

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

Special Features—March Number

One Hundred Years
of Portland Cement



Complete Plans for
Modern Residence



What is Best Location
for Radiators?



How to Make a
Morris Chair



Shop Kinks

Motor Trucks for
Building Contractors



Details of Inside Trim—
Living and Dining Room



Idea for Non-Opening
Floor-Line Joint

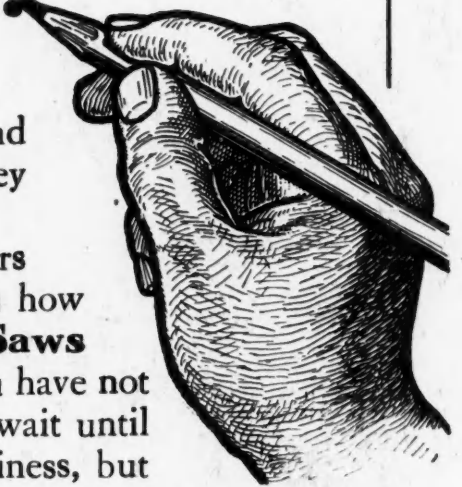


Exhibits at Chicago
Cement Show



Questions and Answers

E. C. Atkins & Co. Silver Steel.



MANY readers of the American Carpenter and Builder have made up their minds that they are ready to buy **Atkins Silver Steel Saws**. We know this because every mail brings us letters from high class mechanics who write to tell us how much they are pleased with their **Silver Steel Saws** or to say that they are just about to buy one. If you have not bought yet, we wish to say *now is the time*. Don't wait until you stub your toe against the Spring rush of business, but order your **Silver Steel Saws** *now* while there is time to make a careful selection.

ORDER THROUGH YOUR DEALER

He is entitled to your business and can serve you better than anyone else. Most likely he already sells them. Even if he does not order from him just the same. He'll get them for you from his wholesale house. But try your dealer *first*. Then if he *won't* supply you, let us know. For your own sake you ought to use an **Atkins Silver Steel Saw** this Spring, that's sure, and now is the time to buy them.

SILVER STEEL—You ought to use a **Silver Steel Saw** because it will save you time and strength? Even if your boss *does* pay you for the time lost in filing the saw, don't you think you ought to use a saw that will run longest without re-filing. And if an **Atkins Silver Steel Saw** does not do this, take it back to your dealer and get your *money back*. That's simple. **Silver Steel** will hold its edge longest because we have discovered a formula for making steel which is far ahead of any other. If it isn't—remember—*money back*.

THE GRINDING—**Atkins Silver Steel Saws** are not simply ground with a thin back, they are taper ground—thickest on the tooth edge, two gauges thinner on the back at the butt—four to five gauges thinner on the back at the point and *gradually taper* toward the thinnest point. This gives them clearance—permits them to run free and easy. This is why they cut faster than any other saws. If they don't—remember that guarantee—*money back*.

PERFECTION HANDLE—While we make some saws with the old style handle if you must have it, we recommend the Perfection Handle which removes all possible strain from the saw arm. Every ounce of power counts and less pressure is required in order to make the teeth cut fast. That's why **Atkins Silver Steel Saws** run easier than any other saw. If you don't find it so—remember that same guarantee of ours—*money back*.

HOW TO KNOW THEM—No saw is a genuine **Atkins Silver Steel Saw** unless the name **E. C. Atkins & Co.**, and the words "**Silver Steel**", are plainly marked upon the blade. Don't let anyone try to work off a cheaper saw on you as a genuine **Silver Steel Saw**. Make him show you our name on the blade. Then you'll know.

OUR FREE OFFER—We are still anxious to receive the names of high-class mechanics who are interested in fine tools and if you send us your name and address, together with ten cents to pay postage, we'll send you a package worth while—a nail apron, and interesting booklet "Saw Sense," on saws, a monthly time book and information on saws that ought to interest every carpenter. Address

E. C. Atkins & Company, Inc.
Indianapolis, Ind.

\$165⁰⁰

—FOR THIS—

PORTABLE SAW RIG

With the Following Attachments Included

*Ready to Run when Outfit
Reaches You*

One 8" Rip Saw
One 8" Cross Cut Saw
One 10" Cross Cut Saw
One 1/2" Dado Head
One 2 1/4" Jointer Head (four knives)
and Adjustable Iron Block
One Emery Wheel
One Extra Spark Plug
One Oil Can and Wrench
One Belt Tightener Attached to
Engine

*Buy Only What
You Need of the
Extra Attachments
as Follows:*

Boring Attachment
complete with sliding
table, bolts, chuck and
two boring bits.

Sanding Disk.

Special Moulding
Knives.

Different sized Dado
Heads, Etc.

All these extra attachments
will be charged to you at cost on
your order for a complete outfit.

WE ARE THE PIONEERS

IN THE MANUFACTURE OF PORTABLE SAW RIGS

Over 1000 Rigs in Actual Use

A complete and economical operating mill, which requires
no line shafts or large amount of floor space. Can be
moved from job to job and will do the work of five men.

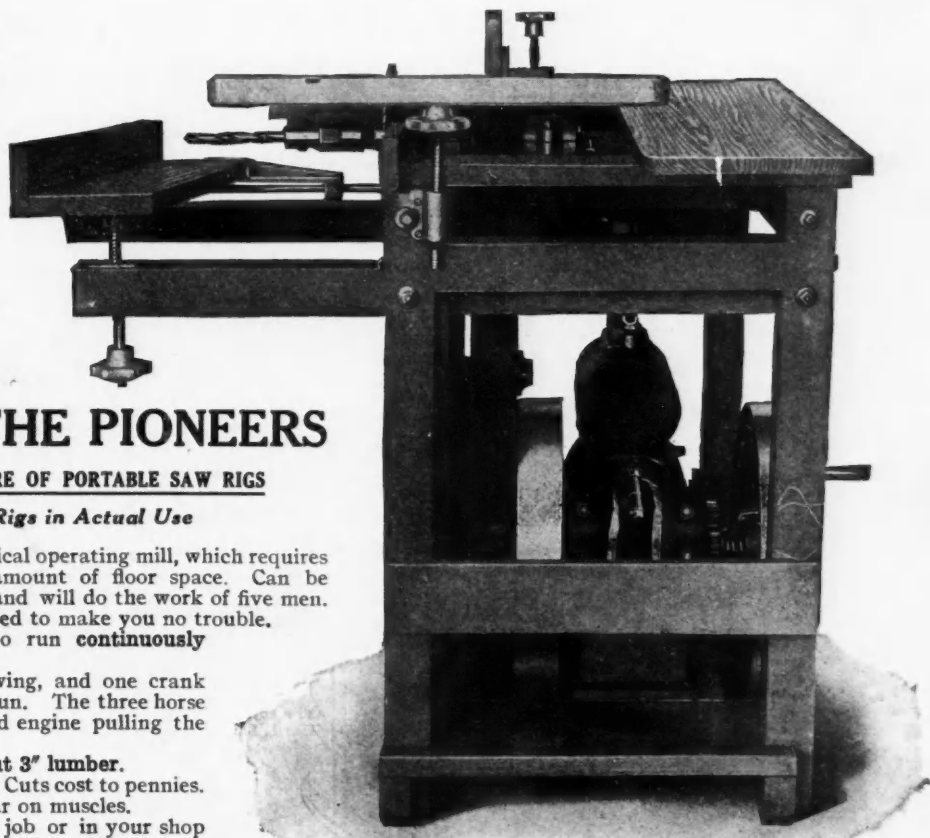
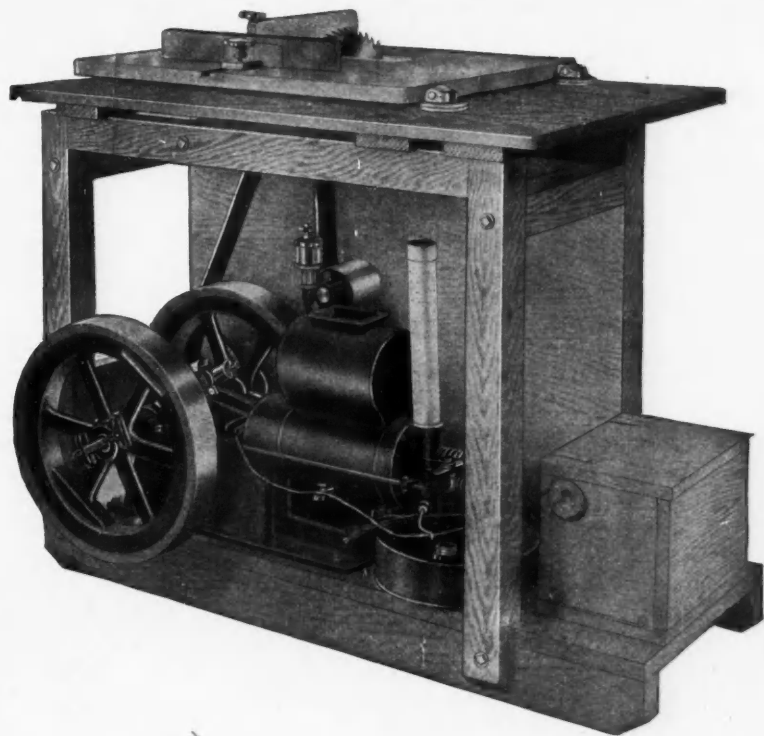
A power plant guaranteed to make you no trouble.
Designed and built to run **continuously**
under full load.

Always ready to do sawing, and one crank
of the flywheel makes it run. The three horse
power water hopper cooled engine pulling the
8" saws with ease.

Will rip 2" and cross cut 3" lumber.

Cuts hours to minutes. Cuts cost to pennies.
Cuts out the wear and tear on muscles.

This Rig put on your job or in your shop
will pay for itself in a short time and we abso-
lutely guarantee same or return at our expense.



Write for Descriptive Folder

GEORGE D. SMITH,

414 Fisher Building,

Chicago, Ill.

The American Floor Surfacing Machine

IS NO EXPERIMENT. Its work since 1903 has established a standard for finely surfaced and polished floors. It is the only machine whose work is specified by leading architects and used in the best government buildings and will surface and polish any kind of a floor from common pine to the finest parquetry.

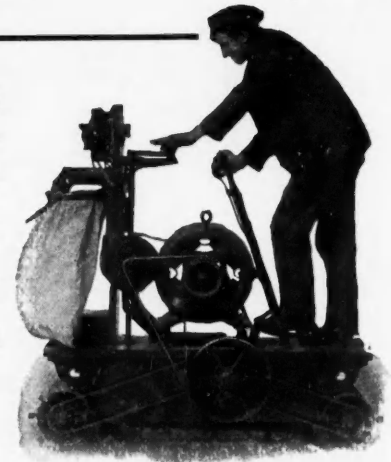
IT IS THE ORIGINAL and only two-roll, self propelled, dust collecting machine, that surfaces close to the wall and can be used in small rooms. Anyone can operate it.

ITS WORK IS RAPID, regular smooth and even because the power that drives the rolls, also propels the machine at the same ratio of speed. It has surfaced and polished millions of square feet of the finest floors in America and Europe.

GET A MACHINE that does first class work and in paying quantities, that is fully guaranteed and sold on its merits.

Write for Our Free Book, "Surfacing Floors as a Business."

Manufactured By **The American Floor Surfacing Machine Co., TOLEDO, O.**



TRY BEFORE YOU BUY

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

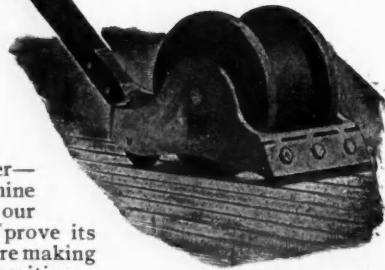
A request from you brings the "Little Giant" Floor Scraper to your door—you send no money and we pay all expenses. After you have given it a fair trial and have tested it as thoroughly as you know how, and have found it satisfactory, pay for it. If you do not think it is the best floor scraper made,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

A NEW MACHINE

That Will Not Only Do the Work of
10 Floor Planers and Scrapers
But will do it more perfectly



We claim and have proven that it has no equal competitor on the market for perfect work. We also manufacture the electric scrubber and polisher.

Floor Sanding and Polishing Machine Co.

Driven by Electricity. Automatic Throughout. Ask for Booklet "F."

1706 Chestnut Street,
PHILADELPHIA, PA.

Miller's Hand Mortiser

WILL SEND ON APPROVAL

Its Work is to Make Openings in Doors for Mortise Locks.

The time is Three Minutes. The Material is Hard, Soft, Gross Grained and End Wood.



The job is clean, true and parallel with sides of door. The labor is performed with slight exertion. The care is practically none, as the tool does not get out of order. The adjustment is done in a moment's time for the different sizes. The cutters are five in number and cover locks from 1/2 inch to 1 1/4 inches thick. Thin doors are handled as easily as thick doors.

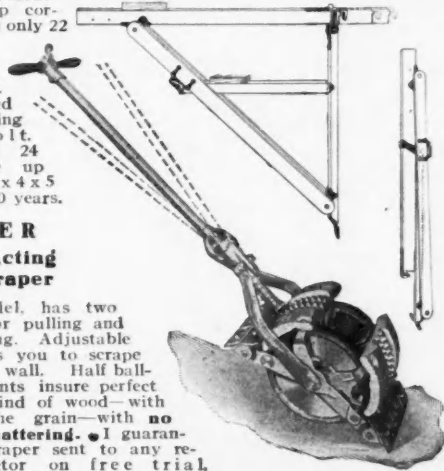
Riverside, Cal. A. W. MILLER MFG. CO. Cincinnati, O.

The Latest WEBER Work Savers

SAVE time and you make money. Crude tools delay work and turn out "botch" jobs. My devices are right up to the minute—mechanically correct—and you can't afford to be a day without them. Read every word of this ad; then send for complete catalog and prices. I have been a successful contractor for 25 years, and I absolutely know I can save you money at every turn of the road.

DOUBLE SCAFFOLD BRACKET

is the only one that can be adjusted for use on any kind of buildings. Will not swing sideways, and has two scaffold boards which make it ideal for putting up corners. Weighs only 22 lbs., but is much stronger than the old, heavy scaffolds. Can be folded without loosening a single bolt. When folded, 24 brackets take up space only 3x4x5 feet. In use 10 years.



WEBER

Double-Acting Floor Scraper

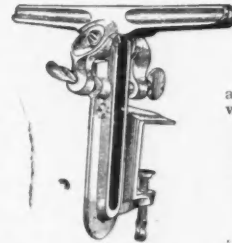
improved model, has two knives—one for pulling and one for pushing. Adjustable handle enables you to scrape right up to the wall. Half ball-and-socket joints insure perfect work on any kind of wood—with or against the grain—with **no waves nor chattering.** I guarantee this. Scraper sent to any reliable contractor on free trial.

FOLDING SAW VISE

holds the saw with rigid, unyielding grip, and is as nearly noise-preventive as such a tool can be made. Can be thumb-screwed to any plank or bench in an instant. When folded, it takes up no more room than a common hammer. Saves many an aching arm from using dull saws, and should be in every kit.



FOLDED



OPEN

Cabinet Scraper and Sander

affords a firm grip and can be controlled with ease in the tightest corners. Knife



is fastened with a clamp, not with holes or slots, and can be used till but a half inch remains. Scraper can be quickly reversed and used for sandpapering and polishing. Weight 22 oz. Handiest tool ever made for the purpose.

SHARPENING DEVICE

for floor scrapers holds the file at the correct level for an even, true edge on Weber and other floor scraper knives. With this tool, anyone can do excellent work in short time without previous experience. Well worth investigation.



SEND FOR CATALOGUE

John F. Weber, Pres. Weber Mfg. Co.
670 71st Avenue, WEST ALLIS, WIS.

AS SURE AS 2 AND 2 IS 4

A SHEARING CUT GETS BEST RESULTS IN FLOOR SCRAPING

Why does a mechanic when scraping a floor by hand use a Shearing Cut? Because he obtains smoothest and quickest work so. When you whittle a piece of wood you use a Shearing Cut.

A Shearing Cut is ALWAYS made with the

"DAISY" FLOOR SCRAPER

With One Ten-Inch Blade Single Shearing Cut is Made

With Two Five-Inch Blades Double Shearing Cut is Made

The "Daisy"

CUTS EITHER WITH OR ACROSS THE GRAIN
CUTS RIGHT UP TO BASE BOARD AND INTO EVERY CORNER
IS EASIER ON THE OPERATOR AS IT REQUIRES ONLY A SLIGHT LIFT TO GET BEST WORK
WILL DO MORE WORK THAN ANY OTHER IN SAME LENGTH OF TIME
WILL DO PERFECT STRAIGHT EDGED WORK AND WILL PLEASE YOU
CLAMPS ARE INSTANTLY FASTENED
FILING DEVICE FILES BLADES TO RIGHT BEVEL
EDGE-TURNING DEVICE IS A WONDER

UNSOLICITED TESTIMONIALS

Gillette, N. J., Oct. 11th, 1910.
THE DAISY MFG. CO.,
South Bend, Ind.

Gentlemen:—
The flooring has arrived and we have scraped it with your machine and I find it does all you claim for it. Inclosed you will find check as per agreement.
Thanking you for your kindness in allowing me to try this machine and for extending the time for trial, I am,
Yours respectfully,
FRED L. WALTERS.

Dubuque, Iowa, Sept. 1, '10.
THE DAISY MFG. CO.,
South Bend, Ind.

Gentlemen:—
Immediately after using the Scraper we have found it to be satisfactory and superior to any we have seen in use.
We herewith inclose draft in full for same.
Yours truly,
KUTSCH BROTHERS,
per J. P. E.

Belle Fourche, S. Dak., Aug. 4, '10.
THE DAISY MFG. CO.,
South Bend, Ind.

Gentlemen:—
After giving the three Floor Scrapers a trial we have decided that the "Daisy" is the one we want. Inclosed find draft in full for same.
NELSON & GOLDING.

Ten

Days

Free

Trial

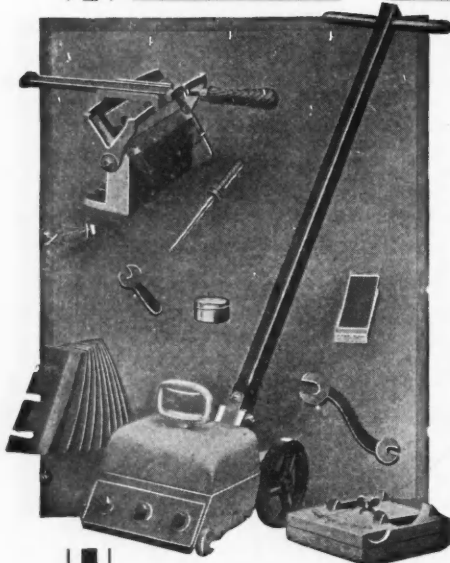
Offer



We will ship a "DAISY" Outfit to any responsible contractor who intends purchasing a floor scraper for a ten days free trial. Test it with others, if you do not find it best return it. The trial will not cost you a penny.

THE DAISY MFG. CO., South Bend, Ind.

Look This Over Carefully



DOES this equipment look as though it is simply made to sell or has it the appearance of being constructed to do the work for which it is intended—Floor Scraping?

You can find out very easily and it won't cost you one cent. Just write me that you are ready to do some floor scraping and I will ship the Acme Floor Scraping Outfit to you on **One Week's Free Trial**. If, after you have given the machines a thorough test, you do not find the same entirely satisfactory, pack them up and ship them back at my expense.

I have been making this **Absolutely Free Trial** proposition for the past three years and thousands of contractors have investigated into it. If you haven't—why not? You certainly want to save 75% of your floor scraping labor expense, don't you? The **Acme Floor Scraping Outfit** offers the means for you to accomplish this saving.

Bear in mind that I devote my entire time to manufacturing floor scrapers. It is not a side issue with me. I superintend the construction of each **Acme Outfit** and can therefore guarantee it in every particular. You take no chances—I assume all responsibility.

I want to send you booklet and full details of my free trial offer. Write me for them to-day.

JOSEPH MIOTKE, 247 Lake Street, MILWAUKEE, WIS.



Made in three sizes:
18 8x15 and 8x12 in. Roller

Perfect Results Are Easily Obtained By Using Schlueter Rapid Floor Surfer

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.

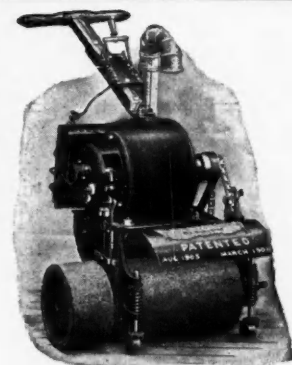
The **Schlueter** will remove all joints or warped edges, and oil, wax, lime stains, or the "muck" from skate wheels, in a most satisfactory manner.

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

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

M. L. SCHLUETER, Chicago, Ill.

108 N. Canal Street N. Y. Office, 1001 Flat Iron Bldg



Edge Roller easily adjusted
to either side.

The Only Self-Setting Plane

Over 25 years ago we commenced to make the Self-Setting Planes. They are shovled in every state and Canada. Thousands of carpenters use them doing work easier, better, quicker, saving time, trouble and temper.



Every issue of this paper has had our ad. in it. If not sold in your town, we will send you a Beech wood plane on trial on receipt of one dollar less than list price, and if you return it at our expense within 30 days of receipt we will refund your money. If you want more than one we will allow you dealers' discount.

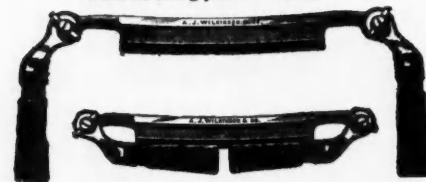
In writing, if you mention this paper and send us the addresses of 10 plane users—no matter where they live—we will send you a carpenter's hard tough pencil. If you send us a 2-cent stamp we will send you two pencils.

Remember this trial will cost you nothing if you return the plane at our expense, as per circular. We will not knowingly send to customers where our planes are being sold. This offer is good while this ad. appears.

GAGE TOOL CO., Vineland, N. J.

THE FOLDING DRAW KNIFE

Have you seen the Folding Draw Knife?
It's the Draw Knife that will draw;
It will quickly draw attention;
Slickest thing you ever saw.



If your hardware dealer does not keep it, we will send it to your address postage paid. : :

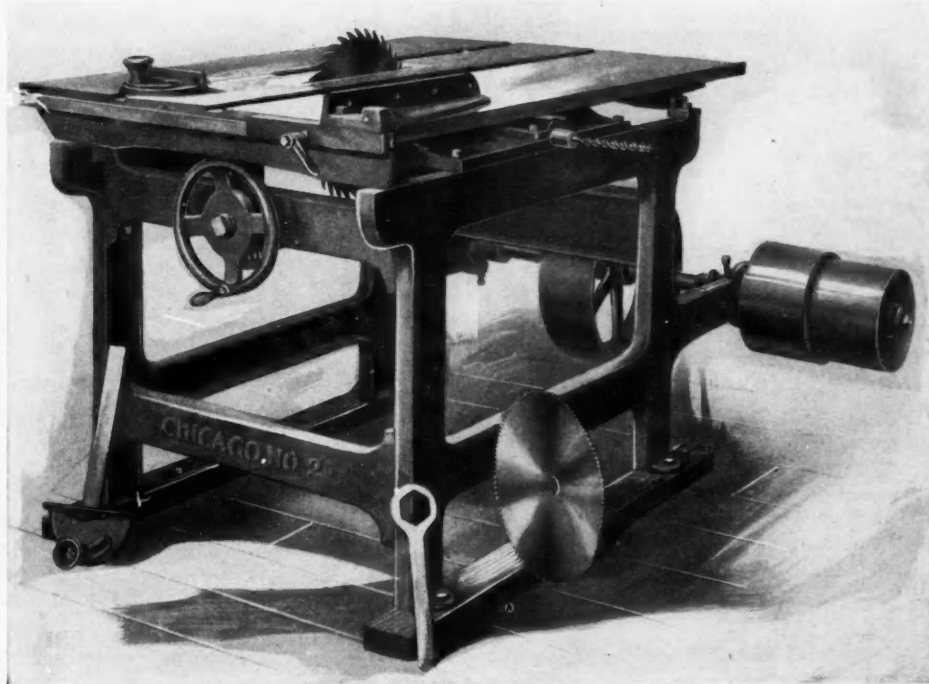
A. J. WILKINSON & CO., 180 to 188 Washington St., BOSTON, MASS.

Start With Two Machines

They are always ready for work. (Not so with the Universal Wood Workers.)

MACHINE No. 1

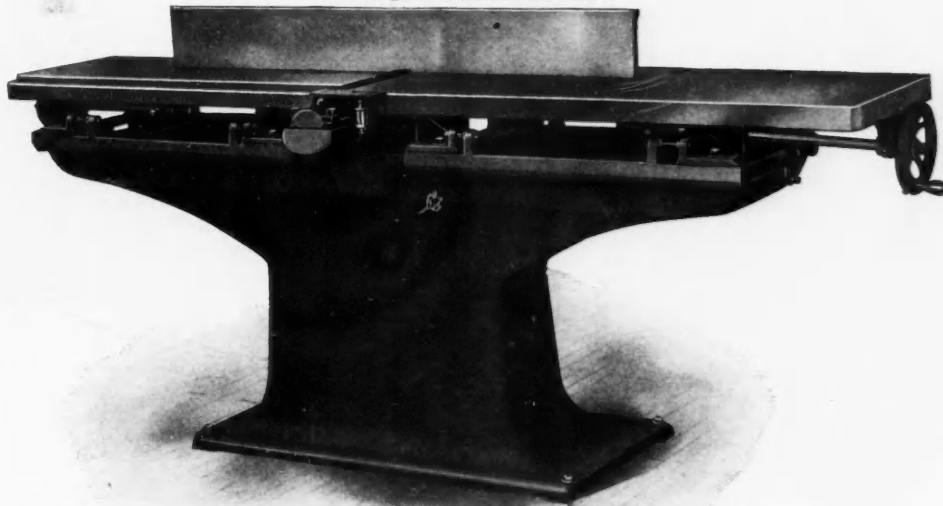
Chicago No. 2 Combination Saw Table



Used for Cutting Off, Ripping, Mitering, Grooving, Boring, Tenoning, Etc.

MACHINE No. 2

Chicago 12" Jointer and Planer



Used for Planing, Jointing, Shaping, Matching, Rabbering, Grooving, Chamfering, Beading and Making Mouldings.

These Two Machines for \$180.00, including belt for saw arbor, countershafts, 1 14" rip saw, 1 14" cut off saw, 5 boring bits— $\frac{1}{4}$ ", $\frac{5}{16}$ ", $\frac{3}{8}$ ", $\frac{1}{2}$ ", $\frac{3}{4}$ " and 1-inch pair of jointer knives. Ask for price on one if you cannot use both.

Send for our Special Catalogue today. We issue a catalogue of machines especially adapted to Contractor's and Builder's use.

Chicago Machinery Exchange 159-161 North Canal Street
CHICAGO, ILL.

C. E. JENNINGS

TRADE
ARROW → HEAD
MARK

AUGER BITS No. 1 1/2

BEAT the WORLD. TRY THEM and SEE for YOURSELF. FULLY WARRANTED.

These Bits are universal in scope. They will bore equally well in hard or soft wood, with the grain or against the grain. They combine our single skip Auger twist with our extension lip. No pressure is required to make them bore. They draw themselves in—they are the easiest boring bits made.

Insist on Having Genuine

C. E. JENNINGS

ARROW → HEAD
TRADE → MARK.
TOOLS

Accept no substitute—Order by name and number

If you cannot purchase of your dealer we will furnish direct in sets of 13 in leather roll or hardwood case at \$6.00 per set.

C. E. JENNINGS & CO.

42 MURRAY ST.

NEW YORK

E-Z ELECTRIC FLOOR SANDPAPERING and POLISHING MACHINE

For keeping Floors of every description **Clean and Polished.** It saves **Time, Labor and Money.**

The E-Z will clean, scrub, sandpaper or polish anything—from a common **WOOD** floor to the finest **Polished Oak** floor.

It is **FOOL PROOF** and dust-proof; **noiseless** in operation; weight, 50 pounds. Can be attached to **any lamp socket**, requiring no special wiring or "inspection."

Machine interchangeable for direct or alternating current. Driven by a **1-4 horse power motor.**

It grinds and polishes **MOSAIC, TERRAZZO and MARBLE** floors.



Write For Free Trial Offer

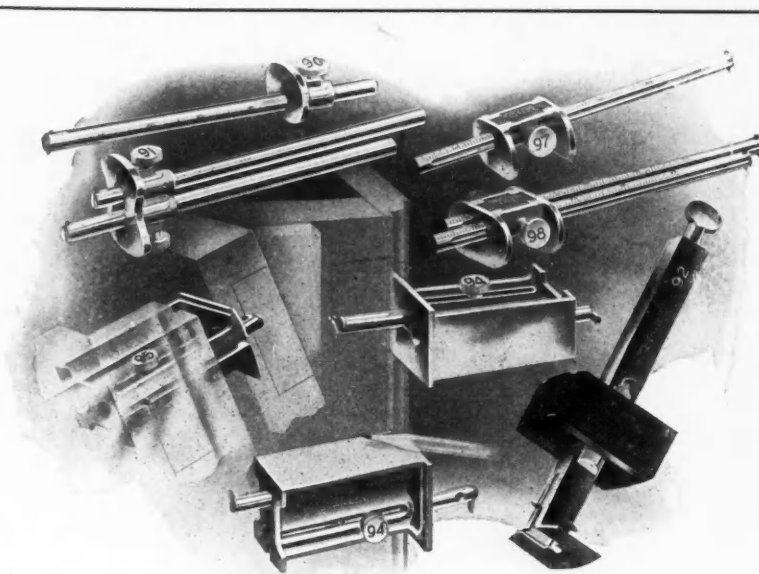
Machines Used and Endorsed with flattering Testimonials by the Largest Firms and Institutions.

John Herr Mfg. Co.

53 Merchants Bldg.

::

PHILADELPHIA, PA.



COPYRIGHTED, 1909, BY THE STANLEY RULE & LEVEL CO.

This tool is convenient for carrying in the pocket, and so constructed that the Bars cannot fall out.

Look for the name **STANLEY** on every tool. It is a guarantee of the highest class of workmanship and material.

SEND FOR CATALOGUE.

Stanley Rule & Level Co.
NEW BRITAIN, CONN. U.S.A.

**Stanley Tools**

Among the Gauges shown herewith, we call particular attention to

No. 94, A NEW BUTT GAUGE.

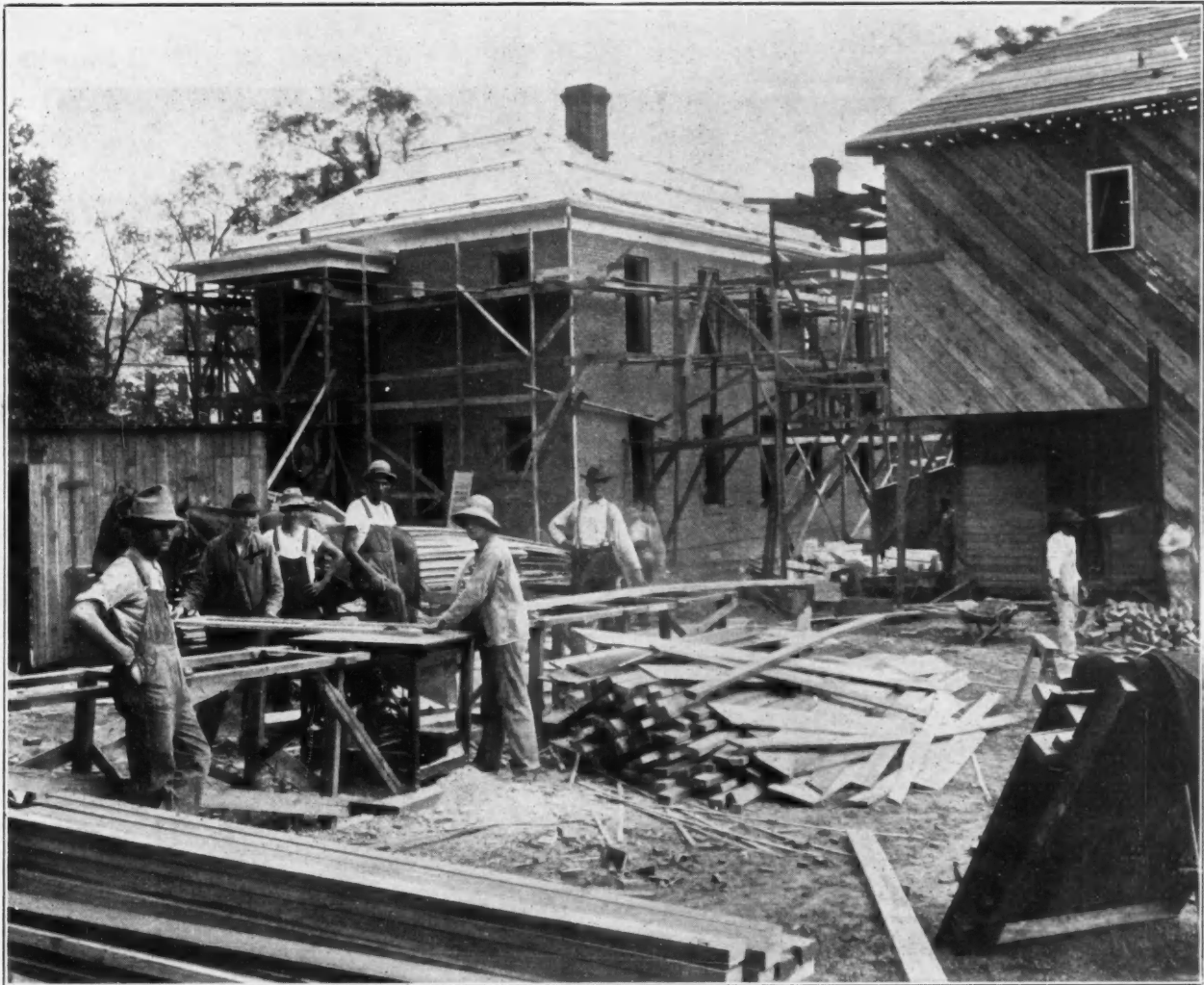
It has two steel bars—to one are affixed two steel cutters for use when gauging for doors with rabbeted jambs—this bar may be reversed for gauging from the casing (whether of the moulded form or flat), on doors which have a strike strip nailed on after the door is hung.

The other bar is fitted with a steel cutter to gauge for the thickness of the butt.

The two ends which are parallel, are at right angles to the Bottom, and as one end overhangs the Bottom slightly, it can be used as a square from which to mark at right angles to the casing, as shown in the cut.

A MACHINE YOU CAN USE
IN THE SHOP OR ON THE JOB

The GRIMM WOODWORKER



ON THE JOB—RIPPING BLINDS

The Kind of Letters We Receive

Dear Sirs:

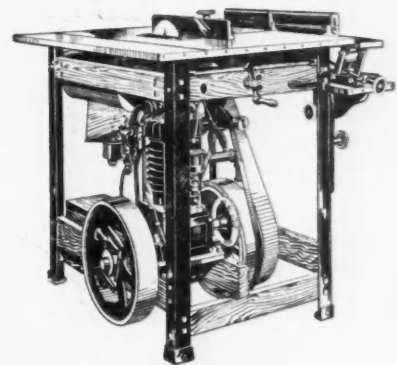
Wilkesbarre, Pa.
The machine I bought of you last May has been running like a "trooper" ever since. It actually saved me \$100.00 in mill work on the first job I used it, in about a month. Am using it now in my shop doing all kinds of work with it, from window frames to panel work. In ripping up scrap lumber and sawing bridging, it would pay to own one. If it was the last one to be had, money would not buy it from me. Very truly yours,

(Signed) A. J. KENT.

[Write for Booklet and Selling Plans

Grimm Manufacturing Company

46 Erie Street, BUFFALO, N. Y.



Type A
Showing Rip Saw and Jointer.
7 other attachments.



No. 6-E TRIMMER

FOX Universal Trimmers

No Pattern Shop Complete Without a Fox Trimmer

We are the original builders of Wood Trimmers, having built the **FOX Universal Wood Trimmer** for 25 years. You receive the benefit of our experience as builders of these tools.

20,000 Satisfied Users Testify to FOX EFFICIENCY

Prices Range From \$22.50 to \$150

WRITE TODAY FOR OUR COMPLETE CATALOG OF TRIMMERS



No. 4-A TRIMMER

FOX MACHINE CO.

2211 FRONT STREET
Grand Rapids, Mich.



(TRIPLE DRUM SANDER)

A New Triple Drum Sander

with Endless-bed Feed and **Polishing** Drums over the work—Guaranteed to do **Better Work** and from 200 to 600 more work than any other high grade Sander on the market.

This Polishing Machine is specially adapted for Sash, Doors and Blind Factories, and Furniture and Chair Makers.

Address for Literature

H. B. SMITH MACHINE COMPANY

SMITHVILLE, N. J., U. S. A.

Branches: New York, Chicago, Atlanta, Memphis



No. 254—Bench Hand Planer and Jointer

PAYS FOR ITSELF

By making these small hand planers and jointers in large lots we are able to offer them at a price so low that the machine pays for itself in a short time.

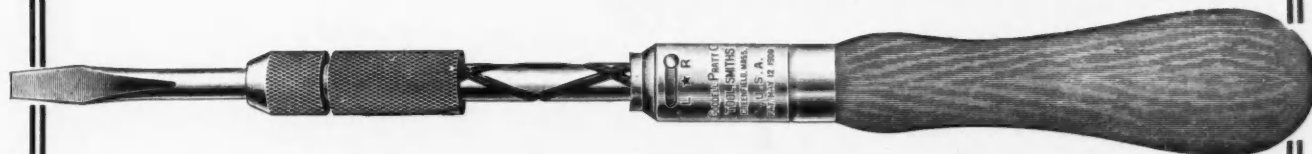
You will be surprised at the amount of work you can do on this little tool, how quickly and accurately it can be done, and the low cost of operation.

Write for full description, price, terms, etc.

J. A. FAY & EGAN CO.

545-565 West Front Street, CINCINNATI, OHIO

GODELL-PRATT'S } SHORTER,
 } LIGHTER,
No. 111 } HANGS BETTER, yet
 } HAS GREATER POWER



The matter of greater power is one of prime importance to the user of Automatic Screw Drivers, for not only can he handle larger screws with our No. 111, but the work with smaller sizes is done easier.

Examine the Spiral on our tool, and you will see that our claims of greater power are no idle boast. The Spiral is what gives greater or less power to a tool of this description, and the long easy slant which we have adopted gives the greatest possible amount of drive.

GODELL-PRATT COMPANY

Toolsmiths

GREENFIELD, MASS., U. S. A.



New Starrett Protractor

One of the most useful tools a carpenter ever had. See full description in free Catalogue No. 186. With this tool in your chest you can give away half a dozen or more which it will render back numbers

The L. S. Starrett Co., Athol, Mass., U.S.A.

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.

Ten
 Substantial
 Reasons
 Why You
 Should
 Purchase the
Climax
 Line of
 Furnaces,
 Stoves and
 Ranges—
 and no other.



1. Because the line has been well and favorably known in every City, Village, and Cross-roads in the United States, for more than forty years.
2. Because the line we sell directly, or indirectly, and have field Agencies to look after, and take care of our business, as well as that of our customers.
3. Because you get a Factory Guarantee on your whole outfit.
4. Because your heater is made by, and installed by practical men—ones WHO KNOW HOW TO DO IT.
5. Because you can burn any kind of fuel in the CLIMAX—even the refuse from other Furnaces.
6. Because the furnaces are made by stove-plate Molders, of stove-plate material; all brand new, and not half old junk.
7. Because of improved principle of combustion, giving you over-draft, down-draft—any kind of draft.
8. Because equipped with large double feed doors—big enough to drive in pony and cart.
9. Because has a Cast Iron Smoke Pipe.
10. Because we sell all our heaters under the strongest guarantee, that they will do the work—or no pay:—BEWARE OF TRAPS FOR THE UNWARY.

THE TAPLIN, RICE-CLERKIN CO., MFRS, AKRON, OHIO
 The Only Stove and Furnace Folks Send for Catalogues



"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.

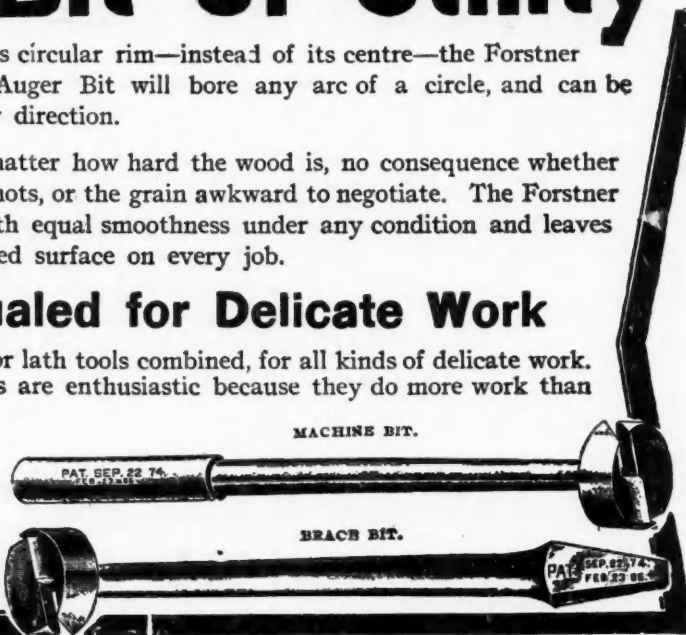
Doesn't matter how hard the wood is, no consequence whether it is full of knots, or the grain awkward to negotiate. The Forstner Bit works with equal smoothness under any condition and leaves a true polished surface on every job.

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.



THE "LIGHTNING" AUGER BIT

WARRANTED



WARRANTED

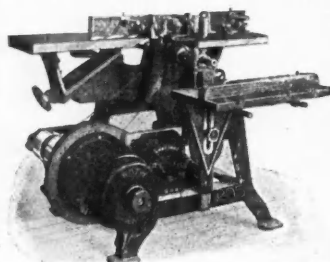
It will bore through any kind of wood in common use about twice as quickly as the best and fastest heretofore on the market. The worm has a double thread terminating in two cutting points.

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.

1/8	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	.85

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

Next machine you buy, order a— **Rothmotor**



to drive it individually. You will be pleased. You will be gaining some profitable experience in economy.

Ask
ROTH BROS. & CO.
1422 West Adams Street,
CHICAGO, ILL.

NEW YORK OFFICE:
136 Liberty Street



COMPLETE OUTFIT Hand and Foot-Power MACHINERY

Our No. 3 Wood Turning Lathe can be speeded from 1,000 to 2,000 revolutions a minute with perfect ease. Stopped or reversed at will of operator.

Write for Particulars

W. F. & Jno. Barnes Co. 74 RUBY ST., Rockford, Ill.

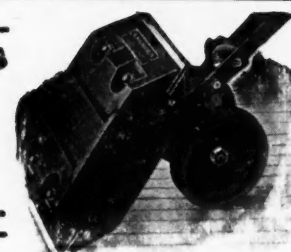
CHAMPION FLOOR SCRAPERS

WHY PAY EXORBITANT PRICES?

Don't give double what anything is worth. We have a machine that does the same kind and quantity of work as the highest priced.

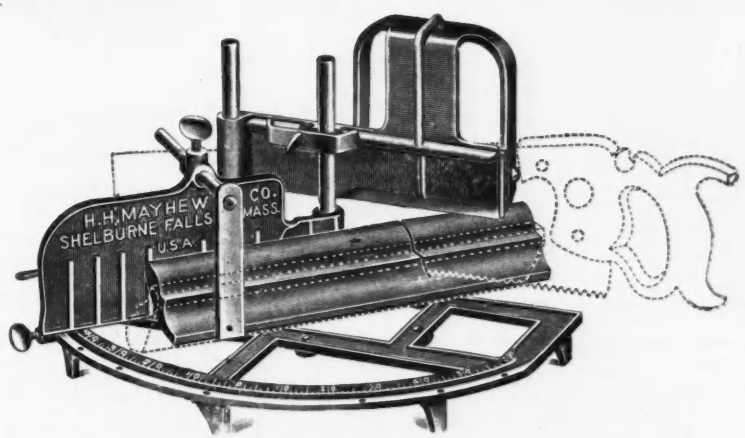
We Can Save You Money Both first cost and every day machine is used.
SEND FOR OUR CIRCULAR.

THE DOSCH MFG. CO. Bridgeport, Conn.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

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.

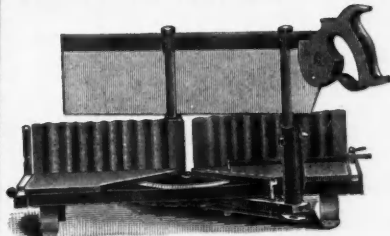
Extreme mitre to 60° without makeshift. May be used as a stationary or pivot box by use of the pin posts.
 In mitering duplicate cuts there is no restriction on length.
 Will cut compound mitre.
 Parts take down into space 10x10x4 inches.
 Weight 15 lbs. complete.
 Box contains full directions for use.

PRICE EACH, \$10.00

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

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.

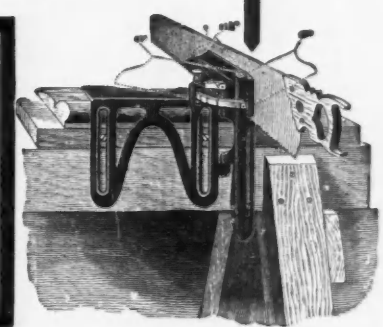
"SEAVEY" MITRE BOX

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

LUFKIN

Tapes & Rules are Standards of Accuracy, Durability and Workmanship.



SEND FOR CATALOG

THE LUFKIN RULE CO.

SAGINAW, MICH.

NEW YORK LONDON, ENG. WINDSOR, CAN

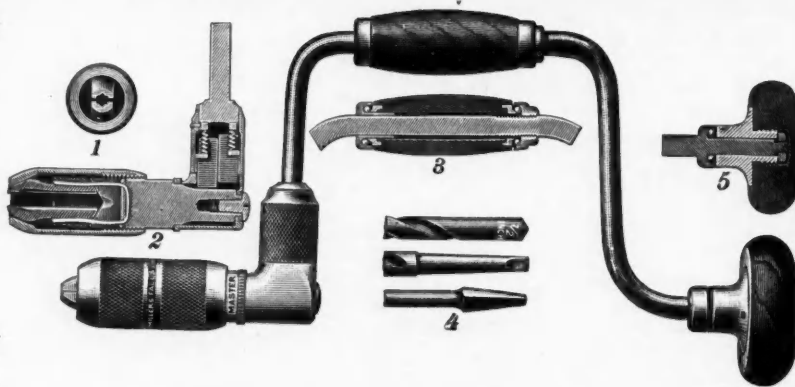
The Master Bit Brace

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.

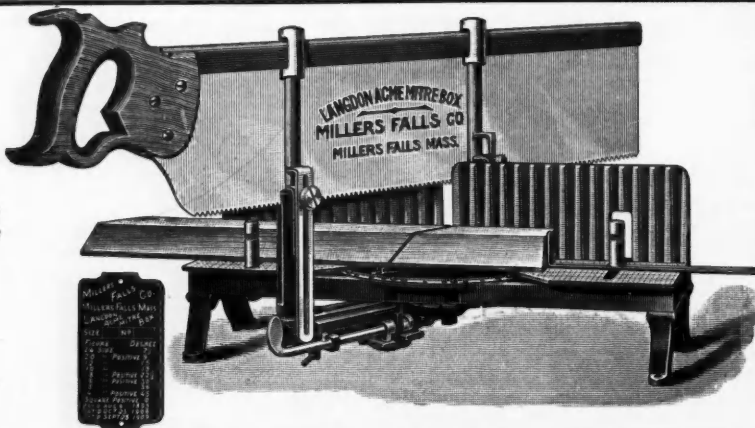
Our new catalogue describes this Brace in detail. Ask for one.

Millers Falls Company

28 Warren St., New York, N. Y.



THIS IS THE MITRE BOX YOU WANT

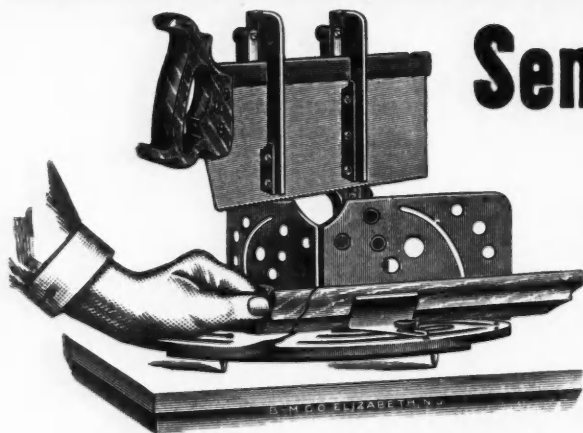


It's a LANGDON ACME and is made in three sizes put up with varying lengths of saws.

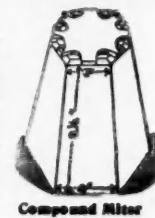
The advantage over other styles are too numerous to mention in this advertisement, but our pocket catalogue tells the whole story. You can have one of the catalogues by asking for it. It illustrates our full line of tools.

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

Sent on 10 Days Trial



The Famous Dorn Revolving Miter Box. Will saw compound as well as plain miters any width with a back saw 4 inches wide.



Compound Miter

Send for Booklet Called "Tools That Last"

OUR "CHISEL" GUARANTEE

We guarantee that our chisels will hold their edge all day with one sharpening, even if used on quartered oak across the grain

Chisels look simple, but there is no tool of which such hard work and varied service is required. Recognizing this we have given the choice of the steel, regardless of cost, and the design of these chisels, the most extensive study and experimentation, and in their manufacture the greatest care and highest order of skill is employed

SPECIAL OFFER

To further increase the number of carpenters who insist on having B. M. Co. Chisels we will sell direct to readers of the American Carpenter and Builder, express prepaid any chisel or set of chisels with privilege of returning after ten days trial if they do not prove to be the BEST EVER USED.



BEVELED EDGE BUTT CHISEL

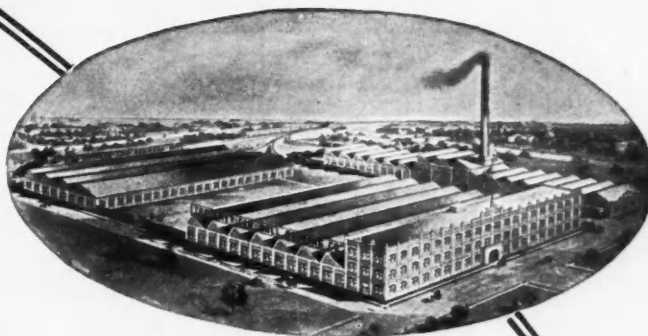


SOCKET BUTT CHISEL

BRAUNSDORF-MUELLER CO., - Elizabeth, N. J.

Make the Roof as Permanent as the Foundation

The foundations of buildings are made of stone because nothing can affect Stone. If the entire building were equally as durable, it would last forever. J-M Asbestos Roofing is made from stone—Asbestos. We make this fire-proof stone into roofing fabric by cementing the fibres together with Nature's ever lasting water-proofer—Trinidad Lake Asphalt. It will make the roof as permanent as the foundation.



Plant of American Ball Bearing Co., Cleveland, Ohio, covered with J-M Asbestos Roofing



J-M Asbestos Roofing

is the only ready roofing that never has to be painted. It hasn't any skin coat of paint to be constantly renewed. That is why it is always the "cheapest-per-year" roofing in the end, even though it costs a little more than some other ready roofings at the start. The first cost is the only cost. Its white surface also reflects heat and makes a building 15° to 30° cooler in hot weather.

Write to our nearest branch for samples and catalog No. 303

H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos and Magnesia Products

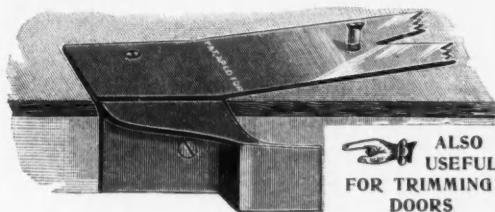
ASBESTOS

Asbestos Roofings, Packings, Electrical Supplies, Etc.

Baltimore	Cleveland	London	New Orleans	San Francisco
Boston	Dallas	Los Angeles	New York	Seattle
Buffalo	Detroit	Milwaukee	Philadelphia	St. Louis
Chicago	Kansas City	Minneapolis	Pittsburg	1196

For Canada—THE CANADIAN H. W. JOHNS-MANVILLE CO., Limited
 Toronto, Ont. Montreal, Que. Winnipeg, Man. Vancouver, B. C.

"The Roofing for Any Building Anywhere."



ALSO USEFUL FOR TRIMMING DOORS

WHIPPLE'S CARPENTER COMBINATION BENCH HOOK

The Handiest Little Tool Ever Manufactured
 ARE QUICKLY ADJUSTED TO A TEMPORARY BENCH
 EVERY CARPENTER SHOULD OWN ONE

45c Postpaid

45c Postpaid

Sent postpaid on receipt of price.
 R. P. WHIPPLE & CO., 275 Main Street, SPRINGFIELD, MASS.
 See Our Ad on Page 119

WE ARE WONDERING

How you can afford to get along without the ABC PROTRACTOR SQUARE when you can BUY IT FOR \$2.00. If you had one in your possession, and could not get another one, you would not sell it at any price. It is a TIME SAVER, and mistakes are IMPOSSIBLE. For ROOF, STAIRWAY and CIRCULAR work it has no equal. It gives lengths as well as bevels. It is no new method, just the old one made easy by the proper construction of the tool. IF NOT SATISFIED with the ABC PROTRACTOR SQUARE, return it to us within 30 days, and your money will be CHEERFULLY refunded.

CROOKSTON TOOL COMPANY, Crookston, Minn.

Don't Ask the Dealer for Sash Cord. Ask for "SILVER LAKE"

"SILVER LAKE"

and see that he gives it to you. It is impossible to

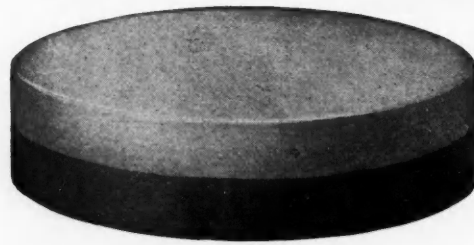
SILVER LAKE A

substitute, as our name is stamped on every foot of cord. Silver Lake Sash Cord is the Original Solid Braided Cotton Sash Cord, and has been the standard since 1868. No other is just as good.



Send us two or more names of persons who are interested in or want to buy Hot Water Heating Plants and we will send you this scale. Back inches are divided into 6, 10, 12, 16, 20 and 40 parts. Also free catalog on request. Mention this paper.

Andrews Heating Co., 1165 Heating Bldg. Minneapolis, Minn.



It is Round—and it is a Wonder

The new Carborundum Carpenters' Bench Stone is just the right size for that rotary motion required in sharpening chisels, plane bits, etc. Made one side coarse grit for bringing the tool to an edge, the other fine grit for finishing. Like all Carborundum sharpening stones, it gives a better edge in less time—never fills or glazes and wears uniformly.

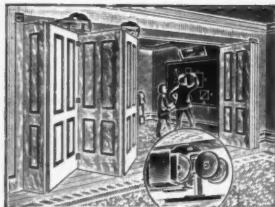
Carborundum Round Combination Bench Stone

No. 107	-	-	-	-	-	-	-	-	-	\$1.00
With quartered oak box holder	-	-	-	-	-	-	-	-	-	1.50
Carborundum Pocket Stone in leather case	-	-	-	-	-	-	-	-	-	.35

ASK YOUR HARDWARE DEALER OR SEND DIRECT

THE CARBORUNDUM COMPANY, Niagara Falls, New York

What a convenience are folding doors.



They are properly applied when hung with Richards Ball Bearing Swivel Hangers specially made for this purpose.

Every builder should know about these.

Ask your hardware dealer. Shall we send you our architects catalogue?

Richards No. 135 Swivel Hangers

It contains Hanger information you may require on special work

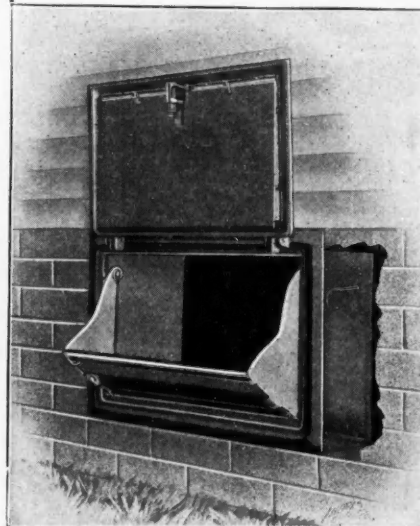


WRITE US TODAY.

Richards-Wilcox Manufacturing Co.
AURORA, ILL.

THE MODEL Foundation FUEL CHUTE

AND
Cellar
Window
COMBINED



Protects the building just where the protection is most needed, above the opening.

The shield protects the rubber glass.

Our Majestic Chute has a solid cast door.

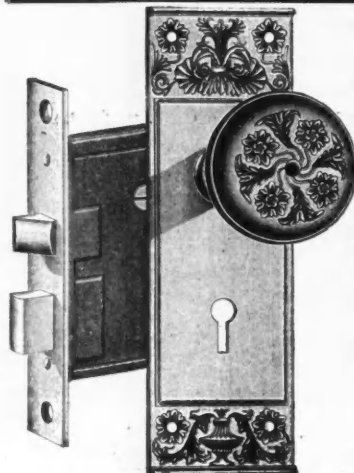
Both styles are made in 3 sizes.

SEND FOR CATALOGUE

Majestic Furnace & Foundry Co.
121 Erie Street, HUNTINGTON, IND.

Chicago Office, 1102 Monadnock Block.

New York Office, 50 Beekman St.



Are You Ready

for the hardware on that new building? Then use a new and up-to-date design in

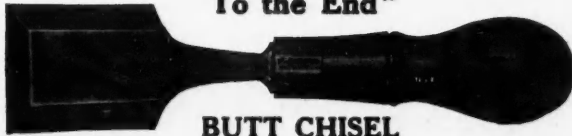
Builders' Hardware

No. 8030 Lock Set as per cut, steel, Antique Brass 44c shaded, per set.

Free Our illustrated catalogue and net price list

Rehm Hardware Co.,
1501 Blue Island Ave.
CHICAGO, ILL.

"Last a Lifetime and Give Satisfaction To the End"



BUTT CHISEL

The celebrated Barton Planes and Edge Tools for carpenters and all other woodworkers are unequaled by any other made for keen, hard smooth cutting edges. If your hardware dealer does not handle

TRADE MARK



THE CELEBRATED BARTON TOOLS

send direct for catalogue. Be sure to specify "CARPENTER'S CATALOGUE."

MACK & COMPANY, 20 BROWN'S PLACE ROCHESTER, N. Y.

AUGER BIT ESSENTIALS

THE SECOND REASON

why carpenters prefer

RUSSELL JENNINGS BITS



is that they are made by skilled men of

LONG BIT MAKING EXPERIENCE

and are hand made except in those operations which can be performed more accurately by machine :

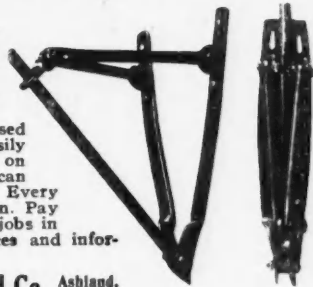
Our bits are carefully forged in order that the steel may be of uniform density. In forming the head every precaution is taken to get greatest strength at this point.

Russell Jennings Mfg. Co.,
Chester, Conn., U. S. A. 21-25

ASHLAND

Folding Scaffold Bracket

Best and strongest bracket made. Used on any kind of siding. Adjusts to any space studding or pitch of roof instantly. Just the thing for carpenters, tanners, painters and brick masons. Folds instantly. No pins or bolts used in adjusting. One bracket easily carries 1000 pounds put up on 4-10d nails. No contractor can afford to be without a set. Every man who uses them orders again. Pay for themselves on first two jobs in time and material. For prices and information, write.



Ashland Folding Scaffold Co. Ashland, Ohio.



DO YOU

Consider

The **COST**

of **GRINDING**

WHEN BUYING EDGE TOOLS? Did You ever stop, consider and *FIGURE* that *TIME, MONEY, and PATIENCE SPENT* on *INFERIOR TOOLS* requiring continual sharpening is greater than the purchase price? Do you add the grinding expense to the price paid for your tools, or do you make the mistake of judging the cost only by the price you pay the dealer?

Save Money BY LESS GRINDING Make your first cost the last cost. Buy *WHITE'S Edge Tools* and they'll save enough in grinding to pay for themselves. They're **GUARANTEED PERFECT** in *quality, shape, material and temper*, for any wood, any job, at any time, always ready, sharp, accurate and perfect. The **BEST TOOLS** for **BEST WORK**. It'll pay you to buy **White's Edge Tools**. If not at your dealer, furnish us his name and secure our latest catalogue.

The L. & I. J. WHITE CO

143 Perry Street, Buffalo, N. Y.

LOOK FOR IT
DEMAND IT
ACCEPT NO
OTHER



You Won't Do Without a

"YANKEE" Screw Holder

Once You've Tried It

Works easy and quickly. Slight thumb pressure opens Jaw—insert screw—release spring and there you are ready for business. Positively self releasing as screw sinks into wood. Slip holder back on the blade and you have a plain "YANKEE" Ratchet Driver.

3 Styles
13 Sizes

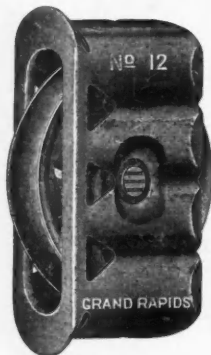
Let us send you our FREE BOOK of Labor Savers. 35 styles, 75 sizes. A postal brings it.

All Hardware Dealers Sell
"Yankee" Tools

NORTH BROS. MFG. CO.

DEPT. A
PHILADELPHIA, PA.

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.

ONE of These Aprons for 20c Postage Prepaid



It is made of the very best 8 oz. white duck with ties and neck band of same goods. It has three large nail pockets well sewed and riveted at top of pockets.

We are the only manufacturers who manufacture framing and standard squares containing *Hardened Corners*. Our No. 100-A has our regular framing rule on face and octagon framing rule on back. Sells for Pol., \$2.25—Ox. black \$2.50—nickel plated \$3.00.

Nicholls Mfg. Co.
Ottumwa, Iowa



ABOUT SASH CORD

OUR President started making Solid Braided Sash Cord over forty years ago, and is now the Nestor of the trade. At that time Quality was the main consideration, not First Cost; but as more competition came into the field, cheaper and cheaper cords were made. To-day there are a great many kinds on the market, put up under various meaningless labels. Most of them are just made to sell as cheaply as possible, although at that they are only a few cents a pound cheaper than the best. They look badly and wear out quickly.


¶ The only way you can be sure of getting first quality sash cord to-day is to buy Samson Spot Cord. It not only has our name and address on the label, but the spots on the cord are a quick means of identification after the label is removed. Spot Cord is made of extra quality stock, is carefully inspected, and is guaranteed to be free from the imperfections of braid and finish which make common cords wear out so quickly. As you probably know, Spot Cord will outwear metallic devices many times over, besides costing much less in the first place. We shall be glad to send complete tests.

¶ We think you will appreciate the advantages in using guaranteed trade-marked cord, which has been proved to be the most durable and economical material for hanging windows, in preference to cord made to satisfy the demands of competing jobbers by manufacturers without our long established reputation. There is only one grade of Spot Cord. Some manufacturers make more than one grade bearing the same name.

¶ Spot Cord is carried by the leading hardware dealers everywhere. Write to us if you can't get it conveniently. Would you like a sample card?



SAMSON CORDAGE WORKS
BOSTON, MASS.



When **\$13.95** (if you send cash with order) pays for a dozen 4 ft. brackets, every pair of which will carry a ton in weight without even springing, does it pay to go on using wooden brackets, or putting up staging?

Consider also that once equipped with these, you don't have to be bothered continually with broken or worn out brackets, for **The Taylor Brackets** last a lifetime. Besides, there's a big gain in time: one man can put them up and take them down alone.

If you'd like to be shown, write for terms of our special trial offer. It will pay you.

THE TAYLOR STEEL SCAFFOLD BRACKET

When **Buying CLAMPS** Ask Two Questions


How Quickly Will they Work?

It pays to get quick-acting, self-locking clamps, for they double or treble the output of your men, and save money in wages.

How Long Will They Last?

Everyone knows a clamp that is not durable is dear at any price, for one well made clamp will outlast many of the other kind, and in the end the best clamp is the cheapest.


THE TAYLOR is top of the heap in both these respects, and we'd be glad to mail you our catalogue telling you more about them and showing 22 different styles.



No. 16
THE TAYLOR

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

HARGRAVE **STANDARD CLAMP**



Ⓜ HARGRAVE

This clamp is thoroughly made of the best refined malleable iron, and is provided with a button tip. It has a very deep, square thread in both the screw and frame, and is in every way the strongest and best clamp in the market. Each size is numbered by inches the thickness of the work it will take in.

Cut one-quarter size of 8 inch

THE CINCINNATI TOOL CO., - - - Norwood, Cincinnati, Ohio
Write for circular. Dept. H

STANDARD HANDBOOK
-OF-
ESTIMATING DATA

Every Man in the Building Trade Needs It
READ WHAT OTHERS SAY:

It is a very handy book, not only valuable, but comprehensive. I think it the nearest correct, and the shortest cut to business, the busy man has yet found.
It fills a place that has been wanted for years.
Your Standard Handbook is the best book of its kind ever written.

For all the 30 years I have spent in estimating and building, I would not be without it for twice the cost.
Just what I want and well worth the money. Thank you for calling my attention to it.

PRICE ONE DOLLAR

The Builders' Auxiliary Co., 325 Old South Building
BOSTON, MASS.

Ask for particulars of the "Builders Auxiliary" the latest and most efficient system of recording estimates and keeping cost accounts, for building contractors.

BLAKE QUICK ACTING VISE



PRENTISS VISE CO. NEW YORK

For Cabinet Makers and Wood Workers. Simplest—Strongest
—Cheapest—Best
Send for Catalogue of all kinds of Vises
PRENTISS VISE COMPANY, MAKERS
106-110 La Fayette St., New York, U. S. A.



CUSTOM MADE Fly Screens

Our work is far superior to the usual output of local mills and has a style and finish not obtainable from those who do not make a specialty of fine screens.

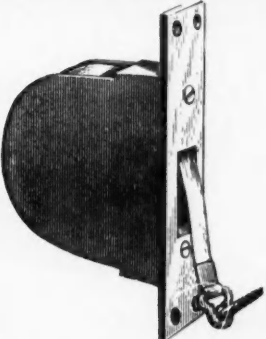
Our screens are made from kiln dried lumber and have waterproof coped joints and the frames are weather proofed before finishing coats are applied.

Best grades of Wire Cloth, enameled, galvanized, genuine bronze, fastened by the most approved method.

The new "Ironwood" screen is the cheapest good custom made screen yet produced. Intending purchasers may have free, by mail, samples of woods, finishes, wire cloth and a copy of catalogue. Agencies in nearly all large cities. Agents wanted in smaller cities. Special terms to contractors and builders.

A. J. PHILLIPS & CO., FENTON, MICH.
28 YEARS' EXPERIENCE 3 1-2 ACRES FLOOR SPACE

CALDWELL SASH BALANCE



Does away with weights and cords, and VASTLY more durable.

Makes sashes work perfectly.

Permits greater window space in new work, as box frames are not necessary.

May be applied to old windows without altering sashes or frames.

Write for circular to the

Caldwell Mfg. Co.
15 Jones Street, - Rochester, N. Y.

DON'T PUT SASH WEIGHTS ON 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.

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

Sold by hardware dealers or direct from us—Correspondence solicited. Representatives and side lines travelers wanted all over the world.

Automatic Sash Holder Company
277 Broadway, New York City.

Diehl's Separable and Reversible Hinge No. 20



This hinge is designed for storm and screen doors. The door may be swung at right angles and lifted from its bearings without removing the screws, as the shank slides through the small slot in the upper ear so that it makes it very easy to change from storm to screen doors and from screen to storm doors without removing the hinges. They are made of open hearth wrought steel 14 gauge and finished in black baked Japan or oxidized copper. A sample of these hinges will be sent upon receipt of 25 cents in stamps.

Manufactured by the
Diehl Novelty Company
Sheboygan, Wis.

FIGHTING

the Trust!!

The Smashing Anti-Trust Fight Now On!



Trust Prices Eclipsed at Last

An absolutely *first-class* high-grade watch at a price within the reach of the people—The Burlington Special Anti-Trust Watch.

The World's Masterpiece of watch manufacture—the Burlington Special—now sold direct to the public at its rock-bottom, anti-trust price (and besides without middlemen's profits.)

We do not care what it costs—we will uphold our independent line, and so we are making the most sweeping, baffling offer ever made on watches.

Some trusts are legal and some are not. **We do not say that the watch trust is illegal**; but we do say that the methods of the giant factories in making "contracts" with dealers to uphold double prices on watches is very **unfair**—unfair to us and unfair to you. Hence our direct offer on the Burlington at the very same price the Wholesale Jeweler must pay.

This is your opportunity—NOW—while this great Anti-trust offer lasts—get the best watch made anywhere at one-third the price of other high-grade watches. Furthermore, in order to fight the trust most effectually, we even allow terms of **\$2.50 a month** on our finest watch—easiest possible payments at the rock-bottom price, the identical price the Wholesale jeweler must pay.

