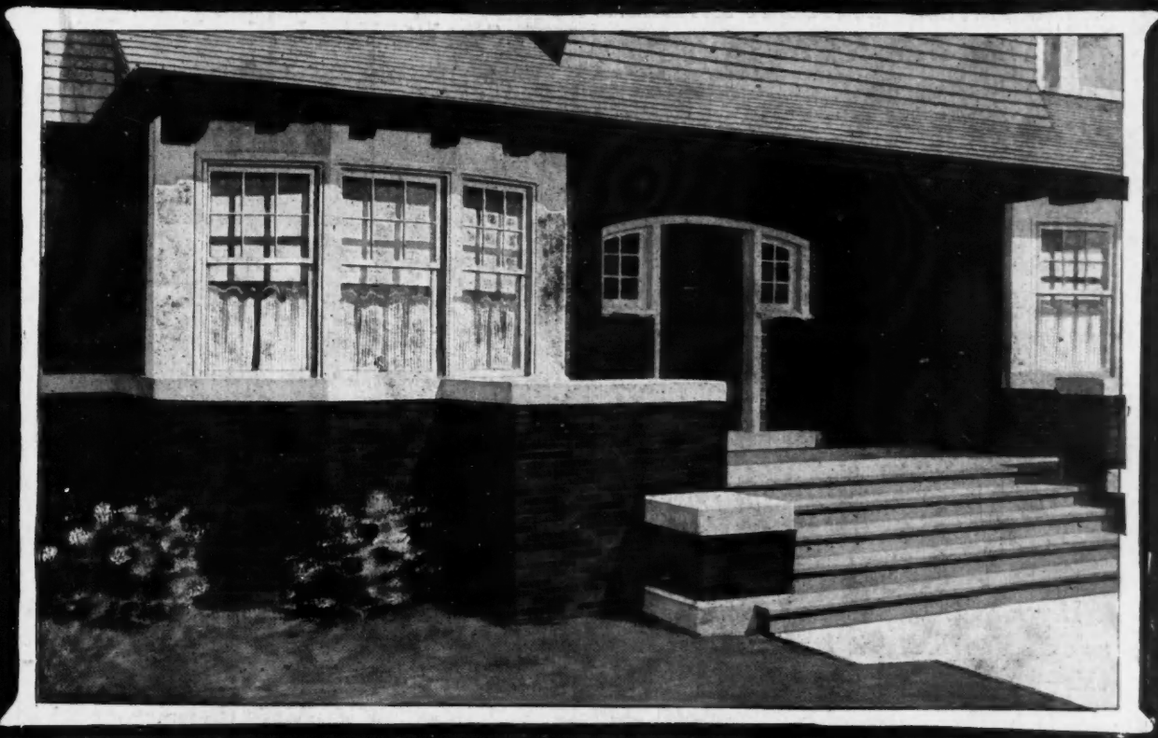
AMERICAN CARPENTER AND BUILDER

THE WORLD'S GREATEST BUILDING PAPER



Speaking of Nails—Read These!

April 4, 1910.

"I am sending you today a piece of board showing four ten-penny nails sawed off by an Atkins No. 53, and also by an Atkins No. 68 (nine points to the inch). The writer drove the nails in the board and then cut the four nails and board twice with each saw, without affecting either saw in any particular. While this test surprised the carpenters with whom I had been arguing, it did not surprise me, for I have long been of the opinion that an Atkins Silver Steel Saw would stand up under hard work better than any other make of saw that I have handled in 30 years experience as a carpenter."
S. CAMPBELL, 3128 N. 6th Street, Philadelphia

(Sawing nails, of course, isn't the way to use a handsaw if you want to keep it keen. We make a special nail-cutting saw for that work. But this letter shows that Silver Steel stands abuse that no other saw steel has ever been known to do.)

DeSota, Mo., June 10, 1910.

"I have been a carpenter since the close of the Civil War. I have used saws of all the well-known brands, and now my kit contains five Atkins Silver Steel Saws. With an experience of over 40 years, I can pronounce them the best saws that have ever come to my hands.

I have charge of the carpenter work at the Peters Shoe Co. factory in this city. Recently I cut an opening between two floors, going through 2 inches of yellow pine and two ply of maple, all well studded with nails. My Atkins Silver Steel Saw cut through all of them without being damaged in the least."—EDGAR PERRY.

Sold 350 Dozen—Five Saws Returned

"We have sold in the past approximately 350 dozen of Atkins Silver Steel Handsaws and take pleasure in saying that we have only had 5 saws returned to us, 4 of which we had re-filed and sold subject to quality demonstration, all of which gave satisfaction.

Atkins Saws for us, first, last and all the time."

(Above is from a prominent hardware merchant. Name furnished on request.)

What Carpenters are Saying

"I am at present using two of your Silver Steel Saws with Perfection Handle and am going to replace my other saws with your make this season."
ROLAND MERRILL, Vernon, N. Y., Feb. 10, 1910.

"I now have one of your Silver Steel saws, and will say it is the best and easiest cutting saw in my chest, where I also have 5 other makes."
N. R. MOOREHEAD, Clymer, Pa., Feb. 15, 1910.

"I have three of your saws and find them all you claim them to be."
LEONARD DeGRAAF, 17 Glosser St., Brooklyn, N. Y., Jan. 25, 1910.

"I now own one of your saws and expect soon to purchase two more. The Atkins Saws give satisfaction."
R. W. BROWN, 30 Gaylord St., Binghamton, N. Y., Jan. 30, 1910.

"Have used Atkins Saws for the last two years. Best saws I ever used, and I have worked at the trade 37 years."
A. C. B. PAESLER, Elgin, Ill., June 8, 1910.

"Am using your saws now, and think they are the best on the market."
WM. T. HUTCHINSON, New Castle, Del., June 13, 1910.

"I am now using three of your saws, which I have had over two years, and they have no rusty spots. I think they are the best yet."
E. C. CARPENTER, Hogo, Okla., Jan. 5, 1910.

"I purchased two Atkins Saws in January, and find them all that you say and more too. I shall not hesitate in saying a good word for Atkins Saws whenever I have an opportunity."
JAMES CROWLEY, New Britain, Conn., April 18, 1910.

"I have used Atkins Saws for a long time, and for ease in cutting and perfect proportion, they cannot be beat. They will stand up longer without filing than any other saw made. I have tested them as to that in the shop and as a journeyman."
R. J. TIERNEY, New York City, Feb., 20. 1910.

"I have one of your Atkins Silver Steel Hand Saws. Must say it is the best saw I ever used. The Atkins Perfection Handle is the only handle."
MILTON WITTENMYER, Flint, Mich., Jan. 31, 1910.

"I have now used my Atkins Saw for one year. It is the best saw in my kit."
CHAS. CARROLL, Hamilton, Ont., May 25, 1910.

"I recently had the pleasure of using one of your saws, and I decided right there that the next saw I bought would be an Atkins. I have now placed an order for one."
W. M. SNYDER, Buhl, Idaho, May 16, 1910.

To the Man Who Has Almost Decided to Try An

ATKINS

Silver Steel

S A W

You've read some of our ads.

You've probably been interested in the peculiar and excellent qualities of Silver Steel — the saw steel that takes a better temper and a keener edge, requires less filing yet files more easily, is less liable to rust and stands more hard usage than any other.

You've considered the Atkins taper-ground blade, which doesn't stick or bind in the wood, and makes the Atkins the easiest running, fastest cutting saw you ever touched.

You've probably seen the advantage of the Atkins Perfection Handle, which saves your strength and makes the work easier.

Undoubtedly, you like the Atkins Guaranty—money refunded by your dealer if the Atkins Silver Steel Saw isn't the very best saw you ever put through a board.

Like hundreds of carpenters who are writing us, you have probably decided to give the Atkins a trial.

We're writing this to suggest that you try the Atkins *now*. Why put it off?

We know this is your "busy day." But that's all the more reason why you should try the Atkins NOW. The busier you are, the more you'll like the labor-saving Atkins saw.

Speak to Your Dealer About This

Select the Atkins Silver Steel saw that you wish to try. Take that saw with you to your work—compare it with the saws you have been using. That's the way to find out, and NOW is the time! Money back if we don't make good.

BE SURE the blade says "Silver Steel"—that's our best saw. Remember, too, that it isn't a genuine guaranteed Atkins Saw unless it bears our name.

FREE to Carpenters

Have you got your FREE nail apron yet? We have it here for you. Write for it (enclosing 10 cents to cover postage.) With the free nail apron—and it's a good one—we'll send our Carpenter's Time Book and our popular "Saw Sense" booklet, which contains a lot of handy information. Address our Carpenter's Department.

E. C. Atkins & Co., Inc.

INDIANAPOLIS, IND.

Largest Exclusive Saw Manufacturers in the World

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

$165.00 Complete

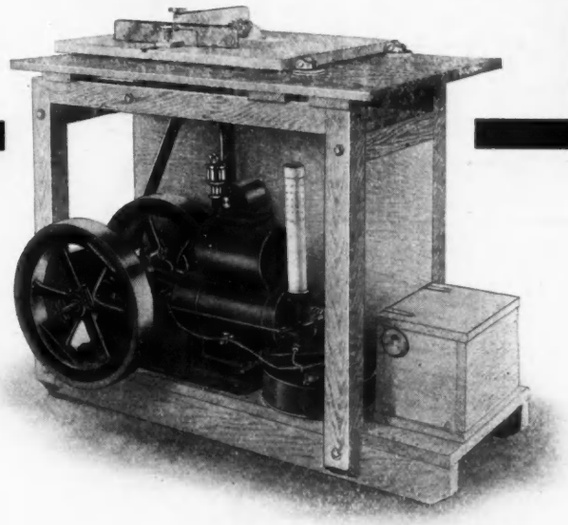
THIS RIG COMPLETE, strongly crated, ready to start when it reaches you, weighs 550 pounds. With the outfit is included:

One eight-inch Rip Saw
One eight-inch Cross-Cut Saw
One ten-inch Cross-Cut Saw for Bridging
One half-inch Dado Head
One two-inch Jointer Head and Attachments
One Emery Wheel
One Extra Spark Plug
One Wrench and Oil Can
One Belt Tightener attached to engine

Send us your order today and we will Ship Quick

Inter-State Equipment & Engineering Co.

1775 Old Colony Bldg. Chicago, Ill.



3 H. P. Hopper Cooled Engine.

Will Rip Two-Inch and Cross Cut Three-Inch Lumber

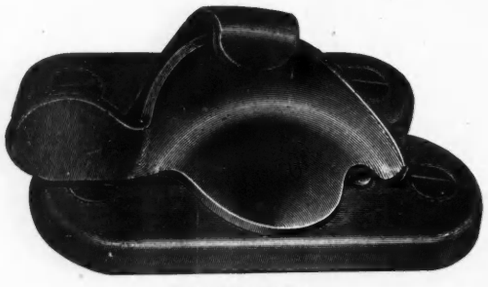
Put this Portable Saw Rig On Your Job

Th's PORTABLE SAW RIG on your job, will do all your millwork and will save you much time and labor. Figure out how much you are paying your five high priced carpenters and the expense of running this rig at 20 cents a day and you have the solution of the problem. We guarantee this rig will do the work of five men. Always on the job and ready to work day or night.

This is the Second Appearance of this Challenge in this Magazine. It has not yet been Officially Accepted.

Daisy Mfg. Co.

MONITOR SASH LOCKS



(PATENTED)

NEVER BREAK

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

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

MADE IN TWO SIZES AND ALL FURNISHED BY

The Champion Safety Lock Co.
Geneva, Ohio

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

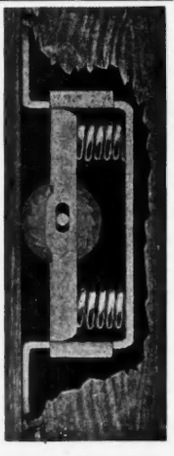
The "AUTOMATIC" SASH HOLDER

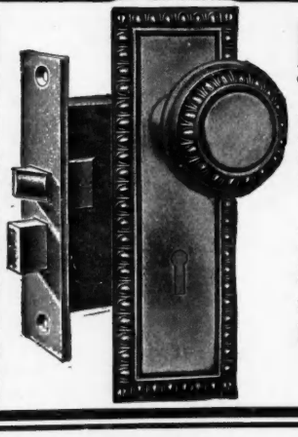
The "Automatic" Sash Holder is the new, modern, up-to-date device that dispenses with cumbrous sash weights, kinking cords or ribbons, useless weight pockets, misfit pulleys and reluctant balances, and saves all the time, labor and expense of fitting them in place.

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

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

Automatic Sash Holder Company
277 Broadway, New York City.





A Price That Talks

We can save you money on Builders' Hardware. Send me a list of your wants and get our prices—THEY will surprise you. No. 1010 Antique Copper inside Lock set (as per cut)

Price per set 40c

FREE our No. 4 Builders' Hardware Catalogue and net price list to contractors and material men.

REHM HARDWARE CO.
1501 Blue Island Ave.
CHICAGO

Carpenters, Here Is the Only Saw Set Ever Made That Will Set the Tooth of Your 12 Point Finishing Saw.

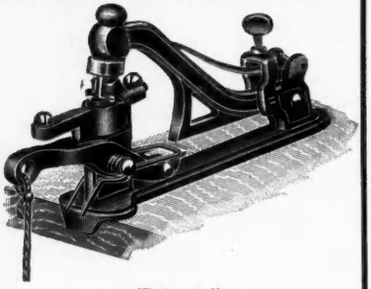
"THE BUCKEYE FOOTPOWER HAMMER SAW SET"

It will set any saw from the finest tooth to the two man cross cut saw, absolutely accurate, as the hammer strikes only the point of the tooth and does not bend the blade of the saw, as is often the case with the pincher sets. Being operated by footpower there is no strain on the wrist, and it leaves both hands free to guide the saw. It takes very little space in the tool chest, wgt. 2½ lbs. Ask your dealer to get it for you, or send us $1.50 and we will ship you one prepaid. If after you have tried it, you do not find it does all we claim for it, and is not the best SAW SET you ever used, return it, and we will cheerfully refund your money.

We also manufacture a full line of—

Saw Vises, Chain Drills, Hollow Augers, Etc.

Our catalog to dealers on request.



(Patented)

Buckeye Saw Vise Co. 2044-50 W. 55th St. **Cleveland, Ohio**

$1000.00 CHALLENGE

We herewith challenge the manufacturers of any advertised Floor Scraper, Floor Planer or Floor Smoother to a competitive test. We will agree to forfeit the $1000.00 Certified Check, deposited with the American Carpenter and Builder, if any advertised Floor Scraper, Floor Planer or Floor Smoother can do straight-edged (whole hand smooth) floor dressing as perfectly and as rapidly as the "Daisy" Floor Scraper. This challenge is open until Oct. 1st, 1910. *The Daisy Mf'g. Co.*

A. L. BLODGETT — OFFICE OF THE DAISY MFG. CO. MANUFACTURERS OF FLOOR SCRAPERS — H. A. LENSING

SOUTH BEND, IND.

Americ[illegible]arpenter and [illegible]
[illegible]go, Ill.

Gent[illegible]

[illegible]nge the makers of Floor Scrapers, Floor Planers and Fl[illegible]others to a competitive test. The Test to be made in [illegible] city.

We agree to forfeit the inclosed $10[illegible]0.00 check to some charitable cause, preferably to the Carpenters' Benevolent and Relief Fund, if any other Floor Scraper, Planer or Smoother can do straightedged or wholehand smooth floor dressing as perfectly and rapidly as The "Daisy" Floor Scraper.

We [illegible]k that the maker of any Floor Scraper, Planer or Smoo[illegible]res to compete in test, forfeit or donate any mor[illegible]ce is to be free to them.

We ha[illegible] the following five well known men, who are expert j[illegible]ssed floors, to act as committee, to decide at any [illegible], which section of floor is most perfectly and rapidly dressed.

Mr. H. B. Barnard, Pres. Carpenters and Builders Ass'n.
Mr. Wm. McCumber, Sec'y. Carpenters and Builders Ass'n.
Mr. John A. Metz, Carpenters Executive Council.
Mr. John J. Brit[illegible]eas. Carpenters Executive Council.
Mr. Daniel Gilv[illegible]s. Carpenters [illegible] Council.

Yours very truly,
HAL[illegible] The Daisy Mf[illegible] Co.
Per H. A. Lensing

The "Daisy" Outfit

consists of
1 "Daisy" Floor Scraper
6 10-inch blades (3½ inch deep)
6 5-inch blades (3½ inch deep)
2 "Daisy" Clamps
1 "Daisy" Triangle
1 "Daisy" Filing Device
1 "Daisy" Edgeturner
File, Wrench, Hand Burnisher and Whetstone.

10 DAYS FREE TRIAL OFFER

We will ship a "Daisy" Outfit, freight prepaid, to any responsible contractor who intends purchasing a Floor Scraper, for a ten days free trial. Test it with others, if you do not find it best, ship it back. The trial will not cost you a penny. We have never had a "Daisy" Outfit returned to us.

The "Daisy" Triangle

Makes two machines out of one. With it on ∧ shape, double shearing cut, with it off single shearing cut is made. Triangle is easily put on with two bolts.

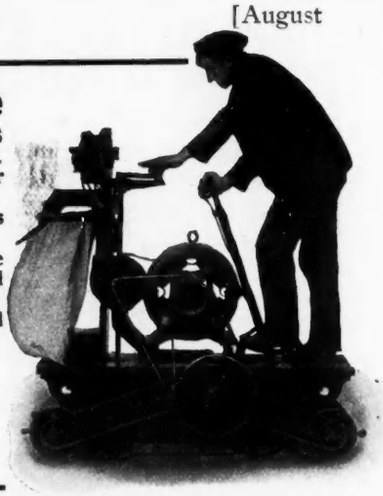
THE DAISY MFG. CO. South Bend, Ind.

Gentlemen:—
Send me the "Daisy" Floor Scraper Booklet Free.

Name .....
Street .....
City and State .....
Occupation .....

This is the second issue of this challenge in this Journal and it has not yet been officially accepted.
DaisyMfg. Co.

The American Floor Surfacing Machine



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

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

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

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

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

The only one whose construction **is guaranteed** and **sold on its merits.**

Write for our book "Surfacing Floors as a Business."

Manufactured by

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

"Held to its work by muscles of steel."

Every Floor You Scrape by Hand, or with an Inferior Machine, means Money Wasted.

The *tempered spring steel arms* on the Universal, *press down* on the blade with a *resilient and elastic action* which is perfectly controlled by the operator from his standing position.

That is why the Universal *cuts smoothly over hard and soft places* and DOES NOT JUMP OR TREMBLE. It works on the principle of a workman's arms and his hand scraper

"HELD TO ITS WORK BY MUSCLES OF STEEL."

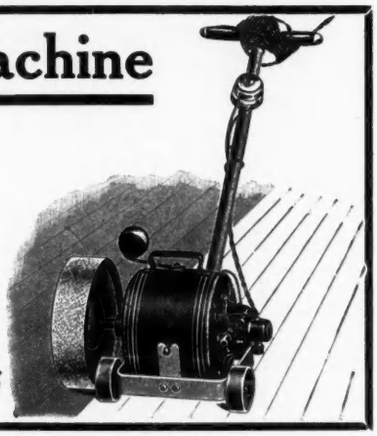
Not by a dead weight on the blade.

The Blade Sharpener is a necessity to any carpenter using a scraper of any kind. It files, stones and turns a perfect cutting edge on any scraper blade, and is complete with file, oil stone, and especially designed burnisher. Every machine has an Adjustable Blade Holder and Rubber Bumpers. This complete outfit shipped on approval at our expense.

Universal Floor Scraper Co.

110 EXCHANGE STREET :: :: :: WORCESTER, MASS.

Only Perfect Floor Surfacing Machine



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

A BOY CAN OPERATE IT.

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

Write for further Information.

MARSH COMPANY, 970 Old Colony Building CHICAGO, ILL.

We Call Our Competitor's Bluff

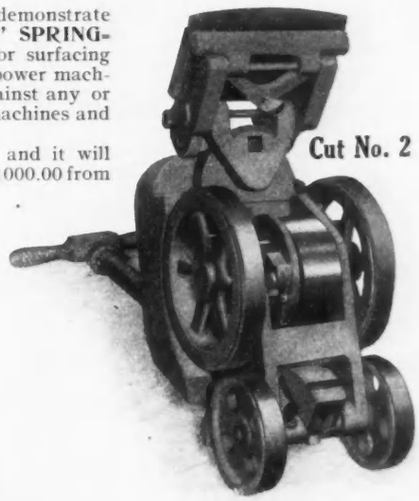
We hereby accept the challenge, published in the July issue of this paper, for a competitive test of floor surfacing machines.

This opportunity is gladly taken to further demonstrate the established superiority of the **TRIPLE "A" SPRING-DRIVEN FLOOR SMOOTHER** over other floor surfacing machines. We do not limit ourselves to a comparison between hand power machines alone, as the challenger does, but are open to a competitive test against any or all other devices on the market for surfacing floors, including power machines and experts with hand scrapers.

Our "wordy" challengers will certainly get a run for their money and it will give us great pleasure to be the means of transferring the neat sum of $1000.00 from parties apparently so careless with their money to so worthy a cause as the **CARPENTERS' BENEVOLENT AND RELIEF FUND.**

In the meantime we would respectfully caution prospective buyers of floor surfacing machines to **TAKE NOTHING FOR GRANTED** but to insist on being shown—Don't be mislead by a **MERE ADVERTISING SCHEME.**

We will cheerfully send our **TRIPLE "A" FLOOR SMOOTHING OUTFIT** to prospective buyers on 10 days' free trial against any or all other makes, and let them be the judge



Cut No. 2

Cut No. 1

The Triple "A" Floor Smoothing Outfit Includes:

ONE TRIPLE "A" FLOOR SCRAPER, equipped with

A Powerful Triple "A" Motor Spring (which does half the work).

Two Adjustable Weights (which make it suitable for light or heavy cutting).

A Vertically and Laterally Adjustable Knife Clamp (which forms a practical Knife Sharpening Device when the machine is tipped back as in cut No. 2).

A Telescopic and Up-and-Down Adjustable Handle (for use in small rooms and to suit the convenience of the operator).

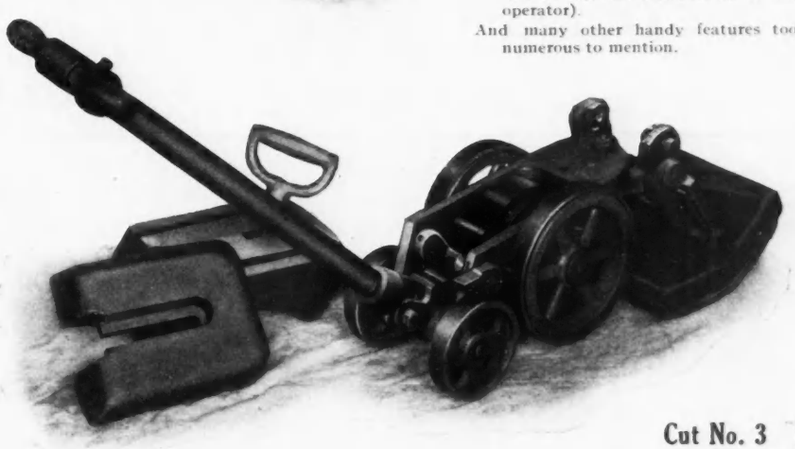
And many other handy features too numerous to mention.

ONE TRIPLE "A" AUTOMATIC SANDPAPERING ATTACHMENT (which works with a rocking action and is self cleaning).

ONE TRIPLE "A" HANDY TOOL BOX containg:

6 Triple "A" Finest Steel Scraper Blades 4½x8½ (solid—no slots).
1 Triple "A" Flat Mill File and Handle.
1 Triple "A" Special Grade Oil Stone.
1 Triple "A" Tool Steel Burnisher.
1 Triple "A" Drop Forge Wrench.
1 Triple "A" Oiler and Cotton Waste.

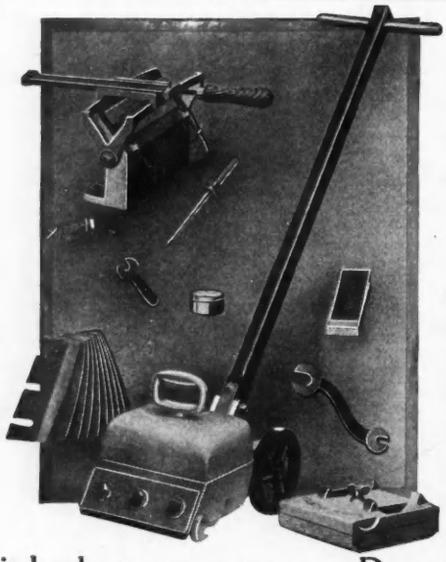
Write for further particulars.



Cut No. 3

Triple "A" Machine Company, 114 S. Clark St., Chicago.

How to Buy a Floor Scraper



The safest, surest and most reliable way to select a floor scraper is to try it out on your own work yourself or let your men operate it. By adopting this plan you will then know, through actual experience, exactly what the machine can do and whether it will be to your interest to own one.

The **Acme Machines** are yours to test, simply for the asking. I don't require you to deposit any money, sign any agreement or pay any charges. Just write me that you want to try the **Acme Floor Scraping Outfit** and advise me when you will be ready for it, and shipment will be made. You can keep the outfit for one week, work with it as much as you please, then make up your mind whether you want to purchase it or send it back at my expense. Do you think this is a fair offer? If you do, write me now for further particulars.

JOS. MIOTKE, 247 Lake Street, Milwaukee, Wis.

Made in three sizes:
18 6x15 and 6x12 in. Roller.

Perfect Results Are Easily Obtained By Using Schlueter Rapid Floor Surfacer

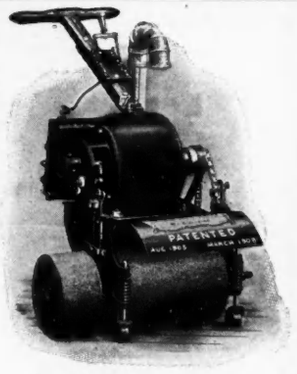
This machine is built on the only correct principle. It is guaranteed to be **The Best** machine with which to produce an even, smooth surface on any kind of large or small wood floor, old or new, hard or soft, and in all buildings: Residences, Stores, Factories, Bowling Alleys, Roller Skating Rinks,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

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

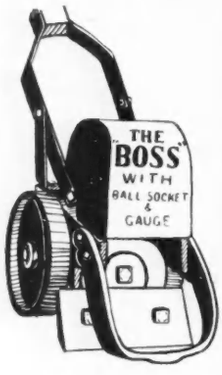
Earning capacity, $20.00 to $35.00 per day!

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

M. L. SCHLUETER, Chicago, Ill.
103 N. Canal Street



Edge Roller easily adjusted to either side.



THE BOSS JUNIOR FLOOR SCRAPER

with gage, is the latest. With ball adjustment—it can be set to any shearing cut by loosening one bolt. Right or left gage can be set for any thickness of shaving, and keeps knife from making an uneven impression in Floors. Gives knife double support. Gage on front and wheels at the rear make it like a plane. The weight on top can move it back or forward. This machine lets you be the judge, not me.

Send for Prices.

G. J. Kepplinger
Dwight, Ill.

Sent on FREE Trial—anywhere

If you want the best—get the Ackermann Floor Scraper

The Ackermann is the best floor scraper. We guarantee it to do more, better and easier work than any other machine on the market. If it doesn't you get one free. Send for details of our offer under which any contractor may test the Ackermann Rapid Floor Scraper and Ackermann's New Knife Sharpener free at our expense.

J. B. ACKERMANN CO., 100 Pearl Street, GRAND RAPIDS, MICH.

BROTHER CONTRACTOR:

No one can judge a floor scraper but you yourself—by giving it a thorough trial with your own hands.

During the past two years I have allowed prospective purchasers to place my machine into competition with every other floor scraper built. I offered a machine free to the contractor who could prove that there was another floor scraper that would do better work than the WEBER or even equal its work. The fact that I haven't given a floor scraper away proves that the WEBER has no equal. BROTHER CONTRACTOR, my offer is still good. Will you try one? I'll pay the freight.

SOMETHING NEW

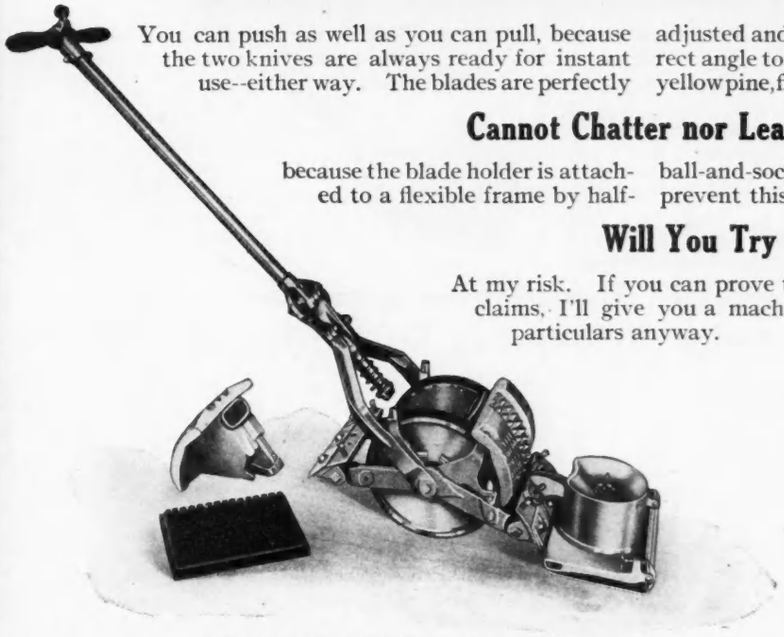
See those dotted lines? They mark my latest improvement. By setting the handle a little to the right or left —and moving the shearing knife toward the same side—the handle comes into direct draft with the extreme edge of the knife —so that you can scrape right into the very angle of the floor and base board without the least side draft or danger of marring.

MY 1910 SANDER ATTACHMENT

Below you will see one of my machines equipped with my new model sander. The rear machine-weight is removed, which throws the front machine-weight and the sander's own weight fairly onto the sandpaper, assuring a working surface always under perfectly even pressure, and a free movement of the handle. And by loosening the screw in the center of the sander weight, the sander can be given a half turn, changing the grain of the paper and nearly doubling its life. Can be used with the machine or with special handle. Besides this, with the

Side View Showing Adjustable Handle

The WEBER DOUBLE ACTING Floor Scraper



1910 Model with New Sander or Attachment

You can push as well as you can pull, because the two knives are always ready for instant use--either way. The blades are perfectly adjusted and can be quickly set at the correct angle to do perfect work on maple, oak, yellow pine, fir--it makes no difference what.

Cannot Chatter nor Leave Waves

because the blade holder is attached to a flexible frame by half-ball-and-socket bearings that absolutely prevent this. Contractors:

Will You Try a Weber?

At my risk. If you can prove that it doesn't come up to my claims, I'll give you a machine FREE. Write for more particulars anyway.

JOHN F. WEBER, Pres.,

Weber Mfg. Co.

670 71st Ave.,

West Allis, Wis.

TRY BEFORE YOU BUY

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

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

25,000 "Little Giant" Floor Scrapers

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

TRY IT ON YOUR OWN FLOOR

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

Write us for our Special Price

Hurley Machine Company

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

The Fox Will Save You Time Money and Trouble

SENT ON TRIAL

Fox Floor Scraper No. 1

A Perfect Machine for Perfect Work.

Built on scientific principles, simple in construction, light running, *easy* to operate.

Will Last a Life Time

Remember the Fox *leads*; others *follow*, and the best is what you want. We guarantee the Fox and back that guarantee by the largest floor scraper factory in the world.

Write for catalog on floor and hand scrapers, it will pay you.

Fox Mfg. Co.
Brooklyn, Wis.

The Black Hawk Floor Scraper

Simplest, Cheapest and Best on the Market

Weight, 75 lbs.

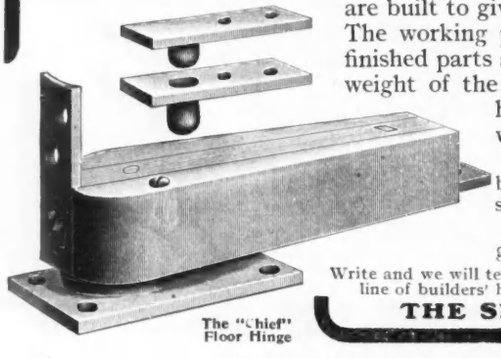
Also Attachments for Floor Scrubbing, Wax Polishing, Tile Rubbing, at Small Extra Cost. Put on in an instant.

Retails at $18.00.

Enameled dark blue and gold.

PUTNAM MFG. CO. HARDWARE DAVENPORT IOWA

The Shelby Double-Acting Ball-Bearing Spring Hinges



The "Chief" Floor Hinge

are built to give satisfaction to the contractor and builder. The working parts of these hinges are made of steel, and finished parts are steel, real bronze or brass, as desired. The weight of the door is sustained upon ball bearings set in hardened cups which have no perceptible wear after years of service.

The Chief floor hinge is very easily applied and can be adjusted after the door is hung by removing a side plate and turning the tension nut.

Spring Butts

The Spring Butts have a carpenter's guage on each flange which greatly assists the carpenter in hanging the door.

Write and we will tell you more about them. We also make locks, screen door hinges and a fine line of builders' hardware.

THE SHELBY SPRING HINGE CO., Shelby, Ohio

Common-Sense Says:
One Machine is Enough

FAMOUS

The dictates of business economics are against tying up working capital **unnecessarily.**

In other words, the multum in parvo principle is the only correct principle to adopt when buying woodworking machinery.

When **one** machine will do the work of fourteen different machines, that one machine should be installed in preference to the fourteen.

"Is there such a machine?" you ask. "Is such a proposition possible?—and if so, how?"

To the first question we answer: There is such a machine—the FAMOUS Universal Woodworker. To the second question we say: Not only possible but a wonderful and assured success. To the third question we refer you to the next paragraph.

The FAMOUS Universal Woodworker consists of one woodworking machine which, by being adjusted, is made to do various kinds of work. The various adjustments are easily and quickly made so that the FAMOUS will do each variety of work every bit as good as a machine that does only one kind of work.

No other woodworker can compare with the FAMOUS for wide range of adaptability, ease of operation, simplicity of construction, or durability. No other woodworker can be utilized for so many uses—or anything like it. The FAMOUS is in a class by itself.

Interesting literature has been prepared and copies will be mailed immediately upon request.

The Sidney Tool Co.

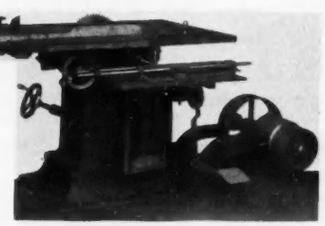
Builders of the FAMOUS Universal Woodworker

Sidney . . . . . Ohio

VARIETY SAW

with or without Boring Attachment.

Write for Catalogue.



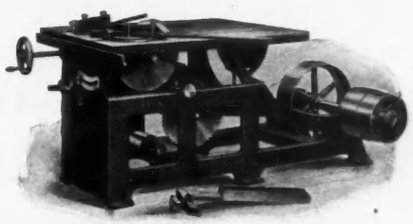
B. M. ROOT CO.

Wood Working Machinery

New York Office, 136 LIBERTY STREET

YORK, PA.

Results Prove the Value



Study the construction of this Saw Bench

It has two arbors. Both can be fitted with Saws, or one with a Dado head, as may be desired, and by a few turns of a hand wheel either can be brought into operation while the machine is in motion.

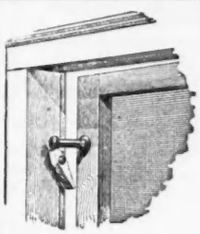
Manufacturers of More Than 150 Different Machines for Working Wood.

For Further Particulars, Address,

H. B. Smith Machine Co.

Smithville, N. J., U. S. A.

New York Chicago Atlanta Memphis



Silent Screen Door

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

"Dime" Screen Door Check

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

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

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 provide perfectly for the expansion and contraction of the metal.

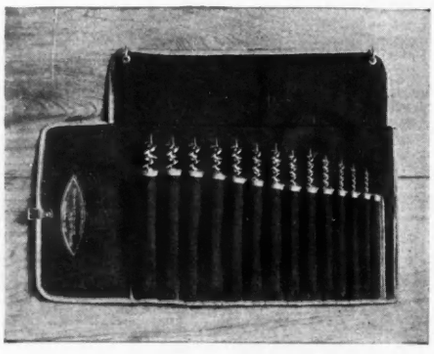
SEND FOR SAMPLES AND BOOKLET.

"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.

The New Roll Is a Winner



It contains a set of Genuine

RUSSELL JENNINGS BITS

It is made of heavy brown duck neatly bound on the edges — it protects the bits from injury and keeps them in place.

It can be hung on the wall instantly — the two holes in the long flap providing for hooks and nails.

The pockets are deep so that the roll can be hung on the wall without danger of the bits falling out, and the bits can be slipped in or out easily.

Russell Jennings Mfg. Co.,
Chester, Conn., U. S. A. 21-23

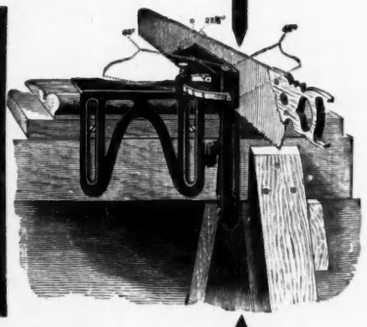
"SEAVEY" MITRE BOX

Cuts Any Angle

Meets Every Requirement

Special Offer

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

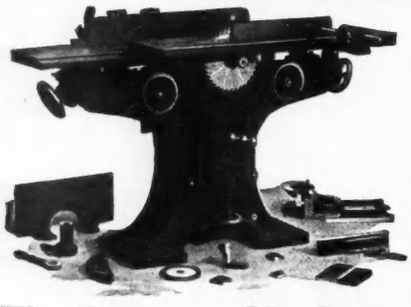


Portable — Can be carried in the Tool Kit

Weighs 2 Pounds

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

Mr. Contractor — This Machine is Built for You



THE CRESCENT VA RIETY WOODWORKER

Simple, durable, efficient, convenient, safe to operate, and easy to change from one use to another, it fills a long felt want in those shops that have varied or but limited use for woodworking machinery. It is just the machine the up-to-date Contractor has been looking for. Combines a Jointer, Saw-table, Borer, Shaper, Pole-rounder and Tool-grinder.

READ THIS LETTER

Lake Geneva, Wis., May 14, 1910

The Crescent Machine Co., Leetonia, Ohio.

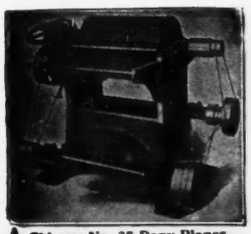
Gentlemen: Yours of recent date at hand. In reply would say that I have used your variety wood worker for the last five months, and am more than pleased with it. Don't see how I ever got along without it. The wood worker in connection with the Crescent band saw is worth more to me than a man for repair work. They never get on a spree, and are always ready for business. Yours truly,

J. H. RUSSELL.

Machine is valuable to carpenters and contractors, as they can take the machine out on a job, or use it in the shop with equal satisfaction. It can be driven with electric motor or gasoline engine.

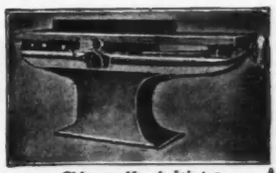
Get our 1910 catalogue and find out all about this splendid tool and our elegant line of hand saws, disk grinders, planers, planer and matcher, jointers, shapers, saw tables, etc., etc.

The Crescent Machine Co., - - 224 Main Street, Leetonia, Ohio



Chicago No. 35 Pony Planer

Machines for Contractors



Chicago Hand Jointer
8, 12 and 16 in.

Do Your Own Millwork!!

Stop paying somebody else profit — put it in your own pocket. Be in a position to estimate below your competitors. You can do this by installing your own Machinery.

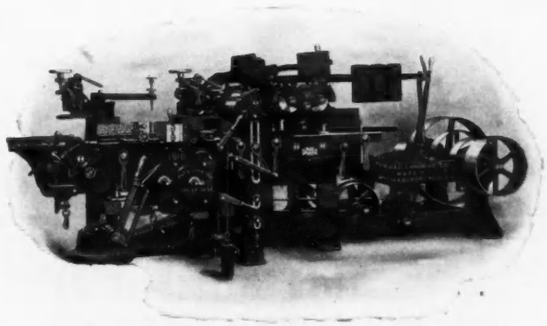
Money Saving Machinery

The contractor and builder who installs his own woodworking machinery can easily estimate under his competitors. Modern economic conditions ***demand*** it. Money you expend in millwork is profit for somebody else — the profit that rightfully belongs to you.

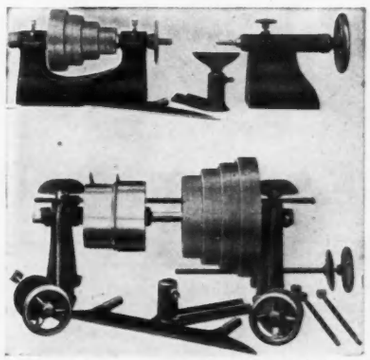
Prices are Favorable Our line is the most complete in the country and our prices are most favorable. All our machinery is of special construction to secure fine finished surfaces and reduce sand-papering to the minimum.

Send for Lists and Circulars Our monthly list of rebuilt machines (free to contractors) shows just the machines you ought to have. Write today.

Chicago Machinery Exchange, 159-161 North Canal Street **Chicago**



Hermance New 1910 "Wide-Open" Moulder
Up-to-date and a little ahead.



Wood Turning Lathe and Countershaft
16 and 20 inch

Chicago No. 7
Improved Swing Saw

"A Bit Of Utility"

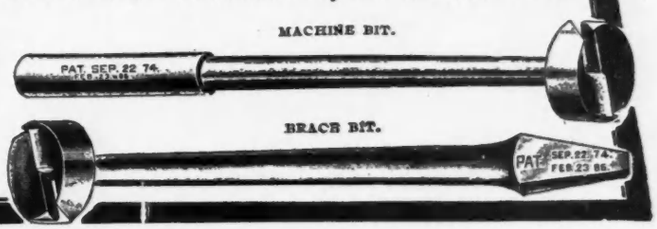
Guided by its circular rim—instead of its centre—the Forstner Labor-Saving Auger Bit will bore any arc of a circle, and can be guided in any direction.

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.

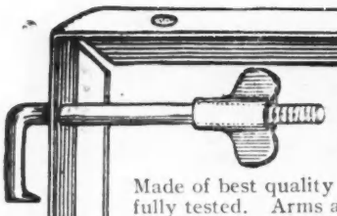
Unequaled for Delicate Work

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.



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

Made of best quality angle steel, strictly first-class and fully tested. Arms are notched and brace riveted fast in such a way that the strain is carried entirely on the solid metal instead of on the rivets; a single pair carry a ton easily.
4 ft. brackets $1\frac{1}{4}$" x $1\frac{1}{4}$" x $\frac{3}{16}$"
5 ft. brackets $1\frac{1}{2}$" x $1\frac{1}{2}$" x $\frac{3}{16}$"
Prices respectively, $14.85 and $18.00 per dozen.

Prompt Shipments Guaranteed.

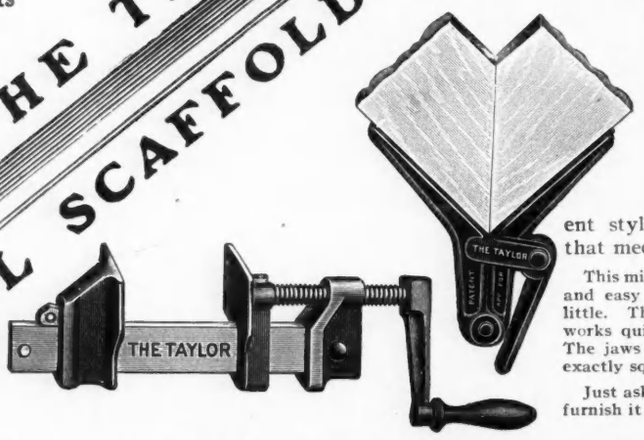
If you wish to try a pair, before ordering in quantity, write for terms of special trial offer.

THE TAYLOR STEEL SCAFFOLD BRACKETS

ABOUT CLAMPS

Isn't it quick work to be able to slide your clamp jaw right against the work operated on, let it lock itself, and then apply the power with about half a turn of the screw?

You can do this with the "TAYLOR," and as the grip doesn't depend on friction, there's no danger of the clamp becoming useless in a short time. Each is for its weight the strongest and best clamp made, and with proper use practically unbreakable. The steel bar is of a special grade, more than twice as strong as Bessmer, and the rest of the clamp is even stronger, correspondingly. We make 21 different styles, so you're likely to find one that meets your requirements.



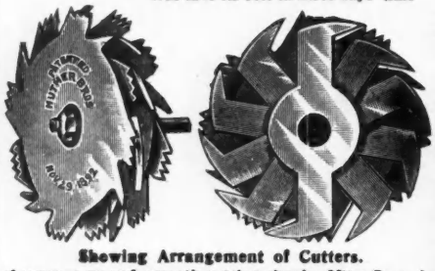
This mitre clamp is a crack-a-jack. It's light, and easy to handle and mars the work very little. The eccentric is a special design that works quickly, but gives great holding power. The jaws are planed true, and hold the work exactly square when closed.

Just ask for a catalogue, and we'll be glad to furnish it and tell you more about these clamps.

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

Huther Bros. Patent Groover or Dado Head

Will save its cost in three days' time



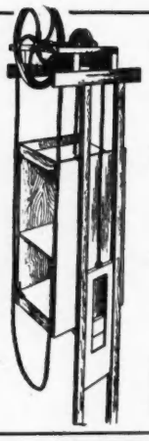
Showing Arrangement of Cutters.

Can be used on any Circular Saw Mandrel.

For cutting any width groove from ¼" 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.
1600 University Ave. ROCHESTER, N. Y.



This DUMB WAITER

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

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

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

SEND FOR SPECIAL PAMPHLET

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

No. 254—Bench Hand Planer and Jointer

A Bench Hand Planer and Jointer

FOR

CARPENTERS, CONTRACTORS, BUILDERS and CABINET MAKERS

Undoubtedly, the handiest and most valuable tool ever invented for planing small work—saves much time, does the work much better and with far less labor than can possibly be done with the hand plane.

With our **No. 254 Bench Hand Planer** you can plane, surface straight or tapering, joint, edge, etc., in the most rapid and perfect manner. The price is so reasonable that the ordinary Carpenter or Cabinet Shop cannot afford to be without it.

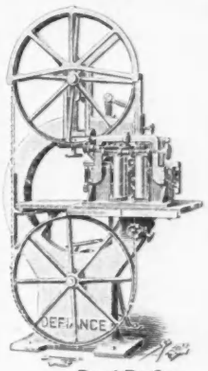
Write for Large Illustrated Circular.

J. A. FAY & EGAN CO., 545-565 Front St., Cincinnati, Ohio.

"DEFIANCE" WOOD-WORKING MACHINERY

For Making:

AUTOMOBILE SPOKES, RIMS, WHEELS, and BODIES. Carriage and Wagon Hubs, Spokes, Rims and Wheels, Wagons, Carriages, Shafts, Poles, Neckyokes, Singletrees, Hoops, Handles, Spools, Bobbins, Insulator Pins, Balusters, Table Legs, Oval Wood Dishes and for GENERAL WOODWORK.



Band Re-Saw

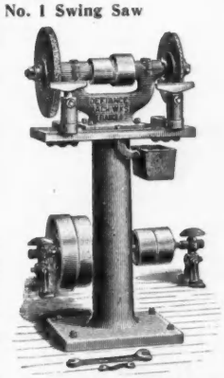
Invented and Built By

The Defiance Machine Works

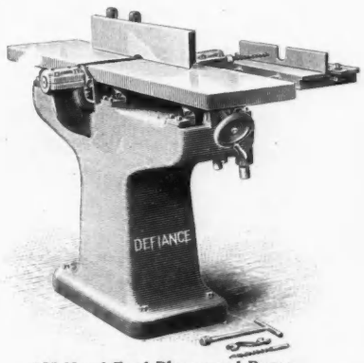
Defiance, Ohio

SEND FOR CATALOG

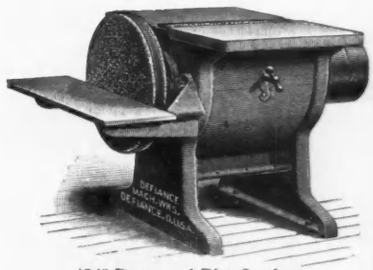
No. 1 Swing Saw



Defiance Emery Grinder



12" Hand Feed Planer and Borer



24" Drum and Disc Sander

PARKS' No. 620 and 622

Combination Circular Saw, 6-inch Jointer, Band Saw, Reversible Spindle Shaper with Boring or Mortising and Rabbeting attachments.

ALWAYS READY FOR INSTANT USE

Six Machines in One and all in Plain Sight

No unbolting or bolting is necessary before you can see or use all the attachments. Economical, cheap, and a constant money maker for Carpenters and Contractors.
Write for Circular and Prices.

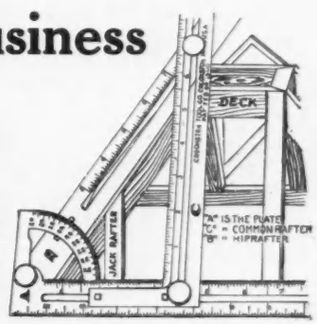
Parks' Ball Bearing Machine Co.
Fergus & C. H. &. D. Ry.
Cincinnati, Ohio
Originators of the Circular Saw, Band Saw and Jointer Combination, also Foot and Hand Power Machine.

Canadian Agents,
Bournival & Co., No. 10 Beaconsfield Ave., Toronto, Ont.
St. Barnabe, P.Q. Can.

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

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

Doing Business ON THE Square

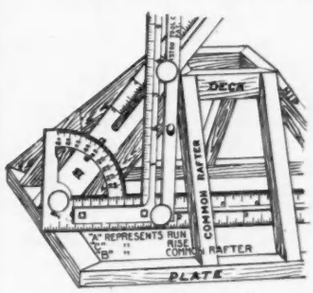


The recommends you have seen from time to time in this publication from men who cannot afford to misrepresent, ought to convince the most sceptical that the **ABC Protractor Square** is not a toy tool, but one that **every** carpenter in the country **should have.**

Members A and C are 12 inches long and member B 16 inches, large enough for any ordinary work, and you can use a scale of ½ inch to a foot as well as ¼ or 1 inch. It is made of hard steel, coppered and nickled and the best of workmanship guaranteed. It is not frail, nor clumsy, but **Just Right.**

We are building up our enormous business **on the Square,** and if it is not as represented, **send it back,** and your money will be **cheerfully** refunded. Price, $3.00.

For the next thirty days, we will pay you 10 cents each for 5 names of carpenters, if you buy one of our ABC Protractor Squares. Send us $2.50 with the 5 names and we shall send you the tool by mail **prepaid.**



Crookston Tool Company
Crookston, Minn.

THE "LIGHTNING" AUGER BIT

WARRANTED  WARRANTED

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

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

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

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

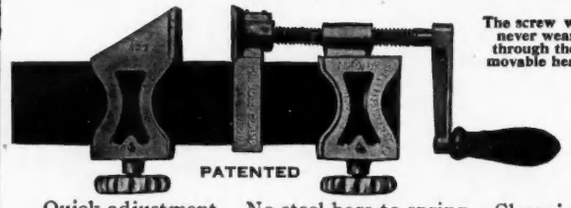
FOLDING HANDLE DRAW KNIFE.

These are Handles that are rigid
On a blade that's always keen;
They are set at any angle;
Why, it's sold as soon as seen.

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.

The TODD Clamp Will Save You Money



Quick adjustment. No steel bars to spring. Clamping range unlimited. No notches to weaken the bar. Heads always square with the work. Send for circular giving full description.

BROWN SPECIALTY MACHINERY CO.,
Jackson Boulevard and Clinton Street, Chicago

FOREST CITY BIT AND TOOL CO.

Manufacturing Hollow Mortising and Wood Boring Bits and Tools

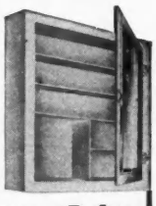
Our Hollow Chisels made to fit all Mortising Machines
For complete description write for Catalog H.

FOREST CITY BIT AND TOOL CO., Factory and Office, Rockford, Ill.

HESS MEDICINE SANITARY CABINET LOCKER

The only modern ***Sanitary*** Steel Medicine Cabinet or Locker.

Handsome beveled mirror door. Snow white, everlasting enamel, inside and out.



FOR YOUR BATHROOM

Costs less than wood and is better. Should be in every bathroom.

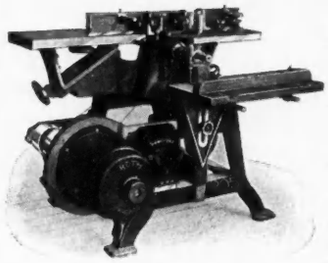
Is dust, germ and vermin proof and easily cleaned with warm water.

Made in four styles and three sizes. ***Price $7.00 and up.*** Send for illustrated circular.

HESS, 920L, Tacoma Bldg., Chicago

Makers of the Hess Steel Furnace. Sold on Approval. Free Booklet.

Individual Drive by Rothmotors



will allow you to place your machines where they are most convenient as regards light and easy handling of material; entirely independent of shafting.

NEW YORK OFFICE:
136 Liberty Street.

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

Miller's Lock Mortiser Does The Work

Cuts an opening for a Mortise Lock in any kind of wood, complete in three minutes, thick or thin doors, does not split the doors and cuts true.

5000 Mortisers Sold Mean Something

Complete Job in 3 Minutes
Actual Use of Tool ½ Minute

READ, BUILDER, WHAT THE OTHER FELLOW SAYS:

"I gave it a severe test on a lot of oak veneered doors and it worked fine."
"It has paid for itself already."
"We are more than satisfied."

Don't judge by looks or methods

Judge by Results

We will allow you to prove our claims. Sent subject to 30 days trial to any reliable contractor or builder. Write to us. We mean business.

A. W. MILLER MFG. CO., Main Office Cincinnati, Ohio

Our Butt Mortiser and Rule Gauge is a useful present for any Carpenter. Seventy-five cents brings them, if your dealer does not have it.

