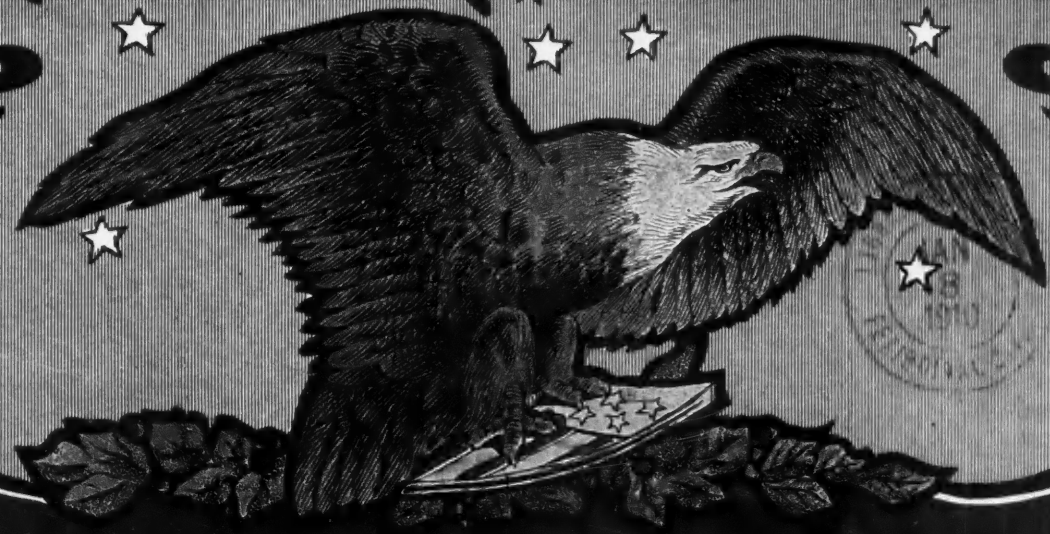


AMERICAN CARPENTER AND BUILDER



THE WORLD'S GREATEST BUILDING PAPER

Special Millwork Number

The planing-mill man and the carpenter have much in common. One makes the Millwork; the other uses it. The work of each depends on the other. This Special Millwork Number is for them both.

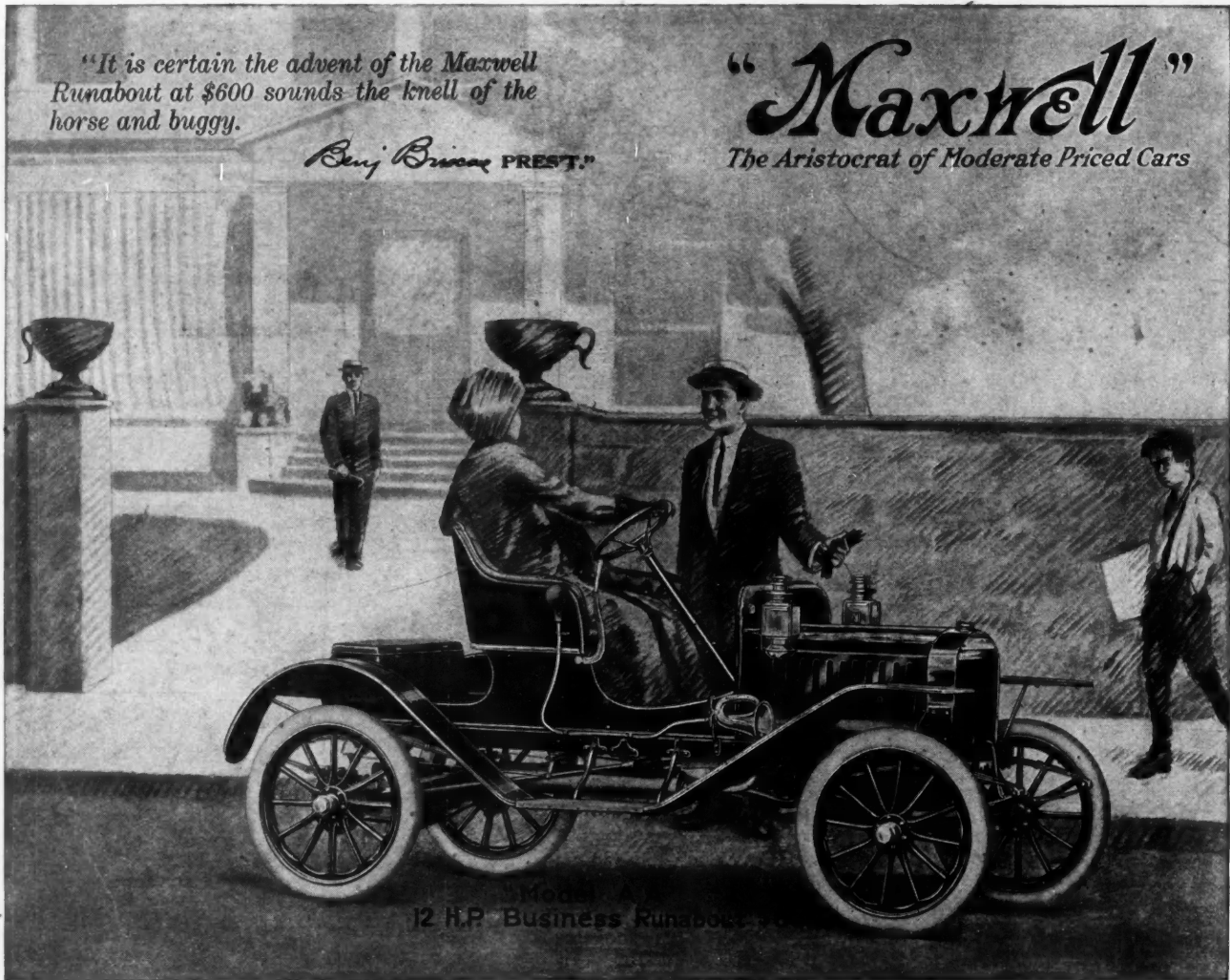
Some of its Special Features are:

- How Modern Millwork Is Made
- Design and Use of Interior Finish
- Suggestions for Machine Woodworkers
- Veneered and Embossed Millwork
- Details of Construction and Finish
- Complete Set of Building Plans

"It is certain the advent of the Maxwell Runabout at \$600 sounds the knell of the horse and buggy.

Benj. Briscoe **PREST.**"

"Maxwell"
The Aristocrat of Moderate Priced Cars



Here It Is An Automobile Within the Reach of all — \$600

The car for which the World has waited. A high-grade reliable business runabout. Costs less to keep than a horse and buggy—does the work of three.

When not in use expenses stop. A horse eats all the time—this MAXWELL is vastly more economical.

Sale of MAXWELL Cars To Date
Sold to Oct. 30, '09 - - 19,391
Sold during Nov., '09 - - 526
Maxwells in use today - - 19,917
WATCH THE FIGURES GROW

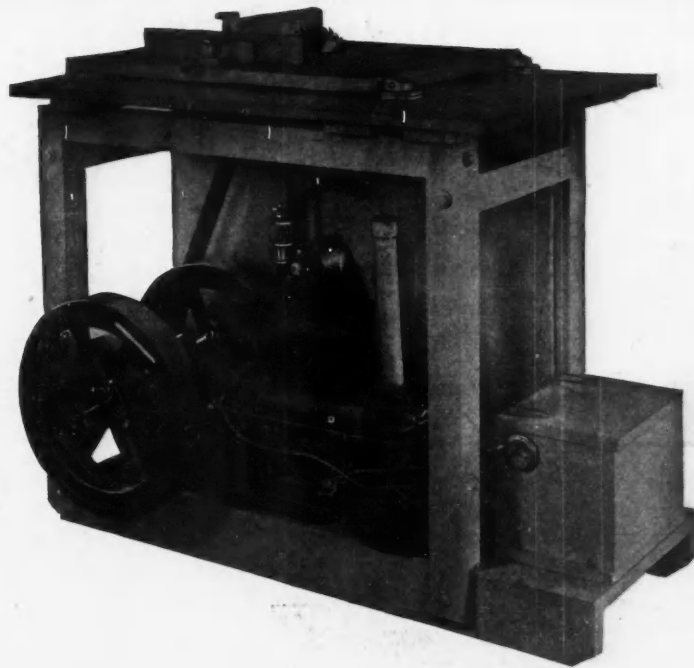
Maxwell-Briscoe Motor Co.

Main Office and Factory
FORK STREET, TARRYTOWN, N. Y.
(Licensed under Selden Patent)

OTHER MAXWELL FACTORIES

NEW CASTLE, IND.
PROVIDENCE, R. I.
PAWTUCKET, R. I.
KINGSLAND POINT, N. Y.

ON THE JOB



This Portable Saw Rig Complete

Strongly crated, ready to start when it reaches you, weighs 520 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

This rig is absolutely guaranteed to be as represented or money back without any argument.

Let us have your order for one of these time and money savers. The rig will make you independent.

WRITE FOR OUR ATTRACTIVE FOLDER AND PRICE

Inter-State Equipment & Engineering Co.

OLD COLONY BLDG.

CHICAGO, ILL.

**WE WISH ALL THE TRADE A
PROSPEROUS NEW-YEAR**
MILWAUKEE
CORRUGATING CO.,
MILWAUKEE, WIS. — KANSAS CITY, MO.

Here is a machine you need. You have use for it every few minutes—it will enable you to do better work and will save you time and labor on every job.



Costs little—
Does much

**Takes Up
Little Room**

Requires Little Power

Our Variety Wood-Worker is suited for planing out on wind, making air-tight glue joints and flat mouldings up to 6" wide, ripping, cross-cutting, mitering, bevel sawing, dadoing, grooving, boring, etc.—in fact its range in general work is limited only to the skill of the operator. Extra attachments are provided for panel raising, self-feed ripping, tenoning, routing, hollow chisel mortising, garning, etc. Not a toy but a good substantial machine, one that won't give you any sort of trouble.

Write for descriptive circular, V185.

The Cordesman - Rehtin Co.
Cincinnati, Ohio

THE NEW SASGEN CIRCLE SWING DERRICK

**No Stiff
Legs**

**No Guy
Lines**

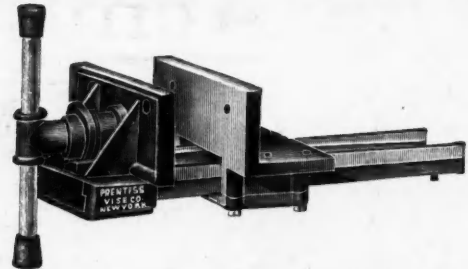


Light in weight, speedy in operation, all malleable castings; weight 250 lbs., capacity 1000 to 1500 lbs.

Fully equipped. Ready for use.
F. O. B. Chicago
\$35.00
Sold on trial to all reliable contractors. Catalogue FREE.

Manufactured by
SASGEN BROS.,
2744 Lincoln Avenue
CHICAGO, ILL.
New York Office: 103 Park Ave., N. Y.

BLAKE QUICK ACTING VISE



For Cabinet Makers and Wood Workers. Simplest—Strongest
—Cheapest—Best
Send for Catalogue of all kinds of Vises
PRENTISS VISE COMPANY, MAKERS
44 Barclay Street, New York, U. S. A.



THE HAVEN FLOOR PLANER

HERALDS THE NEW ERA IN FLOOR SCRAPING

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

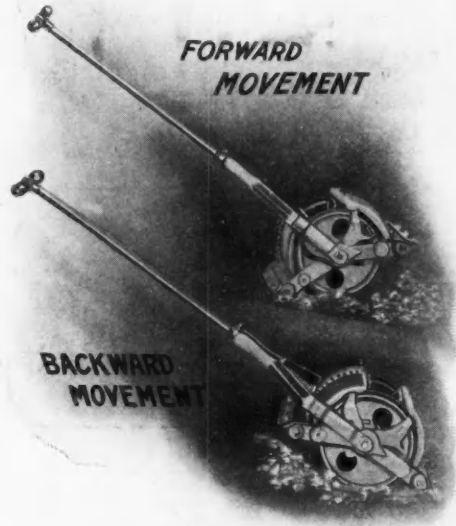
Be an agent in your locality for the floor planer of the future.

Particulars on request.

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

You can push as well as you can pull

You don't go backward all the time because the two knives are always ready for instant use—either way. That means two machines instead of one and you can scrape twice as much floor surface, save more time and money and accomplish better results with



The WEBER DOUBLE ACTING Floor Scraper

than with any other floor scraper made.

The blades are perfectly adjusted and may be set at the correct angle, easily and quickly, to scrape any kind of wood—maple, oak, yellow pine, fir, it makes no difference what. The blade holder is attached to a flexible frame by means of half-ball-and-socket bearings—absolutely preventing chattering and the leaving of waves in the floor.

In 1909 nearly a thousand machines were sold—besides, 246 Webers were sent out on free trial—in competition with others—and the Weber was chosen in 98% of all cases.

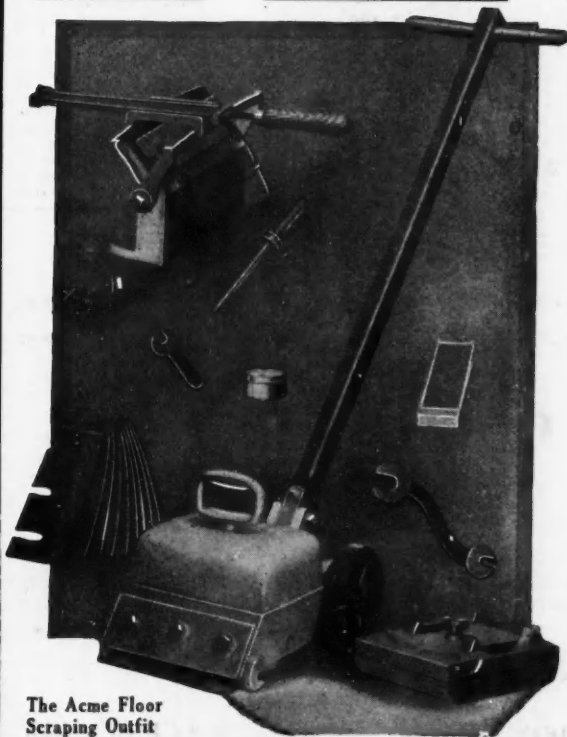
You can try it yourself—for 30 days. Try other machines too and make comparisons. Satisfy yourself that the Weber is the only perfect scraper made—remember

I Pay the Freight

Write for free descriptive booklet and price list—but don't buy a scraper until you have seen a Weber in action.

John F. Weber, Pres., WEBER MFG. CO.,
670 71st Avenue WEST ALLIS, WIS.

The Acme Floor Scraping Outfit for 1910



The Acme Floor Scraping Outfit

is exactly the same as my 1909, 1908, 1907, etc., has been. The reason for this is that I cannot improve it.

It possesses all the features for perfect floor scraping. It does the work, and that is what you want it to do.

Let me prove its merits by sending you an outfit on a WEEK'S FREE TRIAL, at my expense. Test the machines on your own work and if they are not satisfactory, send them back.

Further information and booklet mailed on request.

JOS. MIOTKE

247 Lake Street

Milwaukee, Wis.



"A Bit Of Utility"

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

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

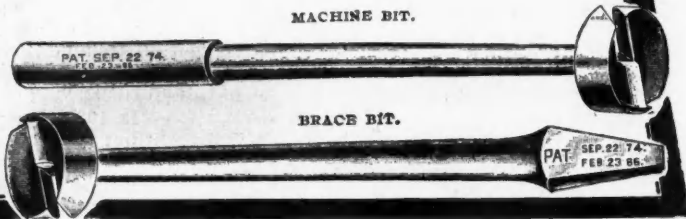
Unequaled for Delicate Work

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

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

The Progressive Mfg. Co.

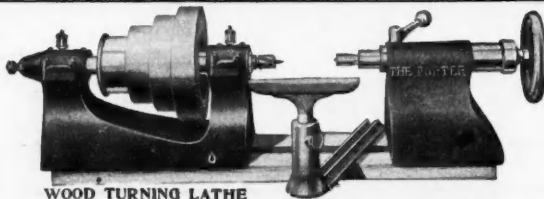
Torrington, Conn.



"THE PORTER" Wood Turning Lathes

for wood turners and pattern makers. Furnished complete with countershaft, rests, steps, bolts, center and face plate. A high grade machine at a reasonable price. We also make Hand Jointers, Shapers, Swing Cut-off Saws, Pony Planers and Post Boring Machines. *Better get our Catalog.*

C. O. PORTER MACHINERY CO., Grand Rapids, Mich.



WOOD TURNING LATHE

Established 1872

Everything in Hardware

ELECTRICAL SUPPLIES

OF ALL KINDS

TOOLS

FOR EVERY TRADE

BUILDERS AND GENERAL HARDWARE

MOST COMPLETE LINE IN THE WEST

HAND DUMB WAITERS ELECTRIC

COOLING ROOMS and REFRIGERATORS

FOR HOTELS, RESTAURANTS, MARKETS, ETC.

MARKET AND GROCERS' FIXTURES

BUTCHERS' SUPPLIES

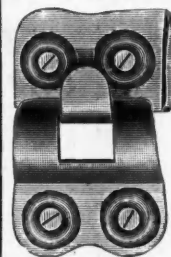
Our Goods are the Best that Money can Buy—Make us Prove it

Orr & Lockett Hardware Co.

71-73 Randolph St., Chicago

FRESH AIR IN THE BED ROOMS

Don't cut holes in the storm window frames. Hang them with **Gossett Hinges** and swing them out at the bottom for ventilation. Special fasteners lock them securely, opened or closed. Easily put in place, just hook them on. No tools or ladder needed because of the **PATENT GUIDE FLANGES**



Easily taken off to wash windows. Full length screens can be hung with the same fittings. Screens and windows last longer. They'll not be left on after their season, it's so easy to make the change. No loose parts to get lost, nothing to wear out. 50,000 doz pairs sold this year. If your dealer can't show you **Gossett Hinges** send for complete set for actual test. Free to carpenters, contractors and planing mills.

1/2 SIZE **F. D. KEES MFG. CO.**
Box 522 BEATRICE, NEB.



Reliable

Write for description and prices



Ideal

Ask your dealer

Contractors find the **Reliable Jack** easy to operate, strong, less expensive and more durable. Capacity five to ten tons.

THE ELITE CO.

ASHLAND : : : : OHIO

The Easiest Running
Machine in the World.

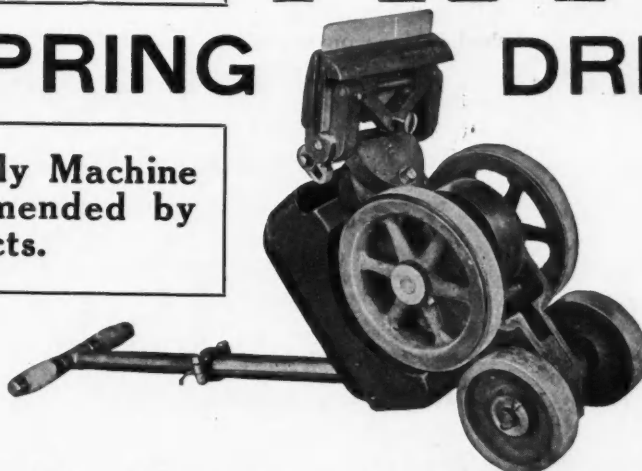
A Real Friend of the
Carpenter.



Saves 90% of your
Floor Scraping
Time over Hand
Scraping.

SPRING DRIVEN

The Only Machine
Recommended by
Architects.



We also manufacture
A KNIFE SHARPENER
A SMOOTHING SHOE and
A SANDPAPERING
ATTACHMENT

The Outfit Sent
ON FREE TRIAL

FLOOR SMOOTHER

Manufactured by TRIPLE "A" MACHINE COMPANY, 112 Clark Street, Chicago

TRY BEFORE YOU BUY

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

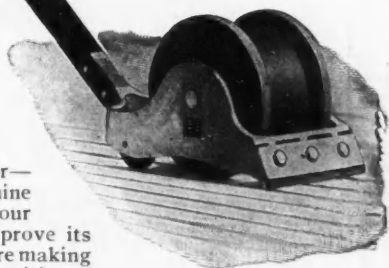
A request from you brings the "Little Giant" to your door—you send no money and we pay all expenses. After you have given it a fair trial and have tested it as thoroughly as you know how, and have found it satisfactory, pay for it. If you do not think it is the best floor scraper made, return it.

TRY IT ON YOUR OWN FLOOR

You can try the "Little Giant" 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" 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?

20,000
"Little
Giants"

are in use through-
out this country
and abroad. These
were purchased be-
cause they were
better; because
they did more
work—did it quick-
er, 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.

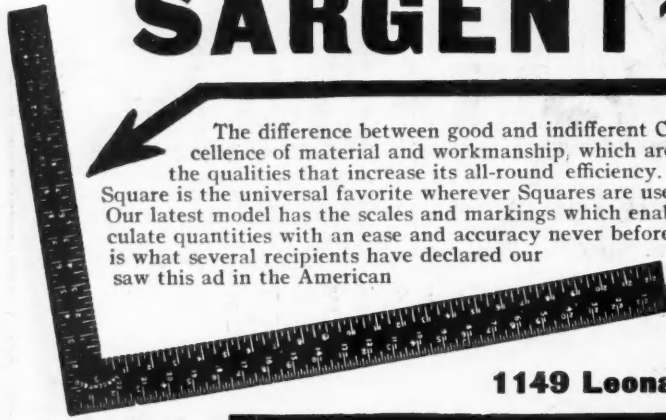


Ask for our Special Price

Hurley Machine Company

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

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

The Best Ever

You Will Never Regret Buying One



Wide Heel Brick Trowel

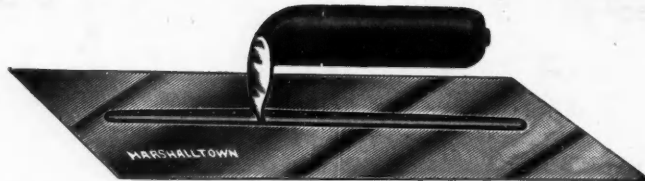
Made of Best Quality Crucible Trowel Steel.
Leather Handle.



Philadelphia Pattern

Best Quality Crucible Trowel Steel.
Wood Handle.

Send For
Catalogue



Send An
Order

Genuine Marshalltown Trowel

Straight Edges Always. Best Quality Spring Steel Blade. Hardened Mounting
Ten Rivets. Imitated because they are good.

Marshalltown Trowel Co.,

Marshalltown, Iowa

"Sterling" Surveying Instruments



In 1909 over three times as many "Sterling" Transits and Levels were sold as in 1908.

Their rigid construction, lightness and absolute accuracy compel recognition.

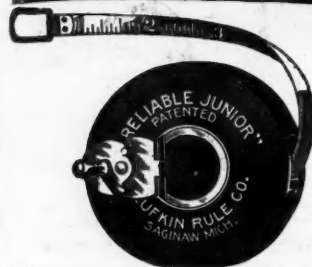
Send for 225-page Catalogue of Surveying, Engineering and Drafting Instruments and Supplies.

ISZARD-WARREN CO., Inc.

136 N. 12th Street

PHILADELPHIA, U. S. A.

LUFKIN STEEL TAPES and RULES



ARE INDISPENSABLE FOR ACCURATE WORK

MADE BY
The Lufkin Rule Co.
Saginaw, Mich., U. S. A.
New York London

For Sale Everywhere.
Send for Catalogue.

ACKERMANN FLOOR SCRAPER

Let an Ackermann Work for You at Our Expense

Let us ship you an Ackermann Rapid Floor Scraper at our expense, all charges prepaid. Try it on any kind of floor. If it does not do your floor surfacing smoother, quicker, easier and better than any other machine made, you can return it at our expense.

Every carpenter, builder and contractor needs the Ackermann floor scraper. The investment is small — the dividends are large. And you take no chances because our guarantee is behind every machine.

Ackermann Rapid Knife Sharpener FREE With Each Machine

The new Ackermann Knife Sharpening Device makes it easy for anyone to keep the knife blade perfectly sharp. Unless the edge of the knife is constantly sharp no floor scraper will do good work. The Ackermann Knife Sharpener works automatically. With it, a perfect cutting edge can be turned on any knife blade in less than two minutes. A complete Ackermann Knife Sharpening Outfit is sent free with each machine.

Write us now — to-day — for more complete information than we can give you in an advertisement.

J. B. ACKERMANN CO.

100 Pearl Street

Grand Rapids, Mich.



When not in use the Knife Sharpening outfit is stored here ready for use.

The Union Floor Scraper

Price \$35.00

A money maker for the contractor and a satisfied customer every time a floor is scraped.

The Union will pay for itself in two days.

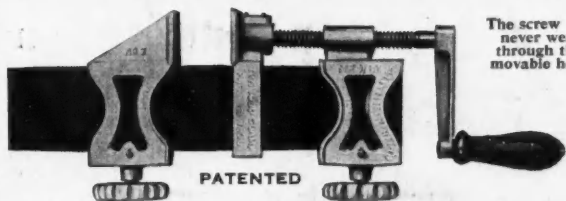
SENT ON APPROVAL

GEO. J. BACHMANN
No. 501 Lyon St.
Grand Rapids, Mich.



WE PAY THE FREIGHT

The TODD Clamp Will Save You Money



The screw will never wear through the movable head.

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

Hotel Cumberland New York

S. W. Cor. Broadway at 54th Street

Near 50th St. Subway Station and 53rd St. Elevated. "Broadway" cars from Grand Central Depot pass the door.



Headquarters for
ARCHITECTS
and
BUILDERS

Near Depots, Shops and Central Park.

New and Fireproof
Strictly Firstclass

Rates Reasonable

\$2.50 with Bath and up.

Ten Minutes Walk to Twenty Theatres

Harry P. Stimson, formerly with Hotel Imperial
R. J. Bingham, formerly with Hotel Woodard

Send for Booklet

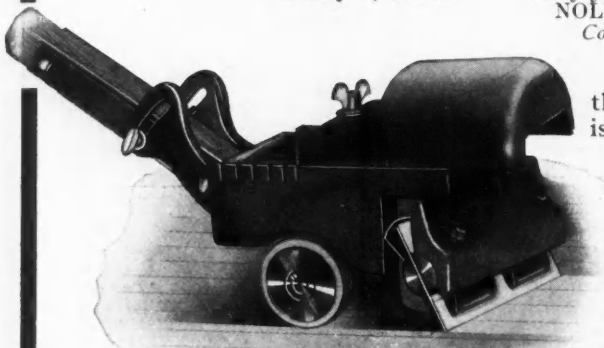
Let Me Tell You About A REAL FLOOR SCRAPER

The only one having such a wide range of adjustments that it can readily be adapted to any kind or condition of floor,—hard or soft wood, old or new.

This is what one user says about it:

Grafton, N. D., 12/9/09.
We used your floor scraper on the State Hospital and Institution for the Feeble-minded, and must say we lost a lot of money in men's time by not getting it a long time ago. Any one having one job to do is foolish not to get it, as it will pay for itself on one job. Enclosed find check, which we gladly send you, \$35.00.

Truly yours,
NOLLMAN & LEWIS,
Contractors & Builders.



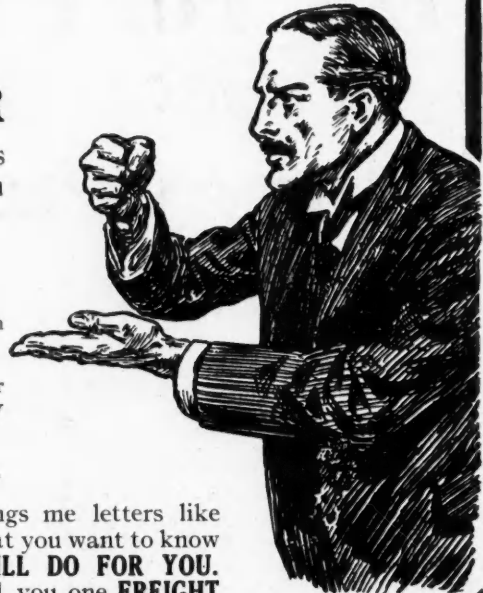
Every mail brings me letters like this one. But what you want to know is: **WHAT IT WILL DO FOR YOU.**

I will send you one **FREIGHT PREPAID**, and let you test it. Be your own judge. If you don't want to keep it, it won't cost you a cent.

Don't Buy Any Floor Scraper Until I Have Told You About **THE ADJUSTABLE**

H. P. DIDRIKSEN

Sole Distributor
1008 High Street SOUTH BEND, IND.



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

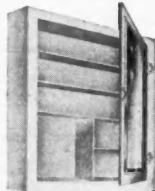
Costs less than wood and is better. Should be in every bathroom.

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

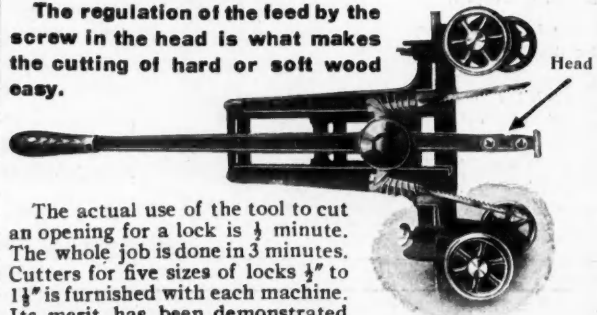
Makers of the Hess Steel Furnace. Sold on Approval. Free Booklet.



Miller's Lock Mortiser

IS SCIENTIFIC

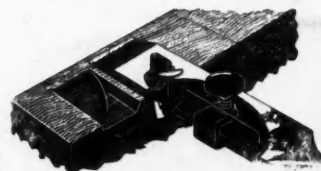
The regulation of the feed by the screw in the head is what makes the cutting of hard or soft wood easy.



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

Butt Mortiser

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



A. W. Miller Mfg. Co.

Western Office:
RIVERSIDE, CALIF.

Main Office:
CINCINNATI, OHIO.



When in Detroit STOP AT Hotel Tuller

New and Absolutely Fireproof
Corner Adams and Park Streets

In the center of the Theater, Shopping and Business District.

Has large Convention Hall.
"Grand Roof Garden Café."

Music from 6 p. m. to 12 p. m.

Every room has private bath. European plan.

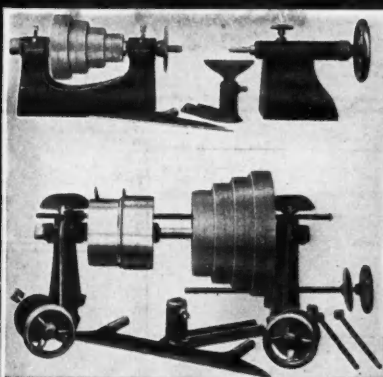
Rates, \$1.50 per day and up.

L. W. TULLER, Prop.

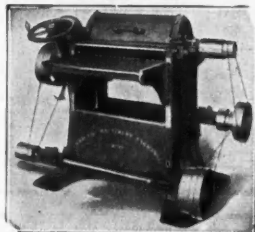
Do Your Own Millwork!!

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



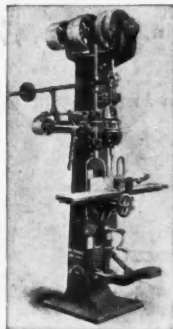
Wood Turning Lathe and Countershaft
16 and 20-in.



Chicago No. 35 Pony Planer



Chicago No. 7
Improved Swing Saw



New Hermance No. 1
Heavy Power Mortiser

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.

500 Machines in Stock

For a small investment contractors can obtain sufficient machines from us to make them independent. We have new machines, direct from manufacturers, and many rebuilt machines as good as new. 500 machines are constantly in stock at our warerooms.

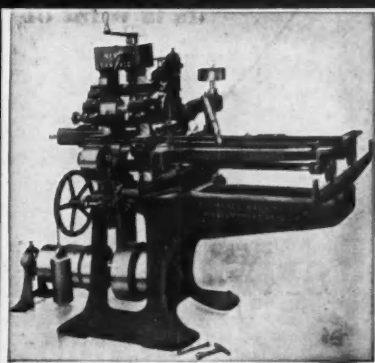
Prices are Favorable

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-papery to the minimum.

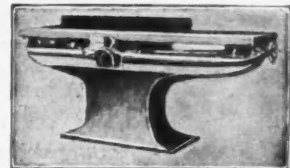
Send for Lists and Circulars

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

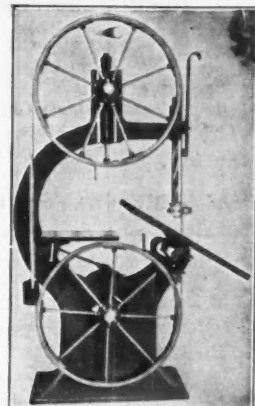
Chicago Machinery Exchange
159-161 North Canal St., CHICAGO



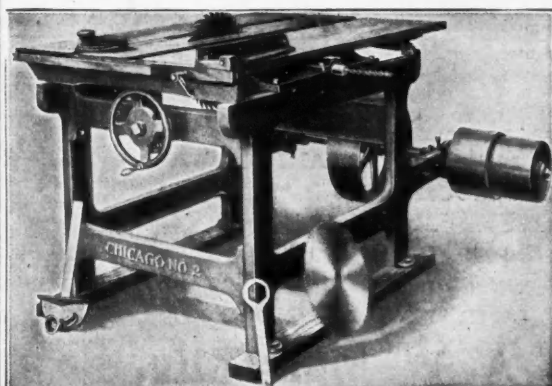
New Hermance No. 3 Tenoner



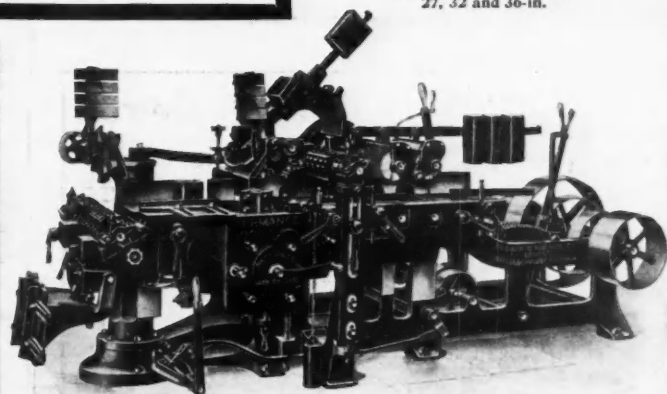
Chicago Hand Jointer
8, 12 and 16-in.



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



Chicago No. 2 Combination Saw Table
An excellent machine for ripping, cutting-off, mitering, dadoing, etc.



Hermance New 1909 "Wide-Open" Moulder
Up-to-date and a little ahead



The American Floor Surfacing Machine

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

CONTRACTORS'

Portable Combination Woodworker

GAS, GASOLINE or ELECTRIC POWER

Rip Saw
Cut-off Saw
Jig Saw
Dado Head
Molder and Shaper
Jointer
Sander
Boring Machines
Emery Wheels

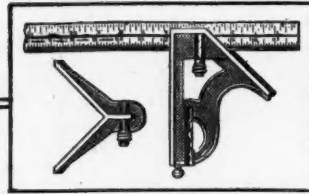
A practical machine for every contracting builder, jobbing shop, cabinet maker, etc., combining nine machines, so assembled that they do not conflict. Large table surface. The power, 4-H. P. Engine, is rigid in the frame and machine can be used in the shop or on the job.

Send today for circular fully describing the best combination woodworker ever built.

C. A. & F. G. Diffin
Builders' Exchange
PHILADELPHIA, PA.

We Furnish Machine, Engine and Tools Complete.

Used by Contractors, Lumber Yards and Railroads Everywhere



STARRETT

COMBINATION SQUARE

THE ORIGINAL : : THE MUCH IMITATED

Send for free Catalogue No. 136, of Fine Tools for all kinds of mechanics.

The L. S. STARRETT CO., Athol, Mass., U. S. A.

CARPENTERS

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

Barnes' Hand and Foot Power Machinery

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

SEND FOR OUR NEW CATALOGUE

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



THE STANDARD
FOR 55
YEARS



IT'S CHEAPER

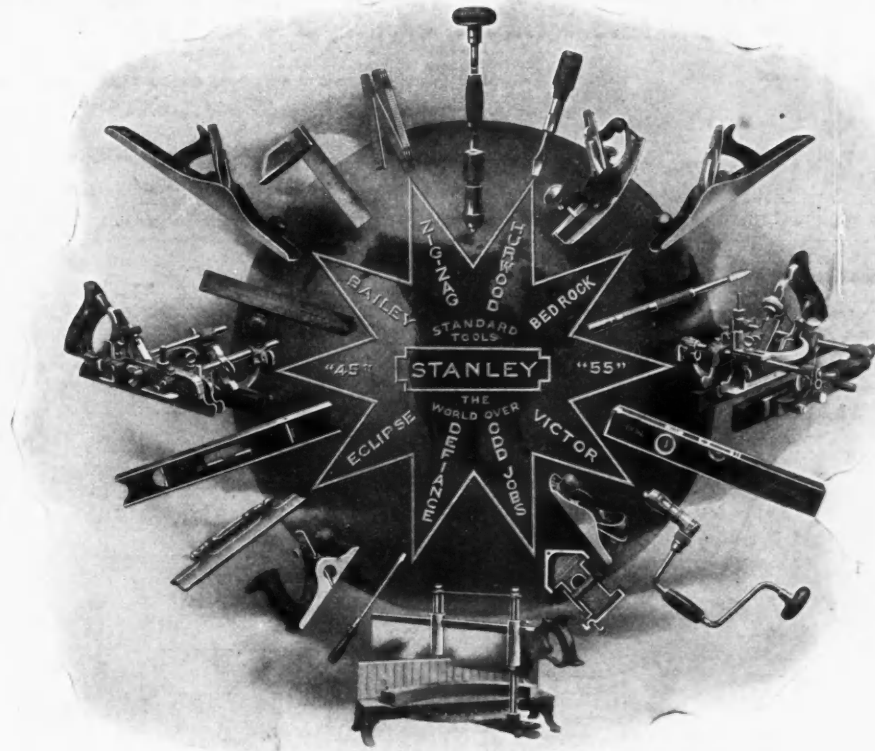
TO PAY A LITTLE MORE AND GET A BIT THAT WILL WEAR MUCH LONGER. THE

RUSSELL JENNINGS

IS MADE OF GENUINE CRUCIBLE STEEL. CUTS A SMOOTH HOLE LONG AFTER CHEAPER BITS ARE WORN OUT.

