulting in the

MURPHY TRANSPARENT WOOD FINISH, \$3.00
 costs less by The Job than varnish which costs less by The Gal-
 lon. It covers from 20% to 40% more surface, with from 20%
 to 60% less labor.

MURPHY OIL COLORS are the finest ever made for house
 painting; and they go enough farther in tinting to make them
 cheaper than colors at half the price.

MURPHY KONKRETO stops the dustiness of Concrete and
 Cement due to wear and sweeping, and makes such floors as
 easy to keep clean as Tile.

“Quality and Economy in Varnish and Varnishing”

Our FREE money-saving book. Address us at 222 McWhorter St., Newark, N. J.

MURPHY VARNISH COMPANY, FRANKLIN MURPHY, President

THE VARNISH THAT LASTS LONGEST

NEWARK

BOSTON

CLEVELAND

ST. LOUIS

CHICAGO

Associated with DOUGALL VARNISH COMPANY, Limited, MONTREAL, CANADA



Handsome, Strongest and Most Practical Bar on the Market. Long Life—Nothing to rot out. Glass bedded on Spanish Cork preventing cracking or crushing of glass. No putty, yet Absolutely Water and Dustproof. Simply incomparable with old fashioned styles. They add immensely to the Beauty, Utility and Rental Value of Buildings.

ARE LOW IN COST
 Architects, Contractors and Owners are invited to write me for descriptive literature, prices or estimates.
 Also Shultz Patent Burglar Proof Coal Chute. All Steel Cork Bedded and Ventilated Bottom Bar.

C. H. SHULTZ, MANUFACTURER, ST. JOSEPH, MO.

ALL-STEEL BURGLAR-PROOF COAL CHUTE

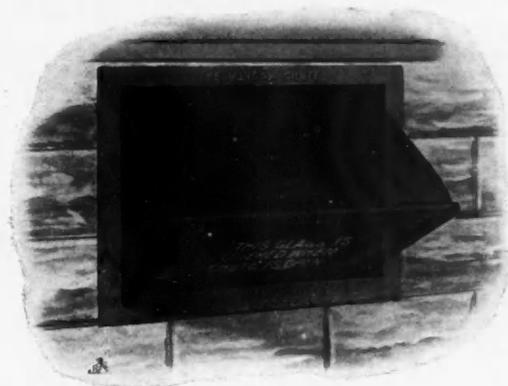


The Neatest, Strongest and Most Convenient Coal Chute Made. Prices also Lowest. No modern residence complete without it. Locks itself when closed up. Can only be opened from inside. Architects, Contractors and Owners are invited to write for descriptive circular.

C. H. SHULTZ, Manufacturer, St. Joseph, Mo., U. S. A.

An Ornament to Any House

Not an ugly looking cover hanging on the wall, but a substantial glass window without hinges, bolts, or other contraptions on the outside



USEFUL?

Yes. 365 days in the year for lighting the basement. Open it and it's ready for the coal man. **The Name? "The Window-Chute."** Some call it "the one with a glass."

Twenty Thousand in Use

Manufactured by
HOLLAND FURNACE CO.

Dept. "A," HOLLAND, MICH.
 CLARE BROS. & CO. (Ltd.), PRESTON, ONT.



There's Money for You in Steel Ceiling Work

And you can easily handle it. Our construction is planned to simplify erection and reduce number of pieces to handle, thus saving time, labor and expense. Any good mechanic with the aid of our working drawings can easily do the work and secure a neat, snug-fitting, workmanlike job.

We help you by preparing free suggestion drawings and estimates. Send sketch and dimensions of room or rooms to be covered and we will submit suggestions and quote exact prices on the material delivered at your depot.

Berger's "CLASSIK"

is the most complete line of artistic Steel Ceilings in existence AND OUR CATALOGUE PROVES IT.

Write for it TODAY. Ask for No. D-55.

THE BERGER MFG. CO., Canton, O.

New York Philadelphia Boston Chicago
Atlanta Minneapolis San Francisco St. Louis

Granite
TRADE MARK
ROOFING
Penn. R. R. Station
Washington

Good Material and Plenty of It

Many ready roofings are made of flimsy, light-weight paper, scantily coated, [which] last only a year or two.

Granite Roofing does not belong in that class.

Good materials and plenty of them are used in making it. There is nothing flimsy or fragile about *Granite Roofing*. It has a heavy sea-grit surface, which takes the place of the usual coat of paint, and wears indefinitely.

Other roofings require coating with some special compound every year or two, [but] *Granite Roofing* never requires any coating. After the roof is laid, it will take care of itself.

A Free Sample will be sent "for the asking." You will be astonished to see how heavy, firm and durable a ready roofing can be made.

EASTERN GRANITE ROOFING CO.
19 Battery Place, NEW YORK.
CHICAGO ST. LOUIS

Shelby "Chief" double-acting floor hinge, by which it is claimed the problem is solved.

The hinge is first applied to the door, and this is done by simply sawing out a square cut at bottom corner of door; no mortising required. When the hinge is in place, the door is then placed in upright position with its opposite edge placed to center of jamb or opposite door (when double doors are used) thus getting the door in line before the base plate is screwed fast to floor.

The tension of the spring can be regulated at any time after the door has been hung, thus enabling one to adjust the swing of the door as desired.

In the first illustration the first piece is the pivot for upper jamb, the second piece is the socket for top of door, and the third piece is the hinge for the bottom of the door.

The other illustration shows the Shelby "Chief" floor hinge applied, the side plates being removed to show working parts, adjusting nut and ball bearing.

Ever-Ready Door Clamp

The Willshire Clamp Company of Willshire, Ohio, are offering a very useful and labor-saving device for carpenters in their Ever-Ready door clamp, illustrated herewith. It is claimed that it will hold a door firmly on edge while the hinges, lock and other attachments are being fitted.

The clamp is durable and cheap. Its construction is such that the weight of the door serves to throw the clamping jaws toward each other to hold the door firmly. Every downward pressure upon the door, instead of moving it from the clamp, causes the clamping jaws to grip the door more tightly.

A simple thumb-screw provides for adjusting the clamping jaws to take different widths of doors, while the clamping faces are padded to prevent injury to the work. The clamp may or may not be fastened to the floor.



Valuable Book Free

We take pleasure in calling the attention of our readers to a new 52-page book dealing with the subject of modern hot-water heating which is now being sent out to carpenters and builders by the Honeywell Heating Specialty Company, Wabash, Ind. Some of the subjects treated in this book are as follows:

How to remedy an old-fashioned, unsatisfactory hot-water job; the Honeywell heat generator—how it operates; the correct method of designing and installing the Honeywell system; laying in the piping system; proper connections; hints to steamfitters; how to secure piping plans for the Honeywell system; the Honeywell unique hot-water radiator valve; the Honeywell temperature regulator; directions for setting up and operating the Honeywell temperature regulator, etc.

Write for this valuable book today; it is free.