One Man with the No. 5 Union Combination Self-Feed Rip and Cross-Cut Saw

can do the work of four men using hand tools, can do it with ease, can do it better. Consider the amount saved—three men's wages—and compare with the cost of the "Union" saw. In a short time the machine will pay for itself and then the wages saved will go into your pocket.

EVERY MACHINE is carefully tested before leaving factory. We guarantee entire satisfaction and machine may be returned at our expense if, after two week's trial, you prefer your money back.

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

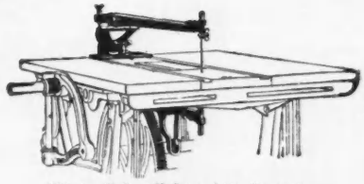
"Union" Moulding Attachment

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

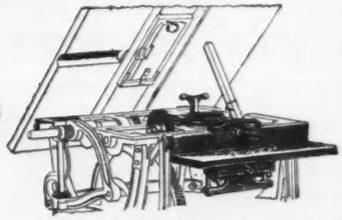
Ask for Catalogue "A," fully describing our complete line of wood working machinery.

The Seneca Falls Mfg. Co.,

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



"Union" Scroll-Saw Attachment.



Union" Boring Attachment. (117)

DISSTON

PROGRESS

1840 Henry Disston made but **Few** Saws a day.
1850 Made **Some** Dozens each of various kinds of Saws per day.
1860 The DISSTON SAW WORKS turned out **HUNDREDS OF DOZENS** of Saws per week.
1865 Factory destroyed by fire—immediately rebuilt.
1870 Sales increased to **THOUSANDS OF DOZENS** per month.
Factory again destroyed by fire and rebuilt.
1880 Mounted up to **TENS OF THOUSANDS OF DOZENS** per month.
1890 Leaped to **HUNDREDS OF THOUSANDS OF DOZENS** per year.
1900 **MILLIONS** of Saws of various patterns were made and **SOLD.**
1910 **Sales still increasing and the demand for Disston Brand of Saws and Tools unprecedented**

The Reasons:—Integrity, persistence, courage, enterprise, knowledge, all united in a constant effort to manufacture and deliver the **best** Saws for every purpose which it lies within human power to produce.

If you are unable to obtain the DISSTON Brand, write us and we will, see that you are properly supplied.

Branches:—Chicago, Cincinnati, Boston, New Orleans, Memphis, San Francisco, Portland Vancouver, Toronto.

Henry Disston & Sons,
(INCORPORATED)
Keystone Saw, Tool, Steel and File Works
PHILADELPHIA, PA., U. S. A.

TRADE MARK

SHULTZ Modern Store Fronts
of Steel and Brass CORK BEDDED
CORNER POSTS, MULLIONS AND TRANSOM BARS

A-STEEL B-GLASS C-CORK D-BRASS E-SLOT
SECTIONAL VIEW
PATENTED APR. 23 07

Handsomest, Strongest and Most Practical Bar on the Market. Long Life—Nothing to rot out. Glass bedded on Spanish Cork preventing cracking or crushing of glass. No putty, ye. **Absolutely Water and Dust proof.**

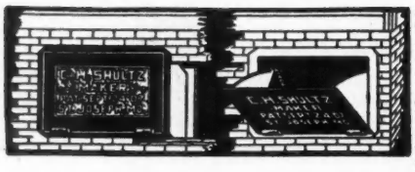
Simply incomparable with old fashioned styles. They add Immensely to the Beauty, Utility and Rental Value of Buildings.

ARE LOW IN COST
Architects, Contractors and Owners are invited to write me for descriptive literature, prices or estimates.

Also Shultz Patent Burglar Proof Coal Chute. All Steel Cork Bedded and Ventilated Bottom Bar.

C. H. SHULTZ, MANUFACTURER, ST. JOSEPH, MO.

ALL-STEEL BURGLAR-PROOF COAL CHUTE

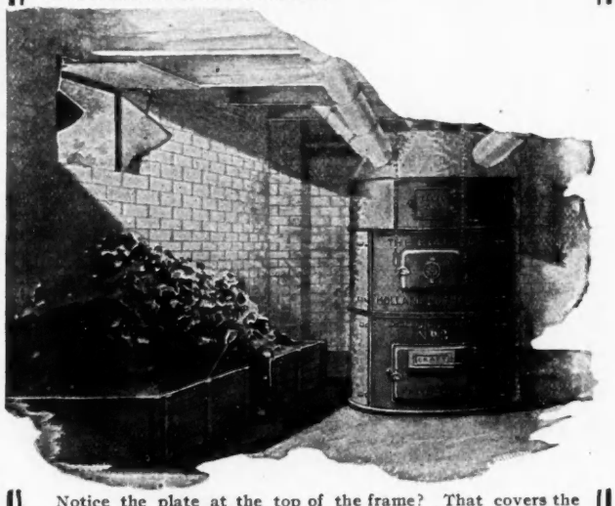


The Neatest, Strongest and Most Convenient Coal Chute Made. Prices also Lowest. No modern residence complete without it. Locks itself when closed up. Can only be opened from inside. Architects, Contractors and Owners are invited to write for descriptive circular.

C. H. SHULTZ, Manufacturer, St. Joseph, Mo., U. S. A.

A LIGHT BASEMENT

With all the conveniences of the coal chute, can be obtained by using the Window-Chute—"the one with the glass." It's different from all others because it's a window and a chute all in one. Saves the cost of a frame and sash otherwise necessary. Saves another opening through the wall—You've sometimes found it difficult to locate another.



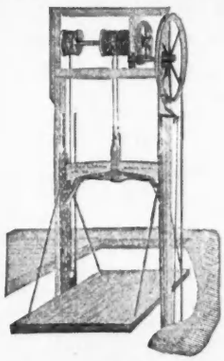
Notice the plate at the top of the frame? That covers the glass when the chute is open. It swings at the outer end and drops down, forming the bottom of the chute.

Beware of Infringement.

We also manufacture the famous "Holland Furnace." "The Holland Furnace makes Warm Friends."

Write for Booklet

HOLLAND FURNACE CO.
Dept. "A" Holland, Mich.
Clare Bros. & Co., (Ltd.) Preston, Ont.



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 SERVICEABLE QUALITIES. They are practically self-contained, and can be erected by any carpenter in a few hours. We furnish plans for erecting.

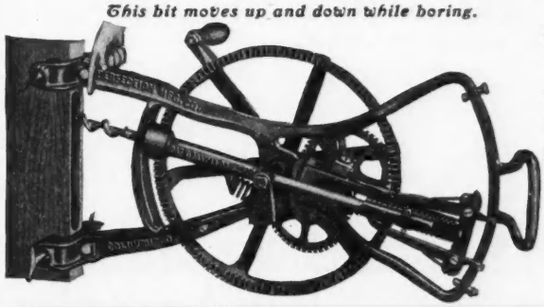
The Low Cost Will Surprise You

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

The Perfection Universal Mortiser

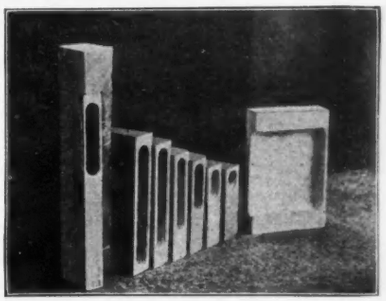
This bit moves up and down while boring.



For Door Locks, Sash, Sash Pullies, Screen Frames and Cabinet work.

Instantly changed with screw driver, from round hole to ANY size mortise up to 6½". Finished perfect, WITHOUT THE USE OF BRACE OR CHISEL.

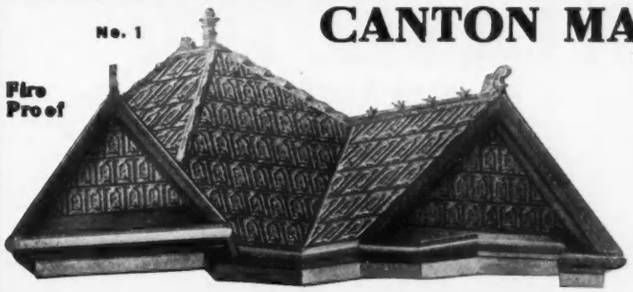
Made of Malleable. Automatic and ball bearing.



MANUFACTURED BY PERFECTION MFG. CO.
COLUMBUS, OHIO

CANTON MANUFACTURING CO.

No. 1



Fire Proof

We can save you money on

Cornice, Skylights, Ventilators, Metal Ceilings, Roofings, Sidings, Eave Trough, Conductor Pipe

No. 2

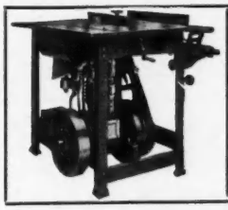
Catalogue FREE

No. 3

1320 E. 2d Street CANTON OHIO

STANDARD—Lock Joint—METAL SHINGLES

Ornamental, Easily Applied Guaranteed Weather Proof



THE GRIMM WOODWORKER

PORTABLE

NINE MACHINES IN ONE, with its own "Built In" Power-Plant - - - - - - Gasoline Engine or Electric Motor

WRITE FOR BOOKLET

LITTLEFIELD & CLARK - 46 Erie Street, BUFFALO, N. Y.

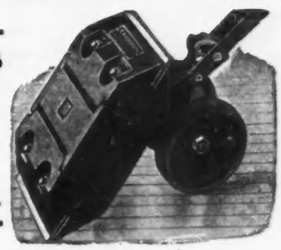
CHAMPION FLOOR SCRAPERS

WHY PAY EXORBITANT PRICES?

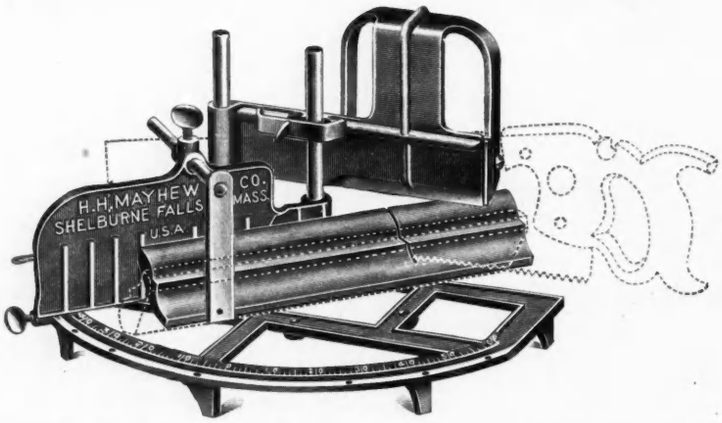
Don't give double what anything is worth. We have a machine that does the same kind and quantity of work as the highest priced.

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

THE DOSCH MFG. CO. Bridgeport, Conn.



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.

Do You Use Your

Strong right arm in mortising window frames for the sash pulleys? Just consider boring $\frac{13}{16}$-inch holes $\frac{5}{8}$-inch centers and set the pulley in—i. e. the **Grands Rapids No. 12.** No cutting—no fitting—no counterboring—no breaking—no swearing—no nails—no screws.

These **Grand Rapids** pulleys save more time than they cost *in money.* If we are telling the truth you *cannot afford* to use ordinary pulleys if you get them for nothing. We can prove it too.

WRITE FOR FREE SAMPLE

Say what pulleys you are using and how many you buy

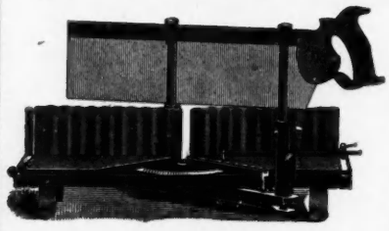
Grand Rapids Hardware Co.

36 Pearl Street

GRAND RAPIDS, MICH.

GOODELL MITRE BOX

Made of STEEL - Cannot Break



First in Quality and Improvements

Automatic Stops for holding up saw.

Corrugated Backs Graduated.

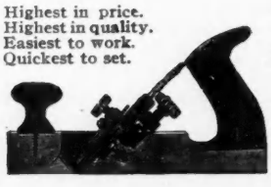
Gauge for duplicate cuts and many other features.

Send for Circular "C"

GOODELL MFG. CO., Greenfield, Mass.

Self-Setting Planes are not like other planes. Why not try one, and if it is not worth to you twice its cost, return it at our expense and we will return you the amount you paid us, and the trial will not cost you a nickel. During August, 1910, we will receive this advt. as $1.00 if the balance of the list price of a plane and 10 addresses of plane users, no matter where they live, is sent us from where the Self-Setting Planes are not sold.

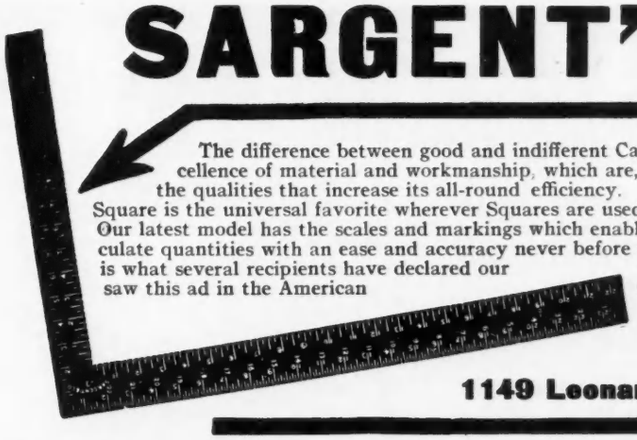
Highest in price.
Highest in quality.
Easiest to work.
Quickest to set.



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

GAGE TOOL CO., Vineland, N. J.

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 New York

COMPLETE OUTFIT PRICE $15.00
HAND AND FOOT-POWER
MACHINERY

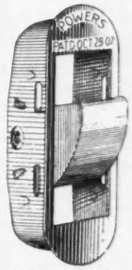
Our No. 7 Scroll Saw is warranted to be made of good material and workmanship, and to saw pine 3 inches thick at the rate of one foot a minute.

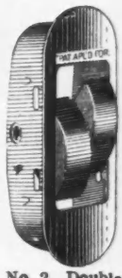
Send for Catalogue.

W.F. & Jno. Barnes Co.

74 Ruby St. ROCKFORD, ILL.

THE
LOCK THAT PROTECTS





Just what you have been looking for. Not only locks window, but when desired **takes the place of sash weights.** No. 1 on upper sash, No. 2 on lower. On balanced windows, use No. 1. Mortised in jamb just above and below meeting rails, as quickly and easily as a sash pully—no screws.

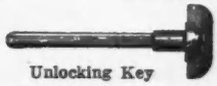
No. 1. Single Cam Lock

Send card to-day for catalogue and prices, giving dealer's name.

No. 2. Double Cam Lock

Powers Burglar-Proof Sash Lock Co.

Hastings, Neb.



Unlocking Key

The Builder Who Knows: vs The Builder Who Guesses

It is easy to tell which wins out. Stop guessing. Learn to estimate safely and rapidly.

The New Sixth Edition of

THE LIGHTNING ESTIMATOR

shows you how

SIMPLE RAPID ACCURATE RELIABLE PRACTICAL SYSTEMATIC

Easily adjusted to any locality. Based on experience not theory. Amply Illustrated and Bound in CLOTH. This is **Your Opportunity** to get on to the road to Success. Don't let it go by, but send $1.00 TO-DAY, for a copy of this interesting book.

BRADT PUB. CO.

1260 Michigan Ave. :: JACKSON, MICH.

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.

HARGRAVE

STANDARD CLAMP

Cut one-quarter size of 5 inch

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

THE CINCINNATI TOOL CO., - - Norwood, Cincinnati, Ohio

Write for circular. Dept. H

NAIL SETS!

Our NAIL SETS, like all other GOODELL-PRATT PRODUCTS, stand at the head in quality.

It is a pretty good sign of the popularity of any article when after more than ten years on the market its sales continue to rapidly increase. Most any kind of a tool can (with sufficiently good salesmanship) be sold for a time, but it takes REAL QUALITY to stand the test of a decade.

GOODELL-PRATT COMPANY

Toolsmiths

Greenfield, Mass., U. S. A.

GOODELL-PRATT NAIL SETS may be obtained in sets of four, one each 2, 3, 4 and 5/32 inch, in an attractive and useful little case. This is known as our No. 900 Set.

Profits of $25.00 a Day

IDEAL

Concrete Machinery

Read this Contractor's Letter

Pretty comfortable return upon a moderate investment, don't you think?

West Liberty, Ia., 5-14-10.

"I am well pleased with the IDEAL Block Machine I purchased of you. I find the 8x8x16-in. Blocks can be put in the walls for less cost for labor than other sizes larger. The IDEAL makes a perfect block, and no trouble to keep the wall level and plumb.

I find a saving in labor of 30 per cent in wall building over other blocks I have used.

I am running the IDEAL Tamper at 60 and over. Capacity is 600 blocks in 10 hours. The Tamper is all O. K., and we find machine tamped blocks are ready for the wall in one-half the time hand tamped blocks could be used.

I have the Batch Mixer, and the thorough mixing and perfect tamping in the IDEAL machine will give satisfaction to the most particular of men. The expression of practical men who visit my plant tells the tale:—'The best I ever saw.' 'You have got the proper thing.' 'It can't be beat.'

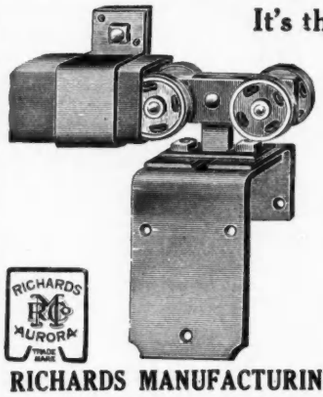
The blocks sell themselves. My profits are $25.00 per day on the machinery I bought of you, and I am entirely satisfied with my purchase and success."

Yours truly, A. ROMAINE

That letter praising and commending Ideal Concrete Machinery as highly as it does is no different than many others which we receive daily. You can do what other Carpenters and Builders do. *Send today* for our Free Book which tells all about the concrete hollow block industry and ideal Concrete Machinery.

IDEAL CONCRETE MACHINERY COMPANY

London, Ontario 416 N. Emerick St., South Bend, Ind.



It's the Man on the Job

who recommends

Richards Royal House Door Hangers.

With ball bearing hanger running freely, noiselessly on a full trolley, covered maple track, you have the best — **the Royal.**

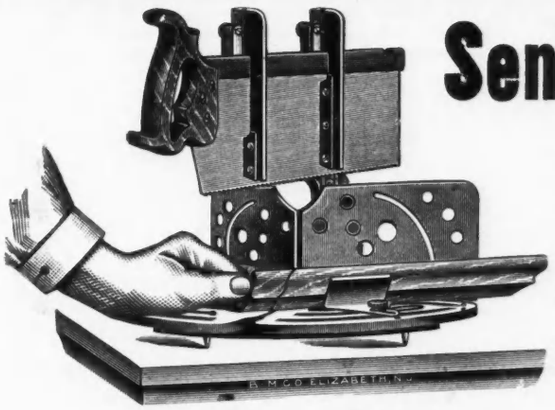
You can adjust both hanger and track. Hang any door quickly and do it alone.

Architects specify Richards Royal for the peace of mind it brings.

Good things are imitated. Get original package by insisting on Richards Royal.

RICHARDS MANUFACTURING CO., AURORA, ILL.

New York Mfgr. of well advertised Labor Saving Tools which are used all over the world; wants a capable young man to invest $3,000 and services. Will receive half interest in business and patents. Write to "Opportunity 666," American Carpenter Builder, 185 Jackson Boulevard, Chicago, Ill.



Sent on 10 Days Trial

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

Compound Miter

Send for Booklet Called "Tools That Last"

OUR "CHISEL" GUARANTEE

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

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

SPECIAL OFFER

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

BEVELED EDGE BUTT CHISEL

SOCKET BUTT CHISEL

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

The Carpenters Ever Ready DOOR CLAMP

Durable, Efficient and Inexpensive

Saves cost in time and labor on one job.
Holds doors firmly on edge while hinges, lock and other attachments are being fitted.
Adjustable to any width of door.
Clamping faces padded to prevent injury

SATISFACTION GUARANTEED OR MONEY REFUNDED

— Write for Free Trial Offer —

Price so low you can't afford to be without one.

WILLSHIRE CLAMP CO.
WILLSHIRE, OHIO

THE NEW SASGEN CIRCLE SWING DERRICK

No Stiff Legs

No Guy Lines

Light in weight, speedy in operation, all malleable castings; weight 250 lbs., capacity 1000 to 1500 lbs.

Fully equipped. Ready for F. O. B. Chicago

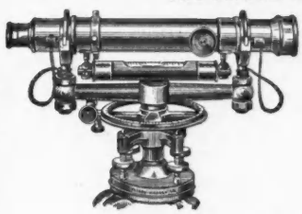
$35.00

Sold on trial to all reliable contractors. Catalogue FREE.

Manufactured by
SASGEN BROS.,
2053-2057 Racine Ave.
CHICAGO, ILL.
New York Office: 103 Park Ave., N. Y.

"Sterling" Convertible Level

Two Instruments in One



The only perfect Builders' Level made that can be converted into an Instrument for Vertical Sighting.

Price complete $65.00

Send for 1910 Complete Catalogue.

Sole Manufacturers
Iszard-Warren Co., Inc.
136 N. 12th St. PHILADELPHIA, U. S. A.

LUFKIN Tapes & Rules

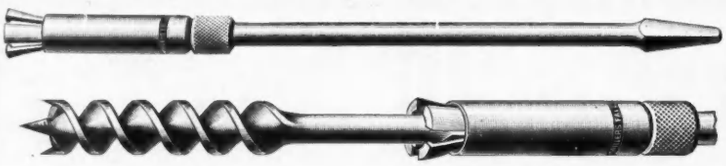
are Standards of Accuracy, Durability and Workmanship.

SEND FOR CATALOG

THE LUFKIN RULE CO.

SAGINAW, MICH.

NEW YORK
LONDON, ENG.
WINDSOR, CAN



Extension Bit Holder No. 5

It has been found difficult to make a Bit Extension with Chuck small enough to follow a ⅝-inch Bit into a hole and strong enough to stand the strain put upon it, but we have succeeded in producing a satisfactory Extension of this description in our No. 5 as illustrated above.

Millers Falls Co.

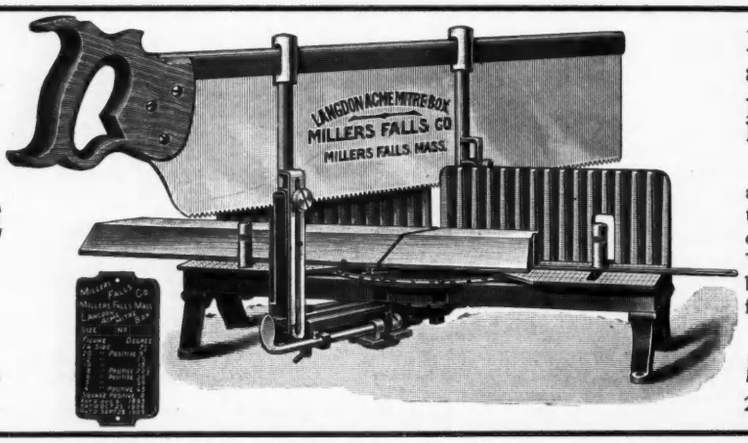
28 Warren St., NEW YORK

The Chuck is positive and there is no danger of the bit becoming loose and lost between partitions.

The four jaws are made from one piece of steel and grasp the corners of the bit shank securely. Electricians and plumbers will find this Extension most useful and satisfactory.

Ask for one of our catalogues showing our full line of tools.

THIS IS THE MITRE BOX YOU WANT



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

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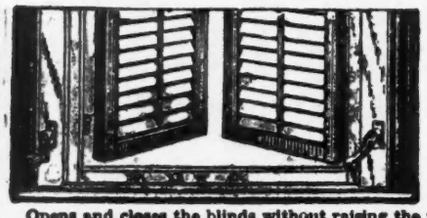

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Made of gray and malleable iron. The best and most durable blind hinge. Incomparable for strength, durability and power. Can be applied to old or new houses of brick, stone or frame. Send for illustrated Circular. If your hardware dealer does not keep them send direct to

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can be used anywhere. It forms a perfect, practicable lock; sash hung with it cannot be opened or removed from the outside; it cannot be blown open by storms; makes practicable the only substitute for the half-sash sliding screen; is sold in sets, half sets, or in any other way the trade demands; indestructible; will outwear a dozen screens.

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The time is drawing near at hand when carpenters and builders begin putting up storm sash and it might be well to say that the **best and most convenient** goods are always the cheapest in the end.

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HANDBOOK OF ESTIMATING DATA

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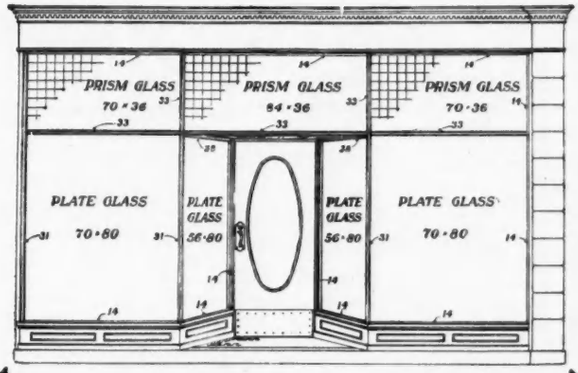

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THE CELEBRATED BARTON TOOLS

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

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It prevents chattering and trembling when used on hard or knotty timber, works equally well in soft wood.

Mechanics will find a most satisfactory line of tools stamped under the trade mark shown here. We manufacture a complete line of **Planes, Iron and Wood, Auger Bits, Chisels, Draw Knives, etc.**

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(Dept. A)
Columbus, Ohio — Auburn, N. Y.

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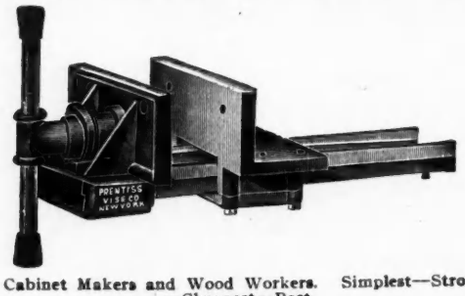

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BLINDS
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Sliding Blinds for inside use. Require no pockets. Any wood; any finish.

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The Phoenix Sliding Blind Co.
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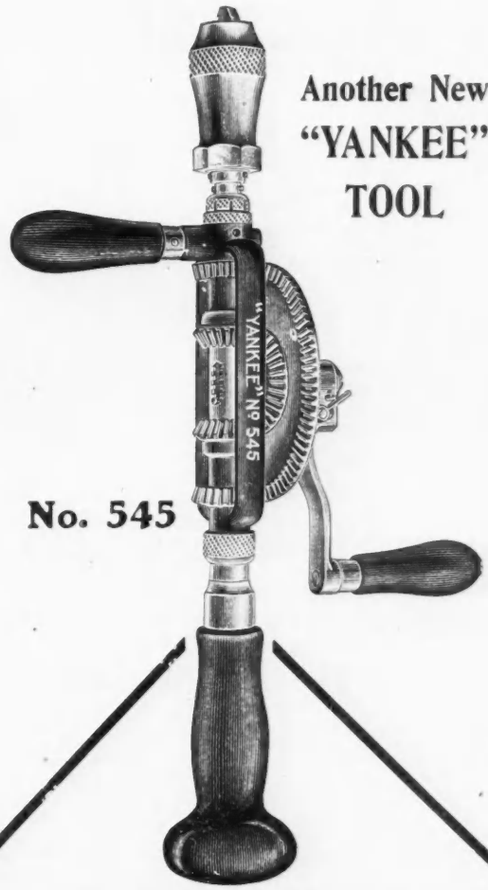

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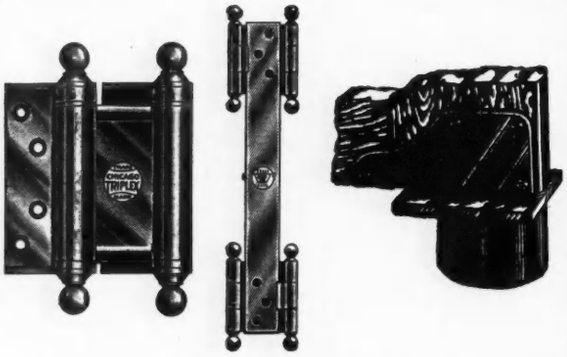

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Knocked Down Skylights

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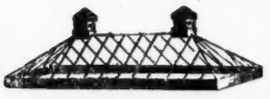

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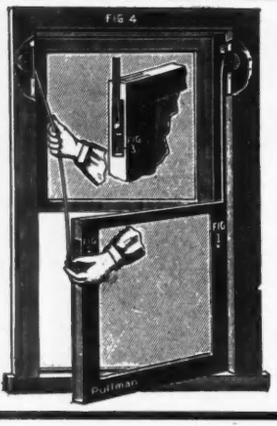

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This is the

Strongest Simplest Most Durable

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THE CHEAPEST

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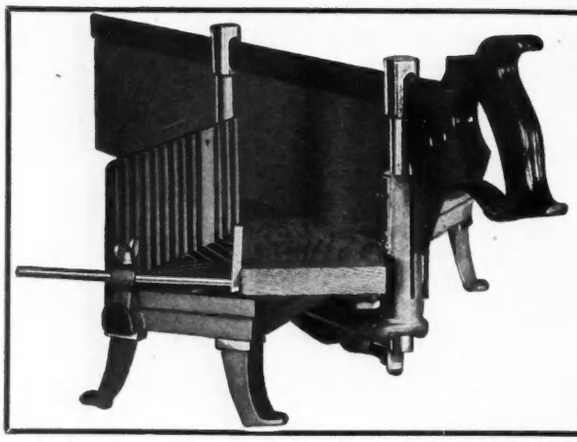

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Saw and all attachments are included.

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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

606 Race Street Rockford, Illinois

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AMERICAN CARPENTER AND BUILDER

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American Carpenter and Builder

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VOL. IX AUGUST, 1910 NO. 5

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BETTER to make a mistake than never to make anything.

✣

TAKE a firm grip when you take hold—when you let go, stand from under.

✣

Extra Care Needed

WE VERY often hear it said that the lumber we get nowadays is poor stuff and that it is a shame the way the millwork "they" send us warps and checks and misbehaves after being put in place.

If the truth could be known however, the fault is usually not with the millwork, but with the way we treat it—or rather mistreat it. This is particularly true of doors; and the higher quality they are, the more they resent improper treatment.

A prominent Chicago lumber company, realizing this, sends out with every order of millwork this card of warning, instruction and advice.

"*Read Carefully.* All wood is porous; and the drier and more thoroughly seasoned it is the more readily it absorbs moisture and is affected by climatic conditions. For instance, when an unfinished hardwood door is placed in a damp room, it quickly absorbs the moisture in the air, consequently expands or swells and when it returns to normal condition (that is, when the moisture is all dried out), the door is warped and twisted all out of shape, the joints open, etc., and it takes much time and work to repair the damage. This could easily have been avoided if only a little precaution and care had been exercised in the handling of the door.

"Be sure your building is thoroughly dried out before any interior finish is put in.

"Mortar, as you know, contains large quantities of water and until the moisture has dried out of the walls the house is not fit for occupancy; neither is it in the right condition to receive hardwood doors or any other fine woodwork quickly affected by climatic conditions, and the manufacturer should not be blamed if the product upon which every care is exercised in the making is not handled properly upon arrival at building.

"Where possible, it is always well to have artificial heat to help dry out the building before any interior woodwork is put in. After doors are hung and no more 'fitting' is to be done, it is an excellent plan to cover the ends of the stiles (both top and bottom) with at least one coat of paint or varnish. This will prevent moisture from entering the 'end pores' of the wood.

"If the above hints are carried out we guarantee that finish manufactured by us will stay where it is put, and the doors not to shrink or warp."

This is along the right line. Carpenters and builders find it to their special advantage to see to it that *extra care* is taken to protect their materials on all jobs so that permanent satisfaction may be had.

From Logs to Lumber

HOW OUR LARGE MODERN SAW MILLS ARE EQUIPPED AND OPERATED—AN INTERESTING ARTICLE FOR ALL USERS OF TIMBER

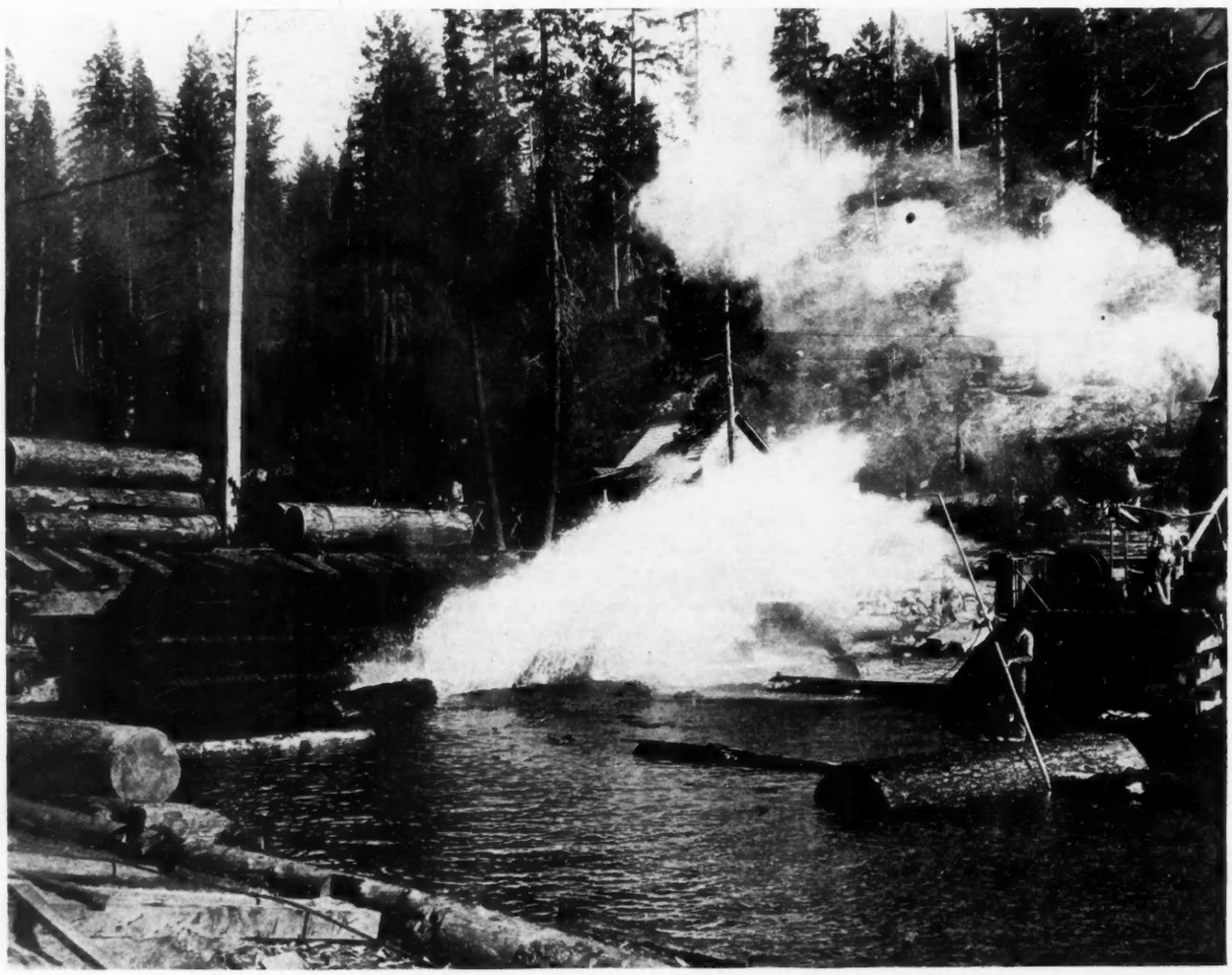
By John Lawrence Heaton

UNDOUBTEDLY there are many of the readers of this journal who, though they have been working with wood for years, have never had an opportunity of seeing the manner in which logs are changed into lumber. The writer has a friend, a worker in wood for over fifty years, whose place of work is so far from the lumber region that he has never been able to satisfy a life-long desire to see the manner in which the material which he handles every day is prepared. Next best to visiting a place is to be able to read a description and to look at photographs of it.

All of the countries of the globe that grow trees and use lumber for building purposes have developed sawmills to a greater or less extent. It is in America, however, that the sawmill has seen its greatest development. The reason for this is two-fold. First, the vast forests, seemingly unlimited in their supply in the early days, provided a milling problem distinctly American. In Europe, where the natural forests long have been exhausted and trees are grown and harvested as we grow crops of corn and other grains in America, the trees are small and logs scarce, so that every effort has been placed upon the economical cutting up of the logs. Labor being cheap and logs scarce, sawmilling problems of Europe have been just the reverse of what they are in America, where labor is dear and logs comparatively cheap. With us development took the direction of providing labor-saving machinery.

With the European, a mill once built remains a permanent factor, the system of forestry being such as to furnish a limited but constant supply of logs. In America the planning of a mill necessitates a consideration of the fact that the mill is to be a temporary affair, remaining in its place only until the available supply of logs shall have been exhausted. The American, therefore, when planning a mill, has to consider the original cost and the cost of keeping up repairs until the mill shall have used all the logs within its limits, as well as the question of economical arrangement of machinery and power.

The principal thing in a sawmill is the saw, or saws,



From Train Into the Log Pond—El Dorado Lumber Co., Pinogronde, California.

for there are almost always two or more. Those most commonly used are the circular, the band and the gang saw. Of the relative merits of each of these it may be profitable to speak a few words. The band saw is rapidly superseding the circular saw in mills where productive economy is of vital importance. With a circular saw, one-fifth of the product goes into sawdust, while with the band saw but one-eighth is thus wasted. The circular saw is still used upon small logs in small mills. It is a cheaper machine and requires less skill to run. The circular saw works faster than the band saw of the single forward cut.

From Pond to Mill by Endless Conveyor—California Sugar Pine Region

The gang saw is, as its name implies, a series of saws, whose movements are like that of the jig. Its chief advantages lie in the uniformity of the products, the rapidity with which it disposes of logs and its economy in cutting. Its disadvantage, and it is a great one, lies in the inability of the sawyer to control the cuts. With the band or circular saw, the freshly sawn surface is ever visible. If the cut shows a good clear surface, free of shakes and knots, the sawyer can move the log carriage so as to make the saw take a thick or thin piece of lumber according to the desirability. In this way the highest prices can be realized and the log cut to the best advantage. With the gang saw, the saws being once set and the log started, desirable and undesirable stock are cut alike; there is no alternative.

One who has had the care of an ordinary band or circular saw understands the principle upon which the great mill saws are made to cut. In the early history of these saws, before it was understood that there must be tension in the cutting edge, saws were inclined to "run." To the uninitiated the fact that a circular saw is not made flat but is slightly "dished" may seem strange. It is a fact, however, and the dish of one of these great saws is sufficient to allow of its being sprung from side to side somewhat like the bottom of a tin pan. The reason for making them in this manner is that it allows the centrifugal force, generated in the saw by the rapid movement, to straighten out the dish and thus place the outer or tooth edge under greater tension than the rest.

Band saw blades are formed upon the same principle. Great pressure is applied at the middle of the blade by means of the steam rollers, which causes it to expand more than the toothed edge. The enormous strain placed upon the blade while in motion throws the toothed edge under great tension, as in the circular saw.

Sawmills are usually two stories in height. Whenever possible they are built upon water, a river if possible, otherwise a lake or pond. Those built upon a river depend upon having the logs rafted to the mill. Many mills are built well within the "limits" controlled by the lumber company. The lumber is shipped to market. Many mills, however, are hundreds of miles

from their forests, notably along the Mississippi river, it being cheaper to raft the logs than to ship the lumber.

At the mill, logs which come by water are kept in log booms until wanted at the saw. Log booms are made by chaining logs together, end to end, making a fence upon the water within which the loose logs float.

Logs that come by rail are dumped into mill ponds and allowed to remain there some time before being used. Soaking the logs in water causes them to lose much of the mineral matter which they contain. This mineral matter is soluble in water.

Let us follow the course of a log as it leaves the mill pond and passes through the mill.

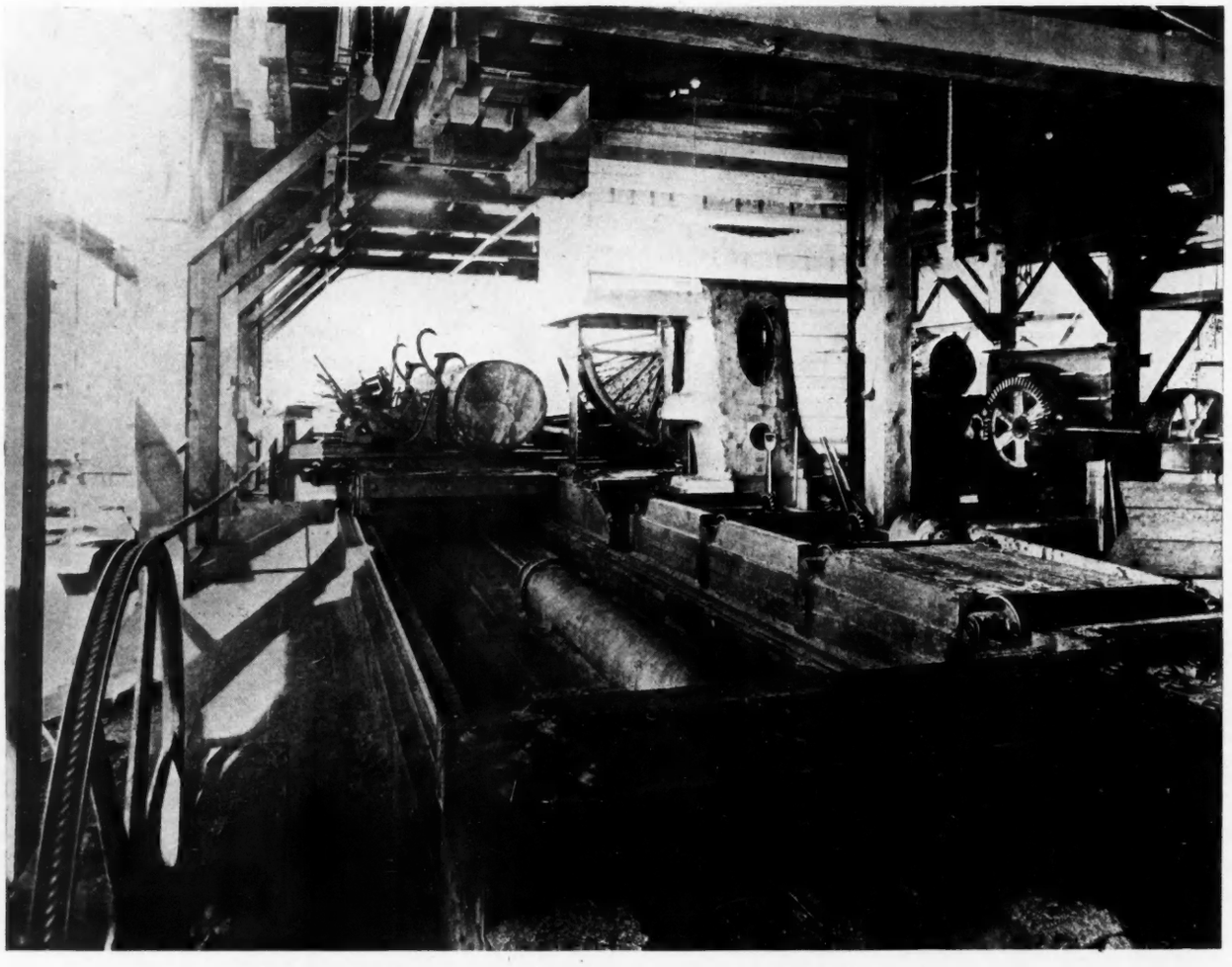
Men with pikes push the log through the water to a place where an endless chain with spurs catches it. This chain drags the log up an incline or slip and into the mill. If the logs come by rail and are not first unloaded into a pond, they are placed on a car which is drawn into the mill by a wire rope.

When the log arrives in the mill it is carefully examined to see that there are no stones embedded in its bark or spikes left by the rivermen. A stone or piece of metal coming in contact with the fast-moving saw may cause hours of extra labor.

After the inspection, the amount of lumber in the log is computed and a record made. The man who does this is called a scaler. He lays a scale, made to read in the lumber feet, across the small end of the log. This scale is so computed that a glance shows the number of lumber feet in a perfect log of any diameter. Deductions are made by the scaler if the condition of the log seems to justify.

On either side of the log slip are inclined floors made of heavy plank with skids. These are called log decks. The log has been resting quietly in the slip, but when the scaler has completed his task he touches one of two levers and the log is literally kicked out of the slip to roll down the log deck. If the log is long it goes to one side of the slip, if short, it is kicked out the other side. There are two saws, the one on one side of the slip having a long carriage, the other having a short carriage.

The machine called the kicker, which causes the log to be sent out of the slip, is an interesting affair. Four steel arms come up under the log, two on one side, two on the other. These arms are connected to steam



Double Cut Saw Mill—El Dorado Lumber Co., Pinogrande, California.

chests under the slip. A lever moved by the scaler allows steam to enter a pair on one or the other side of the log. With this, the arms are pushed up on that side and the log is rolled out of the slip.

When within several feet of the carriage, the track of which is at the lower end of the incline, the log is prevented from rolling farther by means of two or more arms which project above the deck. These log stops are operated by steam cylinders quite similar to the ones which operate the kickers. When the carriage is in position at the foot of the incline and is empty, the small lever in the hands of an operator causes these stops to revolve, in such a manner as to draw down and out of the way the part which retained the log on the incline, at the same time throwing it forward upon the carriage.

As soon as the log strikes the knees, the upright arms of the carriage, it is dogged. That is, steel hooks are driven into it so that it is fastened firmly to the carriage. The man who does this part of the work is called the setter. It is the setter who feeds the log to the saw, to do which he must ride back and forth on the saw carriage. Some idea of the nerve required in this work may be obtained when we consider the rate of speed with which the log and carriage are shot back and forth. In the exhibition at the World's Fair at Chicago, a sawing speed of 260 feet per minute was maintained with a gigging speed of 500 feet per minute. The saw was cutting at the rate of fourteen boards per minute and was an 8-foot band which was toothed on one side only. The boards sawn were about 12 inches wide and 16 feet long. The saws were running at the rate of 10,000 feet per minute.

To stand upon a catapult, weighing 2½ tons, driven by high-pressure steam, at such a rate, and be able to do work required at just the exact moment, requires a good head. Yet the setter can and does do this, and keeps at it all day long. The more modern double-toothed saws produce lumber faster, but the rate of travel for the carriage for the same amount of lumber is correspondingly less.

After the log has been dogged the sawyer moves a lever which starts the carriage toward the saw. The setter meanwhile sets the log out to the saw line and a slab is quickly taken off.

With the circular and single-cut band saws, the carriage is gigged or reversed and moves quickly back to take a new cut. When the carriage begins its backward journey it is automatically drawn over a good half inch so that the log shall clear the saw. Should there happen to be any splinters, or other projections upon the freshly sawn surface, the saw might, otherwise, be thrown from its position. This sometimes happens, but the result is not so serious as one might suppose, for they are so well guarded that usually a tangled saw is the only result.

With the cutting of the first slab the sawyer, who is in a position to see the condition of the sawn surface, signals the setter the amount to take off; and he in turn sets the carriage over the number of inches indicated by the sawyer. Several boards are taken off, then the log is turned over and a second slab is taken off. In the modern mill even the turning of the log is done by simply throwing a lever. A steam cylinder under the floor is made to throw up a toothed steel bar. These teeth engage the side of the log as they ascend, giving to it the rotary motion. This mechanism is called a canter, or more commonly the "nigger." The log is left with the sawn side against the knees; having been given a one-half turn.

The name "nigger," we are told by one authority, was given to the canter by its inventor. Previous to the invention, he had trouble in keeping the colored men, whose duty it was to turn the logs, satisfied. One morning they came to work, after having made threats to leave the night before, only to be told that they were not needed, as the boss had a better "nigger." They waited to see who the new "nigger" was, only to be mystified by seeing the spiked bar jump up, seemingly from nowhere, turn the log, then return quickly out of sight.

After the cutting of the slab, enough boards are taken off to make the difference between the two parallel sawn surfaces some standard width. Again the log is turned, this time only one-quarter, so that it rests on a flat surface.

The third slab is cut and the log sawed nearly up, after which a one-half turn is given the remainder, the hooks are fastened and the fourth slab taken off, together with what boards can be made.

The remaining board or timber is now released from the hooks and pushed onto the rolls. These rolls extend along the side of the carriage in such a manner that the sawn lumber and slabs fall upon them. They revolve so as to convey the lumber toward the rear of the mill.

By means of a series of stops, placed at intervals along the way, which can be raised or lowered above the level of the rolls, material traveling on the rolls can be made to stop at desired points along the way. Conveniently arranged at either side of this way are auxiliary machines.

Lumber, about one-third of which has rough edges, is stopped and conveyed by chain belts to the edgers. These machines cut off the rough, bark-covered edges, making the edges parallel and the boards of greatest widths possible.

A jump saw is used to cut boards of unusual length into more convenient lengths. This is a circular saw, fastened to the top of a sliding frame, placed under the rolls. At the lower end of this frame is a steam chest. A lever turns steam into this, causing the saw to jump upward, cutting in two any board passing over the rolls above it.

In some mills a horizontal swinging frame is used, the saw moving forward instead of upward.

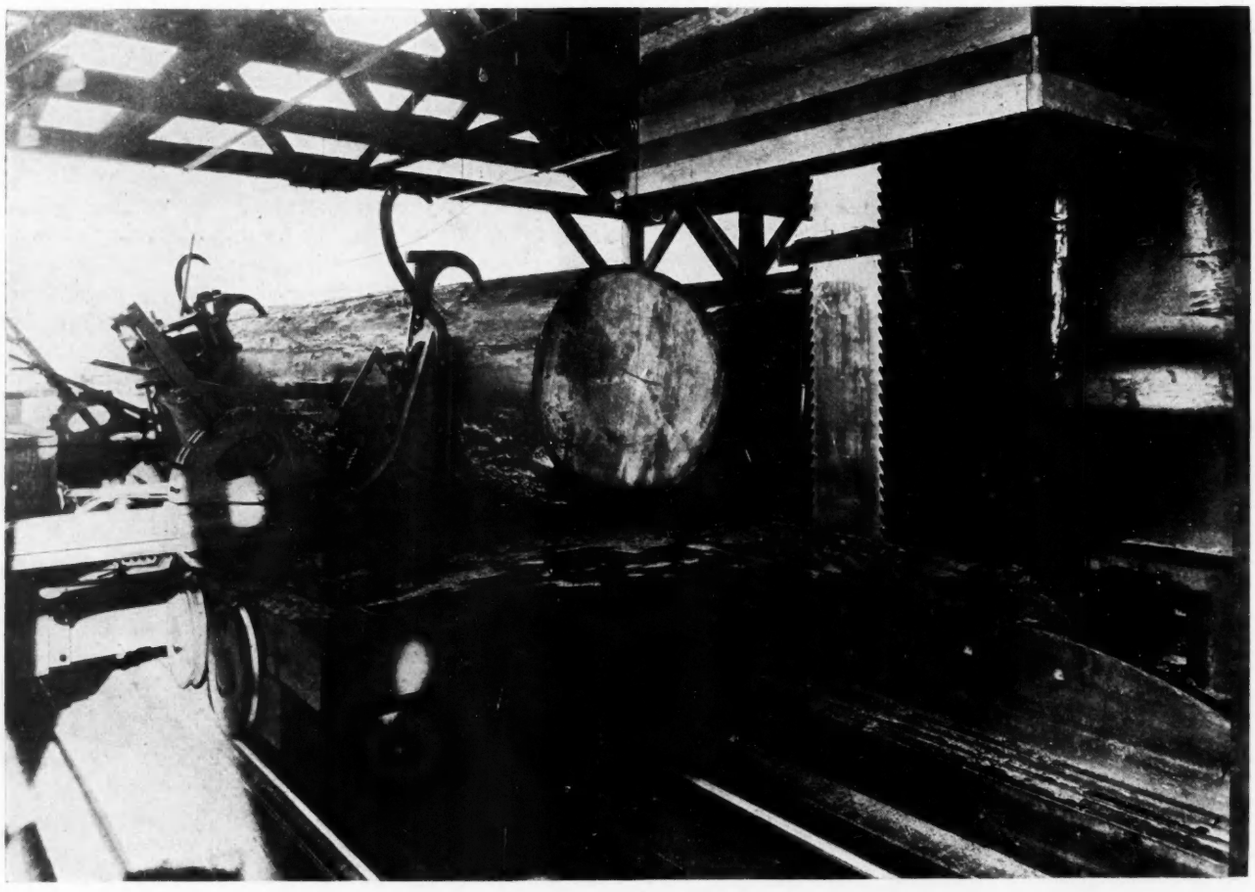
After leaving the edger, the boards are conveyed sideways to the trimmer. Here the ends are squared

and the stock cut to standard lengths.

While the boards are passing along the trimmer chains, the grades are marked. From the trimmer the lumber goes to the assorting platform, from which it is loaded on trucks and hauled to the yards.

In many mills the different lengths are assorted automatically by passing the boards over chains of different sized links. The short lengths fall through the first section and then the next length through the next section, etc.

Timbers require nothing further after leaving the saw except to have their ends squared, and to be cut to standerd length. A circular saw is used for this.



Double Cut Saw Mill, Showing Two Edged Saw and Modern Carriage Gear

In every industry there is more or less waste. In this day of close competition it is the manufacturer who can utilize the waste to the best advantage who wins out. Sawmilling is no exception. Slabs are utilized by making them into barrel headings, box boards, lath, shingles and pickets.

These slabs are caught from the rolls as they come from the saw, and made to slide down an incline to the mill floor, where they are caught upon chain conveyors and carried to the slasher. Here a series of circular saws are so arranged that the slab is cut into lengths of four feet, one inch, as it passes along.

These pieces fall into a conveying trough with a chain at the bottom and are carried toward the dump. Spiked rollers catch the four-foot lengths and throw them upon other conveyors. As they pass along, the material suitable for laths is pitched out and placed upon conveyors running to the lath machine. Others pick out the stock suitable for shingles and place it on conveyors for the shingle machine.

As the lath are sawn they are counted and bound into bundles of one hundred each. These bundles have their ends trimmed so that they are exactly four feet long. From the trimming saw the bundles are placed into a chute which takes them to the place of storage.