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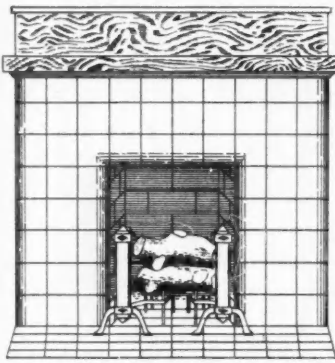
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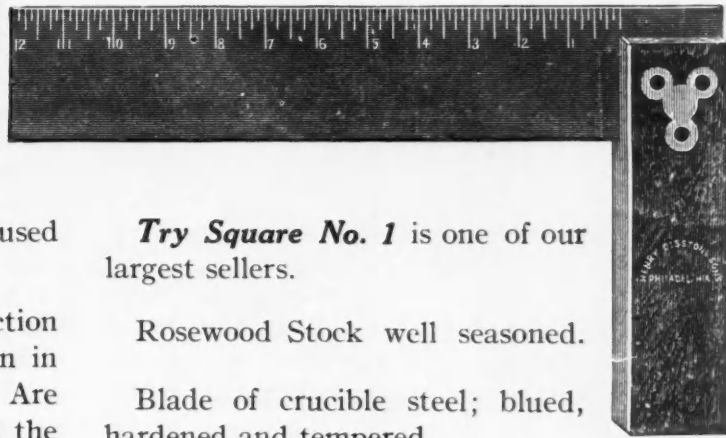
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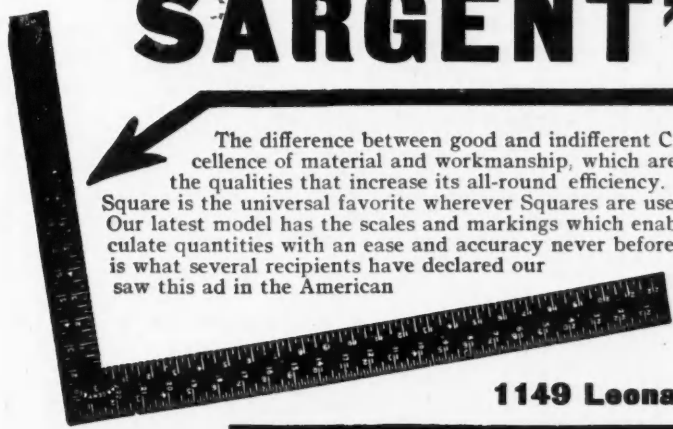
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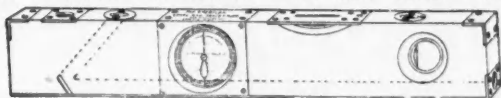
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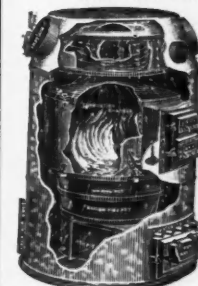
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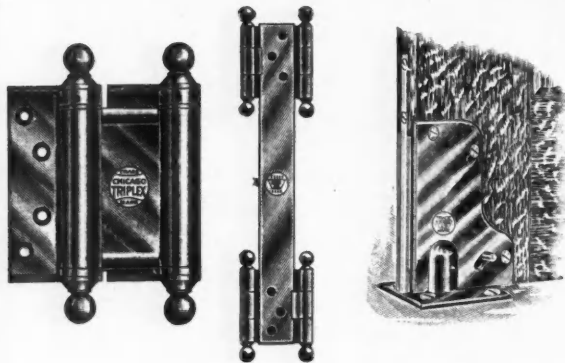
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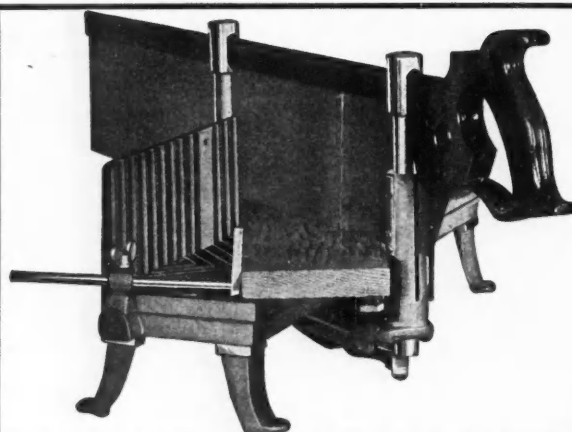
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American Carpenter and Builder

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HE WHO trusts to luck will not be lucky. It is the man who does the right thing at the right time who is lucky.



NO MATTER how well you may do a thing today, there will be a better way of doing that thing tomorrow.



PERSEVERANCE was thus defined by a colored preacher: "It means, firstly, to take hold; secondly, to hold on; thirdly, to nebbber let go." The man who possesses these qualities is bound to be successful in any field of work.

SO FAR as in you lies, let the last job be your best piece of workmanship.



A Fable for Builders

LAST Summer a good citizen of a certain town not over a hundred miles from almost everywhere, built a wooden house for a woman and her children. He built the chimney of brick because he had to. The chimney was able to stand alone, so he did not have to prop it up with wood. But the floors of the house would not stay up without props. The good citizen saved a dollar by using the chimney as a support to the floors. He nestled the ends of the floor joists nicely in the brick of the chimney. He covered up the job and got his money.

The rains fell and the winds blew in the most biblical manner, and Winter came after its fashion. The chimney settled a little; and there was a tiny crack.

One morning the woman woke up with fire all about her. She tried to get to her children. If she got to them no one ever knew it. The good citizen who built the house was not arrested for manslaughter. He is building other houses of the same kind for other women and children.

He is making his living by it.

By FRANKLIN H. WENTWORTH,
Secretary of the National Fire
Protection Association.



Care Needed in Concrete Work

THE Cleveland Chapter of the American Institute of Architects, the Cleveland Engineering Society and the Builders Exchange joined in appointing a committee to investigate the collapse of a four-story reinforced concrete building which was being erected for the Henke Furniture Co. of that city, November 22, 1910. The collapse was a disastrous one accompanied by the death of four persons and the injury of seven others. The commission paid nine visits to the ruins, held seventeen public sessions at which eighty-six witnesses were examined, besides twenty-eight private sessions.

The commission held that the initial failure was due to the premature removal of forms and supports in

the third story, and found that the architectural supervision was deficient, that the concrete used was of poor quality and not properly placed, while the owner and the city had a share in the responsibility for failure to watch the work and enforce the ordinances. The conclusion of the committee was that the collapse gave no reason to condemn the use of concrete in combination with steel, provided the concrete was composed of proper materials, accurately measured and thoroughly mixed; the steel sufficiently strong and properly placed; the work installed by competent contractors and workmen; and the specifications, drawings and construction properly executed under the direction of competent designers and inspectors.



Against the Narrow Building Lot

THE narrow building lot has drawn down upon itself a long merited rebuke in a recent issue of the *Improvement Bulletin*. At the same time some suggestions are made looking toward future betterment of building, and living, conditions in growing towns which we want to indorse.

It is suggested that if the various legislatures want to take up a topic which would work to the advantage of the communities they could find a line of work for their activities in passing a law to regulate the minimum widths of city and town lots which might be accepted for platting. The acceptance of plats with twenty-five and even narrower frontages for residence sections is simply a move to the encouragement of huddling houses close together; of inducing the development of slums; of increasing fire hazards, and of encouraging the things which are most objectionable in large communities.

The fire insurance companies have but recently removed the additional charge which they formerly levied upon buildings which were within a certain limit, so they now ask no more for the extra hazard of a building which is within a few feet of its adjacent neighbor than for another which is twenty or more feet separated. The wisdom of this move is very doubtful, and it would seem that in view of the heavy losses which have been sustained in the larger cities there should have been an additional charge levied rather than otherwise.

The legislatures are supposed to be seeking to make laws which work for the benefit of the communities, and this suggestion of making narrow lots in residence districts harder to acquire is one way in which better things can be done. Unfortunately, the damage is largely done. Plat after plat in most towns and cities have been accepted, with miserable little strips of ground, and some sections show houses huddled up nearly like sheep. Where there is no necessity for crowding up in this manner, except the desire to get as many pieces of real estate out of a block as possible, the thing should be stopped.



"Why," asked a Missouri newspaper, "does our State stand at the head in raising mules?" "Because," said an Iowa paper, "that is the only safe place to stand."

Candor in the Home

"Your sister's a long time about making her appearance," suggested the caller. "Well," said the little brother, "she'd be a sight if she came down without making it."—*Cleveland Leader*.

Anatomical

Artist—"Madam, it is not faces alone that I paint, it is souls."

Madam—"Oh, you do interiors, then?"—*Boston Transcript*.

On the Level

"Do you assimilate your food, aunty?"

"No, I doesn't, sah. I buys it open an honest, sah."—*Baltimore American*.

A Hero

Kicker—My great-grandfather carried that drum all through the Revolution.

Snickler—And whenever he sighted the enemy he beat it, I suppose.—*Brooklyn Life*.

Easily Explained

"Do you understand this building loan scheme?"

"Sure! They build you a house and you pay so much a month. By the time you are thoroughly dissatisfied with the place it's yours."—*Ladies' Home Journal*.

Boy Nature

"What's the matter, little boy?"

"M-maw's gone an' drowned all the kittens."

"Dear! dear! Now that's too bad."

"Yep, she p-promised—boo hoo!—'at I c'u'd do it."—*Harper's Weekly*.

Possibly So

After staring at the minister straight through the fish course, Adeline inquired: "Mamma, why is that man's hair so black when his beard is white?"

She was hushed by the stricken family, and stayed hushed until the salad was brought in.

Then she saw her chance. "I know," she said, "it's 'cause he uses his jaw more'n he does his head."—*Success*.

One Hundred Years of Portland Cement

AN ILLUSTRATED STORY OF THE ORIGINAL INVENTION AND THE FOUNDING OF THE GREAT MODERN CEMENT MANUFACTURING INDUSTRY

By Alfred Sidney Johnson*

Associate Editor of the "Cement World", (One of the Radford Publications)

ALTHOUGH not patented until October 21, 1824, it was in 1811—just one hundred years ago—that the first Portland cement was produced. It was the invention of Joseph Aspdin, a bricklayer living in the city of Leeds, in Yorkshire, England.

Portland cement ranks among the most important structural contributions ever made for the benefit of mankind. With its advent, there began the evolution of the modern Age of Concrete. It has come to be one of the most potent factors in this present day of wonderful engineering achievement, and from it the entire world is learning a new lesson of economic and hygienic regeneration.

And yet the inventor of this wonderfully versatile agent of construction attracted but little attention in his day and generation. It was not until some thirty years had passed after Aspdin's great discovery, that Portland cement secured any wide recognition of its merits and possibilities as a material of construction; so that during the lifetime of the inventor but little effort was made to keep systematic or accurate records that would

afford an authentic outline of his career or a connected history of the early years of the industry to which he gave the original impulse.

Probably the first formal treatise ever printed on the subject of Portland cement was an advertising booklet† issued in 1853 by William Aspdin, a son of the inventor, as head of the firm of Aspdin, Ord & Co., proclaiming the merits of Aspdin's "Patent Portland Cement," describing comparative tests of Portland and the so-called "Roman" cements, and giving directions as to methods of using Portland cement for various structural and ornamental purposes. This book incidentally throws considerable light of an authentic, "first-hand" character on the original invention of Portland cement, and on the early struggles of the industry to attain a substantial footing in the face of the not over-scrupulous methods of opposition adopted by its competitors. For portrait of the younger Aspdin, see Fig. 5.

Another document of great historical interest (see Fig. 2, page 30, in this number of the AMERICAN CARPENTER AND BUILDER) is the original Specification of

*In the search for data relating to the Aspdin home and family, the writer is indebted to His Honor, the Lord Mayor of Leeds, for kind assistance rendered.

†The text and illustrations of this booklet are reproduced in full, in Volume IV of "Radford's Cyclopedia of Cement Construction."



Fig. 1. OLDEST PORTLAND CEMENT PLANT IN THE WORLD

Built About 1830 by Joseph Aspdin, the Original Inventor of Portland Cement, on Ings Road, Wakefield. Here Mr. Aspdin Carried on the Manufacture of Portland Cement Until His Death in 1855. Part of the Old Kilns can be Seen at the Left

Joseph Aspdin, recorded in the British High Court of Chancery, December 15, 1824, as required by terms of the Letters Patent granted him under the royal seal on October 21 in the same year. The specification describes the inventor's method of making Portland cement and artificial stone.

Joseph Aspdin was born in 1778 or 1779, and was thus about 45 years old when he obtained his patent. At that time, and for some years previously, he had been living at No. 3 Princess Street (see Fig. 9), New Road End, in Leeds, the principal manufacturing city of Yorkshire. His trade was that of a bricklayer.

In 1825, shortly after obtaining his patent, Joseph Aspdin removed to Wakefield, nine miles south of Leeds, where he established the first factory ever erected for the manufacture of Portland cement. The original works were located near the bridge over the river Calder; but, after some years of operation, were pulled down to make way for a railroad, whereupon Aspdin erected a new plant on Ings Road. This plant, now long in disuse, is still standing, and is shown in Fig. 1. It is the oldest Portland cement plant in the world.

Joseph Aspdin had one daughter and two sons, James and William. Both sons were associated with him in the manufacture of cement, which he appears to have carried on in Wakefield until his death in 1855, after which his son James continued the business for some years. The earliest instance of the use of Portland ce-

ment in important construction work was in the building of the Thames tunnel in London about 1828. After careful tests, the eminent engineer, Sir Isambard

Brunel, who had in charge the building of the tunnel, adopted Aspdin's Portland cement as the chief material of construction.

The inability of the works at Wakefield to meet the growing demand for Portland cement caused William Aspdin, in 1843, to establish a plant at Rotherhithe, on the banks of the Thames, near London, in which he was associated with Messrs. Maude, Son & Co., and later with the firm of Maude, Jones & Aspdin. He also established, in 1848, the works at Northfleet, in Kent, of which the kilns shown in Fig. 6 are still standing. He was thus the leading pioneer in the Portland cement manufacturing industry in what is known as the Thames District; and the extent of his enterprise is further shown in the fact that in 1852 he took out a patent for an improved method of manufacturing Portland cement and in the same year we find him at the head of the firm of Aspdin, Ord & Company, controlling large works at Gateshead (Newcastle)-on-Tyne, in northern England (see Fig. 8), with extensive warehouses and wharfage facilities at Milbank, Westminster, on the bank of the Thames in London. At that time the firm confidently announced to the Engineers, Architects, Contractors, and Builders of England, that they were "in a position to meet almost any demand," as their manu-



A.D. 1824 N° 5022.

Artificial Stone.

ASPDIN'S SPECIFICATION.

TO ALL TO WHOM THESE PRESENTS SHALL COME, I, JOSEPH ASPDIN, of Leeds, in the County of York, Bricklayer, send greeting.

WHEREAS His present most Excellent Majesty King George the Fourth, by His Letters Patent under the Great Seal of Great Britain, bearing date at Westminster, the Twenty-first day of October in the fifth year of His reign, did, for Himself, His heirs and successors, give and grant unto me, the said Joseph Aspdin, His especial licence, that I, the said Joseph Aspdin, my exors, admors, and assigns, or such others as I, the said Joseph Aspdin, my exors, admors, and assigns, should at any time agree with, and no others, from time to time and at all times during the term of years therein expressed, should and lawfully might make, use, exercise, and vend, within England, Wales, and the Town of Berwick upon-Tweed, my Invention of "AN IMPROVEMENT IN THE MODES OF PRODUCING AN ARTIFICIAL STONE," in which said Letters Patent there is contained a proviso obliging me, the said Joseph Aspdin, by an instrument in writing under my hand and seal, particularly to describe and ascertain the nature of my said Invention, and in what manner the same is to be performed, and to cause the same to be enrolled in His Majesty's High Court of Chancery within two calendar months next and immediately after the date of the said in part recited Letters Patent (as in and by the same), reference being thereunto had will more fully and at large appear

NOW KNOW YE, that in compliance with the said proviso, I, the said Joseph Aspdin, do hereby declare the nature of the said Invention, and the manner in which the same is to be performed, are particularly described and ascertained in the following description thereof (that is to say):—
[Price 8d.]

A.D. 1824—N° 5022.

Aspdin's Improvements in the Modes of Producing an Artificial Stone.

My method of making a cement or artificial stone for stuccoing buildings, waterworks, cisterns, or any other purpose to which it may be applicable (and which I call Portland cement) is as follows:—I take a specific quantity of limestone, such as that generally used for making or repairing roads, and I take it from the roads after it is reduced to a puddle or powder; but if I cannot procure a sufficient quantity of the above from the roads, I obtain the limestone itself, and I cause the puddle or powder, or the limestone, as the case may be, to be calcined. I then take a specific quantity of argillaceous earth or clay, and mix them with water to a state approaching impalpability, either by manual labour or machinery. After this proceeding I put the above mixture into a slip pan for evaporation, either by the heat of the sun or by submitting it to the action of fire or steam conveyed in flues or pipes under or near the pan till the water is entirely evaporated. Then I break the said mixture into suitable lumps, and calcine them in a furnace similar to a lime kiln till the carbonic acid is entirely expelled. The mixture so calcined is to be ground, beat, or rolled to a fine powder, and is then in a fit state for making cement or artificial stone. This powder is to be mixed with a sufficient quantity of water to bring it into the consistency of mortar, and thus applied to the purposes wanted.

In witness whereof, I, the Joseph Aspdin, have hereunto set my hand and seal, this Fifteenth day of December, in the year of our Lord One thousand eight hundred and twenty-four.

JOSEPH (L.B.) ASPDIN.

AND BE IT REMEMBERED, that on the Fifteenth day of December, in the year of our Lord 1824, the aforesaid Joseph Aspdin came before our said Lord the King in His Chancery, and acknowledged the Specification aforesaid, and all and every thing therein contained and specified, in form above written. And also the Specification aforesaid was stamped according to the tenor of the Statute made for that purpose.

Inrolled the Eighteenth day of December, in the year of our Lord One thousand eight hundred and twenty-four.

Redhill: Printed for His Majesty's Stationery Office, by Love & Malcomson, Ltd.

Fig. 2. FIRST PATENT FOR PORTLAND CEMENT. The Above is an Exact Reproduction of the Original Specification for the Manufacture of Portland Cement, Written by Joseph Aspdin, Its Inventor, and Filed in His Majesty's High Court of Chancery, December 15, 1824.

facturing capacity was equal to "three thousand casks per week."

Unfortunately, shortly after this, William Aspdin became involved in financial difficulties through an attempt to build a costly residence for himself, which was to be known as "Portland Hall" (see Figs. 3 and 4), and which was to set forth the ornamental possibilities of Portland cement, as well as to be a permanent monument to its enduring qualities. His resources were unequal to the occasion; and before the "Hall" was half completed, the work had to be abandoned. Mr. Aspdin left England, and crossed over to the Continent, where he died at Holstein, in what is now a part of Germany, during the Schleswig-Holstein war in 1864.

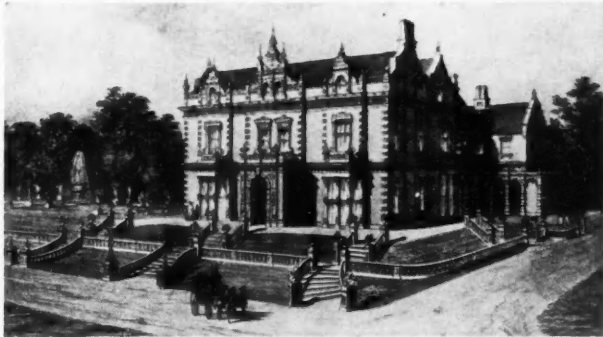


Fig. 3. AN UNREALIZED DREAM IN PORTLAND CEMENT. "Portland Hall," Projected Residence for Wm. Aspdin, Son of Joseph Aspdin, at Gravesend, Kent, Near London, England. Reproduced from Architect's Original Drawing.



Fig. 4. HOW "PORTLAND HALL" LOOKS TODAY. Structure in Background, now used as a Private Residence, is only Portion of "Hall" that was Completed. The Cement Stucco on the Brick Walls Around the Grounds, and on the Gate-Posts, is Probably the Oldest Example Extant of the Ornamental Use of Portland Cement.

Every great invention or discovery, almost without exception, is found on investigation to have had the way prepared for it to some extent. This is as true of the invention of Portland cement as of every other great guide-post along the march of technical or scientific progress. It was by experimenting in a field explored by predecessors, and following along lines more or less definitely indicated by them, that Joseph Aspdin was led to his discovery of the method of making Portland cement and finally achieved the success that laid all future generations under the tribute of indebtedness to him and rendered his name immortal.

All cements made prior to the invention of Portland were of the class we term "natural"—made, in some instances, as was that of the ancient Romans, without calcining, by simply



Fig. 5. WILLIAM ASPDIN. Son of Joseph Aspdin, Original Inventor of Portland Cement, and Himself One of the Earliest Pioneers in the Industry.

mixing slaked lime with powdered volcanic ash called Pozzuolana, and in other instances produced by the calcining of cement rock. Calcined cements are a distinctively modern invention, having apparently been unknown to the ancients. They were developed during the eighteenth century in England, France, and Germany, to meet a revived demand for hydraulic mortars, which had fallen into disuse during the Middle Ages; but it was only by slow steps that knowledge of the principles essential to



Fig. 6. PORTLAND CEMENT KILNS OVER SIXTY YEARS OLD. Built in 1848 at Northfleet, Kent, England, by William Aspdin, Son of Joseph Aspdin, Inventor of Portland Cement. Kilns of Upright or Dome Type, with Intermittent Draft.

the making of a uniform and reliable product was acquired.

In searching for a reliable hydraulic mortar for use in marine construction, John Smeaton, the English engineer who built the third Eddystone Lighthouse (completed in 1759), developed a form of natural hydraulic cement after experimenting on limestones containing different proportions of clay. He demonstrated that pure limestone would not produce a hydraulic lime, but, on the contrary, the property of setting under water depended on the use of very impure, clayey limestones. Smeaton's discovery, however, had no immediate effect on engineering practice in general, for no record of his

made consisted of certain argillaceous or clayey limestones common in some of the English coastal formations—essentially natural mixtures of clay and limey material, interspersed with small amounts of calcite, barite, or other minerals, and known geologically as "Septaria." This material was calcined "with a heat stronger than that used for burning lime"; and the resulting clinker was finely pulverized, to develop its hydraulic activity. As might naturally be expected, the product varied considerably in quality; and in many respects—notably its strength and fire-resisting powers—it fell far below the high standards of true Portland cement.

Although the experiments of Smeaton and Parker constituted important steps in the development of cement-making, yet their products were merely "natural" cements, the raw material being used in the natural state as it came from the quarry, without alteration or admixture. It remained for Joseph Aspdin to produce a cement from an experimentally determined artificial mixture, and thus to develop for the first time a product having the essential characteristics of true Portland cement.

The keynote of Aspdin's invention is found in his analysis of the imported lavas sold in England as "terras" and Pozzuolana, and in his experimental attempts to duplicate the volcanic conditions that produced them. He conceived the idea that if he mixed certain earths and materials, and calcined them, he would obtain an article not only similar in its properties to the imported cements of volcanic origin, but capable of being improved upon. The raw materials he selected were limestone and clay. His original specification shows that the limestone, either powdered or in lumps, was first reduced to lime by burning. This lime was then mixed with a "specific quantity of argillaceous earth or clay," water being added to reduce the mixture to the consistency of paste. The mass was subsequently dried, broken into lumps and calcined in a "furnace similar to a lime kiln." Finally, the burned product was ground to a powder.

It will be noticed that Mr. Aspdin's specification makes no statement as to the relative amounts of lime and clay to be mixed together, or as to the degree of temperature necessary in the calcining process. These, as shown by the development of the industry in later times, are features of vital importance; but it is possible that at



Fig. 7. Grave of Joseph Aspdin, Original Inventor and Patentee of Portland Cement, in the Graveyard of St. John's Church in Wakefield

the time of taking out his patent, Mr. Aspdin did not have sufficiently explicit data to justify him in giving what might be considered a final word. He designated his cement "Portland," because of its resemblance, when set, to the popular building stone obtained from the famous limestone quarries on the Isle of Portland in Dorsetshire, on the southern coast of England, from which many churches, public buildings, and other structures in England, such as St. Paul's Cathedral, the Eddystone Light, etc., were built.

It was not to be expected that, in its beginnings, the manufacture of Portland cement should be characterized by the careful technical supervision and scientific accuracy that mark every detail of the process to-day. This was a problem for a later generation, and not all of its details have even to this

experiments was published until 1791; yet he is entitled to the honor of being placed on record as the first investigator who demonstrated the practical importance of chemical analysis in cement-making—now insisted on as an indispensable prerequisite for intelligent regulation of the processes of manufacture.

The next important step in advance was the invention, in 1796, in England, and almost at the same time in France, of a form of natural cement known as "Roman," which soon came into general use in England and also attained considerable vogue on the Continent. "Roman" cement was the invention of Joseph Parker, an Englishman, who took out a patent for his product in 1796. According to Parker's specifications, the raw material from which "Roman" cement was

made consisted of certain argillaceous or clayey limestones common in some of the English coastal formations—essentially natural mixtures of clay and limey material, interspersed with small amounts of calcite, barite, or other minerals, and known geologically as "Septaria." This material was calcined "with a heat stronger than that used for burning lime"; and the resulting clinker was finely pulverized, to develop its hydraulic activity. As might naturally be expected, the product varied considerably in quality; and in many respects—notably its strength and fire-resisting powers—it fell far below the high standards of true Portland cement.

day been fully and finally solved. For many years, undoubtedly, the manufacture of Portland cement in England was carried on in an empirical manner, the proportioning being done by "rule of thumb" methods. "Even in the beginning of the seventies," says a German writer* on this subject, "there was as good as no chemical supervision in the English cements works."

Joseph Aspdin's title to recognition as the original inventor of Portland cement—a claim never questioned until comparatively recent years—is based on the following indisputable facts:

He was the first to produce, after experiment, a hydraulic cement by artificially mixing limey and clayey ingredients, burning to a clinker, and then grinding—the essential method of making Portland cement to this day. He originated the name "Portland cement"; and the first patent ever issued for a hydraulic cement known under that name, was granted him.

Several independent investigators, early in the last century, approached quite closely the production of real Portland cement by experimenting in the calcining of artificial mixtures of chalk and clay. This is true of the hydraulic cement produced by M. Vicat in France; of the similar product made at the Chatham Dockyard about 1833, by Colonel (afterwards General) Pasley; and of the form of cement known as "Frost's Cement," first made at Swanscombe in Kent, about the same time. Frost's cement was made as follows: Two parts by weight of chalk and one part by weight of Medway clay thoroughly mixed with a considerable quantity of water, and allowed to settle. The water was then drained off the surface, and the sediment left to dry by atmospheric action. When sufficiently dry, the mixture was lightly burned in kilns—not to vitrification, as that would have destroyed its setting properties—and then ground in mills. Had Vicat, Pasley, or Frost used a larger quantity of chalk in proportion to the clay, and had they carried their burning to the point of incipient fusion, they would have produced true Portland cement. In all these cases, however, the product contained

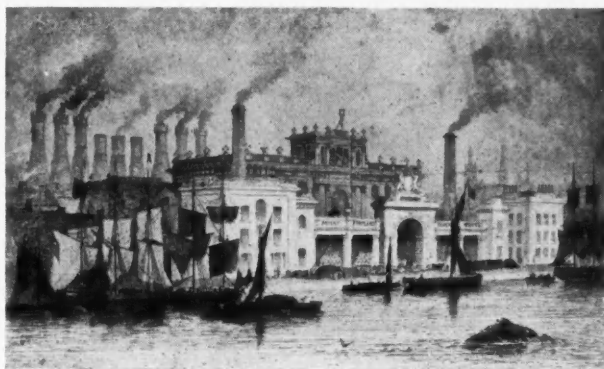


Fig. 8. Portland Cement Works of Aspdin, Ord & Co., at Gateshead-on-Tyne, England. In Flourishing Condition about 1852

a great excess of clay (alumina), was only lightly burned, was very quick setting, and was much inferior in weight and strength to Portland cement, being rather of the nature of hydraulic lime.

The approximate relative proportions of lime and clay (5 to 2) required to give a reliable and uniform product, were determined experimentally, in the forties, by Mr. Isaac Charles Johnson, founder of the firm of I. C. Johnson & Co., cement makers, now of Gateshead-on-Tyne and Green-

hite-on-Thames, and were by him first made public. Mr. Johnson subsequently invented several mechanical improvements in the manufacture, one of these being known as the Johnson "Chamber System," utilizing the waste heat of combustion for drying the ground raw-material mixture, and



Fig. 9. Joseph Aspdin's Home, the Birthplace of Portland Cement. His home stood at No. 3 Princess Street, Leeds, the open door at the right. The old home was torn down about 1895 to make way for an extension of the Public House or "Inn" on the Corner, which has been Doing Business Under Continuous License Since 1693

providing a simplified method of charging the kilns; but this chamber system was soon superseded by the modern rotary kiln now in almost universal use.

Joseph Aspdin is described by those who remember him as a "large, broad, fine-looking man," and he is reputed to have been worth £60,000 (about \$300,000) at the time of death, nearly 56 years ago. He lies buried in the little graveyard of St. John's Church in Wakefield, where the inscription on his tombstone can still be plainly read (see photograph, Fig. 19):

SACRED
to the Memory of the late
Joseph Aspdin of this
Town (Inventor of the
Patent Portland Cement)
who departed this life on
the 20th day of March, 1855
Aged 76 Years.

Mr. Aspdin himself never realized the full significance of his discovery. His gift to mankind was one of which future ages alone could see the full development, and the world will continue throughout all time to reap more and more of its rich fruition. It would not be inappropriate for us of the present generation to mark in some suitable way the spot which he rendered "sacred ground" to all students of cement, and to perpetuate his memory by some permanent and worthy memorial. His invention of Portland cement, however, will in itself be his most enduring monument.

*Dr. Wilhelm Michaelis, in "Tonindustrie-Zeitung," March 25, 1905.

Contractors' Costs Cut Down by Use of Motor Trucks

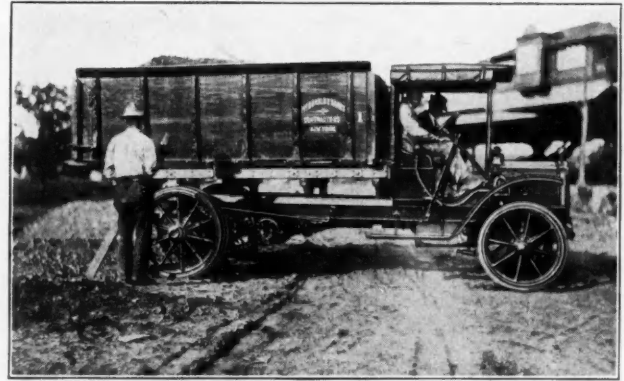
(An article for wide-awake builders.)

THERE was recently submitted to a large manufacturing company bids for the erection of an addition to its plant, which a competent architect had estimated would cost in the neighborhood of \$15,000.00. To the average person, the elements that enter into a contractor's estimate for the construction of a large building, are an unknown quantity; and in many instances it is suspected that this is true also with the contractors themselves! This, however, is not the point we started out to make. Merely mention it in passing, since the following motor truck incident and a study of the hauling and inspection costs of contractors generally bring it to mind.

The great difference in the final figures submitted on this contract, by the several bidders, proved extremely puzzling, ranging from \$12,000.00 to \$22,000.00. Exactly the same specifications were furnished to each of the contractors and the same guarantee was required of each. The material was to be standard throughout and could be recognized as such by the layman, as well as the contractor. The element of risk on weather conditions and the labor market were speculative and were no doubt the determining factors in the mind of each bidder. Some

men are willing to take greater chances than others, believing in the efficiency of their equipment to speed up and accomplish seeming miracles.

The lowest bidder in the case was recognized as



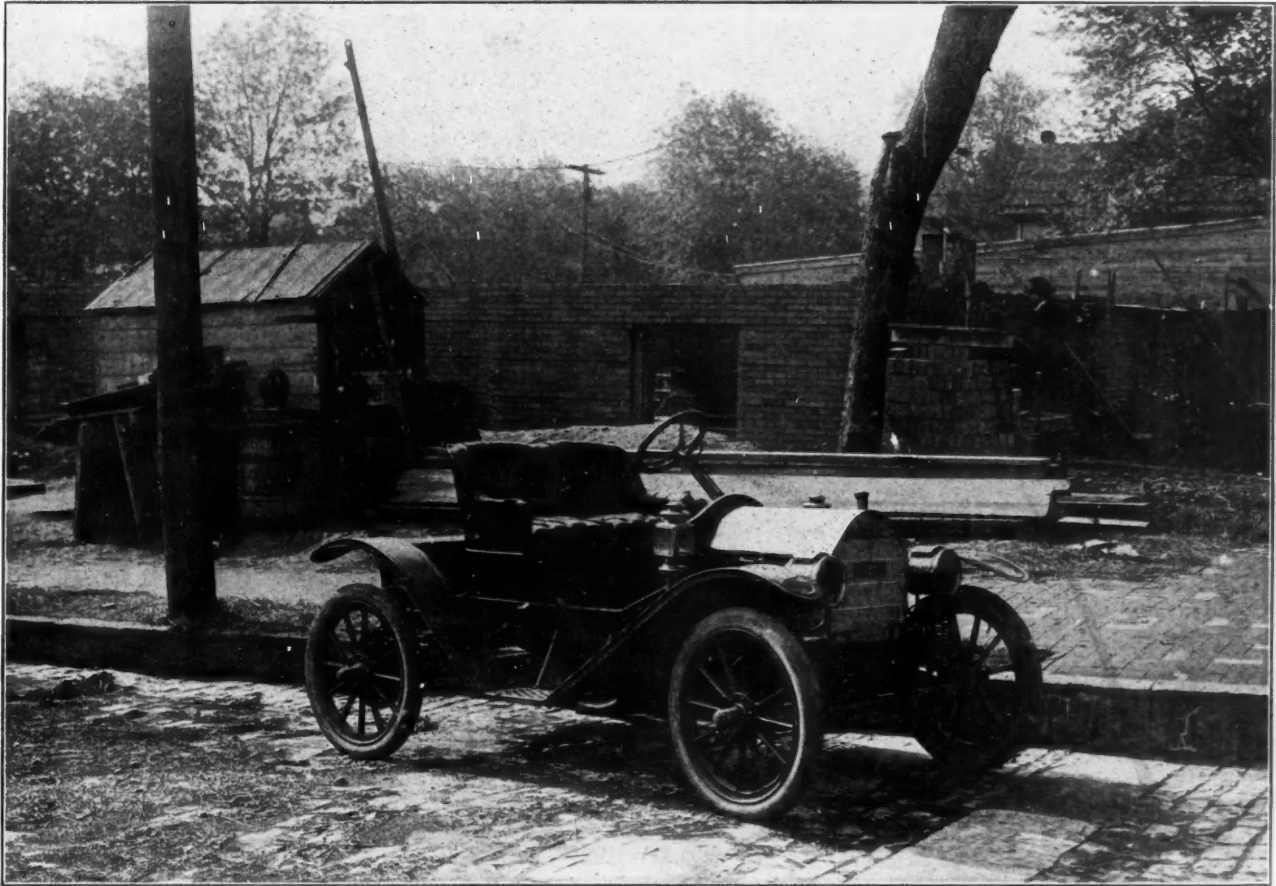
"White" Dumping Truck in use in New York City by McDonald & Barry, Contractors

reliable in every way and, to insure a faithful carrying out of the contract, gave a bond.

In telling of this incident the manager of the manufacturing concern stated that while not particularly interested in acquiring a knowledge of the contracting



How Power Trucks Save Time and Money in Getting Lumber to the Job. Four Horse-Drawn Loads were Stalled on this Hill Before the Truck Came to the Rescue



The Little "Brush" Helping Along the Inspection Work of the Nebraska Stone Co. at Omaha

business, but in order to reconcile in his own mind the great difference in the figures presented, he sought out the successful contractor to get his explanation and find out how it was that he was able to so underbid all the rest. He found at the head of this firm an individual who had kept abreast of the rapid development of mechanical aids in his business.

As weather and labor conditions were to determine the profits on this contract, provision for every emergency had to be made. The time of the employees had to be conserved in every possible manner. Living in widely separated districts and having to

depend upon an inadequate street car service to reach the job which was a long way out, many hours of lost time of their men were staring the contractors in the face—time that meant money both to the employer and employee. Now the partners of this firm each owned his own automobile and realized the immense saving of time these machines had afforded in getting about on inspection trips, looking after material, and transferring skilled men from one job to another. So, an investment in a passenger motor car for the use of their employees was discussed and determined upon.

The selection of a Rapid combination passenger and freight car was made and it was duly installed for service between the contractor's office, which was centrally located, and the plant where the building operations were to be carried on. Employees assigned to this particular job were instructed to report at the Company's office in the morning at 15 minutes before seven o'clock, instead of at the job.

While the car was designed to carry but 20 persons, 25 and 30 were comfortably transported on each trip to the job and the entire force were always ready to begin work at the appointed hour. When not used in passenger service, the car was used to haul light loads of materials needed in a hurry. Sometimes it was sash and doors, which had been ordered in plenty of time from the manufacturers, but on account of inadequate delivery equipment, would have hindered the progress



"Rapid" Combination Truck and Passenger Car Equipped for Winter Service



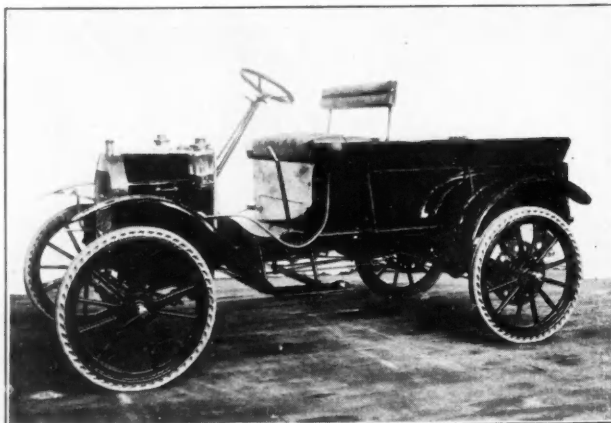
"White" Gasoline 3-Ton Truck Hard at Work in Cleveland

of the masons, except for the contractor's own motor truck, ready at all times for every kind of a haul. At other times it was nails or special bolts and steel work, which had been overlooked in getting out the material for the job.

Influenced by the complete success of this innovation and looking at it from the viewpoint of economy, a three-ton heavy duty truck was then placed in commission to haul the heavier materials used. It was found that one of these trucks, with one driver, accomplished the work of four teams and four drivers and the time consumed in making deliveries was reduced over one-half.

Other Examples of Costs Cut Down

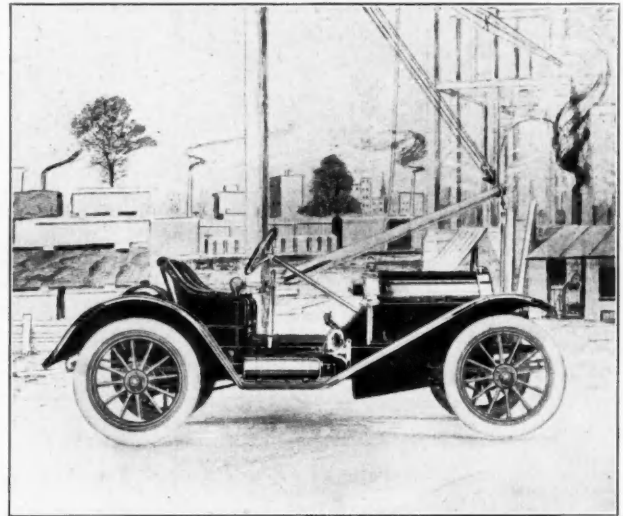
Another striking example of the saving of time and money through the wise use of motor trucks in connection with building work is in upper New York City where a three-ton motor truck with self-dumping steel body has been used for some time in fulfilling a



New Type of Delivery Car, a "Brush", for Small Contractors' Needs contract taken by McDonald & Barry to fill in a tract of low ground at Broadway and 204th street. The truck hauls loads of wet ashes from a power house about a mile away. Each load contains seven cubic yards, or just double the load hauled in a horse-drawn wagon. The motor truck makes ten to twelve

trips a day as compared with an average of five or six trips made in a working day with horses. Thus the power vehicle is doing the work of four horse-drawn wagons, and is hauling from seventy to eighty-four cubic yards of material a day. In this case the saving in time is of especial importance because the filled ground is to be used for the construction of buildings that are badly needed by the owners.

The large photograph on the first page is a typical example of how much time is lost in transporting lumber by the horse-drawn vehicles. Four loads became stalled on this hill, and it was necessary to unhitch all four teams and hitch them to each load to nego-



"Overland" On the Job—A Time Saver for Inspection Trips

tiate the hill. The time lost, not only by the four drivers, but by the men waiting at the other end for the lumber, is one of the speculative elements in the contracting business that is rapidly becoming eliminated by the use of the commercial motor car. Record loads of lumber, steel, roofing in rolls, cement in sacks and even heavy granite blocks are commonly seen on the streets of the larger cities threading their way through narrow streets and over steep hills at a ten-mile-an-hour pace.



Ferry Lumber Co., Pittsfield, Mass., Making Good Use of a 1,000 Pound "Franklin" Gasoline, Air Cooled Truck

The ordinary obstacles that horses seem to experience difficulty in overcoming are as child's play for the contractor's motor trucks which are as fresh at 6 o'clock p. m. as at 7 o'clock a. m.

As typical of the practical utility of the light, small cars and runabouts for inspection trips and superintendence in connection with building operations the experience of Harry L. Hurlburt, structural superintendent of the Schmied-Sisman Co., of Detroit, is interesting.

The Schmied-Sisman Co. have always on hand a large number of building contracts in all parts of Detroit, covering a radius of about twenty miles. In his daily rounds with a "Hupmobile" in the course of superintending these constructions, Mr. Hurlburt's speedometer shows an average register of from sixty to eighty miles. Mr. Hurlburt, of course, runs his car every day in the year regardless of weather conditions, and the car is subject to much harder use than the



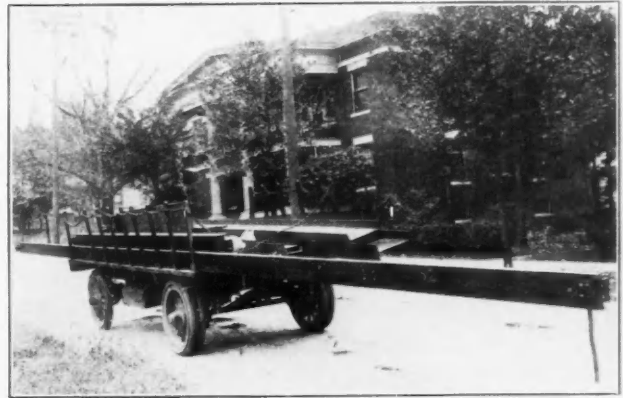
Mr. Schmied of the Schmied-Sisman Co., Detroit, Consulting with his Structural Superintendent, Harry L. Hurlburt. Mr. Hurlburt is "On the Job" at a Great Rate of Speed all Day Long in his "Hupmobile" Averaging 60 to 80 Miles per Day in the Course of his Business.

average. Mr. Hurlburt has made as high as thirty-two miles on a gallon of gasoline and states that the little car will average about twenty-seven miles to the gallon the year around.

The company has found the use of a motor car a great economy in covering the long rides necessary to their work. They have at present two other makes of cars in use and have just added another Hupp to their squadron of cars.

"To give you an idea of the use I give this car," states Mr. Hurlburt, "I have already worn out three cars in the service of the company. They were all large cars with long wheel base and I find the smaller cars quicker to start, easier to get in and out of, and on account of the short wheel base, I can turn in a narrow space without reversing—which saves a lot of time in the course of a day's work.

"On account of the light weight it is infinitely easier



"Kelly" Truck at Work for the Kansas City Structural Iron Co., Handling Extra Long Beams

on tires. One set of tires will last an entire season of hard usage. In fact, I am still using one of the original front wheel tires after a season and a half of hard usage.

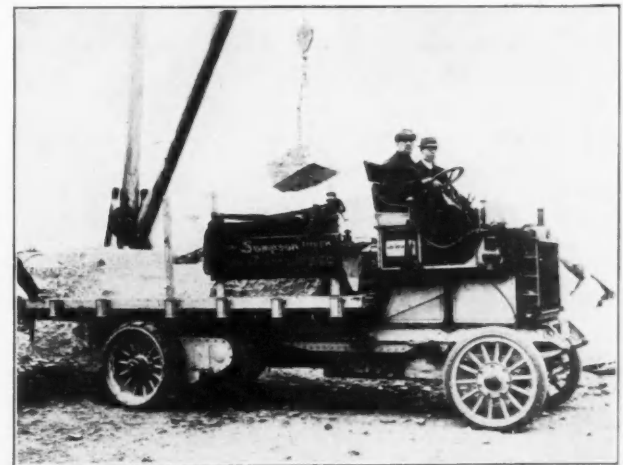
"Of course working around buildings and excavations I find it convenient to drive into vacant lots and places where there is no road way. Often the going is soft and I would not dare attempt it with a heavy car. But with my little light car I never have any trouble in getting through."



Power Trucks are a Great Success for the Economical Handling of Lumber

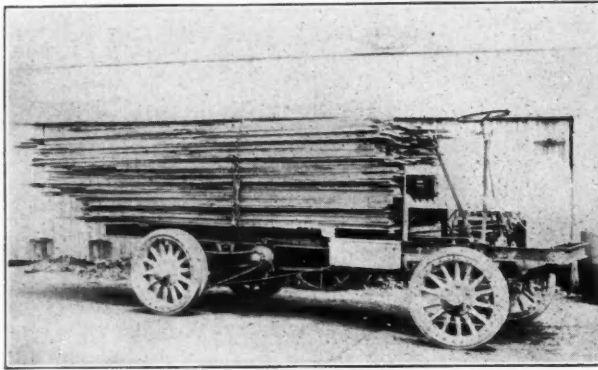
Mr. Hurlburt's experience is but one of the hundreds of similar cases in which the business runabout is actually made to pay its way by its saving of time and economy of up-keep in the contracting business.

As to the maintenance cost of motor trucks and



They "Stand the Racket" for Heavy Stone Hauling too—A "Sampson" in use by the Quincy (Mass.) Quarries Co.

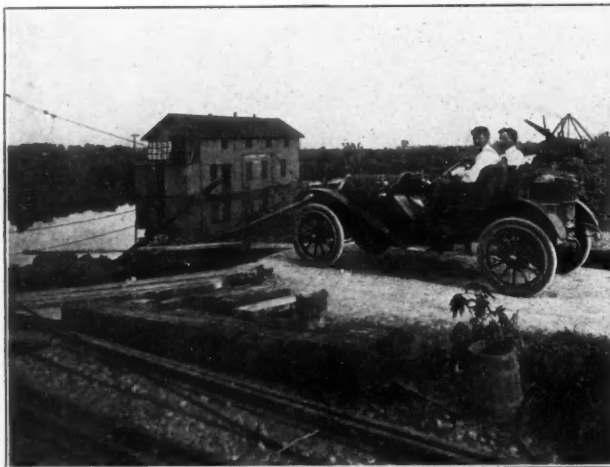
other cars used for business purposes some figures based on actual experience will prove interesting. Not long ago averages were compiled from the records of twenty-eight motor express and delivery wagons operating in as many different lines of trade in the city of Syracuse, New York. These figures, although not based exclusively on motor trucks and inspection runabout cars in use by building contractors,



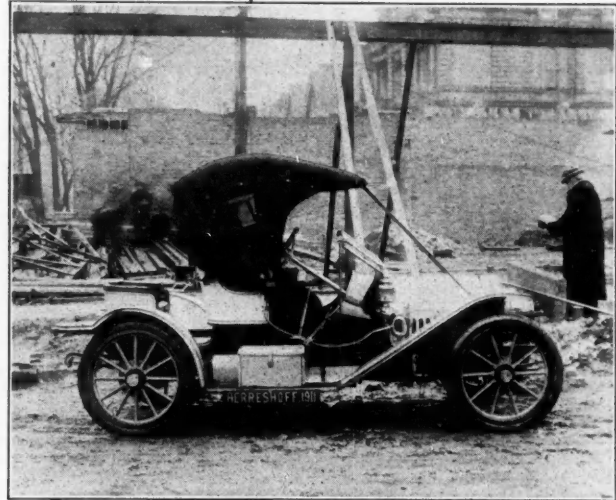
"Gramm" 3-Ton Lumber Truck Having Motor Operated Load Dumping Device

nevertheless, may be taken as fairly applicable to this line.

For periods of time ranging from six to twenty-two months the *annual operation* and maintenance costs averaged as follows: Fuel and oil, \$168; depreciation estimated at 20 per cent, \$180; repairs and replacements, exclusive of tires and ignition batteries but including repairs due to accidents and drivers' carelessness, \$150; driver's wages, at \$12 a week, \$624; tires, \$50; interest on investment at 5 per cent, \$45. This gives a total cost per wagon of \$1,217 a year. The machines average 50 miles a day. Assuming that two single-horse wagons could do the work of one of the motor wagons, and that the cost of stabling, shoeing, drivers' wages and other items averaged \$22 a week, the horse service would cost \$2,112 a year, or \$895 more than the motor wagon. Syracuse is subject to very severe winter conditions and in general has very poor pavements, while many streets are not paved at all. Hence the actual figure of \$13.25 per month per car for repairs arrived at by the



There are Some Places That Even a "Hudson" Can't Go



Handy Car for Inspection Trips—"Herreshoff" Runabout

records of a score of wagons in a variety of services is considered an excellent average upon which to base estimates for maintenance repairs for this particular type of power vehicle.

The commercial motor car has undoubtedly reached a stage of development which entitles it to recognition as a great time saver, and an economical factor in modern building operations. Wide awake men will do well to investigate its possibilities individually as applied to the needs of their own particular line of



Popular Size Delivery Truck—Half Ton "Sampson"

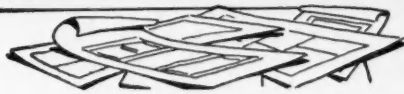
work. Both the motor trucks for heavy hauling and the lighter machines used for inspection trips should be looked into. They are money makers and money savers for many building contractors.



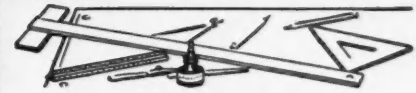
How to Remove Old Putty

Remove the window sash and lay it flat on a table with the putty side up. Take a common spring-bottom oiler filled with gasoline and squirt a small quantity of gasoline on the putty all around the sash. Apply a match and the heat of the burning gasoline will soften the old, hard putty so that it can be removed with a putty knife without cutting or defacing the sash. If the putty is very hard, a second application of the gasoline may be necessary.

DETAILS of CONSTRUCTION AND FINISH



CHARLES FRAWSON



Living and Dining Room in One-Story Wing

FLOOR PLAN LAY-OUT WITH COMPLETE DETAILS OF INTERIOR FINISH—GOOD IDEAS FOR NOVEL BEAM CEILING, WOOD MANTEL, BUILT IN CASES, SEAT, ETC.

WE NEED not dwell upon the importance of using a very generous amount of woodwork in a room to give the effect of permanence, homelikeness and rich, warm color. Anyone who has ever entered a house in which a large amount of natural wood is used in the form of wainscoting, beams and structural features of all kinds, has only to contrast the impression given by such an interior with that which is received when entering the average house, where the walls are covered with some hideous paper and the conventional door and window frames are of varnished wood, in order to realize the great difference made by giving to the woodwork its full value in the decorative scheme. No amount of care or expense lavished on draperies, furniture or decoration can make up for the absence of the proper use of wood in the interior of a house. This truth has long been understood and applied in England whose mellow and friendly old houses are at once the delight and despair of Americans; but is only a few years since we began to use it in the building and furnishing of our own homes.

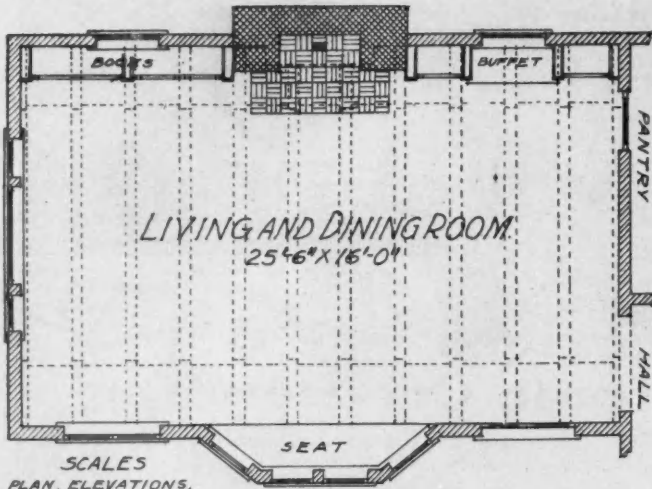
We would have it clearly understood, however, in recommending the generous use of woodwork that we mean the use of wood so finished that its individual qualities of grain, color and texture are preserved so far as possible, and such treatment of wall spaces and built-in features that they are not made unduly prominent, but rather sink quietly into the background and become a part of the room itself, forming an unobtrusive setting for the furniture and draperies instead of coming into competition with them. To this end the woodwork should be so treated that its color quality is deepened and mellowed as if by time, and its surface made smooth without sacrificing its woody quality and texture. When so done the little irregularities of grain allow a play of light over the surface which is entirely lost in woodwork which is filled, stained to a solid color, varnished and polished so that the light is reflected from a hard and unsympathetic surface.

Unquestionably the two most important rooms in a house are the living and dining rooms, and there is no reason why, in a small or medium sized house, they should not be combined into one apartment. A large and simply furnished room of this kind, where the business of home life may be carried on freely and with pleasure, may well occupy all the space that is ordinarily partitioned off in small rooms conventionally planned to meet supposed requirements. A house should be the outward and visible expression of the life, work and thought of its inmates, and the station in life of its owner should be expressed in a dignified manner and not disguised. Honesty is the thing that pays the best in creating a home atmosphere. If servants cannot be afforded, build the house so that it is convenient to do without them, and it is astonishing how easy the care of a house can be made by the simple process of eliminating useless rooms. The right kind of home does not drag out all that there is in a man to keep it going, nor is the care of it too heavy a burden upon a woman.

Such a room in such a house is shown in the accompanying drawings, where a combined living and dining room containing a fire place, buffet, bookcases, seat, wooden wainscoting and ceiling is fully detailed. This room shows an abundance of woodwork treated entirely with smooth surfaces without mouldings of any kind; and it is so planned that convenience and cheerfulness take equal rank. The serving of meals in the rear end of the room goes on with little friction and without interruption of other purposes for which the room is used. The room occupies the principal wing of a bungalow and as it has three exposures, plenty of light is assured.

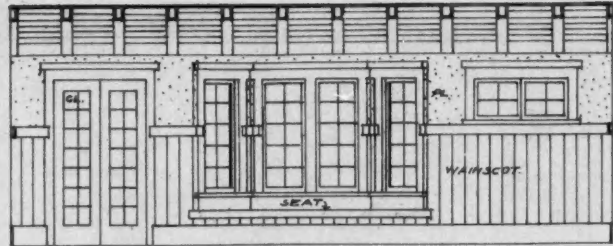
The drawings show a plan, section and the four elevations of the room, drawn to the scale of one-eighth of an inch equals one foot; scale drawings of the principal built-in or structural features, drawn to a scale of three-eighths inch equals one foot; and every principal part of the woodwork in the room is detailed to the scale of three inches equals one foot.

FULL PAGE PLATES SHOWING PLAN AND COMPLETE DETAILS ARE SHOWN ON THE TWO PAGES FOLLOWING

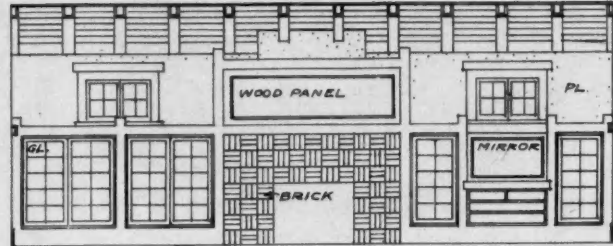


SCALES
PLAN, ELEVATIONS,
AND SECTION - 1/8" = 1'-0"
DETAILS - 3/8" = 1'-0"
SEE OTHER PAGE.

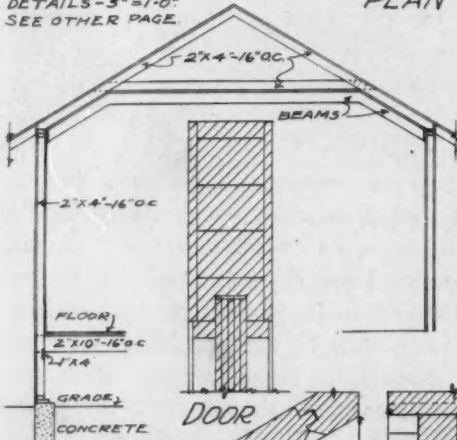
PLAN OF ROOM



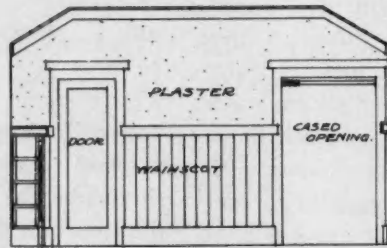
SIDE ELEVATION



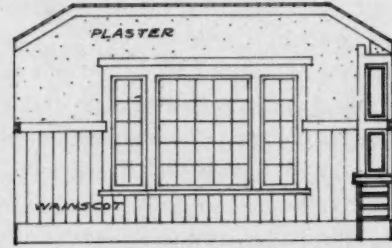
SIDE ELEVATION



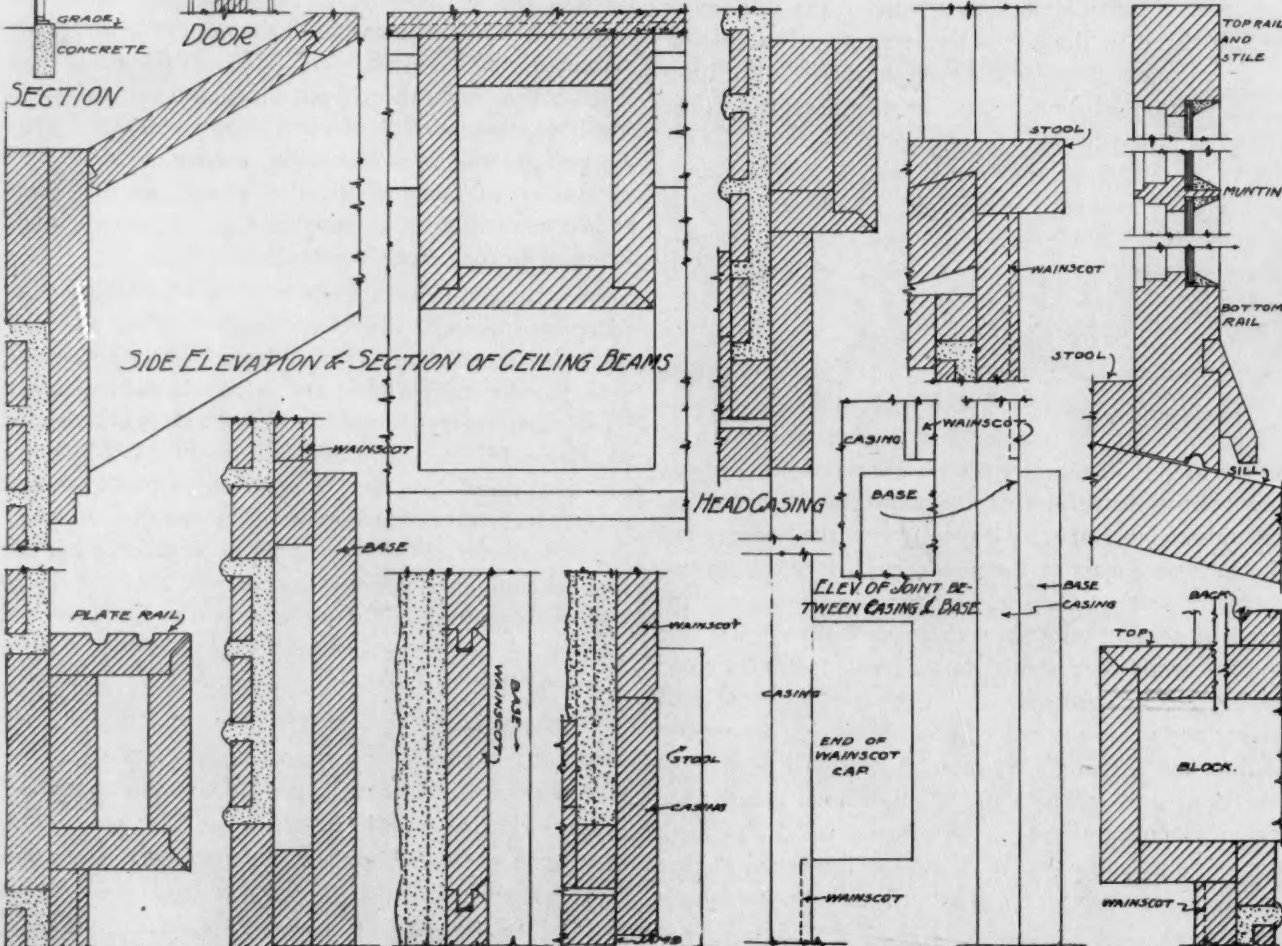
SECTION



END ELEVATION

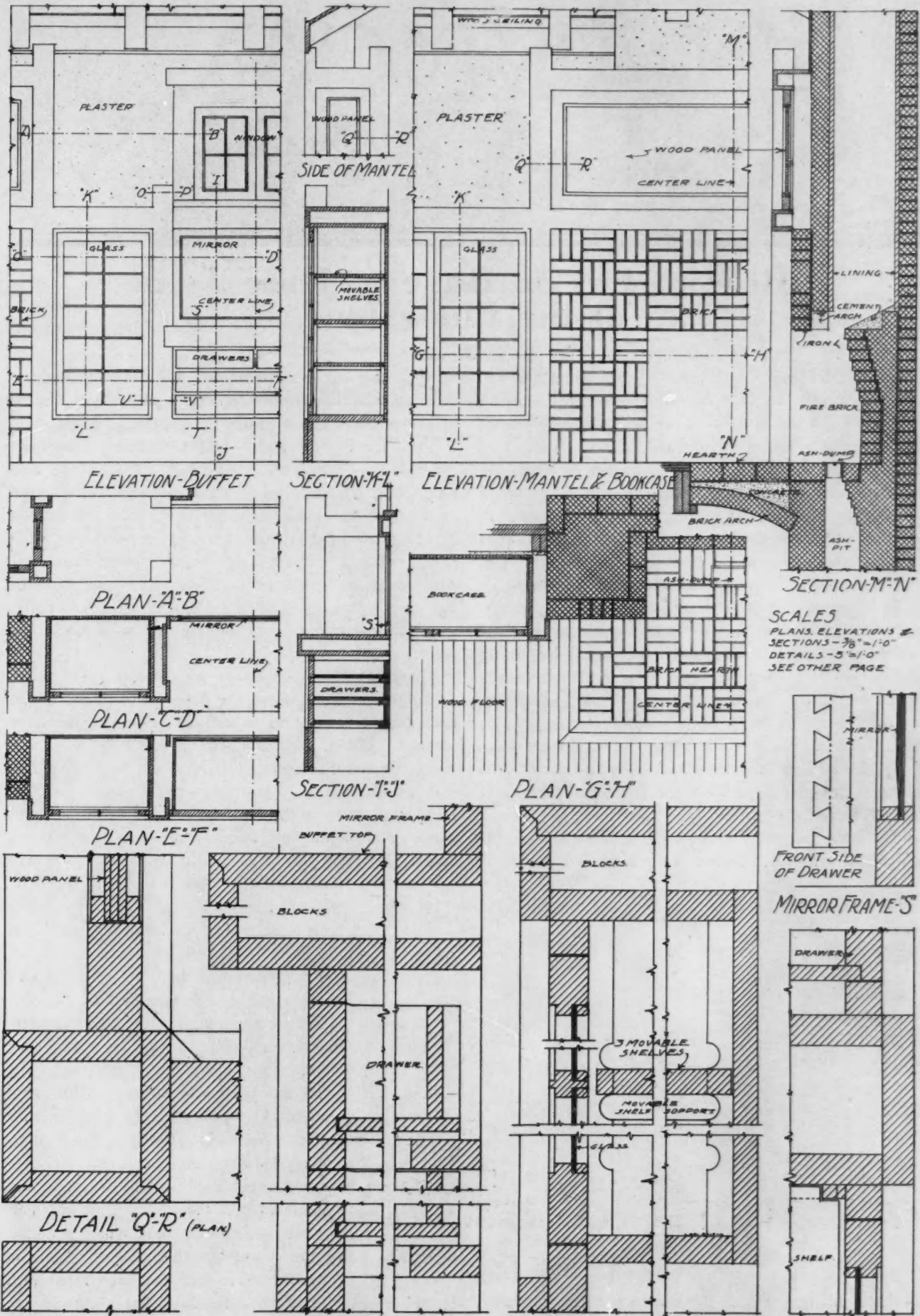


END ELEVATION



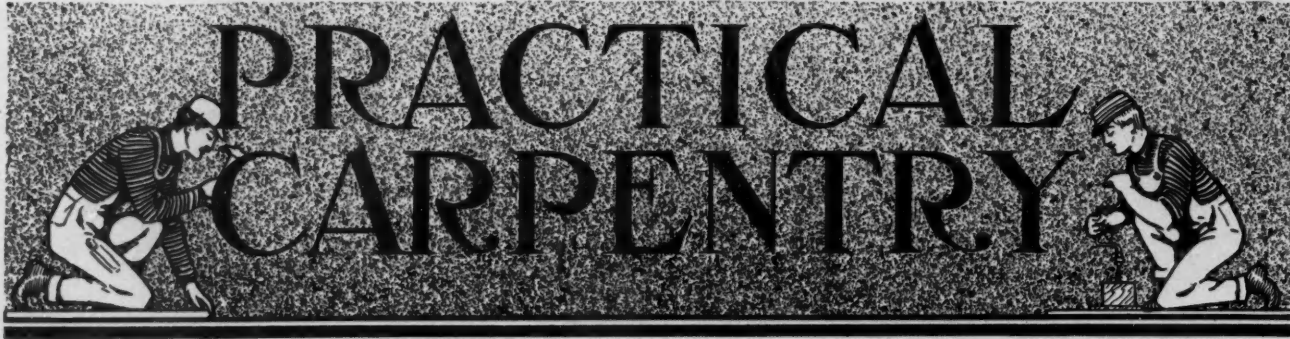
WAINSCOT CAP - SECT OF BASE - WAINSCOT - SECT OF CASING - DETAILS OF BASE & WAINSCOT - SECTION OF SEAT

COMBINED LIVING AND DINING ROOM IN ONE-STORY WING SHOWING PLAN AND DETAILS OF INTERIOR FINISH



SCALES
 PLANS, ELEVATIONS &
 SECTIONS - 3/8" = 1'-0"
 DETAILS - 3/16" = 1'-0"
 SEE OTHER PAGE

ADDITIONAL DETAILS OF INTERIOR FINISH—FIRE PLACE WITH WOOD MANTEL—BOOK CASE—BUFFET



How to Put on Base to Hide Joint at the Floor Line

By B. L. Jenks

ALMOST every contractor of experience can call to mind the case of some client who, having lived in his new house for several weeks, comes back to the contractor, all excited, and complains that the workmanship and materials furnished for his house must have been poor indeed; for, he says, "The floors are settling badly and you can almost put a pencil in the crack between the base and the floor, and if it is that bad now, what will it be a year from now?"

This condition is most frequently met in brick or stone buildings and is most noticeable around the outside walls, but it is not a cause for alarm and the experienced contractor reassures his client by telling him the building is perfectly safe, and that the crack is caused by the shrinking of the floor joists, and that the base, being attached to the masonry wall, remains fixed, while the floor joists, taking the floor with them, shrink away from the base and leave a crack. The client, at this point, generally concludes, and frequently says, "If the joists shrink, they must have been wet;" and he will then refer to a clause in the specifications which states that "all lumber must be thoroughly dry."

as they dry out very slowly in the building without artificial heat, the finish is generally put on and painted or otherwise finished before the trouble appears.

So much for the cause of the trouble. The next question is, "what are you going to do about it?" One client I have in mind could see no other solution of the problem than to raise the joists from below with a jack screw, forgetting in her excitement, that such treatment would leave a similar and much more conspicuous crack between the ceiling and the sidewalls of the story below. But in her absence, a carpenter disposed of the matter very quickly and with slight expense.

There are several ways of overcoming this trouble, as follows: Fig. 1 shows the different members of the base and their relation to each other and to the floor as well. When originally put on, the base itself and the carpet mold came down tight to the floor. The base was put in place and varnished separately and then the mold was nailed to the base. In drying, both base and carpet mold remained fixed, while the floor shrank away. To overcome this it was only necessary to take

off the carpet mold, lower it to the floor and nail it back in place. This was easily done, and it did not leave any mark on the base; but it meant a loss of time as the carpenter had gone with his tools to another job in a distant part of the city.