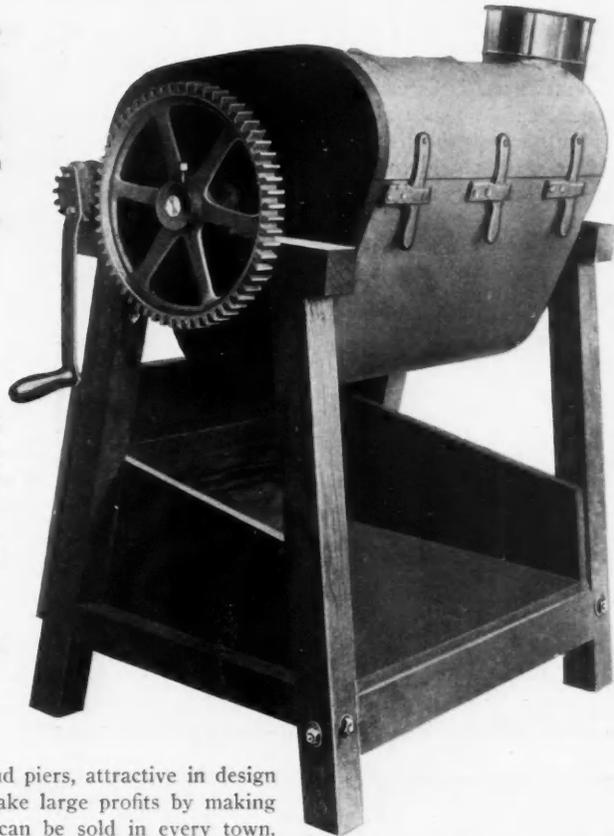
Complete Hand Mixer \$22.50

"Northwestern" Triangular Hand Power MIXER

**The Most Practical, Thorough,
Rapid and Handiest
BATCH MIXER Made**

Mechanical Mixers are Best

They are replacing the mortar box and the hoe. They make a more perfect mix and are time and money savers. Just compare the time of one man to operate such a machine to the time of six to eight men mixing by hand. This mixer pays for itself in a few days. Mixes enough concrete at one time for 6 to 8 blocks. Thoroughly mixes a batch in one minute.



Enormous Profits in Ornamental Concrete Lines

Complete Porch Column and Pier Outfit \$20.00

Makes massive, solid, substantial columns and piers, attractive in design and made at small cost. Every builder can make large profits by making special and ornamental concrete articles which can be sold in every town, district or community—cheaper than wood and more attractive. We furnish special instructions and anyone can make good porches, piers, or ornamental moulds with little experience. Dozens of different designs to select from. This line opens up a new field with unparalleled profits. Buy one and increase your profits.

Sill and Cap Mould \$12.00

An invaluable mould for carpenters, builders, masons or block makers. Caps, Door Steps, Lintels, Water Table Blocks, Chimney Moulds, Paving Blocks, Coping and Door Caps can be made right on this mould. Sills and Caps can be made right on the wall or any plain surface. Builders will find structures are more solid and substantial when using concrete for this purpose. Block makers will find attractive fields and extensive profits in the manufacturing of such articles. Mould is adjustable to various lengths and widths, and every builder should own one.

Special Concrete Machinery for Carpenters, Masons, Builders and Block Makers Everything Sold by the Pound

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|---------------------------|---------|----------------------------------|---------|
| Porch Column Outfits..... | \$20.00 | Brick Machines..... | \$18.00 |
| Sill and Cap Moulds..... | 12.00 | Well Curbing Moulds..... | 5.25 |
| Chimney Moulds..... | 5.50 | Drain and Sewer Tile Moulds..... | 5.00 |
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| Power Mixers..... | 50.00 | Ball Moulds..... | 5.50 |

We Make Everything in the Concrete Machinery Line

SEND FOR OUR BIG 1910 WHOLESALE CATALOG

It shows everything manufactured in the concrete machinery line. Everything imaginable is listed and it makes a fine reference book. It is beautifully illustrated and gives much valuable information. It will save from 50 to 100 per cent on your concrete purchases.

NORTHWESTERN STEEL & IRON WORKS

Box 804

EAU CLAIRE, WISCONSIN



Ornamental Designs for All Purposes

Few people realize to what extent concrete is being used to beautify buildings and structures of all kinds. It is impossible to go anywhere nowadays without seeing concrete in some form or shape. You see solid, massive, beautiful columns, attractive gate posts, substantial and handsome porches, piers, grave stones—in fact, everything imaginable.

Concrete lends itself so readily to the forming of ornamental moulds that its use is becoming larger and larger; and it is no uncommon sight to see plain buildings turned into handsome and attractive structures by means of concrete. In many localities concrete porches and columns are being added to plain wooden buildings and the effect is everything that could be desired.

Concrete is being extensively used in the manufacture of grave stones and it has no apologies to offer as it does not make a cheap or shoddy looking substitute for marble.

Ornamental gate posts are becoming common, and they lend distinctiveness to any property, giving it a stylish appearance and adding value to the property.

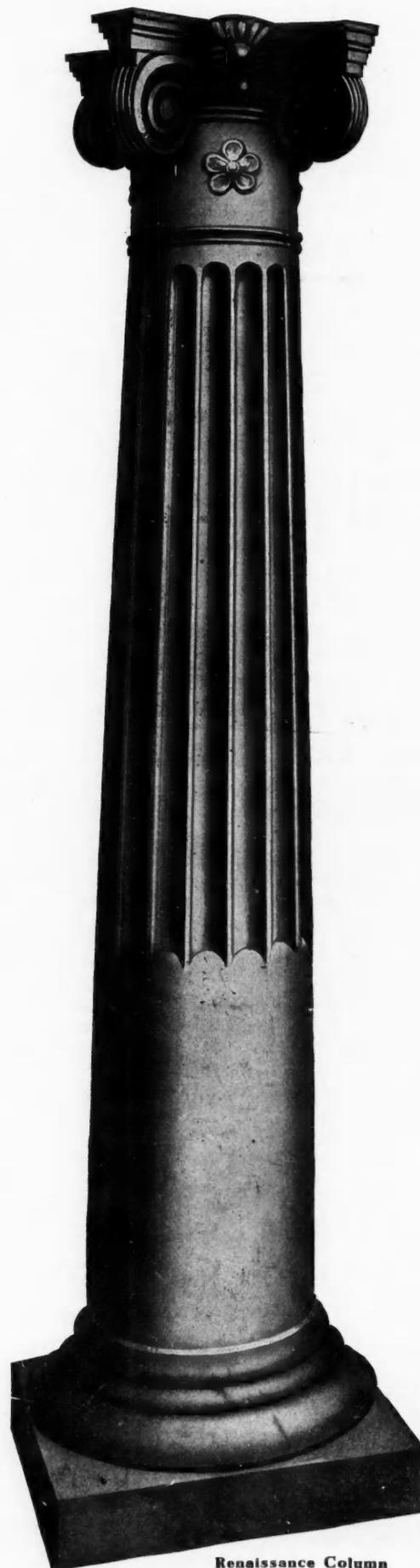
Later developments in concrete construction are bringing out new materials for facing, and beautiful effects can be secured in white, medium red, dark red, blue, brown, gray, black and even in imitation of granite and marble. There is not a thing manufactured but that can be reproduced in concrete.

The Renaissance column shown on this page gives some idea of the beauty and rich appearance of concrete when properly moulded. Builders, masons and carpenters, all over the country, are taking up the manufacture of these special articles and furnishing them on their buildings. It is a branch of the building industry which opens up unparalleled opportunities of profit. Such special articles can be easily manufactured with the proper and necessary moulds. Full and complete information can be secured from leading concrete concerns, especially from the "Northwestern" Steel and Iron Works of Eau Claire, Wis. They are pioneers in the manufacture of these special moulds, and practically anything in the concrete line can be secured from them. Their line covers various sizes of block machines, brick machines, mixers, porch column and baluster outfits, sill and cap moulds, chimney moulds, drain and sewer tile moulds, ball moulds, well curbing and pier moulds, block cars, cinder crushers and gas-line engines.

The output of their factory is astonishingly large and they sell at minimum prices. The quality of their goods is recognized everywhere.

They issue a wholesale catalogue which is beautifully illustrated, and will be sent free to all readers of this publication on request. Masons, carpenters, builders or block makers will do well to secure a copy, as it not only makes a fine reference book, but is full of valuable and useful information.