The four-foot lengths of slab suitable for shingles are recut to lengths of sixteen inches. After passing the shingle machine, the pieces go to the lower story of the mill and are jointed and packed.

In spite of this utilization of waste, there is still an enormous amount of waste to be cared for, not the least of which is the sawdust.

Sawdust is blown to the engine room, there to be used for fuel. Bark and other waste is sold for kindling and stove wood as far as there is a demand.

Most mills make no attempt to season their lumber except to pile it in the open air in the usual manner until demand takes it away. Occasionally a mill has its own kilns and is thus able to enter the market with seasoned as well as green lumber.

Gravel Roofing

STANDARD SPECIFICATION FOR GRAVEL OR SLAG "BUILT-UP ROOFS"—RECOMMENDED METHODS OF INSPECTION—ROOFING GUARANTEES AND THEIR RELATION TO BUILDING PRACTICE

By L. P. Sibley

THE fact that gravel roofs cover more than 75 and perhaps 90 per cent of the permanent buildings having comparatively flat roofs is of itself proof of the fundamental strength and merit of this type of roofing; but even with a roofing as widely used as this is, there is too little knowledge about what makes the difference between good gravel roofs and poor gravel roofs.

Too much dependence has been placed in the number of plies of felt used; and roofing contracts are frequently let to the lowest bidder on this basis alone, while as a matter of fact the price of a gravel roof based only on the number of plies of felt has no more relation to its value than the size of a coat has to the value of a suit of clothes.

The factors that will determine whether a gravel roof is to be a good roof or a poor roof are quality and weight of felt, the number of plies, quality and amount of pitch, and the care with which these two materials are applied, with special reference to the even distribution of the pitch.

Standard Specification

The National Association Master Gravel and Slag Roofers of America believes it serves its members best by assisting property owners to obtain the best value in this type of roofing, and with this end in view at its 1909 annual meeting adopted a standard specification as follows:

For Use Over Boards.—There shall be used 1 thickness of sheathing paper or unsaturated felt, 5 thicknesses of tarred felt weighing not less than 14 pounds per 100 square feet single thickness, and not less than 120 pounds of coal tar pitch, and not less than 400 pounds of gravel or 300 pounds of slag from ¼ to ⅝ inch in size, and free from dirt, per 100 square feet of completed roof.

The material shall be applied as follows: First, lay the sheathing or unsaturated felt lapping each sheet 1 inch over the preceding one. Second, lay two full thicknesses of tarred felt, lapping each sheet 17 inches over the preceding one, and nailing as often as may be necessary to hold the sheets in place until remaining felt is applied. Third, coat the entire surface of this two-ply with hot pitch mopped on uniformly. Fourth, lay 3 full thicknesses of felt lapping each sheet 22 inches over the preceding one, mopping with hot pitch the full width of the 22-inch lap between the plies, so that in no case in the last three plies shall felt touch felt. Such nailing as is necessary shall be done so that all nails will be covered by not less than 2 plies of felt. Fifth, spread over the entire surface of the roof a uniform coating of pitch, into which, while hot, imbed the gravel or slag. The gravel or slag in all cases must be dry.

At the same time the specification was adopted, the Association adopted the following resolutions, and the benefit that property owners and architects obtain from complying with the requests is clearly shown in the resolutions themselves:

Whereas, Lack of inspection of gravel roofs has resulted in irresponsible roofers taking work at prices at which it is impossible to do good work and therefore many roofs are laid with fewer plies of felt and narrower moppings of pitch than are specified, and

Whereas, This unfair competition has resulted in the loss of a large amount of work to our members, and has also been of great injury to the reputation of gravel roofing, and

Whereas, Inspection that will insure the fulfillment of a specification is a protection to all responsible roofers,

It is Resolved, That every roof should be inspected by cutting a slit not less than three feet long at right angles with the way the felt is laid, before the gravel is applied, and that architects and owners be requested to inspect in this manner.

Whereas, Difficulty of inspecting felt on the work results in a large amount of felt being used that is of a lighter weight than is specified, and

Whereas, This is unfair to all who wish to maintain a reputation for honest dealing,

Be it Resolved, That this Association request that architects and engineers require that all felt used on their work shall bear the manufacturer's label, stating the weight per one hundred square feet single thickness.

The principle involved in laying a good gravel roof is that it is the pitch which gives life to the felt and to the roof, and that a roof is very little better than its weakest part. As gravel roofs are frequently laid there are spots in every square where there is no pitch between the top ply and the bottom, and such roofs are tight only as long as the pitch on the surface lasts.

Experience indicates that each mopping of pitch between the plies will add an average of at least five years to the life of the roof, and gravel roofs may therefore be made just as good or just as poor as any building warrants.

Probably there is no other factor in roofing that is as little understood as the effect that different inclines have on the satisfaction different roof coverings will give. This factor is well understood as far as it affects slate and shingles, but is not understood as to its effect on gravel roofing and the various prepared roofings. Experience indicates that the flatter the incline the better service a gravel roof will give, and that the steeper the incline, the better service the prepared roofings will give. The reason for this is that all prepared roofings have fundamental weaknesses, namely, narrow laps, exposed laps (usually exposed nailings), and too small an amount of waterproofing material to give permanent results if they are laid on comparatively flat surfaces. These weaknesses become less evident as the incline increases.

Although gravel roofs have been laid successfully on inclines as steep as 8 inches to the foot, and in some sections are very generally used on inclines as steep as 6 inches, they are not recommended for general use on inclines exceeding 3 inches to the foot unless the roofing contractor has had experience with them on steeper inclines, and proven that he can lay them with good results.

What About Roof Guarantees?

As guarantees have become more of a factor in roofing than in any other work connected with building construction, and are frequently put in the foreground so that the real point at issue, *the merit of the roofing*, is overlooked, they should be subjected to the closest scrutiny.

Very naturally guarantees for 5 years or 10 years will appear in the light of a safeguard, but they are not given because of a sublime faith the guarantor has in his roofing, or because of any generous impulse on his part to protect the buyer, but they are given for one purpose only, to sell the roofing. For the purpose of considering their value they may be divided into three classes.

First: Where the guarantor is responsible and gives the guarantee in good faith. In such cases the buyer has assurance that the roof will be repaired if it leaks, but there is not any protection against damage, as a guarantee against damage would be a greater liability than any solvent contractor would assume, even with the best of roofs. No matter how often leaks occur, all the owner can require is that repairs be made with reasonable promptness; and, as frequently happens, it is better to buy a new roof than stand the loss and annoyance caused by the leaks.

Second: Where the guarantor is responsible but purposely words the guarantee to mislead and avoid legal responsibility. This class is the most misleading and causes the greatest loss. It embraces the "painting ever so often" clause usually calling for material which the owner must buy and apply at certain specified times. One day over, and the guarantee is invalid. Also in this class are the guarantees when parties other than the guarantor applied the roofing. This means a division of responsibility and there are literally dozens of "excuses" why the manufacturer is not to blame.

Third: Where the guarantor does not remain in business or solvent for the term of guarantee. Statistics show that the life of a surprisingly large percentage of firms is less than 5 years, to say nothing of 10 years, and this is especially true of general contractors as a class, who usually take the sub-contractors' guarantees and then guarantee direct to the owner.

Tile, slate, copper and shingle roofs are rarely guaranteed for more than one year if at all, so they need not be considered, but it is the two great classes "Ready Roofing" and "Gravel or Slag Roofs"—(frequently referred to as "Built-up Roofs")—that have been and are most affected by long-time guarantees.

In buying Ready Roofing, the character of the building, the incline of the roof, the chances of the roof being recoated occasionally (if roofing requiring such care is used), the length of service the roof is expected to give, the experience of others with the same matrial used under the same conditions (printed testimonials should not be accepted without investigation), and the reputation of the manufacturer for fair dealing, are factors of far more importance than any guarantee.

Several of the largest manufacturers of Ready Roofing who do not apply their roofs, have justly refused to give guarantees. It should be borne in mind that there is no "cure all" in roofing any more than there is in medicine.

"Ten-Year" Gravel Roofing

When it was the custom to buy gravel roofs on their merit, and the factors considered were quality of material, amount of material (that is, number of plies and weight of felt and pounds of pitch), knowledge regarding the use of the materials and a record of roofs in service, it was usual to have gravel roofs last 15 to 20 years and sometimes longer; but since the 10-year guarantee was made the basis for price, and contracts awarded to the lowest bidder, most of the responsible roofing contractors have had no option except to figure on a 10-year roof, and if the contract was secured, that is all they could give, as it was all they were paid for or agreed to give.

Under these conditions contractors soon learned that it was cheaper to make a few repairs during the term of guarantee than to put on a roof that would not have to be repaired for ten years. Usually a roof upon which there is no maintenance cost for 10 years will give good service for more than 20 years, but naturally roofs that require repairs during the term of guarantee are of little value at its expiration.

Gravel roofs have been in use long enough so that there is a definite known value to a ply of felt and mopping of pitch (with materials of given quality), and by using more plies or less a roof can be made as good or as cheap as any building requires. In calling for a long-time guarantee, an architect or engineer apparently avoids responsibilty as to the quality of material and manner in which it is applied. This is not done with boilers or plumbing or electric wiring or any other work in connection with building, and should not be allowed in roofing.

A definite specification which meets the requirements of the building should be provided the same as is provided for the foundation and other parts of the building, and then competent inspection given so the roof will be its own guarantee the same as the foundation.

Redwood

The name "redwood" is used commercially to cover two distinct species, the coast redwood, which grows chiefly in a narrow belt along the coast, north of San Francisco, and the "big tree," which is confined to a limited region on the western slope of the Sierras. Only a small amount of "big tree" lumber is manufactured, however, nearly all of the commercial supply of redwood being furnished by the coast species. Redwood is unique in that it is cut in only one state, California, and in very restricted portions of that state.

Joints in Heavy Timber Framing

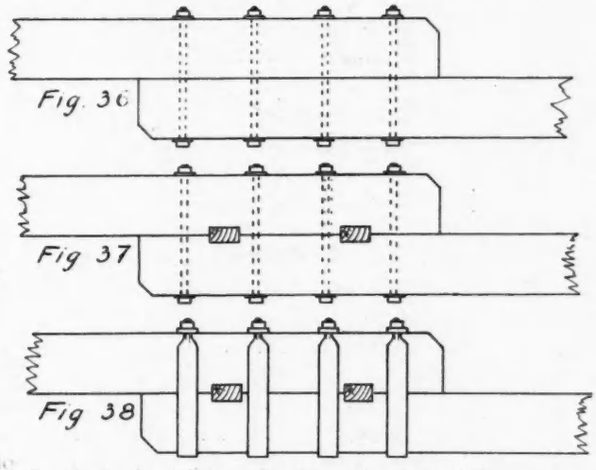
FOURTH ARTICLE—PROPER SPLICING JOINTS TO WITHSTAND COMPRESSION, TENSION AND CROSS STRESSES—FISHING, SCARFING ETC.

By T. B. Kidner

ONE of the problems confronting the carpenter who is engaged in the framing of large wooden structures is the necessity of lengthening beams, posts and other members when these are required to be of greater length than they can be obtained in single pieces. Various joints are used for this purpose, according to the particular stress to which the lengthened member is to be subjected when in its position in the structure.

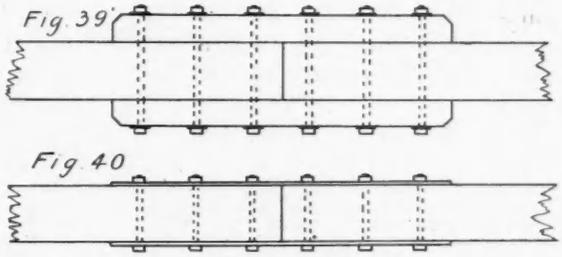
A post, for instance, has to resist chiefly a simple compression stress, lateral or cross stresses being prevented by suitable bracing, if the structure is properly designed. The upper chords of trusses, framed partitions, etc., are also subject only to compression, and the joints to resist this form of stress are the simplest to design.

In the case of tie beams or bottom chords of trusses, which are in tension (that is, subjected to a pulling stress) the case is very different, and the matter of the proper design of the joints used for lengthening timbers subject to tensional stress has received considerable attention from engineers and other experts in heavy timber construction.



In designing joints for lengthening timbers, not only has the strength of the joint to be considered, but also the purpose of the framing. Joints that serve very well for rough temporary structures, such as false work for bridges or masonry arches, travelers or gantries for the use of erectors, and such-like framing, would not be satisfactory in a truss or piece of framing of a permanent character.

Where appearance is no object, perhaps the simplest method of lengthening a member by joining two pieces is by overlapping, as shown in Fig. 36. As will be noted, the pieces overlap each other for a short distance, usually five or six times the diameter of the material, and are bolted as shown. For a simple pull-



ing or tension stress, this joint would be quite satisfactory, but if a compression stress had to be resisted, hardwood keys should be inserted, as in Fig. 37. Sometimes a cross stress has to be provided for in a joint of this type, and in that case, iron straps with threaded ends, and provided with bearing plates for the nuts, so as completely to encircle the timbers, should be employed as in Fig. 38.

Next in order of the methods adopted for lengthening timbers is that known as "fishing," in which the two pieces to be joined are butted end to end, and held together by means of wood or iron fish plates bolted to them. Fig. 39 shows the usual method of lengthening posts in false work, erecting towers and other rough temporary structures, and requires little explanation besides the sketch. For work of a more permanent character, wrought iron fish plates, as shown in Fig. 40, should be used in place of the more clumsy wooden ones of the previous example.

Such joints as shown in Figs. 39 and 40 would not be suitable for a pulling or tensional stress, and several modifications of the simple fished joint are used for resisting such stresses as are set up, for instance, in a tie beam or bottom chord of a truss. Fig. 41

shows a "tabled" joint; the wooden fish plates being tabled into the main pieces as shown. Obviously, this joint takes considerable time and labor in making, and the joint shown in Fig. 42 is often used instead. Hardwood keys are sunk in grooves in the fish plates and main pieces as shown, and if these keys are well seasoned, make an effective joint for resisting a tensional or pulling stress.

Another device often seen in fished joints required to resist tension is the iron fish plate with the ends turned down and sunk into the face of the timbers. Fig. 43 shows such an arrangement, which gives a first-class joint with a minimum of labor.

While the fishing of round timber falls more to the lot of the sailor than of the builder, it may be of interest to note the method adopted by seamen and ship carpenters for repairing broken masts, yards, booms, etc. This is shown in Fig. 44, and consists in lashing a number of pieces of wood about the fracture, somewhat as a surgeon might about a broken limb.

Fig. 41

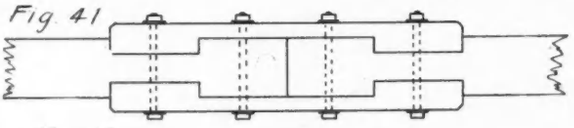


Fig. 42

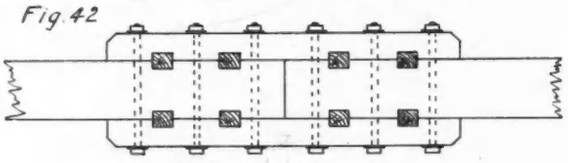
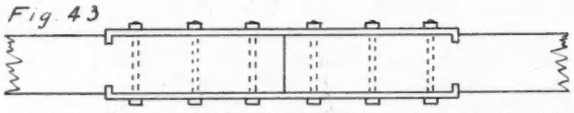
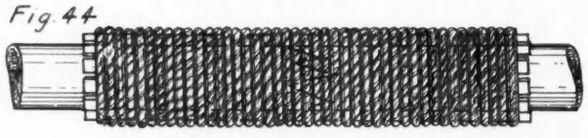


Fig. 43



All fished joints are more or less clumsy in appearance and therefore are seldom used where appearance is a consideration. For cases where the unsightliness of a fished joint would be an objection, "scarfed" joints are employed instead. These, while neater in

Fig. 44



appearance, are undoubtedly not as strong as fished joints, and also take up some of the length of the pieces in the formation of the joint.

Fig. 45 shows the simplest form of scarfed joint, and is admirably adapted to resist a direct compression stress, as in a post. For light work it should be sufficient simply to screw the joint together, but for heavy constructional purposes, the joint should be reinforced with iron plates, as shown in the sketch.

Fig. 46 shows a tabled scarf joint for resisting a tension stress. No bolts are shown, but the remarks as to the fastening of the previous joint apply to this one also. The length of this scarf, and of similar joints which follow, is about five times the depth of the timbers. Such a joint requires very careful fitting and therefore one of the form shown in Fig. 47 is often used instead. In the latter, a pair of folding wedges of hardwood are inserted in the center and the butt joints are beveled so that they may be fitted by running a saw into the joint before the wedges are finally tightened.

Some authorities object to the beveling of the ends and prefer a joint of the form shown in Fig. 48, which is considered a very effective arrangement; the tongues

Fig. 45

Fig. 46

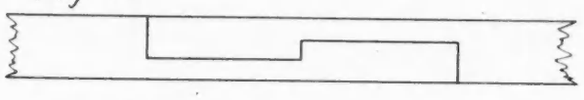


Fig. 47

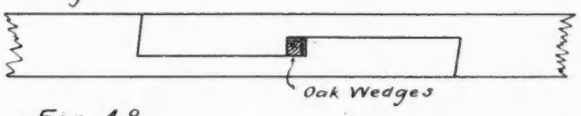
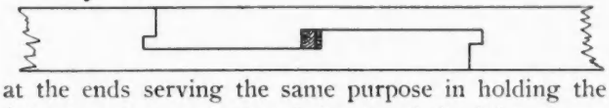


Fig. 48



at the ends serving the same purpose in holding the joint together as the beveled ends of the joint shown in Fig. 47.

Fig. 49 shows a scarf which is a favorite with carpenters in many localities, and is a good joint. It is, however, slightly weak, because of the tendency of the triangular pieces, A A, to shear off under a heavy tensional stress.

Another form of scarf often seen is shown in Fig. 50, and has much to commend it in its simplicity. As will be seen from the sketch, the pieces are simply

Fig. 49

Fig. 50

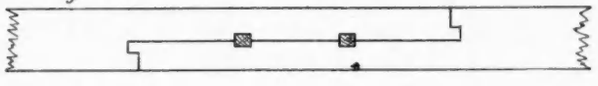


Fig. 51

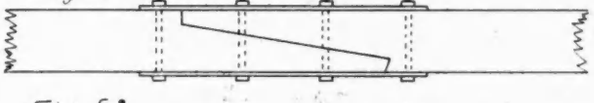
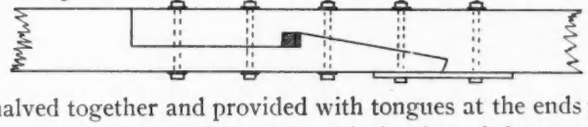


Fig. 52



halved together and provided with tongues at the ends; the whole being tightened with hardwood keys or wedges.

These comprise the scarfing joints generally in use, but variations and combinations of these several methods are occasionally seen, Figs. 51 and 52 being examples. Taken altogether, the scarf joint affords as good an opportunity for the skill and ingenuity of the

carpenter as may be found in the whole range of structural woodwork. Tension, compression and crosss stresses may all have to be provided for in scarfed joints in different parts of a structure, and one or other of those illustrated in this article can probably be made to fill each requirement by the skilful craftsman.

Bending Cast Iron

It is sometimes necessary to straighten castings which have become warped and twisted. This can be done to some extent, says the *Electrician and Mechanic*, by heating the iron and bending it into the desired shape. The part to be bent should be heated to what is best described perhaps as a dull yellow heat. The bending is done, but very gradually, applying pressure using two bars or tongs, which should give about the right amount of leverage for twisting and bending. Thin castings, if properly handled, may be bent to a considerable extent, but before attempting any special work, some experimenting had better be done on a piece of scrap iron in order to determine at just what heat the iron will work to the best advantage.

Varnish Resistance and the Wood

If you would observe a striking illustration of one of the many varnish intricacies, take a piece of yellow pine, and finish it with any hard tough varnish. Then run your fingernail across the finish, and you will find that part of the surface is easily scratched, and the rest is not affected at all. Upon examination, you will note the varnish that is scratched rests upon the soft grain of the wood, while the scratch-resisting varnish covers the hard grain.

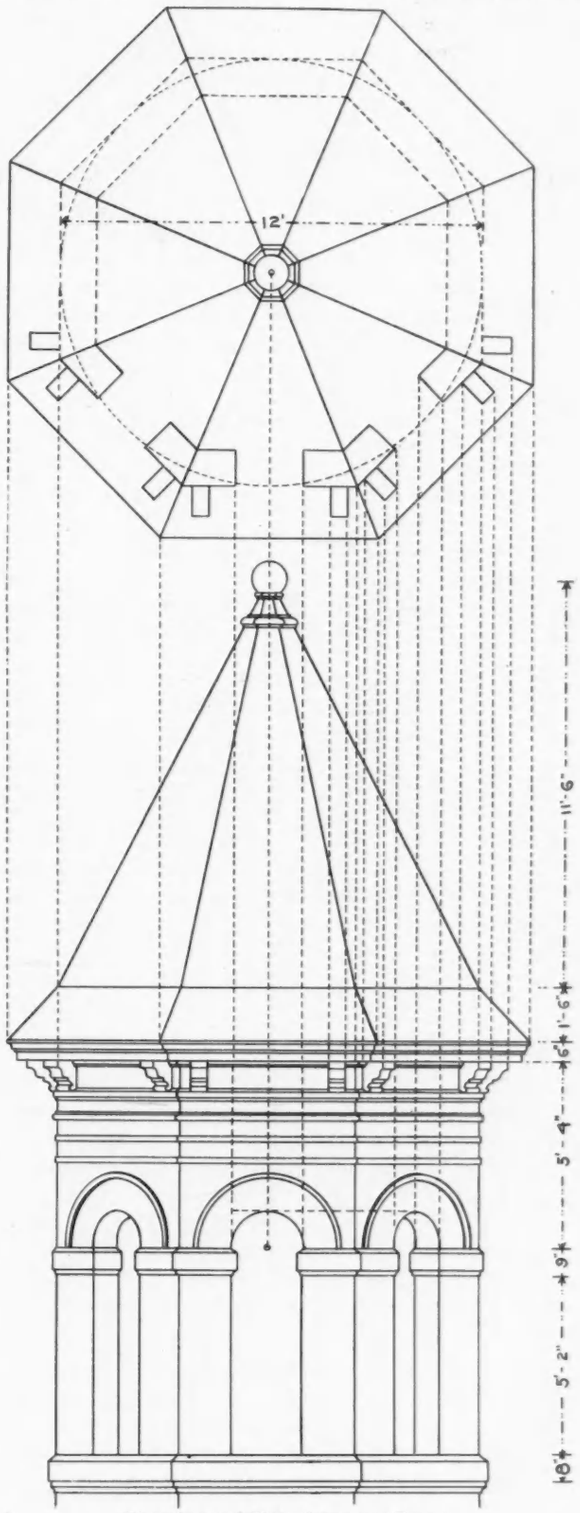
A Lesson in Architectural Drawing

In drawing elevations containing several faces, it is better to outline that part of the plan that is to show in the elevation either above or below the desired drawing space and plumb down or up as the case may be. In the illustration is shown an octagon tower, the sides of which are exactly alike, but owing to the receding sides they do not show as wide as the central face.

The dotted lines from the plan to elevation locate the openings, arches, brackets, etc. Of course these lines should never appear in the finished elevation. It is better to draw the plan on a separate piece of paper placed above the desired elevation and with the T-square and angle locate the points in the elevation. This will save the paper from being marred by erasures.

The arches form a true half circle, though only the central or full face view shows this to be the case. The other arches setting at an angle of 45 degrees with the face view makes them appear oval shape, consequently they cannot be drawn with the compass.

The dotted lines from the plan indicate the width and the full face arch indicates the proper height; with these points in view the curves are generally drawn



Elevation and Plan of Octagon Tower

off-hand. It would be well to practice on this in different scales, say draw this lesson on a ½-inch scale to the foot, then re-draw to the ¼-inch to the foot, the latter being the one most generally used by architects.

DETAILS of CONSTRUCTION AND FINISH

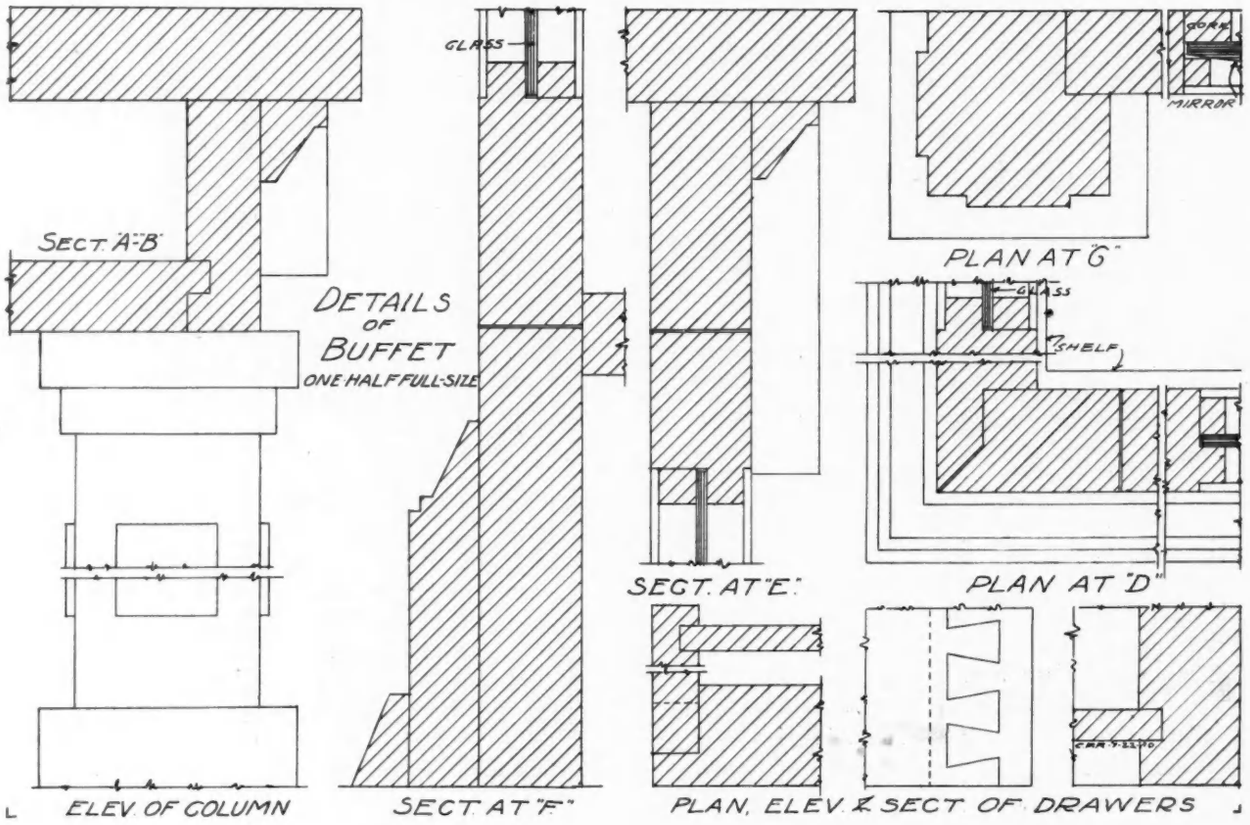
CHARLES P. RAWSON

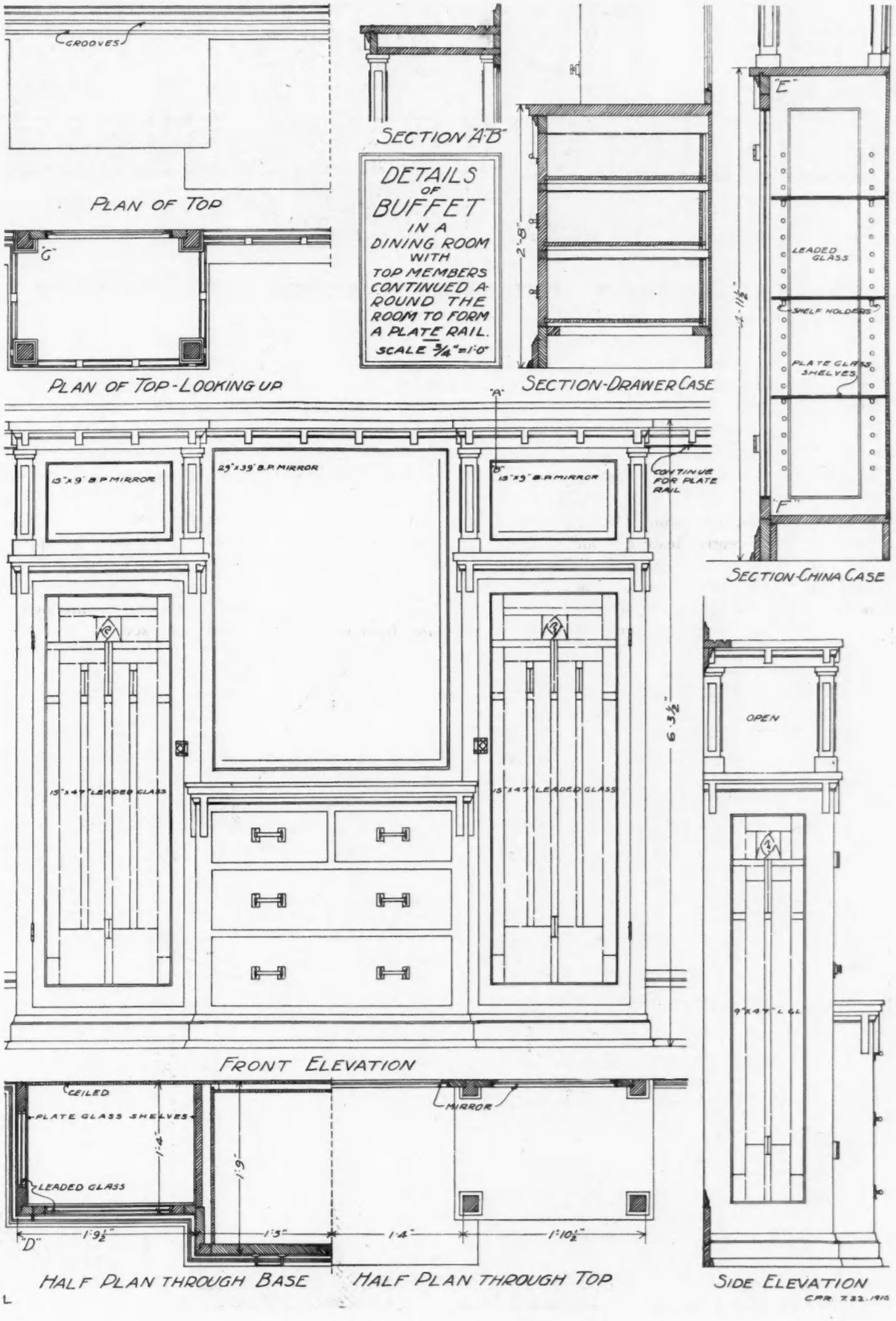
Buffet Design—Framing for Cement Plaster

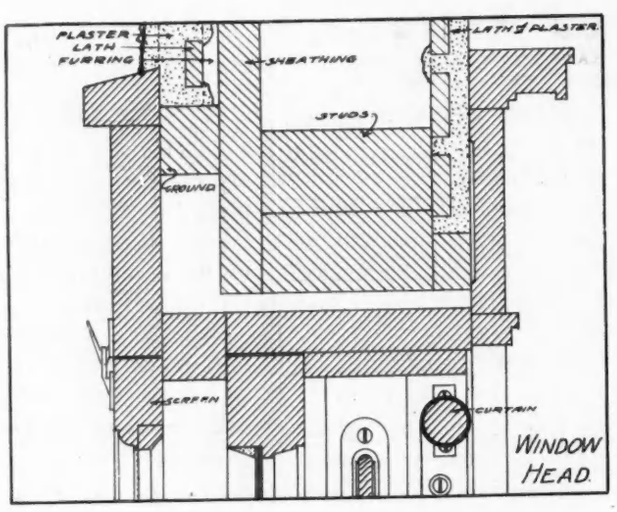
COMPLETE WORKING DETAILS DRAWN TO GOOD SCALE SHOWING A MODERN DESIGN FOR BUILT-IN SIDE BOARDS—ALSO DOOR AND WINDOW FRAMING FOR "STUCCO" HOUSES

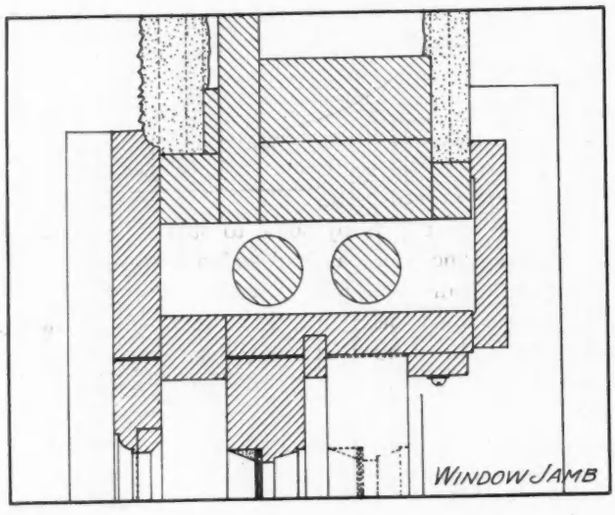
THE value of structural or "built in" features is evidenced more in the dining-room than in any other room in the house. Almost all of the decorative quality of this room depends upon them. In addition to ceiling beams, well placed windows of various sizes, shelves and window seat, and perhaps a big cherry fireplace, there should always be a built-in sideboard or buffet with cabinets for glass and china. In all rooms one central feature should dominate the rest, and in a dining-room no feature is as appropriate as a well-designed buffet. The one shown herewith is one of the newer designs which extends only up to the plate rail, the top members of the buffet extending around the room to form this. Complete elevations, plans and sections are given on the opposite page, drawn to the scale of three-quarters of an inch equal one foot; below on this page are shown details of the various parts, all one-quarter full size.

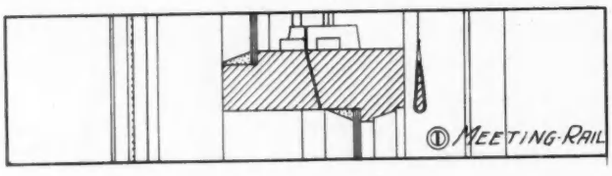
In accordance with a request from one of our subscribers, we present also the complete details of door and window frame construction and the method of securing the panel strips for a "stucco" or cement house; these are drawn to the scale of three inches equals one foot. Attention is called to the fact that all casings, bands, panel strips, etc., are applied directly on the grounds after the first coat of plaster is in place and that the second coat is put on after all woodwork has been placed in position. This method has been used by the author for several years with much better success than when the woodwork was put on, either before the plastering was started or after it was finished.

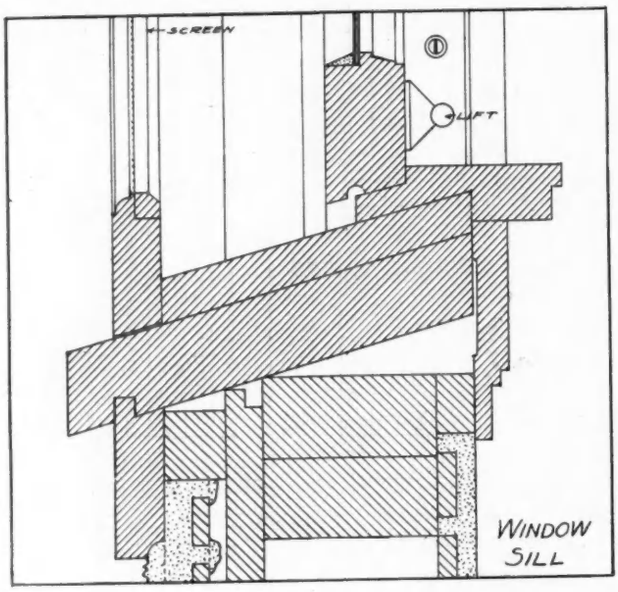



GROOVES
PLAN OF TOP
"C"
PLAN OF TOP - LOOKING UP
SECTION "A-B"
DETAILS OF BUFFET IN A DINING ROOM WITH TOP MEMBERS CONTINUED AROUND THE ROOM TO FORM A PLATE RAIL.
SCALE 3/4" = 1'-0"
2'-8"
SECTION - DRAWER CASE
"E"
4'-11½"
LEADED GLASS
SHELF HOLDERS
PLATE GLASS SHELVES
"F"
SECTION - CHINA CASE
"A"
"B"
15"x9" B.P. MIRROR
29"x39" B.P. MIRROR
15"x9" B.P. MIRROR
CONTINUE FOR PLATE RAIL
15"x47" LEADED GLASS
15"x47" LEADED GLASS
6'-3½"
FRONT ELEVATION
OPEN
9"x47" L. GL.
CEILED
PLATE GLASS SHELVES
LEADED GLASS
1'-4"
1'-9"
MIRROR
"D"
1'-9½"
1'-3"
1'-4"
1'-10½"
HALF PLAN THROUGH BASE
HALF PLAN THROUGH TOP
SIDE ELEVATION
C.P.R. 7.22.1910





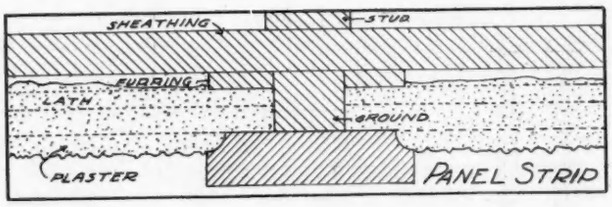


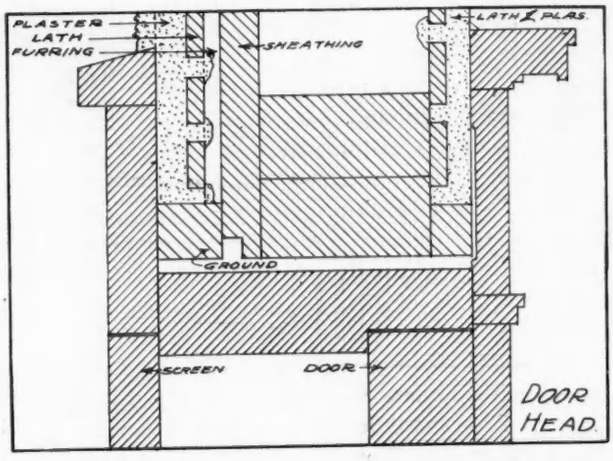


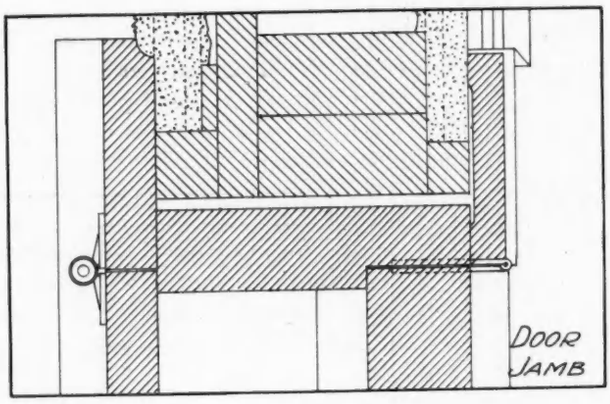
DETAILS

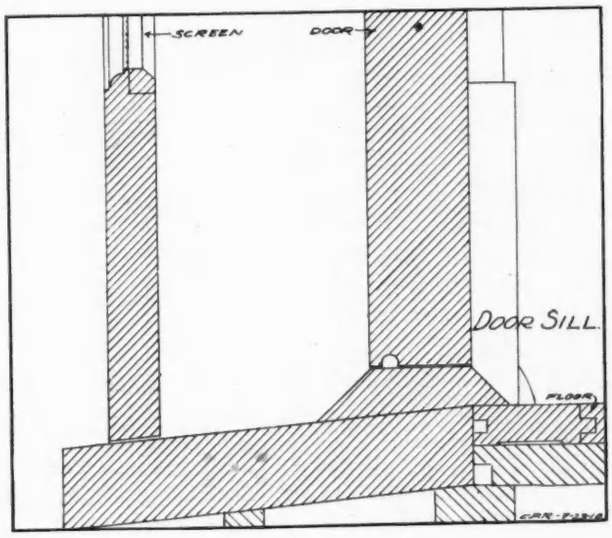
SHOWING CONSTRUCTION OF WINDOW AND DOOR FRAMES IN A STUCCO (WOOD FRAME) HOUSE. AND METHOD OF APPLYING A PANEL STRIP.

SCALE 3"=1'-0"









Galvanized Nails

NO WORK CAN LIVE LONGER THAN THE NAILS THAT FASTEN IT—HISTORY AND DEVELOPMENT OF NAIL MANUFACTURE—"PENNY-WISE" VS. GALVANIZED NAILS

IT IS surprising how much there is to know about a *nail*—and how few people know it.

The architect who plans a structure, and the builder who erects it, are both anxious to give best results to the client. Yet, much of their work may be invalidated by the use of improper nails.

Galvanized

The merchant sells nails by the pound or the keg—the customer pays his good money for them—and neither seems to know, nor to care, whether the nails are good, bad or indifferent.

To most people a nail is just a "nail"—something to be whacked on the head a few times, and forgotten. Then, whether it hold or not—whether it break, or bend, or rust, or not—what matter?

For these reasons we think some authentic information should be published about common nails—and about the recently developed galvanized nails.

The first nail in common use was a plain iron nail—a cut nail in square form with four edges from top to point. This was followed later by a steel nail of similar form; then followed the steel wire nail most generally used today.

Then it was discovered that for outside work—siding, sheathing, shingling, roofing, car, boat and fence building, etc.,—where nails are exposed to the atmosphere and all manner of weather conditions, a very serious question had to be considered—*RUST*.

The rust was a small matter so far as it concerned the nail itself—but the attendant results were disastrous. The iron rust of the plain nail soon rots the wood, and the holding power of the nail is destroyed.

On shingle roofs, if the nails rust out, the shingles become loose, and a wind storm may carry them away completely.

If the roofing be slate, tin or any of the different ready roofings, the heads of the nails rust off, the action of the wind loosens the roof and repairs are necessary.

Another disadvantage—where plain nails are used for sheathing, siding or any outdoor work in connection with painted wooden surfaces, the rust runs down in streaks, necessitating repainting. This is particularly noticeable in localities where the atmosphere is damp or salty.

Hence, it was found that the plain iron or steel nail had very apparent defects, and was followed by a persistent demand for a rust-proof nail—a nail that would defy the elements, damp atmosphere, salt-air defects, sulphur fumes, etc. The result was, the galvanized nail.

It has been demonstrated beyond every doubt that the only possible practical method of preserving iron and steel from the ravages of rust, is by applying a covering or coating of pure zinc. This can be successfully accomplished only by dipping the nails properly conditioned in a bath of molten zinc, which must be maintained at exactly the proper temperature.

The early efforts at galvanizing nails were attended by many difficulties. It was not easy to produce nails which were evenly coated and properly separated—there were many rough nails and much waste.

The early methods were faulty also in the matter of cooling. The too sudden cooling resulted in an undue hardening of the nail—both nail and coating becoming brittle—very often the head breaking and the coating peeling off when driving.

The perfected nails as made today however by the best methods are stronger and sturdier after galvanizing than they were before.

Because of the delicate processes involved, the expense of applying pure zinc coating, increased fuel charges, and losses by the metal drossing—the cost of galvanizing proved to be high.

This led to efforts by some to substitute materials other than zinc—such as lead and tin. Such attempts have proven dismal failures—lead-coated nails sold as galvanized have been known to rust before leaving the dealer's warehouse. How long would they survive if exposed to the ravages of damp or salty atmosphere?

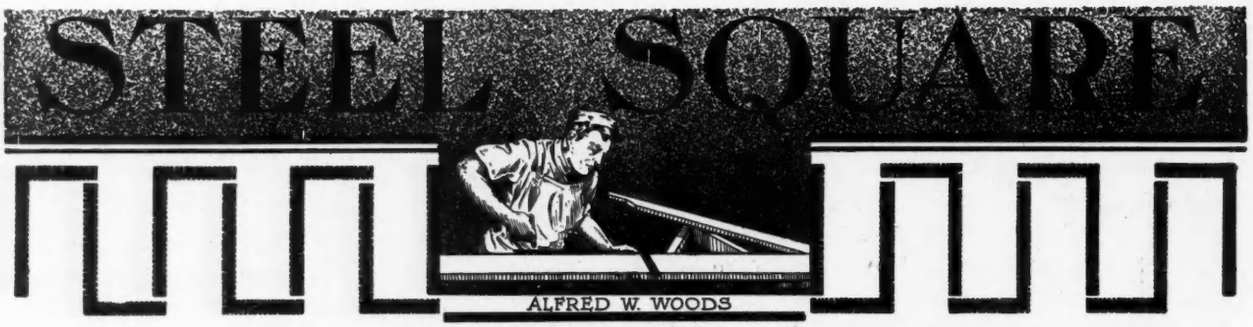
Again, there have been attempts to economize in the process of manufacture. Efforts have been made to eliminate the hot dip and apply the coating by electricity—to electroplate, or "electro-galvanize." These methods, too, were doomed to failure because they proved incapable of depositing metal of sufficient quantity of uniformity to retard the rust evil.

Certaily, the galvanized nail must cost a little more than the plain nail, if you consider only the first expenditure. But, the increased cost is a small matter compared to the longer life of buildings, and the saving in repairs. It has been stated that the only way you can find out whether galvanized nails finally will rust or not in your buildings is to specify in your will that your great-grand-son shall notify you!

✤

The Output of Oak

The cut of oak in 1908 was but little more than 3/5 as much as in 1900, and it is probable that the total cut of oak lumber will never again be as great as it was in that year. The supply of oak in the northern states has been largely cut out, and now the southern states are being heavily drawn upon. In 1900 Indiana ranked first in oak production, with 649,794,000 feet, or nearly four times as much as in 1908, and in the same year Ohio was second, with 596,618,000 feet, or nearly three times as much as in 1908.



Problems of Roof Framing Solved

EIGHTH ARTICLE—FINDING THE ANGLES IN DEGREES AND HOW TO APPLY THE STEEL SQUARE TO OBTAIN THEM—RELATION OF DEGREES TO MITERS AND SIDE CUTS

CONTINUING the subject of degree framing which we were discussing last month, we desire to present again the very valuable "Table of Degree and Tangents" shown opposite. It will be seen that the actual degree lines are shown as contained in ⅛ part of a circle or up to 45 degrees. This is all that is needed to find any angle by the aid of the steel square, because when one member of the square is set for a given degree, the other member will give the complement degree. This applied to or taken from the 90-degree quadrant, as shown in Fig. 19 of last month, will give the angle sought. The figure as here published covers the whole subject in angles, as reckoned by degrees, and is as near absolutely correct as figures can make it; as it will be seen that the tangents are given to the ten thousandth part of an inch, the recognized standard for centuries. All that we lay claim to is the application of the steel square to these angles for obtaining the cuts.

In connection with this illustration are shown decimal equivalent tables to the 1/32 and 1/24 part of an inch, so that it is an easy matter to ascertain the equivalent in common fractions in either table. Thus, the angle under consideration last month in the roof framing problem there discussed, namely 110 degrees, is found to be an addition of 20 degrees to 90 degrees, and the tangent for 20 is found to be 4.3676. By referring to the tables, the decimal is found to equal ⅜ of an inch. Now by taking two squares and placing them across each other, so that the tongue and blade of each will intersect at 12 and 4⅜ inches respectively, the tongues from the intersection back to the blade will form the 110-degree angle.

What is true of this applies to any other angle. In fact this illustration, as here shown, furnishes the foundation for all miters for frames and side cuts of rafters. For an example, suppose we wish to find the miter for a twenty equal-sided polygon. Dividing 180 by 20 equals 9, and we find that the tangent of 9 degrees to be 1.9005; by referring to the 1/32 table, the decimal is found to be between ⅞ and 15/16, though a shade nearer the former while in the 1/24 table it is found to be nearer 11/12 than anything else. Now, as the steel square is divided in twelfths on one side and sixteenths on the other, either side can be used as best suits the operator. Twelve and 1⅞ will give the miter, the latter figure giving the cut. Suppose this frame is to have an inscribed diameter of 75 feet; multiplying the diameter by the tangent will give the length to cut the sides. Thus, 75 times 1.9005 equals 142.5375 inches, or 11 feet 10 13/24 inches, which will be the proper length.

The tangent also represents the figures to use on one member of the square for the side cut of the jack and the length of the common rafter for a 1 foot run on the other. The side of the square on which the length is taken, will give the cut. For example, suppose we wish to find the side cut for a 20-sided building with a ½-pitch roof. The figures then to use would be 1⅞ and 17, with the cut on the latter. The tangent for the common square building is 12. Then, the side cut of the jack for the ½-pitch is 12 and 17.

For the problem submitted by Mr. J. H. K. last month the figures to use for the side cut of the jack on this basis is 8 5/12 and 15. These figures also apply to other cuts about the cornice and roof boards. In other words this figure contains the essence of the whole subject of roof framing.

Odd Uses for Wood

Recently while visiting the works of a firm manufacturing logging machinery and particularly logging railroads, a noteworthy point came out in conversation. A large shipment of logging cars was about to be made to a company in British Honduras. These were to be used upon a railroad several miles long, and equipped with a small steam logging locomotive.

The cars as originally ordered were to be equipped with standard tread wheels for use with ordinary steel rails. After work had commenced an order was sent in changing the tread of the wheels. The firm had discovered that mahogany rails would be much cheaper for them than steel rails, and therefore the tread of the wheels was made 6 inches and the road equipped with the wooden rails.

At first this certainly seems like a waste of good material. The fact that this road lies through a tropical jungle where there is a very heavy rainfall

and that steel rails would corrode very rapidly shows that the life of the wood may compare quite favorably with that of the steel while the first cost of the wood as compared with that of steel is very much less.

There are in South America a number of kinds of wood which are similar to the lignum vitae and so heavy that they will sink in water. These are all oily in nature and resist decay for a great many years. The step at the approach of one of the old Spanish cathedrals in Brazil is made of what is known as ironwood. This log has lain in this position for at least 125 years.

In the ruins in Yucatan the lintels of many of the doors in the masonry walls are made of wood from the sapodilla-tree, a tree from which the chicle of the chewing gum factories is obtained also. These are still sound despite the fact that these buildings have been abandoned so long that the natives have no traditions as to the original owners.

We can readily see that material of this kind would outlast steel in tropical climates and for such service as slow-moving logging railways would probably give excellent service, either as rails or ties.

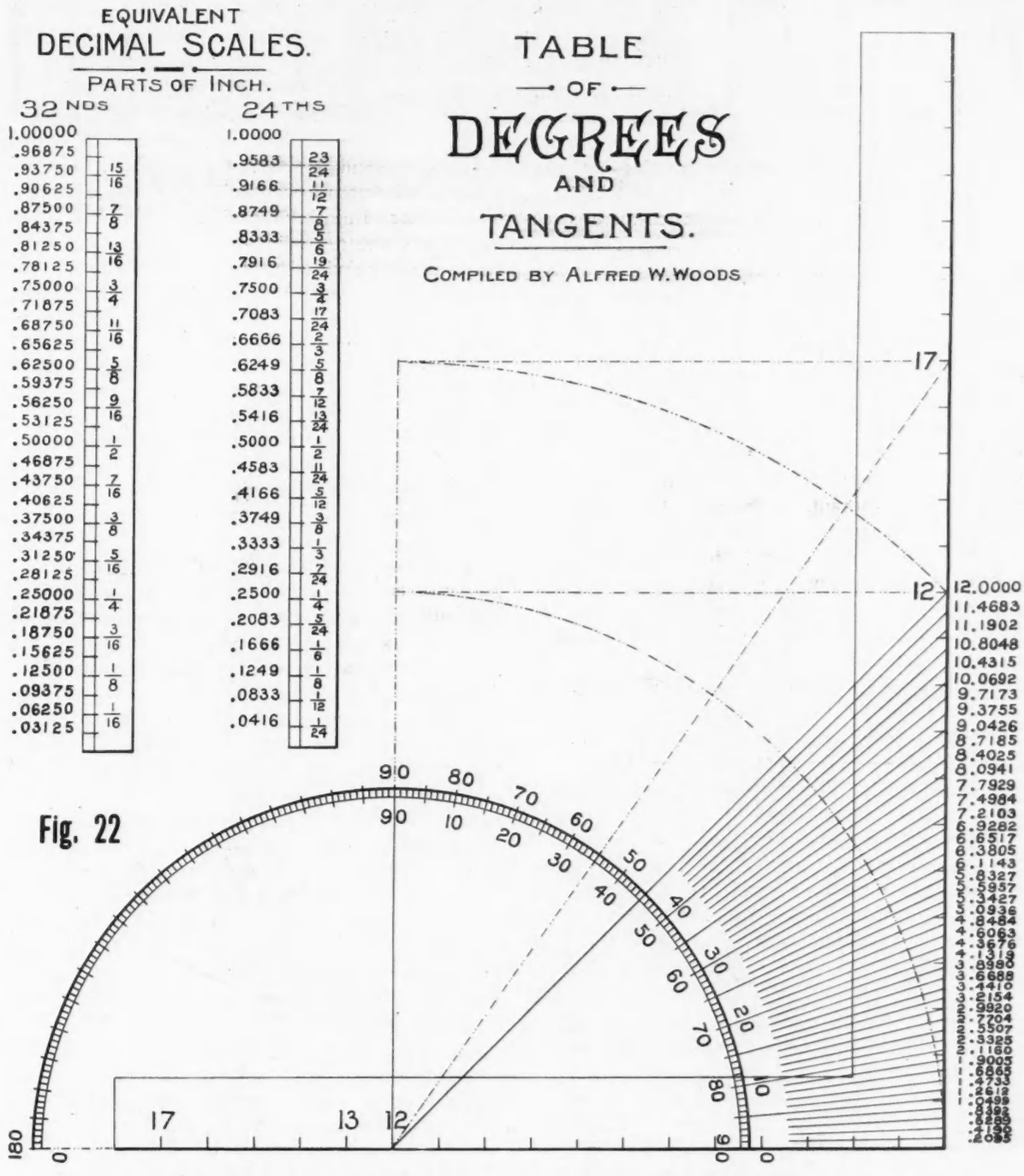


Fig. 22

Importance of Party Walls

THE CONSTRUCTION OF PARTY WALLS AND SOME INTERESTING LEGAL POINTS CONNECTED WITH THEM—NECESSARY STEPS BEFORE ALTERATIONS CAN BE MADE

By Owen B. Maginnis

AT THE outset of this article the reader might rightfully ask, what is meant by a "party" wall? Webster defines a wall of this kind as "a wall that separates one house from the next," which is correct as far as it goes, but it doesn't go far enough from a constructive standpoint.