This method, while effective in correcting the difficulty, has not been very satisfactory, in that it is not automatic. In other words, the shrinkage of the joists and the change necessary to hide that fact has been altogether too apparent to the occupant of the premises. Another method, sometimes used to overcome the same trouble, is shown in Fig. 2, in which the base is set into a shoe, which is nailed to the floor. In this case the shoe is put down first and the base fitted into

it and when, in that position, these two members are varnished, and afterwards shrink, the base will show a strip of unfinished wood or at least a rough line where the varnish has pulled away from the other

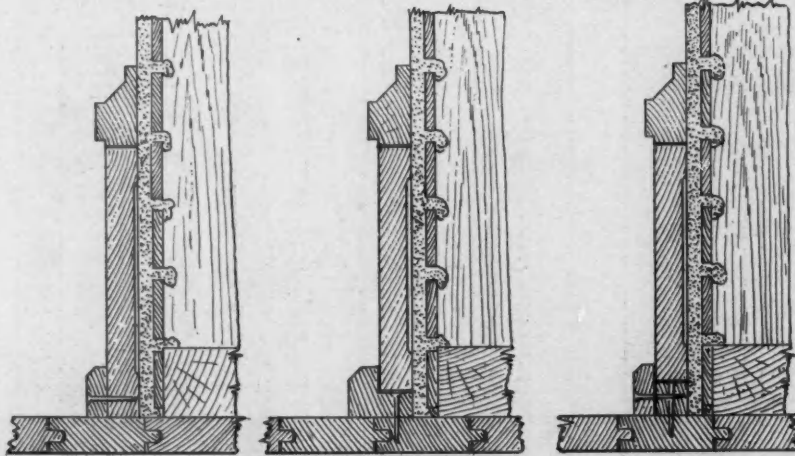


FIG. 1.

FIG. 2.

FIG. 3.

Perhaps this may puzzle the contractor for a moment, but he will remember probably that the joists were dry when they were delivered, but that it is impossible to keep them dry while the house is being plastered, and

member. This requires the attention of a painter instead of a carpenter, but it is equally annoying and expensive.

There is a third method of handling this matter, which, if carried out properly, will not only prevent nervous strain to the owner, but will save the time of the carpenter or the painter, or both, and will do it quietly, unobtrusively and withal, effectively. This method is shown in Fig. 3. Under this plan, assume that the wide member of the base is to be $7\frac{1}{2}$ inches and the carpet mold is $\frac{3}{8}$ by $1\frac{3}{8}$ inches. Then instead of ordering the base $7\frac{1}{2}$ inches wide, order it $6\frac{3}{4}$ inches, and order the same number of lineal feet of hemlock, pine or other cheap wood of the same thickness as the base, and $\frac{3}{4}$ inch wide. Set this piece on edge around the room in line with the base, and nail

it to the floor, and not to the studding or furring. Then on this member set the base, nailing it to the studding or grounds in the usual manner. Then paint or varnish the base in its fixed position on the wall and paint or varnish the carpet mold apart from the base. After both members are thoroughly dry, set the carpet mold in position and nail it firmly to the strip which is nailed to the floor. It thus becomes a part of the floor itself and will move up or down with the floor and having, upon the basis of measurements used above, a lap of $\frac{5}{8}$ inch on the base, it will readily hide even an unusual shrinkage, and, better still, there will be no tell-tale marks of varnish or lack of varnish, to disturb the owner with fears of disaster or visions of repair bills, and no incentive to withhold the contractor's final payment, as might be the case otherwise.

Something About Chimneys

ESTIMATING BRICK CHIMNEY WORK—NUMBER OF BRICKS REQUIRED FOR DIFFERENT SIZES—BURNT FLUES AND SMOKING

By A. W. Woods

THE chimney is a necessary adjunct to every house where heat is required for commercial and domestic purposes and should require careful attention, not only by the man that lays out the plan, to give it architectural dignity, but more especially to meet the requirements to the best advantage as to what it should do. The surroundings should be taken into consideration, as conditions vary; and lastly the builder should know how to build. Too often he knows more about chimneys than anybody else, because as he says he has built lots of them and he knows he knows—and unless the superintendent is "Johnny on the spot," he is his own superintendent and the work passes the scrutiny of the owner. It may have sufficient draught, or it may have some defect, but unless it is of a very serious nature, it usually passes as finished and the real cause of trouble is never known.

As a usual thing chimneys are not made large enough and too often too much is expected of each one in the way of openings from different rooms. Better build several flues in the one chimney—that is, have a separate flue for the heating plant, kitchen range, fire place and perhaps another for the laundry room in the basement. The former for an 8 to 10 room house should not be less than 8 by 12 inches; and for the others 8 by 8 inches will be sufficient. These can usually be grouped and carried up in one large chimney.

The flues should be plumb from bottom to top and be kept or built smooth on the inside as well as on the outside. The joints should be completely filled with mortar and the joints pressed with the point of the trowel. This can be best done with a small trowel for the inside pointing, as a large trowel cannot be handled in the flues to as good advantage.

How to calculate the number of brick required in a

chimney furnishes a little problem that is not generally understood and especially in the arrangement of laying them to obtain the greatest flue space with the least number of brick. The size of a common brick on its bed is about 4 by 8 inches or 32 square inches. To this of course must be allowed the mortar joint but for illustration purposes, we will not take that part into consideration.

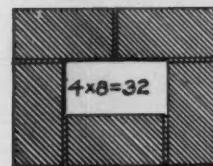


FIG. 1.

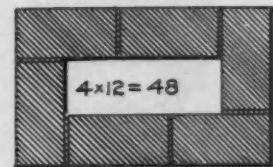


FIG. 2.

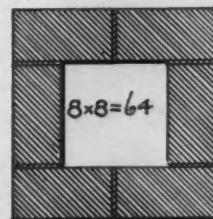


FIG. 3.

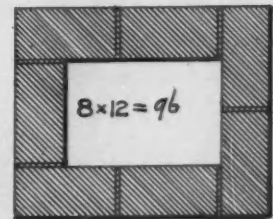


FIG. 4.



FIG. 5.



FIG. 6.

In Fig. 1 is shown what is called a five-brick chimney which gives an opening of 32 square inches, which is entirely too small for a smoke flue for any purpose.

In Fig. 2 is shown a six-brick flue, giving an opening of 48 square inches. This form is quite generally used for cottages and sometimes for more pretentious residences, but it too should not be used. It lacks space in the opening and the shape is bad.

Better use the number of brick shown in Fig. 3 which gives an area of 64 square inches and is sufficiently large for an ordinary sized stove, or fire place; but if more than one stove is to connect with the flue it should be larger and by adding another brick, the flue space is increased to 96 square inches. This is sufficient for two stoves or for the heating plant for an eight or ten room house.

The flue for the fire place should always be independent of other openings. An eight-brick flue gives an increase of 48 square inches over that for a seven-brick flue, as will be seen by referring to Fig. 5 and by adding two more bricks, the flue area is increased to 256 square inches, as shown in Fig. 6.

The height of the flue has much to do with the draught. What may work satisfactory in one place may not do so well in another on account of obstructions such as trees, or taller buildings, etc., and for that reason as we said before, it is well to study the surrounding conditions and plan accordingly.

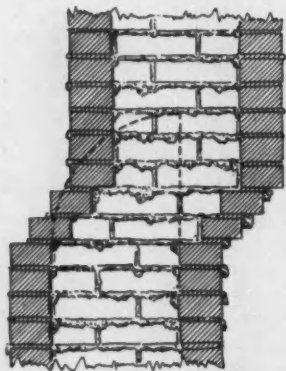


FIG. 7.

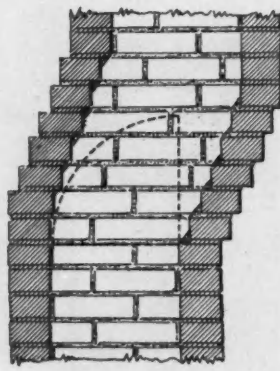


FIG. 8.

Quite a common mistake is the fault of the builder in not keeping the droppings cleaned out at the bottom, but leaving them until they clog up the opening and become set; then it is a job to clean them out, oftentimes requiring the removal of several brick to get at the obstruction.

Then again the mortar joints on the inside are allowed to go without being pointed or even being struck off with the trowel; leaving protruding, baggy ridges, as shown in Fig. 7, which makes an excellent soot catcher and thereby greatly interferes with the draught. The joints ought to be struck and then pressed with the point of a small trowel, as before mentioned. This will close up the voids, making a tighter joint and greatly lessens the danger from fire.

Another great mistake which is quite common and

more often traceable to the carpenter, is the crooked or drawn flue. The rafters are usually spaced, regardless of where the chimney is to pass through the roof. If they happen to miss coming over the chimney, all right and good. On the other hand, if a rafter happens to sit 6 or 8 inches over the plumb line of the chimney, it is generally deemed good enough anyway and instead of cutting out and framing an opening so as to give a perfectly straight flue, it is allowed to go with the idea that the mason can easily draw his flue that much. Of course in some cases, it cannot well be helped but the mason often makes a mistake in starting the corbelling of the bricks for both sides on the same course instead of starting the corbelling on the outer side of the chimney two or three courses lower down than on the opposite side.

In Figs. 7 and 8 are shown the wrong and the correct way respectively. NOTE, the difference as indicated by the quarter circle. In the former, the flue is diminished nearly one-half and the droppings of the careless mason readily find a lodging place to still lessen the opening, while in the latter the full size flue is maintained and if the ledges are properly beveled off with cement mortar as the bricks are laid, there will be much less chance for the droppings to become lodged at this point.

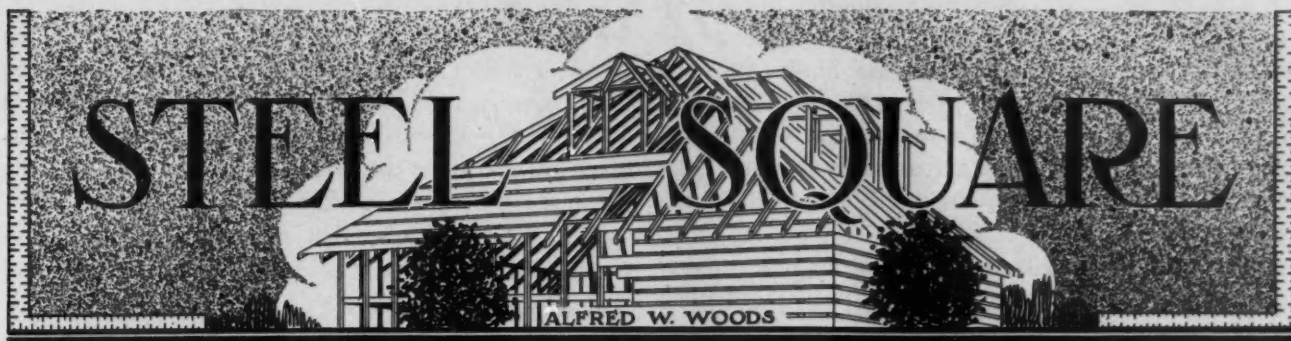
Recently we had a little experience with a crooked chimney. The carpenter left the opening in the roof so that it was necessary to draw the flue not only one way but two ways. The mason started the drawing from the same level and the chimney was completed; then the furnace man got in his work and fired up. It smoked and smoked and then smoked some more. In fact it was a persistent smoker. An investigation was necessary and the hindering cause was soon located away up in the dark attic and the mason's and carpenter's attention was called to same. It was urged that the bricks be removed on two sides and be carried up plumb and then drawn over; catching the plumb line above; but oh, no; they protested the trouble could not be there, because they had built and seen many chimneys built that way before! But the change was made and the trouble passed into history.

Still there is another mistake and a very common one, too, which is chargeable to the tinner. To increase the draught of a low chimney, or one that may be close to a building, or a clump of trees that extends higher than the chimney, the tinner is often called on to make an extension of galvanized iron. This he usually makes with a smaller area than the opening of the flue. It is quite common to see a six-inch round pipe set on an 8 by 8 inch flue, when the diameter of the pipe should at least equal that of the flue.



A Sailor's Yarn

Sailor—Just at that moment my father received a bullet that cut off both his arms and legs and threw him into the sea. Fortunately, he knew how to swim.
—*Le Rire.*



Practical Uses of the Steel Square

CUTS FOR THE PURLIN—A COMPARISON OF THE MITER FOR THE PURLIN AND ROOF BOARDS WITH HOPPER CUTS—DIAGRAM GIVES GENERAL RULE FOR ANY ANGLE

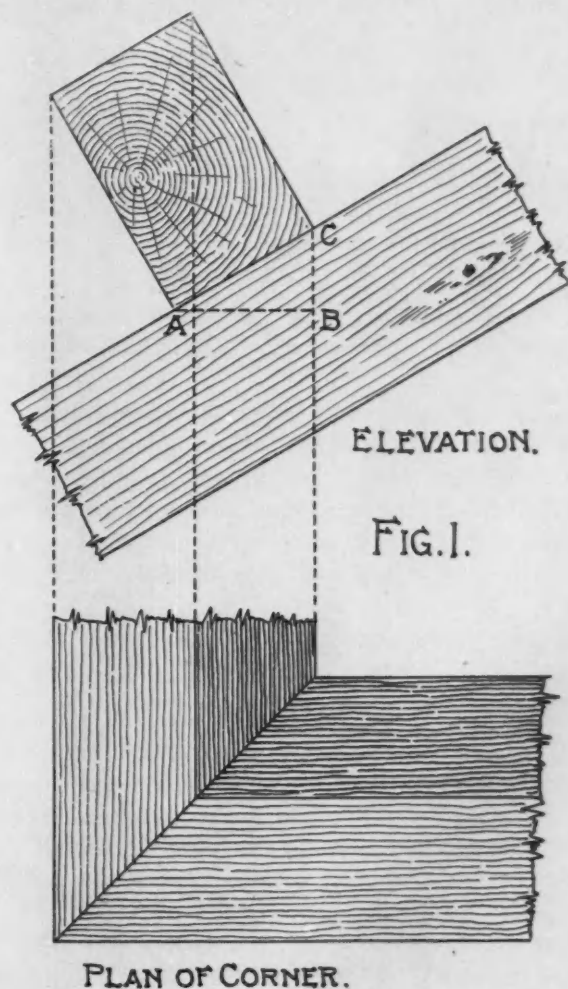
HOW to frame the purlin, when the same is set with the rake of the roof so as to properly miter at the hip, furnishes a subject recently given us to explain; and as the same time furnishes a good text for an extended article, we will take advantage of it for this month's article. It is a fact that questions of this kind are bothersome to many carpenters who understand roof framing fairly well, men who can go ahead and frame all of the other members in the roof, but because a purlin is required to be membered at the hips and valleys with a perfectly tight fitting joint, they loose their bearings, so to speak. They look upon this part of the framing as out of the ordinary and pass it up as something hard, when in fact the same problem is involved in other parts of the roof. Carpenters will go right ahead and frame the work and think no more about it, but coming up under a different form, without looking into the relationship with other parts, they allowed themselves to be bewildered when with a little thought in the way of comparison with other parts, all would have been clear.

It is a very easy matter for a foreman on a job to become bewildered unless he has thrown around himself, safe guards for just such problems as this. He should look ahead and see what is coming and likewise what he has gone over, and study the relationship of one to the other. This of course belongs in early training; it is essential; and, unless mastered, trouble is sure to loom up, and that too at an embarrassing time. When the boss is on the job with the steel square; and a gang of men are on hand waiting and watching to see him manipulate the square and say, "Cut to this line, Bill, and you, Jake, cut so many jacks rights and lefts," etc., for all of the timbers required in and about the roof. Yes, it takes careful study on the part of the foreman and he should master it when off the job. He is the leader; and if he hesitates, the men under him will laugh in their sleeves, and cast sly knowing winks at each other, when at the same time, it is dollars to doughnuts that they are as ignorant of how to proceed as the Hotintots in darkest Africa.

In Fig. 1 is shown the elevation of the purlin resting on the truss, or in other words, it is resting with the rake of the roof. In connection with it is shown the

plan of the corner. It will be seen that this is just the same as the hopper cut.

Now, we will try and illustrate how to obtain the cut with the aid of the steel square in the simplest way possible. But before giving the parts to take on the square, let us see what relation, or similarity this part has to some other parts of the roof. How about the roof boards that intersect at the valley? Do they not lie in exactly the same position as the purlin? To



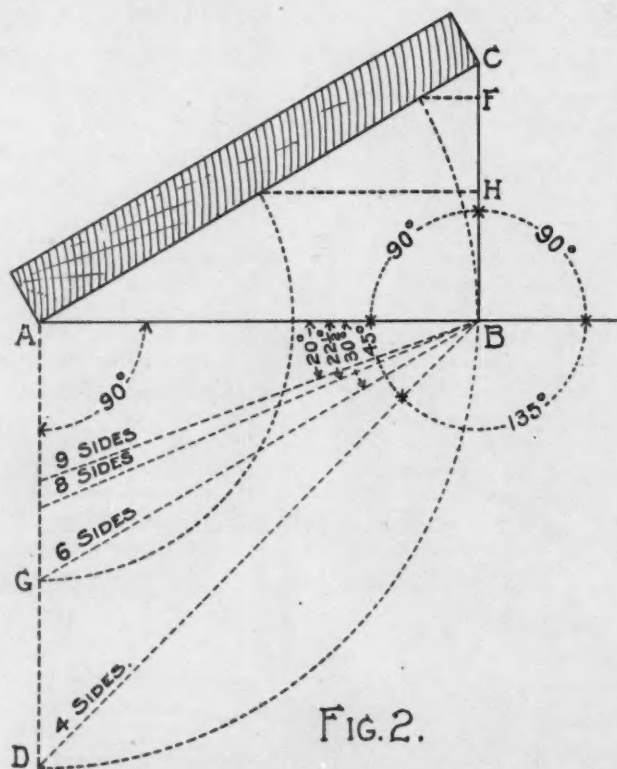
be sure they do. The only difference is in the thickness of the timbers. One is a board about an inch thick and the other a timber eight or more inches in depth. But that does not make any difference, as far

as the cut is concerned. Again it is the same as the miter for a standing gutter at the hip. One is a board set edgewise with the pitch of the roof; the other is a timber sitting in the same position but several inches thick, but the angle across their face and edge are the same and consequently the cut must be the same.

In cutting the roof boards to fit to the valley, many carpenters—we might better say practically all of them—do not stop to consider what determines the cut and do not try to make a snug joint because it is covered up—out of sight. They consider it a waste of time to take accurate measurements and so they use the rule o' thumb. If they get a tight joint, it is more of an accident than anything else. Just so they get good nailing is all they care for; and the subject is given no further thought.

Now let us see what the parts are to take on the steel square to get the cuts, and what determines them.

Referring again to Fig 1, there are shown three



letters A B C, forming a triangle. A B represents the run, B C the rise and A C the pitch. NOTE the diagram is governed by the thickness of the purlin and by the pitch given the roof and constitutes the same parts that give the seat and plumb cuts of the common rafter. A C and A B taken on the square will give the angle across the bed of the purlin; the side on which the latter is taken giving the cut. For the miter, take A C and C B on the square and the side on which the latter is taken will give the cut across the side of the purlin.

This is all there is to it, so far as the square cornered building is concerned. The results are correct,

but it is misleading because the part A B is not taken at all in reality; but because the part that should be taken is equal to A B and this occurs only in the case of a square cornered building; neither do the parts as given for the miter cut apply to anything else than the miter for the square corner.

Then the question is, what is the formula that applies to all alike? In Fig. 2 is shown such a formula and is a general rule that applies to all alike. NOTE A B is equal to A D; but if the building had six sides to it, then the part to take would be A G and A C for the cut across the face of the board or the bed of the purlin. The side of the square on which the former is taken gives the cut. For the miter, it is A G and B H. The cut will be on the latter. The miter cut for the square corner is A D and B F. The cut being on the latter. By tracing the dotted lines from F and H, it will be seen that they lead back to the starting points D and G respectively. This clearly illustrates why the points B F and B H are taken.

In connection with this illustration, are shown the starting points for 8 and 9 sided buildings, or their angle, but as we have already taken up all the space that can be spared in this number, we will close for the present, leaving the subject to take up again and illustrate more fully.

A Screw Driver Suggestion

The ordinary screw driver has been in use for so long and is so conventionalized that it would seem presumptuous to suggest any changes. A writer in an English mechanical journal recently expressed his surprise, however, at the number of inefficient screw drivers in use. He claims that no such implement should be shaped down to an edge like a chisel, but should be squared and blunt. The edged tool requires a stronger twist, and cuts more screw heads than it is worth. The driver should be just large enough to fit the groove closely, for tests have shown that a driver which is a fraction too small for the grooves requires almost double the force to turn the screw.

Double Glazing to Exclude Noise

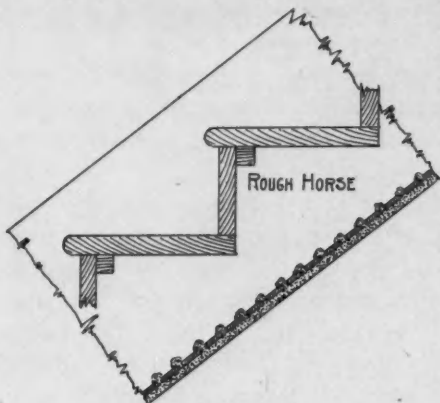
In these days of trolley cars and other noise-producing agencies, the exclusion of this noise from sick-rooms, from studies and from lecture-rooms has become an important practical problem. An English builder has tried, with success, the plan of double-glazing the windows exposed to such annoyances. He found that the noise of heavy wagons and trolley cars was reduced to a bearable degree, and that conversation through a window having two thicknesses of glass, with an air-space between, was almost impossible. Of course, where such a device is adopted, suitable arrangements other than the windows must be made for ventilation, but this ought not to cause any great difficulty.

Shop Kinks

SECOND ARTICLE—A NUMBER OF PRACTICAL HELPS, HINTS AND IDEAS ON MILL WORKING, CABINET MAKING AND CARPENTRY WORK FROM THE EXPERIENCE OF A SHOP FOREMAN

By William C. Jasbury

I WILL start off talking about stair work. Oftimes when going out to measure a job, we find the stairs horsed up between two plastered walls, commonly called boxed stairs. Now to house out the strings, the risers and treads cannot be gotten in their



Scheme for Boxed Stairs

place, for the want of room; and the stairs cannot always be built up elsewhere and slipped in place, so just notch out a couple of strings, right and left, the same rise and tread as the rough horses.

First cut off all the treads neat, that is the width between walls, and nail them to the rough horses, then put the notched strings up, cut the risers between the strings and the show is about over.

The reason a shoe squeaks, is because the outer and inner sole creep or rub against each other while walking. For the same reason glue blocks are put in the angle of riser and tread to prevent creaking stairs.

When nailing the cove under the nosing, the nails should be set up so that they will go into the tread and not the riser, for when the riser shrinks, it will take the cove down with it, if it is nailed to it.

This is how to kerf risers or other pieces so the kerf will exactly close up and not leave the face bunchy. Take the piece of stuff the same thickness as the riser, say $\frac{7}{8}$ inch; measure back from one end a distance equal to the radius on which the riser is to be bent; cut on band saw against a stop the required



depth, then lay it on a flat surface with kerf up and lift up the radius end until the kerf closes; then measure the distance from the lifted up end to the bench, which will be the distance the kerfs should be apart in the back of the riser. Soak the face of the riser well with water, drive a nail in the end; tie a piece of string to the nail and bend over to the required shape; then take a thin piece of veneer waste, such as comes around stuff from veneer factories, or even

take a piece of canvas and glue over the inside or kerfed side and let lie until dry, then clean up face, etc.

Many times I have steamed a piece of $\frac{3}{4}$ by $\frac{5}{8}$ inch square cornered stuff around such a riser. When cool, cut cove with a gouge, if only one or two are wanted, as it is quicker than running them on the variety moulder, because steamed circle work on the variety moulder is hard to work, it tears out. It is cheaper to make the step cove this way than to hand saw it out of the solid, because it does away with joints. It takes less material and uses what would otherwise be a waste strip. The reason it is bent in the square, or oblong section, before working, is because it will twist and break if worked first.

Next I shall endeavor to give a very satisfactory and mechanical way of fastening together a bull nose tread with a curved riser above it. I put a tongue on the back edge of the bull nose tread, back as far as the extension and the tongue fits into a plow in the lower face of the riser above until it reaches the ex-



PLAN OF BULL NOSE TREAD.

To Fasten Curved Riser to Tread

tension; then the upper riser is cut out or notched over the bull nose tread from there on until it reaches the newel, see illustration. "X" on the plan shows where the notch starts.

Oftimes fellows working on a bull nose tread, have no little thinking to do, on getting the length of a curved riser. A few different ways are, figure it by one-half the diameter; another is with a steel tape, or a thin piece of wood, or a cord or with a wheel similar to a blacksmith's trammel wheel; another is with the compass.

This is for the moulder or sticker man. In making cutters for tongued and grooved stuff, take a piece of steel $\frac{1}{2}$ or $\frac{3}{8}$ by $\frac{5}{8}$ inch and from 6 to 8 inches long. Grind this tongue shape on one end

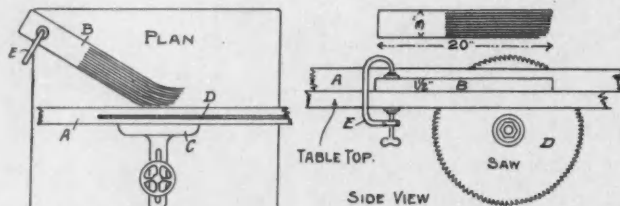


For Tongued and Grooved Work

and groove shape on the other, then bend similar to a horse shoe so that the cutter bolt will fit the inside, as shown in the illustration.

Here is an odd thing I once saw in the mill. I recently worked in a shop where they had a large three-drum sander; when the felt that was originally on the rolls wore, or tore off, instead of getting the sander people to send new, or a man to refelt it, it was done in the mill by some lads, using brussels carpet instead of felt,—and they got away with it too; that's the best part of it.

Here is a spring made of wood, which can be used to advantage in the mill every day in the week. Take a piece of any kind of wood and on the band saw



Wood Spring in Use

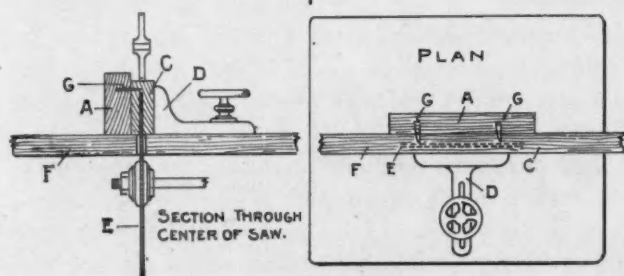
rip kerfs in it lengthwise about $\frac{1}{8}$ -inch apart; then cut the corner round, clamp on table and commence. A slick being ripped, B spring with pressure, C saw gauge, D saw, E clamp.

Here's one for getting out drip cap. I have seen mills where they put thousands of feet of 1 by 4 inch



A Saving in Drip Caps

stuff in front of a machine and run it through. Here's the way to save the strip. Rip out the strip first, then stick on the moulder. This not only saves the strip but saves the heavy cut on the moulder. Here is the way to cut the strip out. Run the stuff on edge on a self-



R for Working Drip Caps

teed saw and where the cut, X, comes the operator had an oak block in which two pocket knife blades were fastened. These knives nearly cut the strip loose, in fact the pull-out man could take a hold of one end and rip it off easily. Here it is. See sectional drawing. A is the oak piece, B feed wheel, C drip cap being cut, D saw gauge, E saw, F saw table, F knife blades. The same letters represent like parts in the plan.

A Few of the Tools You Can't Buy

BY EMERY H. CHASE

There are quite a few of the most useful tools the carpenter uses that are home made for the reason that manufacturers are slow in producing everything the carpenter wants. And so you can't find them listed in catalogues but must proceed to the blacksmith or make them if you wish to have them.

One of them is the little claw or nail-pulling pinch bar. In different localities different forms are used; but after having tried several and having overcome prejudice against the appearance of some of them, I have finally decided in favor of the 24 or 26 inch square or octagon tool steel bar. It is exceedingly useful in repair work and as a spike puller will save hammer handles.

Another useful thing in my chest is the very fine and thin saw. I, of course, could not buy one so I took a corset steel $\frac{5}{8}$ of an inch wide and about 10 inches long and filed fourteen teeth to the inch and did not set it. It works finely. I use it in pattern making; the main object of its use is to avoid much width in the saw kerf. It leaves a kerf only wide enough to admit thick writing paper; and cuts smoothly and rapidly and two pieces sawn in two with this saw and then put together again do not lose much of their original dimensions from the thickness of the saw kerf. It has to be used in a hack saw frame, however. Just try it though!

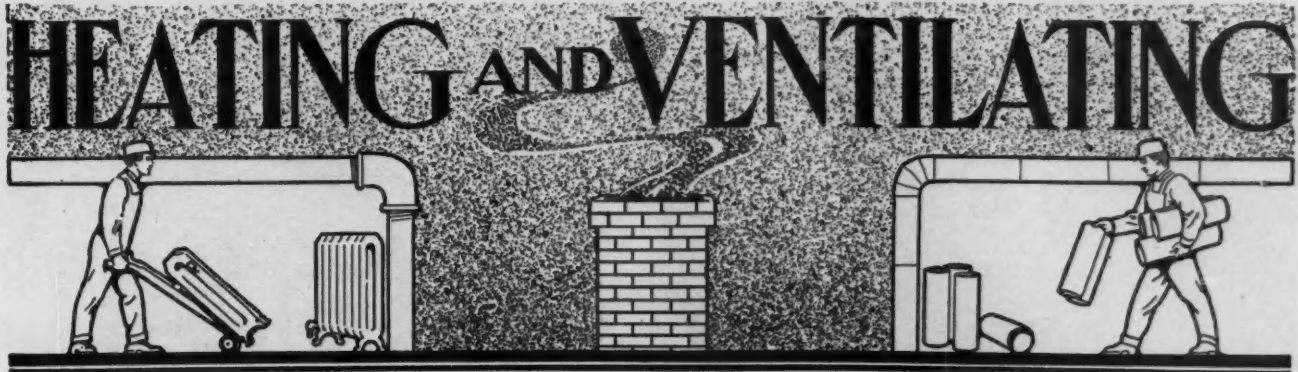
Here is another useful thing I tried—ridges or corrugations running around the hammer handle to keep the hand from slipping, especially when striking hard blows and nailing at a distance. The ridges are like those on the handle of a policeman's club. They should be turned right on the wood when the handle is made. Just carve one out and you will see how nice it works.

Fishermen have good fishing reels; but a good and rapid-winding carpenter's chalk-line reel is something not yet dreamed of by the manufacturers. One kind in which the awl can be placed and the line unwound rapidly is on the market, but when the line is re-wound it must be twisted and twisted while winding it by hand. I made one that works with a small crank and consequently the line no longer twists and snarls.

I hope the manufacturers will listen to the users of tools some day.

To Locate Gas Leaks

In searching for gas leaks, trust your nose rather than your eyes. Never look for a leak with a light; open the doors and windows and let out all the gas you can. To produce an explosion the gas and the air must be present in certain proportions before they will ignite, and the necessary proportion of gas is far less than that required to produce a strong odor.



What Is Best Location for Radiators?

SOME INTERESTING POINTS ON THIS SUBJECT OFFERED IN A PAPER BEFORE THE INSTITUTION OF HEATING AND VENTILATING ENGINEERS

By Frederick Nye

IT may be reasonably assumed that there is a best position for a radiator to occupy in a room, and while the customer often decides where the radiator shall stand, we ought to consider that there is a best position from the heating engineer's point of view if he is at liberty to express his choice.

The position of radiators near a wall that has no windows, but at right angles to and near the wall which has the windows in it, I believe, will give better results than any other.

My attention was first called to it in a house in which I lived some years ago, one room in which was warmed more effectively than the others without any apparent reason. I need scarcely say that I went to all reasonable trouble in trying to find a cause—after once realizing that there was something that wanted accounting for—taking into consideration position of room, temperature of water in the radiator (as compared with the others), the area of radiation, and all that could be thought of or done, and was finally forced to believe the position of the radiator had something to do with it.

It was the only radiator in the house so situated, but there was another one in the same room of a little larger size and next on the circuit to the one in question (but on the wall opposite the windows), and this would not heat the room so well. I tried this several times, and the difference was so marked that it would in words, appear like an exaggeration.

I feel convinced that the position indicated is a good one and better than others. Whether one may be discovered that is still better I do not know, and I must confess to feeling weak in offering any good reason for radiators so situated doing better service in keeping up the temperature of rooms than if fixed in different spots. Perhaps discussion may enlighten us, but I personally can only suggest that it is because the radiator deals effectively with the window end of the room, where almost all the heat loss occurs.

I have not noticed that the position of the fireplace (with its air-extracting chimney) affects the good results, but I have noticed, sufficiently to feel tolerably

certain, that if one of the radiators stands flat against the window wall, the good effect is greatly reduced.

I do not favor putting radiators under windows, for, apart from curtains and drapery affecting results, the warmed air having contact with cold glass, must lessen the degree of warmth the radiator can afford to the room. It is recognized, of course, that the chief work a radiator has to do is to counteract the cooling influence of windows (always assuming that the air entering a room comes from a warmed entrance way). The windows do not constitute the whole work the radiator has to deal with, but, in a residence with a heating apparatus reasonably well arranged, the windows represent the greatest cooling influence in any kind of living room.

A radiator affords the desired sense of comfort by warming the air, the radiant heat from it being a negligible quantity as regards the question now under discussion. The warmth may be said to come from it in the form of a broad and thick ribbon, or flat stream of warmed air, ascending vertically from the radiator, this stream going toward the ceiling where it curves over and spreads, and becomes diffused in all directions more or less. In any case the warmed air goes up a few feet before it does anything toward warming the body of the room, and while this action may be modified in the case of radiators having ventilators behind them, it still remains the general rule.

If, therefore, this flat stream of warmed air first travels up against glass for about five feet, the glass being the great cooling factor in the room, we may suppose that the heat loss due to this cause is made the greatest it can be. I have not had opportunity to test and ascertain the actual difference (if any) in the resulting warmth in a room warmed by a radiator under a window, and one not under a window, but I have been gradually forced to consider that there is a difference sufficient to warrant my practice in allowing (in my own specifications) 15 per cent more radiation than customary when radiators are to go under windows, even though they stand exposed and are not under window seats or window boards.

MACHINE WOODWORKING



How Gasoline Engines Run

WHAT EVERY OWNER OR OPERATOR OF A GASOLINE ENGINE OUGHT TO KNOW ABOUT ITS BASIC PRINCIPLES WHICH MAKE IT "GO"

GASOLINE engines are in such general use by building contractors and carpenter and wood-working shop men that the following brief and clearly stated principles telling how such engines "work" will be of real interest to many.

It is a very common "gag" that gasoline engines are apt to be "notional," and to make trouble without apparent cause. This, doubtless, arises from the fact that, they being the simplest motors made, and requiring least attention, are so often run (?) by inefficient men, who give them no efficient attention. Edison has been charged with having made the remark that a machine ought to be so made that a "jackass can run it"; and a gasoline engine comes about as near that standard of perfection as does any machine.

While there are hundreds of makes of gasoline engines on the market, the fundamental principles on which they run are alike in all. If these basic principles are understood by the man running or owning one of these engines, the chances are good that he will have very little need of the services of the engine "expert." These four diagrams and their explanation tell the whole story. They have

crank, on the other end of which is the shaft or crank-shaft.

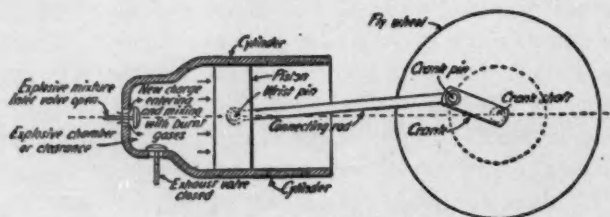
The piston moves back and forth in the cylinder; but when nearest the cylinder-head there is still some space left between the walls, valves, and the piston-head. This space is called the clearance, or the explosion-chamber, and is the space in which the charge is compressed before it is exploded.

In the clearance-walls, or cylinder-head, there are two valves, in the form of disks, which cover the openings or ports. Through one of the valves an explosive mixture, having certain characteristics to be explained later, is admitted from the source of the fuel-supply, and from the air.

Through the other valve the products of combustion, after an explosion, are expelled. Their duty gives the valves the names of inlet and exhaust valves, respectively.

Four strokes are usually required to complete the cycle of events occurring within the cylinder, and to engines requiring these four strokes, the name four-stroke cycle, or four-cycle, is given.

There are certain other engines, with different valve



Diagrams Showing Mechanism of Internal Combustion Engines
Fig. 1—Suction Stroke

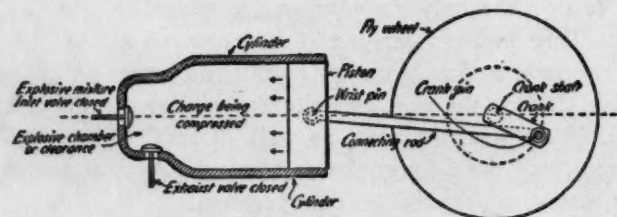


Fig. 2—Compression Stroke

been prepared by a Government expert with the idea of making this matter easily understood.

Every exploding engine operating with crude or gasoline-oil, must have certain parts, no matter how different engines may vary in other details.

These parts are a cylinder, in which the sliding-plug or piston works back and forth carrying a pin, called the wrist-pin, to which is fastened a connecting-rod, the other end of which fits in another pin called the crank-pin.

The crank-pin is at one end of the arm called the

arrangements, which may complete a series of operations in two strokes, and these are called two-cycle engines.

The series of operations requiring four strokes is best illustrated by a set of diagrams. In figures 1 to 4 is shown a cylinder with the parts connected with it. On the first stroke or outstroke (Fig. 1) the piston is drawn forward, either by hand when starting, or by the action of the fly-wheels after the engine is put in motion.

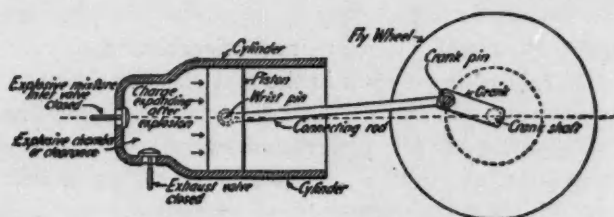
This moving forward of the piston is accompanied

by an opening of the inlet valve, permitting the explosive mixture to follow the piston, and fill the cylinder.

The clearance space, before this suction-stroke begins, is filled with burnt gases from the previous explosion, so that the amount of mixture drawn in will be equal to the volume displaced by the piston, and this fresh mixture will be mixed with some burnt gases. At the end of suction the inlet-valve is closed and compression begins (Fig. 2) continuing through the second stroke.

During this process, both valves are closed, and the fresh charge, together with the residue of burnt gas, is squeezed into the clearance space, so that it will have as a result, a considerable pressure, called the compression-pressure, preparatory to exploding.

At the end of compression, an electric spark explodes the charge, causing the pressure to rise two to four and one-half times the compression-pressure. This



Diagrams Showing Mechanism of Internal Combustion Engines
Fig. 3—Expansion Stroke

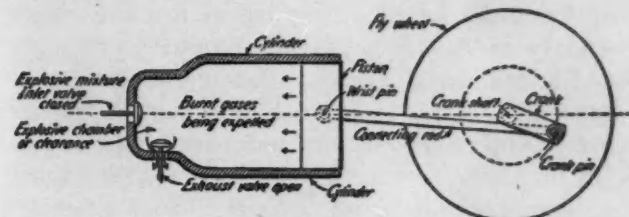


Fig. 4—Exhaust Stroke

high pressure in the clearance space will then drive the piston forward.

This stroke, the third or outstroke (Fig. 3) is accomplished by the high pressure of the gases filling the explosion-chamber; and during the progress of the piston, the pressure gradually falls, as expansion takes place.

During this time both valves are closed, as during the compression. At the end of the expansion (Fig. 4) the exhaust-valve opens, and the piston returns, under the influence of the fly-wheel, which has been spun around by the explosion giving the fourth stroke or instroke.

The exhaust-valve being open for this stroke, most of the burnt gases are expelled, but some are retained in the clearance.

After this, the fifth stroke begins, which is the same as the first stroke, and subsequently the whole series repeats itself indefinitely, and automatically.

While the above operations are usual, and the above parts are likewise important, an engine having no more mechanism than is shown, would not run. There will be required, in addition to what is shown, a valve-gear, which is a mechanism for opening and closing the valve at the proper time.

There must also be some device for making a mixture having the proper characteristics for explosion. This mixture will consist of air, and the vapor of the liquid fuel, so that there must be supplied a carbureter, which vaporizes and mixes at the same time, or a vaporizer which vaporizes without mixing.

There must also be a mechanism for automatically producing an electric spark at the proper time. This constitutes the igniting-gear. The explosions will heat the cylinder so much that a lubricating-oil will burn and the piston stick; therefore some cooling device must be supplied, generally in the form of a jacket surrounding the whole cylinder and containing water.

If the engine is to do stationary work, it must operate at a constant or nearly constant speed, regardless of the work done; this requires a governor. The explosions are very loud, therefore these engines are equipped with a "muffler" to lessen the noise.

The rubbing parts, such as the piston, the main bearings, crank-shaft, wrist-pin, crank-pin, valve-gear, igniting-gear, governor, etc., must all be lubricated to prevent overheating, and undue wear, so that a lubrication system is required.

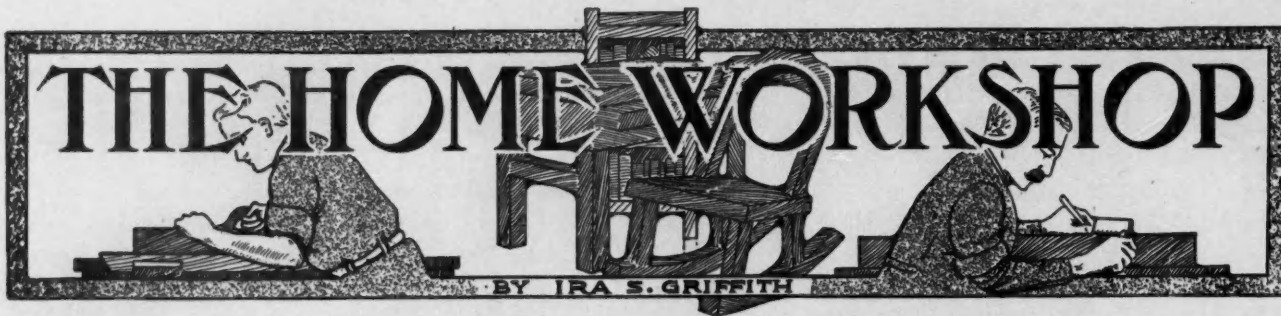
In conclusion; don't put in a gasoline engine with the idea that it will take care of itself. It won't do

that, but there is no prime mover made, unless it may be a water wheel, which will do its work with as little attention. Kept supplied with fuel and lubricating oil, and with proper attention given to keeping the cylinder from overheating, it comes about as near perpetual motion as is possible. Troubles there are, but investigation is very apt to reveal the fact that they are due to slight oversights which may be quickly remedied.

A New Substitute for Steel

With practically an unlimited field in which to use it, an English firm has begun the manufacture of duralumin, a new alloy of aluminum, which may in time become a substitute for steel in work where lightness, strength and flexibility is required. H. B. Weeks, head chemist at Vickers' Sons & Maxim's works at Barrow, England, is the discoverer of duralumin. It is a little heavier than pure aluminum, but is as strong as steel and about one-third the weight of brass. It can be rolled, drawn, stamped, extended, or forged. It does not corrode as easily as other aluminum alloys.

The one big drawback to the extensive use of aluminum, aside from its expensiveness, is the fact that while its tensile strength equals that of steel, it is far less flexible. The new alloy overcomes that defect, according to the inventor. The firm has such faith in duralumin and of the future demand for it that it is building works at Birmingham to manufacture it and has patented it in all countries of the world.



How to Make a Morris Chair and a Rocker

COMPLETE DETAILED DIRECTIONS WITH WORKING DRAWINGS SHOWING HOW TO MAKE THE TWO PIECES OF FURNITURE SHOW IN THE PHOTO

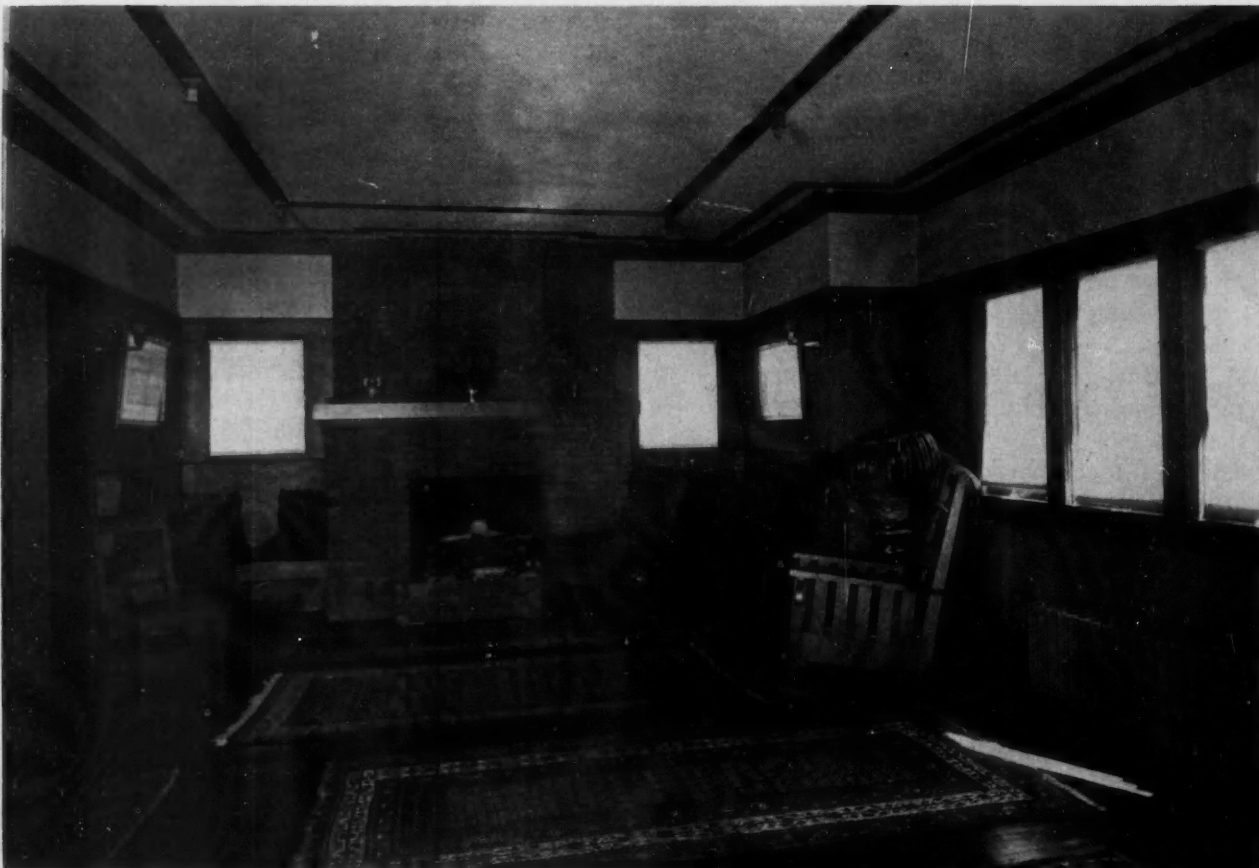
WE describe two necessary pieces of furniture for the living room this month and show a photograph of them in their home surroundings. The rocking chair has been a part of our American house furnishings so long that no home is considered furnished without one of them for each member of the family. They tell us that the rocker is strictly an American piece of furniture, not being found in continental Europe. Possibly, as some philosophers tell us, it is favored here because of our nervous temperament that demands constant action and is, as they say, the very kind of chair we should not use, because it tends to aggravate our national failing; but it certainly is a comfort and is here to stay.

The Morris chair, an English importation, finds just as favorable reception and is rapidly becoming looked

upon as a necessity. It so readily supplants the use of the rocker that we are inclined to doubt the above mentioned philosophy.

The Morris chair and also the rocker here described are intended to be fitted with spring seat cushions and well filled back cushions. The expense of the spring seat cushion is but slightly in excess of the ordinary filled cushion and is much more serviceable. However, if one desires he may put in the seat slabs as shown in the drawing and use the ordinary seat cushion. The spring seat cushions, like the ordinary cushions, are independent of the chair and can be taken out at will. Any upholsterer can make these cushions or they can be made by the home worker himself.

Both pieces should be made of well seasoned, clear, quarter-sawed white oak. The following stock bill



STURDY, HAND MADE FURNITURE IN THE HOME
Complete Directions are Given with Working Drawings for Making the Morris Chair and the Rocker.

is for the Morris chair and provides for the most economical use of mill and hand tools.

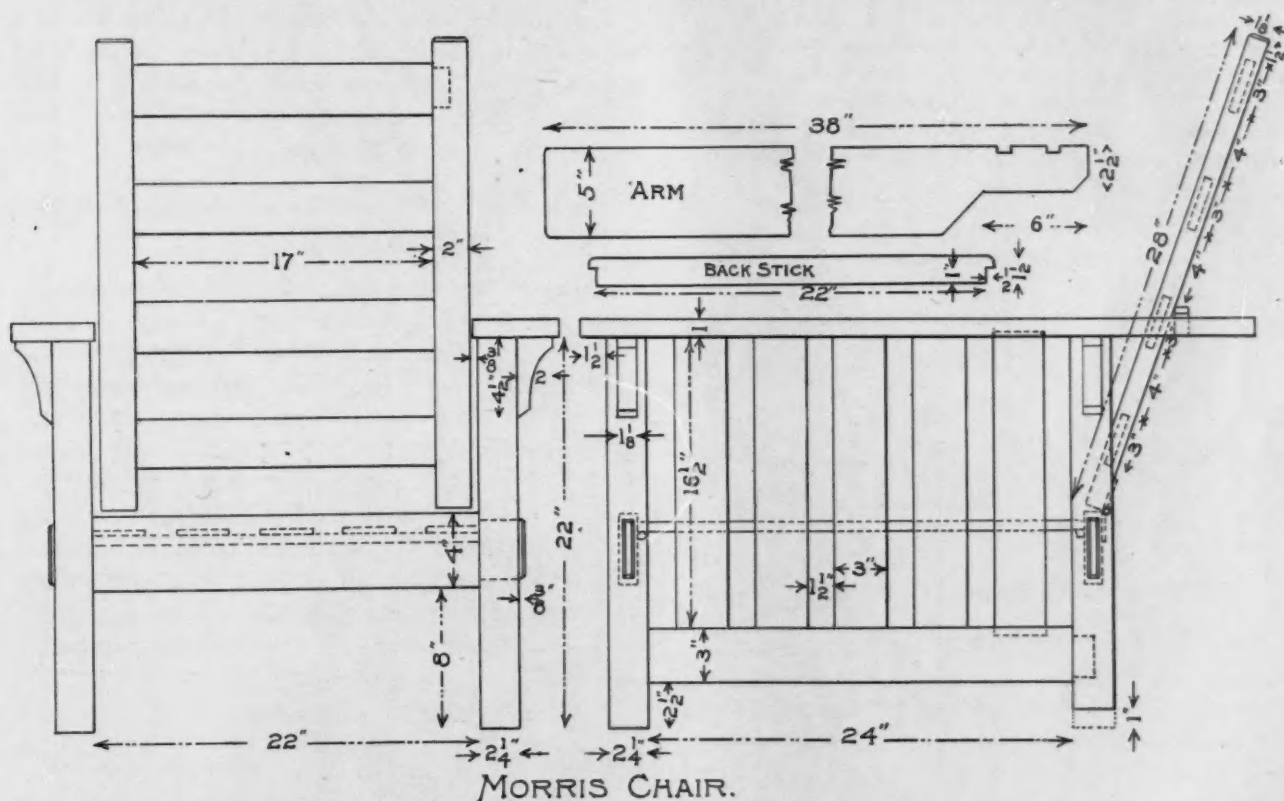
STOCK BILL FOR MORRIS CHAIR.

Posts, 4 pieces, $2\frac{1}{4}$ by $2\frac{1}{4}$ by $22\frac{1}{2}$ inches, S-4-S.
 Front and back rails, 2 pieces, 1 by 4 by 28 inches, S-4-S.
 Side rails, 2 pieces, 1 by 3 by 27 inches, S-4-S.
 Side slats, 10 pieces, $\frac{1}{2}$ by 3 by $17\frac{1}{2}$ inches, S-4-S.
 Arms, 2 pieces, 1 by 5 by $38\frac{1}{2}$ inches, S-4-S.
 Brackets, 4 pieces, $1\frac{1}{8}$ by $2\frac{1}{4}$ by 5 inches, S-2-S.
 Cleats, 2 pieces, 1 by 1 by $22\frac{1}{2}$ inches, S-4-S.
 Seat slats, 5 pieces, $\frac{3}{8}$ by 3 by 26 inches, S-4-S.
 Back verticals, 2 pieces, $1\frac{1}{8}$ by 2 by $28\frac{1}{2}$ inches, S-4-S.
 Back horizontals, 4 pieces, $\frac{5}{8}$ by $2\frac{1}{2}$ by $19\frac{1}{2}$ inches, S-4-S.
 Back stick, 1 piece, $\frac{3}{4}$ by $1\frac{1}{2}$ by $24\frac{1}{2}$ inches, S-4-S.

The posts should be worked first. Square up the top ends of each. The lower ends need not be squared as they are to be cut off on slopes after the chair has been put together. From the top ends

Next shape the arms as shown in the working drawing and cut the side slats to length. Now lay the arms and side rails side by side and lay out for the location of the mortises which are to receive the ends of the slats. It will be found much easier to "house" the whole end of the slat in both arm and lower rail than to attempt to shoulder them. Any slight variation in the straightness of the arm or the edge of the rail will then make no difference in the way the joints fit. The lower rail is thick enough to permit this. These ends should not be let in any more than is necessary, about $\frac{1}{4}$ to $\frac{3}{8}$ of an inch at each end.

Scrape and sandpaper and put the sides of the chair in the clamps using good hot glue. The arms are to be fastened to the posts by means of dowels and glue.



measure off and lay out the mortises in the posts. To help in the visualizing of the locations of these mortises it will be well to stand the posts up in the positions they are to occupy relative to one another in the finished chair and mark roughly, as with penciled circle, their approximate locations. After this has been done the posts may be laid down on the bench and measured and marked accurately, placing them side by side in pairs and making their top ends even with the try-square.

In selecting the face sides of the posts remember that the faces are to be turned in to make the joints and for this reason the face sides will not want to be the sides with the most attractive grain.

Having worked the mortises of the posts, the side and front and back rails should be laid out and tenoned. These will want to be laid out in pairs.

The brackets are to be fastened in place with dowels and glue, also.

While these parts are drying, the back may be made. This is a simple frame and its construction presents nothing difficult. The horizontals are to be tenoned into the verticals. They may be shouldered on the two edges only if desired. Place this in the clamps using one at each horizontal.

Remove the clamps from the chair ends or sides and place the front and back rails. Make sure the chair frame squares up by measuring the two diagonals by means of two sticks. If necessary put a clamp across the longer diagonal and draw it up until both are alike and leave it there until the glue has had time to set thoroughly.

Put in the cleats when the clamps can be taken off the chair and put in the necessary slats. Make the

back stick according to the working drawing and cut the recesses for it in the arms. Hinge the back and cut off the bottoms of the posts as shown. To lay off for the cuts on the posts lay a straight-edge across both posts at once.

Remove any surplus glue and scrape and sandpaper the chair until it is ready for the finish.

How to Make the Mission Rocker

The Mission rocker will be found roomy, and comfortable like the Morris chair. There will be needed the following pieces:

STOCK BILL FOR MISSION ROCKER.

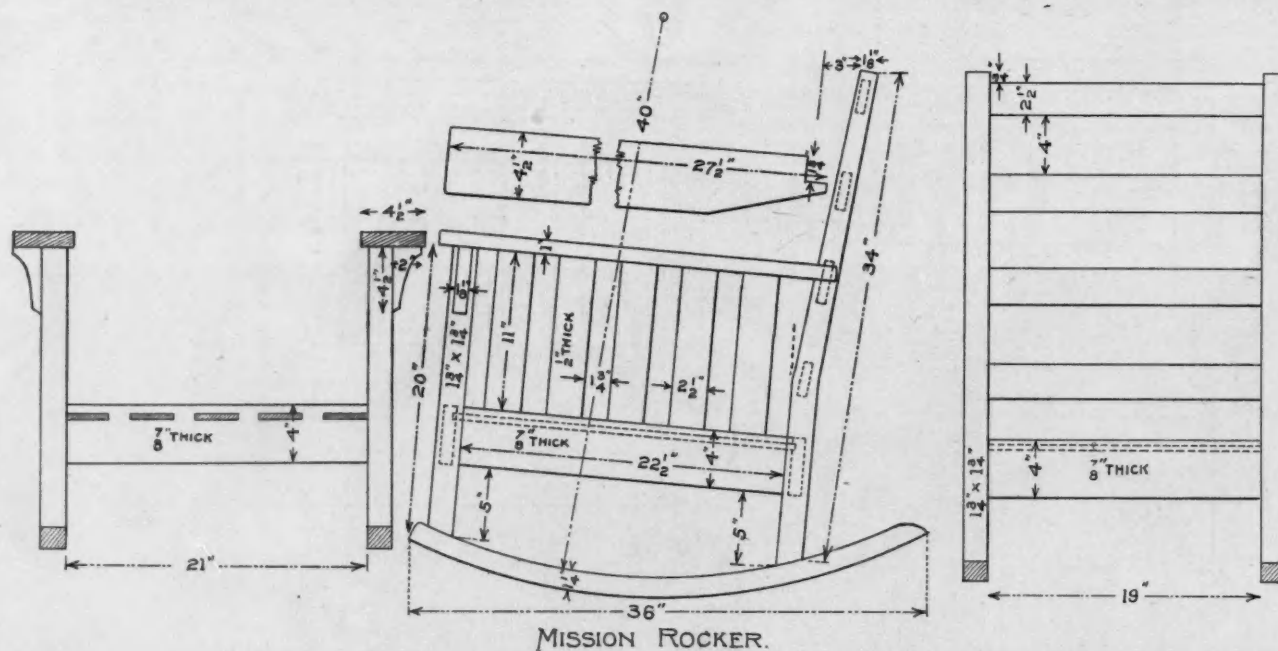
- Front posts, 2 pieces, $1\frac{3}{4}$ by $1\frac{3}{4}$ by 21 inches, S-4-S.
- Back posts, 1 piece, $1\frac{3}{4}$ by 6 by 35 inches, S-2-S.
- Front rail, 1 piece, $\frac{7}{8}$ by 4 by 23 inches, S-4-S.
- Back rail, 1 piece, $\frac{7}{8}$ by 4 by 22 inches, S-4-S.
- Back rails, 4 pieces, $\frac{3}{8}$ by $2\frac{1}{2}$ by 22 inches, S-4-S.
- Side rails, 2 pieces, $\frac{7}{8}$ by 4 by $25\frac{1}{2}$ inches, S-4-S.
- Side slats, 10 pieces, $\frac{1}{2}$ by $2\frac{1}{2}$ by 12 inches, S-4-S.
- Brackets, 2 pieces, $1\frac{1}{8}$ by $2\frac{1}{4}$ by 5 inches, S-2-S.
- Arms, 2 pieces, 1 by $4\frac{1}{2}$ by $27\frac{1}{2}$ inches, S-4-S.
- Seat slats, 5 pieces, $\frac{3}{8}$ by 3 by 25 inches, S-4-S.
- Rockers, 1 piece, $1\frac{3}{4}$ by $6\frac{1}{2}$ by $36\frac{1}{2}$ inches, S-2-S.

to shape the tenons on the side rails accordingly. This angle is best obtained by laying out the chair seat frame to scale, or better to full size, and getting the setting from the drawing. After the glue has set on the front and back parts, the clamps may be removed and the side rails inserted and clamped together with the side slats and the arms. The arms and rockers are to be fastened to the posts by means of dowels and glue. The side slats are to be tenoned into the rail and arm. The brackets are to be doweled and glued.

For the seat, the front and back rails are to be grooved before they are put in place and the seat slats inserted in these when the front and back of the chair are assembled.

Painting a Metal Roof White

A recent number of the *Painter's Magazine* tells of a tin roof to be painted white, the former coating being metallic brown. Their advice is that when a tin roof is painted white it is usually done to deflect the rays of the sun, so as to have the space below the roof



Shape the two front posts then the two back posts and lay out the mortises in them. The suggestions given for the Morris chair will apply equally here. By exercising a little forethought the manner of getting both back posts from the one piece of stock specified will appear. The two rockers, too, are to be got from one piece of stock. As in the Morris chair, the lower ends of the posts are to be cut to fit the rockers after the chair frame has been assembled.

Lay out the side and front and back rails, cutting them to length and working the tenons to fit the mortises cut in the posts.

Shape the arms and the brackets which support them. Put the front of the chair, then the back of the chair, together with glue and clamps. Since the back of the chair is narrower than the front it will be necessary

somewhat cooler than when a dark paint has been employed. One cannot expect, however, to produce a well-covered white job with one coat of white lead paint, even if made from pure lead and linseed oil. Use pure white lead in oil, as the basis of the paint, omitting zinc white as being too brittle, and if pure white lead paint is too high in cost, add whiting and barytes as cheapeners, but not in excess. Ten per cent whiting and twenty per cent barytes should be the limit. Use pure raw linseed oil only with very little drier and only enough turpentine or turps. substitute to make the paint work freely. Brush the roof well with a stiff broom, so as to remove all that is loose of the brown paint, and add to the white paint for first coat a trifle of lampblack to make it a light lead color, upon which the second coat of paint will be pure white.

Pen Sketching Simplified

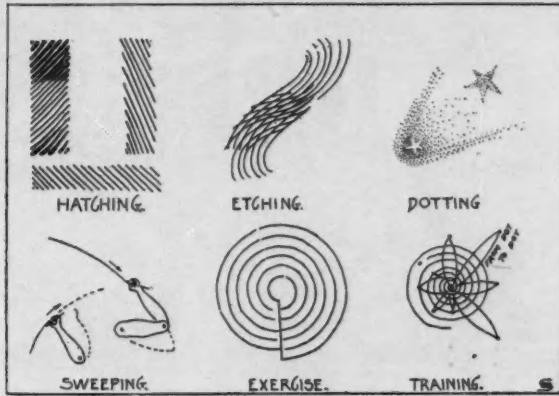
AN ADDITIONAL ARTICLE ON THIS SUBJECT FOLLOWING THE SERIES OF THREE CONCLUDED IN THE MAY, 1910, NUMBER—VALUABLE SKETCHING POINTS FOR ALL WHO DRAW PLANS

By Conrad H. B. Schaefer

EVERY medium with which one can draw pictures has its own peculiarities. These, instead of being defects, may be developed into characteristics of unusual beauty. Thus in the charcoal drawing the impossibility of making clear outlines is

When the shading is not quite dark enough it is best to go over some of the lines a second time, as shown in the hatching exercise on the practice illustration. Another point is to avoid awkwardness of lines by making them gracefully. This is characteristic of etchings.

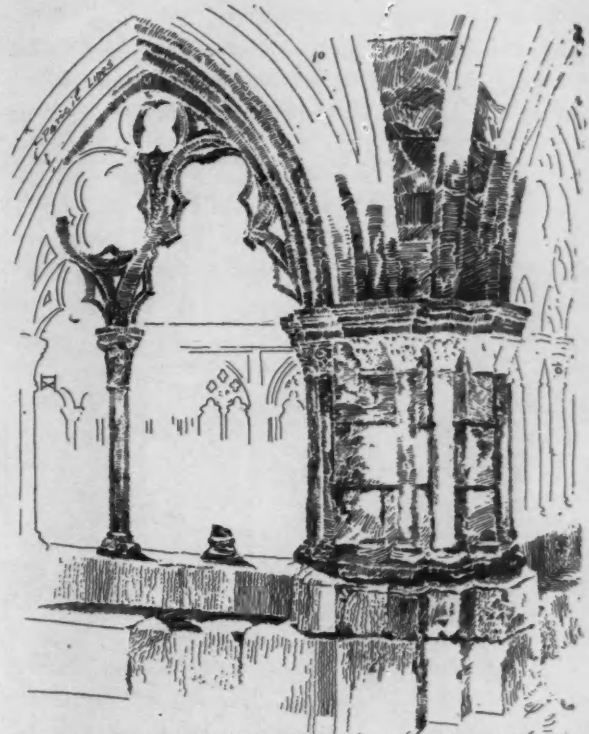
In high lights it is often necessary to break the lines and resort to dotting.



EXERCISES

developed into a beautiful softness and blending of light and shade. The indistinct half printed lines of an etching are utilized to secure an effect of atmosphere. After sufficient practice in pen and ink drawing to have learned the difficulty of securing some artistic effects, it will be seen that the beauty of the pen sketch lies in accenting the variety of outline and brilliancy of light and shade to be found.

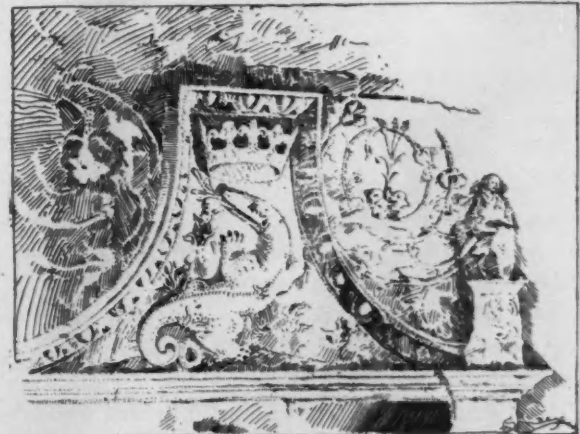
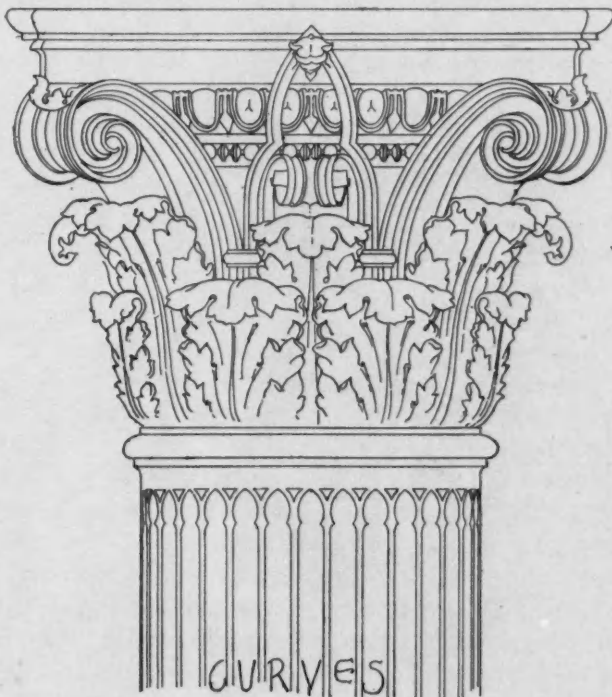
In the high lights outlining the details has to be omitted, for it darkens the light. Then, again, in the shady portion one may show as much detail as possible and find additional lines unnecessary.



AN ILLUSTRATION IN PROCESS OF PENCILING AND INKING IN.

When the fingers are well trained it will be found helpful practice moving the arm in parallel sweeping motions. It helps keep the lines true. Another difficulty will be quickly overcome by the practice of drawing circles.

One of the most important duties is to carefully plan the rendering of the drawing. Think it out before-



ORNAMENT

hand—the kind of lines to be used, how much and the best position in which to draw them, and so on. Even in drawing a single line, make a dot at the other end towards which to train the movement. It will save crookedness and erasures.

With practice one learns to omit such particulars as these; but they are all, nevertheless, in the mind, in the hand and eye, guiding one to success.

The free and easy manner of drawing and the beautiful work that may result come from careful practice, as has been outlined in the three previous lessons. Do not be discouraged by thinking that some artist is more gifted by nature; but go to work carefully and win the nature as all artists have to.

It is often a great gain to become even appreciative of good art, for many persons who see the freedom with which sketchy, playful work is thrown off under-



attractive the sketch is than the full line methods of the shell wood cuts that were once so much copied.

The building entrance—the fifth illustration—shows what may be done in outline perspective. All the important details are fully shown, though much unnecessary work is omitted.

The colonial sketch—sixth illustration—is very simple, but gives a true impression of the white and dignified country meeting house.

In the composition of buildings we have the ultimate aim of every artist and designer. It is the repre-



value its seriousness and thereby run the risk of mortification sooner or later.

Fore-shortening curves is such an obstacle that it is wise to overcome it with a little special practice. The acanthus leaves as they turn around the column, in the second illustration, form a good illustration.

The gothic corridor drawing—the third illustration—is about half finished. It shows the progress of the shading.

The spirited rendering of the flat ornamental subject, in the fourth illustration, shows how much more



sentation of things to be desired. When one has at last mastered the art one is no longer hampered by how one shall draw, but the mind is free to consider the proportions and the practical work necessary in realizing the subject one has in mind. The first ideas may have been but hazy impressions, but by well directed study one's sketchy little pictures may be made as reliable an instrument as any bond and contract devised by legal state.

And so the carpenter who guides the rough grown log through a multitude of processes to the accomplishment of some idea he has in view, is an artist to whom pen sketching will be found helpful in many ways.