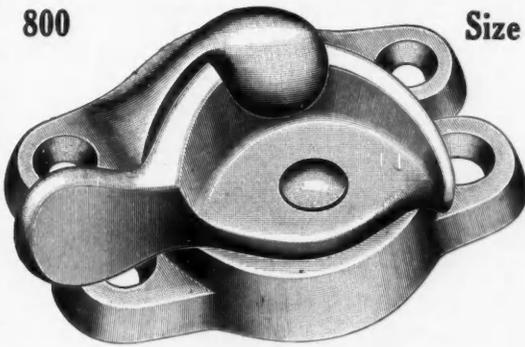
It is thought by many that the future building material will be exclusively concrete, and those who take up its use early will reap the largest profits. Masons and carpenters can secure such moulds as porch column and baluster outfits and supply their trade, making double profits—one in the manufacture and one in laying. Various uses will suggest themselves and the use of such moulds will be found indispensable after they are once used. The prices at which these are being sold are attractive and permit of every mason, carpenter or block maker owning an outfit. Over five thousand builders in the United States alone took up the manufacture of concrete last year, and the reports show successful effort on their part with unusually large and attractive profits. Write at once, addressing Northwestern Steel and Iron Works, Eau Claire, Wis.



Renaissance Column

800

Size



88-Page Catalogue Hardware
Specialties Mailed Free.

The Crescent SASH FASTENER.

The Best Sash
Lock Made.

Strong, Symmetrical
and finely finished

Made in 5 sizes, and all builders' hardware finishes.

THE H. B. IVES COMPANY

Sole Manufacturers

NEW HAVEN, CONN., U. S. A.

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DRAWING & SURVEYORS INSTRUMENTS

BOUGHT, SOLD AND REPAIRED

ARTISTS' MATERIALS

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Kansas City, Mo.

Honeywell Hot Water Heating is the Best

THE HONEYWELL SYSTEM

It is not only the cheapest system to install, but by far the most sightly, efficient, responsive and economical system on the market. It contains one-third less water and heats one-third quicker, with a resultant saving in fuel. The water circulates from the boiler to the radiators from *three to five times faster* than in the old style system, hence quick results from firing with a minimum loss of heat in transmission. No large, unsightly piping through the rooms with this simple system. Owing to the very rapid circulation of the water $\frac{3}{4}$ " pipes are amply large to supply any sized radiator on the upper floors.

Every Radiator heats perfectly with the water at a temperature as low as 85 degrees, which can be increased to a temperature of *240 degrees without boiling* inside of a *few minutes*, giving the system the efficiency of steam at 10 lbs. pressure to meet extremely cold weather, while retaining all the valuable features of the mild temperatures of hot water.

34,000 SYSTEMS IN USE

Endorsed and Sold by the Leading Manufacturers of Heating Materials.

Free engineering advice given the trade on all installations. Failure absolutely guaranteed against.

If you have an unsatisfactory job of hot water heating, we can cure it at a very small cost and without remodeling.

Write us for full information regarding this eminently successful system that is revolutionizing hot water heating.



Honeywell Heating Specialty Company

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WABASH

INDIANA



The Honeywell Improved
Hot Water Radiator Valve



The Honeywell
The Clock
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**Double-Disc
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BONCI The World's Greatest Tenor.

Exclusive Fonotipia Double-Disc
Records by Bonci, \$2.50 and \$3.50

Send us 6c and we will send you a double-disc record together with a catalog and the name of a nearby dealer.
COLUMBIA PHONOGRAPH CO., GEN'L, Dept. A-Z, Tribune Bldg., N. Y.

ACME WOVEN WOOD LATH

Accepted by the U. S. Government for
use in new buildings at Fort Sill, Oklahoma.

Used everywhere and is a big money saver for
"Stucco" and Cement exteriors. A new
booklet just out describes it thoroughly.

Write for it.

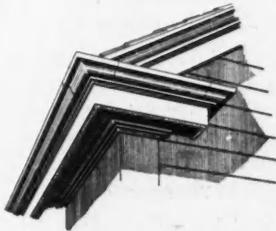
Acme Woven Wood Lath Co.

Suite 1015, New Bank of Commerce Building

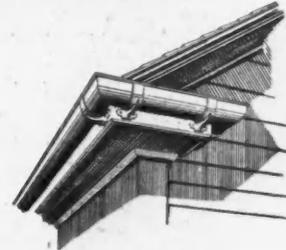
ST. LOUIS, MO.

U. S. A.

Cast Iron Gutters Last



Easily put up. Once up, always up. Do not bend or break by pressure of ladder against them. Will stand greater weight of snow or accumulation of ice than any other gutter. Not affected by acid fumes that in some vicinities play hob with all other metal gutters. They are adaptable to any kind of building or type of construction. Cast with moulded face to form part of cornice, or rounded to serve as a hanging gutter. Used almost exclusively in England and all over Europe. Supplied in 6 feet lengths. Joints fitted ready to erect. No soldering required. Send at once for circular and prices.



HITCHINGS @ COMPANY, Elizabeth, N. J.

Better Light



and more display room are certain results when store fronts are built on the Petz System. It combines to the greatest degree the essentials of strong, permanent construction and artistic appearance. It is quicker and easier to install than others, as with Petz Bars the glass is set from outside. Insurance companies, architects and builders endorse them and you should insist upon them. An interesting booklet "Modern Store Front Construction," will be mailed upon receipt of your request. Write for it today.

DETROIT SHOW CASE CO.

SOLE MAKERS

491 West Fort St.

DETROIT, MICH.





FELLGREN SYSTEM Solves the Problem

Solid Concrete Houses—At Last—Without Expensive Forms or Lumber Waste

THIS is an example of the beautiful, substantial, modern houses being built by the Fellgren System of Concrete Construction. (Patented.) The only practical, satisfactory method. Strong, Fireproof, Damp-proof. No lumber wasted for Forms. Dead-air space makes Dry Walls. Framing and Construction Easy. The Fellgren System has been Tested and Approved.

CARPENTERS AND BUILDERS—INVESTIGATE

Write today for particulars and for money-making proposition

G. W. Fellgren & Sons Co. 4874 Magnolia Ave. Chicago, Ill.



A Booklet telling how to get water Fresh from the well for suburban homes. How to avoid storage of water. The most economically operated independent water system, etc.

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UNITED PUMP & POWER CO.

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Hotel Tuller

New and Absolutely Fireproof
Corner Adams and Park Streets

In the center of the Theater, Shopping and Business District.

Has large Convention Hall.
"Grand Roof Garden Café."

Music from 6 p. m. to 12 p. m.

Every room has private bath. European plan.

Rates, \$1.50 per day and up.

L. W. TULLER, Prop.

Mr. Builder!

This New Side wall is a dandy for a Nice Room

This is only one of the many handsome designs shown in our new catalog of metal ceilings and side-walls. **Your copy is waiting for you.** Write for it today.

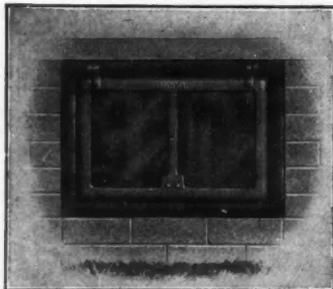
Our plain instructions make measuring and erecting easy for the carpenter and builder; we also furnish detailed drawings showing just **how** to do it.

We make the best fitting and nicest looking **Spanish Metal Tile Roofing** in the market. Sample and prices free.

Send us a letter today, asking for catalog and special inducement to new representatives. We want one carpenter or builder to handle our products in each town, everywhere. Get the Metal Ceiling business in **your town** now.

The Kanneberg Roofing & Ceiling Co., Canton, Ohio

Manufacturers of Art Steel Ceilings and Sidewalls; Metal Roofing; Architectural Sheet Metal Work; Eave Trough and Conductor. Catalogs Free.



"MODEL" FOUNDATION CHUTE

Complete with Rubber Glass

Rubber Glass is a non-breakable, translucent substitute for glass, giving **perfect satisfaction**. Every "Model" Chute is shipped complete with the rubber glass.