It is not only owned by different parties, but is, in its utility, fulfilling two functions as a bearing wall, as will be seen in Fig. 1. In this sketch there is represented an 8-inch party wall, one side of which is owned by "A" and the other by "B." "A" owns 4 inches and "B" 4 inches, respectively, and each owner is entitled to what is technically known as "beam right," that is to say, the right to place the ends of floor beams in the wall without endangering its safety or impairing or prejudicing its value in any way.

The foundation is of stone, the upper part of 8-inch brick. This thickness of party wall, however, is now a thing of the past, having been mostly used in small one or two story houses.

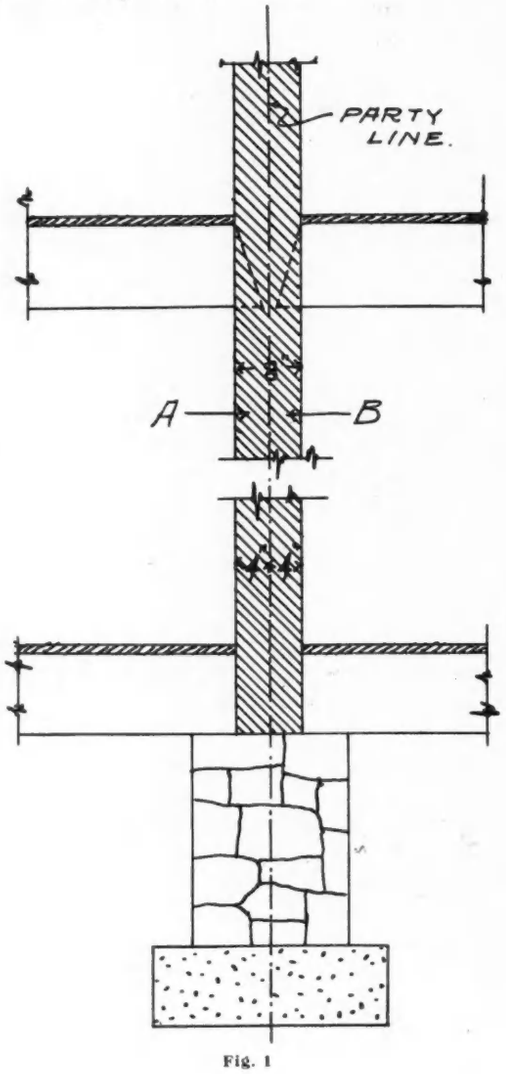


Fig. 1

The next thickness of party wall we come to is the 12-inch wall, where, of course, the dividing vertical line entitles each party to 6 inches on either side. This thickness of wall is consistent up to a height of 3 stories or perhaps four; but beyond this it is hardly safe. Much depends, however, upon the character of the building and its uses. For example, there is a difference between a wall built of cement and one of lime mortar in bearing capacity, and between a warehouse wall and a dwelling-house wall. Forty feet is about the best limit in height for a 12-inch party wall.

There are some very curious features in connection with party walls which are not known among the general run of builders and with which they should be

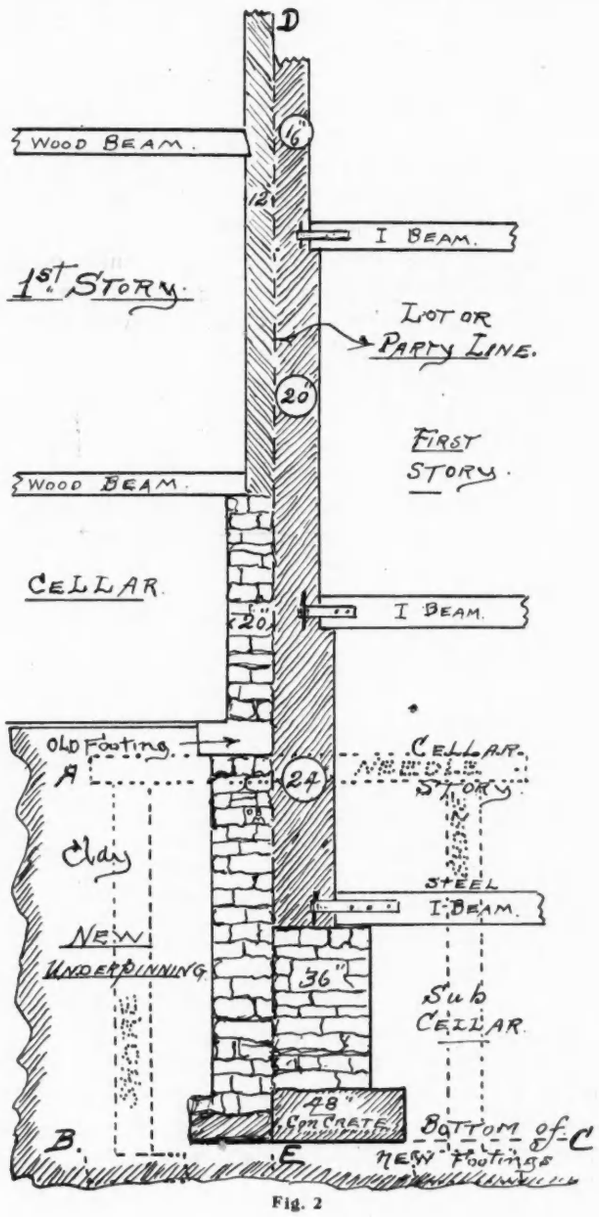


Fig. 2

familiar. For instance, it is not permissible for the owner of one side of a party wall to alter, strain or endanger the same by cutting into it or weakening its structural value in any way, without the consent of the next interested party, and he is liable for damages for so doing. He cannot sell or deed his half without the signature of his neighbor being affixed to the instrument or deed. Every transaction carried through in connection with the wall or walls must be done as partners acting conjointly and as joint owners.

To illustrate this let us refer to the sketch, Fig. 2, where the importance of party walls is fully exemplified and the work of which was recently carried out. Originally there existed where these two walls are represented an old 12-inch party wall separating two old business buildings. Both owners were desirous of improving the property, so by mutual arrangement "B" sold his entire half to "A," thus moving the line 12 inches east, to the right in sketch as shown, thus nullifying its party value, so the improvements were proceeded with as follows: "A" needled his wall below the bottom stone and underpinned his foundation down to the level of the concrete in "B's" building in the manner seen to the left, doing this for the protection of his own building and to gain a subcellar. When this was done "B" set his concrete footings and commenced the erection of his new building to the entire satisfaction of everybody concerned.

There has been much litigation and much money spent over party wall disputes, but experience has generally demonstrated that as they are purely a technical matter of building construction, it is better to leave the matter to the adjustment of a skilled architect or builder than to hasten into court and argue the matter before a judge who, in nine cases out of ten, is a first-class lawyer but a poor expert in building or real estate law. He will as a rule appoint an architect or builder as referee in any case, and bond both parties down in the meantime, thus delaying the work and causing loss of time, money and temper to everyone concerned.

Concrete Building Erected in 118 Days

Something like a record for speed of construction has been established in the erection of the Manufacturers' Home building, Vancouver. The structure was put up from the water's edge to a height of 103 feet in 118 days. There are about 14,500 square feet of floor area per floor. The floors are designed to carry a live load of 175 pounds per square foot, the concrete slabs being carried on shallow concrete beams and girders, which are in turn carried by hexagonal columns heavily reinforced to cut down their sizes to a minimum. The entire floors were finished as the work progressed from floor to floor and were immediately covered with lake sand to protect them from being marred. The building piers rest on clusters of piles; the largest columns in the basement are 28-inch hexagons; the smallest columns in the last story 10-inch square.

Worth Remembering

A LITTLE more patience, a little more charity for all, a little more devotion, a little more love; with less bowing down to the past, and a silent ignoring of pretended authority; a brave looking forward to the future with more faith in our fellows, and the race will be ripe for a great burst of light and life.—*Fra Albertus.*

Too Much to Expect

King Arthur had just invented the Round Table.

"Maybe he can invent a bureau where the husband can have the top drawer," they cried.

Patiently they waited for the flowering of genius.

Breaking It Gently

Her—Richard! Why on earth are you cutting your pie with a knife?

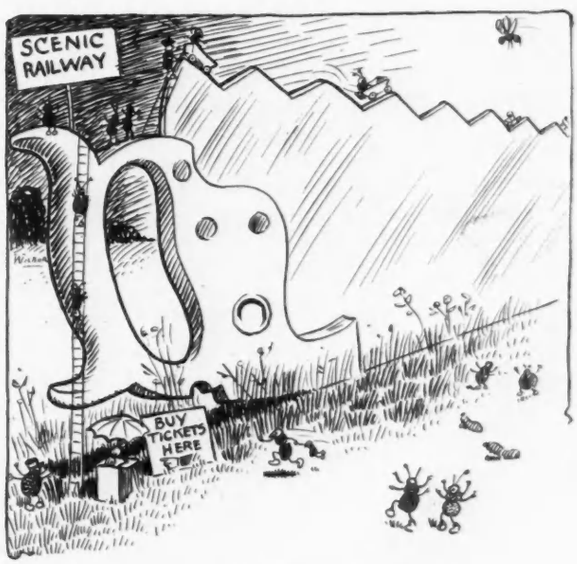
Him—Because, darling—now, understand, I'm not finding any fault, for I know that these little oversights will occur—because you forgot to give me a can-opener.

A Simple Solution

"Repeat the words the defendant used," commanded counsel for the woman plaintiff in a case of slander being tried in the First Criminal Court of Newark recently.

"I'd rather not," bashfully replied the defendant. "They were hardly words to tell to a gentleman."

"Whisper them to the judge, then," magnanimously suggested counsel—and the court was obliged to rap for order.—*Lippincott's.*



Summer Sport in Bugville

Oak Flooring

INCREASING DEMAND FOR BEST QUALITY BUILDING MATERIALS—POPULARITY OF OAK FLOORING—STANDARD GRADES AND SIZES—HOW TO HANDLE THE STOCK

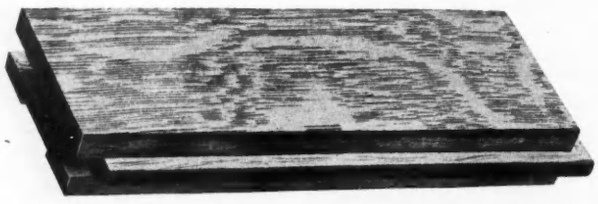
TO ANYONE alive to the developments in the building world nothing is more striking than the steady growth of the quality idea during the past ten years. Where formerly owners were satisfied with makeshift construction and with the cheap though gaudy effects in building, there has come to be a general demand for the best grades of material and the most thorough workmanship, united to form substantial, *permanent* structures.

Take the medium size dwelling house for instance, such as the average family requires. A generation ago $2,000 would probably have been the top figure considered proper for its cost. Today no one would think of spending less than twice that amount, if he would build with an eye to permanent use or future sale.

The increased cost of labor and materials has had something to do with this, it is true, but not so much as is sometimes thought. No, it is the added comforts and the higher standard of quality all the way through that have brought this about. Modern plumbing and fixtures, modern heating systems, modern lighting, cemented basements, permanent, fireproof roofing, hardwood floors; all these, the luxuries of yesterday but the necessities of today, mark the advancing standards of building. And the general building public now realize what the carpenters and building contractors have known all along—that quality building is the only kind that pays.

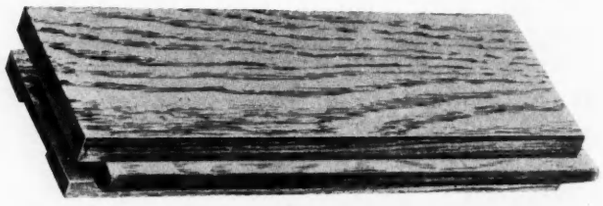
The steady growth in popularity of oak flooring is an example in point. In Great Britain and the continent, where they have builded well for centuries, native oak has been employed for flooring in the better class of buildings for several hundred years; but up to within the last ten years a floor of oak in the United States was regarded as a luxury only to be afforded by the rich.

But the unsatisfactory results obtained from soft



Quarter Sawed Tongued and Grooved End Matched Oak Flooring

woods brought about a demand in the United States for a flooring material of good wearing qualities, beautiful, and at the same time sanitary and hygienic. It was demonstrated that floors of such specifications could be obtained by the use of hardwoods. So now oak floors have ceased to be regarded as a luxury; on the contrary, they have come to be considered as a necessity in every building, from the palatial office structure to the home of the laborer. The old soft wood floor was but a temporary expedient, and the carpet with which it was covered was a disease-breeding makeshift. In reality, hardwood floors are cheaper than carpets when their durability and the cost of maintaining cleanliness are taken into account. As to oak its density of texture makes it practically indestructible through wear; the tannic acid which it contains renders it immune to decay, and its beauty of grain and figure causes it to be regarded as the most beautiful and satisfactory of flooring materials. Therefore it happens that the house owner and tenant alike, in choosing flooring, place the oak product foremost as reflecting personal taste, as insuring cleanliness, sanitary conditions, beauty, cheerful appearance, comfort and durability. The builder of even a modest home can better afford to have an oak floor than not.



Plain Sawed Tongued and Grooved End Matched Oak Flooring

Standard Grades and Sizes

Hardwood flooring is made in varying thicknesses, among these chiefly being 13/16-inch in thickness. It is also produced in 7/16-inch and 3/8-inch thicknesses, which are employed both for new floors and for recovering old soft wood floors.

The standard grades, made by leading manufacturers and accepted by all interested in oak flooring, which apply to both quarter and plain sawed stock, are as follows:

REVISED RULES FOR GRADING OAK FLOORING

The grades of oak flooring shall be known as clear, sappy clear, select, No. 1 common, and factory.

QUARTER-SAWED

Clear.—Shall have one face practically free of defects, except 3/8 of an inch of bright sap; the question of color shall not be considered; lengths in this grade to be 2 to 16 feet, not to exceed 10 per cent under 4 feet.

Sappy Clear.—Shall have one face practically free of defects, but will admit unlimited bright sap. The question of color shall not be considered. Lengths in this grade to be 1 to 16 feet.

PLAIN-SAWED

Clear.—Shall have one face practically free of defects, except 3/8 of an inch of bright sap; the question of color shall not be considered; lengths in this grade to be 2 to 16 feet, not to exceed 10 per cent under 4 feet.

Select.—May contain bright sap, and will admit pin-worm holes, slight imperfections in dressing; or a small tight knot, not to exceed 1 to every 3 feet in length; lengths to be 1 to 16 feet.

No. 1 Common.—Shall be of such nature as will make and lay a sound floor without cutting. Lengths 1 to 16 feet.

Factory.—May contain every character of defects, but will

lay a serviceable floor with some cutting. Lengths 1 to 16 feet.

In an interpretation of the above rules, as well as in the selection of oak flooring, natural wood markings must not be confused with defects.

The question of lengths is no longer considered by the user of oak flooring, as the process of end-matching has eliminated any necessity for the employment of long pieces. It has been demonstrated that short sections make equally as good, if not a better floor than long-length stock. Neither is it absolutely necessary to have a sub or under floor on which to lay the 13/16-inch end-matched flooring.

Experience has shown that narrow widths of oak flooring are most satisfactory. The narrower the stock, the smaller the interstices between the strips, and there is thus less danger of unsightly appearance. The narrower widths of flooring, while a little more expensive than the wider ones, make the better floor. Again, the shading and figure of the wood may be blended more harmoniously than when the broader strips are employed. The use of narrow widths also obviates any possibility of the flooring strips cupping. The narrow pieces lay and stay absolutely flat.

Handling Hardwood Flooring

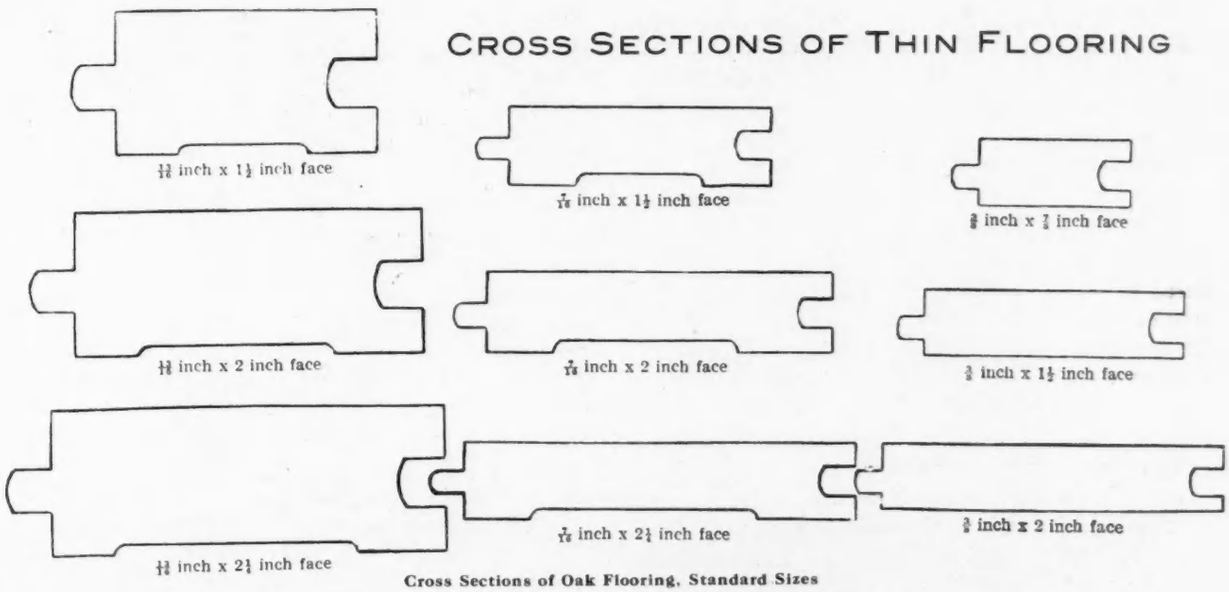
Oak flooring leaves the factory in perfect physical condition. The wood has been kiln-dried, cooled, milled accurately, and has been stored in a well-ventilated warehouse. It is invariably shipped in box cars, and should therefore reach the dealer in perfect condition. Handlers of oak flooring often treat it just as they would ordinary lumber. This is a mistake and sometimes results in serious damage to the material. It should not be unloaded in rainy weather and, if the atmosphere is damp, the wagon should be covered with a tarpaulin. Flooring should be stored only in well-ventilated warehouses, and these should be kept as near an equable temperature as possible. It should never be piled in open sheds, even though protected by a roof, as any wood absorbs moisture from the air at the exposed ends. The stock then swells, impairing the accuracy of the mill work, and flooring thus carelessly handled often shrinks after having been laid, leaving unsightly cracks.

Oak flooring should never be laid in a new building while the walls and plaster are damp. The floors should be the last work done in building construction, and they should be laid only after the brick or stone work, concrete or plaster, is thoroughly dry.

To secure the best results in an oak floor, the better plan is not to have it laid until even the painting, wall-papering and decorating have been done and are thoroughly dry.

Use of Different Grades

Dealers in oak flooring allege that they have the greatest call for the higher-grade stock. Practical demonstrations have proved that the lower grades are equally as well adapted for many purposes as the better grades, besides effecting a deal of difference in the cost. For the drawing-room of an expensive residence the clear grade of oak is recommended, and the quartered variety is, of course, the choicest. By many authorities on house finishing materials the second grade of quartered oak is even given the preference over the first. To those who are not critical judges of lumber it is very hard to distinguish in the floor which of the two qualities has been employed. As a matter of fact, in the two grades of quartered oak flooring the difference is largely technical. There is no difference in the lasting qualities and comparatively little in the figure. The second quality of quartered oak flooring can be obtained at about the same price as the first grade of plain oak.



Cross Sections of Oak Flooring, Standard Sizes

The second or select grade is the one generally employed for ordinary residence work, because it gives a high-class floor at a reasonable cost.

The third, or No. 1 common grade, is used extensively in hotels, apartments, tenements and medium-priced structures. The experienced builder or carpenter can lay a floor from this stock that is just as serviceable as one from the higher grades, and the cost is about the same as that of an ordinary soft wood floor. This particular grade contains slight timber growth defects and little roughnesses of dressing in the milling that are concealed after the finishing is done.

The fourth or factory grade is particularly recommended for factories, warehouses, cheap tenements and such buildings as require a good serviceable floor without regard to high finish. This grade is intended for heavy service and will stand the use of trucks carrying merchandise.

Three-eighths-inch select plain (second grade) oak flooring is adaptable for many purposes where clear plain is being specified. It may be bought for about thirty-five per cent less than 3/8-inch clear plain. An economical plan for its use is to place the select grade in the field of the floor, using clear quartered or clear plain for border work. Three-eighths-inch select plain contains slight imperfections in dressing, and other minor defects, easily lost sight of in the finishing, and makes a floor equally as durable as the clear grade. This grade can be bought, laid and polished for about 60 per cent less than the cost of a fair quality of carpet, which proves that carpets are an expensive luxury, as compared with oak flooring. Three-eighths-inch oak flooring costs about 30 per cent less than the 13/16-inch thickness, and is even cheaper than the regular pine flooring. Everyone can now afford to have oak flooring in every room in the house.

Three-eighths-inch oak flooring is only manufactured in 1½-inch and 2-inch widths. Being matched and end-matched, it can be secret nailed, and presents the appearance of a heavy floor. The 1½-inch face is recommended for the reason that it is not only pleasing to the eye, but it generally insures a better quality of flooring, and is subject to less change from atmospheric variations. For an extremely large room, some give preference to the 2-inch face.

It is desired to call particular attention to the adaptability and exceedingly low cost of No. 1 common (third grade) oak flooring, as compared with the better grades.

No. 1 common is especially adapted for dwellings, tenements, stores, high-class factories and manufacturers' buildings. Very often select (second grade) is used in this class of buildings, where the No. 1 common could be utilized, making a floor just as serviceable as the select grade, besides making a saving in the cost of approximately 60 per cent.

No. 1 common is used extensively in some of the better dwellings, and apartment houses, where it is being laid in the center section of the room, where the rug covers it up, and employing the better grades, such as the clear or select, in the borders. By this economical plan, the whole floor will have the same appearance as though it were laid with the better grades, thereby saving 125 per cent in the cost, figuring if the clear grade were employed entirely, and 60 per cent in the cost, figuring if the select grade were employed entirely. This grade of oak flooring can be used to advantage in some of the better dwellings in closets, pantries and other out of the way places at a great saving.

No. 1 common goes through identically the same manufacturing process as the better grades. The only difference is that the No. 1 common grade contains defects, such as sound knots, and slight imperfections in the milling—but makes a floor equally as strong and durable as the better grades.

No. 1 common oak flooring is growing constantly in demand. Builders, in general, are beginning to see that this is the best grade for the money that can be obtained.

✤

Niagara to be Protected

It is gratifying to learn that the United States and Great Britain have signed a treaty which will serve to regulate the use of water for commercial purposes at Niagara Falls. According to the provisions, the New York side will be permitted to take 20,000 cubic feet from the river above the falls, and the Canadian side may divert 36,000 cubic feet. The treaty contains a provision which allows the Canadian companies to transmit and sell on the United States side at least 50 per cent of the power generated in Canada.

✤

The Business Side of Architecture

At a meeting of the Royal Institute of British Architects, held last month in London, a valuable paper was read by Mr. Alfred Hudson, who said:

"One of the first matters with which an architect will have to deal when he confers with his employer is the question of cost, and to this all his ideas must be made subservient. For this purpose he must be trained to measure and estimate, and he must learn the value of different materials. It falls to the lot of very few architects to find clients of unlimited means, and it is still more rare to find even such clients willing to disregard questions of cost. Another example of equally necessary instruction is the proper specifying of the materials and the various works which are required to be carried out. This is a matter in which very great foresight is required, besides a thorough knowledge of every kind of detail. One of the first essentials in the student's instruction should be to teach him to describe accurately the various materials and methods of construction upon which he is receiving instruction during the course of his studies. It is not uncommon to find that a specification has been copied from an obsolete model describing materials which have ceased to be sold or manufactured.

How to Make a Porch Swing

A TIMELY PROJECT FOR THE HOME CRAFTSMAN—COMPLETE DETAILED INSTRUCTIONS FOR MAKING—ALSO HOW TO MAKE A TABORET—FUMED-OAK FINISH

THE porch swing is to be made of plain sawed red oak; it is to be swung from the ceiling by means of chains the lower ends of which are to be fastened to bolted staples in the ends of the cross ties. The back chains should be somewhat shorter than the fore chains, so as to give the seat a slight inclination backward or downward.

There will be needed stock as follows:

STOCK BILL FOR PORCH SWING.

Seat, 2 pieces, 2¼ by 2¼ by 66 inches, S-4-S.
Seat, 2 pieces, 2¼ by 3 by 23 inches, S-4-S.
Posts, 2 pieces, 2¼ by 2¼ by 15 inches, S-4-S.
Posts, 2 pieces, 2¼ by 2¼ by 21 inches, S-4-S.
Arms, 2 pieces, ¾ by 5½ inches by 22 inches, S-2-S.
Back, 1 piece, ¾ by 10 by 51 inches, S-2-S.
Slats, 11 pieces, ⅜ by 4½ inches, S-2-S.

The seat may be framed first. Since the pieces are specified, mill-planed to exact thickness and width, it remains only to square the ends and remove the mill-marks with the smooth plane. The ends of the long pieces should be planed smooth as well as square. The ends of the shorter pieces need to be sawed only, since they are to form the ends of tenons. Lay out the mortises in the long pieces and the tenons on the short pieces and cut them. The drawing shows the dimensions. Also lay out and rabbet a groove on the inside edges of all these pieces, three-eighths of an inch wide, to receive the ends of the slats and the edges of the two outside slats. A circular saw will be found very convenient for cutting this groove, if one is at hand. If not, use a grooving plow and plow as far as is possible, gauging the sides of the remaining parts and finishing with the chisel.

Square the top ends of the posts and saw them to length. Tenon the lower ends into the seat frame and cut the mortises into which the tenons of back and arms are to be inserted. The top ends should be chamfered slightly.

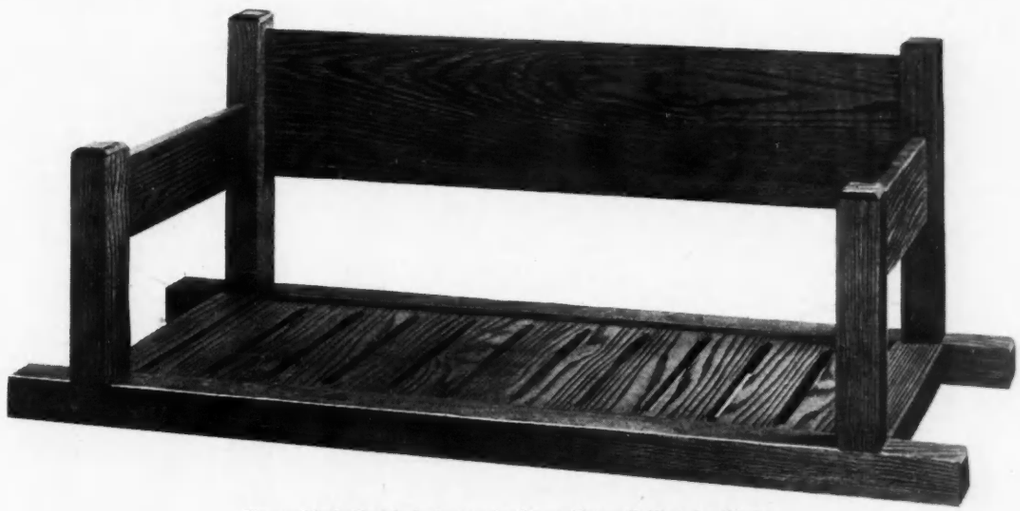
Plane the slats to size, and shape the edges as shown. This will allow any water that may be driven on the porch and swing to run through.

The seat parts may be scraped and put together, good hot glue being used. The tenons ought to be pinned to the mortises, too, thus insuring a solid joint should the weather weaken the glue.

Next put the back together, having cut the tenons necessary. Put the arms together, putting the posts in place and gluing and pinning the parts.

Bore the holes for the hanging staples as shown, the size of the hole depending upon the staples to be used.

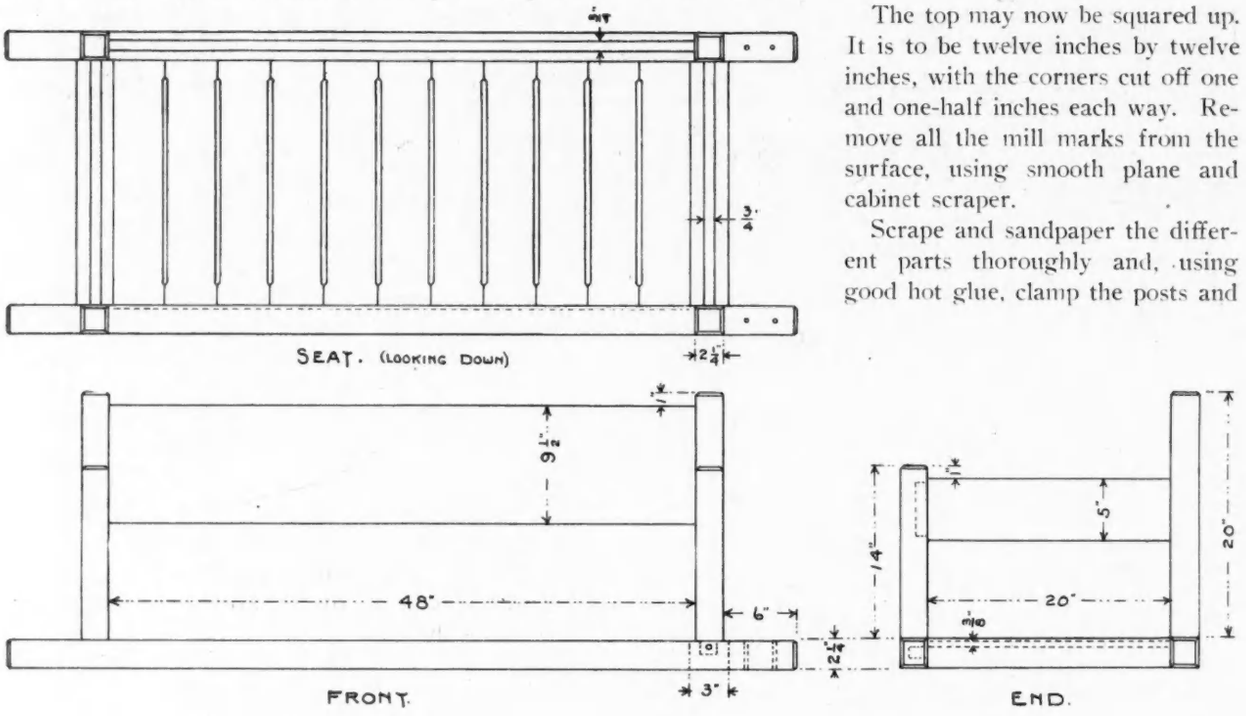
Scrape off the surplus glue, making sure all the mill-marks have been removed, and put on a finish as follows: One coat of brown Flemish water stain diluted by the addition of an equal volume of water. When dry, sand lightly and put on a coat of very thin shellac.



Home Made Porch Swing to be Hung From Ceiling by Chains

Sand this shellac, using number 00 paper and put on a coat of paste filler, rubbing it off, when flatted, in the usual manner. On this filler put a coat of orange shellac, sand slightly and apply two coats of spar varnish. Rub the last coat with crude oil and pumice, pulverized, and the previous ones with curled hair. This finish will withstand the weather and protect the wood. If other colors are desired, all that is necessary is to substitute the stain desired for the Flemish and color the filler to match. The filler should be darker than the stain, whatever the color.

The pictures shown herewith are from pieces made from original designs by pupils of the Oak Park and River Forest Township High School.



PORCH SWING

How to Make a Taboret

A piece that is comparatively easy to make is the taboret. It should be made of oak—either red or white. There will be needed the following pieces:

Top, 1 piece, ⅞ by 12½ by 12½ inches, S-2-S.
Posts, 4 pieces, 1⅝ by 1⅝ by 20½ inches, S-4-S.
Stretchers, 4 pieces, ¾ by 2 by 14 inches, S-2-S.

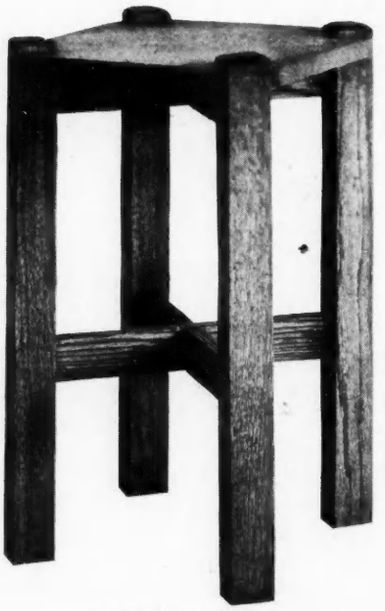
In ordering the stock it will be more economical to add the lengths of like pieces—that is, pieces having the same widths and thicknesses. Begin work on the legs or posts. Square up the top and bottom ends, putting a slight chamfer on the bottoms to prevent their slivering through usage, and a bevel or chamfer of about 3/16 or ¼ inch on the top, for looks.

Next, saw the stretchers to length—it is not necessary to plane these ends square, since they are to form the ends of tenons which will be inserted in mortises. They should be sawed square, however. Lay off and cut the cross lap joints at the intersections of these stretchers. Next lay out and saw the tenons on the ends. These tenons may be cut to a thickness of three-eighths of an inch, a width of one inch and a length of one inch.

Lay off and cut the mortises in the posts which are to receive these tenons. The drawing indicates clearly their locations.

The top may now be squared up. It is to be twelve inches by twelve inches, with the corners cut off one and one-half inches each way. Remove all the mill marks from the surface, using smooth plane and cabinet scraper.

Scrape and sandpaper the different parts thoroughly and, using good hot glue, clamp the posts and stretchers in place. Make sure the posts form right angles with the sides of the stretchers, before allowing the glue to harden. By properly adjusting the clamps this may be done.



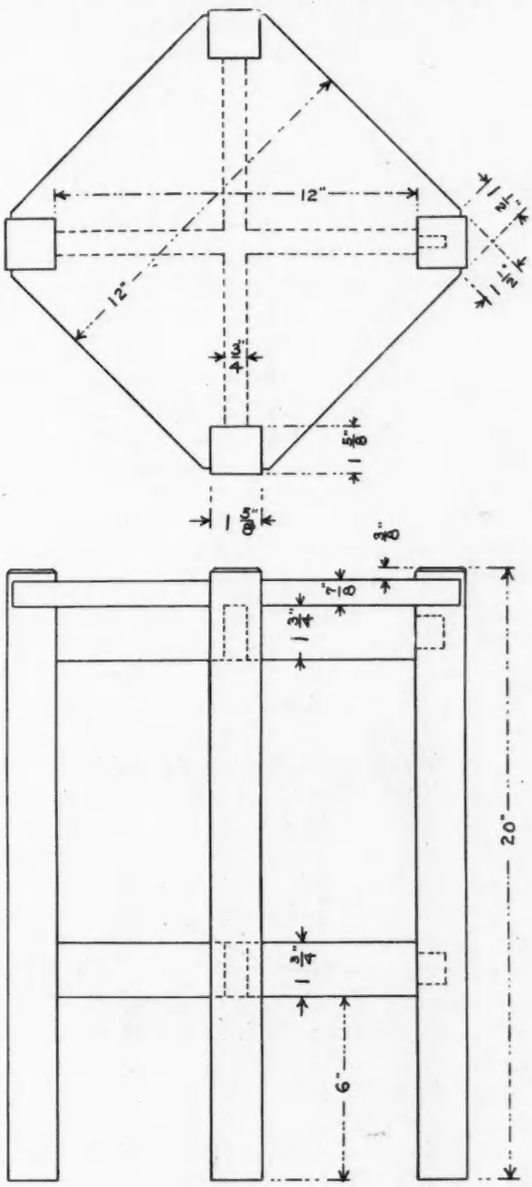
Easily Made Taboret

While the glue is hardening locate the positions for the mortises in the top, through which the tops of the posts are to extend, and cut them. The top is to be

held in place by means of screws inserted through the top stretchers from their under side. Bore part way with a bit large enough to "take in" the entire head of the screw; then finish with a bit just the size of the shank of the screw. In this way, by boring the first holes to proper depth, screws of any ordinary length may be used.

Fumed Oak Finish

Remove any surplus glue and finish as follows: Take a barrel of some kind and make it airtight by pasting paper over the cracks. Secure some concentrated ammonia and place it in a saucer. Over this saucer place the taboret and over all place the barrel inverted. The ammonia fumes act upon the tannin in the oak and produce a chemical change, causing the wood to take on a rich nutbrown color. This is called fuming, and the product fumed oak. The depth of color will depend upon the strength of the ammonia and upon the length of time it is allowed to act upon the wood. If left in the barrel all night with a fairly strong solution the result will be a dark brown.



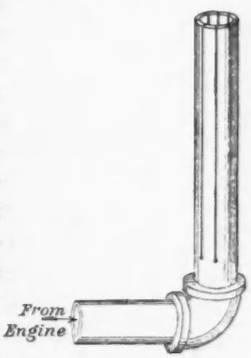
TABORET.

The wood may now be finished in several ways. Probably the easiest and simplest is to apply three or four coats of wax in the usual manner, building up a smooth surface.

A second method is to fill the surface of the oak, using a medium dark filler colored to give the same general tone as the fumed oak. On this filler apply a very thin coat of shellac, and when this has dried sand lightly with number 00 paper. On this apply several coats of some good rubbing varnish. Rub the first coats with curled hair or hair cloth and the last with crude oil or raw linseed oil and pulverized pumice. This latter finish will stand the wetting that a taboret is likely to get, better than the wax finish. If a strong contrast is wanted between the high lights and the background, a thin coat of shellac should precede the filler to prevent the stain in the filler from affecting the highlights. The shellac, if thin as it ought to be, will not fill the pores of the wood or interfere with the action of the filler.

A Muffler for Gas Engines

The handy man who has a gasoline engine in his shop and which exhausts outside into the atmosphere may silence that disturber of the peace, says *American Homes and Gardens*, somewhat in the manner shown in the accompanying illustration. It removes the sharp penetrating quality of the noise without causing any back pressure. The end of the exhaust pipe, which must be vertical in order to prevent clattering of the segments, is split into eight parts by means of longitudinal cuts made with a hack-saw. The cuts should extend for three or four feet in the pipe.

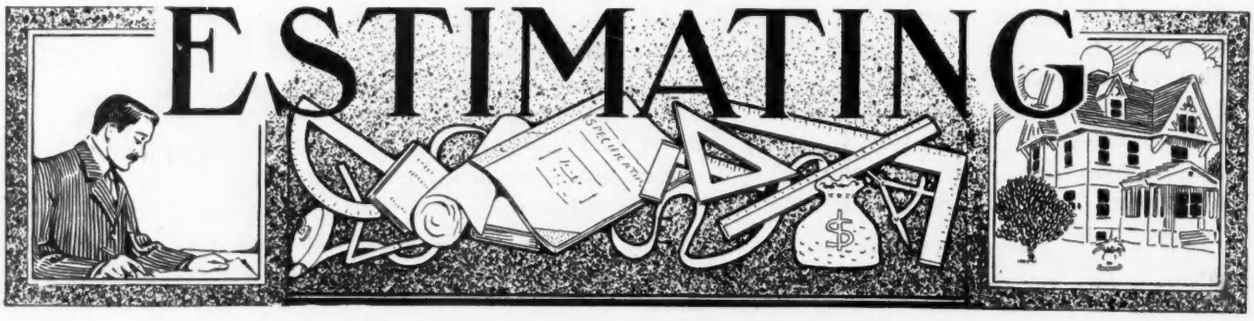


To Treat a Bruise

When one has pounded a finger or otherwise bruised oneself, try the effect of water as hot as it can be endured. Hold hand or foot in water and apply hot cloths.

A little turpentine added to the water increases its beneficial effect. Painting with pure turpentine is also excellent.

When nothing better is at hand try bandages wrung out of the strongest possible solution of salt and water for sprains and bruises.



Costs That Should Be Figured

SECOND ARTICLE—THE SIX FUNDAMENTAL RULES FOR ALL SUCCESSFUL ESTIMATING—IMPORTANT FACTORS, OFTEN OMITTED, WHICH SHOULD BE FIGURED

A SCHEDULE of those factors which are usually overlooked by most building contractors but which do have an astonishing effect on the total cost of a job are presented in this paper. A consideration of these—although they apply especially to very large work—should prove interesting to all.

Before taking these up however we desire to state the six general rules on which all successful estimating must be based:

1. *Make all estimates in the fullest possible detail.*

2. *Get together and classify all the available data before commencing to figure.*

3. *Use a carefully prepared standard schedule of items for the classification.*

4. *Go over the ground with great care—visiting the site of the work, if possible—to guard against the omission of items not provided for in the standard schedule.*

5. *Put down all the unit-quantities first; then all the unit-prices; and finally, make the arithmetical computations in such manner that you will not know even approximately the final results until the figures have been thoroughly gone over and tabulated.*

6. *Check over the final results by every available means, such as contract prices on similar work, which are unsatisfactory as preliminary data, but may be very useful as a check.*

The reasons for these rules are as follows:

1. At first sight it would seem that it requires more labor and time on the part of the estimator to make estimates in elaborate detail than to make them in general. This, however, is not the case according to experience, since a much larger part of the detailed estimate can be done mechanically than when many of the items are lumped, and because the more elaborate the detail, the more confidence a man has in his own figures, and the faster he is able to work. When an estimate is made in careful detail, gaps in the available information become apparent; and in this way it is easy for an estimator to know what information he lacks, and where the dangerous parts of his estimate are likely to be. Then, again, an estimate made in detail is much more easily checked by the subordinate or by the estimator's superior officers; and, when filed for reference, such an estimate is a document of great utility in future work. When the field costs are properly prepared, they can be used to check up the estimate for the work, in a way that is not possible if the estimate is not made in full detail.

2. It is a psychological fact—one based on the natural tendencies of the human mind—that if an estimate is made as the figures come in, it is impossible to obtain as good a grasp of the general problem as when the data are first collated, and the estimate then prepared on the data. While the estimates should be made in full detail, this does not mean that they should be made for different items of the work independently, since all parts of a piece of construction work are to a large extent dependent upon one another; and thus, if the estimated cost of one item is set down before the other items are known, their interdependence or mutual relations will not be appreciated and will not be allowed for in the estimate.

3. Rolling off a log is a difficult and elaborate feat compared with forgetting items in an estimate; and it has been found, from wide experience, that *the best way to avoid omitting items is to start with a standard schedule.* To write a zero after an item that is not going to come into the estimate, takes practically no time; and the use of such a schedule in all cases is excellent insurance against blunders. A good plan is to have such schedules in stock, printed on sheets of coarse-ruled paper.

4. It is a sad fact that a great many estimates are made without the estimator ever seeing the work. This is utterly wrong; and it should be an invariable rule that the estimator must go over the ground, and go over it thoroughly; else it will be impossible for him to use the essential quality of judgment. Moreover, there is nothing like a physical view of the field for enabling a man to grasp all the details of the work. For this purpose, plans are of great assistance in the detailed analysis; but they are no substitute for a good look at the ground.

5. An estimate, to be accurate, should be *absolutely unbiased;* and where a question of judgment is involved, it is essential that the estimator make his figures without regard to what the grand total will be.

6. After the grand total has been computed, it should be checked; and the checks may throw some light upon erroneous items, which can then be corrected. The estimator's judgment will be a great deal more accurate if he works the problem out in detail first, than if he tries—perhaps sub-consciously, or without fully realizing the fact—to work to a desired or hoped-for result.

The practice of taking somebody else's contract price as a base for figuring, is very deceptive if you do not know what specifications he had, how he intended to do his work, what layout he anticipated, and what his financial arrangements were. All of these items are of the utmost importance in figuring the economics, or the financial features, of any particular piece of work. Conditions vary in places short distances apart; rates of wages vary in different parts of the country; specifications, and the interpretations of identical specifications by different architects vary greatly; the bid prices are frequently too low or much too high; the bid prices may be purposely "unbalanced"—that is, made abnormally high on certain items, and abnormally low on others, but always so as to offset one another and "even up" in the grand total; a unit-price for a large job is usually too low for a small job, on account of the falling percentages, or relatively lower rates, of overhead charges and superintendence on the larger jobs; a contractor well equipped with plant can usually bid lower than contractors not so equipped.

Factors to be Considered

Amount of Work. The estimator will generally have trouble when it comes to the *amount of work* to be done, this being roughly approximated, with the right to increase or decrease it later. (This does not apply usually to contracts for building construction.) A good method is to write down the maximum and minimum amounts that are likely to be involved. Clauses in the contract which enable the owner to change the contractor's quantities without changing unit-prices, should add something to the contractor's estimate, for the reason that there is one best plant, one best arrangement, one best organization, and one best outfit for every particular work. It has been shown that many of the conditions which affect the economy of the work are themselves affected by the quantities of work to be done; and any change on the part of the owner's mind affecting the quantity of work to be done, should—but rarely does—tend to increase or decrease the contractor's unit-price. In order to guard against such a contingency, the contractor should add something to his price by way of insurance. After an estimate has been made, it is a practice of many contractors to "unbalance" their bids. A great danger from this is that the work may have to be completed with quantities different from what were originally figured.

General Layout. The general layout of the work can be determined only by a personal inspection of the ground; and on this the estimator should make copious notes, having special reference to the distance of railroad connections, the distance of the railroad connection from shipping points of materials and supplies, the character of the country, the kind of water, and as many of the local conditions as can be reasonably and quickly noted.

Bonus or Discounts. This item depends largely upon the particular business followed. If the contractor is figuring to earn a bonus on the contract price by getting through before the time limit, such being provided in the contract, it should appear in the estimate; and, as offsetting this, what he can lose by delay should also appear in the estimate. Not many months ago, one of the largest cities in the United States paid for a considerable amount of work in bonds at par, which several contractors, needing the money, sold at a discount of not far from 3 or 4 per cent, as it was not convenient for the city to raise the money on short notice. It is safe to say that this had not been figured on in their estimates.

Charity or Accidents. This is an item about which it is practically impossible to give advice in advance. The first part of it covers a good many sins and other things in contract work; while accidents are generally provided against, as far as possible, by insurance. Where the insurance companies refuse to insure, the contractor has got to provide against this item in the estimate somehow; and it is well to estimate the rate that the insurance companies would likely to insure for if their rules did not prevent them from doing so, and to multiply this rate by about two.

A contractor is supposed to assume certain risks; but, as pointed out by Colonel Raban, of the Institution of Civil Engineers of Great Britain, it is another question whether all of the risks should be put upon the contractor. Risks from weather, the problems of handling men, and the general vagaries that go with all construction work, are probably the contractor's risk; but, when held up by strikes, or by eventualities that are peculiar to his line of business, it seems unreasonable to shift these risks to the contractor's shoulders, and thus needlessly raise his estimate.

Depreciation and Repairs. No other part of the estimator's task will call for the exercise of more careful judgment than the determination of the percentages of depreciation and the amount for repairs.

Fire Insurance. For brick buildings and for dwellings and their contents, the rate in 1909, in the eastern part of the United States ranged from ¼ per cent to ½ per cent for three years. For a plant such as is in use in the Hudson River Trap Rock Quarries, the present rate is from 2 to 2½ per cent per year. The rates vary widely with different localities and with different kinds of buildings or equipment insured; and where a general approximation is not sufficiently definite, the estimator will have to go to the nearest fire insurance agent, who, with the idea of getting business, will be so keen to furnish him with information as to

make it a pleasure to ask for it.

Burglary Insurance. This, like fire insurance, will depend upon local conditions and the state of mind of the insurance companies. For private dwellings, 1909, the rates in some companies were $12.50 per thousand dollars per year, or 1¼ per cent per year. Where it is not thought advisable to purchase burglary insurance, the estimator should nevertheless realize that theft is possible if not likely, and it is wise to allow about 2½ per cent of the value of the constant stock of small tools and supplies on the work for this item.

Freight, Express, etc. This must depend upon the class of material handled, the distance to be hauled along the railroad, and the amount of competition between roads. It will be more in sparsely settled country than where there is much competition.

Accident Insurance. Insurance against accident to both employees and outsiders, on work of normal risk, will cost about as follows:

Masonry	.3	per cent of the pay-roll.
Ornamental Iron Work	.3	per cent of the pay-roll.
Excavating (no blasting)	.3	per cent of the pay-roll.
Carpentry	2.25	per cent of the pay-roll.
Private dwellings	1.85	per cent of the pay-roll.
Plumbing	1.25	per cent of the pay-roll.
Painting	1.25	per cent of the pay-roll.

When the risk is great, these items may run as high as 8 or 10 per cent. Insurance on building wrecking runs as high as 13 per cent.

Bond. From a well-known indemnity company, in 1909, when a bond is in favor of New York City and is for 5 per cent or more of the contract price, ½ of 1 per cent of the bond is charged. When it is less than 50 per cent, ¼ of 1 per cent is charged. The minimum charge is $10.00. All other bonds cost ½ of 1 per cent of contract price. Bonds on contracts for furnishing supplies only (no labor) cost ¼ of 1 per cent of contract price.

Estimated Unit Cost

Hourly Direct Labor. From his general experience and what information he can gather from published data, the estimator is in a position to determine with fair accuracy between what limits he can reasonably expect to come on the item of direct labor, which is the fundamental labor charge and which ought to be nearly proportional to the actual amount of work accomplished.

Weekly and Monthly Labor. This can be selected as a percentage of the item above mentioned, and depends very largely upon the local conditions, number of men employed, etc. Where there is a large amount of plant, such as steam shovels, hoists, drills, etc., it may run as high as 15 per cent maximum. For average work it is likely to be about 2/3 of this.

Superintendence. This is likely to vary from 10 per cent to 20 per cent of the direct labor pay-roll. It will be more on small work, and less on large work. On large work, it is generally too small for true economy.

Materials. The amount of these to allow for can be figured from the plans of the finished work. A percentage, generally not less than 3, should be allowed for loss in handling, shortage in shipment, etc. There should also be an allowance for miscellaneous supplies.

Miscellaneous. It is a practice of many estimators to add from 5 per cent to 10 per cent to their estimate for miscellaneous and contingencies. The more the detail of the estimate, the less the necessity for a large amount for this item. Miscellaneous items can cover possible inefficiency of laborers, strikes, raise in rates of wages, or unforseen contingencies. From 5 per cent to 20 per cent of estimated labor cost is a fair allowance. It is an item used to insure against oversight or ignorance in making up an estimate. On materials the prices of which can be obtained before putting in a bid, there is no necessity for this.

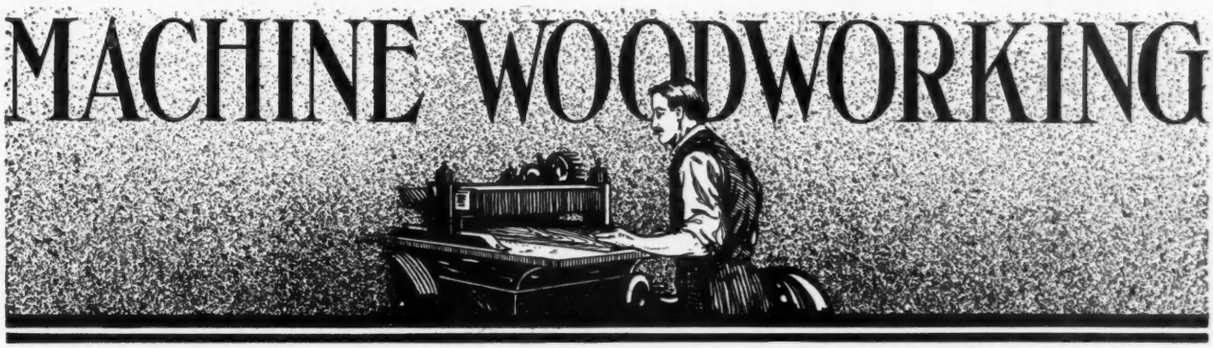
Field Sub-contracts. Sub-letting often results in low cost of work, because a sub-contractor who gives all his attention to the work can frequently get a small job done to better advantage than a large contractor who has not so much time to devote to details. One contractor can generally manage several sub-contractors on a job much more satisfactorily than several independent contractors can be managed by the architect.

It is then necessary to decide upon the percentage to be added for overhead charges. These can vary from as low as 4 per cent to as high as 22 per cent, depending upon the kind of organization and the distribution of expenses. It will be noted that a number of the items mentioned are overhead; and it is well to itemize as many of these as possible in order to make the percentage to be added include as little as possible, and thus be nearer the truth.

Profit. The estimator can figure his grand total of cost, to which should be added a percentage for profit. On small work where the risk is large, this should be high; and on large work where the risk is small, it may be as low as 10 per cent when there is competition. The profit should not only take care of the risks of the business that cannot be or are generally not included in the above items; but it should also take care of the compensation to the stockholders, or to the contractor himself for his time and skill and risk in organizing the business and keeping it going. Thus, on certain work, 25 per cent or 30 per cent is not an excessive profit.

Sprinkler Tank Failures Considered

At the recent session of the consulting engineers of the National Board of Fire Underwriters and the executive committee of the National Fire Protection Association several collapses of sprinkler tanks were considered and plans were made for barring from the support of tanks all material subject to disintegration by the weather. It is possible also that the amount of water required in gravity tanks may be reduced.



Why Machine Woodworkers Get Hurt

By Charles Cloukey

PERHAPS the most deplorable thing about the machine wood-working business is the liability of the operators to accidents of a more or less serious character. It is so common a sight among the mill men to see maimed hands that they are almost considered a passport to a job requiring a man of experience.

