

AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

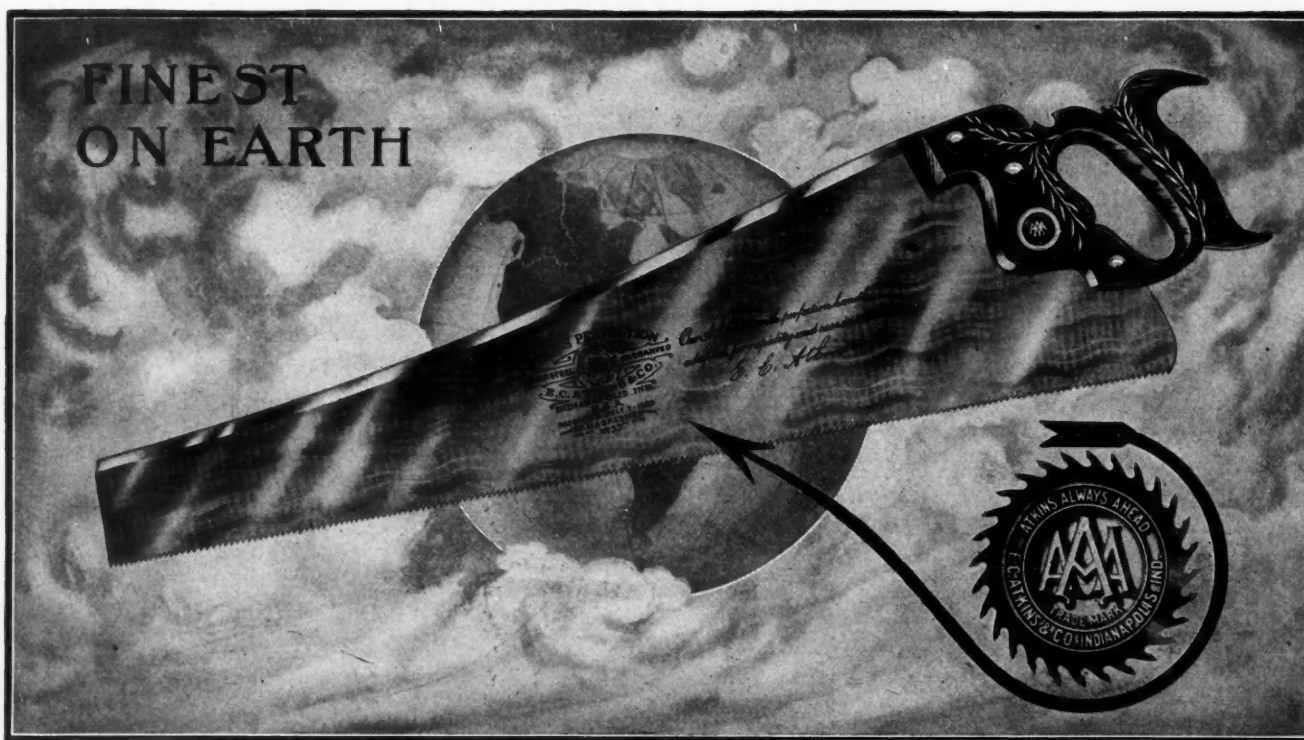
"GILT-EDGE" SUBSCRIBERS

IF all of you could know the American Carpenter and Builder Subscribers as we have come to know them, you would appreciate what is meant by the phrase, "Gilt-Edge" Subscribers. American Carpenter and Builder Subscribers are "Gilt-Edge" Subscribers. For years we have been working with them and for them, and have had many business dealings with them. It is a real pleasure to get acquainted with them through the medium of correspondence; it is a still greater pleasure to meet them personally, face to face. We know them. They are Progressive, Ambitious, Wide-awake, Dependable. They are "Gilt-Edge." Each one is doing a little better work—and a little bigger work—this year than last; and next year his work will be still better and his operations more extensive.

American Carpenter and Builder Subscribers hold an extremely important place in the building world. They are practical men—authorities not only in carpentry work but in all things pertaining to building. Many of them draw up their own plans, recommend and specify all the materials to be used, and then get out onto the job and do the work. Some of these men are known by the name, "Architect and Builder," some "Contractor and Builder," some "Carpenter and Builder." However called, such a man is the Whole Works in his community when any building is to be done or improvements are to be made. Outside the largest cities he is without question the most important personage in the building world today.

These men are "Gilt-Edge." They are the readers of the American Carpenter and Builder.

It's a Pleasure To Use Fine Saws



Saws that hang just right---that run easiest---that cut fastest---that saw to the mark---that take a sharp cutting edge and hold it

We have made a lifelong study of saws. Long before many of you were born, E. C. ATKINS & COMPANY were already making Saws. We know better than anybody else what the high class mechanic wants in a saw, and we know how to make saws that give satisfaction.

Is This the Kind?

Do you want a saw that sharpens easily, that holds its tension, that will receive a very sharp cutting point and hold it? Do you want a saw that cuts fast and easy and true and that hangs just right, so that it will run with the least exertion?

Then you should by all means use an ATKINS SILVER STEEL SAW, because they will do these things for you.

Guarantee

These are rather broad statements to make, but we back them up by the broadest possible guarantee. ATKINS SILVER STEEL SAWS are not only guaranteed to be perfect in material and construction, but we guarantee them to give perfect satisfaction. Listen to this. If your ATKINS SILVER STEEL SAW, for **any reason** does not cut faster, run easier and hold its edge longer than any saw you ever used—take it back to your Dealer and get **your money back** or a new saw. No argument—no proof is necessary; don't hesitate—just take it back and get your money—that's all. If your Dealer even hesitates, show him this advertisement and, if necessary, let

Go to your Dealer and ask him to show you a genuine ATKINS SILVER STEEL SAW and note these things for yourself. If your Dealer does not carry them in stock, he will order for you from his wholesale house. Insist on an ATKINS SILVER STEEL and see that our name is on the blade.

OUR FREE OFFER. If you will send us ten cents in currency or stamps, we will forward you free of charge, a high grade carpenter's nail apron, also our Saw Sense book, illustrating and describing our most popular saws, together with a carpenter's time book and wage scale, also a great deal of useful information in regard to High Grade Saws. Address

E. C. ATKINS & COMPANY, Inc.

INDIANAPOLIS, INDIANA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

us know. We'll see that you get satisfaction. Can we make it stronger? Can we give you better protection?

The reason we can do these things is because we know all about our saws. We make them ourselves.

Silver Steel

SILVER STEEL is the finest material that has ever been used in Saw Blades. It is made of virgin ore and contains the very highest ingredients and is manufactured under an exclusive formula. It is as fine as the steel that is used in most high grade razors, and when we tell you that it will receive a sharper cutting edge and hold it longer than any other steel, we know what we are talking about.

Taper Grinding

ATKINS SAWS are the only saws which are ground on an actual taper from the tooth edge **throughout** the entire blade toward the point on the back. They are different from the thin back saw which is simply ground off along the back while ATKINS SILVER STEEL SAWS are ground on the actual taper throughout the entire blade.

The Handle

Many of our SILVER STEEL SAWS are made with the old style straight across handle, but most high-class mechanics prefer the Perfection Handle, because it is scientifically constructed and saves the wrist and saw arm.

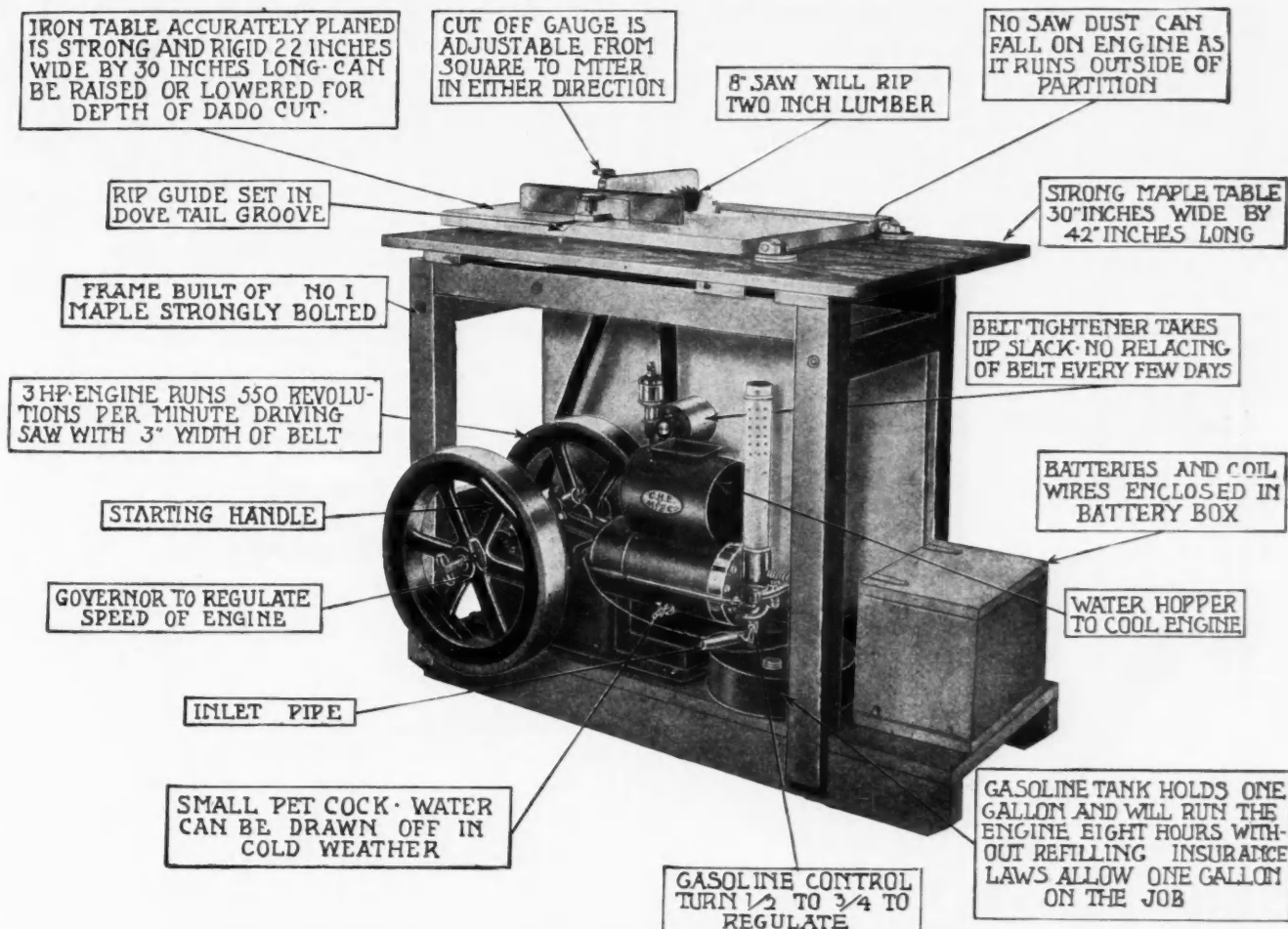
READ THIS LETTER

WILLIAM D. REICHENBACH
CONTRACTOR & BUILDER

Rockford, Ill., Mch. 20, 1911.

This is to certify that I bought a Portable Saw Rig of you and will say it has saved me many times its cost in the one year I have had it. It has never cost me one cent for repairs. At one time it took the place of three good husky men. Our hand rip saws are scarcely ever used. The dado attachment is especially handy in window frames. I do not see how any contractor can get along without one. I would not sell mine at any price if I could not get another like it.

Yours respectfully,
 Wm. D. Reichenbach.



WRITE FOR OUR ATTRACTIVE FOLDERS

Portable Saws and Builders Hoists

GEORGE D. SMITH

814 FISHER BLDG.,

CHICAGO, ILL.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

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 parquet.

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.**



We Make Panels of any Thickness and Any Kind of Wood — Curved or Flat.

FOR
Wainscoting
Ceiling
Mantels
Doors
Counter Tops
Partitions
Cabinets
Shelving
Drawer Bottoms

Our products excel in Quality and Durability, because we concentrate our best efforts in their manufacture.

We specialize in Panels and have the facilities for producing best results.

Try us with your next order. Send us your specifications and ask for our prices.

AMERICAN VENEER CO.

Specialists and Manufacturers of Built-up Veneer Panels

We appreciate small orders as well as large ones

12 Market St., - - - KENILWORTH, N. J.

Do Your Next Job of Floor Scraping at Our Expense with a

Little Giant Floor Scraper

Sold only on its merits. A request brings it to your door, freight prepaid. Try it out, if you are convinced it is the best floor scraper on the market, pay for it. If not, return it at our expense.

Ask us for our special price on this machine.

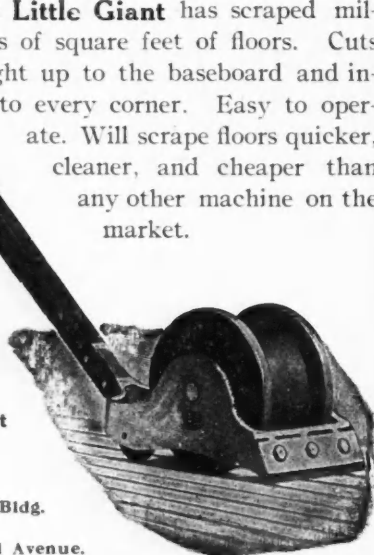
The **Little Giant** has scraped millions of square feet of floors. Cuts right up to the baseboard and into every corner. Easy to operate. Will scrape floors quicker, cleaner, and cheaper than any other machine on the market.

Hurley Machine Company

31 S. Clinton St
CHICAGO

NEW YORK:
1011 Flatiron Bldg.

DETROIT:
246 Woodward Avenue.



TWO MINUTE Lever Lock Mortiser

It Chisels the Opening for Locks Greatest Time and Labor Saver

One builder wrote us last month: "You may expect an order for 3 machines as the carpenters are going crazy about my machine. The more I use it, the better I like it."

Think This Over BUILDER

Our patent double edge, side cutting chisel can cut more wood, four times more rapidly and 100% less exertion than any boring bit. Mortise to be of the same size.

Sent on trial to any reliable contractor

Our Butt Mortiser and Rule Gauge sent for 75 cents

A. W. Miller Mfg. Co.



Main Office:
CINCINNATI, O.

Western Office:
RIVERSIDE, CAL.

A WONDERFUL NEW ELLIPSOGRAPH AND DIVIDER

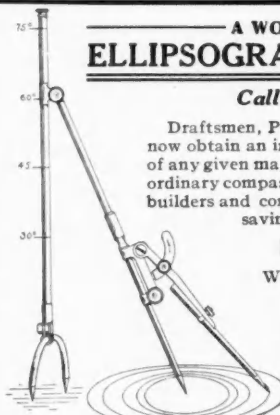
Called the Kelley

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.

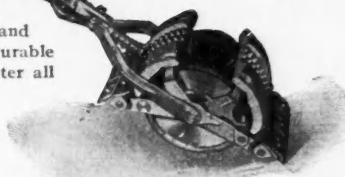
J. T. KELLEY
WEST, RUSH NEW YORK



TRY THEM ALL-KEEP THE BEST T'WILL BE A WEBER IF GIVEN A FAIR TEST

Weber Tools and Appliances stand for themselves—
Try the WEBER
Double Acting
Floor Scraper

on the same floor with all others on the market. If it is not handier, more time and labor saving and more durable—if its work is not better all thru—return it at our expense.

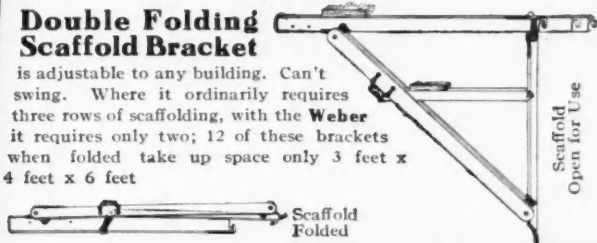


CABINET SCRAPER

and **Sander** is a tool which every cabinet maker, carpenter and painter should have. It is recognized as the most valuable article of its kind ever invented. Ask your dealer. If he does not handle it, I will ship direct or thru him.

Double Folding Scaffold Bracket

is adjustable to any building. Can't swing. Where it ordinarily requires three rows of scaffolding, with the **Weber** it requires only two; 12 of these brackets when folded take up space only 3 feet x 4 feet x 6 feet



Folding Saw-Filing Vise

Also ask your dealer to show you the **Weber Folding Saw-Filing Vise**—the **Weber Vise** you want. Has a rigid grip and is almost noiseless. You will find it the most convenient tool you ever had on a job, or in your shop. It takes up no more room in your hand box than an ordinary hammer.



Vise Open For Use



Vise Folded

Wax Polishing Brush

and **Sander**. Brush sits square and even and imparts a high gloss. Sand-papering block admits turning paper one-half around, greatly lengthening its life.

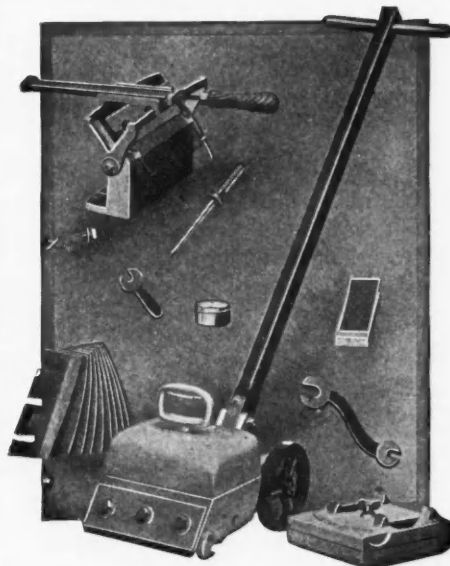


Write For Free Trial

I want you to try the **Weber Double Acting Floor Scraper** on my 5 to 10 days free trial offer.

JOHN F. WEBER, President
WEBER MANUFACTURING CO.
670 71st Ave., West Allis, Wis.

FLOOR SCRAPER SATISFACTION



That's what the **Acme Floor Scraping Outfit** assures. In fact it is guaranteed to do satisfactory work or no pay is asked for the outfit. My free trial offer relieves you of all responsibility. You take no chances, for if the machines do not meet with your approval after you have worked with them for one week, just ship them back to me at my expense. Read what contractors had to say in April:

Gladbrook, Ia., April 22, 1911.

Jos. Miotke, Milwaukee, Wis.

Dear Sir:—Your floor scraper was received a few weeks ago, and will say it is the best machine I ever saw. Please find enclosed draft for the outfit.
Very truly yours,
Paul Cuthbertson.

Sumter, S. C., April 17, 1911.

Jos. Miotke, Milwaukee, Wis.

Dear Sir:—I have used the **Acme** floor scraping outfit and am very much pleased with it. It is exactly what I want and you will, therefore find check enclosed for the same. With best wishes, I am,
Yours very truly,
W. F. Carr.

Logansport, Ind., April 11, 1911.

Jos. Miotke, Milwaukee, Wis.

Dear Sir:—Your floor scraping outfit arrived a short time ago and I have used the scraper on maple flooring and it does the work better and easier than any other machine I have ever used. The sharpening device certainly is a wonder. You can't help but get a good edge on a blade. I cheerfully enclose check in payment of the outfit.
Yours respectfully,
L. E. Wickersham.

If you want booklet and full details of my free trial offer, drop me a line now

JOSEPH MIOTKE, 247 Lake Street, MILWAUKEE, WIS.

Prize-Winning Letters

GIVING

PRACTICAL IDEAS FOR CONCRETE WORKERS

CEMENT WORLD

"THE WORLD'S GREATEST CEMENT PAPER"

Announces a Prize-Winning Contest, open to everybody, for the purpose of gathering and printing information on all subjects pertaining to the cement industry. This competition is open to all the world. We especially invite cement men, contractors, builders, engineers, and all other workers in the building industry to participate. We want real, live, practical articles that will be of practical help. What is bothering one man to-day may have been successfully worked out by some other man yesterday. Tell him how it was done.

One Hundred Dollars in Cash Prizes will be Paid.

For the Best Letter on any of the following subjects, \$5.00 each.

For the Second Best Letter, \$3.00 each.

For all other Letters published in this contest, \$1.00 each.

1. *Best Letter about Proportioning Materials for Various Kinds of Concrete Work*
2. *Best Letter about Making and Laying Concrete Drain-Tile or Sewer Pipe*
3. *Best Letter about Sidewalk Laying with Wooden or Steel Forms*
4. *Best Letter about Waterproofing, Staining, and Coloring Concrete*
5. *Best Letter about Reinforcing with Expanded Metal or Wire Mesh*
6. *Best Letter about Making, Coloring or Handling Cement Brick*
7. *Best Letter about the Manufacture or Use of Concrete Blocks*
8. *Best Letter about Cement Troubles and How to Avoid Them*
9. *Best Letter about Cement Stucco in House Construction*
10. *Best Letter about Finishing Concrete Surfaces*

CONDITIONS GOVERNING THE CONTEST

Letters are to be from 500 words to 1,000 words each. When possible, descriptions should be accompanied by sketches sufficiently clear to allow draftsmen to make finished drawings to accompany the article when printed.

Letters are to be judged by the practical value of the ideas presented.

Anyone can contest for any or all of these prizes, whether a subscriber to the **Cement World** or not.

Letters will be printed in the first available issue of the **Cement World**. The contest will be open from June 1, 1911, to August 1, 1911.

Checks for prizes will be mailed within ten days from the date of the issue in which they are published.

CEMENT WORLD is the Best, Largest and Most Practical Trade Magazine of Cement Construction. Edited by Men with Practical Experience.

Each number contains perspectives, elevations, floor plans and details of Modern, Moderate-priced Residences of Cement-Plaster, Concrete Blocks and Stucco, with all information: Schoolhouses, Churches, Farm Buildings, Garages, Barns, etc.

More illustrations, more pages of reading, more practical information than any other Cement paper.

Special Articles of interest and importance to builders of homes make each number extremely valuable. The contents of the **Cement World** are exclusive and copyrighted.

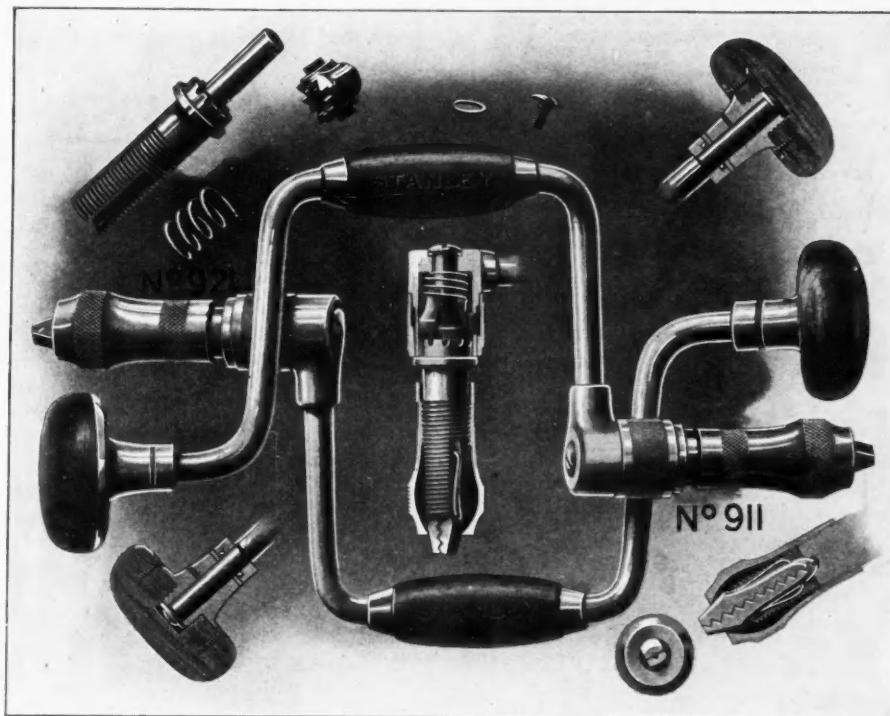
SUBSCRIPTION PRICE, \$1.00 PER YEAR, PAYABLE IN ADVANCE
Sample Copies sent on request

See Our Special Free Book Offer on Page 117.

CEMENT WORLD

"The World's Greatest Cement Paper"

241 So. Fifth Avenue, - - - - CHICAGO, ILLINOIS



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

Stanley Tools

In the STANLEY CONCEALED RATCHET BIT BRACE are embodied improvements and refinements in mechanical construction not previously contained in any Bit Brace.

The novel features of design, together with the highest quality of workmanship and material, place this tool in a class by itself as to strength, durability and convenience of operation.

NOTE PARTICULARLY—The Cam Ring which governs the Ratchet is in line with the Bit—a great advantage in working and that the Ratchet mechanism is completely *protected*, so that it is always free from dirt, grit and moisture, and retains oil for a long time.

In the Clutch mechanism, *five teeth* are in engagement when working as a Ratchet, as against *one tooth* in other forms of Ratchet Braces.

They are highly nicked and have Cocobolo Ball-bearing heads and Cocobolo handles.



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



The Only Self-Setting Plane

Over 25 years ago we commenced to make the Self-Setting Planes They are shod 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 consumers where our planes are being sold. This offer is good while this ad. appears. This paper guarantees that the Gage Tool Co. will do as their advertisement states.

GAGE TOOL CO., Vineland, N. J.

THE FOLDING DRAW KNIFE

The old draw knife's straight out handles
Wouldn't pack in any chest
And its edge was always knicking
A great bother, long confessed.

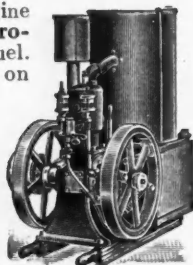


If your hardware dealer does not keep it, we will send it to your address postage paid. : :

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

Use **KEROSENE** Engine **FREE!**

Amazing "DETROIT" Kerosene Engine shipped on 15 days' FREE Trial, proves kerosene cheapest, safest, most powerful fuel. If satisfied, pay lowest price ever given on reliable farm engine; if not, pay nothing



GASOLINE GOING UP!

Automobile owners are burning up so much gasoline that the world's supply is running short. Gasoline is 9c to 15c higher than coal oil. Still going up. Two pints of coal oil do work of three pints gasoline. No waste, no evaporation, no explosion from coal oil.

Amazing "DETROIT"

The "DETROIT" is the only engine that handles coal oil successfully; uses alcohol, gasoline and benzine, too. Starts without cranking. Basic patent—only three moving parts—no cams—no sprockets—no gears—no valves—the utmost in simplicity, power and strength. Mounted on skids. All sizes, 2 to 20 h. p., in stock ready to ship. Complete engine tested just before crating. Comes all ready to run. Pumps, saws, threshes, churns, separates milk, grinds feed, shells corn, runs home electric-lighting plant. Prices (stripped), \$29.50 up. Sent any place on 15 days' Free Trial. Don't buy an engine till you investigate amazing, money-saving, power-saving "DETROIT." Thousands in use. Costs only postal to find out. If you are first in your neighborhood to write, we will allow you Special Extra-Low Introductory price. Write! DETROIT ENGINE WORKS, 495 Bellevue Ave., DETROIT, MICH.

Launch Complete \$94⁵⁰



16, 18, 20, 23, 27, 28 and 35-footers at proportionate prices. Family Launches, Speed Boats, Auto Boats, Hunting Cabin Cruisers. A New Proposition to Demonstrating Agents. 64 different models ready to ship, equipped with the simplest motors made; boats and engines fully guaranteed; 12,500 satisfied owners. Write today for large illustrated Catalog. (108)

DETROIT BOAT CO., 1185 Jefferson Ave., Detroit, Mich.

The Bessler Movable Stairway!



A device combining usefulness, strength and convenience.

Saves Space!
Low Cost!
Strong and Durable!
Easy to Operate!
Operates Automatically!
Adds Value to House!
Reduces Fire Risks!
Secures Good Ventilation!

THE BESSLER STAIRWAY IN POSITION

Write for descriptive circular and price list to

THE Bessler Movable Stairway Co. RAVENNA, OHIO

NOTE—Our Special brand Clamps, have notches on the bottom of the bar, instead of on the top.

Per pair, 1 foot.....	\$2 70
" 1 1/2 feet.....	2 85
" 2 ".....	3 00
" 2 1/2 ".....	3 75
" 3 ".....	4 00
" 4 ".....	4 50
" 5 ".....	5 00
" 5 " heavy.....	7 50
" 6 ".....	8 50
" 7 ".....	9 50
" 8 ".....	11 00
" 9 ".....	12 50
" 10 ".....	14 00

These clamps have steel bars and screws and malleable iron parts.

The New Adjustable and Perfection Clamps are made in the following lengths and sizes:

2 1/2, 3, 4 and 5 foot have 1 1/2 x 1/2 inch bars.

5, 6, 7, 8, 9 and 10 foot have 1 1/2 x 1/2 "

Joiners' Clamps—1, 1 1/2, and 2 foot have hand-wheels for rapid work, 1 1/2 x 3-16 inch bars.

In ordering parts always make sketch, to avoid delay.

Hargrave's New Adjustable SPECIAL Clamp.



Hargrave's Perfection SPECIAL Clamp.



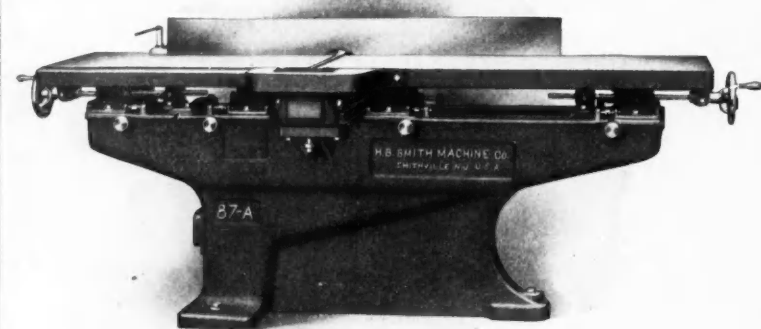
Hargrave's Joiners' SPECIAL Clamp.



Write for circular Dept. H.

THE CINCINNATI TOOL CO.,

CINCINNATI, O., U. S. A.



FRONT VIEW OF NEW JOINTER

A New Modern Up-to-Date Jointer of Unique Design

Made in 12-16-20 and 24 inches wide, with Round Safety Heads, long tables and frame Cast Whole. Equipped with Adjustable Fence and Countershaft. Cut shows rear side view. Full particulars on application. Address for literature.

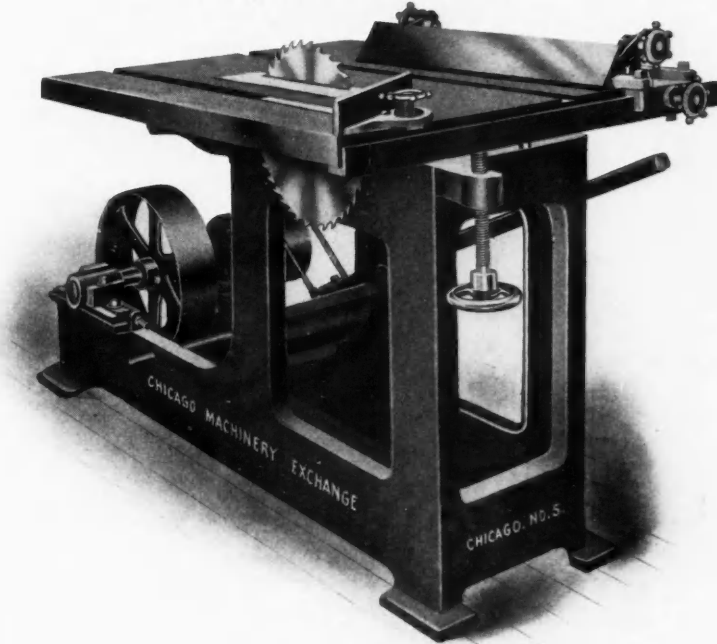
H. B. SMITH MACHINE CO.

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

Branches: New York, Chicago, Atlanta, Shreveport

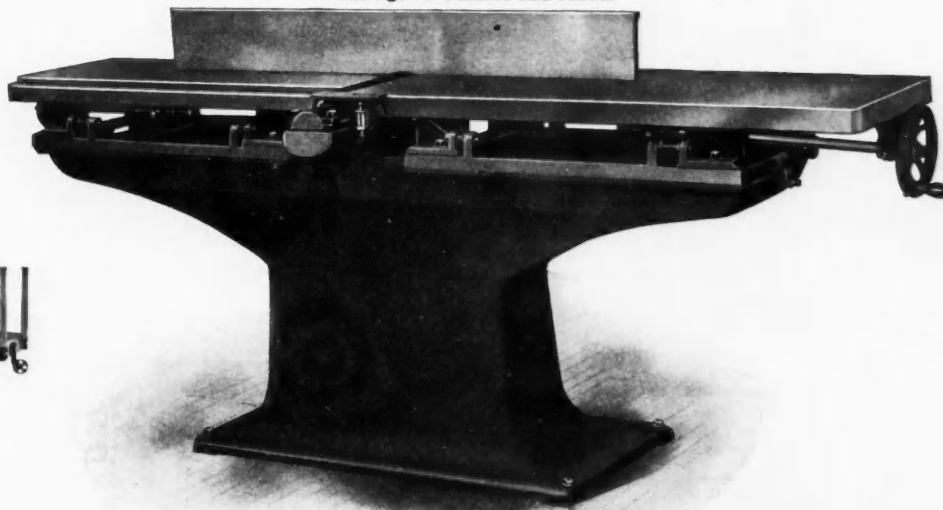
168 Sets of Machines Sold to Contractors Since Jan. 1, 1911

MACHINE No. 1
Chicago No. 5 Combination Saw Table



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

MACHINE No. 2
Chicago 12" Jointer and Planer



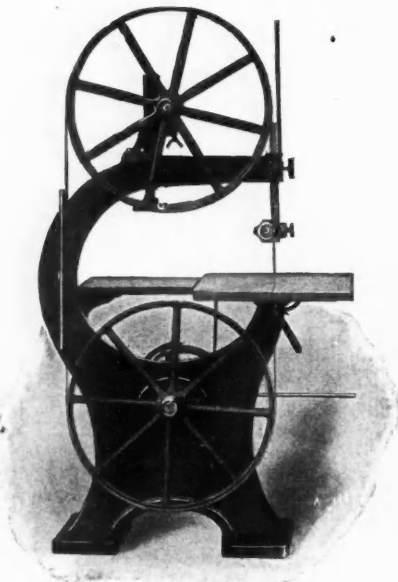
Used for Planing, Jointing, Shaping, Matching, Rabbeting, Grooving, Chamfering, Beading and Making Mouldings.

These Two Machines for \$170.00, 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 pair of jointer knives. Ask for price on one if you cannot use both.

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

Chicago Machinery Exchange 1219-1227 Washington Boul.
CHICAGO, ILL.





BUY A BAND SAW THAT IS DURABLE

Crescent band saws satisfy those practical, experienced mechanics who need strong, substantial tools.

The reason CRESCENT band saws are so popular is because they have earned a well deserved reputation for durability and accuracy where hard service is demanded of them. Each day they are pleasing some of the most exacting band-saw operators in every civilized country, and as you appreciate what it means to have a thoroughly dependable, well-built, practical band saw, you should certainly look into the merits of the CRESCENT line before you order.

Send for a catalog telling about these splendid machines, and our line of Saw Tables, Jointers, Borers, Swing Saws, Planers, Planers and Matchers, Wood Workers, Disk Grinders.

THE CRESCENT MACHINE CO.,

224 Main Street
LEETONIA, OHIO



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**

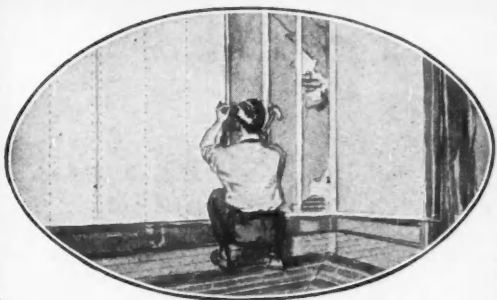
**Prices Range From
\$22.50 to \$150**

WRITE TODAY FOR OUR COMPLETE CATALOG OF TRIMMERS



FOX MACHINE CO. 2211 FRONT STREET
Grand Rapids, Mich.

No. 6-E TRIMMER No. 6-A TRIMMER



**SEE THAT
COMPO-BOARD**

Is In Your Specifications

It is the most satisfactory wall lining yet devised. It will last longer than lath and plaster.

Compo-Board is easily and cheaply put on, and the walls will look well as long as the building lasts. They will never be disfigured with ugly cracks or blemishes from moisture accumulating on the walls. Will not crumble, crack or fall off. Cannot be marred by jamming furniture into them.

Compo-Board makes dry, warm, moisture proof, fire resisting walls, ceilings and partitions. The rooms will be free from draughts, warm in winter and cool in summer.

Not only is Compo-Board a superior wall lining, but it has many uses around the house, in offices and factories.

It is made of thoroughly seasoned, kiln dried strips of lumber well glued together. They are covered with a thick coat of cement on either side and an outside covering of thick paper.

You can buy it in strips four feet wide and 1 to 18 feet long, any length you want in even feet.

Send for Booklet and Sample

It explains the many uses and advantages of Compo-Board and you can get an idea of what it is from the sample.

NORTHWESTERN COMPO-BOARD CO.

5777 Lyndale Ave. No. Minneapolis, Minn.

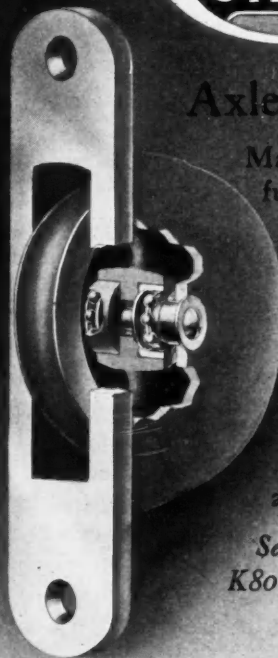
The border of this advertisement is a cross section view of Compo-Board.



Axle Pulleys

Made for service. A full line of 250 styles made in 5 sizes and at prices to correspond. The best contractors of the country find satisfaction in their use and the best dealer in any city sells them.

*Send for publication
K80, Corbin Specialties.*



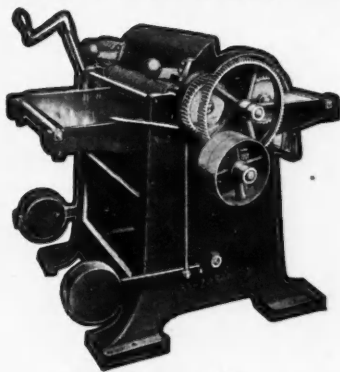
P. & F. CORBIN

NEW BRITAIN, CONNECTICUT

P. & F. Corbin
of New York

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P. & F. Corbin
Philadelphia



No. 2 Centennial Planer

**OUR
SMALL SHOP TOOLS**

Occupy Small Space --- Easy and Simple to Operate --- Under Instant Control of Operator --- Use Little Power --- and

turn out the finest work at prices which make them pay for themselves in a short time.

With our No. 2 Centennial Planer, you can surface all kinds of hard and soft woods in the most rapid and perfect manner. The price is so reasonable that the ordinary Carpenter or Builder cannot afford to be without it.

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J. A. Fay & Egan Co. 545-565 W. Front St. CINCINNATI, O.

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

Accept No Substitute

Order by Name and Number

Arrow

TRADE → MARK.
Tools

Head

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.

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42 Murray Street

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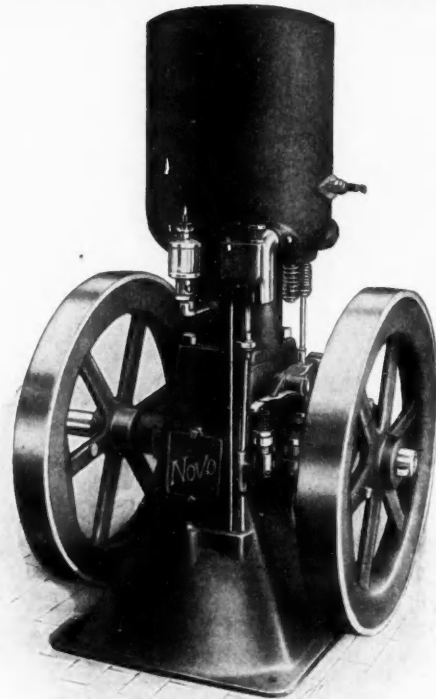
NEW YORK

The NOVO Engine

THE NOVO gasoline engine in four sizes from 1½ to 6 H. P. is especially adapted for use on portable and stationary machinery of every kind. It is **very light in weight, absolutely self-contained**, gasoline being in the base and the water contained in tank around the cylinder, which is guaranteed not to burst from freezing. The **upright form and low height** for vertical engine, and **small size of base** adapts it for use on any machine requiring a self-contained power.

We should be pleased to furnish manufacturers or users of portable machines of any kind with full information, weights and sizes of our different engines.

We make three sizes of gasoline hoists for builders' use.



THE HILDRETH MFG. CO., 151 Willow St., Lansing, Mich.
C. E. BEMENT, Secretary and Manager

**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

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 183J.

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

L. S. STARRETT SAYS:



**"If you find any
tools better than
Starrett Tools,
buy them."**

Send for free
Catalogue No. 186.

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



NEW TOOLS

We are showing many new tools and new designs of older tools in our

**New No.
10
Catalog**

Every carpenter should send for it. It is mailed without cost to you and some of the hints you will get from it may prove very valuable.

Send now.

Goodell-Pratt Company
Toolsmiths
GREENFIELD, MASS., U. S. A.

Every carpenter should send for it. It is mailed without cost to you and some of the hints you will get from it may prove very valuable.

Send now.



"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.

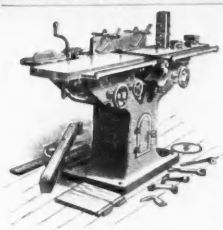
Unequaled for Delicate Work

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.

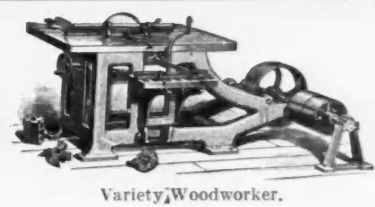
We can offer something special in the matter of price on sets packed in a sensible box. Send today for particulars and catalog.

The Progressive Mfg. Co.
Torrington, Conn.





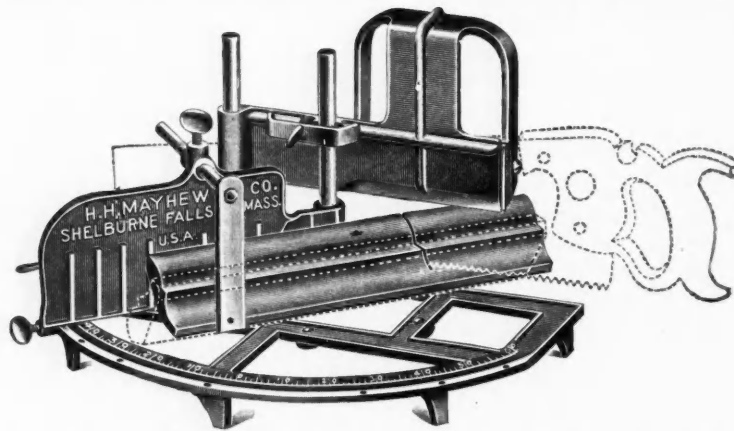
CORDESMAN, MEYER & CO.
Manufacturers of
WOOD WORKING MACHINERY
41-45 CENTRAL AVE., CINCINNATI, OHIO



Write for Catalog Showing Our Line of Machinery for
Universal
Woodworker.
Carpenters and Builders.

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.

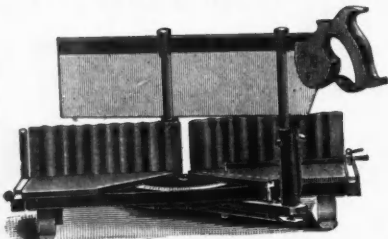
Extreme mitre to 60° without makeshift. May be used as a stationary or pivot box by use of the pin posts.
 In mitering duplicate cuts there is no restriction on length.
 Will cut compound mitre.
 Parts take down into space 10x10x4 inches.
 Weight 15 lbs. complete.
 Box contains full directions for use.

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.

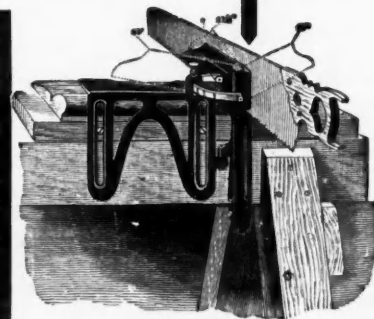
"SEAVEY" MITRE BOX

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

Weights 2 Pounds

SMITH & HEMENWAY CO.
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LUFKIN Tapes & Rules

are Standards of Accuracy, Durability and Workmanship.



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THE LUFKIN RULE CO.

SAGINAW, MICH.

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Make the Roof Fire-Proof

J-M Transite Asbestos Fire-Proof Shingles offer the most perfect fire protection known, because they are made of Asbestos (rock) Fibre and Portland Cement—both minerals. Are absolutely proof against fire, water, acids, gases and chemical fumes, and are not in the least affected by the most severe weather conditions, except that the longer they are exposed, the harder and tougher they become.

J-M Transite Asbestos Fire-Proof Shingles



Residence of Mr. Patrick McCauley, Brooklyn, N. Y.
Covered with J-M Asbestos Shingles
A. J. McManus, Architect



Residence of Mr. W. Hilt, Ridgewood, N. J.
Covered with J-M Asbestos Shingles
Ridgewood Development & Construction Co., Builders

Are moulded under hydraulic pressure into a homogenous mass. They never rot, decay, warp or split like wood shingles. Are tough and resilient, but not brittle, so do not break and fall off like wood or slate. Weighing only about half as much as slate, they save considerable in freight, are much more easily handled, and there is no danger of breakage. These shingles are also excellent non-conductors of heat and cold.

J-M Transite Asbestos Shingles are easily put on with ordinary wood-working tools. Come in many different sizes and shapes to meet all conditions, and in colors of natural gray and Indian red.

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H. W. JOHNS-MANVILLE CO.

Manufacturers of Asbestos and Magnesia Products

ASBESTOS

Asbestos Roofing, Packings Electrical Supplies, Etc.

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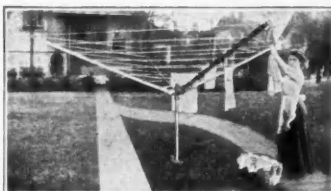
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For Canada:—THE CANADIAN H. W. JOHNS-MANVILLE CO., Limited 1366
Toronto, Ont. Montreal, Que. Winnipeg, Man. Vancouver, B. C.



CHICAGO-SUN CLOTHES DRYER

FOR LAWN USE

Eliminates Clothes Posts, is portable and can be removed when not in use. Holds 165 feet line. Each arm operates independently. When opened, arms lock in position and stretch lines. When closed, arms lock in position automatically. Best, most convenient and satisfactory lawn dryer made. Laundress can stand at one spot and hang all the clothes. No need lugging clothes basket or wading through wet grass when using the Chicago-Sun Clothes Dryer. Write for free folder No. 28.

THE CHICAGO DRYER CO., Dept. 28, 624 So. Wabash Ave., CHICAGO, ILL.

Don't Ask the Dealer for Sash Cord. Ask for

"SILVER LAKE"

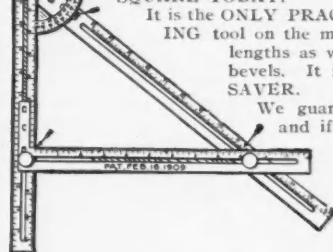
and see that he gives it to you. It is impossible to



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.

Do Not Delay

but send for the ABC PROTRACTOR SQUARE TODAY.



Crookston Tool Co.

It is the ONLY PRACTICAL FRAMING tool on the market and gives lengths as well as cuts and bevels. It is a great TIME SAVER.

We guarantee the tool, and if not satisfactory return it in 30 days and get your money back.

Price with illustrated directions \$2.00. CROOKSTON, MINN.



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.

From an economy standpoint

STAR HACK SAW BLADES

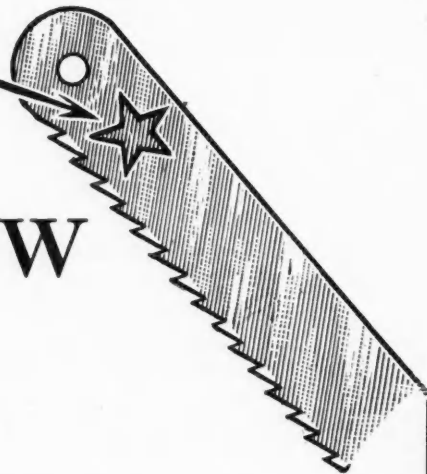
FOR MACHINE USE, 12 x 5/8

Surpass all other Blades. Eliminate carrying in stock Blades of varying widths and thicknesses with different numbers of teeth to the inch. They are made of the best material. Possess great strength and durability. Ask for and insist upon getting the Blade with the ★

ALL DEALERS KEEP THEM

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MILLERS FALLS CO., 28 Warren St., NEW YORK



DON'T SEND THE JOB TO THE MILL

That's the Expensive Way—the Wrong Way

An enormous saving in time and labor can be accomplished by installing practical machines

OSHKOSH PORTABLE SAW RIGS

Do the work of about 8 carpenters, and is the only saw rig known that has a swinging saw that can be held stationary for rip-sawing. It is made in two sizes.

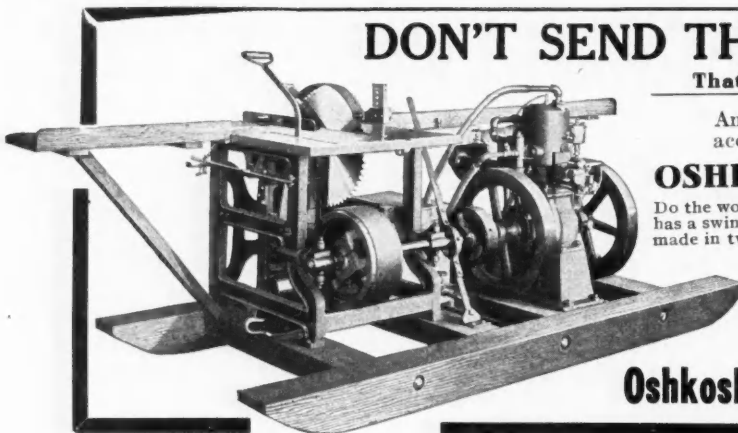
Size No. 1—14" Saw, 6 H. P.

Size No. 2—20" Saw, 10 H. P.

Bring the Mill to the Job

That's the Cheaper Way—the Right Way

Oshkosh Logging Tool Co., 316 S. Main Street, OSHKOSH, WIS.



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

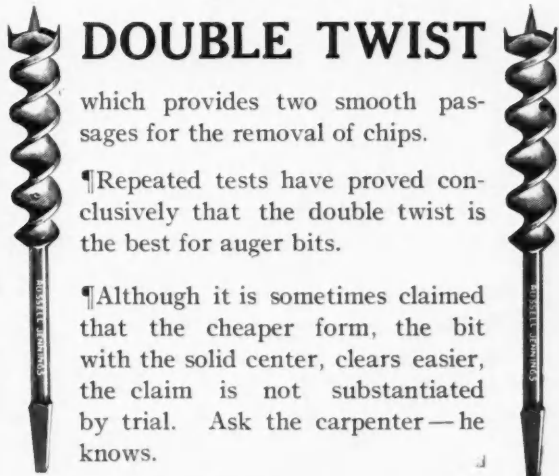


SOCKET BUTT CHISEL

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

AUGER BIT ESSENTIALS
THE FIFTH REASON WHY
RUSSELL JENNINGS
BITS

are unsurpassed is the accurate



DOUBLE TWIST

which provides two smooth passages for the removal of chips.

Repeated tests have proved conclusively that the double twist is the best for auger bits.

Although it is sometimes claimed that the cheaper form, the bit with the solid center, clears easier, the claim is not substantiated by trial. Ask the carpenter—he knows.

RUSSELL JENNINGS MFG. CO.

CHESTER, CONN., U. S. A.

21-28



Insure your work by remembering that it is the "IRWIN" Auger Bit that bores as true as a die and as clean as a whistle.

Only direct solid-center-stem pressure on the hand filed, sharp edge of a genuine "IRWIN" Auger Bit can be depended upon to bore true into even the end of lignum-vitae, the hardest of wood known. Experts know this test—"The Irwin Test."

Made in fifty styles and sizes—one for every purpose.

If your dealer fails you on the Irwin, write us. We will see that you are promptly supplied.

THE IRWIN AUGER BIT COMPANY

LARGEST IN THE WORLD

Station F-18

WILMINGTON, OHIO



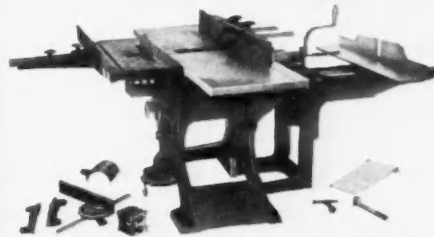
ASHLAND
Folding Scaffold Bracket

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, tiners, 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

BICKNELL'S JOINTER, SAW and COMBINATION MACHINE



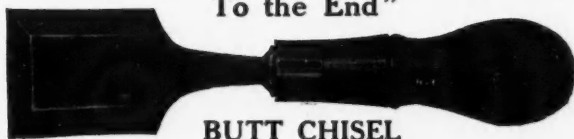
SIMPLE DURABLE

Not too many machines in one but enough.

Write for Catalogue.

BICKNELL MANUFACTURING & SUPPLY CO. JANESVILLE, WIS.
 Originators of Handy Tools

"Last a Lifetime and Give Satisfaction To the End"



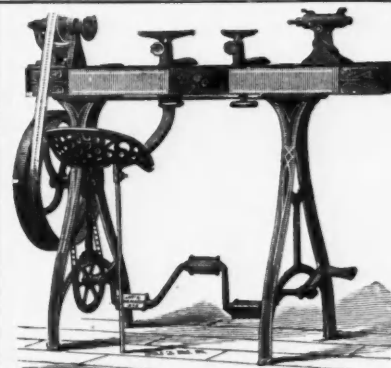
BUTT CHISEL

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

THE CELEBRATED BARTON TOOLS

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

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



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.



Here's Another New One

“YANKEE” Push Brace No. 75

Drives a $\frac{3}{8}$ " auger into hard woods and a $\frac{1}{2}$ " into white pine quicker and easier than a Bit Brace. Drives and draws screws—takes all the small tools and works in close quarters where a Bit Brace cannot be used. Bearing down on the handle drives it with that quick and easy motion of the “Yankee” Spiral Driver.

Have You Seen the “YANKEE” Line?

There are 35 Styles and 75 Sizes each a Labor Saver. Our New Yankee Tool Book tells about them. A postal brings it.

Your Hardware Dealer Sells the “Yankee”

North Bros. Mfg. Co.

(Department A)
PHILADELPHIA, PA.



“GRAND RAPIDS” ALL STEEL SASH PULLEYS

No Nails No Screws
Just Bore 4 Holes

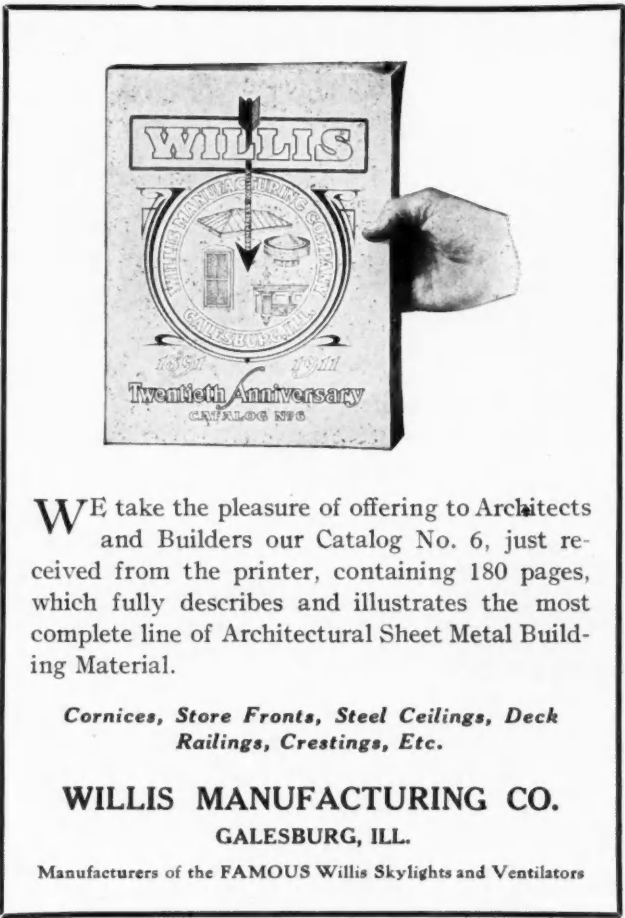
The time saved by the “Grand Rapids” will actually pay for the pulleys.

You can't afford to use old style pulleys.

Write for free samples and prices.

Grand Rapids Hardware Co.
Manufacturers
158 11th Street, GRAND RAPIDS, MICH.

This fastening is more secure than any number of screws or nails could make it. Saves about 15 per cent, too.
S C R E W S
C O S T M O N E Y



WILLIS

Twentyeth Anniversary
CATALOG NO. 6

WE take the pleasure of offering to Architects and Builders our Catalog No. 6, just received from the printer, containing 180 pages, which fully describes and illustrates the most complete line of Architectural Sheet Metal Building Material.

Cornices, Store Fronts, Steel Ceilings, Deck Railings, Crestings, Etc.

WILLIS MANUFACTURING CO.

GALESBURG, ILL.

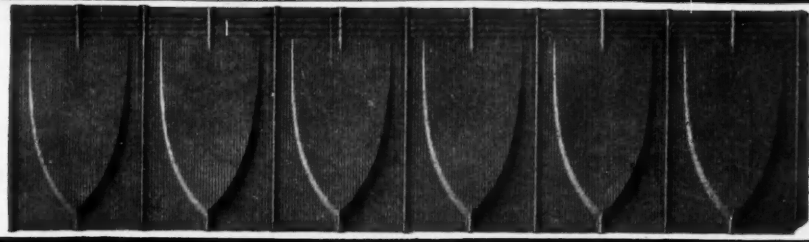
Manufacturers of the FAMOUS Willis Skylights and Ventilators

WATER-FIRE AND
LIGHTNING PROOF

TRADE
TITELOCK
MARK

**METAL
SHINGLES**

MAKE THE BEST
ROOF COVERING



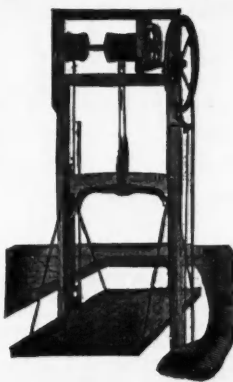
The nature
of embossing
and the crimping
lengthwise of the
plates insure rigidity
and strength, also pro-
vide perfectly for the
expansion and con-
traction of the metal.

SEND FOR SAMPLES
AND BOOKLET.

"Invisible Joint"
STEEL CEILINGS
SEND FOR CATALOG.

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

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



PERFECTION
ELEVATORS

The Best Value for the Money in the World
— Mechanically Correct —

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

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

The Low Cost Will Surprise You

State your requirements, giving capacity, size of platform and number
of feet to travel and we will name our lowest money saving estimate.

SIDNEY ELEVATOR MFG. COMPANY, SIDNEY, OHIO

ORR & LOCKETT'S CABINET MAKERS' BENCH



THIS illustration shows our regular Cabinet Makers
Bench. This bench is made entirely of maple. The
top is made of 2 1/4 inch strips glued together to prevent
its warping. The working top of this bench measures
78 inches long and 24 inches wide. We also make a
smaller size, 66 inches long and 20 inches wide. These
dimensions do not include the screws. 34 inches high.

NOTE—We furnish with this bench our Continuous
Screw, Rapid Action Roller Nut Vise. The simplest and
best screw vise on the market. Jaws 10 inches wide, 4
inches deep, opening 12 inches.

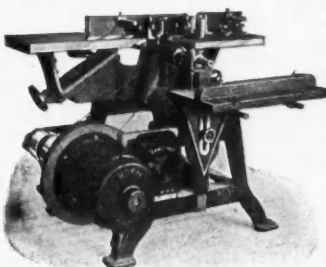
Price of Bench including Vise.....\$14.00

ORR & LOCKETT HARDWARE CO.

ESTABLISHED 1872

14-16 W Randolph St. CHICAGO

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



to drive it individually.
You will be pleased.
You will be gaining
some profitable experi-
ence in economy.

Ask

ROTH BROS. & CO.

1422 West Adams Street,
CHICAGO, ILL.

NEW YORK OFFICE:
136 Liberty Street

DOOR HANGERS?