RUSSELL JENNINGS MANUFACTURING CO., Chester, Conn., U. S. A.

21-4



Copyright, 1909, by The Stanley Rule and Level Company

Stanley Tools

The tools shown in the above cut represent a few of the many lines we manufacture. The trade marks or trade names are among those which serve to identify **STANLEY** tools.

Insist upon your dealer furnishing you with tools bearing the name **STANLEY**, which is a guarantee as to quality.

We should like to send you our catalogue giving complete description of these and many other kinds of Carpenters and Mechanics' Tools manufactured by us.



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



A PLEASED CUSTOMER IS OUR BEST
ADVERTISEMENT

OUR TOOLS

Always Please

WE MANUFACTURE

NICHOLLS' RAFTER FRAMING SQUARES

EUREKA STANDARD STEEL SQUARES

"TRUE" MITER BOXES

"TRUE" ROLLER MARKING AND MORTISE GAUGES

"OTTUMWA" PLASTERING TROWELS

NICHOLLS MFG. CO., Ottumwa, Iowa



THE "LIGHTNING" AUGER BIT

WARRANTED

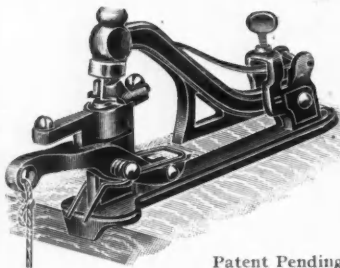


WARRANTED

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.

3/8	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
\$0.28	.28	.28	.28	.32	.34	.38	.42	.50	.50	.55	.55	.62	.62	.73	.73	.85	.85

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



Everybody using a saw has need of the improved "Buckeye" foot power saw set. Formerly the "Foote" Hammer Saw Set.

This Saw Set is guaranteed to set any saw from the finest tooth to the two man cross cut saw perfectly, and with great speed, as it is operated by foot power, leaving both hands free to handle the saw.

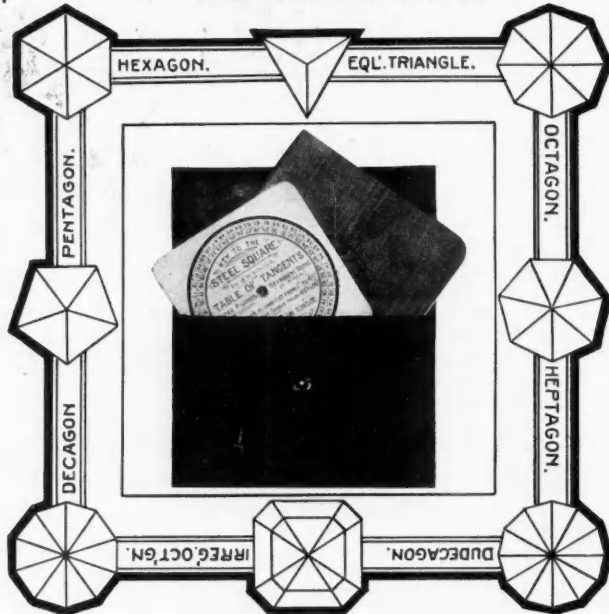
Patent Pending

Requires very little space in the tool chest. Weighs 2 1/2 lbs., retails for \$1.50. Ask your dealer for it, or will send one to any address prepaid on receipt of \$1.50. Write for special proposition to agents. We also manufacture a full line of Saw Vises, Chain Drills, Hollow Augers, etc. Catalog to dealers upon request.

BUCKEYE SAW VISE CO., 2044-50 West]55th St., Cleveland, Ohio

ALFRED W. WOODS' KEY TO THE STEEL SQUARE

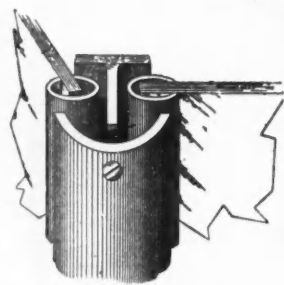
A WONDERFUL INSTRUCTOR



It should be in the possession of every carpenter, or those having work in angles. It tells the whole story of how to use the common steel square, to obtain the cuts in degrees, or by inch rise per foot run for all kinds of framing.

Price \$1.50. Postpaid

AMERICAN CARPENTER & BUILDER
185 Jackson Boulevard, CHICAGO



The Universal Sash Bar

Makes any angle, allows for setting of building, keeps windows from frosting.

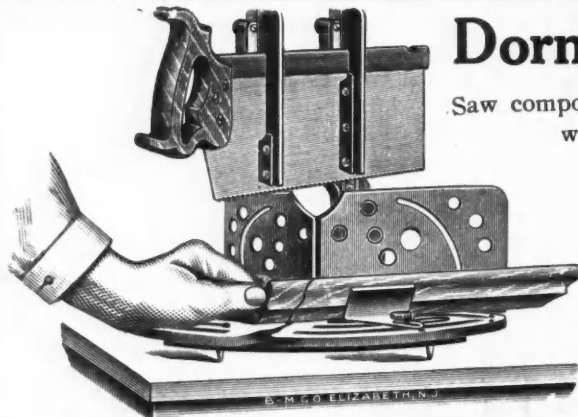
Standard Store Front Construction of the World

Glass set from the outside

Write for latest catalogue

Voltz Manufacturing Co.

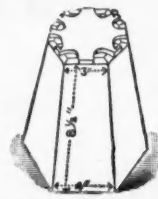
1101-1103 S. 8th St. St. Joseph, Mo.



Dorn's Revolving Mitre Box

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

SEND FOR BOOKLET
IT TELLS THE STORY



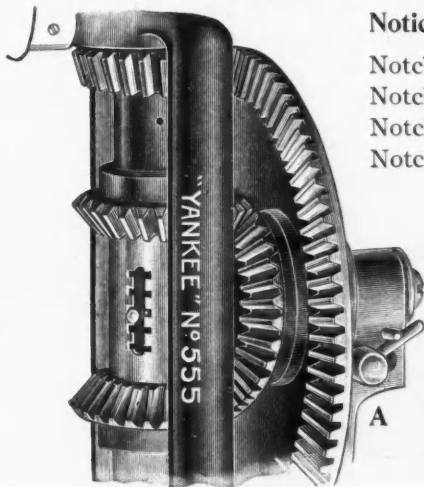
Compound Mitre

MANUFACTURED BY

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

"YANKEE" Breast Drill with Automatic Double Ratchet Adjustable Ball Bearings

The Latest and Greatest



Notice the little shifter between the gears:—

Notch 1—gives you a plain drill.

Notch 2—A Left Hand Ratchet for removing taps, etc.

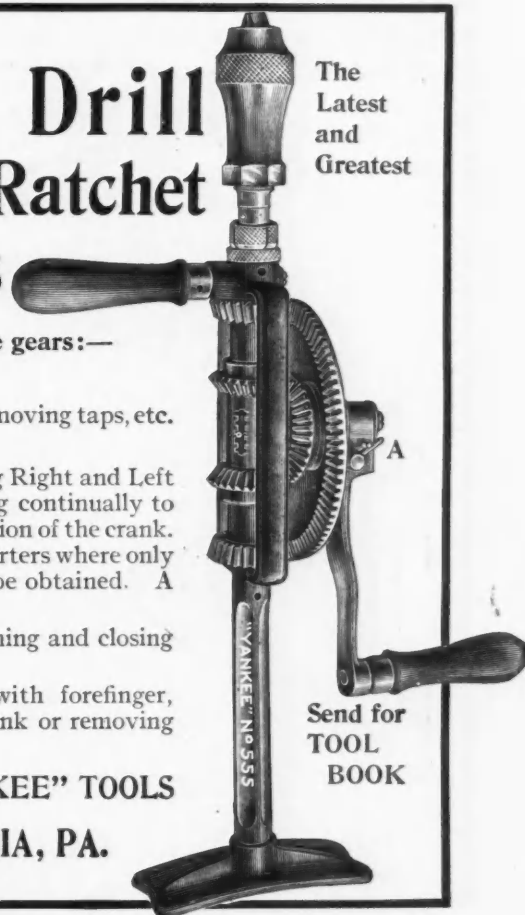
Notch 3—A Right Hand Ratchet.

Notch 4—An Automatic, Alternating Right and Left Hand Ratchet, the bit turning continually to the right regardless of the motion of the crank. A great advantage at close quarters where only a short throw of crank can be obtained. A true time saver.

Notch 5—Locks drill for opening and closing chuck.

Lever A—Change of speed with forefinger, without releasing hold on crank or removing bit from hole.

Your Dealer sells "YANKEE" TOOLS



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NORTH BROS. MFG. CO., Dept. A, PHILADELPHIA, PA.



Price \$7.50

CARPENTER'S BORING MACHINE

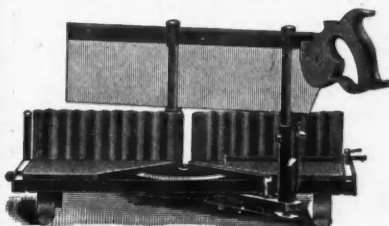
WE do not offer this machine as a low priced one, but do say without hesitation that it has no equal in merit and style. It is durable, neat in appearance, folds up compactly for shipping, and never fails to give entire satisfaction.

It can be used either in upright position, as shown in the cut, or in a moment's time adjusted to any angle required. The power and speed are regulated by the extension cranks. The sale of a machine in any neighborhood invariably brings orders for more. Ask for catalogue illustrating our full line of tools.

MILLERS FALLS COMPANY 28 Warren Street, NEW YORK, N. Y. and Millers Falls, Mass.

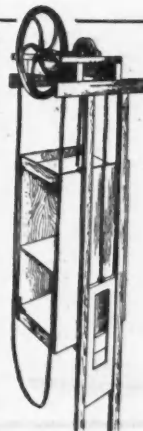
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Made of STEEL - Cannot Break



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.



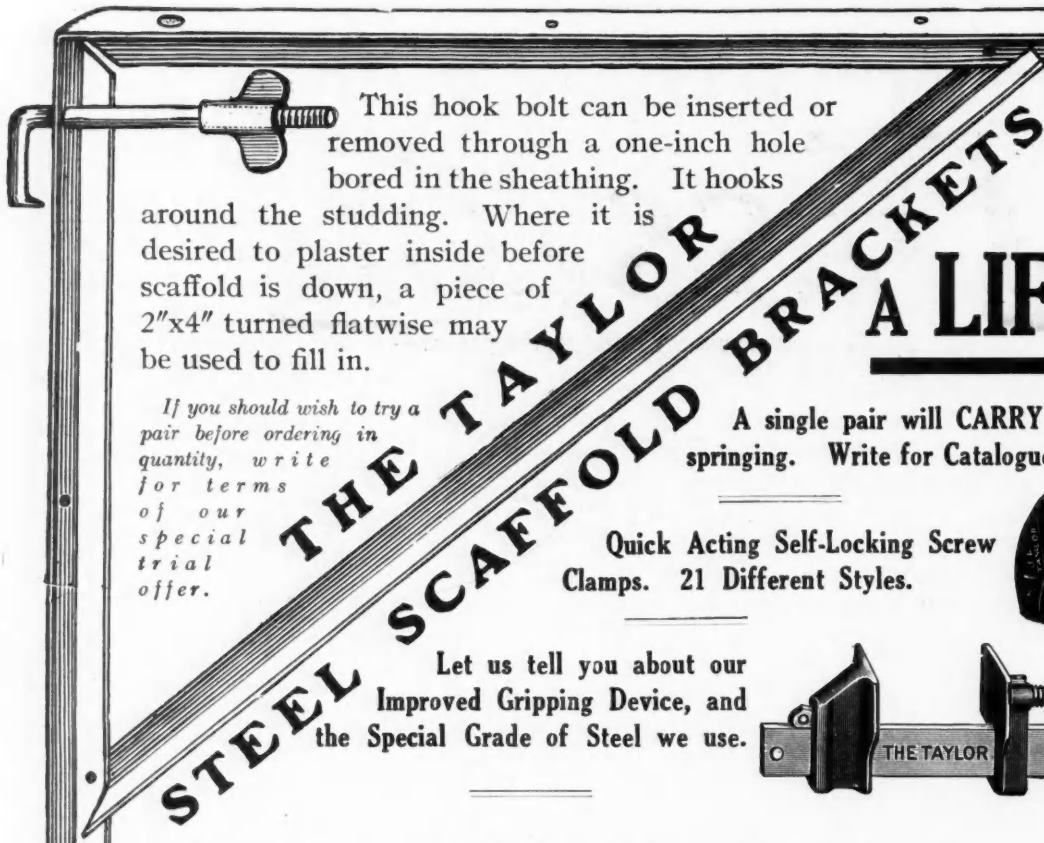
This DUMB WAITER

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

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This hook bolt can be inserted or removed through a one-inch hole bored in the sheathing. It hooks around the studding. Where it is desired to plaster inside before scaffold is down, a piece of 2"x4" turned flatwise may be used to fill in.

THE TAYLOR STEEL SCAFFOLD BRACKETS

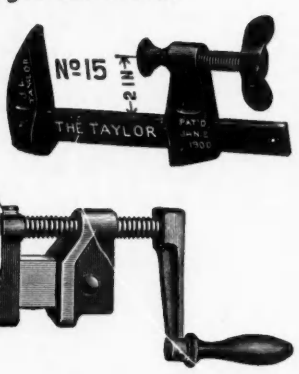
LAST A LIFETIME

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

A single pair will CARRY A TON without even springing. Write for Catalogue and Prices.

Quick Acting Self-Locking Screw Clamps. 21 Different Styles.

Let us tell you about our Improved Gripping Device, and the Special Grade of Steel we use.



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

"OHIO" CHISELS

Are made from a High Grade of Tool Steel, Skillfully Treated, Correctly Tempered, Accurately Ground.



Every "Ohio" Tool is fully warranted. They have been on the market a great many years and the experienced mechanic who does not care to take any chances on tools of doubtful quality always insists on having "Ohio" Tools from his dealer. He knows them to be good tools, with keen and tough cutting edges.

Look for this trade mark when buying Planes, either Iron or Wood, Chisels, Drawing Knives, Auger Bits, Gouges, Spoke Shaves, Bench and Hand Screws, Cabinet Makers' and Manual Training Benches, Etc. Write for our Catalogue No. A, if you are interested in GOOD TOOLS.



Registered **OHIO TOOL CO.,** Columbus, Ohio

PARKS' COMBINATION WOODWORKING MACHINES

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

- A Table Circular Saw
- A Six-Inch Joiner and Boring or Routing Attachment

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

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

Prices and Catalogue on Request.

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

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

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



HESS  **FURNACE**

No. 45 "Leader" Hess Steel Furnace
Price **\$49.00**

Delivered East of Omaha and North of Ohio River
Pipe and Registers Extra

We will deliver a complete heating equipment at your station at factory prices and wait for our pay while you test it during 60 days of winter weather.

The entire outfit **must satisfy you** or you pay nothing. Isn't this worth looking into? Could we offer such liberal terms if we didn't know that the **Hess Furnace** excels in service, simplicity, efficiency, economy.

We are makers—not dealers—and will save you all middlemen's profits. No room for more details here. Write today for **free** 48-page booklet which tells all about it. Your name and address on a post card is sufficient.

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Makers of Hess Sanitary Steel Lockers or Medicine Cabinets for Bath Rooms. Illustrated circular free.

SOMETHING DIFFERENT



All other air coolers use fans. We draw the fresh air directly inside the combustion chamber where cooling is needed. Our cylinder is more durable than any water cooler. Guaranteed against defect for Five Years. Put an engine in your shop that cannot "freeze up." Find out about the only successful air cooler on the market. Sizes 2 to 12 H. P. stationary and portable.

We use 33 1/2% less gasoline and would like to prove this claim to you on a 30-day free trial. Address

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HENRY DISSTON & SONS, Inc.,
(Keystone Saw, Tool Steel and File Works)
Philadelphia, U. S. A.



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FREE our latest catalogue and net price list to contractors, and material men.

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JOIST HANGERS

For Wood Timbers,
Concrete Blocks
or Iron Beams.

Many Sizes in Stock
Special Shapes to Order

Steel Post Caps Wire Floor Clips
STRAPS, BOLTS, PIN ANCHORS
BLACKSMITH WORK AND
IRON FOR CARPENTERS'
REQUIREMENTS


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Chas. Mulvey Mfg. Co.
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PERFECTION DOOR LOCK MORTISER

Makes a perfect mortise without brace and bit or chisel. The only machine of its kind in the world. Worth its weight in gold to the twentieth century contractor and carpenter. You cannot afford to be without it. Automatic, ball bearings, can be set for any size mortise, any size bits furnished.

PERFECTION MFG. COMPANY
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This bit moves up and down while boring



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.

CASSENS IDEAL EAVES TROUGH

TAKES WATER ONLY

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

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

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

Special Propositions to Contractors, Builders and Architects

Write for free booklet

CASSENS MFG. CO.

Edwardsville, Ill.

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.

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THE FOSS GASOLINE ENGINE

DIRECT TO YOU

We save you from 25 to 40 per cent on the Highest Grade Gas or Gasoline Engine.

Write for Price List and Catalogue.

FOSS GASOLINE ENGINE CO.

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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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PERFECTION

ELEVATORS

ARE

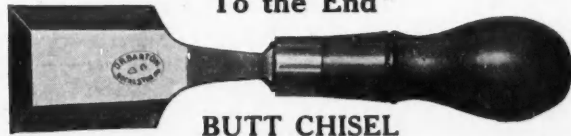
"BEST BY EVERY TEST"

For PASSENGER or FREIGHT SERVICE in Factories, Stores and Dwelling Houses.

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. When writing, state your requirements.

Sidney Elevator & Mfg. Co., Sidney, O.

"Last a Lifetime and Give Satisfaction To the End"



BUTT CHISEL

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

TRADE MARK
D. R. BARTON
1832
ROCHESTER, N. Y.

THE CELEBRATED BARTON TOOLS
send direct for catalogue. Be sure to specify "CARPENTER'S CATALOG."

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

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

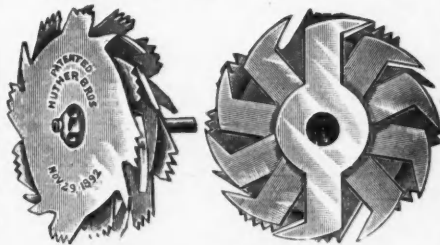
"SILVER LAKE"

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



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

Huther Bros. Patent Groover or Dado Head



Can be used on any Circular Saw Mandrel.

For cutting any width groove from 1/4" to 2" or over. Will cut a perfect groove, either with or across the grain, and leave edges smooth. Will ship to any responsible firm on ten days' approval; if not satisfactory you are at liberty to return at our expense. We also make a specialty

Showing Arrangement of Cutters.

of concave ground, smooth cutting circular Mitre Saws, for either rip or cross cut; Grooving Saws for all kinds of special work; Lock, Corner Cutters, Concave Saws, etc.

Try our Scraper Blades and you will use no others.

HUTHER BROS. SAW MFG. CO.
1000 University Ave. ROCHESTER, N. Y.

100% HOLDING POWER

There is no "waste manufacture," no fancy frills or puffs to the **Star Expansion Bolt.**

But one thing is claimed for it: **It holds! Not for six months or a year but forever!**

The **Star** is made for service, for the wear and tear a modern securing must stand. We want to "show you." Just say on a postal, "Send me Catalog 29 and samples."



STAR EXPANSION BOLT CO.

Catalogue Dept. 29, 149 Cedar St., New York City

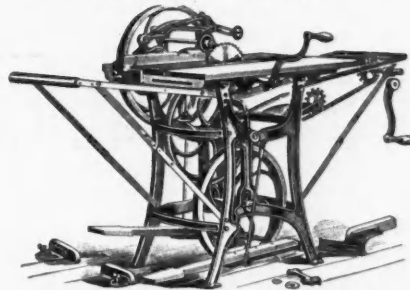
FOOT, HAND and POWER Wood-Working Machinery

FOR WORKING WOOD IN ANY MANNER

Complete Outfits



"Victor" Scroll Saw



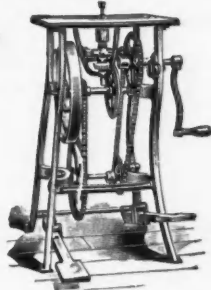
No. 5 "Union" Self Feed Rip and Cross-Cut Saw



"Diamond" Mortiser



No. 8 "Union" Power Saw



"Rex" Moulder



No. 6 "Union" Combination Saw

Carpenters, builders, cabinet-makers and wood-workers generally can successfully compete with the large shops by using our labor saving machinery. With any one of our machines one man will do the work of four to six men using hand tools.

They are built for hard work, accurate work and long service.

Each machine is carefully tested before leaving factory. We guarantee them to give entire satisfaction, and they may be returned at our expense, if, after ten days' trial you prefer your money back.

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THE Seneca Falls Mfg. Co.,

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Chicago's Oldest, Most Reliable and Progressive Hardware House. :: Dependable Merchandise at Lowest Price

STEBBINS HARDWARE COMPANY

74 Van Buren Street, CHICAGO :: Warehouse, 50 Eldridge Court

General Hardware, Builders' Hardware, Cabinet Hardware, Contractors' Supplies, Engineers' Supplies, Machinists' Tools, Carpenters' Tools, Electrical Supplies, Janitors' Supplies, Factory Supplies, Cutlery, Silverware, etc.

Our General Catalog Number 20 Sent Upon Request

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Home Office and Factory, Brooklyn, Wis.

Say! For Metal Ceilings Write

Illinois Metal Ceiling and Supply Co.

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We Furnish and Apply them



GRAND RAPIDS

All-Steel Sash Pulleys

Are sold DIRECT to Builders, Contractors and Mills at prices under the common ordinary goods.

If you make ten or ten thousand window frames we can save you money and give you a superior sash pulley. We are the largest sash pulley makers in the world. We ship direct, or through dealers and jobbers everywhere.

Write for catalogue and free samples and prices on gross, barrel, or any quantity.

Direct from the makers to you. Inquiries welcome.



GRAND RAPIDS HARDWARE CO.
34 Pearl St., Grand Rapids, Mich.

SELF-SETTING PLANE

No plane like it. See this paper for December, pages 261, 320 and 322, for facts and large pictures. This advertisement authorizes any dealer to sell the first SELF-SETTING PLANE in any town on our regular 30 days' trial guarantee. If it is not more than satisfactory to their customers, the dealer may return it to us at our expense within 90 days of this date, and we will refund the amount he sent us. If your dealer does not care to supply you, try another; if he won't, send us list price and we will deliver the plane, charges prepaid, and if it is not just what you want, return it to the Express Co. within 30 days of your receiving it, and they will send it to us at our expense, and we will return you the entire amount you sent us and the trial won't cost you a nickel. This paper guarantees that we will do as our advertisement says. January 1, 1910.

GAGE TOOL CO., Vineland, N. J.



Hargrave's New Adjustable "SPECIAL" Clamp.

Hargrave's Perfection "SPECIAL" Clamp.

Hargrave's Joiners' "SPECIAL" Clamp.

Clamps? Sure.

HARGRAVE

STEEL BAR CLAMPS

ORIGINAL and BEST

Steel Bar, Screw and Dog

All Sizes

Write for Circular and Prices, Dept. H. **THE CINCINNATI TOOL CO., Norwood, Cincinnati, Ohio**



You Can Do Your Own Millwork

With a Crescent Variety Wood Worker



Crescent Variety Wood-Worker

on a job, or use it in the shop with equal satisfaction. It can be driven with electric motor or gasoline engine.

Get our 1909 Catalogue and find out all about this splendid tool and our elegant line of band saws, disk grinders, planers, planer and matcher, jointers, shapers, saw tables, etc.

Every carpenter and builder should invest in one of these machines. You can save money and time. No inconvenience, no worry, no bills from local mills to pay. By doing your own millwork you can place yourself in a position to estimate jobs at a much lower price than your competitor. You will therefore have more work and larger profit.

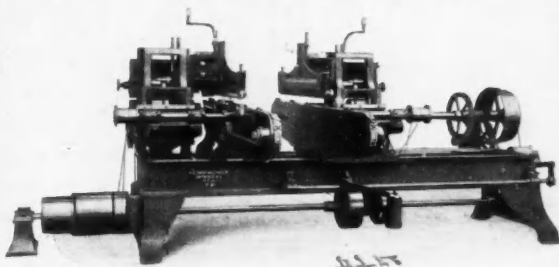
The Crescent Variety Wood Worker

fills a long felt want in those shops that have varied but limited use for wood-working machinery. It combines a jointer, saw-table, borer, shaper, pole-rounder and tool-grinder.

Machine is valuable to carpenters and contractors, as they can take the machine out

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Are You Interested in Tenoning Machines?



Smith of Smithville

builds twenty different styles and sizes of Double-end Tenoners (also Single-end Tenoners) for Standard and Special Purposes.

Double-end Tenoners for Car Shops.
Door, Sash and Blind Factories.
Furniture and Cabinet Shops.
Crate Makers, etc., etc.

For full particulars address

H. B. Smith Machine Company

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

NEW YORK CHICAGO ATLANTA MEMPHIS

ROTHMOTOR DIRECT DRIVE BAND SAW

CONVENIENT

Saves time, space. Eliminates belts, shafts—Spells cleanliness

EFFICIENT

Consumes little power—means small power bills.

MODERN

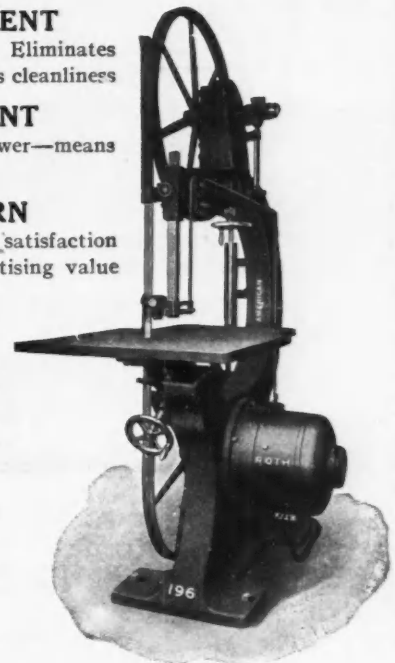
Always a feeling of satisfaction—has much advertising value to you.

RELIABLE

Always ready—A poorer outfit may break down when you have an important job on.

DURABLE

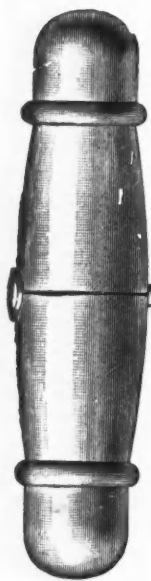
Never wear out—Low maintenance cost.



ROTH BROS. & CO.

136 Liberty Street
New York.

1422 W. Adams Street
Chicago, Ill.



Here is a Gimlet

Equal in quality and usefulness to any Brace Bit

HANDLE OF
SELECTED
COCOBOLO
WOOD

THREE SIZES ONLY
Cutting 4-32, 6-32, and 8-32 Holes

Price Postpaid **15 cents** each

H. H. MAYHEW COMPANY
SHELBURNE FALLS, MASS.

GRILLES



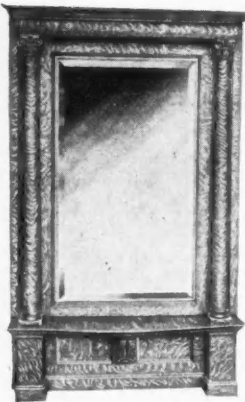
COLUMNS AND CONSOLS

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.

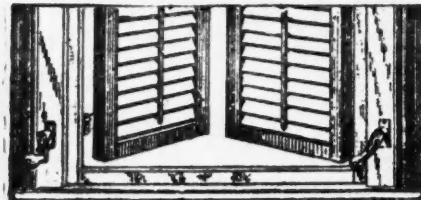


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New and improved patterns and designs.

Opens and closes the blinds without raising the window. Automatically locks the blinds in any position desired. 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 MALLORY MANUFACTURING CO.

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

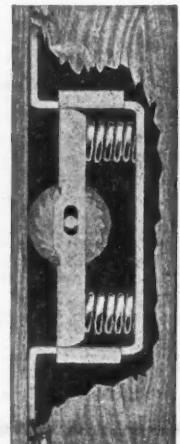
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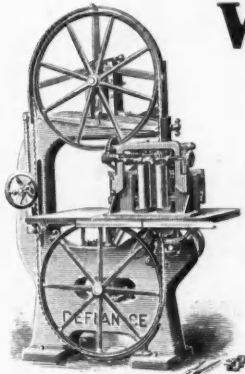


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For making Automobile Wheels and Bodies, Hubs, Spokes, Wheels, Wagons, Carriages, Rims, Shafts, Poles, Neck Yokes, Single Trees, Hoops, Handles, Spools, Bobbins, Insulator Pins, Balusters, Table Legs, Oval Wood Dishes and for General Woodwork.

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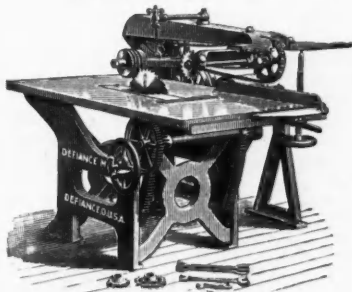
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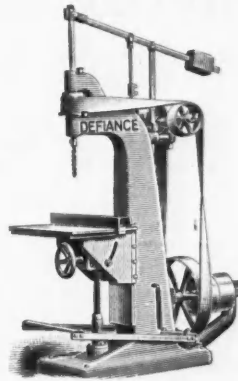
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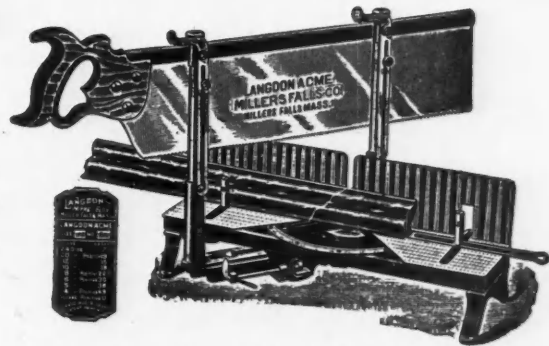
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The “UNIVERSAL” ADJUSTABLE HANGER

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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Special terms to Contractors and Builders.

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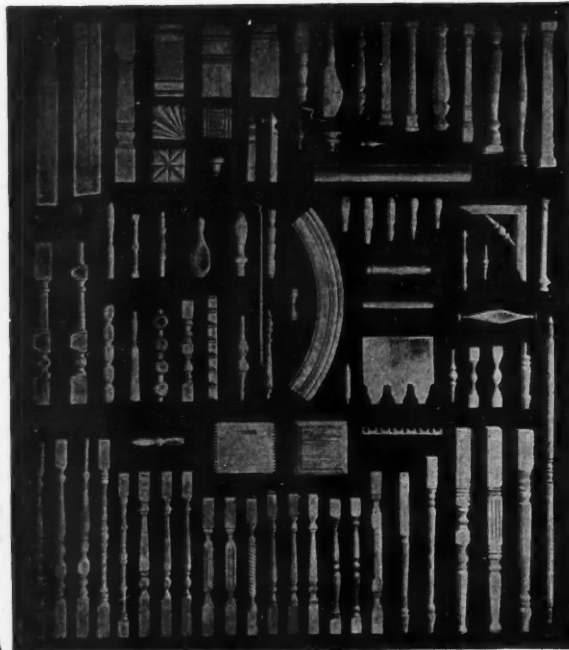


We have had a Chemist experimenting for years to originate a purity of steel with a fine grain and tough body that would stand up under such a fearless warranty as we place on our "GREYHOUND" brand of saws. We now have it. We know its worth as well as its value. As workers of steel we understand it. 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.



There Are Other Variety Machines

But Did You Ever See One Capable of Doing Such a Wide Range of Ornamental Work as This?

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We will gladly send you large circular fully describing it. Now is the time to look into it and it doesn't cost anything to get posted.

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PHOENIX
INSIDE SLIDING **BLINDS**

WILKES BARRE, PA.

The Phoenix Sliding Blind Co.
Enclosed find my check for blinds. I am pleased with them and sorry I did not have them put throughout the whole house.
C. W. MILLER.

Comfort!
Economy!
Convenience!

The lately improved springs and corrugated steel rods put the "PHOENIX" far in lead of less improved styles. Write for Catalogue "O" and free samples, showing construction.

PHOENIX SLIDING BLIND CO.

BRIDGE & CANAL STS.

PHOENIX, N. Y.

Double Acting, Ball-Bearing Hinges

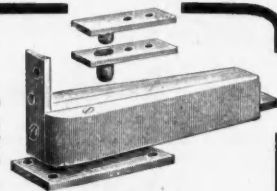
That give satisfaction to the contractor, carpenter and owner.

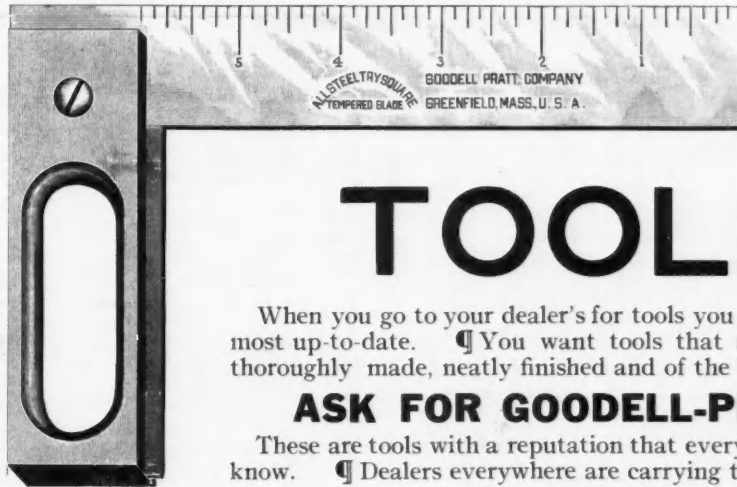
The working parts of the Chief floor hinges are made of steel, which assures strength and long service. The finish plates are either steel, real brass or bronze, as desired. It rests on the top of the floor and is quickly applied.

The Spring Butts are made in steel, real bronze or brass. The weight of the door is sustained upon steel balls and ball bearings, hardened, and which will have no perceptible wear after years of service. All frictional wear of parts is thus avoided and there is no use for lubrication.

They have a carpenter's gauge which greatly simplifies the hanging of a door.

Write and we will tell you more about them.
THE SHELBY SPRING HINGE CO.
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BEST—
it pays.**

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Toolsmiths

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SAMSON CORDAGE WORKS, BOSTON, MASS.



COMPO-BOARD

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Quicker and more Easily Applied.
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Our 4 1/2c price is the logical result of our selling from factory to smoker direct. The 5 1/2c saved is the Jobbers' Drummers' and Retailers' profits and expenses.

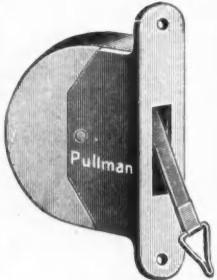
We know the "PANOLA" will gain you as a permanent smoker.

We are so confident of this fact that we want to send you a box of fifty (50), expressage prepaid on **Free Trial**. Smoke 5 or 6 of them—cut one open to prove its long filler Havana and excellent workmanship. If you like them, send us \$2.25 within 10 days. Should they not prove satisfactory in every respect—return the remaining cigars to us expressage collect—there will be no charge for cigars used in testing.

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MORRILL'S NO 1 BENCH STOP.



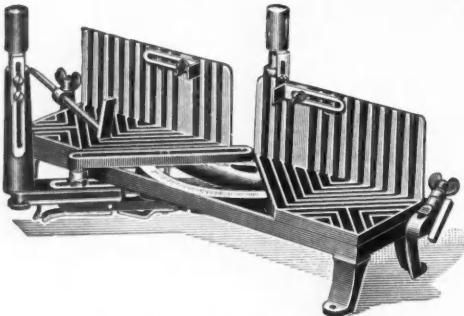
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American Carpenter and Builder

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VOL. VIII JANUARY, 1910 No. 4

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MAY 1910 be a year of joy and prosperity to you all!

+

How to Estimate Millwork

APROPOS of the subject of taking off items from plans, a correspondent, whose specialty is millwork, writing to the *Contract Record*, submits the following:

"The first thing to do, after getting possession of a set of plans and specifications, is to read over the entire specifications carefully.

"Now, some reader will, no doubt, wonder why it should be necessary to read the entire specifications

when you want only the millwork items. My reason is, some architects (or, rather, would-be architects), although they may have certain pages or paragraphs of the specifications devoted exclusively to millwork, will invariably get some things mixed in with the carpenters' or plumbers' specifications that should come under millwork, such as scuttle doors, sink boards, etc., and when the job is about finished the architect generally calls on the mill to furnish them.

"After becoming familiar with the specifications, we proceed with the outside door and window frames, commencing with the basement and finishing with the gable and dormer frames, always stating kind of sash or doors, whether glazed, open or paneled, kind of glass if glazed, and kind of finish to be used for each frame. If for brick or stone building, state if jamb linings, arch bars or sills are required.

"As outside millwork comes next, take off carefully outside base, water table, corner boards, number of lineal feet of main, gable, dormer and porch cornice, giving number of members and width and thickness of each; then porch columns, newels, balustrade, steps.

"Next we will take all inside frames, treating them similarly to outside frames, stating which are closet frames, as it is customary to figure one set of finish to match general finish, and one set plain finish.

"Now we are ready for other interior finish, such as base, chair rail, picture mould, etc. I have found nothing more expedient and accurate for taking off these items than a small rota-meter, which may be purchased from any reliable dealer in architects' supplies for a small amount, and will pay for itself in a very short time.

"Care must be taken to get all that both plans and specifications call for, such as outside steps, lattice panels, plate rail for dining room, corner beads for exposed plaster corners, sink trim, medicine cabinets, etc. These small items are the ones mostly overlooked or forgotten, and if you happen to be making up an estimate on the work, and leave out a few small items, and finally land the job, you will find that your profit will suffer.

"One of the most aggravating and trying experiences for the man that prices the items, and also for

the mill superintendent, is to find that whoever took off the items failed to specify the kind of wood to be used, sometimes even omitting the thickness of doors, sash, etc.—all due to carelessness.

"To make a success of this work a man must needs be an architectural draughtsman, or at least be familiar with the scale rule and have some idea of what the building will look like when completed, for if you can't read plans you may get lost."