Notwithstanding the fact that we are all familiar with stories of mishaps which have come under our own observation, there still remains in a majority of cases a lack of authentic information as to why the accident happened. It is not a distinction without a difference when I say that we are many times able to tell how the thing happened and are still unable to ascertain why it came to pass. In other words, we know that a man got cut by putting his hand against the saw, but neither he nor others could tell why he came to do it.

It may be well to consider planing mill or factory accidents under three separate heads, namely, those caused by the ignorance and the inexperience of the operator, those caused by the carelessness, daring or absent-mindedness of the workmen, and those affecting the "innocent bystander."

Strange as it may seem, there are fewer accidents caused by ignorance than there are by the lax attention of the older hands who have got into the habit of running their machines. I may say that careless habits are bad things to acquire in any branch of industrial work, and, while the beginner may take the chance of ignorance, occasionally, he seldom fails to give his whole mind to the operation in hand. As he grows in experience, he is apt to relax his vigilance, forgetting that there is no change in the machine or in the wood, but that his familiarity is all in his own mind, and is no protection to him if he gets in the way of the dangerous parts.

It is a fact that the machines considered the most dangerous in the shop, like the shaper, jointer, rip and variety saw, are not hazardous machines at all. Their moving parts are all confined within a rigid frame and cannot jump out and cut one. The only way a man can get cut on one of these machines is to come right up to it in some manner. Some one will say that the knives will catch the wood and jerk the man's hand into the cutters, which is all very true, but it is the fault of the feeding, the way he holds his stock or the way he doesn't hold it.

Of all the accidents coming under my observation during the past fifteen years, only one occurred on the swing cut-off saw, and in that case the cutter let his hand slip against the saw when it was back of the cutting table. But one accident was noted on the band saw, and that not a serious one, in which the sawyer got a gash cut in his fore arm by pulling the saw off the wheels when in motion. Dozens of saws break and fly off the wheels, some of them tangle up in the lower wheel, but I have never seen or heard of an accident from this cause, whether the machine was fitted with guards or not.

Speaking of band-saw cuts reminds me of a man in our employ a good many years ago, who was working at the band-saw in cold weather, wearing a thick pair of gloves. Coming up to him one day as he was just finishing a cut in a piece of lumber, he looked around from his work, but kept pushing the piece forward with his thumb until he finished the wood, sawed through his glove and started in on the thumb. His mind then returned to his work.

And this, in turn, brings to mind the pernicious habit some men practice of going up to a machine man when he is busy and taking hold of his arm or suddenly distracting his attention in some way. Some men are so constituted that if suddenly disturbed from a state of mental concentration, they will start or jump violently, and every mill man knows that such a performance is liable to hurt some one.

One other way in which a man may get hurt without its being his own fault, is to be struck by flying pieces of timber let loose by someone else. I once heard of a turner whose lathe was in front of a rip-saw table, and who had the top of his head caved in by a stick thrown back by the machine. Another man whom I knew, and who was foreman of a mill, had a narrow escape from a horrible death in something

of the same manner. While he was casually passing a door in front of which stood a rip-saw, a large and very sharp sliver about twelve feet long was thrown back, point first, and passed between his arm and his side, tearing its way through his coat.

For two or three years while the writer had charge of the machinery of a mill, the emery wheel at which the grinding was done was directly in front of a rip-saw table, and it was one of his first precautions to put up a "back-stop" on the saw side of the emery wheel. The wisdom of this move was verified by the dents in the board made by the lumber thrown back by the saw. Even the older sawyers on the hand fed machines will occasionally let one get away from them, and when they go they don't go slow.

Perhaps more accidents occur on the rip-saw by short feeding than from all other causes put together. By short feeding, I mean that the sawyer fails to push the ripped piece clear of the back of the blade before he starts to shove it away from the fence or guide. The consequence is that the teeth of the saw coming up through the table, catch into the underside of the wood and start the piece over the top of the saw. The first and involuntary impulse of the sawyer is to grab the board and hold it from being thrown, with the too frequent result of cut or severed fingers. Sometimes the man evades a cut, but the board strikes him in the stomach or abdomen with serious if not fatal consequences.

It is worth something to know when to hold on and when to let go when one gets in a tight place or has a piece about to be jerked away from him. The trouble with many operators is that they have never given the subject any systematic thought, and when the time of crisis arrives they are governed by whatever impulse comes naturally, and not by the impression left through deliberate thought.

Let a man think repeatedly what he would do if such and such a thing should happen or such a condition arise, and he will do that same thing on occasion before he has time to think about it. For instance, if a man is feeding a long piece of lumber through the rip-saw and has a good grip on it, he can hold it from being thrown back out of his hands, or at least keep it from striking him with much force. If the timber is heavy, the saw will cut through into it without being able to start such a heavy weight so suddenly. So it may readily be seen that if a plank which a man is able to handle, will not be thrown back on account of its own weight, the man will be able to arrest the flight of a lighter piece if he grips it in time.

The shorter pieces which are so dangerous to handle carelessly are not dangerous to handle carefully. The main precaution is to be sure and feed them so far past the saw that there is no possible chance for them to be caught by the upper-cut. If one should be caught, the safest thing to do is to let it go where it will and dodge it if possible. Never, never try to hold it. Heap this attention on your mind until your involuntary impulse will be to let go if one starts back. It is a good plan to stand to one side and let a few small blocks pick up and fly back so as to know how it feels to have one taken from your hand. However, if you cannot keep your mind concentrated on your work, it would be better not to try such practice, for you might involuntarily grab on just as the saw got hold and then you would be in the same danger as in case of an accident.

There is some danger of short stuff throwing back or sideways while being fed by hand through the self-feed rip-saw while the feed gear is up, on account of the awkward position forced upon the sawyer's arm, but it is in this, like other skillful operations about cutting parts, a matter of the mental care more than the muscular precaution.

Does a man of necessity become careless when he grows older in the work with cutting machines? Most assuredly he does not; neither does he become compelled to take any chances which he can avoid, in the way of adjustments, appliances and attention. The latter is by far the most important feature of precaution, and any good machine man who rivets his attention on his work, sees that he puts the right piece in the right place, watches the grain of the wood, watches his cut, has the necessary help, and follows up his beginning to a full completion, is almost sure to keep free from accidents of a serious character.

When I speak of completing the work started, I mean to finish up a cut so that it is fully done and out of reach of the cutting parts of the machine before letting up on the strain of putting it through. One may say that ripping or jointing a piece of timber is not a strain on the operator, but the fact that accidents happen when the attention is distracted, would tend to prove that the worker of high speed machines is under a strain all of the time when he is doing his best to turn off work and to protect himself from injury.

When looking over his hands the writer finds many scars from cuts, but they are mostly on his left hand and have grown up with him from boyhood. Some from glass, a few from the butcher knife, which was called into commission during the numerous periods when the jack-knife was lost, but most of the scars are the thin, white lines left by the faithful and overworked "jack." On the right are a pair of scars where a felon was opened, another and longer where a bad case of blood poisoning was given drainage, but from machine knives, not a scar.

Many times have I been congratulated on having come through a decade and a half of all kinds of machine experience and operations, with all of my fingers intact, but I always say that I have not yet been at it long enough to become careless. When in charge of work I have done many things myself rather than ask one of the men to do work which seemed to me

and to them as unusually hazardous, but in all these cases it proved out that close attention and steady nerves took all the real danger out of the operations.

One trouble with most men is that they will not take all the precautions they know to be right and proper, preferring to go along with the work a little faster and take the chances. If they take off the jointer guard in order to do some rabbeting, perhaps they are so crowded that they will leave it off indefinitely, or perhaps if it is already on the machine, they will neglect to pull it over close to their work so as to get the benfit of its safeguard.

The men who get injured by belts, pulleys, shafting and set-screws are so few compared with those who get cut and bruised in other ways, that it is hardly necessary to add a word of warning for their benefit; however, it will not be out of place to say that a belt should never be put on by hand when a pulley is running at a high speed. If the belt cannot be run on with a stick in the hand, the machinery should be slowed down until the belt can be safely handled with the bare hand.

And speaking of bare hands puts me in mind of a boy not long ago, who was put to work in the sash and door department, and started to run the sash relisher. It is one of the type which bores into the tenon and then rips off the relish with a small rip-saw. This boy was afraid of splinters so wore a pair of old cotton gloves, which got into the relisher bit and twisted and cut one of his fingers quite badly. This saw has a guard over the top, but the foreman of the department got a bad cut on the back of his arm at the elbow on it in a very peculiar manner. The belt comes up through the floor, to the counter, which is fast to the machine just under the saw, and one day he was giving the counter some attention and as he straightened up he struck the under side of the saw with his arm, and as the machine was in motion, he got his lay-off right there.

But why multiply instances which any old mill man can duplicate and add to almost indefinitely? It is not the knowing that these things happen that tends to prevent them, as I have endeavored to show, but that eternal vigilance, which is the price of manual freedom from accidents, and if a talk of this kind will be the means of making some one always careful, I shall feel that it is not all in vain.

Obligation to Give Guaranty Against Leakage of Roof.—It cannot be said that an agreement by a sub-contractor, constructing a gravel roof on a building, to furnish a guaranty against leakage, is substantially performed by constructing a roof to which no present exception is taken, for the guaranty may be as valuable as the roof itself, and whether it is cannot well be ascertained prior to the end of the stipulated period.

Nichols vs. Roberts, Supreme Court of Iowa, 122 *Northwestern,* 842.

"Extras" Not Properly Authorized.—A stipulation in a building contract that no work shall be considered "extra" unless a written order for it shall have been given to the contractor by the architect defeats a recovery for extra work unless the contractor first received the architect's written order therefor, unless the owner or his authorized agent waived written orders. The stipulation is not so modified by a provision making the architect the supervisor of the building, with authority to order and direct in its construction, that the owner is bound by an oral order of the architect, being the agent of the owner for the purposes of the contract by its provisions. A stipulation in a building contract that in case of payment a certificate shall be obtained from the architect, reciting that the work has been done in accordance with the specifications and that the payment is due, makes the certificate of the architect a condition precedent to the maintenance of a suit for compensation, in the absence of a showing of a fraudulent, malicious or unreasonable refusal to issue the certificate or a waiver of the condition, or inability of the contractor to obtain the certificate by some cause over which he has no control. A stipulation in a building contract that the owner will not be responsible for any damage which the contractor may sustain in material or work at the hands of any other contractor relieves the owner from liability for damages sustained by the contractor through the negligence of other independent contractors of the owner.

A mere payment of a part of a claim, for which the party making the payment is not liable, is not an implied promise to discharge the remainder of the claim. Where a building contract stipulated that the owner should not be responsible for any damage which the contractor might sustain at the hand of any other contractor, a payment by the owner of a part of a claim of the contractor for damages through the negligence of another contractor was not a waiver of the contract.

Bannon vs. Jackson, Tennessee Supreme Court, 117 *Southwestern Reporter* 504.

Annealing Copper and Brass

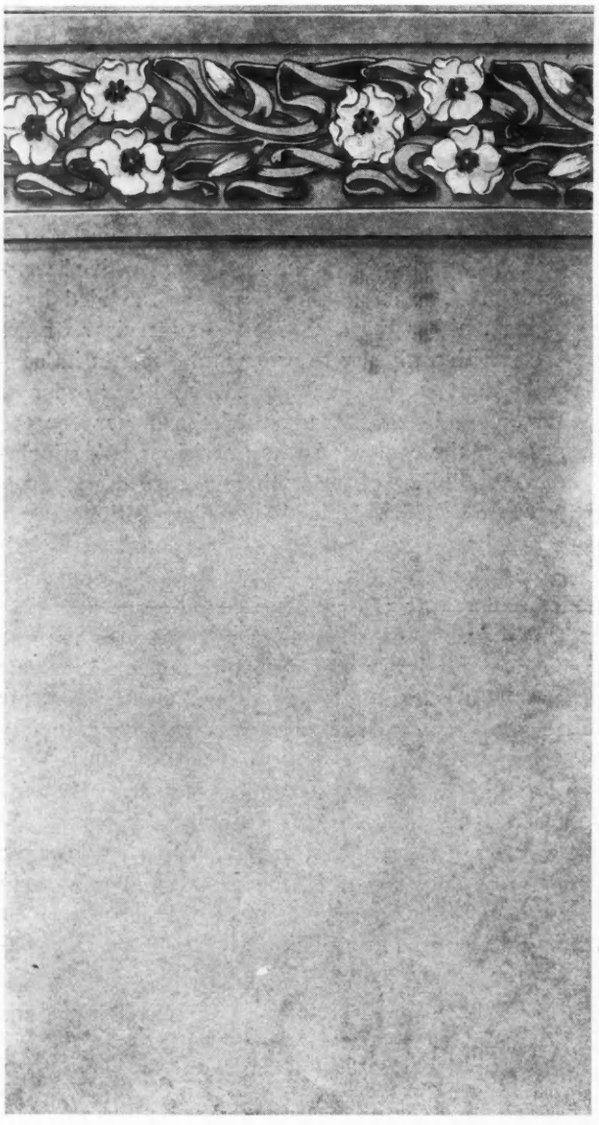
To anneal brass or copper, heat it to a red heat and cool it suddenly in cold water, copper being annealed in the same way that steel is hardened. Copper which has been annealed in this way will be very soft, much like lead. After brass or copper are hammered, they will harden and become springy, so we find when working brass or copper, where much bending or hammering is done, that the metal requires annealing frequently

Glaze Color Paints for Side Walls and Ceilings

THE RETURN TO POPULARITY OF PAINTED INTERIOR WALLS OF AN IMPROVED TYPE—POSSIBILITIES OF STENCILED DECORATIONS AND ARTISTIC COLORING

By Clyde E. Horton

THE words "painted walls" immediately calls up visions of the glossy walls grandmother used to have in the kitchen. The old prejudice against such a finish arises when the wall and ceiling treatment for other rooms in the house is under consideration. Fortunately, now this prejudice is rapidly disappearing and with good cause. The painted or rather decorated wall up-to date is not like the kitchen of old. The painted wall does not necessarily mean the glossy finish with the sky-blue color, but rather the soft velvety and rich effects which can be obtained in any color desired to match any fabric made, and which is sanitary, wholesome and surprisingly durable. One needs but to study the decoration of our most expensive dwellings to determine the practicability of the painted or—using a more proper term—decorated walls. These delightful finishes with a delicate stencil decoration are becoming more popular, and now that they can be more readily obtained, their use will be greatly increased.



One of the New Effects in Painted Walls

The question of wall treatment is one which should receive first consideration in home decoration. It is the foundation upon which all other decorations are based. Some of the qualifications of a good wall are as follows: First, it must conform to the general scheme of the room in color and design; second, it must be restful to the eye and not too prominent; third, it must form a perfect background for pictures. Over-decorated walls and wall paper designs in scrolls and glaring decorations are to be avoided. The plain effects form an important factor in the general scheme of the room and are gaining in popularity. The ideal plain wall is unquestionably the painted one. Such a wall is best adapted for stenciling. Walls are best when tretaed with a rich flat finish, which can be washed readily with soap and water without losing their original beauty. With such a foundation to work upon, the most satisfactory and lasting results are assured. Either whitewash or water paints are permanent enough to justify elaborate stencil decoration.

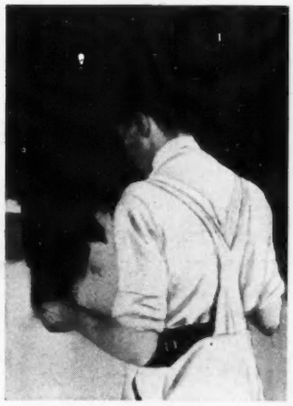
The decorated wall does not necessarily demand a costly foundation; in fact, equally attractive results can be obtained on rough or smooth plaster, as on canvas or other cloth coatings. Many kinds of fabrics are used for this purpose. Prepared decorative canvas is probably the most satisfactory. This material can be obtained in various weaves and weights. Burlap is frequently used as a wall coating. It can be beautifully treated with flat finishes.

There is an increasing demand for rich, velvety, yet durable flat effects in the artistic decoration of interior walls and ceilings. The more refined and harmonious results desired, the more necessary it becomes to combine delicacy, richness and depth of color with a flat finish.

A flat finish of this character has these important advantages. Unlike ordinary oil paint, it is very finely ground in high grade Japan Liquid, uniform in color, has easy working and good flowing qualities, splendid covering capacity and it does not require stippling to insure a uniform finish. It can be applied with a full-sized kalsomine brush, leaving an absolutely smooth surface without brush marks or laps. It may be washed with soap and water without danger of rubbing up or spotting.

The greatest problem in wall decoration, however, has been to produce a flat glazed effect, which is at the same time deep, rich and transparent in tone, and, when necessary, blended and mottled. In addition to these qualities, such a finish, in order to be perfect, must be capable of soap and water washing. One of the larg-

est paint and varnish manufacturers has recently solved this problem by placing on the market a system of beautiful flat glazed effects. The greatest advantage of such finishes lies in the fact that they can be made



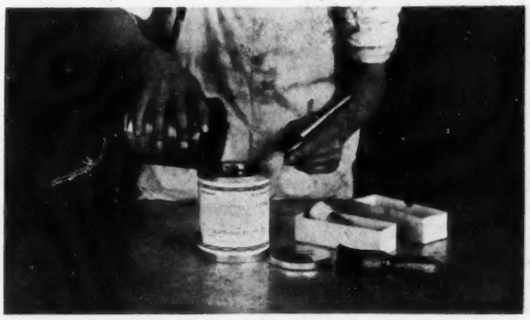
Roughly Applying Mixture

Stippling with a Crumpled Cloth

to conform with any scheme of decoration. They can be blended from light delicate tones of the ceiling to dark, rich colors at the base-board. At the same time the final surface is not glossy and is extremely sanitary.

These system effects are produced over a flat finish groundwork. Two coats of this flat-finish are quite sufficient, particularly when preceded by a varnish or glue sizing. These effects can be produced equally as well over rough or smooth plastered as over prepared canvas, burlap or muslin. The system may be divided into two parts. First, the groundwork produced by the flat oil paint, and, second the glaze coating.

This glaze coating is produced with one coat of a special glazing liquid which has been previously tinted to the desired hue with glaze color. These glaze colors come in paste form and must be reduced or thoroughly mixed with the glazing liquid, which is of the proper



Tinting Glazing Liquid with the Glaze Colors.

consistency for application to the wall. The accompanying illustrations show the exact method of mixing the colors. This mixture can then be roughly applied with a good-sized wall brush and blended or mottled by stippling. When two or more glaze colors are necessary to secure a certain effect, these colors should be thoroughly mixed together before the liquid is added. To secure a lighter shade of the same tone near the top of the wall, use more liquid in the mixture. For a mottled effect, it is necesary to use two mixtures and apply them to the wall with different brushes. They are roughly applied in spots (see illustration) and then blended together by stippling with a brush or frequently with cheesecloth or a cotton rag. As these materials do not set quickly, they can be roughly applied over a large surface of wall, and stippled or blended within ten or twenty minutes after application. Glazing liquid of this kind will cover 500 to 700 square feet per gallon, depending upon the surface to which it is applied. For medium strength of color, it is estimated that one pound of glaze color will be sufficient for a room 14x14 feet.

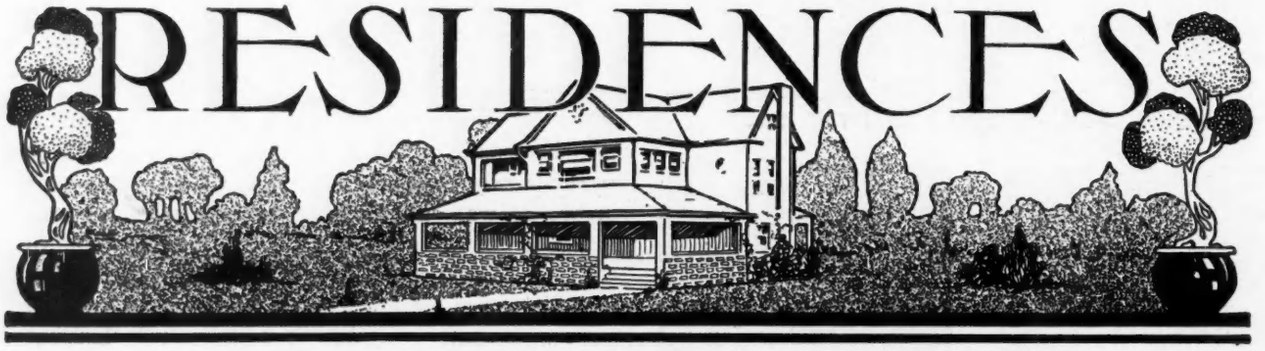
The beauty of such a finish lies in the fact that the glaze mixture is transparent and that when applied to the wall this quality permits the foundation coat of flat oil paint to blend through the glaze. It is in this way that the rich, deep tones are produced. At the same time these system effects can be produced in colors closely matching draperies and fabrics of any kind. They lend themselves most beautifully to any scheme of decoration. They are a big advance over other wall treatments.

Mixing the Glaze Colors.

Special Plan for Commission City Hall

Commission government in Des Moines, Ia., has scored by initiating a commission style of architecture for the city hall. A new structure is being erected and plans for it have been drawn with the especial idea of housing commission government. The main floor, which is two stories high, is one immense room in which all the city's business is done. At each corner of the big room is a private office of a commissioner, while the mayor's private office is located at one of the sides. The officers coming constantly in touch with the public are located behind latticed partions arranged about a rotunda, so that the citizen has no trouble in finding on that floor just the officer he wants to see.

The building especially made to house the commission is typical of commission government itself. It comes directly to the people it serves. All red tape and mystery are eliminated, and the business of the public transacted in a direct and efficient manner. It is easy to find the responsible head, and when he is found he has nobody upon whom to shift his responsibility. He must act and take the consequences.

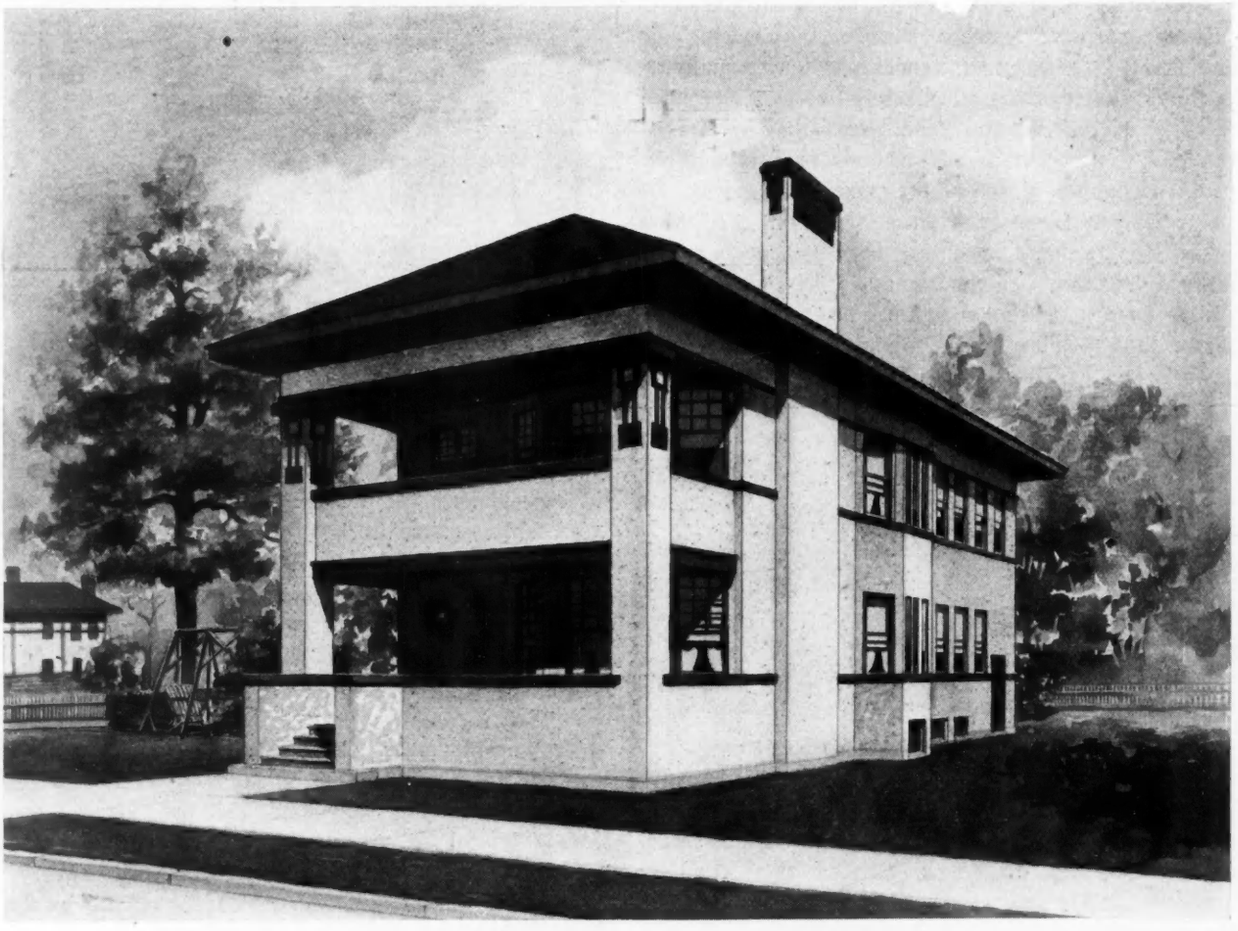


Plans for Modern "Two Flat" House

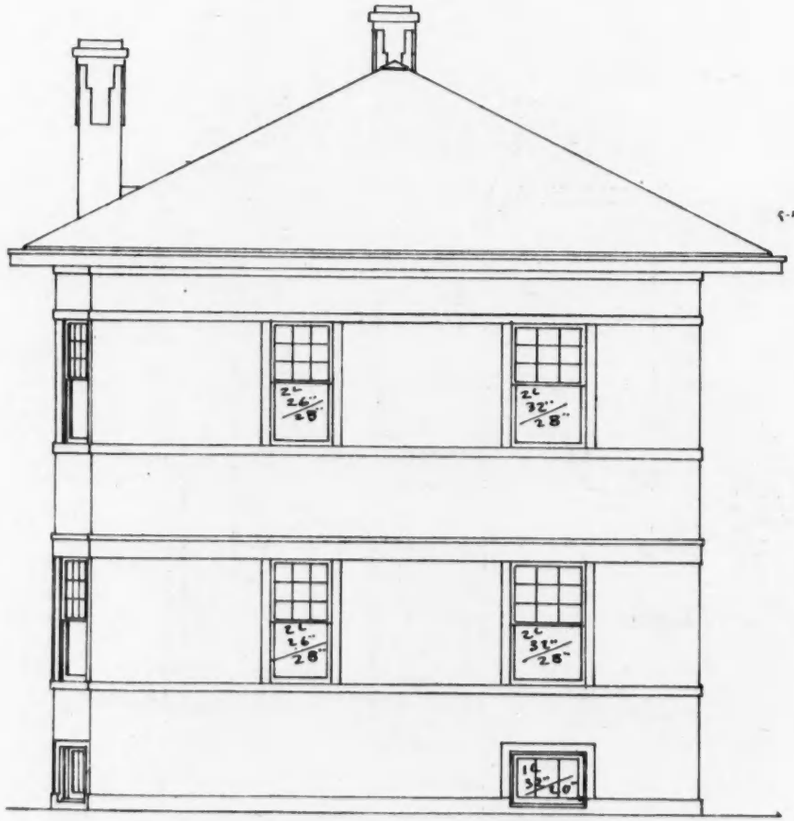
COMPLETE SET OF ARCHITECT'S SCALE DRAWINGS OF A MODERN RESIDENCE FLAT, EACH APARTMENT CONTAINING FIVE LARGE ROOMS

WHILE the city apartment or flat building, in its present development, is acknowledged to be not only the most convenient and home-like for living purposes but also the finest kind of an investment for the owner, nevertheless there is quite a feeling of prejudice against this kind of building in a great many places. In villages and strictly residence suburbs especially, many look askance at the straight brick walls and the ugly exposed outside stairway of the average "flat." Nor can we blame them. No one wants to see their beautiful residence sections marred with such buildings. And fortunately this is not necessary. All the economy and convenience of the city two-flat building may be had, combined with an attractive exterior closely resembling an ordinary house. Such a building would be a welcome addition to any neighborhood.

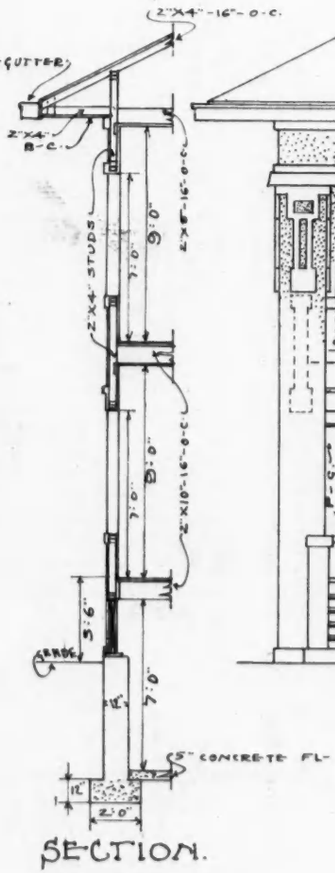
The accompanying perspective and plans illustrate a remarkably well-designed building of this kind, which was recently planned for Dr. A. S. Youngs of Kalamazoo, Mich. The exterior is of gray cement plaster with wood trimmings stained brown. There are five rooms on each floor, besides bath room, pantry and five closets. Every room is exceptionally well lighted. The two large front balconies and the enclosed back stairs are special features.



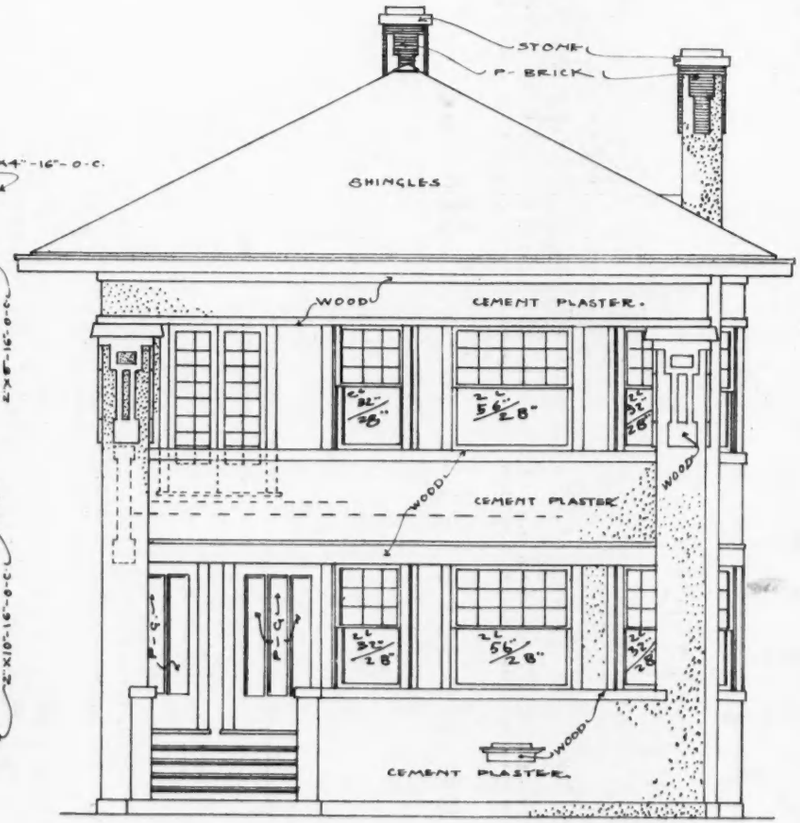
Two Flat Building of a Design Suitable for Strictly Residence Sections



REAR ELEVATION.



SECTION.



FRONT ELEVATION.

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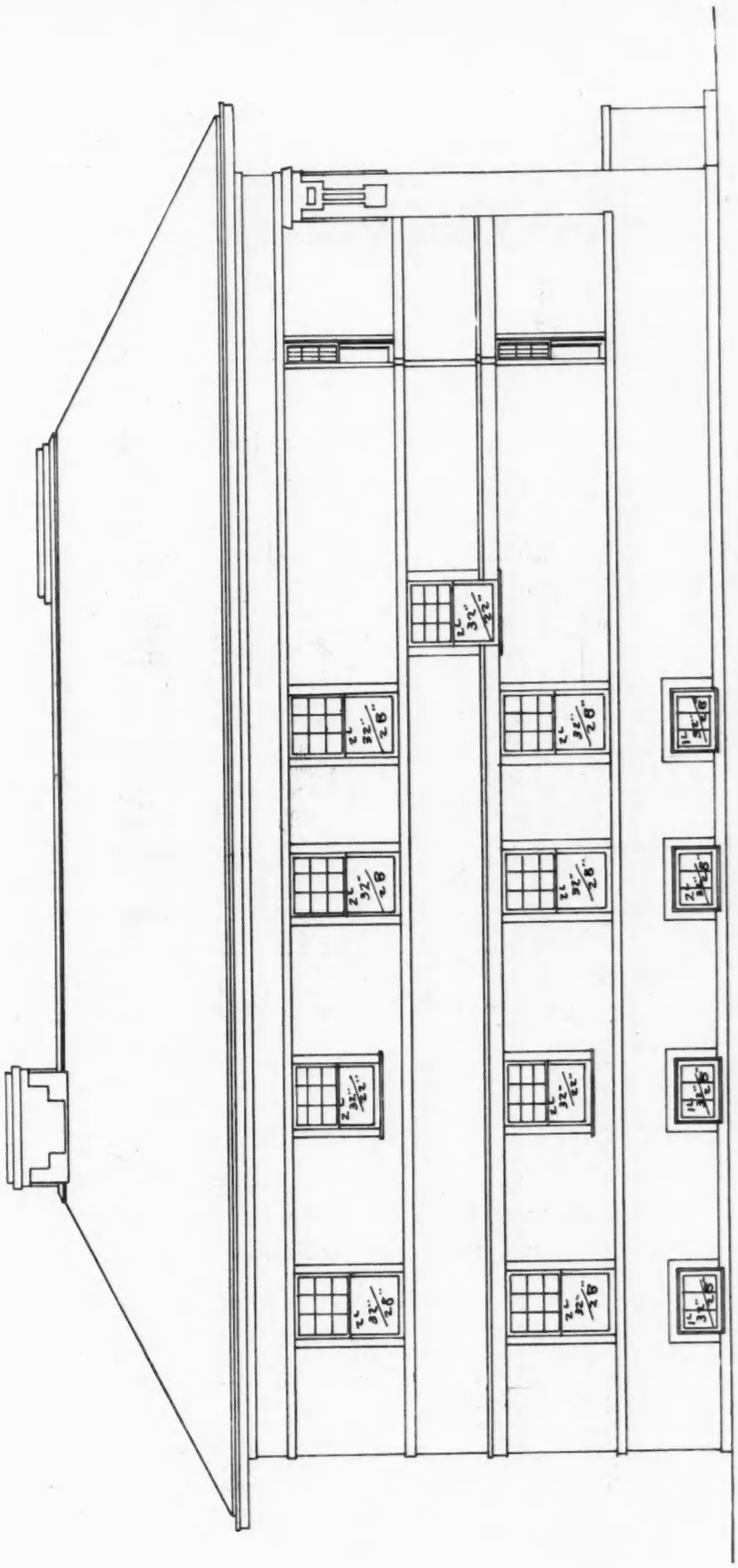
(PERSPECTIVE ON OPPOSITE PAGE)

(PERSPECTIVE ON PAGE 62)



SIDE ELEVATION.

(PERSPECTIVE ON PAGE 62)

Building Operations in 1909

The United States geological survey has issued a statement giving comparisons of building operations in fifty-one cities for four years. Their cost in 1909 was $771,937,564.

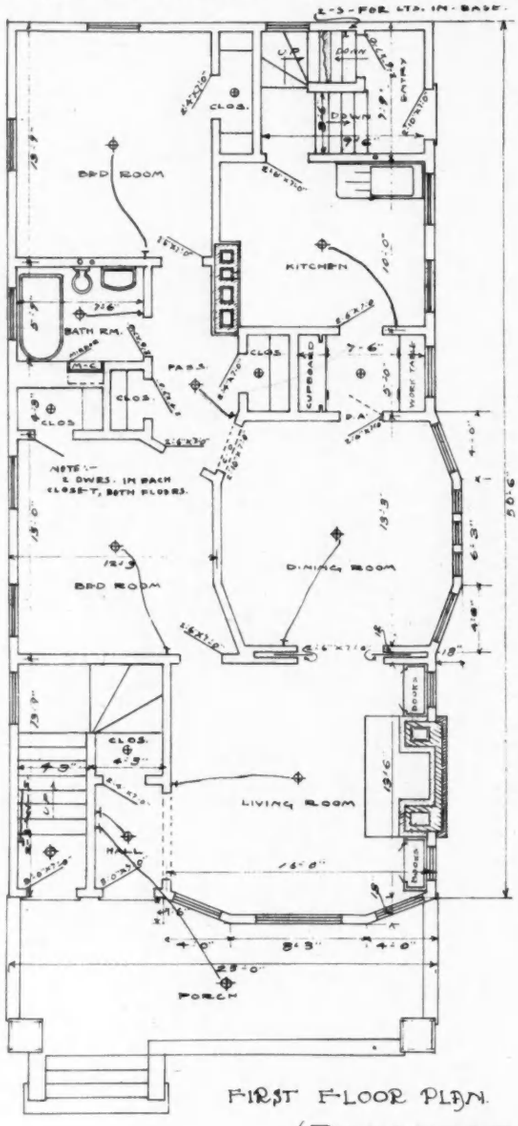
The increases and decreases for individual cities in 1909 compared with 1908 are not significant, because 1908 was not a normal year. The largest increase reported for 1908 was $8,141,720, or 13.78 per cent, by Chicago, and the next largest was $4,446,700, or 3.92 per cent, by New York; the increases in 1909 by these two cities were respectively $28,003,580, or 41.65 per cent, and $68,228,095, or 57.91 per cent.

Brooklyn, which had the largest decrease ($25,427,604) in 1908, showed the third largest gain in 1909—$18,402,061.

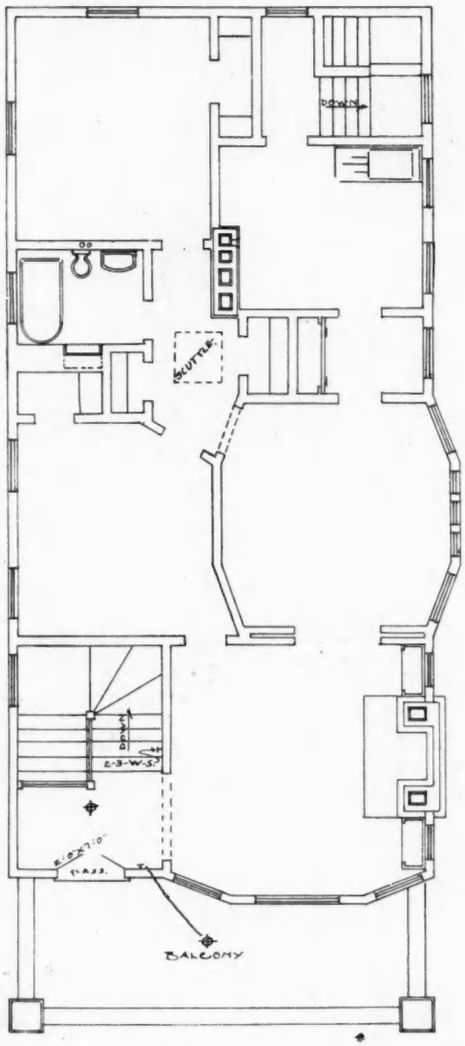
Of the cities that showed decreases in 1909, San Francisco had the largest, $5,484,273, or 17.32 per cent; Dayton was next, with $1,533,780, or 47.42 per cent, the largest proportional decrease, and Oakland was third with $1,002,051, or 15.85 per cent. The decreases in these cities may be ascribed to local causes. The significant decrease in San Francisco indicates that the building activities of that city probably have reached a nearly normal condition after the abnormal condition following the great fire.

The average cost of operations under the total permits issued in the fifty-one cities was $3,616 in 1909, against $3,243 in 1908. In New York the average cost per building was $24,387 in 1909, against $19,305 in 1908; in Chicago it was $4,341 in 1909, against $6,327 in 1908; in Brooklyn $4,672 in 1909, against $4,259 in 1908; in Philadelphia $2,480 in 1909, against $2,107 in 1908; in San Francisco $4,536 in 1909, against $4,706 in 1908.

Seattle had the largest number of new wooden buildings, 7,355, and Los Angeles was second with 5,284 buildings. Chicago was the leading city in cost of wooden buildings, with a total of $13,532,880; San Francisco was second, $12,257,683; Seattle was third, $9,843,805. Reading was the only city that reported no wooden buildings erected.



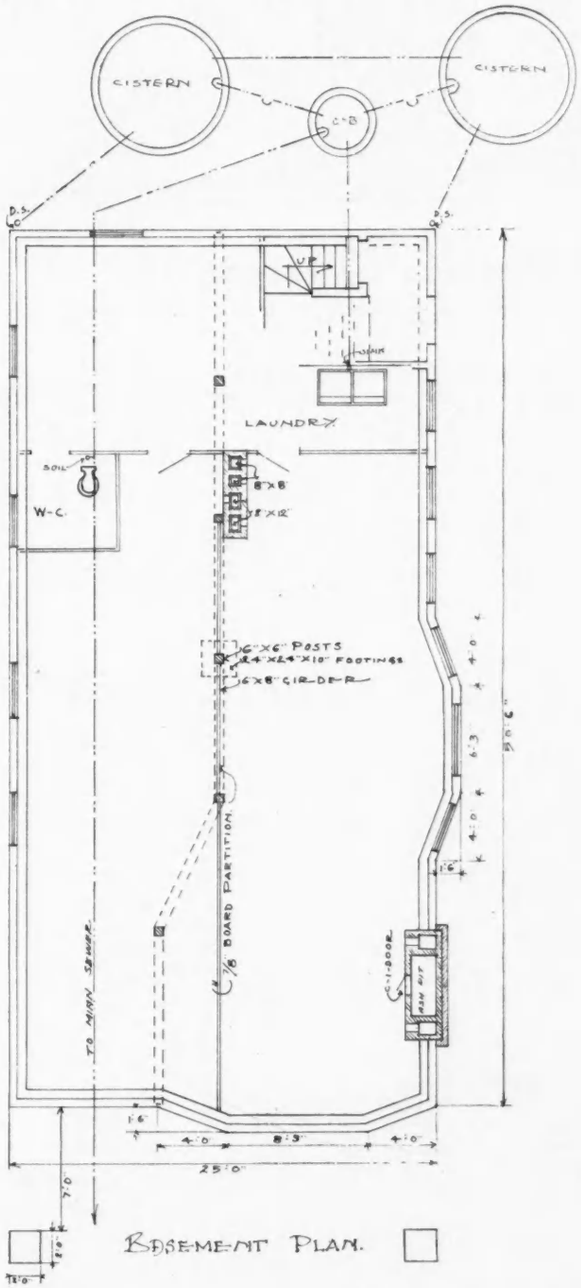
FIRST FLOOR PLAN.



SECOND FLOOR PLAN

(PERSPECTIVE ON PAGE 62)

New York reported the construction of fire resisting buildings at a cost of $181,918,337; Chicago was second with a cost of $79,105,500; Brooklyn third, $54,658,721; Philadelphia fourth, $45,570,770; St. Louis fifth, $22,422,929, and San Francisco sixth, $13,124,987. The average cost of new fire resisting buildings in the fifteen cities reporting the greatest cost for this class ranged from $3,151 in Philadelphia, to $65,384 in New York.

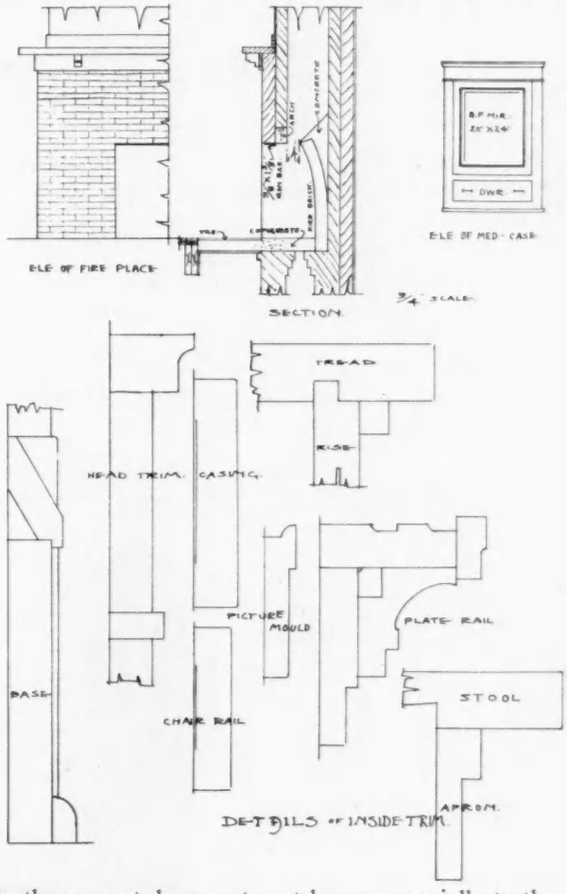


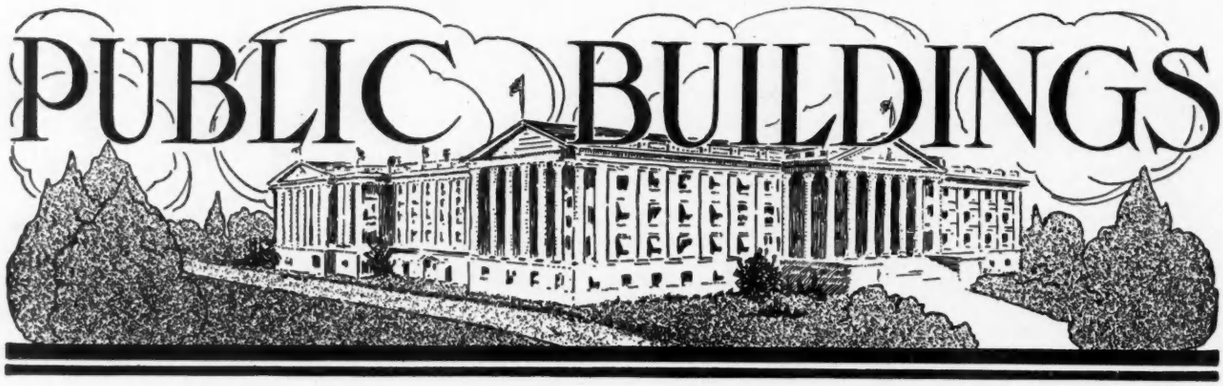
(PERSPECTIVE ON PAGE 62)

In new brick buildings New York was the leading city, Brooklyn second, Chicago third, and Philadelphia fourth. Chicago took the lead in stone buildings, New York being second, and San Francisco third. Chicago was in the lead in concrete buildings, with Seattle second and Philadelphia third. Out of the 128 cities considered, 79 erected new concrete buildings, 1,791 in number, which shows the widespread use of this material.

New Method of Sound-Proofing Houses

The latest suggestion for rendering walls and partitions of apartment or flat houses soundproof and thus prevent the transmission from one room to another of discordant sounds, such as piano playing, the crying of children and other forms of vocal music, is to sheath the partition studs with tin or aluminum. It is a well-known fact that one of the serious drawbacks to life in the present-day apartment house, especially to those people desiring quiet and freedom from nerve-racking noises, is the absence of soundproof walls, floors and partitions. The above suggesstion for sound-proofing grows out of experiments in acoustics recently made by a writer of an article in a German periodical, who discovered that by lining a wooden telephone booth with tin all noises were excluded and it was possible for a person within the booth to carry on a conversation over the wire without being disturbed in the slightest degree by loud talking or other noises outside the booth. The German writer appeals to architects to introduce tin or aluminum in the walls of houses generally to deaden sound, for he is convinced that if this were done the neighbor's daughter's piano and voice would cease to be a disturbing factor in life, except, of course, in summer, when all the windows are open.





Village Fire and Police Station

RENDERED PERSPECTIVE AND FLOOR PLANS OF A MODEL MEDIUM SIZE BUILDING FOR VILLAGE FIRE ENGINE HOUSE AND POLICE COURT

IN the great majority of cases there is no building of a public nature to which such scant attention is given, as to its design and general appearance, as the fire engine house. Such a building may do very well as a combined watch tower, lounging room and livery stable; yet from its prominent and central location, as well as from its importance to the community, the fire fighting station should be treated architecturally. It should be carefully designed so as to be well adapted to the special needs of the case and at the same time present a dignified and attractive exterior.

The accompanying illustrations show a good example of this. The building is designed in the mission style, the necessary hose tower thus adding to the effectiveness of the design instead of being the eyesore that it usually is. The walls are of red brick and the cornices are stucco. The floor plans on the opposite page show the interior arrangement.

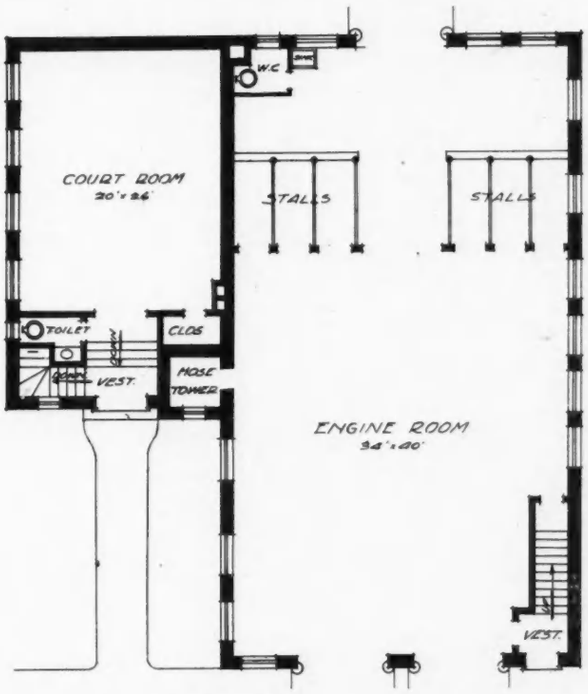
Cicero Fire and Police Station to be Located at Morton Park, G. W. Ashby, Chicago, Architect

Influence of Size of Building upon its Cost

In connection with an investigation of the cost of mill buildings, Charles T. Main, mill engineer and architect, of Boston, has established some interesting relations between the size of a building and its cost. He shows that there is an immediate decrease in cost as the width is increased, due to the fact that the cost of the walls and outside foundation, which is an important item of cost, relative to the total cost, is decreased as the width increases.

For example, supposing a three-story building is desired with 30,000 square feet on each floor.

If the building were 600 by 50 feet, its cost would be about 99 cents a square foot. If the building were 400 by 75 feet, its cost would be about 87 cents a square foot. If the building were 300 by 100 feet, its



First Floor—Engine Room and Police Court

cost would be about 83 cents a square foot. If the building were 240 by 125 feet, its cost would be about 80 cents a square foot. Of course the exact figures as to cost will vary year by year and with the locality, but the relative values will remain practically constant.

The minimum cost per square foot is reached with a four-story building. A three-story building costs a trifle more than a four-story. A one-story building is the most expensive. This is due to a combination of several features:

a. The cost of ordinary foundations does not increase in proportion to the number of stories, and therefore their cost is less per square foot as the number of stories is increased.

b. The roof is the same for a one-story building as for one of any other number of stories, and therefore its cost relative to the total cost grows less as the number of stories increases.

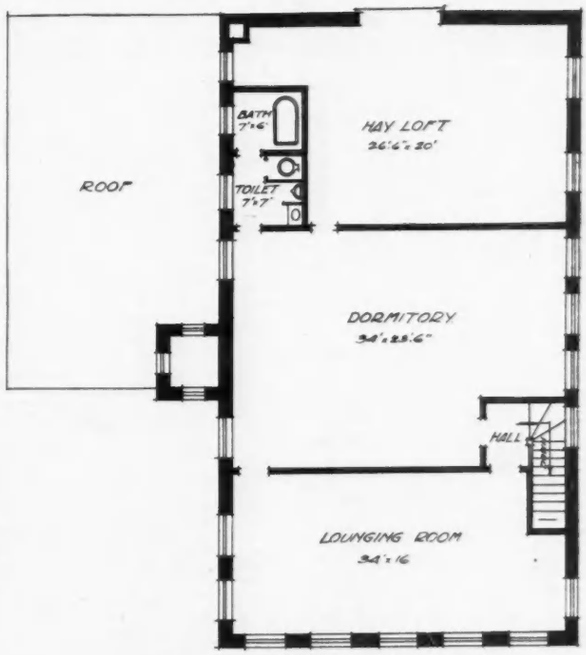
c. The cost of columns, including the supporting piers and castings, does not vary much per story as the stories are added.

d. As the number of stories increases, the cost of the walls, owing to increased thickness, increases in a greater ratio than the number of stories, and this item is the one which in the four-story building offsets the saving in foundations and roof.

The saving by the use of frame construction for walls instead of brick is in somewhat lighter foundations and in the outside surfaces of the building.

Value of Pintles for Columns

In a recent paper on mill construction, Mr. F. W. Dean of Boston, says of the use of cast iron pintles on wood columns: "There is another important



Second Floor—Dormitory and Storage

object gained by the use of pintles instead of having the columns butt full size against each other, and that is this: in case of fire sometimes a floor falls and it, or falling machinery, may push the columns below to one side, and pry the beams of the lower floor horizontally, thus forcing the walls of the mill out of place and probably causing that floor to fall also, by causing the beams to drop off the columns or beam boxes, to say nothing of the injury to the walls themselves. When cast iron columns are used pintles should be used for this reason if for no other. The old-fashioned way of having columns rest on top of beams, and especially when short pieces of beams, to spread pressure, are used on top of columns, is bad construction. Likewise it is bad to butt wood columns end to end because of the difficulty of supporting the beams at the columns, aside from the objections already mentioned."