Absolute Protection to Building and Lawn

The door locking open protects the building. The hopper, with ample extension, protects the lawn.

Our Chutes are built to withstand the abuse of the strongest and most careless coal shoveler. **A Heavy Gravity Lock** secures the door from the inside. 3 Sizes.

No Modern Building is Complete without a Coal Chute

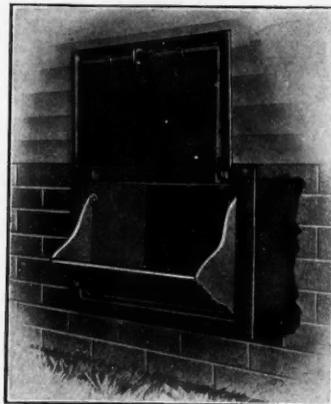
Our new illustrated Catalogue, just off the press, shows our full line of Coal Chutes. Write for one.

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New York



Bargains for May 1910

Never before have we been able to offer greater inducements in brand new building material to contractors, carpenters and builders than at the present time, and if you are now ready to buy, here is an opportunity to save 30 to 50 per cent on clean, fresh, new stocks.

From Receivers, Sheriffs and Manufacturers Sales.

Mail Orders accepted for any of the following items.

We guarantee absolute satisfaction on any of the following items, and will ship same C. O. D. upon receipt of a 25 per cent deposit, and you can pay the balance when the goods arrive at your railroad station, and if not found satisfactory we will return your deposit and pay freight both ways. Certainly this is a fair offer and you should send us at least a trial order.

PRICE WRECKING SALE ON LUMBER

All brand new, guaranteed graded according to U. S. Manufacturers' standard and ready for immediate shipment from our Chicago stock. We guarantee full count and absolute satisfaction.

Boards and Dimension.

- No. 1-6" Hemlock Sheathing-Square Edge or Dressed and matched.....\$16.00
- 12" High grade Arkansas Short Leaf Yellow Pine Barn Boards.....\$20.00
- 5" Select White Pine Corner Strips-s2s. Lengths 10 to 16 ft.....\$20.00
- No. 1 2x6, 22 or 24 ft. Yellow Pine, Sized.....\$20.00

Shingles, Lath Etc.

- White Cedar Shingles 5-2x16" Best quality\$3.25
- No. 1 White Pine 32" Lath.....\$1.75
- Clear 2 1/2 O. G. Fir Battens, any Length 10 to 2 ft.....\$0.70
- No. 1 White Pine Furring Strip 1x2, Lengths 10 to 16 ft.....\$0.25

Flooring

- Clear Hard 1/2 in. Maple Flooring Steel Polished and End Matched.....\$40.00
- Clear 4 in. Hard Pine Flooring Lengths 10 to 20 ft. D & M.....\$26.00
- Clear 3 in. Quarter Sawed Yellow Pine Flooring.....\$31.00

Siding

- Clear 6 in. Oregon Fir Drop Siding.....\$29.00
- C & Better Genuine White Pine Beveled Siding, Standard Lengths.....\$22.00
- Clear California Red Wood Beveled Siding.....\$25.00
- Clear Yellow Poplar Beveled Siding.....\$24.00
- Clear 6 in. Arkansas Soft Pine Drop Siding.....\$24.00

Save 30 per cent on Porch Material

Here are a few specimens of the low prices we can make you on Porch Material.



- Colonial Columns, No. 1 quality Fir, 8 in. diameter, 8 ft. long.....\$1.66 each.

Balusters.

- Clear Fir-Turned, 1 1/2 in. square x 24 in. at \$3.38 per 100.

Porch Rails.

- Top and bottom rails at.....\$2.75 per 100 lineal ft.
- Column rails at \$4.12 per 100 lin. ft.

Porch Flooring.

- 1 1/2 x 3 1/2 in. face clear Fir at.....\$32.00 M.
- Clear 4 in. Minn. Soft Pine at.....\$28.00 M.

Porch Ceiling.

- No. 1. Y.P. Ceiling, D.M. and Beaded \$18.00 M.

Mill Work Bargains

Every piece of Mill Work absolutely guaranteed brand new, highest grade and satisfactory to you.

WINDOW FRAMES.

- Lot 10 A-100. Everything complete, outside casing 1 1/2 x 4 1/2 inch, main sill 1 1/2 x 3 1/2 inch, sub sill 1 x 5 1/2, jambs including stile and blind stops 5 1/2 in. wide, parting strip, etc. Made from sound selected clear face Yellow Poplar, Cypress and White Pine. Price complete in the K. D. with pulleys.....\$1.65



DOOR FRAMES

- Lot 10 A-99. Outside door frame, everything complete, outside casing 1 1/2 x 4 1/2 oak sill, 1 1/2 x 7 1/2 rabbetted jambs, 1 3-8x5 1/2. Made from the same woods as above. Price complete in the K.D. \$1.85

\$8.10 BUYS BEAUTIFUL FRONT DOOR.

- Lot 10 A-13. Soft Pine double A quality glass, size 3x7 ft., 1 3-8 in. thick.....\$8.10
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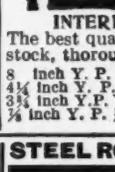
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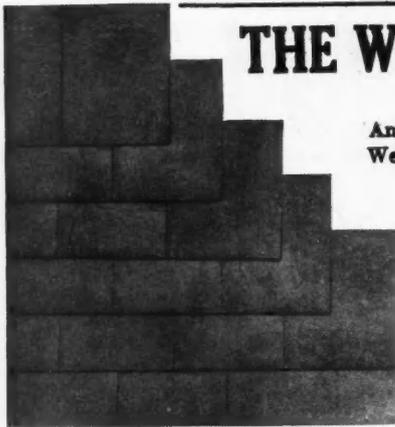
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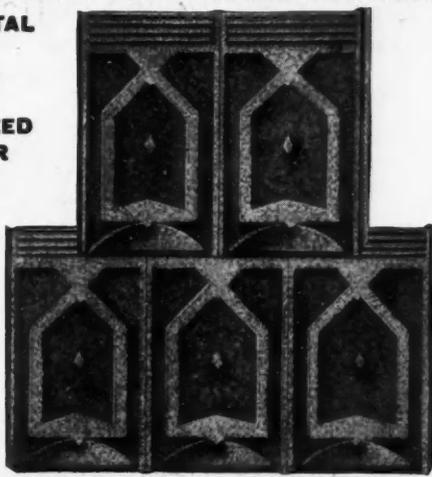