Fees of Architects

The American Institute of Architects allows 6 per cent for complete architectural services, including sketches, working drawings and details, taking of figures, letting of contracts, superintendence of the construction and the payment of all contractors' bills. This institute, however, recommends a higher scale for residences and alteration work. Most architects adopt a sliding scale, 7 to 8 per cent for work less than \$10,000 and 6 per cent for all work over that amount.

"What should be charged," declares an architect in *Country Life in America*, "is 10 per cent straight for all residence work. This is the amount of clear profit usually figured upon by the contractor. I have kept careful count of the time spent on all work turned out of my office, and by an empirical rule based on the salaries of the draughtsmen employed this time is reduced to office hours. I have figured that to return myself an income of \$5,000 a year there should be a gross receipt of \$3 for each office hour expended on a building. Perhaps to expect an income of \$5,000 a year is presumptuous in as humble a member of society as an architect.

"Nevertheless, some of us do, and if it were not for a factory building once in a while most of us would be disappointed. Of eight houses recently completed the lowest return was \$1.75 an office hour and the highest \$3.19, with an average of \$2.28. Remodeling jobs at 10 per cent commission will return higher. I might further state that my office is run in a very economical way and the maximum salary paid is \$25 a week. This should amply demonstrate that the practice of architecture is not a lucrative one, and I believe that of the professions it returns the least in

money for the capital invested, the arduous labor required and the great responsibilities incurred.

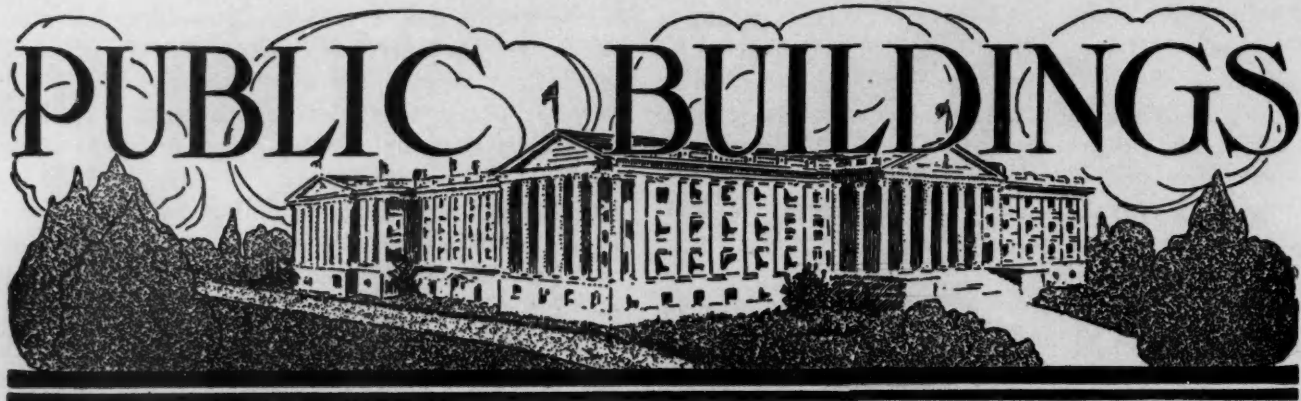
"Possibly we make one set of sketches; more likely we make five or six. Consultations with our clients last usually from 8 p. m. to 11:30, and we cheerfully give up our evenings because our client tactfully informs us that he is too busy during the day to waste any time talking about plans. Finally the plans are completed and are changed back and forth and back again, each time patiently and for nothing. The specifications also are completed. An owner should realize that an architect is not a necromancer. He is just as dependent as the owner on the contractor. He cannot, by a wave of his hand or his pencil, make a \$10,000 house cost \$5,000. An owner can say, 'Here is \$6,000; do the best you can for me,' or he can say, 'I want so any so; keep the price as low as you can.' But he cannot say, 'I want so and so and won't pay a cent over \$6,000 for it.' Maybe he can get it, and maybe he can't. The contractor determines that question.

"The architect will make mistakes, but small wonder. Did you ever stop to consider what an architect must know? First, the artistic side: here we must start with a certain amount of God-given talent. To design properly an architect must have or think he must have exact and intimate knowledge of the great styles of architecture. This knowledge is usually acquired in four years of arduous study at school, either at home or abroad. Furthermore he must know something—no, he must know a great deal—about the following professions: Civil engineering, the design of beams, trusses, etc., mechanical engineering for heating and power plants, sanitary engineering for plumbing, electrical engineering for wiring, etc.

"To construct his building he must have exact and minute knowledge of each one of the twelve or more trades that enter into it. This is essential for efficient superintendence and it comprises, for instance, knowledge of characteristics of all kinds of woods, the properties of all varieties of building stone, the strengths of the different mixtures of concrete, properties of plaster and methods of manufacture, the same of slate, sheet metal, hardware, glass, tile, paints, stains and varnishes, plumbing goods, boilers, radiators, etc. Not only that, but he must be acquainted with the prices of these articles. He must be a business man, for he lets all your contracts and pays by certificate all your bills, and he must have a knowledge of building law because under the laws of most States mechanics' liens may be levied by contractors, sub-contractors, and yet after all—artist, engineer, builder, financier, lawyer though he be—it avails him nothing if he cannot get the job."

Fatal Generosity

"Your father looks very nice with his gray hairs."
"Yes, dear old chap! I gave him those."

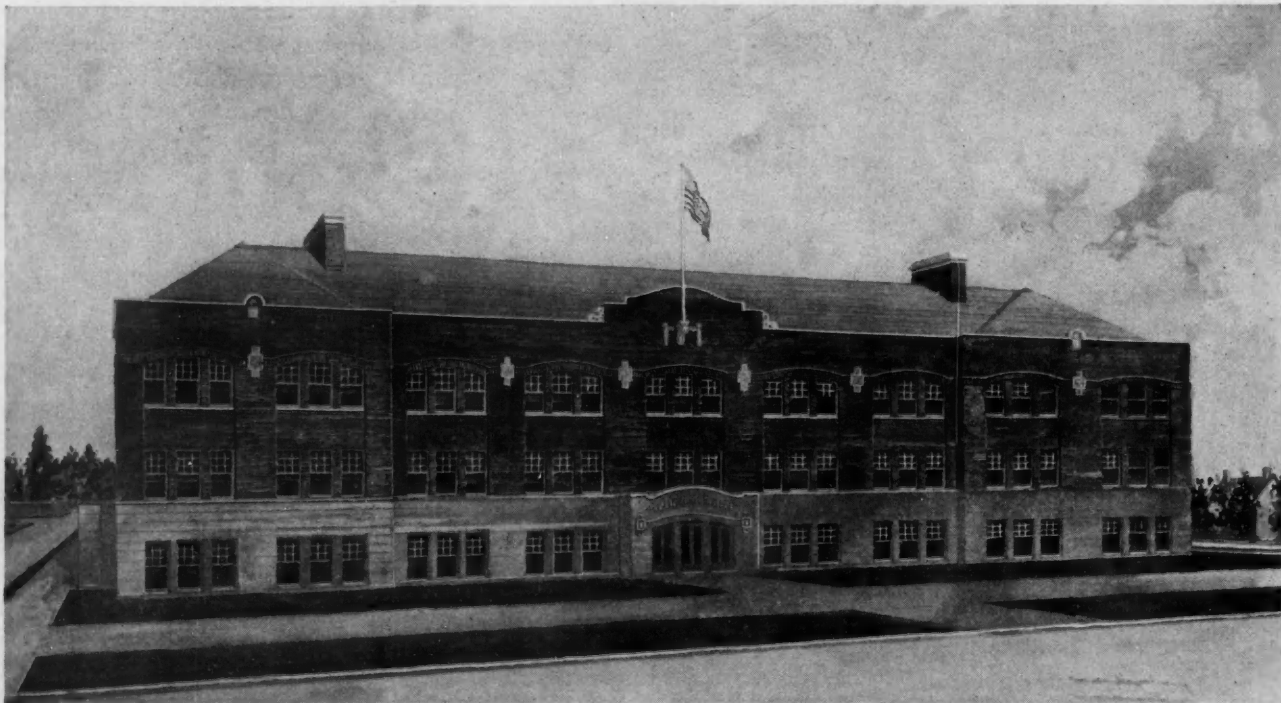


Competitive Design for School

PERSPECTIVE DRAWING AND FLOOR PLANS SHOWING DESIGN AND ARRANGEMENT OF LARGE MODERN SCHOOL BUILDING

THE problem presented by the design of a modern city school building is threefold. In the first place it must be so designed that the floor plans will suit the scholastic and administrative needs of the school. Second, the building must conform to the latest practice in economical, safe and sanitary construction. And third, satisfactory and ready maintenance must be assured. Added to these three necessary, practical requirements, there is also the architectural appearance of the building to be taken into consideration. The public school building usually

it is not at all strange that certain architects have given it special study and in consequence have come to be something of school-house specialists. The school-house architect has to know, as intimately as the school superintendent, the uses to which the building and its various parts are to be put. He has to understand all about school-house heating, lighting and ventilation, and he has to be well posted on the several laws and building regulations pertaining to school-house building frequently being passed in the several states.



Competitive Design Submitted by G. W. Ashby, Architect, Chicago, for the Lincoln Parish School, Ruston, La.;
L. J. Bell, President, T. A. Green, Superintendent

occupies a rather prominent location; and so an attractive outward appearance, while not as essentially important as the interior arrangement, is nevertheless highly desirable.

In view of the complicated nature of this problem, together with the many technical features presented,

The perspective and floor plans presented herewith show what may be taken as a model city school building, in which all these various factors have been rated at their true worth. This building has been designed by the architect, G. W. Ashby, with the idea of keeping the front of the building as plain as possible,

consistent with good appearance, while putting the main emphasis on the solution of the complicated school-house planning problem as outlined above. The result is an exceedingly practical design, economical considering the accommodations provided, and in all a dignified, well-appearing structure.

This building is laid out in a modified E form, a two-story auditorium or assembly room forming the

ber of rooms being provided. The chemical and physical laboratories are on this floor and from it entrance is had to the balcony of the assembly hall.

A study of the floor plans will show the main features of the arrangement of this school building. Note the generous width of the main corridor and the fact that four stairways are provided.

The exterior is of dressed stone for the basement course and brick with stone trimmings above.

To Prevent Dusting of Concrete Floors

By ALBERT MOYER

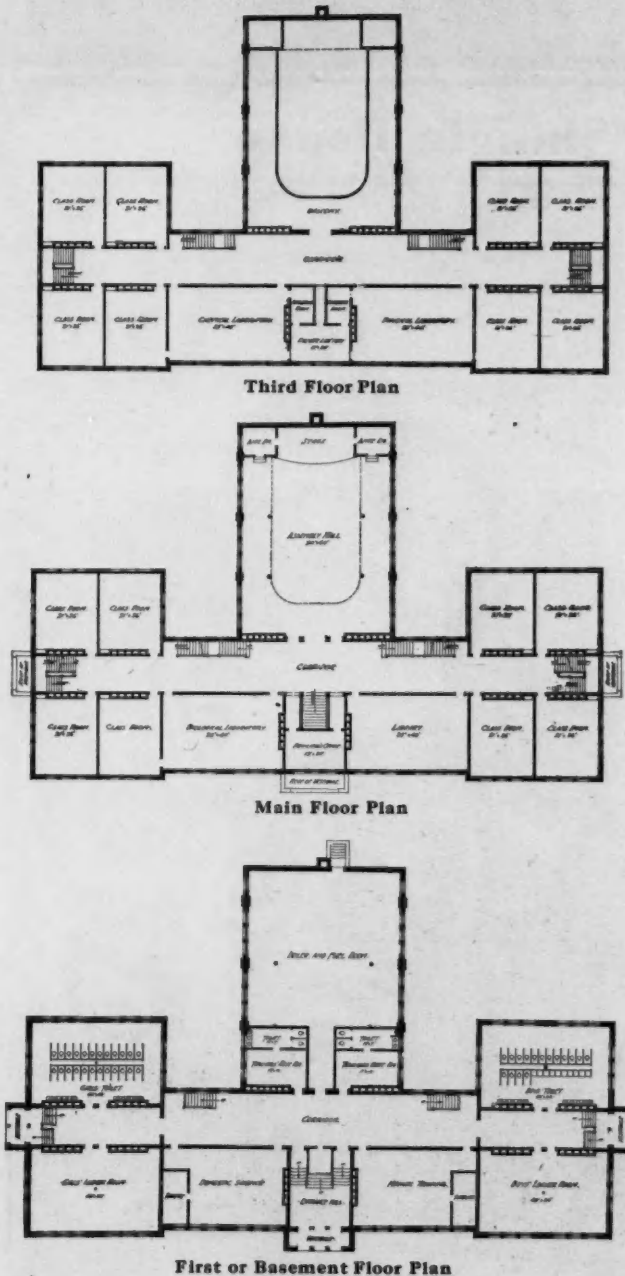
Cement floors, particularly in office buildings or warehouses, which do not have the advantage of obtaining the necessary moisture from the atmosphere such as outside floors and sidewalks on which the dew falls at night, if not properly protected and kept damp, become prematurely dry and are therefore more or less porous and weak, causing easy abrasion under foot traffic, or what is commonly known as dusting.

Care should be exercised in keeping such floors damp by covering with wet sand, wet hay or straw, for a week or more until the floor has properly hardened. If this has not been done and the floors are found to dust under foot traffic, the following remedy will be found very easy to accomplish, economical and effective.

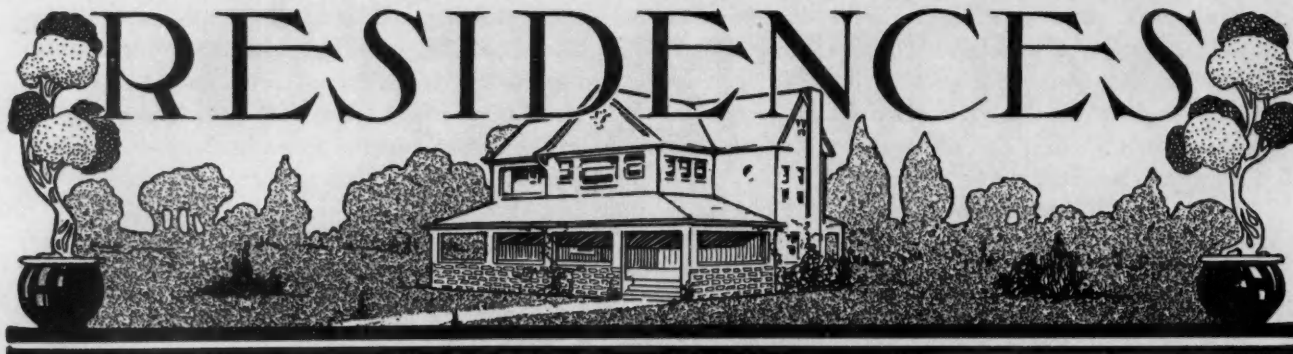
Wash the floor thoroughly with clean water, scrubbing with a stiff broom or scrubbing brush, removing all dirt and loose particles. Allow the surface to dry. As soon as dry apply a solution of one part water-glass (sodium silicate) of 40 degrees Baumé, and 3 to 4 parts of water, the proportion of water depending upon the porosity of the concrete. The denser the concrete the weaker the solution required. Stir well, and apply this mixture with a brush (a large white-wash brush with long handle will be found the most economical). Do not mix a greater quantity than you can use in an hour.

If this solution is sufficiently thin, it will penetrate the pores of the concrete. Allow the concrete surface thus treated to dry. As soon as dry, wash off with clean water using a mop. Again allow surface to dry and apply the solution as before. Allow to dry and again wash off with clean water, using a mop. As soon as the surface is again dry, apply the solution as before. If the third coat does not flush to the surface apply another coat as above.

The sodium silicate which remains on the surface, not having come in contact with the other alkalis in the concrete, is readily soluble in water and can therefore be easily washed off, thus evening up the color and texture of the floor. That which has penetrated into the pores, having come in contact with the other alkalis in the concrete, has formed into an insoluble and very hard material, hardening the surface, preventing dusting and adding materially to the wearing value of the floor.



middle bar of the letter. On the first or basement floor are the manual training and domestic science rooms, also the locker and toilet rooms and the heating plant, this latter being in the central extension under the assembly hall. On the first floor are eight class rooms, 21 by 26 feet in size, a library, biological laboratory and the main floor of the auditorium. The principal's office is on this floor, situated immediately above the main entrance to the building. The third floor is laid out in the same way as the main floor, the same num-



Large Brick and Shingle House

COMPLETE SET OF PLANS, WITH ALL DIMENSIONS AND DETAILS FROM WHICH THIS ATTRACTIVE RESIDENCE CAN BE BUILT

A DESIGN that ought to be popular with a great many builders this year is presented herewith. The perspective drawing is presented on this page and on the six pages following the complete set of architects drawings from which this house can be built, is reproduced. Since all dimensions are given, besides the drawings being made to scale, this set

to the second story a 13-inch brick wall is used, the second story being of frame construction; 2 by 4 studs set 16 inches on centers, sheathed and covered with shingles.

A striking feature of the exterior is the front porch. This extends clear across the front of the house, but only the central portion is roofed over, an artistic per-



Substantial Residence Exhibiting Many Good Points, Designed for Mr. A. J. Saxe, Hindsdale, Ill.

of plans ought to be of a great deal of assistance for practical building purposes.

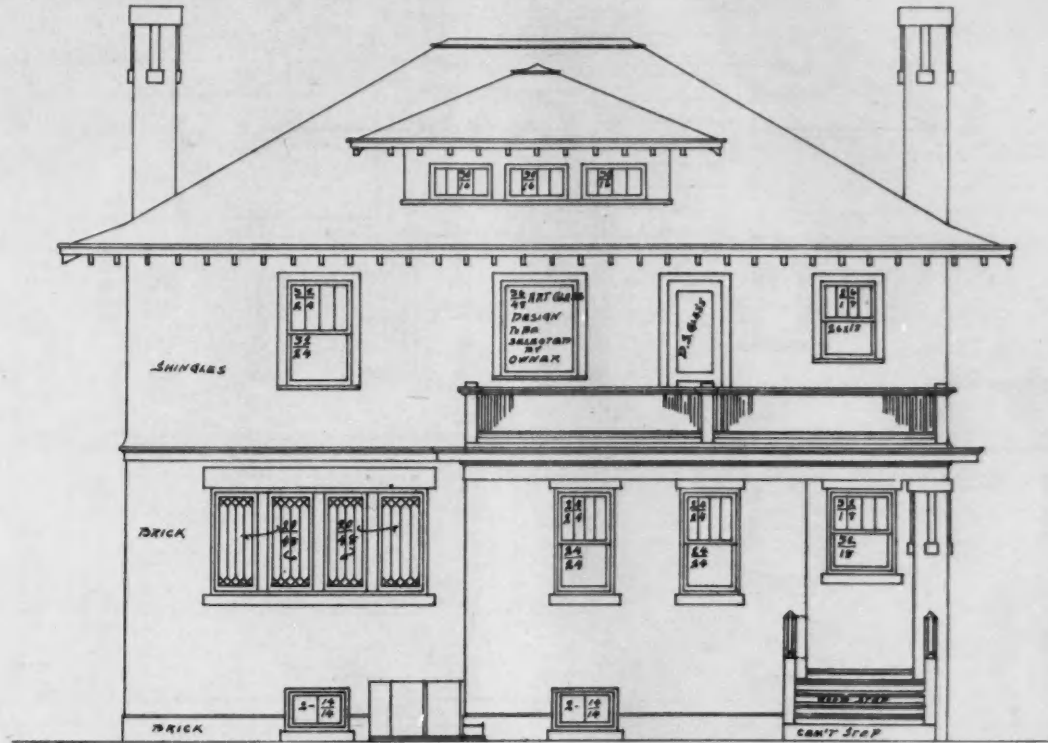
This is a combined brick and shingle house of the square-cut, hip-roof design which is now so popular. The basement wall is of concrete, 13 inches thick, resting on 10 by 24 inch footings. From the grade

gola arrangement covering the section at each side.

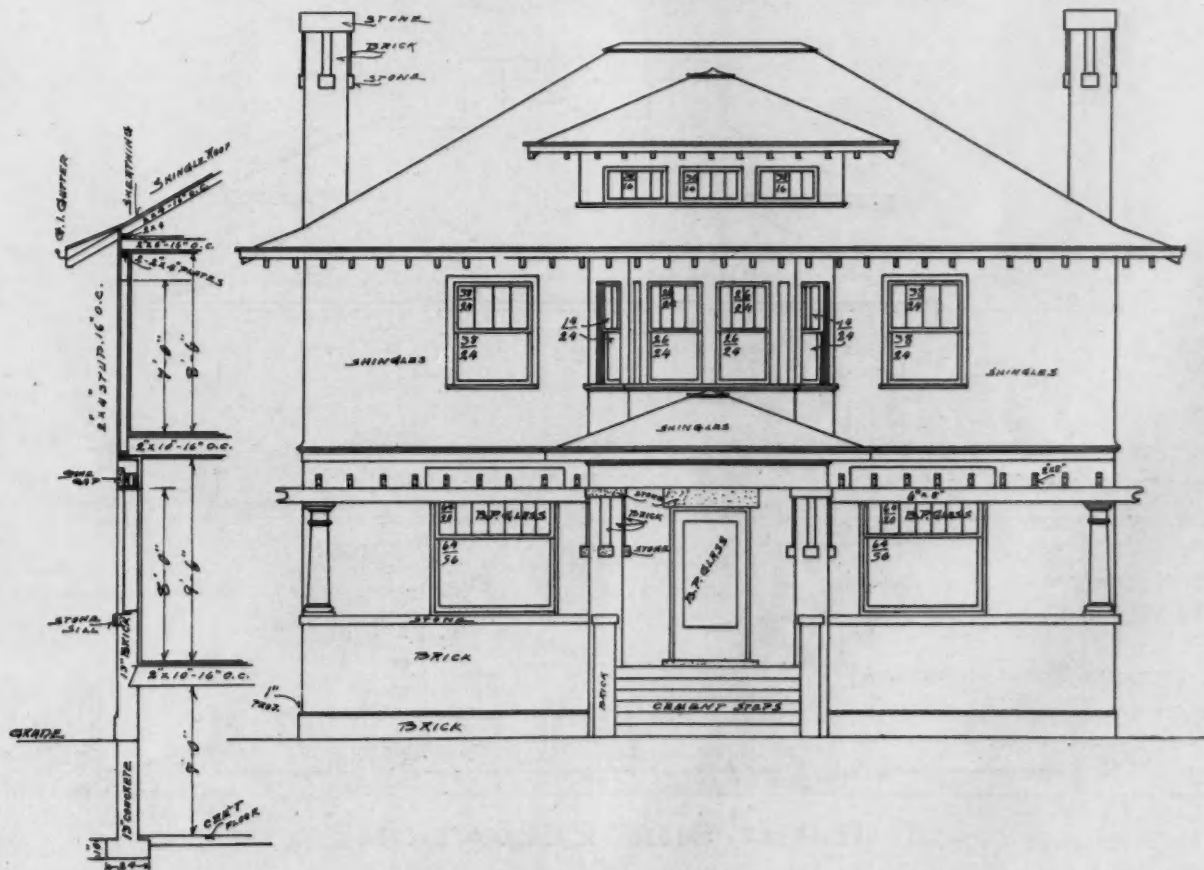
The arrangement of the space inside shows many good features. On the first floor the living room takes up practically one-half the entire space of the house. It extends clear across the front, being approximately 16 by 32 feet in size. It is very attractively finished

with beamed ceiling and a large fireplace at one end; a nook with built-in seats, and a simple grille work separating it from the rest of the room. The arrangement of the stairway is unusual—an open stairway out of the living room, yet going up between closed walls. To the right of the stairway is the square dining room;

a very cheerful and home-like apartment. To the left of the stairway a small room opens which serves as a lavatory.² This opens into the kitchen and is a very desirable feature of this plan. The pantry is well placed for convenience and gives a large amount of case and cabinet space.



REAR ELEVATION

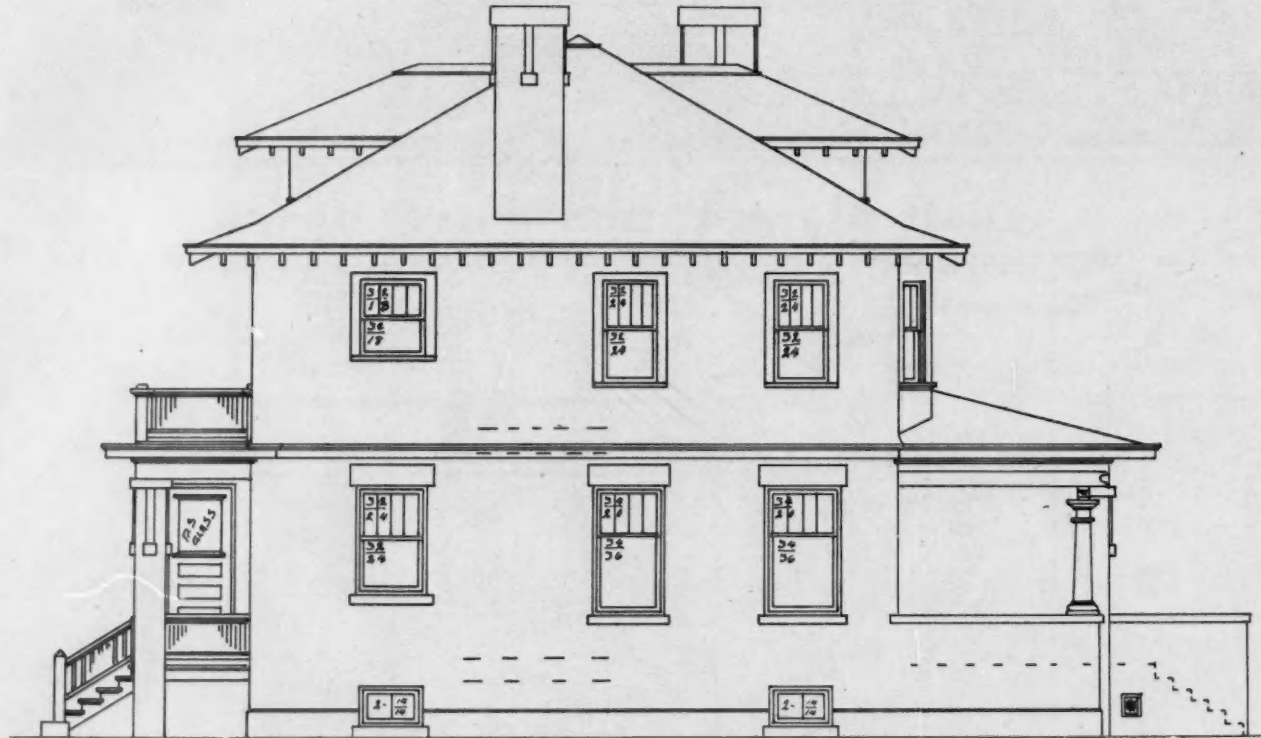


FRONT ELEVATION

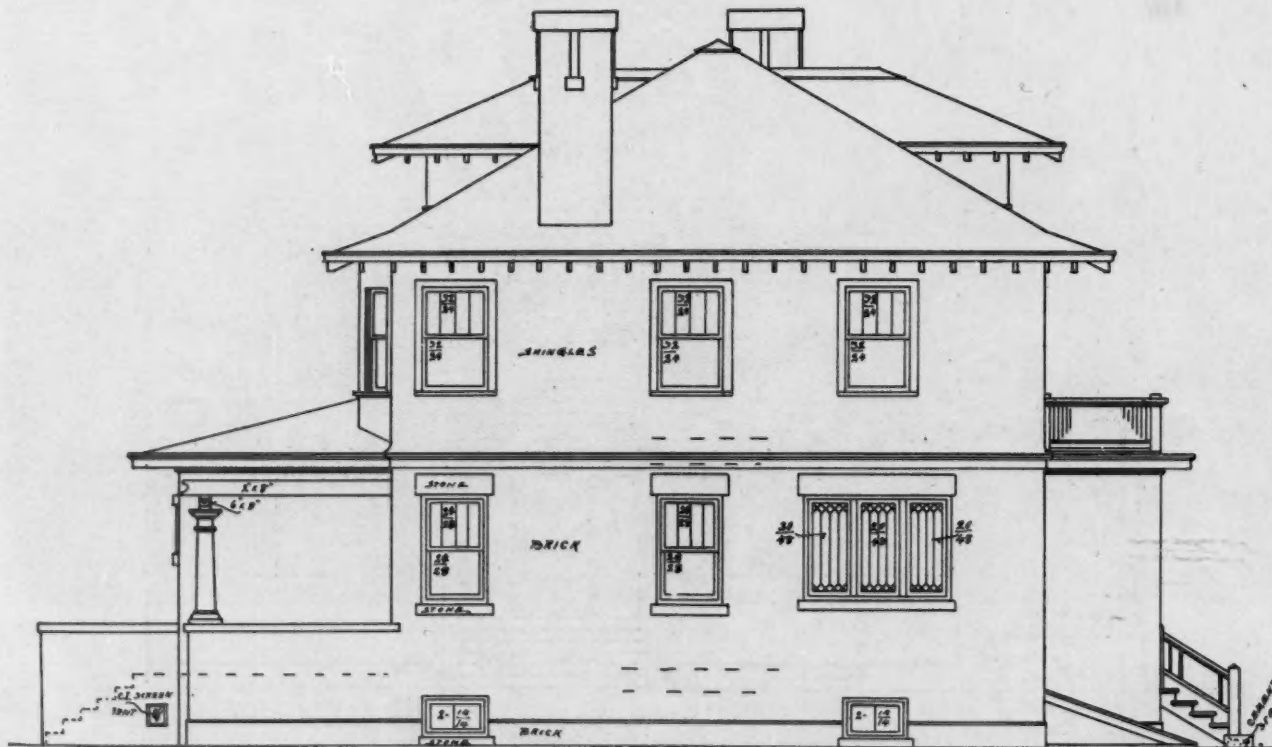
House Shown on Page 60

On the second floor there are four large-sized bedrooms, with plenty of closet space. The bathroom is on this floor and is located directly above the kitchen, thereby simplifying the plumbing installation and making it a great deal less expensive than when the va-

rious plumbing fixtures are widely separated. The balcony at the back of the house opens out of the upstairs hall. This is a very desirable feature. An interesting feature of the basement of this house is the square-cornered cement cistern built in one corner.

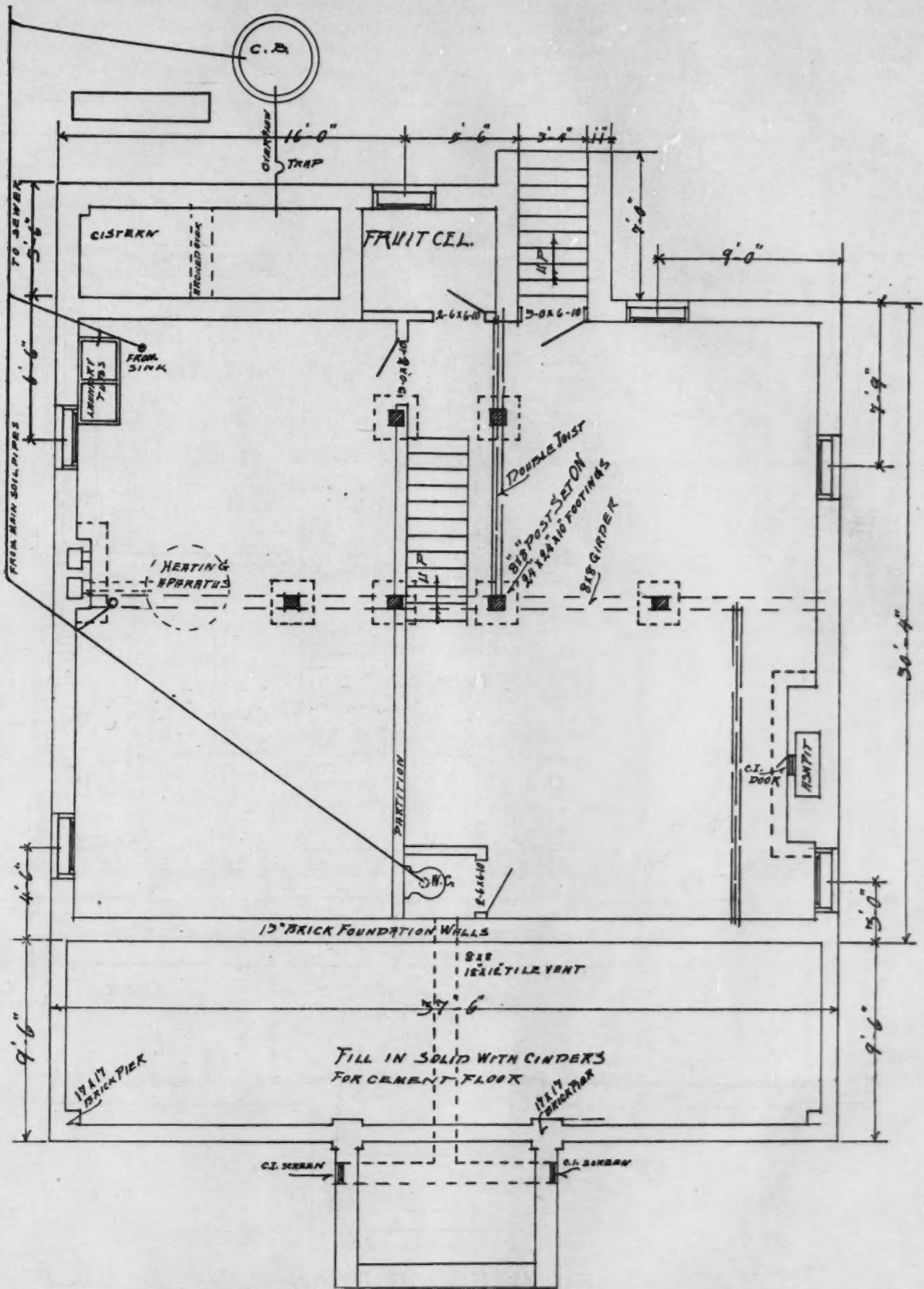


LEFT SIDE ELEVATION



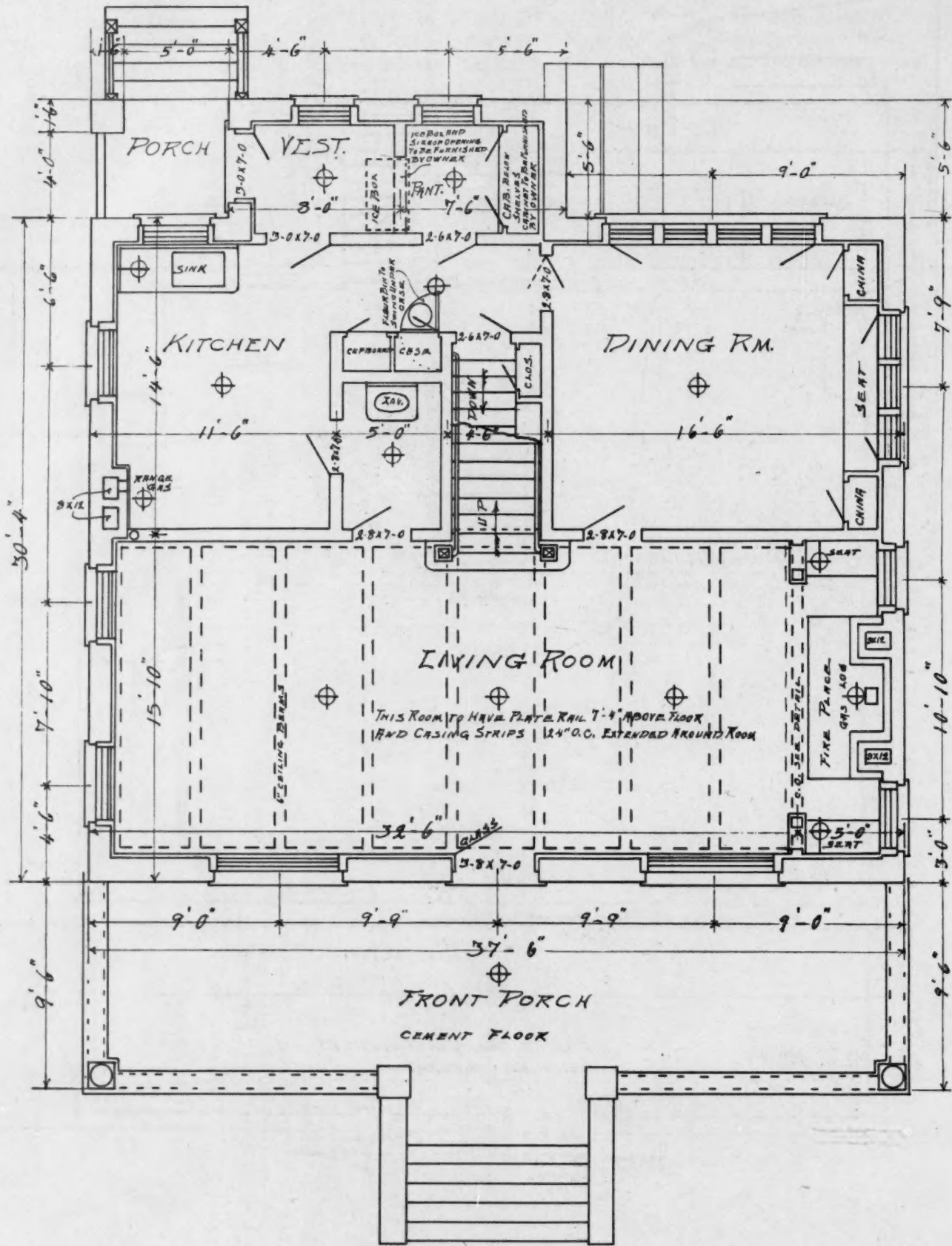
RIGHT SIDE ELEVATION

House Shown on Page 60



BASEMENT AND FOUNDATION PLAN

House Shown on Page 60



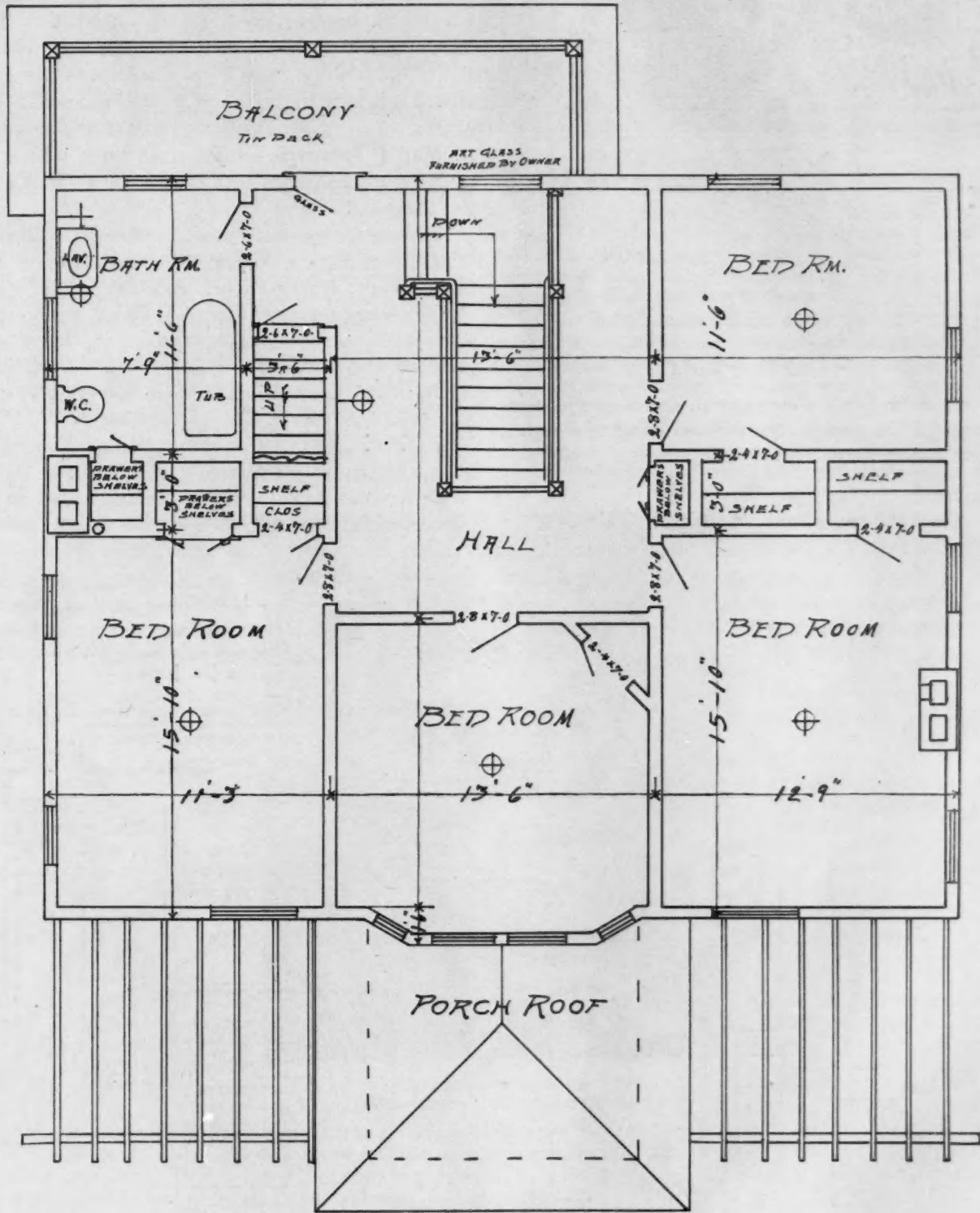
FIRST FLOOR PLAN

House Shown on Page 66

Wire Glass as a Fire Stop

The efficacy of wire glass in preventing the spread of conflagration was shown by a recent hot fire in the lumber yard of the Staudte-Rueckholdt Manufacturing

Each was equipped with automatic sprinklers. In the building equipped with wired glass, three sprinkler heads were opened by the radiated heat on the third floor and one on the second floor. The heat pene-



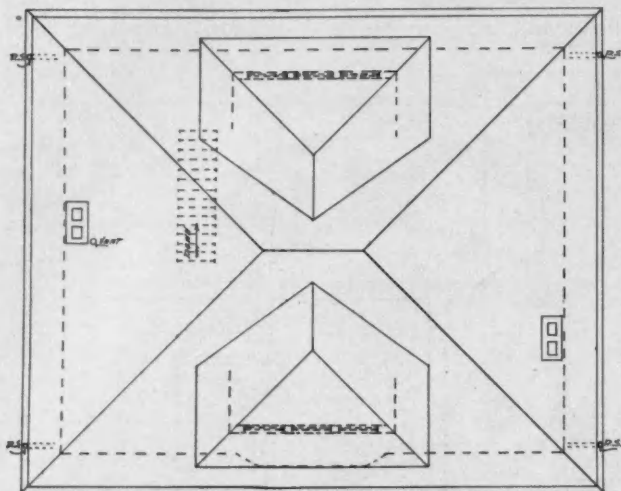
SECOND FLOOR PLAN

House Shown on Page 60

Co., of St. Louis, makers of interior fixtures. Two of their buildings, one with the windows equipped with wired glass in metal sashes and the other with ordinary windows, were equally exposed to the blazing lumber.

trated the wired glass which held intact, setting fire to wood 15¾ inches from the glass, according to a measurement made by H. C. Henley, chief inspector of the St. Louis Fire Prevention Bureau. This incip-

ient blaze was promptly extinguished by the sprinklers. In the building not equipped with wired glass windows,



ROOF PLAN

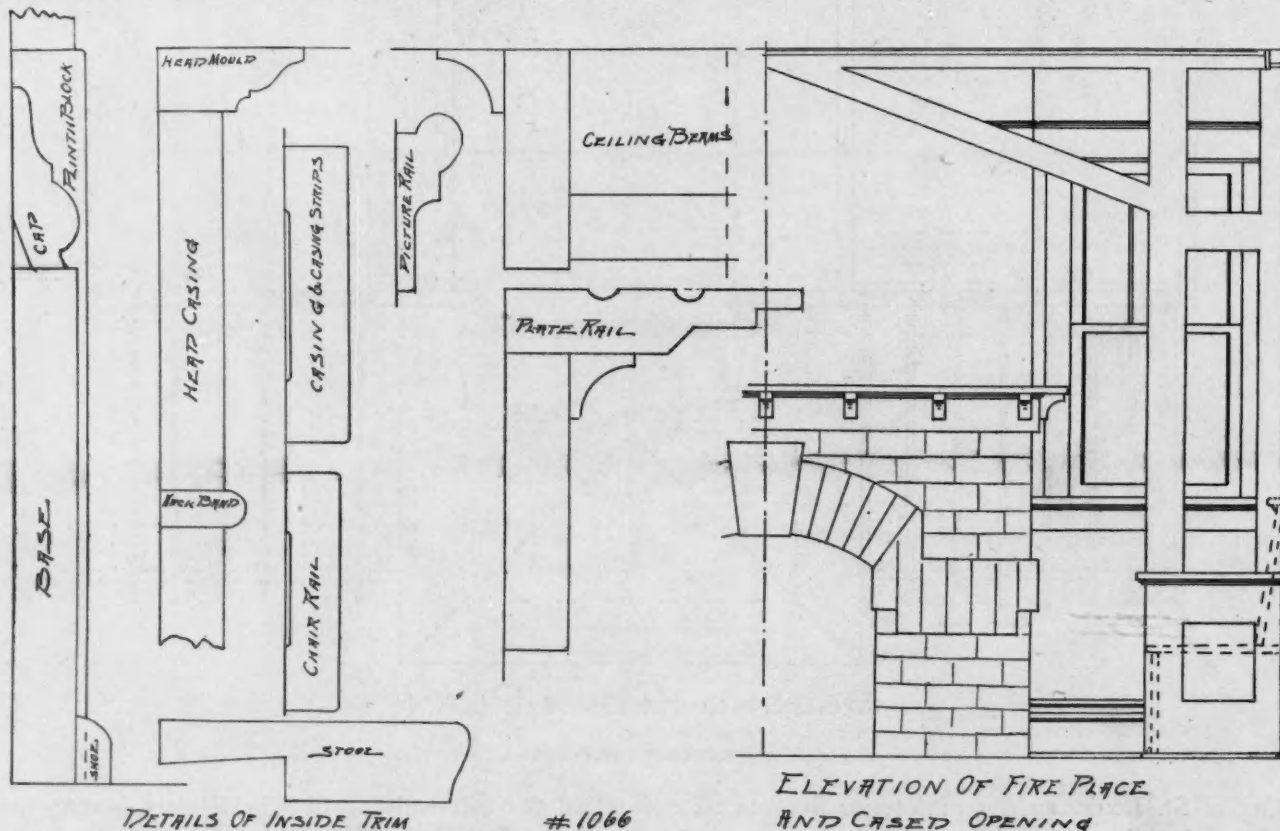
117 sprinkler heads were opened, causing serious injury to cabinet work through the softening of the glue, water damage, etc.

Carpenters Elect National Officers

The count of the referendum vote for general officers of the United Brotherhood of Carpenters and Joiners has been completed by the tellers, at national headquarters in Indianapolis, showing the election of the following general officers: President, William D.

Huber, Indianapolis; first vice-president, Arthur A. Quinn, Perth Amboy, N. J.; second vice-president, J. D. McKinley, Chicago; secretary, Frank Duffy, Indianapolis; treasurer, Thomas Neale, Indianapolis; member of the general executive board, First district, Charles H. Bausher, New York; Second district, D. A. Post, Wilkes-Barre, Pa.; Third district, John H. Potts, Fourth district, R. E. L. Connolly, Birmingham, Ala.; Fifth district, John Valquist, Minneapolis; Sixth district, W. A. Cole, San Francisco; Seventh district, A. Martel, Montreal, Canada. All these officers are the present incumbents with the exceptions of McKinley, Potts and Martel.

The vote for president was as follows: William D. Huber, Indianapolis, 20,446; William G. Schardt, Chicago, 20,315; Harry Payne, Rock Island, Ill., 5,760. For first vice-president, Arthur A. Quinn had no opposition and received 36,430 votes. For second vice-president the vote was as follows: J. D. McKinley, 16,969; Fred J. Cheshire, Spokane, Wash., 9,856; W. W. Reynolds, Peoria, Ill., 9,674; Charles W. Paine, New Orleans, 7,858. For secretary, Frank Duffy had no opposition and received 38,750 votes. Thomas Neale received 29,729 votes for treasurer and his only opponent, William Michaels, of St. Louis, received 13,819. Bausher had one opponent, as did also Post. Potts had six opponents and Valquist two opponents, but Connolly, Cole and Martel ran for their respective position on the executive board without opposition. The officers are elected for two years.

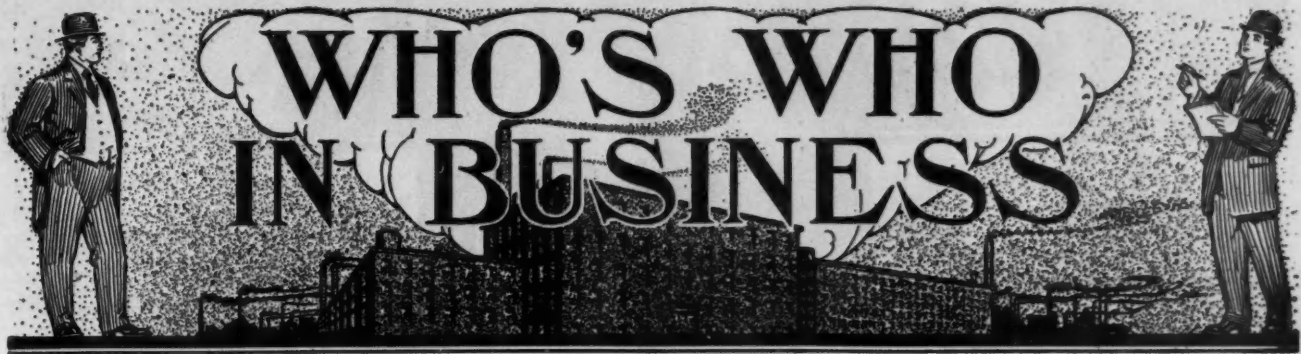


DETAILS OF INSIDE TRIM

#1066

ELEVATION OF FIRE PLACE AND CASED OPENING

DETAILS OF INTERIOR FINISH



Clarence J. Luther

THE life of Mr. Clarence J. Luther, president of the Luther Grinder Manufacturing Company, exemplifies in an unusual degree what a man can accomplish when he makes the most of every opportunity presented. It was only 46 years ago the middle of this month that Mr. Luther began life as a husky youngster on a farm near Poynette, Wis. The farm itself was not much different from thousands of other farms and he himself grew up under the same influence and training that so many farmer boys have known. There was only time for school in winter. Chores had to be done nights and mornings and it meant getting up long before the sun in order to have them done before the boys left for school. During the spring and summer months even the services of a boy could not be dispensed with; schooling had to be left out for the more important farm work.

If there was one thing more than any other that helped to turn his mind toward grinders it was the fact that the marsh on the back of the farm produced more than ordinary crops of hay. June or July always meant some hard work in getting the hay cut and cured. And the job that fell onto the boy of the place was the one that so many of us know a great deal about, turning the grind stone. Noons and nights meant long hours spent at this task, for two or three mowing machines need plenty of work done on the sickles. The one who held the sickle probably did not mind it so very much, but to "the boy behind the grind-stone" it was an endless job. Perhaps even then he was thinking out some scheme for doing this same work by an easier method.

Twenty years were spent on the farm. But as his younger brothers began to grow up and were able to do their share of the work, it became apparent that there was not room enough on the old homestead for all. Clarence went to town; and for ten years worked at the carpenter trade. There, too, he had to use many edged tools, realizing all the time that the method of sharpening them on the grind stone was slow and laborious.

When he was 28, a bad debt he could collect in on other way put him in possession of a state right to a patented sickle grinder. It was a simple affair, equipped with an emery

wheel. With this as a starter, Mr. Luther spent a great deal of time and thought in perfecting it. He made many changes, adding the improvements from time to time he found by experience were advisable. He began to see also the opportunity for making something out of this grinder. The latent demand for an efficient and thoroughly reliable machine of this type appealed to him until he decided to start a company for the manufacture of them. The money was raised and the C. J. Luther Company organized at Port Washington. At first the factory employed only a few hands, with more added from time to time as the business increased. The machines put out were equipped with emery wheels and a comparatively simple gearing. Many of these are yet in use throughout the country, still doing good service for their owners.

As the business continued to grow it was seen that much better facilities could be had in a larger city. Accordingly 12 years ago the factory was moved to North Milwaukee. Five years later it was again moved, this time to its present location in Milwaukee, where their new factory gives a working floor space of one acre, equipped with special machinery for producing the grinders.

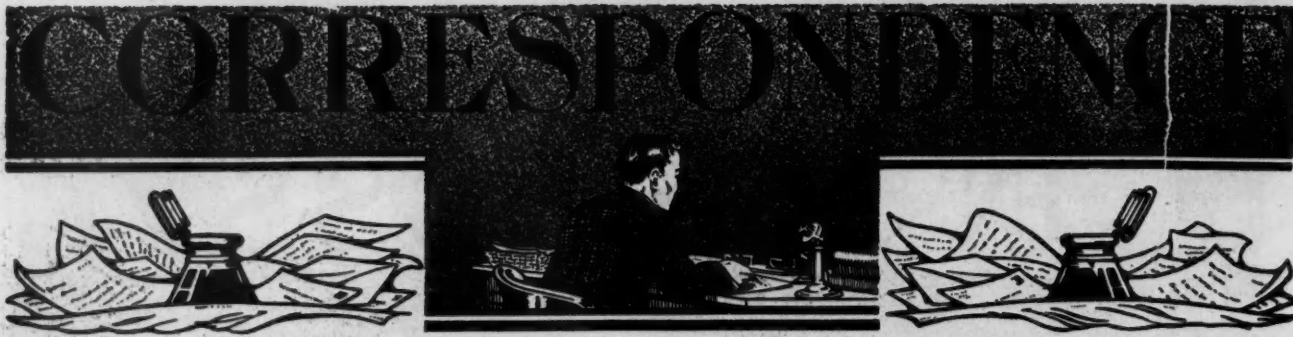
It was at the time it left Port Washington that the radical change was made from emery to carborundum as a grinding substance. The emery wheel was superior to the grind stone, provided the operator had sufficient skill in using it; but carborundum possessed all of the good points of a grind stone and none of the poor ones of the emery wheel. Carborundum cuts 25 times as fast as a grind stone while at the same time there is no friction

to draw the temper from steel tools. The grains never wear smooth so that little pressure is necessary. Its continued use has demonstrated the truth of its claim as the ideal abrasive.

Starting in this way as the pioneer in the grinder field, Mr. Luther has continued in the lead. Today the Luther product is known in every country on the globe. The export trade has assumed proportions that the man who started the business sixteen years ago at Port Washington never dreamed of. Quality has been made the watchword for success, and this has been backed up with hard work.



CLARENCE J. LUTHER
President Luther Manufacturing Co.



Work of the Country Carpenter

To the Editor:

Elgin, Iowa.

I have been receiving the *AMERICAN CARPENTER AND BUILDER* a little over a year and have learned a great many things from its pages. I wish especially to thank Mr. Woods for his articles on roof framing. I gathered much information from them.

The article by D. L. Stoddard in the January number I think is also worthy of a little notice. I agree with him that the subject of interior finishing has been a little neglected.

I work in the country and live in the country. It is through the *AMERICAN CARPENTER AND BUILDER* that I am enabled to keep informed of the up-to-date methods of executing my work. I am required to build houses, barns, granaries and other buildings on the farm, so I have a wide field for improvement. We country carpenters are required to do many things—even painting and mason work at times.

ALEX. PAGAN.

Church Built in Nine Hours

To the Editor:

Austin, Texas.

In this era of development and upbuilding which is going on in Texas, things are done with a rush. The establishment of new towns is carried on with almost magical quickness in this state, but it remained for a minister of the gospel to



8:30 A. M.—Material and Men Arrive and Work Starts

recently direct a building enterprise that in shortness of time of its accomplishment eclipses anything in construction work yet accomplished in Texas. Through his well directed management a church was erected in less than nine hours, every part of the edifice being finished within that time.

Rev. H. L. Munger was appointed to establish a new church in Waco. He wanted to get the place of worship ready for his congregation as quickly as possible, and with that end in view he spent one day perfecting an organization among the members of his flock, and making arrangements for the erection of the edifice. On January 9 he had the plans drawn by a local firm of architects and made a contract with a planing mill for the manufacture of the interior finish and furniture. He let the contract for the construction of the church on January 10, with the understanding that it was to be built on the following day. By this it was meant that the edifice was to be finished and

ready for occupancy within a period of less than twelve working hours.

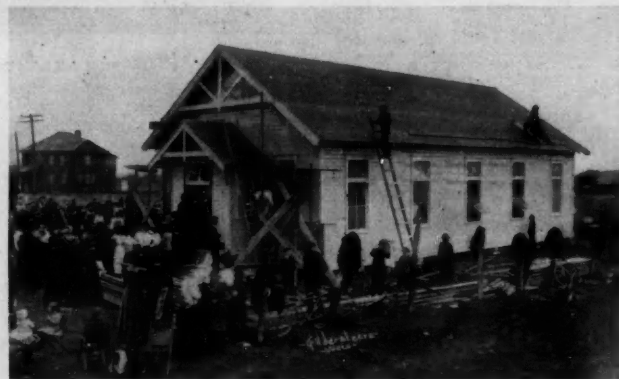
By actual time, the edifice was completed in a little less than nine hours, and religious services were held therein the same evening. The site of the proposed church was entirely bare at 8 o'clock on the morning of January 11. At 8:30 teams began arriving with stone for the foundation, lumber



Noon—Progress Made by 50 Carpenters

and other construction material. By 9 o'clock the foundation was well along towards completion. When the foundation was finished, forty carpenters went to work on the superstructure, under the direction of Oscar Myer. The "house raising" took place at 10 o'clock, and the work of placing on the weather boarding and interior ceiling began. As fast as a board was placed in position the painters gave it a coat of paint. The church was well advanced towards completion at 12 o'clock, when all work ceased for an hour for rest and dinner. The entire frame was then up, the front steps and vestibule about finished, part of the floor laid and rafters placed in position.

The ladies of the congregation and of the neighborhood provided a good lunch for the workers and at 1 o'clock the army of men resumed the construction operations with renewed vigor and enthusiasm. Fifty men were employed by



5 P. M.—Church Nearly Done

this time in rushing the different parts of the structure to a rapid finish. As soon as the rafters and roof-boards were in place an additional force of 28 roofers went to work on that part of the job. By this time the ceiling, electric wiring and other interior details were finished and the paper-hangers went to work, and the painters and varnishers were giving the finishing touches to their respective features of the contract.

The inside finish for ceiling is natural wood; and the trim—base, mouldings, pulpit and seats are mission finish.



6 P. M.—Interior of Church Ready for Meeting

At 5 o'clock the edifice was nearing the finished state, and at 6 o'clock the last touches in the construction work had been given. At that hour the working men and large crowd of spectators were invited by Rev. Munger to attend the dedicatory services, which began a few minutes later.

Men who had participated in the construction of the edifice gave experience talks. Rev. Munger related how he came to Waco a stranger without a dollar or a friend, and awakening to a realization that a new church was needed in his neighborhood, he had set about arranging for its construction. It was announced that the cost of the building was \$2,500. Subscriptions were called for to pay for the edifice and within a few minutes the entire sum was raised. The services came to an end at 7 o'clock, and the congregation dispersed.

W. D. HORNADAY.

Wants an Inexpensive Dry Kiln

To the Editor:

Wichita, Kansas.

We have been subscribers to the AMERICAN CARPENTER AND BUILDER for a long time. We are well pleased with it; and never have as yet asked for a settlement of our troubles. We have a small planing mill and wish to construct some kind of a dry kiln that will be inexpensive and at the same time do the business. We have in mind to build one of cement stone that will accommodate about 10,000 feet of lumber. Can you not tell us of some way by which we can use hot air produced from our shavings and sawdust which can blow to the kiln and possibly keep burning from a pilot flame from a gas jet? We think some arrangement of this kind can be perfected, but do not know just how.

SUBSCRIBER.

Answer: Cement stone will make a very good kiln wall and there are several methods for heating. It is doubtful, however, if it would be practical to burn shavings and sawdust from a gas jet and apply the heat of combustion direct without carrying with it the attendant danger of fire from sparks. A better plan would be to burn the shavings and dust under either hot water or a low pressure steam heating system and pipe this into the kiln pretty much as one puts a

hot water or a steam heating system into a house. Get the heater down on a lower level, nearby, but outside of the building itself, so that the condensation will drain back into the boiler. Or you might use something on the order of a furnace with an inner combustion chamber and an outer hot air duct system, pretty much as when equipping a furnace in a house, and get fairly good results. J. CROW TAYLOR.

Board Feet in Round Logs

To the Editor:

Philadelphia, Pa.

Between the AMERICAN CARPENTER AND BUILDER and Radford's Cyclopaedia I have been able to find most everything pertaining to the building line; but one thing I have failed to find. That is how to obtain the board feet in a log. Will you enlighten me as to the method employed by the mill men? Will you also give me an example say for a log 20 inches at butt and 12 inches at top and 30 feet long?

DANIEL FINK.

Answer: There are a great many rules in use by lumbermen in different parts of the country for obtaining the number of feet, board measure, in round logs. A hand book gotten out by the Forest Service on log rules shows forty-five different methods for measuring logs, each one differing in some respect from the others.

In the southern and central sections of the country, a rule most generally followed is the Scribner-Doyle, which is based on the number of square edged inch boards of standard width a log will make; and, in scaling by this rule, measurement is taken at the small end of the log inside of the bark; or, if it is a longer log to be cut in two before sawing, the measurement of both ends is taken and the average diameter of the two makes the scale measurement for the butt log.

There is a rule known as the Three-Quarters Rule said to be used in Maine, Massachusetts and New Hampshire, the formula on which it is based being as follows: Deduct one-quarter of the diameter of the small end of the log inside of the bark for saw kerf and slabs, square the remainder, multiply by the length of the log and divide this last product by 12 for the contents of the log in board feet.

There is another rule known as the Orange River Rule, used in Texas, based on the following: Multiply the square of the diameter of the small end of the log inside of the bark by the length of the log and divide the product by 30. The result is the contents in board feet.

The rule known as the New Hampshire Rule is based on an imaginary cubic foot equal to about 1.4 of the standard cubic foot. The statutes of New Hampshire, 1901, give the law on this rule as follows: "All round timber, the quantity of which is estimated by the thousand shall be measured according to the following rules: A stick of timber 16 inches in diameter and 12 inches long shall constitute one cubic foot and the same ratio shall apply to any other size and quantity. Each cubic foot shall constitute 10 feet of a thousand board feet." In the practical use of this rule it is customary to consider 115 cubic feet equivalent to one thousand feet board measure instead of 100 cubic feet, according to the wording of the statute. In this case the diameter is taken at the middle of the log inside the bark. If the diameter is measured at the small end of the log, 106 cubic feet are allowed for one thousand board feet. The New Hampshire Rule is also called the Blodgett Rule.

EDITOR.

He Wants Advice

To the Editor:

Prince Albert, Sask.

I should be obliged if you would give in the AMERICAN CARPENTER AND BUILDER the most inexpensive methods of getting up heavy timbers on 3 and 4-story buildings, say 50 by 80 feet in size, also 24-foot built-up girders 12 by 16 inches, over store fronts.

H. H. LUKE.

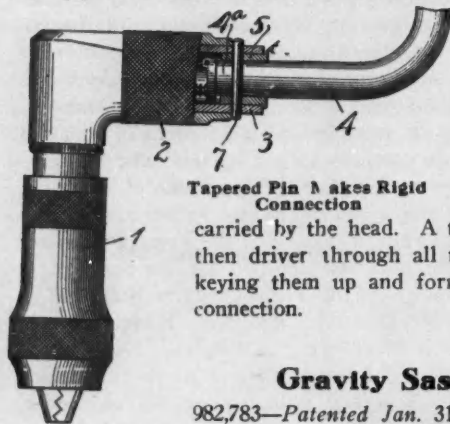


CONDUCTED BY WATSON & BOYDEN, PATENT LAWYERS AND SOLICITORS, WASHINGTON, D. C.

Connection for Bit-Brace Bows

981,693—Patented Jan. 17, 1911, by Edmund A. Schade, of New Britain, Connecticut.

This invention provides ready means for attaching the bow (4) of a bit brace to the head (1 and 2). The improved means consists of a split sleeve (5) adapted to surround the end of the bow and fit within a rigid sleeve (3) carried by the head. A tapered pin (7) is then driver through all three parts tightly keying them up and forming a very rigid connection.

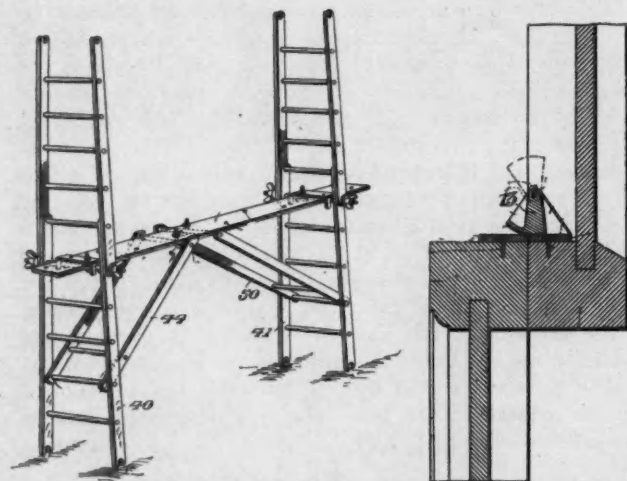


Tapered Pin Makes Rigid Connection

Gravity Sash-Lock

982,783—Patented Jan. 31, 1911, by Daniel M. Barr, of Philadelphia, Pennsylvania.

This invention relates to an improvement in sash locks and has for its object the provision of a gravity lock which shall be automatic in its operation, simple, durable and free from the objections of spring locks. The lock comprises a



Portable Ladder Scaffold

Automatic Gravity Lock

pivoted tumbler (13) secured to the upper sash and adapted to normally overlie the top of the lower sash. To raise the lower sash the tumbler is swung to the dotted line position and the engagement of the upper rail in passing throws it over the center and causes it to return to normal position so as to again engage the sash when it is lowered.

Portable Ladder Scaffold

982,083—Patented Jan. 17, 1911, by Addison H. McGhan, of Washington, D. C.

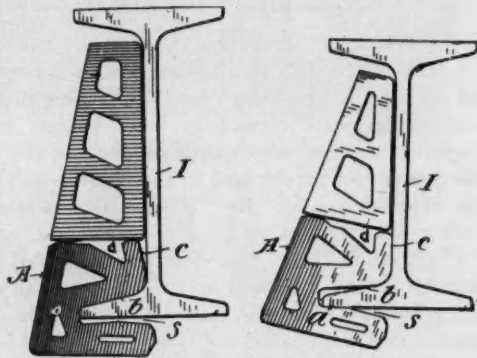
The improved scaffold shown in the illustration below comprises a pair of braces (44 and 50) adapted to engage rungs of the ladders (40 and 41) and also adapted to be secured to the middle of the platform board by means of hook bolts so as to render the same strong and rigid.

Skewback for Hollow-Tile Arches

971,749—Patented Oct. 4, 1910, by Henry L. Hinton, of New York, N. Y.

The object of this invention is to provide a skewback of a single pattern which may be used in constructing arches of different inclinations.

The two figures of the illustration show the same skewback A applied to eye-beams of different depths and two arches of different inclinations. The adjustment is accomplished by rocking the part A upon the base flange of the eye-beam to the desired position and then filling in the crevices such as b, s, c, and d, with cement.



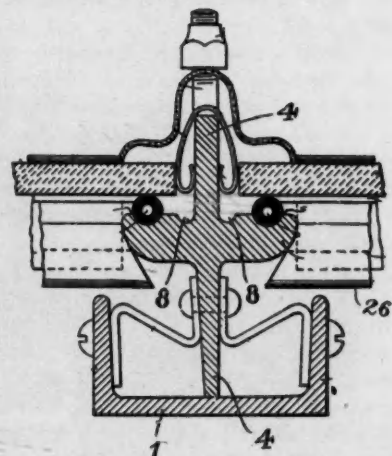
Adjustable Tile Skewback

The adjustment is accomplished by rocking the part A upon the base flange of the eye-beam to the desired position and then filling in the crevices such as b, s, c, and d, with cement.

Nondripping Skylight

981,813—Patented Jan. 17, 1911, by Benjamin Storch, of New York, N. Y.

This is a skylight which will not leak nor permit the moisture condensation to drip. The main supporting beams (4) are of special construction comprising vertical and horizontal webs serving to support the packing and also being formed with grooves (8) to catch the drip. Beneath the member (4) extends a trough (1) into which trough traverse troughs (26) are adapted to discharge whatever water of condensation they may have collected.



Cement Show at Chicago

THE CEMENT INDUSTRY IN ALL ITS PHASES SET FORTH BY ELABORATE DISPLAYS REVEALING THE REMARKABLE PROGRESS MADE IN STRUCTURAL AND INDUSTRIAL APPLICATIONS OF CEMENT, AND AFFORDING A POPULAR EDUCATION ON THE NATURE AND USES OF CONCRETE

THE fourth annual Cement Show at the Coliseum in Chicago, under the auspices of the Cement Products Exhibition Company, was declared by all who witnessed the marvelous display to be the greatest in the history of the industry. The striking feature of the show was the increase in the number of exhibits illustrating to the public the actual products in which cement is used; and the hope was expressed by many, that even more would be shown next year. For it is through these displays of articles made from cement, and of the methods employed in its practical use, that the uninformed public gains its ideas of cement construction, and recruits are secured for the growing army of cement users.