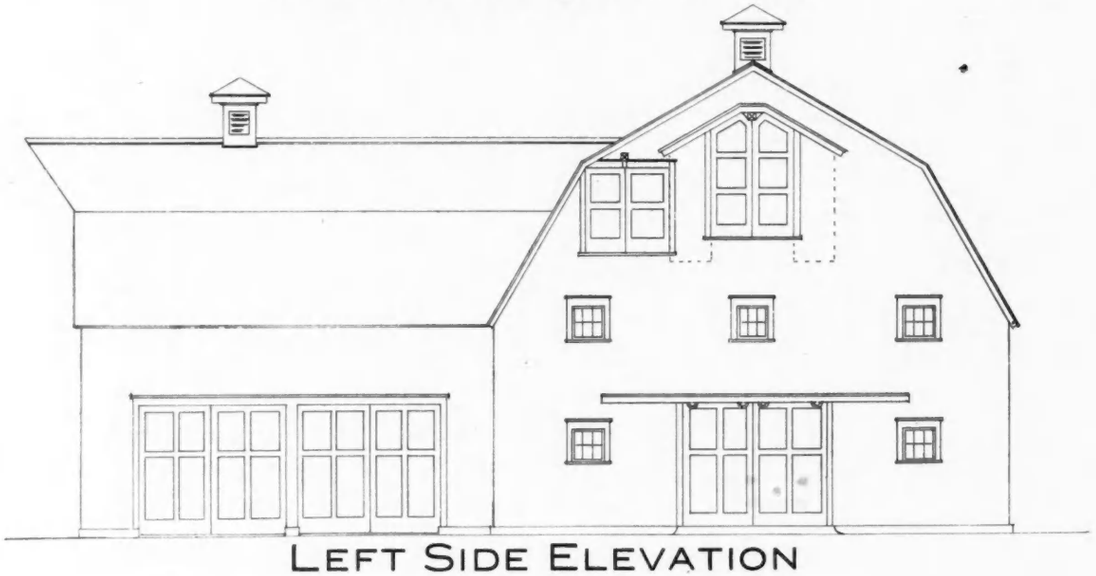
FARM BUILDINGS

Plans for Large General Purpose Barn

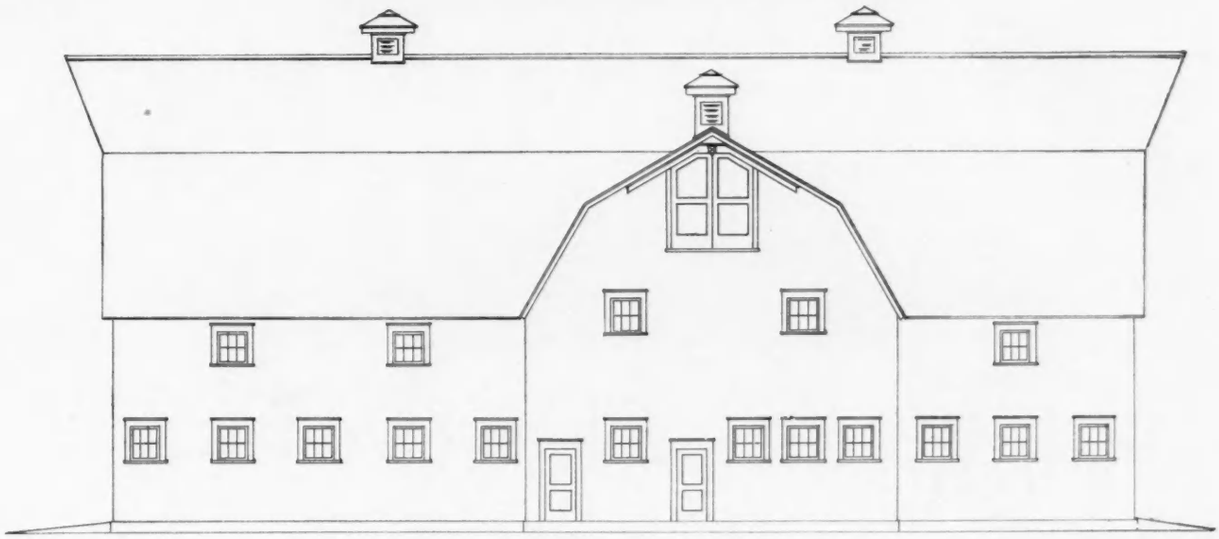
COMPLETE SET OF ARCHITECT'S DRAWINGS FOR A LARGE T-SHAPED, GAMBREL ROOF BARN—ACCOMMODATIONS FOR EVERYTHING IN ONE BUILDING

IN the accompanying plans is shown a large general-purpose farm building recently designed for Mr. H. I. Mills of Chicago. It consists of a main part 99 feet long by 60 feet wide, with an addition 36 by 40 feet projecting at one side. Both have full gambrel roofs, securing a large storage space for hay and grain on the second floor. The main section of the barn has a wide drive way extending from one end to the other. In this section are the horse stalls, place for buggies and wagons, and the work, harness and feed rooms. In the ell are cow stalls and place for implements.

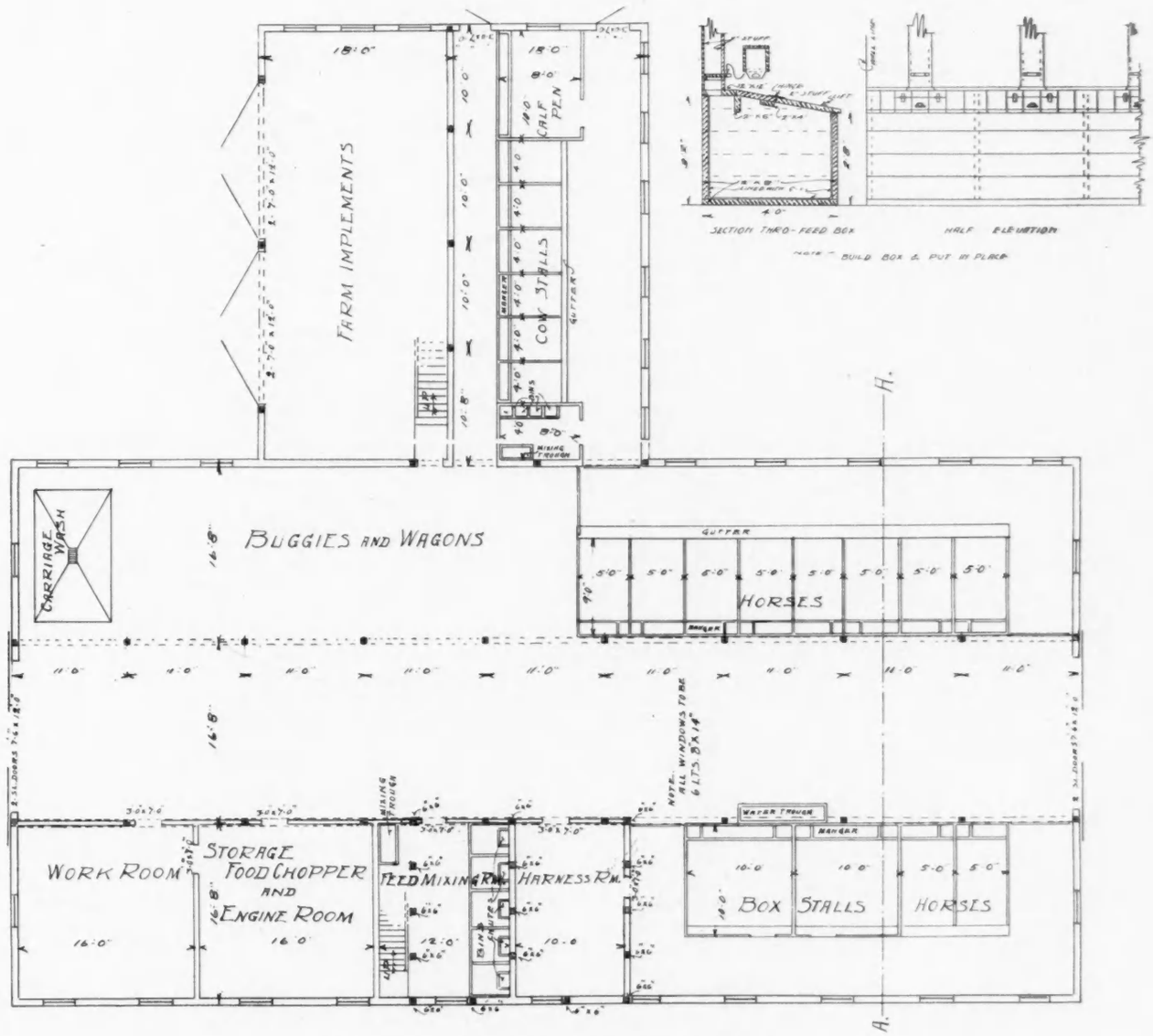
RIGHT SIDE ELEVATION



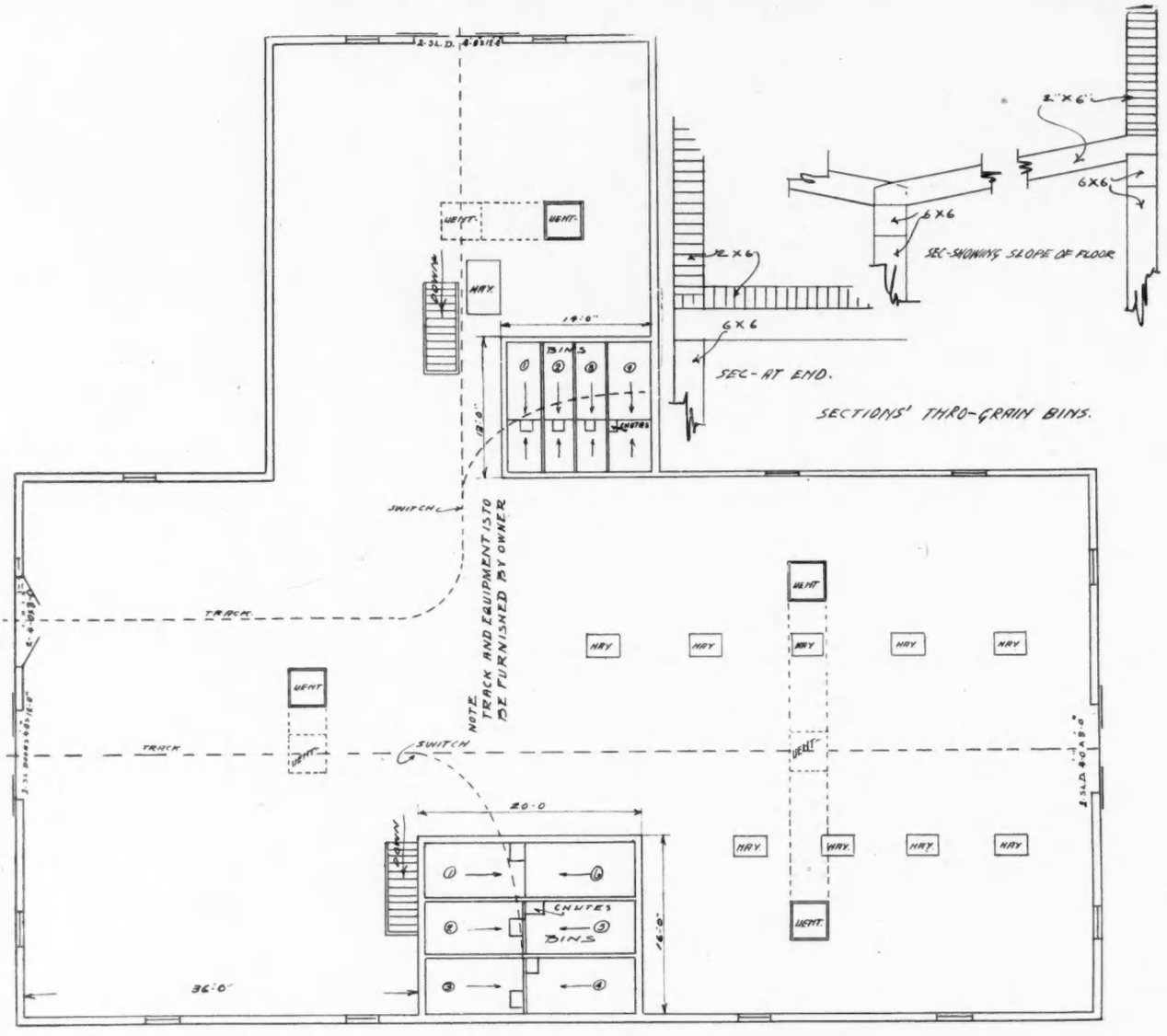
LEFT SIDE ELEVATION



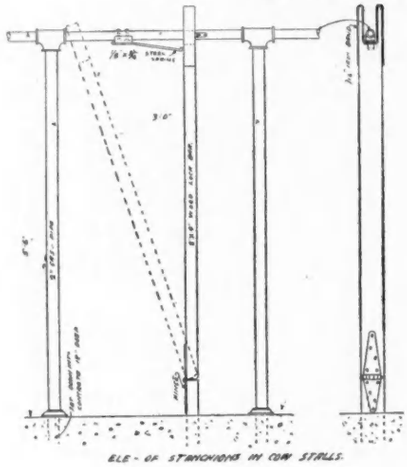
REAR ELEVATION

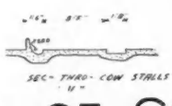


MAIN FLOOR PLAN

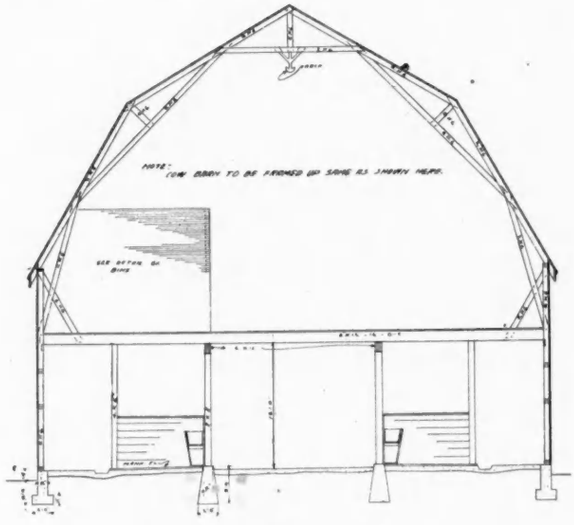


SECOND FLOOR PLAN





DETAIL OF COW STALLS



SECTION A-A.

A Cramped Stair

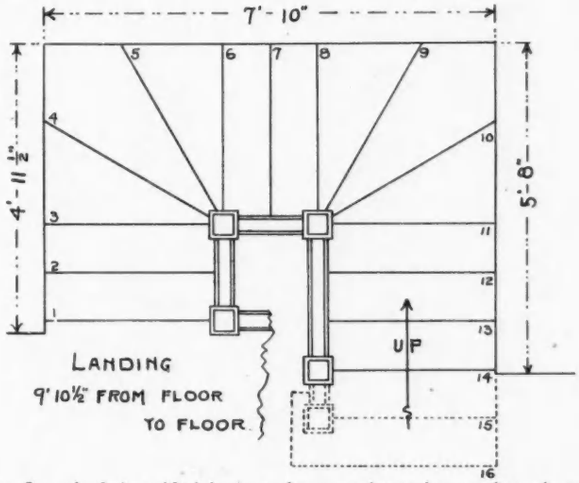
To the Editor: Doniphan, Neb.

I have been a reader of your paper for more than a year and have found it very valuable to me, but have never seen an article on winding stairs.

I enclose a sketch of a stair that I am to put in after another man's measurements. Could I ask you, or the readers to detail this, showing how to start the stairs, the location of newels, where the rails meet on the newels, etc. I think this would be valuable to many readers, as well as myself.

HENRY E. CLARNO.

Answer: The accompanying diagram is a reproduction of Mr. Clarno's sketch. No width is given for the stairs, but it is evident that not enough risers can be had to make a comfortable stairway. As the distance as given from floor



to floor is 9 feet 10½ inches, there ought to be not less than 16 risers, which would give 7.4 inches to each rise. With the opening as given but 3 risers could be had from the top wind to the landing; and as this would give but 12 risers directly under point of headroom, would leave the distance down from the floor practically 7 feet 5 inches; from this the thickness of the floor must be deducted, which we will say is one foot, leaving 6 feet 5 inches in the clear. This is not enough for a good stairway. Then according to the sketch, the starting point is 5 feet 8 inches run from the back wall, which is only 8½ inches more than from the same point to the landing, to complete the remainder of the stairs. So far we have only counted to the 13th rise. It will require 4 more to complete the stair, or 3 more treads and only 8½ inches to get them in. From this, it will be seen that the stair cannot go in the given space without reducing the number of risers to 14 which would so increase the individual rise, as to make them entirely too steep for residence work. The best thing to do, is to increase the well-hole so as to gain the extra space needed to make a comfortable, easy climbing stairway, even if much needed room space must be sacrificed. It is poor economy to stint the stairway. It should be the best part of the house, for an error here is more noticeable than anywhere else, both in looks and comfort. Better plan the stairs first, giving ample room, then lay out the rooms afterward and if they are not large enough, just increase the size of the house accordingly.

As a reader of your valuable magazine, I wish to say that the face of the riser will be at the center of the newels, and as for the proper point for the rail to strike the newels, it gives the best effect to use ramp and goose-neck rails, so as to strike and start on a level. A. W. WOODS.

Glue for Marble

To the Editor: Oshkosh, Wis.

I like to keep your magazine on file, for it helps me out sometimes when in trouble. One trouble right now is in putting up marble base; I always find some broken pieces, and I would like to find some better way to repair the pieces and glue them together than the way the marble men do it with shellac and whiting. If any of the brothers know a better way I would like to see it in the next number. W. BINDER.

"Patent" or Gypsum Plasters

To the Editor: Fairmount, Ill.

The accompanying notes on plastering may be of interest. Today "Patent" plasters are in the front ranks, and some knowledge of their chemical and working values seems necessary because the successful manipulation of gypsum plasters requires more than general directions as given on the sacks. One must be able to read between the lines. Patent plasters are a success and in most cases a better job can be secured than with lime plaster with even small adherence to detail. But it is with an intimate knowledge of its nature we arrive at results no other way obtained.

Gypsum plasters are sulphates of calcium ($CaSO_4$). From chemistry we learn that calcium sulphate is slightly soluble, in other words, dissolves to some extent in water. In nature we find gypsum in two conditions, in a putty-like condition and hard, depending on the amount of water present. The companies that manufacture "plaster" take the material in this condition and burn it until all water of crystallization has been expelled; then they grind it, mixing hair or fibre and some substance to control the "setting." This is "Patent" plaster as we have it today. All that is necessary now to make it harden is water.

The hardening process is essentially one of crystallization. The sand of course playing no part in the setting process; merely assuming a passive role, that of a body for the mixture, much the same as the aggregate in concrete. One point now should be carefully noticed. In nature we find gypsum in two conditions, soft putty and hard, as has already been said, depending on the amount of water present. The same condition presents itself again when the plaster has been mixed and placed on wall. An amount of water should be used, and kept in mixture, to insure complete crystallization; when this

setting has taken place the excess of water should be dried out slowly but completely, without direct drafts. If the building is closed up tight, or for any reason the water is held an undue time after complete setting or crystallization, the distructive action of water on the crystal takes place and a partial or complete dissolution is the result—depending on how long the water is held in contact with the set mortar.

It must be sufficiently clear then to obtain the best results one must be careful to systematically dry the wall so soon as the hardening process is complete. One point should be emphasized, a natural deduction from what has just been said. *Patent plasters are not durable in exposed situations.* Should *never* be used for laying bricks or in any damp situation. I speak from a standpoint of experience as well as of chemistry. FRANK P. PRITCHARD.

Design for Sleeping Porch

To the Editor: Albert Lea, Alta.

Enclosed is a sketch showing the layout of a house where a sun-parlor or open-air sleeping porch is to be built. I would like to get some ideas and suggestions from you in regard to it as you have such a good chance to see such rooms. This porch is to be second story and is to be built in new into the corner of the house which is already built. The first story under the porch or sun parlor may not be finished off at present.

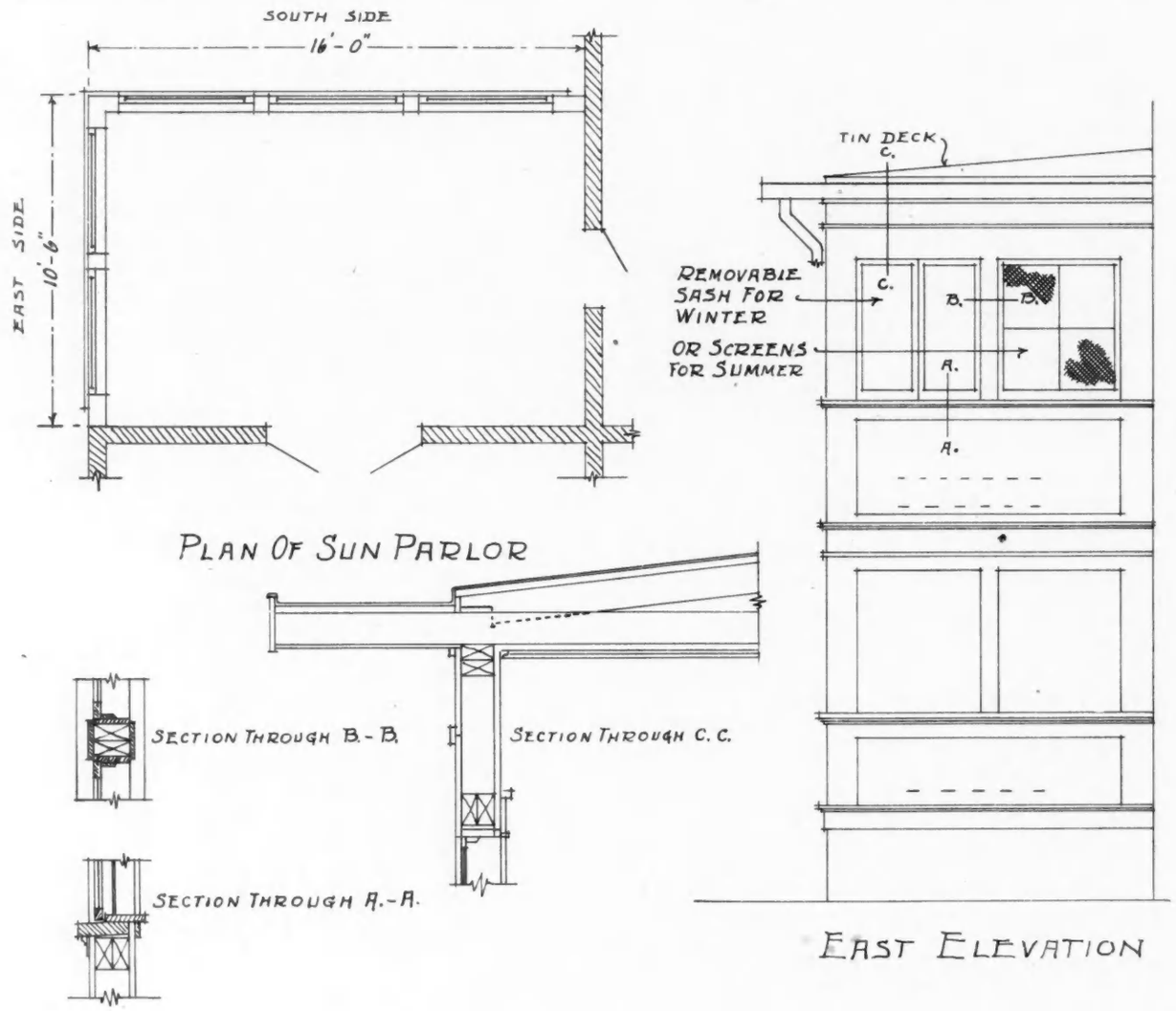
Answer: The accompanying details suggest a good arrangement for the desired addition and show how the various parts should be constructed. EDITOR.

A Few Criticisms

To the Editor: Glenham, S. D.

I wish to offer a few criticisms in regard to Mr. Lucas' answers to Mr. W. T. Marshall's questions in the June number. I think his answers are far from correct and without any detail whatever. He says 3 feet 6 inches high is the rule for placing door locks; how would a lock look on a 2 by 6 door 3 feet 6 inches high or 6 inches above center of door? I consider 34 inches sufficient height for a lock on any ordinary door in a residence and have never placed one higher. Regarding the distance of butts on doors I also do not agree with him. My rule is for a door less than 2/8 by 6/8, top butt 6 inches down, bottom butt 10 inches up; for a 2/8 by 6/8 door, 7 and 11, and for a larger door the same, only use a third butt 3 feet 6 inches from floor. To use 9 and 12 for all doors I must say is far from practical.

Another thing I wish to say is this: I think that it would be a good idea for the editorial department to answer such questions direct as the inquirer would receive his answer much sooner and would also receive an answer based upon knowledge and not upon some common carpenter's idea. As I have noticed several questions which were asked through the columns of our paper which have never been answered at all much less in a practical way. I am very much interested



in the questions and answers printed in our paper and would like to see all questions answered correctly.

GEO. LEHNERT.

Answer: Brother Lehnert is exactly right in grieving over the fact that numerous good questions have gone unanswered; and he does what he can to square the account by discussing one of these questions himself. And that is the way it should be. We can not agree with him at all however about the "common carpenter ideas." The best ideas—those that are practical and have stood the test—always come from the men on the job. The correspondence columns belong to them. It should only be occasionally that the Editor begs leave to take a hand. EDITOR.

Music Rack and Magazine Stand from a Home Workshop

To the Editor: Oak Park, Ill.

This piece of furniture should find a place in every home. It can be used, not only as a music stand, but will make a very good book or magazine rack, although it is of sufficient size to hold the ordinary sheet music.

The music stand illustrated is made of white oak, this being one of the best of cheaper hard woods with which to construct mission furniture. Chestnut makes a very good substitute if soft wood is preferred, the grain being such that when stained it looks similar to that of the oak.

Magazine Rack and Music Stand

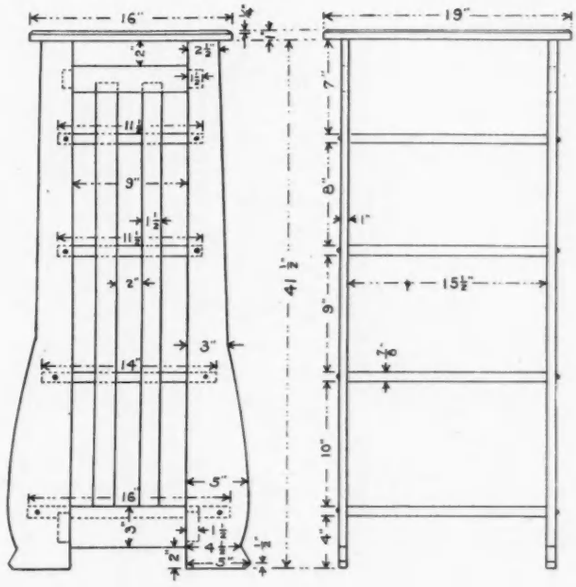
The wood should be ordered as follows, planed and sanded on both sides:

4 legs, 5 inches wide, 1 inch thick, 41½ inches long.
4 slats, 1½ inches wide, ½ inch thick, 34 inches long.
2 shelves, 11½ inches wide, ⅞ inch thick, 15½ inches long.
1 shelf, 14 inches wide, ⅞ inch thick, 15½ inches long.
1 shelf, 16 inches wide, ⅞ inch thick, 15½ inches long.
1 top, 16 inches wide, 1 inch thick, 19 inches long.
2 lower cross pieces, 3 inches wide, 1 inch thick, 12 inches long.
2 upper cross pieces, 2 inches wide, 1 inch thick, 12 inches long.

It will be noticed that the legs have an irregular curve on the outer side. This curve should be cut with a bracket saw and smoothed with a small jack plane.

The slats are tenoned into the cross pieces 1 inch deep and the cross pieces tenoned into the legs 1½ inches deep.

The shelves are of such a width as to make it necessary to glue two or more pieces together, which should be done by planing one edge of each of the pieces, testing with a square and straight edge. They should fit so closely that when held to the light it will not shine through in any part. Bore three or four ½-inch dowel holes about 2 inches deep in each piece so that when one is placed upon the other the holes will coincide. Cut the dowel pin a little less than the depth of the two

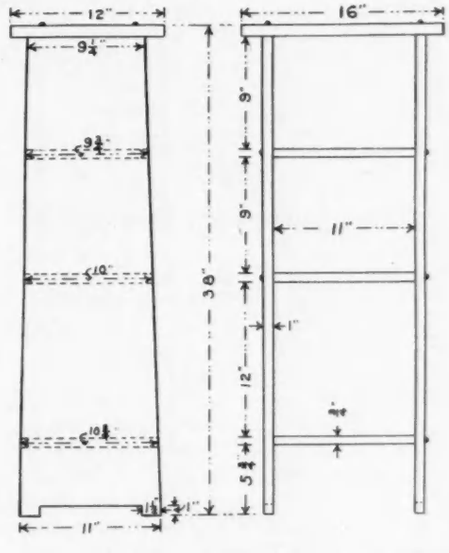


MUSIC STAND.

holes, which is about 4 inches, and when glueing together use plenty of hot glue, clamping securely.

The top has a ¼-inch bevel on the upper side and is fastened to the end of the legs by lag screws or finishing nails, set and covered with putty.

This piece of furniture, as well as the magazine stand, should be stained medium color, using two or three coats of wax or



MAGAZINE RACK.

two coats of shellac, each being rubbed with a soft cloth and pumice stone.

The magazine rack, as shown, is small, but of equal importance to the house.

The wood needed is:

2 sides, 11 inches wide, ¾ inch thick, 37¼ inches long.
1 shelf, 9¾ inches wide, ¾ inch thick, 11 inches long.
1 shelf, 10 inches wide, ¾ inch thick, 11 inches long.

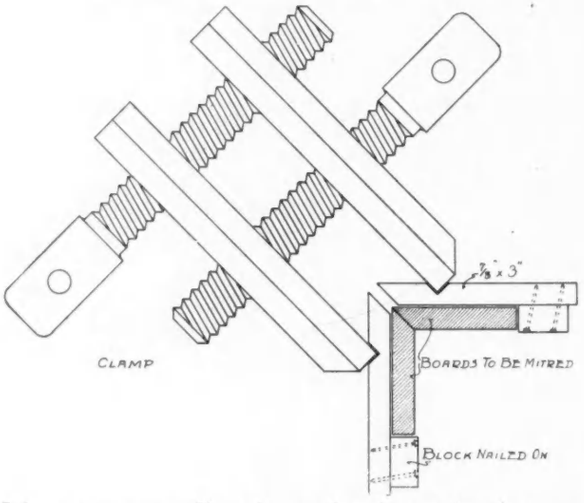
1 shelf, 10 inches wide, ¾ inches thick, 11 inches long.
1 shelf, 10¾ inches wide, ¾ inch thick, 11 inches long.
1 top, 12 inches wide, ¾ inch thick, 16 inches long.

The sides are smaller at the top, gradually widening at the bottom. The shelves, as well as the top, are screwed to the sides by four lag screws. STANLEY B. FURBECK.

Clamp for Mitering

To the Editor: St. Joseph, Mich.

I enclose a sketch of a method of clamping two boards when it is wished to miter them. I consider this the best



I have ever seen. Hope it may be of some benefit to our brother mechanics. The working of the arrangement is plainly evident from the sketch. JAMES D. TAHANEY.

Modern Hand Railing Pointers Wanted

To the Editor: Broadalbin, N. Y.

Have of late been interested in hand rails over stairs. Would any of your readers give a few of the *today* principles regarding the laying out of same. I think this would be a very interesting subject and will help some of us who have not been in harness long on hand railing. A. E. FASSETT.

Some Interesting Questions

To the Editor: Winnipeg, Can.

Will you kindly answer the following questions?:

1. In a book I have it says that when a raking plancher and gable plancher intersect the cuts for jack rafter and cuts for sheathing boards in valley will answer. Does this apply when gable plancher has a different pitch?
2. What is the best way of putting up a deck; should it be braced up from studs till the rafters make it self supporting?
3. What is creosote used for in building work?
4. Has clay any adhesive properties when mixed with sand? JAMES BALLANTINE.

Answer: In the first question you say that where a raking plancher and gable plancher returns, the cut for jack rafter and sheathing in valley will answer, and you ask if this applies when gable plancher has a different pitch? Yes, the cuts that apply to the unequal pitches necessarily apply to the planchers that go with it.

Your second question in regard to putting up a deck roof. Frame your deck and temporarily locate it with studding till you get your principal rafters up, when the supports may be removed; but if it is a very large deck, better build permanent supports for the deck.

Third: Creosote or creosote oil is a coal tar product and is also produced by the destructive distillation of wood. It is used as a wood preservative for railroad ties, fence posts, piling, paving blocks, etc., protecting the wood very effectually from rot. Creosote is also used for staining shingles and rough siding, especially in bungalow or summer cottage rustic work.

Clay has no great adhesive property when mixed with sand, that is as far as strength is concerned. The adobe blocks of the Mexicans are made of clay with a little sand mixed with water and dried in the hot sun. If protected from the rain they are quite durable, but have no real compressive or tensile strength. EDITOR.

How to Miter the Bed Mould

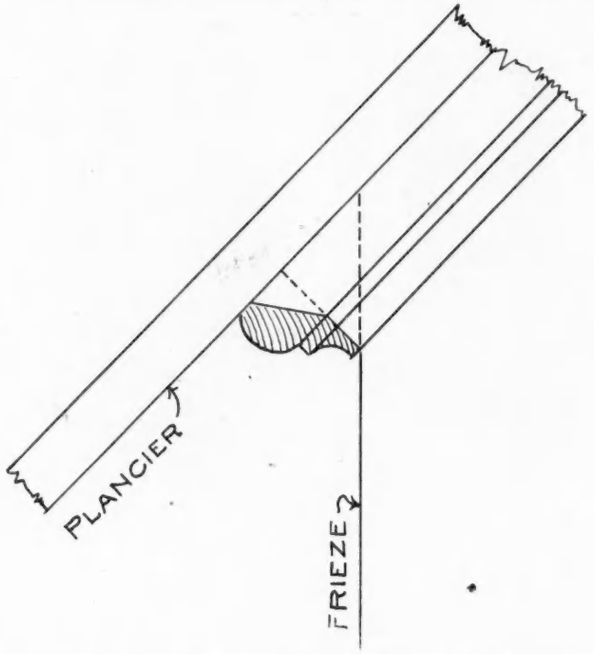
To the Editor: Reliance, S. D.

As a reader of your valuable magazine, I wish to say that I gain something by reading each new number in information, new ideas and enjoyment.

I would like to ask the proper way to cut the joint for a raking and horizontal moulding, as for instance—the bed mould on the frieze under the plancher of gable end, to make the proper joint with corresponding mould under the eaves.

E. B. LOCKWOOD.

Answer: The mould should set at right angles to the plancher, as shown in the illustration, and the miter would be



on the 45 degree angle; otherwise if set plumb with the frieze one of the pieces would have to be a special mould to member with the other. A. W. WOODS.

What is the Trouble?

To the Editor: New York, N. Y.

I have a cottage on the shore with an open fireplace; everything works to perfection until a northeast wind hits it; then it smokes badly.

My roof is to the west and the chimney extends about 1 foot above it. There is a house about 75 feet to the northeast which I think may be the cause. What is your opinion? Their roof is a little higher than my chimney.

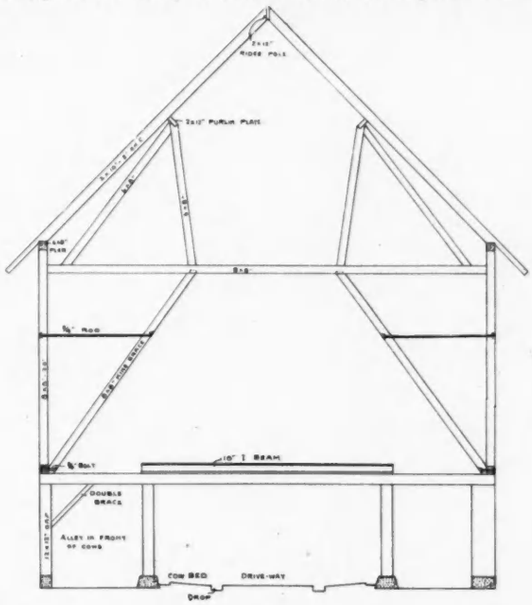
I would be very grateful if some one would suggest a sure cure for this back draft. R. W. LAWRENCE.

A Convenient Barn Plan

To the Editor: Ridgebury, N. Y.

I am glad to say that I am a charter member of the AMERICAN CARPENTER AND BUILDER and have not missed getting a number.

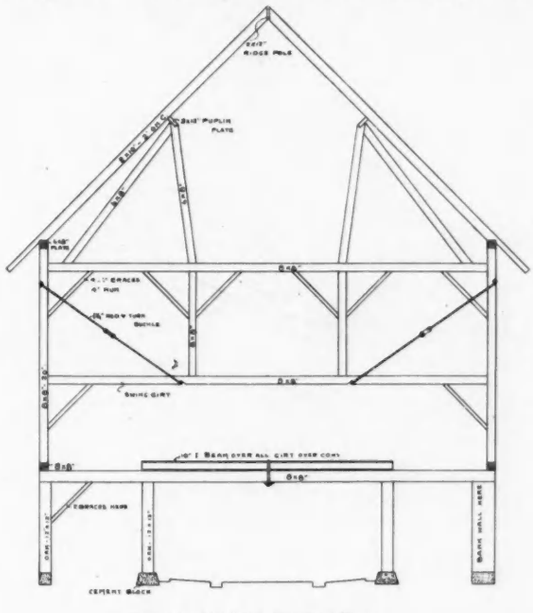
I have never contributed anything to its pages before, but am sending with this some sketches of a barn that I have been working on for the past three months, barring bad weather.



ALL BENTS IN HAY BAYS LIKE THIS

It is built on the Valley View Stock Farm, near Middleton, N. Y., and owned by Martin Brothers. It was planned and the work supervised by Mr. Charles B. Terwillager.

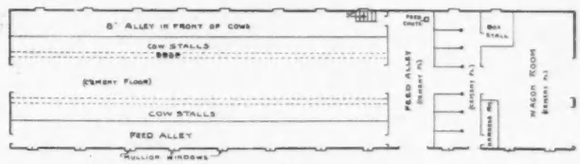
The sills and basement posts are of oak, but all of the other timbers are of yellow pine, sized on four sides. The building is 40 by 168 feet on the ground and 28 feet high, including



4 BENTS LIKE THIS, ONE OVER FEED ROOM & ONE EACH SIDE OF BARN FLOORS

basement, which is 8 feet. There are 13 bents spaced 14 feet center to center. I am sending sketches of the basement and upper floors, which I think will explain themselves. There is a 10-inch steel beam on top of all girts over the cow stables with floor beams fitting in them. This beam and girt are yoked

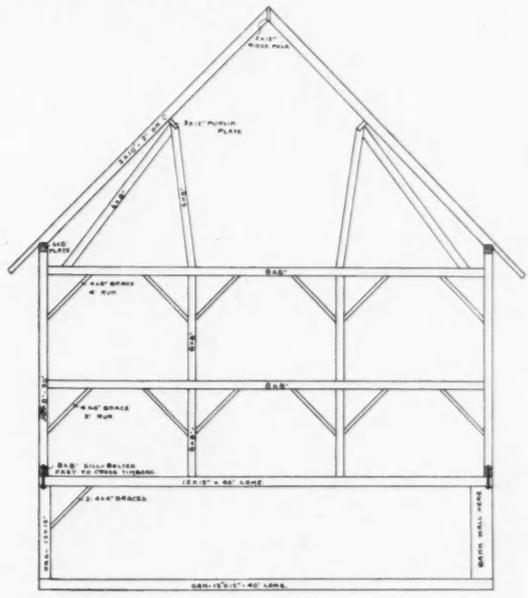
FIRST FLOOR PLAN



BASEMENT PLAN

together in center of building with a ¾-inch iron clevice. This is for the purpose of doing away with a truss in each bent.

The basement floor is of cement throughout. The raising was all done with derricks.



END BENTS

I would like to see this published in the AMERICAN CARPENTER AND BUILDER, provided it does not take up too much space in your valuable paper, and you think it worth while.

SILAS C. BROWN.

Points on Piping Wanted

To the Editor: Philadelphia, Pa.

Enclosed find check for amount of subscription. It certainly is an oversight when I fail to remit, as I have fully received value. Although I have had over 25 years' experience in all lines of building construction, in every copy I find some item that adds to my store of knowledge. I offer as a suggestion, articles written on the tricks of hot water and steam heating, in fact, points in the matter of piping in general would be interesting. All workers in this line have their troubles even in carefully constructed plants, and when remedied were surprised at the little oversights that cause the big trouble. Wishing you more of your deserved success, I remain,

JOHN S. POMEROY.

Wants Markings for Ten Foot Pole

To the Editor: Perry, Mich.

In your valuable paper will you get the different opinions as to the correct marking for a 10-foot pole. There seems to be a vast difference in the ideas around here. J. M. DEAN.

P. S. & W. "Samson" Brace

Our readers will be interested in the following description of a patent brace which has several remarkable features and is said by the makers to tighten and release more quickly and easily than any other brace made.

This is the "Samson" brace, and is manufactured by The Peck, Stow & Wilcox Company of New York, Southington, Conn., and Cleveland, Ohio, who make a large line of high-grade carpenters' tools; also an extensive one of tinsmiths' tools and machines and hand-tools for electricians, machinists and other mechanics. The strong grip of the "Samson" brace and the ease of adjusting, tightening or releasing it are due to an exclusive patented feature, the ball-bearing chuck. The makers claim that with this chuck you can get a tighter grip on anything that bores than you can with any other brace in a vise, and the ball bearings are so arranged that no matter how tight the grip you can release it in an instant.

They say that it is the only brace that will hold, equally well, round, square and tapering shank drills or bits, from the smallest size up to half-inch shanks. Ten-penny nails held in this chuck have been bored through solid oak and 5/16-inch rods twisted to the breaking point.

The strong grip of the "Samson" brace is also partly due to the alligator jaw. These jaws are fastened with a patent spring so that they automatically parallel themselves to fit either round, square or tapered shanks. Beside these remarkable features, the "Samson" brace is an exceptionally well-made and well-finished brace throughout. The head is made of lignum-vitae, and protected by a steel-clad quill which is fastened permanently to the head and completely surrounds it to a height of 5/16 of an inch. This makes a perfect protection against splitting. The head is also furnished with

ball bearings and a hardened washer between the quill and the ball-bearing cup eliminates friction when in action.

The Peck, Stow & Wilcox Company make many other high-grade tools which show this same thorough and careful manufacture and excellent adaptation to the purpose for which they are made. These guaranteed tools are all sold under their own name and branded with the *mark* of the *maker*—the P. S. & W. registered hand-tool trademark.

A manufacturing experience, extending well over 90 years, has resulted in the development of many advanced methods.

Hang Out The Sign of Progressiveness

Kawneer System

of Store Fronts

This System adds attractiveness and effectiveness to every show window display. It places the seal of "dependability" upon the store and its merchandise—indicating quality—all along the line.

The Kawneer System all-metal (Copper, Brass, Aluminum and Bronze) store front construction possesses "pulling power." *It draws constantly new and better patrons to the show windows*—the place where many a sale is half made.

It provides a ventilation and drainage system that can be perfectly regulated winter or summer. This means clear dry windows in winter—dust-tight windows in summer and uninterrupted show window service all year around.

If the architect does not specify or the contractor fails to use the Kawneer System, the original all-metal glass setting, the tenant and owner both pay for it just the same. The former in loss of service and business that passes his door and goes to the more aggressive competition. The latter in reduced revenue due to the use of inferior construction. Send for Booklet No. 2.

VENTILATION IS EASILY REGULATED

With the improved No. 30 sash all ventilation for show windows is under perfect control. In extreme cold weather an effective current of air circulates next to inner surface of glass—preventing frost and sweat. In the warm summer days all air is shut off by simply moving slide—eliminating all dust and dirt. All this with no additional cost.

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

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

SEE DETAILS IN SWEET'S INDEX

Another year – and still no rival

For 1911 the Hupmobile will be a continuation of the 1910 car.
Five thousand owners have proved that the 1910 Hupmobile is right —that we could not improve upon construction or design.

Price, $750, includes magneto and regular equipment of three oil lamps, tools and horn. Top, windshield, gas lamps and tank extra.

4 cylinders,
20 H. P.
Sliding gears
Bosch Magneto

Hupmobile

$750
(F. O. B. Detroit)
Including three oil lamps, horn and tools

There are two or three cars in this country which have succeeded simply because the owners *got what they thought they bought.*
One of them is the Hupmobile, which has made good because it *is* good.
The third year of the Hupmobile is here—without a hint of real rivalry in its class.
Its owners are not merely pleased in a passive sort of way—they are whole-hearted and positive in their approval.
Ask any of its five thousand owners how they feel about the Hupmobile. In every instance you will find that they have not had a single moment's dissatisfaction, or cause for regret—that their cars have been all they have expected them to be, and more.

The Hupmobile has made good with men who have owned two, or three, or half a dozen cars; and with men who never before possessed one.
They like it because of the facility with which it is handled in crowded traffic, slipping through and around where a larger car could not pass; because of the time and energy it saves a dozen times a day.
They like it because of the pleasure it brings to their leisure hours.
The Hupmobile has won by rendering continuous, unvarying service; and because of the absence of parts which, in even the costliest cars, require much attention and frequent adjustment.

For instance, it carries no batteries.

The ignition source is a Bosch high-tension magneto—and the engine starts every time on the magneto spark.

The elimination of batteries does away with extra weight, a coil, a commutator, and a mass of wiring.

The complication of water pump and fan are missing, because the cooling is by the natural circulation of the thermo-syphon system; and the fly wheel carries fan blades.

Write for the literature; and we will put you in touch with the local Hupmobile dealer.

Hupp Motor Car Company, Desk 32, Detroit, Michigan

Licensed under Selden Patent

and in a high degree of skill on the part of individual workmen in the employ of the company.

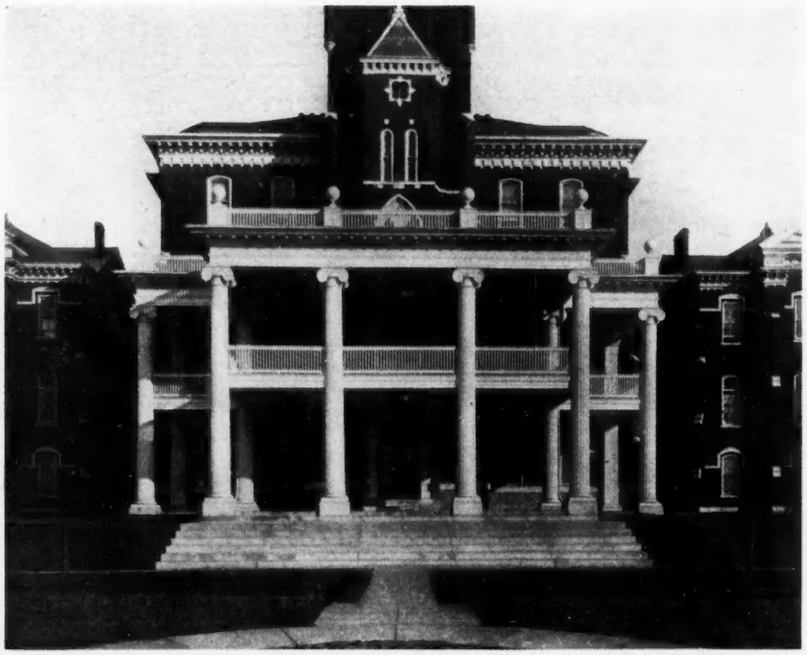
The P. S. & W. Company publishes a little book of convenient pocket size, called appropriately the "Mechanics' Handy List." In this book are listed over 200 tools for carpenters, machinists, electricians and tinsmiths. There are also over 30 pages of handy reference tables giving general information and hints on the proper uses of tools. This book has enjoyed a wide popularity with mechanics generally and is now in its second edition. It will be sent to readers of the AMERICAN CARPENTER AND BUILDER on request.

Union Metal Columns

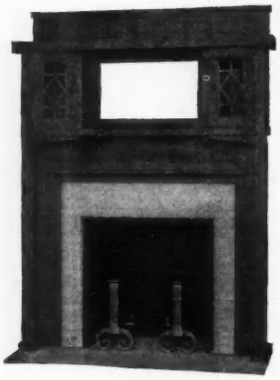
Columns of proper proportions and style are of prime importance in the adornment of an edifice, and to be really valuable, their lines of beauty and symmetry must be permanent and durable. Another essential of a good column is strength.

Union metal columns fulfill all of these requirements and besides have many other superior qualities. They are made only and solely by the Union Metal Manufacturing Company of Canton, Ohio, and in their production the manufacturers have certainly overcome many of the serious and annoying defects common to wood columns, such as splitting, warping, opening up of glued up joints, rotting, etc.

The manufacturers have proven and are proving every day the truth of their many claims of superiority of Union metal columns by the receipt of many unsolicited letters from their patrons in nearly every state and foreign countries expressing the most perfect satisfaction and unqualified endorsement of Union metal columns. The illustration shown on this page is



a photographic cut of the Missouri State School for the Deaf, located at Fulton, Mo., whose elegant and massive portico is equipped with Union metal columns, 26 inches diameter at base of shaft and 24 feet long. Hon. M. Fred Bell, official architect



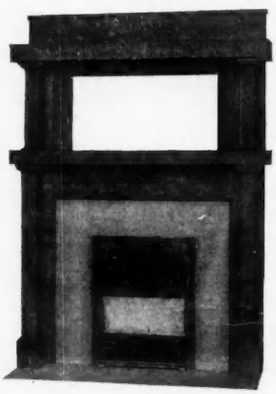
CONFIDENCE!

Can be Gained Only by Square Dealing

BURRITT MANTELS

Enjoy the Confidence of a large number of Contractors and Builders because they are found to be Exactly as Represented—Always.

It will be worth your while—if you intend buying Mantels—to write for our Beautiful Handbook "A," sending your business card and advising us of your requirements.



THE A. W. BURRITT CO.

"THE MANTEL FOLKS"

349-473 Knowlton St. BRIDGEPORT, CONN.

The above picture shows an expert user of a tool that is made by experts and branded with The MARK of the MAKER.

He represents thousands of skilled mechanics who know how to use and appreciate the brace with the Ball-bearing Chuck. They know there is absolutely none like the top-notchers of our large line of Braces.

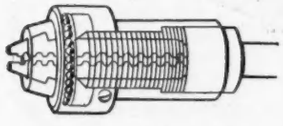
The P. S. & W. SAMSON BRACE

The Ball-bearing Chuck

Ten-penny nails, held in this chuck, have been bored through solid oak.

Five-sixteenth inch rods, with one end held in a vise, have been twisted to the breaking point.

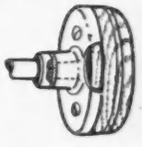
You can tighten it by the bare hand to a firmer grip than you can get on any other brace with the aid of a vise, but it releases so easily that the weakest wrist can do it.



The Steel Clad Head

A tight-fitting cap of steel (not cast-iron and not a flat steel plate) completely surrounds the head to the height of $\frac{5}{16}$ of an inch to prevent splitting. The head also has dust-proof ball-bearings (steel balls —not shot).

The Alligator Jaw of the Samson Brace is another good feature. It parallels itself to fit the shape of any shank.



Like all P. S. & W. Guaranteed Tools the Samson is branded with *The MARK of the MAKER.*

Write today for our 160 page Mechanics' Handy List. It contains many pages of valuable information for every day use, and a complete Catalog of over over 200 Tools for CARPENTERS, MACHINISTS, ELECTRICIANS and TINSMITHS.

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

for the State of Missouri, created this beautiful portico and specified the Union metal columns and pilasters used thereon, and while the job is admired by many, and highly prized by the manufacturers, of Union metal columns as being one of their most elegant installations, yet they advise that they have many such installations throughout the country.

The manufacturers also advise that Union metal columns are rapidly coming into general use in many different parts of the country, for porch work on houses and cottages of moderate or even low cost and also ordinary pergolas or arbors, which is not at all to be wondered at considering that the metal column in many parts of the country is no more expensive than wood columns, while in other places there may be a slight difference in cost which however is well justified considering the superiority of Union metal columns and the fact that they will last a life time making their first cost the only cost.

Union metal columns are made in various designs following as nearly as practical the classical order of architecture, and ranging in size from the smallest up to 40 inches in diameter at base of shaft, and 35 feet long. The bases of all designs are made of high-grade cast iron, the shafts of special quality sheet steel fluted; and in the larger diameters two ply of same is used, being rolled and fluted together. The capitals vary according to design made of pressed zinc or copper, cast iron or composition cement plaster. The shafts of all designs and sizes can be made of heavy sheet copper and reinforced with sheet steel when desired at a very reasonable cost.

It can be seen by this brief description that Union metal columns are very strong comparatively and that their strength is durable. The secret of their extraordinary strength lies in the fact that the shaft is correctly tapered and fluted the full length thereof, thereby making it capable of withstanding a remarkable crushing strain. The same principle governing and determining the strength of structural steel on account of shapes and bends, also applies to the shafts of Union metal columns.

These columns are broadly protected by U. S. patents as are also the machines used in their production which accounts for the fact that the columns are made exclusively by the Union Metal Manufacturing Company, of Canton, Ohio, who will gladly respond to all requests for further information, and will send catalogue and prices to all applicants.

New Huther Saw Catalog

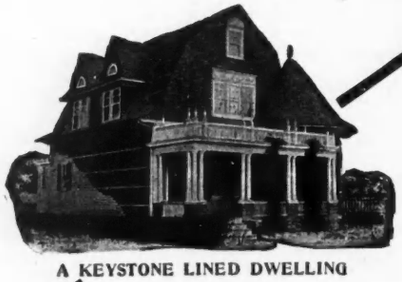
We have received from Huther Bros. Saw Manufacturing Company, of Rochester, N. Y., a copy of their complete and beautifully illustrated new catalogue. We desire to call it to the attention of the readers of the AMERICAN CARPENTER AND BUILDER.

In this catalogue we note that they have given considerable space to illustrating band and circular saws, also special grooving saws, showing the way in which they are used for making joints, panel raising, etc., also fitting machinery. All readers interested in these lines will do well to write for a copy at once.