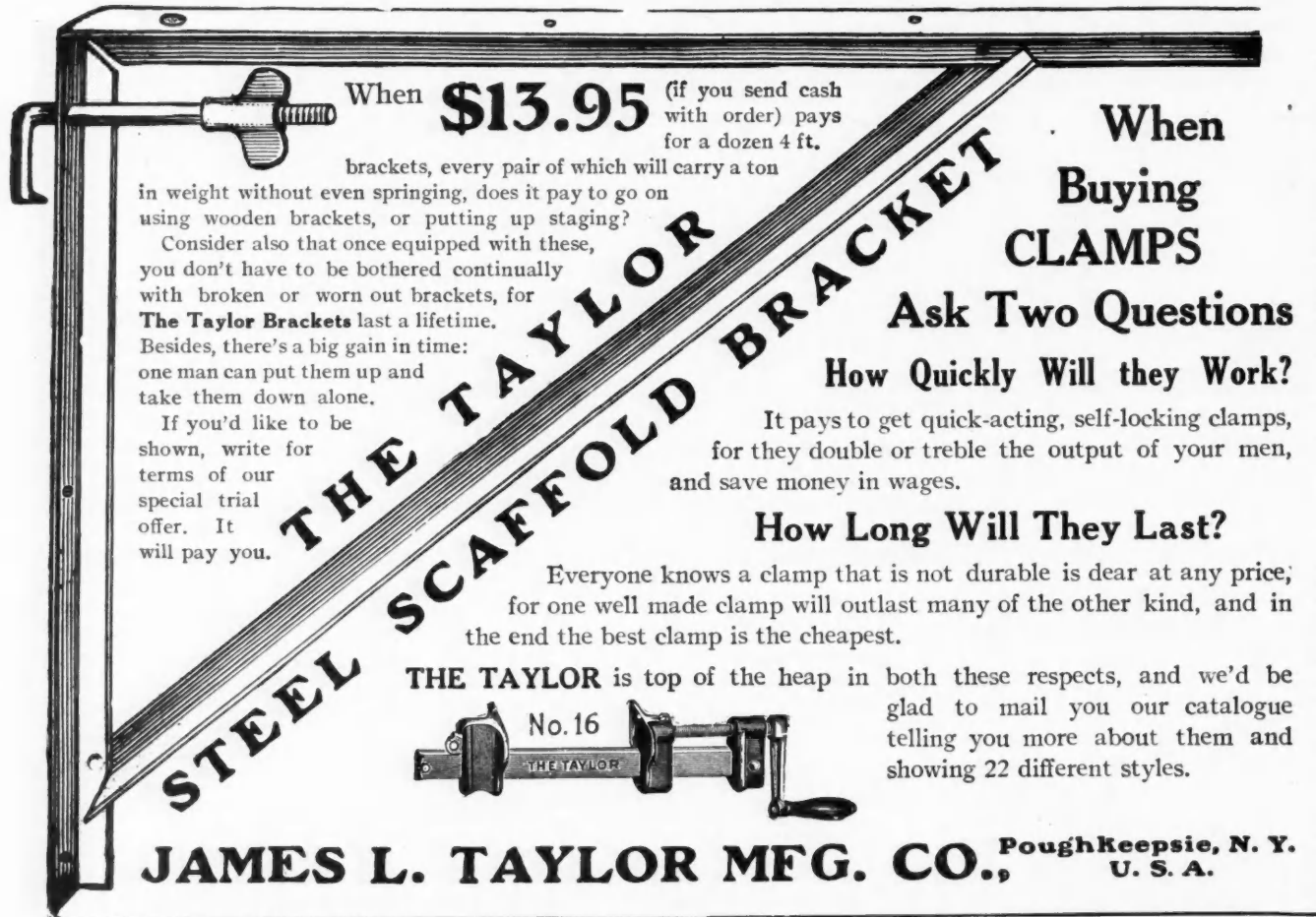
Richards-Wilcox

Any Dealer

GET CATALOG



Richards-Wilcox Mfg. Co.
AURORA, ILL.



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

JAMES L. TAYLOR MFG. CO., Poughkeepsie, N. Y. U. S. A.

Dumb Waiters

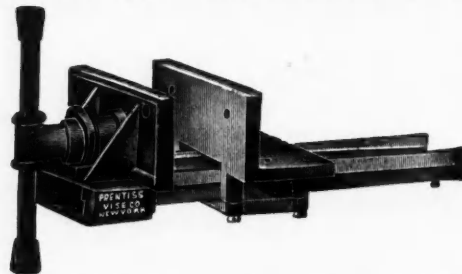
In the December issue of this magazine there was an inquiry for working drawings for a Dumb Waiter.

There has never yet been made a dumb waiter which would meet all requirements equally well, and best results will be obtained therefore by selecting the dumb waiter best adapted to the particular job in hand.

The Sedgwick Machine Works, 128 Liberty Street, New York, will send to any builder or carpenter on application their catalogue "K" which shows various types of Dumb Waiters and Hand Power Elevators. Every builder should have this catalogue for reference and then whatever his requirements, he can select the particular size and style of dumb waiter which will best meet the conditions. Machines only or complete outfits may be purchased.

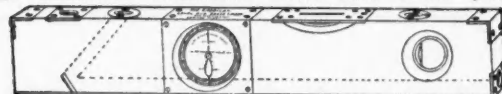
In addition the Sedgwick Machine Works will furnish working drawings free of charge to any builder who will write them what his needs are.

BLAKE QUICK ACTING VISE



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.

The American Combined Level and Grade Finder



All progressive and up-to-date Carpenters, Contractors and Mechanics should have one of our levels and grade finders. An instrument with which at one glance you can get the true slant on any line or grade, either in degrees, inches or percentage, or all at one time, and will at once give the exact distance needed to plumb up to a true level.

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SEND no money—just mail us your name and address. Your book will reach you by return mail. Keep it 5 days—use it—then either send one dollar or return the book.

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This tool is designed expressly for Electricians' use.

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Most practical electricians' screw driver ever made.

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Incorporated

Keystone Saw, Tool, Steel and File Works

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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.

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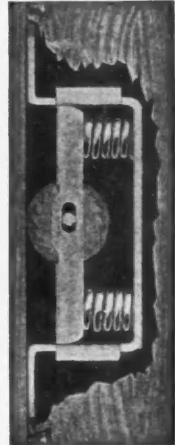
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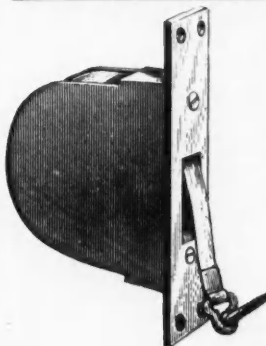
Prevent rattling and permit the window to be moved up and down with ease. Hold it safely at any point desired.

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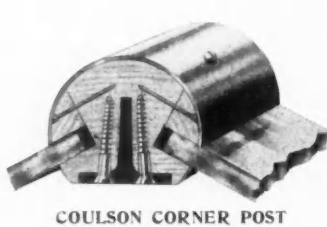
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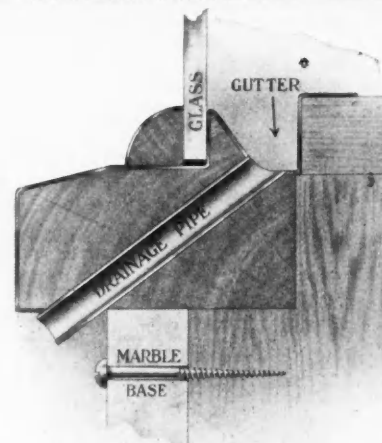
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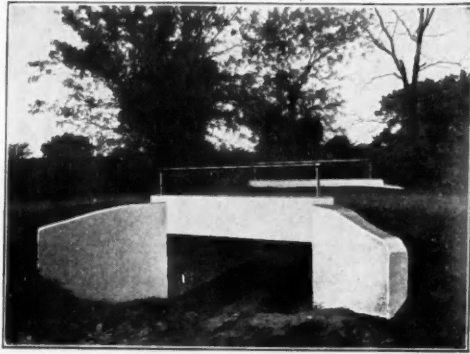
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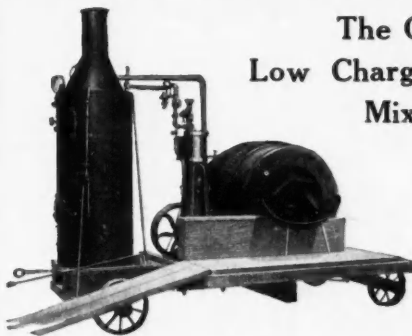
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That no high-charging mixer is complete without a charging hopper and elevator; that fully one-third of the power is required to operate the loading device; that one-third of the attention is required to operate it; that charging skips get out of order quickly, and that you save all of this needless expense in the low-charging, direct from barrows,

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The Only Low Charging Batch Mixer



It is charged two feet from the ground and both platforms and approaches are portable with the mixer.

And don't forget we mean exactly what we say and can supply the proof that it saves one-third of the cost—one third of the first cost and one-third of the operative cost.

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Economical Power in a Millwork Shop



OTTO This vertical moulder is one of many machines in the shop of a Philadelphia contractor, all operated by an 8 H. P. **OTTO**

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Gas Engine

This engine has been running now for about 8 years, with the usual complete satisfaction, operating (besides the moulder shown) a band saw, sander swing saw, sticker and other machines.

The OTTO is used just as effectively for outside hoisting work or for portable rig saws.

Over 100,000 OTTO engines have been installed—Reliability, Efficiency and Fuel Economy were the deciding factors in making the sales. Remember the OTTO will afford a saving year in and year out during the life of the engine. Many an OTTO sold in the 70's and 80's is giving good service now.

Let us bring the facts to bear on your individual case, and prove what the OTTO can save you each year. Simply state the conditions to be met, horse power required, and fuel you wish to use. Our figures will surely interest you.

Special literature for each type sent upon request.

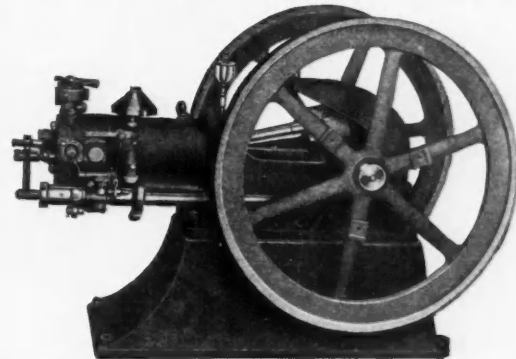
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For Carpenters, Builders, Cabinet-Makers, and Other Wood-Workers

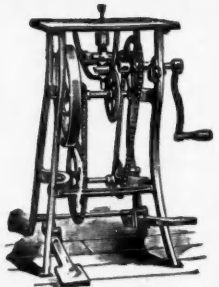
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"Victor" Scroll Saw.




"Diamond" Mortiser

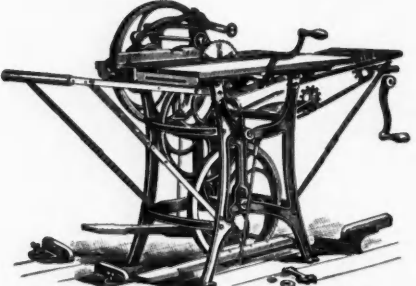


"Box" Moulder.

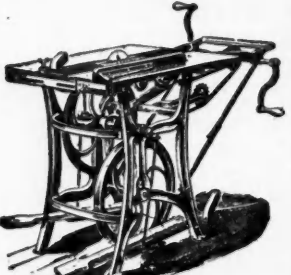
ONE MAN with one of these machines will do the work of four to six men using hand tools; will do it easier, will do it better.



No. 8 "Union" Power Saw.



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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.

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Blackboards, for Schools, Colleges, etc., are being used all over the World, need no better commendation, "it is just the thing".

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Combination Saw Sharpener, Saw Setter, Tool Grinder and Sander

As a **Saw Sharpener**, it sharpens cut-off or rip saws 8-in. up to 26-in. Rip saws can be sharpened square or bevel, and are kept perfectly round and ground even at all times.

As a **Saw Setter**, Remove plate in front of wheel and insert anvil, which is beveled for different degrees of set.

As a **Tool Grinder** it is furnished with a 12-in. emery wheel and has movable table 10x8-in. which can be tilted so small knives may be ground rapidly and accurately.

As a **Sander**, The face plate is 14-in. diameter and furnishes a convenient means for sanding and smoothing up stock.

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9 Machines In One

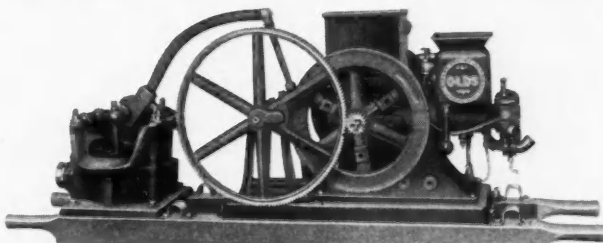
Rip Saw — Cross Cut Saw — Dado Head — Jointer
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Gentlemen:—My large machine is all set up and running fine. If you care to refer any prospective buyers to me, I think I can convince them that there is a saving in using it as we are turning out work and all kinds of it.
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 Handles 3000 gallons per hour on one pint gasoline.
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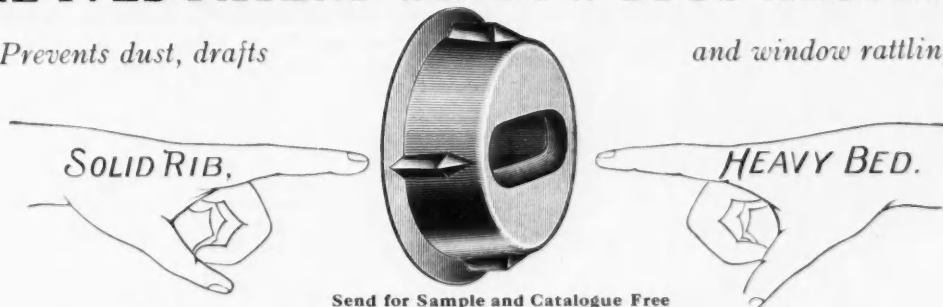
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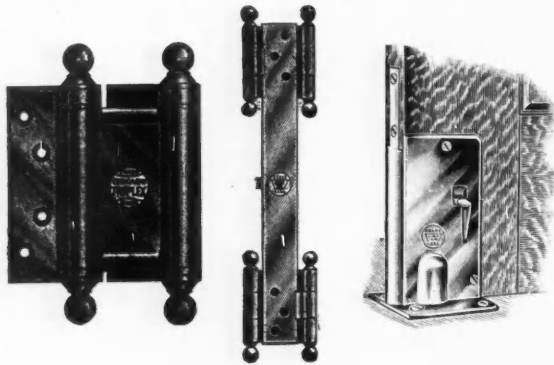


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combining all the valuable features which experience has demonstrated to be desirable.

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Genasco is the roofing of the age. Its foundation has stood for ages past.

It beats shingles. They warp, crack, split, and rot—more so now than ever before (lumber is getting scarcer, and shingle-quality is becoming poorer every year).

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Coal tar roofings have the same old faults they have always had—get soft and melt in the summer sun, and get brittle and crack in the cold, and leak.

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is the one roofing that lasts. It is made of Nature's everlasting water-proofer.

Trinidad Lake Asphalt has withstood the suns and storms of centuries; and in Genasco it gives this same lasting resistance to sun, rain, snow, wind, heat, cold—and even fire.

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The Kant-leak Kleet waterproofs the seams of Genasco without cement, and prevents nail-leaks besides. It gives the roof an attractive appearance.

Ask your dealer for Genasco mineral or smooth surface Roofings with Kant-leak Kleets packed in the roll. Guaranteed, of course. Write us for samples and the Good Roof Guide Book.

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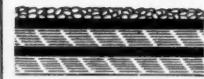
Largest producers of asphalt, and largest manufacturers of ready roofing in the world.

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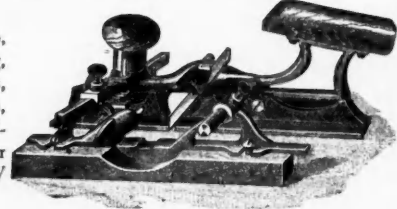
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Fale's Patent Variable Bench Plane

Is the Best That Money Can Buy

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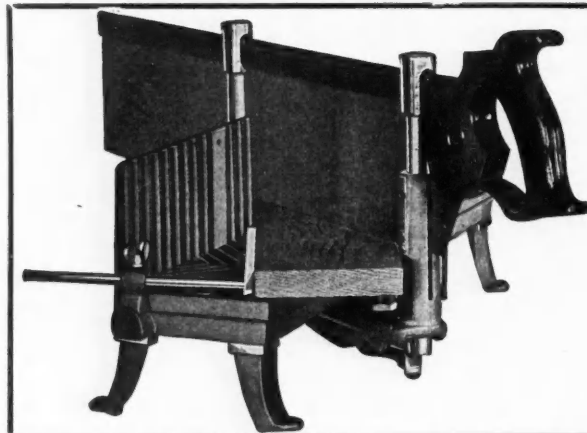
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MARSH-AYER BOXES cost more to manufacture than any other; but they cost you no more. We are satisfied with a small profit, and you get more for your money.

Saw and all attachments are included.

Size	Saw	Capacity at Miter	Price
A26	26x4	7 inches	12.50
B28	28x5	7 inches	13.75
B30	30x5	7 inches	14.00
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Illustrated circular on request.

H. C. MARSH COMPANY

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Rockford, Illinois

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American Carpenter and Builder

Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill. under the act of Congress of March 3, 1879.

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178 W. JACKSON BOULEVARD, CHICAGO
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VOL. XI **JUNE, 1911.** **No. 3**

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DON'T forget that the man who can but doesn't must give place to the man who can't but tries.



What about Paint Oil?

THERE is not enough linseed oil in the world at the present time to go around.

Two years of flaxseed shortage has produced a serious condition. The condition is so serious that a few plain words are justified and should be of intense interest to every painter, dealer, property owner and any one else interested in paint or painting.

One of the foremost paint companies in this country takes up this question in a recent letter, and brings out the following interesting facts:

In the first place, there is an actual shortage. The situation is caused by crop failure, not by manipulation by speculators or holding back stocks by farmers. The high prices of linseed oil are therefore justified.

Keep that fact in mind.

In the second place, there is no substitute for linseed oil for outside painting.

Keep that fact in mind also.

The serious shortage of linseed oil makes the search for some other worthy paint oil highly desirable and entirely praiseworthy. But do not let the fact blind you to that other fact, that, so far, the worthy substitute for linseed oil has not been found.

The unprecedented situation has caused to spring up many new paint vehicles with all kinds of extravagant claims. Some say, "better than linseed oil." Others are more modest. They say, "as good as linseed oil."

The wise painter will not be tempted by any of these unproved claims. Try them, if you wish, in a small experimental way, but remember that no paint oil has yet made good except the old time-tested linseed oil.

Dealers who care for their customers' welfare and their own reputations will be just as cautious.

Property owners have nothing whatever to gain by allowing anything but pure linseed oil to be used. The latter is high, it is true, but the painting job will not be much greater than usual, and he had better pay the difference.

Having indicated the safe attitude to take toward the new claimants for attention as paint oils, let us sound a warning against that greater danger, adulterated linseed oil, masquerading as pure.

To palm that off on anyone is merely theft. It is theft of more than the amount one over-pays for the material. The total stealing is the amount represented by the damage the material causes.

Painters and dealers may guard themselves by dealing with only reputable concerns. A price below the market at any time, but especially at such a time as this, is suspicious. It should be a signal of danger to the buyer, like a suspicious pressure on your watch-pocket in a crowd.

Let us summarize the safe course:

Refuse adulterated linseed oil altogether.

Be on the lookout for new paint oils, but do not trust them till you have *proved* them good by *adequate tests*.

Stick to pure linseed oil for serious, outside painting.

The Home Builder—Substantial Citizen

THE best citizen of any community is the man who owns his home.

Home building is equivalent to nation making.

The foundation of the best society is the hearthstone. Upon it is erected the greatest glory of the world's greatest achievements. It indicates stability, sturdy character and honest worth.

A people without permanent homes never becomes a nation, but remains a tribe. It does not progress, but stands still and deteriorates. It cannot have the highest sense of morality, because the home is the bulwark of morality.

What is true of a people is similarly true of an individual. Home-making and home-building are essential to character development. They produce honesty, sincerity and truth. The dishonest man, the hypocrite and the untruthful man—they are not home-makers, but, if they become builders at all, they are as the man who built upon the sand.—*Finance*.

Criminal Carelessness

NEARLY all the great fire disasters of the past few months have been due to carelessness of one form or another. The factory fire at Newark, N. J., in which twenty girls were killed and fifty seriously injured, was due to gross carelessness in the handling of gasoline. The shirt-waist factory fire in New York in March, where nearly 150 were killed, was due to a match or cigarette carelessly thrown in the masses of cotton clippings which covered the floor. In both of these cases, the carelessness of the occupants was added to by the negligence of the owners of the building in failing to provide proper fire escapes.

These conspicuous disasters should serve to call attention to the fact that a majority of all fires are likewise due to carelessness of one form or another, and cost the United States \$234,000,000 last year, with every indication that 1911 will greatly surpass that amount. Most of these fires are easily preventable, by the exercise of reasonable care on the part of the property owners in the construction and protection of their buildings, and on the part of the tenants by ordinary precautions and watchfulness.

The recent disasters have shocked the public into attention and interest in the matter of the fire waste, and the probability that the aggregate property losses will reach a quarter of a billion dollars this year, at the present burning rate, should stimulate states and municipalities to action, and should bring home to the individual his personal responsibility for this ruinous waste.



A Fine Point

"Tell me," said the newly-rich lady, as they were discussing points of pronunciation, "do you say 'the Rhine' or 'the Rhone'? I hear it both ways."—*The Christian Register*.

His Solution

Sociologist: The poor have to live in dark rooms.

Philanthropist: Dark rooms, eh? Why don't these people adapt themselves to their surroundings and take up photography instead of sewing?—*Puck*.

Not a Requisite

"And do you have to be called in the morning?" asked the lady who was about to engage a new girl.

"I don't has to be, mum," replied the applicant, "unless you happens to need me."—*Yonkers Statesman*.

Of Such Stuff Are Heroes

"Now then, men," cried the gallant captain, "fight like heroes till your powder is done, then run for your lives. I'm a little lame, so I'll start now."—*Wasp*.

Domestic Wrappers

"Your friend is rather indelicate," remarked Mrs. Wombat. "Says she gave her husband some panettas for Christmas."

"What's wrong with that?"

"I wouldn't think of mentioning sleeping garments in public."—*Louisville Courier-Journal*.

Couldn't Believe It

Young Lady—"Grandmother, this is Mr. Snifkins." Grandmother—"What was the name? You know I'm pretty deaf." "Snifkins, grandmother." "Well, I'm afraid I'll have to give it up, dear. It sounds exactly like 'Snifkins!'"—*Boston Transcript*.

A Riotous Pace

Uncle Eben—I tell ye that it's excessive indulgence in pleasure that kills so many men.

Uncle Ezra—You're right on that, Eben; those fellows that stay up till nine o'clock pitchin' quoits by lantern-light won't realize it till their eyes begin to fail 'em.—*Puck*.

Teaching a Girl to Swim

"Say, Harry, w'at's the best way to teach a girl how to swim?"

"Dat's a cinch. First off you puts yer left arm under her waist and you gently takes her left hand—"

"Come off; she's me sister."

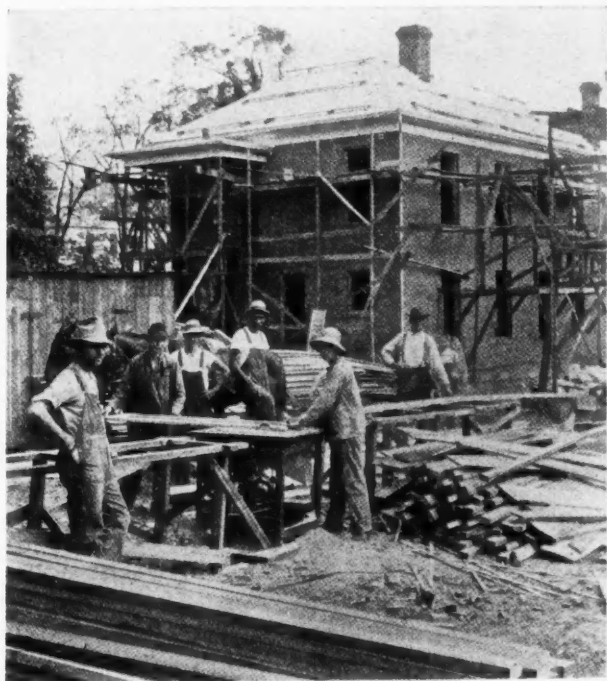
"Aw, push her off de dock."—*Cosmopolitan*.

Power "On the Job"

LABOR SAVING AND MONEY MAKING EQUIPMENT IN USE BY PRESENT DAY CARPENTERS AND BUILDING CONTRACTORS

WE have often wondered what one of the old time builders would say if he were to "come back" and see the methods in use by the builders of today.

We hear a good deal about things not being as they used to be in the "good old times," that the work is slapped together in a great hurry now, and that the best materials are very apt not to be used—at least unless they will show. All of which is probably more or less true. Still, there is another side to the matter; and it is by far the more important side. The spook of an old-time builder, spooking around the building site where a piece of modern construction work is under way, might be grieved at a few things he would see, but he would certainly be astonished and a little bit incredulous, amazed and yet pleased, at the labor saving methods he would see in use.

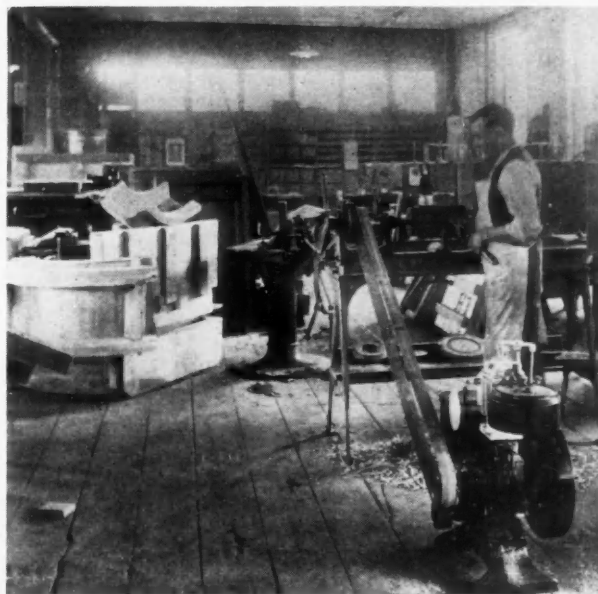


Portable Saw Rig Ripping Blinds Out on the Job

If one of the old time builders could "come back" he would certainly be most forcibly struck by the free use of power equipment in present day building operations.

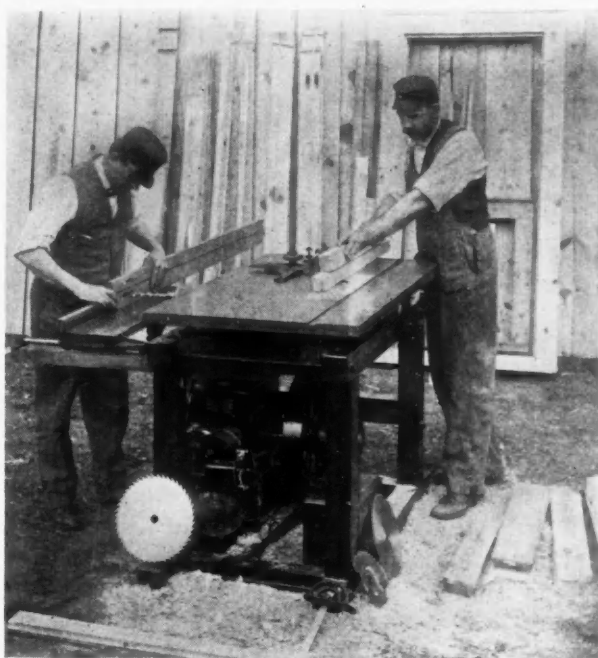
Portable saw rigs and portable variety woodworkers are now to be seen in increasing numbers "out on the job"; and they are revolutionizing the work of the carpenters and carpenter contractors. Material hoists, gas or steam operated, have long been a necessary and important part of the equipment for putting up large buildings; but the old timer would note that on the smaller sized jobs, as well, the builders are now enjoying the benefits of power hoists. He would see that small size material hoists have been devised, oper-

ated by gasoline engines, electric motors, and in some cases hand operated, which greatly lighten the work of handling the materials and are adaptable to the needs of the small size building operations. As to concrete mixers—granted that the old timer would know a con-



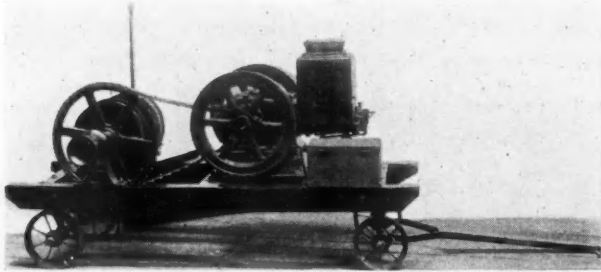
Small Gasoline Engine Driving Turning Lathe in Woodworker's Shop

crete mixer if he saw one—they would be found to be power driven with a compact engine, usually gasoline, mounted right with the mixer. If Mr. Spook had ever worked on one of the old time concrete mixing boards or had ever paid the bills for shovel mixing, this would



A Portable Variety Woodworker with Compact Engine or Electric Motor. One workman is boring window stiles, the other beveling sills

certainly appeal to him and strike him as rather too good to be true. Then turning to the wood working and pattern shops, the convenient little power generator would be found busily at work also, turning out more good work in a day with the assistance of one

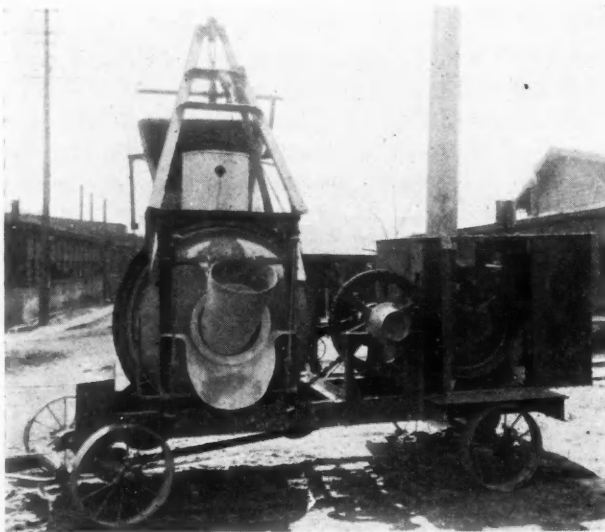


Hoisting Drum with 5 H. P. Gasoline Engine

man than five men—and good ones too—used to do by hand.

The illustrations show some typical pieces of power equipment that would be found in use, that are especially adapted to the needs of the carpenters and building contractors. These photographs not only show what these machines are, but a number of them demonstrate clearly the work that they are able to do. They are very suggestive of work being done at a profit.

The owner of one of the machines here illustrated,



Large Concrete Mixer with 5 H. P. Gasoline Engine

the portable saw rig, writes as follows: "I bought this machine last May and it has been running like a 'trooper' ever since. It actually saved me \$100 in mill work on the first job I used it, in about a month. Have been using it during the winter season in my shop, doing all kinds of work with it, from window frames to paneled work. In ripping up scrap lumber and sawing bridging, it would pay to own one. If this were the last one to be had money would not buy it from me."

This letter is typical of many that have been re-

ceived from practical builders concerning their investments in power equipment. For high quality work, done at a saving of labor and time (which means money) the power driven machinery takes the prize.

To conclude: As the old timer spooks away, his



Portable Gasoline Engine Hoist, with Derrick Handling Timbers for Railway Trestle

heart goes out in sympathy for the many old timers who are still with us trying to compete with their old time methods against modern labor saving equipment.



Use of Magnets in Surgery

The employment of magnets to draw out needles from the flesh is a new feature of modern surgery—an extension of their use to recover minute steel chips from the eyeball. Says the *Literary Digest*.

"Large electromagnets have been used for more than twelve years in ophthalmology to extract foreign bodies from the eye—bits or needles of magnetic metals such as iron, nickel, or cobalt. Messrs. Theuveny and Raoult-Deslongchamps are using regularly and successfully, a very powerful electromagnet to extract such bodies from lodgment in tissues other than those of the eye, using the X-ray as an aid. The metallic body is exactly located by means of two radiographs taken in two different planes. Then the foreign body, usually a needle, attracted by the magnet, raises the skin and forces its way through, adhering to the instrument. In a certain number of cases it is necessary to make an incision of very small size at the top of the cone formed by the skin, and the needle or other metallic body finds its way through this .

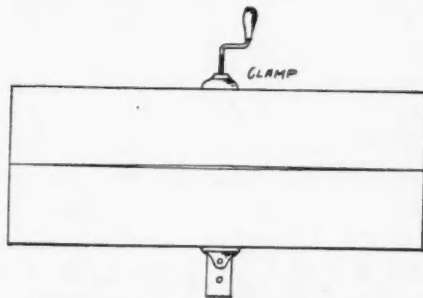
Shop Kinks

FIFTH ARTICLE—A GREAT MANY HELPS, HINTS AND IDEAS ON MILL WORKING, CABINET MAKING AND CARPENTRY WORK FROM THE EXPERIENCE OF A SHOP FOREMAN

By William C. Jasbury

HERE are just a few items of interest in the wood-working line, to let you know that I am still a contributor to the paper, that all men in the building business should be privileged to consult regularly. My notes will pertain to the bench, the building and the machine, and I will give them as they crop up to me.

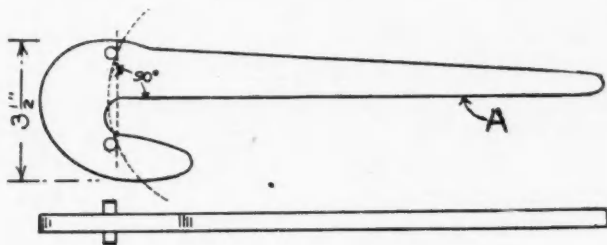
When gluing up table tops, wide pilasters, or any other flat stuff, instead of joining the edges perfectly straight, give them a slight concave, this enables the mechanic to use only one clamp (in the center) and brings the ends up very hard, which is the first place



Make Gluing Surfaces Slightly Concave

the joint is apt to come apart. It also facilitates the work inasmuch as the worker has only one clamp to contend with and gives the balance of the clamps for other work.

A centering tool: Allow me to give you an idea of a very handy tool made by a mill man and found at times useful by a turner and others for centering circles. Take a piece of birch, or any other hard wood, make it about 12 inches long and 3 1/2 inches wide. Shape it as illustrated; the hook makes it handy to hang up. Bore two holes through, being careful to space them exactly the same distance each side of the edge, A, and so that the imaginary line connecting the holes is exactly at right angles to the edge, A. Put a 1/4-inch dowel through each, so the dowel sticks out each side about 1/2 inch. In use,

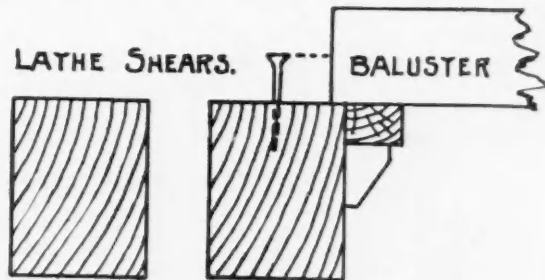


Tool for Centering

keep the dowels bearing against the edge of the circle, or disc and mark along the edge, A; slide the tool around the circle and mark again across the first line. The intersection gives the center.

A wood turner may center his balusters thus to save time while turning, say for 3-inch, 4-inch or 5-inch balusters. They are hard to get in the lathe centered without going all over them with a marking

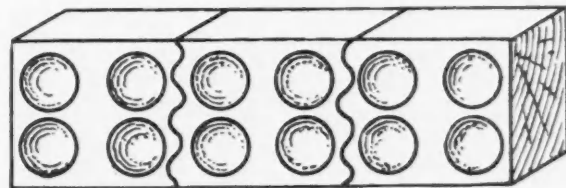
gauge or such appliance. Here is a way to center the baluster while you are putting it in the lathe to turn. Drive a 20 d nail in the lathe shears, down, so that the head comes just to the center of the baluster.



Nail Head Marks Center of Baluster

Take a file and file the edge of the head, so that it will give a scratch on the end of the baluster each way. Do you catch it?

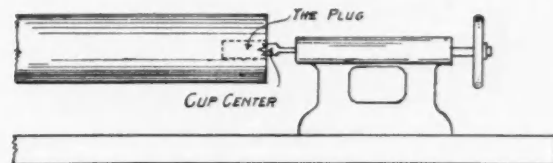
In making money drawer tills in a shop that is not hooked up to do such work regularly. I have done this many times with success. Lay out on the back of the block the scoop-out holes—say 3 1/2 inches or whatever the size wanted. If it has only three holes or so, or is short, you can screw it on the lathe



Money-Till, Hand Turned in Sections and Glued Up

face plate; run slow speed and turn them out with a gouge allright. Of course it will be much out of center and will flop around a good deal, inviting the turner to get a good belt in the slats, but that must be watched. If the till is a long one, say 18 inches or two feet, it will have to be hand sawed apart; then after the parts have had the cups turned in them they are clamped up, glued and nailed. The crooked line gives better and longer gluing surface than a straight line, and gives nailing place better too. Got him?

In turning very heavy columns in yellow pine, or



Hardwood Bearing Plug Inserted in Heavy Soft Wood Column

any other wood that will not bear up its own weight between centers, bore a hole in the tail stock end and drive a hickory or locust plug in for the cup center

to push against. Keep well oiled. I've had to do this once and have seen other lads have trouble likewise with the soft wood tearing and wearing out. This scheme fixes it.

Gauge for sawing miters: I have a very useful shop, rip or cross-cut saw gauge, used in cutting miters, either right or left, such as in heavy mouldings, trim, etc. The iron top saw table has two grooves

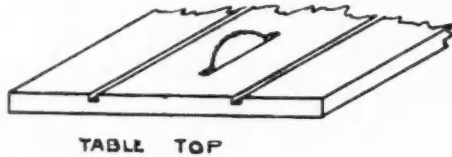
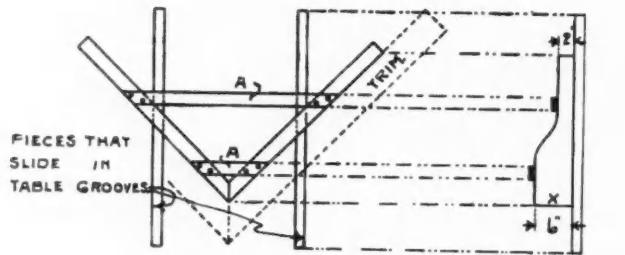


TABLE TOP

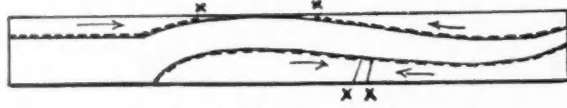


PLAN SIDE VIEW
Gauge for Sawing Miters

or ploughs in it, running lengthwise, one each side of the saw. I take two pieces of hard wood $\frac{7}{8}$ by 6 by 24 inches and cut each one on hand saw, then miter them together at point "x," so as to make a square angle, or 90 degrees. Then I screw two pieces, as at A, across the top to strengthen it and keep it square; and screw a piece on each side bottom edge, to slide in groove in saw table. Shove the gauge up to the saw and cut kerf all the way through the miter, except a couple of inches at the top. In use, this is one of the handiest saw gauges I have ever seen. It will stay true.

To level or plumb with a steel square, use a cord with a weight, such as a pocket knife, or heavy nail. Attach to the tip end of the tongue; sight along the edge of the tongue and when the cord coincides or is parallel with the edge, the tongue is plumb and the blade is level.

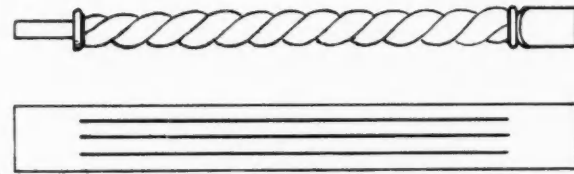
Many times a carpenter is called upon to build a stand with sawed legs, Louis XV, etc. I have a way to saw these that has always given good results. I saw not quite out at the various points, as at "X," so that the slab will not fall off, then turn over other side and saw. When finished, a sudden jar will shake off



Sawing out Curved Stand Legs

the slabs and the leg is ready to clean up. Stop sawing at points "x" each time and saw in direction of arrows.

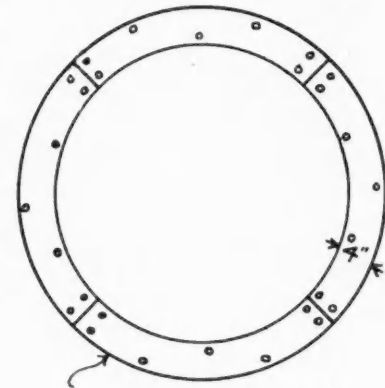
Here is a way to lay out rope balusters, table legs, etc. Take a piece of building paper, cut a series



Rope Baluster and Gauge for Marking

of lines or slits the width apart the rope is to be wide. These cuts are parallel all the way across the paper from end to end, leaving about 1 inch on each end to keep them together. Wrap it around the post or baluster or leg, etc., then mark with a pencil through the slit on to the wood.

Well curbs: Many times carpenters in the country are called on to build circular curbs for well tops, etc., and want the curb the proper diameter for 13 brick, which is the usual number of brick used. The required diameter is 3 feet 5 inches. The well curb is usually made of two thicknesses of $\frac{7}{8}$ -inch spruce or hemlock.

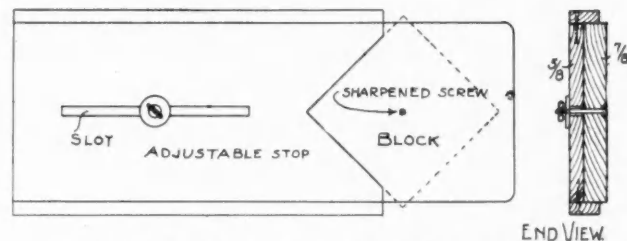


2 THICKNESSES OF $\frac{7}{8}$ "
SPRUCE OR HEMLOCK

Circular Well Curb

I have seen two circular rip saws put on the same mandrel with a wood washer between them, in order to cut double the quantity when ripping small stuff. One strip runs between the gauge and the saw; the other runs between the two saws.

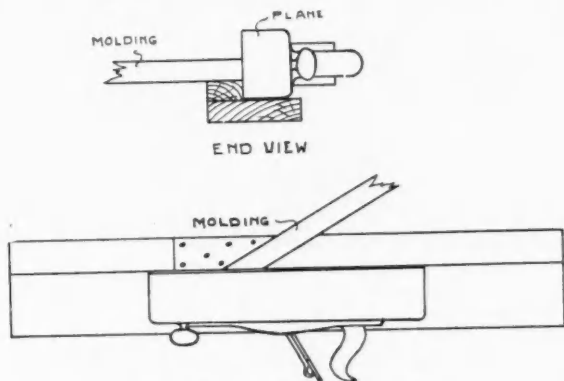
Here is a centering block used by turners on corner blocks, which is adjustable and quick. Take a



Adjustable Gauge for Centering Corner Blocks

piece of wood $\frac{7}{8}$ by 6 by 18 inches long, one piece $\frac{5}{8}$ by 6 by 12 inches long and two strips $\frac{3}{8}$ by $1\frac{1}{4}$ by 12 inches long. These will make it. In use, adjust and set the sliding stop so that the sharpened wood screw will mark the center of the size blocks to be turned.

A chute plane is a very handy thing for a man at the bench for making miters. Take a piece of oak $\frac{7}{8}$ by 5 inches by 2 feet long and fasten on one side



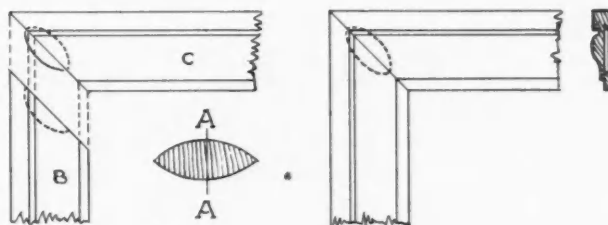
Chute Plane Rig for Mitering

of it a piece of $\frac{7}{8}$ by 2 inches by 2 feet, and on this a short piece of $\frac{7}{8}$ -inch stuff with a miter on one end. The moulding to be planed or shaved off is placed up against the edge of this short piece, while the plane is slid back and forth with its side rubbing against the 5-inch piece and its bottom or cutting edge against the 2-inch piece.

When making joints in small pieces, it is often handier to turn a foreplane upside down and rub the

pieces across the knife (or bit); sort of a Japanese way, opposite the Yankee.

Just a few words about the splines in the miters of cabinet trim; the way to get a good job and a quick one too, is to put a small, thick saw on the variety moulder; then shove the mitered end of the trim up to the saw and let it cut into the trim until it shoulders up against the collars, then pull out; this will leave a segment shaped hole. Proceed in same manner for the opposite piece. This requires a spline



Splines for Mitered Joints

piece convex convexio (that is some geometry, eh?); this is shown at A-A; it is just thick enough to fill the saw kerf. At C is a view, showing the spline in position. Remember the grain of the spline should run the narrow way for best results.

A Slam at Winding Stairs

By A. W. Woods

THE things that have long been fuming within us and wanting to be said concerning winding stairs, boiled up and quite overflowed on reading the following:

To the Editor:

Manchester, Iowa.

Would you kindly explain how to build and lay out a winding stairway—one that has a wind at the bottom and a straight string the rest of the way. Also how to build a wind where the wind is not square. What I would like is the rule to go by.

M. E. M.

The best way to build winding stair is to lay them out full size and take measurements from the diagrams. The main thing is to keep the treads at the center of the stair the same width as those of the straight part.

But pardon us; we cannot enthuse on winding stairs worth a cent. At best, they are a nuisance in the common dwelling house. In fact, should not be used at all, except in large stairways where more show than utility is desired—that is, where there is plenty of space to make decent wind, so that if a person should take a header in coming down the sensation would come on gradual and pass off the same way. What we object to is the narrow winding stair with the treads running to a feather edge at a corner or to a newel post. A header in that case comes on quick and is altogether too much one-sided. To make the wind elongated, that is too much and we draw the limit. We graduated in this kind of stairwork many years ago and received our self imposed degree.

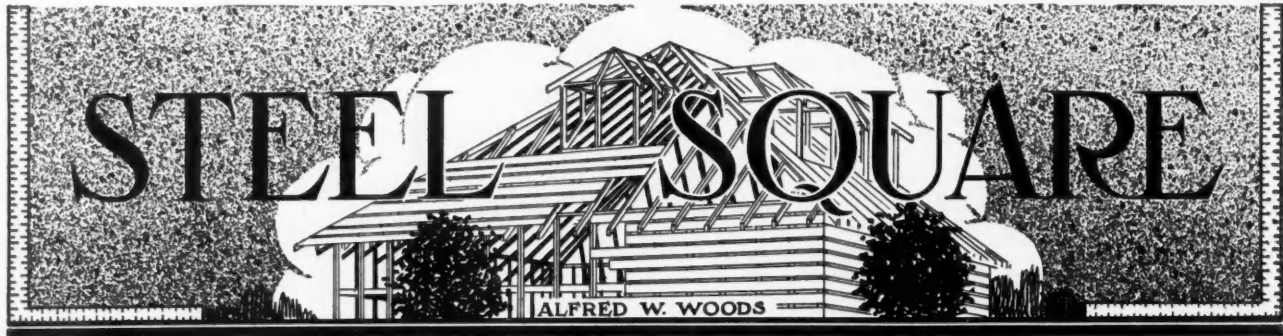
It all happened this way. We had charge of the draughting department in a University and in the class

was a young man, one of the handsomest of God's noble creatures. One evening he togged himself out to attend some class function—and he wasn't going by himself either—which might have had something to do with his head for the time being, but anyway in coming down the stair, he took a tumble and in the act his head went through a window-pane, a piece of which laid the side of his cheek open from near the corner of his mouth almost to the ear, lacerated his tongue and injured the roof of his mouth. Well, the doctor patched him up as best he could, and in a week or ten days he was able to resume his work, but he was a sadly disfigured young man, and all because of that dinky winding stair that should never have been built.

We said then, no winding stair for us, and we have been standing pat ever since. In fact, the older we get the patter we are. No, no! None for us.

In planning a house we make it a point to take all the room that is necessary to give a comfortable stairway with square turns where turns are necessary and plan the rooms to work to it as best we can, and if crowded for room, why we just make the house larger to accommodate the stair.

We go on the principle that it is better to have the ups and downs in the home as pleasant as possible with no cause for unexpected jars. Remember this, and when you build your house, profit thereby, as we know you will, and you will always have something to be thankful for, even if dished out in these homely remarks.



Practical Uses of the Steel Square

BASIC PRINCIPLES OF ROOF FRAMING AND THE DEVELOPMENT OF RAFTERS—THEIR LENGTHS AND CUTS BY MEANS OF THE STEEL SQUARE

THE three essential things to know in framing a hip and valley roof are as follows:

- First,—the size of the building;
- Second,—the shape of the corners; and
- Third,—the pitch of the roof.

We say essential, because these parts must be fully understood before proceeding with the work; or blunders, if not utter failure, will be the ultimate result.

Knowing the relation of these parts, other parts can readily be developed and brought into use to fit any condition, regardless of shape, size or pitch that the building may have. In short, to know the parts is to know the whole subject of cause and effect in roof framing.

The accompanying illustration exemplifies the cause and effect in connection with the steel square, which we will endeavor to explain in as few words as possible.

In this example, we have taken a 10-inch rise to 1-foot run. Twelve is used on the tongue of the square, because it represents a 1-foot run and is therefore the starting point. Ten is used on the blade because it represents the rise in inches for a 1-foot run. The shape of the corner of the building on which the hip is to rest, should be known, also what the figures are on the square, to give the miter for the angle. Now, as we said before, 12 on the tongue is the starting point, so 12 must be the part to take on that member; that being the case, we trust everybody knows that (for a square corner) it must be at a like point on the blade as 12 and 12. Now then, with the pitch and miter established (see the solid lines from tongue to blade), we are ready to branch out. Come and go along with us and do not drop behind, or you will get out of hearing distance.

Twelve and 10 will give the seat and plumb cuts of the common rafter; the former on the tongue and the latter on the blade. Now, suppose we could take hold of the common rafter at the top and stand it up straight; sighting across to the edge of the blade, it would strike at $15\frac{5}{8}$; then 12 and $15\frac{5}{8}$ will give the cut across the face of the roof boards and also the side cut of the jack; the former on the tongue and the latter on the blade.

Now, we will let the common rafter down again to its original position and pick up the other end and lift it up until it is level with the top, and plumb down to the tongue; we find it strikes at $15\frac{5}{8}$; then $15\frac{5}{8}$ and 10 will give the miter for the roof boards to fit into the valley or over the hip. The cut is on the latter; we say latter, because 10 is on the blade.

Now, this is good, but it only applies to a square corner. We do not like it because the same operation does not apply to any other corner, so we let the rafter down again to its original position and try something else that will apply to all alike. So we will throw out a line from the toe of the foot of the common rafter and at right angles to it, to a point directly under the top or highest point of the common rafter, which we will call co-pitch. This being done, we will swing it around until it rests at a point directly over the toe of the common rafter; sighting across to the blade, we find it strikes at $18\frac{5}{8}$; then 12 and $18\frac{5}{8}$ will give the same cut as last mentioned above; but this time the cut is on the tongue. This is good because it applies to any shaped corner the building may have; better mark this down in your block, so that you may always have it handy.

But say,—before we quit this, let us find a method for a butt miter, which is useful in building hoppers, or say for building a gable on the side of a roof that is already built and where you do not care to tear off the roof boards, but, nevertheless, you want to make a good, tight job of butting the gable roof to those of the main roof. Go to the upper end of the common rafter and throw out a line at right angles to it to a point on a level with the foot of the rafter. This line we will call the complement pitch. Now swing the lower end of this line around to a point on a level with the top of the rafter, as at opposite 10 on the blade and plumb down from the end of it and it will be found to strike at practically $13\frac{1}{2}$ on the tongue; then $13\frac{1}{2}$ and 12 on the blade (tangent of common rafter) will give the cut, which is on the latter. This is good, because the formula applies to any shaped hopper; but in doing it, look out that you do not get your lines crossed because the figures to use on the tongue must be its tangent.

We are now through with the gyrations of the com-

mon rafter and will now take up the miter for the square corner and see what relation it has to the framing of the roof. As we said before, it is 12 and 12 on the square, and either side gives the cut because the

miter is at the half-way place between horizontal and perpendicular, or 45 degrees, and is therefore the same from either side. This, of course, does not occur in any other corner.

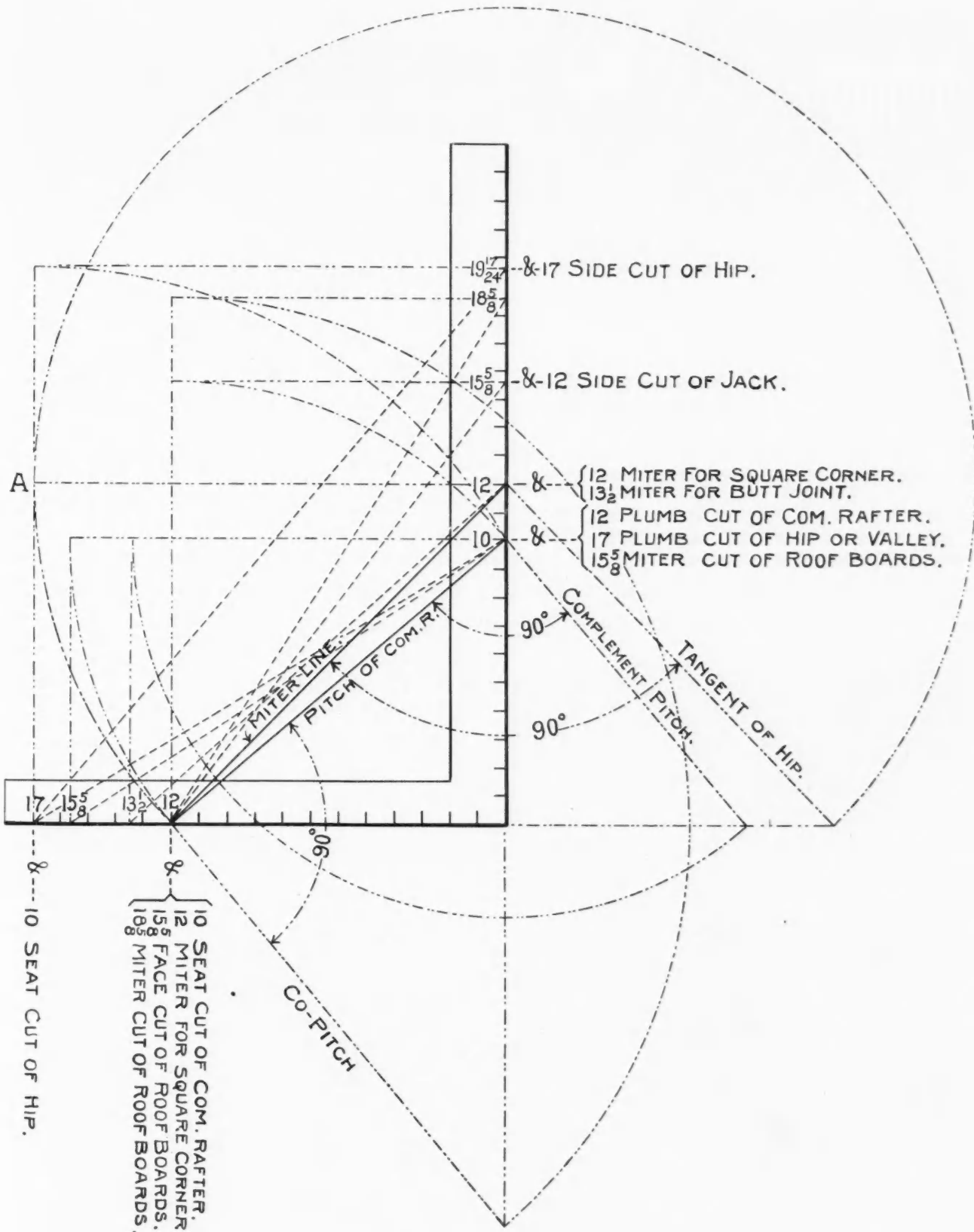


Diagram Giving the Basic Principles of Steel Square Rafter Framing

To begin with the miter in reference to the outer edge of the plate, this lies in exactly the same position as the run of the hip to the run of the common rafter. See? All right. The length of this line from 12 to 12 is practically 17 inches (lacking only .0207 of an inch). If you do not believe it, pick up the lower end and lift it up to a level with the top end, as at A, and plumb down and you will see that it strikes 17. Then 17 and 10 will give the seat and plumb cuts of the hip; the former on the tongue and the latter on the blade. Ten in this case is used because it is the rise of the common rafter. The next thing is to find the side cut of the hip. A line from 17 to 10 represents the length of the hip, then take hold of this line at the top and swing until it stands straight up. Sighting across to the blade, it will be found to strike 19 17/24 on that number; then the square placed at 17 and 19 17/24 will give side cut of the hip, the latter giving the cut.

But hold on! Here is a point,—a vital point,—mark this down in your block; if its full take another. Seventeen is not used because it is the length of the run of the hip as is generally supposed. Oh, no! It gives correct results as far as the square corner is concerned, but it is misleading. Then why is 17 used? Because it is the tangent which is the same as throwing out a line from the upper end of the miter line and at right angles from it and to a level with the foot of the hip rafter, as shown. This line we will

call the tangent of the hip. Now, take hold of the lower end of the tangent line and swing it around to a point level with 12 on the blade, as at A, and it will be found that it coincides with the point previously described for the run of the hip; but this does not occur in any other than the square-cornered building. However, by taking the tangent of the miter or run of the hip, we have a general rule that applies to all corners alike.

In the illustration, we have shown the side of the square on which the cut is obtained for all of the above described cuts, but remember they are for the rise of 10 inches to the foot.

To find the cuts for the 9-inch rise, the pitch line would drop to 9 on the blade. Proceed as before.

In the case of the half pitch roof, the pitch line would show the same as the miter line and the whole diagram would be developed from that one line; and, while the diagram would be apparently simplified, it is misleading because the same parts must naturally exist as here shown, yet in the half pitch they are intermingled—as for instance 12 and 17 in the half pitch give the fact cut across the roof boards, the miter cut for the edge of the board and also the butt miter. Three in one, with no way of readily distinguishing what determines one from the other! Consequently the would-be learner is left stranded; his lines crossed and he can go no further.

Built-In Seats and Settles

GOOD IDEAS AND SUGGESTIONS FOR THOSE WHO DRAW PLANS AND FOR INTENDING HOME BUILDERS



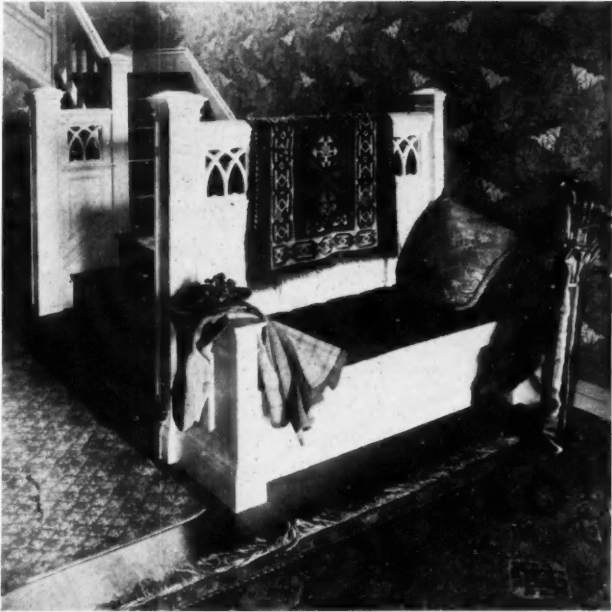
What Would a Summer Cottage Be Without its Built-in Settle by the Open Fire Place?

IN point of economy, artistic effect and convenience, nothing is quite so satisfactory as built-in furniture when it is wisely adapted, well constructed and rightly used. So often it supplies the little touch of comfort and decoration that we are all striving to attain in our homes. Take the built-in seat or settle for instance. It has a stability that does not belong to the detached piece, and it produces a harmony that is delightful. More than this, it can be so constructed as to be one of the most useful articles in the house. Built-in seats are often made with the top hinged, the body of the seat being a roomy box; which, in a hallway, serves as a convenient receptacle for rubbers, porch cushions, shawls, etc.; in a bedroom, as a shirtwaist box; and in a living-room, to hold magazines, books, games, etc. There is always need for just such a handy place in a home, and the built-in settle meets the need, at the same time contributing to the artistic effect of the room and supplying an extra sofa or seat.

Note the charming effect derived from the placing of two harmonious settles at the sides of a fireplace. With high back and graceful ends, they complete the room and give a cosy, comfortable atmosphere that suggests long winter evenings around the bright fire. Again, the settle may stand directly in front of the fireplace. In this arrangement, which is both con-

venient and attractive, the top of the settle is much lower than in the foregoing, being on a level with the edge of the table which stands against it.

The hallway settle is of still another type. Its length is usually governed by that of the side of the staircase, with back and arm pieces of corresponding



Built-in Seat as Part of Stair Hall

size and height. Occasionally, there is a high shelf above for bric-a-brac,—but this all depends upon the proportions of the hallway.

The built-in seat that one finds in a bed-room or a den is usually of a smaller model. It may occupy a space on one side of a corner, when the back is in the form of paneled wainscoting, and the arms follow



Convenient at the Rear Door

the same simple lines. Or, it may be built on the two sides that form the corner,—a cosy, attractive nook that could not be utilized to better advantage. Another choice spot is offered by a bay window in the living or dining room, and this, when piled with cushions, may be one of the most effective features of the room.



Judicious Use of Built-in Seats Makes a Room More Cozy and Homelike

Specifying Electric Wiring

A PAPER READ BEFORE THE MILWAUKEE ARCHITECTS' CLUB BRINGING OUT SOME VERY USEFUL POINTS CONCERNING ELECTRIC WIRING

By Harvey E. Bloomer

Electrical Inspector Milwaukee Board of Fire Underwriters

A UNIVERSAL specification which can be used for all classes of electrical equipments, is a subject that has been before the architects throughout the entire United States and has never been solved. The Western Association of Electrical Inspectors appointed a committee to prepare specifications, one which could be adopted for all classes of dwellings, one for store and office buildings, and another for factories, but when submitted to the association it was decided that although great care and considerable thought had evidently been given the matter, the specifications did not meet the requirements, and it was finally decided impossible to construct a universal specification. Inasmuch as the Western Association, composed of men of ability in electrical engineering, have come to the above conclusion, I am inclined to believe that the most advisable method for you to adopt in making specifications would be to state the number and location of lights; the kind and location of switches, the location of cutouts, the place where the service is to enter, where the meter or meters are to be located, and the kind of wiring, whether knob and tube, rigid or flexible steel conduit or moulding. State that the wiring must be neat and in a workmanlike manner and in conformity with the rules of the Board of Fire Underwriters. It would also be well to add that before the first installment is paid a letter of approval must be secured by the contractor from the Board of Fire Underwriters.

I have observed in many specifications obsolete and irrelevant terms indicating that a general specification such as those published in book form had been selected and filled in to suit the installation that it was intended to cover. As a consequence the specifications were lengthy, contradictory and misleading. It is this embarrassment, I am informed, that the architects are endeavoring to avoid, and consequently I suggest that the specifications be brief, explicit and free of any statement as to how the equipment should be installed excepting that it must be done in a neat and workmanlike manner, etc. By adding that the material and workmanship must meet the approval of the underwriters and conform to their rules in every respect and detail it covers everything that you might mention and saves you considerable time and possible errors. As the Underwriters' rules only take care of the capacity of wires and not the drop in voltage, it would be advisable in large installations that the maximum percentage of drop be specified.