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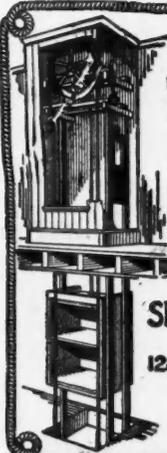
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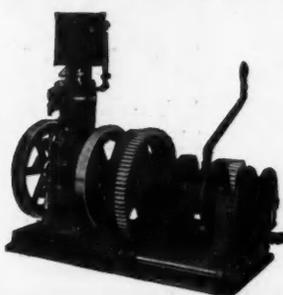
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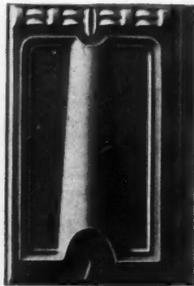
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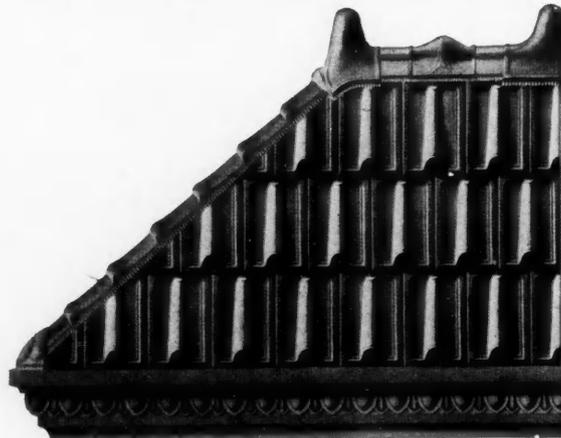
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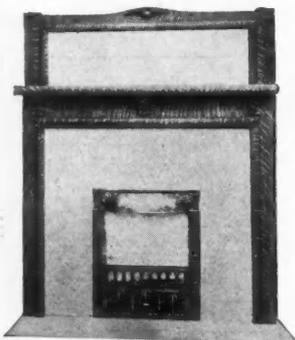
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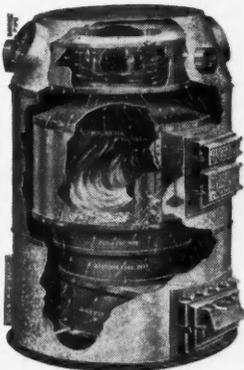
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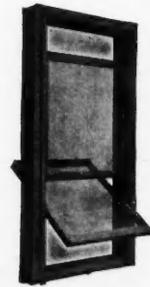
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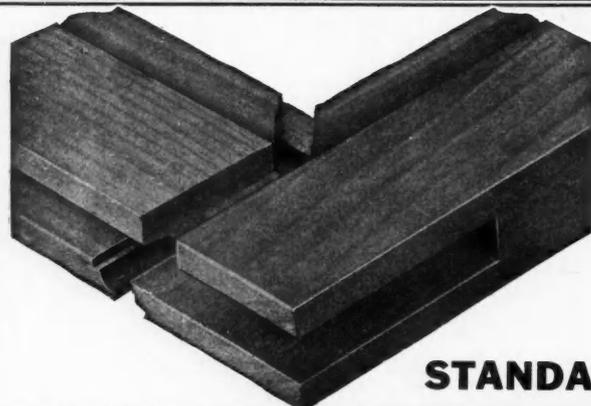
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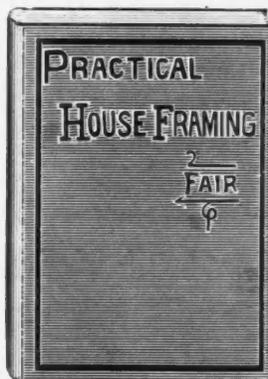
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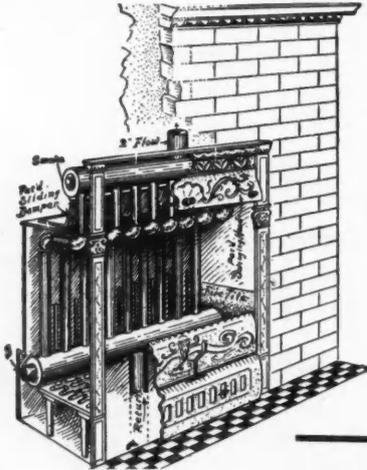
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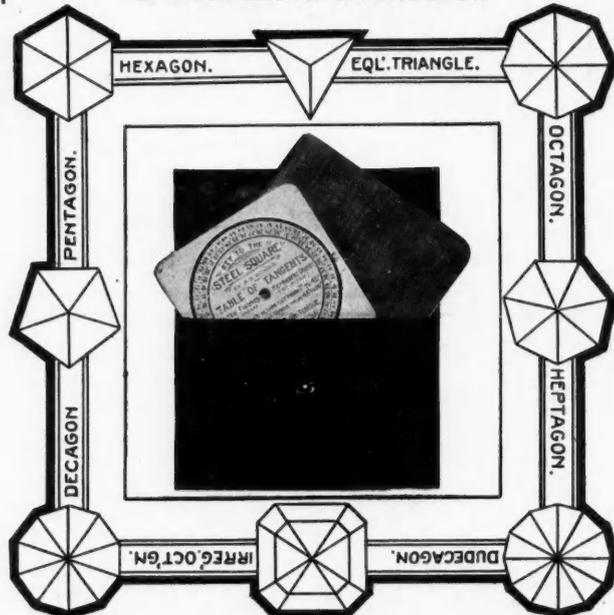
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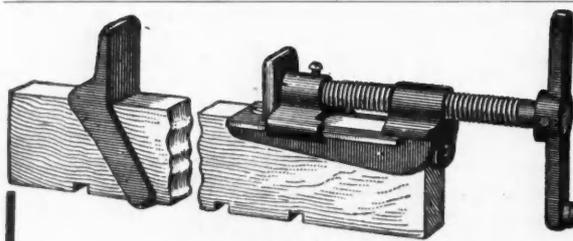
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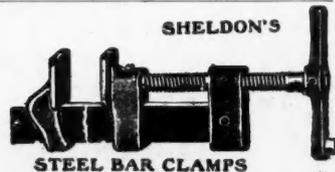


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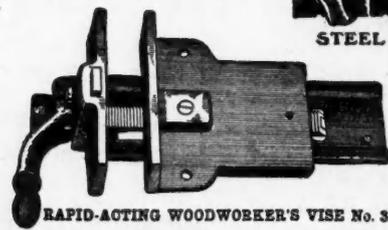
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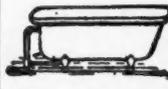
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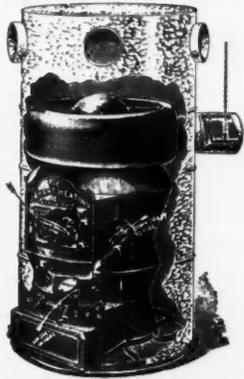
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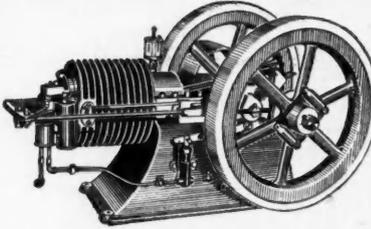
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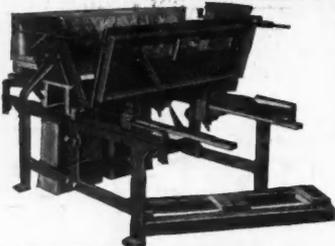
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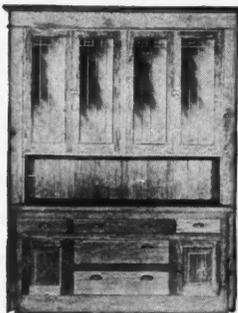
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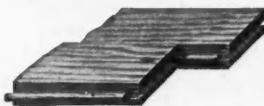
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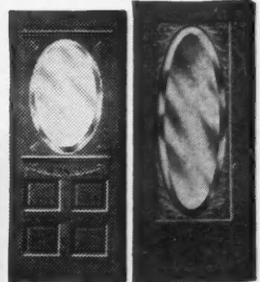
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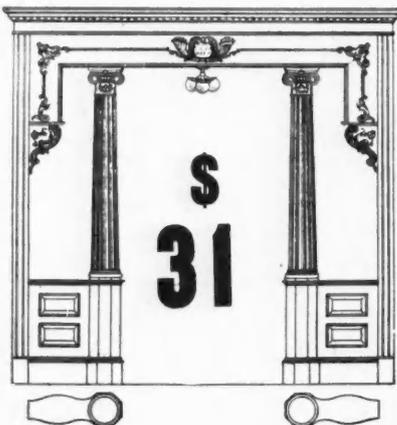