Woodworkers Review Added

WITH this number the readers of the *Woodworkers Review* are added to the "Big Family" of the AMERICAN CARPENTER AND BUILDER. On this New Year's day we bid them welcome. May they soon feel so much at home that they will ask questions and join in the discussions just as freely as our most venerable charter member!

The *Woodworkers Review* has had an eventful and useful life. Some of its readers, no doubt, who have watched it grow up from its very small beginning to its recent prominence, will feel a shade of regret that it is now merged with its larger brother. But any such regret should quickly disappear because of the immensely improved paper made possible by this consolidation.

The *Woodworkers Review* has been devoted to the interests of all woodworkers, at the bench and at the machine; its readers are the carpenter shop and planing mill men. Both of these are interested in a vital way in the work of the carpenter. The planing mill man and the cabinet maker produce the interior finish; the carpenter uses it. The work of each depends on the other. The successful planing mill man has to keep in close touch with the changing styles in the building world; the carpenter and builder should know how modern woodworking is done.

So, beginning with this number, this enlarged AMERICAN CARPENTER AND BUILDER will contain the regular departments of practical interest to carpenters and building contractors (with some new departments added) and also practical departments devoted to Machine Woodworking, Cabinet Making and Planing Mill Work. There will also continue to be the generous amount of finely illustrated special articles pertaining to building which are of interest to all—carpenters, building contractors, architects, woodworkers, and prospective home builders.

In announcing this consolidation, we wish to state that all the readers of the *Woodworkers Review* have been transferred to the AMERICAN CARPENTER AND BUILDER list to finish out their subscriptions. It is hoped and confidently expected that they will be so well pleased with their new journal that all will continue with us and feel perfectly at home in the Big Family.

We wish you all a most happy and prosperous New Year.

COURT DECISIONS AFFECTING BUILDERS



NONPERFORMANCE OF BUILDING CONTRACT.—Where a building contractor abandoned the work, leaving a substantial part thereof uncompleted, so that the owner was required to expend more than the balance due the contractor to finish the uncompleted portion, the owner was not liable for work and material furnished by the sub-contractor.

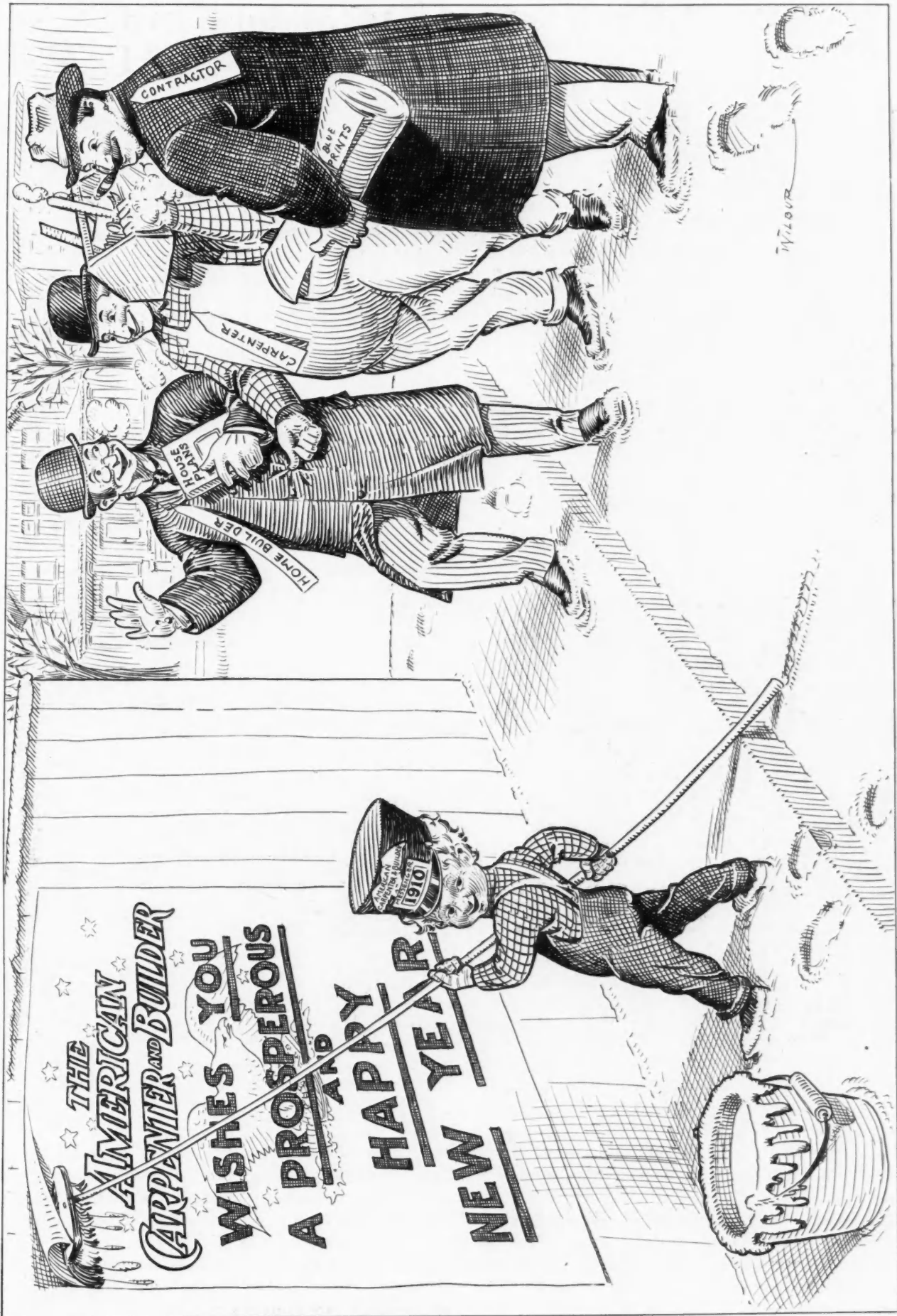
Schumer v. Kohn. New York Supreme Court, Appellate Term. 117 New York Supplement, 770, 771.

LIABILITY FOR INJURY TO EMPLOYEE.—An experienced carpenter was injured by reason of the collapse of a temporary scaffold constructed by himself and fellow carpenters in the erection of a sawmill in defendant's lumber yards. The scaffold was erected in compliance with directions from defendant's foreman out of certain hemlock pieces lying on the third floor of the building. The injured carpenter did not construct the part of the scaffold which broke and did not know of its defective condition. While the carpenters were ordered to utilize the material designated, there was other material in the yards that could have been used by merely asking the foreman to furnish it in case any of that designated was found unsuited for the purpose for which it was required. *Held* that the foreman's order only amounted to an order to use such part of the material as was suitable and nearest at hand, and that defendant was not negligent, and hence not liable for the injury.

Noble v. C. Crane & Company. United States Circuit Court of Appeals, Sixth Circuit. 169 Federal Reporter 55.

MISTAKE IN BID ON LUMBER.—Plaintiff, who contemplated bidding on a building contract, invited defendant, a lumber dealer, to bid on the necessary lumber. Defendant's bid was on a printed form, which bore at the top a request that persons receiving the estimate would examine the same, as defendant agreed to furnish only the articles named in the estimate; "errors in extensions and footing subject to correction." The bid showed the number of pieces of each description of lumber, and in an extended column the number of feet in each description. Plaintiff accepted the bid on the total price given, paying no attention to the number of feet. Defendant, in calculating the number of feet in one description, made a mistake, whereby his bid was less than it otherwise would have been. Defendant refused to perform, and plaintiff, who had contracted to build in reliance on the bid, was compelled to buy elsewhere. *Held*, that defendant was liable in an action for damages.

Chapline Realty & Construction Company v. Philip Gruner & Bros. Lumber Company. St. Louis Court of Appeals. 118 Southwestern 665.



To All Builders Everywhere—Greeting!

Detroit Contractors Use Motor Cars

LEADING BUILDERS OF DETROIT, MICH., TELL HOW MOTOR TRUCKS AND AUTOMOBILES HAVE HELPED THEM TO DO A BIGGER BUSINESS

By Maxton R. Davies

THIS is the day of the motor car.

That sounds like an ancient and stereotyped phrase. But let us amend it as each reader of the AMERICAN CARPENTER AND BUILDER will unconsciously see it. This is the day of the motor car among carpenters, builders, general contractors and architects. And in Detroit, the city which builds more automobiles than any other one city in the world, this statement is doubly true.

It was not so many years ago that the automobile was almost unknown in Detroit building circles. Several contractors used machines five years ago, but they used them for pleasure only. In those days the motor car was too rare a species to be submitted to the hardships of the work-a-day grind. Then one man, and local tradition says he was J. G. Vinton, of the contracting company of Vinton and Company, began using his car for inspection. The success of the experiment was a revelation to Mr. Vinton. In a few hours he could cover territory which previously could not be visited in less than two or three days. The

But more cars are being bought for business purposes each season, and the manufacturers of light motor wagons and power trucks predict that a couple of years hence will find practically every contractor in the city possessed of not only a runabout or touring car for inspection work and collecting, but also some kind of a motor truck.

The heaviest users at the present time are Vinton and Company, Detroit's pioneers in the use of automobiles for contracting work. This firm uses two large Reliance trucks, four Ford runabouts for collection and inspection work and one Pope-Waverly electric car, which is the private car of Mr. Vinton.

This firm handles a most varied line, from general carpentry work to the largest contracting jobs. Probably no contractors in Detroit have a more widely scattered business.

"It is this phase of our business which makes automobiles so valuable to us," said the superintendent of the Vinton automobile line. "On long runs, and we have many of them to the settlements of country



Reliance Truck Said to Do the Work of Four Teams

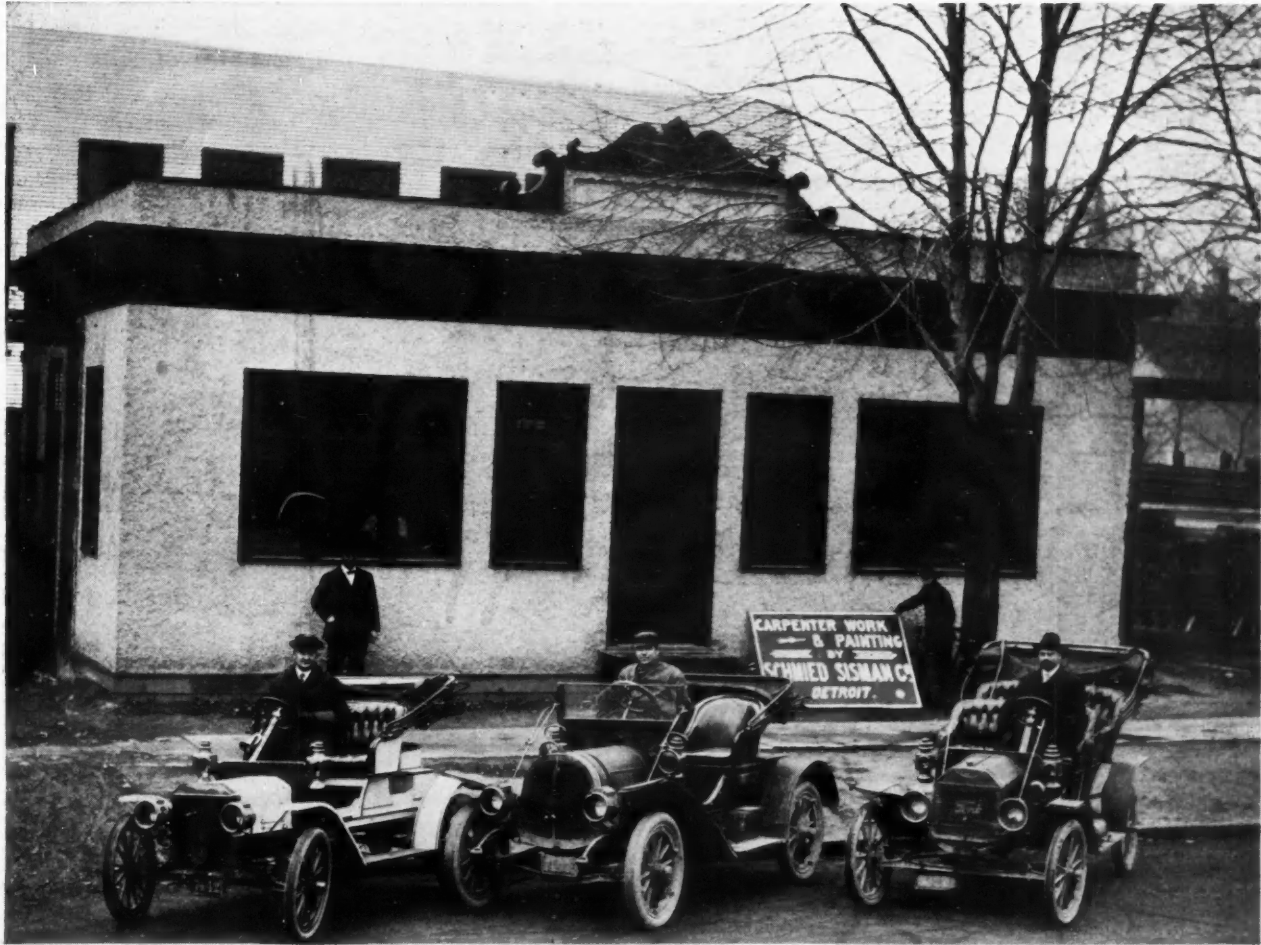
motor car ceased to be a pleasure vehicle. It became instead an important factor in the daily business of Vinton and Company.

Since then, the use of the automobile has become quite general. And even now, but a small percentage of the city's carpenters and contractors are fully alive to its advantages. Comparatively few motor trucks are used in Detroit for either heavy or light hauling.

homes about the city, we have found that one of our large trucks can do the work of four teams. In city work, consisting largely of short hauls, the motor truck outclasses a team about three to one. The trucks cannot be equaled for rush jobs. One of them can be loaded from two to three times as heavily as one of the wagons and so loaded can make a run in about one-third the time it would take a team.

"In view of these facts, one may well wonder that we still use any horses at all, but the fact is that motors sometimes go wrong, and then it is well to have faithful old Dobbin ready to carry on the work. But I

the sentiment in the Wright shops. And it is a matter of record that while the large truck was out of commission for a few days the firm was almost as greatly hampered as though its factory had been closed.



The Three Cars Kept Busy by Schmied and Sisman for Inspection Trips and Light Delivery

must acknowledge that we have had very little trouble with our motor trucks.

"For inspection work we have abolished the horse-drawn vehicle entirely. Our four runabouts can do the work of twenty single horses.

"To suddenly do away with our automobile service would set us back about twenty years. There is that much difference in the work we can handle under the new order of things."

William Wright and Company, ranking among the largest manufacturers of special furniture and fine interior finish in the country, have pinned their whole faith on the automobile. For heavy work, this firm uses one large truck, while for light delivery and inspection, three touring cars are kept in constant commission. The company has a very large business in the line of fine interior finishing. Most of the products in this line being comparatively small, the touring cars are even more serviceable than trucks, because of the additional ease in handling them and their greater speed.

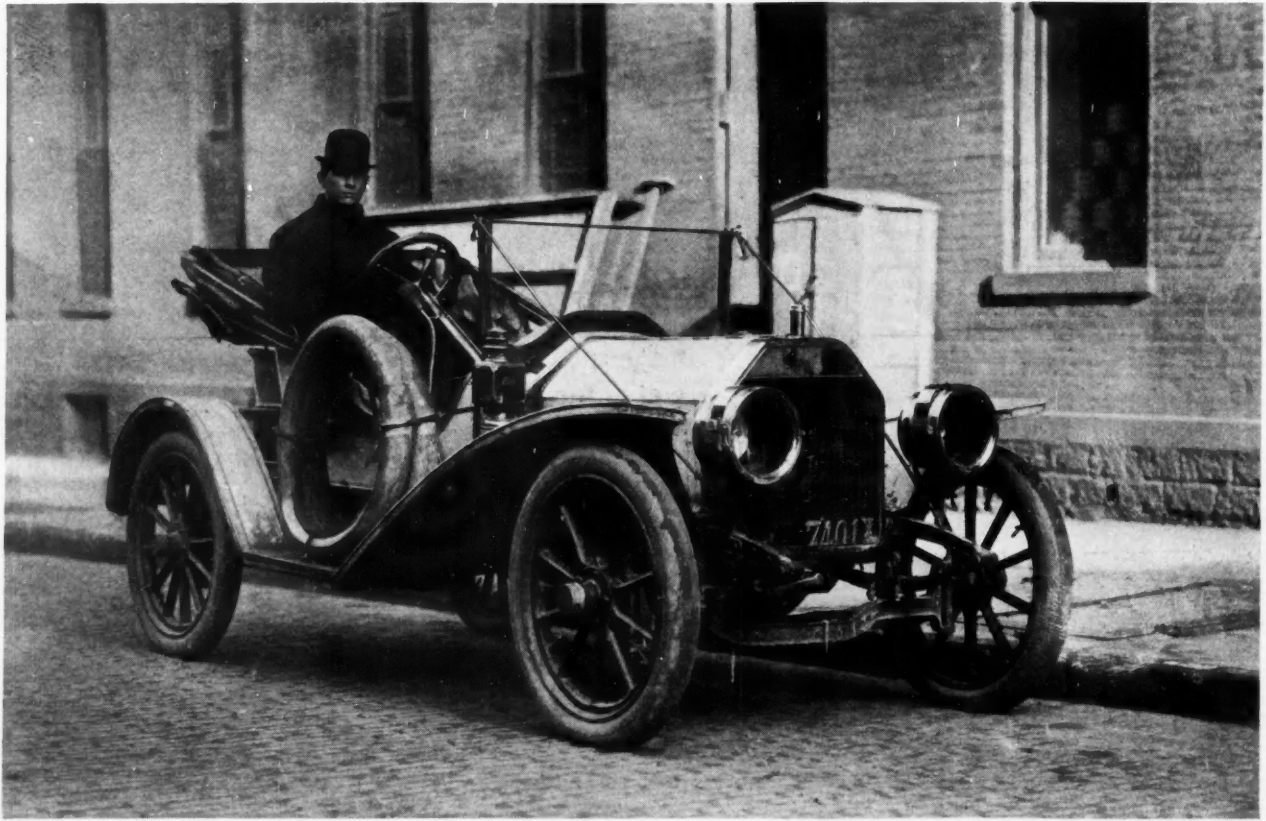
"We would be absolutely lost without our autos", is

Schmied and Sisman Company have three machines in commission and will buy another in the spring. At present the company has no truck, but keeps busy all the time one Ford touring car, one Ford runabout and one Pope-Hartford roadster.

"The automobile is the greatest kind of a boon in



One of the Buicks used by Baxter and Odell, Architects

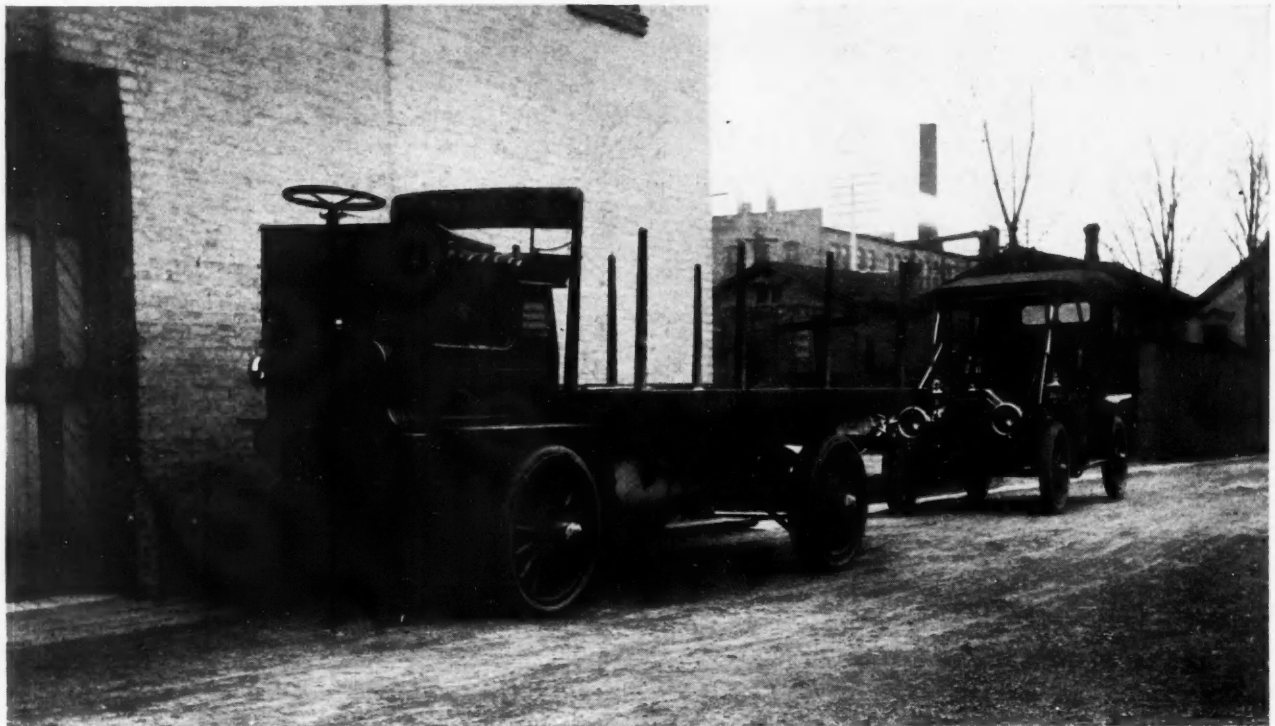


Roy Haberkorn Very Much "On the Job" in His Wayne

building work", says Mr. Sisman. "Why, in one of our machines a man can visit all of our jobs once or twice a day, where formerly he could not cover all in an entire day with a horse and buggy. We also find the cars very successful for light delivery work. We

wouldn't know how to do business without them now."

So available have Schmied and Sisman found the motor car for rush work that a large truck will be put in commission early in the spring. Several manufacturers are now figuring on a truck just suited to



Truck and Touring Car Used by Albert A. Albrecht & Co.

the needs of this firm. If the first one proves as great a success as is anticipated, one or two more will be bought the succeeding season.

When Roy Haberkorn first went into business he bought a little runabout. A little more than a year ago he got a Wayne roadster. And if future business is on a par with that of the past, Haberkorn will go in for automobiles even more extensively.

"I really didn't appreciate how important that car was to my business until I was forced to do without it for a while. I was like a lost man during that time. I couldn't cover my work satisfactorily, I worked until the most uncanny hours, and yet I didn't seem to accomplish much. But when the car came I was myself once more. Everything straightened out. I simply couldn't do business without it."

business for hauling purposes, but for inspection there is nothing like an automobile."

Lennane Brothers take the same stand as Bartholomaei. They have two cars for inspection work, and they are never out of commission.

Albert A. Albrecht and Company handle some of the largest building contracts in Detroit, work which requires almost constant light delivery from one job to another. They formerly used light wagons, but these have been superseded by one Seitz motor truck. The modern vehicle can accomplish more work than several wagons and is available for comparatively heavy work as well. But perhaps its greatest advantage, as found by this firm, is the short time used in making trips. With several large jobs progressing at the same time, unexpected work is necessarily rush work. And there



Truck Used by Vinton and Company for Heavy Hauling

Mr. Haberkorn has the construction of two big plants for the E. M. F. automobile company. They are in opposite ends of the city, about seven miles apart. Work is being carried on at both places seven days a week. Yet with his machine Mr. Haberkorn says he is enabled to be "on the job", in fact, on both jobs, constantly.

Max Bartholomaei uses a Cadillac for inspection work and like Roy Haberkorn is convinced that he could not do without it.

"One has only to get used to a machine", says Mr. Bartholomaei, "to appreciate its advantages. Horses may last for a good many years in the contracting

is where the motor truck proves far superior to the horse and wagon.

W. S. Piggins, one of the city's leading stone contractors, has become so enthusiastic over the automobile that he has become interested in the company which manufactures the Krit car. Mr. Piggins believes that the automobile is destined to revolutionize the contracting business.

"It triples a man's efficiency", he says. "That means that he can handle three times as much business as in the old days. Detroit is a rapidly expanding city. No contractor can limit his work to any one section. If he is at all successful, he must get about. The one

way to accomplish this with the proper economy of time is with a motor car."

Henry A. Apel originally bought a machine for pleasure use. Later he began using it in his business, and now the business is so big that the machine seldom is used for "joy riding". Mr. Apel has a Ford car and that machine does duty for inspection work and delivery as well.

Bryant and Detwiler, George and Company, John A. Mercier, the F. M. Sibley Lumber Company and J. F. Weber and Company may be mentioned among other Detroit contractors, builders and mill owners who have found the automobile highly successful in their business.

Several Detroit architects have also adopted the automobile, most prominent among them being Baxter and Odell. Both members of this firm have Buick cars and would not be without them now.

"I have my machine in commission both summer and winter", said Mr. Baxter, "and I can handle three times as much work as when I was dependent on a horse and the street cars. Any man of affairs nowa-

days has to have an auto to keep up with the times."

Detroit offers several striking examples of the utility of the motor car in general construction work. When ground was recently broken for the new factory for the Brush Runabout Company, the contractor was using horse-drawn plows. A member of the company noticing this, suggested that an auto be used. A plow was hitched to a little Brush runabout and that one machine accomplished the work of three horses.

In the same manner, the contractor for the recently erected addition to the Chalmers-Detroit automobile factory used an ordinary thirty horse power touring car in place of a stationary engine and windlass for the hoisting of heavy loads.

It is such instances as these which prove that the motor car in contracting work is by no means limited to mere hauling and inspection work. All of the really hustling contractors in Detroit are coming to see the many advantages of the motor car. It is safe to predict that in another year every man who handles any of the really big business of the city will be using motors almost entirely.

"Embossed" Mouldings and Carvings

WOOD CARVING BY MACHINERY—HOW IT IS DONE—THE LIMITATIONS AND POSSIBILITIES OF MODERN EMBOSSED WOOD WORK

WOOD carving, that most ancient and honorable method of wood decoration, is most baffling to the machine woodworker, and to the designer of woodworking machinery. While practically all other operations on wood can be done better by machinery than by hand, the wood carver still holds the inner citadel of his art. The rotary cutter has its limitations; and the inside corner of more than one angle, such as abounds in decorative wood carving, is safely beyond its scope. There are carving machines, it is true, which will do all but such corners—and the finishing—but their work being, for a machine, comparatively slow, their product is not cheap enough for "every-day" use.

Many attempts have been made to cheaply imitate wood carving, but no great success has been attained. The "carvings," once quite common, made of pressed and cemented sawdust, had little semblance of the real thing, except general color and shape. To have work show the real "live" grain of the wood, and yet to do all the work by machinery is, as yet, like making diamonds—possible, perhaps, but too expensive for practice. The nearest approach to this desideratum is the "embossed," or pressed, ornamentation common on furniture, but somewhat less known to the building trade.

This work is done by running the wood under hot rollers, the surface of which is shaped to the desired pattern. Thus the wood is pressed into shape; the heat tending to soften the surface and to make it "stay put." By this method "carvings" are made of much deeper relief than one would think possible were he not forced

to so think by the evidence of his eyes. All the softer woods are thus successfully worked; and even oak takes a surprisingly deep impression without breaking the fibres.

The fibres being bent, instead of cut, the surface, of course, presents an entirely different appearance, to the initiated, from what it would if it were cut. This difference is mellowed, however, by a little distance; and, in such shallow work as is not beyond the capabilities of the wood employed, is not appreciable to the casual observer. Such work is very common on the cheaper grades of furniture; and the best of it, where not too deep a "cut" has been attempted, is a very close imitation of hand carving. Yet a careful examination, by a woodworker, easily reveals the method of its doing—its very smoothness serving to "give it away."

Though the trend of the day is decidedly toward straight lines and plain surfaces, a fillet or band of "embossed" moulding often serves to relieve what would otherwise be monotonous; or—just between ourselves—to stop a crack. For painted work it has every appearance of the most elaborate of hand carving; and, even when finished natural, one of the craft might be deceived unless he looked closely.



Veneering is getting to be quite an important factor, not only in planing mill work but in carpentry and cabinet making also. The up-to-date workman must now equip himself with information on veneering as well as on carpentry and joinery.

Modern Planing Mill Practice

THE DEVELOPMENT OF MACHINE WOODWORKING AND SUGGESTIONS AS TO THE PROPER ARRANGEMENT OF WOODWORKING SHOPS FOR THE BEST RESULTS

By John Lawrence Heaton

SO RAPID has been the development of the country along all lines of mechanical pursuits that we take as a matter of course many things that a half a century ago would have been considered little less than marvelous. The electric car, the electric light, the telephone, gigantic steel skyscrapers, ocean-going steamships that can house people enough to make a good-sized city; automatic machinery so perfect that each machine seems possessed of intelligence—these things excite comment no longer. Today it is the wireless telegraph and flying machines that cause us to pause and take notice.

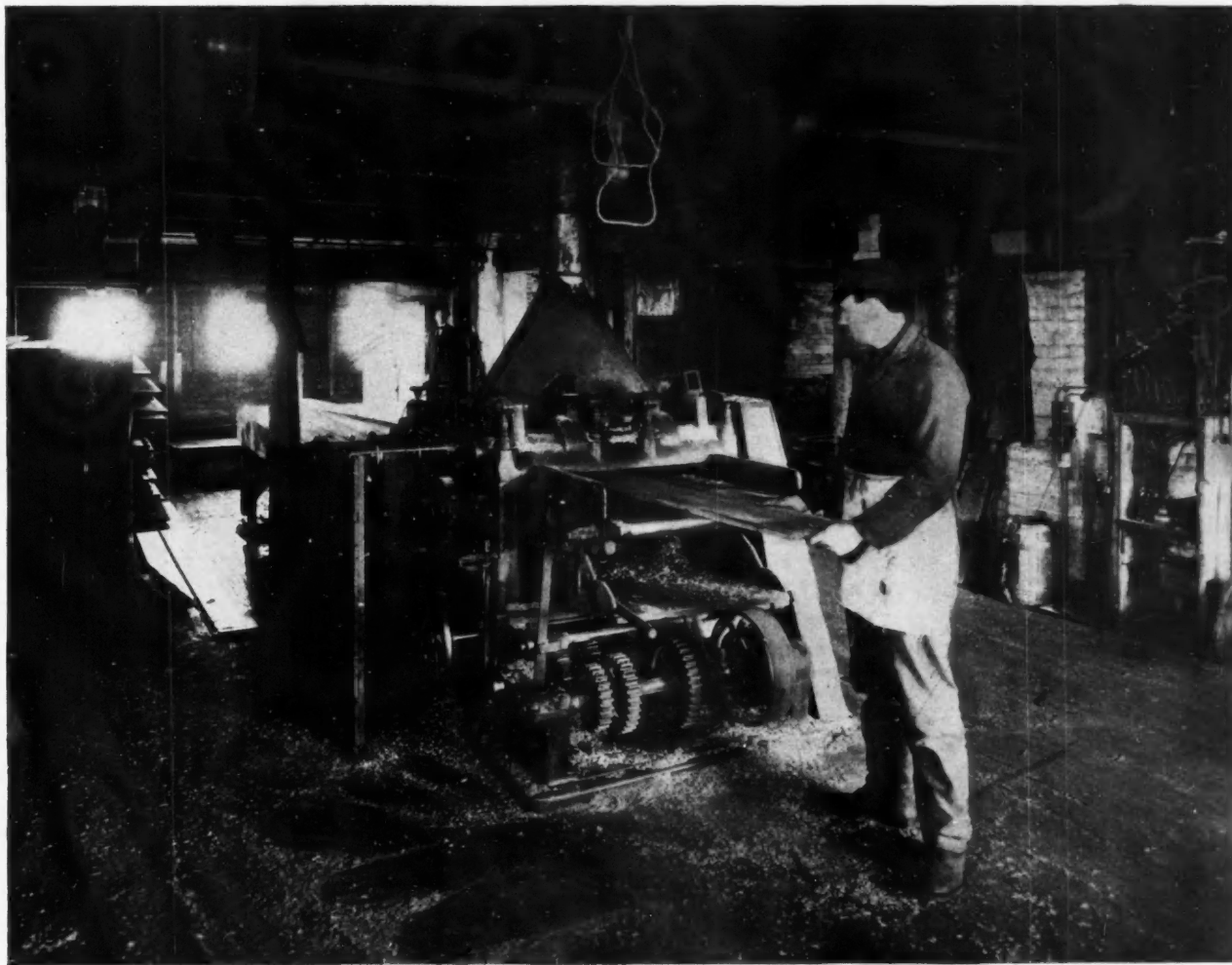
While little known to the general public, the development made in the woodworking shop has been little less than marvelous, both for the rapidity with which the changes have taken place and for the number of changes.

Fifty years ago our grandfathers—yes, and in many cases our fathers—were the planing mills. The shop equipment consisted of two or three men with plenty of arm and shoulder muscle whose “machinery” con-

sisted of a great variety of hand tools. In other words, everything was “hand-made.” Those were the days of the heavy framing. Trees were felled and sized with the adz and broad ax. Box sills, such as are used today, would have been considered entirely too light for satisfactory endurance. Their mouldings were ripped to size by hand and planed to shape in a similar manner. A set of moulding planes (occasionally one runs across a set nowadays) required no small space to contain it, so numerous were they—one for each kind of mould and one for each different size.

Today this is all changed. The “man behind the machine” has taken the place of the man behind the tool in most of the preparation of wood for the many and diverse lines in which wood plays such an important part today.

“Hatchet and saw carpenter” has been a term of reproach for years, applied to workmen who knew so little about the craft that a hatchet and saw answered their every purpose. The day has come when the “hatchet and saw” man can hold up his head with some



The Planer

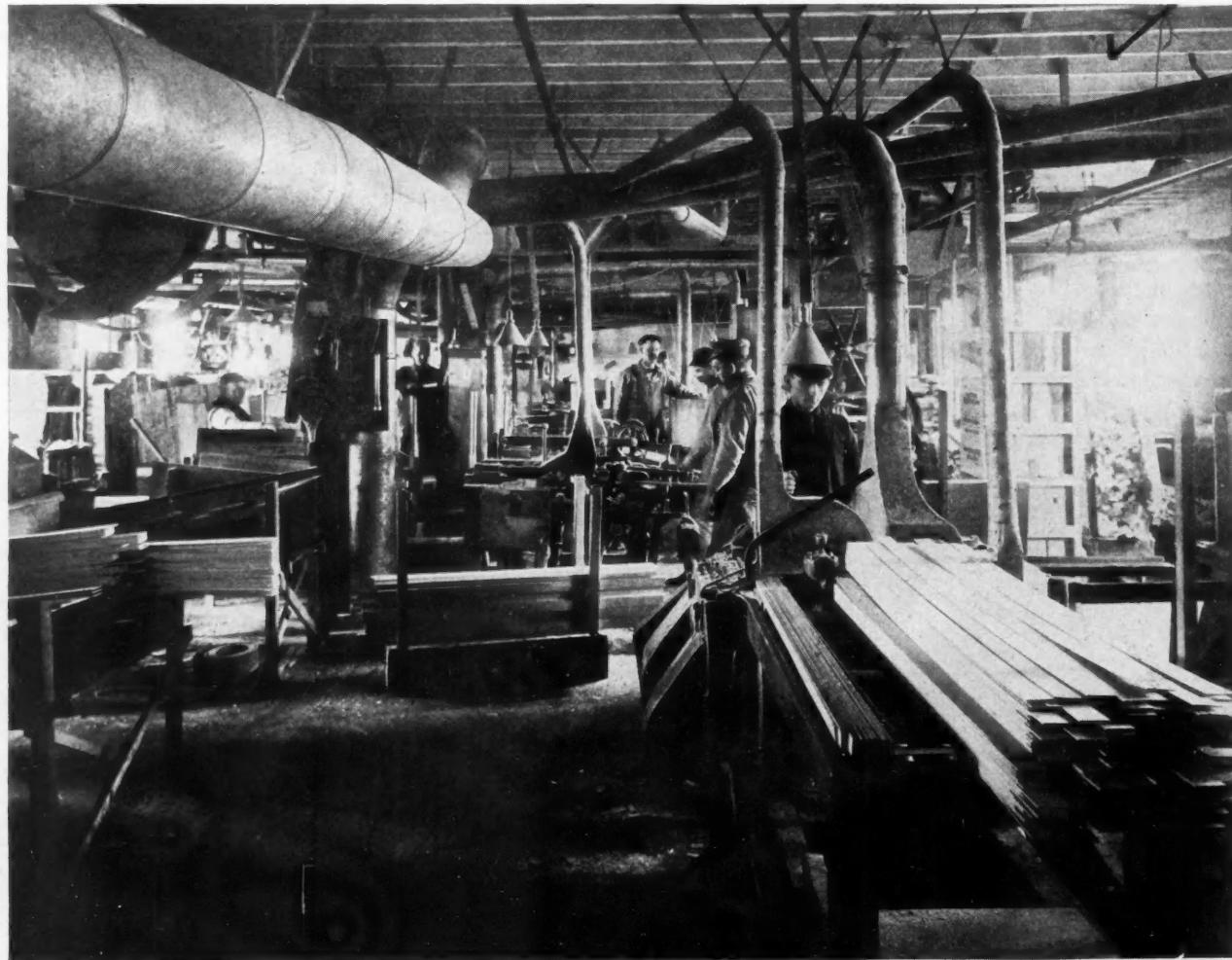
degree of assurance, so nearly complete when it leaves the mill is most of the woodwork which goes into a building.

Window and door frames are made, jambs, sash doors, mouldings, interior trim, cases, etc., etc., until the whole division of labor as it relates to the interior and exterior woodworker has been changed.

The planning of a planing mill necessitates the employment of an architect. However, a mistake sometimes made should be studiously avoided—that of

machines should be so placed that they may be belted to that end of the shaft nearest the engine. For convenient hauling of lumber, this will necessitate the kilns being placed between the shop and boiler-room.

Again, machines should be so placed with relation to one another, that planer, rip-saw and sticker shall receive the stock in the order named. Stock passes through the planer first. The rip-saw should be so placed that this stock can be picked up by the saw hand from the place where it has been laid down by



Special Planer-Room for Highly Specialized Work—Notice the Blower System, Interior Piping

trusting to the architect alone. There are some things about the practical workings of a mill and the proper arrangement of machinery that no one is so well qualified to order as the man who has worked among the machinery year in and year out. An architect is needed to attend to the proper forms of plans and specifications and to care for the exterior appearance of the walls and the interior construction. But the placing of the machines, their relations to each other and to the kilns should be left to an experienced floor man or foreman. He knows even better than the proprietors themselves unless they have "been through the mill."