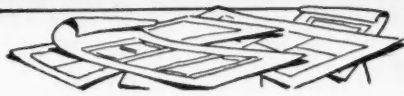
Specifications are important and necessary in con-

nection with electrical construction, yet there are numerous other very vital features which should receive close and careful attention. One is the time when the electrician is permitted to perform his work. Too often has the electrical work been installed at the same time as the plumbing and heating and frequently with the result that the electrical installation, which was possibly first class and worthy of praise, has become extremely menacing, occasionally resulting in a fire, owing to having been disturbed and crossed with pipes and other objects. I would advise that the electrician be prevented from working until all other mechanics are through and the house ready for lathing. Then, after the equipment has been inspected, you will know positively that it has not been disturbed. I would also advise that the lathers be permitted to work only after you are assured that the equipment has been inspected and accepted. This suggestion, however, refers only to concealed knob and tube construction, as rigid steel and flexible steel conduits are not subject to the same misuse.

The Underwriters' rules permit 660 watts, or twelve candle power lamps, to a circuit which the electrician takes advantage of. Frequently after the equipment is completed it is decided when fixtures are being purchased that more lights are desired in some of the rooms than originally intended and consequently the circuits become overloaded. To avoid this, it might be well to specify eight lamps to the circuit as is being done in other towns and then there will be ample capacity to add more lamps, fans, curling irons, etc. To facilitate the work of the electrician and avoid errors and disputes it would be well to furnish him a blue print upon which the location of the fixtures and switches and various devices should be designated. The symbols most favored and most prominently used in designating the kind and location of switches, brackets and fixtures and the number of lights on each are those adopted by the National Contractors' Association, which, I believe, will be pleased to furnish them on request.

With the advance of electricity for domestic purposes, the architect finds that he has new problems to solve and an ever increasing responsibility. It is but very recently that a new appliance has been introduced that is destined to become more prominently used as time advances and that is the vacuum cleaner. The installation of this apparatus, also flat irons and all heating appliances should receive special attention and an individual circuit should be installed for each the size wire depending upon the capacity of device.

DETAILS of CONSTRUCTION AND FINISH



CHARLES P. RAWSON



Built-in Refrigerators for Kitchen and Pantry

VARIOUS ARRANGEMENTS OFFERED FOR THE PLACING OF REFRIGERATORS TO BE ICED FROM OUT DOORS—WORKING DETAILS FOR ACCOMPANYING KITCHEN AND PANTRY FINISH

MODERN thought concerning sanitation and domestic science have so emphasized the important relation between pure food and health that the modern refrigerator has been perfected. In its present improved form it would hardly be recognized as of the same genus as the old-fashioned zinc-lined ice-box. It is getting to be more and more the custom among the architects to make the refrigerator an organic part of the house—in other words, to “build it in.” To do this it is not necessary, as is generally supposed, to go to the additional expense of having the refrigerators built in the house, or even built to order. All of the prominent refrigerator manufacturers now make a complete line of their goods for this special purpose, adapted to any ordinary arrangement.

A few of these many arrangements for built-in refrigerators for kitchen or pantry are shown in the accompanying drawings. It will be noticed that in all cases the refrigerator has a door in the back or end, opposite which door in the wall of the building is usually placed. This allows the refrigerator to be iced from the outside. The many advantages of this arrangement are obvious. Details to the scale of 3 inches equals 1 foot for the construction of this outside icing door, and frame for the same, in both brick and frame buildings, are given on the following page. This door in the wall of a house, which covers the icing door in the refrigerator, should be larger than the latter by 2 inches at the top, 2 inches at the bottom, 3 inches at the fastener side, and 5 inches at the hinge side. In case of a very thick stone or brick wall, the opening should be still larger, thus allowing the ice to be handled more easily through the opening.

The refrigerator should be either delivered in advance before the placing of this door in the wall, or exact measurements of the size of the door, the distance from the corner of the refrigerator and the height from the floor should be obtained from the manufacturer.

Most of the manufacturers are now willing to work

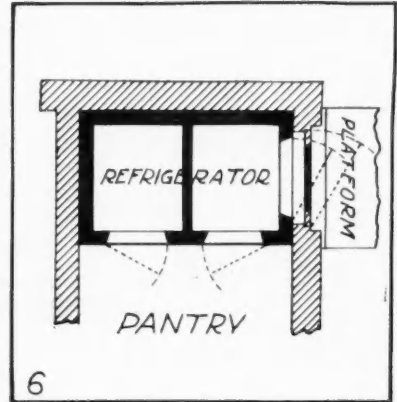
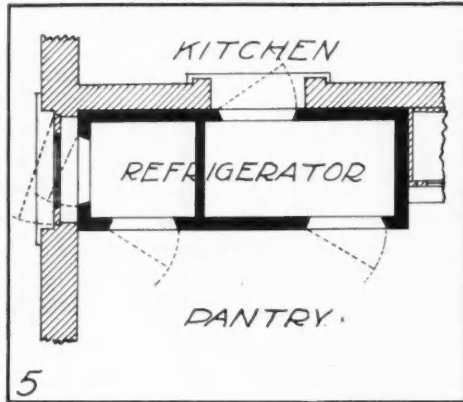
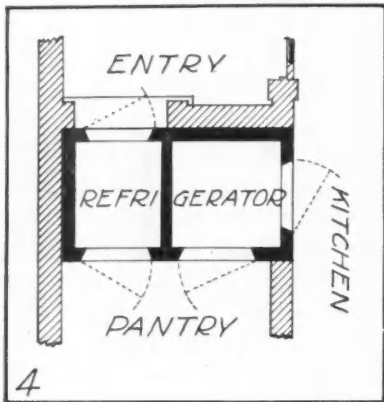
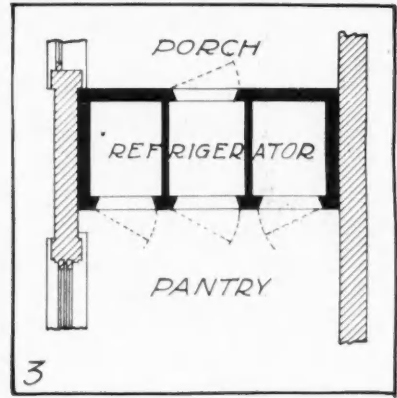
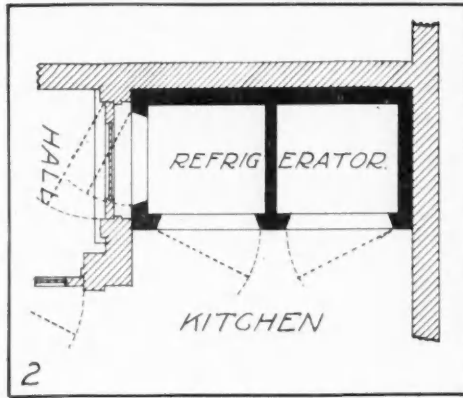
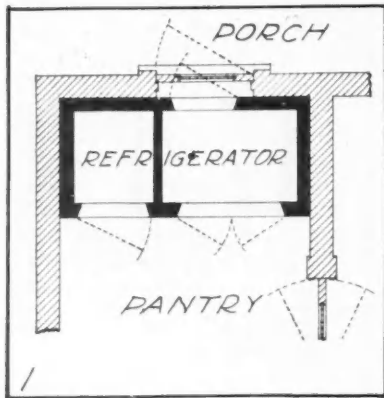
with the architect and act upon his suggestions as to finish and design. By so doing, the refrigerator being built of the same material as the surrounding woodwork and finished in the same color, is made an organic part of the house. It is of course necessary in order to do this, to have the refrigerator shipped from the factory “in the white.”

On the second page following will be found a plan of a pantry containing an unusually good arrangement of built-in refrigerator and the adjoining cupboards, cases, etc. This plan is given as a model arrangement and shows how the refrigerator can be iced from the outside and so placed as to be convenient to the kitchen, pantry and dining room. In this connection details are also given of the various cupboards, cases, drawers, etc., all drawn to the scale of $\frac{3}{8}$ inches equals 1 foot.

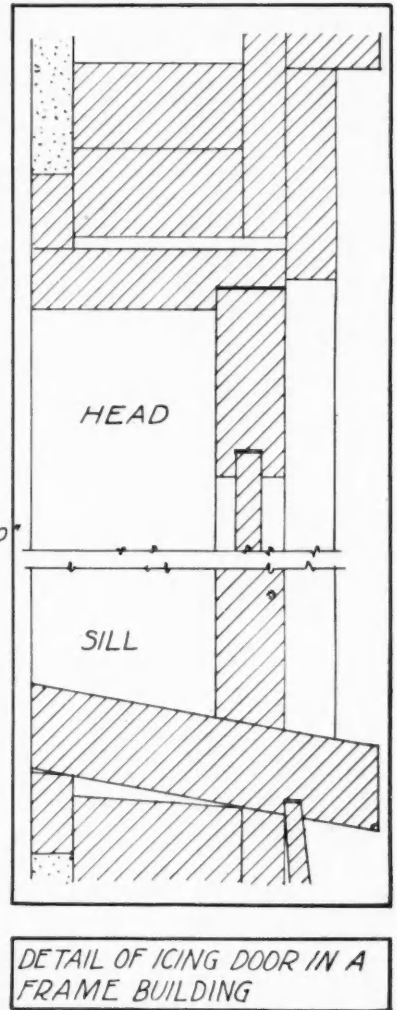
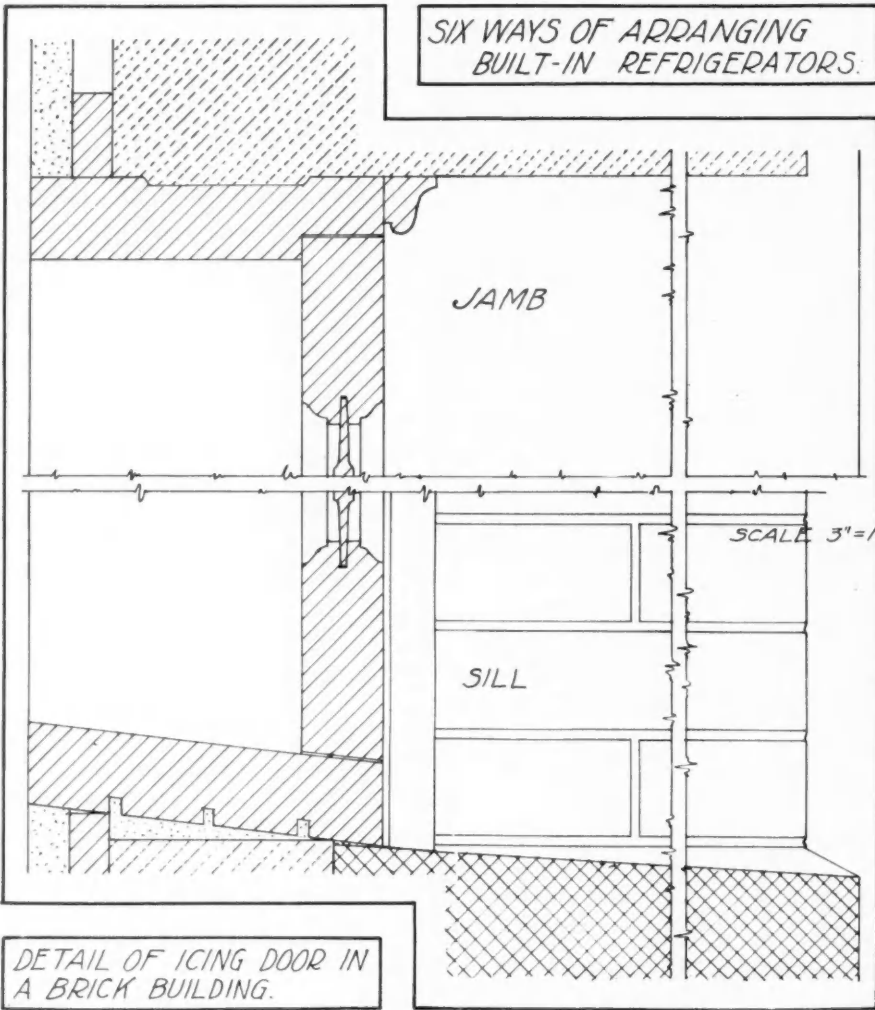
Everyone is familiar with the fact that cold air falls and warm air rises; modern refrigerators are built on this principle. The cold air of the ice chamber is sent directly into the compartment beneath, and as it becomes warmer, rises through the other apartments, cooling the provisions in its course back to the ice-chamber. This forms a constant circulation of air as long as the ice cake lasts. As soon as the air from the storage compartments strikes the ice all moisture condenses and drains through the drain pipe out of the refrigerator. All odors and gases which have been gathered by the air in its circulation through the food compartment are absorbed by the melting ice, leaving the air dry and pure.

It is always economy to buy a good refrigerator. All refrigerators should be provided with a drain pipe leading to the laundry tub or sewer, and the best make of refrigerators are provided with a water-sealed trap, which prevents warm air, sewer gas, insects, etc., from entering the refrigerator through the drain pipe and yet made in such a manner as to be easily removed for cleaning, which should be done as often as once a week. This removes the refuse matter which accumulates from even the cleanest ice.

FULL PAGE PLATES SHOWING COMPLETE DETAILS ARE PRESENTED
ON THE TWO PAGES FOLLOWING



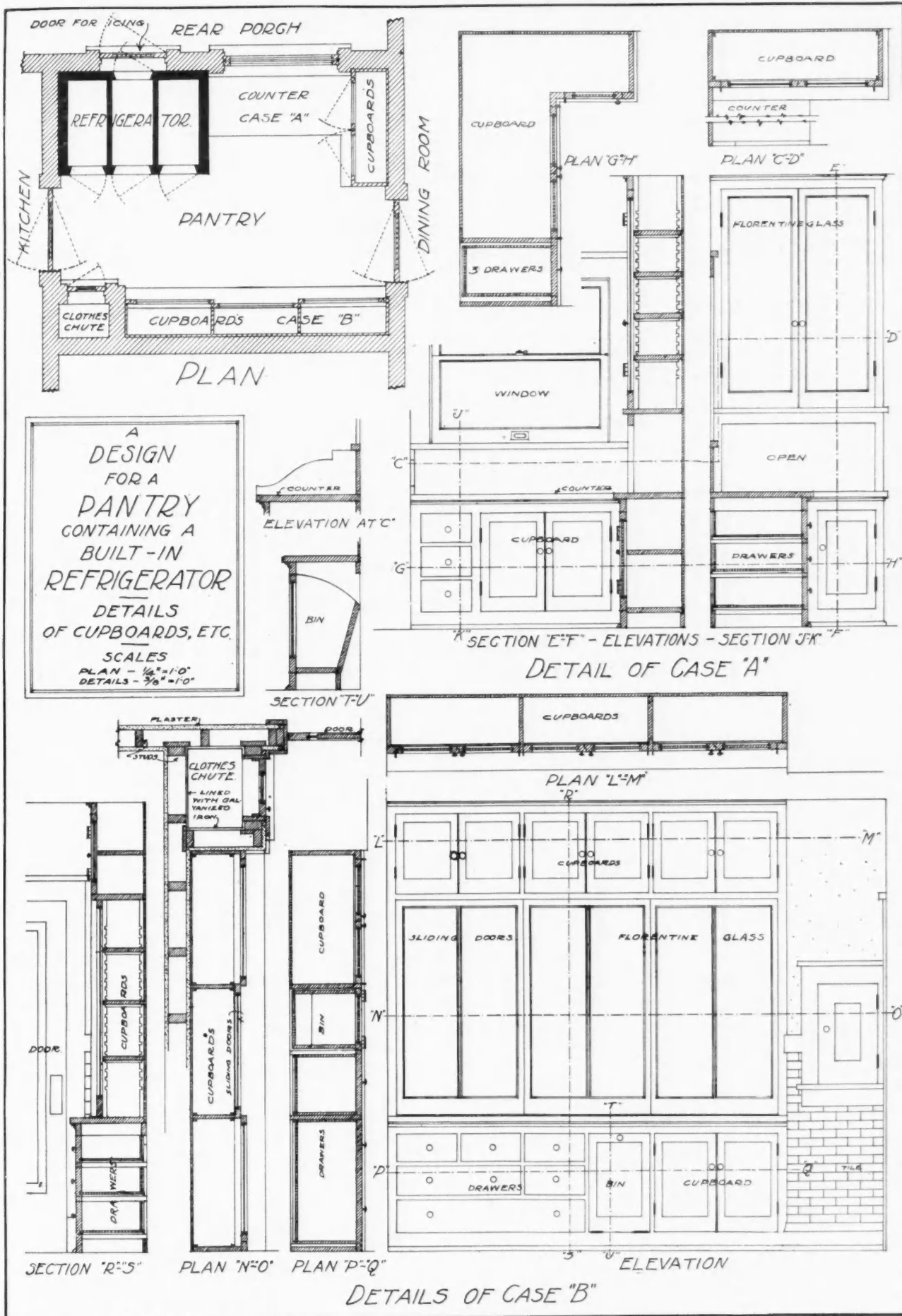
SIX WAYS OF ARRANGING BUILT-IN REFRIGERATORS.



DETAIL OF ICING DOOR IN A BRICK BUILDING.

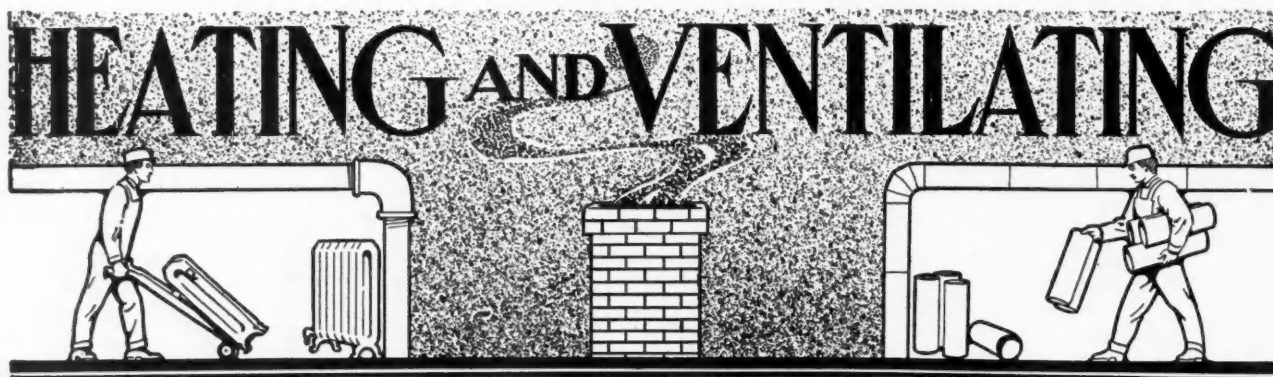
DETAIL OF ICING DOOR IN A FRAME BUILDING

ARRANGEMENTS FOR REFRIGERATORS TO BE ICED FROM OUTSIDE



A
DESIGN
FOR A
PANTRY
CONTAINING A
BUILT-IN
REFRIGERATOR
DETAILS
OF CUPBOARDS, ETC.
SCALES
PLAN - 1/4" = 1'-0"
DETAILS - 3/8" = 1'-0"

PANTRY DETAILS IN CONNECTION WITH BUILT-IN REFRIGERATOR



Mistakes in Warm Air Furnace Heating

THE FACTS CONCERNING THREE ACTUAL CASES WHICH SHOW WHAT TO AVOID IN FURNACE WORK AND HOW TO "SIDE STEP" COMMON MISTAKES

IN a series of papers in *The Master Sheet Metal Workers Journal*, Mr. M. H. Smith has discussed the question of warm air furnace heating, taking up especially some all too frequent and prevalent mistakes that are made. Some of the mistakes in warm air furnace heating arise from a lack of knowledge of the laws and forces that govern heating engineering, but this lack of knowledge, less politely termed "ignorance," is totally inexcusable, he maintains, because the information that would dispel this mantle of ignorance is as free as the air we breathe, to those whose ambition will develop a desire to read and study.

Some of the mistakes are due to gross and inexcusable carelessness, but these may be avoided by the furnace man whose pride in the result of his work should prompt the exercise of reasonable care.

Some of the mistakes are due, neither to ignorance nor carelessness, but are without difficulty directly traceable to the architect and builder, whose interest in the subject of efficient warm air furnace heating—a subject of vital importance and considerable interest to the occupant of the house—ceases when the deluded purchaser has paid for and accepted title to the property, and frequent experiences in the mistakes of warm air furnace heating warrant the assertion that the fault too frequently rests with the architect and builder.

A Furnace "Mistake"

For example, a house completed less than a year ago in a certain small town, presents a striking example of the "mistake" which cannot be placed in either the ignorance or careless column. In this case the question was not what will it cost to satisfactorily warm the dwelling to be erected, but how much of an outfit that looks like a heating plant can be furnished and installed for seventy-five dollars? What a proposition to emanate from a contractor's office!

The construction of the house was begun, and in due time the plans and specifications for the heating were passed to the tinner, who, in spite of his better judgment, proceeded to install the plant in accordance with the architect's plans and specifications.

The specifications stipulated a furnace by name and

number—one that has a casing 32 inches in diameter and a fire pot of 13 inches average diameter, and this to warm a stone and frame dwelling entirely exposed, containing nine rooms, kitchen and bath, and aggregating—considering wall and glass exposure—fifty-six thousand gross cubic feet. The specifications further provided for 8 by 10 inch registers in each room, four runs of 8-inch warm air pipe from the furnace to four risers $2\frac{3}{4}$ by 9 inches each, one of the risers intended to warm three rooms, and three of them intended to warm two rooms each.

The house, when nearing completion, was sold—likewise the purchaser, who, perhaps having experienced some disappointments in warm air furnace heating, asked for a larger furnace and agreed to pay through the architect an additional sum for a larger sized furnace. The same careful (?) consideration induced the architect to merely order the larger furnace, and when reminded by the tinner that the round and partition piping was neither large enough nor enough of them, was told that no change in the plan of piping, flues and registers would be considered. This heating plant was completed as arranged by the architect, and when tested during the subsequent cold weather proved, as might have been expected, a miserable failure. Now, the architect, the contracting company, the builder and the tinner are each busy trying to convince the purchaser of the property that some one of the other three is responsible for the mistake.

Note the original plan:

House contains gross cubic feet.....	56,000
The No. 32 selected furnace would heat gross cubic feet	19,000
Maximum limit of piping for the No. 32 furnace, inches, area, is.....	280
Four 8-inch horizontal pipes, inches area.....	200
Four risers or partition pipes, $2\frac{3}{4}$ by 9 inches, area	100
Aggregate area of nine registers, in inches....	360

Notwithstanding the furnace specified was entirely too small for the proposition, it was, nevertheless, of greater efficiency than the round horizontal piping, and very much greater than the risers or upright pipes, but

how much more unevenly balanced is the amended proposition:

The No. 40 furnace used with heat gross cubic feet	54,000
Maximum limit of warm air piping, inches area	440
Four 8-inch horizontal pipes, inches area.....	200
Four risers or partition pipes, 2 $\frac{3}{4}$ by 9 inches, area	100
Aggregate area of registers in inches.....	360

We know that a warm air furnace heating plant is measurably elastic, but neither the intended furnace nor the larger substituted one would be sufficiently elastic to cover the defects in this exhibition of an architect's heating engineering ability.

Another Example

Plans were presented for the erection of a bungalow, warm air furnace heating specified. Mr. Smith examined the plans, showing six rooms, kitchen and bath to be heated, and recommended the use of a certain No. 35 warm air furnace of modern type, the specifications of which might be briefly stated as:

Diameter of casing in inches.....	35
Average diameter of fire pot in inches.....	18
Diameter of smoke collar, in inches.....	8
Heating efficiency, in gross cubic feet.....	35,000

(Gross cubic feet means the actual cubic feet plus the net wall and glass exposure multiplied by seven and one-half and seventy-five respectively.)

The bungalow, by measurements from the plans submitted, measured 33,400 gross cubic feet.

The tinner who installed the plant put up a creditable job, mechanically speaking, but for some unaccountable reason reduced the smoke pipe from eight inches to five and one-half inches, the effect of which was a sluggish, lifeless fire and a complaint from the house owner that only cold air came into the rooms through the registers. The tinner was called in, his inexperience prompted him to close off all air supply at the base of the furnace (the air having been supplied by the basement in which the furnace set) and extended an air duct eight inches in diameter from the base of the furnace to a west window in the basement.

Of course the result of this example of engineering was the admission of only sufficient air to fill one of the runs of warm air pipe and to perplex the owner, who said, "At first we had air from all the registers, now we obtain moderately warm air from only one register at a time." At this stage the writer was called in, and a brief examination disclosed the entire difficulty, namely, insufficient draught. The diminutive air duct was removed, an adequate air supply taken from the basement, the smoke pipe increased to eight inches. Result, a brisk, active fire, improved combustion and all the rooms of the bungalow satisfactorily warmed to a temperature of 70 degrees in zero weather.

In this instance the funniest mistake, first, was the needless reduction in the diameter of smoke pipe; second, in attempting to supply air for warm air piping

aggregating 350 inches area with one 8-inch pipe—fifty inches area.

Insufficient Air Supply

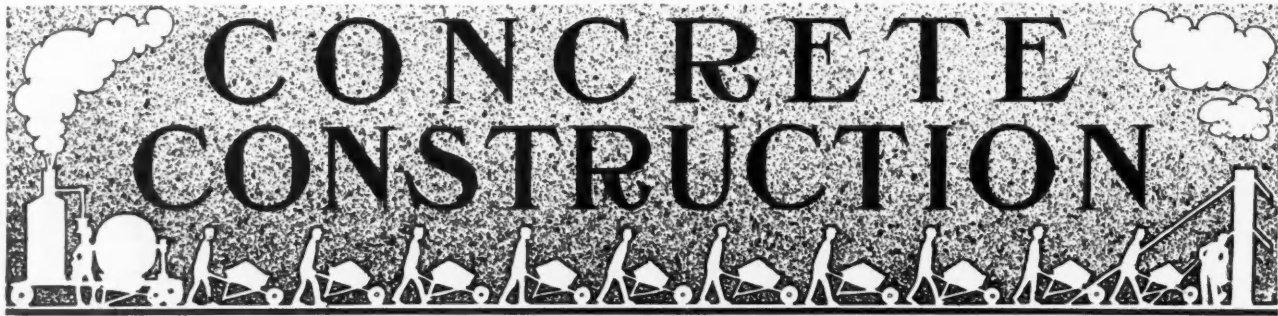
Another example of inexperience on the part of a tinner, and a condemnation of warm air furnace heating on the part of a house owner was presented during the past winter. Mr. Smith was called in to determine, if possible, why only one room at a time could be warmed. A brief examination of the system disclosed many mistakes in the heating plant, chief of which was an insufficient air supply. The maximum warm air pipe efficiency was about 360 inches area, the furnace, however, having been installed with two runs of 10-inch and two runs of 9-inch and two runs of 8-inch warm air piping, aggregating 384 inches area. All air from the cellar to base of the furnace had been excluded and a 4 by 12-inch tin air duct run from the base of the furnace to the seat wall, where some bricks had been removed and the opening covered with a 4 by 12-inch register face, actually admitting only 24 inches area of air to supply 384 inches area of piping. Can any one be surprised at the effect and the annoyance to the family?

Immediate relief was afforded by the removal of the toy air duct and the blind panels at the base of the furnace and partly opening one cellar window to permit a circulation of air in the cellar. This produced a change in the temperature of the rooms, but not in the hall, which was served with a floor register. To temporarily produce a different effect here we resorted to the old trick of placing upon this register a joint of warm air pipe, which carried the warm air above the strata of cold air on the floor and permitted the warm air to freely flow from this register into the hall.

When one considers the number and variety of mistakes in warm air furnace heating which have a strong, a very strong, tendency to prejudice the average householder against warm air furnace heating it would seem to emphasize the necessity for establishing in each State a system of issuing permits to mechanics after an examination as to their ability to install a warm air furnace in a scientific manner.

Many examinations of defective warm air furnace heating plants disclose the fact that too little attention is given to both air supply and draught. Without a supply of air at the base of a furnace warm air cannot be obtained in the rooms, and this fact is so simply plain that we are more than surprised that any mechanic capable of installing a warm air furnace does not readily understand this feature.

No warm air furnace has a draught of its own. This must be supplied by the chimney and the smoke pipe leading from the furnace, and unless these be properly constructed and proportioned it would be useless to look for good results from an otherwise correctly installed warm air furnace heating plant.



Highway Culverts

A DESCRIPTION OF THE COMMON TYPES OF ROAD CULVERTS AND THE METHODS OF THEIR CONSTRUCTION—PROPER REINFORCEMENT

By Paul Chesterton

THE name "culvert" is one of rather broad application, its use ranging from the case of a small pipe or opening under a roadway to that of a small bridge spanning a running stream. The difference between a culvert and a bridge is not very clearly marked; a large culvert may be called a small bridge, and a small bridge is but little different from a large culvert. It is commonly considered that a bridge is intended as a crossing or roadway over a stream or gulch, while a culvert is used to allow the passage of water under an ordinary roadway.

Since the material from which the culvert is constructed is always subjected to dampness from the earth surrounding it, concrete has proved of great value for this class of work. The strength of concrete when mixed in proper proportions, and the smoothness of surface possible when concrete is used as an interior water passage, are also important factors to be considered. The old-time ditch with rough stone sides, and with a top covering formed of slabs of stone more or less closely laid, is now replaced by

concrete which is mixed at the site and placed with but little trouble. The strength of the slab in the old stone culvert was limited by the strength of the stone. In concrete work, steel may be used, if desired, to provide strength where the stone is weak, thus allowing a greater overhead loading capacity for the culvert.

Culverts may be divided into three distinct classes:

1. Box culverts, which are rectangular in section.
2. Arch culverts, which have arched tops, and, in some cases, arched floors.
3. Pipe culverts, which are circular or elliptical in section.

The circular type is the more common form of pipe culvert.

Fig. 1 shows four types of box and arch culverts. Pipe culverts are often cast in sections at a place away from the site of installation, and then transported and laid in sections. It is claimed that circular culverts, even when cast in sections and hauled for some distance to the place where they are to be used, are considerably cheaper than ordinary cast-iron pipe of the same size which might be used for the purpose.

Figs. 2, 3 and 4 illustrate types of culverts as taken from practical designs. In connection with these figures, it may be well to explain the meaning of the names given to the various parts of the construction. In Fig. 3, the rounded passage through which the water flows is called the "barrel" of the culvert. The bottom part of this passage is called the "invert." In Fig. 3, this invert is formed of cobblestones. The arched part is called the "arch-ring," and each end of this ring rests upon "side walls" or "abutments." These abutments, in turn, may rest upon the foundations, if the soil is such that foundations are needed. At the ends of the barrel of the culvert, two end walls are shown rising up above the road level. The part of these end walls which is located between the arch-ring and the road level is called the "spandrel wall," while the part of the wall from the road level upwards is called the "parapet." This parapet wall is

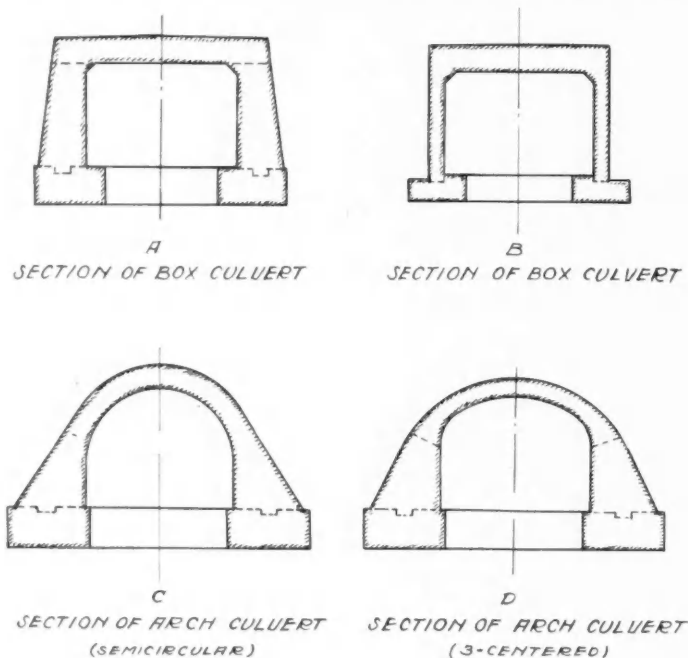


Fig. 1. Box and Arch Culverts

often called the "coping." The parts of the end walls extending each side of the spandrel are referred to as the "tail-walls." Sometimes the spandrel wall and the tail-walls are referred to merely as the "retaining walls." The widened part at the base of the end walls may be spoken of as the "footing."

The length of a culvert is measured in a direction parallel to its axis; while in referring to a culvert in terms of the size of opening, the width of opening should always be given first, and then the height. For instance, a 4 by 3-foot culvert is one 4 feet wide across the opening, and 3 feet high from the "bed" or bottom surface, upon which the water flows, to the "cover" or top surface of the passageway through the culvert.

In Fig. 2, in addition to the parts already named, an

ing the construction. If the presence of water is unavoidable, dams should be built which will turn the water temporarily in another direction, or a flume of boards built through the structure for temporary use, as shown in Fig. 4.

The size of opening through the culvert will depend upon the amount of water to be removed. For ordinary road drainage purposes, openings of 12 to 18 inches are considered to be of sufficient size. The culvert should be set as low as possible under the road, so that a fairly deep covering of earth will protect the material of the culvert; but care should be taken to provide side ditches of such depth that a slight slant may be allowed through the length of the passage.

The size of the excavations needed for the placing of the culverts will depend upon the size of the walls,

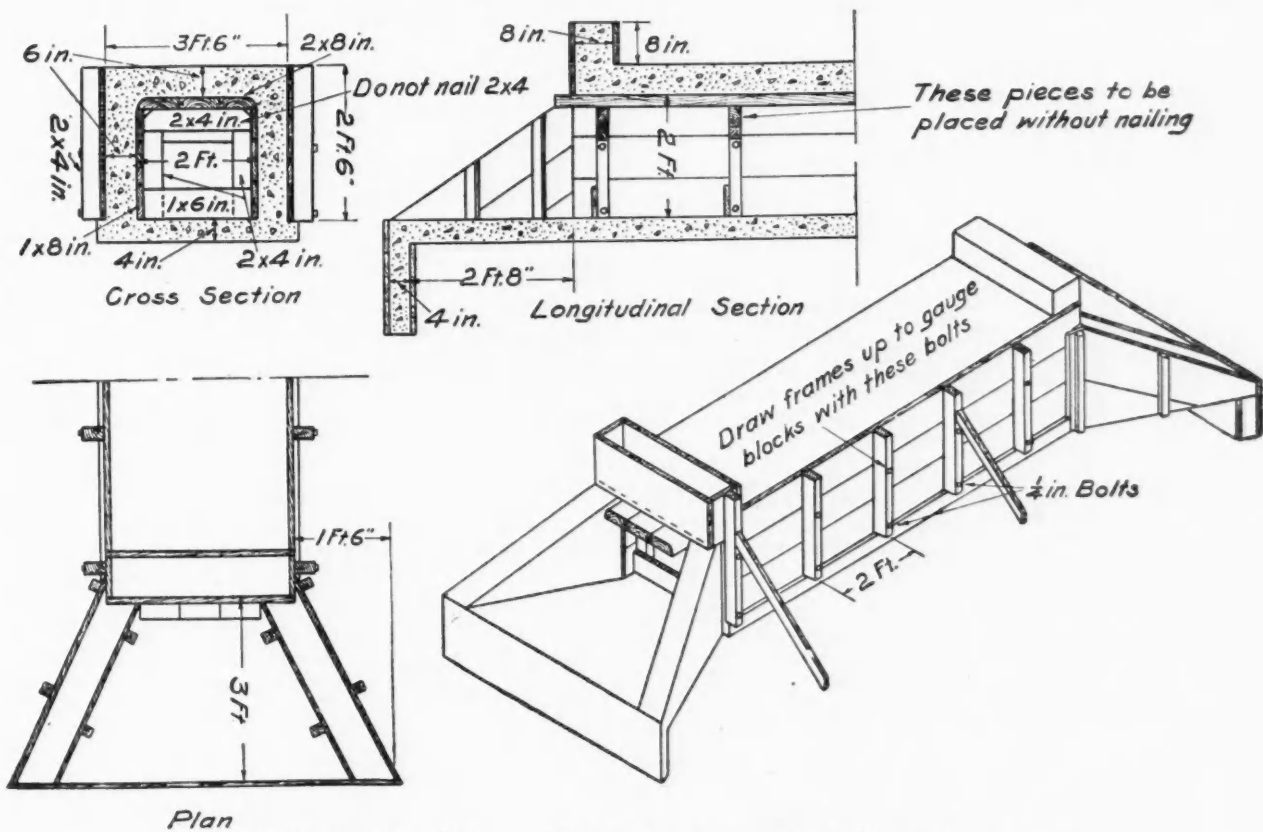


Fig. 2 Standard Type of Form and Culvert Used by Iowa State Highway Commission

"apron" and "wings" are shown. The "wings" are the sloping walls which are shown projecting outward from the side walls in the lower right-hand part of the figure. These wings act as a guide in directing the flow of water, and hold back the embankments, thus preventing a washing away of the earth at the sides of the culvert. The flat slab shown projecting downward into the ground at the outer ends of the wings is called the "apron." The object of this apron is to prevent the action of the water from undermining the concrete which is used as a bed or invert in this type of culvert.

The best time to build culverts is during the summer months when the ground is free from frost, and when there is little or no water to be disposed of dur-

ing the construction. If the presence of water is unavoidable, dams should be built which will turn the water temporarily in another direction, or a flume of boards built through the structure for temporary use, as shown in Fig. 4.

The thickness of the slab, the amount of footings or foundation needed, and the dimensions of the culvert in general. Figs. 2 and 3 will illustrate this point. The footings in ordinary soil may be placed directly in the trenches dug for them. These footings should be made wide where soils are soft; and in case of marsh or quicksand, it may be necessary to excavate to hard soil and fill in with gravel rammed well into place, or piles may be driven to form a support for the upper layers of concrete which form the footings under the side walls.

After trenches of the necessary width have been provided, lay whatever footings are necessary for the side walls in the case of box and arch culverts. The next step is to provide the forms necessary to use in

placing the remaining parts of the structure, and fill the spaces between the forms with concrete. In small work, the concrete for the whole culvert should be placed at one operation if possible. In large work, this may not be possible; but the points for joining the concrete placed at different times should be located in such a manner that the strength of the culvert is not lessened.

In the case of an arched culvert, the footings and side walls may be laid at one time and extended upwards as far as the line where the curve of the arch

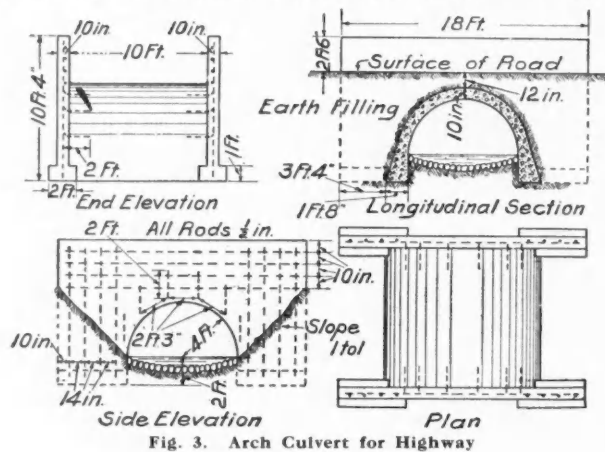


Fig. 3. Arch Culvert for Highway

begins. After this point is reached, the forms for the arch ring and wings, or spandrel and tail walls, may be set, and the concreting continued. Where a rectangular opening is used, the bottom or invert, if of concrete, may be laid, and then the forms for the side walls set immediately in place while the bottom concrete is still wet. Figs. 2 and 4 show the construction forms for box and arch culverts, and will be explained later. In Fig. 4 the outside forms are usually carried upwards about three-quarters of the distance from the beginning of the curve of the arch to the crown or top of the arch. This is to hold the wet concrete in the proper place, since it would flow down over the sides of the outside forms if not supported.

The quality of concrete for use in culverts varies from a mixture of 1 part Portland cement, 2 parts clean sand, and 4 parts broken stone about 1½ inches in size or smaller, to a 1:3:6 mixture, using a 2½-inch stone. The richer 1:2:4 mixture is used for top slabs where heavy loading occurs, and also in the side walls of large culverts. Abutment walls and wing walls may be built of a 1:2½:5 mixture, while the weaker 1:3:6 mixture is used in larger foundations and footings. A mixture of 1 part Portland cement and 5 parts clean bank gravel is often used in the end or parapet walls. The concrete should be wet, and rammed well into the forms.

Reinforcement for Culverts

Although plain concrete will generally be sufficient for small road culverts, reinforcement consisting of steel rods, or of some form of wire fabric or expanded metal, may be used to advantage in large struc-

tures, or where heavy loads are to be carried when the culvert is located near the surface of the road. In the box culvert, the steel rods should be placed near the bottom of the top slab and near the inside surface at the side walls and invert. This steel aids in strengthening the concrete against bending due to loads on top of the culvert and to earth pressure on the sides. These rods or main reinforcing members of the fabric extend across the short dimension of the slabs, and are placed vertically in the side walls. A few small rods are placed lengthwise in all walls

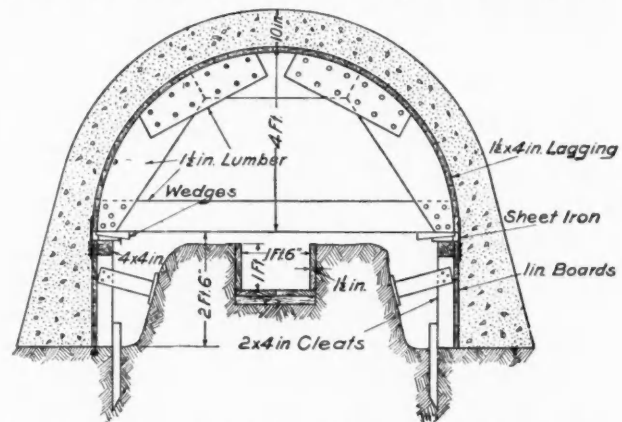


Fig. 4. Forms for Arch Culvert, Showing Use of Drainage Flume

to prevent shrinkage cracks. These rods are not needed if fabric or expanded metal is used. If there is danger of settling of the bed of the culvert, steel should be placed lengthwise in the concrete invert, and located near the bottom of the invert slab. Rods bent into the shape of an L should also be placed along all edges near the outer surface, with one leg of the L in the top or bottom slab, and the other leg in the side walls, or a short piece of fabric. This is to prevent cracking at the outside edges. All inside corners should be well filleted, so that no sharp angles are present. This feature is clearly shown in Fig. 2.

When expanded metal is used, the steel is placed in the slabs and side walls about one-half inch in from the inside surface. The reinforcement in the side walls should be placed so that the diamond in the mesh is vertical. The top and bottom slabs should be

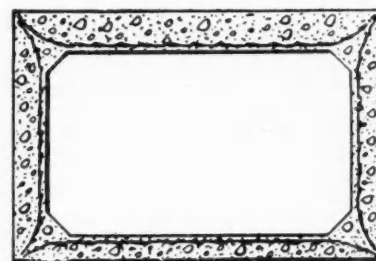


Fig. 5. Box Culvert Reinforced with Expanded Metal

reinforced in such a manner that the diamond goes from support to support. Reinforcement for the top slab should be long enough to extend across the slab and through the thickness of both side walls, as shown in Fig. 5. The Northwestern Expanded Metal Com-

pany, of Chicago, publish valuable data as to sizes of culverts, giving thickness of walls and slabs, together with the amount of expanded reinforcement needed in various cases.

The reinforcement of arch and circular or pipe culverts is placed near the inside surfaces at top and bottom, and near the outer surface on the sides. This reinforcement may consist of either rods or wire fabric.

The construction of wood forms for both box and arch culverts is clearly illustrated in Figs. 2 and 4. The use of heavy lumber is advised on account of the weight of concrete which must be rigidly supported while hardening. Supports are placed at intervals of two or three feet throughout the length of the barrel.

Wood forms should be constructed in such a manner that they may be easily removed, and used again if desired. The directions given in Figs. 2 and 4 make allowance for this, as shown. The forms for the arch-ring shown in Fig. 4 are made solid, but are supported by wedges upon the tops of the side-wall forms. The thickness of the wedges shown should be sufficient to allow the easy removal of the arch forms from the barrel when the wedges are knocked out. The strips of sheet metal shown protect the crack left between the side forms and the forms for the arch ring.

Several types of collapsible metal culvert forms are in the market. These may be used many times, and are rigid and easily placed in position. When a collapsible form is to be used, the ditch is dug, and coping or wing forms are placed in position. Then a bed of concrete is laid up to the point that the culvert is to occupy, and the collapsible form placed on this bed of concrete, the ends fitting into the proper places in the coping or wing forms. The concrete is then placed around the forms, and allowed to harden. After the concrete has set, the forms are removed by allowing them to collapse to a smaller diameter, which will permit of their ready removal from the concrete.

While some advocate the removal of forms after a period of two weeks, it is safer to allow them to remain in place for a month if possible, allowing no traffic over the culvert for the first week, and as little as possible during the first month. After the forms are removed, the earth-fill should be watched for a time to see that it covers the concrete to a depth of from 12 to 18 inches at all parts. No ruts should be allowed to form.

If it is necessary to keep the roadway open at all times, a culvert may be constructed in length of about nine feet. Thus, after the forms have been removed from one section of the length, they can be moved along, and the remainder of the culvert built.

Attention should be paid to the following points which may control largely the success of concrete culvert work:

Provide solid material under all walls. Use clean materials and plenty of a good grade of cement. Provide good, strong forms, and have them clean before

placing. After placing, grease forms with crude oil to prevent the concrete from sticking. Use wet concrete well rammed to place. Do not lay concrete in freezing weather. Cover new concrete from the effect of the sun, and keep it moist. Do not attempt to remove your forms too soon; leave the concrete undisturbed until it has well set. Handle concrete intelligently, and it will last for centuries.



Painting on Brickwork

If you have a wall of brickwork, and the bricks are very soft, then broom down clean and apply a size of acid water, just enough muriatic acid to sour the water. Let this be rinsed off with clear water, let it dry, then apply all the raw oil the wall will take. This is for a first-class job, and the oil will prevent the chipping of the brick afterwards. The oil makes the soft bricks harder, and also waterproof. Hard bricks will not need so much oil. Where the wall has been filled with raw oil the first coat of paint should be of good quality, and according to what the finish is to be; if to be painted like wood, it should be thinned with oil and turpentine until the last coat, which should be done with all oil. But if a dead brick finish, then use all turpentine color, for the finish, though the priming may be all oil, and the next coat or two, half and half, as the dead effect is surer on a partly lustrous ground, or on a perfectly full luster.



Artificial Aging of Wood

It is sometimes desired, for artistic reasons, says *La Nature*, to give certain wooden articles a tint or aspect that makes them look older or more used. From a translation of this article in the *Literary Digest* we note that the coloration of the wood by impregnation, to imitate old wood, does not generally give satisfactory results. When the wood is subjected to the action of ammoniacal gas in the presence of air and superheated steam, the effects obtained come nearer to the natural effects of age. The best way to imitate old wood is to subject it to the slow action of moist air and ammonia.

For this purpose, the wood is placed in ditches in moist soil, free from bacteria, not clayey and not too sandy, containing a little humus, and treated with 1 to 2 per cent of lime and sal ammoniac. Cinders do very well for the constitution of this soil. Amateurs may profitably use this receipt to age certain articles artificially and give them a more artistic or more antique appearance.



A Good Shot

"Paw wants a bottle o' liniment and maw wants a bottle o' china cement right away."

"All right, sonny. What's wrong?"

"Maw hit paw with the sugar-bowl."—*Judge*.

How to Install a Motor-Boat Engine

DIRECTIONS FOR PUTTING IN THE FOUNDATION TIMBERS OR ENGINE BED—CONNECTING UP THE VARIOUS PARTS OF A SMALL BOAT ENGINE.

By A. E. Palmer, M. E.

THE success with which a motor boat may be operated and the degree of satisfaction it gives its owner, depends so much upon the proper installation of the motor that this phase of the motor boat subject should receive the most careful attention that the builder is able to give.

There are so many types of installation, depending upon the type of motor and boat, that space will not permit of a lengthy discussion here, but the writer will select as his theme the installation of one type as being typical of the operations necessary to correctly placing a marine motor. The general method of procedure for all installations is the same, varying only in point of detail.

We will assume that the shaft log is bored and ready to receive the propeller shaft. The next step is to design the engine foundation.

In selecting wood for the foundation, some care must be exercised. Procure some good pieces of oak as free from flaws and knots as you can find. The engines up to 15-h. p., use two-inch stock, and for engines above that rating, three-inch lumber is better.

Place your boat upon suitable support and level it both lengthwise and sideways. In leveling lengthwise, place a straight edge along the keel, inside the boat and then place a spirit level on the straight edge. In leveling sideways, place straight edge across the coaming.

Having leveled the boat and blocked it so that it will maintain this position, stretch a strong string through the center of the shaft log hole and extend it into the boat some distance beyond the proposed engine foundation. Be sure that this passes exactly

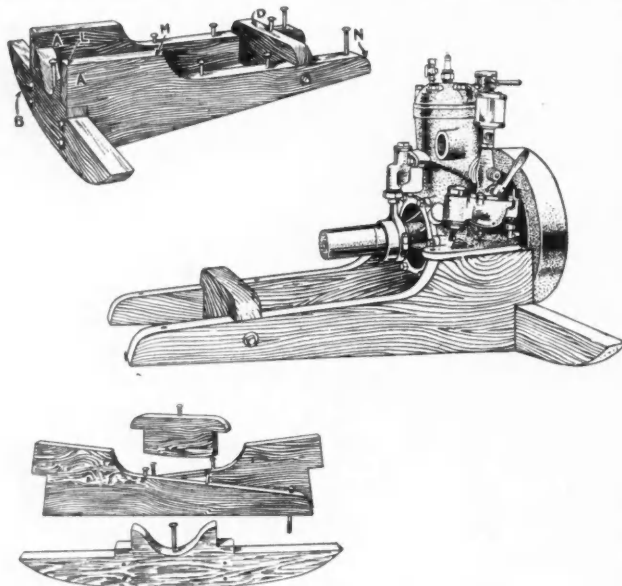


Fig. 1. Foundation Timbers or Engine Bed

through the center of the hole in the shaft log and not to one side or the other. Say the shaft log hole is $1\frac{3}{8}$ inches in diameter, then with a rule, measure the distance from the sides of the hole to the string and adjust the string until the distance from any point on the circumference is exactly $11/16$ of an inch. Secure the string in this position. This string represents the center line of the engine and propeller shafts when in position.

Having determined the size of engine bed needed, cut out two or three cross pieces to conform to the shape of the boat and upon which the bed timbers are to rest and to which they are secured by means of lag screws. The side timbers are the next pieces to shape, which may be done in the following manner: Measure the distance on the motor from the center line of the crank shaft to the lower face of the crank case flange. This dimension will be the distance from the string to the top face of the bed timbers at all points. Shape the side timbers and cross pieces something after the pattern shown and bolt the whole frame together by

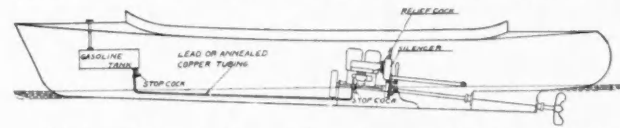


Fig. 2. Diagram Showing Arrangement of Engine, Supply Tank, etc.

means of lag screws before placing in the boat to receive the engine. The cross member may be bolted directly to the keel by means of bolts put through from the under side of the boat. In putting these bolts in place, put a washer under the head and coat it with thick lead paint before drawing up tight on it, thus preventing leakage at this point.

After the foundation is in place, measure the distance from the string to the top face of the bed timbers again, in order to be sure that the face of the timber is parallel with the string. Secure the bed to the keel by drawing down on the bolts after you have measured to find whether or not the center line of engine bed is directly over the center of keel. Remove the string through the propeller shaft hole and place the engine on the bed timbers. Insert the propeller shaft and secure the outer stuffing box temporarily in place with small screws. Suspend a plumb bob from one head in line with the keel center and arrange to adjust this line so that it can be brought to within an eighth of an inch from the end of the propeller shaft. Chalk the end of the propeller shaft and find the center with a pair of dividers and place a prick punch mark at this point. Now bring the plumb bob line close to the end of the shaft and adjust the stuffing boxes until the plumb line falls directly over the prick

punch mark. Block up the shaft in this position, remove the temporary screws and insert the regular lag screws, binding the flanges of the stuffing boxes down against the face of the shaft log, which has been previously coated with thick lead paint. Now we are ready for the engine.

Place the engine on the timbers and line the pieces up temporarily by bringing the faces of the coupling together and with the aid of a plumb bob, see that the

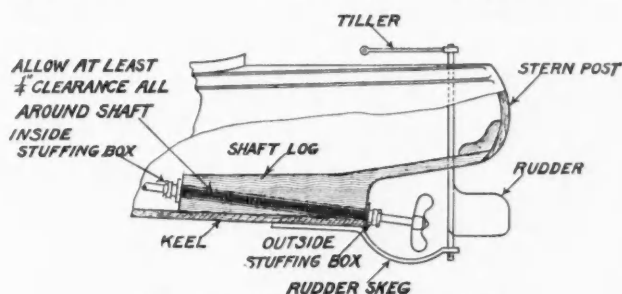


Fig. 3 Arrangement at Propeller End.

center of the engine shafts are directly over the center of the boat. Now mark on the timbers the position of the bolt holes in the flanges of the motor bed, then remove the motor from the foundation and bore the holes in the bed timbers to receive the holding down bolts. Replace the foundation; line it up again with the keel and with the spirit level placed across the top, then secure permanently to the keel. Put engine on the bed, place flange and coupling bolts in place loosely and then wait for the final lining up until the boat is in the water.

The fuel tank is usually placed in the bow of the boat and the fuel led to the motor through copper or block tin pipe. Copper tanks are best for holding gasoline, but rather expensive. A good heavy coated galvanized iron tank, riveted and well soldered, gives very satisfactory results under all ordinary conditions. In making gasoline connections, all points should be smeared with ordinary brown kitchen soap, as this is more effective than white lead for this purpose. Two stop cocks should be placed in the fuel supply pipe, one at the tank and one near the carburetor, to prevent loss of fuel in case there should be a leak somewhere in the pipe line between the tank and the carburetor.

The water intake pipe should lead from the pump to a point in the boat far below the water line, close to the bottom, and there should be a stop cock placed thereon to shut off the water supply when the engine is at rest for any length of time, to prevent the water from escaping into the boat should there be any leaks in the connections or around the pump plunger. It is well to make the connection between the pump and the intake with a wire bound rubber hose, as this eliminates the possibility of the vibration being transmitted to the intake connection which would tend to work it loose at the planking. This same principle applies to the water outlet which should be piped to a point above the water line.

There are virtually two kinds of exhaust installa-

tions; namely, the atmospheric and the under water exhaust. In the atmospheric exhaust system, the pipe is led from the engine directly to a point above the water line. Sometimes it is advisable to use a muffler with this type of installation, owing to the disagreeable noise.

It must be born in mind that the engine is not permanently set, up to this point and any connections that will tend to bind should not be made fast to the engine until it is lined up and bolted down permanently. This last operation will take place after the boat is launched. In the meantime, however, we may proceed with the other branches and get everything ready for the final "connecting up." All holes that are to be bored below the water line should be done now and connection secured to them permanently. Do not wait until the boat is in the water and then bore them, unless you are fond of bathing.

We will take it for granted that the boat is now launched and all that remains to be done is the final lining up of the engine with the propeller shaft. Bring

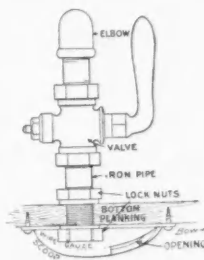


Fig. 4
Water Intake

the faces of the engine and propeller shaft close together and insert four strips of paper between them, at 90 degree increments. Notice if the tension on each strip of paper is the same. If not, adjust the engine bed by placing shims under it until the strips of paper are held with equal tension. Draw down on the bolts, keeping an eye on the coupling and the paper strips. Now draw up the coupling bolts, bringing the faces of the coupling together permanently.

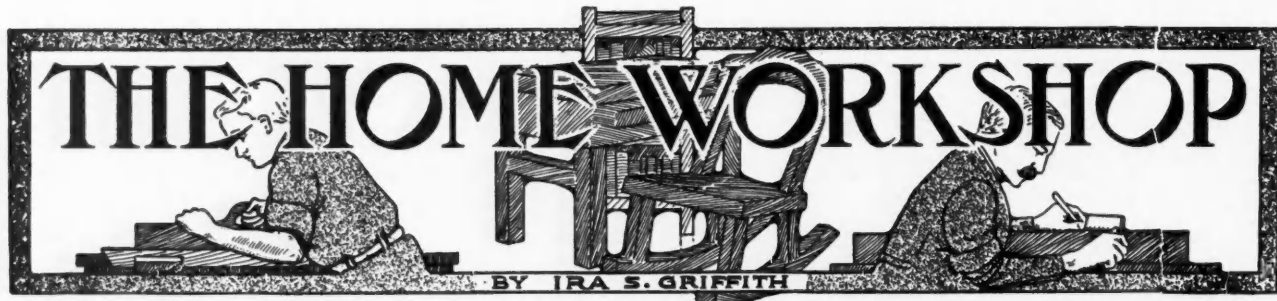
It is a good scheme to pour melted babbitt around the engine bolts where they come through the frame, in order to guard against any sideway or lateral movement while in action.

The installation is now complete, and the motor is ready for its trial run.



Fire-Extinguishing Hand-Grenades

These are well known, and like most other means of extinguishing fires, they do good service if used soon enough. The composition with which they are filled varies greatly, and some of the recipes call for expensive salts which are of very little use. Ammonia and carbonic acid are two of the most efficient agents, but they are difficult to keep and to apply, carbonic acid, at least, requiring special arrangements and appliances. If carbonate of ammonia were a little more soluble than it is, it would be the ideal salt for this purpose. A solution of equal parts of alum and sulphate of ammonia, dissolved in water and diluted so that the liquid is about half saturated, has been highly recommended for filling these grenades. Any good sized bottle may be used to hold the liquid.



How to Make a Bed-Room Set

COMPLETE DETAILED INSTRUCTIONS WITH ITEMIZED STOCK BILL AND WORKING DRAWINGS SHOWING HOW TO MAKE A BED AND A CHIFFONIER

A BED of simple construction is shown in the accompanying drawing. The objection to most wooden beds is their excessive weight. This bed is so planned as to overcome that objection. In fact, some may prefer the heavier construction; although this one when made of mahogany, or birch, stained mahogany, makes a very attractive appearance.

STOCK BILL FOR CRAFTSMAN BED.

- Posts, 2 pieces, 2½ by 2½ by 50½ inches, S-4-S.
- Posts, 2 pieces, 2½ by 2½ by 42½ inches, S-4-S.
- Rails, 4 pieces, 1½ by 1½ by 58 inches, S-4-S.
- Spindles, 7 pieces, 1 by 1 by 43 inches, S-4-S.
- Spindles, 7 pieces, 1 by 1 by 31 inches, S-4-S.
- Side rails, 4 pieces, 1 by 1½ by 75½ inches, S-4-S.
- Side rails, 8 pieces, 1 by 2 by 5 inches, S-4-S.
- Keys, 8 pieces, ¾ by ¾ by 3½ inches, S-2-S.

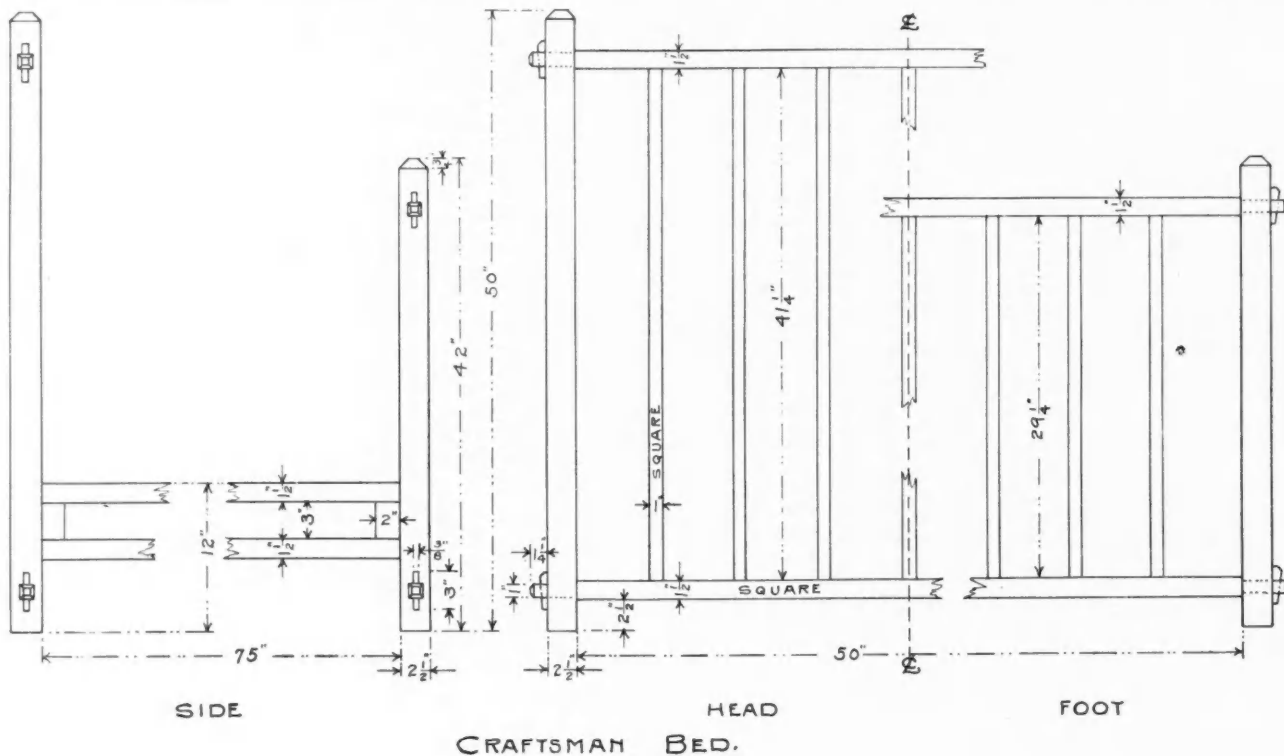
Begin work by squaring the posts to length and putting on the chamfer at their top ends. Next, lay out and cut the mortises in them. Next, cut the head and foot rails to length, square the ends, lay out the mortises for the keys and then shoulder the tenons.