The decorations in the great Coliseum were tastefully arranged and in keeping with the character of the show. Commencing Thursday evening, Feb. 16, and continuing till near midnight on the 23d, the show was visited by great crowds daily. Carpenters and builders, especially, were interested in the exhibition; and large numbers of them attended to learn the methods of using cement in connection with woodwork.

Both visitors and exhibitors were loud in their praise of the management for the perfect manner in which the show was conducted, and President Hagar added more laurels to his record.

Our readers will be interested in learning the nature of the exhibits and who were in charge at the various booths. The names and addresses of the exhibitors, together with a brief indication of the line of products shown, and the names of those who were in immediate charge during the show, are given in the following alphabetical list:

Advance Concrete Mixer Co., Jackson, Mich.—In this exhibit was shown the operation of the "Advance" type of concrete mixer, its points of advantage being explained by H. F. Abbott, President of the company. Lawn Bros. are the Chicago agents.

Alpha Portland Cement Co., Chicago, Ill.—Pictures showing the company's mills, together with samples of their raw and finished product.

American Art Marble Co., Philadelphia, Pa.—Artistic decorative materials.

American Mason Safety Tread Co., Boston, Mass.—M. H. Eddy in charge, and very busy pointing out the merits of the Mason Safety Treads, whose steel base prevents wear while the filling of lead or carborundum is proof against slipping. An interesting line of composition sanitary flooring was also on exhibition.

American Saw Mill Machinery Co., Hackettstown, N. J.—Portable saw bench and wood-worker, self-contained with gasoline engine or electric motor built in. Mill work for forms, trim, etc., done on the job. W. E. Swanger, secretary of company, in charge, assisted by A. C. Eadie.

American Steel & Wire Company, Chicago, Ill.—The triangle wire mesh for reinforcement was displayed in a scene representing a building in course of construction. The foreground was a display of the wire as it is placed in a structure, merging into a scene showing the complete frame of the building. H. S. Doyle was in charge, assisted by B. S. Pease, O. T. Allen, and P. Fisher.

American 3-Way Prism Co., Chicago, Ill.—Messrs. C. H. Paschall and G. S. Knott, assisted by Fred A. Flocken, in charge of the exhibit. The exhibit consisted of the Paschall interlocking sidewalk, floor and skylight construction system, together with 3-Way Prisms in various forms for all kinds of lighting. An interesting feature of this exhibit was a 4 by 6-foot Paschall interlocking sidewalk light slab of standard thickness and construction, supporting a weight of 20,060 pounds of pig lead.

Anchor Concrete Stone Co., Rock Rapids, Iowa.—The exhibit in charge of Mr. G. W. Bradley, Mgr.; J. Oleson, Field Mgr.; assisted by J. Lahetchka. The Anchor continuous air space block machine in operation, together with sample walls of continuous air space building stone.

Architectural Decorating Co., Chicago, Ill.—E. N. Simpson in charge of exhibit, consisting of decorative cement work—fountains, flower vases, and pedestals.

Architectural Mold Co., Detroit, Mich.—This display was especially fine. It was in charge of Paul Klebba, Herman Pleger, E. D. Allen and W. Gagnier.

Arrowsmith Concrete Tool Co., Arrowsmith, Ill.—Here was shown the famous trowel made by this company, and it attracted much attention. Those in charge were W. A. Scott, J. H. Jacobs, Geo. M. Slingloff, and R. L. Sohn.

Art Stone Co., Waynesboro, Pa.—Art concrete and stone specialties for building trim. Formulas for artistic facings on concrete, brick, stone, wood, etc. Amos Stouffer, proprietor, in charge.

Ashland Steel Range & Mfg. Co., Asland, Ohio.—The "Senior A" and "B" mixers of this company were shown in attractive display, also the "U. S. Standard" Block Machine and a measuring device. Those representing the company were U. S. Shelley, A. J. Bentz, James E. Howland, and B. A. Tinkey.

Association of American Portland Cement Manufacturers, Philadelphia, Pa.—Stereopticon views of varied applications of cement to construction of houses, bridges, farm buildings, etc. Percy H. Wilson, Secretary, in charge, assisted by L. R. Ferguson.

Atlas Portland Cement Co., New York, N. Y.—The Atlas crowd were in good attendance, and showed a justifiable pride in the beautiful exhibit presented, consisting of a concrete loggia and a model farm in concrete. Those in attendance were C. S. Quincy, Mgr. Western Sales Dept.; W. T. Chollar, S. A. Putnam, H. M. Dowd, P. A. Tomes, R. S. Thompson, M. A. Regan, I. M. Lewis, T. B. Hemmick, the latter having just returned from two years on the Panama Canal where Atlas Portland cement is being used. There were also J. J. Evans, Walter Smith from Iowa, F. C. Bailey, from Wisconsin, F. A. Schmudger and P. C. Smith from Illinois, and W. D. Peters and Fred Winter from Kansas.

Automatic Sealing Vault Co., Peru, Ind.—A special type of burial vault obviating the necessity of entering the grave for sealing purposes, was here shown, the exhibit being in charge of Ira I. Rush, assisted by Elbert S. Miller.

Ballou Manufacturing Co., Belding, Mich.—In charge of W. D. Ballou and E. E. Weed. An interesting feature of this exhibit was their small though efficient hand-power concrete mixer. Three sizes of power mixers were also on exhibition.

Barrett Manufacturing Company, Chicago, Ill.—Here was a display of materials for waterproofing, roofing, subfloors, and paving. The exhibit was in charge of G. H. Gage, H. B. Nichols, and C. G. Wells.

Barton System of Reinforced Concrete, Chicago, Ill.—The display was in charge of Mr. Barton himself, and was well arranged. It showed the simplicity of the Barton system.

Besser Mfg. Co., Alpena, Mich.—This was one of the very large exhibits, including power and hand tile machines, continuous mixers on trucks and on skids, block machines, automatic block tamper, culvert moulds, etc. Mr. J. H. Besser was in charge, assisted by H. H. Burns of Battle Creek, Mich., and Ben Cole.

Best Bros., Keene's Cement Co., Medicine Lodge, Kansas.—Here was shown a beautiful display of artificial marbles and fine cement surface coatings, all produced with Keene's cement. Roger Titus and Jack Best were in charge.

Billings-Chapin Co., Cleveland, Ohio.—This company had a fine display of Drival waterproofing. The booth was in charge of Chas. F. Case and Norman E. Hills.

Black Co., T. W., Green Bay, Wis.—A rubbing machine used in the making of Terrazzo floors was shown. T. W. Black was in charge, assisted by Miss C. V. Birkner.

Blaker, J. L., Blaker Mills, W. Va.—Automatic dumping cars for quarries and concrete construction work. Mr. Blaker, inventor and patentee, in charge.

Blanc Stainless Cement Co., Allentown, Pa.—This company had an attractive display of the products of its white cement. The exhibit was in charge of Mr. J. Maxwell Carrere, John Kappenberger, and Miss Minnie Lerchen.

Blystone Manufacturing Co., Wilkesbarre, Pa.—Messrs. P. L. Blystone, E. E. Wright, L. Thomas, and W. J. Pees were in charge of the exhibit, consisting of the Blystone Batch Mixer mounted on skids and belted to a gasoline engine.

Bolte Manufacturing Co., Kearney, Neb.—Mr. T. H. Bolte in charge. The Ross concrete spade; Felton's conduit rods and special tools; Andrews concrete tamper; Wire rope blocks, and sheaves. Also—last, but by no means least—the Bolte Concrete Mixer in operation.

Bond Co., Harold L., Boston, Mass.—Contractors' spades, picks, markers, and tampers were shown. Those in charge were Geo. S. Hedge and Jos. F. Ross.

Bragstad Bros. Co., Inc., Canton, S. D.—Here was a very interesting exhibit showing the block machine and automatic tamper made by this company, also their concrete mixer. Those in attendance at the booth were J. W. Bragstad, President, and A. N. Bragstad, Secretary and Treasurer; also Joe Juel, Joe Oleson, and D. N. Johnson.

Briggs Labor-Saving Specialty Co., Waterloo, Iowa.—Mr. J. E. Briggs and W. L. Hollman were kept busy explaining the workings of a concrete spreader for street-paving work, a hand concrete spreader for building and sidewalk work, and a motor-driven wagon for asphalt street paving.

Brooklyn Concrete Machinery Co., Brooklyn, Mich.—This company had the Oliver Block Machine on display. The company was represented by Ralph Stevenson, L. B. Bond, E. D. Francisco, Perry Miles, J. E. Scudder, and E. F. Horning.

Brown Hoisting Machinery Co., Cleveland, Ohio.—Here a very interesting exhibit was presided over by Mr. Geo. T. Sinks and A. R. Leeds. A quite romantic looking little building formed a part of their display, and the men in charge were kept pretty busy explaining to the visitors that this was not a bungalow, nor a material for bungalow construction! The exhibit was a practical working exhibit throughout, intended to show the builder how Ferrocement reinforcement is used in different kinds of building. A feature of the exhibit was a "Brownhoist" Suspended Coal Bin with Ferrocement lining, also a Brown Sanitary Water-Closet Shield for factories.

Butler Concrete Machinery Co., Butler, Ind.—Mr. L. D. Knisely, Secretary and Treasurer of the company, found time to explain to visitors the special features of the 20th Century Gasoline Continuous Concrete Mixer.

Campbell, J. C., & Co., Chicago, Ill.—This exhibit included the "Buckeye" Mortar Mixer, for which many special claims are made. Mr. K. C. Buckeye himself was in charge.

Carnegie Steel Co., Pittsburg, Pa.—See Illinois Steel Co.

Carpenter & Co., Geo. B., Chicago, Ill.—Pumps for sewer work were shown here. The booth was in charge of W. R. Sostheim, H. B. Seavy, H. G. Watson, and M. Kaplin.

Cement Machinery Company, Jackson, Mich.—This company had on display chimney moulds, sill, cap, and step moulds, brick and block machines, drain-tile moulds, the "Systematic" mixer, and numerous other accessories. Those representing the company were Sid Wiltse, W. G. Smith, W. H. Hartigan, and E. H. Van Wey.

Cement Tile Machine Co., Wateloo, Iowa.—The famous tile machine of this company was shown to good advantage. The booth was in charge of J. H. Stewart, W. H. Stewart, W. P. Wells, T. G. Spellman, Godfrey Gross, E. V. Haight, S. L. Northrup, W. L. Northrup, and F. A. Rossa.

Century Cement Machinery Co., Rochester, N. Y.—Mr. A. T. Bradley and S. Filley were about the busiest men at the Show, demonstrating the good qualities of the "Hercules" cement stone machinery.

Ceresit Waterproofing Co., Chicago, Ill.—Actual tests of this material on concrete were shown in an effective display. Those in the booth were P. H. Hansen, F. G. Stanmeyer, and R. H. Schwandt.

Chain Belt Co. Milwaukee, Wis.—G. M. Trevor, Sales Manager assisted by A. M. Anderson and W. B. Louer, was on the job explaining the workings of the model concrete elevator and telling the good points of the Chain Belt concrete mixer.

Channon Co., H., Chicago, Ill.—An hydraulic sand and gravel pump was shown; also concrete buckets, etc. Those in charge were Frank W. Jackson and Benj. Bersten.

C. H. & E. Manufacturing Co., Milwaukee, Wis.—Portable saw rigs for contractors, trench pumps, etc., were shown. Those representing the company were F. F. Hase and G. D. Smith. Wood-working machinery also was shown.

Chicago Architectural Photographing Co., Chicago, Ill.—An interesting exhibit of photographic work, showing many architectural subjects—especially concrete construction, which is a specialty of the work of these photographers. E. L. Ericson and Gus Flodin were in charge.

Chicago Concrete Machinery Co., Chicago, Ill.—An interesting exhibit showing the No. 14 Chicago mixer on trucks, equipped with a steam engine, boiler and side loader.

Chicago Portland Cement Company, Chicago, Ill.—This display consisted of a fountain and fence surrounding the booth, made of "Chicago AA" cement. Those in the booth representing the company were J. U. C. McDaniel, W. F. Main, E. A. Mollan, E. Muhler, Chas. Greenleaf, M. R. Lilly, Fred Cassidy, and Frank Cull.

Christopher, Geo. C., & Son, Wichita, Kan.—This was an exhibit of the "Eclipse" paddle-type of concrete mixer, and the "Eclipse" concrete stone machine. It was in charge of Mr. G. C. Christopher, assisted by F. W. Grabendike.

Clinton Wire Cloth Co., Chicago, Ill.—This company had a model house on display, showing the method of using its "cloth" with cement mortar.

Clough, John G., Quincy, Ill.—The automatic continuous batch mixer of this company was shown. The exhibit was in charge of H. L. Gordon.

Concrete Form & Engine Co., Detroit, Mich.—This exhibit included a special type of collapsible steel form for construction of concrete culverts, conduits, small bridges and sewers. F. S. Freer was in charge.

Conneaut Shovel Co., Conneaut, Ohio.—Hand-made shovels, scoops, etc. G. W. Benton, Gen. Mgr., in charge, assisted by E. D. Moore. C. A. Shannon, of the Great Lakes Supply Co., South Chicago, is the Chicago representative.

Cowham System, Jackson, Mich.—The cement companies of this system were represented in a fine display. Those in the booth were M. K. Sawyer, J. W. Boardman, W. T. Murray, H. L. Shove, Geo. Diekmann, Robert Boyle, Fred Smith, P. A. Danielson, C. L. Johnson, and E. R. Stapleton.

Cropp Concrete Machinery Co., Chicago, Ill.—At this exhibit were demonstrated the advantages claimed for the double-chamber mixer and low charging device. President A. J. Cropp of the company was in charge, with E. R. Jarvis and B. M. Cropp as assistants.

D. & A. Post Mold Co., Three Rivers, Mich.—A fine display of the post molds of this company was shown, and the exhibit was well arranged. Those in charge were O. Dougherty, President, and G. H. Dougherty, Secretary.

Dahlstrom Metallic Door Co., Chicago, Ill.—The beautiful doors turned out by this company in metal attracted much attention. The exhibit was in charge of A. T. Hansen, W. L. Edwards, Chauncey Moon, and M. L. Oberg.

Decorators' Supply Co., Chicago, Ill.—Mr. C. L. Bender was in charge of this beautiful exhibit, showing ornamental pieces cast in cement, consisting of garden furniture, house and building details, and decorative work.

de Smet, Geo. W., Chicago, Ill.—Mr. de Smet and his efficient corps of men were very much on hand explaining how his beautiful exhibit, or any other ornamental work, could be easily made with Vulcanite Portland cement and treated with his cement coating for waterproofing and decoration.

Detroit Steel Products Co., Detroit, Mich.—This company has the United States and Mexican patent rights on the well-known "Fenestra" joint for metal window-sash, a German invention. An actual installation was shown, in which the glazing consisted of photographic transparencies of examples of the use of Fenestra sash. Wm. F. Schmelzts was in charge. The company has a branch office in Chicago.

Dunn, W. E., & Co., Chicago, Ill.—W. E., H. E., and Fred Dunn had a very busy time of it showing their Dunn Combination Block Machine, the King Cement Brick Machine, and also their line of moulds for chimneys, columns, sewer pipe, drain tile, caps, sills and steps. Something of a novelty was the lattice mould on exhibition.

Elite Manufacturing Co., Ashland, Ohio.—Messrs. E. H. Fuhrman and E. L. Kilhefner were having the time of their life talking in competition with the noise in that locality. They found many interested in what they had to say concerning the new low-down concrete mixer which they had there in operation.

Eureka Machine Co., Lansing, Mich.—Their exhibit consisted of the "Eureka" cement and mortar mixers in operation. Messrs. H. G. Mulholland, W. I. Alling, and H. J. Becker were in charge.

Eureka Stone & Ore Crusher Co., Cedar Rapids, Iowa.—A business-like exhibit showing the "Eureka" Stone Crusher and the Mitchell Improved Crusher in operation. Three sizes were shown.

Fellgren & Sons Co., C. W., Chicago, Ill.—Mr. C. W. Fellgren, in charge of the exhibit, explained his patented system of monolith concrete building construction.

Fence Supply & Mfg. Co., Elburn, Ill.—The concrete fence-post has already demonstrated its attractiveness, cheapness and durability. The "Sheldon" moulds here shown turn out round posts, for which special advantages are claimed. The exhibit is in charge of Q. G. Sheldon, assisted by J. W. Carlton and C. F. Markle.

Fisher Hydraulic Stone & Machinery Co., Chicago, Ill.—An exhibit that attracted a great deal of attention, showing the hydraulic ramming concrete block machine in operation, equipped with a revolving table. The dense, non-absorbent concrete blocks were also on exhibition.

Foote Concrete Machinery Co., Chicago, Ill.—The Foote batch mixer was shown in a fine display. Those in the booth were F. C. Wilcox, M. A. Preston, H. B. Franklin, and E. R. Bacon.

Foote Foundry Co., J. B., Fredericktown, Ohio.—The company's block and tile machines attracted much attention. A novelty in the shape of an individual brick mould was shown, it being a single mould operated by the foot. Those in charge were J. B. Foote, C. B. Harry, L. H. Brenlinger, John Hyatt, Miss H. B. Reynolds and Miss Nellie Baker.

Garden City Sand Co., Chicago, Ill.—There was the customary attractive and instructive exhibit of cement plaster panels in different colors made from the products of this company. Toxement and R. I. W. for waterproofing walls were shown, and also Liquid Konkert and Stone-Kote. Those in charge of the exhibit were C. B. Shefer, N. C. Fisher, S. W. Curtiss, C. H. Rose, S. J. Binzwanger, Melville Fiber, Wm. Chambers, L. B. Atwood, and Chas. McNeil.

Gauntt Manufacturing Co., F. G., Fort Wayne, Ind.—With Mr. F. G. Gauntt in charge to point out the superior features of the Gauntt Adjustable Concrete Mixer, good business was done.

Gearless Company, Gloversville, N. Y.—The brick machine made by this company was shown to good advantage. The booth was in charge of G. H. Witherhead, W. J. Dunham, and H. K. Dutcher.

General Cement Products Co., 30 Church St., New York, N. Y.—Demonstrations of Cement Gun in operation—a new method of depositing concrete directly by spraying it from a nozzle. Operation claimed to be rapid and cheap. John Shepherd, 171 La Salle St., Chicago, in charge, assisted by W. B. Akeley.

General Fireproofing Co., Youngstown, Ohio.—This company had a fine display of its materials. The booth was in charge of W. B. Turner, S. A. Smith, P. A. Clark, and F. K. Rhines.

German-American Portland Cement Co., Chicago, Ill.—This company had a beautiful miniature bridge with electric lights along the roadway, and water underneath containing real fish. The display was much admired. Those on hand were General Sales Manager Cox, John Dugan, W. Blomgren, and Miss Elizabeth Morrison.

Hall-Holmes Manufacturing Co., Jackson, Mich.—Their exhibit consisted of the "Grand" and "Baby Grand" concrete and mortar mixers. Messrs. E. J. Curtis, C. Hall, and W. S. Coon were in charge.

Hayden Automatic Block Machine Co., Columbus, O.—Here was another large exhibit including the well-known line of "Hayden" face-block and stripper machine, ornamental moulds for columns, capitals, lawn vases, spindles, etc. Mr. W. B. Simpler had charge, assisted by Geo. Friel and Geo. Lupper.

Heath & Milligan Manufacturing Co., Chicago, Ill.—Mr. F. J. Morse was in charge demonstrating their well-known line of coatings for cement work. Their exhibit consisted of a large number of cement panels coated in various colors.

Hildreth Manufacturing Co., Lansing, Mich.—Here was a display of the simple but strong and efficient "Novo" type of gasoline engine and hoisting outfit, the advantages of which were proclaimed by Mr. Wm. M. Sleaford and Chas. S. Smith.

Hobbs Concrete Machinery Co., Detroit, Mich.—The "Iron Stone Composition" face-plate used with the Hobbs block machine for producing real rock-face blocks created quite a sensation at the Show. The display consisted of a wall and ornamental posts made of these blocks, and the machine itself was demonstrated frequently. A unique little feature was the concrete block model bungalow made of very small concrete blocks. Messrs. H. F. Hobbs, C. L. Hobbs, and Chas. Powers were in attendance at the booth.

Hoosier Mfg. Co., Goshen, Ind.—Mr. Charles F. Black, the proprietor, had a most interesting exhibit of the artistic cement columns turned out by use of the "Hoosier" moulds. These columns are becoming increasingly popular as an element in the exterior adornment of house porches and verandas.

Hotchkiss Lock Metal Form Co., Binghamton, N. Y.—Messrs. Jerome B. Landfield, G. A. Payne, W. H. De Laney, and Joe Howe were in charge of an interesting exhibit of steel forms for the construction of sidewalks, crossings, curbs and gutters.

Hough Co., Wm. B., Chicago, Ill.—One of the striking features of this year's show was the Wm. B. Hough Company exhibit, showing a model of the gravity system of handling concrete. There was also an interesting model of the Koppel dump-cars and railway equipment for contracting operations. Reinforcing metal was in evidence, and the large force of salesmen were busy talking Ransome Concrete Mixers, Wrightworth hoisting engines, and "Clamshell," "Orange Peel," and dump-bottom buckets. Those in attendance at this exhibit were Wm. B. Hough, J. E. McAfee, C. W. Wilson, A. K. Robertson, P. S. Smith, F. Bruner, G. A. Long, J. B. Noble, R. B. Clark, R. B. Cassingham, D. H. Squires, S. H. Hathaway, A. Fleischer, and H. S. Bope.

Hunt & Co., Robert W., Chicago, Ill.—This company had a display of its testing apparatus. Those in charge were John E. Moore, H. H. Morgan, C. C. Whittier, W. T. Reeves, Lester Gill, Robert Moore, Lawrence Wennerholm, John Fletcher, and C. E. Hansen.

Ideal Concrete Machinery Co., South Bend, Ind.—This company had its usual fine display, consisting of block machines and their products, the famous tamping machine and the mixer, besides samples of beautiful walls built up with Ideal blocks. Mentor Wetzstein and a large force of men were in constant demand showing the crowds the advantages of the Ideal machine.

Illinois Copeland Portable Wall Co., Chicago, Ill.—Reinforced glass-faced wall construction and fastening devices for tile for wainscots, floors, etc. Hugh B. Copeland of Denver, Colo., patentee, in charge, assisted by Joseph Kugel, Joseph Schener and Geo. K. Schmidt.

Illinois Steel Co., Chicago, Ill.—In conjunction with the Carnegie Steel Co., this company had a very interesting exhibit of part of its products, consisting of steel bars for reinforcement, which are of three kinds—plain, cold-twisted and deformed, also sheet steel piling. The exhibit was in charge of Mr. C. L. Wood of Pittsburg, Pa.

Inman Concrete Building Block and Machine Co., Beloit, Wis.—This display was a fine one, showing the good products of the company's machinery. Those in charge were O. D., C. L., and C. E. Inman.

Insulite Chemical Co., Aurora, Ill.—The exhibit was in charge of Mr. A. C. Bernatzki, who was very glad to demonstrate the merits of the Insulite company's waterproofing, a mastic coating for cement floors and roofs, and an iron preservative.

Ironite Company, Chicago, Ill.—This company had a display showing how Ironite is used in waterproofing. E. I. Bucklin, V. R. Bucklin, W. H. Hunt, and T. N. Hunt looked after the interests of the company.

Jaeger Machine Co., Columbus, Ohio.—This company manufactures the "Positive" automatic feeding mixer, the "Positive" batch mixer, and a line of folding deck cars.

Jones & Heltzel, Streator, Ill.—Adjustable steel sidewalk, curb, and gutter forms. Rotary floating and finishing tools, and a self-retaining straight-edge for sidewalk work. John Heltzel in charge, assisted by H. A. Allen, practical expert.

Ka-De Adjustable Cement Clamp Co., Chicago, Ill.—An exhibit showing the use of the "Ka-de" clamps and forms for construction of concrete silos, grain bins, factories, houses, and mausoleums.

Kent Machine Co., Kent, Ohio.—The company had on display the Kent mixer and tile machine. Those in charge were A. L. Post, F. A. Kershaw, Joe Cox, E. N. Barber, G. M. Hackett, J. F. Davis, and C. F. Scott.

Keystone Varnish Co., Brooklyn, N. Y.—This was a beautiful installation, showing use of "Keystone" flat wall finish for interior decoration. N. B. Arnold was in charge, with R. Estep as his assistant.

Knickerbocker Co., Jackson, Mich.—The company had on display the Coltrin mixer, and it was much admired by contractors. Those in the booth were W. B. Knickerbocker, Geo. Schaffer, Geo. K. Coulter, E. L. Martin, and J. B. Bruner.

Knickerbocker Ice Co., Chicago, Ill.—This company had a display of cement plaster in charge of R. H. Adams and E. E. Fletcher.

Koehring Machine Co., Milwaukee, Wis.—Here was a display of the company's big power mixer. Those in charge were P. A. Koehring, R. M. Moss, W. Williams, P. H. Miller, and John Donahue.

Kramer Automatic Tamping Co., Peoria, Ill.—Here was an effective demonstration of the advantages of automatic tamping from the point of view of labor-saving and at the same time securing uniformity of product. This exhibit was in charge of W. H. Janseen.

La Grange Specialty Co., La Grange, Ind.—The visitor was here shown how a small machine, the "Little Giant," can turn out cement brick at a wonderful rate. The fine points were explained by W. E. Snyder, the inventor, or by one of his assistants, J. E. McIntyre or John Stacey.

Leavitt Mfg. Co., Urbana, Ill.—"Cardiff" cement tile machine. E. G. Christopher in charge, assisted by John Cardiff, inventor and patentee.

Lehigh Clutch Co., Catasauqua, Pa.—Electrically operated shafting, pulleys and clutches; also Dunn's Uniform Pulverized Fuel Device. R. O. Kohler and C. H. Wolf, Jr., in charge.

Lehigh Portland Cement Company, Allentown, Pa.—A fountain and other products made with this cement were shown. Fred Paulsen and his staff were there from Indianapolis. They were Bert Swett, Louis J. Moss, E. E. Filian, W. H. Eckles, Dan Adams, and W. E. Veits, J. H. McGill, Miss Emma Beckman, Robert Crawford, and a number of others.

Lightbody, Thomas, Youngstown, Ohio.—Mr. Lightbody himself showed the saving in time and cost of hauling and labor which could be effected in the unloading of cars by using his "rapid loader."

Link Belt Co., Chicago, Ill.—Here were shown Link Belt chains, malleable and steel buckets, and belt-conveyor rolls. Flint Rim Sprockets and Rollers and Link Belt specialties were shown. A feature that attracted considerable attention was a model Link Belt bucket-conveyor and automatic dumper in operation. W. W. Sayers and E. C. Burton were in charge.

Locke Drill Co., New York, N. Y.—A demonstration of the use of an electric percussion drill for making holes in concrete for hanging signs, etc.

Luck Cement Post Mold Co., Aurora, Ill.—Here was exhibited the "Luck" system of pouring reinforcing concrete fence and gate posts and hitching posts. J. G. Birtness, Gen. Mgr., with C. G. Birtness, his son, and J. W. Townsend, was in charge.

McArthur Concrete Pile & Foundation Company, New York, N. Y.—This company had a display showing its products in a most comprehensive manner. The display was in charge of F. B. Mann, G. D. Milliken, H. K. Garver, and J. B. McLene.

Malloy, Thomas, Chicago, Ill.—The "Malloy" loading, proportioning and conveying concrete machine adjustable to the feeding needs of any mixer, was here shown by the proprietor, who was assisted by John J. Gilman.

Marquette Cement Mfg. Co., Chicago, Ill.—An interesting exhibit showing the artistic possibilities of concrete for both interior and exterior use in construction.

Marsh-Capron Manufacturing Co., Chicago, Ill.—An instructive exhibit showing the heavy M. O. "Rail-Track" concrete mixer, also their mortar mixers, concrete hoists, buckets, reinforcing bars, benders, and metal lath. The exhibit in charge of Messrs. Geo. Marsh, H. M. Capron, J. M. Pierce, G. S. Warren, Max Ward, and B. H. Bisbee.

Marsh Co., Chicago, Ill.—This company has succeeded to the well-known "Miracle" line of concrete tile machines, collapsible forms for culvert construction, etc. The exhibit was in charge of W. G. Jenkins, General Sales Mgr., assisted by S. B. Shaw, and included the "National" power cement tile machine.

McIntyre Pouring Block System, Detroit, Mich.—Self-locking blocks with continuous concrete monolithic bond, and complete air-space, for walls and chimneys. First introduction in Chicago. D. McIntyre in charge.

Merrillat Culvert Core Co., Winfield, Iowa.—Their exhibit consisted of an adjustable culvert core on which any culvert from 20 inches to 48 inches in diameter can be moulded, also models and pictures of actual work. The four brothers Merrillat were on the ground to explain the working of their adjustable culvert core. They were P. C., C. C., J. J., and G. C. Merrillat.

Milburn Co., Alexander, Baltimore, Md.—The Milburn portable acetylene light for contractors' use. From 50 to 10,000 candle-power, storm-proof, and claimed to be cheaper than oil or electricity. C. R. Pollard, Jr., in charge, assisted by Geo. Barret and C. Jones.

Miles Manufacturing Company, Jackson, Mich.—The "Miles" block machine was shown, also the "Simplex" mixer. Those in the booth were C. F., D. P., C. W., and J. E. Vining and Earl Arnett.

Miller & Co., Clifford L., New York, N. Y.—Mr. J. S. Slosson was demonstrating for the benefit of numerous interested parties the workings of the Curry bag tyer, an ingenious little hand-operated tool which ties bags—cement, lime, grain, etc.—with light wire. Ties for holding reinforcing steel were also shown.

Miller, J. C., Block Machine Co., Jackson, Mich.—"Sureshut" tile mould, with jolt ramming process, self-tamping; also block and brick machines. J. C. Miller in charge, assisted by Wm. M. Robertson, E. H. Seydel and David Snuggs.

Milwaukee Concrete Mixer and Machinery Co., Milwaukee, Wis.—An interesting exhibit of this well-known company's mixers, engines, and hoists. W. J. Rosebery, Gen. Mgr., was in charge, with W. H. Rattenbury of the Kelley-How-Thomson Co., Duluth, Minn.

Minwax Company, New York, N. Y.—Mr. Wm. A. Dallom and G. C. Grier were very busy showing what "Minwax" damp-proofing will do as a waterproofing coat for cement, terra-cotta, brick, stone, etc., also as a coating for steel work to prevent electrolysis. A specialty also on exhibition was "Minwax" Glazier's Rope, a material to take the place of putty for metal sash.

Morrill Moulds Corporation, Washington, D. C.—A new method of pouring cement houses was shown, by the use of unit steel forms—the "Morrill System." These forms have been used in house construction at Virginia Highlands, Va., a suburb of Washington, D. C. Milton Dana Morrill was in charge, with J. P. Jackson and J. B. Hannan as assistants.

Multiplex Concrete Machinery Co., Elmore, Ohio.—This display also was attractive, and the machinery was much admired. Those in charge were A. Fieldach, Frank Buncer, and C. M. Bell.

Municipa. Engineering and Contracting Co., Chicago, Ill.—Messrs. Cameron and P. E. Bager were in charge, and were assisted by H. Wesling. All were kept busy pointing out the good features of the "cube" mixer, emphasizing especially the new anti-spill apron attachment. A feature of this exhibit attracting a great deal of attention was a working model of a complete "cube" mixer plant now in use on the Panama Canal.

Northwestern Expanded Metal Co., Chicago, Ill.—This consisted of a model bungalow, illustrating the use of "Kno-Burn" expanded metal plastering lath. Mr. C. O. Powell was in charge.

Norwalk Vault Co., Norwalk, Ohio.—Cement burial vaults were shown by this company, also the moulds for making them. The interests of the company were looked after by A. B. Bowen, C. L. French, A. S. Alexander, and Isaiah Hovader.

Ohio Ceramic Engineering Co., Cleveland, Ohio.—This exhibit embraced a general line of concrete machinery for contractors—the "Lakewood" line of mixers, buckets, cars, turntables, barrows, skips, etc. It was in charge of J. C. Campbell, Manager of the Chicago office, assisted by D. L. Wadsworth, of Cleveland, O., Advertising Manager, E. A. Allen, and A. W. French.

Ohio Post Mold Co., Toledo, Ohio.—Jake Urschel, ably assisted by the brothers Asa M. Smith and E. S. Smith, was on hand to demonstrate the merits of their post moulds, on which twenty and thirty posts are moulded at one time. A beautiful medal was on display, awarded this company at the National Irrigation Exposition, at Pueblo, Col., in 1910.

Ottawa Silica Co., Ottawa, Ill.—Mr. C. B. Herring was in charge of the exhibit of Pure White Silica sand, the product of this company, in various grades of fineness. An interesting feature was their pulverized white sand which is used half-and-half with white cement for fine interior work.

Peerless Brick Machine Company, Minneapolis, Minn.—L. V. Thayer was in charge of the exhibit, and crowds were kept constantly interested viewing the operations of the "Peerless" brick machine.

Pittsburg Steel Products Co., Pittsburg, Pa.—This very striking display was formed with cement pillars and the "Pittsburg Standardized Reinforcement." Those in charge were Richard E. Harris, General Mgr. of Sales; E. E. Seyfert, Chief Engineer; D. S. Bright, Wm. L. Rowe, S. A. Binner, and Geo. A. Dickson.

Pittsburg Testing Laboratory Co., Inspecting and Consulting Engineers and Chemists, Pittsburg, Pa.—An exhibit of cement tests and cement literature. Represented by R. T. Miller, Mgr. Cement Testing Depts.; H. M. Bachman, cement chemist; and G. L. Hogans, assistant.

Queen City Brick Machine Co., Traverse City, Mich.—The Helm brick machine was always surrounded by a crowd of interested spectators, and good business was reported. The company was represented by E. S. Williams and Ray Austin.

Raber & Lang Manufacturing Co., Kendallville, Ind.—This company had a very fine display. It was in charge of J. E. Lang, R. L. Raber, Wm. Castleman, and Corey Yoder, and comprised the "Crescent" continuous concrete mixer; a vertical tamping brick machine and mould; a power drain-tile machine, and a sewer pipe mould.

Radford Publications, 185 E. Jackson Blvd., Chicago, Ill., and 178 Fulton St., New York, N. Y.—A large and attractive display of books and periodical literature of educative value to all interested in Cement Construction, Architecture, and the Building Trades in general. The "Cement World"; "American Carpenter and Builder"; "Dealers' Record"; "Radford's Cyclopaedia of Cement Construction"; "Radford's Cyclopaedia of Construction" (general); Radford books on "Cement Houses," "Cement and How to Use It," "Framing," etc., and Radford's Plans and Specifications for all types of buildings.

Raymer Hardware Co., St. Paul, Minn.—An exhibit of the "Erickson" Metal Bending Machine, a very strong and compact piece of mechanism. Its fine points were set forth by A. C. Raymer, President of the company, assisted by R. Smith.

Raymond Concrete Pile Co., Chicago, Ill.—A model of the well-known "Raymond" steel-shell concrete pile was shown and the method of driving it. N. C. Farr and J. W. Taussig represented the company.

Reichert Mfg. Co., Milwaukee, Wis.—Here were shown the special advantages of a new type of steel forms—the "Reichert"—for monolithic concrete construction. A. P. Wilson was in charge.

Rickman, E. L., Eau Claire, Wis.—Here was shown a machine for moulding sewer-pipe bends. Mr. Rickman himself had charge of the exhibit.

Rockford Sand & Gravel Co., Rockford, Ill.—Sand and gravel for concrete work, plastering, etc. L. E. Hotchkiss, Chicago representative, in charge, with S. A. Gibson, Business Manager, and R. H. Mower.

Rosing, Astrid S., Chicago, Ill.—An interesting exhibit of sewer and drain tile. Also clean gravel in various sizes.

Ross & Co., J. A., Chicago, Ill.—The block machine put out by this company was much admired; and a crowd was always around, watching its operation. The exhibit was in charge of Frank Gross and two assistants.

Roughen, P., Fond du Lac, Wis.—Mr. Roughen demonstrated the use of his adjustable street gauge, for grading and giving crown to streets. The working model was very interesting.

Sackett Screen & Chute Co., Chicago, Ill.—The line manufactured by this company covers a wide range, including dump cars and buckets, deck cars and trucks, turntables and switches, screens, elevators, hoists, wheelbarrows, etc.—also a flexible chute for depositing material by gravity. The exhibit was in charge of A. H. Morehouse, assisted by S. A. Williams, Jr., and O. A. Matthews.

Sandusky Portland Cement Co., Sandusky, Ohio.—This exhibit consisted of a reproduction of an Italian garden in Medusa White, which formed a most effective display. Those in charge were S. B. Newberry, J. Newberry, L. B. Stuart, R. R. Fish, S. C. Printy, A. B. Nelson, and H. D. Jenkins.

Sasgen Brothers, Chicago, Ill.—This company showed a circle swing hoist operated either by hand or power, pole and setter derricks, etc. M. T. and M. J. Sasgen were present, assisted by Mrs. D. Browne of the New York office, and M. D. O'Keefe of Plainfield, N. J.

Schluter, M. L., Chicago, Ill.—Rapid and flexible floor surfacers for stone, concrete, terrazzo, and wooden floors. Mr. Schluter, patentee, in charge, assisted by H. W. Newitt.

Simpson Cement Mold Co., Columbus, Ohio.—No cement show would be complete without the Simpson exhibit. This one was of the accustomed interesting quality, consisting of iron moulds for making concrete columns, newels, balustrades, rails, vases, and other ornamental work, together with examples of the finished product. Mr. H. G. Simpson and A. W. Ross were in charge of the exhibit.

Sioux City Cement Machinery Co., Sioux City, Iowa.—The McCracken tile machine was here in operation, turning out perfect tiles with neatness and dispatch. The exhibit was in charge of Will and Frank McCracken and Chas. Young.

Smith, D. B., Mount Healthy, Ohio.—The "Permit" cement brick machine. Mr. Smith in charge, assisted by Herman Berdke of Cincinnati, O.

Smith Wire & Iron Works, F. P., Chicago, Ill.—In this exhibit were shown wire spirals for column reinforcement; also the "Smith" girderless floor construction, floor reinforcing fabrics, and stirrups for girders.

Smith Co., T. L., Chicago, Ill.—Exhibit in charge of Mr. A. L. Tucker, Dist. Mgr., and G. E. Hillsman, who regaled all comers with the facts of the case concerning the large dam at Keokuk, Ia., across the Mississippi, the largest dam that has been built in the country. It is stated that seven Smith mixers are in use on this contract.

Snell Mfg. Co., South Bend, Ind.—Here was shown the operation of the well-known "Snell" open-to-view batch mixer, and an automatic loading device, doing away with the necessity for wheelbarrows in filling the mixing drum. A. Hunsberger, President of the company, was in attendance, with G. W. Moon, assistant in charge; also Willard Dice, the Chicago agent.

Snuggs Mfg. Co., Jackson, Mich.—The "Little Wonder" tile machine. D. Snuggs in charge.

Somers Bros., Urbana, Ill.—Their exhibit consisted of the Somers Pressure Block Machine and blocks made thereon. Frank Somers and Ed. Somers, assisted by H. Christensen, were on hand to show how the work was done, and had no difficulty in interesting the buying crowd.

Southern Wisconsin Sand & Gravel Co., Rockford, Ill.—Sand and gravel and reinforced concrete posts. George A. Rubin, Bus. Mgr., in charge, assisted by A. A. Rotstein and David Rubin.

Space Saving Appliance Co., New York, N. Y.—This exhibit attracted a great deal of attention. It consisted of "Space Saving" and sanitary specialties, consisting of combination sink and drain board, laundry tubs, shower bath, etc., also the Madsen automatic water-heater. Messrs. S. Velle and C. H. King were in charge.

Standard Scale & Supply Co., Chicago, Ill.—Here the visitor could examine at leisure the company's large line of "Eclipse" concrete mixers, hoists, engines and other concreting machinery. M. H. Reed, Chicago manager, was in charge, assisted by J. S. Simpson, Sales Mgr., W. A. Browning, Engineer, of Michigan, and F. F. Gillett.

Sterling Machinery Co., West Salem, Wis.—There are many interesting points about the "Sterling" adjustable combination cement brick and block machine for making a waterproof product by the wet process. Mr. E. Wege was in attendance, and ready at all times to give visitors his attention.

Sterling Pattern Works, Sterling, Ill.—This exhibit included the "Sterling" power concrete mixer and the "New State" hand mixer, and was in charge of Ward Lincoln, assisted by R. L. Halsted.

Sterling Wheelbarrow Co., Milwaukee, Wis.—Sterling sheet-steel wheelbarrows and two-wheel carts for concrete work. H. H. Baker in charge.

Stocker Concrete Material Washer Co., Highland, Ill.—Messrs. F. Stocker and L. J. Kuhnen had the Stocker Gravel and Sand Washer in operation, and were proving to many interested parties that material from their own gravel banks, no matter how dirty, would be just as good as the best if properly washed.

Studebaker Bros. Mfg. Co., South Bend, Ind.—The exhibit of this well-known company, which has a branch house in Chicago, included a bottom-dump wagon and a bottom-dump box for use with a farm wagon gear. Mr. J. L. Lindsey, of Rockford, Ill., was in charge.

Swiss Concrete Machinery Co., Dayton, O.—A brick, block and tile machine with revolving moulds, adaptable to use of ordinarily wasted material, such as tan-bark, corn cobs, etc. W. C. Shanafelt in charge.

Taylor, John L., Chicago, Ill.—The "Taylor" portable steel derrick for unloading gondola cars. Mr. Taylor in charge.

Tesco Products Co., Milwaukee, Wis.—Artificial marble, onyx, granite, scagliola, etc., for wainscoting, mouldings, columns, counters, etc. Jos. E. Pollworth, Sec. and Gen. Mgr., in charge, assisted by Frederick Pollworth.

Toledo Wheelbarrow Co., Chicago, Ill.—Wheelbarrows and carts of various patterns for the use of contractors. W. L. Schumacher in charge.

Trussed Concrete Steel Co., Detroit, Mich.—The display showed the "Kahn" system of reinforcing, made by this company, and was a comprehensive display. Those in the booth were S. M. Fehheimer, R. A. Plumb, I. L. Hirschman, F. C. Ayers, T. W. Murray, V. L. Page, C. B. Mayer, and W. B. Tynan.

Twentieth Century Manufacturing Co., Chicago Heights, Ill.—C. C. Denny in charge, assisted by Mr. G. H. Wright, contractor, of Chicago Heights, who states that he has finished 45,000 square yards of sidewalk with this company's long-handled cement workers' tools, and guarantees that he will finish alone all the walk that a gang of fifty men will lay. The "wrist motion" between the handle and blade of this tool is what does it, he explains.

Ubbink, Jos., Port Washington, Wis.—An interesting exhibit of all-steel adjustable forms and accessories for cement sidewalk construction. In charge of Mr. Ubbink, who is assisted by his son, Wm. J. Ubbink, and Frank A. Kendall.

United Concrete Machine Co., Columbus, O.—This exhibit included a large line of concrete mixers, tile and block machines, and various contractors' devices. J. W. Sanderson was in attendance.

United States Gypsum Co., Chicago, Ill.—This company had a beautiful display of the products of hard wall plaster. The company was represented by W. H. Price, R. F. Baggan, H. J. Schmoeger, W. B. Collins, S. H. Beard, S. Jampolis, E. H. West, and Clyde Crane.

United States Metal Products Co., New York, N. Y.—Hollow-metal and metal-covered doors, windows, partitions, etc.; hollow-metal wainscoting, moulding, and all interior trim; all-steel medicine cabinets and cut-out boxes; rolled steel window sash; bronze and copper doors and windows; steel automobile bodies; and sectional safety stair treads. C. Dickens Sternfels, Adv. Mgr., in charge, with Geo. Karbureck, Sales Mgr.

United States Silica Co., Chicago, Ill.—R. E. Hyatt and H. E. Blood, Jr., were in charge of a very interesting exhibit of white Silica sand of various grades of fineness. Many mistook the powdered or pulverized Silica sand for pulverized sugar, and ate freely of it. One aged contractor pronounced it a No. 1 as a dyspepsia cure, but Mr. Hyatt affirms that the entire supply is needed for legitimate building purposes.

Universal Concrete Machinery Co., Waterloo, Iowa.—Block machines, hand and power mixers, well-curb moulds, etc. J. L. Shannon, Pres., in charge, with O. R. Taylor, Vice-Pres., and Treas.

Universal Crusher Co., Cedar Rapids, Iowa.—E. A. Veldt, Sales Mgr., F. R. Mason, Asst. Mgr., and F. G. Doyle were kept busy explaining the good points of the "Universal" crusher, of which a number of sizes were shown. What are claimed to be the smallest and most powerful crushers in the world were set up and running. These, it was explained, are used in assaying.

Universal Portland Cement Co., Chicago, Ill.—This display consisted of a concrete fence made of "Universal," and was ornate to a degree. A bag shaker, the mill sampler, and a scene representing the mill at Buffington, Ind., with cars and kilns in operation, were shown. Mr. Affleck, Mr. Rader, and Mr. Van Doorn, with their corps of salesmen, were always on hand to explain to visitors.

Universal Sanitary Appliance Co., Chicago, Ill.—An exhibit of concrete garbage and ash receptacles, and the forms for their construction. This interesting exhibit was in charge of Louis G. Raggio.

Urschel Bates Valve Bag Co., Toledo, Ohio.—This is an exhibit of bag-filling machinery and valve bags, which are now used in a majority of the cement mills. L. H. Hartman was in charge, assisted by R. J. Thompson and Carl Hartman.

Van Guilder Hollow-Wall Co., Rochester, N. Y.—Mr. W. H. Van Guilder, with Leo S. Terhaar and W. N. Britton, showed the use of the Van Guilder Hollow-Wall Machine, for which great rapidity of operation and strength of wall construction is claimed.

Wabash Portland Cement Co., Detroit, Mich.—A beautiful exhibit showing the possibilities of plain and ornamental concrete work, using Wabash Portland cement. Mr. S. P. Selby and Mr. G. O. Harcourt were in charge, welcoming the friends of the company.

Wadsworth-Howland & Co., Inc., Boston, Mass.—Messrs. H. M. Gordon and L. L. Turner had on exhibition a number of attractive panels, showing the use of "Bay State" brick and cement coating for the decoration and protection of brick, cement, and concrete surfaces. It was stated that this coating is the "Grandfather of them all," being the first waterproof coating for cement on the market.

Wallace Concrete Machinery Co., Los Angeles, Cal.—This company showed a fine power mixer. Those in charge were R. B. Summer, S. T. Wallace, and M. J. Griffith.

Waterloo Cement Machinery Corporation, Waterloo, Iowa.—This was a spacious exhibit showing special features of the well-known "Polygon" type of mixer mounted on truck with gasoline engine and power loader. The company's line also included carts, wheelbarrows, dump cars, stone crushers, screens, etc. C. D. Walworth was in charge.

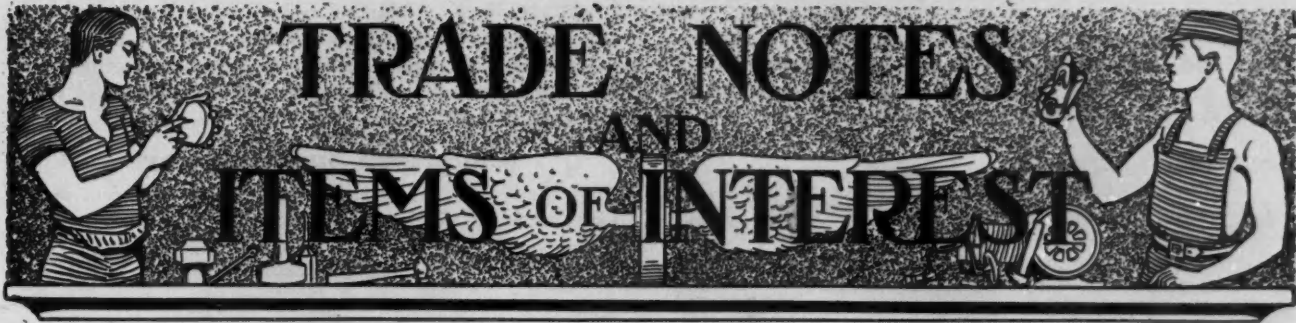
Wert, C. S., Kendallville, Ind.—Mr. Wert, the inventor, was himself in charge of the exhibit, which includes the "Perfect" brick machine and tile machine, and the "Perfect" line of well, cistern, silo, fence-post and sill and cap moulds. R. Armstrong assisted in doing the honors.

Western Brick Machine Co., La Crosse, Wis.—"Western" and "Leader" brick machines and well-curb moulds. Wm. Garber, Pres., in charge, assisted by Aug. Houthmaker, Sec.-Treas.

Wolverine Portland Cement Co., Coldwater, Mich.—A very attractive booth, consisting of cement railing, urns, and pedestals constructed of Wolverine Portland cement.

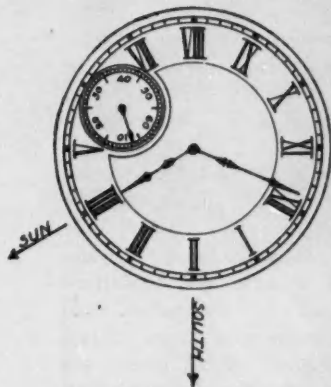
X-L-All Manufacturing Co., Chicago, Ill.—The X-L-All concrete block and tile machines and mixers. In charge of Mr. W. C. Burrell, President, Ralph Burrell, C. B. Russell, and H. Dubois.

Zagelmeyer Cast Stone Co., Bay City, Mich.—A fine display of the company's system of block casting machinery was shown. Alex. and Frank Zagelmeyer were in charge. W. H. Corey of Grand Rapids, Wis., an enterprising block manufacturer, made the display.



The Watch as a Compass

The points of the compass may be determined with the aid of an ordinary watch if held in a position so that the hour hand is directed toward the sun. The south then lies exactly midway between whatever hour it may happen to be and the numeral XII on the dial.



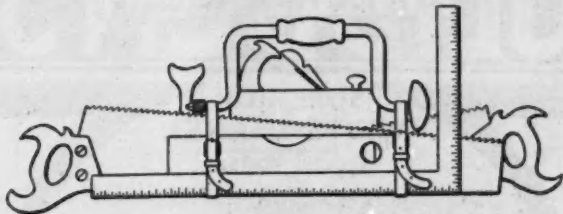
Let us suppose, for instance, that it is four o'clock, and the timepiece is held in the position indicated. The direction of the numeral II will then be the exact south. If it be eight o'clock, the numeral X will indicate the exact southerly point.

Try this, and make sure you understand how it is done.

It's a pretty handy thing to know sometimes.

Handle for Carrying Tools

Carpenters, electricians, plumbers and others having to carry tools any distance, may find the following suggestion offered by the *Woodworker* of considerable assistance: Arrange tools into a compact parcel, leaving the brace out. Hav-

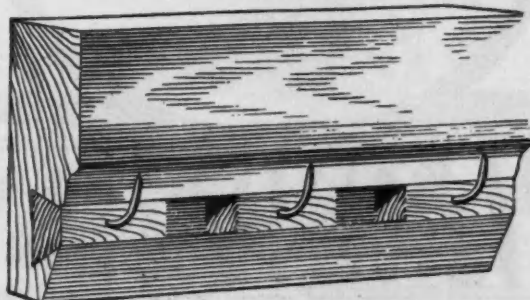


Compact Bundle with Brace as Handle

ing procured two straps, put one around each end of bundle. Before buckling straps, place the brace on top of pack, then fasten straps over each end of brace, and you have a handle which will greatly reduce the tedium of carrying tools any distance.

New Idea for Curtain Stretchers

There is hardly a household in which a curtain stretcher does not, at some period of the year, play an important part.



Pins Are Mounted on Sliding Blocks

A prominent woodworking concern is making twelve different patterns, and in their manufacture have demonstrated that there is always something new to be found out in the producing of any article. They have made what is known as the adjustable pin stretcher, the brass, nickel plated pins which hold the curtain, being set in adjustable sliding blocks. The cut given furnishes a correct representation of the use of this new idea.

Cleaning a Painted Wall

A little ammonia added to warm water answers admirably for this purpose. The advantage of ammonia is that it evaporates and leaves no residue; borax, soda and similar salts are apt to leave a residue which does not evaporate.

Special Hand Ax for Flooring

The L. & I. J. White Co., Buffalo, N. Y., has just placed upon the market a special flooring pattern of hand axe, which is illustrated herewith. The particular feature of this axe is that the end is perfectly straight and at right angles with the handle, thus being different from the hand axe heretofore used for flooring purposes. The new pattern is such that the axe will clear itself and not strike the floor when being used by the carpenter. When it is taken into consideration that practically half of the hand axes sold are for use in connection with the laying of floors, it will be readily appreciated that this improvement is important, the pattern here shown seems better adapted to this work than the old style. The axe weighs 2 pounds and has a cutting edge of 4 inches. We understand that the company is meeting with a very gratifying demand for it, and that carpenters who are using it speak in very high terms of its merits for the purpose named.

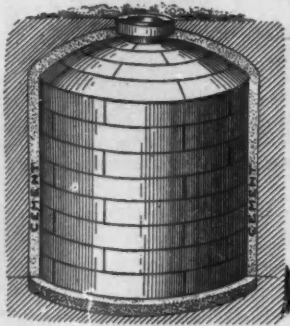


Good Money Building Concrete Cisterns

Big returns for contractors and builders are promised by the Kuhn Cistern Form Co., of Columbus, O., to all who will take up their proposition for the building of concrete cisterns.

It is stated that the Kuhn cistern form is almost completely revolutionizing the process of cistern building. Through its use the best and most lasting cisterns can be constructed at a saving of time, labor and material; and the mechanism is so simple that even the most inexperienced laborer can set up a form and build the cistern as satisfactorily as an expert mechanic. We know of no business that promises larger returns to the contractor, or even the unskilled laborer, with so small an outlay of money, as the making of cisterns and tanks with these forms.

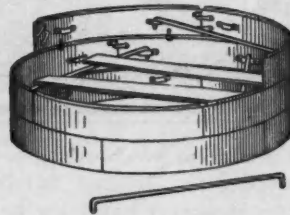
This apparatus consists of a form made up of sections to be placed in the ground, the excavation having been made large enough to allow a four-inch space between the form and the earth. Concrete is then poured around the form where it is allowed to harden for a period of three or four days. The form is then removed and after a solution of clear cement



Cement Cistern Made With Kuhn Forms.

and water-proof compound is applied to the rough surface in the same manner as paint, the cistern is complete.

The forms are made of sheet steel, the hooks and latches of malleable iron—all parts being practically indestructible. Scaffolding rods are provided with all cistern forms. One of the illustrations shows the use of these rods for supporting the scaffold boards during the process of erecting. Each circular section is one foot high, consisting of four parts, all interchangeable. Any number of sections may be used—varying with the contents desired. For example, the No. 4 form will make cisterns eight feet in diameter, containing any number of barrels up to one hundred. The sections are wired together for shipping, the entire weight ranging from three hundred to two thousand pounds.



It is stated that the prices are very reasonable. There are no state or county rights to buy. The only restriction is that the form is sold under a guarantee that it will not be used in Franklin county, Ohio, the patentee reserving full rights in that county. All interested should write the Kuhn Cistern Form Co., Columbus, O.

Underfeed Saves Money

There has never been a year since the introduction of the Peck-Williamson Co. Underfeed Furnaces and Boilers which has not been marked by tremendous increases in sales. The popularity of the Underfeed is universal and emphasized in multiplying letters of appreciation. The fact that Peck-Williamson Underfeed heaters save—as it is claimed—one-half to two-thirds of coal bills is information just as cheerful in the states where zero is rarely felt as in Manitoba or other Canadian provinces where the mercury slips far into the bulb of thermometers.

Underfeed furnaces and boilers possess so many points of exclusive heating value that it is really no surprise to learn that the Peck-Williamson Company recently carried off the biggest contract in heating history. Through their Columbus representatives, forty furnaces were installed in seven buildings at the Ohio State Fair grounds at Columbus. Their efficiency was fully tested and approved during the cold days of February conventions in the Capital city of the Buckeye State.

The Underfeed coal-burning plan has been adopted by many municipalities as best for health, because the Underfeed system with all fire on top and coal fed from below, does away with the smoke nuisance. Smoke and gases contain many heat units which, wasted in other heating plants, are conserved and utilized as heat in the Underfeed. Smoke must pass through the fire, is burned and transformed into more heat.

Kawneer System
of Store Fronts

Store Fronts That "Make Good"

The Kawneer System of Store Fronts is the original solid, all-metal store front construction, and from the first has met with universal approval, not only by merchants and owners of store buildings, but by technical men as well. You will approve of and use the Kawneer System if you are shown the many characteristic features that have made it so popular.

Kawneer Fronts are the faces of prosperous stores—they are Good fronts and do the work intended for them.

Kawneer System
of Store Fronts

SIMPLE TO INSTALL

Kawneer System of Store Fronts can be found in every nook and corner of the country and in order to be a success must be simple in construction and easy to install, because we often depend upon carpenters of very ordinary ability to successfully install Kawneer Material. 2,832,940 lineal feet of Kawneer Material installed in 1910. What better proof could you want of its merits?

1911 BOOKLET NO. 2 FOR YOU

We have compiled a booklet (No. 2) for technical men, and you will enjoy it. Send today and it will go forward by return mail. It contains a plain description of the Kawneer System, plenty of photographic cuts and good points of store fronts in general.

KAWNEER MFG. CO.
Factory and General Offices, NILES, MICHIGAN
Branch Offices in all large cities.

Kawneer System
of Store Fronts

GLIDDEN'S

GREEN LABEL

SUPERIOR WHITE ENAMEL (GLOSS FINISH)

is the finest quality of white enamel that can be made. It dries quickly, with a beautiful glossy surface that retains its beauty through exposure and wear and does not turn yellow. Is easily kept clean and is not affected by repeated washing. It is intended for use on the finest interior wood-work, and can be used over old varnished or painted surfaces with most excellent results. Can be rubbed to a dull finish.

Price \$5.00 per gallon; quarts \$1.35 each

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.

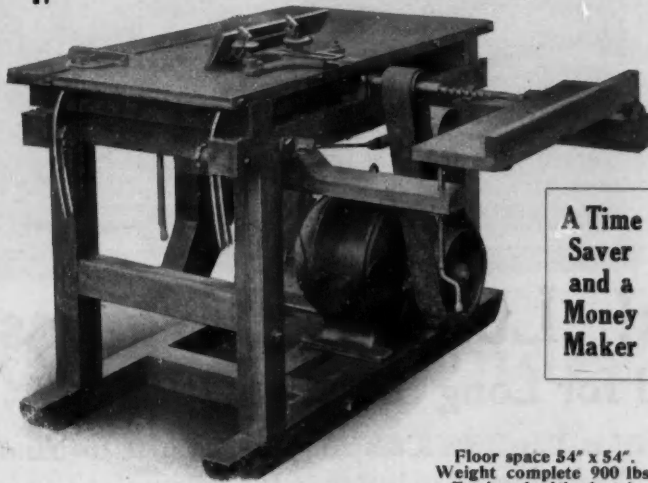
THE GLIDDEN VARNISH COMPANY
Makers of high-grade varnishes for all purposes
Glidden Building
CLEVELAND, O.

VARNISHES

FOR ALL PURPOSES

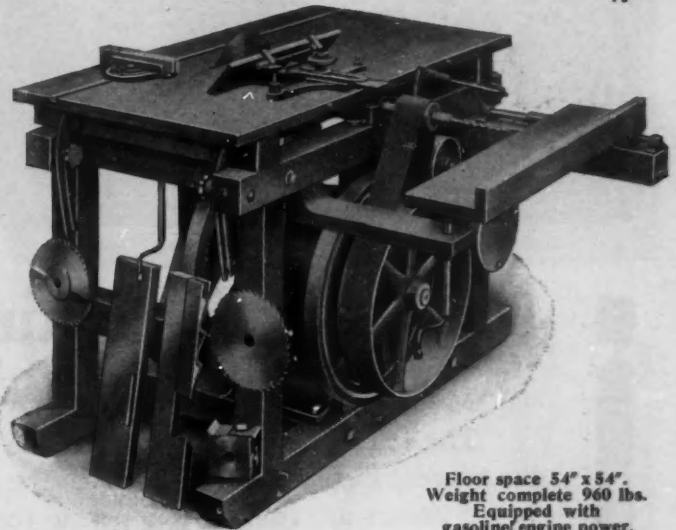
American "Contractors" Portable Saw

Bench and Variety Wood Worker



**A Time
Saver
and a
Money
Maker**

Floor space 54" x 54".
Weight complete 900 lbs.
Equipped with electric
motor.



Floor space 54" x 54".
Weight complete 960 lbs.
Equipped with
gasoline engine power.

THIS MACHINE is particularly adapted to the use of General Contractors, Carpenters and Builders, Concrete Workers and Engineers. It is portable, compact, self-contained, and very substantially built throughout so as to stand the hardest kind of service. No contracting builder's equipment is complete without one or more of these machines.

Use this Rig on the Job or in Your Shop

This machine comprises a rip saw, a cut-off saw, a mitre saw, a dado machine, a rabbetting machine, a joiner, a boring machine, a gaining machine, a groover, a matcher, and a moulder.

Capacity in 1 inch lumber, 75 to 125 lineal feet per minute; in 2 inch lumber 25 to 50 feet per minute. Will rip 3 inch lumber easily and can be utilized to work 4 inch stock.

Well designed and strongly constructed to stand hard, continuous service.

This saw bench has self-contained power—no shafting.

We are prepared to furnish this machine equipped with electric motor, to suit any current or voltage, or with gasoline engine.

Write for folder containing complete specifications.

AMERICAN SAW MILL MACHINERY CO.

Main Street, HACKETTSTOWN, N. J.

Hudson Terminal Bldg., NEW YORK, N. Y.

Our Catalogue Completely Describes Everything Used in the Saw Mill, Including:

Portable Mills in Five Sizes
Stationary Mills, all sizes
Planers and Matchers

Edgers
Trimmers
Surfacers

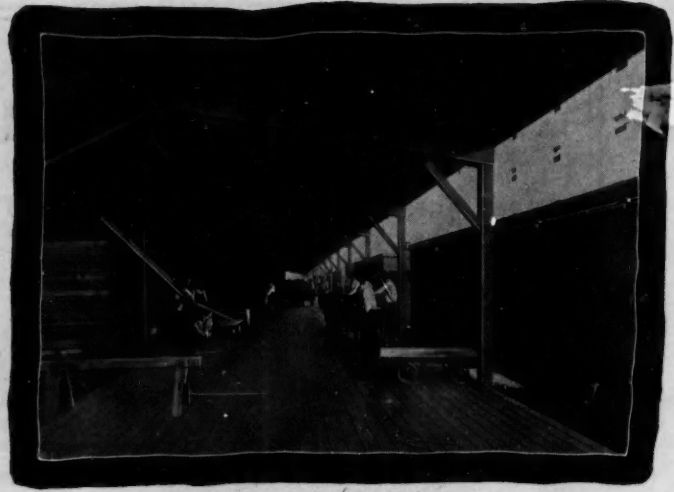
Shingle Machines
Excelsior Machines
Wood Splitters

Lath Mills
Drag Saws
Rip and Cut-Off Saws

Log Hauls and Turners
Gasoline Engines
Engines and Boilers



Loading Orders Same Day We Receive Them



Shipping Platform No. 3

Millwork Bargains! Lumber Bargains! Carefully Packed for Long Shipment!

The 1911 Spring Season finds the Gordon-Van Tine Company in readiness to handle the biggest business ever known in the building material industry. It's coming! The advance orders are rolling in at a rate that indicates a highly prosperous season for builders everywhere.

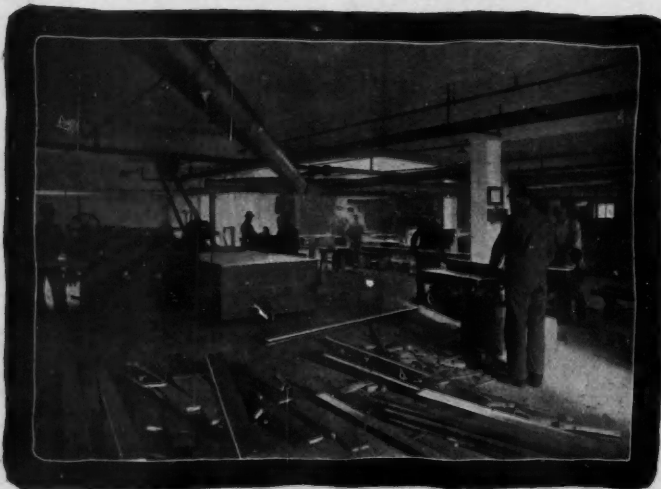
We are going to help swell the profits of every carpenter, every contractor, every home builder who patronizes this great building material supply depot.

Grand Spring 1911 Catalog

The new Gordon-Van Tine Building Material Catalog, now ready for the mails, is the most important document we have ever issued. It is as far in advance of our last year's offering as our mammoth new concrete building material plant is ahead of the one wiped out by fire in November, 1909. Send for a copy *at once*.

Big Reductions on Staple Items of Building Material

Vastly increased *facilities* and corresponding gain in *volume of business* have enabled us to still further reduce our prices on staple items of Doors, Windows, Mouldings, Inside and Outside Finish, Flooring, Stair and Porch Work. A *positive saving of at least one-third of retail dealers' prices*.



One Corner of Woodworking Shop

OUR GREAT FACILITIES At Your Service

We want you to feel a proprietary interest in this great institution. Our immense facilities, our wonderful resources, our big organization of experts, are freely *at your service*.

Use our Estimating Department, our Plans Department, our Contractor's Advisory Bureau—all branches of our service—*just as if you owned the place*. (117)

Gordon-Van Tine Co.



Finishing Lumber Shed No. 2



Interior View Loading Platform

One-Third Under Dealers' Prices! Deliveries Immediate—Stocks Immense!

The pictures shown here give merely a *hint* of the huge proportions of our plant and the great facilities for fast handling and quick shipping of Gordon-Van Tine Millwork and Lumber.

Our plant has 14 acres of concrete floor space. Two railroad switch tracks and triple loading platforms have capacity of 25 cars at a time. We ship most stock size orders same day received—*always within 48 hours*. And we handle special orders more promptly and at 40 per cent saving in price over any plant in America.

Springs Many Surprises

On nearly every building job there are a number of odd items in doors, windows, etc., that must be *made to order* at considerable *excess cost*.

Our new "*special*" designs, at "*stock*" prices, *solve the problem*, saving time and money for the contractor.

Many New Styles of Art Doors, Windows and Interior Combinations

In the new catalog we have devoted many pages to *color illustrations* and complete descriptions of magnificent Art Doors in Craftsman, Colonial and Mission Styles, Exquisite Art Nouveau Glass Windows set in Metal, and a great variety of Venetian Art Glass in strikingly handsome designs.

Consider the economy of buying "*special*" designs at "*stock*" prices, saving "*made-to-order*" expense.

OUR GRAND CATALOGS Swell Your Profits

Drop us a line *today*—ask for our Spring Catalog of Building Material.

Ask for our Lumber Catalog.

Ask for our Book of Plans—enclosing 10 cents for postage. Ask for Free Estimates.

Use our time-saving, money-saving facilities and make more money on every building job.

569 Federal St., Davenport, Iowa



View of Our Own Art Glass Shop

It is claimed that pea and buckwheat sizes of hard and soft coal and cheapest slack will yield as much clean, even heat in the Underfeed as highest priced coal; this is another factor in proving that while the cost of living has increased, the cost of heating has been successfully hammered down by the Underfeed. Contractors and builders are especially interested in the easily proved declaration that an Underfeed heating plant adds to the renting or selling value of any building.

The Peck-Williamson Co. will cheerfully send to anyone who writes for them, books of their Underfeed line—regular encyclopedias of heating facts. Fac-simile letters of appreciation will also be sent. Heating plans and services of their Engineering Corps are free. Progressive carpenters and builders should write to the Peck-Williamson Company, for their literature. Address The Peck-Williamson Co., 436 West Fifth St., Cincinnati, Ohio.

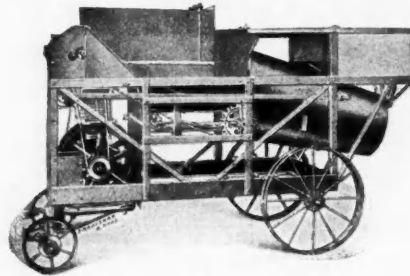
The Little Giant Mixer

The Little Giant concrete mixers manufactured by the Ballou Manufacturing Company, Belding, Mich., were one of the leading attractions at the recent cement show in Chicago.

The striking feature of the Ballou concrete mixers is the accuracy of the proportioning device. The materials are fed into their respective hoppers which are provided with adjustable gates that regulate the flow of materials in greater or less amounts as required. The materials being forced toward the gates by a special cork screw agitator are drawn out by a heavy conveyor belt in the exact proportions desired, and as determined by the adjustment of the gate. Thus, a maximum output of 15 yards an hour may be obtained or less than half that amount, according to the setting of the gates. The aggregate is then delivered into the upper end of the revolving drum, the rotary action of which thoroughly blends the material before the water is used, thereby making the balling of the

cement impossible. Having passed two-thirds down the drum the water is introduced and sprayed over the rotating mass, the volume being regulated by valves according to the consistency to be obtained.