Among other things, the heavy machinery should be placed near the source of power. That is, the

the planer hand, without any unnecessary walking on his part. The rip-saw man ought to be able to place it on his machine so that it will run back in the direction opposite to that in which it came through the planer. The sticker should run the stock through in the same direction as did the planer.

Such detail may seem trivial but it is just such little time-saving arrangements that spell "profit" to the proprietor and "satisfaction" to the foreman. Machine tenders, too, are not fond of unnecessary labor, even though they may be working by the day.

Architects should see that there are no supporting timbers to interfere with the proper movement of the belts. Second floor joists should be hung in iron stirrups so that the lower edges of joist and timber

are on a level. Line shafts should have at least three hundred revolutions per minute.

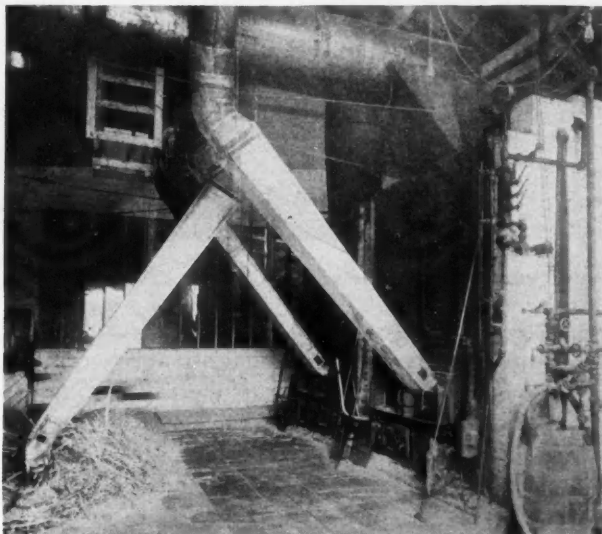
Complete arrangements should be made for taking away shavings and dust and chips from planes and saws and other machines. A system of piping connected with each machine and carrying refuse to the engine room is no longer considered a luxury but a necessity. The blower system, which has become universal, is well illustrated in the accompanying photographs.

Probably next to the blower system nothing aids so greatly in keeping a well ordered mill as that of using electrically distributed power. The main reason for using electricity, however, is economy, rather than orderliness. Individual motor driven machines are becoming quite common these days. The relative merits of shaft-driven vs. individual motor-driven machines has been a source of considerable discussion lately. The consensus of opinion seems to be that where heavy machines are operated, either continuously or for part of the time, where the load is constant, direct motor drive is desirable.

However, where they are light running machines, all of them never running to their full capacity at once, and where the loads are variable, such as with turning lathes, it is considered better to connect a series of them to a shaft, which shaft can be electrically driven.

The use of electricity permits the placing of the boiler room away from the mill far enough to avoid danger of fires, such as frequently break out in the fuel bunkers, always at unseasonable hours.

On the first floor of the mill should be located the



Blower Pipe Exhausts in Boiler-Room

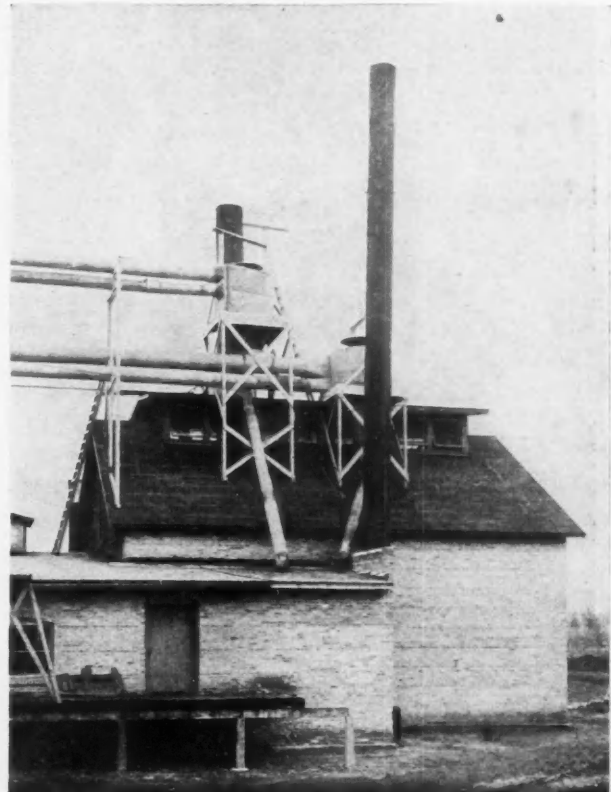
heavy machines, such as planer, rip saw, stickers, and cut-off saws. Here also may be placed the lathes, near which should be the band saw. A jointer will be needed. An emery grinder will complete the equipment for this floor, for a mill of usual capacity. Allowance should be made for plenty of floor room for the heavy machinery.

Time was when most of our ornamentation, exterior

and interior, was turned. Today rosettes and spindle work are little seen; so one or two lathes—better one short one and one long one, will do the work required of most mills.

Planers will be placed nearest the door leading to the kiln, rip saws next, and stickers next the rip saws. In many mills jointers are placed between planer and rip saws.

The best place for lathes is along the walls in



Detached Boiler-Room. Showing Blower Piping

front of the windows. Plenty of light is needed. Tables for hanging cut-off saws are best placed along the wall also.

The second floor should be given over mainly to the lighter machines and to assembly work. It is not wise to build more than two stories high unless the lack of ground necessitates it, even then it would be better to move to some spot where land values were not so great as to cramp the establishment. A mill needs plenty of room, yard-room as well as building room, for there must be sheds for lumber and other stock.

On the second floor there will be needed a corner for the veneer worker. A press must be provided. Possibly the old-fashioned kind in which the veneers are placed between two heavy timbers that rest upon three jacks which in turn are supported by a third timber, is as good as any.

Close by should be a room with racks inside and heated by steam coils into which stock may be placed to take the chill off of it in cold weather, before the gluing process takes place.

Since such work as linen closets, pantry cupboards, china cabinets are now made in the mill, a generous amount of floor space with plenty of light should be provided for the cabinet workers.

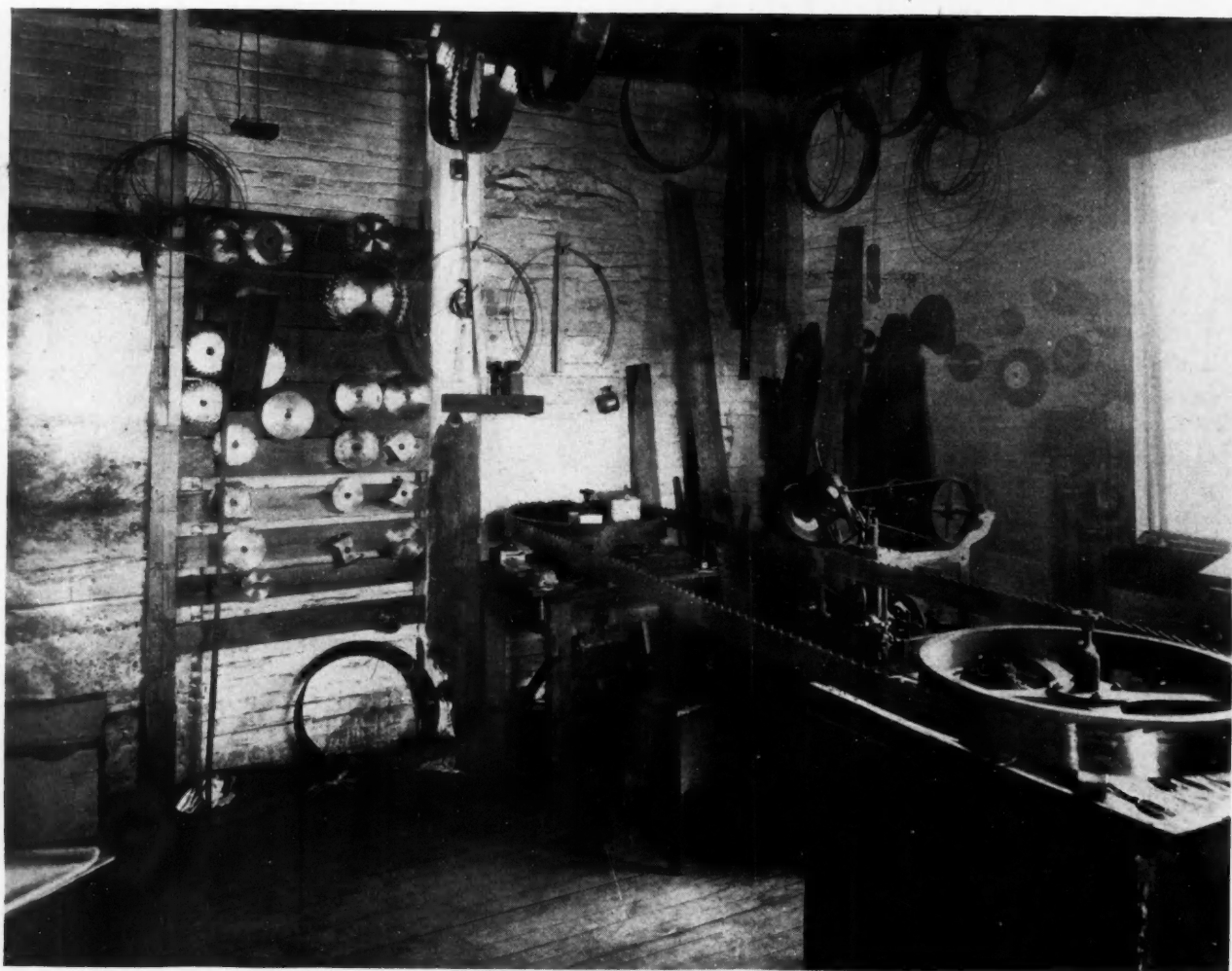
The shipping room should be placed so as to readily receive finished work of this floor and pass it on to the wagons, through a generous wall opening.

The benches of the workers whose business it is to

and special machines. The above will be found sufficient for all general work.

Where band-resawing is a part of the mill's work saw sharpening is no small task. Here automatic saw-filing machines are a great convenience and a saver of time and labor.

The proper location of the office is a problem. Because of the noise and danger from fire it is desirable



A Corner in the Filing-Room—Automatic Band Saw Filing Arrangement

assemble frames, such as window and door, should be placed near the shipping room.

A place should be reserved for the benches of the repair men—men who repair old or broken doors, sash, etc.

The different machines should be so placed that the work on each is progressive as is that of the arrangement for the floor just suggested.

Among other machines every well-ordered mill should possess one or more of the following on this floor: circular saws, planer, jointer, panel raiser, cut-off saw, sanding-machine, emery machine, jig saw, stair router, machine for making pulley holes in window frame stock, pocket machine, shaper, mortising machine, sash relisher, rotary sander, sander for sash and doors, sash and door clamps, boring relisher, sticker, and tenoner. To these might be added other

to have it detached from the mill. Because of the necessity for frequent communication between office force and mill men relative to the work, it is better in the end to endure the noise and dust and have the office in the mill. Telephones would save many trips, but often the presence of the foreman is necessary.



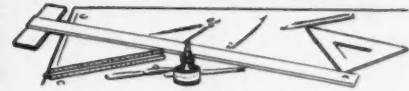
Heating Power of Wood

Contrary to a widespread belief that hard woods give more heat in burning than soft varieties, the scientists at Washington are contending that the greatest heating power is possessed by the wood of the linden tree, which is very soft. Fir stands next to linden and almost equal to it. Then comes pine, hardly inferior to fir and linden, while hard oak possesses 8 per cent less heating capacity than linden, and red beech 10 per cent less.—*Domestic Engineering*.

DETAILS of CONSTRUCTION AND FINISH



CHARLES P. RAWSON



This Department Has Been Organized at the Request of One of Our Subscribers. We Want It to Continue to Be a Subscribers' Department. Please Call on Us for Any Point, Either in Building Construction or Interior Finish, Which You Want to See Detailed in Full.

AT THE request and suggestion of one of our readers we present this new department. As the head would indicate, this department is devoted to *details*—details of interior finish and constructive details of every kind. It may include not only those pertaining to carpentry, but the scope of the work is broad enough to include also constructive details of other building materials, such as brick, concrete, stone, terra cotta, steel, etc., and also the combination of these materials, as they are used today in modern building. We are glad to announce the formation for such a department in the AMERICAN CARPENTER AND BUILDER, for it will certainly be of real practical interest to the readers.

This department is open to all who desire information concerning building construction and finish. If the subject is of general interest, it will be thoroughly detailed and presented in such a way that the plates can be used as working details. Where measurements are not given the scale can be applied directly to the plate. We want our readers to co-operate with us in making this department not only interesting but really serviceable to them. We want them to make practical use of it and to feel perfectly free to offer suggestions at any time.

It is our intention to publish in this department the completed details of interior finish of a series of rooms, giving one room each month, and showing in this way every kind of interior finish, including stairs, mantels, seats, buffets, cupboards, closets, beams, various designs of trim, etc. These details may be readily adapted to any work having similar requirements. We shall endeavor to have each give a multitude of suggestions, not only in construction but in design as well. Other sizes, proportions, materials, etc., than those shown may, of course, be used.

We hope that these detail drawings may save our readers much time in preparing drawings for similar work. We hope, also, that they will be the means of elevating, to some extent, the quality of the work, from an architectural as well as a constructive standpoint, as ordinarily performed.

We show this month, as the first of the series, com-

plete details of the interior finish of a typical dining-room. While the design presented is, perhaps, somewhat more elaborate than what is used ordinarily in houses, still the construction is simple and the cost is not prohibitive, and, in a great many cases, a similar treatment may be used to advantage. All drawings are to scale and measurements may be taken directly from the plate.

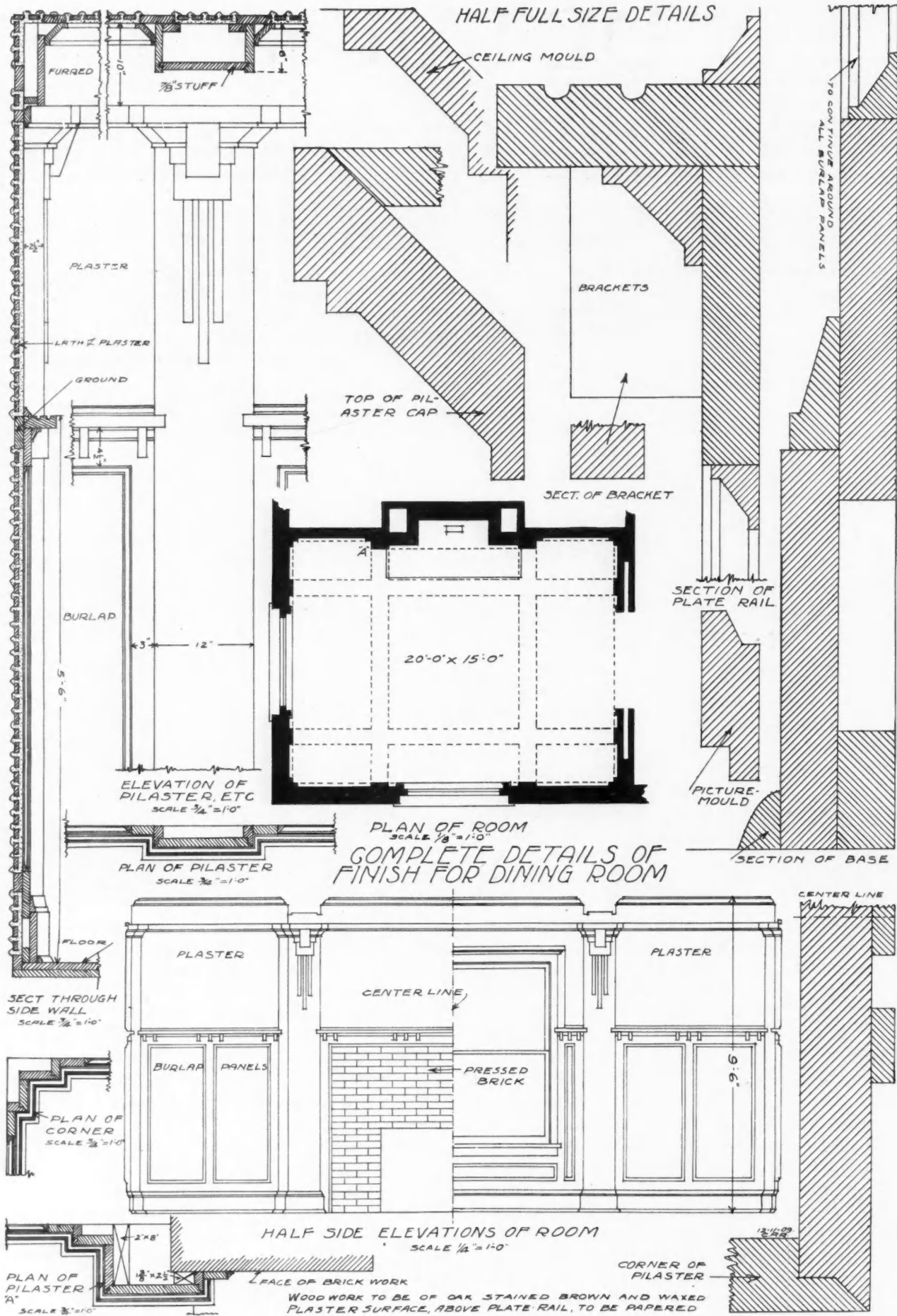
The scheme consists simply in a series of pilasters supporting low beams at the ceiling. A plate rail extends entirely around the room; the panels below are filled with art burlap secured directly to the plastering. The portion above the plate rail is to be papered, preferably with a forestry design. The panels of the ceiling formed by the beams may be either papered with a light plain paper or tinted.

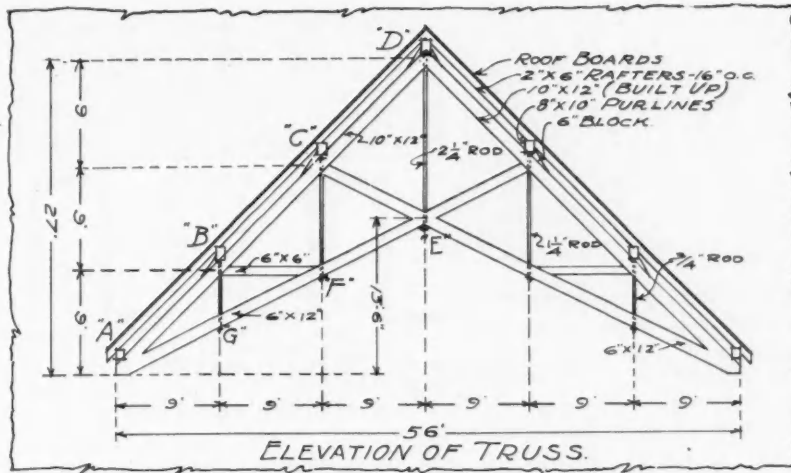
This method of treatment might properly be used in a living-room, with the plate shelf omitted except above the fireplace, and the panels between the pilasters papered from baseboard to picture moulding.

Mr. Edward A. Wettengel of Appleton, Wis., has sent us the drawing of a truss, the design and general dimensions of which were fixed and as shown at the top on the next page. Trusses are to be placed 14 feet 6 inches on centers. For the same span and pitch of roof, a design with a horizontal lower chord would probably have been less expensive, but a greater height was desired in the center of the building than such a construction would allow. No ceiling of any kind is shown. Constructive details of this truss were desired and as they are typical of many wooden trusses we show on the next page a side elevation of each joint and, where necessary, an end and top view, all drawn to a scale of three-quarters of an inch equal to one foot.

In addition to the weight of the truss and the roof proper, a snow load of 20 pounds per square foot and a wind pressure of 50 pounds per square foot on a vertical plane surface had to be provided for.

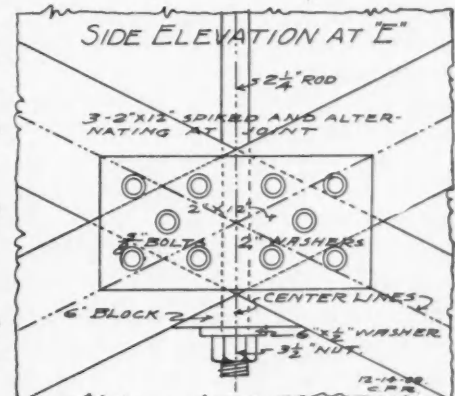
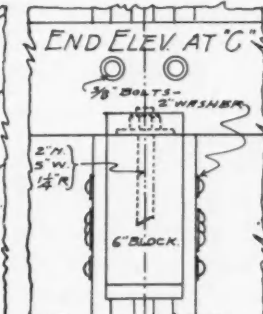
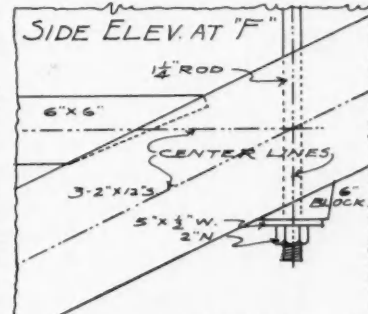
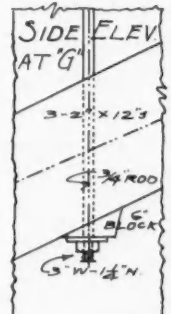
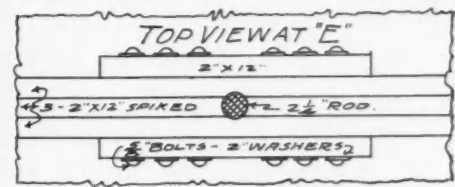
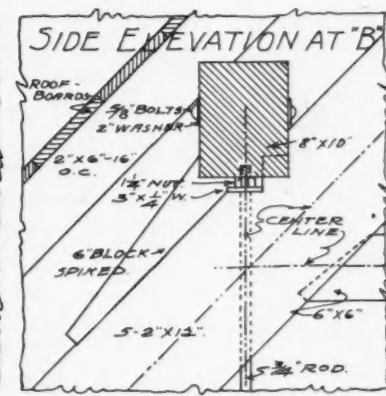
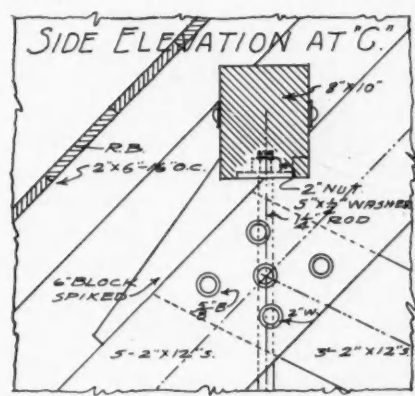
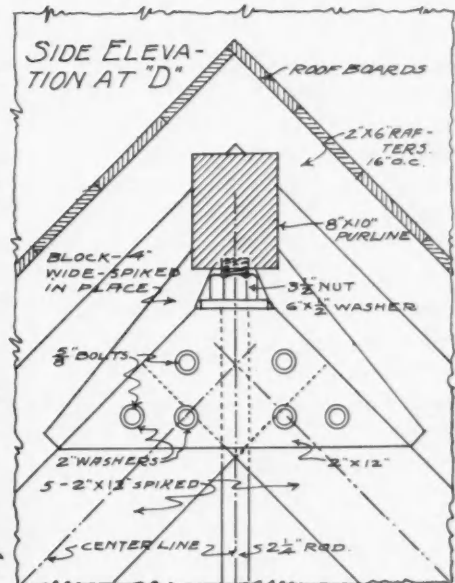
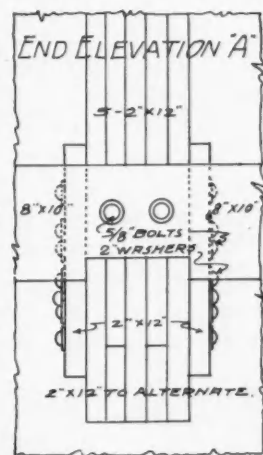
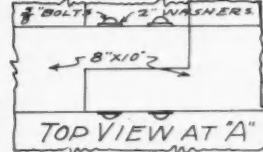
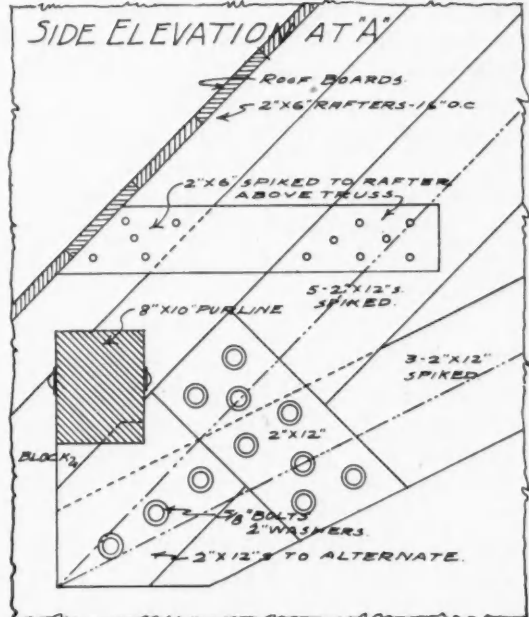
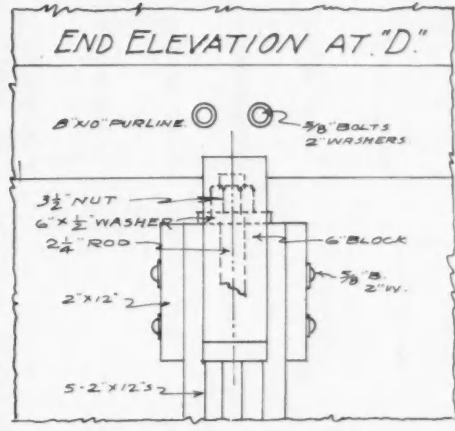
The upper and lower chords are built up of 2 by 12 inch planks, thoroughly spiked together and bolted at the joints, as shown. The vertical $\frac{3}{4}$ -inch rods receive no stress from the loading of the truss, and are inserted merely to remove the sag from the lower chord.

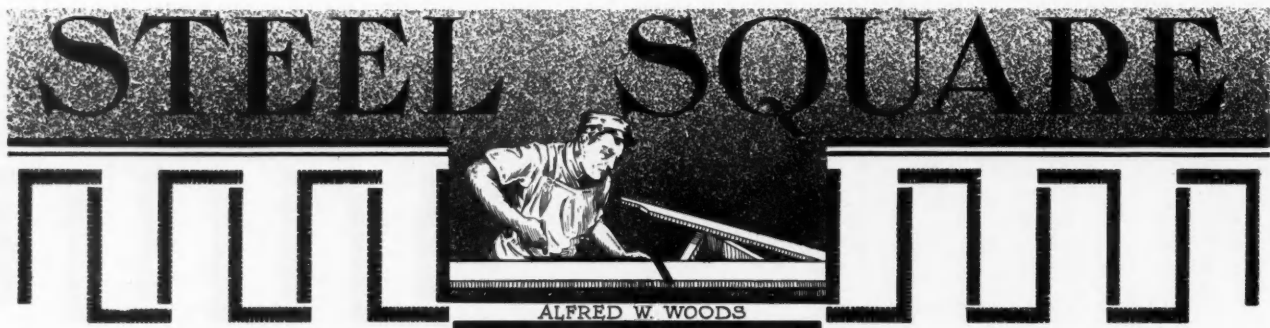




A TRUSS WITH DETAIL OF JOINTS.

SCALE OF TRUSS - 1/8" = 1'-0"
SCALE OF DETAILS - 3/8" = 1'-0"





Problems of Roof Framing Solved

FIRST OF A NEW SERIES OF ARTICLES ON THE PRACTICAL USE OF THE STEEL SQUARE FOR ROOF FRAMING—TERMS DEFINED

HAPPY NEW YEAR to the readers of the AMERICAN CARPENTER AND BUILDER family in every land and clime where the English language is spoken!

The members have become so numerous that we cannot favor one above another, but we propose to give all a square deal. This is the time of year when many resolve to turn over a new leaf, or in other words, begin over, and that is just what we propose to do. It is now nearly five years since the first number of this magazine was published and every number has contained an article on the practical use of the steel square. But, as with all publications, some of our readers are dropping out and new ones are all the time coming in. Therefore, what may seem old to some, will be new to many others.

In commencing a new series, it will be our aim to make the work as simple as possible. While it will be necessary to cover the same ground as in some of the former articles, new dress and illustrations will be brought into use with a view to simplifying the problems wherever possible.

Therefore, we have thought best to begin this series with an explanation of the common terms used in roof work, so that even those not actively engaged in carpentry work, may fully understand the subject and



FIG. 1.

apply the steel square to obtain correct results in the actual work.

Span.—The first thing to be considered is the span. It has reference to the gable or that part of the building over which the common rafters are to be placed, regardless of deck.

Run.—The run is equal to one-half the width of the span, unless the roof contains a deck. In that case, deduct the width of the deck from that of the span; the run will be one-half of the remainder. It is sometimes called the base of the rafter.

Rise.—The rise comprises that portion of space on a plumb line directly under the comb, or highest point on the measurement line of the rafter, to a point level with the plate on which it rests. Its height regulates the slope given the roof and determines the pitch, as $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, etc., or the proportion between the rise and the span.

Pitch.—The pitch represents the slope given the roof, as before mentioned, and is the slope of the common rafter. This completes the triangle formed by the run and the rise.

These three terms, "run," "rise" and "pitch," name the parts of a right-angled triangle. Knowing the lengths of the first two, the length of the third (common rafter) is found by extracting the square root of the sum of the squares of the first two. This method is the one most used by engineers in steel construction. But in ordinary roof framing, where wood is employed, absolute accuracy in lengths is not essential, as a fraction of an inch or so in the rise is not noticeable so long as the other members are framed on the same basis.

Therefore, the usual way of obtaining the lengths of the rafters is by scale; that is, by letting inches represent feet on the blade of the steel square for the rise and on the tongue for the run of the roof; and the length taken diagonally across from these points will represent the length of the common rafter. By using the side of the square that is divided into twelfths of an inch, the divisions will represent inches in the measurement of the actual rafter. So, in laying out work, great care should be observed as to accuracy in applying the square, because the variation of $\frac{1}{12}$ inch in the run or rise, amounts to a full inch, and more in the length of the rafter.

In Fig. 1 is shown a simple diagram of the parts that must be known before laying out the rafter.

Another method quite generally used is to take the rise on the steel square for 1 foot run of the common rafter. It does not matter which member of the square this is taken on, but for reasons which we will explain later, let the measurement taken on the tongue represent the run. Suppose the rise is 7 inches to the foot; the figures then would be 12 on the tongue and 7 on the blade. These figures will give the seat and plumb cuts. Now, say the span is 13 feet 4 inches, the run

being one-half this amount, namely 6 feet 8 inches; the square is placed seven times at 12 and 7 along the upper edge of the rafter (which is supposed to be

5 inches (nearly) which is just the amount of space between $3\frac{1}{2}$ and $8\frac{1}{2}$. In other words, if the timber is exactly 12 inches across the sides, the rule would be laid straight across and the gauge lines would be found to be $3\frac{1}{2}$ inches from the corners. When the timber is less than 12 inches across, the rule is placed diagonally, as shown in the illustration; mark at the

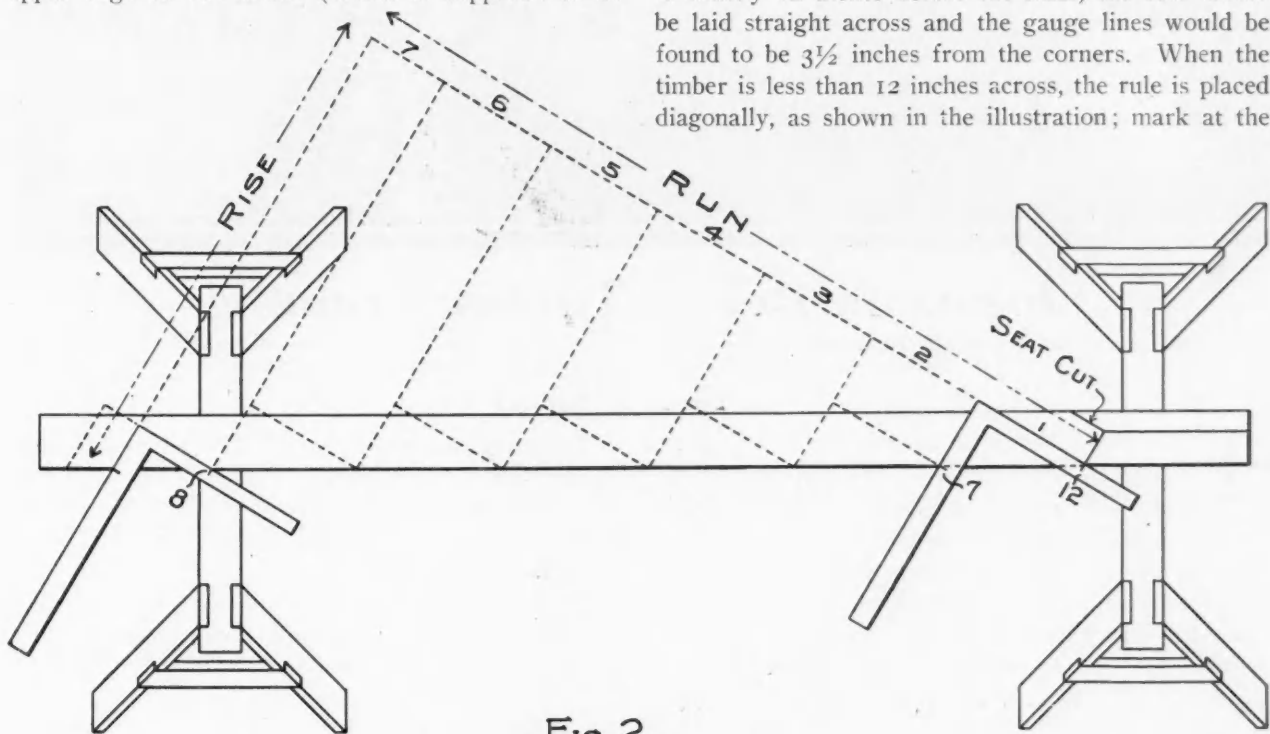


FIG. 2.

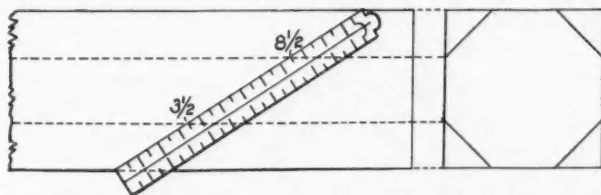
straight for a pattern). We say seven times, because there are six and a fraction of a foot in the run. At the last or seventh placing of the square, mark along the tongue and draw in the square till the figure 8 rests at the edge of the rafter and a line drawn along the blade will represent the proper line for the plumb cut, provided there is no ridge piece. If there is a ridge piece, one-half of the thickness of the piece should be deducted from the run by slipping the square over that much further to allow for same. Thus the length of the rafter is indirectly obtained without further measurement.

In Fig. 2 is shown the layout of this rafter on the trestles ready to cut. The dotted lines show how the run and rise is taken care of in the manipulation of the square.

Next month we will show the relation of the hip to the common rafter.

✦
Laying Out an Octagon

Recently we were asked to explain why an octagon stick can be laid out from a square timber by applying



a pocket rule opened out to the 1-foot length, placed diagonally across the timber, and marking at $3\frac{1}{2}$ and $8\frac{1}{2}$ for the gauge lines. Easy enough; the side of an octagon when the inscribed diameter is 1 foot is

figures as before and the gauge lines would be proportioned accordingly. If the timber is wider than 12 inches, then open up the rule to 2 feet length and mark at 7 and 17, which is double the amount of the figures used in the above illustration, and the result will be the same.

In finding the side of an octagon for a building, or for any other purpose, multiply the diameter by 4.9705 and divide by 12, this will give the required sides. The decimal being so near 5, it is generally used, but where the diameter is large, it is better to use the decimal, the difference being about $\frac{1}{32}$ of an inch to the foot, which means that the figures on the square to obtain the miter should be 12 and $4\frac{31}{32}$, or 4 and $15\frac{1}{2}$ sixteenths.

✦
Trinity Bells Modulated

The famous chimes of Trinity church, New York, were recently overhauled and one of the 3,000-pound bells is being recast to give a better tone. The most interesting feature of the rejuvenation, however, is the installation of a playing apparatus provided with loud and soft pedals. This effort to modulate the expression in chimes playing is said to be unique.

✦
Necessary Precaution

"Prisoner at the bar," said the portly, pompous, and florid magistrate, "you are charged with stealing a pig, a very serious offense in this district. There has been a great deal of pig-stealing, and I shall make an example of you, or none of us will be safe."