The spindles are to be tenoned into the rails, snugly fitted and well glued; for upon them, to a great extent, depends the strength of the head and foot steads.

The side rails are to be built up by making two frames, one for each side, in which the short verticals—four on a side—are well tenoned into the long rails. For fastening these side frames into the posts one can purchase at the hardware store fixtures especially designed for this purpose.

On account of the small amount of material needed to make this piece of furniture one may well afford to get the genuine mahogany and finish the piece natural.

Since the natural color of mahogany is rather insipid it will be advisable to apply a coat of some good mahogany stain first. Rub this lightly with some No. 00 sandpaper and then apply a coat of filler colored to match the stain. Remove the surplus filler when it has flatted, in the usual way, and allow it to harden over night. Sandpaper the filler lightly, then



apply a coat of shellac. Allow the shellac to harden then sand it lightly. On this shellac apply several coats of some good rubbing varnish. Rub the first coats with hair cloth or curled hair and the last with pulverized pumice stone and raw or crude linseed oil.



Craftsman Bed of Wood



Chiffonier

How to Make a Chiffonier

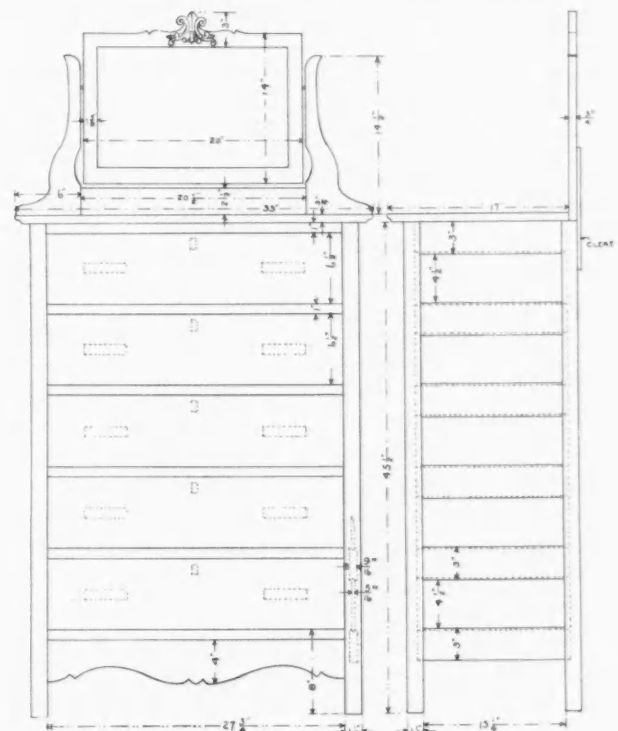
THE Chiffonier is much more difficult to make than the bed, but will be found within the ability of anyone familiar with tools.

STOCK BILL FOR CHIFFONIER.

- Posts, 4 pieces, $1\frac{1}{2}$ by $1\frac{1}{2}$ by 46 inches, S-4-S.
- Front rails, 6 pieces, 1 by $1\frac{1}{2}$ by 29 inches, S-4-S.
- Facing, 1 piece, $\frac{3}{4}$ by $4\frac{1}{4}$ by 29 inches, S-2-S.
- Side rails, 12 pieces, $\frac{9}{16}$ by 3 by $14\frac{1}{4}$ inches, S-4-S.
- Side panels, 10 pieces, $\frac{7}{16}$ by 5 by $14\frac{1}{4}$ inches, S-4-S.
- Back rails, 6 pieces, $\frac{9}{16}$ by 3 by $28\frac{3}{4}$ inches, S-4-S.
- Back panels, 5 pieces, $\frac{7}{16}$ by 5 by $28\frac{3}{4}$ inches, S-4-S.
- Top, 1 piece, $\frac{3}{4}$ by $17\frac{1}{2}$ by $33\frac{1}{2}$ inches, S-2-S.
- Mirror supports, 2 pieces, $\frac{3}{4}$ by 6 by 15 inches, S-2-S.
- Mirror supports, 1 piece, $\frac{3}{4}$ by $2\frac{1}{2}$ by $22\frac{1}{2}$ inches, S-4-S.
- Mirror frame, 2 pieces, $\frac{3}{4}$ by $1\frac{3}{8}$ by $14\frac{1}{2}$ inches, S-4-S.
- Mirror frame, 1 piece, $\frac{3}{4}$ by $1\frac{3}{8}$ by $20\frac{1}{2}$ inches, S-4-S.
- Mirror frame, 1 piece, $\frac{3}{4}$ by $3\frac{1}{4}$ by $20\frac{1}{2}$ inches, S-2-S.
- Mirror backing, 1 piece, $\frac{7}{16}$ by $12\frac{1}{2}$ by $18\frac{1}{2}$ inches, S-2-S.
- Drawer fronts, 5 pieces, $\frac{3}{4}$ by $6\frac{1}{2}$ by 28 inches, S-4-S.
- Drawer ends, 10 pieces, $\frac{5}{8}$ by $6\frac{1}{2}$ by 14 inches, S-4-S.
- Drawer backs, $\frac{3}{8}$ by 6 by 28 inches, S-2-S.
- Drawer backs, 5 pieces, $\frac{3}{8}$ by 6 by 28 inches, S-2-S.
- Drawer slides, 10 pieces, $\frac{3}{4}$ by $1\frac{3}{8}$ by 15 inches, S-4-S.
- Cleats, 2 pieces, $\frac{5}{8}$ by $1\frac{1}{4}$ by 10 inches, S-4-S.

The chiffonier is best made of white oak, quarter-sawn being preferable. Begin work by squaring the posts to length and plowing the two inner surfaces of each, the faces, so that the ends of the panels and rails may be inserted. The simplest construction, and one that will serve the purpose well, is to plow a

rather deep groove in the posts the full length of the paneling and then make the tenons of the rails of a length and thickness to fit this groove, shouldering



CHIFFONIER

them flush with the surface of the post. Plow the rails and cut them to length. The length of the panels will be the same as that of the rails. No detail is given for the back paneling. It is to be made up the same as that of the sides, the pieces being the same width, only longer, of course. Scrape the parts and glue up the sides of the chiffonier. In putting on this glue be careful not to get it on the edges of the panel as the panel must be free to shrink or swell freely.

Cut the front rails to length and tenon them ready to be fastened to the posts. Place the back panel and the front rails and place the whole in the clamps. The cleats are to be fastened to the posts. On the front posts it will be necessary to trim off the back of the rails somewhat to permit of this. Of course a separate frame might be tenoned up for the support of each drawer if wanted. This latter construction would be stronger, giving added stiffness to the frame of the chiffonier.

While the glue is hardening on these the drawers may be made up. They are to be constructed in the usual manner by dovetailing the sides to the front and plowing the sides and front to receive the bottom and back.

The drawing shows clearly the manner of making the mirror frame and support. For the curved supports a templet of heavy paper or cardboard will be needed. The top of the mirror, too, and the facing of the front of the cabinet will need to be worked from a half-templet so as to get both halves alike. The mirror frame is to be rabbeted to receive a plain plate glass with the necessary backing. The mirror support is to be fastened to the chiffonier body with cleats and screws so that it may be taken off in moving. The mirror may be fastened to its support either by means of wooden dowels, or patent metal fasteners for that especial purpose may be purchased at the hardware store.

The front facing should be tenoned and placed in grooves cut in the posts, at the time the front rails are assembled.

The simple ornament on the mirror is the Fleur-de-Lis and is to be fastened in place with glue and brads.

The Mortgage — A Valuable Asset

By R. B. BUCKHAM.

Doubtless the reader well remembers that seven years after the Pilgrims landed at Plymouth, a second band of new-comers followed them, and eventually settled at what is now Salem, Mass. From these two beginnings came the development of the Bay Colony, and the country at large. In this connection, it is of the utmost interest to note that the *first* instrument of record in the Registry of Deeds at Salem is a *mortgage*. It is a quaint instrument, brief and to the point, and is as follows:

"Thomas Dexter, of Lyn, yeoman, by his deed dated

22th. of Octob 1639 hath mortgaged his fearme in Lyn, conteyning about — acres, with all his houses, meadows and broken grounde thereon, for 2 oxen and 2 bulls, upon condition of payment to Symon Broadstreet of Ipswich of 90 lbs. the first day of August then next following, with a reservation upon the sale of said fearme to give the said Dexter the overplus above the debt and damages of the said 90 lbs."

From that day to this, as frequent an instrument as any to be recorded at this Registry is the mortgage.

A great many people have an indescribable dread of, and aversion to, the mortgage, and look upon it as a thing to be avoided, as far as possible. As a matter of fact, however, it is the source and means of untold blessing, an asset which the great majority of us could not well get along without, and yet live as well and comfortably as we do.

As long as it is rightly used, the mortgage is a most convenient and efficient business assistant. It is only when grossly abused and neglected that it becomes troublesome. Like fire, it is a good servant, but a very poor master.

The carpenter especially has frequent occasion to make use of its good offices. It is far from prudence and business foresight on his part to avow that he will have nothing whatever to do with it. It is no enemy of his, no treacherous foe, lurking in hiding for a chance to accomplish his undoing, but a helpmeet and friend, whose services are of the utmost value.

It is a well known fact that the city of Chicago was almost entirely rebuilt after the great fire by means of the mortgage. And it proved the best possible means of restoring the afflicted city. All of our great railroad systems, and colossal industrial enterprises have been built up in the same way. Even our municipal corporations acquire and pay for most of their public improvements by the same means.

It is in this way, too, that the carpenter can better his circumstances, build up his business, enlarge his opportunities. It is business man's method of financing a business undertaking. It is, of course, satisfactory to hear one state that his home is clear of any mortgage, and that he owes no one a single dollar. But there is nothing more commendable than the course of the man who has secured a home for himself and family by means of the mortgage, who otherwise would have none. Think twice before abandoning the idea of a home, through distrust of the mortgage.

A mortgage is, in reality, nothing but a contract, a business arrangement, an agreement on the part of the promisor to pay a certain sum of money at a specified time, to insure the performance of which he pledges his home as an additional security.

The several states are constantly passing legislation to encourage and facilitate the use of the mortgage as a means of doing business. At this very time such a measure is being urged on the legislature of Vermont;

to exempt mortgages from taxation, some of the reasons being advanced for such action being as follows:

"Because it would give the private individual a chance to loan his money at home, instead of driving it out of the state.

"Because it would enable a man with a farm to sell to deal with a young man of limited capital.

"Because the young man of limited capital would have a better show of paying for his farm.

"Because it would help the laboring man who is trying to acquire a home.

"Because it would mean cheaper money, which would help build up all lines of business."

All of which must be admitted as certainly true.

There is an old Arabian axiom to the effect that "a blank page is a fool's page," which might well be interpreted to mean, in this connection, that the contractor in need of capital, who persists in showing a blank page as his list of obligations assumed, is not pursuing a wise and justifiable course.

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How They Build Elevator Bins

Wooden Grain Bins in Huge Seattle Structure

A branch of carpentry work that is interesting because of its rarity, at least on such a large scale, is illustrated in the accompanying photograph. This is a wooden grain elevator of huge size recently erected at Seattle, Wash. It is divided up into units or bins, each bin being about 12 feet square.

The bin walls have to be exceedingly strong so as to withstand the lateral pressure of the grain when one bin is filled and the bin next to it is empty. In

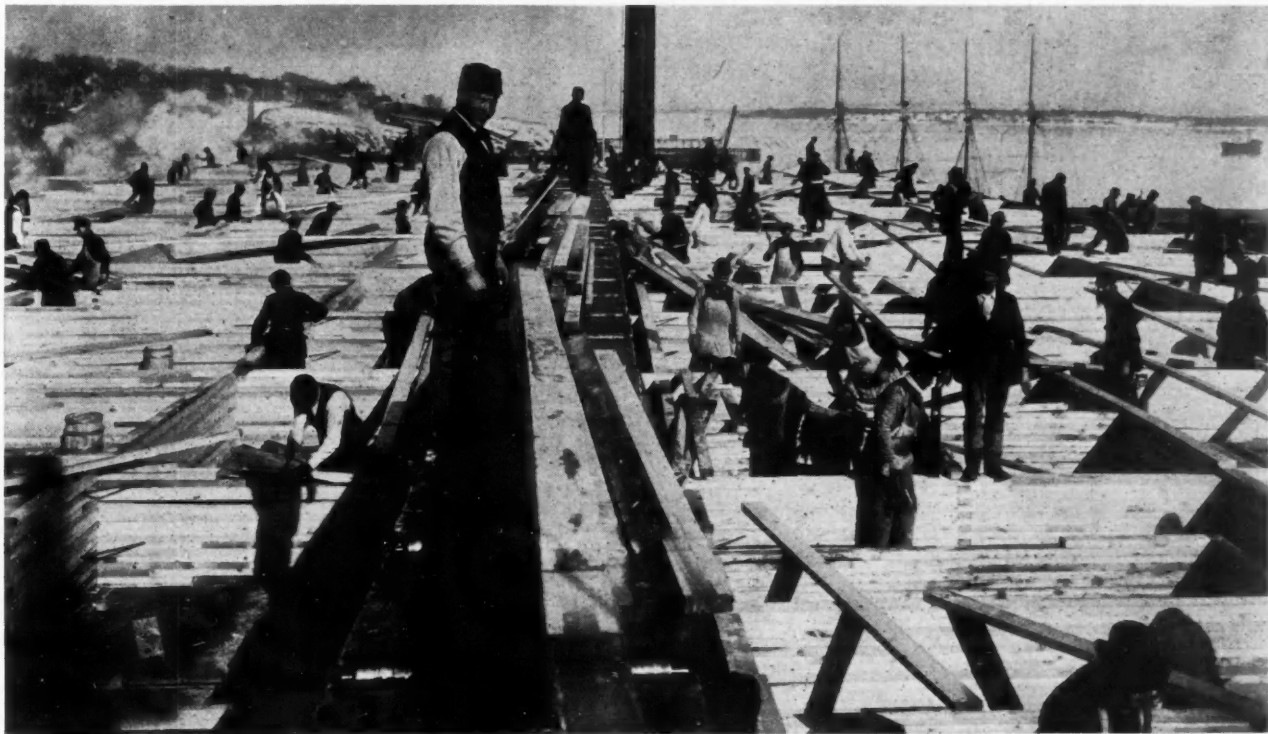
order to gain this necessary strength the wall construction illustrated is made use of. The walls are built up of 2-inch planks of a width depending upon the size of the bin, 2 by 10 being a common size. These planks are thoroughly spiked together; the corners are made with alternating over-lapped joints and are also reinforced with iron rods set in across the corners about every tenth plank, to give additional stability. Walls built up in this way are well liked for grain bins, since, in addition to being very strong, they present a flat, smooth surface on both sides.

This photograph shows the work on the elevator as just beginning. An interesting feature is the lumber conveyor which is a great labor saver in carrying the lumber to the different parts of the job. This conveyor is simply a series of "live rolls," chain driven. The laborers stationed along the conveyor at intervals pick off the planks needed as they are carried along.

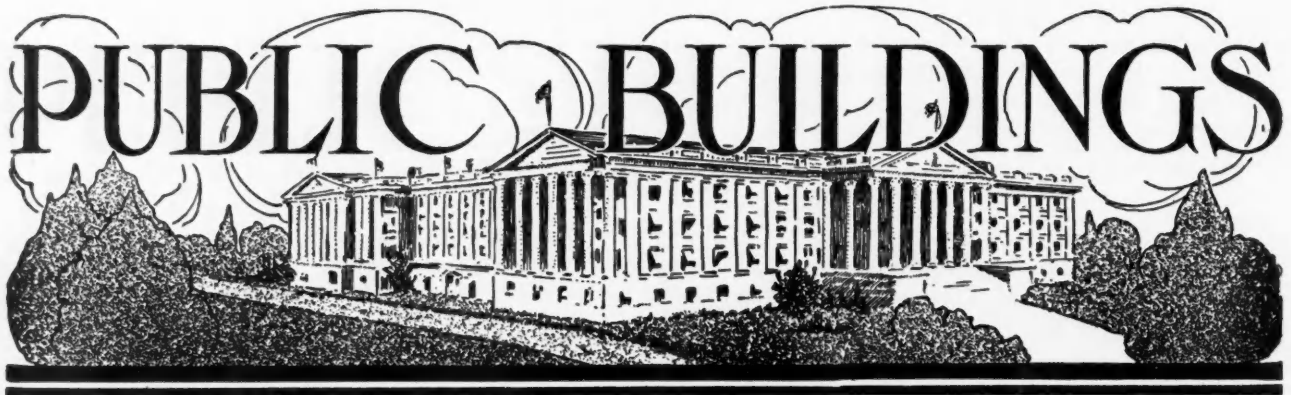
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Stipulation for Foundation Below Ground

A building contract required the contractor to put a foundation wall under the building four feet below the ground. The grade sloped, being higher in the front than in the rear of the building. The contractor placed the foundation in the rear upon the surface of the ground and, by filling, increased the level of the ground two feet above the bottom of the foundation. It was held that this was not a compliance with the contract, the owner being entitled to have the foundation four feet below the surface, in order to protect it from frost, etc. *Vilhauer v. Gross, N. Y. Supreme Court, Appellate Division, 122 New York Supplement 520.*



Building up Grain Bins from Planks in Large Seattle Elevator



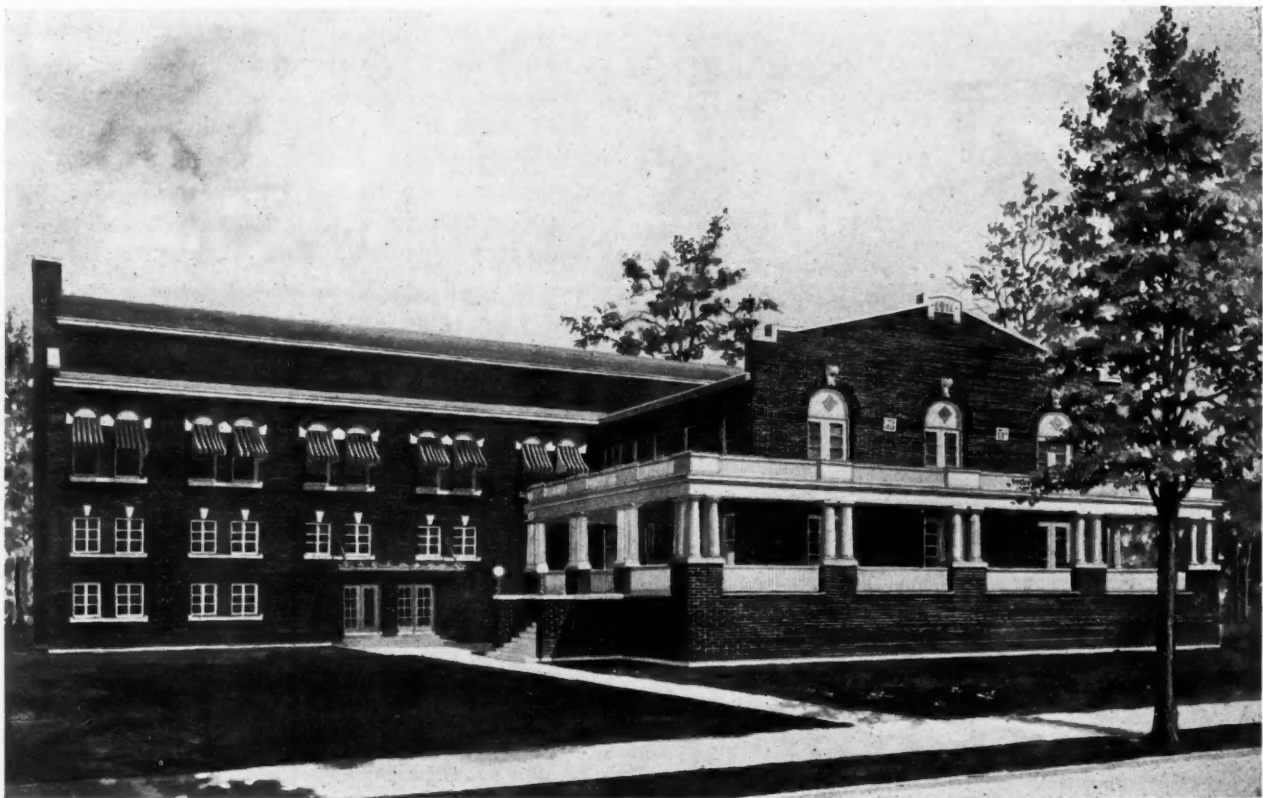
Berwyn Club and Masonic Hall

ARCHITECT'S PERSPECTIVE DRAWING AND FLOOR PLANS OF FINE NEW BUILDING TO BE PUT UP BY THE AUDITORIUM ASSOCIATION AT BERWYN, ILL.

THE new \$35,000 building to be occupied jointly by the Berwyn Club, the Berwyn Blue Lodge and the public, is illustrated herewith. It is to occupy the site of Oak Park Avenue, between 30th and 34th Streets. The corner stone of this building is to be laid July 4th.

Berwyn has felt the need of a building of this kind for some time. Both the Berwyn Club and the Ma-

Mr. Geo. H. Anderson as Treasurer. This association, with the help of G. W. Ashby, Architect, of Chicago, have worked out the problem of making provision for this three-fold need within the walls of a single building. A study of the floor plans will show how this is done. The Club quarters are in the forward wing, occupying both first and second floors. The Public Auditorium, having a large seating ca-



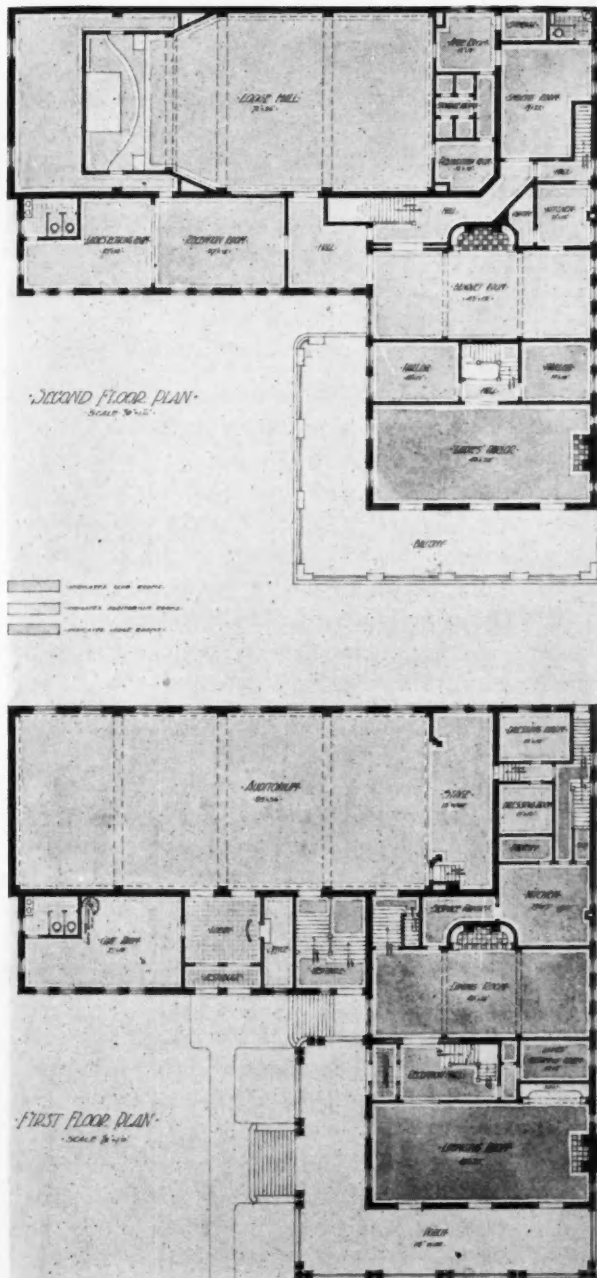
New \$35,000 Building for Club House, Masonic Hall and Auditorium, to be Built by the Auditorium Association, Berwyn, Ill., G. W. Ashby, Chicago, Architect.

sonic Fraternity were in need of better and more adequate quarters; and a public auditorium was badly needed. Realizing the possibilities of this situation, some of the leading men of Berwyn got together and organized what is known as The Auditorium Association, with Mr. C. W. Ostrander as President and

capacity, occupies the first floor of the rear part. The second floor of this part is given over to the Masonic Hall, and the rooms connecting with it. Each division has its own entrance, so as not to interfere with any of the others.

Mr. H. A. Sellen, President of the Berwyn Club,

expresses himself as being very well pleased with the new accommodations that the club is to have in this building. Mr. Wm. H. Gaylord, Worshipful Master and Mr. W. F. Struckmann, secretary of the Berwyn



Floor Plans of Club Rooms, Lodge and Public Auditorium

Blue Lodge, are equally well pleased with the Masonic Hall and rooms. It is certain also that the Auditorium, which is to be used for lectures, musicals, etc., will meet with general public approval, since it will meet a long felt want.

To Buy Ice With

Rich man (to beggar)—Not a cent! Remember that you will have your reward in heaven.

Beggar—Will I? Then lend me five dollars now and I will pay it back then. I'll drop it down the chute.—*Fliegende Blaetter*.

COURT DECISIONS AFFECTING BUILDERS

When Delay is Caused by Owner

A factory building contract called for completion by a certain date. On that date the building was completed except as to a loading platform. The construction of this platform had been postponed by request of the owners and afterwards erected promptly on request and as directed by their superintendent acting under their instructions. It was held that the building was "completed" at the required date within the meaning of the contract. *Iron Clad Mfg. Co. v. Thomas B. Stanfield & Son, Maryland Court of Appeals, 76 Atl. 854.*

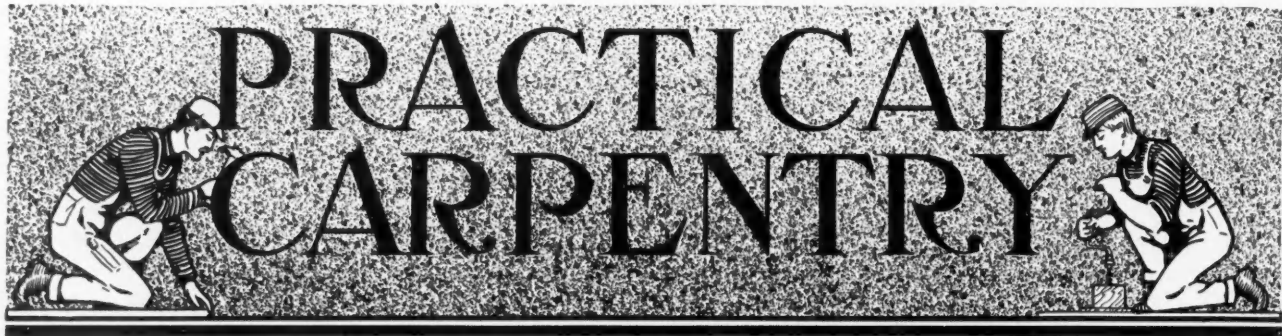
Agreement to Pay for Extra Work

An owner let a contract for the carpenter work and one for the mason work to different contractors. During the progress of the work the contractor for the carpenter work found that the mason work was being done in such a defective manner that the cost of the carpenter work would be far greater than had been contemplated. He therefore refused to finish the work unless promised extra compensation. The owner signed an agreement to pay him \$350 extra. On completion of the work he paid \$25 and refused to pay the remainder, alleging that there was no consideration for the agreement to pay extra compensation. It was held, however, that the plaintiff was not bound to do the extra work rendered necessary by the defective mason work, and that this extra work was a benefit to the owner and a detriment to the plaintiff and hence a good consideration for the promise to pay thereof. *Marten v. Brown, New Jersey Supreme Court, 76 Atl. 1009.*

Boring into End Wood

Here is something about boring holes in end wood. This is a stunt that causes some trouble, especially if the fiber of the wood is coarse, as in North Carolina pine, chestnut, etc. The trouble starts with the worm of the bit sliding off each side of the hard fiber, or annular ring. This can often be remedied by hitting the end of the wood a sharp blow with a hammer, compressing or bruising it, then the worm will start, as though the wood was as dense as box wood. I find the best way to do end boring is to have a bit with a worn or point without threads put in a lathe or horizontal boring machine. Run it quite fast, but not too fast, as it will burn and smoke and take the temper out of the lips of the bit.

WILLIAM C. JASBURY.



Details of Stair Building Work

SEQUEL TO STAIR BUILDING ARTICLE OF LAST MONTH—HOW THE DOUBLE PLATFORM STAIR WITH WINDERS IS CONSTRUCTED—HAND RAILING

By Morris Williams

CONTINUING the study of the stair-building problem begun last month, the mechanic will now proceed to lay out the constructive details of the stairway, which includes many details that were not included in the construction of the example presented in the February issue.

The first operation will be the laying out of the stringers. The front stringers of the three flights containing straight steps only, will be laid out in the ordinary way, either by using the steel square as a tool or the pitch-board as a template, to mark upon the stringer board the groove lines for the number of

steps each stringer will have to contain. The builder will consult his plan drawing to ascertain the exact number required for each stringer.

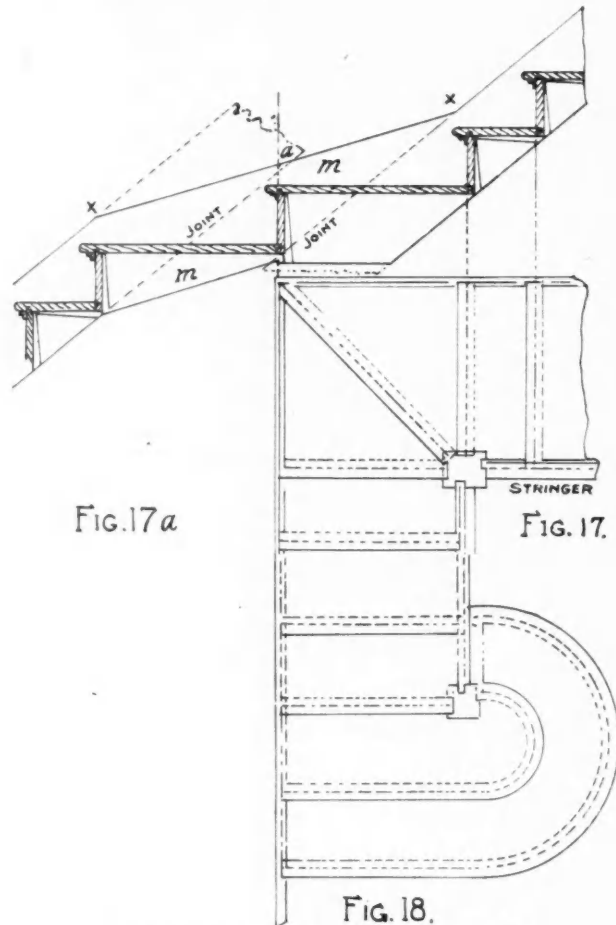
The method of laying out the wall stringers is shown in Figs. 17 and 17a. Fig. 17 represents the plan of either intersection of the flight as shown in Fig. 14 (May number) where the winders are indicated. The heavy lines of the flyer steps and of the winders indicate the nosing lines; and the dotted lines running parallel represent the risers.

From this diagram, measurements may be taken to cut out the winders and also to mark the grooves upon the wall stringer board.

Fig. 17a represents a portion of the two intersecting wall stringers laid out. It will be observed that they intersect at the corner, *a*. The upper edge of the two stringers at this point is made to measure the same above the nosing of the winder as the upper edge of the stringer does above the nosing of the common steps of the flights.

In laying out such stringers as these, containing winders, the stair-builder finds that he will have to joint a piece to the top edge of one and to the bottom of the other, so as to make them wide enough to contain the winders. The added pieces are shown in Fig. 17a at *m* and *m* respectively. The intersecting corners shown at *x* and *x* are sometimes left as shown, but in the best class of stairways, they are always ramped; that is—the abruptness of the angle is worked into an easement. Two different methods to work such examples were given in the February issue.

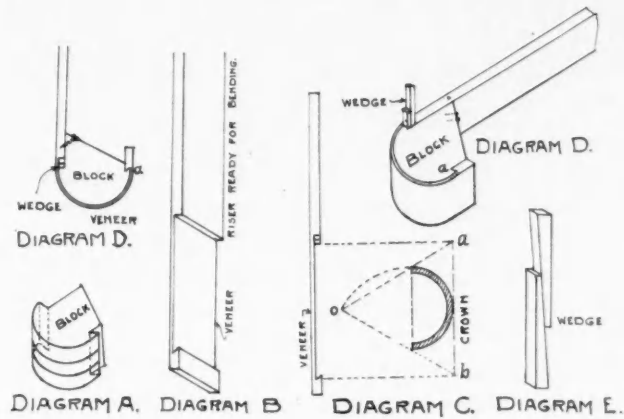
In regard to the front stringer, the plan view, Fig. 17, shows it housed into the newel about 1 inch deep. It is only the inside layer of the stringer that is housed. The outside layer is usually planted upon the inside when the stairway is being built. It may be a panel stringer, or it may be made up of parallel mouldings; but of whatever design, the usual method of construction is to nail it upon the face of this inside layer; the one that has been grooved to receive the treads and risers. It is the inside only that really needs being housed to the newel; in as much as it is the one



Plan of Steps and Elevation of Wall Stringer

which supports the steps. The outside layer is merely used for decoration, needing no housing but rather a good fit between the newels when in position.

The reader will observe that I am dealing here with a "closed" front stringer—one grooved for treads and risers, not "cut and mitered," as was the subject of consideration in the February issue. The "closed" stringers are always made in two layers, while the



FIGS. 19 & 20.

"open" or "cut and mitered" are always made of one board, occasionally decorated with face brackets, which are neatly mitered to the projecting end of the risers beyond the face of stringers. As I will have occasion to again refer to the stringers when dealing with them in connection with the balusters, I will now proceed to explain how stair-builders layout and construct the round steps which are shown in Fig. 18, placed at the starting of the stairway.

Here is shown a plan drawing of the two round steps, both semi-circular but of different diameters. This figure must be drawn full size, because it will be the base of operation for risers, treads and the blocks

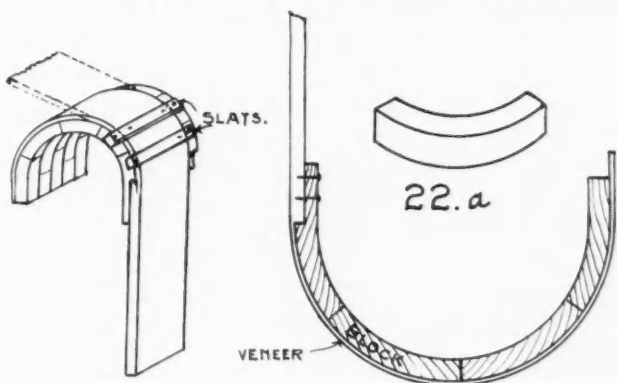


FIG. 21

FIG. 22.

which will be needed to bend the veneered risers. The curve of the two steps are drawn from the same center, as shown, it is fixed outside the face of newel and stringer, at a distance of from 1 to 2 inches, so that the steps upon entering the grooves prepared for them, in the newel and stringer, will enter with that much tangent to the curves. The dotted parallel lines

in this figure, indicate the thickness of the risers and the heavy lines those of the nosing of the treads.

The only difficulty attending the construction of these steps pertains to the bending of the risers. The easiest method of operation is the one known as "kerfing," which calls for but the labor of making a number of saw cuts at equal distances upon the inside of the riser, to a certain depth, leaving a thin veneer on the outside. The saw cuts to produce a satisfactory job will, of course, have to be properly spaced.

An operation very much superior to the kerfing method is shown in Fig. 20, which represents an assumed full size plan drawing of the second riser shown in Fig. 18 entering the newel post. The riser is shown veneered in Fig. 20 and tightly bent around a solid block. The block is shown in diagram A made up of 2-inch layers glued together to the required thickness.

In diagram B is shown the riser ready for bending, having been prepared by removing the waste wood from its inside face, leaving but a thin veneer on the front face.

A method to find the exact length of the veneer is

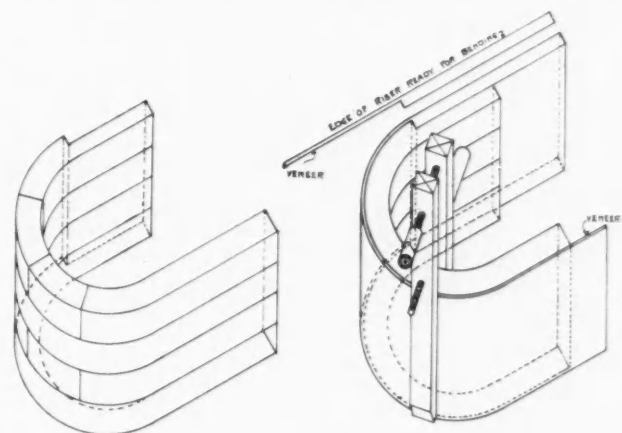


FIG. 23.

FIG. 24.

shown in diagram C. The shaded semi-circle indicates the curve to be veneered. By drawing lines through the corner of the curve, as shown, to meet in O and continue the lines on each side to the crown line, the distance a-b shown on the crown line will be the length required.

The riser is shown finished, having been bent around the block in Diagram D. The method of bending is to fasten the riser first to the beveled notch, shown at a, then bend the veneer slowly and carefully around the block up to where the wedges are shown. The wedges when driven tightly in the manner shown in Diagram E, will draw the veneer tight against the block; when it is fastened by being screwed to the solid part of the riser, as shown. Before the operation here described is commenced, the veneer and block receive a coat of glue, which when set, holds the two inseparably together. It will be observed that to prepare the veneer in the manner shown in Diagram B, entails considerable labor, owing to its being between

two solid portions of the riser. But it may be said that if the job is carefully done the labor it entails will be fully compensated in having produced a bent riser that in point of merit cannot be surpassed.

I present another method in Fig. 21, to bend the veneer for the same riser, but in this operation, the veneer is prepared by being ripped its whole length thus saving much time and labor in its preparation. To bend this veneer, two rough pieces are temporarily nailed one on each side of the block about $\frac{1}{8}$ of an inch below the curved side, for the purpose of receiving nails driven through 1-inch slats that are used to press the veneer to the block. The block, veneer and slats, as shown in Fig. 21, plainly illustrate the process of bending by this method.

A third method is shown in Fig. 22, applied to the curve of the first riser, taken full size from the plan of the curved steps presented in Fig. 18. Fig. 22 represents the plan of the veneer riser and also the block that is to be used to hold fast the bent veneer. The block is built up of sections similar to the sketch shown in Fig. 22a, made out of 2-inch stuff. They

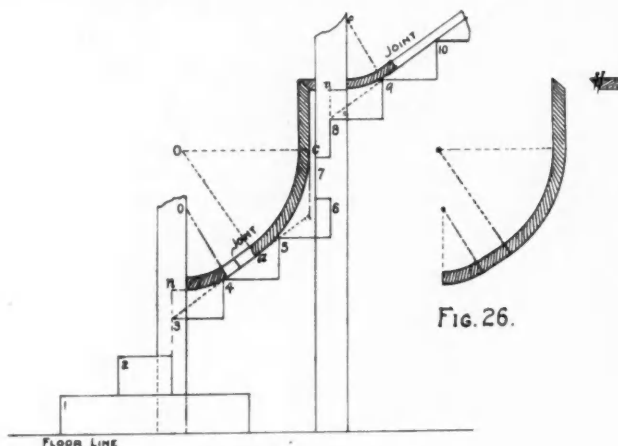


Fig. 25.

are glued and nailed together to the form of the required block, in the manner shown in Fig. 23.

Fig. 24 illustrates the operation of bending the veneer around the block by the use of hand screws.

Fig. 25 is an elevation drawing of the two round steps, the first flight and few flyers of the second flight.

In practice this figure must be drawn full size, so that from it the length of the newels, the housing for treads and risers, in the newels, and also the templates for the easements and goose-necks of the rail may be obtained.

The reader will recall that these items were under consideration in the February issue, but there, the conditions were different than they are here. The first newel is here placed on the third step, while there, it was on the first step; and again—the second newel here contains one more step than was contained in any of the newels in the February issue. The consequence of the difference in conditions will inevitably

cause a difference in the lengths of the respective newels and the size and form of the goose-necks.

It is shown in Fig. 25 how the length of the first newel may be found when placed upon the third step and the length of the second newel when it contains three steps; such being the conditions shown in plan, Fig. 14 (May number) of the stairway at present under consideration.

Referring to the first newel, as shown in Fig. 25, it will be observed that by measuring from the floor to the top of the third riser, we obtain $22\frac{1}{8}$ inches made up of the sum of three risers, $7\frac{3}{8}$ inches each; added to this sum is shown 5 inches measured therefrom to the bottom of the rail, as shown at *n*, which will make the total height from the floor to the under side of the rail equal to $27\frac{1}{8}$ inches.

When the rail is raised to its height above the steps, it will be 28 inches (2 feet 4 inches) higher than it is shown to be in Fig. 25. This therefore is to be added to the $27\frac{1}{8}$ inches already found, which will make the length of the newel now measured from the floor line to the bottom of the rail, when in position, equal to $55\frac{1}{8}$ inches or 4 feet $7\frac{1}{8}$ inches. By adding again the thickness of the rail and whatever desired for the cap above the rail, we will obtain the exact length of the first newel.

The length of second newel, as shown in Fig. 25, will be the sum of five risers longer, which is the difference in height from the floor line between the risers three and eight.

I have before explained how to lay out the easements and goose-necks for rails, but as the example here presented differs, and in some respects is somewhat exceptional, I will now describe how a stair-builder would go about a job like this. He will first draw the easements. The one upon the second flight will determine the height of the goose-neck upon the second newel, which will have to be in line with the easement of the second flight. Next the goose-neck is laid out as shown, the curve being described from the center *O*.

It will be observed that there is but a very short piece of straight rail between the goose-neck and the bottom easement; therefore one joint will suffice to connect the two, as shown. Sometimes it is decided to make away even with one joint and have the rail in one piece between the newels. In such case a template is prepared, as the one shown in Fig. 26. From this template, the material for the rail is cut out in one piece, which may be molded by machinery at a trifling cost. The knee is fastened to the neck as shown, by being glued and nailed from the top.



A Bad Egg

"He always was a bad egg, but nobody seemed to notice it while he was rich."

"Yes, he was all right until he was broke."

PLANING MILL WORK



Measuring Interiors for Mill Work

HOW ONE MILL MAN HANDLES THIS WORK TO MAKE SURE THAT STAIRS, BUILT-IN CASES AND CUPBOARDS AND ALL INTERIOR FINISH IS MADE JUST RIGHT

THERE are undoubtedly many systems, for each man who measures up the mill work will have a method which differs in some degree from that of another man; but from my experience of the work, writes John Wavrek, Jr., in *The Woodworker*, I have come to the conclusion that the one which is described herein is the most satisfactory—to me at least.

In the first place, the man who takes measurements at buildings, it is needless to say, should be thoroughly familiar with every branch and detail of the planing mill; should be a practical mechanic who has had much experience, besides having ideas of his own. Often he will be called upon to make suggestions to people who are building or making alterations, and it would be greatly to his discredit if he were not able to supply them.

He often comes across people who intend to have certain work done in their houses, yet do not exactly know what they want; or, rather, do not know the details of the job. In such cases the mill man should be able to give ideas and suggestions. If he is able to do so, people will have confidence in him, while his inability to do this will be detrimental to the interest of the concern which employs him.

Careful Work for a Good Man

In some mills there is a very lax system in regard to taking data at houses for the interior finish, calling any man to do the work who may not be busy at the time there is a call to take such measurements. This is positively wrong practice, for in many instances the party who takes the measurements does not write out the cutting bills for the mill, but it is done by the foreman or some man in the office. If the data should not be very explicit, it will cause a lot of running back and forth in trying to find out the correct data, thereby squandering much valuable time, besides delaying the work; and all because the management employs the wrong method in this respect.

There are some instances which justify the bench man taking his own measurements, as, for instance, the stair man. There are some stairways which are much complicated, requiring very exact data, for a

mistake in this kind of work is very costly to the mill. In such an instance it would certainly be the wiser procedure to have the stair-builder take the data himself. Sometimes there is a store front to be made which has some complicated features, and this, too, should be measured up by the man who is going to make it. However, these are exceptional cases which do not occur often. As a rule, there should be one man employed to take all the measurements.

There is another advantage in this, because of the fact that the one man gets to know the peculiarities and desires of the different contractors with whom he comes in contact, and will therefore know how to approach them and arrange to have their work gotten out according to their requirements. Another advantage to be gained by this system is that one man will be acquainted with progress of the various jobs which are in the course of construction, and can see to it that interior work for them is gotten out at the proper time, so that it can be sent on the job when needed.

How the Measuring is Done

For an example, we will assume that we are to measure up the interior of an ordinary house three stories in height. To be thoroughly familiar with the job which we are to work on it is essential that we read up the specifications thoroughly, also study the plan well. Of course, in most cases there are some changes made either in the plans or the specifications, which should be noted in the estimate or contract. This latter sheet should also be taken along to the job and note taken to see that there are no extras put into the job without being noted on the slips containing the measurements.

A very handy book to use to take data is one which has loose leaves that can be removed upon having completed the measurements, and placed on file. The sheets are in size about 5 by 7 inches, and section ruled. This ruling I find very convenient in making sketches, and especially in taking data for staircases. We will use a 4-foot rule as the most convenient for our purpose, besides a handy steel tape for the stair work.

Top Floor

First, then I go to the uppermost floor, which is the third in this instance, and start by taking the measurements of all the windows first. The handiest and quickest method is to take the sash sizes. Having this, and knowing the construction of the frames, we have a very good basis to work on. There would be one twin box frame, 2 feet 5 inches by 4 feet 6 inches, 1 $\frac{3}{4}$ -inch jamb, 1-inch center; one box frame, 2 feet 9 inches by 5 feet 2 inches, 1 $\frac{1}{4}$ -inch jamb; one skeleton window frame, 2 feet 7 inches by 5 feet 2 inches, 3 $\frac{3}{4}$ -inch seat.

After having taken all the windows, proceed by taking the door sizes next. There may be an opening of 2 feet 10 inches by 6 feet 10 inches between the rough studs. This would mean a door of 2 feet 8 inches by 6 feet 8 inches. The stud, which may be 3 inches, would need a jamb of 4 $\frac{3}{4}$ inches. Whatever the rough opening is, make the door 2 inches less in size and the jamb 1 $\frac{3}{4}$ inches wider than the rough stud. However, in cases where plaster boards are used, this would be too wide, but in such case we would make the right allowance for the jamb by finding out the thickness of the wall finish. If an opening for a door should be irregular in width, as, for instance, 2 feet 9 inches, then it is a good plan to mark the studs with the correct size of the door which we intend to furnish, so that there will be no mistake made by the carpenter when placing the jambs.

When taking the size of closet doors be careful to make note of the fact, for in most cases closet doors are only 1 $\frac{1}{8}$ inch thick, while the others will probably be 1 $\frac{3}{8}$ inch. Also, very often the trim in a closet is different on the inside in cases where there is a cabinet head finish on the outside. Also measure the openings for switch-box doors, which are usually made the inside size of the box. After having taken the doors, proceed to measure up the baseboards or base, taking the closets separate, because in most cases they are different.

Next the base blocks, if any are needed, which is not always the case. Then corner beads, stating how long, for some corners will not allow of a regular 4-foot stock head being used. Sometimes it happens that a corner is not at right angles, which must therefore be stated and the correct angle noted.

In most cases there is a plaster railing inclosing the staircase on the top floor. If this wall is 4 inches thick, then furnish a cap of 5 $\frac{3}{4}$ -inch wide, nosed on both edges, calculating a piece of moulding the same kind as the base cap on each side of and under this nosed cap. These mouldings should miter into the base cap. Now measure the closets for shelving and pin rail.

Second Floor

Having taken all the data on this floor, take the steps and risers, nosing and strings for the stairs, which are usually the box kind; also wall rail. This

would bring us to the second floor, with which we proceed in the same manner. It very often happens that this floor has different kinds of wood in the different rooms, the front room being oak or chestnut, the bedrooms cypress or pine, and the bathroom and toilet poplar. It is best to mark on the plans the various kinds of finish to be used in the different rooms, so that there is not so much chance to make a mistake; for a door which is to be made up of two different kinds of wood is expensive, as it has to be veneered and cannot very well be kept in stock.

On this floor there may also be a bay window, in which case take note of the width of space between the frames at the angles, for in many cases the regular trim is not wide enough, and a special trim must be made for these angles. If a seat is to be put in this bay window, correct measurement must be taken of all angles, length and depth, so that the seat will fit when sent to the job.

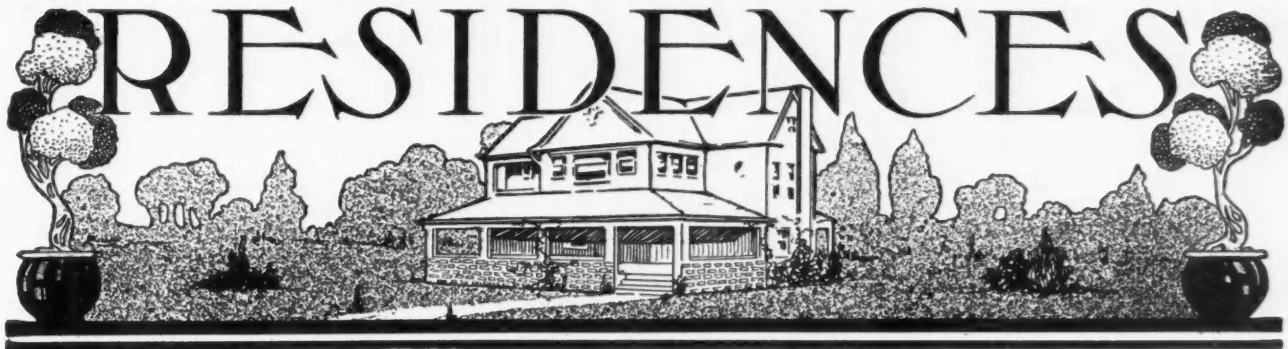
First Floor

The first floor is usually the hardest to measure up, for very often there is a colonnade which members into the staircase, and must therefore be measured very exact. Then there may be a paneled wainscot in the dining room, in which case the utmost care must be taken to get the figures just right, or there will be "something doing" when the paneling does not fit. A circular bay window is also one of the nightmares which often occurs on this floor. If this should have a paneled base or box seat, then your troubles are more than a few. However, be sure what you are about and go ahead.

The staircase, which is by no means the easiest part of the job, I usually reserve for the last. This necessitates the making of sketches in order to take down right so that the stair man may readily understand what is meant. Here it is very appropriate to impress the fact that whoever the man that takes the data, he should be able to make a tolerably good sketch, both instrumental and freehand, for often it is required of him to sketch the outlines of some ornamental work which has many curved lines and mouldings and which must be duplicated exactly.

It is therefore evident that you cannot pick out a man at random from the mill employes and send him out to get data. Also, there is very great responsibility connected with the work, which is not always appreciated by the mill owner. If you have the right man it is to your interest to pay him well; his path is not strewn with roses, for if anything goes wrong the man who takes the measurements is blamed first.

The data should be explicit in every respect, so that the man who writes out the cutting list for the mill may understand it thoroughly, without asking a lot of questions. It often happens that the measuring man will be out for several days in succession, and if the data is not explicit it will cause great delay in writing out the cutting list.



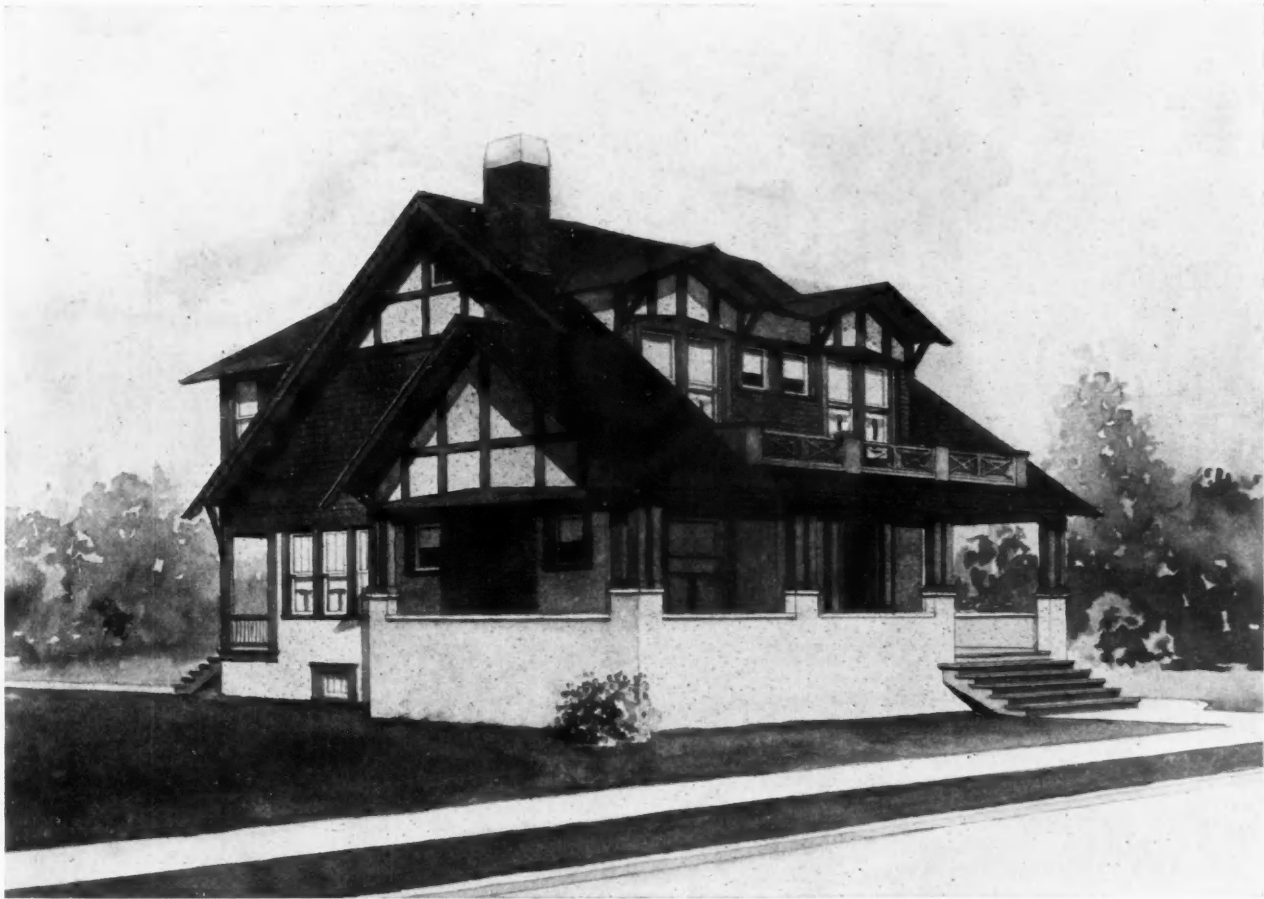
Plans for Story and a Half House of Seven Rooms

COMPLETE SET OF ARCHITECT'S PLANS WITH ALL DIMENSIONS AND DETAILS FROM WHICH THIS ATTRACTIVE MODERN RESIDENCE CAN BE BUILT

THE accompanying perspective drawing shows a design that has been prepared to serve as a model of what a modern, convenient, low-cost house of medium size should be. The outside has been planned with an eye to artistic, attractive, and home-like appearance; and the interior has been arranged to include all the features that have been found

drawn and are here reproduced to scale, and since all the principal dimensions are given, it will be very easy for our readers to make practical use of these plans. Although these may not be used in their entirety, they will be found to contain many interesting and valuable features that can well be made use of in other work.

There are seven rooms in this house. On the first

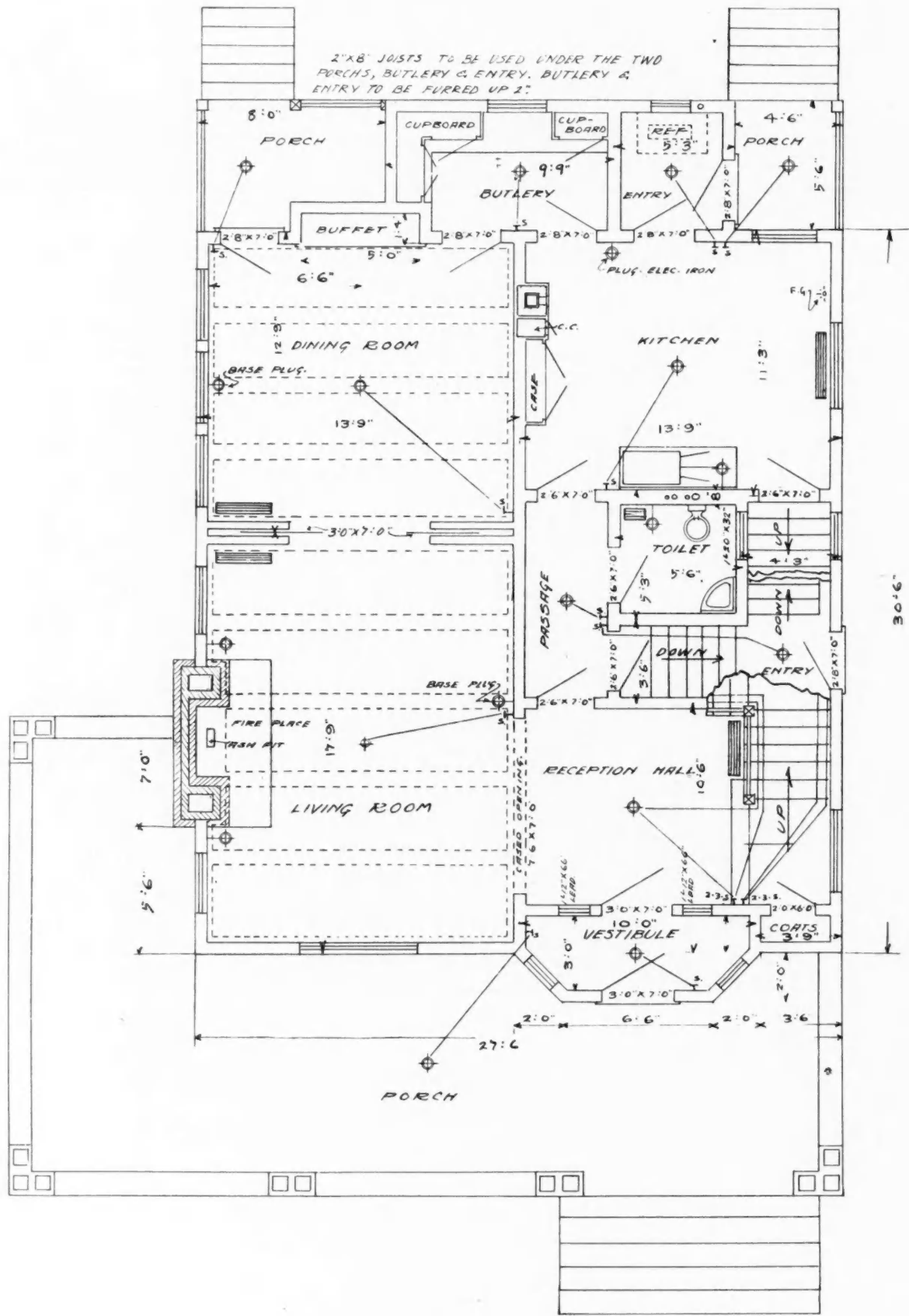


Model Seven Room Dwelling, Embodying all Modern Features
COMPLETE WORKING PLANS FOR THIS HOUSE ARE PRESENTED ON THE 6 PAGES FOLLOWING

desirable and which the present day home builder expects and demands for his new home.

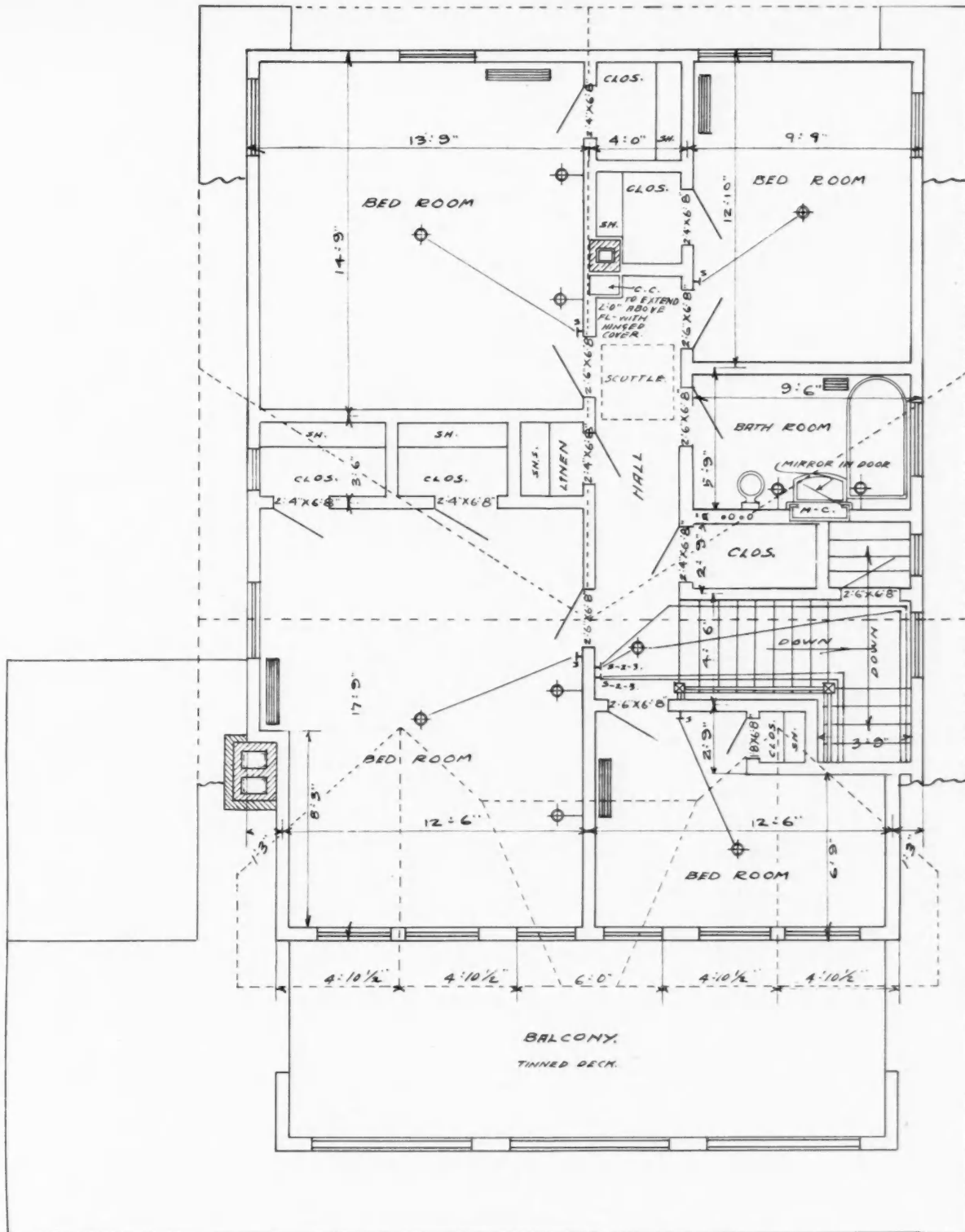
The complete set of architect's drawings, from which this house can be built, are reproduced on the six pages following this. Since these plans were

drawn and are here reproduced to scale, and since all the principal dimensions are given, it will be very easy for our readers to make practical use of these plans. Although these may not be used in their entirety, they will be found to contain many interesting and valuable features that can well be made use of in other work. There are seven rooms in this house. On the first floor living room, dining-room and kitchen, and on the second floor four bedrooms. In addition to these, however, there are many small supplementary rooms which are so important in making a house convenient and livable. There is a vestibule at the front door



FIRST FLOOR PLAN

House shown on page 61.