Life of Metal Lath

Some interesting and valuable points concerning the rusting or decay of steel as compared with "American Ingot Iron" are well brought out by the following article from the American Rolling Mill Co., Middletown, Ohio:

"The progress and advancement in the building line has brought about extensive use of metal lath for fireproof structures. The permanency of these structures, and the safety of future generation, depend upon the life of our building materials. Hence we should give the subject of corrosion our undivided attention. Historic records show us that the age of bronze gave way to the age of iron, and that this age of iron gave way to our present age of steel. The product of



A KEYSTONE LINED DWELLING

Cool in Summer

Warm in Winter—Quiet All The Time

These results are assured with buildings in which **Keystone Hair Insulator** is used. No other sheathing material has as high insulating properties or as perfect sound deadening qualities. The Reason:

Keystone Hair Insulator

is made of a heavy layer of cleansed and sterilized cattle hair securely fastened between two sheets of strong, non-porous insulating paper. This produces in the finished material **innumerable air cells,** which are the secret of perfect heat insulation, and also a **cushion effect** which absolutely prevents the transmission of sound waves through the material.

Keystone will not pack down nor settle; will not dry out and split; will not rot nor attract moisture; will not carry flames; is absolutely inodorous and vermin-proof.

Write nearest branch for Catalog and Samples.

H. W. JOHNS-MANVILLE CO.

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

For Canada:—THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED

Toronto, Ont., Montreal, Que., Winnipeg, Man., Vancouver, B. C.

810

Transom Operation Perfected

The many faults of appearance and operation characterizing the old style transom rods, so objectionable to everyone are overcome in the

"RICHMOND"

Concealed Transom Lift

Simply turn the knob on door trim and transom opens or shuts to the required angle and is held steady there until the knob is again turned. No locks, hinges or catches are required.

In the RICHMOND Concealed Transom Lift all parts as implied by the name are concealed, excepting only the knob. The fixture is completely assembled before leaving our factory. Booklet descriptive of the operation and installation of this fixture will be mailed upon application to

THE McCRUM-HOWELL CO.

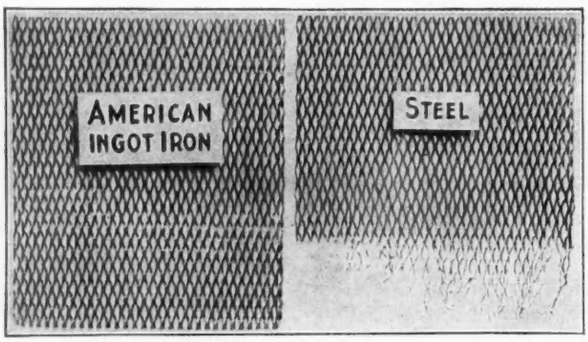
MANUFACTURERS

Park Avenue and 41st Street NEW YORK CITY

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

the bronze and iron age is noted for its durability and lasting qualities, but can we say the same thing of our present age of steel?

"To our sorrow, we must admit that although steel is noted for its tensile strength and ductility, and is the best material for structural purposes, it will not resist corrosion,



nor withstand the action of the elements, hence when strength is of secondary importance, and resistance to corrosion is paramount, we must use iron, therefore, our attention was devoted entirely to the manufacture of iron, and our 'American Ingot Iron' was the result.

"In order to better understand the subject at hand it will be necessary to give a brief resume of the theory of corrosion. The present day theory of corrosion accepted by the leading scientists throughout the country is the electrolytic theory. Resistence simplified is as follows:

"The action that takes place in the corrosion of iron or steel can be compared with the action that takes place in the ordinary telephone battery. In the battery the zinc is eaten away and deposited upon the copper, because there is a difference of what is known, in the electrical world, as 'potentiality.'

"Now applying this theory to iron and steel, the impurities in iron and steel and the pure metal act toward each other the same as zinc and copper in the telephone battery. In damp weather a current is set up between the pure iron and the impurities because of this difference of potential, and the one is eaten away and deposited on the other. This action continues indefinitely until the iron or steel is decayed.

"In order to overcome this action, it is absolutely essential that these objectionable impurities be eliminated, and that our material be homogeneous throughout. Dr. Allerton S. Cushman says, 'The purer the iron in respect to certain metals which differ electro-chaemically from iron, and the more carefully the lack of homogeneity and bad segregation are guarded against, the less likely are the electrolytic effects and deterioration to become serious.' These points constitute the essential problem which confronts the manufacturer who desires metal which will have a high resistance to corrosion.

"By the able co-operation of the best scientists in the country, and by applying information thus obtained to modern metallurgy, we are now able to manufacture an iron which we guarantee to be 99.94% pure. This is the purest iron that has ever been manufactured commercially. It is soft, ductile and tough, very dense and perfectly homogeneous throughout. All laboratory as well as service tests prove it to be highly resistant to corrosion.

"By using American Ingot Iron for the manufacture of metal lath we obtain a building material, which will not only withstand the weathering action, but also, the severe deteriorating action caused by moisture, and by the impurities

HAVE ONE ON THE HOUSE

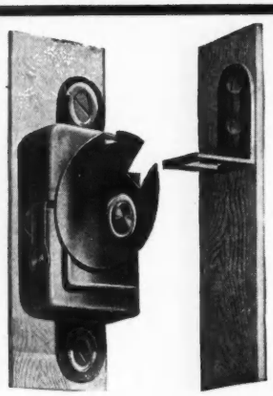
"A Roof of GAL-VA-NITE"

This is our treat—we want every man that reads this paper to send for one of our CARPENTER & CONTRACTOR ESTIMATE BOOKS—something every builder should have. It is handy and valuable and we will send it to you FREE. We also want every man interested in building to know all about the best ready roofing manufactured —"the triple asphalt-coated, mica-plated" GAL-VA-NITE.

GAL-VA-NITE is made to wear—not to wear out. We can convince you that it is the roofing you will specify and use hereafter. Just let us send you samples. The celluloid covered estimate book will also be sent you without cost. A postal today will do.

"Owners of The Mills That Quality Built"

1109 E. 7th Street **Union Roofing & Mfg. Co.** St. Paul, Minn.



The No. 21 Watrous Screen Door Catch

The Latest and Best Thing in Screen Door Catches

THE CATCH WITH THE POSITIVE LOCK

The case comes flush on door jamb. The strike is adjustable. Needs no templet. A child can set it without making a mistake. A light trip and a strong hold. Positive lock does away with necessity for hook-and-eye, or other fastener.

Sells at Sight

THE E. L. WATROUS MFG. CO., DES MOINES, IOWA

Over 3,500,000 Square Feet of Gravel and Slag Roofs

Why do Gravel and Slag Roofs cover most of the large manufacturing plants of the country?

Because the experience of more than sixty years has proven that:

They keep out water, and that is what a roof is for.

Their cost per year of service is the lowest.

And there is no painting, coating or similar maintenance cost.

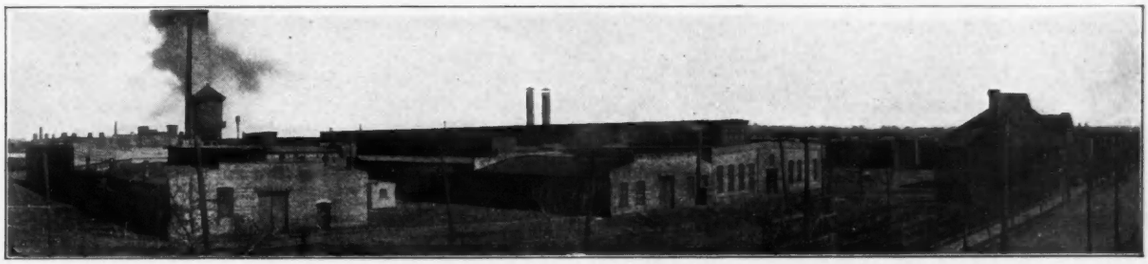
Claims regarding other roofings can generally be answered by **one** question—namely:

"Can you refer me to anyone who has used, say 500 squares on comparatively flat surfaces for ten (10) years and bought any more of it?"

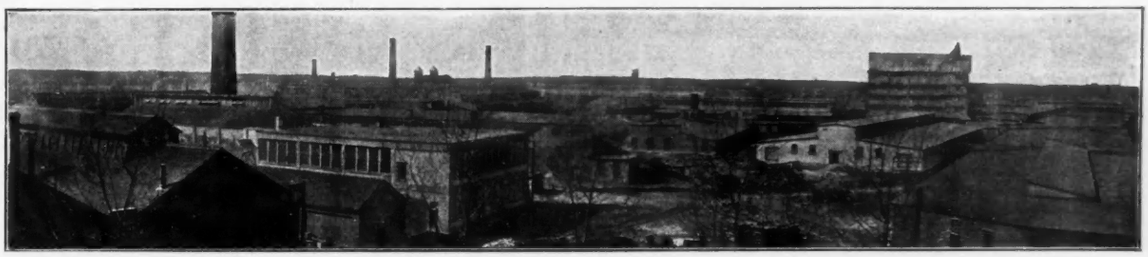
Then investigate any such claims or give us an opportunity to do so, for such roofs are rare except in the salesman's imagination.

Exaggerated and untrue claims sometimes sell other roofings because the principles of gravel or slag roofs are not well known to the purchaser. Once he understands the long service they give and the low cost **per year of service,** he will have no other kind.

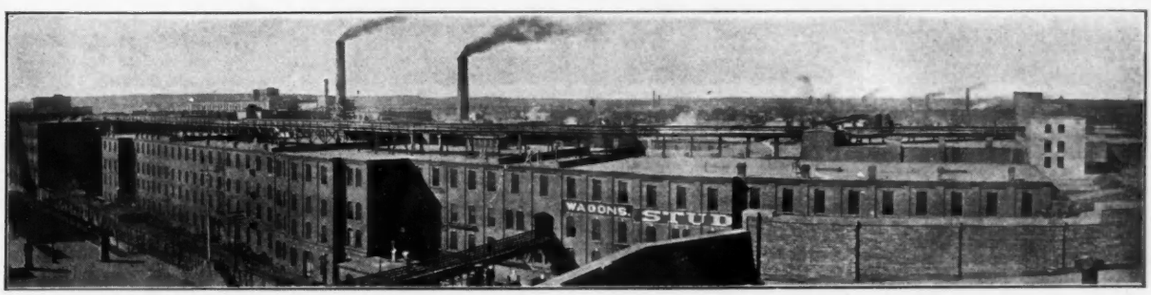
The photographs below show three of the largest manufacturing plants in the country, located at South Bend, Indiana, aggregating an area of 3,530,000 sq. ft. Read the caption under each. It shows what concerns of this character think about roofing laid by members of our Association.



The Singer Manufacturing Co. have 870,000 square feet of Gravel Roofs, applied nine years ago on their new factory. There is on the old plant, which is located in another part of the town, 500,000 square feet, which was applied about 20 years ago.



Oliver Chilled Plow Co., illustrated above, began using Felt, Pitch and Gravel Roofs 24 years ago, and now have over 1,000,000 square feet of such roofs.



The Studebaker Manufacturing Co. began using Gravel Roofs, 23 years ago and have about 1,160,000 square feet.

If your experience with gravel or slag roofs has not been fully satisfactory, the trouble was caused by one of these three reasons: Either the material was not of standard quality, or too small amount of it was used, or it was carelessly applied. Roofs laid by members of the undersigned Association will not fail from these causes if a definite specification is provided. Is your roofer a member?

National Association Master Gravel and Slag Roofers of America

Whitehall Building, New York, N. Y.

The Simonds Saw

means much Our Boss Carpenter gives some points on our saw.

"Every carpenter wants a good **cutting** saw, for a dull saw means extra labor and most of us get tired enough."

You can't keep your saw sharp unless it's tempered right, this is where the Simonds people are strong. They have a special patented process.

Another point, because the **SIMONDS SAW IS MADE OF SIMONDS STEEL** you are sure of getting the finest crucible steel, made especially for this saw in their own mills.

Now here's another point, you're never sure of a saw that isn't trade marked. The trade mark means the makers are back of it.

It's a fact.

THE SIMONDS SAWS ARE BEST
And They ARE Best

In a nutshell:—Buy a Simonds Saw, because it's made right, tempered right and cuts right.

You'll know it by the trade mark.

Save extra work by using a Simonds Saw, and my advice is buy it now.

If your dealer don't keep them write to headquarters. Tell them what kind of a saw you want and ask for a free copy of "Simonds Carpenter Guide," a valuable booklet.

SIMONDS MFG. CO.

FITCHBURG, - MASS.

Chicago New York New Orleans
San Francisco Portland Seattle

in some patent plasters. Herewith you will find a cut showing the life of American Ingot Iron lath compared with steel lath. The lower ends of these two samples were subjected to a 20 per cent sulphuric acid solution for one hour. That part of the steel lath which was immersed is almost entirely eaten away, while the Ingot Iron lath is in a remarkable state of preservation. This is the test that tells the story.

"The following are the points which must be considered when considering the life of our metal lath.

"First: Since all plaster coatings are more or less porous, you are always troubled with corrosion caused by moisture.

"Second: Since it is impossible to cover any lath completely on the rear side there is always some metal lath exposed which is subjected to moisture and the weathering action.

"Third: Some patent plasters contain impurities which accelerate corrosion, and hence our metal lath must be able to withstand this severe deteriorating action.

"From the above you can readily appreciate that this is a very important subject, and demands our close attention. We are all aware that shingle nails, fence wire and sheet metal, manufactured years ago lasted three to four times as long as the present material. Put a shingle roof on your house today, and in less than seven years' time shingles will commence to blow off. Upon close examination you will find a hole where the nails used to be filled with iron oxide, commonly called rust. Years ago our shingle nails lasted at least twenty-five years, at that time they were made of iron, and today such articles are made from steel. You might say, why not paint or galvanize the metal lath. A good paint is advisable, and a spelter coated lath would be an improvement, but this would only defer the ultimate results. Again we refer you to the painted and galvanized sheet steel on the market today in comparison with our sheet iron of years ago.

"In order to get at the root of the evil, we must manufacture our lath out of an iron which will withstand the severe deteriorating action. Steel no doubt is cheaper when considering the first cost, but when considering durability it is far more expensive. This has proven to us beyond a peradventure of a doubt that an iron is far superior to steel from a rust-resisting standpoint."

The American Rolling Mill Company are manufacturing their spiral expanded lath from the American Ingot Iron, described above, and they invite your investigation. They state that their research department is at your disposal.

Beaver Board Invades Canada

Ottawa, Ont., June 28.—The Beaver Company, of Buffalo, N. Y., is to establish a branch here which will manufacture beaver board, now coming into general use as a substitute for plaster, wall paper, ceiling, etc. It is made of pulp wood and is nailed directly to ceilings or walls.

Ottawa was chosen on account of its exceptional facilities for supplying pulp wood. The firm employs 3,000 hands at Beaver Falls, N. Y. It will employ 150 hands here.

The Universal

No matter what people tell you, floor scraping by hand—by the hand of a good mechanic—is usually first class. True it is infinitely harder and very much slower but the quality is there nevertheless.

The Universal floor scraper is so constructed that it reproduces the same action as the hand. This is accomplished by two tempered steel arms that press down on the blade as the operator lifts on the handle. These two arms are of tempered spring steel having the same elastic action on the blade that the arms of the working man give to the hand scraper. These arms also positively prevent the Universal from jumping.

The Universal is not a new machine. It has been manu-

Annihilator of Space

To be within arm's reach of distant cities it is only necessary to be within arm's reach of a Bell Telephone. It annihilates space and provides instantaneous communication, both near and far.

There can be no boundaries to a telephone system as it is now understood and demanded. Every community is a center from which people desire com munication in every direction, always with contiguous territory, often with distant points. Each individual user may at any moment need the long distance lines which radiate from his local center.

An exchange which is purely local has a certain value. If, in addition to its local connections, it has connections with other contiguous localities, it has a largely increased value.

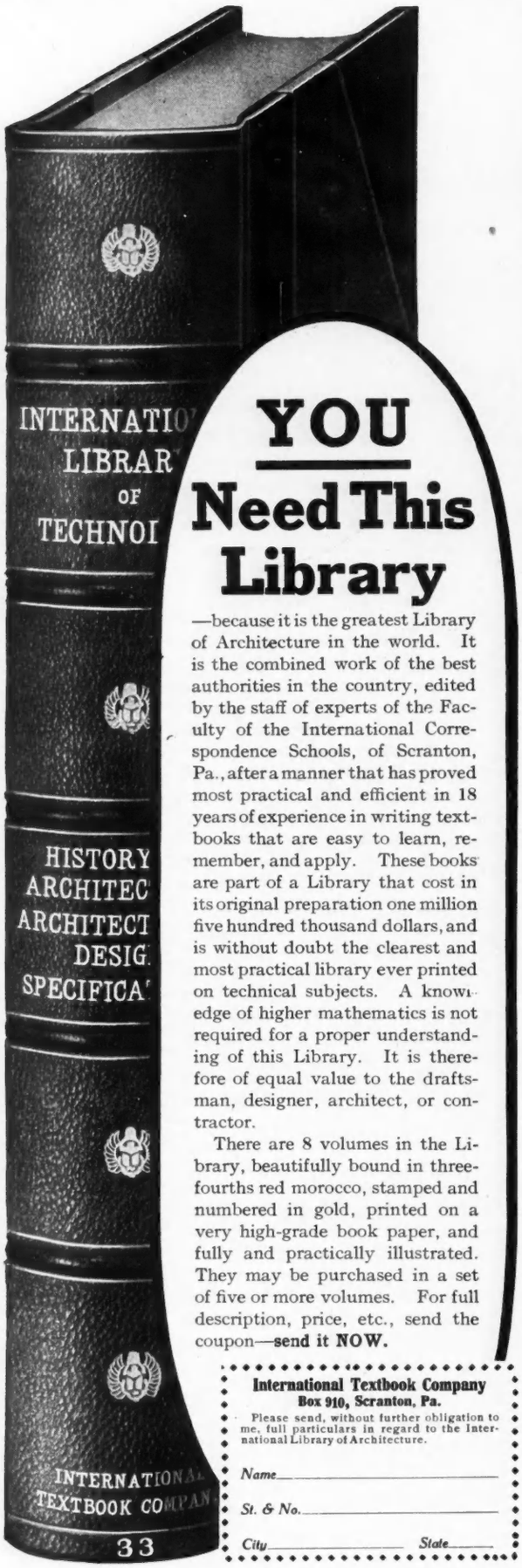
If it is universal in its connections and inter-communications, it is indispensable to all those whose social or business relations are more than purely local.

A telephone system which undertakes to meet the full requirements of the public must cover with its exchanges and connecting links the whole country.

The Bell Telephone System annihilates space for the business man to-day. It brings him and any of his far-away social or business interests together.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy, One System, Universal Service.



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There are 8 volumes in the Library, beautifully bound in three-fourths red morocco, stamped and numbered in gold, printed on a very high-grade book paper, and fully and practically illustrated. They may be purchased in a set of five or more volumes. For full description, price, etc., send the coupon—**send it NOW.**

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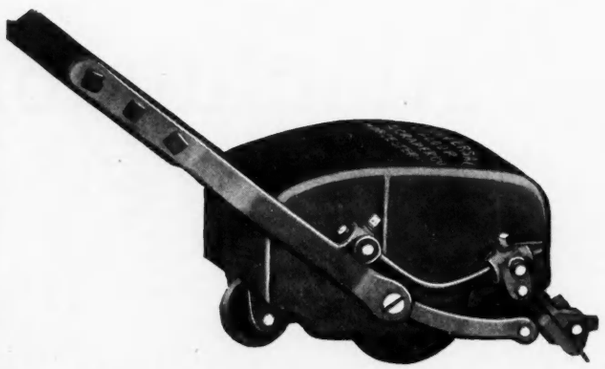
factured for years, but its sale has been largely in the East. It is new to the West only. To show its popularity in the East there are at present seventy-one machines in operation today in the city of Worcester, Mass, where it is being man-



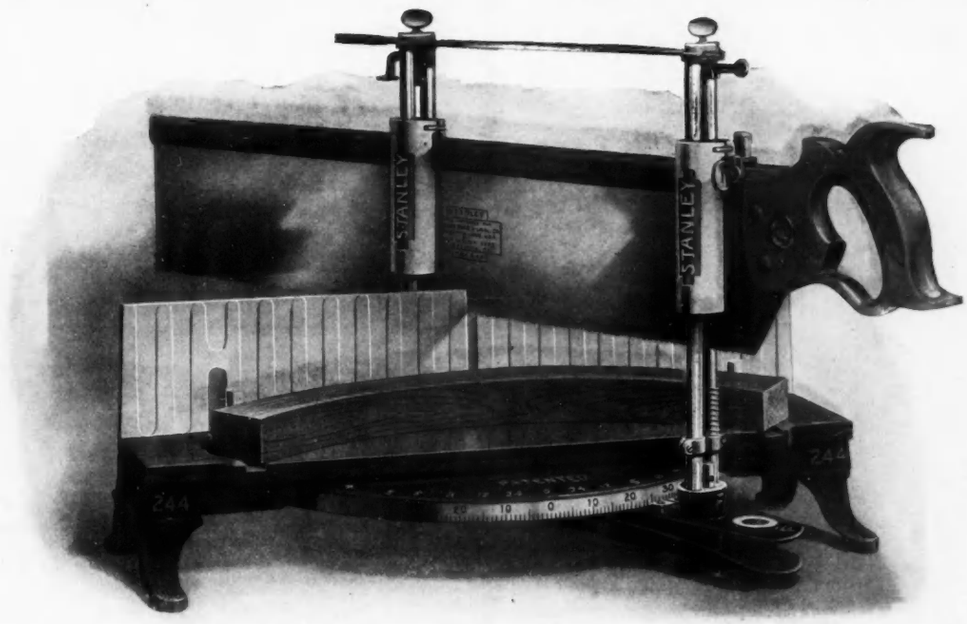
ufactured and according to the Worcester directory there are approximately one hundred contractors in that city. In the New England States alone there are over 1,000 in use. Now there is a reason for this—reasons we should say, and among these reasons here are a few logical ones that the Universal Floor Scraper Company of Worcester, Mass., offer in behalf of their floor scraper. It is strongly built and is easily operated. It scrapes the floor perfectly with a minimum expense of energy and time. It acts on the floor as the hand scraper does—the action is elastic and resilient. Any pressure desired can be used on the floor, from five to ninety-five pounds. It

is held to its work by muscles of steel, not by a dead weight. Blade holder is adjustable. Blades are tested thoroughly before leaving factory, each one being guaranteed. The quality of blades used insures a lasting edge. Rubber bumpers prevent marring the woodwork.

They give many other reasons but it is not the object of this little article to tell all about the machine. Their catalogue does that; also about the Universal blade sharpener, which, in the hands of any workman, will file, stone and turn a perfect edge on any scraper blade. Write for this catalogue. The Universal Floor Scraper Company, Worcester, Mass., will gladly send it to any interested party.

Hy-Rib Catalogue—New Enlarged Edition

We have received from the Trussed Concrete Steel Company, Detroit, Mich., their new Hy-Rib catalogue just off the press. This fourth edition is nearly twice as large as any of the previous issues, and contains many new illustrations and descriptive pages. We believe it the most comprehensive



Stanley Tools

STANLEY MITRE BOXES are strong, durable, all parts are interchangeable, and they have the widest range of adjustment of any Mitre Box made. For strength, accuracy and durability they are unsurpassed.

No.	Saw	Capacity Right Angle	Capacity Mitre (45°)	Capacity at 30° without Stock Guide	Each
240	20 x 4 in.	8¼ in.	5½ in.	3½ in	$10.50
242	22 x 4 "	8¼ "	5½ "	3½ "	10.75
244	24 x 4 "	8¼ "	5½ "	3½ "	11.00
246	26 x 4 "	8¼ "	5½ "	3½ "	11.25
346	26 x 4 "	9½ "	6½ "	4⅛ "	12.25
358	28 x 5 "	9½ "	6½ "	4⅛ "	13.00
460	30 x 6 "	11 "	7½ "	5⅛ "	16.00

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STANDARD THE WORLD OVER.

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

Hardwood Floors

QUARTERED OAK FLOORING for the artistic home. The natural beauty of **QUARTER SAWED OAK** is unexcelled. The characteristic figure is not found in any other wood.

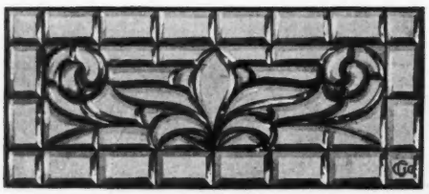
13-16 inch by 1½ inch, 2 inch and 2¼ inch faces are adaptable for all sizes of rooms.

⅝ inch by 1½ inch and 2 inch faces may be laid over sub-floors, or over old floors, where economy is considered It has the appearance of heavy flooring. **QUARTERED OAK FLOORING** increases the salability and rental values.

Write us for further information.

Oak Flooring Bureau
407 Hammond Building **Detroit, Mich.**

ART GLASS



We manufacture

Clear, Bevel Plate, Mitred Bevel Plate & Colored Glass

—Set in—

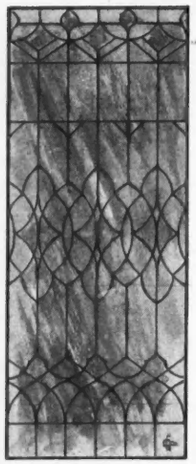
Lead, Zinc, Copper or Brass

—For—

Residences, Public Buildings and Churches

Special designs quickly and satisfactorily executed.

Write today for our beautifully illustrated catalog.



Clinton Glass Co. 1001 W. 21st St., Chicago, Ill.

UNION METAL COLUMNS

Most Durable Columns For Porches and Pergolas

Made in all required sizes from the smallest up to 40 inches in diameter and as high as 55 feet, following classic designs.

They support far more weight than the best wood columns of same diameter and last much longer.

Union Metal Columns are not expensive.

Splitting, Warping and Rotting Impossible

Made with fluted and tapered steel shafts and best gray cast iron bases and capitals. Broadly protected by patents allowed and pending.

In use on homes of every type and size from mansion to cottage, with absolute satisfaction to every owner.

Every carpenter in the country should send for catalog and prices.

THE UNION METAL MFG. CO.
530 Clifton Street
CANTON, OHIO

publication of its kind ever issued.

Some of the new matter which has been added to this publication is as follows:

Complete specifications for construction of roofs, floors, sidings, partitions, suspended ceilings and furring.

Detailed drawing, showing details of connections and constructions of all kinds.

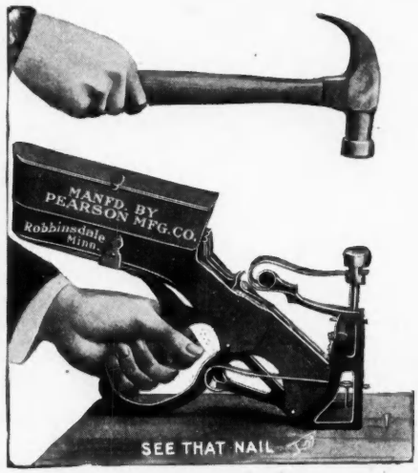
New photographs, demonstrating the actual use of Hy-Rib in important building construction.

The Hy-Rib catalogue is furnished free to architects, engineers, contractors and builders, on request.

Pearson's Improved Nailer

Pearson's improved nailer, manufactured by the Pearson Manufacturing Company, Robbinsdale, Minn., is here illustrated.

This device is designed for carpenters doing shingling work and its use prevents bruised fingers, sore mouth from holding nails therein and is a genuine time-saver.



The principle on which this tool is constructed stands alone; it is especially adapted for shingle-nails. The advantage of this hand-nailing tool is plain to a "nailing mind" and it has no equal.

A technical description is: The frame is of malleable casting, and the hopper and slides are of heavy galvanized iron of the best quality. In the bottom of the hopper are three parallel slits, into which the nails drop of their own accord, and hang by their heads when put into the hopper. From these slits the nails pass into a similar slit in the incline, and slide, still hanging by their heads, down to the catch spring. This spring holds the nail under the plunger which sets the nail in the material. The machine works automatically; all the workman needs to do with the nail is to put them by the handful into the hopper; the machine does all the rest. Nails used are 3d. (1¼-inch) wire nails. Weight of nailer about two pounds.

This hand-nailing tool has no triggers of any kind to obstruct the mind or movements of the operator. The workmanship on this machine is the very best and the finish is excellent.

New Warehouse of Milwaukee Corrugating Company

The extensive warehouse which has been in course of construction for a number of months at Kansas City, for the Milwaukee Corrugating Company has been completed. This will double the capacity of the Milwaukee people at Kansas City and enable them, with their exceedingly large stock to serve the trade throughout the southwest and the territory adjacent to Kansas City to greater and better advantage.

A New Bench Hand Planer

Realizing the many practical advantages of having a small hand planer in the wood shop, the J. A. Fay & Egan Company have designed a machine, called their No. 254 bench hand planer. This machine will do a great variety of small work.

ASBESTOS "CENTURY" SHINGLES

"The Roof that Outlives the Building"

Asbestos "Century" Shingles are a "show me" roofing for "show me" clients. Their permanence and durability are a matter of record.

By years of service on thousands of buildings—both industrial structures and private homes—in America and Europe, Asbestos "Century" Shingles have proved themselves proof against weather, fire and time.

Specify Asbestos "Century" Shingles and you will provide your client with a roofing that is absolutely indestructible.

Made of *reinforced concrete*—hydraulic cement reinforced with asbestos fibres. Compacted by tremendous pressure.

Asbestos "Century" Shingle Roof—Residence of Mrs. H. J. Lewis, Stony Creek, Conn.; Architect and Contractor, Warren R. Briggs, Bridgeport, Conn.

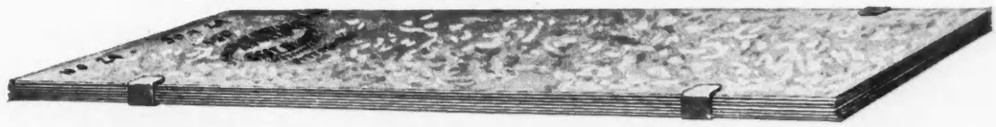
Asbestos "Century" Shingles cannot rot, rust, crack, split or blister.

No upkeep expense. No painting—no repairs. *The first cost is the only cost.*

You can get Asbestos "Century" Shingles in shapes and sizes to fit any architectural scheme. Uniform in size and shape—easily laid and fitted. Three colors, Newport Gray (silver gray), Slate (blue black) and Indian Red. Ask your Roofer for new quotations. Write for Booklet "Everlasting 1910."

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania

APOLLO BEST BLOOM
Galvanized Sheets



AMERICAN SHEET & TIN PLATE CO. APOLLO BEST BLOOM TRADE MARK REGISTERED PITTSBURGH

Highest quality and best known Galvanized Sheets manufactured—possessing exceptional forming qualities and adapted to all forms of sheet metal work. Apollo quality is the result of years of careful manufacture and these sheets cannot be excelled. Gauges 10 to 30 inclusive. Send for weight card.

AMERICAN SHEET & TIN PLATE CO. APOLLO BEST BLOOM TRADE MARK REGISTERED PITTSBURGH

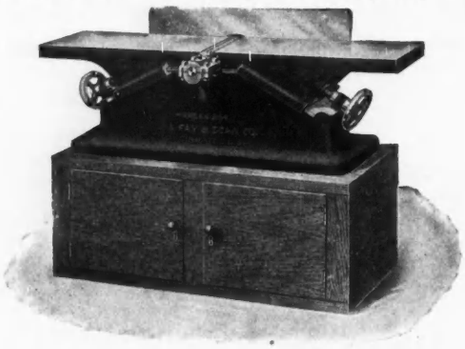
American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburg Portland San Francisco St. Louis

It occupies very little space and accomplishes the work more rapidly and conveniently than a large machine. The construction of the machine is as complete in every respect as the



large type of machine. Tables 6 inches wide by 260 inches long are adjustable on long gibbed inclines, free from vibration; and the fence is arranged to angle to 45 degrees. Cutter head bearings are of improved self-oiling type. The manufacturer's safety circular cutter head is used on this machine. With each machine, the manufacturers furnish, at slight extra charge when ordered, a bench box on which to set the machine. The box has a hole in the top to receive the shavings and is supplied with doors for removing the shavings.

The manufacturers have just issued a descriptive circular of this machine which they will be glad to send you by return mail. Address the manufacturers at 545-565 West Front street, Cincinnati, Ohio.

To Resilver Mirrors

The following is a practical and satisfactory way to re-silver an old looking glass. The first requisite is to have the side of the glass to be silvered very clean and dry, and is best to clean glass first with fine chalk or whiting dampened with alcohol, then wipe it over with a little alcohol and rub dry with fine tissue paper. Make a liquid preparation by melting in a porcelain crucible one drachm of lead, one drachm of tin and one drachm of bismuth. With these are melted, and before the mass cools, add ten drams of mercury (quicksilver). It is now cool enough for immediate use. Lay your glass flat with the clean side up and pour the liquid over it, so that all of the surface is covered, then raise the plate to nearly perpendicular position and let it drain off quickly. When the liquid has become perfectly dry and hard on the glass it should be coated with drop black ground in Japan, thinned with turpentine, which will insure greater opacity and wearing properties.

New Bilge Trench Pump

The Inter-State Equipment and Engineering Company, Old Colony building, Chicago, are mailing circulars on their new Diaphragm Bilge Trench pump.

This portable trench pump is mounted on a strong skid and bolted and is a complete dower-driven outfit for use of builders, railroads, ship-owners, or on public works, where it is necessary to raise large quantities of water. The engine is a strong three horse-power water hopper cooled, exerting a pull or lift of 990 pounds on the pump lever at each stroke.

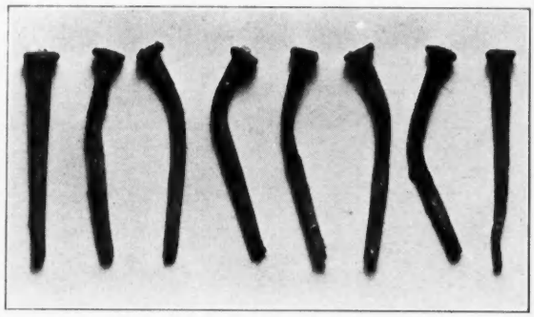
The wrist pin on gear wheel can be changed to either one of the four different strokes, and the revolutions of the engine can be regulated to run the pump from 30 to 50 strokes per minute. The pump is of up-to-date design—strong and simple in construction. It has a diaphragm of the highest quality of rubber which can be readily replaced when worn. The outfit can be supplied either with bottom or side suction, as desired, 3-inch in either case and can be used with either pipe or suction hose. The capacity of the outfit is from 3,000 to 3,500 gallons per hour. The saving in the cost of operation

Zinc Coated Brand

TRADE M.I.F.CO. ZINC COATED MARK

NAILS

Will Last a Life-time



In Use Nearly 30 Years and No Signs of Rust.

Read This Evidence of Durability:

In 1880, Mr. M. P. Harding, of Branford, Conn., shingled his store with pine shingles, nailing them with Zinc Coated Iron Cut Nails. In July, 1909, just 29 years later, he reshingled. The nails were as free from rust as on the day they were driven, although the house stands within three-quarters of a mile of the seashore. The cut shows some of the nails.

One of the main causes of leaky roofs is that the nails rust after being a few years in use. The way to prevent this trouble is to use nails in the beginning that are guaranteed to last as long as the building.

The **"M. I. F. CO. ZINC COATED"** brand of iron cut nails are that kind. They are made after a process used successfully for many years and are warranted to give full and absolute satisfaction.

We have numerous samples of nails used along the seaboard that were in use more than thirty years. They are as free from rust as the day they were driven.

Don't you think it would be profitable to use nails like these all the time? We will send you a sample package and price list free if you will write us. Why not write today?

Malleable Iron Fittings Company

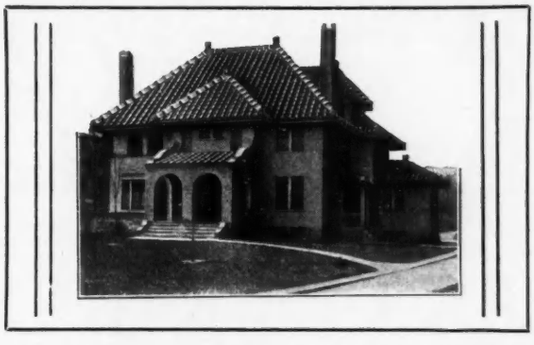
BRANFORD, CONN.

Avoid Lath Cracks,
Lath Stains, Lath Buckles

By using Acme Woven Wood Lath.
Most economical and best
Guaranteed in all interior and exterior plaster and Concrete Construction.

BOOKLET FREE.

Acme Woven Wood Lath Co.
Suite 1015 New Bank of Commerce Building
ST. LOUIS, MO.



AN EDWARDS METAL SPANISH TILE ROOF

COSTS NO MORE THAN A GOOD TIN ROOF

Artistic and Ornamental in appearance and is positively guaranteed to be Fire, Lightning, Rain, Storm and Wind proof.

Its extreme lightness (about one-eighth that of slate), durability and moderate cost commend it to those wishing something out of the ordinary in roofing.

Manufactured from best quality Worcester Grade Terne Plate, furnished painted or galvanized (galvanized after being formed) size 10 x 14 inches.

Descriptive Booklet sent free on request

The Edwards Manufacturing Co.
"The Sheet Metal Folks"
401-417 Eggleston Ave. Cincinnati, Ohio

YELLOW PINE
FLOORS, TRIM AND DOORS

The standard wood for general specification, because it can be relied upon to the fullest extent, and the price is satisfactory.

Sanitary, non-absorbent, hard and durable—easily kept clean and in perfect condition, readily receives, and satisfactorily holds all finishing materials.

Yellow Pine Edge Grain Flooring is manufactured in standard grades, widths and lengths.

Manufactured in long lengths, it COSTS LESS to lay, and less to buy, and avoids unsightly joints.

A & B Yellow Pine Finish insures clear, bright stock, and decorative grain for interior design.

Yellow Pine Stock Doors—solid or veneer—two or five panel. As practical and desirable as any hard wood door of similar pattern or make.

ALWAYS FOR SALE BY FIRST CLASS LUMBER DEALERS AND PLANING MILLS

For any information regarding Southern Yellow Pine, address

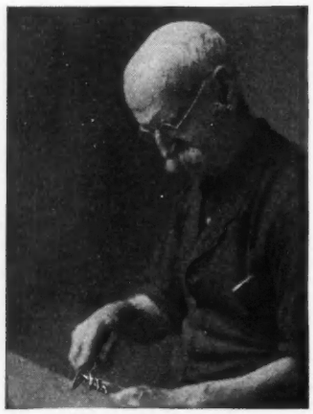
Yellow Pine Manufacturers' Association
Suite 707 - Wright Bldg. ST. LOUIS, MO.

as compared to the usual man power makes you wonder why a person should hesitate in using this outfit.

The manufacturers state it will pump 40 gallons while "Pat" lights his pipe. Circulars on request.

Sharpening Auger Bits

The Russel Jennings Manufacturing Company., of Chester, Conn., makers of the well-known Russel Jennings auger bits, are about to issue an illustrated booklet on how bits should be sharpened. It might be assumed that every carpenter and cabinet-maker already knows the right kind of bit sharpening from the wrong kind, and no doubt many do. Nevertheless, the perfected auger bit represented by the Russel Jennings, is the product of an immense amount of experimenting with angles, cutting edges, and screw threads, which in the new bit are claimed to be exactly right, and it is important that in sharpening the bit a little wrong use of the file should not be allowed to destroy the correct planning of the manufacturer. For that reason it may be profitable to many workmen to summarize here some of the directions given in the Russel Jennings booklet.



Sharpening Spur

The first work of a bit is of course done by the screw on the tip. It is part of the business of this screw point to center the hole, but even more to land the broader cutting edges — the lip and the spur—into the real work of boring. For ordinary uses, and woods that are not excessively hard or extremely gummy, the worm has a double thread of carefully calculated pitch. The Russell Jennings quick-boring bit, however, has a single-thread point, the thread having a steeper pitch than that of the double-thread point. Because of its more prominent and steer single thread, the quick-boring point leads the bit effectively into the gummiest woods, or into the hardest, like lignum vitæ, with perfect ease. In softer woods this worm insures very fast cutting, and bits of this type are therefore particularly well suited to electricians' work. A third style, the square, or "diamond" point, is provided on bits for use on machines with forced feed.

Sharpening Lip

Sharpening the worm is hardlly practicable except with the diamond point, though the skilled manipulator of a fine, three-cornered file can do a good deal in the way of restoring a worm point that has got battered in a collision with a nail. But it is with the lips and the spurs that most can be done in the way of sharpening, and it is most important to sharpen these in a way that shall preserve to the utmost the efficiency of the brand-new bit.

The spurs should be sharpened with a flat, second-cut file,

The test that tells

No matter what other test roofing may stand, you *must* have roofing that stands the test of time.

Genasco
Ready Roofing

is made of Trinidad Lake asphalt, which has withstood the weather and storms for centuries. It is Nature's everlasting waterproofer, and gives Genasco the life that lasts.

The Kant-leak Kleet does away with cement in seams. Saves time in laying. Supplied with rolls of Genasco when specified.

Ask your dealer for Genasco. A written guarantee, if you want it. Mineral or smooth surface. Gold medal (highest award) at Seattle, 1909. Write for samples and the Good Roof Guide Book.

THE BARBER ASPHALT PAVING COMPANY

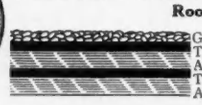
Largest producers of asphalt, and largest manufacturers of ready-roofing in the world.

PHILADELPHIA

New York San Francisco Chicago

GENASCO · THE STANDARD OF EXCELLENCE · TRADE MARK

Cross-section Genasco Stone-surface Ready Roofing



Varnishes

M. P. DURABLE EXTERIOR VARNISH

(GREEN LABEL BRAND)

Is a wonderful varnish for outside or inside exposed woodwork. Especially adapted for front doors, window sash and sills. Is very elastic and flows out with a beautiful deep lustre. Is for use upon exposed parts of residences, buildings, yachts, etc., or wherever an exterior or spar varnish is required.

PRICE
$4.00 per gallon
Quarts $1.00 each

For sale by paint dealers everywhere. If not at yours, we will send by express prepaid on receipt of price. Full descriptive price list on application.

THE GLIDDEN VARNISH CO.
Makers of High Grade Varnishes for all purposes
GLIDDEN BUILDING, CLEVELAND, OHIO

Glidden

GEO. H. BISHOP & CO., Lawrenceburg, Indiana, U.S.A.

Makers of

Fine Hand Made Hand Saws

The Purest of Quality Our "GREYHOUND" Hand Saw

TRADE MARK.

IN introducing our "GREYHOUND" brand of Saws to the trade, we have departed from our usual custom in naming instead or numbering the saw. This saw will be known as our "GREYHOUND" and will be the only Bishop brand of saw known by name.

We have had a Chemist experimenting for years to originate a purity of steel with a fine grain and tough body that would stand up under such a fearless warranty as we place on our "GREYHOUND" brand of saws. We now have it. We know its worth as well as its value. As workers of steel we understand it. We had to name it and we have christened it Bishop's Refined "GREYHOUND" Steel, associating our trade mark with its name. We have in this "GREYHOUND" Saw blade a purity of steel that is tough, tempers accurately and even—together with the special way it is made—enables us to guarantee that this "GREYHOUND" brand of Saws will cut faster and run easier in all kinds of wood, hold its sharpness and set longer than any other makes of good Saws in the world. We Refund the Money if 30 days' trial does not prove our guarantee. Our pride is quality with an honest opportunity for the purchaser to judge. Each Saw is tagged with our warranty on it. No expense has been spared to make this Saw the most perfect in the world. We invite correspondence with anyone who has our "GREYHOUND" brand of saws in use.

Made in both straight and skew back. **Packed One in a Box.**

In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

If this saw cannot be found in the Hardware Store and they will not order it for you, write to us. Price for 26 in. saw, $3.00 delivered. We make anything in Carpenters' Saws.

"Reputation and Quality Count"

$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, feet wide. Furnished with round or square 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.

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 bookfet. Ask us for one. A postal card will do.

HESS, 920 Tacoma Bldg. - CHICAGO

used on the inside of the spur—never on the outside, and the general shape of the spur should be maintained as in the new bit. The dulling comes only on the front or cutting edge of the spur. In filing, it is not necessary to sharpen the back edge, simply reduce the front edge until this edge becomes

Double Thread Screw Point | **Square or Diamond Point** | **Single Thread Screw Point**

sharp, and file back far enough to keep the original shape. Filing only a small portion of the inside surface next the dulled edge, would leave a shoulder which would make the turning of the bit take much more force than is needed with proper sharpening, and would besides reduce the cutting effect of the edge of the spur.

For sharpening the lips the proper file is a half-round, second cut. Use the flat side of this file on the side of the lip that is away from the screw point—never on the side next to the point. The slope of this face of the lip, that is next the tip, is essential to the proper action of the lip in diving into the wood, and so must not be changed. In sharpening the edge of the lip, file away from the edge, toward the shank of the bit. This leaves the edge clean, and free from any feather edge.

For bits 5/8-inch and larger a 6-inch file should be used; smaller files for bits of less than 5/8-inch diameter. For the lip the half-round file is necessary. The same file may be used for the spur provided care is taken not to let the edge of the file cut a furrow in the lip. Nothing but a really good file is of any use on a tempered bit like the Russell Jennings.

An Artistic Mottled Wall Effect

Flat-tone System is a new wall finish which enables the painter and decorator to secure a variety of artistic mottled effects for interior decoration. It is easily produced by the use of a foundation coat of S-W Flat-tone, followed by one coat of Flat-tone glazing liquid tinted to the desired hue with Flat-tone glaze and stencil colors. These glaze colors are of a highly transparent nature through which the under coatings are blended, thus producing a depth of tone and richness not possible to secure through the use of opaque materials. Flat-tone System is not glossy and can be cleaned with soap and water without injury. A full line of colors and directions for use are given in the S-W Flat-tone System color card which will be sent free to any parties writing direct to the Sherwin-Williams Company at 601 Canal Road, Cleveland, Ohio.

Labor Saving Grinder

Not long ago a workman went far up into the woods to chop down trees for a lumber company. Now, this fellow had been a carpenter and was a believer in up-to-date tools.

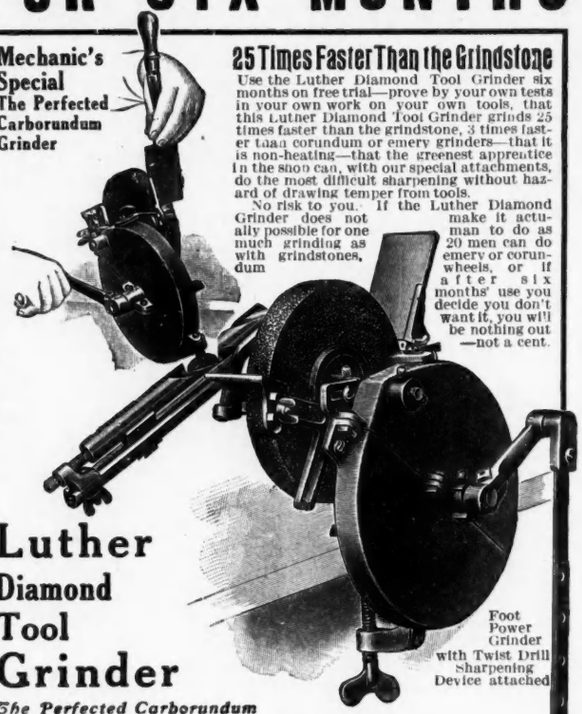
FREE TRIAL FOR SIX MONTHS

Mechanic's Special
The Perfected Carborundum Grinder

25 Times Faster Than the Grindstone

Use the Luther Diamond Tool Grinder six months on free trial—prove by your own tests in your own work on your own tools, that this Luther Diamond Tool Grinder grinds 25 times faster than the grindstone, 3 times faster than corundum or emery grinders—that it is non-heating—that the greenest apprentice in the shop can, with our special attachments, do the most difficult sharpening without hazard of drawing temper from tools.

No risk to you. If the Luther Diamond Grinder does not make it actually possible for one man to do as much grinding as with grindstones, 20 men can do with emery or corundum wheels, or if after six months' use you decide you don't want it, you will be nothing out—not a cent.



Foot Power Grinder with Twist Drill Sharpening Device attached

Luther Diamond Tool Grinder

The Perfected Carborundum Sharpeners Device

Every wheel is genuine **Carborundum** — the artificial diamond crystals produced in the electrical heat hotter than can be measured by any instrument of science. Carborundum crystals will scratch the genuine diamond. On the wheels of the Luther Diamond Tool Grinders this wonderful abrasive cuts hardest tempered steel as emery does copper—cuts it without frictional heat—does not need cooling with water and will not draw temper from steel.

Perfected Mechanically

Besides its wonderful carborundum wheels, the Luther Diamond Tool Grinder in all other respects also is a piece of superior machinery, compact and strong in design. Machined parts run in bath of oil; machine cut spur gears; bronze, dust-proof bearing; twist drill sharpening and other devices—in every point and particular a scientifically strong, durable, machine—a work, time, tool and money saver from start to finish, all of which is guaranteed by the largest exclusive manufacturer of foot and hand grinders in the world.

Return this coupon and get our FREE TRIAL OFFER

We want you to sharpen your tools with a Luther Diamond Tool Grinder for 6 months. You don't have to keep the Grinder unless you want it. This coupon entitles you to six months' free trial—it puts you under no obligation whatever. Send us this coupon today for complete free trial proposition, and catalog showing 35 types of hand and foot power grinders and grinding attachments from which you can choose an outfit for six months free trial. It's going to be money in your pocket to have one of these grinders on six months free trial. Have it. No letter or postal necessary. Just write your name and address on this coupon and return it today

Luther Grinder Mfg. Co.
56 Madison St.
Milwaukee, Wis.

Please send me free and prepaid books on Carborundum and catalog of Luther Diamond Tool Grinders, and particulars of six months' free trial offer.

Name.....

Address.....

.....

Luther Grinder Mfg. Co.
56 Madison Street,
Milwaukee, - Wis.

USE YOUR OWN BITS
IN THE
Nicholls Lock Mortiser

Then you can do your mortising jobs up quicker, easier and more accurately than ever before.

The most inexperienced workman can do a perfect mortising job with the Nicholls Lock Mortiser without danger of splitting the doors, whether veneered, hard, soft, coarse grained or end wood.

The scales on the Nicholls Lock Mortiser guarantee placing and cutting with the bit exactly where the cutting should be done without danger of injuring the door.

Wood fiber bushings are furnished for all standard sized bits and make dulling of bits impossible.

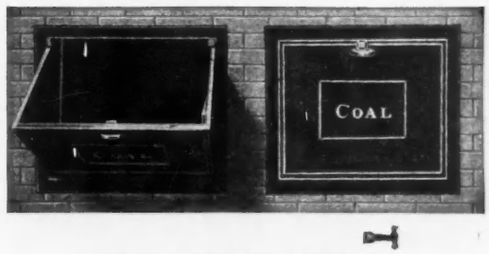
Sent prepaid for $4.50

If not satisfactory, return at our expense, and your money will be cheerfully refunded.

Write for circulars giving full particulars.

Sax-Nicholls-Cohn Co., Inc.
220-230 South Court Street
FAIRFIELD, IOWA

"Canton"
IMPROVED COAL CHUTES



Best in the World.

To introduce, this month only, will sell two only of a size in a locality for Cash as follows:

	Hopper	Opening	Outside Rim	Regular Price	Price Now
Size "A"	22 wide	16 high	25x19	$10.00	$7.00
Size "D"	24¾ "	20¾ "	27x23	12.50	8.50
Size "G"	32 "	24 "	35x27	15.00	10.00

Terms:— 30 days on satisfactory rating, 2% off cash with order, f.o.b. Canton, Ohio, 5% more f.o.b. 500 miles, 10% more 1000 miles, etc.

Satisfaction guaranteed.

Your neighbors will buy at the regular price as soon as they see yours.

Automatic Inside Locking Device, or Outside, if preferred.

As we may never again make this advertising offer, **order to-day before you lose the opportunity.**

The Canton Foundry & Machine Co.,
610 E. 8th St., Canton, Ohio

OUR HOBBY
A MAN IS A CHUMP

that don't buy the best article he can for his money.

Buy our squares and get the benefit of the Harden Corners.

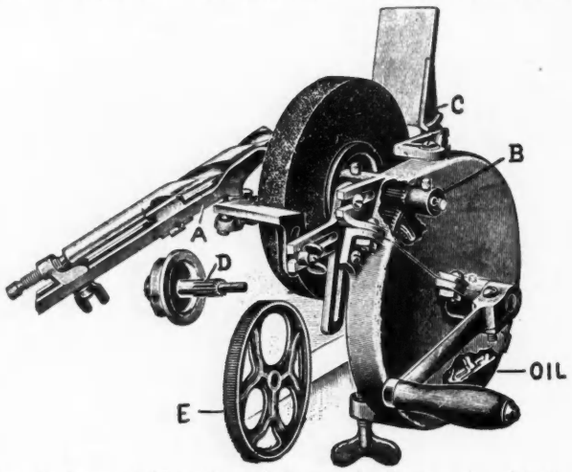
If your dealer will not supply you we will upon receipt of price, express prepaid.

	Polished Steel	Oxidized, Coppered, Black or Galvanized	Nickel Plated on Copper
No. 100-A—Drafting ..... Common and Octagon Roof Framing Rule, brace measure, octagon and 1-100 scale.	$2.25	$2.50	$3.00
No. 100—Drafting ..... Common Roof Framing Rule, brace measure, octagon and 1-100	2.00	2.25	2.75

NICHOLLS MFG. CO., Ottumwa, Ia.

He had in his possession a small grinder, which he had used for his chisels, planes, etc.

One day it struck him that he might sharpen up his axe on that small grinder. The trial was so remarkably satisfactory



that he began taking the grinder up in the woods with him and soon the other men noticed what a fine thing that grinder was.

Here is a true case of what can be accomplished with the Mechanics' special perfected carborundum grinder, manufactured by Luther Grinder Manufacturing Company, 56 Madison street, Milwaukee, Wis., for it is so good that it does more than the manufacturers claim for it. This grinder has cut gearing which is shown in cut marked B. It has bronze businings, also shown at B in cut. The main frame, a case being divided as shown at OIL, so that the gearing runs in oil and is self lubricating.

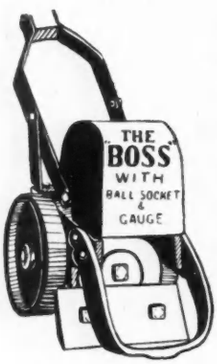
The universal adjusted tool rest is another special feature, and the chisel attachment shown at C, enables chisels or plane bits to be ground at a perfect angle. The twist drill grinding attachment shown at A, enables accurate sharpening of all twist drills. The small gear shown separately in the cut marked D, is cut from the solid steel and the gear shrouded at one end, makes a very strong gear.