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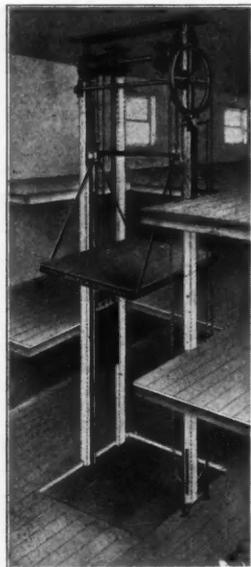
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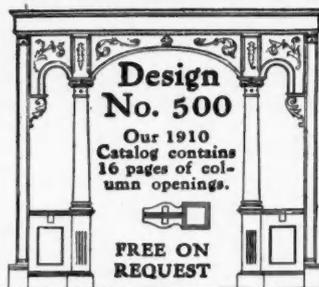
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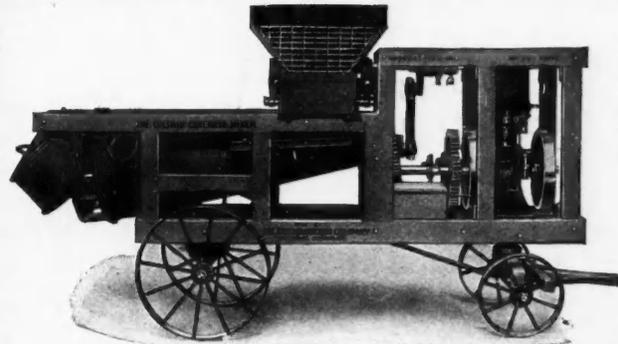
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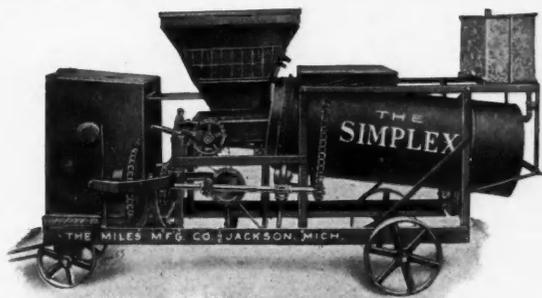
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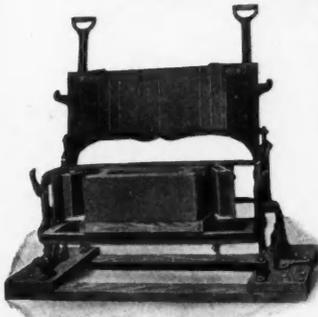
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Anchor Machines Make Continuous Air Space Blocks

The wall that's guaranteed frost and moisture proof.

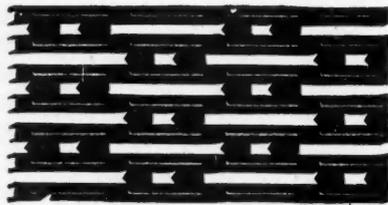


A perfect dead air space from cellar to garret.
 Standard Machine makes blocks 8x24 in.—any width from 8 to 12 in.
 Junior Machine makes blocks 8x16 in.—any width from 8 to 12 in.
 All blocks tied together in construction by four quarter-inch galvanized iron rods 8 in. long and turned 1 in. at each end, guaranteed rust proof and everlasting.

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 All Machines sold direct to the trade.

Anchor Concrete Stone Co., Rock Rapids, Ia.

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Coming right down to the economy question Clincher Lath has got everything beaten.

As a practical man you can understand the principle by the illustration. Notice the level

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Sagging Is Impossible

Sagging between the studding is rendered absolutely impossible if Clincher Lath is used. Read what progressive carpenters have to say about it.

Easier to handle and easier to erect than any other lath on the market. Prove this by sending to Department R. C. for samples. Free to anybody interested.

The American Rolling Mill Co.
MIDDLETON
OHIO

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When in the market for Plumbing Supplies and you wish to

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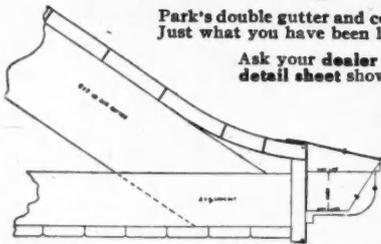
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Park's double gutter and cornice mould combined. Just what you have been looking for.

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Every architect should have this detail sheet to specify from.

We manufacture a complete line of sheet metal work for buildings (watch this space).



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Dept. 21

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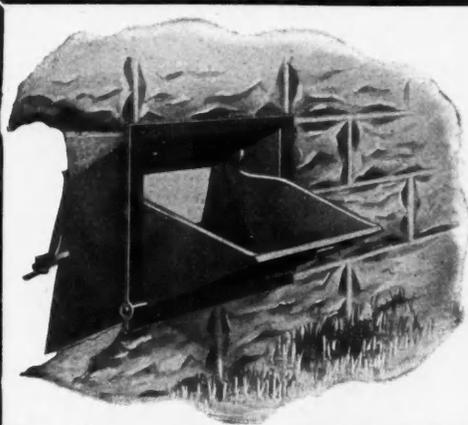
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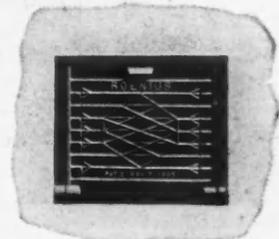
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"The Most Profitable Machine in a Most Profitable Business"

The Only Machine That Makes Accurate and Beautiful Blocks **The Ideal**



The concrete blocks which you can produce with an Ideal machine are absolutely true in every line and measurement, because the Ideal itself is mechanically perfect. It contains no untested or inferior parts, it is machined for flawless, accurate service.

Beware of Concrete Block Machines which infringe our Basic face-down and horizontally — movable core principles

We guarantee the machine absolutely. The buildings constructed with Ideal blocks never have sagged or become "out of plumb."

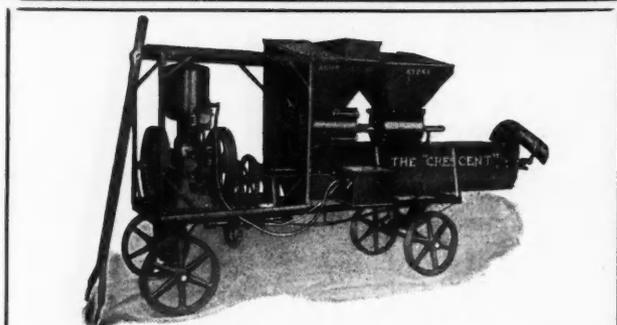
Moreover, you can produce beautiful blocks, because the face down principle of the Ideal permits the use of selected facing material, the adaptation of many designs and thorough tamping, which makes clean cut lines and impressions.

These are only two of the fifteen vital reasons why every carpenter or builder should use the Ideal exclusively. It is reasons like these that make it absolutely necessary for you to understand how to buy a concrete block machine. So we urge you to send for our

Free Catalogue

which explains the fifteen reasons why the Ideal is the only machine for your business, which states how these vital superiorities are guarded for you by a complete series of patents, which tells you how to make money in this most profitable business, and includes innumerable other features of interest and profit, as well as beautiful cuts, examples and testimonials. Write for it today.

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The Little Giant
Cement Brick Machine
Absolutely Guaranteed

The Little Giant

No Waste of Material or Broken Brick.

No Pallets Required

1,000 to 1 500 BRICK PER DAY

Write for full particulars

Three Perfect Brick in Less than Twenty Seconds.

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The **Peerless Brick Machine**

has been proven times without number to be

The most **SUCCESSFUL and ECONOMICAL MACHINE**

The Peerless tamps (does not press) every brick and will turn out 12,000 perfect bricks in 10 hours, making 10 bricks at each operation.

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U MAKER OF CE-
A MENT BLOCKS?
CONTRACTOR
OR BUILDER?

If you are, our machine will appeal to you, as it makes perfect brick at minimum cost.