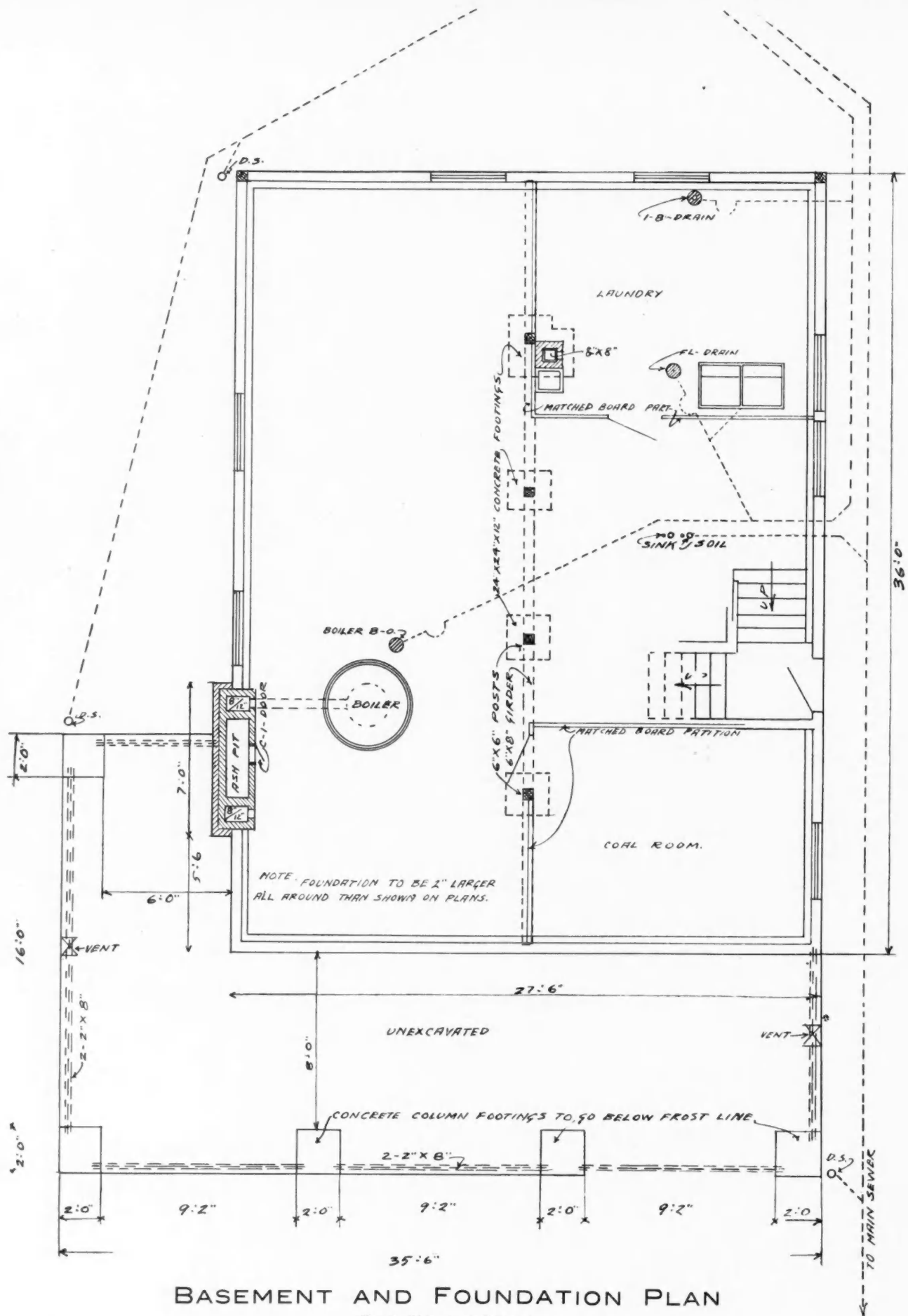


SECOND FLOOR AND ROOF PLAN

House Shown on Page 61

of ample size, from which one enters a large, square reception stair hall; a passage leads back to the kitchen and opening from this passage is the small, square toilet room. The butler's pantry is between the kitchen and dining-room, and there is also a back door entry which accommodates the refrigerator. A small closet on the stair landing gives a convenient place for coats and hats. All of the bedrooms have

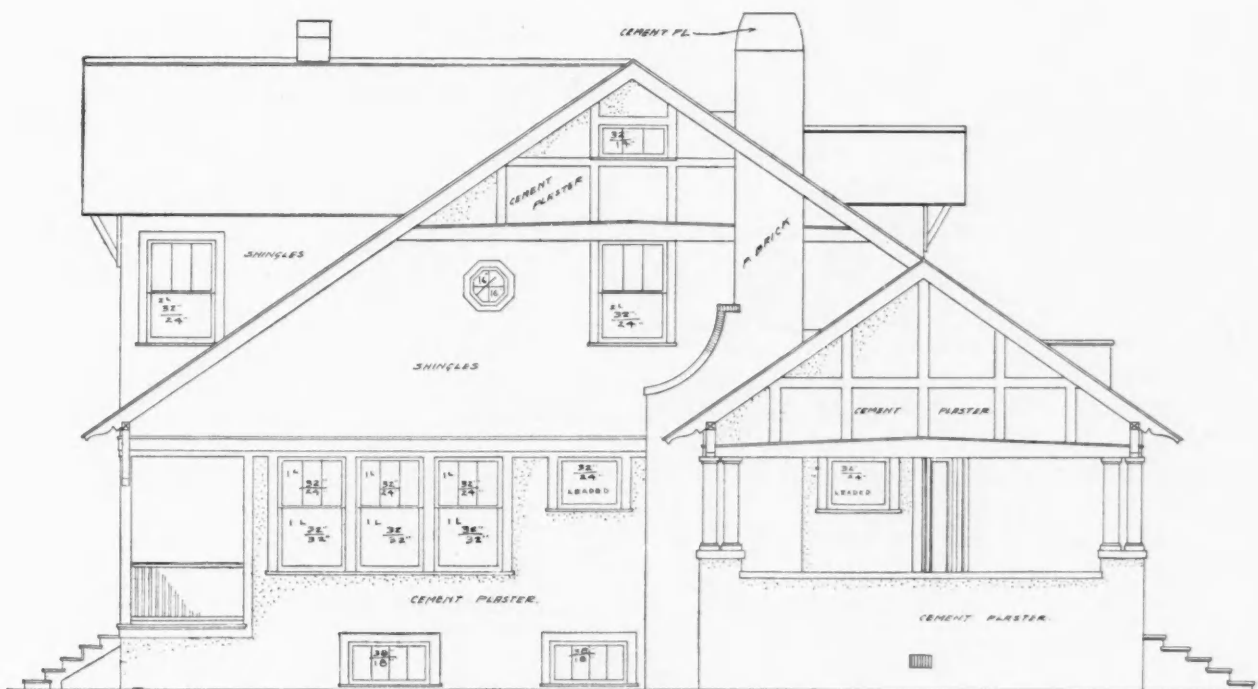
at least one clothes closet, the large front bedroom being provided with two. There are also two large closets off the upstairs hall. The bathroom on this floor is conveniently located. Attention is called to the fact that all the plumbing fixtures are grouped together and line up on all three floors, thus cutting down the expense for piping. The plans call for hot-water heating and electric lights.



BASEMENT AND FOUNDATION PLAN
 House Shown on Page 61



RIGHT SIDE ELEVATION



LEFT SIDE ELEVATION

House shown on page 61.

Causes of Fires

The campaign against the enormous preventable fire waste of the country has naturally led to a study of the principal hazards and those which can most easily be avoided. Hazards are divided broadly into two classes, physical and moral, the physical

hazards being inherent in the risk itself and in its surroundings, while the moral hazards arise from personal factors. Physical hazards may be subdivided into external and internal, the external hazards including lightning conflagration, sparks, bonfires, and exposure losses. To this cause are due 28 per cent of

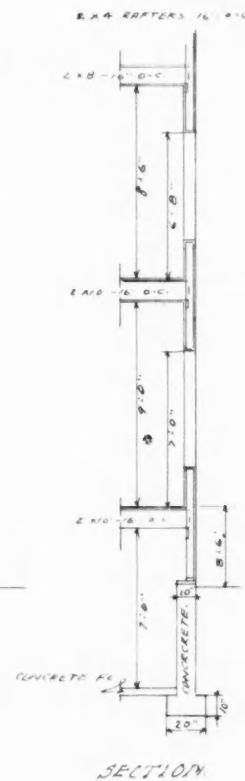


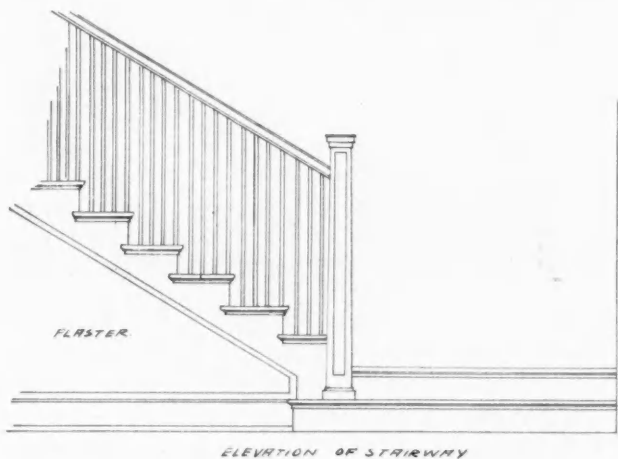
REAR ELEVATION



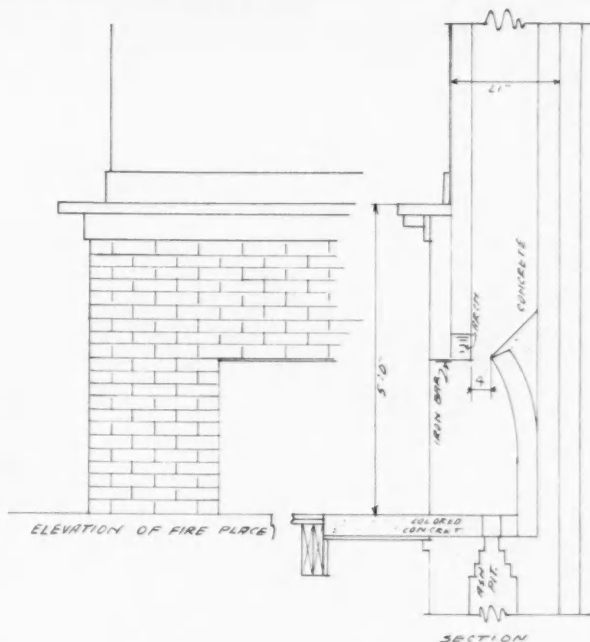
FRONT ELEVATION

House shown on page 61



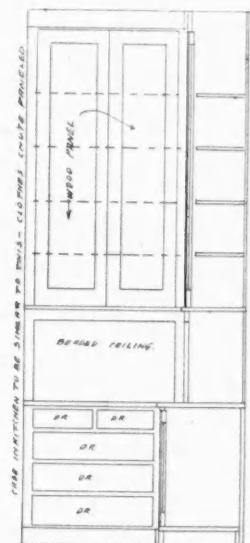


ELEVATION OF STAIRWAY

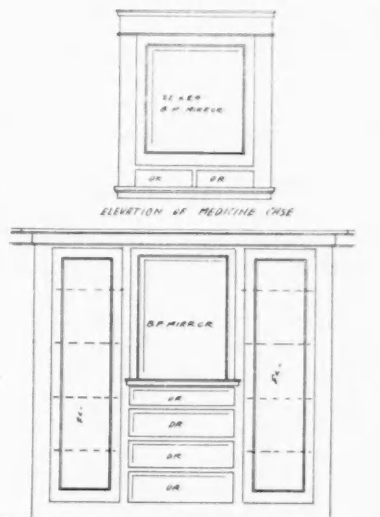


ELEVATION OF FIRE PLACE

SECTION

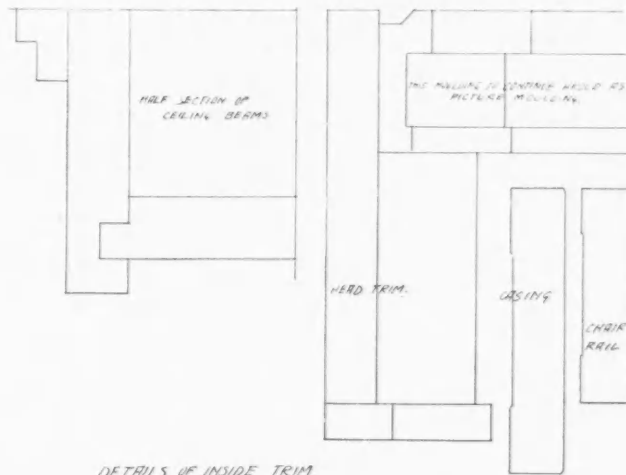


ELE. & SEC. OF CUPBOARD IN BUTLERY

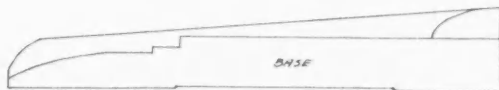


ELEVATION OF MEDICINE CASE

ELEVATION OF SIDE BOARD



DETAILS OF INSIDE TRIM



BASE

N.B. 1227

DETAILS OF INTERIOR FINISH

House shown on page 61.

all losses, both as to number and value. The internal hazards are much more numerous, and may be subdivided into five classes. These are: spontaneous combustion, the hazards due to the operation of machinery, the hazards incident to processes, those due to the various systems and kinds of apparatus used for heating and lighting, while the fifth division includes all those not already classified. The various processes of heating, which usually include the actual use of fire, are responsible for more losses than any other

cause, and under this class it should be noted that defective flues are responsible for twice as many fires as any other physical or known moral hazard, and for a greater property loss than any other cause. Statistics show that 13 per cent of the total number of fires can be attributed to defective flues, with a property loss of over \$12,000,000 annually. Electricity is responsible for the larger proportion of the losses due to illumination, although not for the largest number of such losses.



To Frame a Roof With Different Pitches

To the Editor: Riverhead, N. Y.

I wish to take advantage of some of your expert advice. I have a roof to frame, in which two gables intersect, some having different pitches but having the same height to the ridge. The rise of one is $4\frac{1}{2}$ inches to one foot and the other is $7\frac{3}{8}$ inches to the foot.

What I wish to do, is to get all of the cuts of the valley, the length of the valley and also all of the side cuts. Please show me how this may be done with the steel square, giving full explanations with each step in the working out of the proposition.

HENRY C. JEFFRIES.

Answer: Here it is. The lines from 12 on the tongue to $4\frac{1}{2}$ and $7\frac{3}{8}$ represent the pitch of the common rafter for a one-foot run. These figures give the seat and plumb cuts. Very good; everybody understands this so far. The next step is to find the corresponding run of the steeper pitch to coincide with that of the lesser pitch. Now, since $4\frac{1}{2}$ is the rise of the lower pitch, the corresponding run of the steeper pitch must necessarily be less and is found by squaring over from $4\frac{1}{2}$ to the steeper pitch and then plumb down to the tongue. It is found to intersect the tongue at 5; then 5 from 12 leaves 7, which represents the correspond-

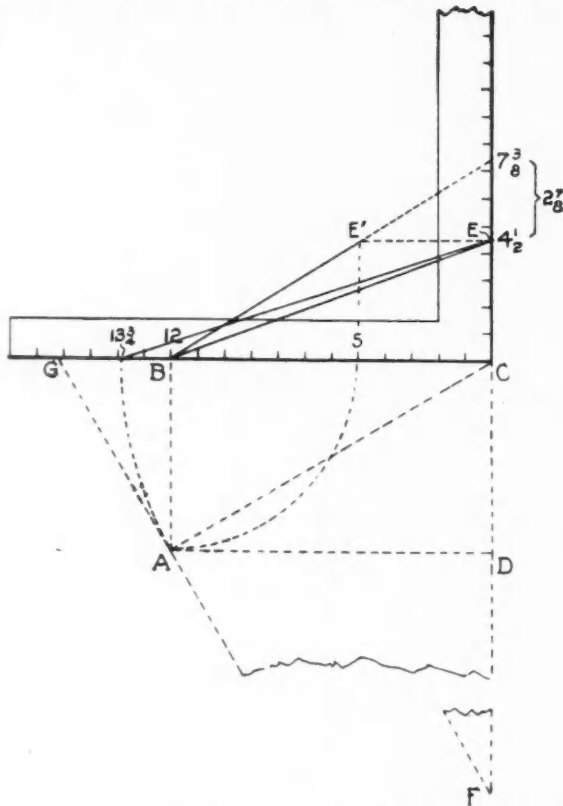


Diagram Explaining use of the Steel Square in Framing Roof of Two Pitches

ing run of the short rafter to that of the long rafter.

The next step is to develop the plan. Set the needle point of the compass at 12 on the tongue and the pencil at 5 and swing to right angles with the tongue and draw the line AC; the plan is completed. AB represents the short run; BC the long run, and AC the run of the valley; ACD represents the plan for the other side; but it is not needed since it is the same as ABC.

The next step is to find the seat and plumb cuts of the valley. Set the compass at C, open out to A and swing to the tongue; it is found to intersect at $13\frac{3}{4}$. Then $13\frac{3}{4}$ and $4\frac{1}{2}$ will give the cuts. To find the side cuts of the hip, take AF and the length of the hip, as from $13\frac{3}{4}$ to $4\frac{1}{2}$ and the cut will be on the side of the square on which the length is taken for the CD side. For the opposite side substitute AG and proceed as before. For the side cut of the jacks, take AB (the short run) and the length of the common rafter for the long run, as 12 to $4\frac{1}{2}$; this will give the cut for the long run side; the side of the square on which the length is taken giving the cut. Proceed in like manner for the other side but remember the length of the short rafter is only as from B to E' or as from 7 to $4\frac{1}{2}$.

Another vital point that must be remembered is this. If there is a cornice on the building formed by the projection of the rafters, it should be of the same width for both parts, and the runs should be reckoned from the toe of the rafters where they intersect at the cornice line instead of the corner, or intersection of the plates. Consequently, the valley will not pass over the corner, as in even pitches, but will veer to the side on which the lesser pitch is used. This will also necessitate the plate on the steeper pitch side being raised higher than that for the lower pitch. The difference is the gain of one pitch over the other in the width of the projection of the cornice. Say the projection is one foot; referring to the diagram, it will be seen that the difference between the two pitches in this case, is $2\frac{7}{8}$ inches, which should be added to the plate of the steeper pitch side. This being done, cut the rafters in the usual way, leaving the tails projecting enough to form the cornice, and they will intersect at the proper point after being cut to a straight line at equal distance out from the studding. A. W. Woods.



Which is the Right Way?

To the Editor: Springtown, Texas.

In order to settle a dispute as to how to hang a screen door, we want to know whether the screen should be on the inside or outside of the door, also whether a transom should be set with the putty on the inside or on the outside?

J. D. ROBERTSON.

Answer: We believe the prevailing custom in that particular section of the country ought to be the judge in questions of this kind. "When you are in Rome, do as Romans do." See? Really what difference does it make? As to our individual taste, we would say put 'em both out—that is the screen and the putty. Perhaps if we had lived in a section

of the country where the prevailing custom were otherwise, we might be just as strongly impressed that the reverse is the correct way; so we do not feel that it is within our province to hand down an iron clad decision to forever settle these questions; we pass it up. EDITOR.



Side Cut of Jack for Uneven Pitches

To the Editor:

Madison, Wis.

I would be pleased to have you explain what you think to be the simplest way to get the side cut for jacks and for the hip and valley rafters when the roof has uneven pitches. I understand using the steel square for even pitches, but this part bothers me.

LOUIS JENSEN.

Answer: There is nothing new in this. In fact, it is the same old trouble that hundreds and thousands of others

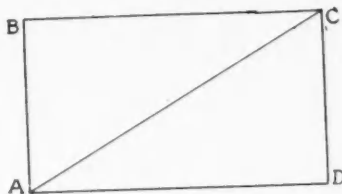


FIG. 1.

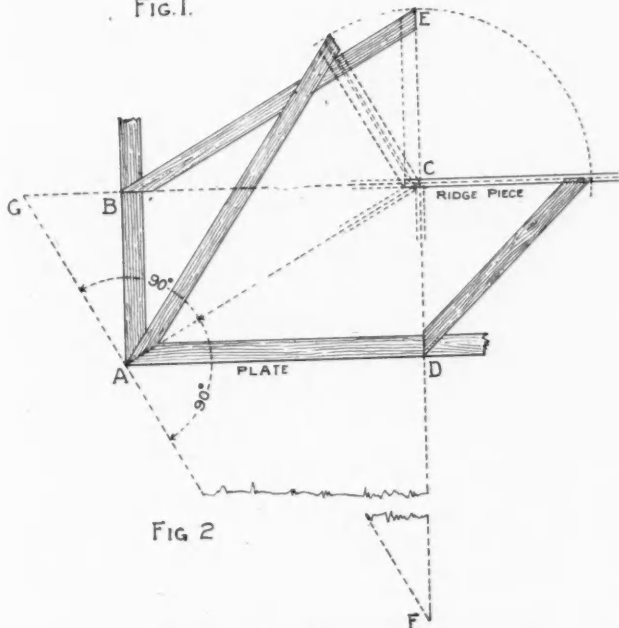


FIG. 2

Framing Uneven Pitches with Steel Square

are troubled with. We have prescribed for it many times in the past six years through this medium, giving simple doses, strong doses and double doses; but the trouble is infectious and for that reason we have been called on to repeat the dose. But whether given mild or strong, it is all the same, although we have a hard time making our patients believe it. In fact, we are looked upon by some, as a sort of a quack. But then we have the consolation of knowing that all specialists are more or less looked upon as quacks; so we are not worrying—take our medicine or leave it alone. It is free; good stuff; and we give it on the square.

Here it is. In Fig. 1, ABCD represents the plan—a plain parallelogram with the long side representing the long run and the short side representing the short run. To this add the diagonal line, which represents the run of the hip or valley and the plan is complete. Nothing more is needed save the rise which may be anything desired, to find all of the lengths, cuts and bevels required in the roof.

We now pass on to Fig. 2. Here we have the parallelogram applied to the corner of the building. Look at it. Like illustration letters are used in like places. CE represents the rise, which as we said before can be anything. As the rafters must all have the same rise over the point C in the plan, then CE must equal the rise of all of the rafters, as shown by the arc that catches the point of all of them. In this they are represented as lying down; and from this the seat and plumb cuts are readily obtainable with the steel or bevel square.

Now, then for the side cut of jack. Take the long run and the length of the rafter for the short run on the square and the length of the hip and the cut will be on the side run on which the length of the rafter is taken; visa versa for the other side.

Now, for the side cut of the hip. Take AF (the tangent) and the length of the hip and the cut will be on the side of the square on which the length is taken. That is all there is to it, provided the toe of the rafter rests on the plate; but if there is a cornice formed by projecting the ends of rafters over the plate, then the reckoning point for the runs should be from the toe of the rafter instead of the outer edge of the plate. The projection should be the same on both sides and in that case, the plate on the side that has the steeper pitch should be raised; and as we have fully covered that point in another part of this number in answering Mr. Jeffries' question, we will not repeat it here.

The dotted lines centering at C represent the plan of the rafters intersecting the ridge piece and the dotted lines from this point, running parallel with the rise of the rafters show the amount of reduction that must be made in their lengths. This is easily obtained by measuring square back from the plumb cut for the full run of the rafters. This, of course, would require a full size diagram of the plan at that point.

A. W. WOODS.



Vise Suggestions Wanted

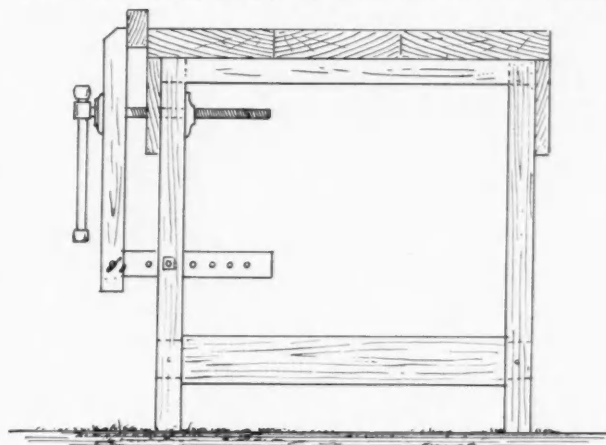
To the Editor:

Craik, Sask.

Please let me know a satisfactory way of putting on an iron bench screw on a bench with a 2-inch plank top and with 1-inch side pieces. The sketch shows one way but when it is placed this way, a small block is required to be held in the vise as the action of the screw pulls too hard on the bench leg through which the screw passes. Would like to know some method to overcome this.

E. VENNING.

Answer: This is a very old style of vise. Mr. Venning



can get at most any hardware store a new vise that will overcome the difficulties that he mentions.

Perhaps some of the "Brothers" can suggest a way to overcome this difficulty with this type of wooden vise.

EDITOR.

Two Questions Asked and Answered

To the Editor:

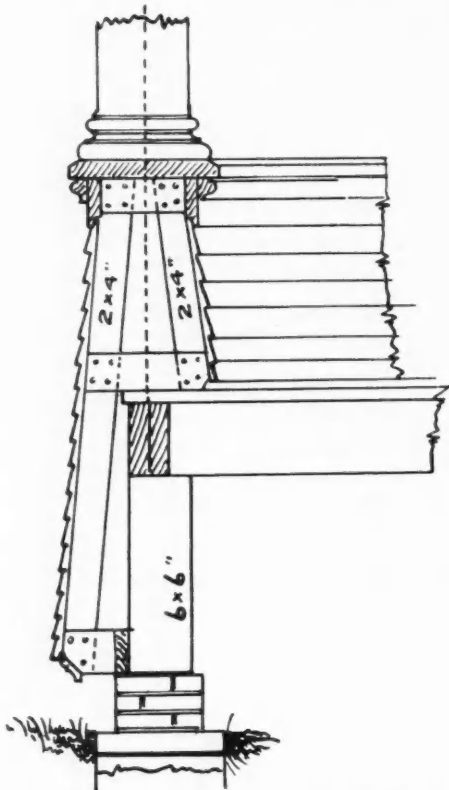
Roggen, Colo.

I would like to ask a question which, if published, I think would be a benefit to a great many others, as well as myself.

How is the best and most satisfactory way of fitting a one sash window that is to swing in over the stool and make it wind and water-proof? Would also like to know how to get water off of a porch floor where the sides are built up with siding or shingled, as the case may be.

C. H. WELSH.

Answer: It is well nigh impossible to make a sash that swings in at the bottom, storm-proof against beating rains and dust storms. There are some patented devices now on the market for hanging single sash that are very good, but



Drip from Porch Floor Runs down Inner Face of Siding

even they are not always satisfactory. A reasonably tight job can be made by hanging the sash at the bottom and putting on a transom lift to operate same as a door transom.

As to the question of drainage for porch floor, we have used the form as shown in the sectional drawing. The inside siding is left up from the floor to allow the water to pass under and is allowed to drip on the inside of the outer siding to the ground. Ordinarily there is not much water that will get in on to a porch that is sided up, especially so with the prevailing wide porch cornice.

A. W. WOODS.

Irrigating Waterwheel

To the Editor:

Louisville, Ky.

Victor C. Knudsen asks in the April number how to build a water wheel for lifting water to irrigate land. I favor a current wheel, of wood, mounted in the center of a flat boat, so that the paddles will be always submerged to the same depth, as the height of the water in stream varies. The wheel should be 12 or 14 feet in diameter and have sixteen paddles each 12 inches high (depth in water), and width (across stream) to be according to horse power required.

It should be inclined up-stream about 10 degrees from the radial line. The rim speed of the waterwheel will only be 40 per cent of the speed of the water in stream. Fasten paddles to the arms of wheel so that they will be fully immersed.

The first thing to do is to find the speed of the water, in feet per second, by tossing a branch of a tree in the water and timing its travel over a measured distance. To find horsepower of such a wheel:

(1) Multiply the area of one paddle in square feet by the speed of the rim of wheel in feet per second (which will be 40 per cent of the speed of the stream) and divide such sum by 150.

(2) Next subtract the rim speed of wheel in feet per second from speed of water in stream in feet per second, and double the result.

(3) Then multiply both above results together to get horsepower.

If he knows how much water he wishes to raise per minute, and how high he has to lift it, he can get the horsepower by multiplying the number of gallons per minute by the height in feet and multiply that by 10 and divide by 33,000, and double the result, to allow for friction.

He can perhaps lift the water in steel elevator cups and sprocket and chain, all mounted on the boat and driven from axle of waterwheel.

WILLIAM EBERT.

Squaring a Corner

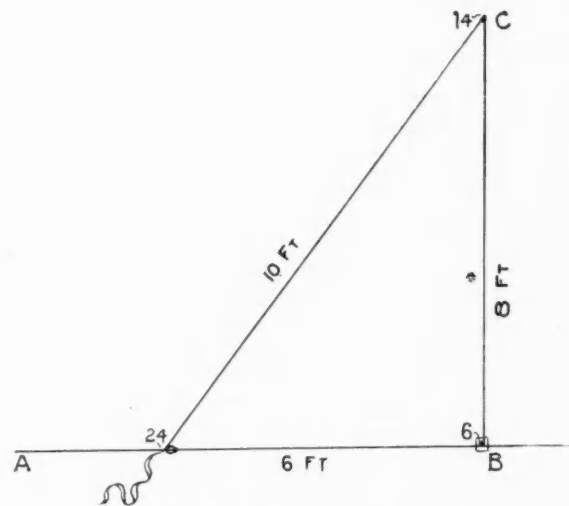
To the Editor:

Creswell, N. C.

Will you tell me the proper way to level and square a foundation for a frame building with an ordinary spirit level and tape line?

A. P. SPRUILL.

Answer: For squaring the corner; take an ordinary tape line and, doubling the same with the end of the line at the 24-foot mark, a second party holding the line at Fig. 6, and a third party at Fig. 14, the line drawn taut will form a right angle at the 6-foot mark, as shown in the illustration. This applied to the given lines, as at A-B, will give the adjoining side line, as at B-C. For accuracy a thin nail should be driven in the corner stake and the line should pass the nail exactly at the 6 foot mark. Then drawing the line taut



Squaring a Corner with Tape Line

by holding a nail, or some other like piece at the 14-foot mark, will give the true angle, provided the line is correct.

As to the leveling with the aid of a spirit level, simply establish a level at one of the corners and then sight across it to the other corners, turning it in the direction as required.

EDITOR.

House Moving

To the Editor: University Place, Neb.

Enclosed you will find a picture of a house I moved last week on the trucks I described in the *AMERICAN CARPENTER AND BUILDER* of June, 1910. As I had some inquiries about them, I thought this photo might interest the readers. This house is 24 by 28 feet, two stories high, plastered, etc. It was moved nine blocks, paralleled the street car track two blocks and was under cables and wires. We were about



Moved on Trucks Illustrated in June, 1910, Number

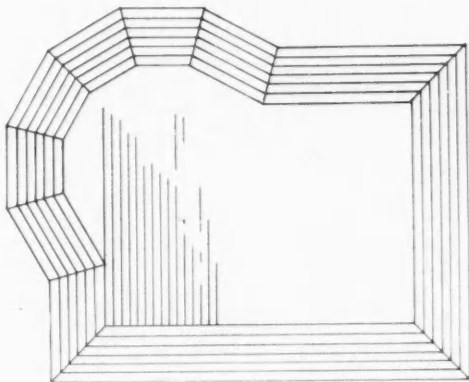
35 hours in all, moving it. The house was loaded V-shape on three trucks pulled with blocks and tackle, as you will see by the picture..

A. H. THOMPSON.



Hardwood Border for Bay

To the Editor: Highland Park, Ill.
In answer to the question asked by Clarence R. Major, Easton, Pa., in the February number of the *AMERICAN CAR-*



PENTER AND BUILDER, I am herewith sending a diagram showing the way I would fill in the space around the window.

WM. WITTEN.



To True-Up Emery Wheel

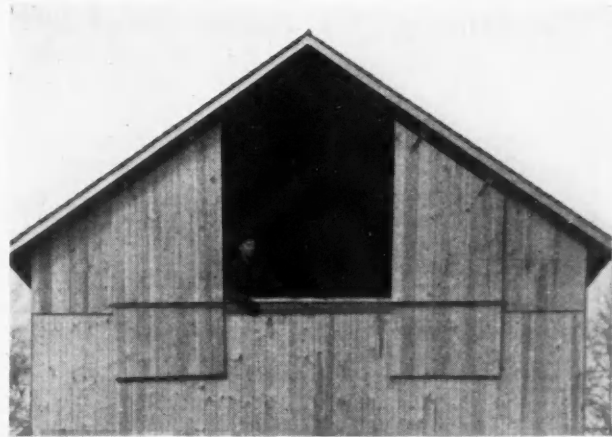
To the Editor: Charlotte, Mich.
Is it possible and, if so, how may an emery wheel be made true again after it has become not true when it is running?

JAMES S. ROBINS.



Gable-End Hay Doors

To the Editor: Lynn, Ind.
Enclosed you will find view of barn showing gable-doors equipped with barn-door hangers and track. The bottom of doors are held in place by iron stays bolted at each end and in the middle, bent at ends the thickness of doors. A small piece of gas pipe the length of the thickness of doors



is placed on a bolt in center of each door.

These doors may be fitted with weights equal to weight of doors. These attached to rope and small pulley inside of barn will allow the doors to open and close as easily as other roller doors do.

This door is intended to be used to take hay in, where hay-track and carriers are used.

This is my own design; the picture is taken from the first set ever erected, as far as I know. I have been a reader of the *AMERICAN CARPENTER AND BUILDER* for some time, but have always regretted that I did not start my subscription when I first had the opportunity.

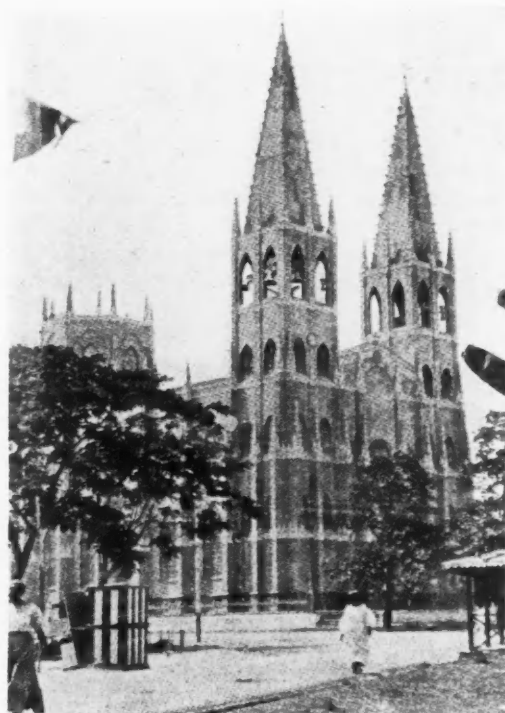
G. F. BEVERLY.



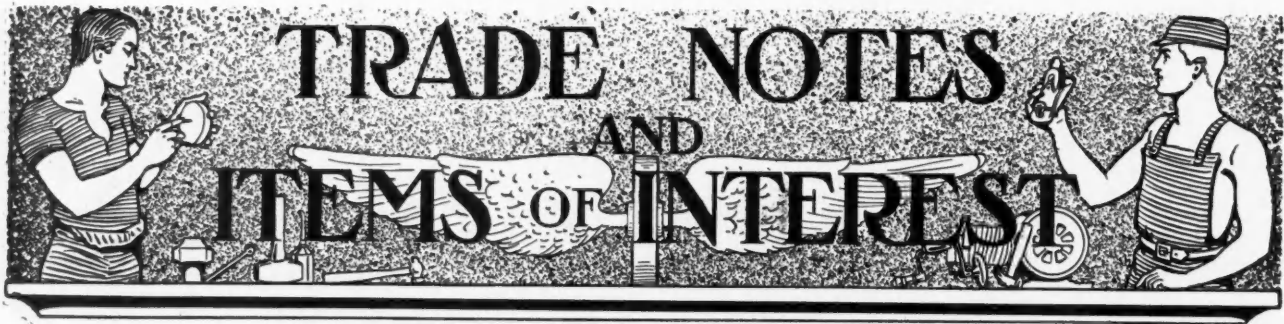
Manila's Steel Church

To the Editor: Manila, P. I.
The San Sebastian, of Manila, better known locally as the steel church, is a drawing card for tourists. It is constructed of steel throughout, says the *Literary Digest*, excepting that the altars and confessionals are of fine Philippine hardwoods. The walls are but one-fourth of an inch in thickness and have no interior lining. The structure was made in sections in Europe and was shipped "knocked down," to the islands.

RALPH ELLISON.



Manila's Steel Church. Built in Europe of $\frac{1}{4}$ -in. steel and shipped "knocked down" to the Philippines



Automatic Hen House Release Door

When fowls are confined for any length of time after sun-up in the morning, they become very restless; and it has been observed by many poultry breeders that when fowls are worried or restless, even for a short time during the day, it is a very hard task to get them to thrive as they should. And yet, when, with good intentions, many poultrymen have left the doors of their houses open all night, that the fowls might get out bright and nearly next day, a raid has been made on the roosts by weasels, foxes, or other prowlers of the night.

Poultry-raisers who are believers in the old adage, "The early bird gets the worm," will undoubtedly be interested in the accompanying illustration of an automatic release door offered by Mr. H. V. Tormohlen in a recent number of *Suburban Life*.

An explanation of the plans is hardly necessary, as the sketch will give the details of construction. The trap is released by the first bird which walks onto the slightly raised floor. A string is fastened to this floor, passing up over the projecting arm attachment and down to the wire hook which holds the door. To this cord is attached a weight to equalize

the weight of the false floor, and make the least downward pressure on the floor lower it, and thus raise the releasing hook.

The trap-door is attached to the outside of the building, where the small drop-door is ordinarily located. The door should be covered with one-half-inch mesh wire netting. The door must be covered with wire, that the fowls may be attracted by the light, and thus be induced to come out upon the false floor and release themselves. When the wire door is up, the hook is pulled down over the edge, and should be tight enough to hold on by its own tension, as all resistance is relieved by the counter balance or weight, which is fastened just above the hook. The weight, of course, should be just heavy enough to balance the false floor, so that it will stand in any position to which it may be raised.

About four inches is sufficient incline to set the false floor. The end toward the building should be fastened to the floor with a hinge. The weight of the first hen will release the trap-door the instant she walks out upon the inclined board, permitting all the flock to pass out. The door will, of course, remain open.

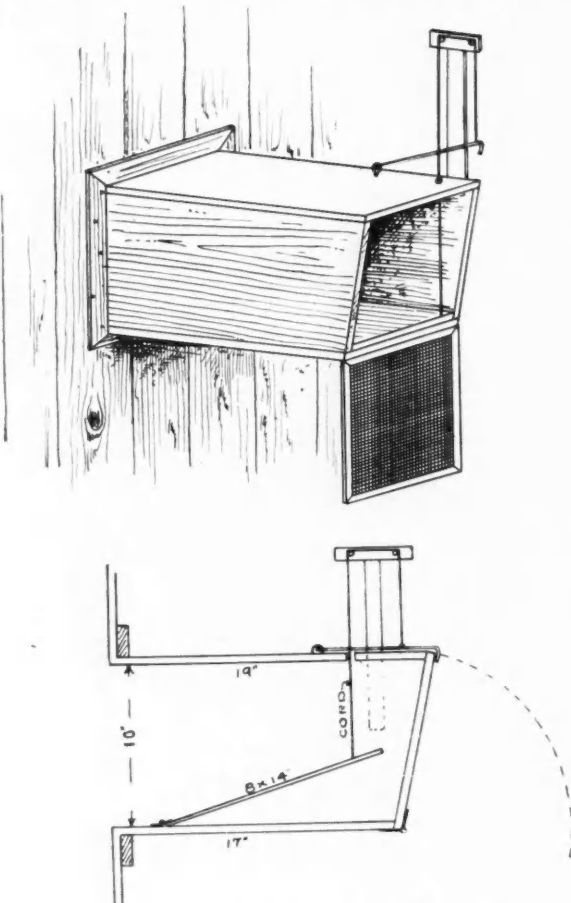
Sharpening Fence Posts

The easiest way to sharpen fence posts is to set a post in the ground to the top of which is fastened a forked stick or piece of board in which has been sawed a crotch. Place a plank at the foot of the post and set the post to be sharpened on the plank and leaning in the crotch at the top of the post. This leaves both hands free to handle the ax. About twice as many posts can be sharpened with this assistance.

The Care of Oak Floors

The physical structure of all wood—and oak is no exception, although it is less susceptible to swelling and shrinking than any other variety—is such that water applied to it, no matter how well the surface is filled and covered, tends to swell the fiber which in time shrinks, leaving slight cracks between the strips of flooring. Hence water, either hot or cold, should never be applied to an unfinished or finished floor. The surface may safely be wiped with a cloth dampened in tepid water to remove the dirt and dust, but the dampness should be immediately taken up with a dry cloth.

The author, in the care of his own oak flooring, has for years successfully employed equal parts of sweet oil, turpentine and vinegar well mixed and rubbed on the floor with waste, or a cotton or woolen rag. The philosophy of this treatment is that there is acid enough in the vinegar to cut the dirt and grime that works into the finish from shoes; the sweet oil produces a luster, and the turpentine promptly dries the moisture. The occasional use of a floor brush alone or with a piece of Brussels carpet placed beneath it will assist in keeping the finish of an oak floor in good condition. The above named mixture need not be applied oftener than once a month to insure a floor finish that will approximate the sheen of a piano. Should the finish become worn in spots from hard usage, a little of this mixture will renew the polish quickly. Once a year it is well to use a good floor



Hen House Door Opened by Weight of Fowl

wax, and rub it into the floor with the aid of a brush with or without the piece of carpet attached.

Other authorities recommend that the floor simply be rubbed with a heavy brush covered with Brussels carpet. Before the finish is worn down to the wood an additional coat of varnish should be applied and thoroughly rubbed.

How to Make Outside Venetian Shutter

A pair of outside venetian shutters are shown in the accompanying illustration, Fig. 1 being an elevation, Fig. 2 a horizontal section, and Figs. 3 to 6 details.

The shutters each consist of two stiles, top and bottom rails, and a number of laths, which are fixed at an angle of forty-five degrees. In making the shutters prepare the stiles, rails, and laths. The stiles and top rails are 2 inches by 1½ inches, the bottom rails 2 inches square in section, and the laths are ½ inch thick. The stiles are set out to receive the laths, which are arranged as shown at Fig. 3, the distance between the bottom edge of one lath and the top edge of the next being ½ inch. The ends of the stiles and rails are also set out for dovetails, a suitable dovetail joint being shown at Fig. 4.

In cutting the dovetail joints allowance is made for mitering the beads, which are worked on the edges of the stiles and rails. The laths are housed into the stiles, and the center lath, and those midway between the center and the top and bottom, should also be tenoned into the stiles, as shown at Fig. 5. In finally fixing together, the dovetail joints may be secured with wood pins, and the laths are fixed with nails, the joints being well painted.

The meeting stiles are rebated together and beaded, as shown at Fig. 2, and the shutters are hinged to the outer linings of the window frame, a suitable hinge being shown at Fig. 6. A bolt should be fitted to the outer shutter by means of which the shutters are fastened when closed, and two shutter fasteners should also be provided in the wall to secure the shutters when open.

Protection from Lightning

Few realize that more people are killed every year from lightning than by railroad accidents and that the property destroyed every year through fire caused by lightning amounts to nearly six millions of dollars.

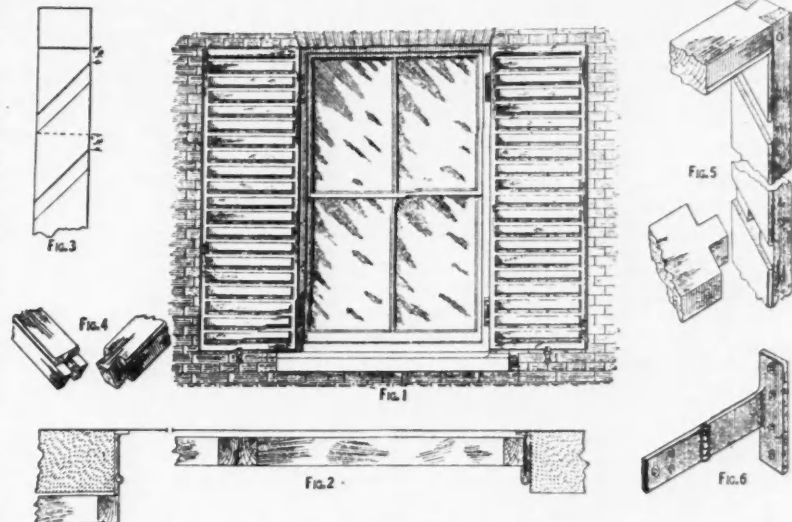
In view of these facts, the matter of adequate lightning protection takes on new importance. Every home builder should see to it that his new dwelling is protected, and every owner of property, whether the buildings are new or old, should see to it that his investment is protected against loss from lightning.

In this matter as in many others an ounce of prevention is worth a pound of cure. It is far better to make the small investment required to properly equip a building so that it will never be struck by lightning than to carry heavy fire insurance premiums on it with the hope of regaining some part of the loss in the event of the building being struck and burned.

The National Cable and Manufacturing Company, Niles, Mich., have given this matter careful, scientific study. They have evolved and perfected the "National pure copper cable lightning conductor system." According to the careful records kept by this company not one of the thousands of

buildings protected by the National system has ever been destroyed, or even set fire by lightning.

They have just issued a new booklet of more than ordinary interest, entitled "The Laws of Lightning." This explains very satisfactorily the principles involved in reliable lightning protection. It answers the question, "What is lightning?" Readers of the AMERICAN CARPENTER AND BUILDER will find this a very valuable book to have, since this is a subject that it is well to be informed on. Wide awake builders will also see in this an opportunity for doing a little



Design and Details for Outside Venetian Shutters

nice business. The National Cable and Manufacturing Company, Niles, Mich., have an attractive agency proposition that will appeal to you. Investigate it.

Write for This

One of the most pleasing and instructive booklets of the year has been received from the Mastic Wall Board and Roofing Manufacturing Company, Cincinnati, Ohio. It illustrates and describes their asphalt mastic products—Bishopric wall board, Bishopric sheathing and Bishopric roofing.

It is a pleasure to look over and study a booklet of this kind, since it serves not only as a practical trade catalogue of an important line of building materials, but also is a text book showing clearly the approved methods of construction with these materials, suggesting new uses that carpenters and builders can make of them. A thorough knowledge of carpentry construction is demonstrated; and suggestions are made that would doubtless save money to many an experienced craftsman.

This booklet is very attractively illustrated, is of convenient size for handy reference, and is arranged in such an orderly manner that it is a pleasure to refer to it.

Part I. explains the composition of asphalt mastic and sets forth its merits as the most important material used in the construction of the asphalt mastic products. Part II. takes up in detail the construction, uses and merits of Bishopric wall board. Part III. takes up in detail the construction uses and merits of Bishopric sheathing. Part IV. takes up in detail the construction, uses and merits of Bishopric roofing, including also Pyramid shingles.

A very interesting part of the booklet is the section made up of excerpts from letters from practical carpenters and builders, telling of their experiences with these products.

The Mastic Wall Board and Roofing Manufacturing Company, Cincinnati, want you to have a copy of this booklet. Will you write for it to-day?

The Peerless Brick Machine

Carpenters and building contractors will be interested in the new 1911 model of the Peerless brick machine. While retaining the tried and tested features that have made the Peerless machine such a favorite heretofore, some new features have been added that make this machine a very interesting proposition to



to all builders or contractors who want a large capacity machine. The Peerless brick machine makes ten bricks at each operation. Every brick is thoroughly tamped and it is stated that 12,000 perfect brick is not uncommon for a single day's work of ten hours with one machine.

The Peerless is remarkable for its ease of operation. By referring to the cut herewith you will notice the tamping device which is automatically lifted by two large coil springs, which do away with a large percentage of the work. A refer-

ence to the photograph will show the tamping device, which is so arranged that each brick is tamped with absolute accuracy. The Peerless machine is substantially made of iron and steel and is strong, compact and durable. Its working parts are extremely simple, so that with ordinary care the machine will last a lifetime.

One of the strongest features of the Peerless brick machine is its price. One does not have to have a small fortune to invest in this machine and another small fortune in getting a place to operate it. Their catalogue tells you all about it. It is an interesting catalogue too, and well worth having. A postcard addressed to the Peerless Brick Machine Company, 19 N. 6th street, Minneapolis, Minn., will bring this to you. Write for it.

Built-Up Veneered Panels

Readers of the AMERICAN CARPENTER AND BUILDER should be interested in the line of built-up veneer panels made by the American Veneer Company, 12 Market street, Kenilworth, N. J. This concern is equipped with the most modern machinery and appliances, for turning out this kind of work, known to the industry and employs the best mechanics identified with this particular branch of trade in America.

The company are specialists and manufacturers of strictly high-grade built-up veneer panels for architectural and interior effect, wainscoting, mantels, ceilings, doors, and bank office fixtures, counter tops, desks, etc. Some idea of the character of the work turned out may be gained when it is stated that the greater part of the veneer work in the new Gimbel store, the Metropolitan Museum of Art, Rector's Hotel, the two Rogers-Peet stores, W. R. Hearst's immense new apartments on Riverside Drive, J. Pierpont Morgan's palatial residence, all in New York, the National Museum at Washington and other similar structures, has come from

the factory of the American Veneer Company. The company import a great deal of its veneer direct, over 35 different varieties being in use. This splendid business is the sole result of the tireless energy, experience and business ability of William A. Bushfield, the president, treasurer and general manager. Mr. Bushfield started at the foot of the ladder; first learned the trade and then established a small business for himself in Jersey City about 1900. By close application to details and producing the best class of material, his product was soon in demand, necessitating his building the large factory at Kenilworth in 1902.

The American Veneer Company will be glad to answer inquiries regarding its product and quote prices on any panel specifications furnished.

New Edwards Mfg. Co. Catalog

The 1911 catalog of the Edwards Manufacturing Company, Cincinnati, Ohio, has been received. It is a large size, 186-page, finely illustrated book, said to cover the most complete line of metal ceilings and side walls ever issued in one general catalog.

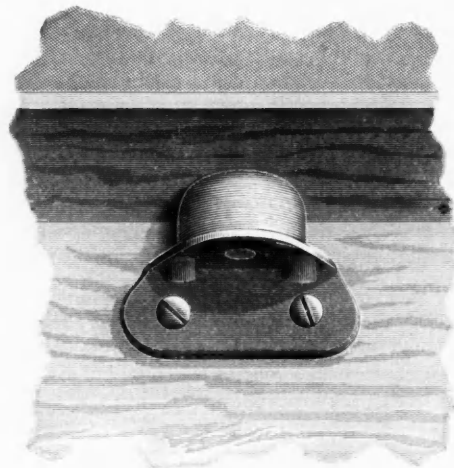
A feature of this catalog, of particular interest, is the collection of photographs of actual installations of Edwards' art metal ceilings and side walls in buildings of various kinds. These show in a striking way the beauty and appropriateness of this kind of finishing for interiors.

The manufacturers call particular attention to that section of the catalog devoted to their new line of Italian Renaissance designs. These patterns will certainly appeal strongly to architects because of their richness and simplicity.

Every reader of the AMERICAN CARPENTER AND BUILDER will do well to write at once to the Edwards Manufacturing Company, 401-417 Eggleston Ave., Cincinnati, Ohio, and ask them to send one of these catalogs. You will find it exceedingly instructive and valuable for reference purposes. They are now making a splendid proposition for one representative in each community to handle their complete line. It will pay you to investigate it at once.

Screen Door Anti-Slam

The Shelby Spring Hinge Co. are putting on the market the Screen Door Anti-Slam, herewith illustrated, which is designed to keep screen doors from banging; which has always been a source of annoyance. The Anti-Slam is made



New Anti-Slam for Screen Doors

from steel and is rubber capped; it is very easily applied to any screen door. Each Anti-Slam is wrapped in separate package with screws, and one-quarter gross are packed in a carton. The company furnish with each box a neat easel to hold one dozen. Address the company at Shelby, Ohio.

Albany Saw Works

A firm that has manufactured saws for more than 55 years should know something about saws. The Albany Saw Works Company, 70 Westerlo street, Albany, N. Y., was established in 1855 by Ernest F. Decker. Years of constant application and watchfulness, experimenting at great cost and improvements in machinery have brought about a



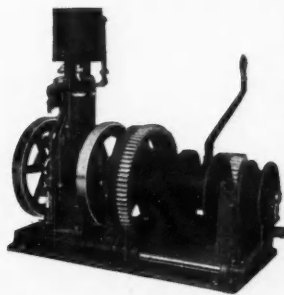
high standard. Naturally, this firm bases its claims for superiority for its goods on the years spent in making improvements. Every saw bearing the Albany Saw Works brand is fully warranted and guaranteed.

The illustration herewith shows one of the Decker hand saws. This is a fast, smooth cutting saw, particularly adapted for fine cabinet work, sawing mitres, and in all instances where rapid, smooth cutting is required. The Albany Saw Works Company also wish to call attention to its line of concave saws; these saws are dished and tempered by an entirely new, patented process. The manufacturers claim to furnish these saws at a lower price than other makers because of this new mode of manufacture.

The Albany Saw Works Company makes saws of every description and will be glad to furnish price lists and descriptions on application. This firm also manufactures planer and machine knives and can quote prices on any quantity or style required.

Special Contractor's Hoist

The Bates & Edmonds Motor Company, of Lansing, Mich., are offering a material hoist and elevator which we believe



is worthy of the careful consideration of every contractor and builder. This hoist is intended primarily for use with a double platform elevator, one platform ascending as the other descends. With this arrangement the load is always partially balanced, consequently less power is required to elevate a given amount of material. On this hoist, in addition to the sheave which carries the elevator cable, the makers have provided a drum for direct hoisting. This drum can be run independent of the sheave carrying the elevator cable, as it can be thrown into gear by a very simple and effective device. This makes the hoist doubly valuable for contractors' work, because the drum for direct hoisting can be used without interfering with or disturbing the elevator cable. The hoist is built in a very strong and substantial manner and is fully guaranteed in every way. It is provided with a powerful foot brake. The clutches with which the hoist is reversed are positive and easily adjusted.

The double platform elevators furnished by this company are intended especially for contractor's work. The overhead horse carrying the upper sheaves is made of angle steel and southern pine timber. While it is very strong and substantial, at the same time it is light and can be easily moved as the building progresses. The wire guides are made from the best steel cable and provided with a mechanism for drawing them taut. The wire hoisting rope is 1/2-inch diameter, with six strands and hemp center. The elevator platforms are 4 by 6 feet and strongly braced at all points. In fact the whole apparatus is built in the most substantial manner and fully warranted for the work intended.

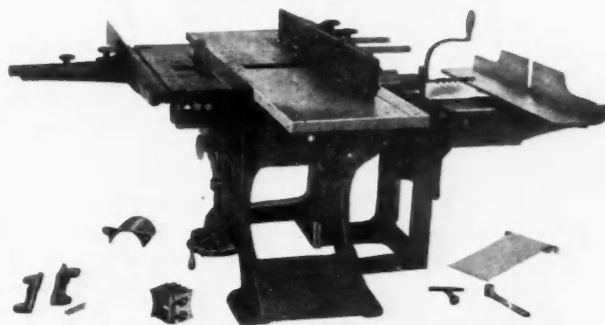
The engines used in connection with these hoists are direct-connected, of the hopper cooling type. The gasoline is carried in the base, consequently they are self-contained, no outside connections whatever being necessary. These engines are the B. & E. Standard Type A machines, of which there are something like 12,000 in successful operation.

Any contractor or builder interested in this apparatus will be amply repaid for writing the Bates & Edmonds Motor Company, Lansing, Mich., and asking for Bulletin No. 5, which gives full particulars of the entire outfit.

Bicknell's Combination Woodworker

Bicknell's Jointer, Saw and Combination Machine is designed for general use in wood working shops. This handy machine is made with different combinations which enables the operator to do jointing, sawing, rounding, grooving, dado work, boring, etc. All of this can be done on one arbor.

The arbor, jointer head, pulley and inside collar are made in one piece from special spindle steel; this runs in high speed babbitt bearings.



Woodworking Machine of great Adaptability

Slotted heads, special cutters and saws are used on the extended arbor, and changes are easily and quickly made.

The most important features of this combination machine are simplicity, durability and the variety of work that can be done on one arbor.

This machine is manufactured by the Bicknell Mfg. & Supply Co. of Janesville, Wis., who will be pleased to mail catalogue to interested parties.

Coltrin-Boos Block Machine

Carpenters and builders realize pretty generally today the money making possibilities, to them in their business, of a good concrete block machine. Blocks are needed on almost every job for the foundation and basement courses; and it is just as easy for the builder to have a block machine and make these blocks himself as it is to pay out good money to some one else for them.

It is well known that there are good profits in making concrete blocks for sale; and building contractors who have tried the proposition tell us that by making blocks for their own work the cost of the block machine and block making equipment is easily made up from the savings, that is profit, on a single job.

The Coltrin-Boos Mfg. Co., Jackson, Mich., want every reader of the AMERICAN CARPENTER AND BUILDER to write to them and investigate their block machines before buying elsewhere. They say that the Coltrin-Boos is the machine you will eventually decide on because it is the simplest, fastest and best and may be had at a reasonable price. The illustration herewith shows one of the sizes of their concrete block machine outfit.

The Coltrin-Boos Mfg. Co. make 16 different sizes of the concrete block machines, besides brick machines, tile moulds, concrete mixers, etc. They make an extremely liberal offer



One of the Sizes of Coltrin-Boos Block Machines

of sending their machinery out on a five-day free trial, so that a thorough test can be made by the purchaser before closing the deal. Write at once for descriptive catalogues and booklets concerning these machines. They contain valuable information, and you will find them very interesting.

A Roof that Needs No Painting

In making a roofing the problem of the manufacturer is chiefly a matter of getting a durable wearing surface. In the past roofing manufacturers have depended upon a heavy coat of paint for such protection. If kept properly renewed, a painted roofing will give satisfaction.

The objection to this type of roofing, however, was that the painting constituted a nuisance and expense. The aver-

age owner was fairly sure to neglect it, and when the paint wore off—and of course no paint could wear very long under the severe conditions of roof service—the water and frost began to do serious damage.

Of late years the roofing industry has been considerably changed by the appearance of Amatite, a mineral surfaced roofing which needs no paint. It is obvious that a surface which consists of small particles of mineral properly cemented upon the top surface of the roofing will not need any paint. The effect of weather upon the mineral surface is practically negligible.

Amatite costs no more than the painted roofings, and the saving of work and expense has made it exceedingly popular.

A sample of it is obtainable on request from the Barrett Manufacturing Company at New York, Chicago, Philadelphia, Boston, Cincinnati, Cleveland, Pittsburg, Minneapolis, St. Louis, Kansas City or New Orleans.

Honeycomb Mitre Boxes

Something as far as we know absolutely new in the line of mitre boxes is being manufactured by the Rockford Mitre Box Co., Rockford, Illinois. In manufacturing this mitre box this company have succeeded in combining great strength and durability with extreme lightness. Every little and big requirement of the carpenter has been carefully looked after by the manufacturers of this tool. The back of the Honeycomb mitre box is detachable, this company claiming that this is the only way in which a mechanically perfect mitre box can be made, and the extra tooling space which is required for so doing, has been overcome by special devices so as not to increase the cost. The lever is peculiar in its construction, inasmuch as it locks—with a positive lock—at any degree or fraction of a degree. This lock works on the principle of an eccentric, there being no springs used.

Kawneer System

of Store Fronts

**DID YOU GET A COPY
OF OUR BOOKLET No. 2?**

You may not be ready right now for Store Front Material, but you should be posted on modern Store Fronts. Booklet No. 2 tells you in a plain and concise manner about the Kawneer System as well as modern store fronts in general.

You ought to know why and how the Kawneer System *regulates* show window ventilation and drainage. And, that is but one feature found only in the Kawneer System. Perhaps you have heard the word "Kawneer," and maybe you know it is a Store Front Construction, but *do* you know exactly *what* kind it is, outside of a "metal frame"—Kawneer is not simply a Metal Front—it is more than that and you should know about it.

Just drop a card for Booklet No. 2.

Kawneer Manufacturing Co.

Factory and General Offices:

Branches in all
large cities

Niles, Michigan

Builders and Contractors Who Want the

Best Steel Butts & Hinges

Should Look for This



**Printed on the Labels
Stamped on the Goods**

LITERATURE FREE

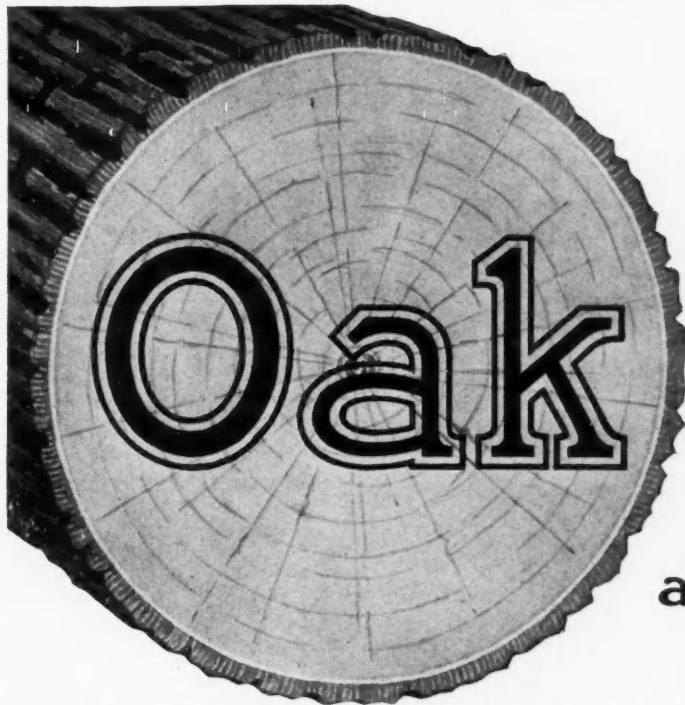
The Stanley Works

NEW BRITAIN, CONN.