The company claims that these machines possess the greatest strength in proportion to their weight of any built, the frames being trussed angle iron. The wearing parts are reduced to a minimum, and the cost for repairs and upkeep is therefore claimed to be a fraction of that of most continuous



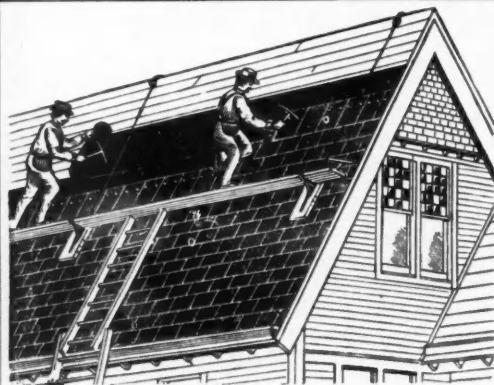
mixers. The mechanism is so simple that anyone can operate the machine. All power mixers are mounted, having high rear wheels, as they are most convenient to move.

The Ballou Manufacturing Company makes a number of different models of mixers. Three of them are Model A, the hand mixer; Model B, the two-hopper power; and Model C, the three-hopper power. They will be glad to answer all inquiries in regard to any of these mixers. Address correspondence to the Ballou Manufacturing Company, Belding, Mich.

Arthur Michaudel—Stained Glass

The accompanying illustration shows a beautiful stained glass window recently placed in St. Columbkille's Church, Paulina St. and Grand Ave., Chicago, by the well known art

TAKE UP SLATE ROOFING



Carpenters and Builders: Take up slate roofing in **unoccupied territory everywhere. It's a money maker.** Only a few simple, inexpensive tools and small capital necessary. Slating is easy to learn. Very much like laying shingles. Can be carried on in connection with your present line with no extra trouble or expense and will give good returns. A profitable, growing slate roofing business can be established **anywhere.** Besides the new work that comes up every year there are simply hundreds of worn-out shingle, metal, tin and composition roofs in every locality that **must** soon be replaced.

Sea Green or Purple Slate Roofs

OUTLAST ANY BUILDING

They **can't** wear out, rust, warp or decay. Are fire and spark proof. Reduce insurance rates. Afford clean cistern water. Don't require constant repairs and attention. Your neighbors are tired of paying good money for short-lived roofing—high-priced shingles that soon decay—tin and metal roofs that cause frequent

and costly paint bills—composition and the "oids" roofing that disintegrate. Furnish them with handsome, sanitary, fire-proof **Never-Wear-Out Sea Green or Purple Slate Roofs** that last forever.

Carpenters and Builders: Take up slate roofing this Spring. You will make good money and please your customers. Write to us at once for delivered prices on slate, tools and supplies and **Free** book of instructions. **Don't Delay. Write To-day.**

AMERICAN SEA GREEN SLATE CO., Box 125, Granville, N. Y.

This special proposition does not apply to any territory now covered by a Slate Roofer

Sea Green and Purple ROOFING SLATE



We have made the dreams of home come true for over 600,000 people, in every community and in every walk of life; from the humble cottage to the pretentious mansion, from the smallest hamlet to the largest city, the Spiegel, May, Stern Co. has been making happy homes for over a half century.

Rich and poor alike have been extended exactly the same terms, exactly the same low prices. There has been no favoritism shown—everybody gets the same liberal, generous treatment. And there isn't any magic about our way of doing business. Just a simple business proposition that has been wonderfully successful and which has built up during the last century the greatest business of its kind in the world.

Everything Shown in Our Home-Lovers' Bargain Book is an Unusual Bargain—Bought at Tremendous Reduction. No Extra Price if You Wish to Pay as Convenient

3,000 Bargains in Furniture, Carpets, Rugs, Stoves, Ranges, Draperies, Chinaware, Silverware, Sewing Machines, Washing Machines, Lamps, Clocks, Baby Carriages, etc.

We sell at cash prices—factory prices. No middlemen, no jobbers, no dealers—all these expenses and profits are cut out entirely. We sell from the factory direct to you by means of this catalog only. This is essentially a book of bargains. We are always in the market with plenty of money to take advantage of every possible bargain that is offered. We snap up everything in sight if we can get it at the right price, and we give you the advantage of our quantity-buying, adding only

one small profit. We guarantee a saving under prices quoted by any mail order house or by dealers of 15 to 50 per cent.

And if it is not convenient to pay cash you may buy on our liberal open account credit plan at the same prices as if you pay cash. No other concern in America does that. We are going to prove that to you, as we have to over 600,000 people. This concern has become the largest of its kind in existence.

**Cash or Credit
Thirty Days' Free Trial**

Anything shown in this book will be sent to you on 30 days' free trial. If it's not convenient to pay cash, send the first payment—about 15 cents on each dollar. Then the goods will be shipped, and you will have them in your home for a month before anything more is due.

If they are not satisfactory—not cheaper than anywhere else—you return them at our expense. Every penny you have paid, including the freight charges, will then be returned to you. Thus you see the goods before buying them. More than that, you actually use them a month. You have every chance to compare our prices with others. And we leave the decision to you. Isn't that immensely fair?

Our Guaranteed Saving

There are some things in this book which some mail order houses sell pretty close to our prices. Even on these things, however, we guarantee a saving of at least 15 per cent. Compared with dealers' prices, the saving on most things runs as high as 50 per cent. We also guarantee that.

We send the goods on approval under our guarantee to undersell all other prices—either cash or credit—by from 15 to 50 per cent. You can easily tell, when you see the goods, if we do that.

It is on this plan that we have built up this business with its 600,000 customers and its combined capital of \$7,000,000, with its six acres of floor space and its thousands of employees. Let us tell you the story in detail.

CUT OUT THE COUPON

and Get Our Big Free Bargain Book

Simply give your name and address on the coupon and mail it today. The big Spring Bargain Book or Stove Book, or both, will come by next mail. *Send no money or stamps.*

SPIEGEL, MAY, STERN CO.
1451 35th Street, Chicago

Mail me the big Spring Bargain Book
 Mail me your new Stove Book

Name.....
Post Office.....
State.....
I am particularly interested in
.....
Name article you most desire.

SPIEGEL, MAY, STERN CO.

1451 35th Street

(87)

CHICAGO, ILL.

Every Carpenter Should Investigate BEAVER BOARD

BEAVER BOARD offers the carpenter a great opportunity for fine work that brings increased reputation. It is easily put up, but the owner must go to you if he wants a high-class job.

Your work shows more in a good-looking BEAVER BOARD wall or ceiling than anywhere else in the house—and you get the credit.

Every good job is a standing ad for you. It won't crack, deteriorate or have to be done over like lath and plaster.

Some of the Advantages of BEAVER BOARD

BEAVER BOARD is made of selected woods, reduced to fibrous form and pressed into panels of uniform thickness, with pebbled surface admirably suited to tinting, stenciling or hand painting. The panels are nailed directly to the studding of new rooms, or may be put on over the lath and plaster of old walls. The seams are covered with decorative panel strips.

BEAVER BOARD resists the passage of heat, cold and sound; it withstands shock, strain or vibration; it is quickly and easily put up; it costs less than lumber or than lath and plaster.

Samples and Booklets Free

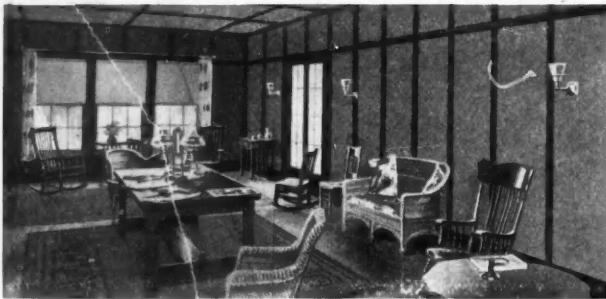
Write today for samples, booklets and special information to carpenters—how BEAVER BOARD is put up and decorated; directions for working out different designs; pictures of finished interiors; how to make partitions, drop ceilings, etc.

Sold by lumber, hardware, paint, wall-paper and builder's supply dealers and decorators, in sizes to meet all requirements. If not handled by your dealer, write us, mentioning his name.

The BEAVER COMPANY of BUFFALO

In U. S.—Address 281 Beaver Road, Buffalo, N. Y.

In Canada—Address 331 Beaver Triangle, Ottawa, Canada.



Lounging Room of a Large Country Club, Every Room in which is Finished with BEAVER BOARD Walls and Ceilings.

glass man, Arthur Michaudel. It is one of the popular "Good Shepherd" designs.

It is the boast of Mr. Michaudel and his associates that they reproduce perfectly on glass any subject from either paintings or photographs of persons and places. A guarantee is given by them, secured by a bond, that their work will not



fade or change in appearance from effects of the sun, age, or any of the elements. They have on their staff the most proficient artists and so can furnish the most artistic windows that can be had. Great care and study are used by them to make their pictorial windows correct, both historically and artistically.

All those interested in having art or stained glass work done, of whatever nature, will do well to write to Arthur Michaudel, 542 N. Paulina St., Chicago.

How to Lay "Neverleak" Metal Shingles

The directions for laying "Neverleak" metal shingles—"the roof that's water proof"—as given by their manufacturers, the Tiffin Art Metal Co., Tiffin, Ohio, are as follows:

Commence at lower left-hand corner of roof. In starting be particular to see that first course is started straight.

Draw a chalk-line parallel with the eaves. Get it high enough on the roof to permit first course of shingles to project about two inches over eaves. This is usually enough.

The shingle is nailed to the roof boards at nailing flange

Great Little Power Plant for WORKSHOPS!

Fuller & Johnson MULTI-MOTOR The "Right-Hand Man" of Carpenter and Contractor

Get this MULTI-MOTOR going in your shop. It makes machinery hum. It takes the place of *man-power* on many kinds of work.

Saves *treadle-pushing* and *crank-turning*. Saves time, money and muscle. Does a big day's work indoors or out for less than a cent an hour.

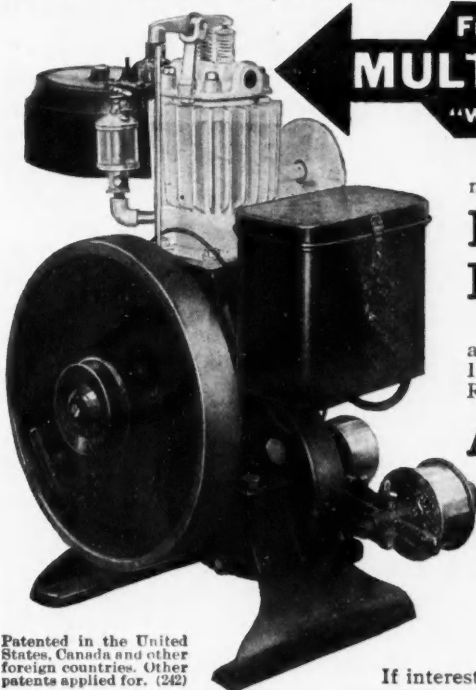
Little Engine—Big Power! Compact, Complete and Portable

The engine weighs only 250 pounds. It is an air-cooled, fool-proof Gasoline Engine—*complete in itself*. Important working parts protected by dust-proof crank case. Comes on its own base. Ready to run when uncrated.

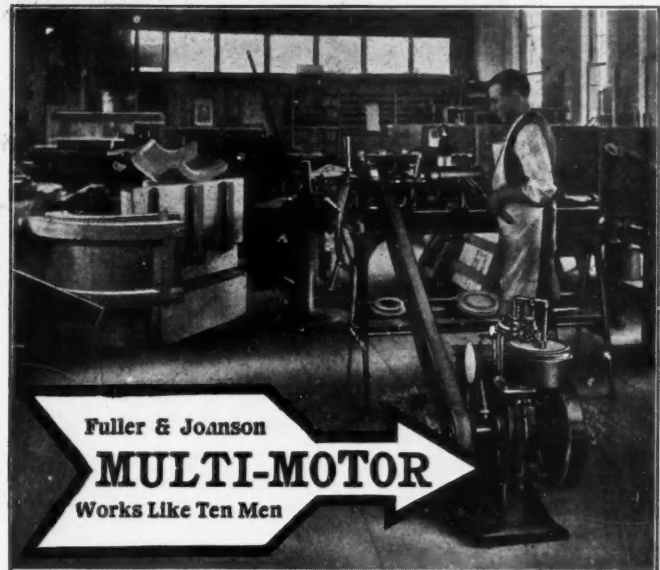
Set it anywhere, fill the tank, oil up and start the engine! Cannot freeze or overheat. Needs no attention while running. The Multi-Motor is the handiest engine ever built. For *indoor* use has *outdoor* fuel tank, insuring perfect safety.

Take the Engine to the Work!

You can load the Multi-Motor on an ordinary wheelbarrow and take it to any building in process of construction. It will help rush the job to completion. Saves many trips to the planing mill or repair shop. Always ready for business. A turn of the fly wheel starts it.



Patented in the United States, Canada and other foreign countries. Other patents applied for. (242)



Fuller & Johnson
MULTI-MOTOR
Works Like Ten Men

Runs All Kinds of Light Machines!

The Multi-Motor runs jig saws, lathes, grindstones, sanders and all other light machines used by carpenters and builders. Runs small electric lighting plants, water pressure systems, etc.

Power for Less Than a Cent an Hour!

This engine will quickly pay its cost in the saving of workmen's wages. *Think of having ample and instantly available power for less than a cent an hour!* Consider the great convenience of this little Portable Power Plant.

Fuller & Johnson
MULTI-MOTOR
"Works Like Ten Men"

**Built and Guaranteed
by Fuller & Johnson**

Sold by Leading Dealers in U. S. and Canada

The engine is as high grade in materials and workmanship as best automobile engines.

Fuller & Johnson Farm Pump Engine Fits Any Pump and Makes It Hump!

This engine has a pumping capacity of 400 to 1,000 gallons per hour. It fits any pump. No belts, arms, jacks, anchor posts or special platforms needed. It is practically the same as the Multi-Motor, equipped for pumping service. Runs all hand-power or foot-power machines.

A Remarkable Engine Book FREE!

The Fuller & Johnson Engine Book gives full details regarding both the Multi-Motor and the Farm Pump Engine. Investigate the possibilities of one of these engines for your special uses.

Book is yours for the asking. Send today. Address

FULLER & JOHNSON MFG. CO.

3 Ames Street (Established 1840) Madison, Wis.

If interested in large engines, ask for catalog of our famous Double-Efficiency Engines.



Durable, Attractive and Weatherproof Roof of "Neverleak" Shingles

on right side of shingle.

Two nails should be used, one at top and one at bottom, each about two inches from end of shingle.

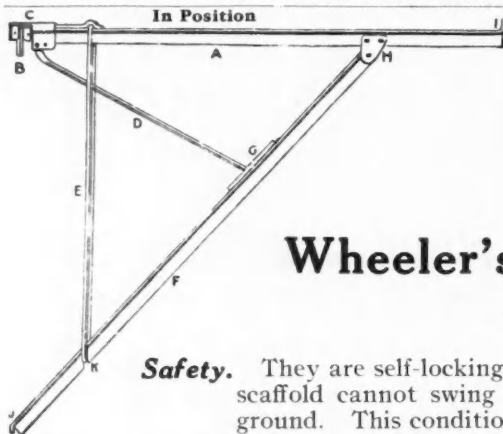
Do not hammer down the locks of the shingle. All that is required is to nail them. Every other course begins with a half shingle.

If it is desired to have the finish flush with the eaves begin at the lower left-hand corner as above, being careful to get the first course of shingles parallel with the eave, by nailing a cleat to butt the shingles against, put on six or seven shingles, loosely nailed to make sure that you are starting right. Then nail on a strip of gable end finish, beginning

at the eaves and complete nailing the finish as you go toward the peak or ridge.

Before you nail on all the shingles, put on the Ridge Roll or Hip Cap and fit the shingles into it, putting the shingles up into the fold of the cap, not under it. Do not nail through the cap and shingle.

"Neverleak" Metal Shingles are laid on the same rules that govern the laying of wood shingles or slate. In flashing against a side wall, bend the shingles so as to project up the side of the wall three inches and counterflash down to the roof line. These directions apply to dormers, chimneys, skylights, etc.



\$10 to \$35 SAVED

on every frame house you build by using!

Wheeler's Safety Scaffold Brackets

Strongest and best brackets made.

Safety. They are self-locking and rigidly firm when put in place. With them the scaffold cannot swing or vibrate and men feel as safe as if working on the ground. This condition enables them to work faster and better.

Economy. One man can put up a dozen in fifteen minutes without assistance and take them down in less time. No nails or lumber used.

Convenience. They are adjustable to any thickness of board. They fold in compact form and take up but little room when handling. There are no separate or loose parts to come off and get lost. Always ready for use.

Durability. They are made of T shaped steel, which gives additional strength, and never wear out.

Capacity. Our 3½ ft. brackets carry 1500 pounds.

Figure the benefits. You will find they will pay for themselves several times in a season. Write us now and prepare for your busy season. Prices and terms upon application.

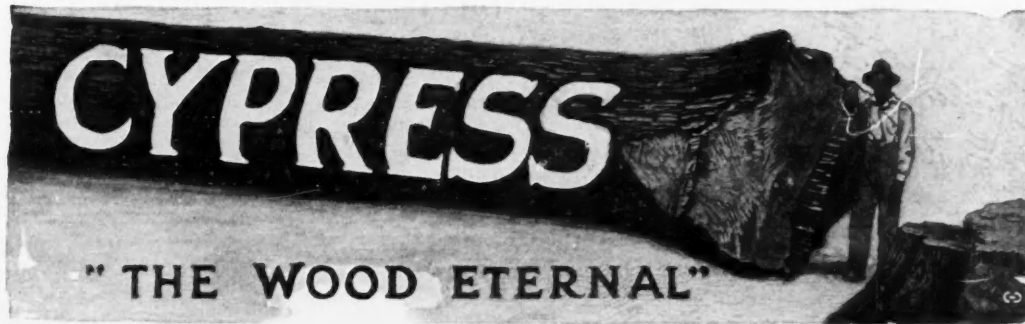
American Steel Scaffold Co.

501 Woodward Ave.—Detroit, Mich.



Folded

"HE WHO USES CYPRESS BUILDS BUT ONCE"



You Know the Ancient fame of

CYPRESS



But do you know its uses *today*,
and their significance to you?

CYPRESS is *the* wood of Scriptural history, and of romance; CYPRESS was the mystic wood of mythology—and it was the reliance of the sturdy builders of early America; CYPRESS always has been a magnet for those who have wrought sentiment and beauty into useful things—and CYPRESS is *today* the *staple wood* of the hard-headed calculating buyer who seeks the most *lasting* values for his lumber-money.

This concerns *YOU*—if you like to avoid repair bills on anything made of wood.

It was of CYPRESS, according to Pliny, that the famous statue of Jupiter was carved; it existed more than six centuries without a sign of decay.

The historic Gates of Constantinople were of CYPRESS; they were on duty for eleven centuries without a furlough.

The CYPRESS doors of ancient St. Peter's, in Rome, were in a state of perfect preservation when removed by Eugenius IV; they had been swinging on the faithful for twelve centuries.

The only Egyptian mummies that survive intact and unblemished are those whose executors filed them in CYPRESS receptacles.

To bring the record nearer home—there was Thomas Lyon, who in 1640 built him a house in Greenwich, Connecticut. He put CYPRESS shingles on its roof and sides. With no exterior repairs of consequence, this house is today occupied as a residence.

THIS WAS AMERICAN CYPRESS—the kind we own and cut and are selling you.

CYPRESS is in truth "the wood eternal." He who uses Cypress builds but once. If you are putting up a palace or a pasture-fence, and want to build it "for keeps"—USE CYPRESS.

There is going to be a liberal education (and a wonderful *investment* value for you) in the CYPRESS advertising here begun—and in the detailed information and reliable counsel to be had promptly, *WITHOUT COST*, if you will *WRITE US YOUR OWN NEEDS* (big or little), and *ASK YOUR OWN QUESTIONS* of the "Contractors' Department" of the

Southern Cypress Manufacturers' Association

1216 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.



Probably your lumberman sells CYPRESS; if not Write Us, and we will tell you the dealer handiest to you.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

**FIREPROOF
CORTRIGHT METAL
SHINGLES**



Selling Talk No. 11

4186 BUILDINGS BURNED

A recent issue of a publication devoted to insurance interests records 4186 fires which they directly attribute to the use of wood shingle roofs.

From this same article under the heading "The Folly of Wooden Roofs," we quote the following opinion, expressed before the Chamber of Commerce of Richmond, Va., in a discussion of wood roofs:

"They are wholly bad and should not be tolerated in any state or city—Twenty-seven per cent of all fire losses are due to exposure; that is they spread from one building to another and the main cause of exposure fires, apart from unprotected windows is that of (wood) shingle roofs."

In view of these appalling facts why is it that property owners still continue to risk the total loss of building after building by roofing them with wood shingles?

Especially when the remedy is so readily obtainable in **Cortright Metal Shingles**.

Cortright are fireproof and storm-proof besides being more handsome and durable than either wood or slate.

Cortright's as a matter of fact will outlast the building itself and flying embers from a neighboring fire such as shown in the picture above can have no effect on a roof of **Cortright Metal Shingles**

Will you let us send you the proofs of all this? All we're waiting for is your name. A postal will do.

Cortright Metal Roofing Co.
Philadelphia and Chicago

This is one of a series of Selling Talks published to help you make more profit through Cortright Metal Shingles.

Next month's talk will tell why Cortright's make the handsome roof

COUPON

**CORTRIGHT METAL ROOFING CO.
PHILADELPHIA, PA.**

Gentlemen:—
You may send me the two free books offered by you in the March issue of American Carpenter and Builder.

Name

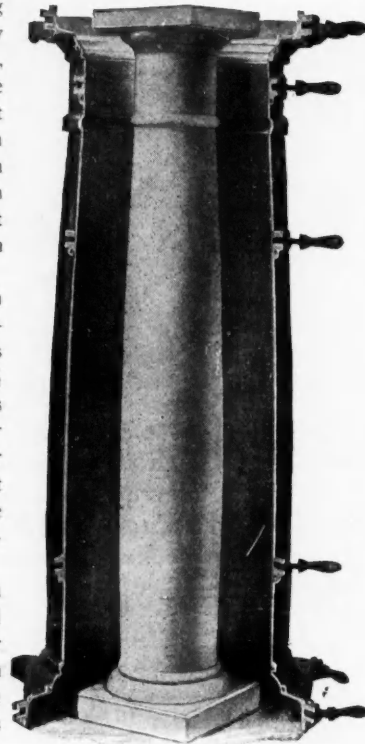
Street Address.....

City.....

Business.....

"Hoosier" Cement Columns

The tendency of the property owner is to have not only an attractive home, but one that has as many conveniences for comfort as possible. The roomy veranda or porch is rightfully becoming more popular every day. When well designed and built it adds to the attractiveness of the house. The Colonial column is being specified and used in nearly every part of the country by owners desiring a building detail which seldom fails to add greatly to the fine appearance of the home. The "Hoosier" Moulds now being placed on the market by the Hoosier Mfg. Co., Goshen, Ind., will give contractors and cement workers a mould which makes a Colonial column of cement, complete with top and base, without **flutings or sections**, all in one solid piece.



The "Hoosier" porch column mould makes columns 54 and 60 inches high. The top is 9½ inches; base, 11¾ inches square, and the diameter is 9 inches. Two or three of these cement columns can be made each day with a "Hoosier" mold.

The company claim that a cement Colonial column made in their moulds retails at from \$3.50 to \$7.50 each. The cost of manufacturing is said to be 50 cents, or, where made of Medusa

Portland cement and white silica sand, about \$1.00. Only two buckets of cement, five buckets of sand, and one hour's time are required for each column. This, therefore, presents a very attractive proposition as a money maker for the man who wants to manufacture his own porch columns or for the cement workers who desire to make them to sell.

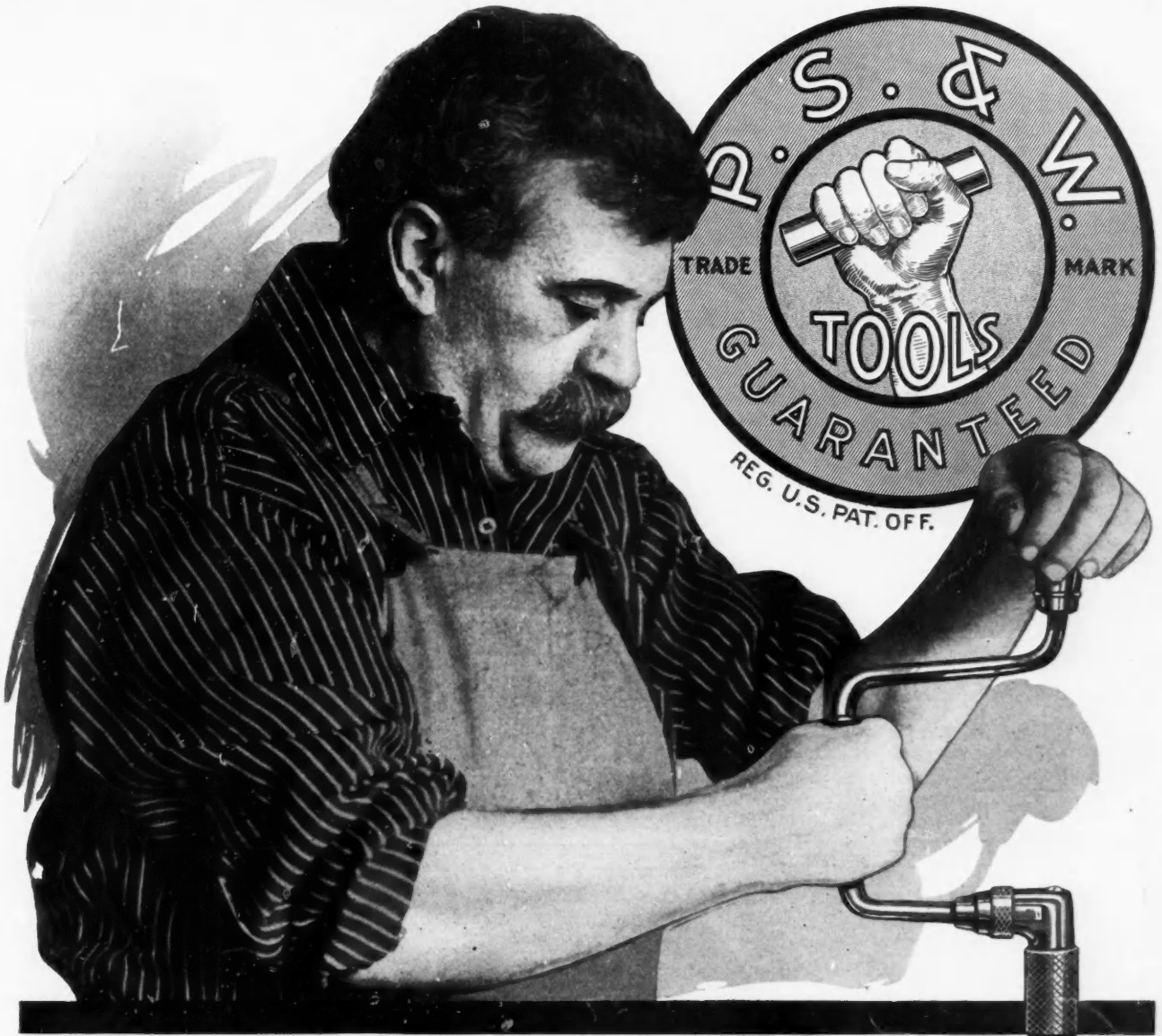
Everyone knows that a well-made cement column has many advantages—and there ought to be a ready market for cement Colonial columns. As a striking testimonial to the popularity of the "Hoosier" cement columns in places where they have been introduced, it is stated that in Goshen, Ind., a city of 9,000 people, there are 300 houses, in the building of which these columns have been used; 19 building contractors use them exclusively.

The Hoosier Mfg. Co. will send full information on request.

Economy Roofing and Siding

The Economy Roofing and Siding Co., West Main street, Tarrytown, N. Y., are directing the attention of carpenters and builders to a new roofing and siding, which does away with sheathing and building paper; and at the same time, it is claimed, makes a house just as weatherproof and strong. An illustration showing this material is printed herewith.

This siding will apply to a building in any position similar to the styles of siding now in use, and is made in any width desired by the trade. By the use of an extra member the siding may be used in various ways, as shown in this company's new catalog. It is also made in different styles, and is arranged so that the water table is joined on by the siding.



GOOD service for many years in the hands of skilled mechanics is the best standing advertisement of the SAMSON Brace and other items in the large line of P. S. & W. Carpenters' Tools.

Look for The MARK of the MAKER; it is branded on our highest-grade tools, and is an absolutely dependable guarantee of excellence.

The P. S. & W. Samson, or "Big Chuck" Brace has a ball-bearing chuck which grips tighter and releases more easily than any other ever made. It has also a steel-clad, lignum vitae head with dust-proof ball-bearings; a forged steel alligator jaw; solid steel sleeves; coco bolo center, etc.

Other P. S. & W. Tools for Carpenters include the largest line of braces and auger bits, and the most complete line of chisels and gouges on the market. Also highest grade drawing knives, squares, calipers, hammers, hatchets and many other carpenters' tools. These are all superior in finish, workmanship and fitness for their several uses.

Write today for our 165-page "Mechanics' Handy List." It contains 35 pages of valuable shop information and a catalog of over 200 tools. Sent free at your request.

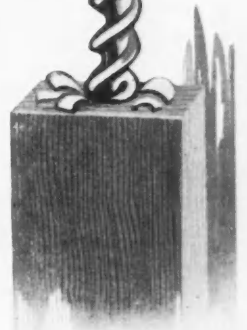
Our four large Lines of Guaranteed Hand Tools for Electricians, Machinists, Tinsmiths and Carpenters are sold by leading dealers in the United States and Canada, or can be ordered by them from any hardware jobber. Insist on The MARK of the MAKER and accept no substitute.

The Peck, Stow & Wilcox Company

MANUF'R'S of the Largest Line of Mechanics' Hand-tools Offered by Any Maker

Est. 1819 Address correspondence to 22 Murray St., NEW YORK CITY 5 Large Factories

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



Other uses include trim, base, Dutch shelf, picture molding, base molding, etc.; the odds and ends can then be turned upside down and used for flooring, or as a good trim for rafter ends, etc.

When used for roofing it is somewhat heavier than the siding and should be painted all over, and then painted or tarred or sanded after laying. Well taken care of, when made



"Economy" Siding.—Patented

of cypress, it will last as long as the house and it makes a strong and light roof. The roof should not be too flat and the rafters should be either set closer together or filled in between with something lighter, such as 2 by 4's, on account of the nailing. The valleys and chimney can be flashed the same as for shingles by setting a board flush with the rafter to hold the flashing, finishing the end the same as the course of shingles. The hips and peaks are finished in the same manner as a slate roof, or in other ways.

The company will sell this material direct, or will dispose of rights to make and sell it, under patent license. Architects, millmen, carpenters and builders should write for this firm's new catalog.

The Framing Problem Solved

The ABC Protractor Square which is being introduced by the Crookston Tool Company, Crookston, Minn., is certainly a wonder in its line.

Every carpenter knows how difficult it is to use the common square and apply it intelligently to all framing. Every day we find out how little we know about it when we come to do it, and with this in mind the Crookston Tool Company

constructed the ABC Protractor Square. They have produced a tool, which they claim, solves the problem, and which it is possible to readily understand.

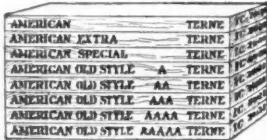
The ABC Protractor Square is an adjustable triangle combined with a degree circle. A triangle that is adjustable makes it possible to get all lengths and bevels without any figuring. There are no imaginary lines with the ABC Protractor square, but three members complete the triangle. The rise, run and the hypotenuse which represents the plum, base cut and the length of a rafter.

The degree circle is another one of the important parts of the ABC Protractor Square, for the reason that so many architects are now drawing their plans in degrees. Having the ABC Protractor Square it makes no difference which way the specifications read. The illustrated directions, which go with every tool, explain plainly how to do it, and anyone can grasp it at once. They detail the work all the way through. We understand the Crookston Tool Co. guarantees the tool to give satisfaction. They will furnish readers of this paper with full information of this tool on request.

"Contractors" Portable Saw Bench

This machine, manufactured by the American Saw Mill Machinery Company, 50 Church St., New York City, is particularly adapted to the use of general contractors, concrete workers, contractors and builders, and engineers. It is portable, compact, self-contained and very substantially built throughout so as to stand the hardest kind of service. It is intended to be taken right to the job where it will do in a most satisfactory manner a large variety of light and medium mill work. No contractor's equipment is complete without one or more of these machines.

It consists of a combined rip and cut-off saw bench with boring attachment, jointer and dado heads, with a gasoline



American Old Style Ternes—A to AAAAA, 20 to 40 pounds coating



American Numethod Ternes—three grades, B, D and F; 40, 30 and 20 pounds coating

**32 POUNDS COATING
ROOFING TIN**

in the hands of a practical roofer insures a roof of quality and lasting protection—fireproof, weatherproof and reasonable in cost. MF ternes are made by the Old Style double-dipped, pure palm oil process, and are high grade in every particular. Other standard ternes are American Old Style and American Numethod, as noted above. Write nearest District Sales Office for full information and booklet.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh Portland San Francisco St. Louis

You may never use a varnish brush, but you ought to know the best varnish.

The way to know is by this label.

When you recommend Berry Brothers' varnishes to your customers, you are not only giving them good advice, but you are insuring the permanent beauty and protection of your handiwork.

Good carpentry and cabinet work deserve good finishing with the best varnish you can get.

Berry Brothers' Architectural Varnishes

MEET ALL REQUIREMENTS FOR HIGHEST GRADE FINISHING IN BUILDINGS

TRADE
LIQUID GRANITE
MARK

For finishing floors in the most durable manner possible. Its quality has made it the best-known and most widely used of all varnishes. There is no substitute.

WOOD
LUXEBERRY
FINISH

For the finest rubbed (dull) or polished finish on interior woodwork. It has for years been the standard to which all other varnish makers have worked.

ELASTIC INTERIOR
FINISH

For interior woodwork exposed to severe wear and finished in full gloss, such as window sills and sash, bathroom and kitchen woodwork, and stands the action of soap and water to an unusual degree.

ELASTIC OUTSIDE
FINISH

For front doors and all other surfaces exposed to the weather. Dries dust free in a short time and possesses great durability under the most trying weather conditions.

SEND FOR OUR FREE BOOKLET:
"NATURAL WOODS AND
HOW TO FINISH THEM."

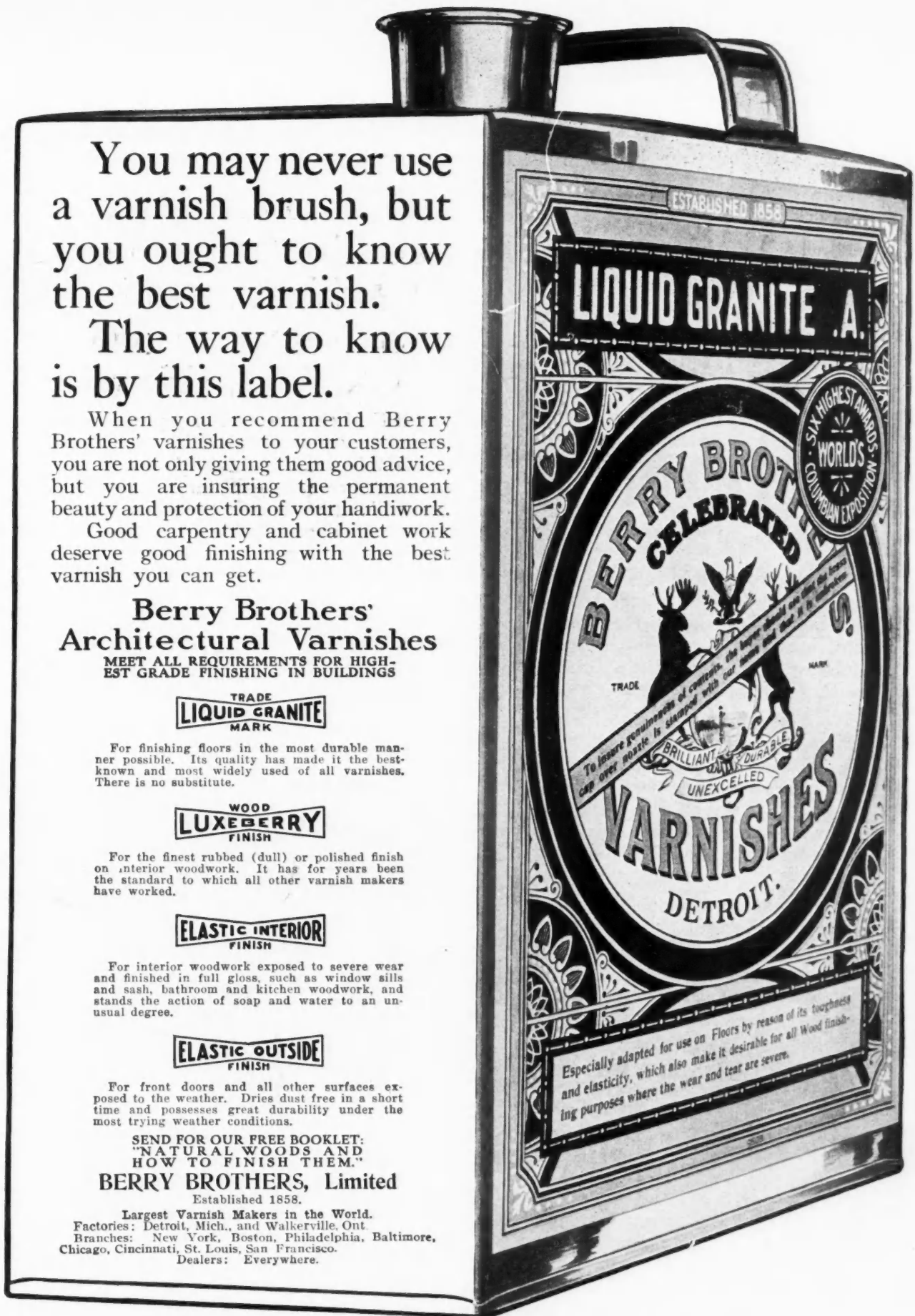
BERRY BROTHERS, Limited

Established 1858.

Largest Varnish Makers in the World.

Factories: Detroit, Mich., and Walkerville, Ont.
Branches: New York, Boston, Philadelphia, Baltimore,
Chicago, Cincinnati, St. Louis, San Francisco.

Dealers: Everywhere.





SIMONDS

(Pronounced "SI-MONDS")

¶ The very first step taken toward making a Simonds Saw—the making of the steel—is specialized under a Simonds Process. By it we produce Simonds Special Crucible Steel—for Simonds Saws only.

¶ No other process produces a better steel for saws. It is tough, flexible, with a temper taking quality that makes it when treated, tempered, ground, finished and made into a saw blade, in the Simonds way, in the Simonds shops, the best saw that can be bought at any price.

¶ Another thing: should even the slightest defect crop up in a Simonds Saw, while in the process of making, that condemns it to the scrap heap. Remember you can always be sure of buying high grade quality when you buy a **Simonds**.

To buy the right saw, let it be rip, hand, or panel, see that the Simonds (Si-monds) name is on the BLADE

Let us send you a free copy of "Simonds Carpenter Guide" Tell us what kind of a saw you will need soon

Simonds Manufacturing Company
Fitchburg, Mass.

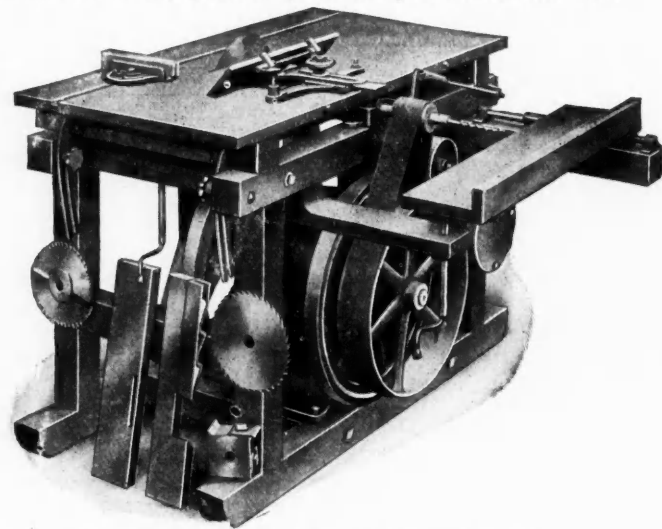
Chicago, Ill.
New Orleans, La.
Seattle, Wash.

New York City
San Francisco, Cal.
Lockport, N. Y.

Montreal, Que.
Portland, Ore.
London, Eng.

engine and ample power mounted on the frame directly under the table and belted direct to the mandrel. A suitable belt tightener is provided with adjustable spring take-up so as to insure the proper tension on the belt.

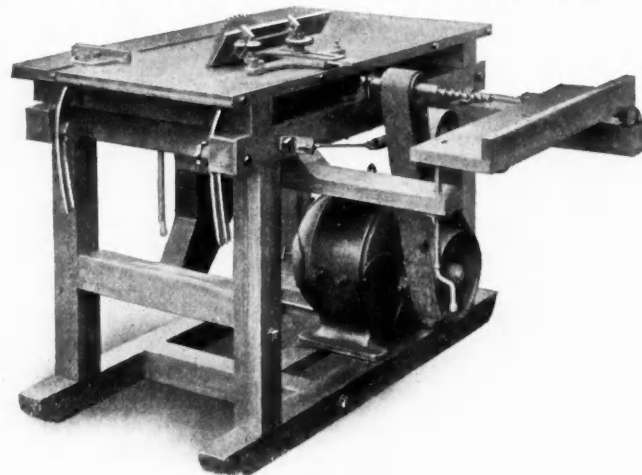
The frame and top are made of seasoned hard wood accurately framed and securely bolted together, insuring rigidity and durability, and is handsomely finished in natural color. The top is strongly hinged to the rear of the frame, and is readily raised and lowered by the hand screw and firmly held in any position by the clamps on each side. The



"Contractors" Portable Saw with Gasoline Engine

mandrel is steel 13/16-inch with self-oiling babbitted boxes strongly yoked together, thus securing rigidity and permanent alignment. The end has a 1/2-inch hole to receive the bit shank, and a hollow safety set screw to hold it securely. The boring table has steel slide, a travel of 6 inches in line with the spindle and a vertical adjustment of 3 1/2 inches.

Adjustable ripping and cut-off gauges are furnished. The ripping gauge is provided with a tilting fence for bevel sawing and has rapid, fine adjustment and may be secured at any point. The cut-off gauge slides in an accurately-planed iron groove, the entire length of the table, and can be set to cut

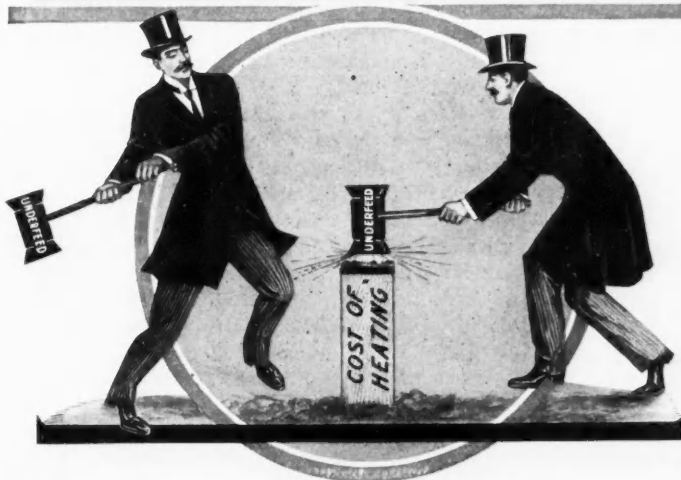


"Contractors" Portable Saw with Electric Motor

square or any angle to 45 degrees. The engine is of the hopper cooled type, strong, durable, simple and reliable. It starts easily, runs smoothly and steadily; has an ingenious speed regulator and carries sufficient gasoline to run eight hours steadily.

The regular equipment consists of engine with batteries, spark coil and connections, driving belt, rip and cut-off gauges, one 12-inch rip saw, one 12-inch cut-off saw, one 1/2-inch and

HAMMERING DOWN the Cost of HEATING



CONTRACTING Carpenters, Builders and architects who specify the **UNDERFEED** insure clean, *even* heat at *least* cost and add to the *renting* or *selling* value of the building. With living expenses in general *climbing higher*, Underfeed Warm Air Furnaces and Steam and Hot Water Boilers are hammering down the cost of heating to the lowest possible notch.

In thousands of American homes *clean, even* heat is enjoyed at *least* cost. The Underfeed has made this possible. There's no guess work about it. Those who have thoroughly tested the Underfeed and proved its merits, give voluntary testimony that they *know* by their own experience that

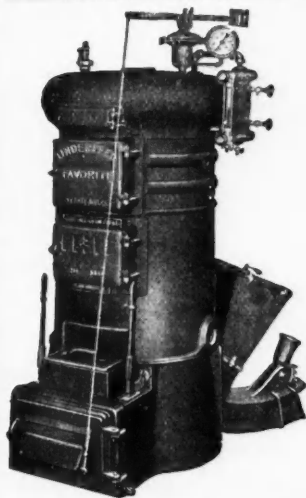
The Peck-Williamson Underfeed HEATING SYSTEMS WARM AIR STEAM-HOT WATER FURNACES-BOILERS

Save $\frac{1}{2}$ to $\frac{2}{3}$ of Coal Bills

This *saving* of from 50% to 66 $\frac{2}{3}$ % is assured alike in modest home or largest building. Pea or buckwheat sizes of hard and soft coal and *cheapest* slack which would smother a fire in an ordinary heater yield as much heat as *highest* priced coal. The Underfeed coal-burning way is responsible for this seeming miracle of economy. Coal is pumped from below. All fire is on top—the sensible *heat-*

conserving way. Smoke and gases, wasted in other heaters, *must* pass through the flames and are consumed. That settles the smoke nuisance and nets *more* heat. The few ashes are removed by shaking the grate bar as in ordinary furnaces and boilers. Satisfaction with the Underfeed *grows* with the years. Abundant testimony in proof of this truth is at hand.

This illustration shows the Underfeed Boiler.



Here's H. C. Beman, of Meadville, Pennsylvania, who writes:

"My Underfeed furnace now in its fourth year of service proves itself **BETTER** every season; no cost for repairs whatever; still perfect as new. The average cost of coal to heat my twelve-room house **THOROUGHLY** through complete winter seasons is \$22.50 per year. I don't think that can be beaten."

We could publish a book as big as an encyclopedia filled with letters like this. Let us send you **FREE** a lot of facsimile testimonials and our Underfeed Furnace Booklet or Special Catalog of Steam and Hot Water Boilers. Heating plans and services of our Engineering Corps **FREE**

CARPENTERS—Cut This Out, Fill in and Mail Today

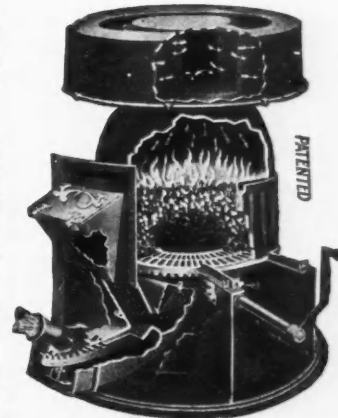
THE PECK-WILLIAMSON CO.,
436 W. Fifth Street. Cincinnati, Ohio

I would like to know *more* about the Heating Plants which cut down the cost of Coal Bills from 50% to 66 $\frac{2}{3}$ %. Send me—**FREE**—

UNDERFEED FURNACE BOOKLET.....
BOILER BOOKLET.....
(Indicate by X Booklet you desire)

Name..... Street.....
Postoffice..... State.....

Illustration shows furnace without casing, cut away to show how coal is forced up under fire, which burns on top.



THE PECK-WILLIAMSON CO., 436 West Fifth Street, Cincinnati, Ohio

one $\frac{7}{8}$ -inch dado head; one jointer head with four 2-inch knives, and one each $\frac{1}{2}$ -inch and 1-inch auger bits; one cast iron jointer table with adjustable section for rabbitting, one throat piece for dado head, one throat piece for saws, oil can and wrenches.

These people are prepared also to furnish this machine equipped with electric motor to suit any current or voltage, when so ordered, at extra cost.

Dimensions: Floor space required 54 by 54 inches; table, 54 by 30 by $1\frac{1}{4}$ inches; total height, 36 inches; frame timbers, $3\frac{1}{2}$ by $3\frac{1}{2}$ inches; Mandrel takes saws with 1-inch hole; weight, complete as described, 960 pounds; weight, without boring attachment, 900 pounds.

For further information and prices address the American Saw Mill Machinery Co., 50 Church St., New York City.

Key to the Steel Square

The above is the name given to an ingenious little instrument, perfected by Mr. A. W. Woods, Associate Editor of the AMERICAN CARPENTER AND BUILDER and steel square authority, who has contributed many valuable articles on the use of the steel square.

Many thousands of these instruments are now in use in this and other countries; and it is safe to say that there is nothing on the market to-day that so clearly illustrates the use of the common steel square, as does this simple little instrument. It is true that not every carpenter needs this instrument, but every carpenter should have it. The banker would be considered an incompetent indeed, if he could not readily figure interest, discounts, etc., yet he finds it very convenient to have a book of interest tables close at hand for ready reference. He finds it a head-resser and a great time saver. The progressive mechanic, like the banker, is quick to see the advantage of these helps; and for that reason he forges ahead of the crowd.

With the Key anyone can instantly find what figures to use on the common steel square for the rafter cuts, together with the lengths of all rafters for all pitches, from one to twenty-four inch rise per foot run. Having the lengths given decimally for one foot run, it is an easy matter to find the lengths for any run.

The instrument is about three inches in diameter. On each side there is a disk, pivoted at the center; one side gives the length and cuts of the rafters, the other gives the table for finding any angle in degrees. By turning the disk until the slot in same rests opposite the pitch or angle desired, only the figures for the lengths and cuts for that pitch, or angle, will be exposed, thereby preventing errors.

Much other valuable information is contained in the Key, all points being fully explained in the small book of instructions. A neat morocco case for carrying the book and Key and of suitable size for the pocket, is given with each Key.

The retail price is \$1.50, postpaid, and can be had from the AMERICAN CARPENTER AND BUILDER, 185 Jackson Boulevard, Chicago.

Keep Your Eye on Diehl

We are pleased to call the attention of our readers to the fact that the Diehl Novelty Company of Sheboygan, Wis., are manufacturing a very fine line of builders' hardware specialties. They are making several new additions this season and will be able to furnish their customers with almost anything that they desire in the specialty line. We are not at liberty just now to mention their new additions for the reason that they wish to put a few in stock before informing their customers, so as to be able to send out samples upon request. Their new catalogue for 1911 will be ready for distribution about March 1st, and we feel that it would be of interest to our readers to keep in touch with them for anything new in the specialty line.

ASBESTOS "CENTURY" SHINGLES

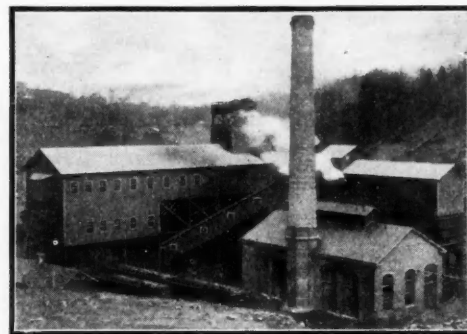
"The Roof that Outlives the Building"

Loss by fire is the one risk that the property owner dreads most. He is so entirely at the mercy of carelessness or negligence on the part of his neighbors.

In nine cases out of ten where a fire starts outside the building it catches the roof.

Asbestos "Century" Shingles are *absolutely fireproof* because they are made of *reinforced concrete*. And more than that—they are *light in weight* and can be laid so they hold up even when the roof frame is weakened by fire within the building.

Asbestos "Century" Shingles are made of hydraulic cement reinforced with interlacing Asbestos fibres—compacted by tremendous pressure.



Asbestos "Century" Shingle Roof—Tipple and Coal Bin of the New River Collieries Co., Sun, West Virginia.

They are indestructible by weather or time and they grow harder and tougher with exposure. *No repairs—no painting.*

You can get Asbestos "Century" Shingles in numerous shapes and sizes to fit any architectural scheme. Three Colors—Newport Gray (silver gray), Slate (blue black), and Indian Red. Ask your Roofer for new quotations. Write for Booklet "Everlasting 1911"

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania

EVERY CONTRACTOR IN AMERICA

CAN
OWN A

Hupmobile

WITH
PROFIT

GUARANTEED FOR LIFE



Runabout \$750 f.o.b. Detroit

including three oil lamps, tools and horn.
Gas lamps and tank, top, windshield, etc.,
extra. Detachable doors, \$25.

**Touring Car for Four, \$900. Four-Door Touring Car, \$925
Torpedo, \$850**

If you have more time, you could supervise more work—keep more jobs going.

If you could superintend more work you could employ more men, and your profits would be greater.

A Hupmobile is the key to the situation.

Because a Hupmobile would give you more time—save money for you—save you a vast amount of inconvenience—keep you in closer touch with your men and your work every day.

We are not making unsupported statements when we say this.

We are telling you facts—facts from the experience of other contractors and builders, who long ago saw the value of the Hupmobile to them and their business and speedily adopted it.

The keep of a Hupmobile would cost you no more—if indeed it cost as much—as

the means of transportation you now employ.

This, too, has been established time after time.

The Hupmobile is pre-eminently fitted for the quick get-about work of the busy builder.

First, it is simple in construction and simple to operate.

It is light and compact. It turns in a narrow street without backing.

Its lightness is easy on tires—easy on the car—cuts down the quantity of oil and gasoline required for its operation.

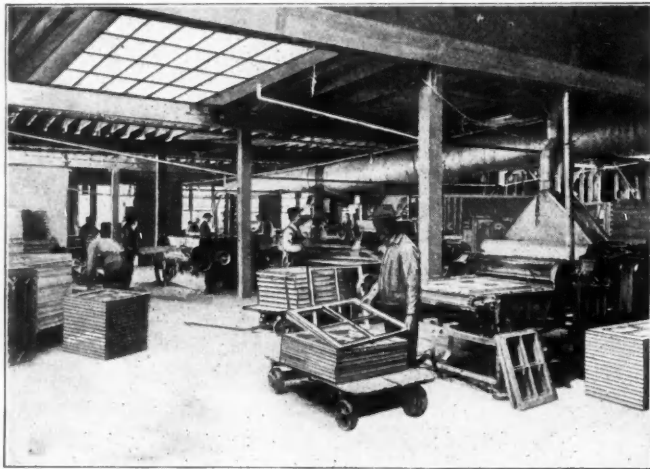
It is efficient from one week's end to the next; and its repairs are few, because it is built with the same care and of the same fine materials that characterize the largest and most expensive cars.

Can you really afford to be without a car in your business—and that car a Hupmobile?

Hupp Motor Car Company

Desk 32

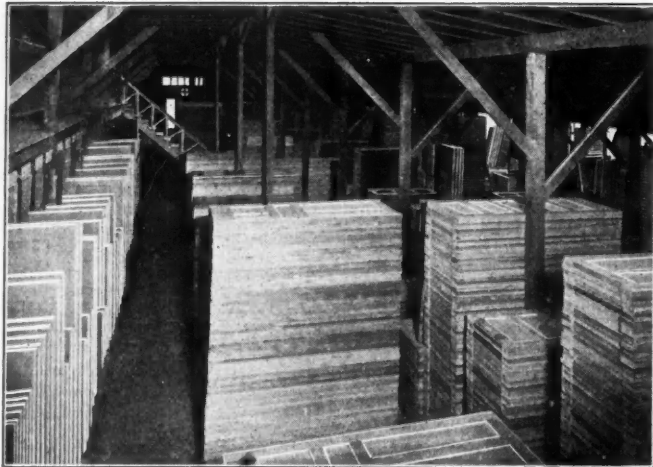
Detroit, Mich.



SASH DEPARTMENT. Capacity 5,000 sash a day.

THESE PICTURES SHOW YOU how well prepared we are to fill your orders and why we can make prompt shipment. When goods are selected from our Building Material and Mill Work Catalog we can ship them to you practically on the same day that your order is received.

EXPERIENCED BUILDERS WILL APPRECIATE QUICK SERVICE. We have over seven hundred people engaged at our factory to handle your orders.



A CORNER IN DOOR WAREHOUSE.

75,000 Doors in readiness to ship on your order.

YOUR ORDER WILL BE shipped at once. No order is too large and no order is too small for us to handle. We are equipped for handling orders amounting to from \$500.00 to \$10,000.00 just as promptly as orders amounting to from \$5.00 to \$10.00. Our shipping facilities are unexcelled anywhere.

Want a Carload of Mill Work in a Hurry?
Here's the Place to Get It.



SHIPPING DEPARTMENT No. 1. Especially equipped for handling carload orders. Capacity twenty carloads a day.

CARPENTERS

THE GREATEST MILL WORK ORGANIZATION IN EXISTENCE IS NOW AT YOUR SERVICE.

In these great warehouses you can make one dollar do the work of two. You can always be sure of getting quickly, just what you want in the sizes and grades you order.

The few prices quoted below have been selected at random from our new Building Materials and Mill-work Catalog which we will be glad to mail you free upon request. Our line is complete. It includes a full assortment of the new and popular Craftsman doors, Craftsman trim, Craftsman buffets and China Closets at about one half usual prices.

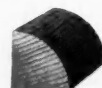
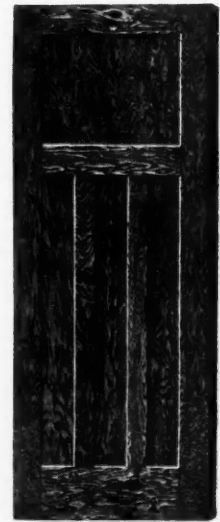
95c Buys a 2x6 - Foot Four-Panel Door



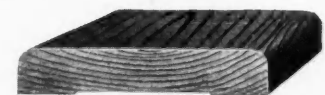
Price...95c



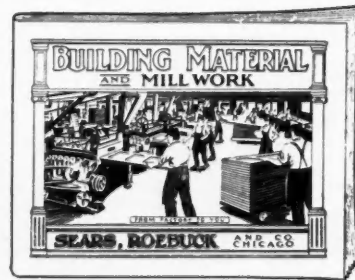
Price...\$1.75



Quarter Round Moulding. Price, per 100 feet...25c



Yellow Pine Casing, 4 1/2 inches wide. Price, 100 feet...\$1.75



This Catalog is free if you will mention the American Carpenter and Builder.

Have you read our announcement in last month's issue?

\$1,000.00 SAVED ON A HOUSE

113 Bridge St., Cohoes, N. Y.
Sears, Roebuck & Co., Chicago, Ill.

Gentlemen:—I am sending you a photograph of the house built from material shipped from you and according to your plans. I am well satisfied with the quality of materials and your prompt shipment. After a close estimate I can say that I have saved on this property \$1,000.00.

Very truly yours,
Frank Chamberlain.



SEARS, ROEBUCK AND

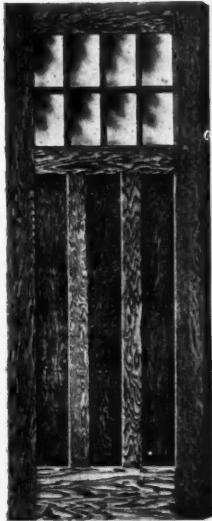
CONTRACTORS

WE CAN SHIP COMPLETE HOUSE BILLS IN 48 HOURS. WHERE ELSE CAN YOU GET SUCH PROMPT SERVICE?

You will never lose a contract on account of not getting your goods on time. Our big stock and our immense working force of mechanics, packers and shippers make it possible for us to give you better service in the way of prompt shipment than any other concern.

You can realize a saving of from \$500.00 to \$1000.00 in the cost of materials for a single house when by ordering from us. Read below the letters from two people who have built according to our plans and with our material. Write for our catalog. It's free.

This Four-Panel Front \$285 Door For



Price... \$285



Price... \$9.20



We ship our mill work into every state in the Union and save our customers from 25 to 50%

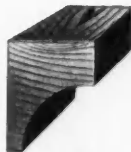
Oak Stair Newel. Price, \$2.96



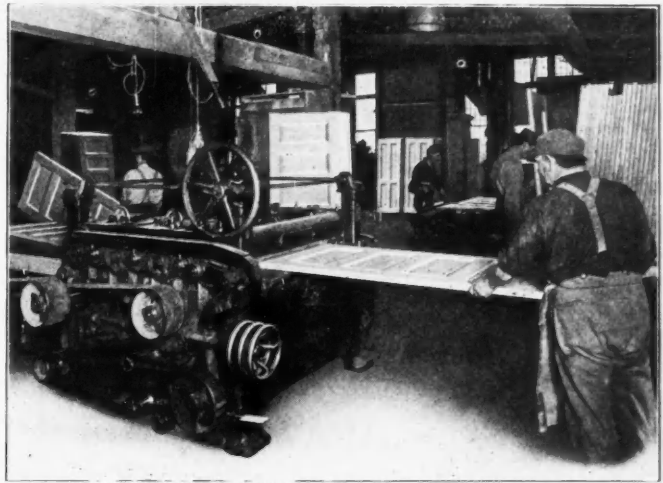
Yellow Pine Kitchen Base, 7 1/4 in. high. Price per 100 ft. \$2.96



Soft Pine Window Stop. Price, per 100 feet... 24c

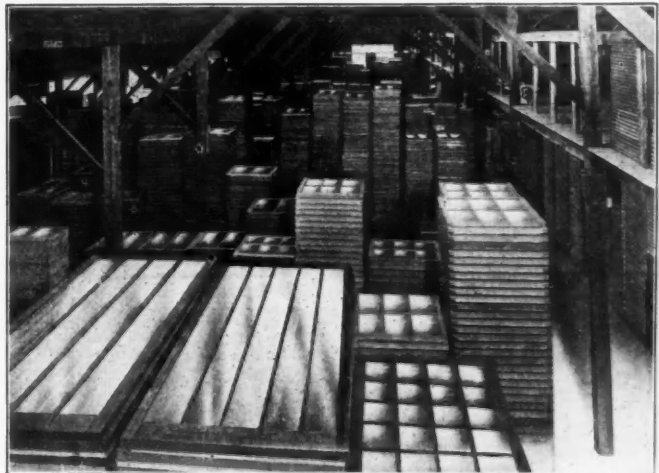


Cove Molding. Price, per 100 feet... 31c



DOOR DEPARTMENT. Capacity 1,500 doors a day.

OUR FACTORY IS EQUIPPED with the most up to date machinery; best qualified mechanics are employed. The mill work is manufactured in quantities ordinarily large enough to supply a hundred good size dealers. This is why we can sell a \$1.75 four panel door at 95 cents, and a 24x28-inch window fully worth \$2.00 for only \$1.10.



A CORNER IN SASH WAREHOUSE. 100,000 Windows, glazed, ready to fill your order.

\$500,000.00 WORTH of material always on hand to fill our customers' orders. Our enormous stock of doors, windows, door and window frames, columns, mouldings, etc., enables us to meet demands on short notice. Our supply is always FRESH, CLEAN AND PERFECT IN EVERY WAY.

Thinking of Sending a Trial Order? We'll Ship it "In a Jiffy" and Pack it Right.



SHIPPING DEPARTMENT No. 2. Especially equipped for handling less than carload orders. Capacity, ten carloads a day.

\$1800.00 WORTH OF MATERIAL \$900.00



Roselle Park, N. J.
Sears, Roebuck & Co.,
Chicago, Ill.

Gentlemen:—I enclose photograph of my house, which I built according to plans No. 114. Am glad to say that whatever I purchased from you which I think amounted to \$800.00 or \$900.00, has been found to be very satisfactory. I could not have obtained the same material here for less than about twice the amount.

Your customer,
John C. Johnson.

CO., CHICAGO, ILL.

Granite

TRADE MARK

ROOFING



SIX INCH SOLID LAP

SAFEGUARD
Granite
ROOFING

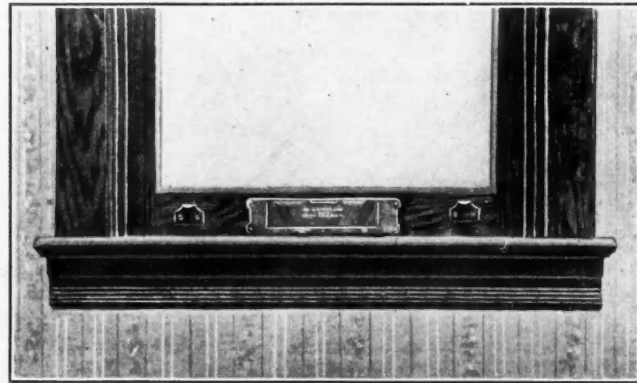
A six inch lap is better than a three inch lap. It gives better satisfaction against leaks and permits nailing down on the under sheet only, so that no nail heads appear on the surface. Otherwise this is the same Granite Roofing that we have sold for 26 years for use on great factories. It is immune from damage by coal smoke or cinders, and it has a sea grit surface which makes painting entirely needless. Behind it is a reputation that has Passed the Quarter Century Mark.

EASTERN GRANITE ROOFING CO.
Chicago 19 Battery Place, New York Pittsburg

The Ideal Sash Ventilator

The need of a contrivance for the admittance of pure air in sleeping rooms, hospitals and offices, has been apparent for years and has been quite a problem for architects and contractors until the Ideal Mfg. Co., Erie, Pa., invented their Sash Ventilator.

When natural ventilation is properly and scientifically applied it invariably proves more successful than mechanical or other forms of artificial ventilation and it has the advantage that it can not get out of order or break down and costs but little to apply and nothing to maintain. This fact is confirmed by the medical fraternities, who say natural ventilation is much to be preferred to any and every artificial system.

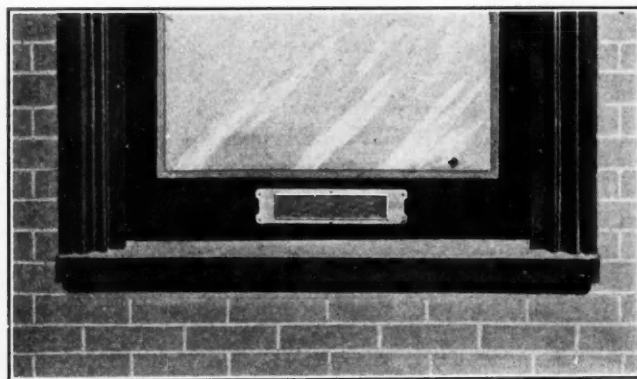


View From Inside

In taking up the question of window ventilation, this company have, through practical tests and varied experiments, successfully produced a ventilator which will fulfill the necessary requirements.

Fresh air is one of the best tonics. Sunshine and a pure atmosphere are sure death to the diseases of the lungs. Is your health worth anything to you? Do you sleep in a close or poorly ventilated room?

The Ideal Sash Ventilator is a simple, scientific device that admits fresh air in a room and expels carbonic acid gas or air from which the oxygen has been exhausted. It takes up no room nor does it disfigure a window, it insures fresh air without draughts and dust, expels all foul air. It is just the thing for the toilet or sleeping room.

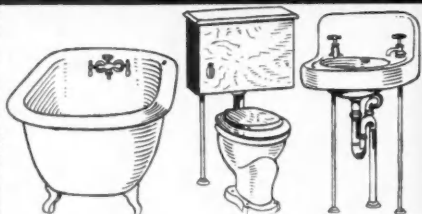


View From Outside

It is designed to fit any window sash (old or new) top or bottom rail and has an opening of 8 square inches. Is made of sheet brass throughout (a non-rustable material); is simple in operation, and the easiest ventilator on the market to install.

We understand that these people are making a special proposition to the contractor who installs the first ventilators in any community. For full particulars address Ideal Mfg. Co., 110 State street, Erie, Pa.

\$38.95 BUYS THIS COMPLETE BATHROOM OUTFIT



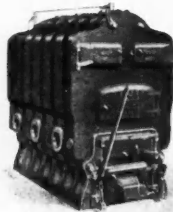
MODERN BATHROOM FOR EVERY HOME

Modern Plumbing at 1/2 Ordinary Cost

Plans and instructions free with every plant

WATER SUPPLY OUTFITS
From \$42.00 Upward

Hot Water and Steam Plants
SAVE \$100 to \$250 on a Heating System



Pumps, Pipe, Valves, Fittings at lowest prices. **Farmers' Tanks** for every purpose. **Acetylene Lighting Plants, Gas and Electric Fixtures.** All high grade, strictly guaranteed goods. **BIG CATALOG FREE.**

M.J. GIBBONS ARCADE DAYTON, O.

Send Coupon Now For Free Samples of Johnson's Artistic Wood Finishes

EVERY practical contractor and builder can better his work, better his profits and better his reputation by using Johnson's Wood Finishes. You can prove this at our expense—it will cost you nothing—save you much. We want to send you free working samples and Johnson's Illustrated Color Book—"The Proper Treatment for Floors, Woodwork and Furniture"—giving complete directions for their use.

We want every contractor and builder to accept this free offer. Mail coupon or postal today.



Johnson's Wood Dye

is not a mere surface stain—but a deep-seated dye, penetrating the wood and fixing a deep, rich, permanent color entirely different from ordinary stains, which are only "skin-deep."
Made in fourteen attractive shades.