Joints in Heavy Timber Framing

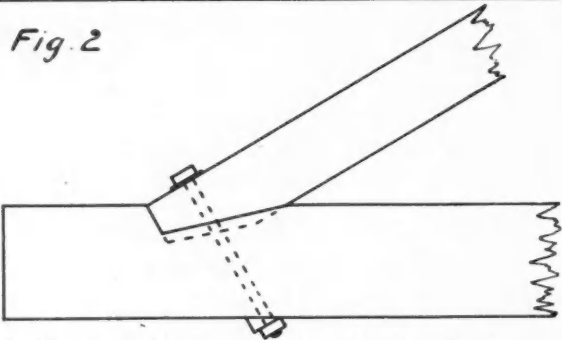
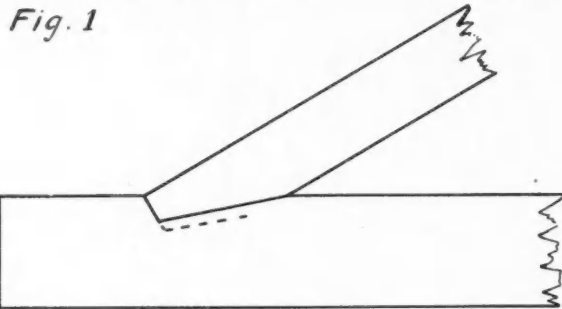
FIRST OF A SERIES OF ARTICLES DEALING IN A VERY CLEAR AND PRACTICAL MANNER WITH THIS IMPORTANT BRANCH OF WORK—GOOD AND BAD JOINTS

By T. B. Kidner

THE proper design of the joints in heavy timber construction is a matter of much importance and has received considerable attention from engineers and architects in their writings on the subject of roof trusses and similar structures. Perhaps less attention is given to the matter than was formerly the case, the introduction of iron and steel as materials of construction having rendered easy some of the problems which confronted the old carpenters in dealing

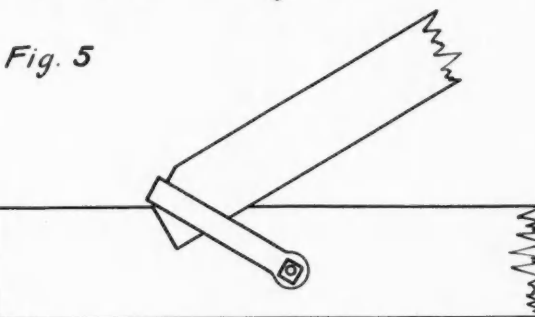
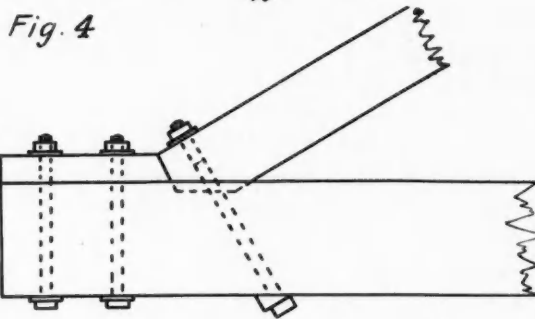
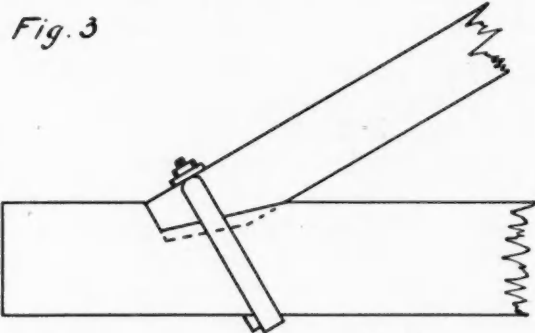
and abutting against the notch. The dotted line represents a tenon which, though not always used, is very useful during the assembling of the members of the truss, and also prevents any lateral movement of the joint afterwards.

The commonest method of fastening such a joint is by a bolt as shown in Fig. 2, but quite often a stirrup strap and plate, with two nuts, as in Fig. 3, is em-



with large roofs, etc. Timber framing is, however, still very generally in use, and every carpenter should be acquainted with the best methods of joining or connecting the various members.

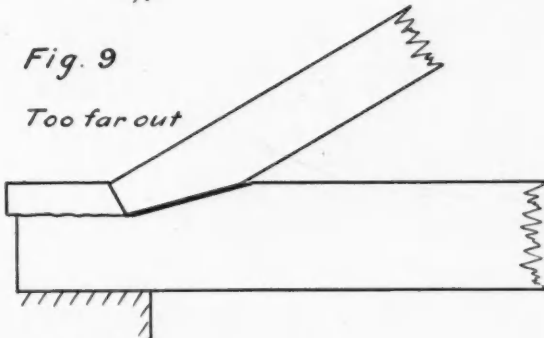
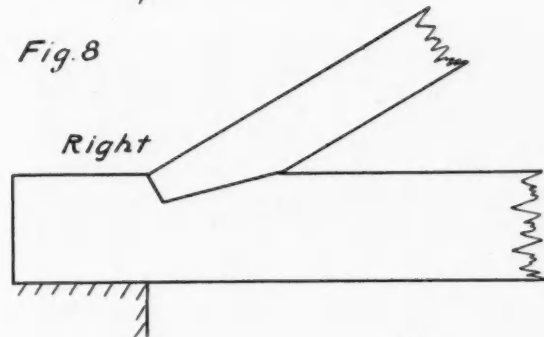
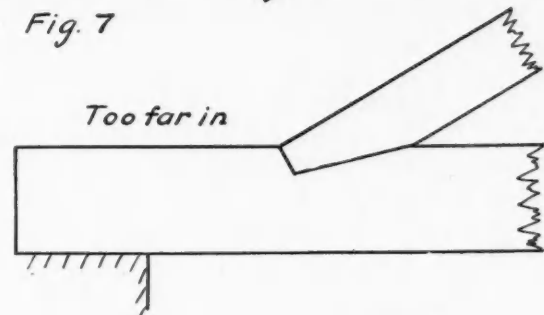
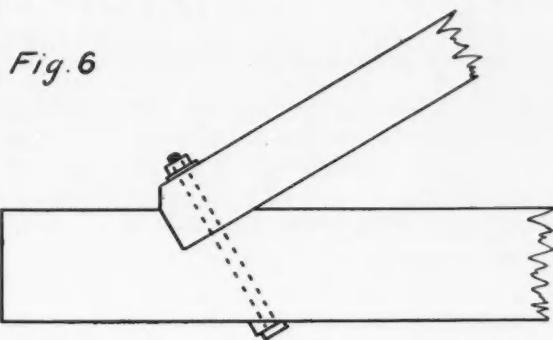
The joint at the foot of the raking member and the tie beam in an ordinary roof truss is one of great importance, as the failure of this joint means the failure of the whole truss. The several methods in common use are generally satisfactory, and are illustrated in the accompanying sketches. Fig. 1 is perhaps the most common and consists of a simple abutment joint, formed by notching the tie beam and having a shoulder on the blade or principal rafter, cut square to the rake



ployed. As some engineers and architects object to the notching of the tie beam, the arrangement shown in Fig. 4 is occasionally used. A block is bolted to the

upper side of the tie beam and the heel of the raking member abuts against it, instead of being in a notch.

Another variation of the same joint is shown in Fig. 5, in which a notch is formed to receive the under



side of the raking piece and a heelstrap is employed to hold it in place. The same is often held by a bolt, instead of heelstrap, as shown in Fig. 6.

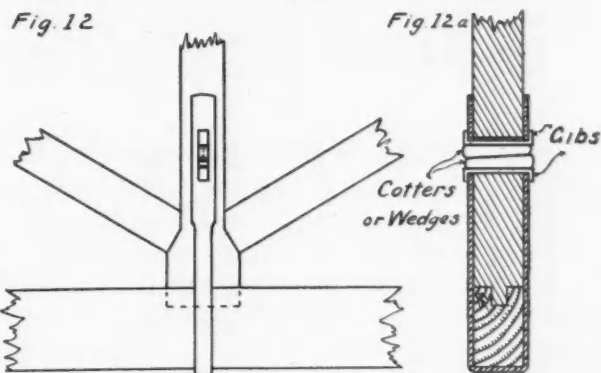
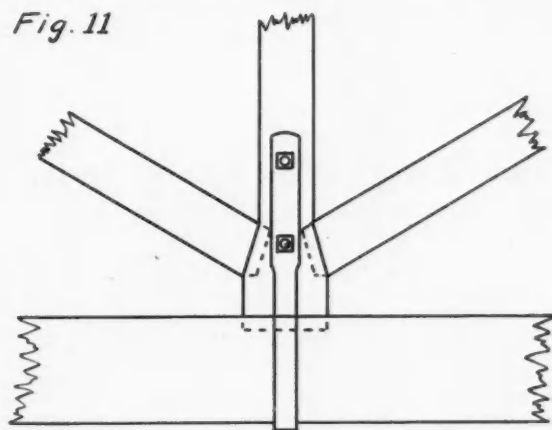
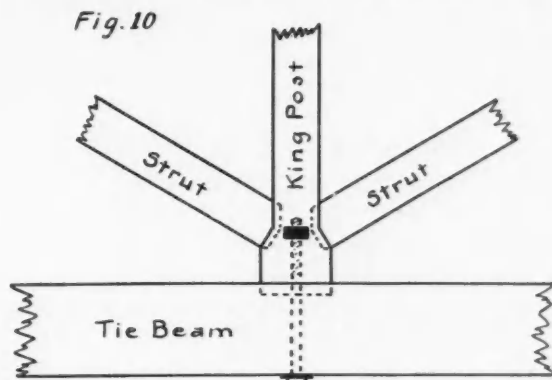
Fig. 7 is a bad form of joint occasionally seen; its weakness being that in the almost certain event of the shrinking of the raking member, the whole weight is on the weak point.

One other point to be noted in connection with the joint at the meeting of the tie beam and the raking member is that the joint must not be too far in from the bearing. The object of the tie beam, as its name implies, is to prevent the feet of the raking members

from spreading, and the joint must not be arranged as in Fig. 7, where the weight of the truss and its load is thrown on the tie beam. Fig. 8 shows the correct position, but it must not be forgotten that if this joint fails, it is usually by the shearing of the abutment, as Fig. 9, and that, therefore, sufficient material must be left beyond the notch to take the thrust of the raking member.

The joint at the foot of the king-post is another important place; the fact that the king-post *does not rest on the tie beam*, but holds it up, rendering it necessary to provide some suitable form of iron fastening.

The commonest method is to set into the king-post



a nut, into which a bolt is inserted from below, as shown in Fig. 10. The dotted line indicates a short tenon, which, as noted earlier in the case of Fig. 1, is useful both in assembling the truss and in the completed joint.

As some engineers object to the weakening of the

tie beam by boring a hole through it for the bolt, a strap is sometimes used instead, as shown in Fig. 11. This would be quite satisfactory were it not for the fact that king-post trusses (queen-post trusses also) are usually cambered by cutting the king-post short and putting the tie beam up to it; a difficult matter to accomplish with the plain strap. To remedy this defect, some architects specify for first class work a gib and cotter joint, as shown in Fig. 12. The sectional view, Fig. 12a, shows the principle upon which the joint is made; a pair of iron folding wedges, or cotters, being employed to pull the tie beam tight up to the shoulders of the king-post. The object of the two iron gibs is, of course, to hold the straps against the wood while the wedges are being driven in from each face.

Durability of Pine Shingles

A striking illustration of the longevity of pine shingles is found in connection with the altering of an old residence in Sturgeon Bay, Wis. While uncovering the roof, which was of $\frac{1}{4}$ -pitch, shingles were found marked "B 1 Red River," and were made by a concern who operated a small mill at Red River in the '50s and ceased operations in 1864. This would indicate that the shingles had been in use for something like 45 years, and when taken off the roof were found in fairly good condition.

Amount of Paint for a Given Surface

Paint makers usually say two coats of ready-mixed paint for 200 square feet of surface to the gallon. But this is only approximately correct, for all depends upon the character of the surface and the consistency of the paint; also upon the kind of paint, as some paint will go much farther than some others. It is also estimated by some that 18 pounds of white lead will be required to make paint to cover 200 square feet of surface, and which would indicate 18 pounds of lead to the gallon of paint.

Architects Elect President

Washington, Dec. 14.—The Architectural League of America, at a meeting today, re-elected Frank C. Borland, of Detroit, Mich., as president.

Many subjects of interest to American architects were considered in the score of committee reports made at the morning session of the institute. The board of directors reported that the membership of the institute was 1026.

The need for high standards in government architecture and the desirability of the establishment of a national bureau of fine arts, of more thorough training of working architects and many other questions relating to the profession received consideration.



MANY men fail because they don't recognize a rut even when they are in it up to their necks.

Scriptural Precedent

Jonah stepped ashore.

"I left my records in the whale," he observed. "Anybody who wants to see them can go after them."
—*New York Sun*.

Awful Place to Be Bitten

The thirteen-year-old schoolboy put up such a fight with the maddened animal that the girl was able to escape, but the youth was badly bitten in the tussle.—
Chicago Daily News.

"None But the Genuine"

Customer—Are you sure this is real Ceylon tea?
Well-Informed Young Assistant—Certainly, sir. Mr. Ceylon's name is on every package.—*The Sacred Heart Review*.

Up to Her

Irate Woman—These photographs you made of myself and husband are not at all satisfactory and I refuse to accept them. Why, my husband looks like a baboon.

Photographer—Well, that's no fault of mine, madam. You should have thought of that before you had him taken.

Open Shop

"The labor unions of Chicago have purchased a cemetery, where only members of the union may be buried."—*News Item*.

All his life in a union shop
He'd daily earned his bread;
They buried him in a union grave
When the union man was dead.

He went down to the Other Place,
And there produced his card,
Then Satan drew an earnest face
And studied good and hard.

And then he laughed, his hands did rub
Till he thought he'd never stop,
"Lord bless my soul," said Beelzebub,
"Why, this is an open shop!"

Ornamental Glass

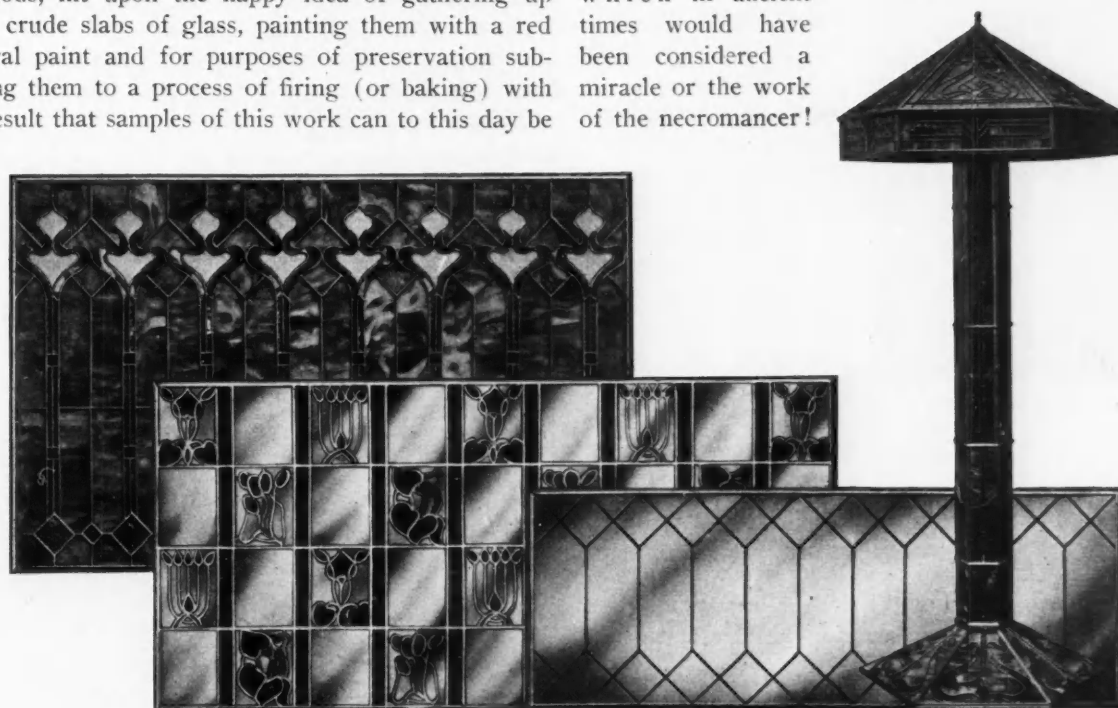
ITS ORIGIN, MANUFACTURE AND USE IN VERY EARLY TIMES—ITS VALUE AND POPULARITY IN MODERN BUILDING—MODERN METHODS OF MANUFACTURE

By Charles Nace Ramsey

THE writing of an article on the ornamental glass industry is very much like attempting to compile a history of the world's progress, so closely is the art of glass decorating interwoven into the history of the different nations of the earth.

The discovery of glass making, as history tells us, occurred about 2,000 years before the birth of Christ. The River Nile was then, as now, noted for its production of fine silica sand, running about 90 per cent pure glass. In the building of fires along its banks by the wandering tribes of Egyptians the melting of this sand became a matter of much comment even in those times. Nothing was ever thought of this common occurrence however until Rameses III, in scouring the country for new art material for use in his temple to the gods, hit upon the happy idea of gathering up these crude slabs of glass, painting them with a red mineral paint and for purposes of preservation submitting them to a process of firing (or baking) with the result that samples of this work can to this day be

ancient times, could have lived in our present days, how he would have reveled in the modern art of glass decorating, such as photographic reproductions in sand blast on glass! With this process he could have depicted his vast hosts of warriors going into battle, or the more peaceful scenes attending his coronation. Pictures made on glass by this process, if protected from fracture or abrasion, could have been handed down to posterity till the end of time, giving to each generation the true historical facts as they actually happened. Unfortunately, however, the photographic reproduction of living subjects, of beautiful pastoral scenes and objects in sand blast on glass is of but very recent origin. It was left for Chicago enterprise and brains to unravel a process of ornamentation on glass which in ancient times would have been considered a miracle or the work of the necromancer!



Ornamental Glass for Various Uses

seen in every museum of note. Crude pictures of warriors with fancy head dresses, carrying bows and arrows, and of birds, constituted these first decorations; later examples depicted natives in the ordinary occupations of life, such as grinding cereals in bowls, and still later we find pictures of glass blowers at work with blow pipes, a process of glass making which up to very recent years was still in vogue.

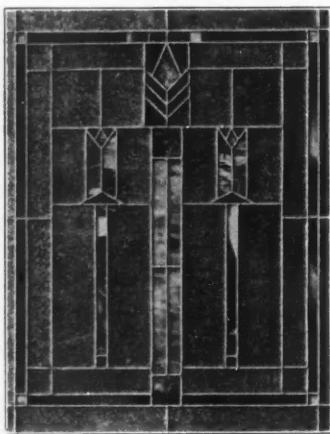
While poor old Rameses has been accused of a great many things—which to this day have never been proven against him—it has been proven, and it is to his credit, that he was the very first mortal to apply the art of decorating glass to practical uses. If this great patron of art, this remarkable character of

The ornamental glass of Egypt was generally opaque and rarely transparent; colors were used profusely, especially in reproducing figures and objects for inlaying into wood or other materials. Specimens exist of this glass bearing the name of Queen Hatasu of the 18th Dynasty, B. C. 1445. The Egyptians also successfully imitated precious and other stones, such as emeralds, turquoises, jaspers, onyx and obsidian, an industry which, unfortunately, flourishes in many other countries to the present day.

Under the native Pharaoh Egyptian glass seems to have been extensively exported to Greece and Italy, and its reputation continued under the Ptolemies, when the furnaces of Alexandria produced ornamental

glass of numberless shapes and considerable size. At this period the Egyptians invented the millefiori glass, consisting of small threads of glass arranged vertically and then fused, so that the whole rod thus formed was of one pattern, and by cutting off slices, each piece reproduced the same pattern. By inlaying these small pieces of glass into ebony and other rare woods, beautiful specimens for interior decoration were made and used quite extensively in the different temples.

To the most flourishing period of the Empire are to be referred certain slabs with white cameo figures of fine execution in relief on a blue background, and plates of opaque glass for inlaying the walls of rooms, such as those which are said to have decorated the mansion of the usurper Firmus. The art of ornamental glass making in fact has never become extinct in Egypt, the Fatimite caliphs having even issued glass coins in the 10th and 11th centuries. Although the



Egyptian Design Set in Hard Metal

art has now fallen to the lowest ebb in Egypt the workmen are said to show aptitude in its production. The glass making art in Italy does not date earlier than the Roman Empire, importations from Alexandria having previously supplied the lack of native manufacture. But there is ample evidence of its extensive manufacture at that period, having been introduced in the days of the Ptolemies, large plates being used for incrusting chambers. Hollow columns of the material with lamps inside were used to illumine the public theaters. As early as B. C. 58 the theater of Icarus had been decorated with mirrors of glass plates disposed on the walls. Ornamental glass was also used for paving, and for the blue and green tesserae of mosaics.

Ornamental sand blasting of glass was suggested originally by the well-known fact that windows exposed to the action of wind-blown sand by the seashore eventually became completely obscured. The sand blast process which has practically superseded all others for grinding glass consists in the projection of sand by powerful blast of air or steam against the surface of the glass, having the effect of grinding it to a pure white surface and perfect uniformity.

When it is desired to produce ornamental work of this character the result is effected by covering the surface of the glass which is to remain clear with some coating to resist the action of the sand. This coating, being removed after the grinding, leaves portions which were covered by it clear and transparent as before, while the exposed portions are ground white. This work is not only used for ornamentation but for

lettering on glass, being well suited for it on account of the distinctive and clear outline obtained. It is also

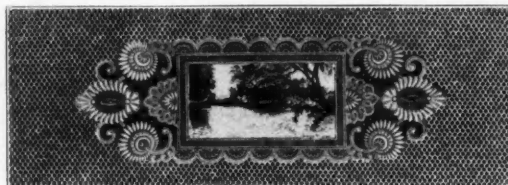


A Stencil Pattern—One of the Older Processes

very extensively used in the ornamentation of colored or "flashed" glass. In work of this character the body of the glass is white or transparent, one side only being covered with a "flashing" of color. The colors in use are ruby, blue, amber, purple and green. In the ornamentation of glass of this kind such portions are protected as are desired to remain in the original color, the balance of the surface being exposed, and the color cut entirely away by the action of the sand blast, leaving the design in color upon a perfectly white ground surface.

Photographic reproductions in sand blast is a work entirely different from the foregoing, inasmuch as the object, scene, or human portrait is exactly reproduced photographically and true to life. By sensitizing the clear glass upon which the reproduction is to be made and printing from a very powerful light, an exact picture of the object results by chemical treatment of the glass and afterwards by subjecting to sand blast is made complete in every detail. Some samples of this wonderful work are shown herewith. In connection with this process the most wonderful and practical use is the reproduction of lace on glass. Had the making of lace glass originated with the Egyptians and samples of the work been found in the ruins of the ancient temples and pyramids it would have been regarded by people of today as one of the greatest arts known to man. Its discovery coming as it does in this age of commerce when true art is little thought of and everything resolves itself into a matter of dollars and cents, the value of lace glass is gauged from its adaptability and usefulness as a glazing for front doors and top sash.

There will come a time, however many years hence, when the people who come after us, in digging into

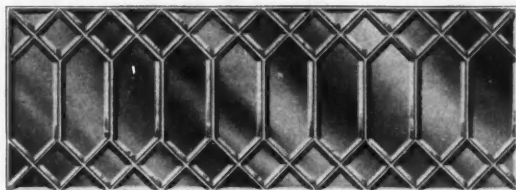


Portrait Lace

the ruins of these pre-historic homes and skyscrapers of ours, will be astounded in discovering samples of such advanced art. Who knows but at that time it may be known as a lost art and future generations be deprived of the benefits of its use!

What is now commonly known as art glass had its

origin in Bavaria in the 10th century. These first windows were made in tasteful arrangements of col-



Beveled Plate Design Set in Hard Metal

ored glass in finely made leaden frames in imitation of the stone mosaics used for floors; nor did the art rise much above this for three centuries after its origin. But in the 13th century, owing to the full developments of the Gothic style of architecture, it became of immense importance, colored glass taking the place of tapestried curtains in filling the spaces within the groined arches. The mosaic patterns were superseded by elaborate designs, not only in beautiful arabesque but even pictorial compositions were attempted. To such perfection did this come, that many of the works of the 15th century are marvels of art. In all of these the figures, excepting the faces, were made of pieces of self colored glass combined with great skill and taste. The features were painted in enamel colors and burned in. Gradually the art of shading by removing certain portions of the colored surface, and other improvements were introduced.

Enameled glass, so called from the fact that similar glass was formerly produced by burning the desired figures upon the glass in fusible enamel, and is still so made in some sections of Europe, is now only made in this country by the sand blast process. It is done by stenciling upon the clear glass the pattern desired



Window Base, Embossed Gold and Silver Ornamentation

in some compound capable of resisting the sandblast, then sanding with the sandblast and washing off the protective compound, the patterns being in neat stencil figures in a ground surface. The glass is known as "clear" when the figures are entirely transparent, and "obscured" when the figures are partially or wholly obscured. Although the cheapest form of ornamental glass, it is of very neat and attractive appearance.

Chipped glass, also termed crystalline, has within the last dozen years nearly superseded all other forms of obscured glass for fine office buildings, and all other purposes where obscurity to vision without obstruction to light is desired; it is the most beautiful, as it is the most natural of all the obscured glasses, and is un-

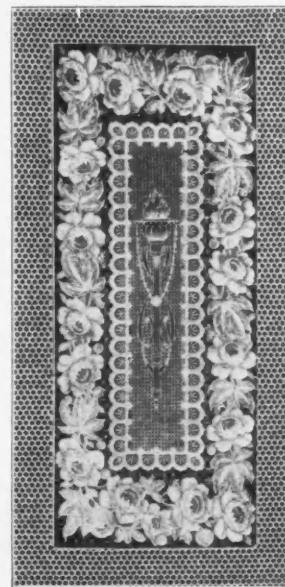
questionably one of the innovations which has "come to stay." The glass, after being roughened to facilitate a strong attachment to the surface, is spread with a strongly adhesive compound, which in drying, contracts and tears off the face of the glass in flakes of crystal of very considerable size leaving the glass itself wrought into a network of graceful natural designs of infinite variety and attractive appearance; it has been very felicitously designated "ice-flower glass" in Germany, a term which conveys an excellent idea of its appearance; the glass is not rendered wholly obscure by the process, but sufficiently so for most purposes. As the obscuration is wholly due to diffusion or refraction of the rays no loss of light results.

Embossed glass is produced in either white or colored glass by eating away the surface with hydrofluoric acid. This method is especially adapted for the production of any work in which shading or perspective effects are desired, and while not producing work as conspicuous in character as the sandblast process it is not equaled by any other process in work which requires subdued and delicate effects.

Beveling, wheel cutting and mitering are kindred arts of working upon glass, all being performed by holding the glass against revolving wheels, not very different from those used in grinding knives and other tools, it being necessary, however, to submit the work to a number of different wheels, fed with emery, pumice, rouge, etc., to accomplish the proper grinding and polishing. The beveling of plate glass adds very greatly to its appearance and gives it a finished effect.

The silvering process (mirror making) formerly consisted in coating the surface of the glass with an alloy of mercury and tin (no silver being used), formed on the surface in a very curious and interesting manner. The mirror work of this character was of excellent quality, but the amalgam was never fully solidified and a long time was required in the process of manufacture before it was ready for use. Moreover no satisfactory method was ever discovered by which the back could be protected from the atmosphere, so it was not suitable for use where exposed to the weather, especially the sunlight.

The process now used is wholly different, consisting in the precipitation of a coating of pure silver from chemical solution upon the surface of the glass, no mercury being used. This is done quickly and it can be immediately protected from the atmosphere, and will withstand both sun and moisture, even in the most exposed positions.



Lace Panel for Front Door

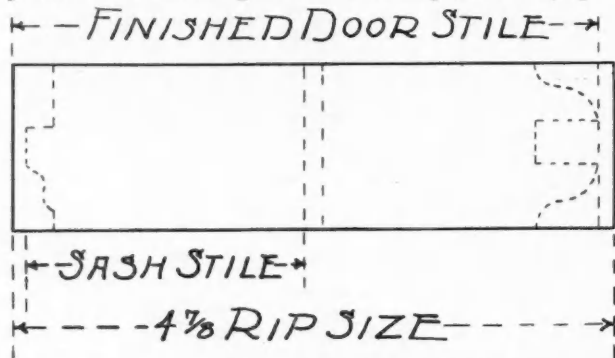
PLANING MILL WORK

A Move to Standardize Details

By Charles Cloukey

THE above caption suggests one of the aggravating and useless expenses connected with our latter-day method of building; especially so in relation to much of the "special" details designed by many of the architects. They may be honest enough in their endeavors to give their patrons the worth of their money in artistic effects; but it results in a needless expense and does not receive any more appreciation than if it had been planned upon standard lines.

During the years past there have come down to us several details which cannot be improved upon, either in appearance or efficiency; and when these are displaced for something new and strange, the only gain



[Fig. 1. Door Stile Makes Two Window Stiles

is in the expense to the builder if the other parties to the contract have figured safe in their estimates.

These details comprise the styles in outside and inside frames, sash, doors, interior finish, outside and inside colonnades including pedestals, capitals, newels, railings and stairwork.

The catalogues of the large planing-mills and sash and door houses have done something toward standardization, but not in a general way. Perhaps the publishers of the catalogues have done more, for one publisher will get out practically the same catalogue for several different houses. But another publisher will sell catalogues to another group of manufacturers or jobbers, and so the standardizing is only of a spasmodic character.

An important feature in the standardizing of details should be to work them out as far as possible to the sizes of lumber as now manufactured. When a certain

member is detailed 6 inches wide it is a foregone conclusion that it cannot be got out of 6-inch stuff. If it cannot be doubled up with narrower stuff in the ripping, then it must be got out of 8-inch lumber and the strip used for something else. If the grade is finish, the loss will not be so great on account of being able to use the moulding strip; but if the lumber is a shop

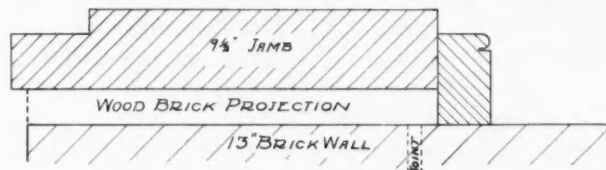


Fig. 2. Door Trim for Brick Wall

or common grade that requires cutting before ripping, the result will be a lot of short strips for the kindling pile. In most cases the 6-inch member may be replaced by one 5 1/2 or 5 3/4 inch without losing any of the advantages of appearance or utility, and so allow the mill to use either 6 or 12 inch lumber in the making.

Another economical device is shown in Fig. 1, in which the door stiles and rails, except the bottom rails, are ripped 4 7/8 inches wide, which lets them come out

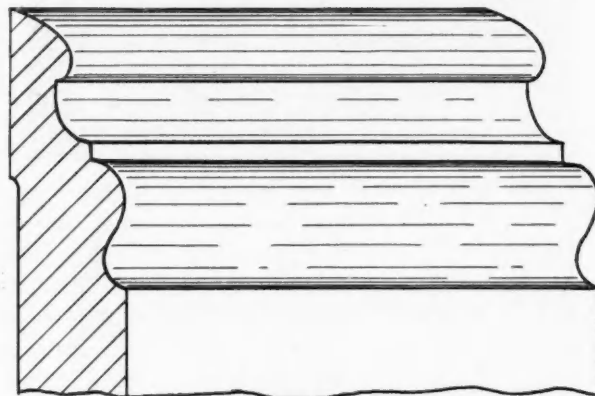


Fig. 3. Base of Fine Cross Section but Poor in Elevation

of 10-inch stock in white pine, or cypress, and will re-rip into two window stiles 2 3/8 inches wide. This is a valuable economy, as all the door cuttings not fit for rails may be cut into sash stock, even down to the short stiles for transoms and cellar sash. The edgings may be run into cut bars for marginal light work and

so clean up on lumber with a minimum of waste.

The same precautions should be observed in the manufacture of cupboard doors, making the stiles and rails the same all around, and making the ripping size $2\frac{3}{8}$ or $2\frac{3}{4}$ inches wide, so they can be got out of 5, 6, 10 or 12 inch lumber.

In the case of the brick wall frame detail shown in Fig. 2, it is just as well to use a $9\frac{1}{2}$ -inch jamb for a 13-inch wall as it is to bill out a 10 or a $10\frac{1}{2}$ inch.

In all box frames having jamb-linings, there is no need to use an odd width for pulley-stiles and back linings, and the $4\frac{1}{2}$ outside casing and the $4\frac{1}{8}$ inside casings may be got out of 10-inch stuff, ripping together.

When we come to consider moldings, the same opportunity for reform presents itself; and it is many a time that the mill man substitutes some standard

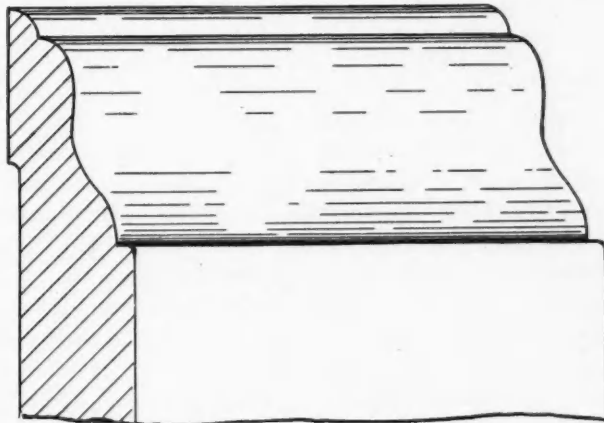


Fig. 4. Simple Base with Pleated Face

pattern or standard sized pattern for details which are fearfully and wonderfully made. The tendency is toward plainer details, fewer lines, and in interior trim and details a greater opportunity to display the beauties of the woods used. In the old days of paint and enamel there was some excuse for the elaborate mouldings whose contour and detail were depended upon for the ornamentation, but later we are despising many things our fathers loved, and the change is not without reason and profit to the beauty of both outside and inside work. Of course there are some things like the details of the five classic orders of architecture, which cannot be improved upon for symmetry and beauty; but if one wants a Corinthian effect in a colonnade opening, using a veneered column of some rare or beautifully figured wood, he would not flute the column as in the same style of exterior development. The latest in architecture is often far from being classical in any and every sense of the word.

One of the errors made in the selection of mouldings for specific places, is to use them because they present an attractive cross-section. The base moulding shown in Fig. 3 has a fine cross-section, but the lines of the elevation make a jumbled pattern quite without character. The more modest section of Fig. 4, on the other hand, develops a face at once pleasing and impressive.

Another feature of moulding use is to keep in mind the ultimate position of the moulding in relation to the eye of the beholder. Some mouldings are designed to be viewed from beneath, like the cap moulds shown in Fig. 5, while others are made to be looked at from

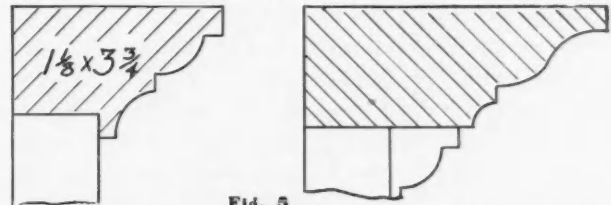


Fig. 5

above like the base mould in Fig. 6, and still others are intended to be looked at from in front. These include to a great extent the list of nosings, astragals and bands.

In the Universal Moulding Book appear details of mouldings for every class of ornamentation, and while there are a few other patterns which have become so generally popular and are evidently deserving of a place in modern classic detail, there should be as little departure from the old book as possible, and the new details should be added to the Universal Catalogue as fast as they have earned the right to a place with the old standbys.

Another consideration, and it is no small one, is that of the local ways of doing things. A workman passes from one part of the country to another and encounters different ways of doing the same things, little details, not of much consequence in themselves, but of enough importance to throw the mill out of step to get them out in a way differing from the usual. Contractors are used to a certain style of millwork in one place and then when they go to another, make no

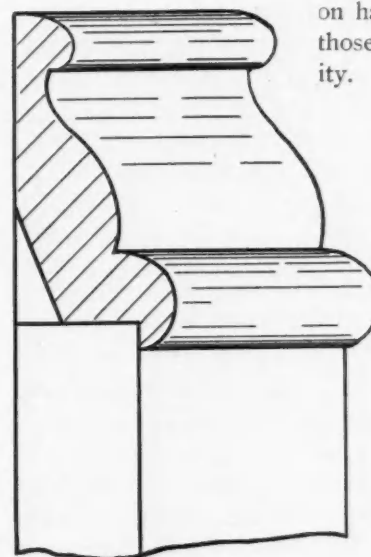


Fig. 6

end of trouble by insisting on having things done like those in their former locality. A good standard of details would greatly lessen this sort of trouble, and at the same time increase the general efficiency of millwork, and the economy of its production.

Again, the saving to architects by the use of standard details would be of great importance, and in almost every case their customers would not know but

that all the details were original and special; and if they did know the difference, the architect could rightly claim that there was not likely to be produced anything better than some of the old standards where new conditions did not call for new details.

Since the fad of the bungalow has come to this country, and no doubt within reason will stay, there has opened up the way for details in the better class of work new to most of us latter-day millmen.

When I say *new*, I mean new for the better class of work demanded in the bungalow finish of today. A true bungalow is a luxury, and must be finished with the best of them as regards quality in wood and workmanship. The same plain angular details are seen in the older houses of plain pretensions, and their revival in the bungalow is a welcome one to the millman who must furnish a "selected figure," nicely polished. As this may be done almost entirely by mechanical means, it spells a neat saving in the expense of manufacture and at the same time gratifies the buyer. In this style

of buildings the details of frames, casements, French windows, columns, pedestals, newels, balustrades, and some other details might be standardized with profit to the millman, builder and owner.

The making of standards does not mean the surrender of originality where it will become apparent, and yet it does not mean that there shall be but one pattern for each item; but it does mean that the component parts shall comprise a system and that they shall be designed to be cut from the standard sizes of lumber with the minimum of waste. It is not only a matter of personal economy with each mill, but it involves the great principle of lumber conservation. Let us make an honest and earnest endeavor to meet it even before it is thrust upon us.

Built-Up Panels—Veneers and Veneering

GROWING USE OF VENEERS FOR DOORS AND INTERIOR FINISH—MODERN METHODS OF VENEER CUTTING AND PANEL GLUING

By W. D. Graves

THERE used to be a big boy, in our school, whose favorite pastime was splitting door panels with his fist. How "us little fellers," who feared but did not love him, would have snickered if he could have been led to try the stunt on a built-up panel! It is one of the clouds on the sky of retrospect that they were practically unknown in those days. Veneer was then looked upon as a mere shoddy makeshift—a cheap imitation. Only veneers of the most expensive woods were used; and, though the initiated knew that veneered work was often better than solid, but few of the general public believed it.

Even now, the spirit of economy is perhaps mainly instrumental in bringing the use of veneer to the front; but that spirit is a large factor in all progress, and it is far from being the most important in this. Whatever be the motive power that forces it, it certainly is rapidly growing in favor and use; but could hardly interest builders very much were it not for the fact that it, as well as most other house trim, is coming to be made exclusively at the mill. The successful manipulation of veneer, except on comparatively small surfaces, calls for appliances impracticable for the builder.

Amateur Attempts at Veneering

The writer has met many mechanics, of unquestionable ability in their lines, who disapproved of veneered work because they had been unsuccessful in their attempts to make it. Their disapproval, too, carries much weight because they *are* mechanics of ability; whose failure was almost—if not quite—entirely due to their lack of proper equipment for the work. We all know that glued surfaces, in order to give the best—or even good—results, must be brought together before the glue begins to set; and pressed into as nearly absolutely perfect contact as is possible. It is impossible to hand coat two surfaces, unless they are compara-

tively small, and get them together before the glue, on some portion of them, begins to set. Even if it were possible to so coat and get together the surfaces, no appliance for properly pressing and holding them is available to the average builder.