New York

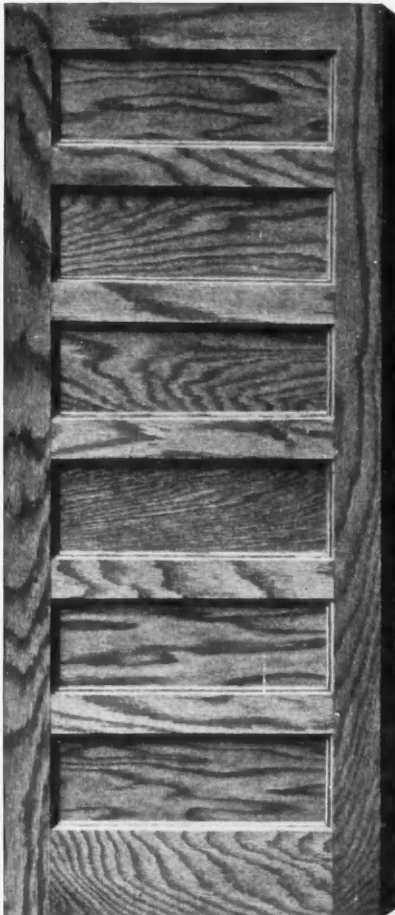
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Chicago



Oak Doors Floors & Finish at Less Than Dealers Ask For Pine

Despite the growing scarcity of Oak, which has been seized upon by lumber dealers and manufacturers as a pretext for raising prices on Oak Doors, Interior Finish and Flooring, we are actually selling the very finest qualities and grades at **less than dealers charge for Pine.** Years ago the Gordon-Van Tine Company arranged for the output of large tracts of the best Oak timber in America. **Our customers profit by our foresight.** We are actually selling Oak to carpenters and contractors at less than the same material would have cost you **ten years ago.** The cut in prices not only affects **Oak Doors,** but extends through the whole line of **Oak Finish and Interior Trim.** A further reason for our low prices on Oak is the big scale on which our goods are manufactured, and our small selling expense.



Oak Doors—All Styles

The most artistic line of Oak Doors in the country. Veneered Oak Doors set with French Polished Plate Glass; Craftsman Veneered Red Oak Doors, glazed in choice designs; Plain Veneered Oak Panel Doors; Oak Sliding Doors and many special designs, at less than half dealers' prices.

Inside Mouldings in "Mission" Styles

We carry in stock for immediate shipment, Oak Mouldings, Interior Finish, Beamed Ceiling, etc., to harmonize with any architectural scheme. Our prices save you big money.

Oak Flooring at Pine Prices

We are selling the finest grade of Oak Flooring at such low prices that you can floor a home in Oak at about the usual cost of Pine.

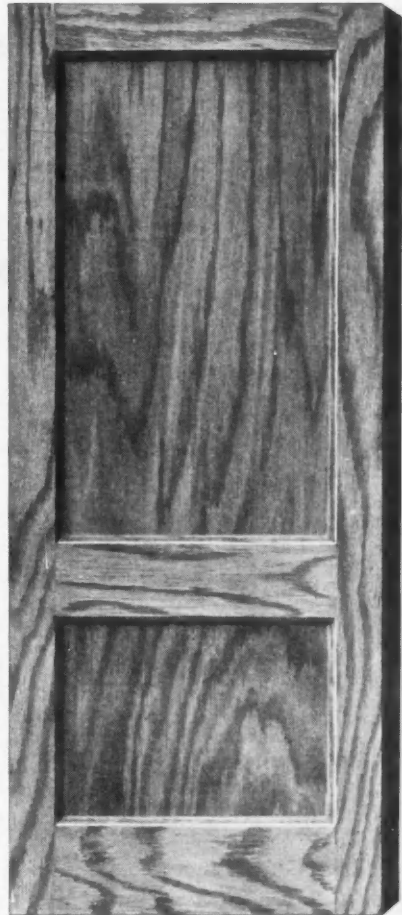
Our Millwork Catalog Your Savings Bank

We sell by mail direct to thousands of Carpenters and Contractors. Our Grand Free Millwork Catalog describes, illustrates and quotes net prices on over 5,000 Bargains in Building Material. We guarantee quality, safe delivery and satisfaction. We save our customers over a million dollars a year.

Protect Your Profits!

Write for the complete Catalog of 5,000 Bargains and protect your profits by buying Millwork and Lumber at wholesale prices.

Our responsibility is vouched for by three big banks with combined capital of \$2,350,000.00.



Gordon-Van Tine Co. 582 Federal Street **Davenport, Iowa**

(172)

The length and clamp gauges are subject to thousands of variations, always assuring a perfect clamp on the material.

The index is conveniently placed for accurate adjustment. The lever can be adjusted off square if necessary for filing or other exceptional requirements. There is an intermediate gib which takes up the wear, which assures you that the gib is always square with the bed-plate. It can be easily moved from place to place and will stand securely without fastening. Moreover the machine is absolutely dust proof.

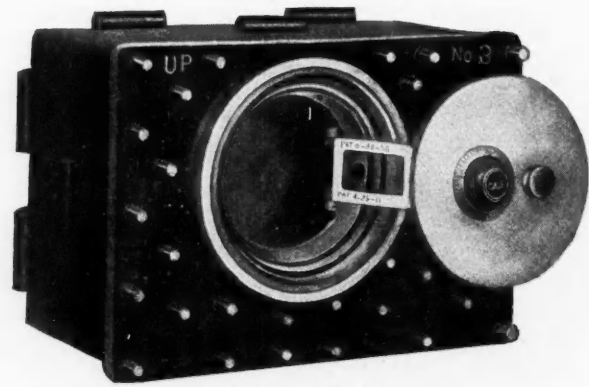
The Honeycomb mitre box is made in a malleable steel frame, which makes it equal in strength with tool steel.

The above mentioned improvements are but a few of the details that have been given most careful attention in the construction of the machine. Where this box is not handled by dealers, the Rockford Mitre Box Co., Rockford, Illinois, will be pleased to quote special price to carpenters and contractors. It is made in eight different sizes. Write today for descriptive literature.

Gale Wall Safe

The accompanying illustration shows the Gale Wall Safe, sold exclusively by the Willis Mfg Co., Galesburg, Ill. These wall safes meet a long felt want in the home, either in city or country. They provide a safe place for your valuables of every description. They preserve the privacy of your affairs and give *absolute peace of mind* and consciousness of security against fire, water, burglars and dishonest persons. *As a protection for the home*, the Gale Wall Safe stands without an equal and alone as the greatest check upon burglars and thieves.

They can be easily put into the wall of occupied buildings. It requires the cutting of a hole in the wall a little larger than the safe, inserting the safe and cementing it in position. This can be done in two or three hours. Only the dial



The Gale Wall Safe

is exposed, which a small picture will conceal. You have your own combination, which may be changed any time so desired. Available at all times for deposit of money, jewelry, etc.

No modern house is complete without one of these safes.

Nicholls Take-Down Square

The Nicholls Manufacturing Company, Ottumwa, Iowa, are putting on the market a new take-down square; one that separates without the aid of a screw-driver, as there is no screw or cams used; it locks automatically.

The tongue completely separates from the body of the square, making it very convenient to carry, as it takes up very small space, going into a space 2 by 24 inches.

The main feature of this new take-down square is that it will always stay true. It is so constructed that the tongue is held down into beveled bearings by a spring, and these

**UNION
METAL
COLUMNS**

**Union
Metal Columns**

follow the classic designs of ancient Greece and Rome.

In the substitution of steel for wood not an atom of charm or beauty is lost—but a new element of value is added.

Union Metal Columns are indestructible—used in Porch, or Pergola; they will outlast the structure in which they are incorporated.

Specified by the most eminent architects and designers of America, these columns have earned an enviable repute even among those who deprecate the slightest departure from ancient forms.

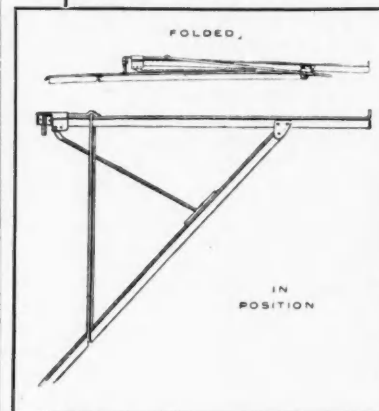
The catalogue which we will be glad to send you upon request, illustrates the artistic use to which Union Metal Columns have been applied in beautiful homes and buildings throughout the country. We have a special proposition for Builders and Carpenters. Write to-day.

The Union Metal Manufacturing Co.
401 Maple Avenue
CANTON, OHIO

Reduce Accidents

You may be held for damages in case of serious accidents. Men's lives are at risk on your scaffolds.

For your own protection you should use the safest and best scaffold you can buy—even if it does cost a little more than the inferior kind, in the beginning.



Wheeler Safety Scaffold Brackets

lock automatically. Are rigid and firm when in position. Scaffold cannot swing or vibrate; men feel safe and work faster and better on them.

No nails or lumber used. By avoiding use of the many nails, men cannot be as careless as they sometimes are when putting up wood staging for scaffold. For this reason our Brackets are safer.

Write Today for our Trial Offer and Full Information

American Steel Scaffold Co.

38-J Equity Bldg.

Detroit, Mich.

Put It At Work In Your Shop



*"Handy as a Pocket
in a Shirt"*

Patented in the United States, Canada and other foreign countries. Other patents applied for.

The "Multimotor" Shop Engine increases your profits and keeps down the size of your pay-roll. Does the work of three men at an expense of *less than a cent an hour.*

Stop pedal-pushing and crank-turning! Let the

Fuller & Johnson "Multimotor" Shop Engine

turn the wheels in *your* shop. This wonderful engine is small in size but a giant in power. Runs all hand-power or foot-power machines—jig saws, lathes, emery wheel, grindstone, drills, etc. Just the thing for carpenters, contractors and owners of small workshops.

Perfectly Simple Absolutely Safe

Simplest, neatest, strongest, most reliable little engine ever built. Comes to you *complete*—nothing to add but gasoline.

Easily moved anywhere. For *indoor* use has *out-door* fuel tank, insuring perfect safety.

Important working parts protected by dust-proof case. Needs no attention while running. Works steadily all day on a few cents' worth of grocery-store gasoline. It is air-cooled, fool-proof, cannot freeze or overheat.

The "Multimotor" in design, material and construction equals the best automobile engines. Every engine is thoroughly tested before leaving the factory, and is *guaranteed!*

Fuller & Johnson Farm Pump Engine

Practically the same as "Multimotor," with pumping gears added. Can be hooked up to any pump in 15 minutes. Needs no belts, arms, jacks or special platform. Pumps 400 to 1,500 gallons every hour. Perfectly adapted to farm and suburban use

Engine Book Sent Free!

Book, giving full information about "Multimotor" and Farm Pump Engine, sent **FREE** on request. Let us tell you more about these amazing little power-producers. Let us send you the name of the nearest dealer, who will show you the engine and *explain* what it can do. (264)

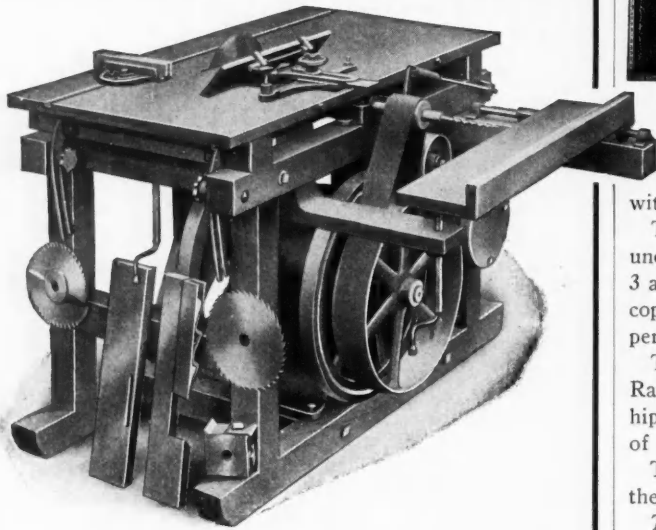
If interested in larger engines, ask for Catalog of Fuller & Johnson's Famous Double-Efficiency Engines.



Fuller & Johnson
"MULTIMOTOR"
Works Like Ten Men

FULLER & JOHNSON MFG. CO. 6 Ames Street (Established 1840) **Madison, Wis., U. S. A.**

Do Your Mill Work on the Job with the "AMERICAN" PORTABLE SAW BENCH



How often you have wished that your job was near the mill, so you could do a large part of your work by machine, instead of by hand.

An "American" Portable Saw Bench on your work will put mill facilities right at hand, and the time and labor this will save you means money in your pocket.

In all probability, an "American" Bench will pay for itself on the first job; and its savings on subsequent jobs will swell your profits.

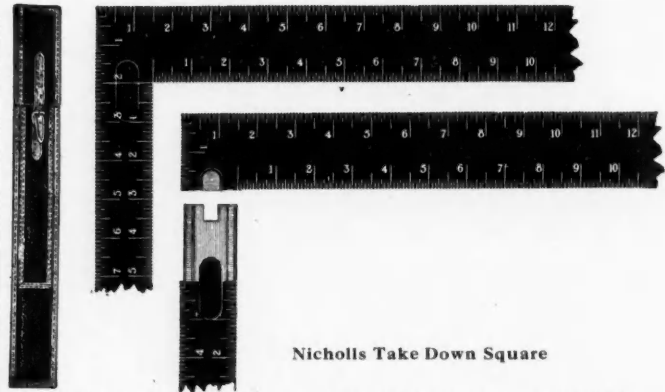
For the "American" Saw Bench is not a "one-job" tool. It is built to the "American" standard, which means that it will prove a permanently profitable investment, year after year.

An "American" Saw Bench is the greatest money-maker a contractor can own. Ask us to send you a descriptive circular.

AMERICAN SAW MILL MACHINERY CO.

82 Main Street
HACKETTSTOWN,
NEW JERSEY

1655 Hudson Terminal
NEW YORK CITY,
NEW YORK



Nicholls Take Down Square

bearings are made so as to take up the constant wear which comes in taking the square apart and putting it together. The more this square is taken apart and put together the firmer the joint. A rust-proof canvas case is furnished with each square.

They guarantee this square to be true and remain so under ordinary use. This square is manufactured in Nos. 3 and 100 Standard, also No. 100 Rafter Framing, in oxidized coppered black (white or yellow figures), galvanized, old copper and nickel-plated.

The No. 100 Rafter Framing has the famous Nicholls Rafter Framing Rule, giving cuts and lengths for common, hip, valley and jack rafters for seventeen different pitches of roof.

The cut below shows part of the Rafter Framing Rule on the No. 100 Framing.

The outside inch figures indicate the rise of your roof to the foot. Under these figures on the first two lines you will find the lengths of common, hip and valley rafters for one foot run only. Now that you have the length of the rafter for one foot of run; multiply this length by half the width of the building and this will give you the exact length of rafter in inches. Divide by twelve in order to get it into feet. For example. If your roof rises 16 inches to the foot, under 16 on the first line are the figures 20.00; this is the length of common rafter for one foot run; if the building is 14 feet wide, half the width of building would be the run of common rafter; in this case it would be 7 multiplied by 20.00, giving you 140.00 inches, or 11 feet 8 inches.

Third and fourth lines give you the exact length of first jack rafter and their difference in length spaced sixteen inches and two feet centers. Fifth, sixth and seventh lines give you the side cuts of jacks, hip or valley rafters, also cuts of sheathing in valley or hip.

These cuts are obtained by placing square on stock at the



The Nicholls Rafter Framing Scale

figures on left of line, for body of square and right of line, for tongue. For example: On the sixth line under 17 are the figures 7 and 10; by placing square on stock to be cut at these figures, 7 on body and 10 on tongue, and marking on the 10 side, this gives side cut of hip or valley rafter against ridge board or deck.

The Nicholls Mfg. Co., Ottumwa, Ia., are giving away free their book showing cut of square, also figures, and explaining how to use these figures to obtain the length of common, hip, valley and jack rafters for seventeen different pitches of roof; also what figures to use on tongue and body of square to obtain their cuts. Every carpenter should have one of these books. Write for one at once.

UNDERFEED IN ZERO-LAND

June Temperature Within
and Arctic Cold Without

*Canadian Saved \$75 on Winter's
Coal Bill and More in Comfort*



One night in January last, with Canadian winds blowing 45 miles an hour and the thermometer registering 26 degrees below zero, the temperature within the concrete covered home of Dr. J. Roddick Byers, St. Agathe des Monts, P. Q., was as delightful as a June day in Southern California. Altho exposed to the full force of the wind, these degrees Fahr. were shown:—Living room 72; Dining room 76; Office and waiting room 73; Bath room 80; Halls 70 and Bed rooms comfortable.

Peck-Williamson UNDERFEED heat did it. Money saved, smoke consumed, health conserved, attention minimized—these are points of supremacy in the UNDERFEED which insure **clean** heat at **least** cost.

It is testimony like this which has given the UNDERFEED the "inside track" with architects and builders as heating systems which **ADD** to the **Renting** or **Selling** value of any building. We would like to go further and **prove** to all building contractors that it will pay them to **specify** Peck-Williamson UNDERFEED heaters.

The Peck-Williamson Underfeed HEATING SYSTEMS FURNACES - BOILERS

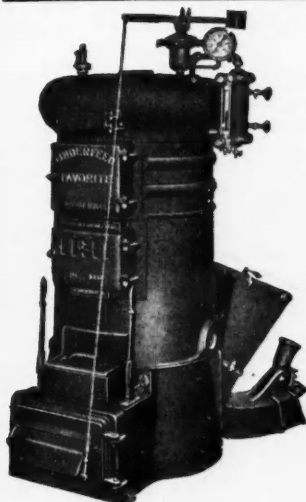
Save $\frac{1}{2}$ to $\frac{2}{3}$ of Coal Bills

Dr. Byers, who is Secretary-Treasurer of The Laurentian Society for the Treatment and Control of Tuberculosis, voluntarily writes: "I have estimated my Underfeed saving in fuel at about \$75 in actual cash and a good deal more in comfort."

We want every architect and builder to know that Heating Plans of our Engineering Corps are **FREE**. Write us about this **NOW**.

A PAYING PROPOSITION TO DEALERS

This illustration shows the Underfeed Boiler.



There is some available territory for exclusive Underfeed Agencies. Write **TODAY** for an outline of our Sales Proposition.

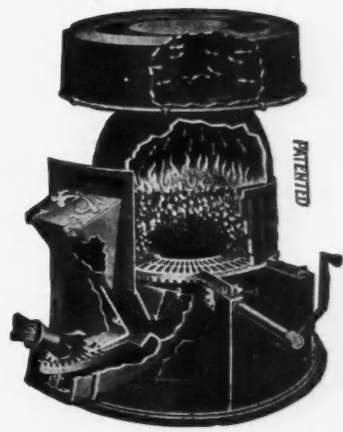
Howard Shordon, Heating and Ventilating Engineer, at Ft. Wayne, Ind., writes us:

"If furnace dealers in general only knew how easy it is to sell your Underfeed line, everybody among them would be trying to secure the agency. All that is required to secure Underfeed business is to sell two or three furnaces the first year and install them properly. After that, you will get all the business you can take care of without hustling around soliciting and cutting prices down so that there is little profit when you do make a sale."

All inquiries that come to us as a result of our great national continuous advertising campaign are **Sent Direct to Dealers** in the territory from which they are sent.

We are behind every one of our agents with the aid of all up-to-date selling helps.

Illustration shows furnace without casing, cut away to show how coal is forced up under fire, which burns on top.



Write for the Underfeed Booklets—Furnace and Boiler—and you'll quickly learn *why* the Underfeed dealer has the bulge in selling argument over all competition.

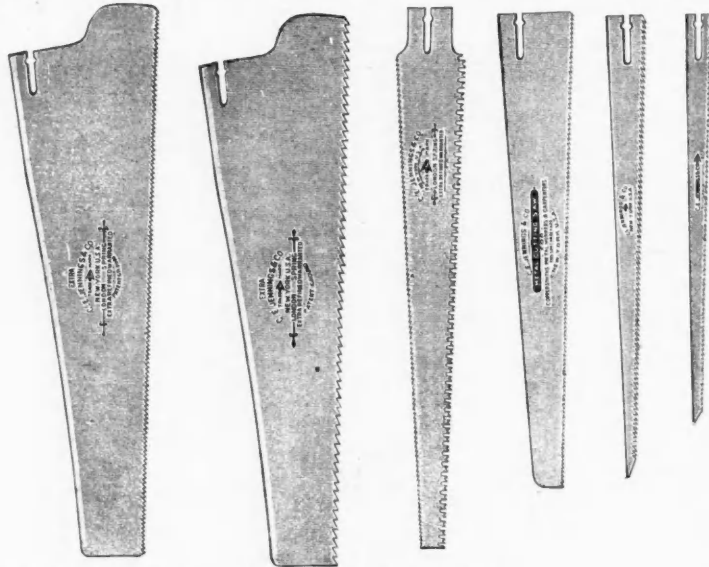
Get into touch with us **TODAY** and learn how **you** can share in the **BIG 1911** harvest.

THE PECK-WILLIAMSON CO., 436 West Fifth Street, Cincinnati, Ohio

A New Wrinkle in Saws

Every carpenter and builder should be interested in the new C. E. Jennings' combination sets of saws, with the Garland adjustable handle, illustrated herewith. These saws are made and sold under the well-known Arrow Head trade mark by C. E. Jennings & Co., 42 Murray Street, New York.

The feature of these sets is the adjustable handle, which will hold any of the blades. The lever turns the screw that locks the blade in place and the handle is guaranteed to remain in position. The sets are sold in different combinations and the handle is made to hold either a panel saw for cross cutting, a rip saw blade, a double edge pruning saw blade, a metal cutting blade, a compass saw blade, or a keyhole saw blade. The entire set should be of great value to any carpenter or mechanic, as it includes practically all the saws required for ordinary work; and when not in use, can be packed with the handle, in a flat box occupying very little space.



Jenning's New Saw Set—Six Saws the Same Handle

The manufacturers have been very successful in selling sets of these saws for home use, for motor boat and automobile men, farmers, etc. If they cannot be obtained at your dealers', write C. E. Jennings & Co., 42 Murray street, New York, for direct quotations.

Dwight Special Thin Hardwood Flooring

The growing scarcity of hardwood and its increasing cost render the use of a serviceable thin floor a necessity. Dwight Special thin hardwood flooring, the well-known product of the Dwight Lumber Company, Detroit, Mich., meets this want fully. It can be laid over an old floor with very little

expense, and for new work it is practically as serviceable as thicker flooring. This flooring is obtainable in $\frac{3}{8}$ by 2-inch quartered oak, plain oak, white maple and red birch. It is manufactured in clear grade only.

Ordinary thin flooring has such a small tongue and the



Build Yourself a Perfect Boat at One-Half Cost

It is as easy as A. B. C. for the man skilled in using tools to build any one of these handsome motor boats. Pioneer Knock-Down Frames are so true, so accurate and simple to assemble that thousands of novices have followed our simple plans, put the frames together and launched beautiful boats at one-half the usual cost.

Pioneer Frames

are made of A No. 1 seasoned white oak. Every rib is accurately bent and fitted in its exact position. Every frame is tested in our factory, taken down and shipped. You just put the pieces back where marked. Here's a real lark for every carpenter and builder. Here's where you eliminate the ready-made boat builders' profits. Here's where you join the great company of Pioneer enthusiasts on every lake and stream.

Let us send you at once the attractive Pioneer Boat Book which gives the details, shows you we supply everything, frame, planking, fittings, engine, etc., and that we save you money at every turn. Remember we guarantee satisfaction. Write today.

Pioneer Boat and Pattern Company
Wharf 25, Bay City, Michigan

“Natural Woods and How to Finish Them”

FREE TO ALL CARPENTERS

YOU ought to own this comprehensive book—for two reasons:

It will aid you in giving sound advice to your customers.

It will teach you how to do your own finishing in and around your home.

Send for a copy today.

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.



Carpenters! Contractors! Builders!

Write for
Free copy
of this Book



Write for this
New Book.

You will be delighted with its clear, concise message. You will find it invaluable because of its practical, reliable information. This is in reality a compendium upon the subject of sanitary house warming, and contains information gathered from the world's most eminent authorities. Forty pages of clean cut, unbiased information on the house warming question. Write at once and we will send you a copy free.

JEWEL Warm Air FURNACES



GRATE POINTS OF JEWEL.

Simple and easily worked. Operates without friction.

Efficient and everlasting.

Cu's the ashes from the fire without wasting an ounce of coal. Cuts out all clinkers and dumps the fire by a simple twist of the wrist.

The livest fire is always next to the fire-pot.

No bolts or braces—operates on ball bearings and slips out through the ash door bodily.

embody the most advanced principles in warm air furnace construction. Are correct in design and high in heating efficiency and fuel economy.

They are built to last—and built to give satisfactory service.

Back of every Jewel Furnace made is the experience, facilities and financial responsibility of the world's largest manufacturers of heating and cooking appliances.

You are interested in having a thorough knowledge of the best, whether you buy or sell. Let us give you the information you ought to have about Jewel Warm Air Furnaces.

Suppose you drop us a line today.

DETROIT STOVE WORKS
FURNACE DEPARTMENT

Detroit, Mich.

Chicago, Ill.

groove such a thin lip that when laid it is insecure. The lip splits and the tongue breaks in nailing. In Dwight Special the tongue is unusually strong, being backed up so that the nail holds securely; and the upper lip of the groove is doubly strengthened.

Carpenters and contractors can readily obtain Dwight Special flooring from dealers in lumber in all cities. If your dealer does not carry it, write direct to the Dwight Lumber Company, and they will see that a supply is procured for you. Samples will be gladly sent upon request to our readers.

If You Want to Save Money

One of the large items of expense in building and equipping a modern home is the plumbing and heating fixtures that are required. Builders like to buy where they can get the most for their money and if they are able to make an appreciable saving in these important items of heating and plumbing, they are usually very glad to do so. Mr. M. J. Gibbons, Dayton, Ohio, is handling the highest grade of plumbing, heating and lighting materials at very reasonable prices. He states that he is prepared to equip any building with the most complete mechanical equipment, including bathroom outfit, kitchen sinks, range boilers, hot water and steam heating plants, electric light systems and hand and power pneumatic water systems, including gasoline engines, etc. In fact, he has everything that pertains to modern convenience in plumbing, heating or lighting. Readers of the AMERICAN CARPENTER AND BUILDER who have had dealings with Mr. Gibbons speak of him in the very highest terms. He guarantees satisfaction in every respect.

Concrete as an Aid in Beautifying the Home

The instinct of mankind has always been to beautify the home and within the past few years this instinct has found an outlet in an entirely different source. That is, the manufacture of artificial stone in the form of ball moulds, lawn vases, lawn seats, and many other things of similar nature. The mixing of sand, cement and water forms a plastic material which lends itself readily to the moulding of dozens of articles which can be used for ornamental purposes. We illustrate herewith some of the articles made with concrete moulds, showing the artistic lines and attractiveness when



Fancy Ball Made of Concrete

used for this purpose. The first is a fancy design extensively used for porches, piers, gate posts and many other places. The second is a complete top section of a concrete gate post. It is made with three different moulds which fit together so nicely that the completed mould has the appearance of one solid piece of cut stone. Such an ornamental piece costs but very little when made out of concrete, but of cut stone would cost from \$10 to \$15 or \$20.

Every property owner, contractor, mason, carpenter or builder should secure a copy of the Northwestern Steel and Iron Works' 1911 concrete machinery catalog, which is one of the largest and most beautiful publications of the kind ever issued, showing complete line of concrete machinery for making these and many other moulds of every description. It will be an agreeable surprise to find how economical these goods are in price. The manufacture of concrete specialties will prove a splendid side line or a fine business that will return

**P.S. & W.
MECHANICS'
HANDY LIST**

**P. S. & W.
TOOL
GUARANTEED**

The MARK of the MAKER.

**THE PECK, STOW & WILCOX CO.
MANUFACTURERS**

Guaranteed Excellence

WHEN we put our factory brand on any one of these tools for Carpenters, it means that we are willing to accept full responsibility for the quality.

The MARK of the MAKER

on a P. S. & W. Samson Brace, stands for the ball-bearing chuck, the steel-clad head, the alligator jaw, and the most careful selection of materials and testing of every part.

When you see it on a P. S. & W. Chisel, it means that chisel is in every respect the standard of the most complete and perfectly finished line of chisels on the market.

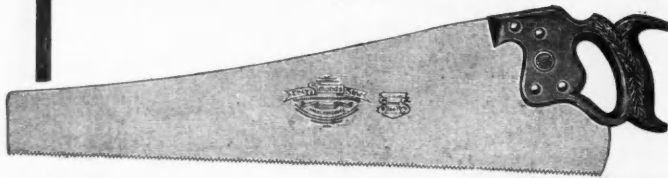
The same Guaranteed Excellence goes with P. S. & W. Augur-bits, Gouges, Drawing-Knives, Squares, Calipers, Hammers, Hatchets and other Carpenter's Tools

Look for The MARK of the MAKER on every item in our four large lines of Guaranteed Hand Tools for Carpenters, Machinists, Electricians, and Tinsmiths.

Write today for your free copy of the "Mechanics Handy List", shown above. It contains 35 pages of valuable shop-information and a catalog of over 200 tools.

The Peck, Stow & Wilcox Co.
 MANUF'RS of the Largest Line of Mechanics' Hand Tools Offered by Any Maker
 Established 1819 Five Large Factories
 Address Correspondence to
 22 Murray Street, New York City

**WHY NOT GET A
SI-MONDS HAND SAW
FOR YOUR WORK NOW?**



You have read so much and heard so much about the Simonds Hand Saw that now it is time for you to try it.

Remember that the Dealer who sells you a Simonds Saw is empowered to guarantee it fully in every respect and your money will be refunded if the Saw is not entirely satisfactory.

Remember that there is a variety of styles from which to choose; different lengths, points, straight back or sway back.

Remember the Simonds Hand Saw is made of Simonds Steel and each Saw is packed in a separate case—a distinctive feature.

Remember that the workmen who make Simonds Saws are the most skilled men at this trade.

If it will help you we will tell you the name of the Dealer near you who sells Simonds Hand Saws, or, if there is none near you, we will quote you a price on a saw delivered direct from the factory. Just fill in the coupon below, clip it out and mail it to us.

**The Quickest Way to Get
a Si-monds Hand Saw**

SIMONDS MFG. CO.,
Fitchburg, Mass.

As per your advertisement in the American Carpenter and Builder, send name of nearby Dealer selling Simonds Saws. I desire a Saw, Length.....
Point.....

Signed.....

Street.....

City..... State.....

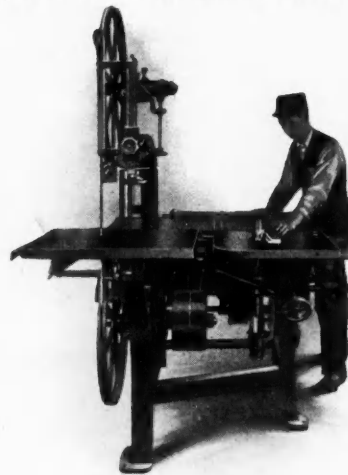


Gate Post and Pier Cap Mould. "Roman" Design of Concrete handsome profits on the investment. To the energetic man who goes after the business it will prove the most profitable undertaking it is possible to make. Concrete lends itself so readily to the manufacture of ornamental articles that they prove very attractive and everyone admires the finished moulds. This company will gladly mail a copy of their catalog free to all readers of this magazine. This is an expensive publication and it will be worth while for every reader to have a copy of it. Address Eau Claire, Wis.

**A Complete Machine Shop Embodied In
One Machine**

As in every other business, competition among carpenters and builders is often keen, and the "little fellows" are often at their wit's end to figure out some scheme whereby they can bid on equal terms with their rivals and stand a show of capturing the contract. After all it is only a matter of lessening the costs of production, and any proposition proving a means to this end should be thoroughly investigated.

But how to cut the costs! Various ways and means may be suggested, but the most prominent is that of cheaper mill-



No. 14. Famous Universal Woodworker work. Local planing mills can charge high prices and get away with it; you can not save anything in that direction. Clearly the only thing to do is to install your own planing mill; in other words, operate your own machine shop. This

Nicholls New Take-Down Square

*Guaranteed
Accurate
and to
Remain So*



FREE

NICHOLLS MFG. CO.
OTTUMWA, IOWA

Gentlemen:—
Please send me one of your
little books telling how to get
lengths and cuts of rafter
by your rule.

NAME.....

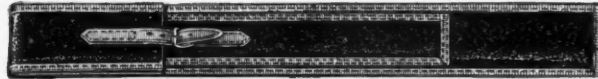
TOWN.....

STATE.....

The main feature of OUR new TAKE-DOWN Square is that it will always stay true, it is so constructed that the tongue is held down into beveled bearings by a spring, and these bearings are made so as to take up the constant wear which comes in taking square apart and putting it together, thereby producing constant accuracy.

SOME OF ITS GOOD POINTS:

1. Convenient to carry—2. Each time Square is taken apart and put together the wear produces a firmer joint, thereby insuring constant accuracy—3. No screws used; locks automatically—4. The only Take-Down Square which leaves no part of the Tongue attached to body when separated—5. Occupies smaller space than any other Take-Down Square manufactured—2"x24"—6. Instantly taken apart and put together—7. Rust-proof canvas case with each Square.



Manufactured in Nos. 3 and 100 Standard; also No. 100 Rafter Framing containing the famous Nicholls' Rafter Framing Rule. This rule gives length of Common, Hip, Valley and Jack Rafters for seventeen different pitches of roof; **also their cuts.**

If your dealer will not supply you we will ship you one of these, express prepaid, at the following prices:

	Polished	Ox. Cop.	Nick. Plated on Copper
No. 3 Standard.....	\$2.50	\$2.75	\$3.00
No. 100 Standard.....	2.75	3.00	3.25
No. 100 R Framing..	3.00	3.25	3.50

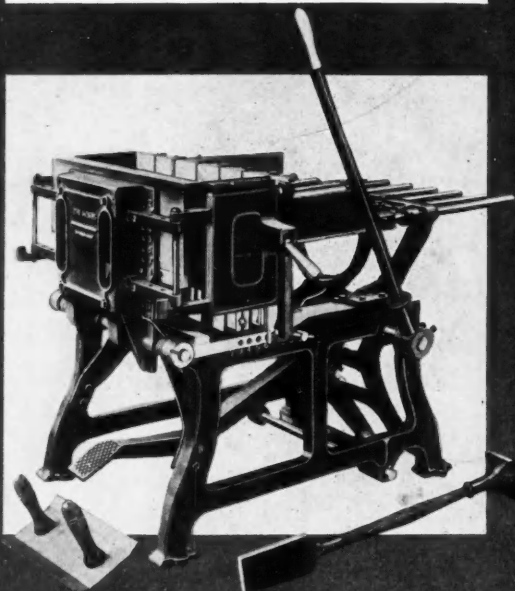
Every carpenter should know how to get the lengths of rafters, also their cuts.



OUR LITTLE BOOK WILL TELL YOU. SEND IN COUPON.

NICHOLLS MANUFACTURING CO.
OTTUMWA, IOWA

THE HOBBS Concrete Block Machine is scoring a remarkable success. The most intelligent and progressive block manufacturers everywhere are buying the Hobbs. 98% of the machines sold replace less modern machines. The Hobbs is not an experiment, but IS a scientifically improved block machine that "stands alone."



FOR your best interests send for the Hobbs catalog. It is a costly book with many illustrations, but we will gladly send it to you free.

It explains all about the Composition Face Plates and the marvelous range of the Hobbs by means of which you can produce Real Broken Ashlar.

THE
**HOBBS CONCRETE
MACHINERY CO.**

800 Ford Bldg. DETROIT, MICH.

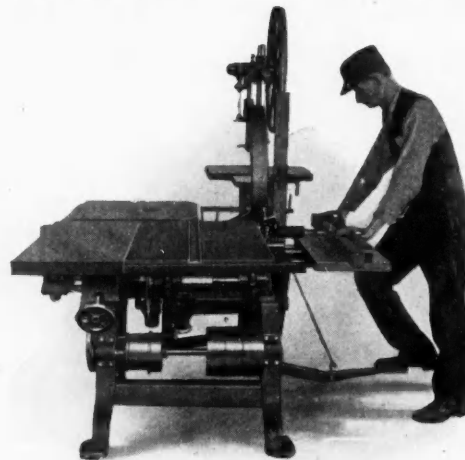
can be done by installing just one machine.

You may argue: "What's the good of one machine when I have a dozen different kinds of work to perform? Is it possible to use one machine as a band-saw, as a joiner, as a planer, as a mortiser and tenoner, as a sander, etc., etc.? I cannot afford to buy separate machines; furthermore, I have not sufficient floor space to install them or men to operate them."

Our answer to this argument would be to refer them to the No. 14 Famous Universal Woodworker, made by the Sidney Tool Co., of Sidney, Ohio, which does sixteen different kinds of work, a few simple adjustments being all that are needed to change from one kind of work to another. That carpenters and builders have been quick to realize the possibilities offered by this machine, is proven by the fact that six hundred have been sold during the past two years. That it is satisfactory is demonstrated by their all being in use today; we understand that not one has ever been returned or reported unsatisfactory.

The principle of constructing one machine to take the place of several is not new. Yet this concern seem to have carried it out to a higher degree than any other. Each of the various kinds of work can be done, so it is claimed, as well, as quick and as clean on the Famous woodworker as on a machine built to do just one thing.

The No. 14 comprises the following sixteen machines: 27-in. band saw; 12-in. joiner; saw table (with raising and lowering arbor); single spindle shaper; boring attachment (arranged on special boring spindle); pony planer; tongue and pole rounder; hollow chisel; mortiser; single end tenoner; drum sander; disc sander; knife grinder; emery grinder, band-resaw; spoke



No. 14, Famous Universal Woodworker

tenoner; rim borer and wheel equalizer; adjustable fellow rounder.

Consider the advantages of this method. Consider that you are doing your own millwork in your own shop, free from the delays and high charges of planing mills, putting their profits in your own pocket, and cutting down production costs that much. And remember there are no machines lying idle, practically no extra floor space required, no high-priced labor to pay, as anyone can operate the Famous. The Sidney Tool Co. will gladly send their catalogue, prices and terms upon request.

Union Metal Columns Used

Builders who are progressive and on the lookout for new things of merit in the building world, will be interested in the accompanying illustration of the new main building of Clinton College, Clinton, Ky. This is a typical installation of Union Metal Columns for large and important work. The



The Keenest Edge
in Shortest Time, on
Any Tool, With No
Danger of Draw-
ing Temper.

6 MONTHS

Hand
and
Foot
Power



**FREE TRIAL
ELEVEN TOOLS IN ONE**

- | | | |
|----------------------|---------------------------|------------------------|
| 1. Coarse Grinder | We want every shop, | 7. Polishing Wheel |
| 2. Fine Grinder | factory, and tool-user to | 8. Carborundum Hone |
| 5. Chisel Attachment | prove by 6 months' Free | 9. Pocket Hone |
| 4. Drill Attachment | Trial, on your own tools, | 10. Scythe Stone |
| 5. Polishing Shaft | how this grinder saves | 11. Foot Power Attach- |
| 6. Buffing Wheel | | ment. |

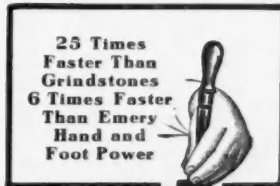
time and money, makes work easier, saves and makes money. We will send this Mechanics Special on 6 months' Free Trial, and then, if you wish, send it back at our expense.

Luther Diamond Tool Grinder
Genuine Carborundum Wheels will not Draw Temper

The genuine Carborundum Wheels on this grinder cut hardest steel, as emery does soft copper, and does not draw temper—no water cooling necessary. You can do work in two minutes on this grinder that would take a half hour on the grindstone. With this grinder it is quick and easy work to keep tools bright and keen-edged, which means faster, easier general work.

BUILT LIKE A HIGH GRADE LATHE

Special tool holders make it possible for any one to do difficult grinding, such as twist drills, chisels, etc. 2500 revolutions per minute—steel and malleable construction, enclosed gears, dust proof, bronze bearings, machine cut spur gears run in oil bath.



25 Times
Faster Than
Grindstones
6 Times Faster
Than Emery
Hand and
Foot Power



WHAT USERS SAY

Thirty Times Faster than Grindstone

We have received your special tool grinder with foot-power attachment and sharpening outfit. We have tried your grinder and our machinist is very much pleased with it and tells us that he ground a chisel on this tool grinder in two minutes, which would have taken an hour of his time on any other grinder. —THE SEARS & NICHOLS Co., Pentwater, Mich.

ELMWOOD HAYNES, Pres. of Haynes Automobile Co., says: "I have found the Mechanics Special a most excellent device."

Thousands of users say the same.

Luther Grinder Mfg. Co.
16 Madison St., MILWAUKEE, WIS.

**RETURN THIS COUPON
FOR SIX MONTHS' FREE
TRIAL OFFER**

Return this coupon for 6 months' Free Trial Offer—a whole half year of free test. Let us give you full description of the Mechanics Special—full particulars of our liberal offer, and also the wonderful story of the discovery of Carborundum, as it appeared in McClure's Magazine. Returning the coupon puts you under no obligations. It is well worth your while to find out all about the grinder guaranteed for 5 years—that will outlast any number of emery wheels—save tools and make work easier. Return the coupon today.

**FREE
COUPON**

LUTHER GRINDER MFG. CO.
16 Madison St., Milwaukee, Wis

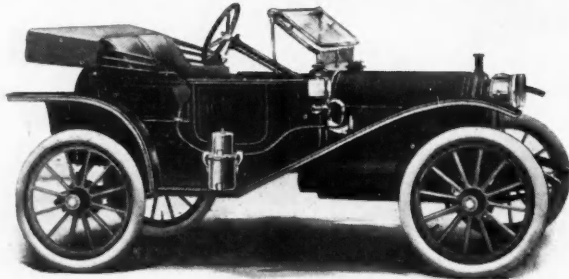
Please send me free and prepaid your Carborundum booklet and Six Months' Free Trial Offer on Mechanics Special Luther Diamond Tool Grinder. This obligates me in no way whatsoever.

Name.....
Address.....
Dealer's Name.....
Dealer's Address.....

Hupmobile

GUARANTEED FOR LIFE

1912 Announcement



Runabout, 20 H. P., 4 cylinders, sliding gears. Bosch magneto; fully equipped with top, wind shield, doors, gas lamps and generator, three oil lamps, horn and tools—\$750 F. O. B. Detroit.

The 1912 Fore Door
Runabout **\$750**

Fully Equipped F. O. B. Detroit

All Prices Include Complete Equipment

We believe that in this new 1912 fore-door Hupmobile, fully equipped for \$750, you get infinitely more than you have ever even been offered before.

To get down to bedrock—pick out any car of lower price; and add to that price the money value of the 1912 equipment of the Hupmobile.

When you've made it plain to yourself that even in point of price this new car is the most extraordinary thing that has ever happened in motordom; get back to the only question that counts—the question of quality—and study this page to see what your Hupmobile dealer offers you.

Into each and every Hupmobile model for 1912 have been incorporated entirely new elements of value.

The legitimate savings of an immensely increased production—these are passed on to you in the form of a structural, mechanical and incidental equipment, never before offered in a car at anything like this price.

Study the list of 1912 improvements. Consider what you get; and what you pay. Remember the flawless reputation of the Hupmobile—its immense popularity not only with men of moderate means, but men of wealth and experience in every community.

1912 Improvements

An auxiliary inverted top-leaf spring placed between the frame and rear spring, to prevent listing of body.

Old ball bearings back of driving pinion replaced with Timken bearings.

Four pinions instead of two on the differential. Rear axle shaft tapered into and keyed onto the wheel—cannot work loose.

Ball bearings on either side of differential replaced by specially designed Hyatt roller bearings.

Ten-inch double internal expansion brakes instead of eight-inch. Adjustable ball housing for universal joint.

All spring hangers fitted with oilers. Timken roller bearings on front wheels.

Supporting seat for front spring. All springs made of Vanadium. New pressed steel radiator, lined with brass, with 33 1-3 per cent more efficiency in cooling.

Double springs on the foot brake pedals. New square dash and hood ledges of natural walnut.

Nine-inch mud guards instead of six-inch; and mud shields completely enclosing space between wheels and fenders.

Large timing gears of bronze instead of fibre.

Valve adjusters on all valves maintain timing longer under all conditions; make timing quickly adjustable and prevent engine power from decreasing.

Improved Breeze carburetor—will not leak, and is accurately and easily adjusted.

Cam-action oiler on the engine regulated with the throttle and gives a positive feed. You get more oil as you need it and as the engine develops power. This feature, peculiar to high priced cars of foreign make.

Four-doors included as regular equipment with no extra charge; also top, windshield, and gas lamps and generator.

Four-doors included as regular equipment with no extra charge; also top, windshield, and gas lamps and generator.

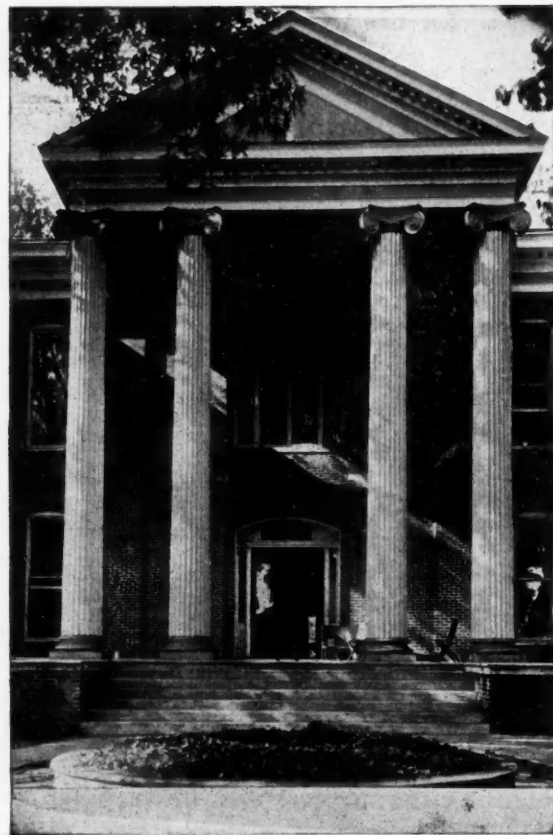
HUPP MOTOR CAR COMPANY
1255 JEFFERSON AVENUE, DETROIT, MICH.

manufacturers inform us that these columns are enjoying an immense popularity, constantly increasing, not only for large columns such as these, but also for ordinary porch use, for pergolas, etc.

Union Metal Columns are made in all sizes, up to 40 inches in diameter and a maximum length of 35 feet. These columns are equipped with cast iron bases and composition capitals. For columns up to and including 14 inches in diameter, 24 gauge galvanized steel is used, one-ply in thickness. For the larger columns, 16 inches up to 26 inches in diameter, two-ply of 24 gauge galvanized steel is used. For columns larger than 26 inches, two-ply of 22 gauge gives the required strength.

Special galvanized sheet steel is used for this purpose, from which the galvanizing will not peel, and which takes paint well.

It is stated that an examination made a short time ago of some Union Metal Columns which had been installed six years ago failed to reveal any indication of rusting or other deterioration in any part of the columns. Builders and



Union Metal Columns Used for New Clinton College Building

contractors consider this an excellent record, and they state that built up or stave wood columns installed at the same time have opened up at the joints, making it necessary to renew a number of them.

The popularity of Union Metal Columns is well demonstrated by the fact that their factory is no longer large enough to meet the demand. The company are now moving into a new office and factory building which will triple their output. They state that this change has been made necessary by the increasing demand for Union Metal Columns.

A new catalogue illustrating and describing Union Metal Columns and showing photographs of many actual installations has been prepared by the Union Metal Mfg. Co., Canton, Ohio, and can be had by writing to them.

“PUT A STOP TO DEPRECIATION—BUILD WITH CYPRESS AT FIRST!”



The Wood That *Lasts* Shall Be *First* With Wise
CONTRACTORS



By honest and intelligent advice on **woods** we are not only saving losses to people who are going to **build anyhow**—but we are also

CAUSING MORE PEOPLE TO BUILD



This is going to be of more and more benefit to **you** month by month. It is **up to you** to intelligently take advantage of this by **learning for yourself** that **CYPRESS** is not only the **ONE BEST OUT-DOOR WOOD** for the owner—but also the **ONE BEST WOOD FOR YOU**. Cypress “**makes good.**” That helps your reputation. Cypress is easy to work—that’s **good for your tools.**

We are giving away complete working plans and specifications for **THIS BUNGALOW**. Many thousands of people **ALL OVER THE U. S.** are writing for them. **THEY WILL HAVE TO GET YOU TO DO THE WORK.**

THEY WILL INSIST ON CYPRESS

It will be **MONEY IN YOUR POCKET** TO HELP THEM GET JUST **WHAT THEY WANT.**



(Plan by Henry L. Wilson, Architect, Chicago)

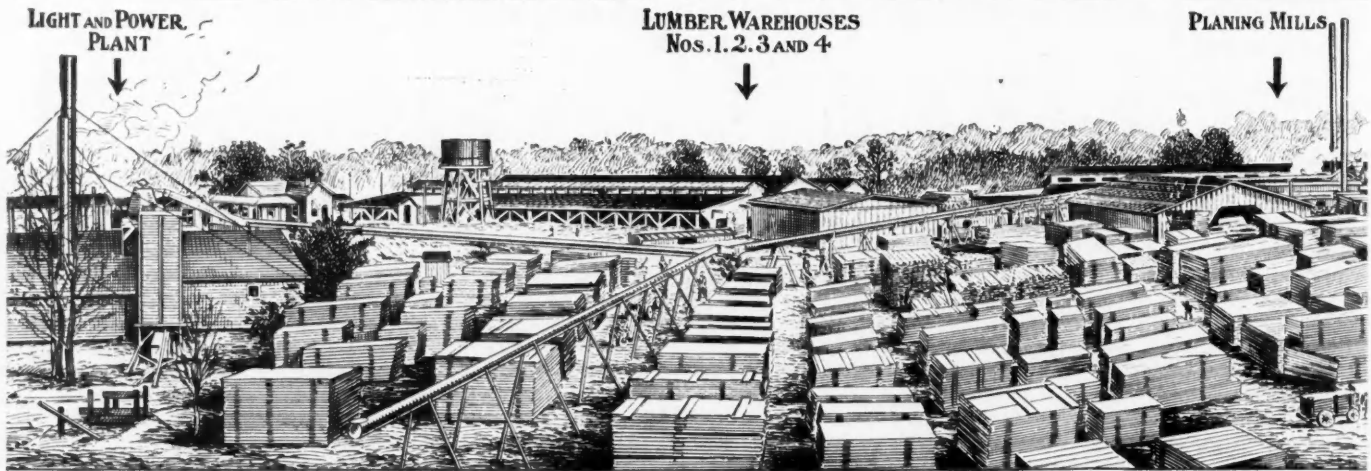


CYPRESS is the “**comer**” in your territory. *Listen For It.*

Why not **FIND OUT** what **CYPRESS** can do for **YOU NOW?** **WRITE US—ASK YOUR OWN QUESTIONS**—about your own needs, big or little. You can rely on detailed and reliable **CYPRESS** information if you address our “**BUILDERS’ HELPS DEPT.**” We will recommend **CYPRESS ONLY FOR USES WHERE IT IS THE BEST WOOD TO USE.**

Southern Cypress Manufacturers’ Association
 1216 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.

We are producing **CYPRESS**—and talking it—but not retailing it. **BUY IT NEAR HOME.** **ASK** your lumber man if he sells **CYPRESS**: if he does not, ask him **WHY.** Then **WRITE US.** We will tell you where you **CAN** get **CYPRESS.**

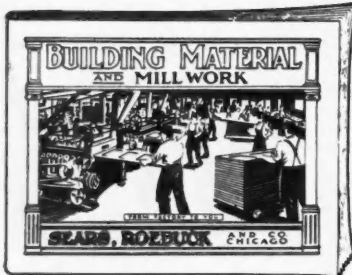


SEARS, ROEBUCK AND CO.'S GREAT LUMBER MILLS AND YARDS AT MANSFIELD, LA., IN THE HEART OF

Supply Your Lumber Needs from This

Why buy your lumber in dribs at high retail prices when you can buy from us in carload lots for the same prices or less than your retail dealer pays? A barn or building of ordinary size requires at least a carload of lumber.

You Are Paying Too Much for Mill Work and Building Material



A Price Manual that should be on every Builder's Desk.

THIS SPLENDID BOOK, just off the press it quotes bed rock prices on more than 5,000 items. This catalog quotes the very latest designs in Craftsman doors and trim for about the same price which you pay for the ordinary doors. We can save you fully 50 per cent on massive buffets and china closets. Whether you are in need of \$5.00 or \$500.00 worth of mill work, you should have our new catalog in order to get the biggest possible value for your money.

JUST GLANCE OVER THE FOLLOWING PRICES on a few items selected at random from our new Building Material and Mill Work Catalog:

\$ 1.50 Doors	\$.95
2.00 Windows	1.10
1.00 Mouldings, per 100 feet ..	.25
75.00 Stairs	22.80

WHY WE CAN QUOTE YOU THESE EXTREMELY LOW PRICES The big mill work factory from which we ship your order carries a stock on hand at all times upward of half a million dollars. Manufacturing our material in such huge quantities enables us to control the raw material, and our big sales make it possible for us to operate with the smallest margin of profit. You reap the benefit.

Right in your own state are hundreds of people regularly doing business with us, and we will be glad to send you copies of unsolicited letters which they have written us telling of the good quality of our material, the big saving which we enable them to make, and the prompt and careful manner in which we ship the material.

Clip the coupon today, fill it in and mail it to us, or mention this magazine, and we will send you by return mail, postage prepaid, our great Building Material and Mill Work Catalog, which may be the means of saving you more than \$1,000.00 during the present year.

LUMBER WAREHOUSES
NOS. 1, 2, 3 AND 4

PLANING MILLS

We are independent lumber manufacturers. Our prices represent the actual cost of manufacture plus one small reasonable profit. We employ no middlemen

How Can You Compete with another contractor, builder or carpenter who buys his lumber from us at a saving of 25 per cent of the prices you have to pay a local dealer, unless you follow his example.

Your Success Depends upon your knowing where you can buy your lumber and building material and supplies at the lowest prices.

THIS IS OUR WHOLESALE LUMBER PRICE LIST

We Publish Special Lumber Price Lists Quoting "Delivered Prices" to Every City in the United States.

Let Us Send You a List Showing Our Delivered Prices (Freight Prepaid) to Your Station. Mailed Free on Request.

If you cannot wait for our delivered Lumber Price List, SEND US YOUR LIST, we will gladly mail you our bid quoting you our prices on your entire bill of lumber or mill work. The prices, however, will be exactly the same as the prices printed in our wholesale price list.

Take Another Look at the illustration of our great lumber yard. It is reproduced from an actual photograph, taken recently, and tells its own story. Here we keep on hand constantly a stock of nearly 15,000,000 feet of dimension timber, ceiling, siding, flooring, finishing and other lumber, shingles, soft pine, fir flooring, cedar, cypress shingles, cypress lumber, pickets, pickets, lath, etc. We can fill your order without delay.

Remember, that your purchase is loaded on the cars in this yard, and in the near future from our Illinois yard, and unloaded at your freight depot. You save all the expense of several unnecessary handlings, as well as two substantial profits—the jobber's and the retail dealer's.

Our Lumber Is Not Regraded. We guarantee all stock to run in even width and thickness, and all tongue and grooved material to be absolutely uniform. If you can use poor regraded stock on some of your work, why not increase your profits by buying Southern mill grades from us and regrading the lumber yourself.

SEROCO HOUSE PAINT

Ready Mixed
Guaranteed like no other.

\$1.10 to \$1.23
a gallon according to quantity.

We are paint manufacturers.

Free on request, our Paint and Varnish Catalog and color samples.



STRATFORD DESIGNS

Genuine Bronze
Lock Set for
Inside Doors

98 Cents
Regular \$1.50 value.

Polished or Sanded
Antique Copper or
Lemon Brass Finish.

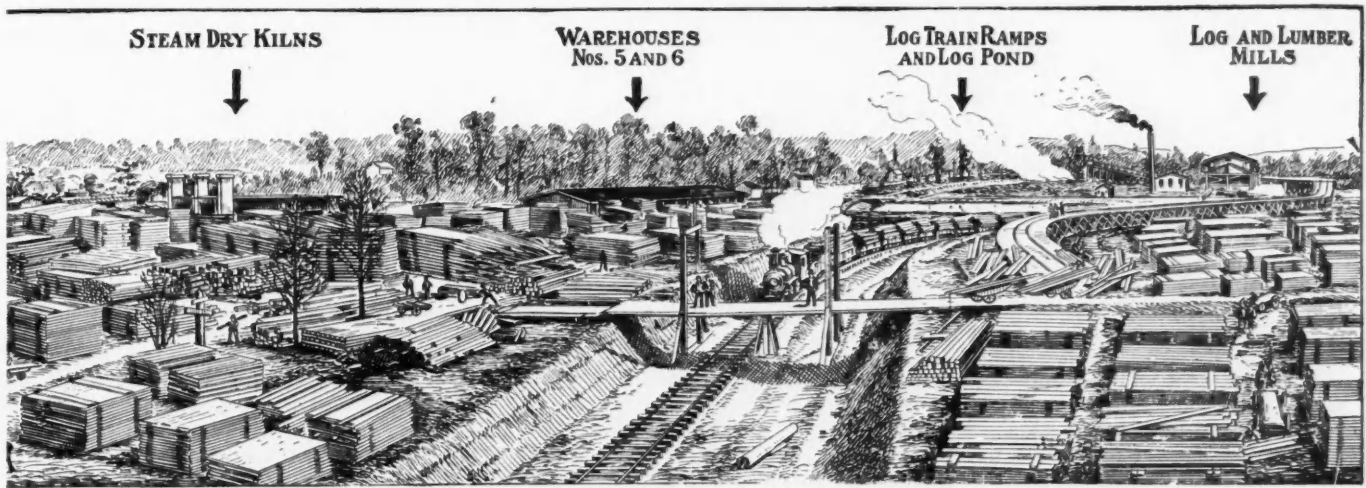
Hundreds of similar
bargains in our Builders'
Hardware Catalog
Send the coupon for it.



Your Money, Including Any Freight Charges You Have Paid,

SEARS, ROEBUCK AND

WATCH FOR OUR BIG



AMERICA'S FINEST TIMBER DISTRICT. WE HAVE ALSO ANOTHER BIG LUMBER PLANT IN COURSE OF CONSTRUCTION IN ILLINOIS

Enormous Stock at Wholesale Prices

We save you the profit you have been paying the retailer and the cost of handling the lumber through two or three middlemen, which you have also been paying. Read the facts; they are of vital importance to you.

The control of coal and lumber prices has long been out of the hands of the public. We have restored lumber prices to a fair basis. Wideawake contractors and builders are alive to the great benefits our plan provides.

We Can Save You \$100.00 to \$150.00 on an average carload of lumber. Think what this means to you in the extension of your field of operations and the growth of your business!

Our Plan Is Not an Experiment. We ship lumber and mill work into every state in the Union. Letters from thousands of customers show that we are able to save them from \$6.00 to \$10.00 a thousand feet.

Here's a few items picked from our Lumber Price List, showing OUR PRICES at our mill. Let us send you our DELIVERED WHOLESALE PRICE LIST, showing what these and other items of lumber cost delivered in YOUR town.

1x4 Boards, 10 to 20 ft. lengths. Price per 1,000 ft. board measure.	2x6 Dimension Lumber, 12, 14 or 16 ft. lengths. Price, per 1000 ft. board measure.
No. 1 grade.....\$14.90	No. 1 grade.....\$12.90
No. 2 grade.....10.80	No. 2 grade.....10.95
No. 3 grade.....9.45	
3/4x4 Bevel Siding, clear grade. Price, per 1,000 ft. board measure.....	16.00

For our complete assortment and wholesale prices, send for our Delivered Wholesale Lumber List.

We Guarantee Every Foot of Lumber to be strictly Southern mill grades. Our great saw mill, situated at the edge of the timber tract in the heart of America's finest timber district, is surpassed by none. Every operation from the selection of the standing timber to the grading and loading of the finished product, is in the hands of experts.

We Can Make Shipment Within 48 Hours After Receiving Your Order and guarantee every shipment to reach you in perfect condition.

Begin Now to Make More Money. Send for our delivered price list, make up an order for a carload of lumber, and let us open your eyes to the possibilities of our plan for increasing your profits.

<input type="checkbox"/> Wholesale Delivered Lumber Price List.	Sears, Roebuck and Co., Chicago, Ill.
<input type="checkbox"/> Book of Modern Homes Building Material and Mill Work Catalog.	Gentlemen:—As per your offer in American Carpenter and Builder please send me, without charge, postage prepaid, the booklets and printed matter opposite which I have placed a check mark.
<input type="checkbox"/> Catalog of Home Heating Systems.	Name.....
<input type="checkbox"/> Plumbing Catalog.	Postoffice.....
<input type="checkbox"/> Paints and Varnishes Catalog.	R. F. D. No..... State.....
<input type="checkbox"/> Woodworking Machinery Catalog.	P. O. Box No..... Street and Number.....
<input type="checkbox"/> Hardware and Carpenters' Tool Catalog.	
<input type="checkbox"/> Roofing Catalog.	

\$1,050⁰⁰



FOR ONLY \$1,050.00 we will furnish all of the material to build this large six-room frame house, (brick, cement and plaster excepted). For the house we specify clear narrow bevel cypress siding, "A" cedar shingles, fir edge grain porch floors, clear oak and maple flooring and pure white tile flooring in the bathroom, Craftsman design oak doors, stairway and trim for the first floor, clear birch doors and trim for second floor, a beautiful rustic fireplace with two colored glass windows on each side in the living room, and a massive oak buffet of the latest Craftsman design, with seats on each side covering the entire end of the dining room.