OUR 1910 MODEL IS A WONDER

Write us so we can tell you more about it

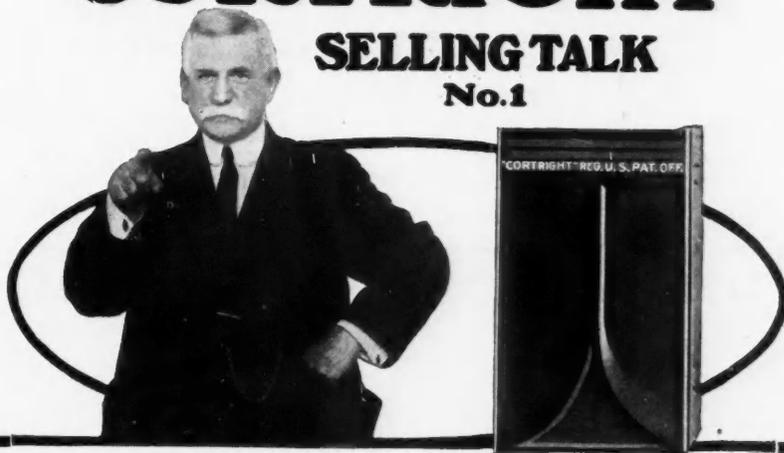
Peerless Brick Machine Co.

19 North Sixth Street : Minneapolis, Minn.

CORTRIGHT

SELLING TALK

No. 1



THIS IS FOR YOU

The only way we can grow is for you to grow. So the best way for us to increase **our** business is to help you increase **your** business. Isn't it?
 Now we **make** Cortright Metal Shingles: We depend on you to **sell** them — with our help, advertising, etc.
 This advertisement is part of our help. We're going to buy this space every month to help you sell more goods — more of our goods.
 Each month we're going to give you here some specific reason why your customers should use Cortright Metal Shingles.
 Each of these talks will be selling arguments which will

increase your profits if you will follow them — use them. The fact that we cannot profit until we help **you** to profit makes it very certain we **will** help you.
 Now, remember always when you read any statement we make that we've spent nearly 25 years making nothing but the Cortright Metal Shingles.
 Next month we're going to tell you something about tin. Be sure and look for that ad. and the ones to follow.
 To get the most benefit from these selling talks send for our two free books; full of illustrations showing Cortright Metal Shingles on all kinds of buildings under all conditions.

Write Right Now

Cortright Metal Roofing Company
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MONEY MAKING CONCRETE

Mr. Block-Maker

Wet Process is Right.
 Face down is Right.
 Three blocks at a time is Right.
 Triple TIERING is Right.
 Damp Curing is Right.

The Mogul Invincible Block Machine

COMBINES ALL THESE

IT IS RIGHT

It is 48 inches long and will make three 16" or two 24" blocks at one operation. It makes sills, caps, copings, rails and steps, faster and better than a special sill machine. It has every adjustment that any other machine has and many that no other machine has.

PRICE—Machine and Outfit, \$75.00

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UNIVERSAL PORTLAND CEMENT
 PORTLAND CEMENT
 CHICAGO - PITTSBURGH - PITTSBURGH

Annual Output
 Six Million Barrels

The uniform high quality, the regular setting properties and good popular color of Universal Portland Cement recommend it to the building contractor for concrete work of all kinds.

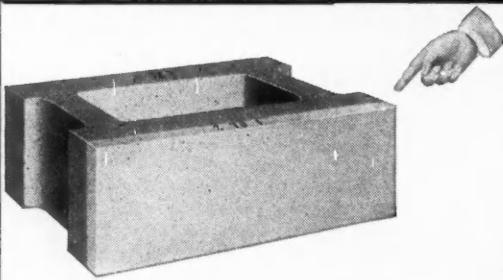
PUMPS, DOOR-HANGERS, STORE LADDERS

The Pump That Pumps SPRAY PUMPS Double-acting, Lift, Tank and Spray PUMPS Store Ladders Etc. Hay Tools of all kinds Write for circulars and prices.

MYERS
 Myers Stayon Flexible Door Hangers with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—“Stayon.” Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.

F. E. MYERS & BRO.
 Ashland, Ohio.

Non-slip Cushion Tires LADDERS



There's Money In Making Concrete Building Blocks

Because they are coming into universal use. Buildings built of them cannot decay, or burn, nor do they ever require painting or repairing.

Every Contractor, Carpenter and Builder Can Increase His Profits by Installing a

HERCULES BLOCK MACHINE

The ONLY machine that will make any and every size, style and design of building block.
The ONLY machine that will make Water Tables, Sills and Lintels of any size up to six feet long.
The ONLY machine that allows for using a Coarse Wet Mixture, making a REALLY CONCRETE BLOCK.

The ONLY machine that expands to meet Every requirement of the user.

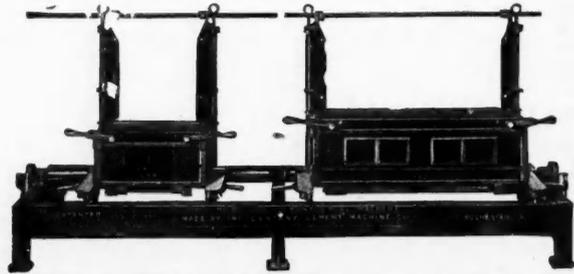
HERCULES BLOCK MACHINES

have been giving results for years. They are the oldest and best established machines on the market.

It will pay you to investigate. — Send for Catalogue today.

Century Cement Machine Co.

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The Eller Manufacturing Co.

CANTON, OHIO

Makers of

ELLER'S "Perfect-Fit" Steel Ceilings

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Also manufacturers of Cornices and Skylights, Eaves Trough and Conductor Pipe, Ventilators, Metal Roofing, Tin Plate and Lock Joint Metal Shingles

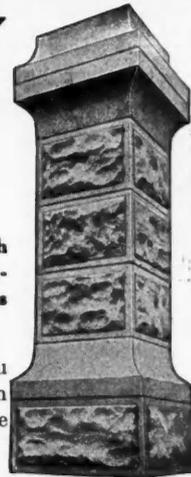
NEW YORK OFFICE AND WAREHOUSE
29-31 LEXINGTON AVENUE

This Chimney Is One of the Many Products Made By This Mold

Porch Piers, Porch Columns, Porch Foundations, Chimney Blocks, Ornamental Posts, are some of the things that you can make.

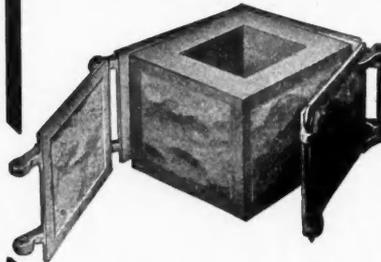
All plates are interchangeable. You can make a great variety of sizes from one set of molds. This gives you a large equipment for a very small price.

21 SIZES — \$25.00



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a Catalog

It gives valuable information about concrete work, cement blocks and brick machines and cement tile.



Send today while you think of it.