We have no way of accurately estimating the amount of pressure brought to bear by one of our ordinary screw clamps; but a crude experiment has demonstrated that it takes but a slight turn of the wrist to lift 300 pounds with one of them. In view of this, there appears no reason to question the statement of one well qualified to know, when he says that a pressure of from 100 to 200 pounds per square inch is necessary for the attainment of good results in gluing veneered surfaces. Figure the number of square inches in any of the panels in common use, and consider how utterly impracticable it would be to get the required pressure with any ordinary or makeshift arrangement. Consider, too, its quick application and even distribution; for a slight inequality will drive a detrimental amount of the excess glue to the parts where the pressure is lighter, causing lumps and weakness there. Where the outside veneer is but 1/20 inch, or less, thick, and has yet to be sanded, a slight inequality is apt to be disastrous.

Estimating the required pressure at the lowest figure quoted, *i. e.*, 100 pounds per square inch, a panel a foot wide by 4 feet long would require a total pressure of very nearly 30 tons. When one considers the strength required to hold such a pressure, and the added massiveness necessary in order that neither the bed nor platen may spring in the slightest degree, he will readily see that a suitable implement for the purpose would seriously interfere with the portability of a tool kit. Yet presses are in use which are capable of taking a panel 52 by 172 inches, and of exerting an evenly distributed pressure of 200 pounds per square inch—nearly 90 tons in all.

How Veneers Are Cut

While it is not surprising that, with any apparatus ordinarily available, the best of workmen "fall down" in trying to veneer large surfaces; uniform good results are attained, in properly equipped plants, very cheaply—so cheaply, indeed, that the lower grades of built-up stock are coming to be quite commonly used for packing cases. The comparative cost of built-up and solid work varies so much in different localities that any attempt at comparison, even if it were within the scope of this article, would be bootless. The immense trade *built up* in this line, within a few years and despite prejudice, argues that the manufacturers have not been over greedy; or, if they have, places beyond question the superiority of their product.

The economy of lumber, both in quantity and quality, is such as should delight Mr. Pinchot. The different methods of making veneer are so well known as to merit but passing mention; practically all the more common kinds being rotary cut—simply turned off the surface of the log in a big lathe. Where the quarter-sawed effect is desired it must, of course, be slice cut or sawed. Sawed veneer, however, on account of the waste, is but little used except in cases where the required thickness and the brashness of the material renders cutting impracticable.

To one who has seen logs converted into boards by a saw cutting a $\frac{3}{8}$ -inch kerf, and thick slabs thrown in the dump, it seemed as though the limit of economy had been reached when veneers were rotary cut; but the heart, or core, so small that veneer cut from it would not flatten out without checking, was necessarily left. This core, especially in case of the smaller logs used, constituted quite an appreciable percentage of the whole; and was rarely of any more than fuel value. Now, however, they are using miniature log saws to convert these into crating stock and the like; so the veneer men are getting pretty near the point of absolutely no waste.

Veneer formerly was—and still is to some extent—air dried, by standing it on edge in roofed racks built for the purpose; but it may now be run directly through a drying machine, thence to the gluing machine and into the press. It is not meant, by this, that the operation of making built-up panels is entirely automatic; for there is the matter of the selection of the different parts, which requires human skill and judgment.

Built-up Panels

The cheaper panels are made by taking stock of nearly the required thickness, and putting a thin veneer on each side of it, the grain of the middle piece, or core, running crosswise. This is called a three-ply panel; but the better grades have an additional thickness of veneer on each side, the center being correspondingly thinner, and are known as five-ply. In the five-ply panel the grain of the center piece runs in the same direction as that of the outside plies. On each side of this center piece, with the grain running

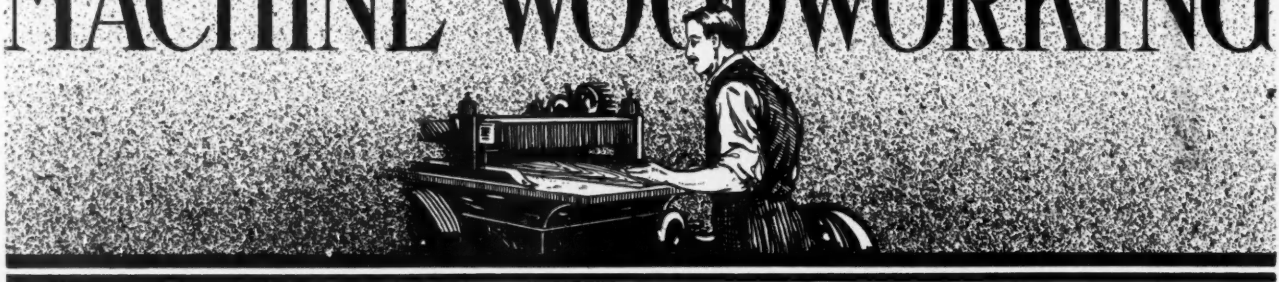
crosswise, is glued a thickness of veneer technically called the cross band, completing what is called the three-ply core. The outside veneers, secured on this, are usually about $\frac{1}{20}$ inch thick; though, in case of very expensive woods, they are often as thin as $\frac{1}{28}$ inch. As the appearance of the lumber in the core is immaterial, over two-thirds of a $\frac{3}{8}$ -inch quartered-oak or mahogany panel may be made of a very inferior grade of lumber; while it has all the appearance, with several times the strength and staying qualities, of solid, high-grade wood.

Doubtless the reader, who knows the difficulty of getting wood so seasoned that it will "stay put"; and who has always practiced so putting it together that the grain will run, as nearly as may be, in the same direction, will be a trifle skeptical about the staying qualities of a built-up panel. Such skepticism is well grounded. We all know, however, that the jobs are very rare whereon we are able to have the grain run all in one direction. Almost invariably we have to make exceptions to the rule, and figure to so place the stock that swelling or shrinkage will do the least possible damage; or to so secure it that it can do neither. In the attempt to attain the latter result the manufacturer of built-up panels has many things in his favor. The thinner the stock is, the more thoroughly and evenly it may be seasoned. The glue, being made up in large quantities and often, is fresh and uniform; being applied by a machine, it is evenly and quickly spread. The glue room, being nothing but a glue room, is kept at just the right temperature and free from dust. The pieces, coming from the glueing machine, are *immediately* put together and into the press; where the pressure is uniformly applied and accurately regulated.

As good glue, well applied, is fully as strong as the wood itself, the limit of possible distortion is the extent to which the veneers may be extended or compressed lengthwise of the grain. Of course, if sufficient moisture penetrates to soften the glue, the panel would be spoiled; but such an amount would be more than sufficient to ruin a solid panel as well. A three-ply panel, in the white, will warp a trifle if the atmospheric conditions differ very much on the opposite sides; or if the outside plies are of very different woods. Even the five-ply, though doubly fortified, must, in order to give the best results, have both sides of like material. Such a panel, though of course not absolutely stable, comes as near being so as is possible for anything made of wood. When properly filled and finished it might be used for roofing without fear of its being appreciably distorted by the elements.

The sentiment in favor of "solid wood" is *but* a sentiment; and, if carried to its logical conclusion, would bring us to log houses. Such conclusion, if the material were mahogany, would be some expensive. As far as looks go the surface is all that need interest us. If we can get a better and more durable surface, coupled with a stronger backing, few of us will lose any sleep on account of the lesser cost.

MACHINE WOODWORKING



Moulder Knife Combinations

THE FIRST OF A SERIES OF ARTICLES ON THE USE OF KNIFE COMBINATIONS FOR MOULDING WORK—SPECIAL ADVANTAGES AND ECONOMY POINTED OUT

THERE was a time when nearly every moulder knife maker, or rather knife grinder, thought that the knife had to be wide enough to take in the whole width of the pattern of the moulding, but I am happy to state that such an expensive method has been discarded for one of much greater economy and utility.

The illustrations will give something of an idea of how the combinations may be made, and also how some of the knives may be used in making many dif-

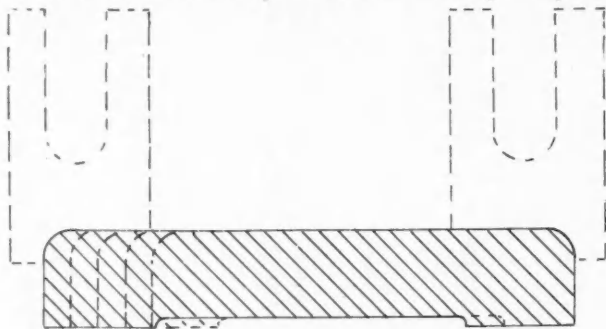


Fig. 1

ferent kinds of mouldings by changing the combinations.

One good rule to observe when laying out a combination of knives to be shaped to pattern, is to avoid inner angles wherever possible, making the division of the combination where the inside corners occur as

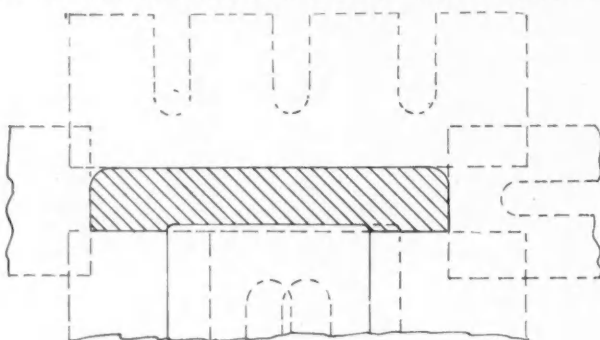


Fig. 2

shown in Fig. 5. The reason for this is to avoid having to file out the corner in making the knife and also the filing to keep them sharp. In some woods it is desirable to have the knives tempered so hard that a file

will just miss cutting them, and if there are no inner angles all the sharpening may be done with the emery wheel and oil stone.

After having decided what knives to use for a given moulding, the next problem is to bolt them onto the cylinders or heads in the proper manner. If this has been done before and a record kept, it is an easy matter of minutes, but if it is the first trial the task may not be so simple.

If the operator is familiar with the moulder's pro-



Fig. 3

portionate scale, it will be a short job to transfer the pattern of his moulding to the scale and then set his knives to these marks.

Some other operators will lay off the pattern of the moulding to be made on the end of a block about a

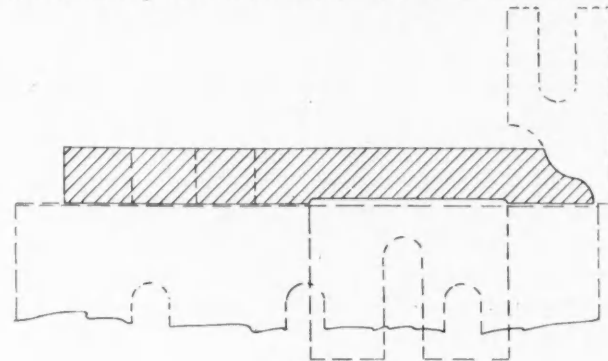


Fig. 4

foot long and saw out a piece on the band saw which they use as a pattern to set up to.

And there are still some others who will put their knives on as nearly right as they can guess it and then shift them after trying until they approximate the correct detail. Of course, this last is the more expensive and the least satisfactory, and no operator should be satisfied to follow such a practice any longer than it takes him to find out about the proportional scale and its use.

When the heads are once properly set the operator should not neglect to take off a template so that he can repeat the set-up in a few minutes at any future time. These templates should be made of thin pieces of smooth lumber, say of birch or poplar, about $\frac{1}{8}$ inch thick, $1\frac{3}{4}$ inches wide and a little longer than the head to be covered. There may be a strip sawed out and a lug left on one end, as shown in Fig. 3, or a small brad may be driven into the template near the end so as to hook over the end of the head. The operator should be careful in using old and battered cutter heads, to see that none of the corners are shorter than the rest, for if they are the template will not register the same from all the corners, thus throwing the work out in some of the members of the moulding. The strips of wood from which these templates are cut should be sanded on both sides so as to be susceptible to a very sharp pencil, and only this condition of the pencil is conducive to accurate work. Place the template under the knives to be registered, with the edge against the lip of the head and the lug or brad hooked over the end of the head, and while in this position mark care-

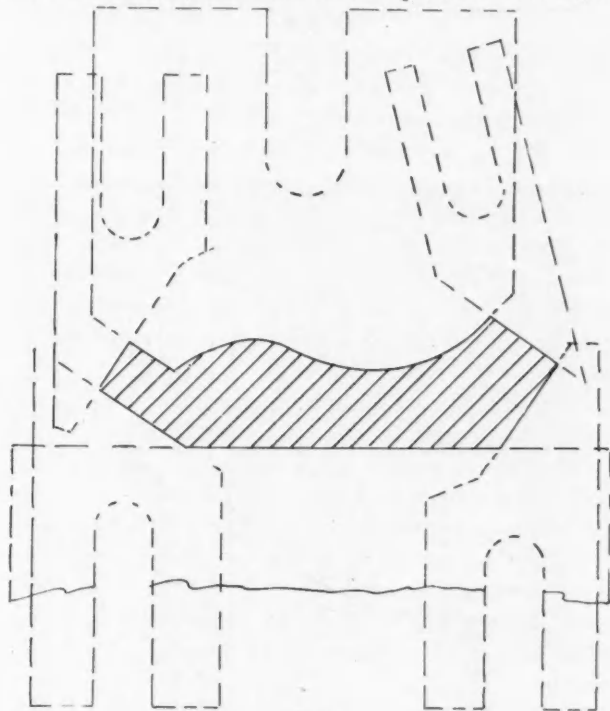


Fig. 5

fully around the profile of all the cutting knives on that face of the head. When this is done turn the head and add any other knives which may be cutting on the same pattern. All the knives used at one time on one head should be registered on the same template and it does not matter if the lines cross, as shown in Fig. 6.

Every blank template should have the surfacing line put on it as soon as made and then it will always be ready to set the straight surfacers by, and at any set-up, will act as a check on such surfacer knives as may already be on the heads.

In order to use these templates with absolute accuracy at all times it is necessary that the heads should occupy the same relative position in regard to the in-

side fence of the machine. It is a mistake, anyway, to always be moving the heads laterally, and it is seldom necessary to make such a move if the most advantageous position is selected as a permanent one for the heads. These remarks refer to the top and bottom heads, and they should be set so as to overlap the frame of the machine somewhat, say $\frac{3}{8}$ to $\frac{1}{2}$ inch, so as to accommodate knives a little wider than the molded pattern or the tilting of knives to conform to some arbitrary design. This last is very often the case with bevel cutters, and it is a big advantage to be able

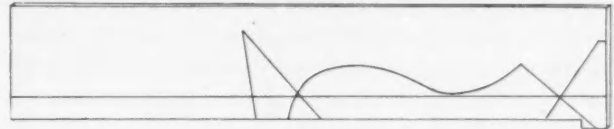


Fig. 6

to tip them over towards the machine a little without the heel striking the casting of the machine frame.

When this position of the upper and lower head has been determined upon, the arbor casting and the frame

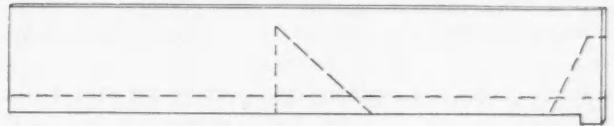


Fig. 7

casting should have a witness mark made by a sharp cold chisel so that if the head is moved laterally, it may be set back to the exact position formerly occupied. If this little detail is attended to at the start, setting up will be robbed of one of its biggest bugbears.

Another item to be considered and attended to very carefully, is the offset allowance for the cut of the inside head. This cut cannot safely be put at less than $\frac{1}{8}$ inch for the great majority of work, and the inside tail fence should be set out that distance from the line of the front or feed-in fence. If this allowance is varied to suit extreme cases, the fence should be set back as soon as the special work has been completed.

When both top and bottom heads are used on a moulding in other than surfacing lines, the bottom pattern should be registered on the reverse side of the template, and as the slip of wood will occupy the same relative position with the bottom head as with the top, it will be necessary to set the bottom head in a permanent position relative to the fence as well as the top head.

The templates for the inside head should have the cutting line on them the same as on the top and bottom ones, and the position of the spindle arbor marked in the same way so that it may be moved to its standard position at will. Both side head spindle arbors should have plumb witness marks with the frame of the machine so that the operator may know that when his side surfacers are set by the scale or template the surfaced edge will be square.

Do not for a moment think that this is useless red tape, for it represents a short cut to operations repeated many times each day possibly, and then the operator knows just what he is going to do when he starts, and

also knows exactly what he has done when he does it; he does not have to spend time to prove it to himself.

If these template patterns represent catalogue mouldings, they should be marked with the standard number, and if they are special details they should be marked with the name of the order or job for which they were made.

In order to avoid confusion with a multitude of templates, a filing case should be provided with indexed compartments in which they may be stored and any one of them be found in a moment.

A large stock of templates is a great aid in making up patterns for mouldings on orders where the customer is not certain what he wants and leaves the selection somewhat in the hands of the moulder man, and it is here that the combination of knife patterns comes in again and saves both time and metal.

Now, to take up the subject of specific combinations, I have endeavored to select a representative lot of patterns, beginning with the simplest and working up to the more difficult, showing upon which heads the different knives are applied to do the work most advantageously. In these examples I have followed the general practice of putting the pattern knives on the top head, which I believe is conceded to be more economical for a great variety of work and for the machines not especially designed for face-down work. For matching of flooring, ceiling, drop siding and some of the standard patterns of casings run by the big stock planing mills operated in connection with the manufacture of lumber, the face-down proposition is

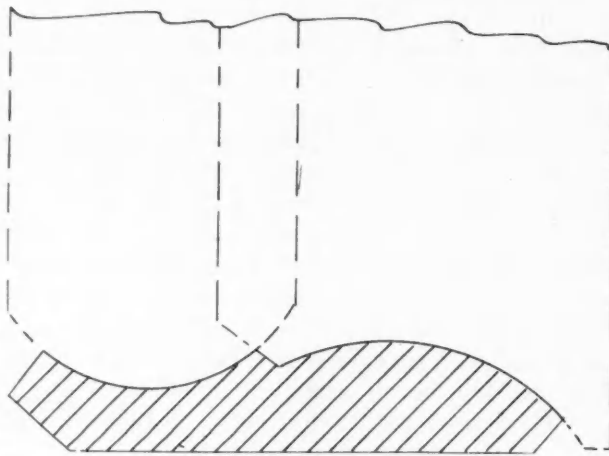


Fig. 8.

a good one, but with such work as is being treated in this paper it will be found more satisfactory to follow the suggestions given here, for they are the result of many years of study of many practical moulding operators and do not simply represent the individual ideas of the writer, although a considerable proportion of them are original.

Fig. 1 shows pattern cutters for a series of round edge casings, and it may be seen that it is necessary to move but one of them in varying the width of the casing. One of the advantages in having the rounding knives separate is that they may be used on apron,

base or any other detail having a similar round corner on either edge.

Fig. 2 shows the straight or surfacing set-up for the same casing, and gives but two positions for the backing out knife which are enough for the four widths. Of course, if any one of them is run separately the backing out should be done in the middle of the width.

Fig. 3 illustrates the template for round-edge casing and may be marked for a greater number of widths

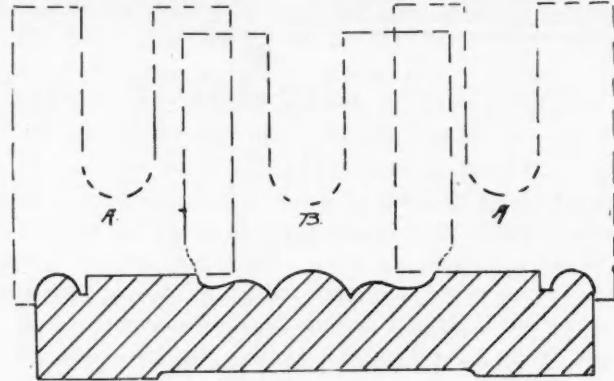


Fig. 9.

than shown here. The same slip may be used to set on base, apron or any other detail having a round edge worked on the inside edge.

In Fig. 4 the top surfacing knife has been neglected and the ogee pattern cutter placed on the inside so as to run different widths without changing cutter as referred to before. The back-out is usually made about $1\frac{1}{2}$ inches from the top edge in ogee base and in round edge it is often convenient in changing from casing to base to leave the casing back-out for the base.

The set-up for all the sprung crown moulds is usually composed of four bevels, top pattern and bottom surfer, the side heads not being run at all. In some patterns of crown and many bed mouldings, there are but three bevels instead of four, the top pattern taking the place of one bevel, as shown in Fig. 8. It will be noticed that here the knife is divided at the inner angle also, giving to the stock of knives a handy lot of hollows and rounds to use for other details than the one shown.

It will require but a comparatively few bevel cutters made in pairs for balance and the pairs in rights and lefts, as they may be tilted considerably as shown in the figure.

Figs. 6 and 7 show the templates for the set-up of Fig. 5 and represent both sides of the same slip of wood, further explanation of which is unnecessary, except to say that the dotted lines represent the reverse side of the template, being shown in this way so as not to cause confusion when comparing with Fig. 5.

The set-up for pilaster casing, shown in Fig. 9, is susceptible to the same advantage enjoyed by the round-edge pattern in that the setting may be made without removing the surfacing knives from the top head. This may be accomplished by using a single set

of cutters, as shown in the figure, making the knives *AA* and their bolts balance with *B* and its bolt. This matter of balancing two knives against one will not work satisfactorily unless the heavy one can be placed directly opposite the center of gravity of the other two considered together, similarly to the position shown in the drawing.

As this paper deals mostly with the fundamentals of combination knife work, a following one will be devoted to more difficult patterns representative of a class of stock, special and detail work, to be met with in building material the country over. It will also take up the matter of speed in knife changes and adjustments as applied to moulder knife combinations.

Utilizing the Waste

By Guido D. Janes

FOREMAN WISECARBER was the only one in the mill that did not have wrinkles of sorrow upon his face. He alone looked upon the comic side of life and dovetailed his trade in with the smile.

"Put me wise to your hilarity," said Pete Cardinal, the proprietor of the said mill. "With Architect Carbunkle on the new office building job, and the weather from Medicine Hat loafing around this place, I see very little reason for frivolity!"

"It is this way, Mr. Cardinal: Carbunkle is close-fisted."

"I should say he is. That's where we suffer."

"Well," added the foreman. "It's our salvation. With coal at \$7.75 a ton, he would sooner shiver than patronize the coal barons. It is then that he gets sore. After which his imagination becomes affected and

soars, taking his designs, plans, front elevations, etc., with it. Common sense plans turn into the grotesque, and our millwork of his get-up becomes so involved that we can't get our machines to handle it."

"Of course," insisted Cardinal, "that's where we catch it in the neck. He is the architect for the new office building that will be put up on Maine street. Our mill is the only one here to handle the interior finish, doors, etc. We got to take the job whether we want to or not, just to maintain our reputation. If we lose \$1,000 we still have to take it. Gracious, gracious!"

"Leave it to me, proprietor. I'll fix matters up O. K., and if you don't clear \$500 on the contract I'll kick the yard foreman on the shins and run."

"All right. Go ahead."

Wisecarber then left the mill, and after a fifteen-minute walk drew up before the Carbunkle residence where the architect had his home and office under one roof. Knocking upon the door, he waited.

Mrs. Carbunkle answered said knock, ushered him into the hall, thence via the parlor to a back study. Here he found the party whom he sought, viz.: Mr. Carbunkle.

"Good a. m., sir," began the foreman, eyeing a thermometer and seeing it to be 58 degrees. "Cold morning."

"Yes. What do you want?"

"Mr. Cardinal sent me here to tell you that if you wanted any mill waste you could have the same."

"Is he bribing me?"

"No, sir. We can't use it all, and are afraid of fire. By using the stuff you can cut out the coal bill."

"Honest?"

"Yes. Burn all you want and keep warm. It will cost you nothing."

"Thanks. I'll accept it. Tell your boss he is a regular ground plan in my ideal life."

"All right. Have you begun on the Maine street office building plans yet?"

"Just starting in. I am busy. Good-bye."

"Good-bye."

The foreman now hurried back to the mill, and straightway sent two wagon-loads of chips, shavings and cuttings over to Architect Carbunkle's residence. This being done he smiled some more, even going so far as to stop a gang-edger so that the superintendent, who was testing a new dado-head, could hear him.



"Put Me Wise to Your Hilarity"

Of course, when the boys caught on to what Wisecarber was doing with the architect, they poked fun at him. The proprietor, too, became so skeptical that he inserted an ad. in the paper asking for a new foreman.

Just as he was receiving the replies, the twenty-sixth load that was being sent to Carbunkle's drove by. This broke the camel's vertebra. At once he took down the dictionary, and although the stenographer was in the locality, he looked up all the swear words, and remembering same, was on the point of going



"Yes. What do you want?"

into the mill with the intention of heaping them upon Wisecarber, when Contractor Steinberg entered the office.

"Good a. m.," began the fellow, removing his mittens. "I am happy, and you should be too."

"Why?"

"Simply because Architect Carbunkle planned the new office building, and has adhered strictly to common sense lines in interior decoration and finish. If he had done this in the summer time I would have thought nothing about it, for he is sane then. It is only in the winter months that he loses his mind. Look at these blue prints."

Here he produced from his pockets the several plans and specifications.

Cardinal looked at them carefully.

"You see," added Steinberg, "that you are to get out the millwork, sash, doors, flooring, etc. When

can you begin on it?"

"At once."

"Fine. But can you guess what's come over Carbunkle?"

"No, but I can find out."

"Do so."

The proprietor summoned Wisecarber at once, and ridding his bosom of the cuss words, began to smile.

"Say, foreman," remarked the summoner, "how did you get Carbunkle to tone down his flights of fancy?"

"Easy as rolling off a log," replied Wisecarber. "With coal at \$7.75 a ton he would sooner freeze than spend his money on heat. As a result, he is chilly all the time from November to April. Said chills make his hand shaky, and tunes his mind up to concert pitch. In this condition he plans airy architecture, air castles, etc., and common sense structures are crowded out. Knowing this, I merely sent him our waste cutting, shavings, etc., heated up his house and brought him down to normal—see?"



Finishing Hardwood Floors in the Natural

The extent to which hardwood floors are being used in dwelling houses and other buildings at the present day lends unusual interest to the methods of finishing them so as to give the most satisfactory results considering the purposes for which the rooms are to be used. A correspondent of that journal recently asking as to the best method for finishing oak, maple and other floors in the natural so that the wood will not darken, and if there is any way of bleaching hardwood floors that have been treated with linseed oil and become very dark with age, The Painters' Magazine suggested the following treatment:

Oak floors require a filler, if good smooth finish is desired in the natural, no matter what material is used. Maple does not require filling. For oak floors a good mineral paste filler and two light coats of grain alcohol shellac varnish, or in place of the latter, waxing frequently with a good floor wax will keep the floor from darkening. Ordinary floor varnishes or linseed oil will produce darkening. Mineral oils tend less to darkening of wood than linseed oil, but are not to be thought of for use in dwelling houses or public halls on floors, because of the tendency to soil the ladies' dresses. For maple floors three coats of grain alcohol white shellac varnish or repeated treatment with floor wax will not darken the wood.

As to the question about the bleaching of floors that have been oiled and become dark, the only remedy we know of is to remove the oil with a paint and varnish remover and then treat the wood with a strong concentrated solution of oxalic acid or by the use of bleaching powder. The use of the last named, however, is liable to be injurious to the health of the operator, and we would not recommend its use. The oxalic acid solution, while poisonous, is harmless when used with care.

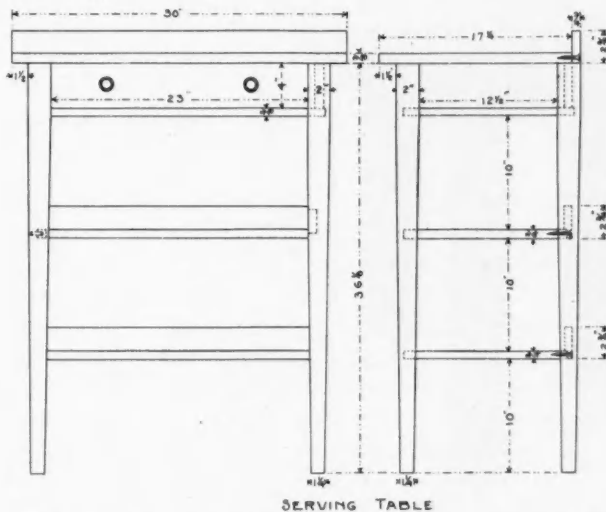


Two Handcraft Pieces for the Dining-Room

COMPLETE DETAILED DIRECTIONS FOR MAKING AN ATTRACTIVE SERVING TABLE AND A SQUARE DINING-ROOM TABLE IN THE HOME SHOP

By Ira S. Griffith

TWO pieces, simple in design and construction, suitable for the dining-room, are offered this month—a serving table and dining table. Both of these pieces would best be made of white oak—either plain-sawed or quarter-sawed. The stock should be thoroughly seasoned and free from sap and other imperfections.



SERVING TABLE

For the serving table there will be needed the following:

MILL BILL FOR SERVING TABLE

Legs, 4 pieces, 2 by 2 by 36½ inches, S-4-S.
 Top, 1 piece, ¾ by 18 by 30½ inches, S-2-S.
 Shelves, 2 pieces, ¾ by 16 by 27 inches, S-2-S.
 Backs, 2 pieces, ¾ by 3 by 27 inches, S-2-S.
 Back, 1 piece, ¾ by 3 by 30½ inches, S-2-S.
 Back rail, 1 piece, ¾ by 4¼ by 27 inches, S-2-S.
 Side rails, 2 pieces, ¾ by 4¼ by 14½ inches, S-2-S.
 Drawer support, 1 piece, ¾ by 16 by 27 inches, S-2-S.
 Drawer front, 1 piece, ¾ by 4¼ by 23½ inches, S-2-S.
 Drawer back, 1 piece, ¾ by 4 by 23½ inches, S-2-S, poplar.
 Drawer sides, 2 pieces, ¾ by 4¼ by 14½ inches, S-2-S, poplar.
 Drawer bottom, 1 piece, ¾ by 14½ by 23½ inches, S-2-S, poplar.

Drawer guides, 2 pieces, ¾ by 1 by 13 inches, S-2-S, oak.

In all these pieces, enough extra stock has been specified to allow squaring them up properly.

Begin work on the serving table by squaring the top to the size indicated in the drawing. Next square up the back, which is to be fastened to the top. This piece should be fastened to the top by means of screws.

Next prepare the rails, back and side. These rails should be shouldered so as to make tenons ¾ by 3 by 1 inch. In laying out these tenons, remember to keep the gauge head against the face side and face edge, and in selecting these faces remember that the best surfaces are not to be selected, because the face sides are to be turned in when the parts are put together. Lay out and cut the mortises in the legs to correspond with the tenons.

Now shape the legs and, placing them on the rails—without glue—secure the lengths of the backs of the shelves and the slopes at which the tenons are to be shouldered, after having squared the backs to size. Rabbet these back pieces so as to allow the shelves to enter about half of their thickness. Cut the mortises and tenons and put the back of the table together, using good hot glue.

While the glue on the back is setting, square the shelves to size, and shape the corners. The sizes of the shelves can be got by placing the parts together



A Simple Serving

as was done for the back. They should extend across the legs to within one-half an inch of the outside edges. The legs should be grooved $\frac{1}{4}$ inch deep on the two sides to receive the corners of these shelves, the corners being cut out sufficient to allow for the same. Hot glue and dowels will serve to fasten shelves and posts together. On the rear legs the dowels may be omitted, screws through the backs into the shelves making their use unnecessary.

Square up the drawer support and prepare its corners for entering the posts, as was done for the shelves. A hollow frame might have been glued together in place of this solid piece. This piece, however, serves to keep the dust from entering the drawer.

When all is ready, put the shelves, the drawer support and the rails together.

The drawer guides are to be glued to the side rails. The top is to be fastened from the underside. A couple of pieces of metal with screw holes in either end will serve the purpose.

These should be straight pieces about an inch long. One end is to be fastened to the top of the side rails, the second end extending out over, the screw being put in from above; the top is set in place and the under side marked and mortised to allow the metal to enter flush. Screw is inserted from under side.

The method of procedure in making a drawer is fully detailed in the April, 1907, number of this magazine.

A suitable finish for this and the dining table, too, is obtained as follows: Thoroughly scrape and sandpaper all the parts well, then apply a coat of English oak water stain. Allow this time to dry, then sandpaper off the raised grain, using No. 00 paper. Put on a second coat of stain diluted about one-half with water. This is to make greater contrast. Next put on a very thin coat of shellac to seal the pores of the high lights so that the stain in the filler may not discolor them. When dry, sand lightly and follow with a coat of paste filler darkened with burnt umber and Venetian red in the proportion of 12 ounces umber, 4 ounces red, and 20 pounds light paste filler. When the filler has flatted rub it off, using excelsior, and following with cloths so as to clear the high lights and leave the surface smooth and level. On this, after it has hardened, put a coat of orange shellac. When this has dried follow with two coats of varnish. Rub the first coats with

hair cloth and the last with powdered pumice stone and crude or raw linseed oil. This gives an egg-shell gloss and the finish is known as English oak.

Square Dining Table

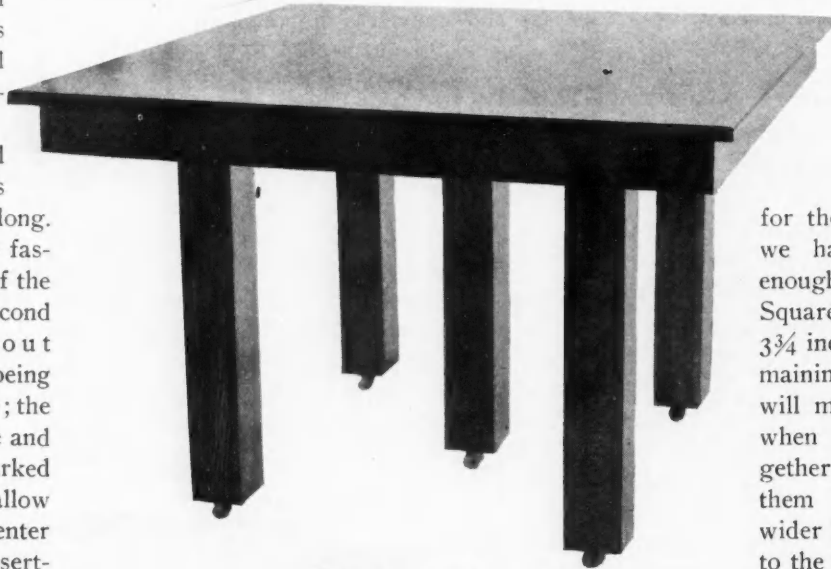
The dining table is an extension table and there will be needed the following:

MILL BILL FOR SQUARE DINING TABLE

Top, 2 pieces, $\frac{7}{8}$ by 24 by 48 inches, S-2-S, oak.
 Leaves, 4 pieces, $\frac{7}{8}$ by 12 by 48 inches, S-2-S, oak.
 Facings, 4 pieces, $\frac{7}{8}$ by $3\frac{1}{2}$ by 48 inches, S-2-S, oak.
 Slides, 4 pieces, $\frac{5}{8}$ by 3 by 37 inches, S-2-S, hard maple.
 Slides, 8 pieces, $\frac{3}{4}$ by $1\frac{1}{4}$ by 37 inches, S-2-S, hard maple.
 Slides, 2 pieces, $\frac{5}{8}$ by $\frac{3}{4}$ by 37 inches, S-2-S, hard maple.
 Slides, 2 pieces, $1\frac{1}{4}$ by 3 by 37 inches, S-2-S, hard maple.
 Blocks, 4 pieces, $\frac{7}{8}$ by $3\frac{1}{4}$ by $8\frac{1}{2}$ inches, S-2-S, hard maple.
 Leg supports, 3 pieces, $\frac{7}{8}$ by $6\frac{1}{4}$ by 37 inches, S-2-S, hard maple.
 Legs, 10 pieces, $\frac{3}{4}$ by 4 by 25 inches, S-2-S, oak.
 Legs, 10 pieces, $\frac{3}{4}$ by $2\frac{1}{2}$ by 25 inches, S-2-S, oak.
 Leg blocks, 10 pieces, $2\frac{1}{2}$ by $2\frac{1}{2}$ by 5 inches, S-4-S, oak.