\$2,000.00 WILL NOT BUY YOU A BETTER AND MORE HIGH CLASS BILL OF MATERIALS IN YOUR LOCAL SOURCE OF SUPPLY. The difference between \$1,050.00 and \$2,000.00 represents your saving when you place an order with us for a complete house bill of the size and design illustrated above.

OUR BOOK OF MODERN HOMES illustrates, describes and prices nearly 100 houses for which we furnish all of the material at amounts ranging from \$153.00 to \$1,521.00. For each one of these houses we give complete building plans, type-written specifications and an itemized bill of materials (our bid), placing at your command the best architectural service.

TO PROVE THAT OUR HOUSES ARE OF THE VERY BEST QUALITY and can be built at an immense saving we print in our Book of Modern Homes twenty-two photos of houses built according to our plans and with our material, together with letters from the builders telling of their experience. You can't afford to be without this book of Modern Homes. Use the coupon today and ask us to send you a copy.



Will Be Cheerfully Returned If You Are Not Perfectly Satisfied

CO., CHICAGO, ILLINOIS
AD NEXT MONTH



The Business of this Place is to Raise Salaries

From every section, and from all sorts and conditions of men, messages come to tell of earnings increased and futures brightened through study of I. C. S. Courses.

And no matter where you live, how little spare time you have, or how brief your schooling, the I. C. S. can raise **your** salary. The 400 or more advancement letters received every month represent only a fraction of the total number of advancements.

I. C. S. Courses have made draftsmen, foremen, and superintendents of shop hands; building contractors, architects, structural and concrete engineers of carpenters and masons; advertising men, window trimmers, show-card writers, chemists, illustrators, and designers of clerks; electrical, mechanical, and steam engineers of laborers; mine inspectors, foremen, and mining engineers of mine workers; bridge engineers, surveyors and mappers, civil engineers, gas engineers, automobile runners, and civil service employes of young men willing to use their spare time to mold a career.

Mark and mail the Coupon and learn how the I. C. S. can raise **your** salary.

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 Running
Arch't Draftsman	Civil Engineer	Foreman Machinist
Contract'g & Build.	Surveying	Sh.-Met. Pat. Drafts.
Building Inspector	Mining Engineering	Textile Manufact'g
Structural Engineer	Mechanical Engineer	Bookkeeper
Structural Draftsman	Mechanical Drafts.	Stenographer
Plum. & Heat. Con.	Stationary Engineer	Advertising Man
Supt. of Plumbing	Electrical Engineer	Window Trimming
Foreman Steam Fit.	Electric Lighting	Commerci'l Illustrat'g
Plumbing Inspector	Electric Railways	Civil Service Exams.
Heat. & Vent. Eng.	Concrete Construct'n	Chemist

Name _____

Street and No _____

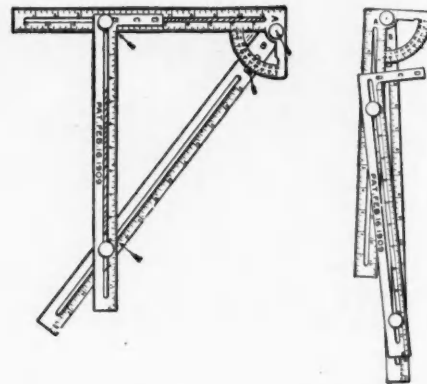
City _____

State _____

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

The A B C Protractor Square

Practically, the difference between an ordinary workman and a foreman is in the latter's ability to lay out the work. In carpentry, as in stone masonry, a knowledge of geometry and mathematics is usually necessary in order to accomplish some of the commonest forms in construction. While it is always convenient to have an understanding of the sciences, the ingenuity of modern designers has obviated the need of detailed technical training and enabled the mechanic who knows what he wants to do to perform the same operations mechan-



ically as the technical man does with mathematics. An instrument of this character is the A B C Protractor and Square, made by the Crookston Tool Company, Crookston, Minn.

This instrument, as seen by the cuts herewith, consists of three parts working together, the different pieces being lettered and figured to give the required results. It works on the principle of the right-angled triangle, and is capable of giving any of the cuts required on a building, no matter how intricate, and it will give the length of rafters, etc., as well.

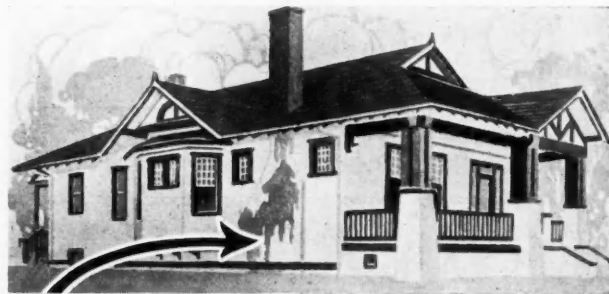
This instrument, so simple that it is called a tool, is meeting with deserved success wherever introduced, and readers of AMERICAN CARPENTER AND BUILDER who are not already acquainted with it should investigate.

We understand that the Crookston Tool Company, who are placing this tool on the market, guarantee that it will do all they claim it will. Aside from the very complete directions which come with the tool, they are always willing to explain fully any point not perfectly clear to the user.

Stucco Houses, Their Protection and Decoration

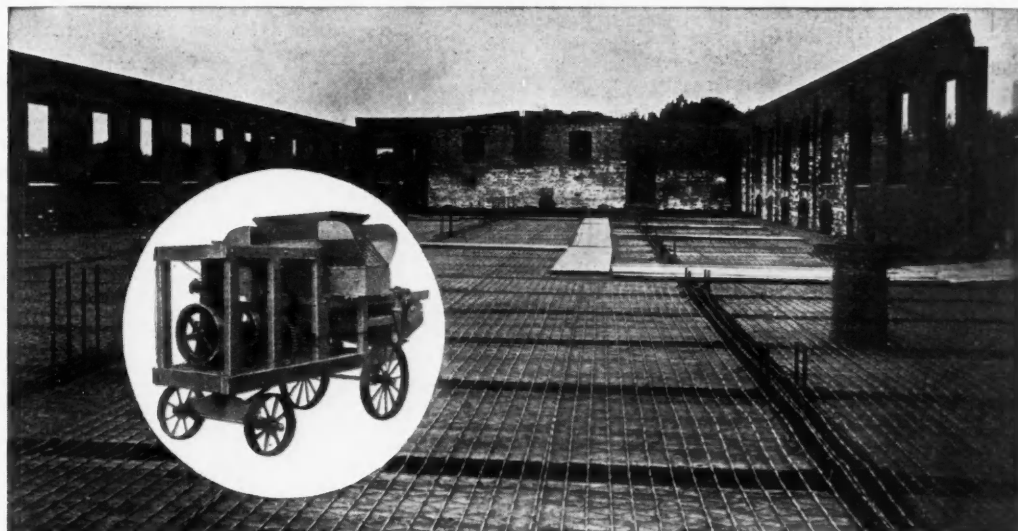
The use of stucco in the construction of private residences has given architects and builders an opportunity to produce handsome and substantial houses having a rich, aristocratic and conservative appearance, at less expense than houses of a similar character formerly entailed.

Stucco has shown itself to be a thoroughly practical material for modern building construction, nevertheless it is a material that requires special precautions to insure its stability; and its surface, unless properly treated, is prone



Spot on Stucco Wall to be Removed with one of the [Glidden] Finishes

“The Roof will be Completed in Two Days and then the No. 12 Coltrin will have Just Cause to Point with Pride to Its Work.”



Reinforcement ready for placing concrete. Cut shows No. 12 Coltrin used on the work.

Ocean Grove, N. J., Feb. 8, 1911.

The Knickerbocker Company, Jackson, Michigan.

Gentlemen: I am mailing you photo of one of the buildings of The Buchanan & Smock Lumber Co. plant which shows where we were just starting to concrete the upper floor, the footings, piers, lower floor, columns, girders, beams, etc., having gained sufficient strength to permit the work to proceed. Unfortunately the COLTRIN MIXER could not be shown in this photo because the work is upstairs, still, when I tell you this building is 280 ft. long and 70 ft. wide you will see it is no small affair. There are four more buildings which are now complete excepting the roof on the north building which is 180 ft. long by 30 ft. wide. This roof will be concreted in two days and then the No. 12 COLTRIN will have just cause to point with pride to its work. Not a single time in 48 days and three hours work has the engine refused to start or the machine failed to do its work.

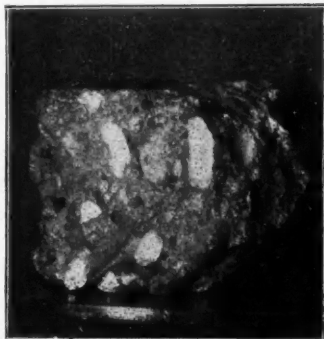
The piece of concrete Mr. Smock gave you at the New York show was a spawl from one of the pier footings of the building shown in the photo and thirty days old when broken. Proportion one part Atlas Portland Cement to six parts of bank run gravel. The piece shows the pebbles or stones were positively fractured, thus indicating the perfect uniformity of the mixture.

Tell any and all of my concrete colleagues who may talk mixer with you next week at the Chicago Show that he who hesitates to choose the COLTRIN is lost so far as dollars are concerned, for our two COLTRINS have proven themselves reliable, faithful and money makers.

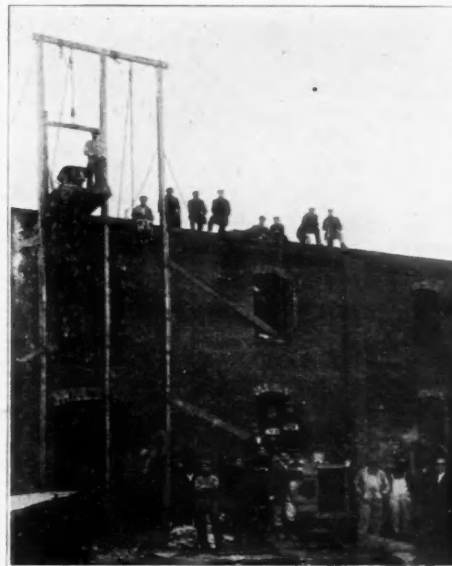
My brother will mail you photo of the sea wall that we are constructing at Allanhurst, N. J. Of course we use only the COLTRIN on the work.

Wishing you the success your good machine deserves, I beg to remain,

Very truly yours,
D. C. LEAW.



Spawl from Pier Footing



Putting on Concrete Roof

Write for 1911 Catalog

THE COLTRIN CONCRETE MIXER

STEAM—GASOLINE—ELECTRIC—HAND POWER

THE KNICKERBOCKER CO.

Dept. A.

JACKSON, MICHIGAN

to disintegrate and to become discolored through exposure to the elements. In this connection it is interesting to note that The Glidden Varnish Company, of Cleveland, Ohio, through a series of elaborate and practical tests carried on in their research and chemical laboratories, in conjunction with practical craftsmen in stucco and concrete, and experts in modern building construction, have produced a number of special products known as "Advanced Finishes," which cover the entire field involved in the protecting, damp-proofing and decorating of stucco and concrete surfaces.

These "Advanced Finishes" include Alkali Proof Wall Size, which is designed to prevent the discoloration and staining of decorative materials used upon stucco, plaster, and cement surfaces. It penetrates the porous surfaces and counteracts the alkaline reaction of cement and plaster, sealing the pores and protecting the wall coating from discoloration.

Concrete Floor Dressing is one of the Glidden "Advanced Finishes," which, as its name indicates, is especially intended for the maintenance of concrete floors, their protection from abrasion and the absorption of moisture and foreign matter, as well as for their decoration.

One of their most valuable products for waterproofing and decorating concrete surfaces is known as Glidden Liquid Cement. It consists of a very high quality of cement incorporated with, or carried in suspension by, a waterproofing medium or vehicle of unusual durability and water resisting features. Taking into consideration the fact that when a cement wash of neat cement and water is applied as a finishing coat upon cement construction, whether it be stucco, concrete, or some other composition, the life of the same is extremely limited, owing to the fact that there is no durable vehicle with which to bond the cement to the surface, naturally a cement wash will not last longer than a matter of a few months, after which it cracks and crazes,

soon disintegrating and presenting a most unsightly appearance.

Moreover it is impossible to permanently bond plaster to concrete, while Glidden's Liquid Cement bonds itself very firmly to concrete surfaces and produces a richly decorative effect.

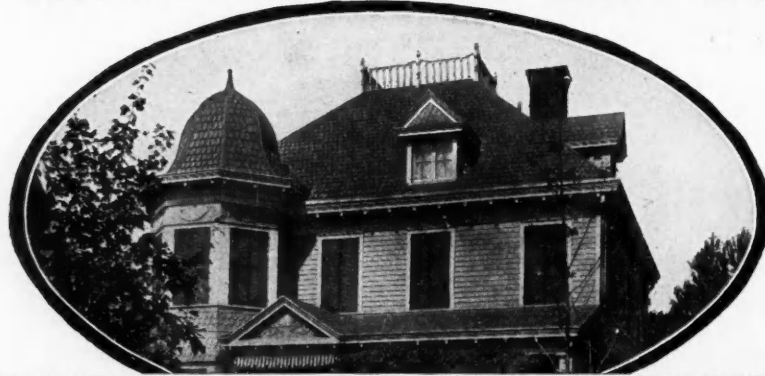
It is made in imitation of Bedford Sandstone, and in a variety of other practical and permanent shades, including Colonial and Pompeian buffs as well as pure white. Architects and builders have expressed perfect satisfaction with this product in waterproofing and rendering uniform stucco, cement plaster and concrete surfaces, both interior and exterior, and they report having obtained very pleasing decorative effects.

The Glidden Company also furnish a special filler for filling breaks, cracks and depressions in concrete and stucco surfaces which produces a waterproof result and prepares stucco and concrete surfaces for treatment with their Liquid Cement. This filler is known as Glidden's Liquid Cement Filler.

The Glidden Varnish Company also manufacture Waterproof White Finish, Waterproof Flat Finishes, French Caen Stone Finish, French Caen Stone Tints, Transparent Waterproofing, Acid and Graphite Acid Proof Coating, Liquid Concrete and other "Advanced Finishes" regarding which they have prepared a special booklet covering general information on the subject of their relation to the protection and decoration of modern building construction.

Architects, builders and owners of concrete, cement, or stucco structures would do well to communicate with The Glidden Varnish Company in regard to any problems relating to the perfection, protection and decoration of modern building construction, as they will be glad to furnish any information desired and to supply free samples and demonstrations when requested.

THIS ROOF WAS LAID 20 YEARS AGO



CORTRIGHT METAL SHINGLES

We are creating such a demand for them that they are rapidly supplanting wood shingles everywhere.

The use of wood shingles is already prohibited in many sections, because of their lack of fireproof qualities.

The modern roofing is *Cortright Metal Shingles*, because they have every good quality a first-class roof should have.

The contractor who handles *Cortright Shingles* in his section is getting the business.

Are you equipped to meet this growing demand?

If not, write for our special proposition to contractors. or just simply fill out and mail us the attached coupon.

CORTRIGHT METAL ROOFING COMPANY
PHILADELPHIA and CHICAGO

COUPON
Gentlemen:—Kindly send me your special proposition to contractors and catalog.
Name
Street Address
City Business



Big Profits In Concrete Specialties

If Dollars Look Good to You—Read This Carefully

Do you realize that there is a lot of money in some sand bank waiting for you to take it out? Do you know that every wagon load of sand can be made to produce a net profit of \$25? It is a fact and right at your very door is a golden opportunity to coin money in a most rapid and gratifying manner. Very few people realize that the manufacture of concrete specialties brings enormous profits and many ambitious men, by devoting all or part of their time are making generous and enormous profits every year in this way. Just as an example of what can be done in this line, we give below one man's experience and profit's for one week.



Indestructible, Solid, Substantial Hitching Post

The manufacture of ornamental concrete articles is not difficult and can be accomplished by any man of ordinary intelligence. We furnish complete and detailed instructions with every mould. These moulds can be readily sold for use in city parks, lawns, cemeteries and every property owner is a prospective customer for a solid, indestructible Hitching Post. **Do you know of another line that will net you such handsome returns in so short a time as the manufacture of these articles?**

Figure the Profit Yourself

These moulds never sell for less than \$5.00 each, which is much less than the cheapest iron hitching post or vase you can buy and are much superior as they are indestructible. They generally bring from \$15.00 to \$25.00 a pair.



Beautiful Artistic Lawn Vase Every Woman Wants a Pair

12 Lawn Vases, \$5.00 each.....	\$ 60.00
33 Hitching Posts, at \$5.00 each.....	165.00
	\$225.00

THEY COST AS FOLLOWS

41 sacks cement (10½ bbls.) at \$2.00.....	\$20.50
5 yards sand, \$1.00	5.00
57 hours labor, 20 cents.....	11.40
33 staples and rings for posts, 10 cents.....	3.30
	40.20
A good week's profit.....	\$184.80

Send for large beautiful Catalog 29
It shows everything in the
Concrete Machinery Line

Every carpenter, builder, contractor, mason and property owner should have a copy of our 1911 concrete machinery catalog. It shows the largest line of concrete machinery in the world and everything imaginable is listed and described. It will pay **you** to send for a copy **now**. You will find the prices lower than has ever been made on a similar line of goods anywhere, and many articles you ought to have in your business. **Do it now.**

Northwestern Steel & Iron Works

942 Spring Street

Eau Claire, Wis.

Franklin Tunnel Quarry

Readers of the AMERICAN CARPENTER AND BUILDER will be interested in this illustration, which is a reproduction of a photograph of the interior of one of the tunnels of the Genuine Franklin Tunnel Quarry of the Slatington Slate Company, Slatington, Pa. This celebrated Franklin Tunnel Quarry was opened in 1846. It is the oldest and the largest quarry operated in the Slatington district.

If you will examine this photograph carefully you will note the compactness and solidity of this bed. Also note that in this tunnel there is only one big bed. Since the Genuine Franklin Tunnel roofing slate, as well as the Genuine Franklin Tunnel natural slate blackboards are made from this one bed and are never mixed with the product of any other bed, the wearing quality is always absolutely uniform throughout, both in strength and color. It is evident that the possession of such a quarry as this, made up of just one large bed, gives the Slatington Slate Company a decided advantage over many other quarries with slate deposits in numerous small beds. No one can appreciate this better than the readers of the AMERICAN CARPENTER AND BUILDER who are practical users of slate, both for roofing and for the numerous special purposes to which slate slabs are so well adapted. For black-boards, toilet-room finishing, sink-tops, laundry-tubs, stair treads and risers, electric switchboard faces, etc., the clear black slate slabs from this Genuine Franklin Tunnel Quarry, are proving very popular.

The Slatington Slate Company, Slatington, Pa., have just issued their new catalogue and price list for 1911. They want to place this booklet in the hands of everyone interested in the building line. It is gotten up in exceedingly

attractive style and is full of valuable information for carpenters and builders. Write for a copy.

New Metal Roofing Journal

A newcomer in the ranks of the roofing papers is "Edwards Metal Sheet," issued monthly in the interest of the Edwards Mfg. Co., Cincinnati, O. It is very attractively gotten up, nicely illustrated, and is brimming over with interesting, useful and entertaining reading matter pertaining to the metal roofing business. We are informed that the



Interior of the Celebrated Quarry of the Slatington Slate Co.

"Edwards Metal Sheet" will be mailed monthly to a selected list of carpenters, contractors, roofers, dealers, etc. It will be sent free to any reader of the AMERICAN CARPENTER AND BUILDER on request.

Look for the trade-mark—the genuine is stenciled



PITTSBURGH

When you're paying the price of good galvanized sheets, you ought to be getting Apollo. If your jobber can't supply you—ask us.

Apollo Best Bloom Galvanized Sheets are carefully manufactured, high in quality and specially adapted to construction purposes and good sheet metal work. Gauges 10 to 30 inclusive. Write nearest District Sales Office for full information and quotations.

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

- | | | |
|--|---------------------------|---|
| 1 27" Band Saw, | 6 Pony Planer | 12 Knife Grinder |
| 2 12" Jointer | 7 Tongue and Pole Rounder | 13 Emery Grinder |
| 3 Saw Table, with raising and lowering arbor | 8 Hollow Chisel Mortiser | 14 Band Re-Saw |
| 4 Single Spindle Shaper | 9 Single End Tenoner | 15 Spoke Tenoner, Rim Borer and Wheel Equalizer |
| 5 Boring Attachment, arranged on special boring spindle. | 10 Drum Sander | 16 Adjustable Felloe Rounder |
| | 11 Disc Sander | |

Messrs. Smith & Seale, of Gloster, Miss., said they could not run their shop with- out the **FAMOUS WOODWORKER.**

Here's Their Letter:

THE SIDNEY TOOL CO., Sidney, Ohio.

Gloster, Miss.

Gentlemen:—We have been using one of your No. 14 Universal Woodworking Machines, furnished with all attachments, for the past year and we believe it to be the most perfect woodworking machine on the market. Every attachment on this machine works perfect and does perfect work. We consider it the most up-to-date and complete machine ever made and we could not run a general repair shop without it.

We have not bought a buggy body, seat or wood part or gear, nor wagon axle, felloe round, bolster reach or anything of the kind since we have had this machine. We buy our timber rough and cut out all such parts that we need, and we will be pleased to recommend this machine to any man running a general repair shop and will be pleased to answer any questions that any brother repair man should like to ask in reference to this machine.

Will endorse anything the Sidney Tool Co. has said in advertising this useful machine.
SMITH & SEALE.

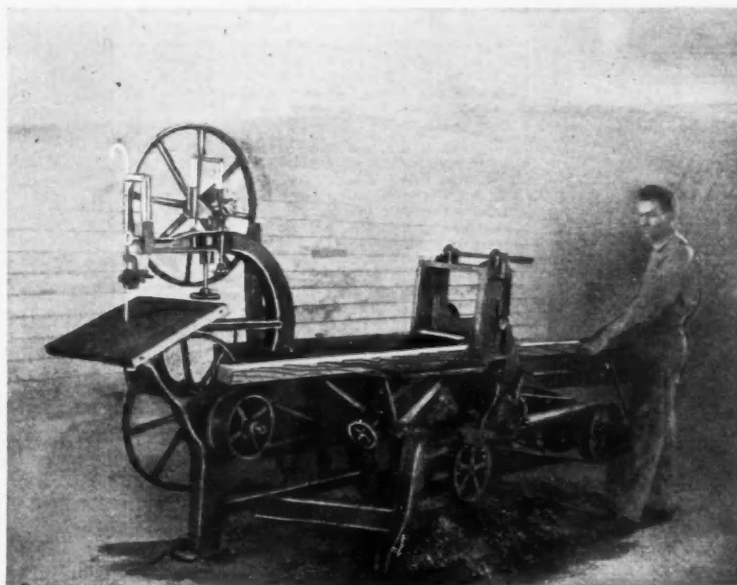
**The No. 14 FAMOUS
does the work of six-
teen ordinary wood-
working machines.**

Your business pays the biggest profits when you eliminate millwork bills. You can do this by installing a No. 14 FAMOUS Universal Woodworker—sixteen woodworking machines in one.

All the woodworking machinery you need is embodied in this one machine. It's not necessary to invest your capital in a number of machines when *one* is sufficient—when *one* does just as much as several and costs *less to buy and less to maintain.*

Over six hundred FAMOUS Universal Woodworkers are in use; and we are getting letters like the above every day. Not one has ever been returned; no user has ever found reason for dissatisfaction. Can any other universal woodworker show such a record? No Sir!

Our guarantee covers the entire life of the machine. You take no chances whatever. Write for special terms and full particulars. Don't think you cannot afford one—you cannot afford to do without one. Write us today.



THE SIDNEY TOOL CO., Sidney, Ohio

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

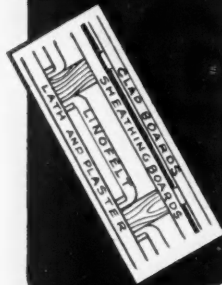
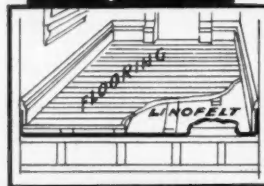
VANCOUVER
The A. R. Williams Machinery Co.
57-61 Alexander Street

Sheath Your Houses With

LINOFELT

Linen-Felt made from Flax Fibre

38
Times
More
Effective
Than
Building
Paper



BUILD houses that keep the outside OUT and the inside IN, that keep OUT the cold of winter and the heat of summer, that keep IN the warmth in winter and the cool in summer. Put up houses and buildings that keep out sound, the rooms of which are quiet and restful. Getting these features will add less than one per cent to the cost of your house, will add more than 40% to its comfort and living value and will effect a constant saving of 40% in all fuel bills. Architects, contractors and carpenters are the ones able to appreciate most the superiority of **Linofelt** because they know how unsatisfactory is ordinary building paper

These Plans Show the Method

They show you clearly the practical and simple method of insulating walls and floors with **Linofelt**.

Anyone who knows **Linofelt** immediately becomes enthusiastic about it—because it has so many delightful features. It is an insulating quilt. No other is as light as **Linofelt** cubical contents considered. It comes from the same source as linen. It is made from flax in the largest flax market in the world—Winona. It is odorless, chemically clean, as sanitary as a surgical dressing.

We have had made comparative tests of **Linofelt** and other sheathing mediums for sound deadening qualities. We will send them on request. The same sound heard 200 feet through ordinary building paper is heard only 2 feet away through **Linofelt**. Tests prove **Linofelt** more than 38 times as effective as building paper for all uses.

Let Us Place All The Data In Your Hands

Let us send you an attractive book for Architects, Contractors and Carpenters showing **Linofelt** in all forms, telling how it is made, showing and explaining plans and methods of using **Linofelt**, illustrated with excellent photographs of residences and buildings built with **Linofelt**, located in different climates. Let us send you a free sample of **Linofelt** so that you can see it with your own eyes and feel it with your own hands and have a close realization of its extreme effectiveness, have a firm knowledge that it will do MORE than we claim it will do. Get the book, the service, the sample by writing to us today. Please ask us for the name of the dealer nearest your home.

Union Fibre Co.

Manufacturers

24 Union Avenue: Winona, Minn.

The Philip Carey Co., Distributors
Cincinnati, Ohio

Branches and Warehouses in all the large cities
in United States, Canada and Mexico



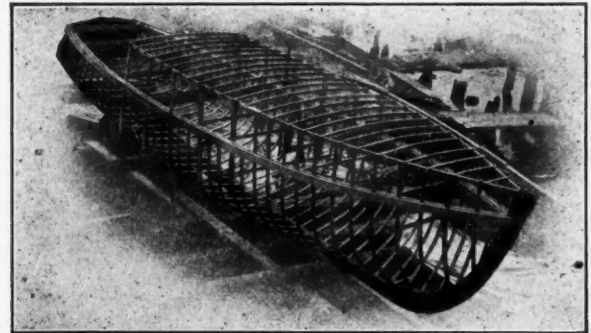
"Defoe" Knock-Down Boat Frames

The DeFoe Boat & Motor Works, of Bay City, Mich., were originally manufacturers of pleasure launches—turning them out complete ready for the water from their factory. About five years ago they conceived the idea of putting them out in a partly finished condition, to be finished by the purchaser at destination.

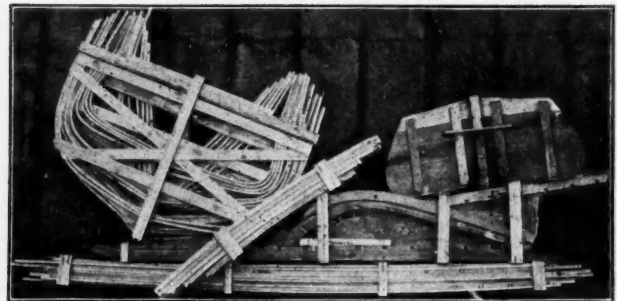
The DeFoe people erect the frame and finish it complete to the point where planking is to be put on. Everything is put together with bolts and screws, afterward taken apart and crated in compact packages for shipment. In this way freight is reduced to about one-tenth of what it would be on the finished boat, and their claim is that any man, not necessarily a mechanic, can finish the work from the special instructions and full sized paper patterns which are furnished with the frame. This being so, a carpenter would be doubly sure of the best results.

Their claim is that a boat can be had in this manner at a saving of at least three-fourths.

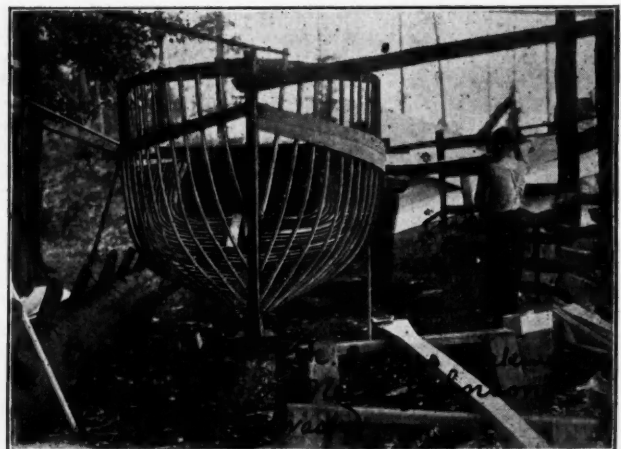
The accompanying illustrations show plainly the success attained by two young men of Milltown, Wash.



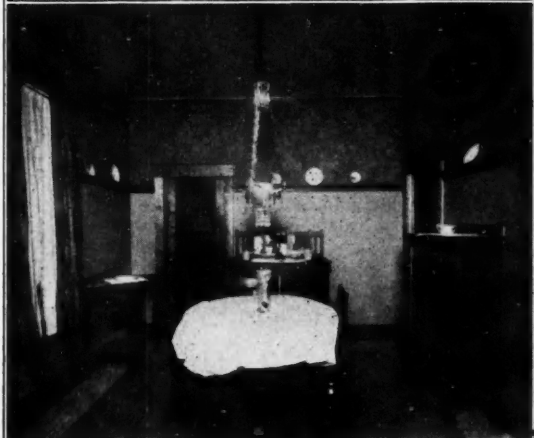
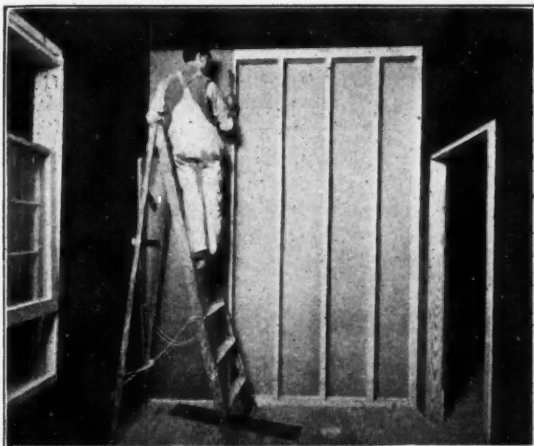
This shows a 30 ft. cruiser frame as it looks in the factory before being taken apart and crated for shipment.



This shows the same frame crated for shipment.



The same frame at its destination. Two men, in one days work, have re-erected it and have one stroke of planking cut out and fastened in place.



Utility Wall Board is Used on Walls and Ceilings of These Artistic Rooms

The first illustration shows how easily Utility Wall Board is applied, the other illustrations show how artistically it can be decorated. Doesn't it look good to you? Wouldn't you like to have us send you a sample of it—and tell you how economical it is—How easily it is applied—How artistically it can be decorated. Our beautifully illustrated and descriptive booklet tells the whole story—and shows pictures of artistic interiors—it is free for the asking, together with a sample of Utility Wall Board.

UTILITY WALL BOARD

is unlike any other Wall Board you have ever seen—It is made of exceedingly tough, durable fibre, thoroughly waterproofed—No moisture can penetrate—It is applied directly to the studding, taking the place of both lath and plaster—Any carpenter can put it on—You can do it yourself with simply a saw and a hammer—It will last as long as the house stands—You'll be amazed at the convenience of it—the economy of it—the beauty of it.

Don't fail to send for the sample and booklet at once.

Utility Wall Board is Sold Through Dealers in Building Materials Everywhere

THE HEPPESS CO.
4503 FILMORE ST. CHICAGO, ILL.

MONTROSS METAL SHINGLES

Made of full weight tin plate, embossed, then galvanized or painted. Outlive wood shingles or composition roofings. More durable, more serviceable. Lasts the life time of building. Have given satisfaction for 22 years. Do not leak, crack, rattle or blow off. Lighter than slate or tile. Easily laid, no soldering. Inexpensive.

Carpenters and builders, increase your business and satisfy your customers, by recommending them. Allows a good profit on your work. Local Agents wanted. Send for Special offer. Illustrated catalogue, testimonial price list, etc. Write now.

MONTROSS METAL SHINGLE CO., 102 Erie St., Camden, N. J.



The Roofing that lasts as long as the building

MONTROSS METAL SHINGLES



Magnificent Steel Launch \$96

Complete With Engine, Ready to Run

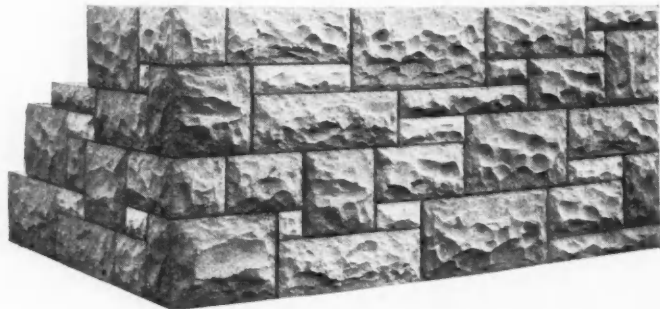
18-20-23 and 27 ft. boats at proportionate prices. All launches tested and fitted with Detroit two-cycle reversible engines with speed controlling lever—simplest engine made—starts without cranking—has only three moving parts—anyone can run it. **THE SAFE LAUNCH**—absolutely non-sinkable—needs no boathouse. All boats fitted with air-tight compartments—cannot sink, leak or rust. We are sole owners of the patents for the manufacture of rolled steel, locked-seamed, steel boats. Orders filled the day they are received. Boats shipped to every part of the world. **FREE CATALOG.** **STEEL ROWBOATS \$20.** (83)

MICHIGAN STEEL BOAT CO., 1239 Jefferson Ave., Detroit, Mich., U.S.A.

Striking Effects in Concrete Blocks

Several innovations of a remarkable character are claimed for the improved concrete block machine that is being introduced by the Hobbs Concrete Machine Company, of Detroit, Mich. Developments in machines for making concrete blocks have been made rapidly during the past five years, and machines that were once thought the acme of perfection are already regarded as out of date.

The Hobbs machine is described as having as few parts as any similar machine in the market, and yet possessing a possible range of over 2,000 sizes of concrete blocks in any style of face. It is claimed that most of the changes can be made



Hobbs Natural Blocks Laid in Real Broken Ashlar

with the bare hands, and that in no instance is more than five minutes required for any change.

What is described as probably the most valuable improvements involved in the Hobbs concrete block machine are the face plates, made of iron-stone composition. An extremely hard and durable composition is used in making these plates, which are protected on the edges by iron frames. The plates are casts taken directly from a selected pattern stone. The

concrete block with a fine facing is tamped face down on this cast, and the result is said to be a revelation in concrete block manufacture, the grain and sharp outlines of the pattern stone being reproduced in all their natural beauty. The natural face of the block thus produced is said to be entirely different from the result obtained from using the cast iron plates employed on other machines to produce rock-faced blocks.

Readers of the AMERICAN CARPENTER AND BUILDER will do well to write at once and look into this proposition for themselves.

Porter Weatherproof Screens

It is the boast of the Porter Screen Company, Burlington, Vt., that their door and window screens are not only substantially made but are architecturally right. They make a speciality of furnishing made-to-order window, door and porch screens; and their method of construction, which is the full mortise and tenon with interlocking corner joint, is approved by architects and is considered the strongest and most durable obtainable. Since their factories are located near abundant lumber supplies, and where experienced labor is had at reasonable cost, they are able to offer exceptional values. Since their factories are fully equipped with modern woodworking machinery, having a great capacity, they are able to turn out the largest or smallest order in the minimum time.

If you have any special screening to do, or if you want to secure the best in both construction and material in screens, it would be well for you to get in touch with these people. We understand that they are glad to submit estimates on any job without obligation to you. They have a new book, and a very interesting one it is, on "screens," which will be mailed free on request, to all those interested. Address the Porter Screen Manufacturing Company, Burlington, Vt.



USE Sackett Plaster Board INSTEAD OF LATH

By right of superior merit
the logical successor of wood
and metal lath.

*Fire - proof Sound - proof Cold - proof
Heat-proof and Avoids Lath Troubles*

SAVES TIME—SAVES PLASTER

and makes walls and ceilings as they should be—safe, sanitary, comfortable and durable.

SACKETT Plaster Board is handled by up-to-date dealers. Our mills have a capacity of over one million square feet per day, and being located at widely separated points enable us to supply this material promptly and economically at any point in this country and Canada.

The advantages gained by the use of SACKETT Plaster Board are of vital interest to every contractor and builder. We want you to know its merits and will gladly send full information on request—ask for booklet "A."

Combines lathing, fireproofing, soundproofing, heat and coldproofing in one simple, inexpensive operation. In the construction of plastered walls and ceilings Sackett plaster board is a

WONDERFUL IMPROVEMENT

—the Ideal Lathing Material. It is modern—progressive—efficient. Avoids buckling, plaster cracks, stains, future repair bills and other defects common to ordinary lath construction.

UNITED STATES GYPSUM CO.
CHICAGO

The World's Leading Producers of Modern Wall Plasters and Fireproof Products

NEW YORK :: CLEVELAND :: MINNEAPOLIS :: KANSAS CITY :: SAN FRANCISCO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

Push the Doors That Pay the Profit

You can build your bank account and increase your local prestige if you stock up with, and recommend

Chehalis Fir Doors

The Stock Door of the Future

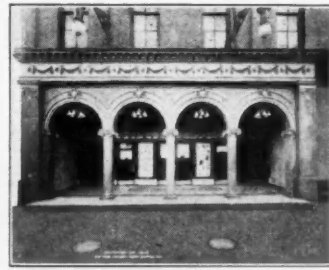
Eventually you will *have* to use Fir Doors because compared to Fir other woods are *getting scarce*. No other wood can compare with Fir in its adaptability to the various finishes often required.

It not only takes the splendid finishes of oak, mahogany and walnut, but it matches yellow pine trim better even than does white pine.

Chehalis Fir Doors are the only doors the panels of which are *picked for similarity of grain*. Built with vertical stiles and rails and slash grain panels. Possess other features that put them in a class by themselves. Let us tell you more about them. *Send for catalog (F)*. It's free. Better still, let us send you samples of Fir done in hardwood finishes. Enclose 10 cents to pay postage.

Chehalis Fir Door Co.

Chehalis, Washington



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.

Granite

TRADE MARK

ROOFING



A six inch lap is better than a three inch lap. It gives better protection 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 COAST LINE
TO
MACKINAC

DETROIT
CLEVELAND
BUFFALO
NIAGARA
FALLS

TOLEDO
PT. HURON
GODERICH
ALPENA
ST. IGNACE

THE LUXURY OF A LAKE TRIP

Where will you spend your summer vacation? Why not enjoy the charms of our Inland Seas, the most pleasant and economical outing in America?

Daily service is operated between Detroit and Cleveland, Detroit and Buffalo; four trips weekly between Toledo, Detroit, Mackinac Island and way ports; three trips weekly between Toledo, Cleveland and Put-in-Bay.

A Cleveland to Mackinac special steamer will be operated two trips weekly from June 15th to September 10th, stopping only at Detroit every trip and Goderich, Ont., every other trip.—Special Day Trips Between Detroit and Cleveland, During July and August.—Railroad Tickets Available on Steamers.

Send 2 cent stamp for Illustrated Pamphlet and Great Lakes Map.

Address: L. C. Lewis, G. P. A., Detroit, Mich.
Philip H. McMillan, Pres. A. A. Schantz, Gen'l Mgr.
Detroit & Cleveland Navigation Co.

New Richards-Wilcox Catalog

A catalog of more than usual interest has been received from the Richards-Wilcox Manufacturing Company, Aurora, Ill. It illustrates and describes the door hangers and other hardware specialties made at the Wilcox plant.

As many of our readers know, the Richards Manufacturing Company, and the Wilcox Manufacturing Company, both from Aurora, joined forces some time ago, consolidating under the name of the Richards-Wilcox Manufacturing Company. By reason of the consolidation of these two large concerns, the trade is now offered the exceptional advantages of the wide range of selections from their line, which is now one of the most complete on the market.

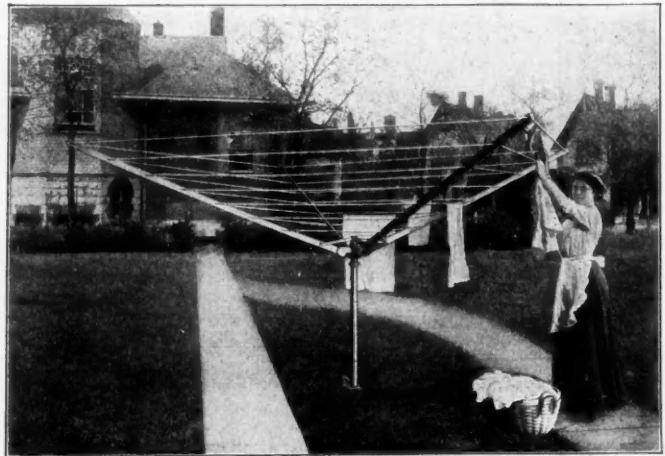
The present catalog shows the Wilcox line and supplements the Richards catalog number 11, which was recently issued. Ever reader of the AMERICAN CARPENTER AND BUILDER should write at once for copies.

An Improved Clothes Dryer

Readers of the AMERICAN CARPENTER AND BUILDER will be interested in an improved clothes dryer that has been perfected by the Chicago Dryer Co., 383 So. Wabash Ave., Chicago. The accompanying illustration will show what this dryer is and how it is used. It is strongly constructed, with a steel post, which goes down into a metal lined socket in the lawn. The post is removable so that the dryer can be taken down and put away when not in use, if desired.

Those who have used the "Chicago-Sun" clothes dryer, which is the name of this dryer, say that it is exceptionally convenient, since each arm operates independently of the rest. It holds 165 feet of clothes line. When opened the arms lock in position and stretch the lines taut. They are also locked automatically when closed, making the device convenient to handle.

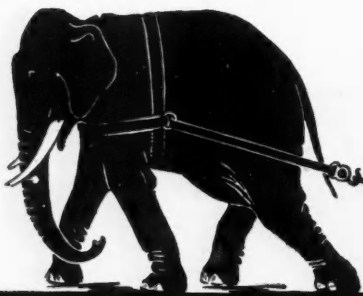
Certainly when a neat, durable clothes dryer like the "Chicago-Sun" can be obtained at such a low price at this is sold for, there is no longer any good reason for going to the trouble and inconvenience of building one of the old-style wooden clothes reels. Those having new homes built this



"Chicago-Sun" Clothes Dryer

season will want their drying yard equipped with this convenience and many others will want it to take the place of the old antiquated contraption that has been serving the purpose of a clothes dryer.

Readers of the AMERICAN CARPENTER AND BUILDER will do well to write at once to the Chicago Dryer Company for their interesting booklet describing the "Chicago-Sun" clothes dryer and their laundry dryers. They have a special proposition that will interest you.



Hold Anything



IF YOU HAVE WORK TO DO

that entails the fastening of fixtures to walls where ordinary screws will not hold, use the SEBCO EXPANSION BOLTS for heavy work and the SEBCO SCREW ANCHORS for lighter work.

You should let us send you some free working samples and our catalog 5R. We illustrate and describe many uses for our Expansion Shields and other products that will interest you and show you a way to do better work at no additional cost for labor or material.

Tell us the work you are doing; we will offer suggestions and send you free working samples. *Send a Postal Now.*



SebcO Bolt



SebcO Anchor

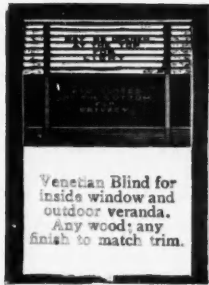
STAR EXPANSION BOLT CO.

147 CEDAR ST.

Cat. Dept., 5-R

NEW YORK

BURLINGTON



Venetian Blind for inside window and outdoor veranda. Any wood; any finish to match trim.

VENETIAN BLINDS

Improve any House

Not only in appearance, but in increased advantages, they will add value to the building. Give privacy, when put up on windows or porches, yet permit a perfect ventilation. They match any wood or finish and require no pockets.

Burlington Venetian and Sliding Blinds, Screens and Screen Doors "keep out the sun but let in the air."

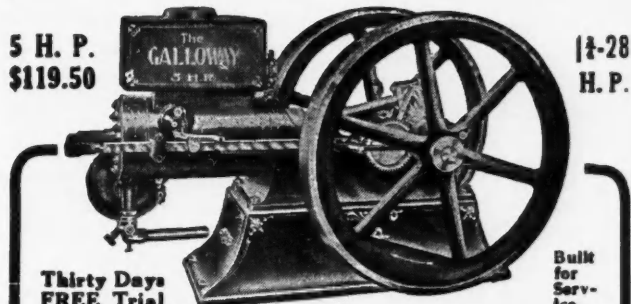
Write for our special price list and catalogue for carpenters and builders.



Sliding Blinds for inside use. Require no pockets. Any wood; any finish.

BURLINGTON VENETIAN BLIND COMPANY
341 Lake Street, Burlington, Vermont

5 H. P.
\$119.50



1 1/2-28 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 oversped. 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



Color Fashions for 1911

Know what color schemes the best architects and decorators are using.

Write to-day for free portfolio of color combinations for exteriors and interiors in approved tints. We also want to send you color cards and literature describing the superior flat finish

MELLOTONE

For Interiors—Soft as the Rainbow Tints

Has the wearing qualities of best oil paint with beauty of water colors. Cheaper than most wall paper—more durable than Kalsomine. Washable, sanitary, fadeless, crackless. Gives best results. Saves the builder money. Write for full particulars.



The Lowe Brothers Co.

Makers of "High Standard" Paint—
"Little Blue Flag" Varnishes

450-452 E. Third Street, DAYTON, OHIO

Boston New York Chicago Kansas City

Band, Circular, Compass, Concave, Cross-Cut, Drag, Gang, Grooving, Hack, Hand, Mill and Scroll

SAWS



EVERY SAW BEARING OUR BRAND IS FULLY WARRANTED

We have been making saws for more than 55 years. In that time we have been constantly experimenting at great cost, and have perfected our machinery so we can now produce saws superior to all others. Write us for prices and circulars on any kind of saw required. We also manufacture Machine Knives of every description.

ALBANY SAW WORKS CO., Established 1855
70 Westerlo St. ALBANY, N. Y.

DIRECT FROM FACTORY TO YOU.

YOU SAVE THE MIDDLEMAN'S PROFIT.

WE MAKE ANYTHING IN WOOD

Therefore, Mr. Builder, don't it stand to reason, that being equipped as is our factory to turn out with special machinery any and every wood work requirement that we can give you superior work and better material

AT A FAR BETTER FIGURE

NO JOB IS TOO SMALL NO JOB IS TOO LARGE.

IT IS NOT THE AMOUNT YOU RECEIVE FOR A JOB THAT COUNTS.

IT'S THE PROFIT YOU MAKE.

We employ only competent workmen and the most modern machinery, and thus can give PROMPTEST ATTENTION to your needs—that is; we won't hold up your job. We don't want the job if we can't SAVE YOU MONEY.

LET US GIVE YOU A FIGURE ON YOUR NEXT LIST.

KANSAS CITY SASH & DOOR CO., KANSAS CITY, MO.

Your Interest in "Jewel" Advertising

The furnace advertising campaign of the Detroit Stove Works, which has been carried on for the past few months in the leading magazines and periodicals of the country, has attracted the attention of all practical warm air furnace men. The style of copy is new in the warm air furnace field, and it's broad comprehensive outlook will find wide sympathy among those interested in the cause of warm air heating.

As the largest manufacturers of cooking and heating appliances in the world, the Detroit Stove Works felt that it was up to them to take the lead in a fight against the untruthful claims put forth by manufacturers of other appliances.

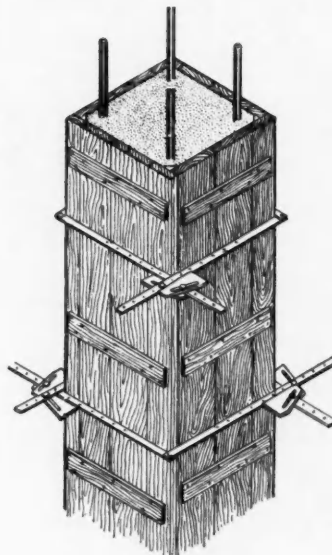
Replies from magazine advertisements have been numerous and indicate the keenest interest on the part of the public in general. These inquiries are, of course, valuable to every seller of Jewel furnaces. The factory turns all inquiries to the dealer in the territory covered, and because the nature of the advertisements is not such as to attract curiosity seekers, the inquiries are proving very valuable assets to every seller of Jewel furnaces. Astonishing as it may seem in view of the efforts put forth by other lines of heating appliances—the sale of the warm air furnace is increasing by leaps and bounds, and especially is the sale of quality apparatus growing; people are beginning to realize as they have never perhaps realized before, that the great features in this warm air apparatus are—durability, efficiency and responsibility.

To be durable a furnace must, of necessity, be properly designed and made of high quality materials. Efficiency naturally follows correct design and proper manufacturing. Responsibility of the manufacturer is the other important factor. And in this respect purchasers of Jewel Furnaces are very fortunate in having back of their selection one of the strongest and best known concerns in the business—a company whose product has been on the market continuously—giving satisfaction for over half a century.

Jewel Furnaces are not only guaranteed from the standpoint of service and efficiency, but the policy of the company in handling the business has always been extremely liberal and broad-minded, and this is one of the features that has helped to increase the already large army of Jewel boosters.

Dealers selling the Jewel Furnaces find the 50-year-old reputation of Jewel stoves a good asset. This, in connection

with the high quality goods and the vigorous advertising campaign, makes the Jewel proposition an exceedingly attractive one to every hustling merchant. Complete outline of the Jewel proposition is well worth having, and if you are interested it would pay you to write the Detroit Stove Works, Detroit, Michigan, mentioning the AMERICAN CARPENTER AND BUILDER with a request for information.



Forms with Carroll Clamps.

The Carroll Column Clamp

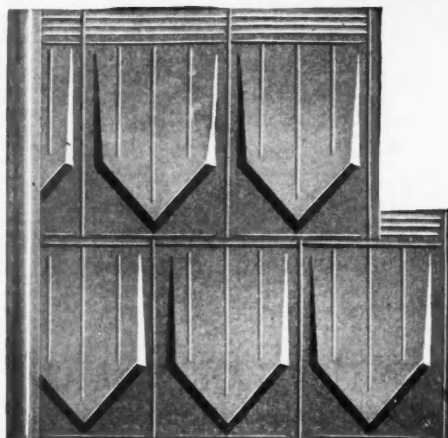
This is an ingenious time, labor and material saver for form building for concrete work. The illustration shows what the clamp is and how it is used. It is claimed that Carroll clamps pay for themselves on a single job. They never wear out. For full information address the Carroll Column Clamp Co., Kansas City, Mo.



**Fire
Will
Not
Burn**

**Any Roof
Covered
With**

**WALTERS' or COOPER'S
METAL SHINGLES**



PROTECT YOURSELF FROM FIRE

THE house on EACH SIDE of the burned one shown above was roofed with our Metal Shingles! THEY COULDN'T BURN! Photo of this house badly burned, taken in Macon, Ga., which DID NOT have our Shingles. Not only are they wear-and-moisture-proof but FIRE-PROOF! One of our latest patterns (Cooper's Diamond Tile) shown here on the left. AN INEXPENSIVE SHINGLE, A TIME AND FIRE DEFYING SHINGLE! Write for NEW CATALOG giving ALL information. Also free samples.

NATIONAL SHEET METAL ROOFING COMPANY

JERSEY CITY, NEW JERSEY

THE FIRST PEOPLE TO MAKE METAL SHINGLES

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

ASBESTOS "CENTURY" SHINGLES

"The Roof that Outlives the Building"

Look into the *service record* of Asbestos "Century" Shingles for yourself. You'll find that you can depend absolutely on their integrity.

They give the client a roof that needs no repairing or painting—no expense bills that arouse his illwill and make him question the value of every other feature of the building.

Asbestos "Century" Shingles are the *first practical lightweight roofing of reinforced concrete*—made of hydraulic cement reinforced with inter-lacing asbestos fibres.



Asbestos "Century" Shingle Roof—Residence of Dr. Thomas H. Bowman, Harrisburg, Pa.; Harry B. Shoop, Harrisburg, Architect; James M. Bowman, Harrisburg, Contractor

These shingles are weatherproof—fire-proof—timeproof. Cannot rot, rust, crack, split or blister. They literally outlive the building—*without repairs or painting.*

You can get Asbestos "Century" Shingles in 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

TILE

BANK FLOORS
BATH ROOMS, VESTIBULES, PUBLIC BUILDINGS

Sanitary—Inexpensive—Beautiful

Just Send Us Plan of Space to be Tiled, and We Will Quote Lowest Price F. O. B. Your Station

CERAMIC—MOSAIC—ENCAUSTIC

IN WHITE AND IN DIFFERENT COLORS

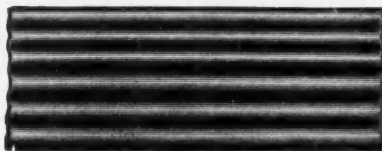
WE SUBMIT DESIGNS when desired, and do work in any part of the country. Let us figure with you on one job, large or small. *One trial will convince you.*

MANTELS—GRATES—FIRE-PLACE GOODS

WISCONSIN MANTEL & TILE CO.

420 Milwaukee St., Milwaukee, Wis.

Corrugated Iron Roofing Galvanized and Painted



The Jersey City Galvanizing Co

MAIN OFFICE

107 John Street

::

NEW YORK



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

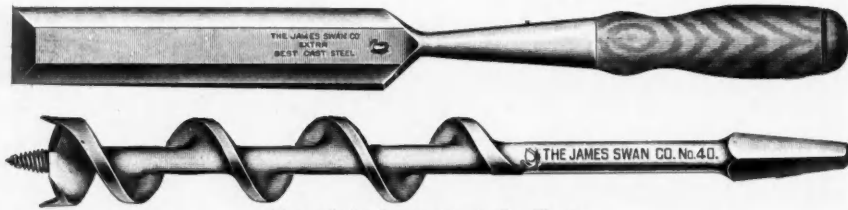
Cincinnati, O.

"FAMOUS FOR DURABILITY"

James Swan Co. Tools

The James Swan Company, Seymour, Connecticut, have just issued a new loose-leaf catalog which shows up to advantage the many lines of carpenters' tools which they manufacture.

The present location of their factory has been devoted to the making of bits and augers for over one hundred years. Their line consists of augers, auger bits and chisels of all kinds, drawing knives, screw drivers, nail sets, boring machines, gimlets, gouges, expansive bits, ice picks, plug cutters and hollow augers, all of which are fully warranted. Two of their leading lines are illustrated herewith.



Two of the James Swan Co. Tools

forms in any size, wet process fence posts molds, tapering or round porch column molds any diameter at top or bottom, and any special molds which will be made to order.

Among this large line they have two especially attractive propositions that will appeal to the readers of this paper, namely, the Crescent mixer and the Crescent brick machine. It is not the purpose of this article to go into detail relative to either of these machines, but the writer knows that they are good machines, machines that will pay you to investigate thoroughly. Their literature is attractive and is of great interest. A letter or card addressed to Raber and Lang Co., Kendallville, Indiana, will bring this to you.

Concrete Machinery Specialists

The first essential of successful concrete machinery is the equipment that makes it.

Raber and Lang, Kendallville, Indiana, owe their ever increasing business largely to this fact, inasmuch as they have equipped themselves thoroughly with everything that was needed to turn out an absolutely perfect product. They are concrete machinery specialists.

Adopting the name "Crescent," when they first started in the machinery business, they have built so well that today the word "Crescent," appearing on any concrete machine, is a pledge of satisfaction. Their line consists of The Crescent continuous mixer, with automatic side loader; Crescent pipe and tile molds; Crescent power drain tile machinery; Crescent brick machine; Crescent elevators and conveyors, revolving sand screens for every purpose, power tampers for large tile, trucks and cars for block, brick and tile makers, culvert

"X L" Metal Shingles

The latest addition to the immense lines of sheet metal products of the Canton Art Metal Company, Canton, Ohio, is the "XL" metal shingle. This is a heavily embossed shingle of beautiful design, and is provided with their improved side lock construction, which is doubtless already well known to many of the readers of the AMERICAN CARPENTER AND BUILDER. It makes allowance for the necessary expansion and contraction and at the same time makes an absolutely tight fitting side lock. These shingles are made in 10 by 14 inch size and are furnished in both galvanized steel and painted tin.

Your Success is our Necessity

We Want to Show You Why

CAN you afford to figure a job of Metal Ceiling unless you are sure the cost of erecting will not exceed your estimate? Your success is our necessity because you will not buy our ceilings unless there is profit in them for you and satisfaction for your customers. Most of your success depends upon the fit.

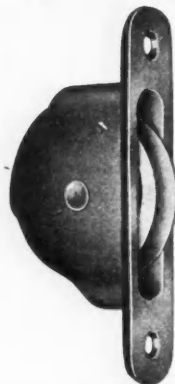
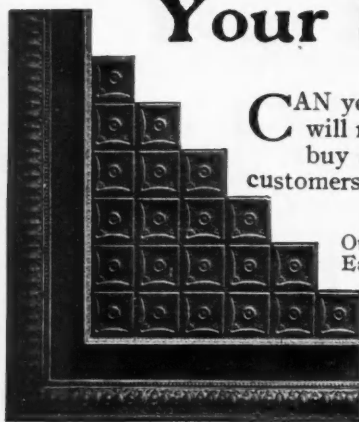
We Have Solved the Problem

Our Double Bead Lap produces a thoroughly dust-proof and invisible joint. It is simplicity itself. Easy to fit, therefore cheapest to erect. This means profit and satisfied customers to you.

Another Secret

The great variety and high character of our Art Metal Ceilings and Sidewall Designs insure the customer's preference when shown our catalogue. Send us plans with all measurements and we will prepare drawings of appropriate ceilings, without charge, and name you low price on all material, F. O. B. your station. *Get our catalog right away.*

The Tiffin Art Metal Co., Tiffin, Ohio
2nd & Broad Ave.



Headquarters For Sash, Door and Blind Makers' Supplies and Special Machines

WINDOW PULLEYS (Cast and Sheet Steel). All sizes and finishes. Write for Catalogue.

ENTERPRISE PULLEY MORTISER. Equipped with Four Bits. Cuts Full Stile in same time required for single mortise

ENTERPRISE POCKET CUTTER. Makes a Pocket both wind and water tight.

PIONEER MOULDING SANDER. Finishes Mouldings and Interior Trim equally as well as handwork, and at one-tenth the cost.

Sash Cord and Chain, Glazier's Points (Standard and Machine), **Blind Staples, Wood Screws, Wire Nails and Dowels.**

125 Broad St., Boston, Mass.

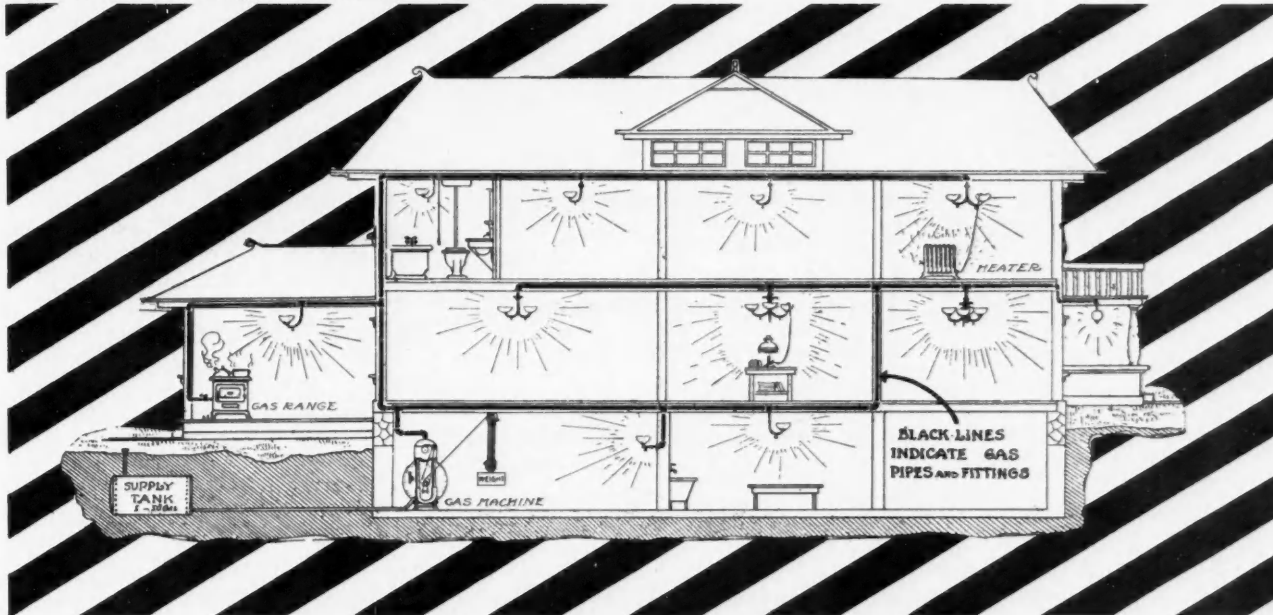
AUSTIN & EDDY

805 Tacoma Bldg., Chicago, Ill.

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.



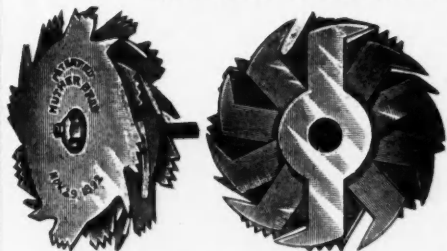
The illustration above shows an entire Standard Vacuum Gas Plant for a Private Residence

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, 89 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)



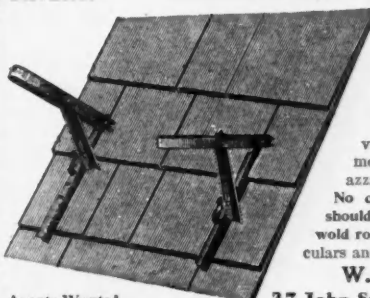
Showing Arrangement of Cutters

Can be used on any Circular Saw Mandrel. For cutting any width groove from 1/4" to 2" or over. Will cut a perfect groove, either with or across the grain, and leave 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.