When used in combination with Johnson's Prepared Wax or Johnson's Under-Lac, inexpensive soft woods such as pine, fir and cypress may be made as beautiful and artistic as costly hardwoods. **Ask your dealer for free samples and prove it for yourself**

Johnson's Under-Lac

A spirit finish vastly superior to shellac and varnish—not thick, sticky and slow drying like varnish, neither does it dry too quickly like shellac. Under-Lac should be used over Johnson's Wood Dye and Paste Wood Filler where a higher gloss than a waxed finish is desired.

For a first-coater, where varnish is to be used, Under-Lac is unsurpassed—one coat of Under-Lac and one coat of varnish will give a better finish than three coats of varnish without the Under-Lac.

Under-Lac is particularly adapted for finishing linoleum and oil-cloth—dries hard so the floor may be walked on in an hour. **Ask your dealer for free samples and convince yourself of the merit of Johnson's Under-Lac. Gallons, \$2.50.**



Johnson's Color Panels and Illustrated Book

Let us send you free a complete set of wood panels showing all shades of Johnson's Wood Dye on various woods. These panels are conveniently put up so that you can easily show them to prospective customers—by doing so we are sure you will procure many contracts at profitable prices for work to be finished with Johnson's Artistic Wood Finishes. The dye **always** matches the panels.



We will also send you a copy of our new book illustrated in many colors and containing color plates of the dye. This book gives full instructions for finishing and refinishing all wood—soft and hard. It is invaluable. Present the attached coupon to your leading paint dealer for samples, wood panels and book. Or mail coupon to us giving dealer's name and we will send them to you from Racine.

COUPON

ACB-3

For S. C. Johnson & Son's Free Illustrated Book and Wood Panels—also free samples of the following Johnson's Wood Finishes.

(State plainly just which samples you wish to try.)

Name

Address

Dealer's Name

Dealer's Address

Present this coupon at your dealers, or mail direct to us for free samples

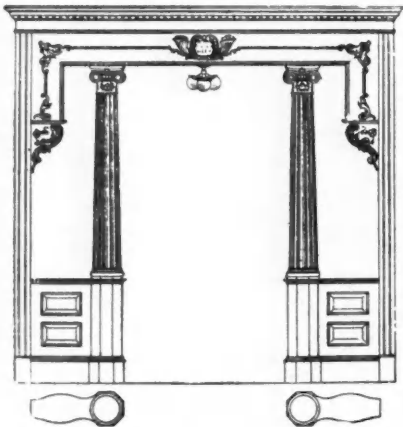
S. C. JOHNSON & SON - - - Racine, Wisconsin
Wood Finishing Authorities

The Chicago Grille Works

A word is in order concerning the Chicago Grille Works and the position that the managers of this concern have built up for it in the estimation of practical contractors and builders. They have a record of eighteen years in their present location at 826-836 Wells street, Chicago, with satisfied customers from Maine to California, never having a complaint from one of them. This record makes them feel (without egotism) that their work is of the class called "perfection."

These people put out a new catalog every year presenting their many new and attractive designs in grilles, parlor columns, colonnade openings and consols. A special feature of their catalog 18, is a combination consol parlor library cabinet, said to be the first of its kind to appear in print in any catalog, as they are the originators of this useful, ornamental, piece of furniture, which is so compact and so serviceable, that we believe one of these handsome cabinets will soon adorn every modern home.

In these catalogs their different designs are described in such a plain clear way, that there can be no misunderstanding in ordering. The accompanying illustrations shows one of their designs. It is a beautiful piece of interior decoration,



something entirely new; massive in appearance, with octagon pedestals, composition caps and ornamentation on beam, designed especially for openings not less than 7 feet and upwards. Electric lights are shown dropping through the beam, which is constructed with this idea in view. Total drop on sides 3 feet 2 inches, beam is 4 inches thick and 8 inches face; columns 6 inches, composition caps 5 inches; plain, reeded or fluted columns.

Modern Merchandising

For some time it has been a favorite boast of the packers of Chicago's famous union stock yards that the business of packing pork has been so perfected that nothing is lost in the killing process except the squeal of the hog.

It would seem that the house of Sears, Roebuck & Co. is striving for a similar standard of development in the merchandising business. Visitors at the great plant in Chicago are impressed with the fact that this institution is prepared today to supply Mr. and Mrs. American Citizen everything required for the construction of their dwelling and everything needed to furnish and equip it for habitation, except the squeal—of the baby. Indeed no surprise will be occasioned if the next catalog issued by this house lists babies, of either sex and any color, at their famous one profit prices, shipped direct from Chicago's orphan asylums.

Speaking seriously it may be noted that so rapid has been the growth and development of this wonderful business that even its oldest customers have not been able to keep pace with it and few know that it actually owns outright, or controls by contracting for the entire output, at least two score manufacturing plants for the production of building material and supplies; farm implements, shoes, buggies, clothing, women's apparel, bicycles, automobiles, furniture, cream separators, etc., etc.

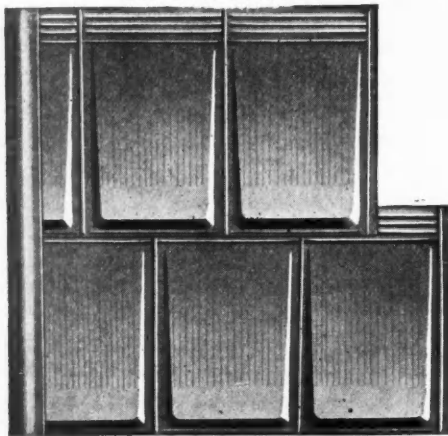
COVER YOUR OLD ROOF WITH

**Walter's
OR
Cooper's**

LASTING METAL SHINGLES

Put them right on over the old Wooden Shingles. Saves Time, Money and Work. Old Shingles add Warmth and Save Sheathing.

GET ESTIMATES



Cooper's Corinthian Tile



WALTER'S AND COOPER'S METAL SHINGLES

Were the First Metal Shingles Made.

They Were The Best 28 Years Ago

Are The Best Today

Made in many designs and of painted tin, galvanized tin and copper. The Original Side Locks invented by Mr. Chas. B. Cooper in 1882, are still the **Only** Locks which will positively exclude **All** moisture. **Cheapest and Best.** The Corinthian Tile here shown is fine for Colonial Residences. **Need Not** remove old shingle roof. Better to allow it to remain. Tin Roofers, Contractors and Architects, write to undersigned, sole manufacturers, for booklet and particulars. Samples on request, also price list, directions for measurement and laying with coat of paint, nails, etc.

National Sheet Metal Roofing Company,

**JERSEY CITY,
NEW JERSEY**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

Builders and Contractors Who Want the

Best Steel Butts & Hinges

Should Look for This



Printed on the Labels
Stamped on the Goods

LITERATURE FREE

The Stanley Works

NEW BRITAIN, CONN.

New York :: Chicago

All "asphalt roofing" is not Trinidad Lake Asphalt Roofing—there's a great big difference. Look out for that when you buy your roofing.

Ordinary so-called asphalt roofings are made of artificial products masquerading as real asphalt. They are nothing more than the residue from petroleum oil or native bitumens made into a black pitch, which is easily affected by changes in weather.

Genasco

the Trinidad-Lake-Asphalt Roofing

is made of genuine natural asphalt—perfectly stable and uniform in quality.

Trinidad Lake Asphalt is endowed by Nature with natural oils; and they stay in it. This gives Genasco its wonderful resistance to rain, snow, sun, wind, heat and cold—and keeps it lastingly waterproof.

The artificial asphalts have oils mixed with them, but they haven't the quality of the oils in the natural product; and they soon evaporate and leave the roofing "dead"—and it cracks, breaks and leaks, although at the first it may look like Genasco, the real Trinidad-Lake-Asphalt roofing.

Natural asphalt in roofing is the greatest weather-resister known. To make sure of roofing that will permanently protect, ask your dealer for Genasco, the Trinidad-Lake-Asphalt Roofing, with either mineral or smooth surface. Fully guaranteed.

THE KANT-LEAK KLEET waterproofs the seams of Genasco Roofing without cement, does away with nail-leaks, and gives the roof an attractive finish. Ask your dealer for Genasco with Kant-leak Kleets packed in the roll. Write for samples and the "Good Roof Guide Book."

THE BARBER ASPHALT PAVING COMPANY

Largest producers of asphalt, and largest manufacturers of ready roofing in the world.

PHILADELPHIA
New York San Francisco Chicago



Gravel
Trinidad Lake Asphalt
Asphalt-saturated Wool Felt
Trinidad Lake Asphalt
Asphalt-saturated Wool Felt



Artistic and Attractive in Appearance—Durable and Inexpensive, Practical and Easily Applied

with Superior Fire-Resistative and Storm-Resisting Qualities to meet Extreme Weather Conditions—Sparks, Hail, Sleet, Sliding Ice, Rain, Snow, or the Extremes of COLD and HEAT do not affect the Superior Upper Coating of "Burmite"—proven *The BEST* by TEST.



Roofed and Sided with "BURMITE"

Ready-Go-Lay Burmite

(REG. U. S. PAT. OFF.)

FLEXIBLE-CEMENT-FURLAP INSERTED MATERIAL

GUARANTEED FOR 10 YEARS without Coating.

Made with two Separate and Distinct Surfaces, i. e.,

BIRD-SAND and "Twolayr" SLATE-CHIPS

PATENT PENDING

For the "Twolayr" Slate-Surfaced Material, colored Slate of Unfading Quality is used, the fine slab-shaped Slate Chips being embedded into the pure Asphaltum Composition so thoroughly—and put there to stay—that a smooth, even, upper Mineral Surface (there being two layers of Slate Chips) is the result, thus securing the well-known Imperviousness and Weather-Resisting qualities of Slate AT ONE-FOURTH THE COST.

Used in any Climate, can be applied in cold weather, and is equally well adapted to uneven, flat or steep surfaces; can be laid over old Shingles or Tin. Lasts longer than Shingles—costs less. Sold on its merits and lasting qualities. The First Cost—The Only Cost.

The resisting qualities of our Slate-surfaced Material are such that it is especially recommended for, and is being largely used as a Roofing on Pulp Mills, Chemical Works, Acid and Fertilizer Plants, and other buildings used for like purposes, where the roofs are affected by Acids, Gasses or Fumes.

As a rule, other grades must be coated at least three times in from seven to ten years, the expense of which, added to the original cost of material, as compared to total cost of "Burmite" for same time, will show a great saving in favor of the latter; besides the satisfaction of having the ARTISTIC APPEARANCE.

Buy **Burmite** and be through with your
"Roofing Troubles" for from 15 to 20 years.

To make yourself acquainted with this up-to-date Material for Roofing and Siding Residences, Business and Factory Buildings, Summer Homes, Bungalows, Barns, Garages, Churches, Plants, Warehouses, Depots, etc., of CONCRETE, BRICK, STONE, FRAME or other Construction—be they NEW or OLD, WRITE TODAY for our SAMPLES and BOOKLET,

"Burmite Quality Counts"

Illustrated with Buildings, Beautifully printed in colors, showing effect of BURMITE MATERIAL applied as a Roofing and Siding. Mailed free of all charges and obligation.

Birmingham & Seaman Co., Mfrs. Roofing Chicago

GEN. OFFICES: 1208-1226 Tribune Bldg. PLANT: 56th, Armitage and Grand Aves.

**Distributors of
Beaver Board**

Chicago Cincinnati Buffalo
Birmingham, Alabama, Dallas, Texas
Detroit, Mich., Grand Rapids, Mich.
Green Bay, Wis. Kansas City
Oklahoma City, Memphis, Tennessee
Nashville, Tennessee, Pittsburg, Pa.
Richmond, Va., St. Louis, Mo., St. Paul

BERMINGHAM & SEAMAN CO., Tribune Bldg., Ch'go

Mail to my address, as above, Sample and Booklet. This places me under no obligation.

Name

Address

Town

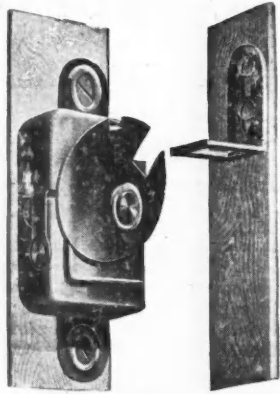
State

A. C. & B.

Particularly will it surprise many carpenters and builders to learn that since its invasion, only a short time ago, of the building supply business for the purpose of demonstrating the applicability and feasibility of mail order methods in this line, it has acquired or obtained entire control of its own factories for the production of lumber and mill work, paints, and varnishes, wall paper, plumbing goods, lighting fixtures, furnaces and hot water heating plants, stoves, roofing material of every kind as well as wall board, interior hardware, etc., etc. In fact the intending builder can depend upon it that he will not have to buy so much as a nail elsewhere when he has sent in his order for a Sears, Roebuck & Co. model home.

Nor does the intending purchaser of one of these homes have to content himself with a "hand-me-down" house. The widest latitude is provided for, so that his finished house may express to the smallest detail his individual and personal taste and preference. This is how the plan works.

The expectant builder first sends to the firm for its Book of Modern Homes, containing half-tone pictures of more than 100 bungalows and cottages of up-to-date and artistic design. After deciding which one suits him best he writes for the blue prints and bill of specifications, all of which, like the first book, are supplied free of charge. With the blue print and bill of materials is sent a large, illustrated catalog of lumber, millwork (including everything used in interior and exterior trim) roofing, furnaces, bathtubs, plumbing, etc. The plans and specifications are specially prepared for the layman and are so simple that even the housewife may understand them readily. The customer then proceeds to compare every piece of material designated on his blue print by number with the article as described and pictured in the catalog under the same number. He may decide for instance, that he prefers another one of the 64 doors illustrated in the catalog, in which case he has only to change the number in his bill of mate-




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



WILLIS
SKYLIGHTS



A WATER-TIGHT LIGHT -
QUICKLY SET UP - WITHOUT TOOLS

IT COSTS NO MORE TO HAVE THE BEST AND THIS IS WHAT YOU GET IN

Willis Skylights

All our skylights are set up in our shop and then knocked down for shipment when practical to do so, thus reducing freight charges and insuring safe delivery.

They are erected without the use of any tools other than a hammer and screw driver. No soldering is necessary. They are water-tight without setting glass in putty.

Every light is guaranteed against defects as to
workmanship or material

We also make a full line of Cornices, Ventilators, Crestings, Finials and Architectural Sheet Metal.

Our Catalogue "B" on Perfect Light and Ventilation; also, our general Catalogue No. 5 will be sent on request.

Estimates given from plans or specifications.

WILLIS MANUFACTURING CO. GALESBURG, ILL.

*The Famous Universal Woodworker
is worth more to your business
than sixteen ordinary wood-
working machines*

**The Famous No. 14 is the best
Investment of the Century for Carpenters,
Contractors and Builders.**

YES, SIR. The best investment they can ever make for all who have millwork done—especially those who have been paying out their profits to planing mills.

The Famous No. 14 Universal Woodworker is a 27" Band Saw—a 12" Jointer—a Hollow Chisel Mortiser—and thirteen other woodworking machines besides. Here are the machines—sixteen of them—combined on one base for reasons of economy.

(1) 27" Band Saw; (2) 12" Jointer; (3) Saw Table, with raising or lowering arbor; (4) Single Spindle Shaper; (5) Boring Attachment, arranged on Special

Boring Spindle; (6) Pony Planer; (7) Tongue and Pole Rounder; (8) Hollow Chisel Mortiser; (9) Single End Tenoner; (10) Drum Sander; (11) Disc Sander; (12) Knife Grinder; (13) Emery Grinder; (14) Band Re-Saw; (15) Spoke Tenoner, Rim Borer and Wheel Equalizer; (16) Adjustable Felloe Rounder.

Adjustments for the different operations are made almost instantly; you can use the machine as a band saw one hour and as a drum sander the next. No machine could be more simple in operation, or to understand. No machine could be durable or practical.

There are many good reasons why it's better for your business than sixteen different machines. First, it costs but a fraction of what a number of machines

would amount to; secondly, only one belt or motor is required for power; third, only a small amount of floor space is necessary; fourth, one machinist can do all the work; fifth, cost of maintenance is practically eliminated.

**You should install
a FAMOUS No. 14**

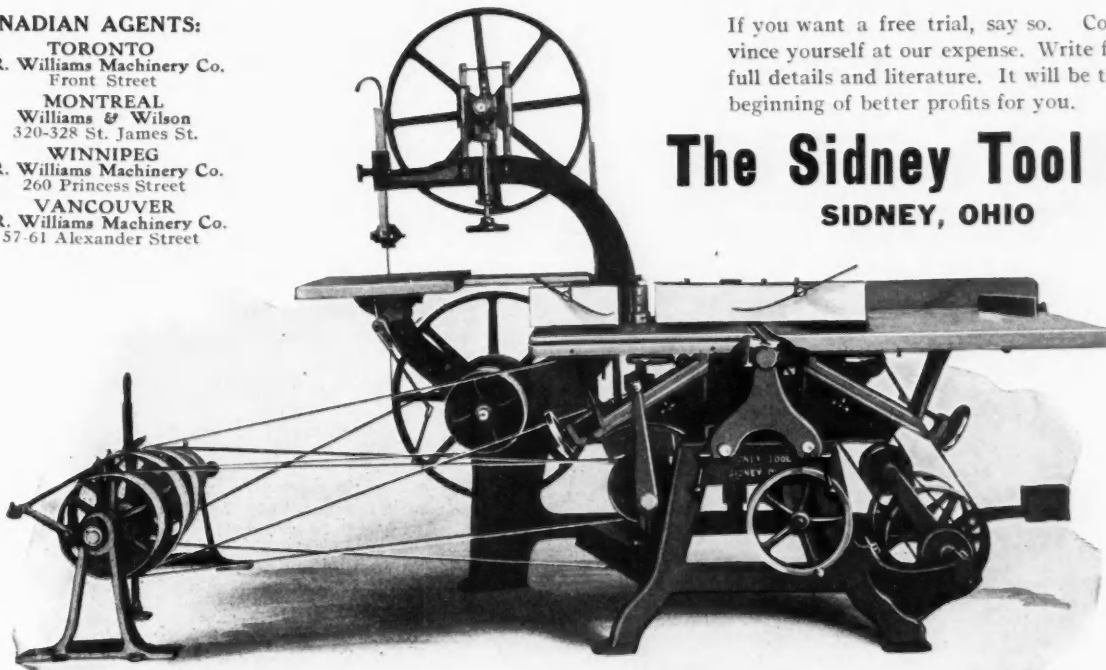
If you have been paying planing mill bills you have been putting money in somebody else's pocket—with a FAMOUS all the profits are yours. If you have your own machinery and need more sell out what you already have and buy a FAMOUS—get sixteen in one

CANADIAN AGENTS:

TORONTO
The A. R. Williams Machinery Co.
Front Street
MONTREAL
Williams & Wilson
320-328 St. James St.
WINNIPEG
The A. R. Williams Machinery Co.
260 Princess Street
VANCOUVER
The A. R. Williams Machinery Co.
57-61 Alexander Street

If you want a free trial, say so. Convince yourself at our expense. Write for full details and literature. It will be the beginning of better profits for you.

The Sidney Tool Co.
SIDNEY, OHIO



rials, and so on through the entire plan.

Three advantages accrue to the builder from this method of buying houses by mail from Sears, Roebuck & Co. First, the saving of all those unnecessary commissions and profits incident to the marketing of materials through devious channels; second, the elimination of vexations and expensive delays in the arrival of the supplies as needed; third, the sense of satisfaction that comes from an absolute personal knowledge of the exact character and quality of every piece of material that has gone into the building when it is finished.

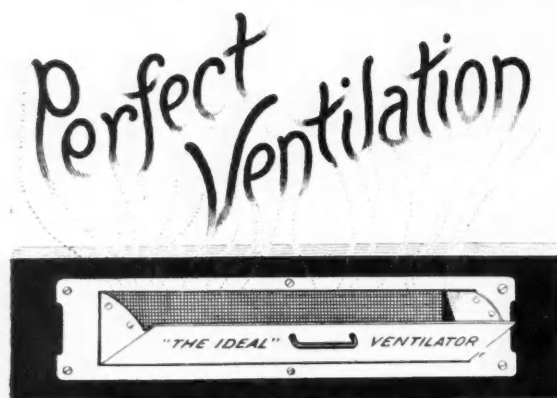
One cannot refrain from contrasting this wonderful retail establishment with the largest stores of a few years ago whose size evoked expressions of wonder from all who visited them.

Think of being able to buy from a single "store" not only everything needed for the construction of your dwelling from foundation posts to roofing, from paint and varnish to wall paper, from bathroom plumbing to lighting fixtures and fur-

nace, but also everything required to furnish the completed house from kitchen utensils to piano as well as everything necessary to make it habitable from linens and provender to wearing apparel and medicines. Nor does the concern stop there in its ministrations to the needs of the American citizen, for when the span of life approaches its close the provident householder may turn to his Sears, Roebuck & Co. catalog and place his order for a monument to commemorate his life, at one-profit prices shipped direct from its own quarries in Vermont.—Adv.



MARBLE
The New Marble
INQUIRE ABOUT IT.
ACID AND FIRE PROOF.
Tesco Products Co., Room 4 Builders & Traders Exchange, Milwaukee



Secured Through the IDEAL SASH VENTILATOR

Pure Air in All Closed Rooms

THE IDEAL SASH VENTILATOR—a simple, scientific device that admits fresh air in a room and expells carbonic acid gas or air from which the oxygen has been exhausted. It takes up no room nor does it disfigure a window, it insures fresh air without draughts and dust, expells all foul air. Just the thing for the toilet or sleeping room.

Handiest, Neatest and Best Sash Ventilator

THE IDEAL SASH VENTILATOR is designed to fit any window sash (old or new) top or bottom rail and has an opening of 8 square inches. Is made of sheet brass throughout (a non-rustable material) is simple in operation, and the easiest ventilator on the market to install.

THE IDEAL SASH VENTILATOR may be used in any sash 1 3/8 inches or more in thickness.

Send today for full details, and special discount we are quoting American Carpenter and Builder Subscribers to sort of celebrate this our first appearance before them.

IDEAL SASH VENTILATOR CO., 1101 State St., **ERIE, PA.**

Artistic Domes and Fire Screens

Mosaic or Inlaid Glass for Wainscoting or Wall Decorations. Perfect and Permanent Reproductions on Glass from Photographs or Paintings of Persons and Places.

ARTHUR MICHAUDEL

AMERICAN ART INSTITUTE FOR STAINED GLASS WINDOWS

542 N. Paulina St., Cor Ohio St., CHICAGO

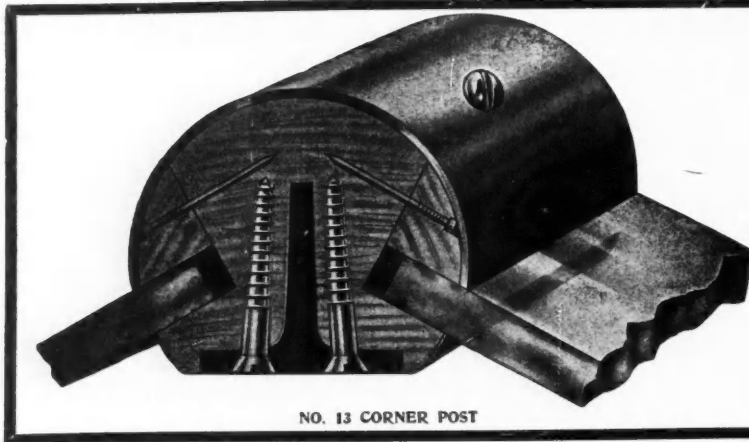


To Prove to You the high, standardized construction and composition of Carey's Roofing, we want to send to you Booklet and Sample FREE and give you practical information regarding Carey's Roofing based on 25 years' actual time-proved tests. Carey's Roofing is equally adapted to flat or steep surfaces, wood-sheathing, tile or concrete. Whether your contract is large or small, we want to show you the advantage of using a standardized roofing material.

THE PHILIP CAREY MFG. CO.

58 Wayne Avenue 50 Branches Cincinnati, O.

"FAMOUS FOR DURABILITY"



NO. 13 CORNER POST

The Coulson Patent Store Front Construction

makes the most practical, complete and modern store front and enables the merchant to display his goods to the best advantage.

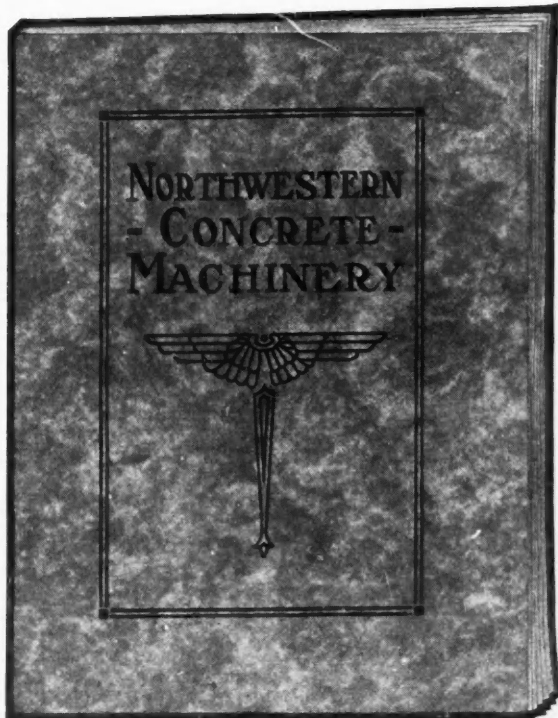
It is specified by the leading architects for both new and remodeled store fronts, and recommended by Plate Glass Insurance Companies.

Write for Illustrated Catalogue "E-800".

J. W. Coulson & Co.

234 N. Third St., Columbus Ohio

You Need This FREE Illustrated Book on Concrete Machinery



The biggest, most modern and up-to-date line of concrete machinery, moulds, tools and appliances are illustrated and described in our 1911 big wholesale concrete machinery catalog. It is a regular concrete encyclopedia, containing hundreds of beautiful illustrations and shows practically everything required in this line—machines and moulds for every conceivable purpose, including block machines, brick machines, post machines, tile moulds, bend tile machines, tomb stone and burial vault moulds, wheelbarrows, block cars, engines, grave markers, ornamental moulds of all kinds, trowels, pointers, tuckers, mortar gauges, etc. The reader will see the most modern and up-to-date machines ever produced.

You cannot afford to be without a copy as it will show what you ought to have and prices you ought to pay.

This volume will prove immensely valuable to everyone interested in concrete, from the biggest contractor to the smallest concrete worker.

Everything is Sold by the Pound

Our entire line of machines and moulds is sold at wholesale prices. You can purchase these machines or moulds at lower prices than those of any other reliable line of concrete machinery manufactured.

No Money Down 10 Days Trial

We back our goods with a **satisfaction clause** and make you the judge of the practicability and adaptability to your use.



The Largest Factory in the World Devoted to the Manufacture of Concrete Machinery

SEND NOW FOR THIS CATALOG AND OUR SPECIAL PROPOSITION

NORTHWESTERN STEEL & IRON WORKS

CATALOG L

907 Spring St.

EAU CLAIRE, WISCONSIN



Will YOU Be Ready When YOUR Chance Comes?

Will YOU be chosen as the right man when the big opportunity comes? Are YOU better prepared to rise from the ranks than the men beside you?

Could you fill satisfactorily a position requiring knowledge of "hows" and "whys"? Could you direct the work of others so as to get the best results? Would any employer be safe to trust your planning and figuring and doing?

To make it short, have you any special equipment? Is there anything in you to command big pay?

Through the study of I. C. S. Courses, shop hands have become draftsmen, foremen, and superintendents; carpenters and masons have made themselves contractors, architects, or structural engineers; clerks have advanced to high-salaried places as advertising men, window trimmers, show-card writers, or chemists; young men have prepared for Civil Service positions, or studied successfully surveying and mapping, illustrating and designing, automobile running, sanitary plumbing, mining, textile work, navigation, or some other occupation covered by one of the 214 Courses of the I. C. S.

It will cost you nothing but postage to learn all about the salary-raising plan of the I. C. S.

Mark and mail 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, trade, or profession before which I have marked X.

Architect	Estimating Clerk	Automobile Runn'g
Arch'l Draftsman	Civil Engineer	Foreman Machinist
Contract'g & Build.	Surveying	Sh.-Met. Pat. Drafts.
Building Inspector	Mining Engineering	Textile Manufact'g
Structural Eng.	Mechanical Eng.	Bookkeeper
Structural Draftsman	Mechanical Drafts'n	Stenographer
Plum. & Heat. Con.	Stationary Eng.	Advertising Man
Supt. of Plumbing	Electrical Engineer	Window Trimming
Foreman Steam Fit.	Electric Lighting	Commerc'l Illustrat'g
Plumbing Inspector	Electric Railways	Civ. Service Exams.
Heat. & Vent. Eng.	Concrete Const'c'n	Chemist

Name _____

St. and No. _____

City _____ State _____



A fireplace will bring a better price for the homes you are building.

Nothing adds to the attractiveness of a home like a fireplace with an appropriate Wood Mantel.

It takes away all the bareness of a room—gives it a finished appearance.

Write today for our book of designs and let us show you how the use of fireplaces and wood mantels in every room, will positively bring returns in better rentals, increased selling prices and preference for your houses.

Write today

The Home Fireplace and Mantel Co.

Room 611 State Life Building

INDIANAPOLIS, --- IND.

6 Months' Free Trial

We want every Carpenter, Contractor and Mechanic in the United States to grind any and all their tools on the LUTHER CARBORUNDUM PERFECTED GRINDER for the next SIX MONTHS, in order that they may realize that it is a money earner, and also its great value. If after this trial you decide not to keep it, return it to us—no hard feelings—just send it back. The SIX MONTHS' USE WILL HAVE COST YOU NOTHING?

Mechanic's Special with Twist Drill Grinding Attachment.

Special Offer on Shop Outfit LUTHER

DIAMOND TOOL GRINDER



10 TOOLS IN ONE

Hand Power Mechanic's Special with Attachment



The Mechanics' Special Shop Outfit, on which we are making this special offer, embraces ten sharpening appliances. The special attachments make it easy for even inexperienced persons to do difficult grinding, such as twist drills, chisels, etc. The outfit consists of one Mechanics' Special, with the following accessories.

1. One rough genuine Carborundum wheel
2. One fine genuine Carborundum wheel
3. One Chisel grinding attachment
4. One twist drill attachment
5. One buffer
6. One polisher
7. One genuine Carborundum oil stone
8. One genuine Carborundum hone in leather case
9. One genuine Carborundum sickle stone
10. One foot power attachment.

READ WHAT OTHERS SAY ABOUT THIS GRINDER:

"Our machinist is very much pleased. He tells us that he ground a chisel on this tool grinder in two minutes which would have taken an hour on the grindstone."

W. H. SEARS, Pentwater, Mich.

"Enclosed find remittance for grinder which I find to be as good as recommended."

S. SCHRANTZ, Stonington, Ill.

"In many respects I like the machine better than a power machine, since its speed can be varied instantly at will."

ELWOOD HAYNES, Pres. Haynes Automobile Co. Kokomo, Ind.

"The grinder has been placed in our work room and proves satisfactory. I heartily recommend it."

GEORGE LEONARD, Pioneer, Ohio.

"We consider your Mechanics' Special the best thing on the market for grinding tools. It will give us pleasure to recommend the grinder to our friends."

MacLEAN & CARRICK, Palmer, Mass.

The Greatest Labor-Saving Tool Ever Made

The Luther Grinder is built like a high-priced Lathe and is Guaranteed for five years.

It's construction is mechanically perfect—machine cut spur gears—dust proof and bronze bearings—all machined parts run in bath of oil.

The Luther Grinder cannot fail to please owing to its solid construction and because it makes it easy to have keen edged tools without drudgery.

RETURN THIS COUPON FOR OUR SIX MONTHS' TRIAL OFFER

25 Times Faster Than Grindstones—6 Times Faster Than Emery—Will Not Draw Temper—Not Emery Called by a Fancy Name, But

GENUINE CARBORUNDUM
WILL NOT DRAW TEMPER

Luther Grinder Mfg. Co.

Address 56 Madison St.

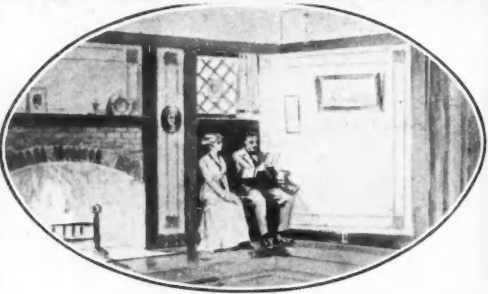
MILWAUKEE, WIS.

Luther Grinder Mfg. Co., 56 Madison St. Milwaukee, Wis.

Gentlemen:—Please send me particulars of your Six Months' Free Trial Offer, also your booklet about Carborundum. This does not obligate me in any way or mean that I will buy. It means simply that I want full details.

Name _____

Address _____



INVESTIGATE
Compo-Board

BEST FOR WALLS AND CEILINGS

Better than lath and plaster. More economical and durable. Can be put on in any weather and will stay up and look well as long as the building lasts.

Compo-Board is made of strips of thoroughly dried lumber well glued. These strips are then covered with a specially prepared moisture proof paper, which is cemented under intense heat and pressure.

This makes a wall lining that will last indefinitely. Cannot crack or crumble off. Cannot chip off or mar by banging furniture into it. It is moisture and cold proof and fire resisting. Warm in winter and cool in hot weather.

Besides being a wall lining, Compo-Board has many other uses around the house and in the yard, in the office and factory. For remodeling the house or finishing off an extra room in the attic or basement, it is ideal. Summer cottages can be made as warm as the city home. Use it for partitions or back plastering.

Compo-Board can be had in strips four feet wide and one to 18 feet long, in any length in even feet.

Send for Sample and Booklet


Fully describes Compo-Board and its many uses and advantages and the sample will show you what it is

NORTHWESTERN COMPO BOARD CO.
5777 Lyndale Ave. No. Minneapolis, Minn.

The border of this advertisement is a cross section view of Compo-Board.

Bradford Reds

BRICK MANTELS
— AND —
FRONT BRICK



Trade Mark—Reg. U. S. Pat Off.

**MANTEL CATALOGUE AND
BOOK OF HOUSE DESIGNS**
— FOR DISTRIBUTION —

Write Us for Information.
IF WE SELL IT, IT'S RIGHT.

Bradford Pressed Brick Co.
BRADFORD, PA.

\$13,245 IN 110 DAYS

R. V. Zimmerman, an Indiana farmer, (address upon application), as sales agent for our

NEW INVENTION

ordered \$13,245 worth in 110 days, and his orders for 9 months total **OVER \$30,000.00**

His first experience selling goods. Started at home in spare time while farming. Another agent, M. G. Stoneman, an artist, of Nebraska (address upon application), devoting only spare time, total orders amount to **OVER \$15,000.00**

and placed one order for over \$6,000. He writes: "Best thing ever sold. Not one complaint from 2,000 customers." Another agent, Wm. McCoubrie, a student of Kansas (address upon application), comes next, with total orders of

OVER \$8,000.00

Another agent, C. A. Korstad, a carpenter, of Minnesota (address upon application), furnishes added proof that we offer an extraordinary winner, by ordering

\$2,212 WORTH IN 2 WEEKS

These are just a few of hundreds who have made big money as agents salesmen, managers, for

ALLEN'S POWERFUL PORTABLE BATH APPARATUS



M. Juell



R. V. Zimmerman

Nothing like it. Gives every home that long desired blessing—Modern bathing facilities for only \$6.50. Abolishes tubs, bowls, buckets, wash rags, and sponges. Turns any room into a bath room, with hot or cold running water. Think of it. So energizes water, one gallon ample; cleanses almost automatically; no plumbing—no water works—self heating. Gives cleansing, friction, massage, and shower baths. Makes bathing 10 minutes operation. Operates wherever water is obtainable. Easily carried from room to room or packed in grip when travelling. So simple—child can operate. Truly delightful; bathing without the drudgery, inconvenience, annoyance, muss of lugging water, filling tubs, emptying, cleaning, putting away. Surely it has all the features of a popular, easy, quick seller. Think of millions who need—want modern bathing facilities—who will welcome this chance to modernize their homes.

Agents very successful. See what others are doing. Actual results that make you want to seize this opportunity. Investigate anyhow.

See what these agents have ordered. (Address supplied upon application).

M. Juell, Canada, (clerk) over \$7,200; C. C. Fritzel, Iowa (lawyer) over \$6,800; W. S. Harlow, Nebraska, (farmer) over \$6,400; E. Edwards, Nebraska (solicitor), over \$6,300; B. F. Magee, Florida (Physical Director) over \$6,100; A. J. Wilson, Kentucky (Bank Organizer), over \$4,000, and writes:

"Sold 102 Outfits In 14 Days"

F. Oviatt, Iowa, (Minister), over \$800 in 11 days, \$4,000 to date; A. Rogers, Kansas, (Surveyor), over \$3,000 and writes: "Selling baths got me one piece of property;" W. H. Byrd, North Carolina, (Mechanic) over \$2,200, and so it goes. O. P. Schleicher, Ohio, (Minister), writes:

"First 12 Hours' Work Sold 30 Outfits" "(PROFIT \$107.25)"

A. P. Lodewick, Maine, (Solicitor), writes: "Lucky I answered ad; it's great; money coming fast; 17 orders to-day; sells on sight." J. B. Hart, Texas, (Carpenter), total orders exceed \$5,000 and writes: "Took 16 orders in 3 hours. Appeals to all. Can't keep from selling it if it is properly demonstrated." Reece of Pennsylvania (Carpenter) solicited 60 people—sold 55

Don't Envy These People—Let Us Give You an Appointment

with exclusive right to demonstrate, sell, deliver, collect, appoint, supply and control sub-agencies, at home or travelling, all or spare time. Previous experience, capital, unnecessary.

FREE SAMPLE AND CREDIT

to active agents. Test your ability once, with a real opportunity. Surprising what a little hustle will do. Think what this business means. No competition. New patent—field unworked—demand enormous—price insignificant—fascinating, dignified, exciting work—everything just right for a good business. Allen's Powerful Portable Bath Apparatus is no experiment. Quarter million already sold. Used by U. S. Government. Praised by thousands. Delighted customers say don't see how they ever got along without it.

SEND NO MONEY—INVESTIGATE FIRST

Just spend 1 cent to-day—a postal—to get our free catalogue and high grade agency plan. Act now—be first—don't let someone else get territory you want.



The Allen Mfg. Co.

3271 Allen Building, Toledo, O.

A Problem and Its Solution

When you are in the market for a floor scraper, and you look through the ads of the different machines and find that all claim to have the best

WHAT'S THE ANSWER?

In hopes of solving the problem, you may write for further information and receive prices and circulars, together with more claims. After wading through all this matter, you will find that you are scarcely any nearer to a solution than before.

No one, of course, will admit that theirs is not the best, even if it can be manufactured and sold for 30 cents.

Price, therefore, being about the only point of difference, it would seem that you may as well buy the cheapest—while the claims of one appear to be as good as that of another.

There's where you are most apt to make a mistake. Judge not by the price alone, nor by the manufacturers claim, but judge by the machine itself.

To those who believe that there is economy in buying the best, and who are in the market for a Floor Scraper, we will send our machine on a week's free trial.

There is satisfaction in **knowing** you have the best. You can satisfy yourself positively on this point by **trying** different makes. Take any one of the old style Dead Weight Machines (there's practically no difference between them except in the name or some auxiliary sharpening contraptions) and try it out, together with the new Triple "A" **Spring Driven**, and you will get a fair comparison on the two classes of floor scrapers on the market today.

After you have made such a test, the problem is

simple enough. You will be just as enthusiastic about the Triple "A" as any one of the following writers, who are now satisfied owners.

Hamilton, Montana.
Triple "A" Machine Co., Chicago, Illinois.
Gentlemen:—We have delayed answering your letter of recent date regarding the Triple "A" Floor Smoother that we purchased from you, as the work for which we had intended it was not ready. Since then, however, we have had occasion to use it, and are pleased to state that it has given the fullest satisfaction and has done all you claim for it.

Yours truly,

VALLEY MERCANTILE COMPANY,
H. A. STEWART,
Manager Hardware Department.

Upland, California.
Triple "A" Machine Co., Chicago, Illinois.
Gentlemen:—Your Triple "A" Floor Smoother has made good on my trial. I gave it a hard trial and it worked all right. I am very much pleased with the machine. The first test was an oak floor that had been filled and waxed and used for two months. It

had been scraped with another machine and left full of marks and holes. I went on it with your machine and made a good job of it.

Enclosed find check in payment of same.

Yours very truly,

W. WILKINS,

Jefferson, Iowa.

Triple "A" Machine Co., Chicago, Ill.

Gentlemen:—I wish to express my appreciation for the work your machine has done. I think it is the only machine of the kind today that comes anywhere near filling the requirements of a floor surfacing machine. I can clean up a job in a very short time and do a fine job of surfacing.

I can say the Triple "A" is the only machine. It's in a class by itself. No others which I have tried comes anywhere near the Triple "A." Enclosed find draft for amount of your bill.

Yours respectfully,

P. L. SHULTZ.

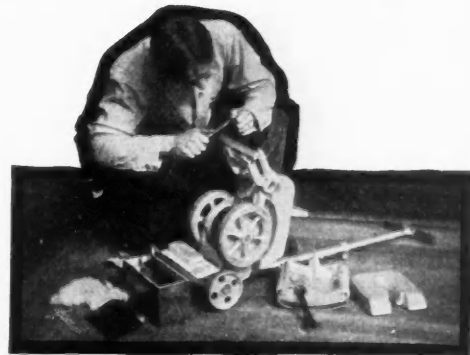
The Triple "A" Spring Driven Floor Smoother combines the advantages of the hand machine and the power machine.

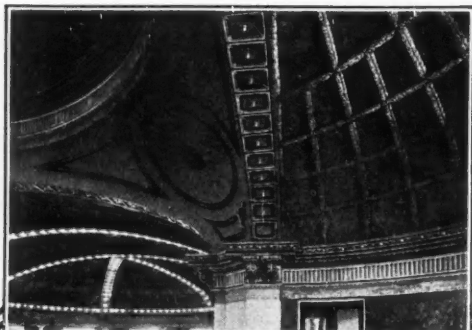
No more expense in operation than the former—Yet the capacity and ease of operation of the latter.

NO WASTED ENERGY—that's all.

Triple "A" Machine Co.

114 South Clark Street, CHICAGO





A Portion of a Theatre Ceiling

Interior Effects Like This Get Business for You.

The illustration shows clearly what is possible in the way of design when handling

"BERGER'S"
Classik
METAL CEILINGS

The richness and depth of embossing are made possible by the special analysis open hearth steel used by us—it's one of the many points that make them the world's standard.

Secure the agency—there's money in it

Boston
New York
Philadelphia
Atlanta

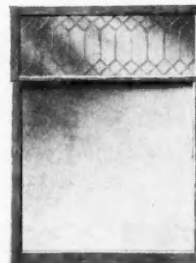
The Berger Mfg. Co.
Canton, Ohio

Minneapolis
St. Louis
Chicago
San Francisco

Low Prices : Quality : Quick Shipments
(Our Headliners)



CYPRESS
Colonial
Column
8 in. x 8 ft.
\$2.10
With cap as shown add 65c.



COTTAGE WINDOW
1 1/2 in. Thick.
Glazed Clear - - - \$3.75
With Leaded Top - - 4.50



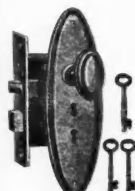
FRONT DOOR
2-8 x 6-8 1 1/2 in. thick, Glazed, \$3.07

SURROUNDED

By EXTRAORDINARY Bargains which are only a few of the many Money Savers shown in our new Catalog of High Grade Sash, Doors, Frames, Blinds, Mouldings, Inside Trim, Grilles, Colonnades, Stair and Porch Work, Mantels, Grates, Tiling, Art Glass, Roofing and Building Papers, Wall Boards, Hardware, Paints, Hardwood and Parquetry Flooring, Rolling Partitions, Screens, Steel Ceilings, Gutters, Shingles, etc.

Write Today for Free Copy

The Huber Builders Material Co.
45-49 Vine St., Cincinnati, O.



Front Door Set
Antique Cop-
per \$1.60
Inside Door
Set, 49c



CASING—Yellow Pine 4 1/2 in.
\$1.89 per 100 lin. ft.

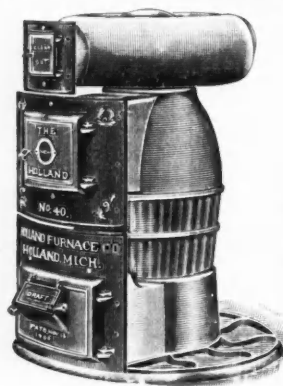


BASE
Yellow Pine
1 1/2 x 7 1/2 in.
\$2.77
per 100 lin. ft.

CLEAT
Yellow Pine
1/2 x 1 1/2 in.
35c
per 100 lin. ft.



Quarter Round Yellow Pine, 1/2 in.
30c
per 100 lin. ft.



"Holland Furnaces Make Warm Friends"

THERE is no method for heating the American Home that excels a Warm Air Heating and Ventilating System for pure air, warm floors, fuel economy, cleanliness, ease of operation, durability, and saving of space in the rooms. Besides, registers are ornamental and do not make any noises like steam and hot water radiators do.

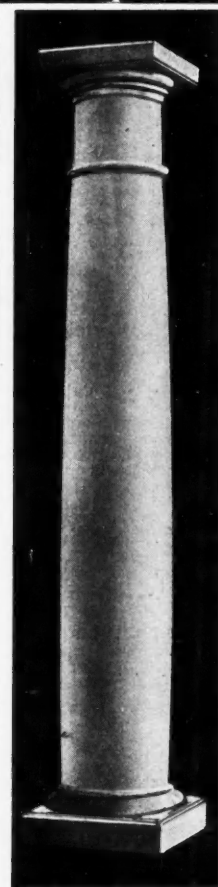
A Holland Furnace, properly installed, and of the right capacity, can not help but please the most fastidious and exacting house owner. The construction is so simple and the furnace is so easy to operate that it will be a continual delight to the user.

Send us your floor plans and we will send you correct diagram for heating and cost of outfit complete without any expense or obligation on your part.

HOLLAND FURNACE CO.

HOLLAND, MICHIGAN

Sole Manufacturers and Patentees



White Cement Porch Columns

A more beautiful column cannot be made of any material at any price. Will not warp, check or rot like wood columns.

Last Forever

The HOOSIER COLUMN MOLD makes this beautiful porch column, with top and base all in one solid piece. Any one can operate it. No flutes or sections to cause imperfections in removing mold. Columns either 4 1/2 or 5 feet in length and can be made in white or gray cement.

No CONTRACTOR, LUMBER DEALER, or CEMENT WOKER should be without the "Hoosier" Column Mold.

Catalog, porch views and testimonials from Contractors Free.

HOOSIER MFG. CO.

Dept. H.
GOSHEN, INDIANA

Write For This Catalog If Interested In Hardwood Flooring



It's
FREE
See Coupon
Below

We have just published our new illustrated Catalog of Ornamental and Plain Hardwood Floors. It is the most elaborate and complete catalog of its kind ever issued and should be in the hands of every Carpenter and Builder. We will gladly send it FREE to any interested person who will write for it—(see coupon below).

This catalog contains interesting information about the different kinds of floors—Ornamental, Plain and Parquetry and about the various kinds of woods.

We have been making fine hardwood floors for over twenty years and are in position to give you the best value and prompt service for your money. We are located

where we can obtain all the different hard woods to good advantages. We employ skilled workmen only—nearly all our men have been with us for years.

We ship our floors anywhere. Any good carpenter can easily lay our floors over old floors. When you want good hardwood floors get

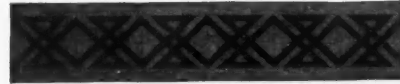
JOHNSON'S ORNAMENTAL HARDWOOD FLOORS

"The World's Standard of Excellence"

Here are two beautiful designs with prices. We have hundreds of others.



Border No. 707—8-inch. Oak, Maple, Cherry and Dark Oak. 28c. lineal foot. Corners 35c. each.



Border No. 836—10-inch. Oak and Dark Oak. 40c. lineal foot. Corners 60c. each.

In this age of keen competition quality is often sacrificed for price. This is particularly disastrous in our line, for if a floor is not made of wood carefully selected and cured and extreme caution used in every detail of manufacture, the floor, instead of being one of the most beautiful and satisfactory features of the home, will be a source of constant care, annoyance and expense. The fact that we have been in business for so long, and have built it up until our trade extends all over the world, is evidence that our goods are satisfactory and our methods right.

Don't forget—send coupon today for this catalog. It will interest you and it's absolutely FREE.

S. C. JOHNSON & SON, Racine, Wis.

'The Wood-Finishing Authorities'

S. C.
Johnson
& Son
Racine, Wis.

Please send me FREE your illustrated catalog of Ornamental and Plain Hardwood Floors. I understand there is no obligation incurred on my part.

CUT OFF ALONG THIS LINE

Name.....

Town.....

State.....

A. C. B. 3

CLASSIFIED DEPARTMENT

Rates 5 cents a word each insertion.
CASH MUST ALWAYS ACCOMPANY ORDERS

For Sale

Planer, Shaper, Sander, Mortiser, Turning Machine, Gas Engine, Belting, Shafting, Hangers, etc., cheap. A. F. REINEKE, Perry, Ill.

FOR SALE—Parker Reversible Hoist for building purposes. Run by electric motor or gasoline engine. Almost new, used short time. Capacity 2,000 lbs. single line. W. J. Brant, Contractor, Wichita, Kans.

Wanted

WANTED—A position with builder or cabinet maker. Have had course in Mechanic Institute, Rochester, N. Y. Can furnish the best of reference. Address 760 Harvard Street, Rochester, N. Y.

WANTED—A first-class concrete mason; must be good all around man, block work, ornamental porch work, etc.; must be able to get results as to low cost and quality of work. Steady position to right party. If you know yourself to be a top notcher and can furnish first-class references, address with full particulars, Mateer Bros. Co., Joliet, Ill.

WANTED—Two first-class Carpenters who can do inside trim. Union wages, 40 cents, and 9 hours work. H. A. Taylor, Morris, Ill.

Miscellaneous

Draftsmen's, Builders' and Foremen's Courses; day, evenings or by mail. Maack's Academy of Architecture, 1742 Chouteau Ave., St. Louis, Missouri.

Patents

O. L. PARKEE, Patent Attorney, Ex-Examiner Patent Office, 920 G St., Washington, D. C. Write for inventor's handbook.

LET US SOLVE YOUR SKYLIGHT TROUBLE

We make anything and everything in the
SHEET METAL LINE
CORNICES, VENTILATORS, CRESTINGS, FINIALS
Write us today
H. C. THOMAS, 119 N. 3d Street, La Crosse, Wis.

Do Not Buy a Floor Scraper

Until you have looked into the merits of the
HAVEN FLOOR PLANER
The Scraper that Planes. Banishes heavy weight pulling—planes and smoothes at one operation.
HAVEN MFG. CO., RACINE, WIS.

Throw Away that Wet, Soggy, Wheezy Pipe

And Get One That Smokes as Pleasantly as a Fine Cigar

Single Pipes, \$1.50
Lots of 6, 7.50
Lots of 12, 12.00



Notice the shape and construction of the Acme Bowl, made of finest Vienna Meerschaum with vertical walls and flat bottom like a pan—the tobacco cannot pack solidly like in other pipes. Again notice the series of holes in the bowl angling through solid meerschaum to a center hole at the bottom. This construction insures a free circulation of air throughout all parts of the tobacco, which is the secret of the cool, pleasant smoke of a fine cigar. Then the air chambers in the briar part of the pipe make it impossible for the saliva to get into the bowl. The bowl of the Acme is guaranteed never to get wet. Cut this ad out and wrap a dollar and a half in it and forward to us and you will receive promptly the best pipe you have ever smoked.

REPAIRING A SPECIALTY

THE ACME PIPE CO.

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SLATE WE HAVE WHAT YOU WANT

*In Roofing Slate, Slate Blackboards
Structural and Plumbers' Slate*

SATISFACTION GUARANTEED IN QUALITY AND PRICE

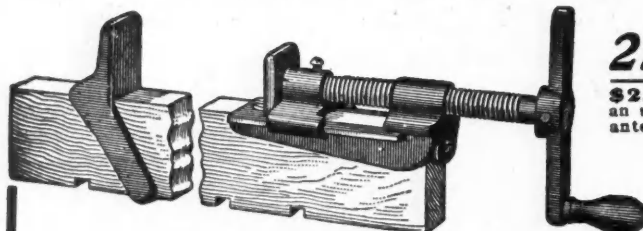
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J. K. HOWER, Station, C., Slatington, Pa.

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Roofing Slate for Houses, Barns, Sheds and Railroad Stations. Clean and ornamental, rain, wind and fireproof. Blackboards, for Schools, Colleges, etc., are being used all over the World, need no better commendation, "it is just the thing". Structural and Electrical Stock, Steps, Sink Tops, Wash Tubs, Window Sills, etc., superior to all other stone for such purpose. Slates' Supplies, Hand-made Slates' Tools, Snow Guards, Slates' Cement, Nails, Felt, Slate Punching, and Cutting Machines, etc. Write for prices and I will tell you all about Slate. D. McKenna, Slatington, Pa., U. S. A. JAMES CRAIG, Manager



Patent Malleable Clamp Fixture

E. H. SHELDON & CO., Chicago, Ill.
Gentlemen—We are pleased to state that the 25 dozen Clamp Fixtures which we bought of you a little over a year ago are giving excellent service. We are well satisfied with them and shall be pleased to remember you whenever we want anything additional in this line.
Yours truly,
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22,000 Sheldon Steel Rack Vises

\$2.80 and up, sold on approval, an unconditional money-back guarantee.



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Guaranteed Indestructible
We solicit privilege of sending samples and our complete catalogue.



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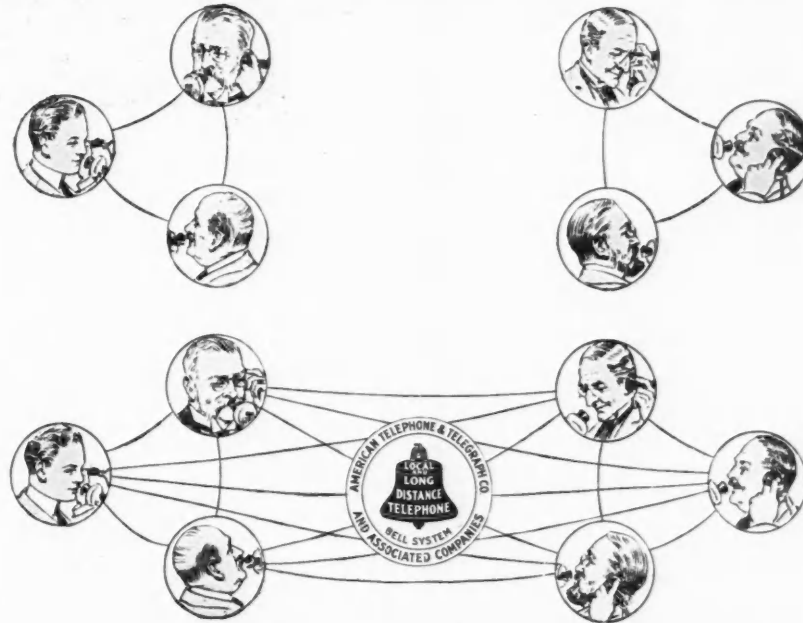
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Model "Ranger" bicycle furnished by us. Our agents everywhere are making money fast. Write at once for full particulars and special offer. NO MONEY REQUIRED until you receive and approve of your bicycle. We ship to anyone, anywhere in the U. S. without a cent deposit in advance, *prepay freight*, and allow **TEN DAYS' FREE TRIAL** during which time you may ride the bicycle and put it to any test you wish. If you are then not perfectly satisfied or do not wish to keep the bicycle you may ship it back to us at our expense and you will not be out one cent.
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YOU WILL BE ASTONISHED when you receive our beautiful catalogue and study our superb models at the wonderful low prices we can make you. We sell the highest grade bicycles at lower prices than any other factory. We are satisfied with \$1.00 profit above factory cost. **BICYCLE DEALERS**, you can sell our bicycles under your own name plate at double our prices. Orders filled the day received.
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When two groups of telephone subscribers are joined together the usefulness of each telephone is increased.

Take the simplest case — two groups, each with three subscribers. As separate groups there are possible only six combinations—only six lines of communication. Unite these same two groups, and instead of only six, there will be fifteen lines of communication.

No matter how the groups are located or how they are connected by exchanges, combination in-

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Many groups of telephone subscribers have been united in the Bell System to increase the usefulness of each telephone, and meet the public demand for universal service.

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AND ASSOCIATED COMPANIES**

One Policy

One System

Universal Service



\$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, 5 feet wide. Furnished with round or square

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It contains many fine designs of modern Grilles Columns and Consols.



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The Dayton Keyless Door Locks give greatest protection to homes. Can't be picked. Opened in 3 seconds day or night. Meets every want. Removes all of the key nuisance. Each home needs it. Interests carpenters, builders and architects. Is a money winner. Salesmen wanted. Let us tell you all about it. Write today.

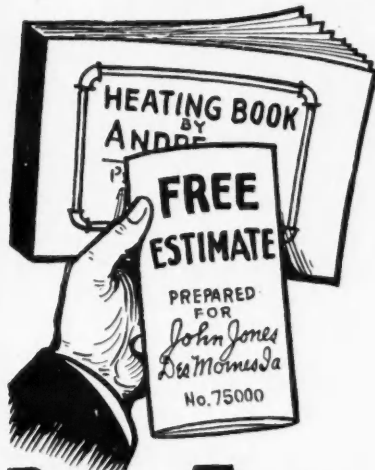
The Dayton Keyless Lock Co.
802 U. B. Bldg. Dayton, Ohio, U. S. A.
Our Keyless Padlock has 38005 Combinations

Interior and Exterior CAPITALS AND ORNAMENTS



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Most Complete Catalog Ever Issued

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Contractors

Before you set a price on that next house get Andrews' Big Book on Heating and Free Estimate covering the price, complete, of an Andrews Plant shipped you direct, "knock down," ready to erect.

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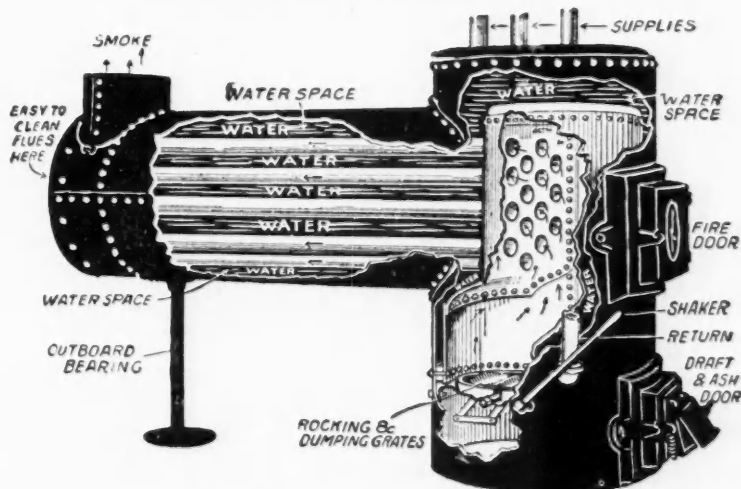
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THIS System is the easiest for you to handle, as we do all the work of planning, cutting and fitting—yes, and take the risk of the plant's success. We know the Andrews' Systems are the best that can be produced in every way.

Your carpenter's helper can easily set up the plant, following our complete and simple directions. It will pay you to investigate our proposition which enables you to make the profit that would otherwise go to the heating contractor. Send us a rough sketch for an estimate on your next job. We will quote you a net price or quote price to your customer, allowing you a liberal commission. Let us help you make some money.

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**SOLD ON 360 DAYS
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HOW TO GET AN ANDREWS SYSTEM

First send us a rough sketch of floor plans (or architects plans) of the house

SOLD DIRECT—FACTORY TO USER

We Pay Freight

to be heated, giving size of rooms, windows, height of ceilings, construction, etc., and get our Free Estimate of cost complete. We will tell you all about the plant, what it includes and send with the estimate our Big Book fully describing everything. Our engineers then design your plant to meet your individual requirements. Pipes are cut to fit and threaded. All fittings, etc., are marked and boxed, and the entire plant is shipped you, freight paid, ready to erect. Such simple and complete instructions are given that a carpenter's helper can easily set the plant up.

1180 Heating
Building

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Our reputation as modern machinery builders extends over a period of 60 long years of careful study, and we are still installing new, up-to-date ideas. We build the celebrated

"Defiance" High-Grade Wood-Working Machines

Known the world over as the "reliable kind"

Single machines or complete equipments for producing Hubs, Spokes, Rims, Wheels of every kind, Wagon, Carriage and Automobile Wood-Work, Shafts, Poles, Neckyokes, Singletrees, Hoops, Handles, Spools, Bobbins, Insulator Pins and Brackets, Chair and Table Legs, Gun Stocks, Golf Sticks, Hockey Sticks, Balusters, Newel Posts, Oval Wood Dishes and for GENERAL WOODWORK.

Up-to-date machines for sawing, shaping, planing, sanding, boring, turning and mortising wood of every description.

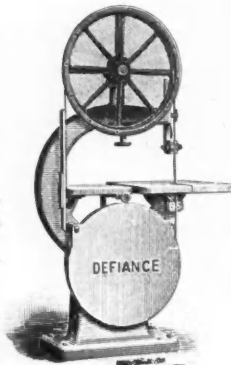
Designed, Patented, Guaranteed and Built by

The Defiance Machine Works

DEFIANCE, OHIO

EUROPEAN OFFICE, 71 Queen Street, LONDON, E. C.

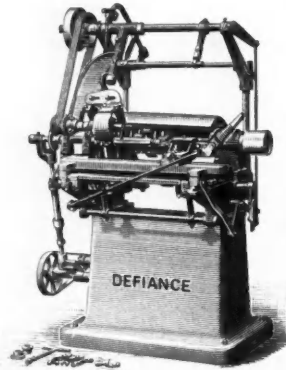
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28" Band Saw

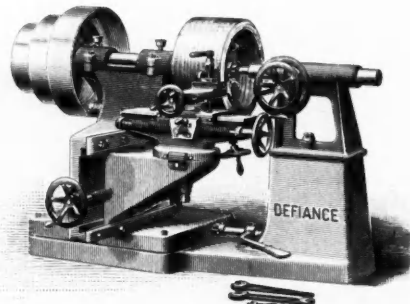


No. 18 Auto Wheel Finishing Stan



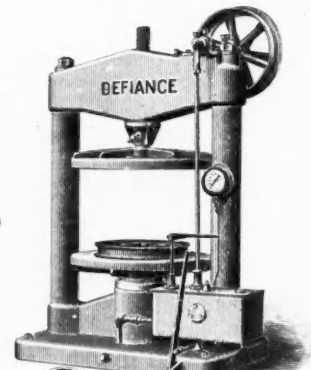
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Write for New Catalog



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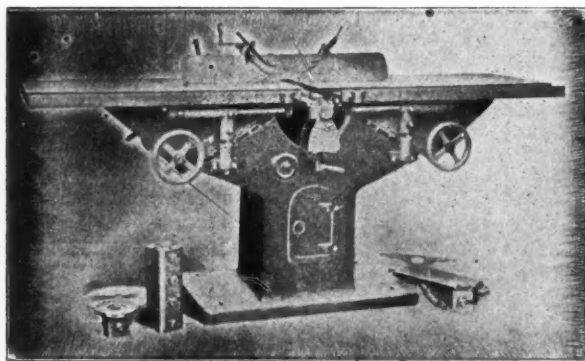
Ask for prices



No. 5 Auto Tire Press

Universal Wood-Worker

Planes, Joints, makes moulding, Rips. Cross-cuts, Gains, Dadoes, Rabbets. Tenons, Raises Panels, Bores. Mortises, in fact its range in general work is unlimited



It is a machine every shop of any importance should have. It is ten years ahead of any other wood-worker on the market. Write for photographs, circulars, prices, etc.

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In This Improved Swing Saw Machine the Saw Arbor Travels in a Perfectly Straight Line

PRYIBIL No. 5 Parallel Swing Saw

Also for grooving, gaining, rabbeting, tenoning, etc. Send for prices and catalog.

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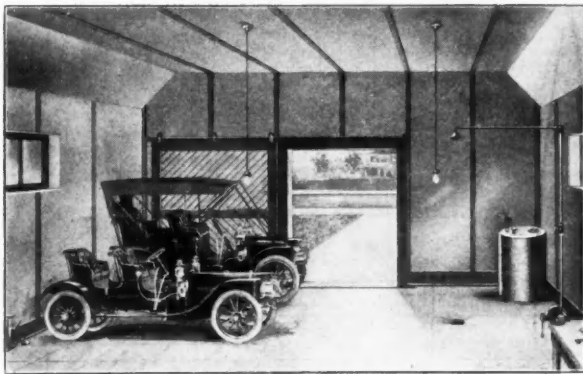


This Machine Cuts.....(Parallel with Table)

UTILITY WALL BOARD

A FIBROUS WATER-PROOF BOARD MADE IN CONVENIENT WIDTHS AND LENGTHS

To be Used Instead of Lath and Plaster in New Building or Repair Work



Make your Garage Warm by Lining with **UTILITY WALL BOARD**

Mr. Contractor: This is your chance to make more money and finish your jobs quicker. **UTILITY WALL BOARD** is right in quality and price. It has come to stay and is rapidly taking the place of lath and plaster.

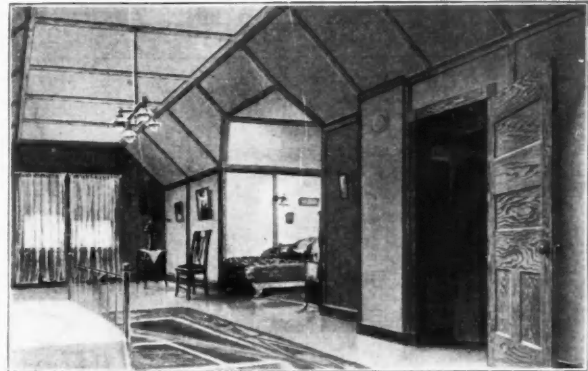
Every up-to-date contractor and builder should get samples of **UTILITY WALL BOARD** at once. There are hundreds of places it can be used with a profit to you and satisfaction to the owner.

Remember that all delays of the plasterer are a thing of the past for those who use this modern building material.

Mr. Dealer: Territory open for live dealers. Detailed information on request.

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This shows how an Attic looks after being finished with **UTILITY WALL BOARD**

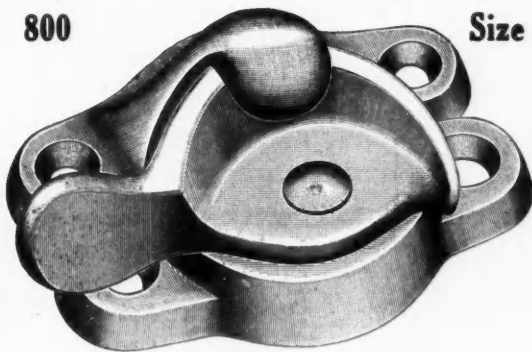
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Sole Manufacturers

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CRESCENT Variety Wood Worker

EVERY carpenter and builder should invest in one of these machines. No inconveniences, no worry, no bills from local mills to pay. By doing your own millwork you can place yourself in a position to estimate below your competitor. You will therefore have more work and a larger profit.

Saves Time and Money

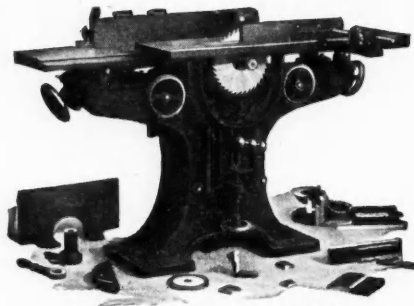
and fills a long felt want in those shops that have a varied but limited use for wood-working machinery. It combines a jointer, borer, shaper, pole rounder and tool grinder. The "Crescent" is built to stand hard usage, all the parts are made of the best material obtainable for the purpose. The machine is strong, durable and will stand the most severe tests.

This machine is especially valuable to carpenters and contractors, as it can be taken out on a job, or can be used in the shop with equal satisfaction. Can be driven with electric motor or gasoline engine.

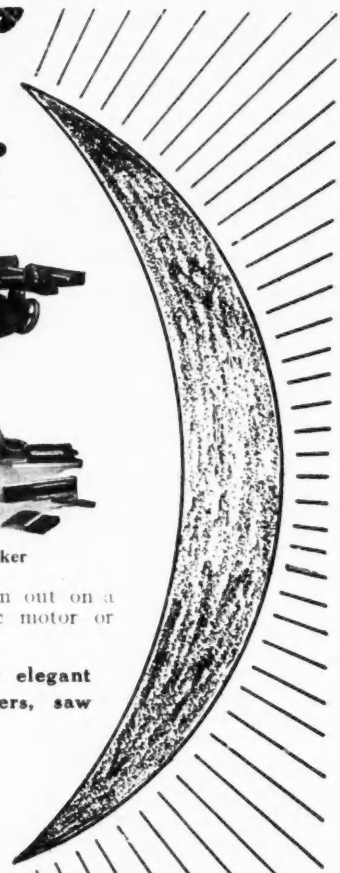
Get our 1910 Catalogue and find out all about this splendid tool and our elegant line of band saws, disk grinders, planers, planer and matcher, jointers, shapers, saw tables, etc.