The posts may be made first. Since it would be both expensive and difficult to get so large pieces as are required

for the legs in one whole, we have specified pieces enough to build up the legs. Square ten of the pieces to $3\frac{3}{4}$ inches wide and the remaining ten to a width that will make the legs square when all are fastened together. Thoroughly glue them in fastening. The wider pieces may be nailed to the narrow ones without the nail holes showing at



A Hand Made Dining Table

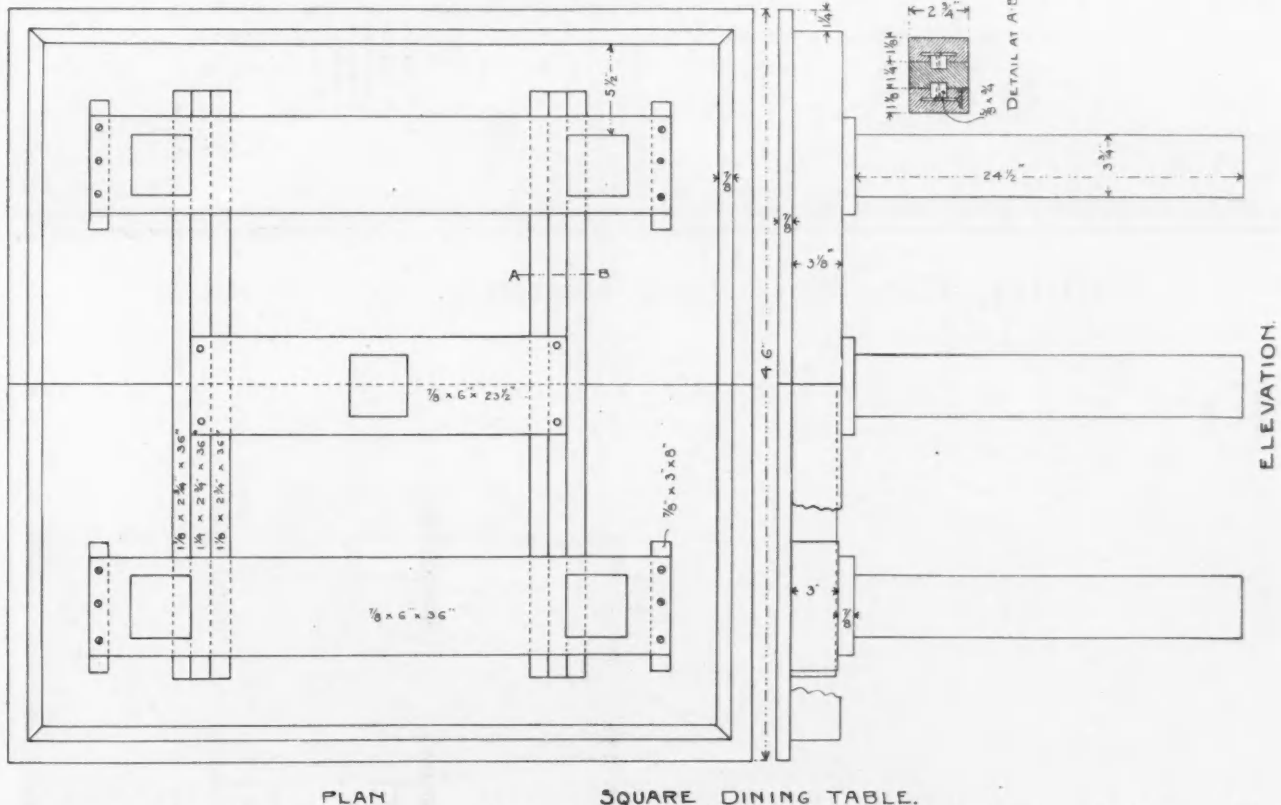
all, with a small amount of extra labor. Use a V-shaped chisel and raise a triangular shaving where the nail is to be inserted. Do not break the shaving but allow it to curl back and to one side, just enough to allow the nail to be driven in place. Set the head of the nail and, putting glue on the sliver, press it back to the place from which it was raised. Five of the blocks specified above are to be inserted into the lower ends of the legs to receive the castors.

Next prepare the pieces to which the legs are to be fastened. The remaining five blocks should be inserted in the upper ends of the legs and glued, being allowed to project about $\frac{7}{8}$ of an inch. Tenon these blocks to about 2 inches square; mortise places in the pieces to which they are to be fastened; glue the tenons and the sides of the mortises thoroughly and put them together. Since considerable strain comes upon these joints, they should be reinforced by wedging the tenon and by inserting long screws through the $\frac{7}{8}$ -inch piece into the ends of the legs.

The slides may now be made. The detail shows the manner of grooving them where special machinery is available. It will be noted, however, that the stock bill is made out so that these pieces can be "built up"

Work of this kind may well be done during the dull period of winter and then all through the year embodied in the house building and plans.

Every housewife who can afford it likes to have a



PLAN

SQUARE DINING TABLE.

and thus grooved without any other than the ordinary hand tools. Iron washers are fastened to the center slide by means of screws, and slide in the grooves prepared for them in the outer slides. Three-eighth-inch dowels inserted near the ends of the slides will serve to stop the extension beyond the desired points; their location can be determined by trial.

These slides are to be firmly fastened to the pieces to which the legs are fastened by means of good stout screws. To insure the middle slide working easily, place a piece of cardboard between it and the piece it rests upon before putting in the screws.

Square up the four blocks that are to be used to secure the top to the leg supports. Fasten these to the supports with screws and the top to them with screws also. The screws into the top should be inserted from below, holes large enough to receive the head of the screw being bored to a depth sufficient to allow the screw to reach into the top securely.

The facings for the top may be put on either before or after the top has been fastened to the slides, preferably before. Miter the facings at the corners and thoroughly "glue and block" them to place.

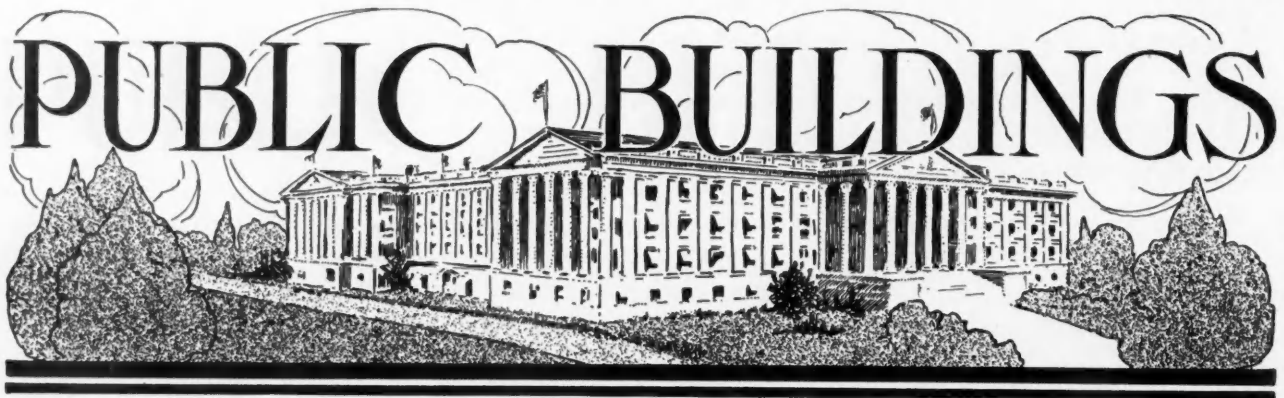


Kitchen Cabinets

Ingenuity of design rather than quality of structure, on the part of the manufacturers of kitchen cabinets, is leaving a splendid opening for enterprising carpenters to develop work of this kind for themselves.

modern kitchen cabinet built right into the house. This is where they enter into the regular house planning. Many of those which have been manufactured and put on the market are cheap, flimsy affairs that soon come apart and look cheap even in the beginning. After a thrifty housewife has worried along with one of these for a while she is ready to pay the difference in the cost and have a good, substantial, workmanlike cabinet. The man with a carpenter shop has a chance to do some of this in the winter time. Especially if he operates a little machinery, he can cut a lot of the material on machines instead of by hand, and develop quite a trade in this line by making a strong point of quality. If necessary, cut out some of the complications from the design and make it simple. And always make them substantial; put construction into them that will hold just the same as you would in a house or barn—make joints that look nice and a finish that is durable and in keeping with surroundings.

Probably in the course of time the furniture men themselves will get onto this better and may get so they cut out some of the complications and put some real workmanship into these cabinets. This is what they ought to have done long ago, but they have neglected it so much that there is a very nice opening here for carpenters and planing mill men in each community to build up a business that will help fill up the dull months of the winter, and help add to the cabinet work and interior house building of the year.



Public Library and Methodist Church

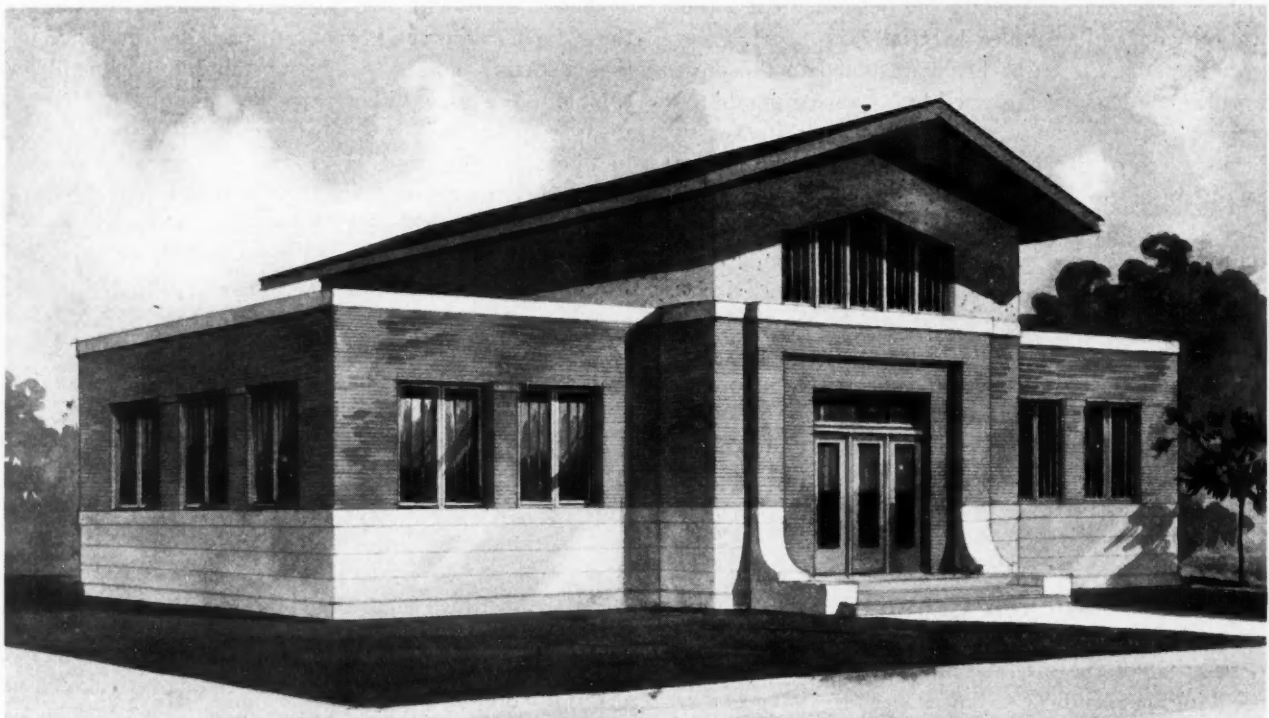
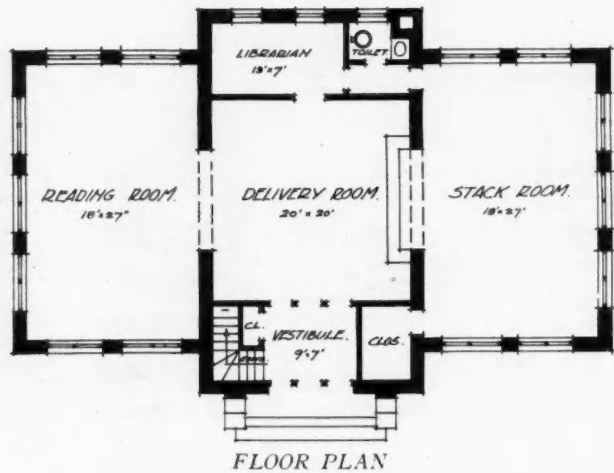
PERSPECTIVES AND FLOOR PLANS OF TWO WELL-DESIGNED, PRACTICAL BUILDINGS OF MEDIUM SIZE—
SPECIAL FEATURES NOTED

DESIGNS for two well-planned public buildings are shown this month. The first is a pretty little public library by G. W. Ashby, architect. It is designed in the bungalow order and is striking in appearance and thoroughly attractive. There is a low gable roof over the central portion, which has a flat-roofed wing projecting on either side. The material is pressed brick with stone foundation and trimmings, cement plastered clerestory and shingled roof.

The interior arrangement is very simple. The delivery-room occupies the central portion with the stackroom on the right and the reading-room on the left. The central portion projects some feet from the main wall line, both front and rear, making room for entrance vestibule, librarian's room, closets, etc. The delivery desk is in a strategic position, commanding a view of almost the entire building.

The other floor plan and perspective are of a Metho-

dist church, now being erected at Peru, Neb., after plans and specifications prepared by Architects Woods & Cordner, of Lincoln, Neb. The plans show a square,

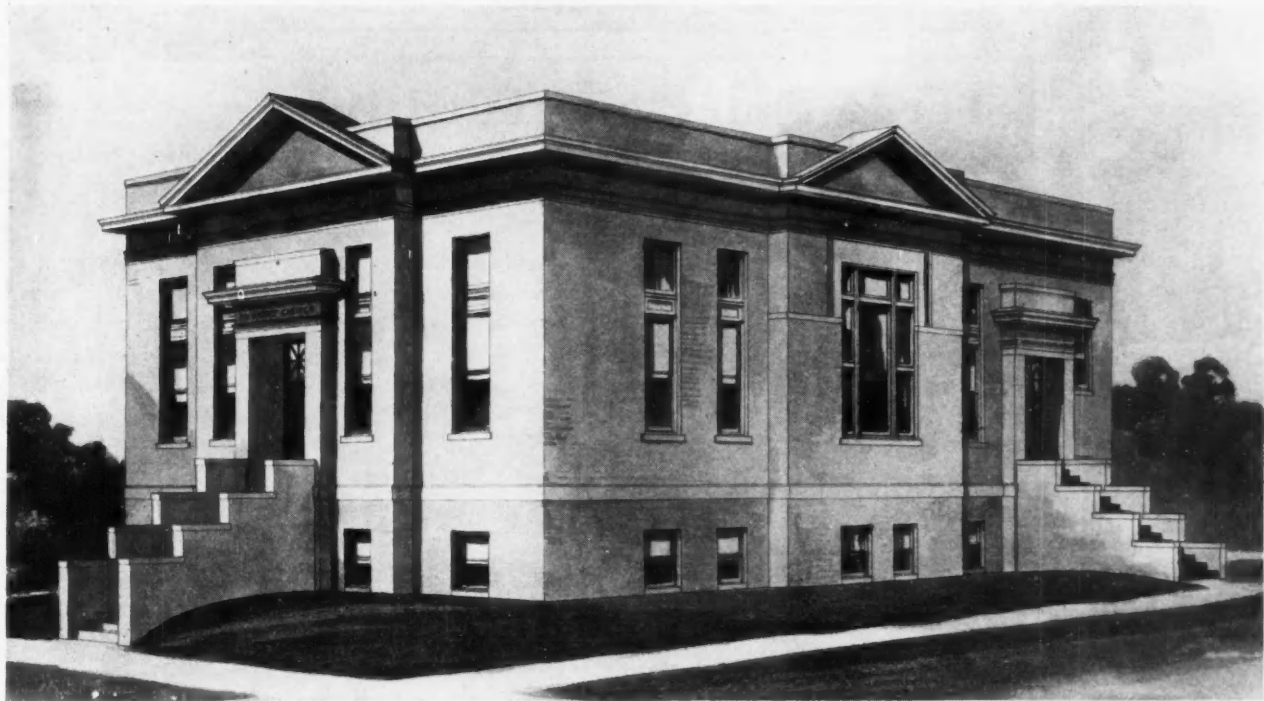


Small Public Library Building of Bungalow Design, G. W. Ashby, Chicago, Ill., Architect

dignified building of very simple, yet convenient arrangement. It has a bowl floor in the main auditorium with four large classrooms to the left of the speaker, with dividing walls of rolling partitions, so that the whole space occupied by the classrooms can be thrown into the main auditorium. Over these classrooms and the corridor in front are galleries with wide stairways

simple in design, yet pleasing in effect. The walls are of buff pressed brick with that part below the water-table of a darker shade. The trimming stone and steps are of white cement stone.

The roof is of composition and a large central skylight over an art glass ceiling dome, gives a beautiful lighting effect in the auditorium.



An Attractive Church Design. Woods and Cordner, Lincoln, Neb., Architects

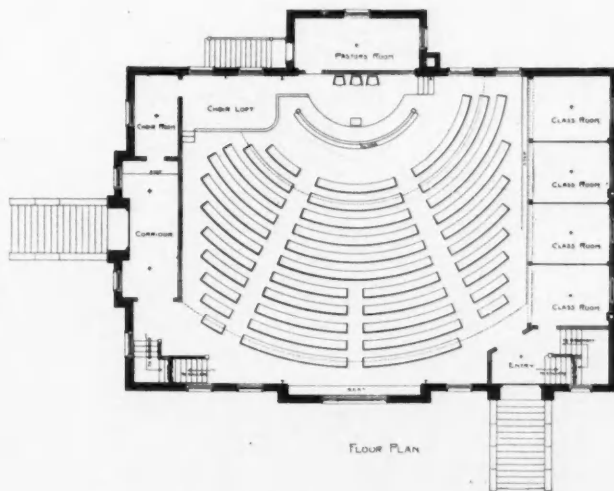
leading to same. The pastor's room is just back of the rostrum and is reached also by an outside stairway. The choir loft has an entrance in addition to that from

The cost of the completed building will be about eighteen thousand dollars.



Wasting Light by Dark Decoration

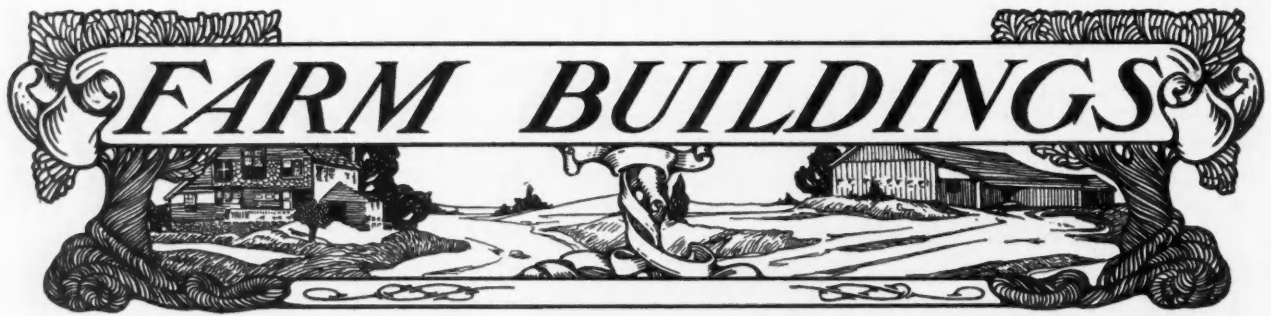
The people of the United States waste in the course of a year \$33,000,000 worth of gas. This statement is made by the president of the National Commercial Gas Association, William J. Clark. One of the ways in which gas is wasted is by having wall coverings that absorb the light. Colors differ immensely in their power of reflection. The reflective power of yellow wall paper, for instance, is 40 per cent, while that of emerald green is only 18 per cent. Dark brown paper reflects 13 per cent, and orange as much as 50 per cent. It pays to be clean, for a yellow painted wall that is soiled has only half the reflecting power of a clean yellow painted wall. Wrong types of burners are another source of waste, and so are burners that are out of order. Having the chandelier too high throws the gas where it isn't needed, and so wastes it. Some people try to secure what they call a cheerful effect by having bright spots of gilding, polished bric-a-brac and inconsequent mirrors to catch the light. This is a mistake; it simply wearies the eyes. Light should be thrown where it is needed, and reflected from broad surfaces.



the main room, and the convenience of the choristers is not overlooked, as will be seen by the commodious room for their special use.

There is a high basement under the whole of the building, divided off for Sunday school work and the usual arrangements for social purposes.

The exterior arrangement is of the temple order,



Large Dairy and Feed Barn

WORKING DRAWINGS OF LARGE GENERAL PURPOSE FARM BUILDING, DESIGNED TO STABLE TWENTY-FIVE COWS AND SIX HORSES

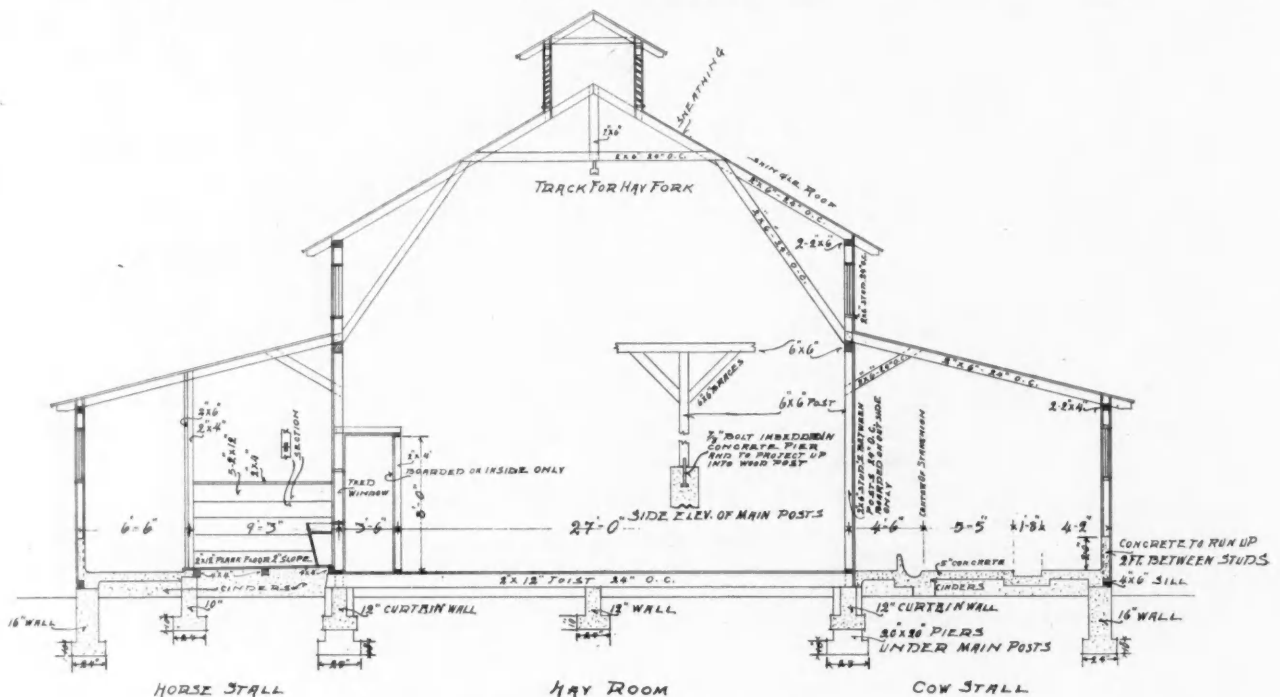
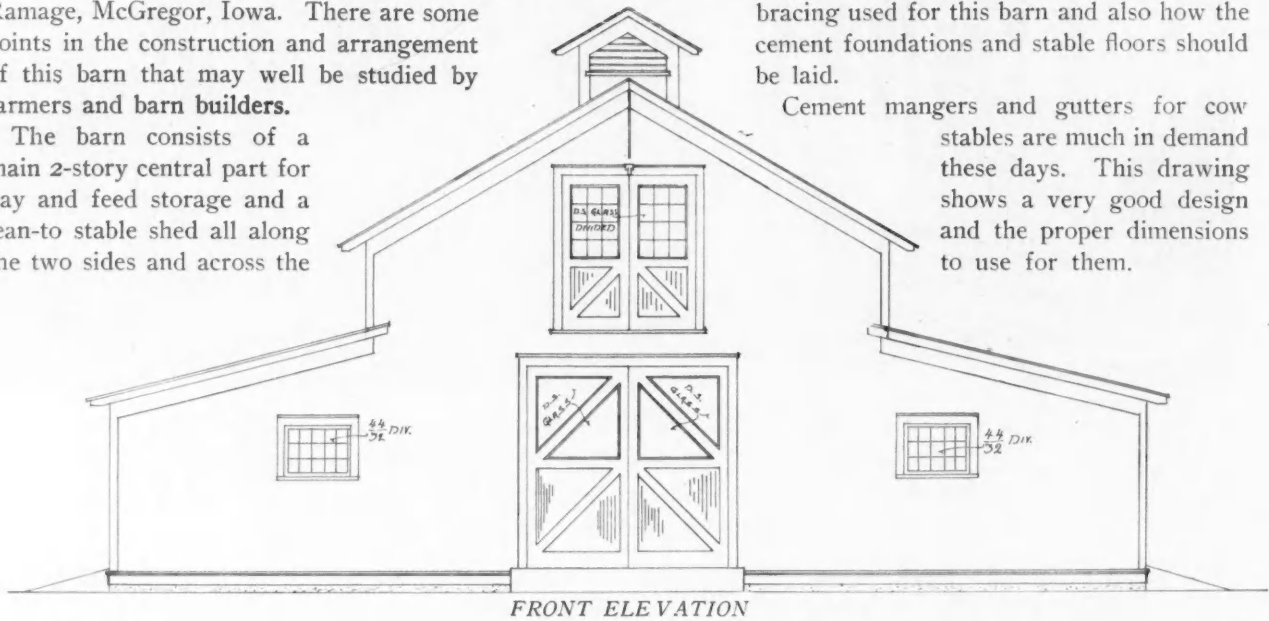
THE accompanying plans show the front elevation, cross section and floor plan from a set of drawings especially prepared for Mr. J. A. Ramage, McGregor, Iowa. There are some points in the construction and arrangement of this barn that may well be studied by farmers and barn builders.

The barn consists of a main 2-story central part for hay and feed storage and a lean-to stable shed all along the two sides and across the

rear. The side elevations show three windows in the clerestory on each side to light the central portion.

The cross section drawing shows the method of roof bracing used for this barn and also how the cement foundations and stable floors should be laid.

Cement mangers and gutters for cow stables are much in demand these days. This drawing shows a very good design and the proper dimensions to use for them.



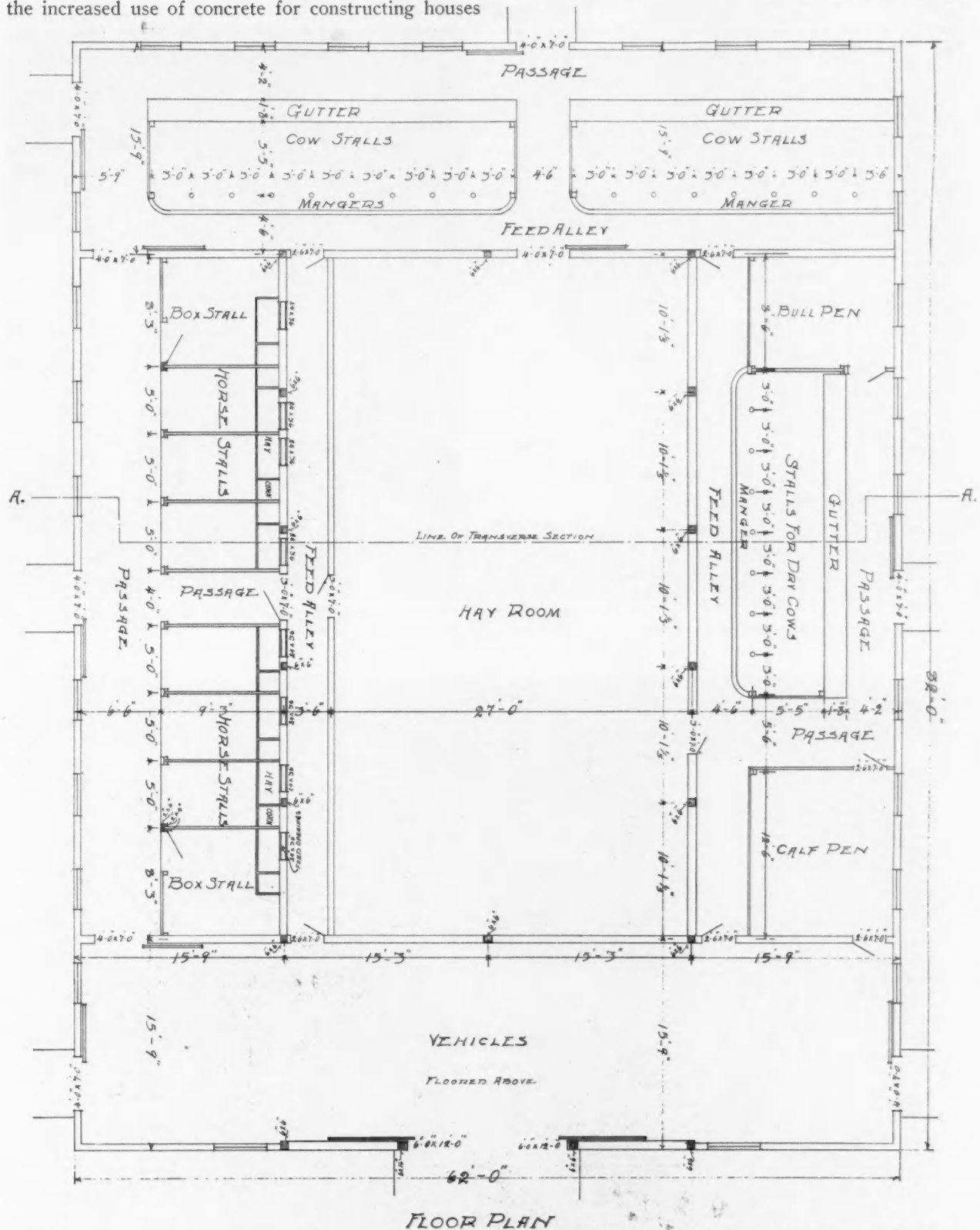
TRANSVERSE SECTION THROUGH BARN AT R.-R. AS SHOWN ON PLAN

Extra Ventilation for Cement Houses

In a recent address, Victor E. Thebaud, architect for the Cleveland, Ohio, board of education, said that with the increased use of concrete for constructing houses

to our ventilation we'll have sickness we won't know how to account for."

Mr. Thebaud recommended that an appliance for



the need for ventilation correspondingly increased. "In a wooden house," he said, "the air is completely changed once an hour simply because of the porousness of the building material. The compactness of concrete prevents this and unless we look more closely

letting air into homes directly from the outside be installed under steam radiators. By a box arrangement the air is not let in so as to create a draft, but circulates between the radiator coils before it flows into the living space of the room.

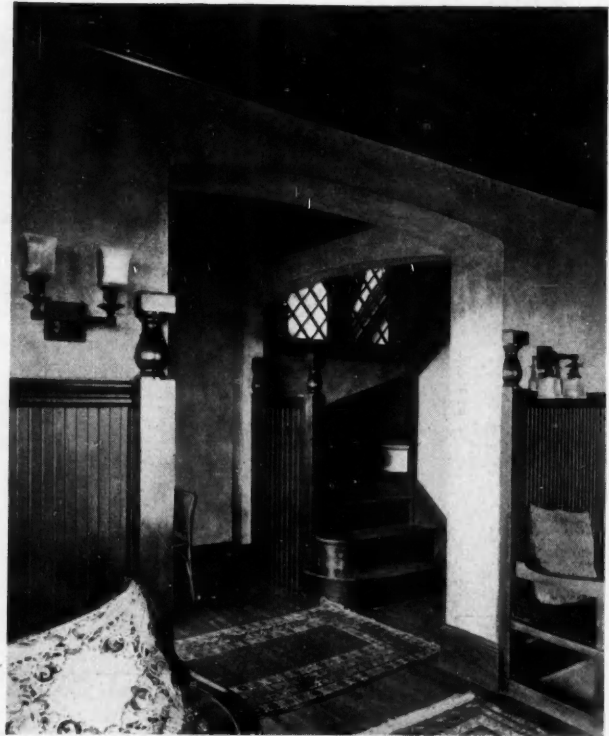
Some Pleasing Interiors

HOW THE INTERIOR FINISH OF VARIOUS STYLES LOOKS IN THE COMPLETED BUILDING—SPECIAL MANTEL, SIDEBOARD AND CASE DESIGNS

SHOW the average man a set of building plans and, without any great amount of previous training, he can understand, fairly well, from the floor plans how the rooms are to be arranged, and from the elevations how the house will look;—but the detail sheets showing the interior finish are all Greek to him! Indeed, all of us, experienced builders, architects and mill men, are sometimes misled in this very matter—the finish put up in the house looking not at all as we expected from the drawings!

It is a very safe practice therefore to occasionally work backward for the interior finish, especially the cases, mantels, etc., starting with a photograph of some finished room of the style desired and working out the details, adapting them to the special needs of the work at hand. In this way there can be very little doubt as to just how the finish will look after it has been run through the mill and put in place.

On this and the two following pages will be found some very attractive interior views that should be a great help along these lines. The up-to-date dwelling is requiring more and more that the interior should be finished in harmony with the general design and equipped with numerous "built-in" features.



Bungalow Finish—Stairway in Red Oak



Dining-Room in a Colonial House, with White Enamel Trim, Lattice Door and China Case Mantel



Dining-Room, with Oak Paneled Wainscot and Cornice Mould and Wallpaper Frieze—China Case Simple Yet Effective



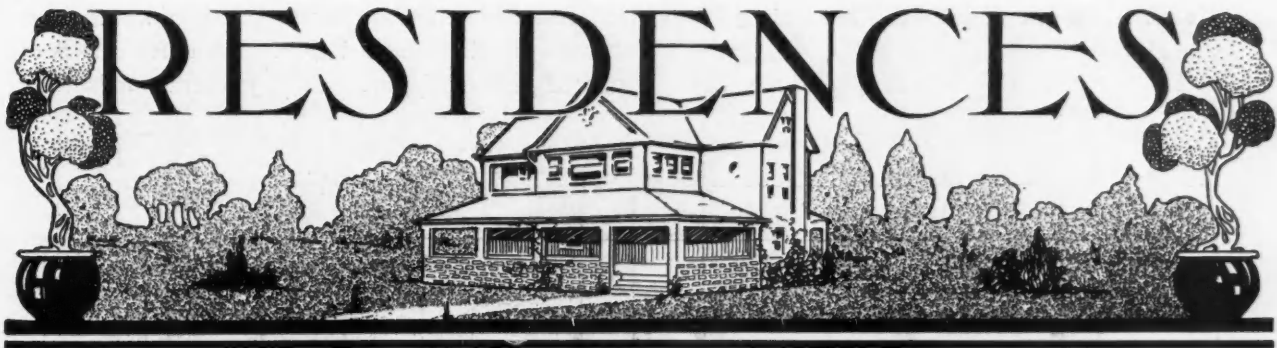
This Unique Mantel Shelf and Fireplace Seat Go Well with the Exposed Framing and Rough-Finished Walls



A Bad Effect—Racks and Cases of Totally Different Kinds Crowded Together—The Corner Case Has No Visible Means of Support



A Dignified Dining-Room Treatment, with Beautiful Combined Fireplace and China Cabinets



Complete Plans for Up-to-Date House

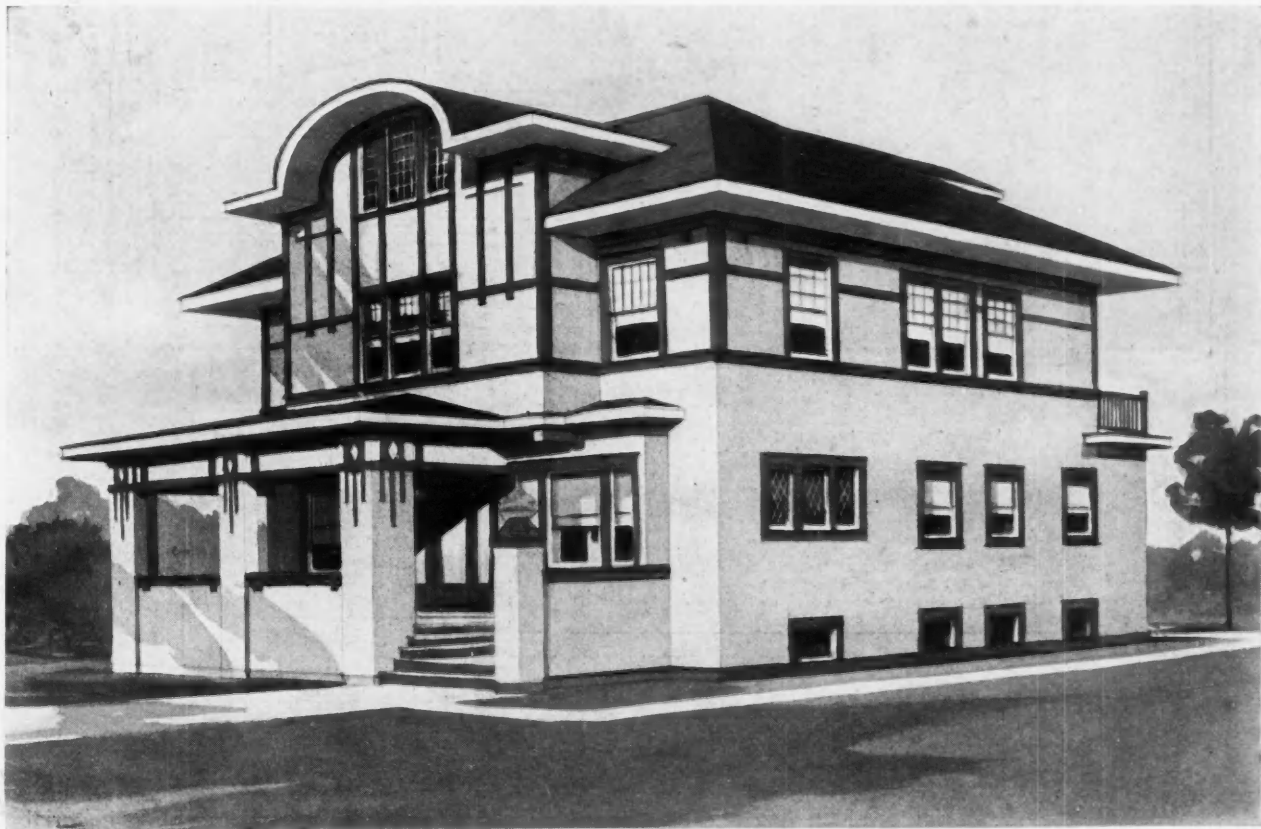
PERSPECTIVE, FLOOR PLANS, ELEVATIONS AND WORKING DETAILS OF A BEAUTIFUL WELL-DESIGNED DWELLING OF CEMENT PLASTER

A COMPLETE set of architect's drawings are presented in connection with this. They show a modern residence especially designed for Mr. W. N. Gillett and to be erected as soon as weather will permit in one of the suburbs of Chicago. This set of plans has been worked out with especial care and completeness and should contain many valuable ideas and suggestions for builders and prospective owners. The drawings, made originally to a one-quarter-inch scale, have been reduced about one-half, to fit the magazine page. As all dimensions are figured, however, no difficulty should be experienced in making practical use of them.

This house is thoroughly modern, both in material, arrangement and finish. The exterior is cement plaster

on wood lath, best three-coat work, waterproofed; the last coat is left with a smooth even finish and tinted a pinkish drab. The wood paneling stripes and ornaments and the window casings are painted brown. This modern stucco or cement plaster work has gained great popularity in some localities—in certain of the finest Chicago suburbs fully 75 per cent of the new houses of the past few years have employed it—and when properly done has been entirely satisfactory. The architects seem to favor cement plastered surfaces because of the ease with which they are handled in unique and artistic ways.