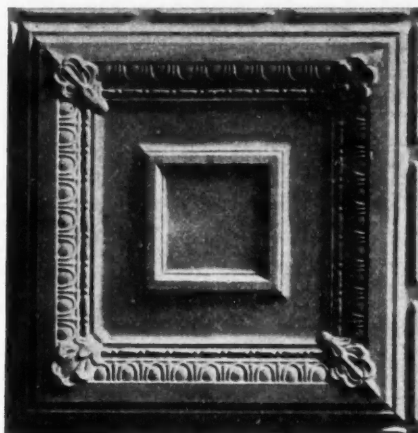
Agents Wanted

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.



Colonial Plate 7004E.

METAL CEILING AND SIDEWALL

LARGE VARIETY OF CLASSIFIED DESIGNS

Easily erected. Plates resquared. Perfect Fit.
Material the Best. Prices Right.

WE MAKE QUICK SHIPMENTS.

Suggestions Plans Estimates Free.

ALL STYLES OF METAL ROOFING.

Catalog Dc for Ceiling.

Catalog Gc, Roofing.

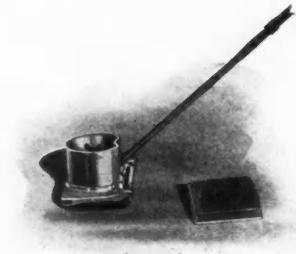
THE KANNEBERG ROOFING & CEILING CO.

1002 Robin Street, CANTON, OHIO

Weber Wax Polisher and Sander

There is a great demand for a small wax polisher and sander, if it is handy and effective.

Knowing this, Mr. John F. Weber, who has made almost a life study of contractors' needs, has perfected a polisher on an entirely new principle.



It is composed of three castings, three screws and a handle. The weight is separate and, when a thumb screw is loosened, the sandpaper block can be set at any angle. This gives as many different scraping surfaces as there are angles, and nearly doubles the life of the sandpaper. When the

sandpaper does become worn out, a new sheet can be set in place in an instant.

When used as a wax polisher, a tough bristle brush of best quality fits into the place of the sandpaper block. The polisher is then ready for use. Special care has been taken to provide a weight just heavy enough to impart a fine finish without being hard to transport.

Both the sandpaper block and the brush fit into a clamping arrangement in such a way as to bring them flat and even on the floor. This care has resulted in producing a true "lineless" finish all over the floor.

Besides using this polisher themselves, contractors find a ready sale for them. After finishing up a house, it is a simple matter to sell one to the owner, because its utter simplicity and handiness—with its superior work—speaks for itself.

Contractors are asked to write to Weber Mfg. Co., 670 71st Ave., West Allis, Wis., for complete particulars and prices on this polisher and on a number of other modern money-saving devices, including the famous Weber Double Acting Floor Scraper.

Hints on Boat Building*

BY AN AMATEUR.

Like most carpenters, there are seasons of the year when I have considerable idle time, and in looking around trying to find some way of profitably occupying this time, I ran across the proposition of building ones own boat.

I have always wanted a boat but the cost of the completed article has been beyond my means. When one of my friends suggested that I could at a comparatively small expense build myself a boat that would be entirely satisfactory, I was a little skeptical, as I had always thought that while I am thoroughly familiar with ordinary carpenter's tools, that the building of a boat required the technical skill of an experienced boat builder.

However, I decided to make the venture, and so purchased a knock-down frame from a boat factory for a 20-foot launch, who sold the goods at a remarkably low price. On receipt of the frame I started to set it up and after considerable difficulty, occupying several days time, I succeeded in accomplishing this part of the work after a fashion. When the frame was set up, one of our local boat builders dropped in to look it over, and I must say that I was somewhat discouraged by his criticisms.

First he said "There is not a single floor timber in the whole boat. What do you suppose is going to hold her together? There is nothing to hold the ribs to the keel but a couple of wire nails. You can never make her tight with

*For further information on Boat Building, address the Pioneer Boat and Pattern Co., Wharf 25, Bay City, Mich. Ask for "Pioneer Boat Book."



OAK FLOORING

BUILDERS AND CONTRACTORS should always use OAK FLOORING. Your clients then will be satisfied. Any truthful landlord will tell you that OAK FLOORING **increases the renting and selling values.**

OAK FLOORING—the modern, sanitary, hygienic floor; cheaper than carpets. With an OAK FLOOR, your home is half furnished.

OAK FLOORING $\frac{3}{4}$ " thickness can be laid over old floors at a very low cost, without disturbing the woodwork of a room.

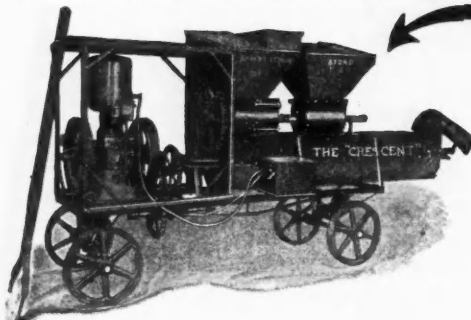
OAK FLOORING gives an air of **refinement and elegance** to a home. Is **rich and cheerful** in color

OAK FLOORING is made in four grades, and is adapted to the humblest of homes or a palace.

Use OAK FLOORING for **artistic, economical and durable** qualities.

Write us for further information.

THE OAK FLOORING BUREAU, 826 Hammond Bldg., Detroit, Mich.



TWO BIG WINNERS

At the Cement Shows the "Crescent" line of concrete machines again carried off all honors. We show in this ad two machines that all builders should own.

The "Crescent" Continuous Concrete Mixer will make you money, absolutely. It is so simple, yet very durable, accurate and efficient. You will never go back to the shovel if you get a glimpse of this machine.

The "Crescent" Vertical Tamping Brick Machine is in a class of its own. It is perfection itself. Over a dozen distinct features.

WRITE FOR OUR FREE LITERATURE.

We manufacture Pipe and Tile Molds, Elevators, Conveyors, Fence Post Molds, Etc., Etc.

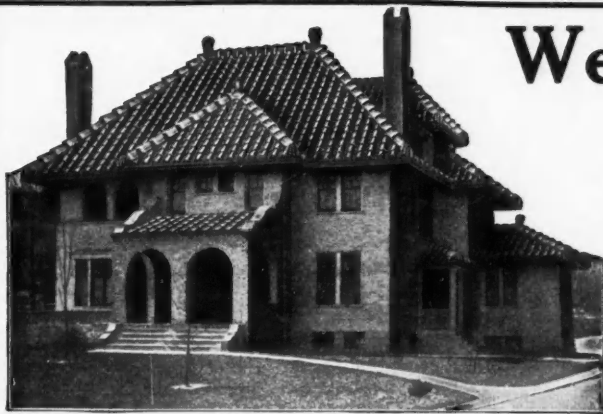
RABER & LANG MFG. CO., Kendallville, Ind.

::

810 Mill Street



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER



We Want a Builder In Every Town

We Have An Attractive Proposition For One Carpenter Or Builder In Every Community To Take Orders For Our Widely Advertised

Edwards' Metal Spanish Tile

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.

Write us today about your territory. Here's an opportunity you should not miss. Many carpenters and builders have been so successful taking orders and laying out Metal Spanish Tile that they now devote their entire time to this business. Others have made big profits selling and laying our metal tile roofing "between jobs." We show you how to build up an independent, profitable business in your own community. Write for our proposition today. The territory is going fast. Don't be too late. Send a postal right now.

The Edwards Manufacturing Company

"THE SHEET METAL FOLKS"

401-417 Eggleston Avenue

Cincinnati, Ohio

THE WORLD'S LARGEST MANUFACTURERS OF METAL ROOFING, METAL SHINGLES AND METAL CEILINGS

"We Save the Children"



By using our
**Ventilating
School
Room
Heater**

For
CHURCHES,
SCHOOLS
and
RESIDENCES

Any Size

Send Plans
for Estimates

CHAS. SMITH CO.

102 Lake Street, Chicago

CONSOLES Columns and Grilles



In quality and price our work is not surpassed

You will make no mistake in writing us before ordering elsewhere.

Send for 36-
page Catalog
— No. 16 —

It contains many fine designs of modern Grilles, Columns and Consoles.

Northwestern Grille Works

Incorporated
CHRISTENSEN BROS., Managers. 1820-26 Milwaukee Ave., Chicago

that kind of construction, and the clamps and stringers are not large enough for a row boat."

However, as I started I determined to finish the boat up, which I did in about two months time, working nights and all other spare time I could get. I spent a great deal of time calking the seams, as I wanted to show my friend, the boat builder, that this boat was going to be water tight.

After installing a 3 H. P. engine the boat was launched and did not leak a drop until I started the engine up. After running about a mile I soon found out that the boat was only tight went standing still, and I had to admit to myself that the boat builder was right, and that the plan of construction was not right, or the boat would not have begun leaking as soon as the boat started.

However, I used her all that season and had more real pleasure than I ever had before, although I think that I lowered the water in the river that summer by steady use of the pump. I sold her in the fall to a party who did a lot of work on her in the way of reinforcing the frame, and giving the boat additional strength throughout and he got along with her fairly well.

After my season's experience I had the boating fever worse than ever, and decided to build a larger boat during the coming winter, but this time I decided that instead of taking merely the question of price into consideration I would investigate the reputation of the Company from whom I bought the material, and be sure that I was getting what I should get in the way of quality and workmanship in the frames of the boat; the technical part of the work which should be made by the experienced boat builder.

I decided on a 25-foot extension cabin cruiser, which I had often seen and admired very much on account of her trim appearance and fine accommodations and seaworthy qualities. On getting acquainted with the owner of the boat he

informed me that he purchased the frames and material in the knock-down the same as I had and finished her himself, but had none of the difficulties that presented themselves to me when I built my first small boat, as the material he had received had been satisfactory in every way.

He gave me the name of the company from whom he purchased and I immediately got busy and ordered material for a duplicate of my friend's boat, from the company he had bought of, and when the goods arrived and I got them uncrated I found them an entirely different proposition from the one that I had first tried. The frames came finished complete, with every possible part ready to re-assemble; with all the parts that might possibly be assembled incorrectly, permanently fastened, ready for the water. Every pair of ribs was fastened securely together with a good solid floor timber; the clamps and bilge stringers were heavy; each rib was bent to its exact shape and stayed, and a keelson was also furnished, and with the frame came complete instructions for re-assembling it, telling how to bolt the bilge stringers and clamps to each rib and how to bolt the keelson through the floor timbers to the keel, together with complete instructions for finishing the boat. The material was of the very best throughout and of the proper size to make a thoroughly seaworthy boat.

I was able to re-assemble this frame, although it was a very much larger boat than my first one, in less than three hours after uncrating it, and the boat was ready to plank. I worked at the boat through the winter, putting in only my spare time, and long before the season opened she was ready to launch. I have used her ever since and she is not for sale, but I have a pump that I would donate to any of my less fortunate boating friends.

From my second experience I found, as I had been told in the first place, that to build your own boat, no matter what

Carborundum Carpenters' Round Combination Bench Stone

You Can Use All of the Surface and Put a Clean Smooth Edge on Your Chisels, Plane Bits or Similar Tools—

Note the shape—round so as to give full play for rotary sharpening motion—There is no unused surface—The wear is uniform—Its use means a better edge in less time—Can be used dry or with Carborundum Temperoil, the oil that tempers the cut, smooths the edge, does not gum and has no acid.

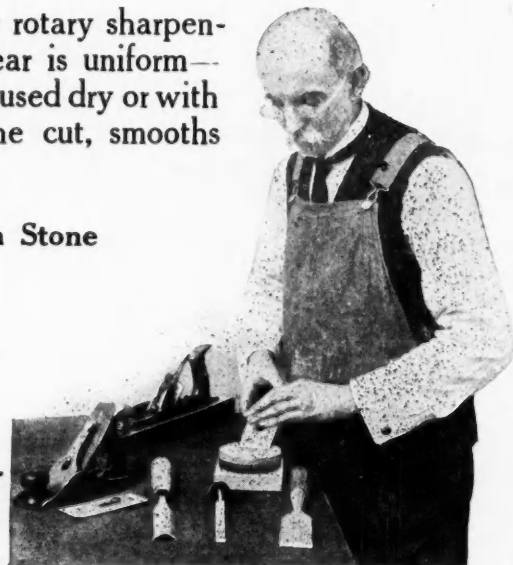
Carborundum Round Combination Bench Stone

No. 107	\$1.00
With Quartered Oak Box Holder	1.50
Carborundum Pocket Stone in Case	.35
Carborundum Temperoil; 1½ ounce bottle	10

All from your hardware dealer or by mail direct

The Carborundum Company

Niagara Falls, N. Y.





LIGHTNING CONDUCTORS
(TRADE MARK REGISTERED)

ADDITIONAL PROFITS
from
Lightning Conductors

You can make extra money and please every customer by handling the **right** lightning protector. The safest, fastest selling and most profitable system is the

NATIONAL Flat Copper Cable

Round if preferred. Advertised extensively for your benefit. We help you sell by sending letters and literature to prospective buyers furnishing names of inquirers, etc. A perfect system, giving perfect protection, with a perfect advertising and selling plan, and **right in line with your other work.** Easy to secure the order when building or repairing house or barn, and you make a complete job with additional profits.

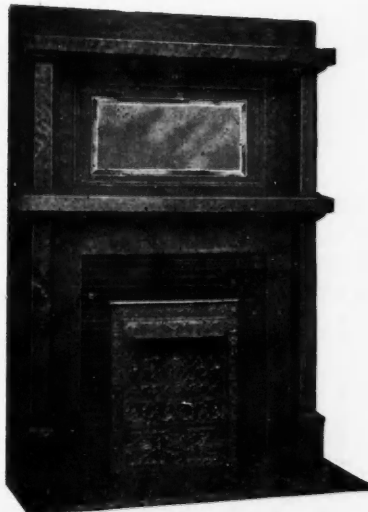
We can place you in a position to overcome all competition in your territory.

Let us send our booklet, "The Laws of Lightning," and full particulars.

National Cable & Mfg. Co.

Department C

NILES, MICH.



"Reputation and Quality Count"

columns, full length or double as shown in cut. Dealer's price not less than \$40.

CENTRAL MANTELS

are distinctive in workmanship, finish and style. Twenty years' experience enables us to know and satisfy the needs of those who want mantels of quality, different from the rest. We build all styles—Colonial to Mission.

CATALOGUE FREE—Will send our 112 page catalogue, the finest ever issued, free, to carpenters builders, and those building a home.

CENTRAL MANTEL COMPANY

1247 Olive Street,

St. Louis, Mo.

\$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



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.

Learn to fill a **BIG-SALARIED** job—the kind of a job that hundreds of other men, with no more natural ability than you, are filling with ease and success.

HOW YOU CAN DO IT

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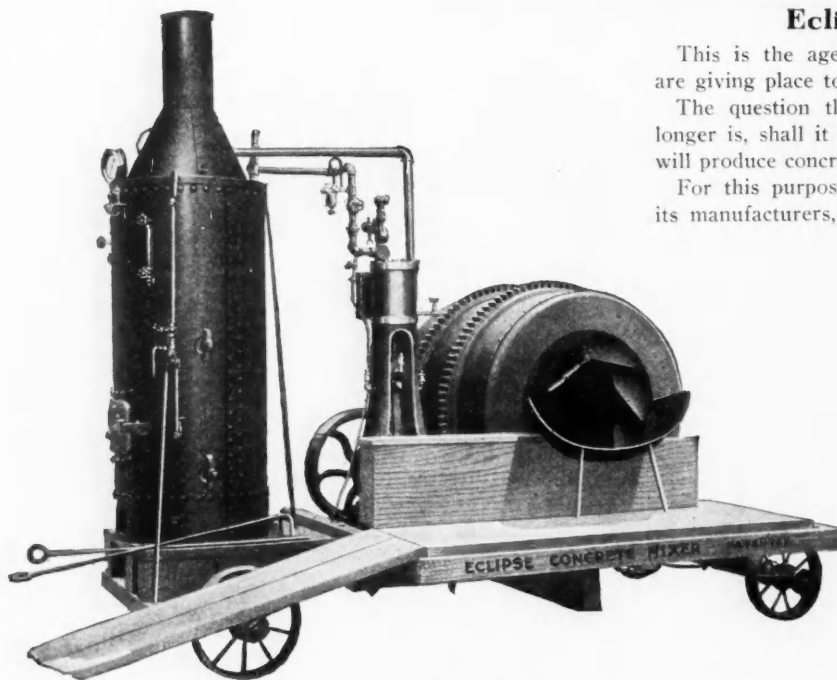
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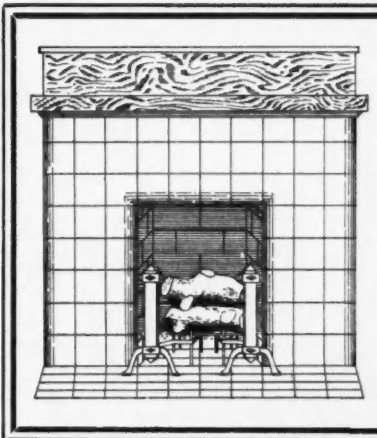
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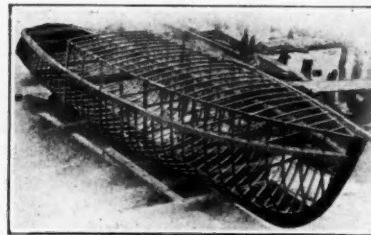
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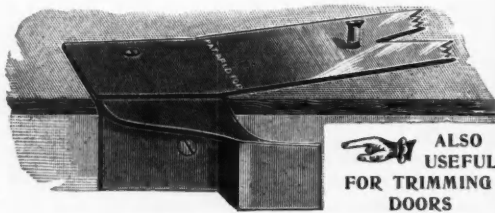


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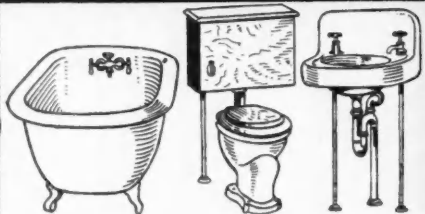
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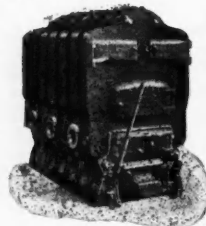
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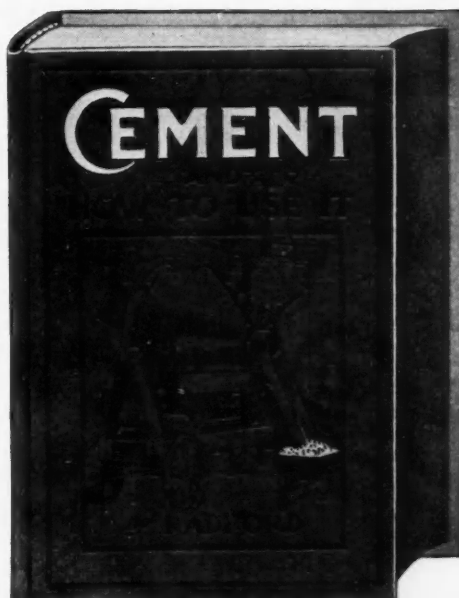


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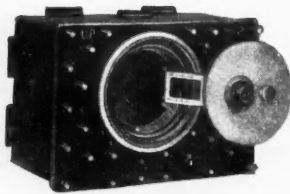
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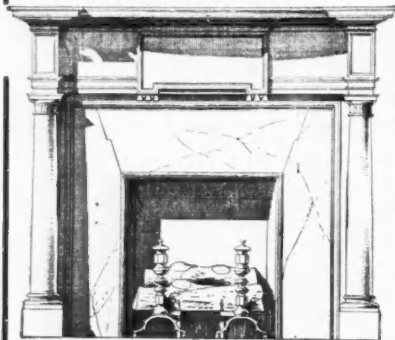
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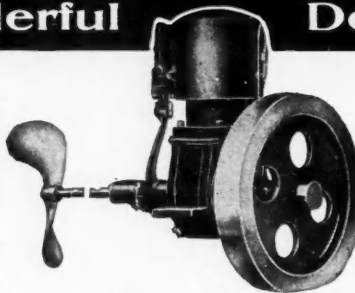
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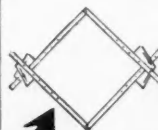
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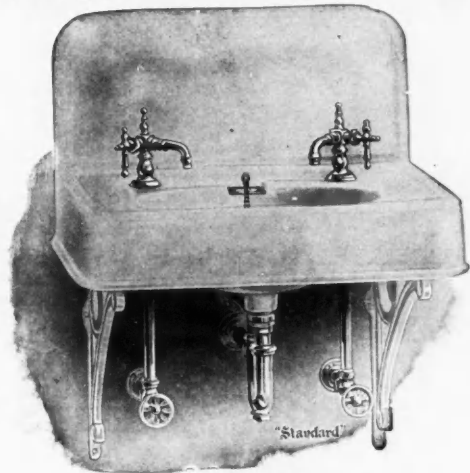
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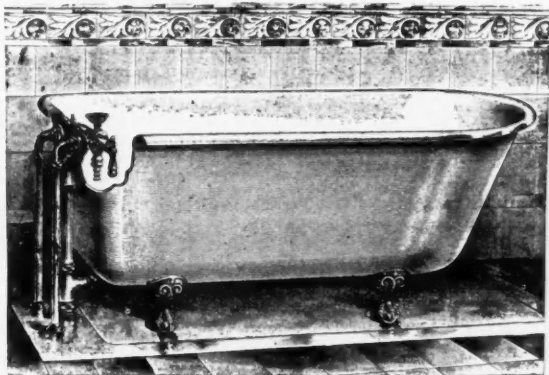
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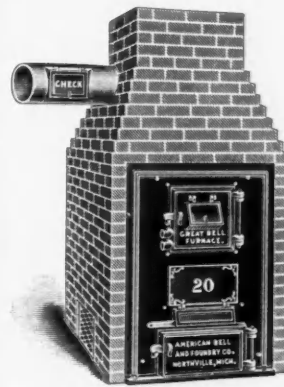
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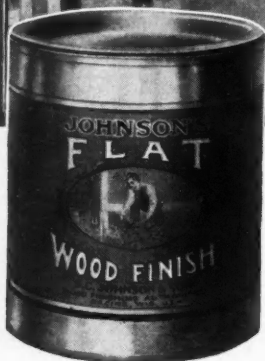


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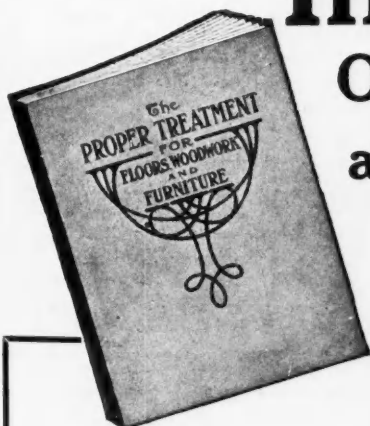
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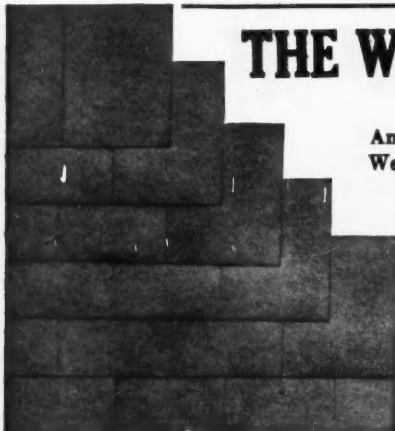
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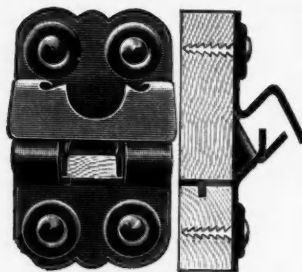
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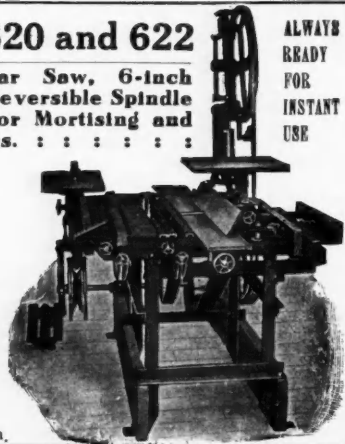
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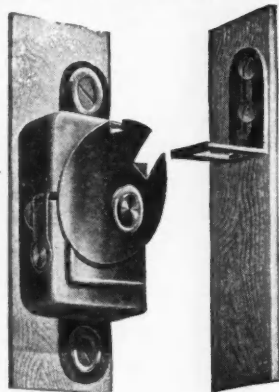
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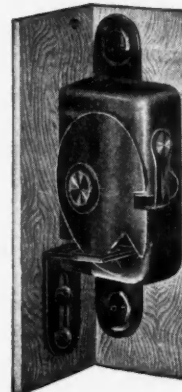
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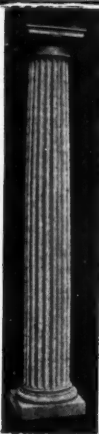


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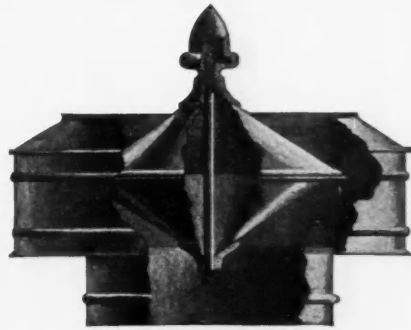
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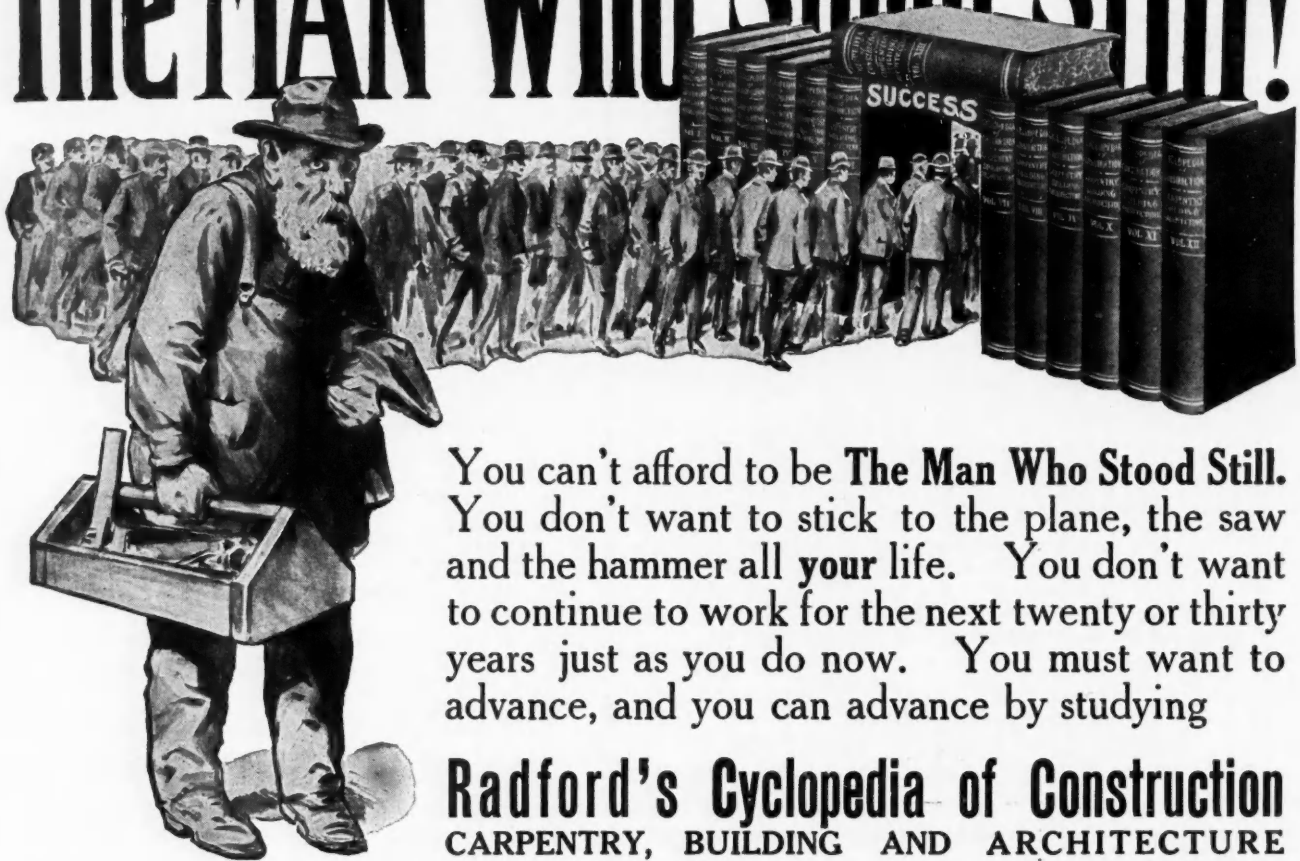
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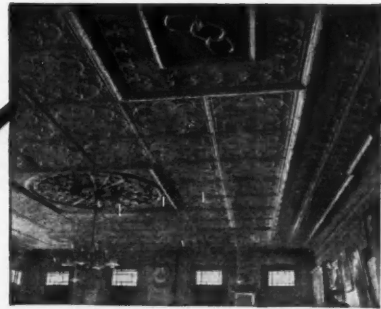


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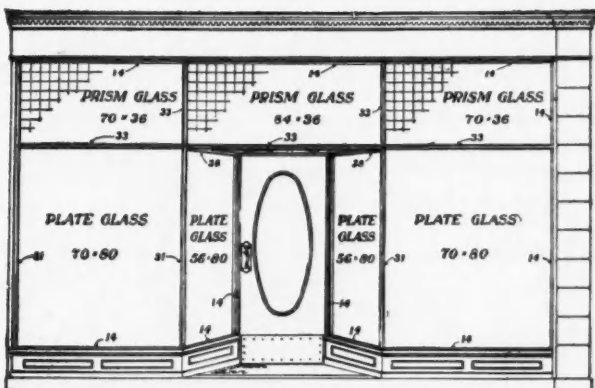
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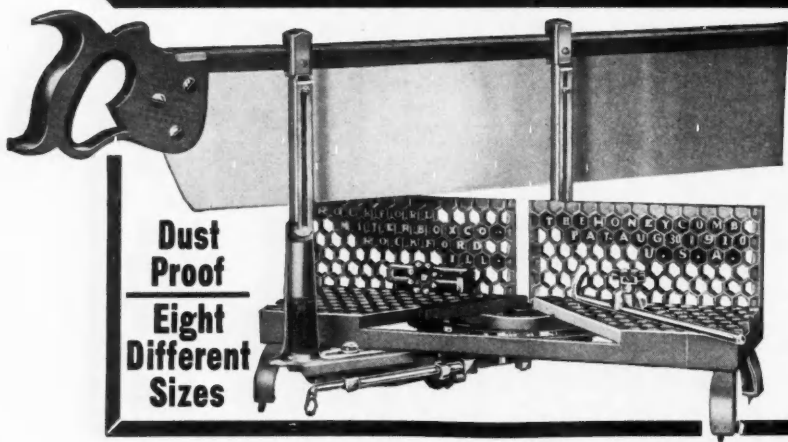
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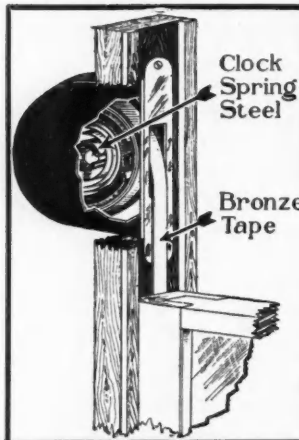


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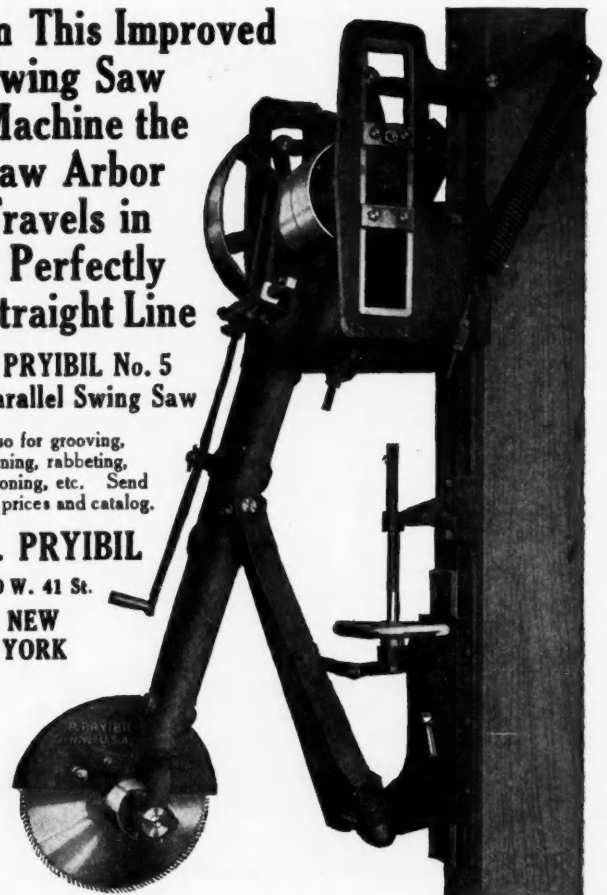
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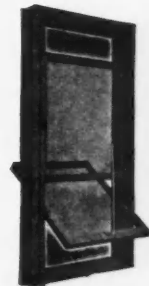
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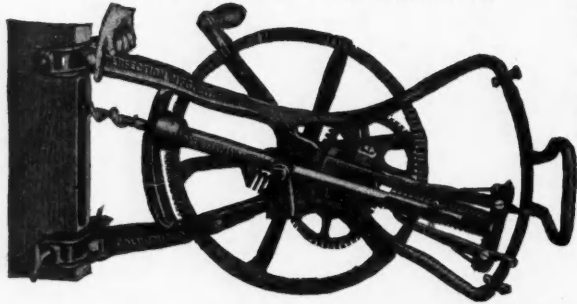
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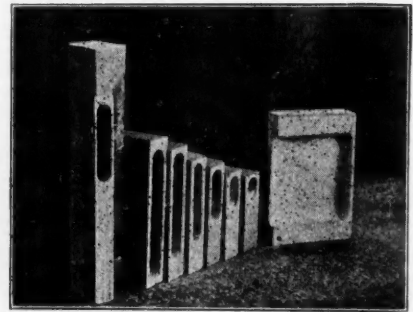


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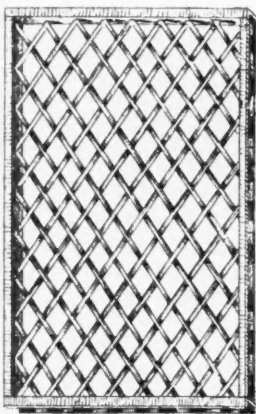
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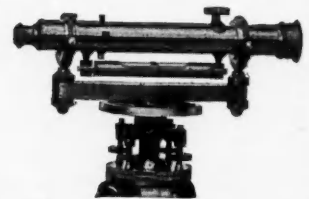
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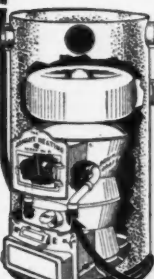
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\$10 Down and \$10 a Month buys the Jahant Down-Draft Furnace with our legal guarantee to return your money after a year's trial if not satisfactory. That's the best and cheapest way to buy a furnace.

The Jahant Heating Co., 1 Mill St., Akron, O.



PUMPS, DOOR-HANGERS, STORE LADDERS

The Pump That Pumps
SPRAY PUMPS
Double-acting, Lift, Tank and Spray
PUMPS
Store Ladders Etc.
Hay Tools of all kinds write for circulars and prices.

MYERS
I Glass Valve

Myers Stayon Flexible Door Hangers with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—“Stayon”. Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.

F. E. MYERS & BRO
A shland, Ohio.



IMPERIAL "SPIRAL" "AMERICAN" INGOT IRON LATH

THE MOST SUPERIOR RUST-RESISTING

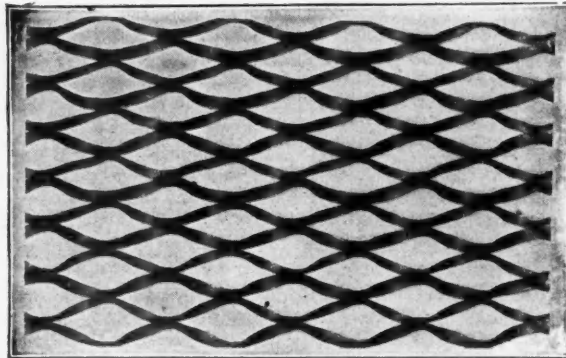
Government Approves It---Architects Specify It, Contractors Demand It.

RUSTPROOF

Made From
**"AMERICAN
INGOT IRON"**

The Attainment
of the
Highest Purity
in Iron

99.94% PURE



Imperial "Spiral"

FIREPROOF

Equal Distribution
of the Metal
Giving Maximum
Rigidity

Is unequalled by any expanded lath made, NOTE that "Spiral" Twist
SAVING of THREE to FOUR cents Per Yard IN labor AND Plaster.

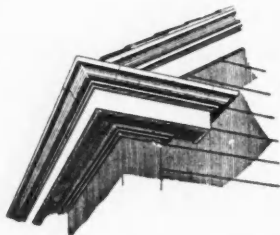
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Samples and Prices Furnished on Request.

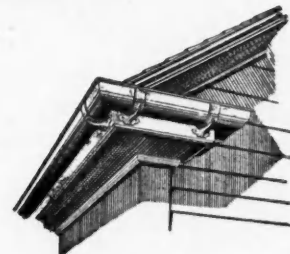
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THE AMERICAN ROLLING MILL CO. - Middletown, Ohio

Cast Iron Gutters Last

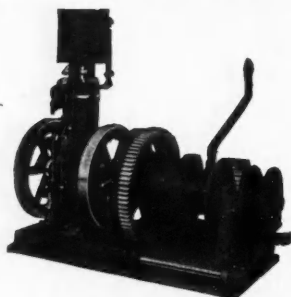


Easily put up. Once up, always up. Do not bend or break by pressure of ladder against them. Will stand treater weight of snow or accumulation of ice than any other gutter. Not affected by acid fumes that in some vicinities play hob with all other metal gutters. They are adaptable to any kind of building or type of construction. Cast with moulded face to form part of cornice, or rounded to serve as a hanging gutter. Used almost exclusively in England and all over Europe. Supplied in 6 feet lengths. Joints fitted ready to erect. No soldering required. Send at once for circular and prices.



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should know about our **Hoist** direct connected with **Gasoline Engine** for use with **Double Platform Material Elevators**. We furnish **Hoist and Elevator** complete ready to run. This outfit will elevate more building material at a less cost than by any other known method. Our Bulletin No. 5 will give you all particulars.

BATES & EDMONDS MOTOR CO. LANSING, MICHIGAN

Practical Art Metal Ceilings

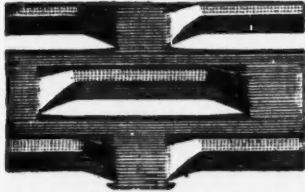


Quickly and easily applied. We are the only manufacturers who cut the heads in the dies after casting. Result—Square and accurate plates—which will save you time and labor in cost of erection. Send for Catalogue No. 2 which shows 200 new and original designs.

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Wm. Foster & Son Co., Inc.
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Also manufacturers of Radiator Shields, Fire Proof Window Frames and Sash, Galvanized Iron Fronts, Hip Shingles, Cornices, Skylights

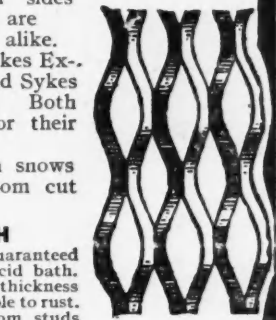
SYKES METAL LATH



that can be plastered on either side — cannot be applied wrong because both sides

The lath that is positively different to anything else made; different because it combines more good features.

Cup lath is the only Expanded Metal Lath



We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose.

The top illustration shows Trough Lath, bottom cut depicts Cup Lath.

NO PICKLED LATH

Sykes Lath is absolutely guaranteed not to have been pickled in an acid bath. This means that the weight and thickness is not reduced and is less susceptible to rust. Requires no furring out from studs because it is self furring.

It has been approved by U. S. Government and by leading architects, carpenters and builders throughout the country. In fact, when we say it is the best ever made we are simply stating a proven fact.

Samples and prices mailed upon request.

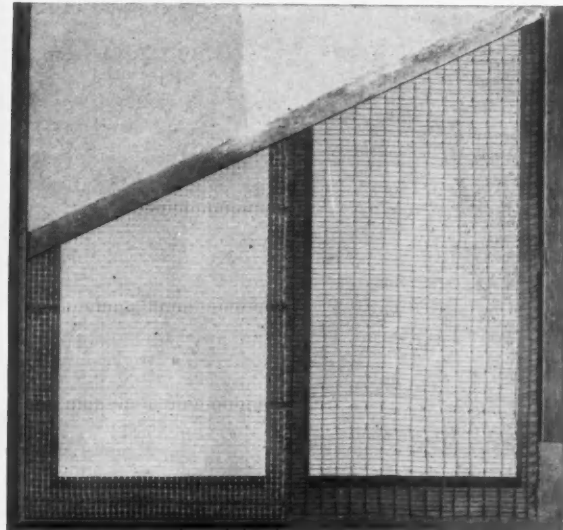
Sykes Metal Lath & Roofing Co.
NILES, OHIO

WIRE LATHING

The Secret of the durability of the woven wire lathing is owing to the fabric being completely embedded in the mortar, and thus secured from the corrosive action of the atmosphere; and also to the fact that rust will not attack the smooth round wire as it does the thin cut edges of a metal fabric.

"Why not use the proper kind of lath that lasts?"

Before building, write for our Booklet No. 6 A and Prices



Grimm's Galvanized Corrugated Wire Lathing
"Patent applied for"

Greening's Patent Trussed Steel Wire Lathing

BUFFALO WIRE WORKS CO., BUFFALO, N. Y.



Made in all sizes and styles, for use with brick or concrete block walls or with wooden or steel beams

TRUS-CON Joist Hangers

Avoid cutting away and weakening of timbers and walls—save labor, time and money.

Trus-Con Joist Hangers are made from open hearth steel plates, and are proven by actual test to be the strongest on the market. Note the bulb-shaped reinforcement at upper angle.

We also furnish Post Caps, Post Bases, Wall Plates and Base Plates made in rolled steel, malleable iron, or cast iron.

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Shaft Hanger Supports for Concrete Buildings

TRUS-CON SLOTTED INSERTS are imbedded in the concrete during construction and furnish a simple, adjustable attachment for shaft hangers, sprinkler systems, etc.



Supplied in various sizes in either rolled steel or cast iron; also Trus-Con Socket Inserts to receive threaded bolts.

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display a composition of utility, durability and good, pure architecture without any "gingerbread."

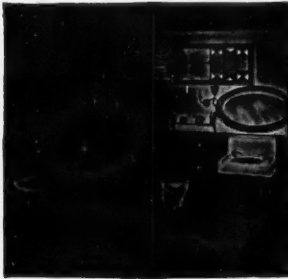
No buildings are too large or too small for our personal and prompt attention.

We develop your own ideas into a practical set of plans and specifications which can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.

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G. W. ASHBY—ARCHITECT
 11th Floor, Medinah Bldg.
 CHICAGO, ILL.

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AT WHOLESALE**



When in the market for Plumbing Supplies and you wish to

**SAVE
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Tile and Marble Floors, Wainscoting, Etc.



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Artistic Mantels of every description and **Fire-place Fixtures** furnished at interesting prices.

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All Concrete Surfaces**

We manufacture a complete line of Advanced Finishes for concrete, cement, stucco, plaster, brick, stone and wood surfaces.



Glidden's
Advanced Finishes

Concrete Floor Dressing protects concrete floors from abrasion and from the absorption of moisture, oil, grease and disease germs.

Liquid Cement produces a waterproof, permanent and decorative finish on walls and other surfaces. It prevents dampness.

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1. Shop saws—power equipment.
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SAVE LABOR—TIME—EXPENSE

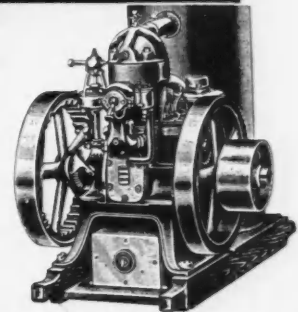
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More power, gallon for gallon. Hundred less parts. Catalog Free—Tells How. Force feed lubricator. Automobile muffler. Starts instantly. No pre-heating, no crank. Experience unnecessary. Vibration eliminated. Comes complete.

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Wire & Iron Works
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**Beams, Angles, Anchors, Hangers.
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FIT ANY WINDOW ARE OUT OF SIGHT WHEN NOT IN USE
They are handy and durable, keeping basement windows in harmony, and they afford a light coal bin. Handles either wood or coal. **OURS IS THE COMPLETE LINE.**

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Roofing Slate
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Large Facilities, Prompt Deliveries

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Quarry Operators

BLACK, GREEN, PURPLE, RED

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SARGENT'S IMPROVED STEEL SQUARE

The difference between good and indifferent Carpenters' Squares lies in something more than excellence of material and workmanship, which are, of course, among other "Sargent" features—it is in the qualities that increase its all-round efficiency. That is why the practical "Sargent" Standard Steel Square is the universal favorite wherever Squares are used. Our latest model has the scales and markings which enable the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before thought possible. "A practical treatise on Steel Square" is what several recipients have declared our little publication. Copy free simply by mentioning you saw this ad in the American Carpenter and Builder.



Sargent & Company
1149 Leonard Street
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THE OLDEST and BEST "THE EUREKA"

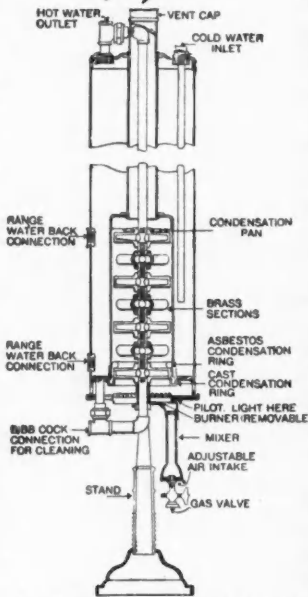
Push on the end and the screw goes in



Made in two sizes. No. 1 Small, No. 2 Large.
SOLD BY JOBBERS EVERYWHERE. Manufactured By **DECATUR COFFIN CO.**, [Dept. 'G'] Decatur, Ill.

Electric Weld

Combination Boiler and Gas Water Heater



The self-contained storage system. Illustration shows arrangement of enclosed Heating Chamber, Vent, and parts. The advantages of this Type are many, in addition to the maximum efficiency thus obtained. Adapted to Large or Small requirements, without change in design of fixture or method of installing. Widest choice as to location of fixture. Economy of space. Absence of delicate or intricate parts. No special Meters or Service pipes required. Lowest possible maintenance cost. Moderate initial cost. Minimum cost of operation (service considered.) Double Circulation. Primary Circulation equal to other types. Secondary Circulation equal to thirty-five per cent. of total efficiency—altogether absent in other types. Automatic or Intermittent Service optional, without adjustment of parts or breaking connections. Range or Furnace Connections provided for Auxiliary Steam Coil, for High or Low Steam Pressure, if desired. This type represents one-twentieth of total number of Gas Water Heaters in service, and is essential if water heaters are to be popularized.

JOHN WOOD MFG. CO.
CONSHOHOCKEN, PA.

Branches Throughout United States

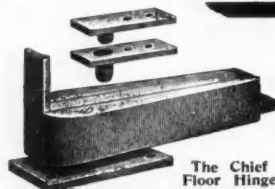


This is the inner radiator of the **HESS STEEL FURNACE**. It's all steel and contains the fire, with its gas, smoke and dust. Radiator leakage in other furnaces sends gas and dust to the rooms, but never in the **HESS**. For every joint and seam in a **HESS** radiator is sealed tight WITH MELTED STEEL. **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 Sent on Approval 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



The Chief Floor Hinge

Do you know how to hang a door with The Shelby "CHIEF" DOUBLE-ACTING-BALL-BEARING FLOOR HINGE?

It's easy—Ask us or your dealer for a "Chief" booklet showing illustrations of the way a door is hung with a "Chief". It will interest you. The Shelby Spring Butts, are good friends of up-to-date carpenters. The carpenter gauge on each hinge makes them easy to apply. Ask more about them.

THE SHELBY SPRING HINGE CO., - - Shelby, Ohio



Spring Butt



MONEY MAKING CONCRETE

Mr. Block-Maker

Wet Process is Right.
Face down is Right.
Three blocks at a time is Right.
Triple Tiering is Right.
Damp Curing is Right.

The Mogul Invincible Block Machine

COMBINES ALL THESE

IT IS RIGHT

It is 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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If You Don't Say This Mold

Is the best value you ever bought you can send it back at the end of six months and we'll return your money.

We can't say anything more emphatic than that; or anything more convincing. It will make 476 different sizes of blocks; and you'll be surprised to see how many different places you can use it.

Adjustable from 2 to 24 inches in width, and from 2 to 24 inches in length.

Send for a catalogue. Don't overlook this because you ought to realize and know the value of a mold **\$10.00** like this to you.....

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LOOK INTO THIS!



Here is the Cement Block Machine you will eventually buy—the Coltrin Boos. Because it is the **simplest, fastest and best.**

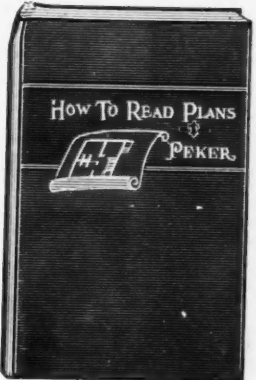
Face down—wet process. \$35 Outfit makes 16 sizes.

Sent on 5 days trial.

Don't buy until you get our catalog of Block and Brick Machines, Mixers, Tile Molds, etc.

COLTRIN BOOS MFG. CO., Jackson, Mich.

HOW TO READ PLANS



A Valuable New Book
By
Charles G. Pekar

60 Pages (5 x 7 Inches)
43 Drawings in Text
8 Large Folding Plates
Handsomely Bound in Cloth

PRICE, 50 CENTS

Sent post-paid on receipt of price.

Your money back if you are not pleased.

MANY building mechanics are handicapped from getting more pay because they are unable to read plans and work from a drawing. It is for these men that this book was prepared, as it simply explains the meaning of the various lines; plans, views, elevations, sections, scales, blue prints, devices, symbols, etc., to be found on a set of plans.

The book is finely illustrated with 43 illustrations in the text, and 8 large folding plates giving the full plan of a 6-room frame house. This set of plans alone is worth many times the cost of the book; an architect would charge at least \$25 for their equal.

It is one of the most valuable books ever got out for building mechanics, as its information means increasing a man's salary. It is pretty safe to say that to the man who cannot read a drawing now this book will mean at least \$50 more pay during the first year he has it.

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It's a Fact



That we can save you money on Builders Hardware.

No. 5653 Inside Lock Set Old Copper or Dull Brass finish per set..... **43c**

FREE Our illustrated catalog and net price list.

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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.,
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Hercules Concrete Block Machines

THE OLDEST AND BEST ESTABLISHED MACHINES IN THE WORLD

Meet every requirement where Concrete Blocks are used. They expand to meet the demand of every Contractor and Builder. They give unlimited variety both in sizes and designs. The output of ONE Hercules exceeds the combined production of from two to four machines of other makes. Two blocks can be made at one time if desired.

The only machine that will produce any size of Water Table, Sill or Lintel up to six feet long, in addition to any and every size, style, or design of building block. Stone can be produced one or two at a time, as desired. Blocks are made face down, allowing fine mixture for facing and coarse mixture for backing. This gives fine outside finish combined with strength and durability. The use of a coarse backing also makes a great saving in cement.

Successful Builders and Manufacturers of Concrete Blocks the World over recognize the superiority of Blocks made on

HERCULES BLOCK MACHINES

They are used everywhere—by the U. S. Government, by the British Government, by the leading Contractors and Builders in all parts of the world. HERCULES MACHINES are simple in construction and easy to operate—all parts are perfectly machined and interchangeable. All Rock Face Designs are taken direct from cut stone.

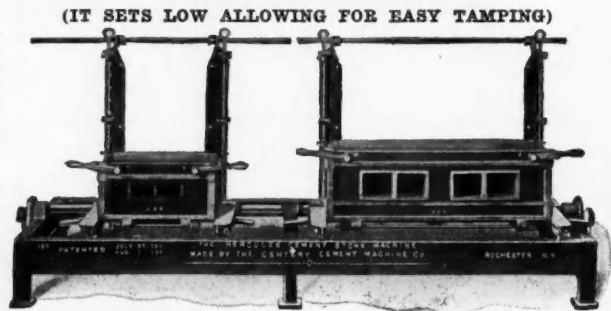
Blocks Can Be Made Better Because—A special fine facing mixture can be used for face of every block, combined with a coarse wet mixture for the back.

Blocks Can Be Made Faster Because—From Two to Four Blocks can be made at ONE time.

Blocks Can Be Made Cheaper Because—Crushed stone or coarse gravel can be used, all of which SAVES CEMENT and at the same time increases the strength and durability of the block.

HERCULES MACHINES ARE UNLIMITED AS TO PRODUCTION—they make all sizes from 3 inches to 6 feet long.

HERCULES MACHINES are in a class by themselves—it will pay you to investigate. Send for large illustrated catalog today.



CENTURY CEMENT MACHINE COMPANY, 290-300 St. Paul St. ROCHESTER, N.Y., U.S.A.



The Peerless Brick Machine

has been proven times without number to be

The most SUCCESSFUL and ECONOMICAL MACHINE

The Peerless tamps (does not press) every brick and will turn out 12,000 perfect bricks in 10 hours, making 10 bricks at each operation.

DEALER IN CEMENT? MAKER OF CEMENT BLOCKS? CONTRACTOR OR BUILDER?

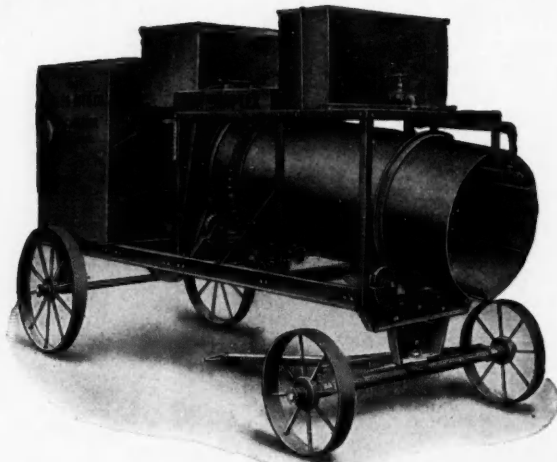
If you are, our machine will appeal to you, as it makes perfect brick at minimum cost.

OUR 1911 MODEL IS A WONDER

Write us so we can tell you more about it

Peerless Brick Machine Co.

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THE MILES SIMPLEX® MIXER



Continuous Feed, Batch Mix, Low Down Steel Frame, 3 Hoppers, Positive Feed, Attractive Price

"The Miles" No. 5, Down Face, Wet Concrete Block Machine

Makes Stone in Lengths, 4", 6", 8", 10", 12", 16", 18", 20", 22", 24"; in Width, 4", 6", 8", 10", 12"; in Height, 4", 6", 8". Also Angle Stone, Circle Stone, Gable Stone, Hollow or Solid Stone. The Contractor's Friend, Simple, Strong and Rapid. Lowest in price.

WRITE FOR NEW 1911 CATALOGUE

THE MILES MFG. CO., Inc. 309 E. Franklin St. JACKSON, MICHIGAN

CONTENTS FOR JUNE, 1911

Table with 2 columns: Article Title and Page. Includes 'Agreement to Pay for Extra Work', 'Artificial Aging of Wood', 'Automatic Hen-House Release Door', etc.

INDEX TO ADVERTISEMENTS, JUNE, 1911

Large index table with 2 columns: Company Name and Page. Lists numerous companies such as Albany Saw Works Co., Amer. Bell & Foundry Co., Galloway Co., Wm., etc.

NOTICE TO ADVERTISERS

Forms for the July number of the American Carpenter and Builder will close promptly on June 20. New Copy, changes and orders for omissions of advertisements must reach our business office, 178 West Jackson Boulevard, Chicago, not later than the above date to insure attention.

AMERICAN CARPENTER & BUILDER CO.

BISHOPRIC WALL BOARD AND SHEATHING

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.

FOR WALLS AND CEILING



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. **The laths imbedded in Bishopric Wall Board give it wall strength, a guarantee against warping.**

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.



Applied Dry
Winter or
Summer

Shows Construction of Bishopric Wall Board

It is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.

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 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.

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)

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.

Write for Descriptive Booklet and Samples—all Sent FREE. Dealers Write for Proposition.

THE MASTIC WALL BOARD AND ROOFING MFG. CO., 24 E. Third St. Cincinnati, O.

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.

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.

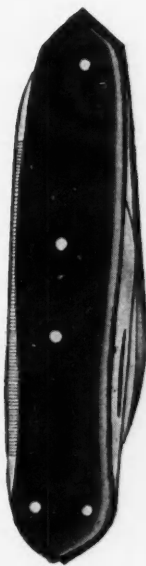
BISHOPRIC ROOFING SELF-PROTECTING

The materials used in Bishopric Roofing are self-protecting. Other roofings require protection in the way of paint or coatings to prevent drying out, cracking or rotting. Bishopric Roofing requires no paint. The Asphalt itself in this patented Roofing is toughened and perpetuated by an exclusive process. Carbonate of Lime is mixed with pure asphalt, making one homogeneous mixture, which stands a pressure of 500 pounds to the square inch. This is a positive guarantee against breaks and cracks. Asphalt Mastic may be exposed direct to the weather in any climate without danger of softening, drying out, cracking or crumbling. Write for free sample and literature.





Cut shows actual thickness of knife



No. K 3555. Size 3 1/2 in. 3 Blades. Gun Metal Handle. Price \$1.50



No. K 762. Price 75c. Size 3 1/2 in. Two Large Blades, Cocobola Handle, German Silver Bolster, Cap and Name Shield. Full Brass Lined.

A Real Knife for Real Work

K EEN Kutter knives are true in temper and of finest quality from point to heel of every blade. Ordinary knives balk, flinch and fail because the blades are soft in *spots* and the microscopic *teeth* that form the edge get bent and useless.

KEEN KUTTER

knives are uniformly hard. The workman who tempers Keen Kutter steel takes the same pride in his work that you do in yours, and that spirit prevails in every detail of manufacture. Keen Kutter blades hold their edge, and keep their spring, the handles stay on—and the whole knife *makes good*. If it doesn't, your dealer refunds the price. The guarantee is as real as the knife.

"The Recollection of Quality Remains Long After the Price is Forgotten."

Trademark Registered.

—E. C. SIMMONS.

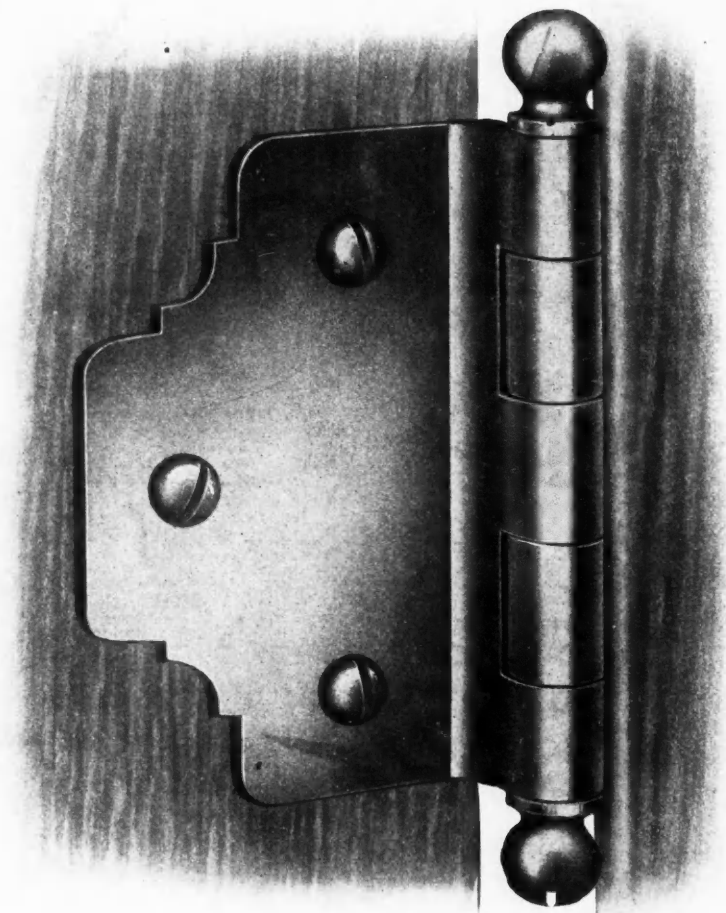
If not at your dealer's, write us.

SIMMONS HARDWARE COMPANY, Inc.

St. Louis and New York, U. S. A.

WE INITIATE -- NEVER IMITATE

Time-Savers



50%

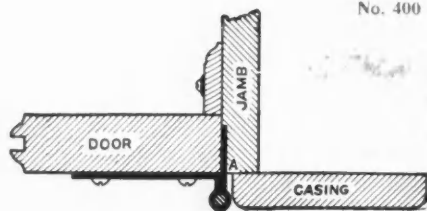
of the time required to hang a door can be saved by using "**National**" Ornamental Butts. Some contractors say they can save more. Figure up the time spent in a year in hanging doors and you will see how much it is to your advantage to use them.

Another exclusive feature—The new false **tip** is **threaded** and screws into the butt. **The slot is for a screwdriver**, making it easy to remove the pin. Also shows which is the bottom of the butt.

STYLE No. 400

here illustrated can be furnished in any finish and in all sizes from 1½-inch to 4½-inches inclusive.

No. 400



Ask for Booklet, "Ornamental Ideas," and give us your dealer's name.

Directions—Attach butt part "A" to jamb first, then set and wedge door into position and attach Ornamental Leaf to surface of the door. Simple, isn't it?



Trade-Mark

Be sure to look for the flag—it's stamped on all "National" Butts—It stands for quality.

National Manufacturing Co. Sterling, Ill.