The Crescent Machine Co.

224 Main Street, LEETONIA, OHIO



Crescent Variety Wood Worker



PARKS' No. 620 and 622

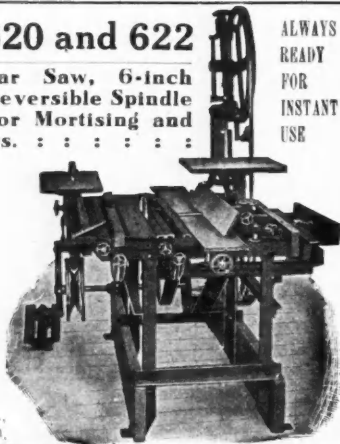
Combination Circular Saw, 6-inch Jointer, Band Saw, Reversible Spindle Shaper with Boring or Mortising and Rabbeting attachments. : : : : :

Six Machines in One and all in Plain Sight. No unbolting or bolting is necessary before you can see, or use all the attachments. Economical, cheap, and a constant money maker for Carpenters and Contractors. Write for Circular and Prices.

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

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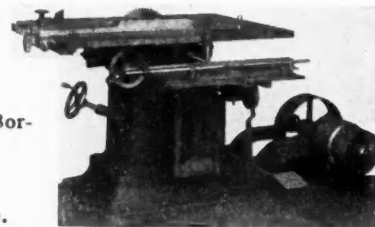


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VARIETY SAW

with or without Boring Attachment.

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Why? Because it costs less than other reliable soft wood doors—keeps perfectly in stock—best built—takes artistic finishes of Mahogany, Walnut, Oak, other brown woods—

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Faultless in make; flawless in grain

The only door made in which a like grain is chosen for all five panels affording great beauty and uniformity. Built with vertical stiles, rails and slash grain panels.

To the home owner Chehalis Fir Doors afford advantages of expensive hard woods at less cost than Spruce or Pine. To you they offer durability—least cost—least risk. While more beautifully figured than pine or spruce, the panels won't fuzz from dampness. In a flood at Kansas City the only part of our dealers stock that was not damaged was our Doors.

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Ask for Free Catalog F—Better still send 10 cents to defray postage and receive with catalog samples of Fir finished in Manogany, Walnut, Antique Oak, etc. Write at once.

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A Twenty-two Years' Test
For that many years Montross Metal Shingles have given unequalled service and proven to be the most durable and economical roofing. We have many testimonials where they have been in use from fifteen to twenty-two years with little or no repair expense. They last the life of the building, if given ordinary care. It will pay you to investigate their superior value over wood shingles, iron, paper and composition roofing.

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Local Agents Wanted—An attractive proposition to good, live agents. Write for special offer.

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Learn to Fill BIGGER SHOES!

Don't be satisfied with merely pushing a saw and driving nails. Be a MASTER of your craft. Learn to PLAN as well as to work—to use your BRAIN with the same skill that you use your hands.

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ARE EASILY SOLD BY OUR AGENTS
Home Owners Everywhere Are Reading Our Advertisements In The Leading Magazines

Edwards' Interlocking Metal Spanish Tile

ARCHITECTS EVERYWHERE SPECIFY THIS ATTRACTIVE ROOFING

Edwards' Metal Tile are stamped out of the highest quality Worcester Grade Terne Plate, size 10 x 14 inches, furnished either painted or heavily galvanized. They are provided with our patented interlocking device, which conceals all nails, makes it possible to get a perfectly moisture proof roof without soldering and without danger of having the tile crack open in extremely cold or hot weather. Edwards Metal Spanish Tile looks exactly like the best Terra Cotta Tile. They have the decided advantage of being much lighter, easier to apply, longer lived and cost much less.

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THE WORLD'S LARGEST MANUFACTURERS OF METAL ROOFING, METAL SHINGLES AND METAL CEILINGS



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They are carefully made from best materials and fully warranted. Experienced mechanics have come to regard them as the most satisfactory and economical tools on the market.



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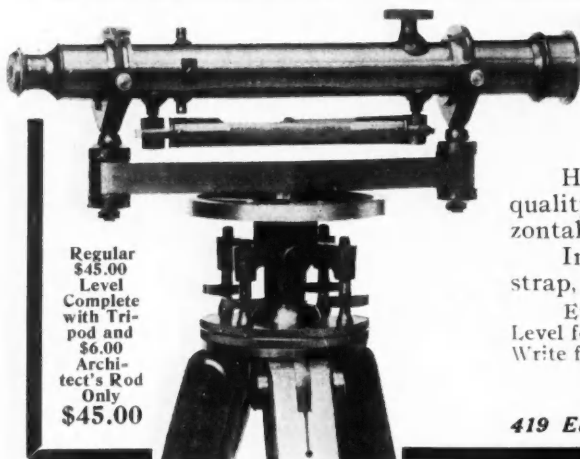
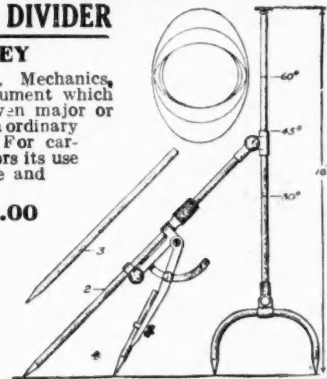
Called the KELLEY

Draftsmen, Pattern-makers, Mechanics, etc., can now obtain an instrument which will draw an ellipse of any given major or minor axis, just as readily as an ordinary compass will draw a circle. For carpenters, builders and contractors its use is a necessity for saving time and doing perfect work.

PRICE COMPLETE \$3.00

We positively guarantee satisfaction. Send \$3.00 for this unique instrument and we will send one by return mail and pay charges. It will pay for itself in a saving of time, labor and worry.

J. T. KELLEY
WEST RUSH, N. Y.



Regular
\$45.00
Level
Complete
with Tri-
pod and
\$6.00
Arch-
itect's Rod
Only
\$45.00

This Improved Level

Especially designed for Builders, Contractors, etc.

Has a telescope 12" in length. Lenses of the best optical quality. Magnifying power 25 diameters. Object glass 1 1/4". Horizontal circle 4 1/2" in diameter, graduated from 0-90 each way.

Instrument complete in a polished hard-wood box with strap, plumb-bob, sun-shade, adjusting pins and trivet.

Every Instrument guaranteed. We offer this regular \$45 Improved Level for the next month at \$40 or complete with \$6.00 Rod at \$45.00. Write for Circular "C" for full information.

DAVID WHITE COMPANY

419 East Water Street,

MILWAUKEE, WIS.

**WHIPPLE'S
AUTOMATIC
BLIND HINGE**



Write Today
For Full
Particulars

Reasons Why
**THEY ARE
THE BEST**

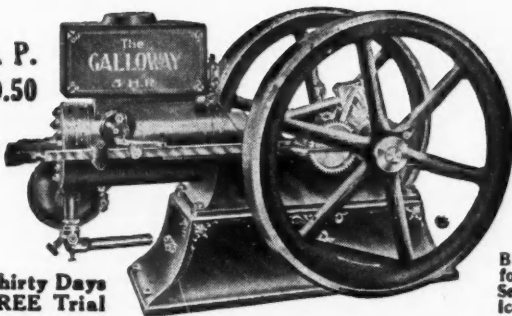
Cannot slam or blow off.
No fastening required.
No blinds to trim or catches to interfere.
Will hold blind—open, half open, or closed.

We also manufacture a flush hinge, constructed on same principle
Two styles, for brick or wood buildings.

R. P. WHIPPLE & CO.,

275 Main Street :: :: SPRINGFIELD, MASS.

5 H. P.
\$119.50



12-28
H. P.

Thirty Days
FREE Trial

Built
for
Service

CONCRETE MEN ATTENTION

Galloway Engines are made in all sizes from 1 1/4 to 28 H. P. They run on gasoline, naphtha, kerosene or distillate. We are furnishing complete mixing rigs and our price means a big saving of money to you—\$50 to \$300 depending on the engine you buy. You have the privilege of trying the outfit 30 days. If it is in any way unsatisfactory we refund your money with interest and pay freight both ways.

The Galloway Gasoline Engine
SIMPLEST ENGINE BUILT

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
WATERLOO, IOWA**



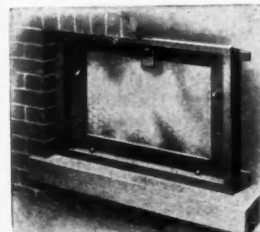
**Ornamental
Theatres**

Plaster Relief Decorations
Theatres Designed Everywhere

Write for illustrated Theatre Catalog. Send
us Sizes of Theatre for Special Designs.

—The—
Decorators Supply Co.
2525 Archer Ave., CHICAGO, ILL.

IRON COAL WINDOW



Opens and is locked
from the *outside*. Admits
light through heavy wire
glass.

Cast iron frame and
sash, cannot become bat-
tered and broken like
wood.

Is not unsightly like
the "chutes" now so

widely advertised. Price *Seven Dollars* and we
allow freight east of Mississippi River. Send
for our booklet.

The H. W. COVERT, CO., 164 Duane St., New York



**Reducing the Cost of Mixing
Concrete One-Fourth**

can be done by use of the **Low-Down, Force Feed, Concrete Mixer**. It feeds with absolute accuracy, sand, cement and crushed stone. The ingredients are forced into the mixing trough, wet or dry. It has a sight feed so that you can see at all times the proportions desired.

The paddles in the mixing trough are easily cleaned because they are not covered up with hoppers. The low-down hoppers enables one man to do the work of two. We do not depend on gravity to feed.

ELITE MFG. CO., Ashland, O.

Honeywell Hot Water Heating

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 1/2" 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.

45,000 SYSTEMS IN USE

Endorsed and Sold by the Leading Manufacturers of Heating Materials.

Free engineering advice given the trade on all installations. Failures 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.

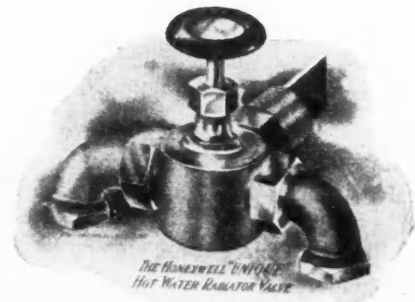
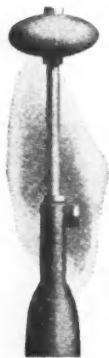
Write us for full information regarding this eminently successful system that has revolutionized hot water heating.

In use throughout the U. S., Canada and Foreign Countries.

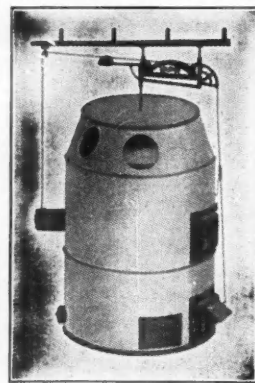
Honeywell Heating Specialty Company

Plant and General Offices

WABASH - INDIANA



A PAYING SIDE LINE FOR YOU



The Kees Regulator

works the drafts of a hot air furnace automatically, so as to keep the temperature even. It prevents waste of fuel through overheating, makes the home more comfortable and healthful and practically "runs" the furnace. Every furnace owner needs one. The price is moderate.

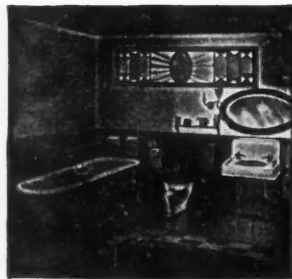
You can make a good many extra dollars this fall selling and installing them.

Drop us a card for full particulars.

F.D. KEES MFG. CO. BEATRICE, NEB. Box 552

PLUMBERS' SUPPLIES

AT WHOLESALE



When in the market for Plumbing Supplies and you wish to

SAVE 20 to 40 Per Cent

on every article write for my free illustrated Catalog. The only house that sells first class guaranteed goods at wholesale prices direct. Shipments are promptly made from a very complete stock.

Small orders are as carefully handled as large ones.

B. B. KAROL, 768-772 W. Harrison St., Chicago, Ill.



This is the inner radiator of the **HESS STEEL FURNACE**. It's all steel and contains the fire, with its gas, smoke and dust. Radiator leakage in other furnaces sends gas and dust to the rooms, but never in the **HESS**. For every joint and seam in a **HESS** radiator is sealed tight WITH MELTED STEEL. **EVERY JOINT IS WELDED AND STAYS TIGHT FOREVER**. Inferior furnaces are not built that way. Cemented radiators always open after a while and give trouble. It's impossible with the **HESS**.

HESS FURNACE

You can buy our furnace direct from our factory, at the factory price, and test it 60 days in winter weather. If not pleased, return it at our expense for freight both ways and pay us nothing. This offer and lots of good furnace information will be found in our free 48-page furnace booklet. Ask us for one. A postal card will do.

HESS, 916 Tacoma Bldg. - CHICAGO

*Not for Economy Only,
But Because of its Hardness,
Durability and Splendid Appearance,*

YELLOW PINE EDGE GRAIN FLOORING

*is the most desirable flooring
for general purposes.*

*Finishes Beautifully. Handsome in Appearance.
Less expensive than other hard woods, only because
still plentiful. The peer of any wood used for flooring.*

Manufactured in narrow widths
and long lengths, thoroughly
kiln-dried, and available at any
first-class lumber yard.

*Floor Finishing Specifications on Application.
(Mention this paper)*

Yellow Pine Manufacturers' Association
Suite 707 Wright Building, St. Louis, Mo.

Let us help you

We have prepared a folder showing successful color schemes and fashions and colors for 1911 which we will send free to any builder, contractor or carpenter.

It gives an idea of the handsome effects received by using

Lowe Brothers HIGH STANDARD Liquid Paint

and other products. Try "High Standard" and demonstrate its economy. Practical tests show it covers more square feet to the gallon and wears longer—hence is most economical. Forty years on the market. See our nearest dealer about the supply. Send for the color folder at once, telling us how and where you buy.



The Lowe Brothers Co.

Makers of
"Mellotone"—Linduro—Vernicol and other
"Little Blue Flag" Products

450-452 E. Third Street, DAYTON, OHIO

Boston New York Chicago Kansas City



"Victor" Scroll Saw.

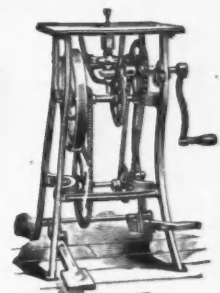


"Diamond" Mortiser.

FOOT, HAND AND POWER WOOD-WORKING MACHINERY

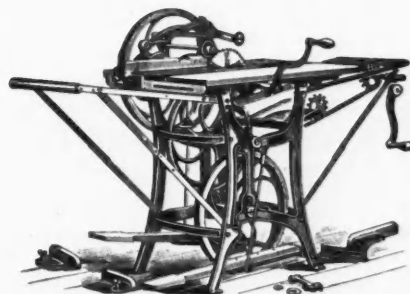
For Carpenters, Builders, Cabinet-Makers, and Other Wood-Workers

Built For Hard Work, Accurate Work And Long Service



"Rox" Moulder.

ONE MAN with one of these machines will do the work of four to six men using hand tools; will do it easier, will do it better.



"Union" Combination Self-Feed Rip and Cross-Cut Saw

WE GUARANTEE each machine to be thoroughly practical and accurate. Machines sent on trial, and if not found entirely satisfactory, may be returned at our expense.



No. 8 "Union" Power Saw.

Enterprising mechanics are quick to see the superior merits of our machines. It will pay you to investigate these advantages.

SEND FOR CATALOG "A"

THE SENECA FALLS Manufacturing Co.

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



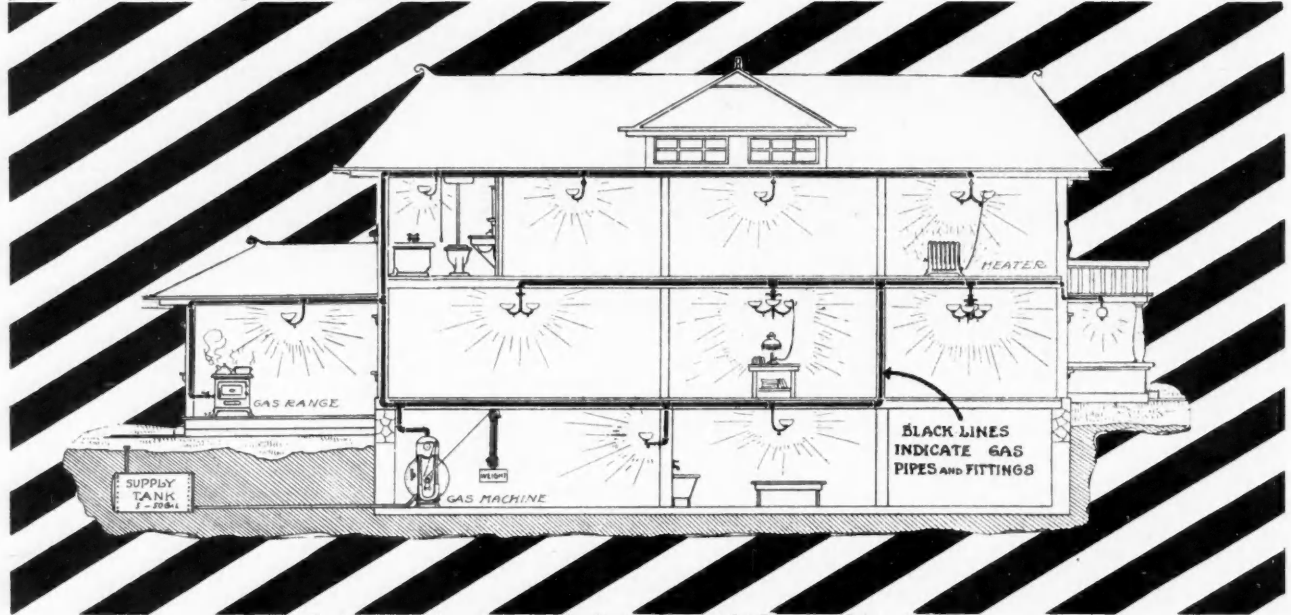
No. 6 "Union" Combination Saw. (96)

AIRGAS—LATEST INVENTION

**NOT EXPLOSIVE. NOT ASPHYXIATING.
NOT POISONOUS. NOT DANGEROUS.**

ACME OF SIMPLICITY AND ECONOMY (1,000 Candle Power for One Hour for One Cent)

The Standard Vacuum Gas Machine has revolutionized Gas Production by means of a Vacuum Cold Process. Airgas can be used for Lighting, Heating, Cooking and Industrial Purposes. Airgas is made without the application of any heat and consists of 97 per cent of air that you breathe and 3 per cent of Gas. Machines are made in different sizes, for small homes, big residences, large buildings, or can be made to supply gas for entire towns up to 20,000 people. Gas made automatically throughout. No cleaning. No work filling machine. It runs itself. Uses Gasoline, Benzine or Naptha, also called Petrol, or Motorspirits of any grade. Standard Vacuum Airgas can be made for 15 cents per 1,000 cubic feet. 32 times cheaper than electricity, 25 times cheaper than acetylene. 12 times cheaper than common kerosene oil lamps and 10 times cheaper than Coal or City Gas. Machine make gas only when needed, otherwise stands idle. It is always ready. Gas produced instantly. No waiting. All conveniences of city gas, with none of its dangers and its disadvantages.



The illustration above shows an entire Standard Vacuum Gas Plant for a Private Residence

Agents Wanted: We want a representative in each town or community. Agents will be fully protected. No experience of any kind required. Plants can be delivered ready for any location and for any country or climate. Systems will last a lifetime. Always satisfactory. No trouble. No worry. Contractors & Builders visiting the coming Cement Show in Chicago are cordially invited to call on us where we have a Machine on demonstration.

THE STANDARD-GILLETT LIGHT COMPANY, B9 W. Michigan St. Largest Manufacturers of Cold Process, Hollow Wire and CHICAGO, ILL. Portable Hydrocarbon Lighting Devices. Write for particulars.

Huther Bros. Patent Groover or Dado Head

Will save it's cost in three days' time

Can be used on any Circular Saw Mandrel

For cutting any width groove from 1/8" to 2" or over. Will cut a perfect groove, either with or across the grain, and leaves edges smooth. Will ship to any responsible firm on ten days' approval; if not satisfactory you are at liberty to return at our expense. We also make a specialty of concave ground, smooth cutting circular Mitre Saws, for either rip or cross cut; Grooving Saws for all kinds of special work; Lock, Corner Cutters, Concave Saws, etc.

Try our Scraper Blades and you will use no others:

HUTHER BROS SAW MFG. CO.
1000 University Ave. ROCHESTER, N. Y.

Griswold Adjustable Roofing Brackets

TIME, LABOR AND MATERIAL SAVERS.

For supporting stagings for shingling, repairing and painting roofs. Only positively safe staging support without nailing. Instantly placed in position or removed. Adjustable to any angle. Made of steel, light and fold to small space for packing. They are particularly convenient in working around dormer windows, skylights and piazza roofs.

No carpenter, builder or painter should be without a supply of Griswold roofing brackets. Send for circulars and agents' proposition.

W. S. GRISWOLD
37 John St., Springfield, Mass.

Agents Wanted

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.

The MAN Who Stood Still!



THE man who stood still! You **pass** him on the street every day. If you take one moment now, you can easily recall at least **one man** who reminds you of this picture. Day after day he **follows** in the same **groove**. In good health and in bad he has **got** to work. Growing older and older, he sees ahead no relief from the ceaseless toil that he has known all through his life. There is no opportunity for him to cease for a **single day** the everlasting "humdrum" that he has known for so long. **He is the man who stood still.**

¶ When he had the chance he failed to seize it. He allowed other men, no smarter, no abler, no better than he, to **crowd him out**. One by one his fellow workers passed him by to better and more profitable work. They left him **always standing** on the threshold of success. But they left him **behind**. He heeded not the beckonings of opportunity. **He is the man who stood still.**

¶ And now at sixty, at seventy or at eighty years you may see him any day if you care to look—a good carpenter, a good builder, a good contractor perhaps—but **that's all**; good in the sense that he can do certain things simply because he has done the same thing **over and over again**—but not good enough to try the new difficult work, the modern up-to-date jobs; the kind that **pay good money**. No, he cannot do these things—he **never learned how**. **He is the man who stood still.**

¶ You don't want to stick to the plane, the saw and the hammer all your life. If you are a contractor or a builder don't you want **bigger** work than just barns, sheds and now and then a house or two?

¶ If you are a draftsman, an apprentice or assistant in an architect's office you don't want to remain in your present position any longer than you have to; you want to make your present work the stepping stone to a **bigger position**, which will be your **life's work**.

¶ You don't want to **stand still** and see your friends step ahead to enjoyable, well paid, **independent** work, simply because they "**snap up**" the same opportunities, the same chances that are **offered you**. It is the natural ambition of man to want to **keep up with his fellows**.

¶ The only way that you or any other man can **keep up** is through **study**—study of your chosen work. If there is a certain part of your work that you don't thoroughly understand then some time when that kind of work **has got to be done** some other man is going to **step up ahead of you** and do it. **He learned how. KNOWLEDGE IS THE GREAT LEVELER.** There is no true independence where there is lack of training.

¶ You have the chance **now** within your grasp to get this necessary training. This advertisement is an absolutely direct appeal to **you**. No matter how good a position you hold now—no matter how much work you are getting—no matter how well you are paid for it—this advertisement holds as much interest for you as the man who is actually **looking for work**.

¶ **At no risk to you**—without the slightest obligation on your part—we offer you the really great opportunity of perfecting yourself in your life's chosen work. Don't pass this page by until you have made up your mind to give the rest of this advertisement careful study. Look at the picture again at the top of this page—look at it carefully. You owe it to yourself and to those who may be dependent upon you to take advantage of every possible chance for bettering yourself.

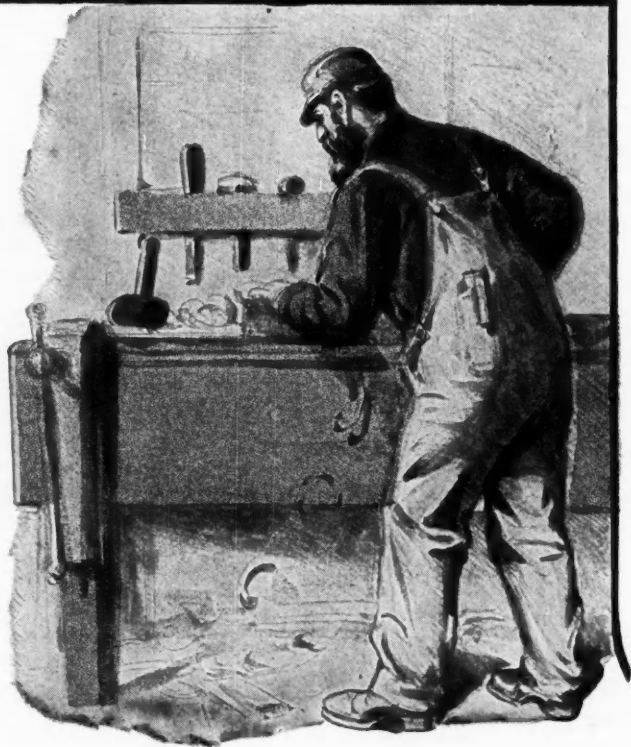
¶ You cannot afford to be the man who stood still.

Radford's Cyclopedia of Construction

Ⓒ The up-to-date mechanic in every kind of work trains his **brain** even more carefully than he ever trained his hand. That is the slogan of Twentieth Century Success — **the trained mind in a trained body.**

Ⓒ The man who uses the compass, the steel square, the chisel or the saw has got to have a true eye and steady hand. He learns in his apprenticeship how to train his eye and hand to the top notch of efficiency. Too often, however, this same man of the **trained body** forgets to **train the mind** that **directs** the work of the body. This kind of a man with the **untrained mind**, while he may be able to do **mechanical** work well enough, cannot do **brain work** and is bound to get in a rut **in the long run.** It takes a trained mind to read plans and blue prints; that's why so many workers live and die in the same kind of a position. You have seen the result on the first page of this advertisement. **The untrained man becomes THE MAN WHO STOOD STILL.**

Ⓒ At the cost of thousands of dollars and years of experience of hundreds of the best known practical building experts, architects and construction engineers, we have collected and prepared the material for the greatest, most comprehensive, the most practical, thorough and understandable



CYCLOPEDIA of CONSTRUCTION, CARPENTRY, BUILDING, and ARCHITECTURE
ever before even conceived.

Twelve Great Big Massive Volumes

and one extra large volume of 300 pages of actual plans, drawn by foremost architects.

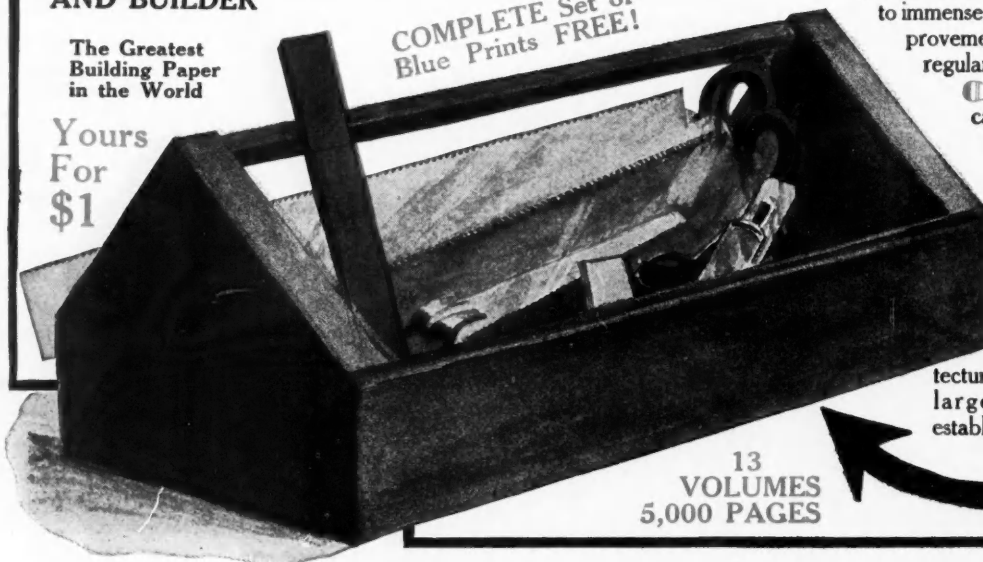
Selected for their excellence, economy of design and popularity along the building classes. The volume of plans is portfolio size, and is in itself worth the special price asked for the complete set.

With a Full Year's Subscription to the **AMERICAN CARPENTER AND BUILDER**

The Greatest Building Paper in the World

Yours For \$1

COMPLETE Set of Blue Prints FREE!



13 VOLUMES 5,000 PAGES

Two Kinds of Two Kinds

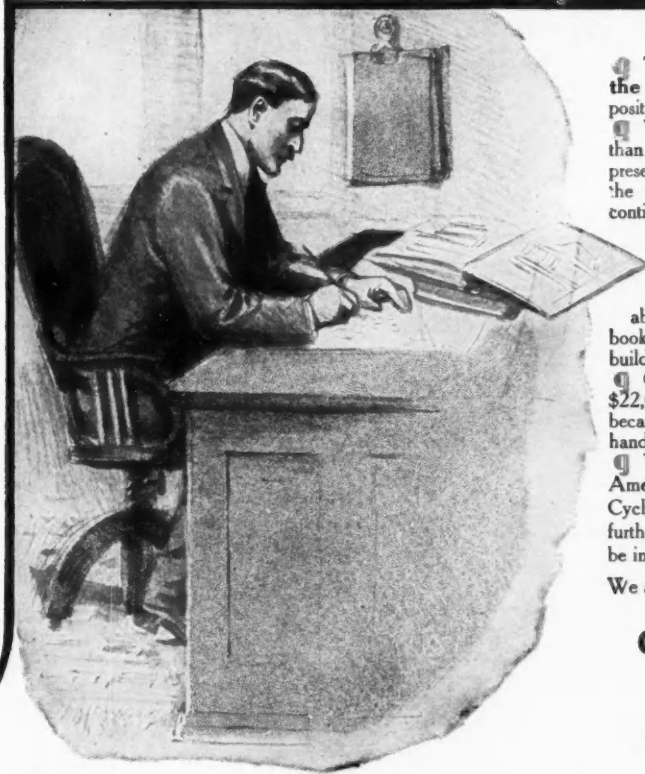
THAT IS NOT ALL YOU GET

We positively guarantee to furnish, free of all extra cost, one complete set of working blue prints, to be selected from any of the 300 plans shown in the big portfolio—the appendix of plans. These blue prints are guaranteed in every way for accuracy in printing, measurement and design.

Ⓒ The contractor and builder can use these plans to get business by showing them to **prospective** builders. The man who intends to build will find exactly what he wants, saving time, money and expense. The carpenter, draftsman and apprentice can use them to immense advantage for study and improvement in connection with the regular features* of the Cyclopaedia.

Ⓒ The only reason that we can make you an offer like this is because The Radford Architectural Company, publishers of the Cyclopaedia, are the largest publishers of architectural and building books in the world and in addition the Radford Architectural Company is the largest architectural establishment in the world.

12 BIG VOLUMES SENT FOR ONLY \$1.00



¶ The difference between the man at the desk and the man at the bench is training—the kind of training that demands well paid positions of dignity and importance.

¶ We don't mean by this that the desk job is always better than the bench job. We don't mean that you should change your present work. We do mean, however, that you must combine more of the desk man's kind of training with your work if you want to continue a live factor in your trade.

¶ The desk man uses one kind of tool that too often the bench man neglects entirely. That tool—the best one in the whole kit—is books; practical books that tell how to do your work in the easiest, the best and latest ways; books that tell you all about each and every feature of your work to the smallest detail; books that keep you in touch with the biggest and smallest details of building construction.

¶ Government Statistics prove that the average desk man earns \$22,000.00 more in a lifetime than the average bench man simply because of this main fact—he trains the brain as well as the eye and hand.

¶ We have made special arrangements with the publishers of the American Carpenter and Builder so that we can offer a few sets of the Cyclopedia to readers of the paper simply as an advertisement. We have further arranged to include the paper in our offer. We know that you will be interested in this stupendous work which applies so particularly to you.

We are shipping the books now, on the second edition

**Cheaper than even Second-hand Books
were ever sold**

One-Fourth Regular Price

**ONE THOUSAND SETS AT TWENTY-ONE
CENTS ON THE DOLLAR**

Workers and of Tools

¶ We are just off the press with the Brand New Second Edition. The cost of getting together this set of books has been incalculable. The task of preparing it has been gigantic. It has taken the entire time of hundreds of writers and editors. Our entire organization has had a hand in preparing it and we have picked outside help here and there from the best and most practical material available. We want to advertise this

set of books at the start in the most effective way, and we believe that we can do this by selling a few sets if necessary at a loss for the sake of the advertising it will give future editions. You can reserve a complete set now for

\$23.80 instead of \$79.00

**Free on five days' approval---No risk to you---No obligation
No expense, all express charges prepaid**

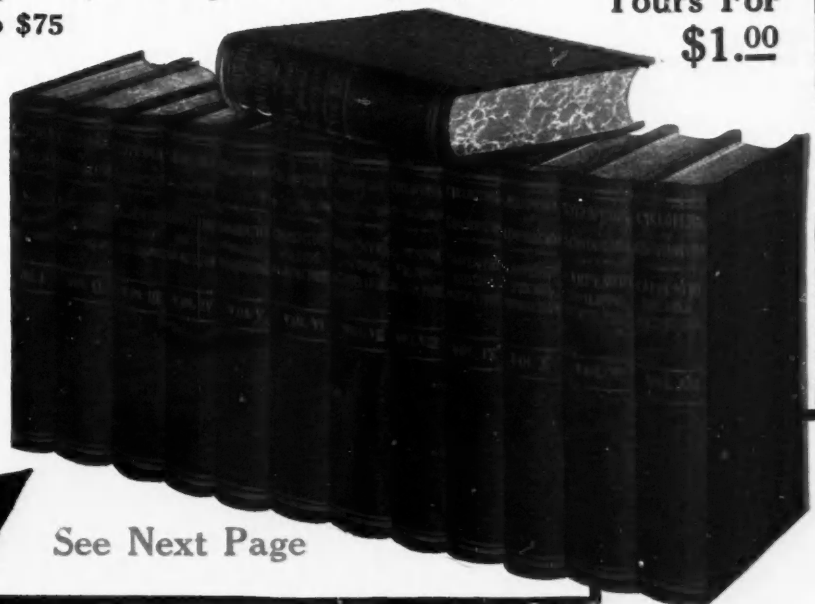
Blue Prints Alone Worth \$50 to \$75

¶ We do this simply because we know you will advertise the books—you will recommend them to your friends if you find them as good as we say they are. We are willing to put out the first one thousand sets at a loss simply for the sake of your good will. Any printer friend of yours will tell you that thirteen such volumes and a complete set of blue prints (regular price of blue prints \$50 to \$75) cannot be sold for \$23.80 at any profit.

Price without magazine is \$22.80.

5,000 pages—thousands of illustrations, diagrams, charts, plans and working drawings; handsomely and durably bound; de luxe books in every particular.

**MASSIVE
PORTFOLIO SIZE
VOLUME OF
PLANS
EXTRA!**

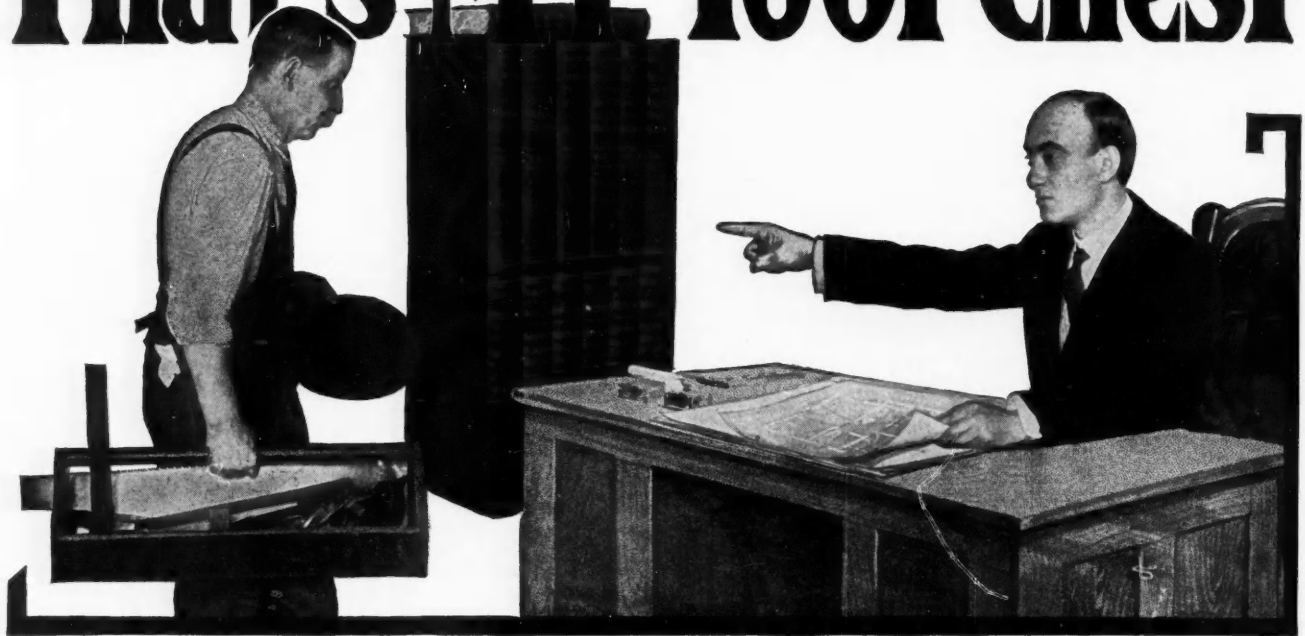


See Next Page

**Yours For
\$1.00**

EXPRESS PREPAID

That's MY Tool Chest



You can almost hear the man at the desk say: "Kelly, this job has got to be done **right**. I haven't anyone else to send and **you will have to do**. If you had ever studied that set of books **there you would know how to do this work now**. But there is no time now to find out; do the best you can and let this be a lesson to you to learn more about **your own work**. Why, man, I am finding out new things every day; finding them out through these books. It is the way I hold my job—**THAT'S MY TOOL CHEST.**"

SMALL LIST OF CONTENTS

To Realize their Tremendous Scope You Must See the Books

Sent for only \$1.00—Subject to your approval—Express prepaid

Carpentry
Stair Building
Steel Square

Correct Measurements
How to Test Steel Square
Key to Steel Square

Possibilities of Steel Square
Test Questions, Practical
Problems, Reviews

Framing
Roof Construction
Roof Trusses and Mill
Building Construction
Strength of Material
Shingling—All Kinds
Roofing Materials
Foundations, Retaining
Walls, etc.
Piles and Caissons

Excavating
Masonry
Brick Laying
Stone Cutting
Mortars, Limes, Cement, etc.
Sewers and Drains
House Drainage and Sanitation

Estimating and Superintendence
Laws of Building Contracts
Painting and Glazing
Plastering Hardware
Blue Printing
Handicraft Work in the Home
Finishing Wood of all Kinds

Cement Construction

Never before has this subject been so completely treated

Specifications for Portland Cement
How to Test Cement
Standard Specifications for Concrete Blocks
Establishing a Concrete Block Business
Concrete Block Systems
Proportions—Sand, Stone, Gravel and Water
How to Overcome Concrete Troubles
Curing Stone by Steam
Color of Concrete Blocks
Waterproofing
Cement Plaster Work
Cement Mortar

Monolithic Concrete Construction
Sidewalks, Pavements and Floors
Expansion Joints
Concrete Flogs
Walls and Foundations
Steps and Stairs
Concrete on the Farm
Concrete Tanks and Cisterns
Roofings, Chimneys, etc.
Reinforced Concrete Bridges
Railroad Work, Concrete Ties, Abutments, Culverts

Concrete Dams
Retaining Walls
Reinforced Concrete
Various Systems, Tables
Showing How to Reinforce
Lawn Ornaments—Fountains, Seats, Vases, Sun Dials
Cement Ornamentation—Porches, Columns, Fences, Capitals
Farm Buildings
Hundreds of Perspective Views and Floor Plans of Cement, Plaster and Concrete Block Houses

Steel Construction

This subject is handled thoroughly

General Principles
Practical Applications
Practical Problems in Construction
Fireproofing
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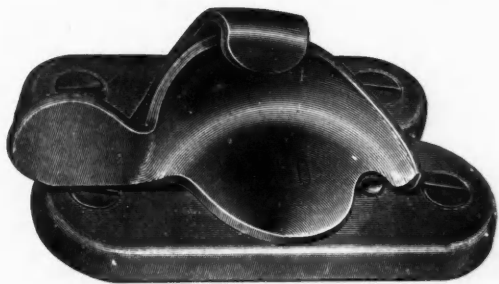
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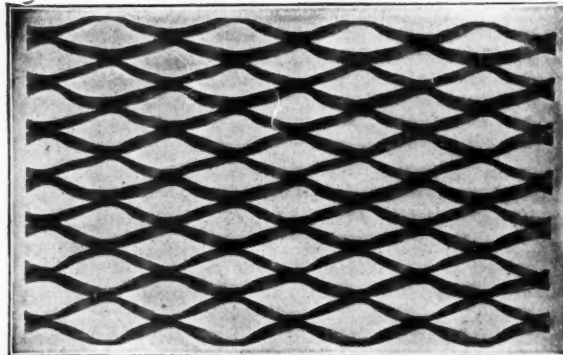
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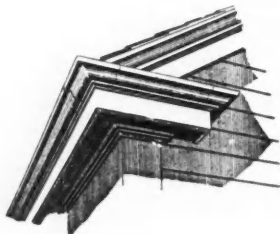
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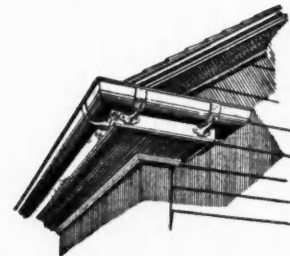
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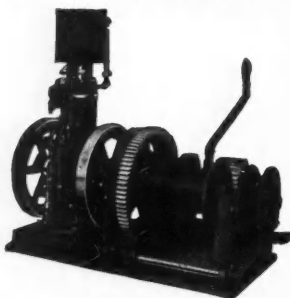


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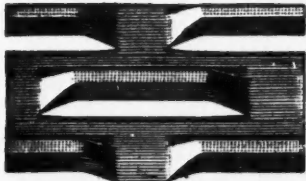
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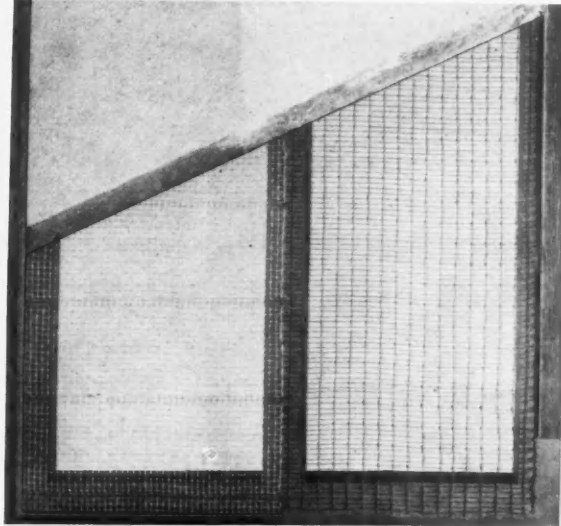


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Made in all sizes and styles, for use with brick or concrete block walls or with wooden or steel beams

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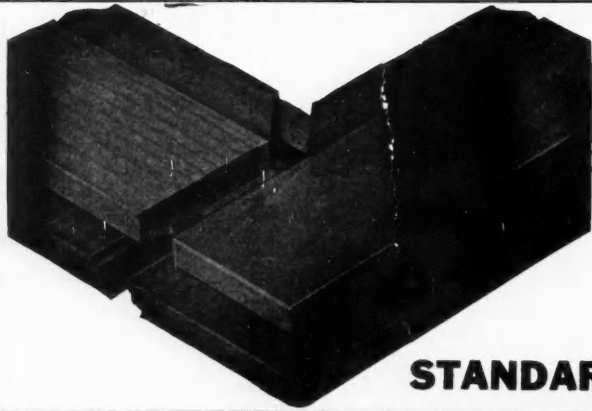
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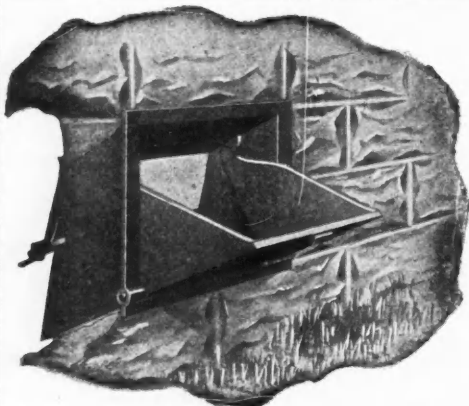


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In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

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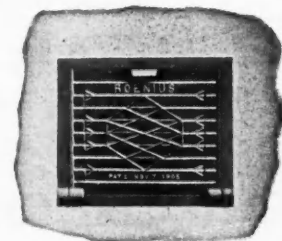
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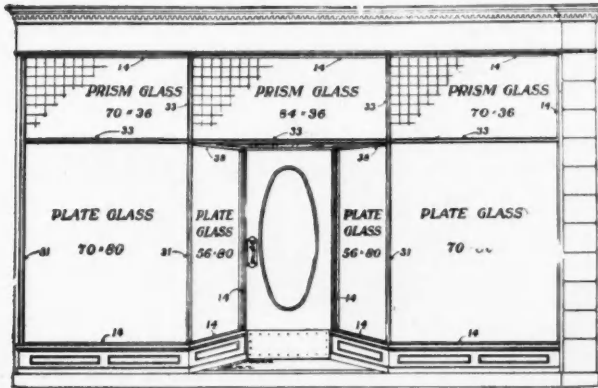
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of construction, combined with artistic appearance and absolute reliability, is the particular feature of Petz Store Front Construction. An unparalleled record of "no breakage" tells the story. It explains why insurance companies recommend them and why careful men insist on having Petz Bars in their store fronts.

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Giving full particulars, weights, dimensions, etc.

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**100
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Made in 4 Sizes—
Hand and Power

Little Giant
Highest in Quality—Cheapest in Price

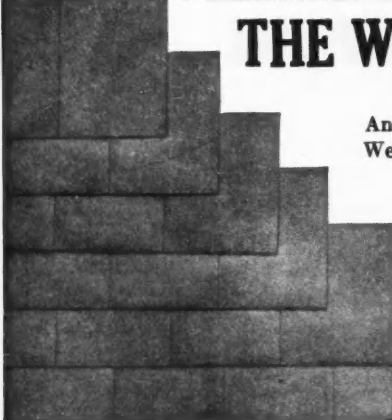
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ARE OF A COOL, GRAY SLATE COLOR

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EASY TO BUY \$10 DOWN AND \$10 a Month

Our monthly payment plan makes it easy for anyone to have the best heating system. Buy direct and save the dealer's big profits and excessive charges for installation and repairs. Saves one-third the cost.



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Sold Under a Binding "Guaranty Bond" to give perfect satisfaction after 365 days' use or money refunded. We send complete outfit — furnace, registers, pipes, special blue print plans, full directions and all tools for installing. So easy to install a boy can do it.

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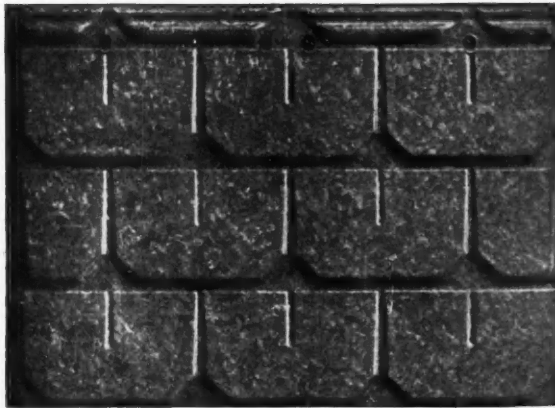
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Quarry Operators
BLACK, GREEN, PURPLE, RED

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The Canton Shingle

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The advantages of sheet metal for a roof covering are obvious. The "Canton" Shingle is light in weight, fire and lightning proof and cannot crack, break, or fall out. It has less joints, reducing the danger from leakage. In applying, it does not require skilled labor, and the cost of erecting is reduced, as it comes to you ready to lay, requiring no cutting nor punching. Each sheet contains an equal area to nine slates, which, when laid covers a space 19½x26¾ inches. It will not rattle, as each sheet is firmly anchored to the sheathing. Expansion and contraction are provided for, in the lock seams and all nails are covered, so there is no danger of leaks from these sources. There is no loss from breakage.

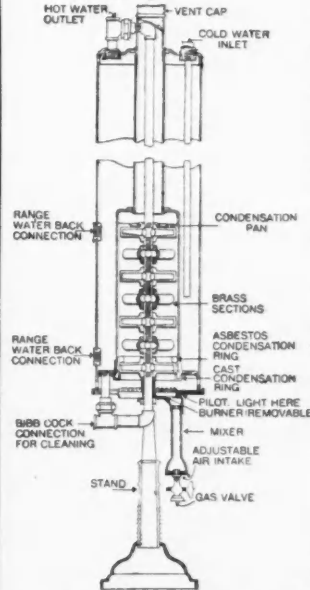


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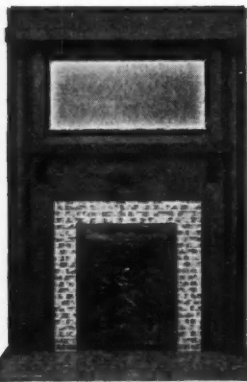
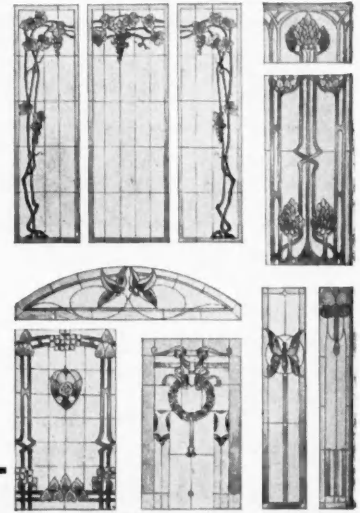
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Our Designs Are Exclusive

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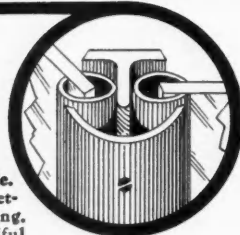
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Our Catalog is worthy of a place on your Desk*

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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.

Let us figure with you and help you get the Metal Ceiling business in your town now.

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Double Acting Ball Bearing Surface Floor Hinges are used by more Carpenters and Builders than any other floor hinge on the market,—Why?

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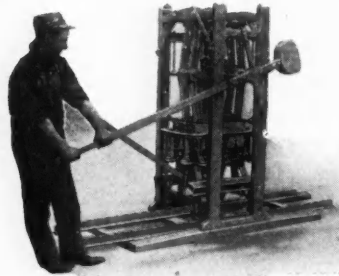
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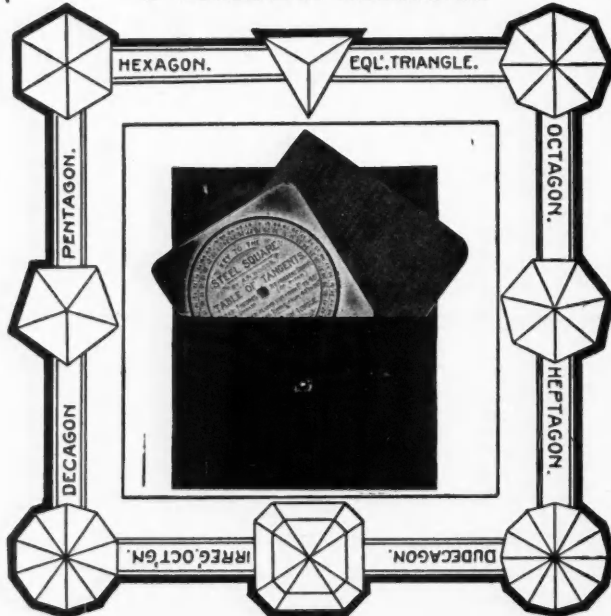
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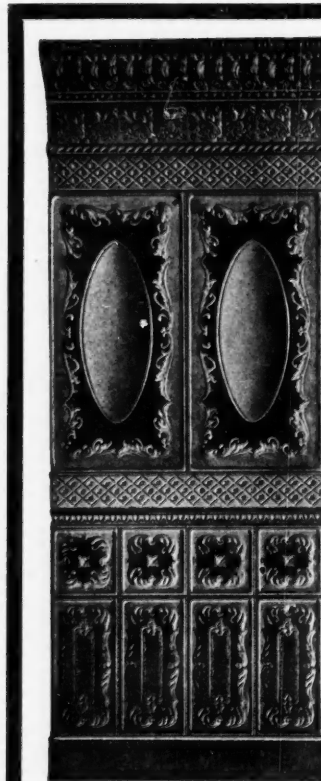
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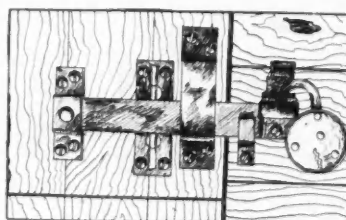
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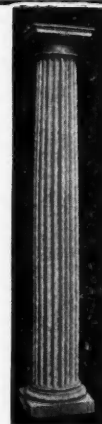
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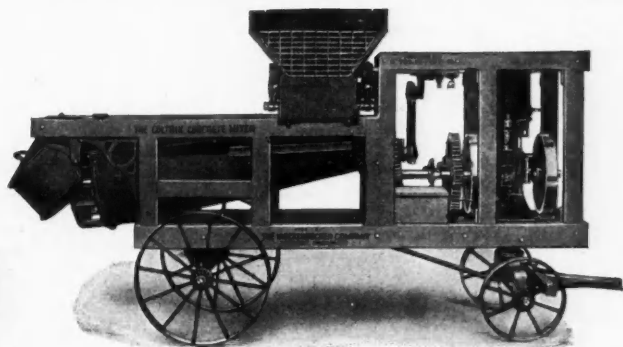
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CONTRACTOR
OR BUILDER?

If you are, our machine will appeal to you, as it makes perfect brick at minimum cost.

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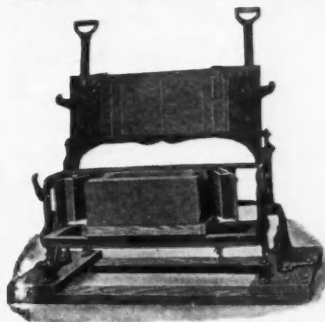
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The molds which make this pier and chimney will make a variety of other things.

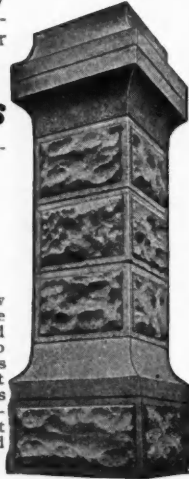
Molds

to make this chimney and pier

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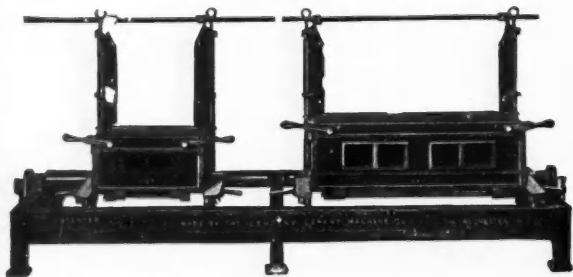
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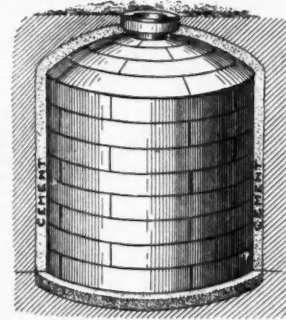
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Big Returns for the Contractor.



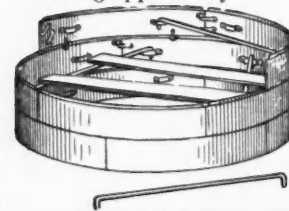
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No state or county rights to buy. Cost of steel form, only capital required.

You can build a concrete cistern with this form 50% less than you can a brick and command a higher price.

No skilled labor required. With this form you can build a concrete cistern just like a big jug in the ground, no chance for vegetable or other kind of matter to get in. No leakage.

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- 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 46 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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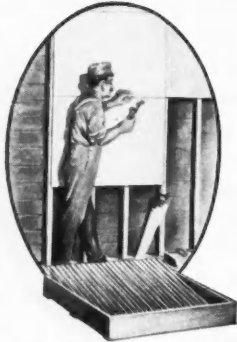
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NOTICE TO ADVERTISERS

Forms for the April number of the American Carpenter and Builder will close promptly on March 20. New Copy, changes and orders for omissions of advertisements must reach our business office, 185 Jackson Boulevard, Chicago, not later than the above date to insure attention.
AMERICAN CARPENTER & BUILDER CO.

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ANY WEATHER is "Good Building Weather" when you use *Bishopric Wall Board* as a substitute for lath and plaster. It is cheaper and better and does away with all delays in building. It is nailed to studding dry, ready for immediate application of paper, paint, burlap, or any other kind of decoration.

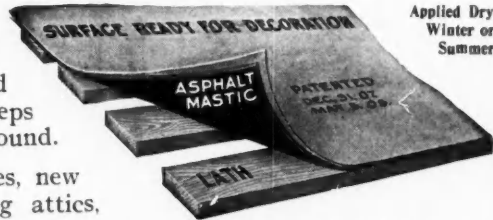


Bishopric Wall Board Easily Applied

This substitute for lath and plaster is made of kiln-dried, dressed lath, imbedded in hot Asphalt Mastic surfaced with sized carboard and cut at the factory into 4x4 feet sheets, 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.

It is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.



Applied Dry Winter or Summer

Shows Construction of Bishopric Wall Board

PRICE OF WALL BOARD AND SHIPMENT—Crate of 16 sheets, covering 256 sq. ft. of surface, \$6.40 per crate, or \$2.50 per 100 sq. ft., f. o. b. New Orleans, Cincinnati, or Alma, Mich. We ship from nearest point.

Bishopric Sheathing is Cheaper than Lumber; saves 75% in Labor; does away with Building Paper

BISHOPRIC SHEATHING

Ideal Material for Cement Buildings or Stucco Exteriors. Proof against Dampness, Heat and Cold

Bishopric Sheathing is made of same materials as Wall Board, but finish is not necessarily so fine, therefore costs less. It is of uniform thickness, insuring a perfectly even surface when applied.



Bishopric Sheathing Construction.

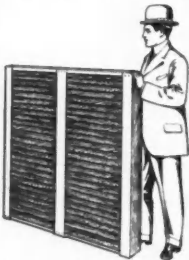
Bishopric Sheathing is nailed to studs, with lath and asphalt side exposed. Over laths weather boards are nailed or cement applied.

Bishopric Sheathing makes a more solid and substantial wall than lumber. There are no gaping joints; no widening cracks due to shrinkage; no knot holes.

The Asphalt Mastic in Bishopric Sheathing is a non-conductor, moisture cannot penetrate it. It is proof against vermin. The pests cannot bore through the tough, gummy Asphalt Mastic. In applying weather-boards over laths, dead air space is left between the laths; forming splendid insulation. Does away with the expense of building paper and cost of its application.

One wagon load of Bishopric Sheathing covers an area from six to ten times as great as one load of lumber—a tremendous saving in hauling. Five thousand feet can be hauled in an ordinary wagon.

The cost of applying Bishopric Sheathing is but \$2.50 per 1,000 feet—A SAVING OF ABOUT 75 PER CENT. Furthermore, 1,000 square feet of wood sheathing covers but 750 feet of surface, 20% less being due to tongue and groove. In Bishopric Sheathing 1000 sq. ft. covers 1000 square feet of space.



Wall Board and Sheathing are shipped in crates

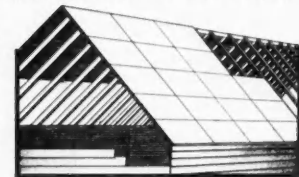
In applying ordinary lumber, heavier scaffolding, more tools and greater scaffold floor-space are required. In applying Bishopric Sheathing, one man drives a few nails in each sheet; a common laborer or boy can finish the nailing.

Bishopric Sheathing insures comfort during the construction of the building. As soon as the building is closed in with Bishopric Sheathing, the men may work in comfort on the inside during bad weather, finishing the outside on suitable days. This insures continuous work, without loss of time, enabling the contractor to hold his men and complete the work in the least possible time.

Bishopric Sheathing is used with equally splendid results under flooring and as a substitute for roofing boards. Used under floors, it serves as a sound deadener and keeps out dampness; used under the shingles, it keeps out cold and summer heat.

ITS MANY USES—Bishopric Sheathing also is used with excellent results as a lining for dairy barns, ranch houses, poultry houses, driving stables or any out-door building where protection from the elements, Summer or Winter is desired.

Bishopric Sheathing is the ideal material for cement exterior or stucco work. Cement firmly adheres to the laths and Asphalt Mastic and makes a solid, smooth exterior. For factory or residence this form of concrete or stucco construction is the cheapest and best known.



The above cut shows Bishopric Sheathing over rafters ready for Bishopric Roofing, also Weather boards over Bishopric Sheathing.

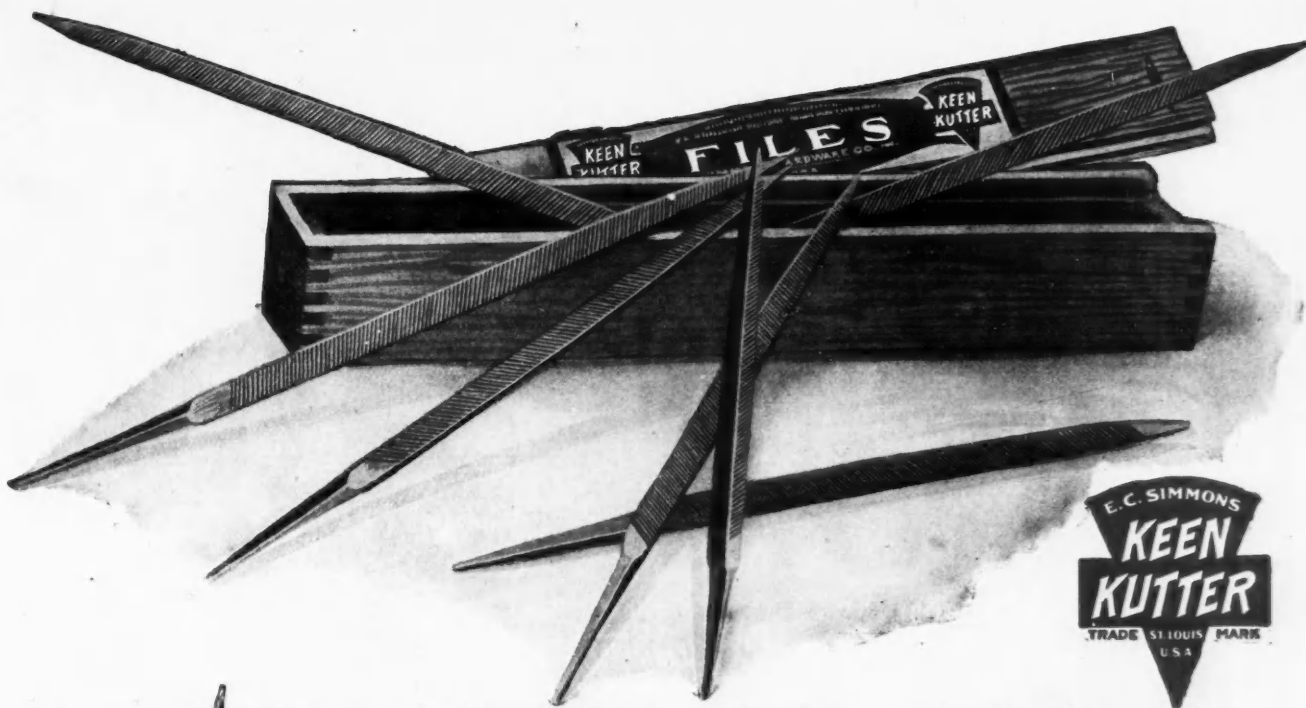
An Ideal Bishopric Home



Ideal home showing Weather-boards over Bishopric Sheathing, lath side exposed, also Bishopric Roofing over Bishopric Sheathing. (smooth side of sheathing exposed)

PRICE OF SHEATHING AND SHIPMENT—Crate of 16 sheets, covering 256 square feet of surface, \$6, or \$2.35 per square of 100 square feet, f. o. b. New Orleans, La., Cincinnati, or Alma, Mich. We ship from nearest point.

Write for Descriptive Booklet and Samples of Bishopric Wall Board, Sheathing and Roofing—All sent FREE.
THE MASTIC WALL BOARD AND ROOFING MFG. CO., 24 E. Third St. Cincinnati, O.



Note small size of special slim taper file compared with regular taper file

Special Files of Special Quality

When you need an extra slim taper file, ask your dealer for this Keen Kutter file. It is the slimmest taper file made.

No other file should be used with fine tooth saws. It cuts to the bottom of the tooth at the proper angle, without skipping or slighting its work. Its surface has a cutting efficiency of 100%. Compare this with the 60% efficiency of the ordinary file.

E. C. S.

KEEN KUTTER

Special Slim Taper Files

are made from blanks of finest tool steel, accurately cut by improved methods and tempered in that faultless Keen Kutter way. The amount of work you can get out of one of these files is surprising. Several cases are on record where one file sharpened 15 to 20 saws. There is a dealer near you who has Keen Kutter tools of all kinds. Remember the Keen Kutter trademark means money back if not satisfied. Keen Kutter Tools and Cutlery have been sold over 40 years under this motto:

"The Recollection of Quality Remains Long After the Price is Forgotten."

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—E. C. SIMMONS.

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St. Louis and New York, U. S. A.

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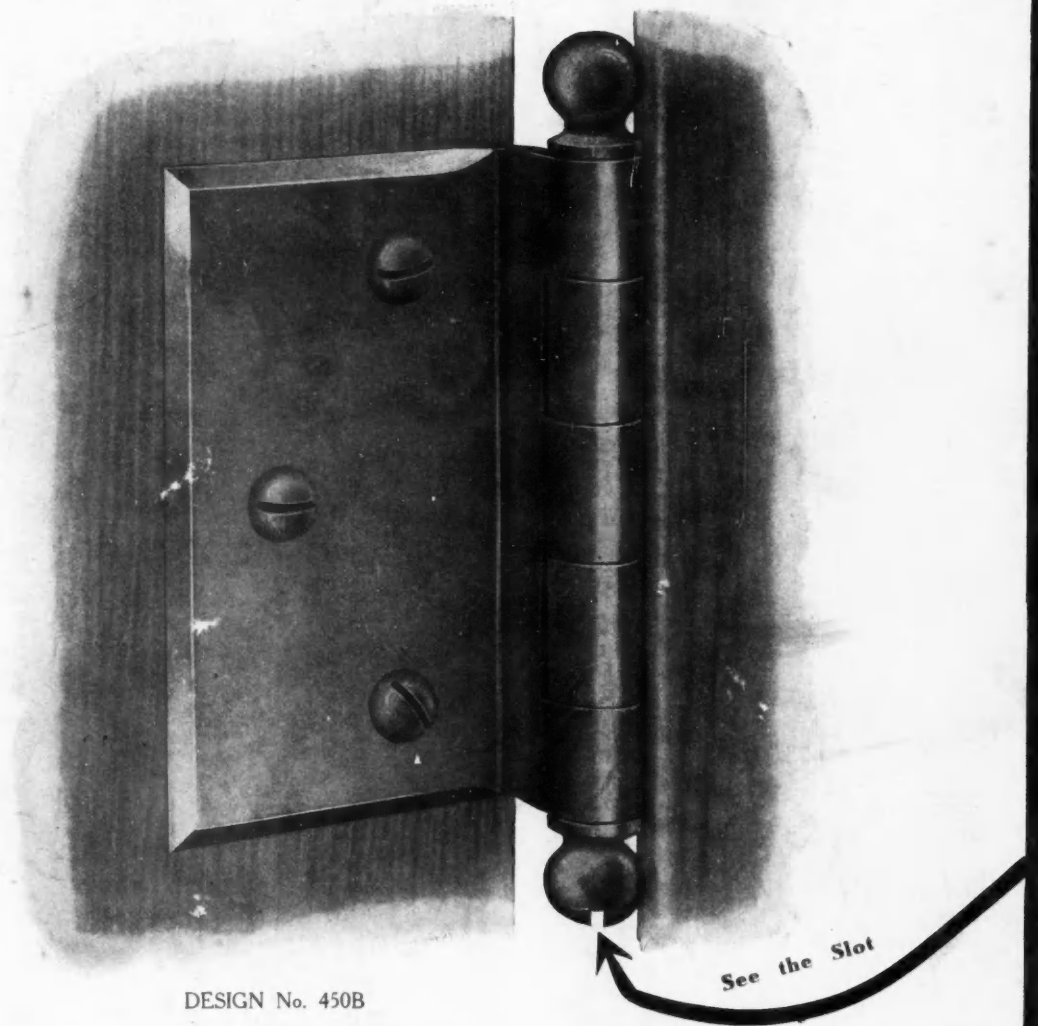
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