The machine is made of malleable iron and is unbreakable. The carborundum wheels are known to our readers for their high cutting qualities. The Luther Diamond tool grinder, as advertised in this number, is sold on the most liberal terms. There is no excuse for anyone going without this labor-saving device.

The "Boss" Floor Scraper

One of the floor scrapers which is meeting with popular favor is that made by G. J. Kepplinger, of Dwight, Ill.

Mr. Kepplinger being a practical mechanic, has studied the requirements carefully and has built the "Boss" scraper along lines which produce good work at a minimum of time and labor.



The machine has a double swivel head, allowing the knife to be set in any desired position.

It also has a gauge which is set in front of the knife, converting the scraper into a plane which cuts off all waves in the floor and leaves it smooth as glass.

The gauge may be set to any cut or taken off entirely.

The gauge makes it impossible to put too great pressure on the knife, which causes depressions in the floor and wavy appearance.

CHICAGO GRILLE WORKS

1890 1910

18 years in our present location satisfied customers in every states in the union.

We can satisfy **YOU** if you will give us a chance to figure on your needs in our line of work.

Our **48**-page catalogue will be mailed on request. **(FREE.)** It contains **Seventy-two** designs of Grille Work, Collonade openings, Consols, and Parlor Columns.

Consol Design No. 5

826-838 Wells Street

Chicago, Illinois

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Get our price on Consol DESIGN No. 5.

We have others.

PEARSON'S IMPROVED Nailer

HERE'S an improved hand nailing tool that can be used for driving small nails and is especially adapted for driving shingle nails.

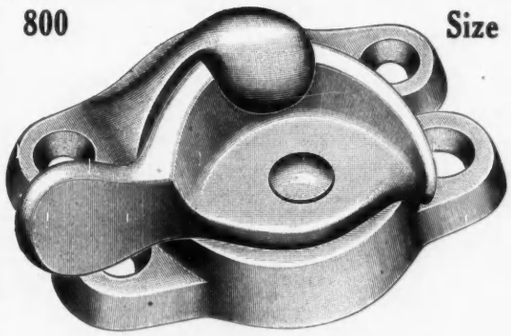
No trouble to handle, because it weighs only about two pounds. Can be used with gloves or mittens on and in any season.

Is operated as easily on a pitched roof as on the level surface. No slipping nails, no bruised fingers, no loss of time and temper.

Start saving money by making the Pearson Nailer part of your equipment. Your dealer has them; if not send to us. Complete information for a postal.

PEARSON MFG. CO., Robbinsdale, Minn.

800 Size



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The Crescent Sash Fastener.

The Best Sash Lock Made.

Strong, Symmetrical and finely finished

Made in 5 sizes, and all builders' hardware finishes.

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DRAWING & SURVEYORS INSTRUMENTS

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ARTISTS' MATERIALS

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Honeywell Hot Water Heating is the Best

THE HONEYWELL SYSTEM

THE HONEYWELL TIME CLOCK THERMOSTAT

It is not only the cheapest system to install, but by far the most sightly, efficient, responsive and economical system on the market t contains one-third less water and heats one-third quicker, with a resultant saving in fuel. The water circulates from the boiler to the radiators from ***three to five times faster*** than in the old style system, hence quick results from firing with a minimum loss of heat in transmission. No large, unsightly piping through the rooms with this simple system. Owing to the very rapid circulation of the water ¾" pipes are amply large to supply any sized radiator on the upper floors.

Every Radiator heats perfectly with the water at a temperature as low as 85 degrees, which can be increased to a temperature of ***240 degrees without boiling*** inside of a ***few minutes,*** giving the system the efficiency of steam at 10 lbs. pressure to m eet extremely cod weather, while retaining all the valuable features of the mild temperatures of hot water.

34,000 SYSTEMS IN USE

Endorsed and Sold by the Leading Manufacturers of Heating Materials.

Free engineering advice given the trade on all installations. Failure absolutely guaranteed against.

If you have an unsatisfactory job of hot water heating, we can cure it at a very small cost and without remodeling.

Write us for full information regarding this eminently successful system that is revolutionizing hot water heating.

THE HONEYWELL "IMPROVED" HOT WATER RADIATOR VALVE

Honeywell Heating Specialty Company

Plant and General Offices

WABASH - INDIANA

ERECTION COST

Cut One-Half

BY USING

"Canton" Ceiling

Manufactured by

THE CANTON ART METAL CO.

CANTON, OHIO

Eastern Branch:
525 W. 23rd Street, New York City

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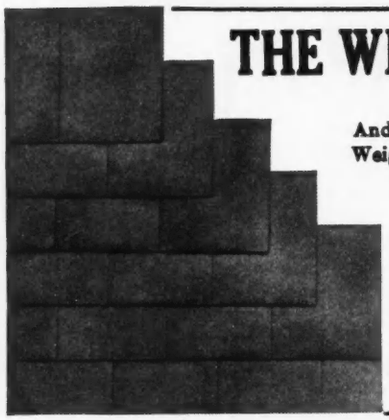
206 S. Third Street, Minneapolis, Minn.



THE WINTHROP SOLID TAPERED ASPHALT SHINGLES

ARE OF A COOL, GRAY SLATE COLOR

And have all the Durability of Asphalt—the Fine Appearance of Slate and the Light Weight and Low Cost of Wood Shingles. Laid with regular Shingle Nails, the same as Wood Shingles. **NEVER REQUIRE PAINTING.**

Write for Free Booklet and

SPECIAL INDUCEMENTS TO THOSE WHO APPLY FIRST ROOF IN EACH TOWN

Winthrop Asphalt Shingles are Fire-resisting, Weather-proof, Wind- and Sun-proof, and never Crack, Break or Fall Off.

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Do You Know
That We Make

Pin Anchors
Joist Anchors
Single and Double Stirrups
Tie Rods Bolts
Washers
Builders' Derricks
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Your Orders Will Have Our Prompt Attention

UNION ELEVATOR & MACHINE CO.
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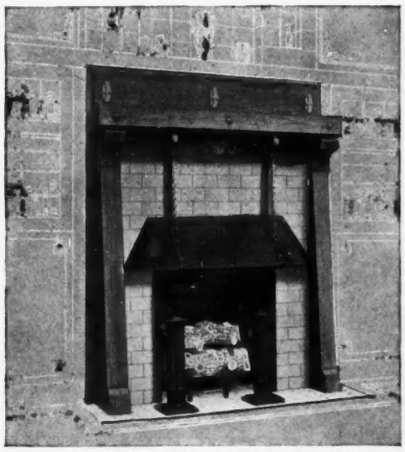
CONTRACTORS and BUILDERS
THIS WILL INTEREST YOU

A furnace for small houses, cottages and bungalows, at a small price.

NO PIPES—NO LOST HEAT

Write us for particulars about the Great Bell Furnace.

American Bell & Foundry Company
NORTHVILLE, MICH.



CRAFTSMEN MANTELS

For dens, inglenooks and living-rooms, finished in the Mission style, Voss Craftsman Mantels are particularly appropriate.

Contractors and builders everywhere find it easy to please builders of bungalows and craftsman homes from the wide line of Mission and Craftsman Mantels we make.

And every

Voss Mantel

is guaranteed by the manufacturer against defects in workmanship and material.

If you need mantels for any job you are now working on, it will pay you to investigate Voss Mantels, and get our prices. We can supply you with any style, from the Colonial to the Mission in all woods and finishes and we are equipped to carry out any special designs of architects or builders at lowest cost.

Our beautifully illustrated booklet, "Mantels for the Home," will be sent free on request to anyone interested in artistic wood mantels.

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"Master Mantel Builders for 25 Years."

Arbegust Street, - LOUISVILLE, KY.

Wood Mantels, Grilles, Colonades, Fireplaces, Mosaics, Tiles

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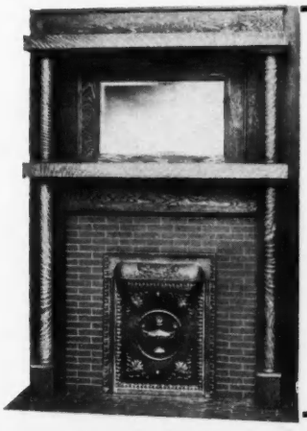
BY BUYING DIRECT FROM THE MANUFACTURER

CATALOGS AND DESIGNS ON APPLICATION

CHAS. F. LORENZEN & CO., 725 N. Ashland Ave., Chicago



$24.75 Special $23.75

Bargains

No. 239 **No. 228**

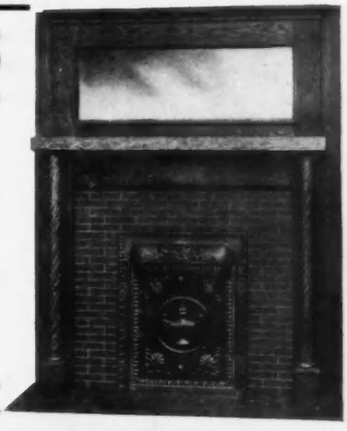
at the above prices we include **MANTEL** with **Tiling** and **Grate,** also

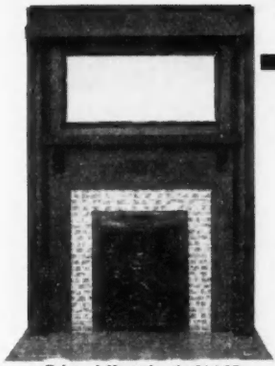
Plated Frame and Front and Ash Screen

Write for our 50 page catalogue. Sent free on application

MOORMANN & OTTEN

611-613 Main St. **Cincinnati, Ohio**





Price of Mantel only $14.85.
Price of mantel as shown above with combination coal burning grate and first quality enamel tile, any color for hearth and facing—**$22.40.**

WHITE MANTELS make home-like homes

Mr. Contractor:

Our Catalog should be in your hands. It shows Mantels of Wood or Tile of every description every one of which can be installed AT A GOOD PROFIT.

Our Designs Are Exclusive

Every one can and should install a White Mantel. They are made to accommodate the small cottage or the modern mansion at prices to suit any purse.

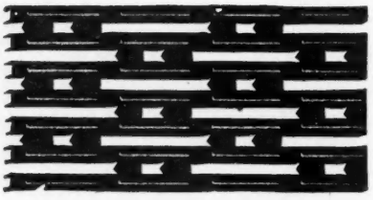
White Mantels are made to Heat as well as Beautify

Our Catalog is worthy of a place on your Desk

WHITE MANTEL & TILE CO.

100 Jackson Ave. - - Knoxville, Tenn.

ECONOMY FROM START TO FINISH



Coming right down to the economy question Clincher Lath has got everything beaten.

As a practical man you can understand the principle by the illustration. Notice the level plastering surface—the construction that's different.

Sagging Is Impossible

Sagging between the studding is rendered absolutely impossible if Clincher Lath is used. Read what progressive carpenters have to say about it.

Easier to handle and easier to erect than any other lath on the market. Prove this by sending to Department R. C. for samples. **Free to anybody interested.**

The American Rolling Mill Co.
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Everything in Plumbing and Steam Goods at Cut Rates to Everybody

SAVE YOU 30 TO 45 PER CENT

$8.50 and up
This Magnificent Enamel one piece Sink. Latest design.

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Artistic Lavatories. Various designs.

$10.95 and up
Luxurious Enamel Bath Tub of guaranteed quality. Will wear forever.

Superb Bath Room Outfit. None better, at any price. **$35.00**

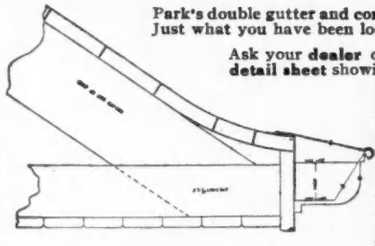
$3.00 and up
Laundry Tubs all styles and sizes.

Low-down and high combination Closets. Guaranteed to be equal to the best in the market. Used in the most palatial homes. **$11.50**

HEATING PLANTS.
Let us make you an estimate on a heating plant. With instructions from our engineering department, you can install it yourself. Simple and safe as a stove. No expense after once installed. The only healthful economic method of heating your home. Plans free. Tools loaned. Boiler only **$65.00 and up**

JOHN HARDIN CO., One-Quarter Century at **4549 Cottage Grove Avenue, Chicago**
Send for Catalog A, Dept. 13

A Detail Drawing Of The Only Practical Double Gutter Ever Made



Park's double gutter and cornice mould combined. Just what you have been looking for.

Ask your **dealer** or write to us for the **detail sheet** showing our eight styles of this gutter and a complete line of sheet metal roof trimmings.

Every architect should have this detail sheet to specify from.

We manufacture a complete line of sheet metal work for buildings (watch this space).

MESSENGER & PARKS MFG. CO.
The Prompt Shippers. **Aurora, ILLINOIS**

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AT WHOLESALE

When in the market for Plumbing Supplies and you wish to

SAVE
20 to 40 Per Cent

on every article, write for my free illustrated Catalog. The only house that sells first class guaranteed goods at wholesale prices direct. Shipments are promptly made from a very complete stock.

Small orders are as carefully handled as large ones.

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COLUMNS AND CONSOLS

In quality and price! our work is not surpassed.

You will make no mistake in writing us before ordering elsewhere.

Send for 48-Page Catalogue No. 15

It contains many fine designs of modern Grilles Columns and Consols.

Consol Design No. 1.

Northwestern Grille Works

CHRISTENSEN BROS., Props. 1820-24 Milwaukee Ave., Chicago

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Are there any times when you have not as much work as you would like? This sometimes happens.

We offer you an opportunity of increasing your income considerably by laying our thin, hardwood flooring, and taking the place of the expert floor-layer.

Our thin hardwood flooring is the result of twenty years of hard study and work, and has the good points of all hardwood flooring with others that combine to make it perfect.

It is so perfect of construction that it is absolutely level when laid, and usually needs but a little sandpapering to prepare it for finish.

SEND FOR OUR BOOKLET

"Profitable Opportunities to Carpenters" which tells you all about our flooring, and contains much other useful information on this subject.

Just cut off the coupon NOW and mail it so that you can place yourself in position to increase your earnings immediately.

Ask us any questions you wish to about hardwood floors, because we want to help you and work with you.

Cincinnati Floor Company
228 W. Fourth St.
CINCINNATI

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Cincinnati.

With no obligations send me your booklet "Profitable Opportunities to Carpenters."

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Easily put up. Once up, always up. Do not bend or break by pressure of ladder against them. Will stand greater weight of snow or accumulation of ice than any other gutter. Not affected by acid fumes that in some vicinities play hob with all other metal gutters. They are adaptable to any kind of building or type of construction. Cast with moulded face to form part of cornice, or rounded to serve as a hanging gutter Used almost exclusively in England and all over Europe. Supplied in 6-foot lengths. Joints fitted ready to erect. No soldering required. Send at once for circular and prices.

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Interior and Exterior

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DETROIT DECORATIVE SUPPLY CO.
Limited

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Most Complete Catalogues Ever Issued

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Full Length Screens Keep Out All the Flies — Always

The best way to attach full screens is to hang them from the top with

Gossett Hinges

Screens can be taken off or swung out in a jiffy to wash windows. No ladder or tools needed even on upper stories. Storm sash can be hung with the same fittings.

Samples Free to Carpenters for trial

F. D. KEES MFG. CO.
Box 522 Beatrice, Nebr.

SHOW THIS TO YOUR CUSTOMER

A leaking pipe will destroy a plaster ceiling. Just remove a few plates of

BERGER'S "CLASSIK" METAL CEILING

make your repairs and replace the plates. That's just one of the many talking points that put dollars in your pocket.

Write for special plans and catalogue

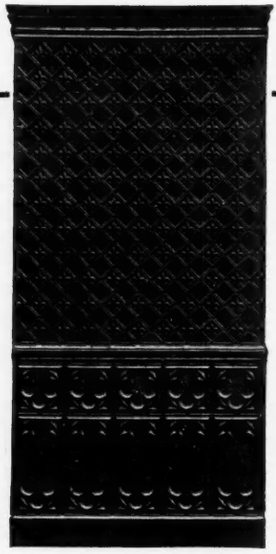
The Berger Mfg. Co., Canton, O.

A Booklet telling how to get water Fresh from the well for suburban homes. How to avoid storage of water. The most economically operated independent water system, etc.

Sent Free on Request

UNITED PUMP & POWER CO.

495 Old Colony Bldg. : CHICAGO



Mr. Builder!

This New Side wall is a dandy for a Nice Room

This is only one of the many handsome designs shown in our new catalog of metal ceilings and sidewalls. **Your copy is waiting for you.** Write for it today.

Our plain instructions make measuring and erecting easy for the carpenter and builder; we also furnish detailed drawings showing just **how** to do it.

We make the best fitting and nicest looking **Spanish Metal Tile Roofing** in the market. Sample and prices free.

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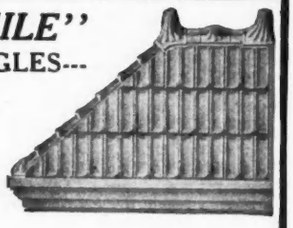

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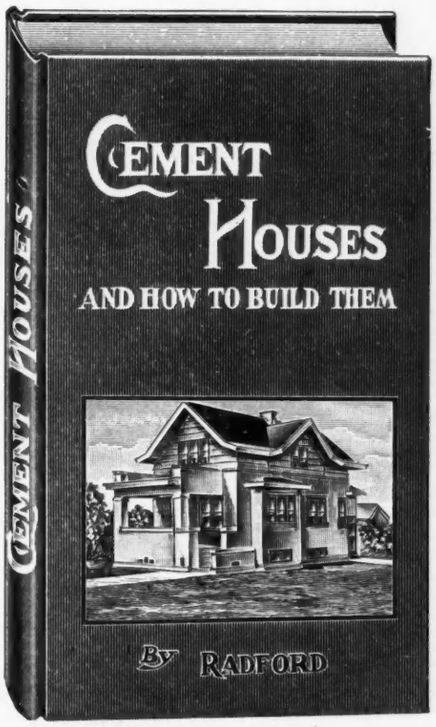

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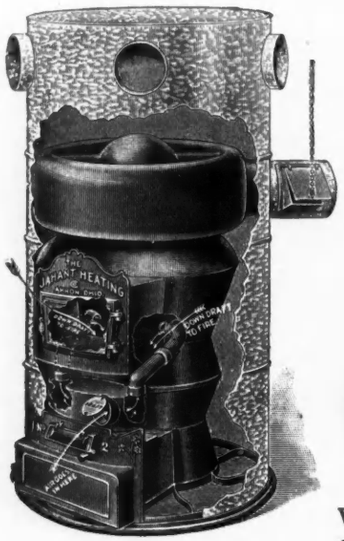

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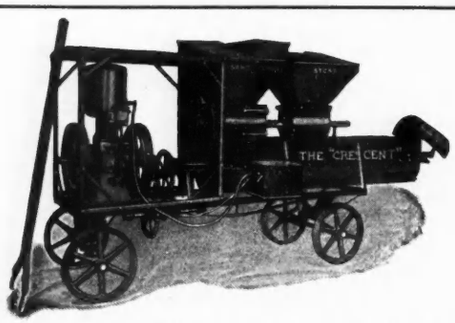

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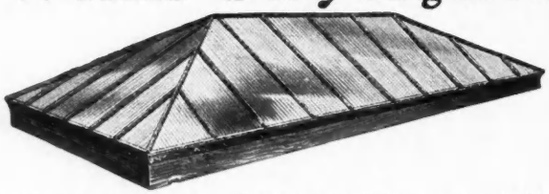

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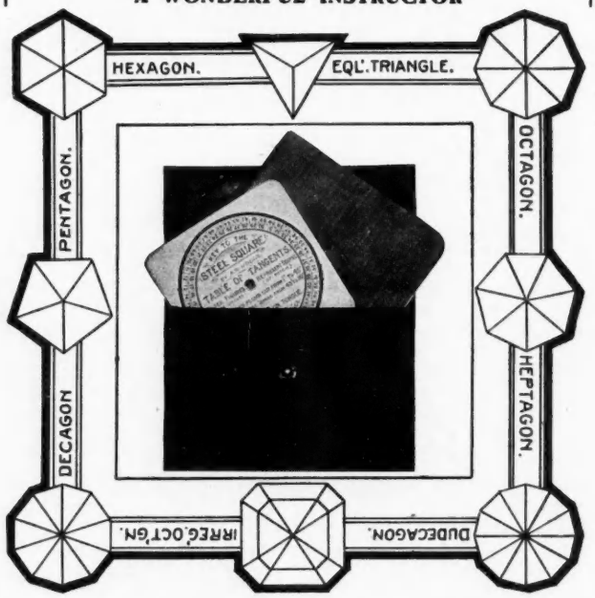

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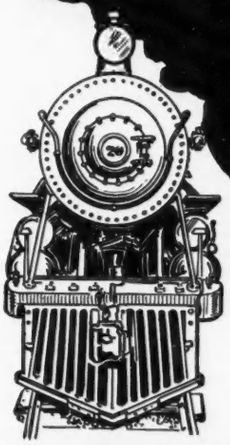

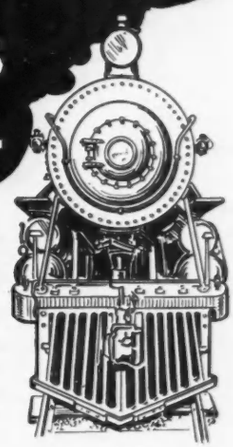

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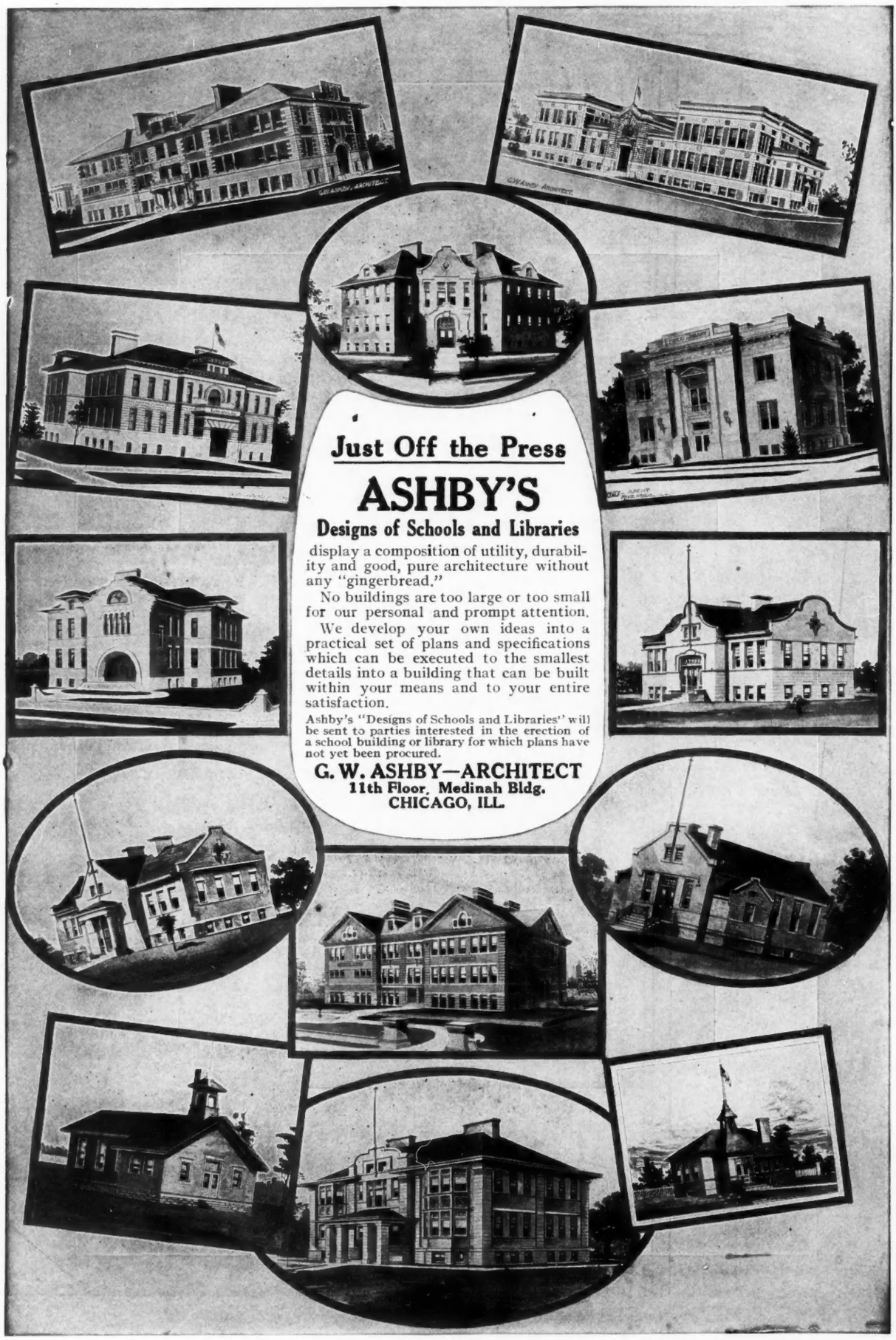
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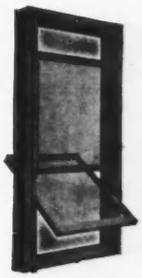
are made with the idea of turning fire. They are entirely of metal, lock-seamed throughout with no soldered joints in frame, sill or sash. Heat does not affect them in any way, and a Mullins was never known to warp, buckle, contract or expand. Mullins Windows are famous for durability, and will outwear any other feature of the building.



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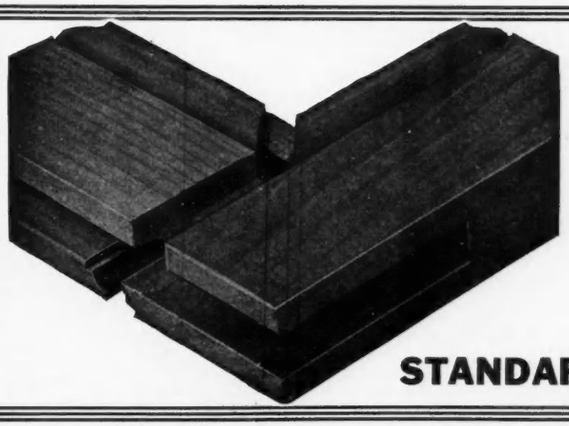

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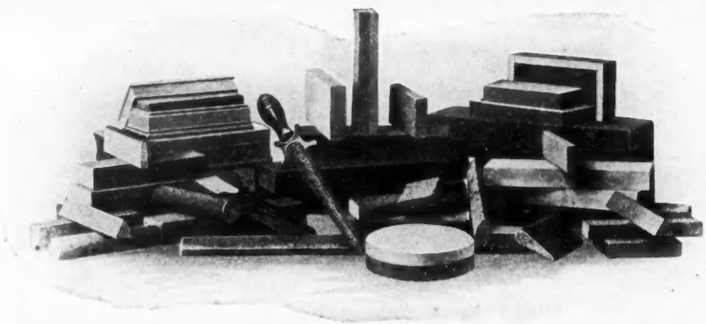

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No man who uses edged tools can afford to be without them.

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Made on a New Rapid Block Machine Insure Satisfaction

NEW RAPID BLOCK MACHINE
The simplest and most reliable block machine made

Machine makes blocks 8"x8"x16" or 8"x10"x16" without additional expense for attachments or pallets.

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One movement of lever opens or closes machine. Cores are drawn in or withdrawn automatically.

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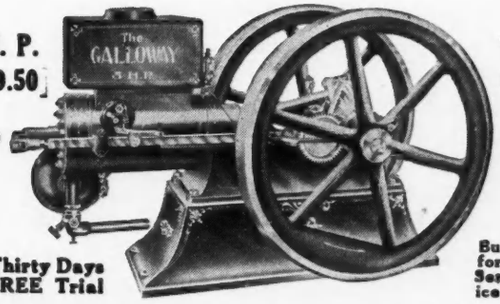

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A Frank Statement

HOW many manufacturers of ready roofing will tell you frankly how their goods are made?

Mighty few.

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They don't tell you what the goods are made of because they don't dare.

From the start we have never hesitated to tell the buying public just what Amatite is made of and just what it will do.

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Alternating with these two layers of pitch are two layers of coal-tar-saturated *felt* to give it tensile strength.

On top of these four layers is a *real mineral surface* — five layers of protection.

The mineral surface is permanent, fireproof, and *absolutely requires no painting.*

It Needs No Painting

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For sample booklet and prices address our nearest office.

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Painters' and Decorators' Striping and Stencil Wheel

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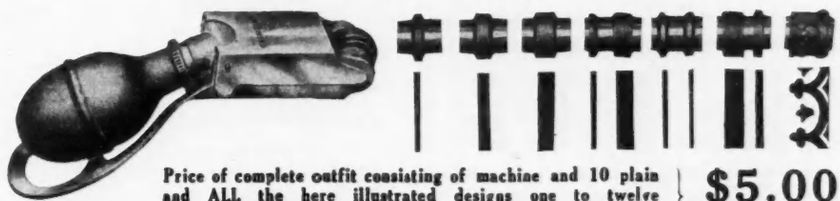

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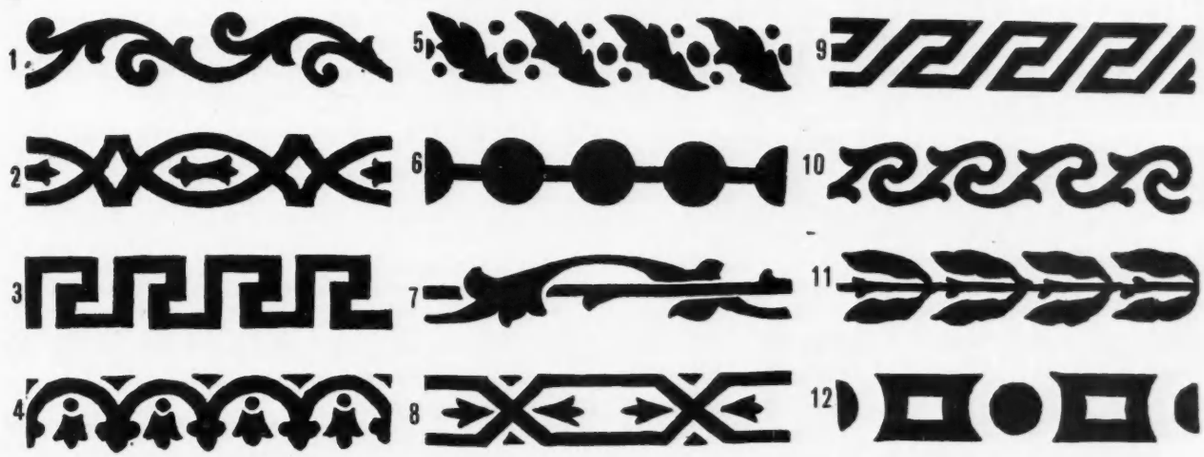

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Won't Crack Like Slate

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The only absolutely protected or covered Lock. No chance here for the lock to flood and leak.

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Made from OPEN HEARTH STEEL.

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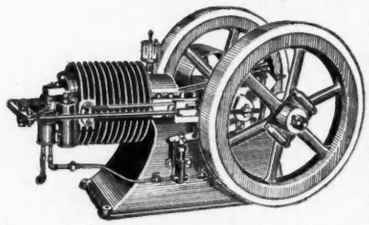

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Ask us today for a sample and our proposition. It will make you money.

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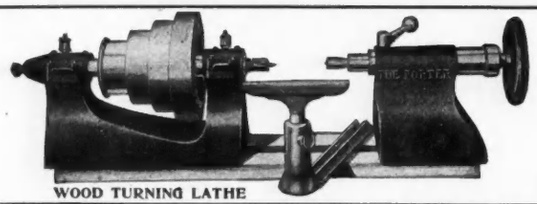

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Read every word of our greatest sale. **Never before** have prices been cut deeper than those quoted in this advertisement. **Every item means a big saving for you. Make your selection at once.**

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The best quality of kiln dried stock, thoroughly sanded.

8 inch Y. P. Base, price per 100 lin. ft.	$2.45
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Over 2,000 other sizes and styles of doors shown in our mammoth Catalog.

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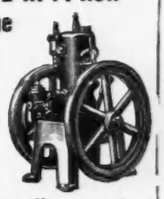

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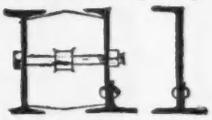

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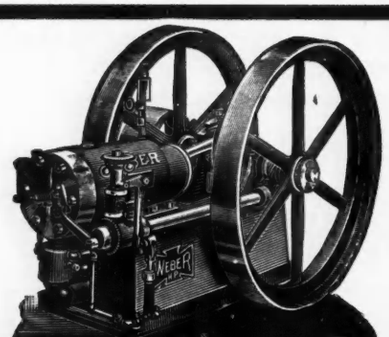

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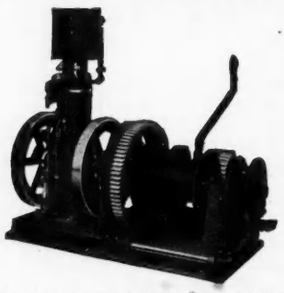

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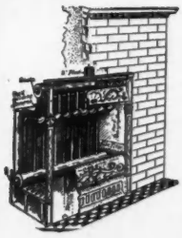

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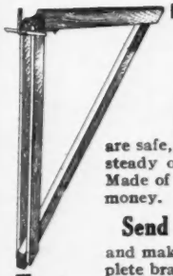

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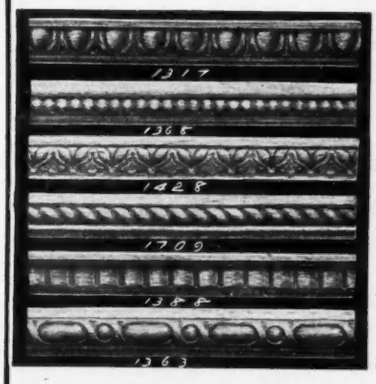

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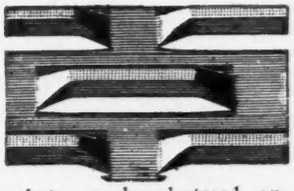

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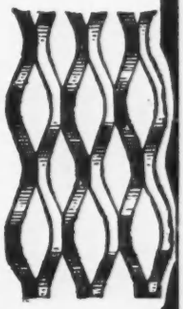

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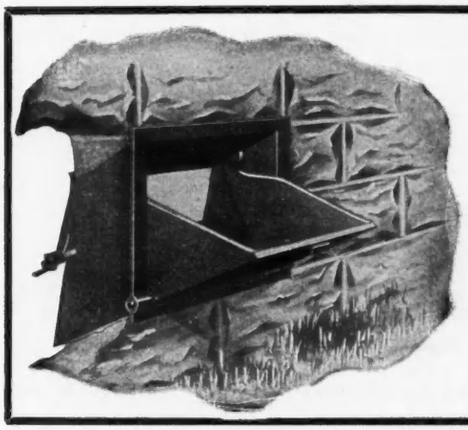

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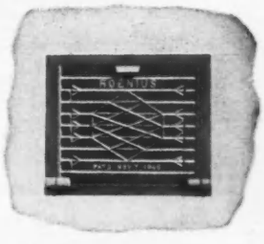

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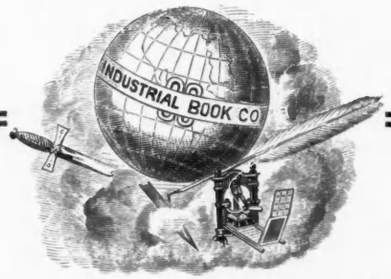

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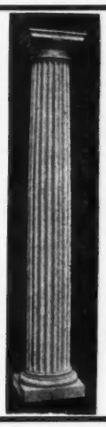

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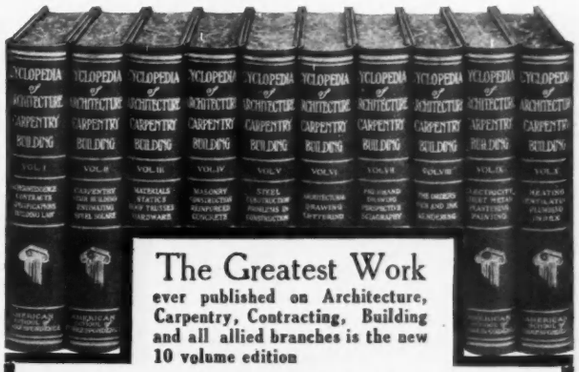

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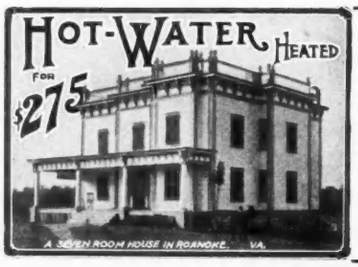

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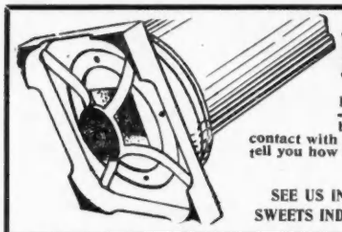

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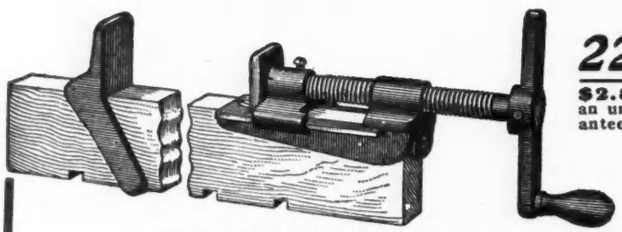

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Wet Process is Right.
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The Mogul Invincible Block Machine

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It is 48 inches long and will make three 16" or two 24" blocks at one operation. It makes sills, caps, copings, rails and steps, faster and better than a special sill machine. It has every adjustment that any other machine has and many that no other machine has.

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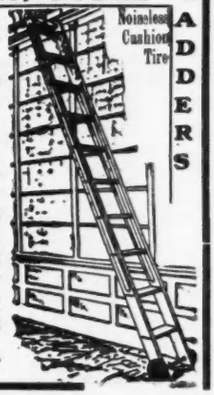

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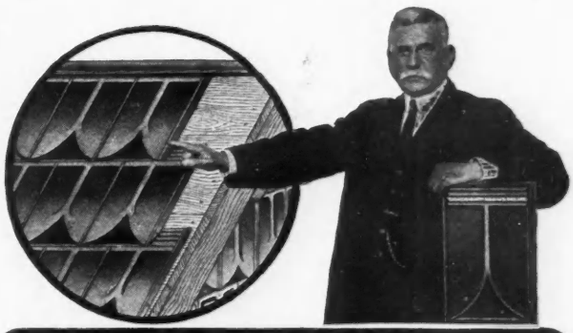

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Put down a shingle, drive in three nails, slip the next shingle into the side lock of the first; nail it down; then fit in the next and so on.

See where I'm pointing?

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Also notice how one row overlaps the other.

These two features make it absolutely impossible for rain or snow to penetrate a Cortright roof.

Then this simplicity of application is only one detail.

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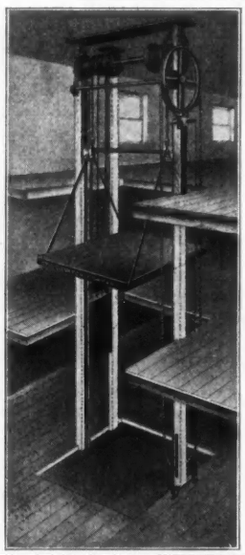

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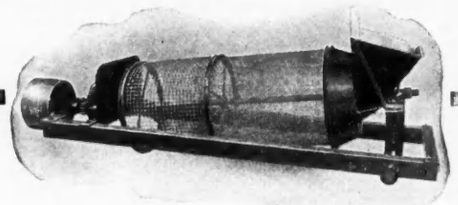

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Our work is far superior to the usual output of local mills and has a style and finish not obtainable from those who do not make a specialty of fine screens.

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

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Special terms to Contractors and Builders.

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was the first construction of its kind on the market. It still holds first place, as it is the most practical and complete. It is specified by the leading architects, and recommended by Plate Glass Insurance Companies and plate glass setters. Write for our illustrated catalogue "E-800," which enters into a thorough description of it.

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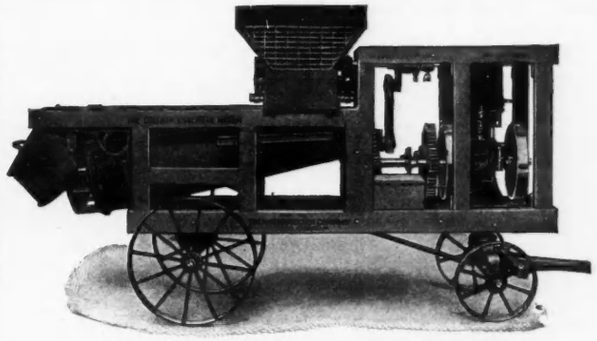

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Dear Sir:—

I have used the No. 12 Coltrin Mixer at a number of jobs this spring, and find it satisfactory in every way. It is the most serviceable, quickly handled and largest producer for its size that I have yet seen.

I most heartily recommend it to any person in need of a Mixer of this capacity. You may use this for any advertisement or circular you see fit.

Yours very truly,
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COLTRIN CONCRETE MIXERS

5 Sizes

Shipped anywhere in the United States on 5 days trial.

Manufactured Exclusively By **The Knickerbocker Co. Jackson, Michigan.**

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30 Tons' Pressure GUARANTEES Uniformity of Product

THE SOMERS uses the "wettest" mix of any block machine on the market

The Somers Makes Money———We Can Prove It

2 Blocks Per Minute FASTEST MACHINE MANUFACTURED

The Machine does the work, not the man

It makes an absolutely damp-proof wall

You Can Guarantee It

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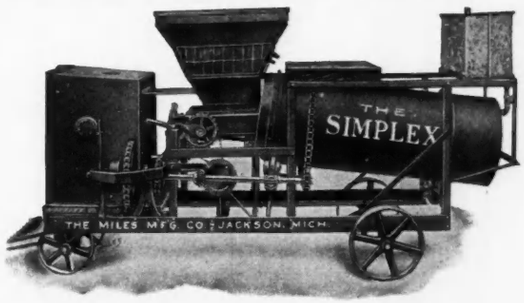

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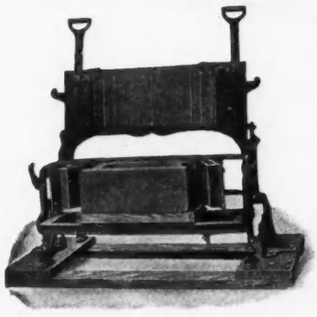

"The Miles" No. 5, Down Face, Wet Concrete Block Machine

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.

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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.

R U A { 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 1910 MODEL IS A WONDER

Write us so we can tell you more about it

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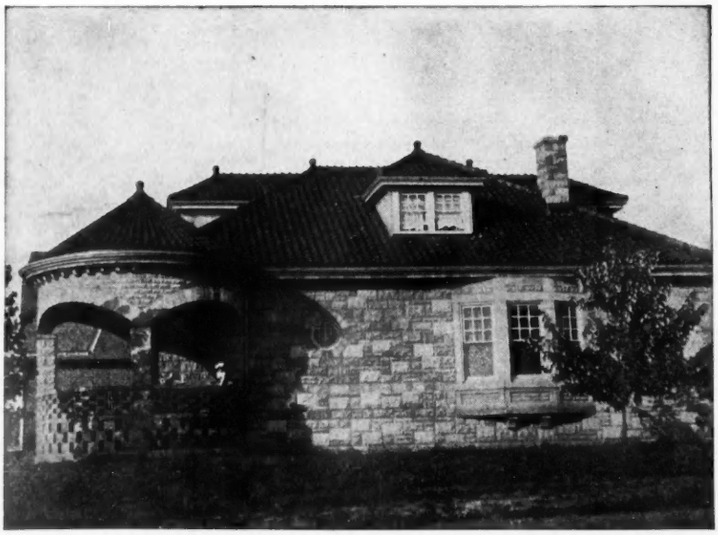
Increase Your Profits by Making and Selling

HERCULES CONCRETE BUILDING BLOCKS



The blocks that sell—the blocks that are always in demand—The high grade blocks

HERCULES CONCRETE BLOCK MACHINES

are used by the progressive up-to-date and successful Contractors and Builders everywhere By the United States Government, the British Government, the leading Railroads and large Engineering Concerns. **They use HERCULES machines BECAUSE THEY GO FURTHER.** They make **sizes of blocks** other machines cannot make. They make BETTER blocks by making them WET. The output of ONE HERCULES EXCEEDS the combined production of from TWO to FOUR MACHINES of OTHER MAKES. It is the ONLY machine that will expand to meet every requirement of an up-to-date block plant, making as it does on ONE machine all lengths and designs of building blocks from 3 INCHES to 6 FEET in all heights and thicknesses.

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ELLER'S "Perfect-Fit" Steel Ceilings

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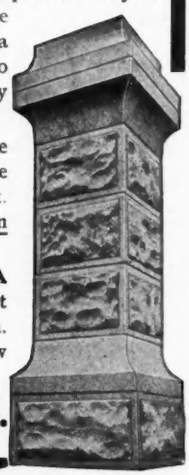
Molds TO MAKE THIS Porch Pier AND Chimney For $19.00

You see, it is this elastic and this interchangeable feature that makes our system of molds valuable.

You can adapt them to a great variety of other purposes. And you always have the molds—and only a few of them—to do any work that may come up.

You ought to see these molds and see how they work. We ship on a fifteen days free trial.

SEND FOR A CATALOG. It describes them. You'll see illustrations which show how they work.



W. E. DUNN & CO.
1332 Grand Ave., CHICAGO

CONTENTS FOR AUGUST, 1910

INDEX TO ADVERTISEMENTS, AUGUST, 1910

NOTICE TO ADVERTISERS

Forms for the September number of the American Carpenter and Builder will close promptly on August 20. New Copy, changes and orders for omissions of advertisements must reach our business office, 185 Jackson Boulevard, Chicago, not later than the above date to insure attention.

AMERICAN CARPENTER & BUILDER CO.

BISHOPRIC WALL BOARD

Cheaper and Better Than Lath and Plaster

YOU DON'T HAVE TO WAIT for good building weather when you use Bishopric Wall Board. This substitute for lath and plaster is made of kiln-dried, dressed lath, **imbedded** in hot Asphalt Mastic under pressure of 500 pounds to the square inch, surfaced with sized cardboard and cut at the factory into 4x4 ft. sheets, of uniform thickness (¾ inch), which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap or other decoration.

Applied Dry, Winter or Summer

It is applied dry; is guaranteed not to swell, shrink, warp, crack, flake or blister; is clean, sanitary and odorless; is proof against moisture, cold, heat, and vermin; saves fuel in winter and keeps out summer heat; also deadens sound. Is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.

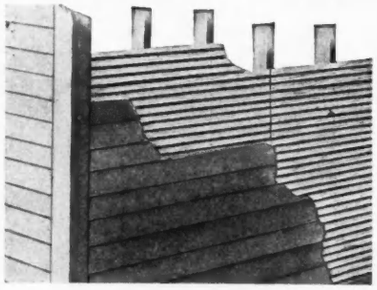
Importance of Lath The lath forms a perfect binder—a guarantee against warping or twisting out of shape. Furthermore, insures perfect adhesion when nailed to studding. Beware of cheap imitations. Bishopric Wall Board is protected by U. S. patents. Prosecution will follow infringement.

PRICE AND SHIPMENT FROM NEAREST POINT: Crate of 16 sheets, covering 256 sq. ft. of surface, $6.40 or $2.50 per 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, O., or Alma, Mich.

Saves labor. Does away with building paper. Cheaper than lumber.

BISHOPRIC SHEATHING

Proof against heat, cold, moisture and vermin. Patented.

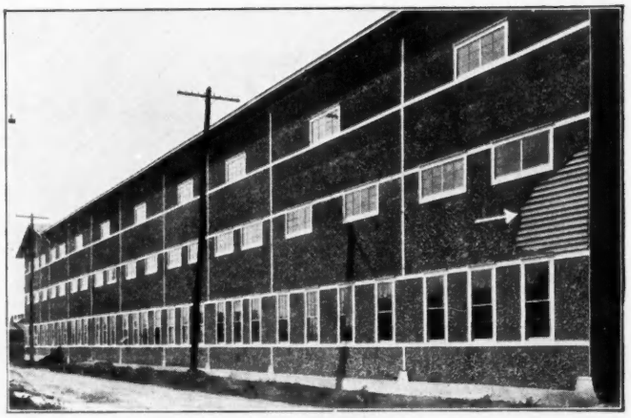


Made of the same materials used in Bishopric Wall Board and same way, though finish is not necessarily so smooth, therefore costs less. It is nailed to studding on outside of the building, with lath and Asphalt Mastic exposed. Over this you nail weather-boarding. This gives solid sheathing with dead air space between Sheathing lath and siding. Ideal material for cement exterior or stucco work. Cement firmly adheres to lath and Asphalt Mastic, making a solid, smooth exterior. For factory or residence, this form of cement construction is the cheapest and best known.

Bishopric Sheathing is cheaper than lumber; is free from holes and rough spots; is nailed to studding in half the time required for lumber; does away with expense of buying and applying building paper; is proof against heat, cold, dampness, frost, wind and vermin. Being a non-conductor, it keeps the building cooler in summer and saves fuel in winter. It is used with excellent results as a lining for dairy barns, poultry houses, driving stables or other outdoor buildings.

Ideal For Cement Exteriors

Illustration to right is from an actual photograph of a New Orleans factory with Bishopric Sheathing and cement exterior. Bishopric Sheathing has been nailed to outside of studding and the exposed lath and Asphalt Mastic have been coated with cement. The artist has indicated with an arrow the exposed lath. This form of cement construction is most durable as well as economical; is fire-proof, moisture-proof, wind proof as well as proof against heat and cold. The cement firmly adheres to the laths, making a solid, smooth exterior. Spaces between parts of laths not fully imbedded in Asphalt Mastic form an excellent key for firmly holding the cement. For factory or residence this form of cement or stucco construction is the cheapest and best known.



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The Mastic Wall Board & Roofing Mfg. Co., 24 E. Third St., Cincinnati, O.

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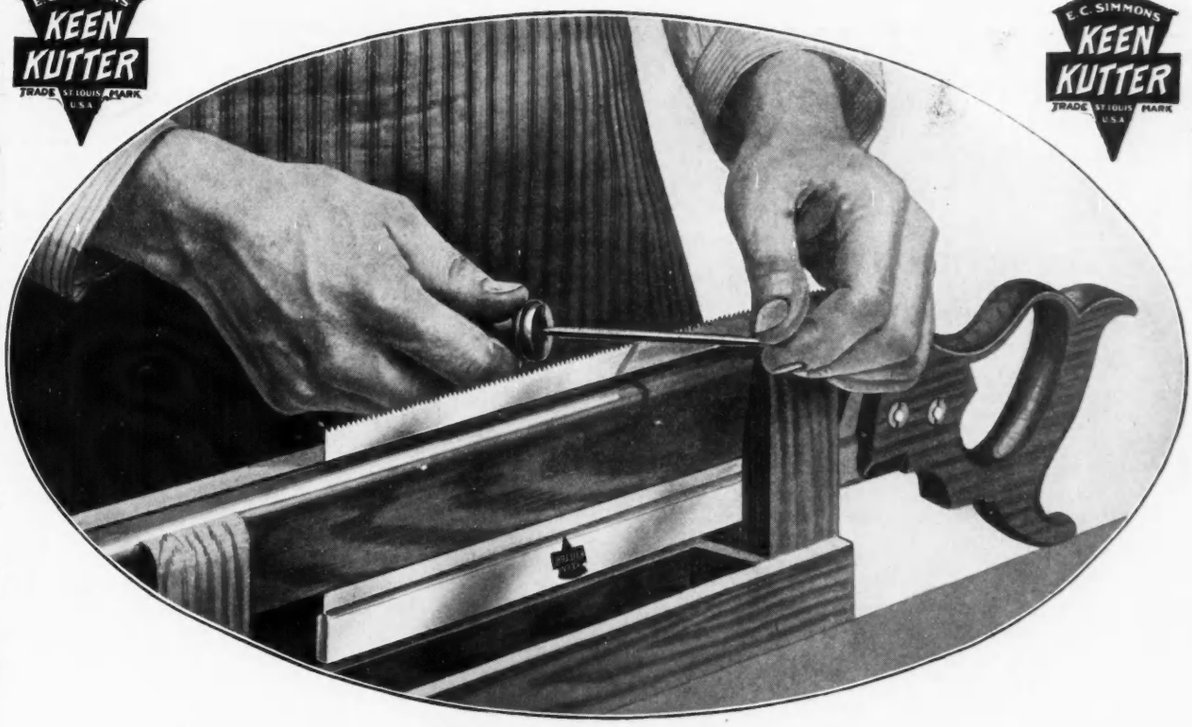

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Special Slim Taper Files

The slimmest taper files made. Best for fine tooth saws, and the longest-lived files you can buy. A case is recorded where one file sharpened 35 saws. Instances are numerous where 15 to 20 saws have been sharpened with the same file. How is that for service?

Quality makes such service possible. And quality here means finest tool steel made, improved machinery that cuts every tooth the same depth, and a tempering process that's wonderful in results.

Fill out attached coupon and get two files absolutely free. Then test them out in hard work. You'll find them all we claim. Send coupon while you think of it.

"The Recollection of Quality Remains Long After the Price is Forgotten."
Trademark Registered. —E. C. SIMMONS.

Simmons Hardware Company (Inc.)
St. Louis and New York, U. S. A.

(Coupon)

SIMMONS HDW. CO.,
(Div. A. C.)
St. Louis, Mo.

Dear Sirs:
Please send me FREE, Charges Prepaid, two E. C. Simmons Special Slim Taper Files, as per your offer, with the understanding that I am under no obligation to buy.

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We Initiate—Never Imitate

A GOOD TIP

Exclusively "National"

The tip is threaded and screws into the butt. It is also slotted for a screw driver, making it easy to remove the tip and affords ready access to the pin. Also indicates instantly which is the bottom of the butt.

The Greatest Improvement in Butt Construction in Recent Years.

Ask for Booklet "Ornamental Ideas" and Give Dealer's Name.

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