W. E. DUNN & CO.

1332 Grand Ave.

CHICAGO

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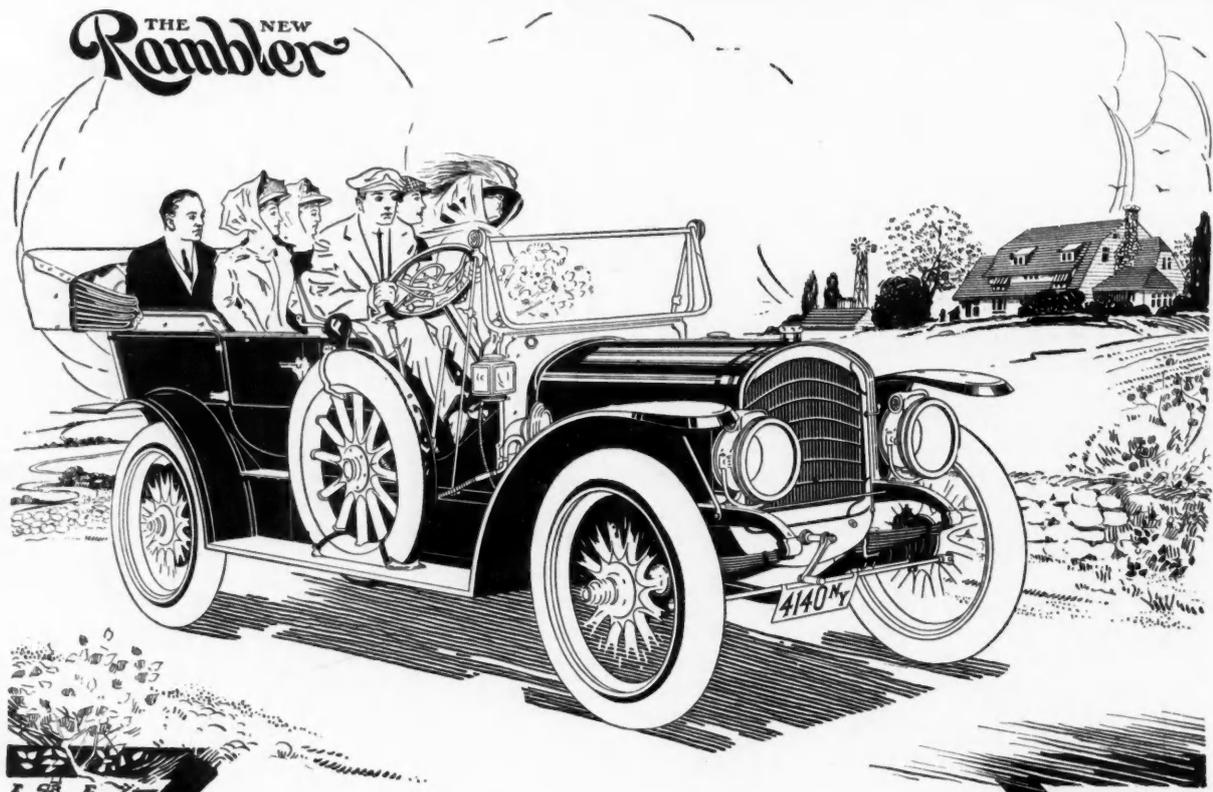
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NOTICE TO ADVERTISERS

New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 155 Jackson Boulevard, Chicago, not later than May 20, in order to insure insertion in June number.



THE New Rambler has many little features of safety and convenience which are most appreciated by the experienced owner. Both brakes may be adjusted by raising the hinged aluminum floor and turning two winged thumb nuts. The safety spark-retarder protects you from a back kick of the starting crank. A convenient gasoline lock prevents the unauthorized use of your car. In these features and in the Rambler door lock, adjustable steering column, and handy spark-plug connection, you find evidence of careful attention to details—the mark of quality. Besides every Rambler has the Off-set Crank-Shaft, Straight-Line Drive, Thirty-Six Inch Wheels and Spare Wheel feature.

Rambler automobiles \$1,800 to \$3,750

Thomas B. Jeffery & Company

Main Office and Factory: Kenosha, Wisconsin
Branches: Chicago, Milwaukee, Boston, Cleveland and San Francisco

Nothing to Unscrew Or Screw Up Or Press Down or Turn Over



Simply Slip

The Blade

Into the Head



You can't get the blade of a Keen Kutter Safety Razor out of adjustment *if you try*. Blade and guard together slip into the head in exactly the *right position* and exactly the *same position every time*. This is impossible where a razor has to be adjusted each time a new blade is inserted. All the experimenting has been done for you, and the perfect adjustment *fixed permanently* in the

KEEN KUTTER **Safety Razor**

It's always in shaving trim. It has the proper angle to lie flat against the face and give the true sliding stroke.

No handles to take off or put on. Ready in two or three seconds and shaved in two or three minutes. That's the experience of every man who uses a Keen Kutter Safety Razor.

Sold everywhere in a neat, compact, leather-covered case, with 10 "ready to use" blades of best Norwegian steel.



No. K-1—Silver plated in genuine Black Leather Case, \$3.50.

No. K-2—Gold plated in genuine English Pigskin Case, \$5.00.



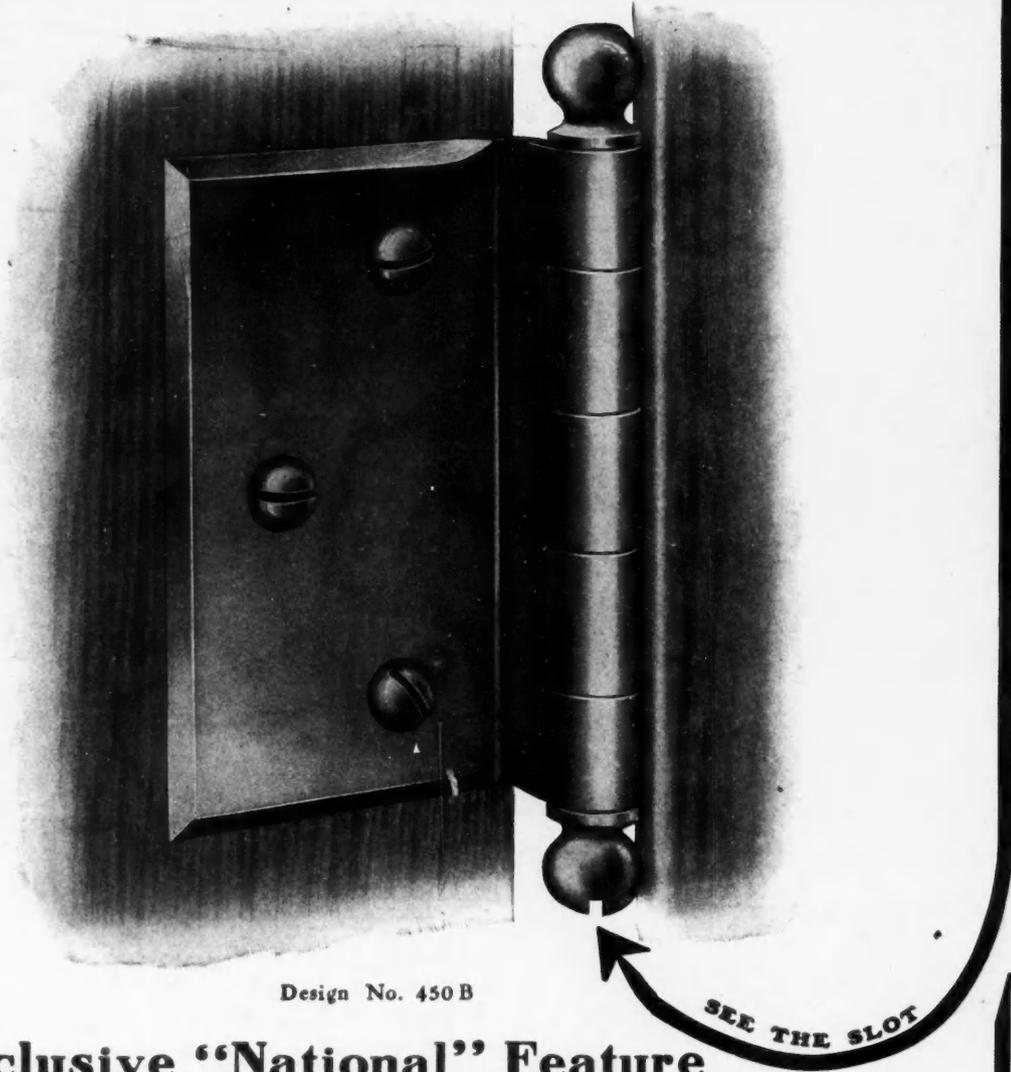
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