The interior of this house shows nine rooms very conveniently arranged. The interior finish is beautiful and complete.

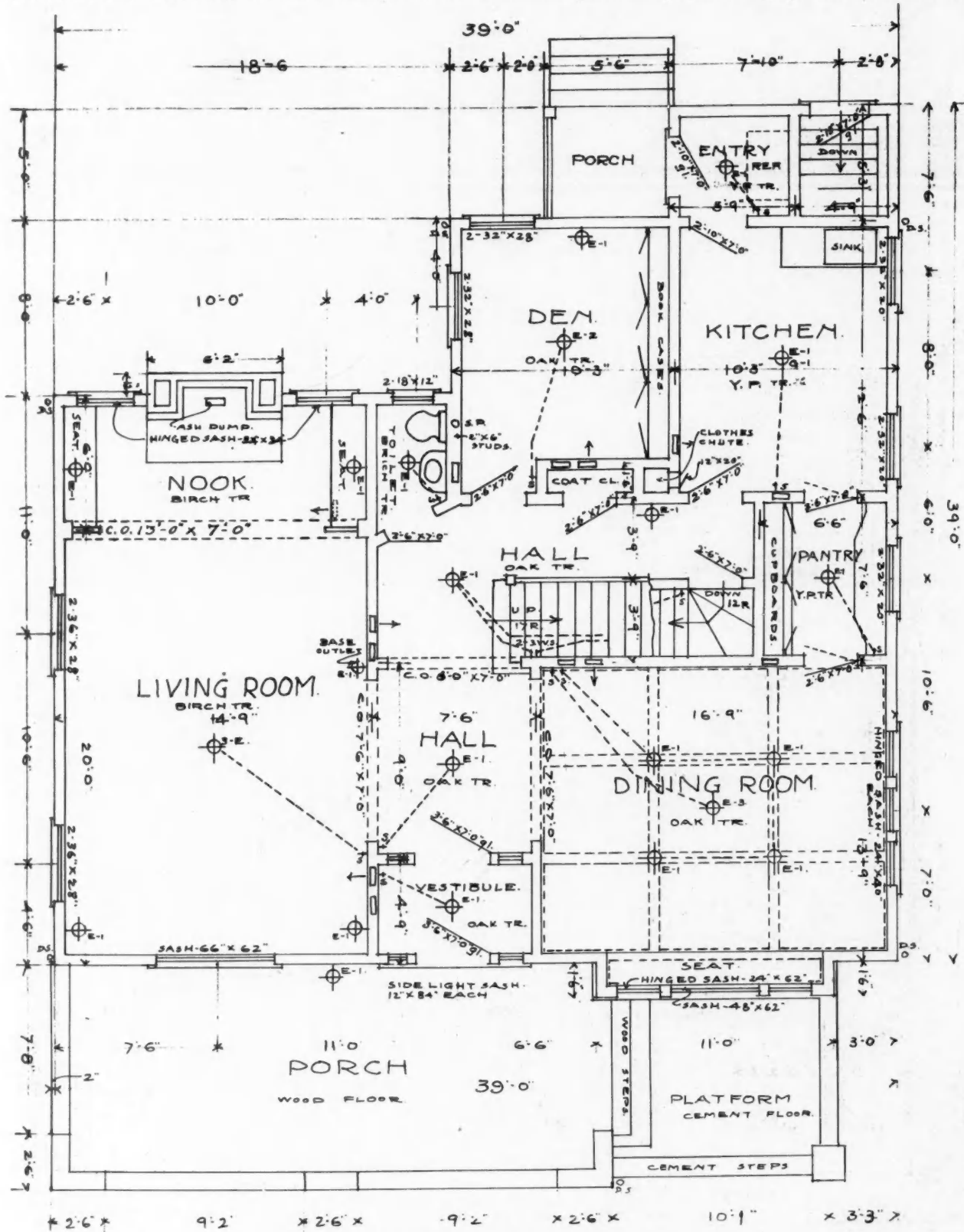


Beautiful Cement Plaster House Designed for Mr. W. N. Gillett, Chicago, Ill.

Metal Lath for Outside Plastering

The controversy that has arisen among builders and contractors over the merits and demerits of metal lath

ford maintains that metal lath is superior in many ways to the old-fashioned kind. His defense is pronounced particularly interesting by contractors in view



FIRST FLOOR PLAN

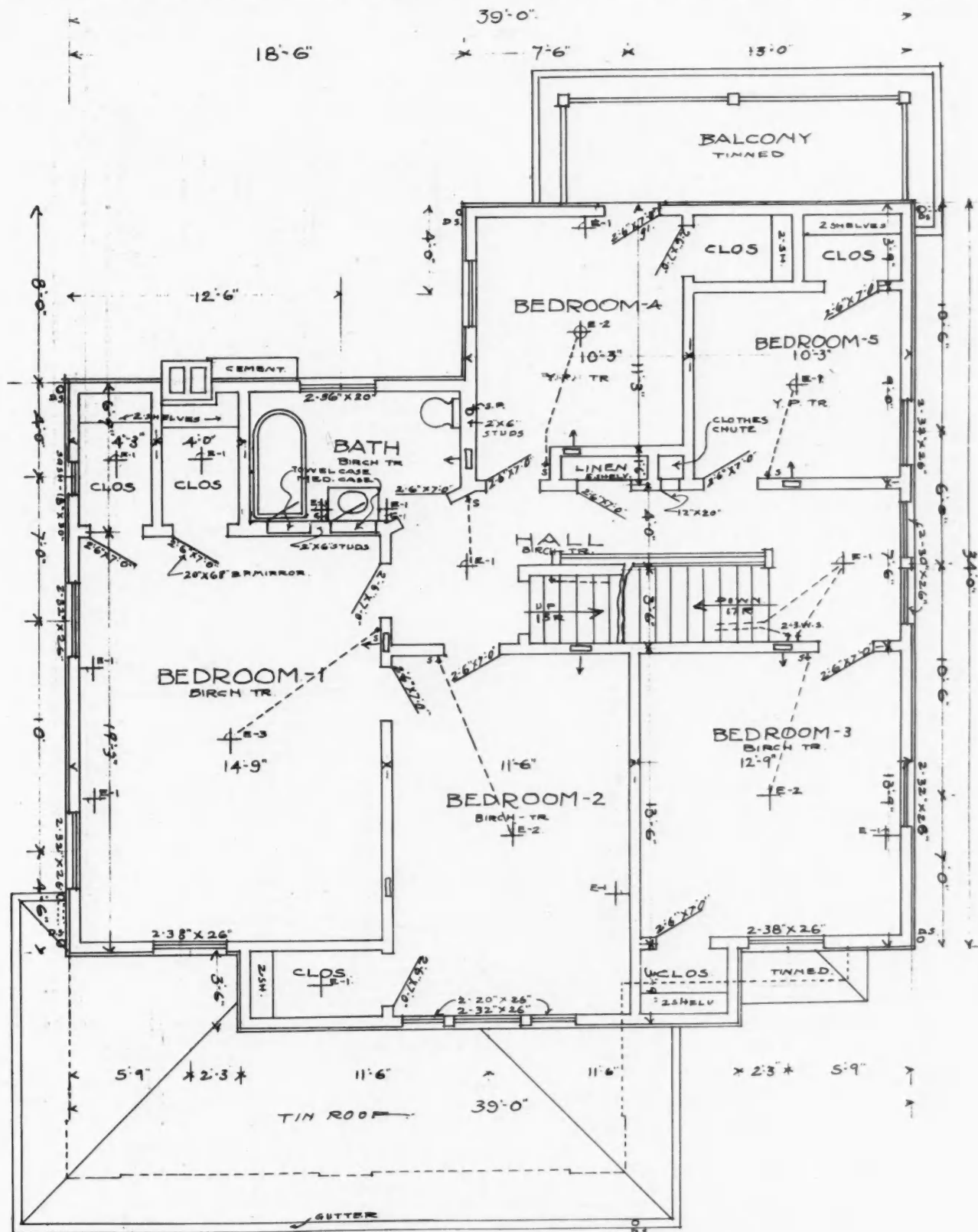
as a holding device for exterior cement work has provoked a defense of the metal product from Oscar Bradford, a prominent Chicago contractor. Mr. Brad-

ford maintains that metal lath is superior in many ways to the old-fashioned kind. His defense is pronounced particularly interesting by contractors in view

in so doing help preserve the remaining forests of the country. Says Mr. Bradford:

"If metal lath corrodes it is solely because of the

metal would rust, especially as the lath now on the market is usually made of the sap and bark of the log.



SECOND FLOOR PLAN

manner of its use, just as a steel frame of a skyscraper would rust if improperly protected.

"If wood lath is used and subjected to moist condi-

"The fact is that aside from questions of longevity, wood lath has such a defective 'key' for mortar that it is a practical impossibility for any length of time to

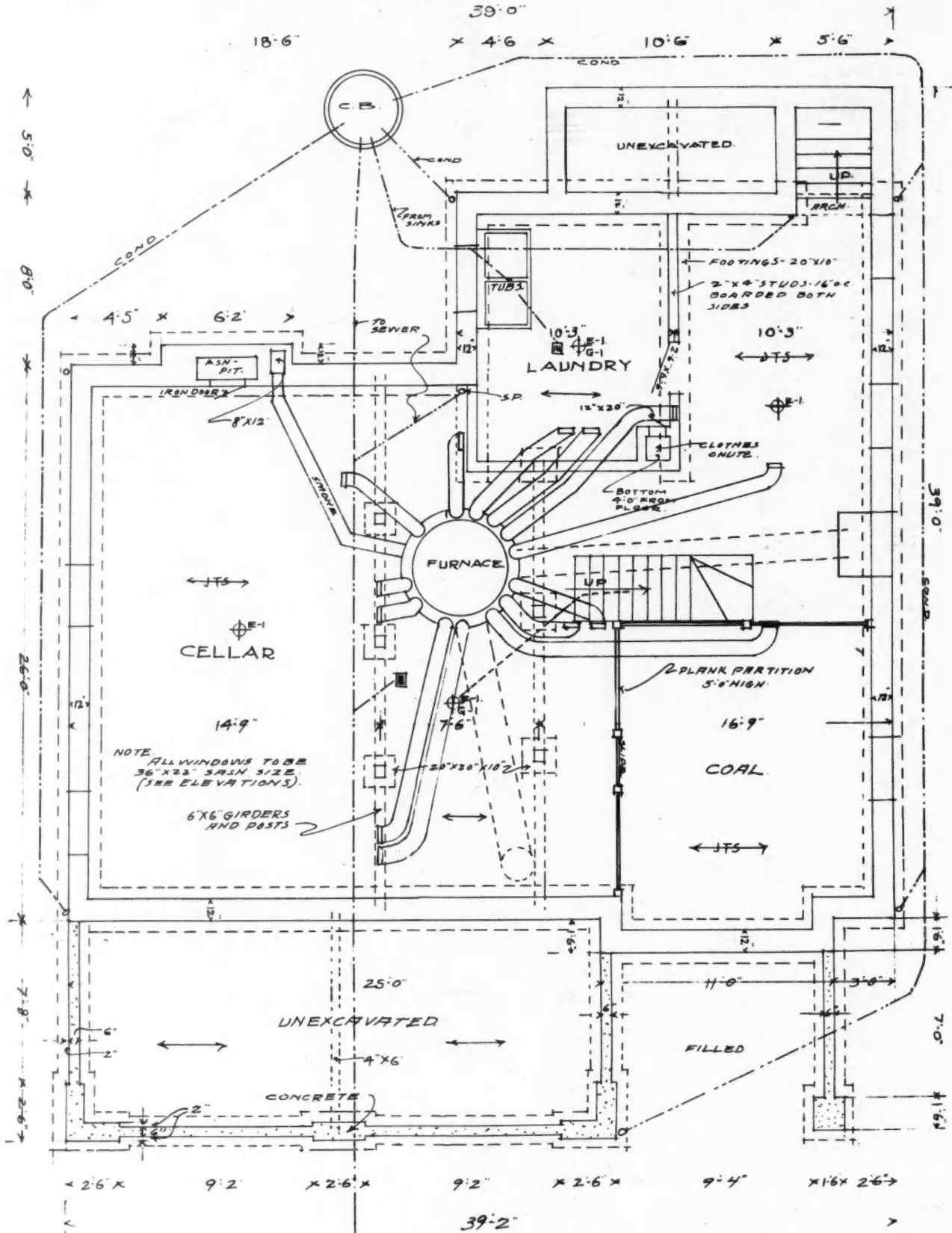
keep plaster on it.

"If this is an evident fact in almost every house on inside work, how much more is such a defect likely to appear on more exposed outside work.

"Metal lath for external use should be of the thick-

ness of 24-gauge and painted before shipment. It should have a mesh not larger than $\frac{3}{8}$ by $\frac{5}{8}$ of an inch, as this enables the mortar to pass through and completely imbed the lath front and rear.

"A large mesh lath causes a waste of mortar, which



FOUNDATION AND BASEMENT PLAN

drops behind.

“Exhaustive experiments have shown that cement is one of the best protectors of metal from corrosion

“This should be arranged to leave at least an inch of space between the lath and the weather-boarding.

“While many buildings so treated have stood for



FRONT ELEVATION

and thousands of steel reinforced concrete buildings are constructed annually on this assurance.

“The greatest advantage of covering an old frame

more than 10 years with no deterioration of the metal lath, there are many water-proofing compounds on the market which can be cheaply applied.

“The overcoating of frame houses, stables and other outbuildings is a fashion that is spreading rapidly, and will likely become so generally adopted that an



RIGHT SIDE ELEVATION

house with cement is the opportunity to secure an air space which makes it much warmer in winter with less fuel and cooler in summer.

uncovered wood house in a few years will be a curiosity. It is well, therefore, for the public to know that the process, if properly done, is undoubtedly safe,

and a house thus protected will last, without frequent expensive painting, for generations."

the best aluminum alloys and but half as heavy. It is called "elektron" and has a specific weight of 1.8

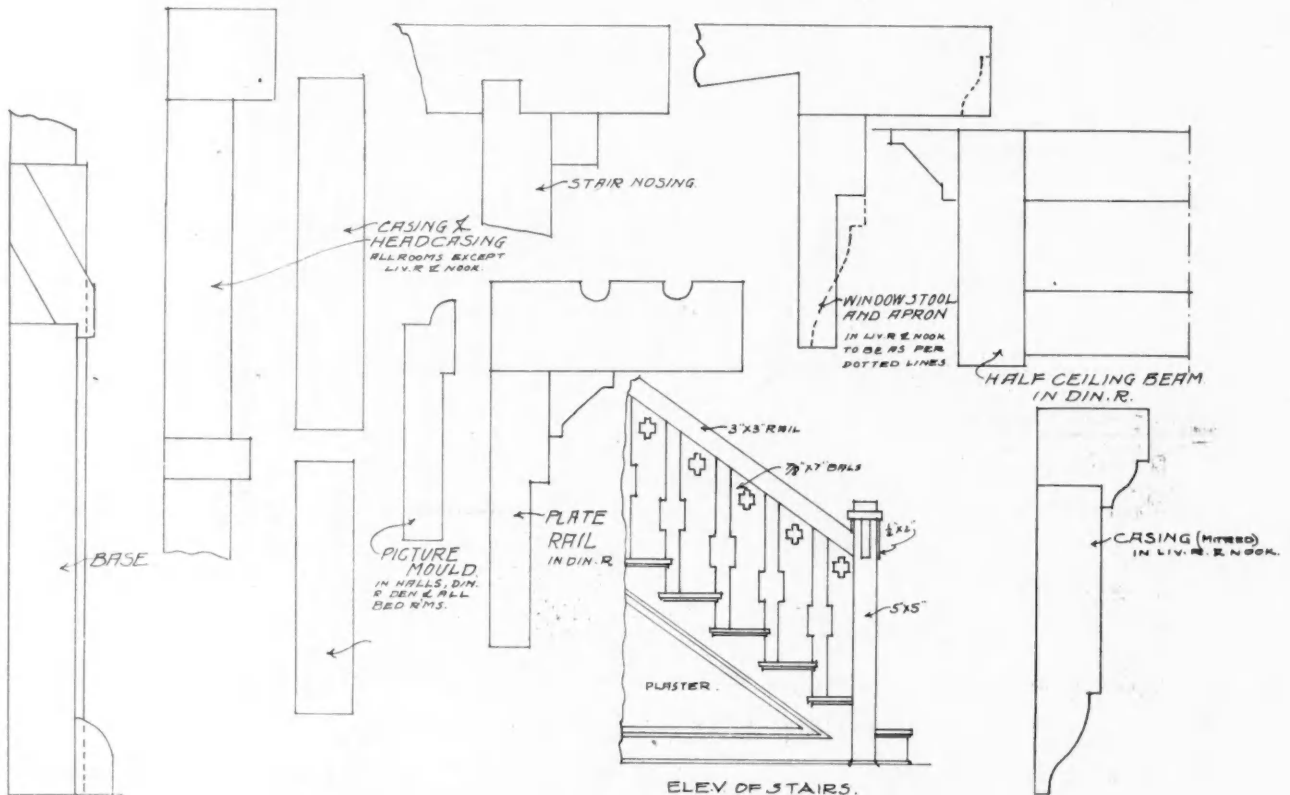


REAR ELEVATION

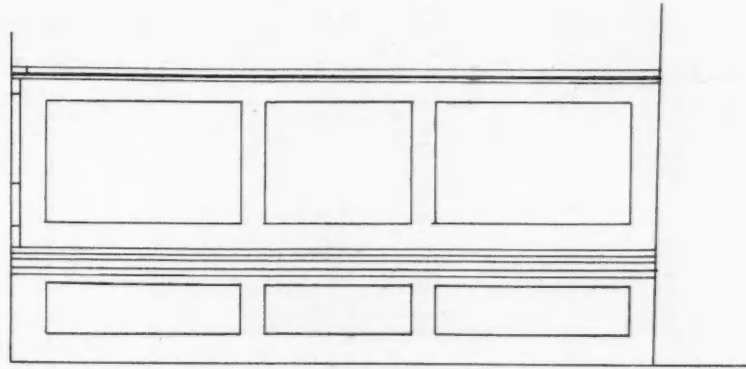
New Metal Lighter Than Aluminum

A great chemical factory at Höchst on the Main, Germany, exhibited a new metal at the Frankfort aeronautic exposition that is said to be as strong as

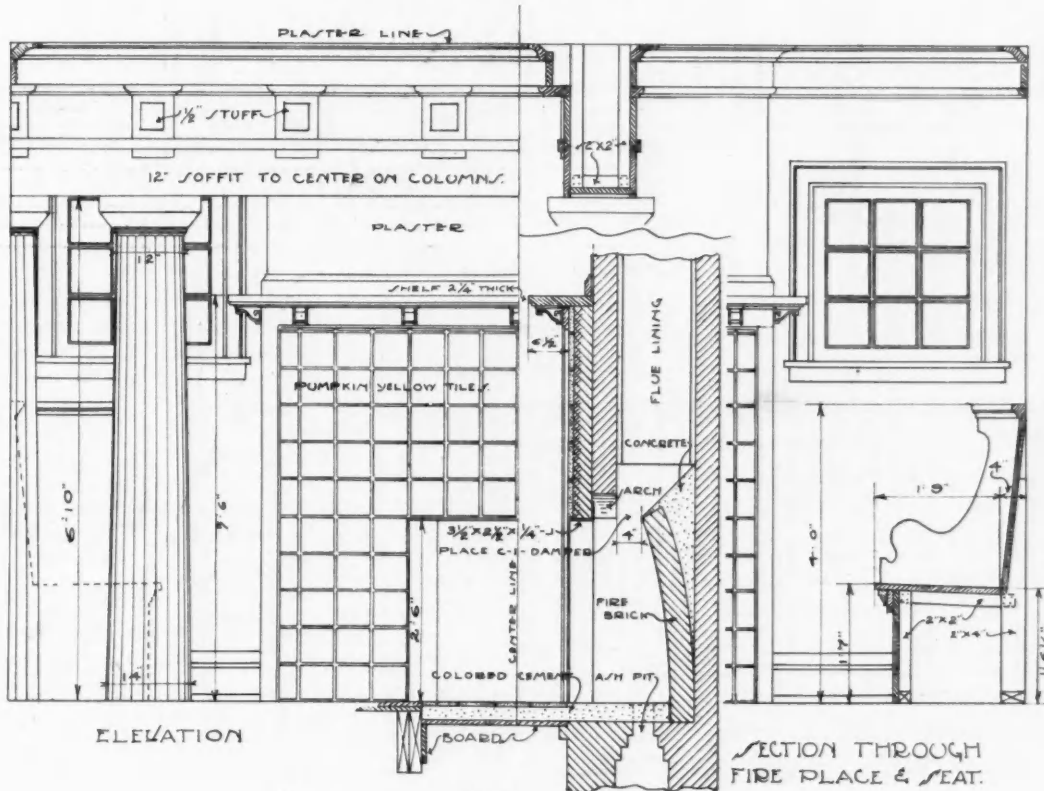
as compared to 2.9 of the best aluminum. Bolts and bars that would ordinarily be thought of as heavy were placed on exhibition, and when handled seemed as light as papier maché.



DETAILS OF INTERIOR FINISH

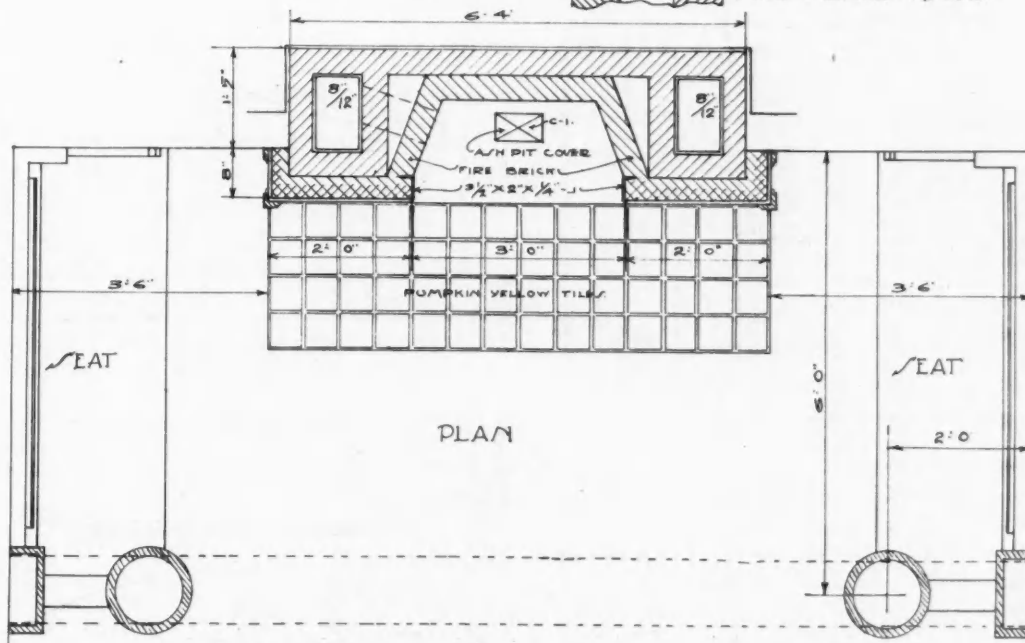


ELEVATION OF SEAT.



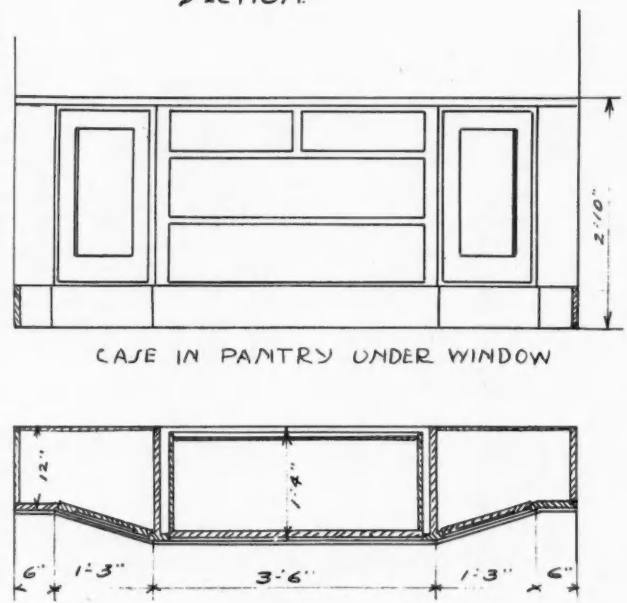
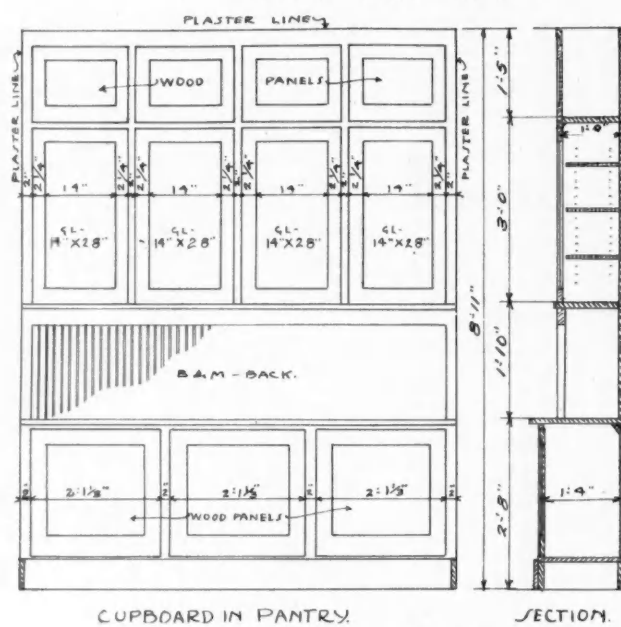
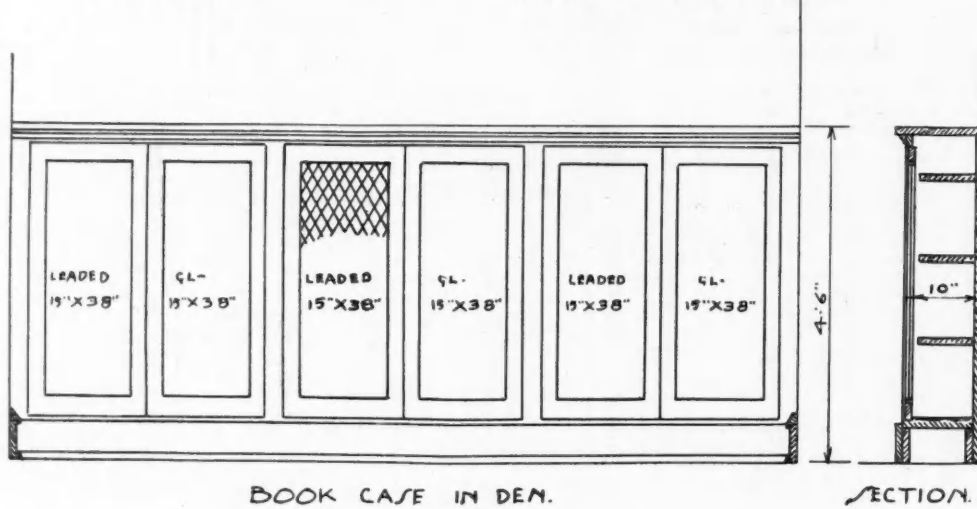
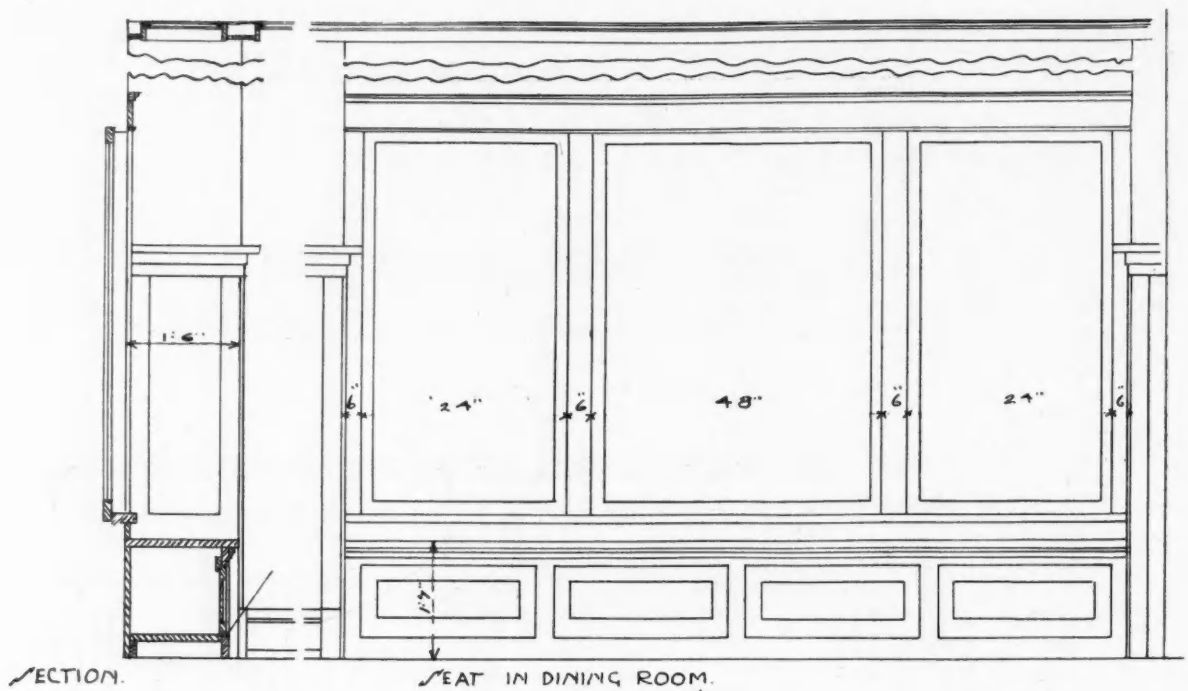
ELEVATION

SECTION THROUGH FIRE PLACE & SEAT.



PLAN

DETAIL OF FIREPLACE NOOK IN LIVING-ROOM



SPECIAL BUILT-IN FEATURES

CORRESPONDENCE



A Fine Suggestion

To the Editor: Cambridge, Ohio.
 In the December issue of the AMERICAN CARPENTER AND BUILDER you have a short article asking your subscribers to "be friendly"—"write occasionally."

Taking you at your word, I want to first compliment you on the AMERICAN CARPENTER AND BUILDER—it is getting better every issue, and I would not like to do without it.

As I am a home student of architecture, I like your "Residence Department" best, and I get some new ideas from each copy as they come to hand.

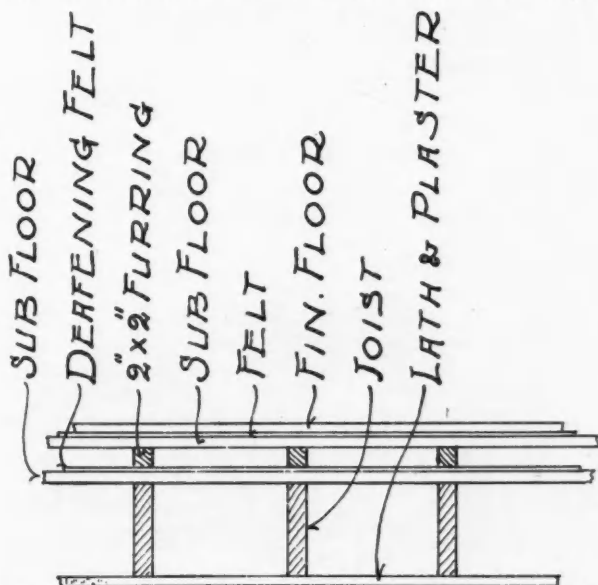
What I would like to see you take up, if possible, is a department devoted to house details, both *constructive* and *interior*, drawn to scale or with all necessary dimensions shown. I am sure that such a department, showing details of cornices, porches, wall sections, all kinds of interiors, details of stairs, colonnades, trim, kitchen and pantry tables, and cupboards, would be a great deal of help to your readers.

As for myself, will say that I have had eighteen years of practical experience in the building line, both as a carpenter and in the mill, at the bench and on machinery, and I am free to say that I am learning new things about my trade almost every day.

A. M. JOHNSON.

Floor Deafening for Apartments

To the Editor: Butte, Mont.
 Will you kindly inform me if in your opinion the accompanying sketch is a good method of deafening floors? The principal objection to apartment houses is the sound coming from floors overhead. I want to overcome this and ask your



help in the matter. If you know of any more feasible plan will you kindly inform me. I am a charter member of AMERICAN CARPENTER AND BUILDER and prize your paper very

highly. Would not be without it for many times the subscription price.

A. H. MULLIN.

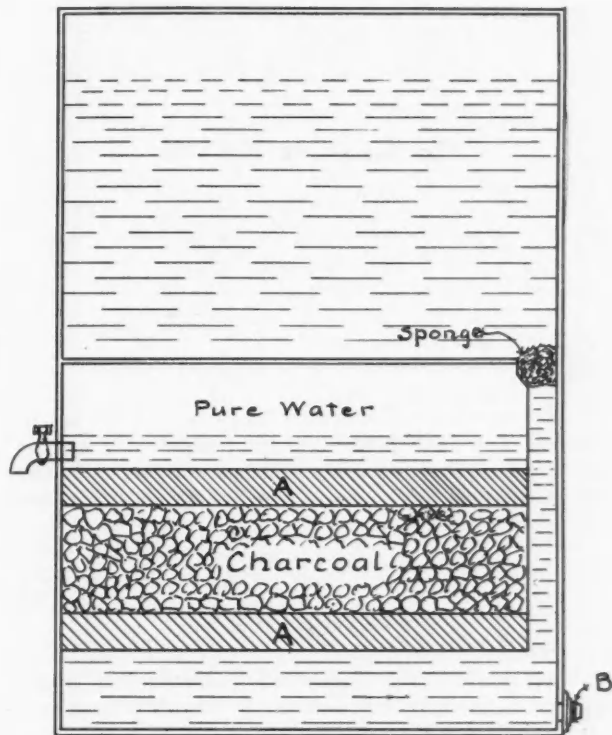
Answer: The method you have used to deafen the floor is the best-known method. We have substituted 2 by 2 inch furring strips instead of 2 by 4 inch, as the former is ample for nailing purposes, and will save 2 inches of space.

EDITOR.

Water Filters

To the Editor: Kennedy, Minn.
 I am a regular subscriber of the AMERICAN CARPENTER AND BUILDER and would not be without it for three times the money I pay for it. I want to get advice about the best way

LELOGE'S WATER FILTER.



A A. Slabs of porous stone.

B. Clean-out plug.

to make a filter for a cistern I have to construct. The cistern is an oblong square and is going to be built in a basement.

ISAK HELSETH.

Answer: We cannot advise you to attempt the construction of a filter for your cistern, for we doubt if it would be satisfactory. By far the best thing to do would be to purchase one of the commercial filters now on the market. They are made in various sizes and so constructed that they may be readily cleaned.

from time to time. It must be remembered that filtering will only remove solid particles in suspension in the water, and that other impurities which may be dissolved in the water are not removed by filtration. Various materials are used for filtering and must be so arranged that while the water can pass through them, the solid particles are held. In time, the interstices, or pores, of the filtering medium become clogged and must be cleansed. In large filtration plants this is done every few hours by forcing numerous jets of clean water upwards through the filter beds, which are usually composed of layers of large stones, pebbles, coarse gravel, fine gravel and fine sand, arranged with the sand on the top.

The accompanying sketch shows a form of upward filter which was formerly much used for small systems. They are, however, seldom used nowadays, as sanitary experts do not encourage their use, owing to their liability to become clogged. Therefore, the commercial filters, made to allow of their being readily taken apart and cleansed, are the best.

T. B. KIDNER.

He Lets 'Em Project

To the Editor: Kawkawlin, Mich.

I wish to give my opinion in answer to the question of Geo. Lehnert in December number of the AMERICAN CARPENTER AND BUILDER regarding the way to trim window and door sills.

Door and window sills should not be cut off flush with the casing, but should extend out $\frac{5}{8}$ to $\frac{3}{4}$ of an inch. Of course the cap must be extended out the same distance too.

If Mr. Lehnert will go and examine doors and windows finished this way and then look at those cut off flush I am certain he will agree with me that it makes a much better finish.

WM. T. STEVIG.

He Says Cut 'Em Off

To the Editor: Agra, Kan.

I am a charter member of the AMERICAN CARPENTER AND BUILDER and find lots of help in its correspondence columns. In answer to Geo. Lehnert's question about the way to trim door and window sills, will say to trim flush with casing. That way it is much easier to fit siding, and it does not give the water a chance to get behind the sill so easily; it is almost impossible to keep siding from curling up, leaving a small crack if fitted on top of end.

I have done considerable repairing of houses in the last few years and find that almost every sill rots that has extended past the casing, while the other way they were most all sound.

It has been my aim to always keep out the water; if this is done there is not very much chance for rot.

W. H. WILSON.

Concrete Work

To the Editor: Cornish Flat, N. H.

I have been but a few months a reader of your valuable paper, but I have come in that short time to be much interested in the subjects presented and the discussions taken part in by different brothers of the trade. I have formed this conclusion: "We don't any of us know it all." Some, and I might say all, carpenters have a way of their own of doing things—right or wrong—and they think after a while that there is no other way. Now I do not think there is any other occupation which man is employed in in which the workmen are so willing to tell or show one another as carpenters are.

Just at this time I am much interested in cement and its uses. For foundations it has no equal. I was watching, a few days ago, some fifty or more men putting in the foundation for a machine shop 600 feet long, 150 feet wide, founda-

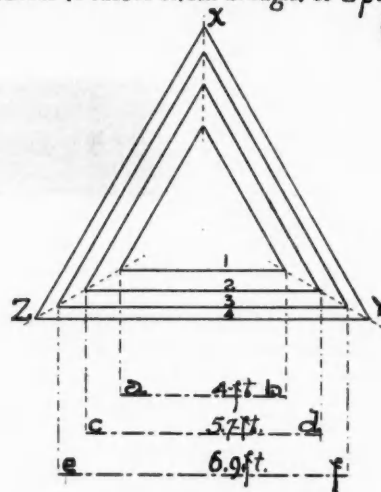
tion wall 5 feet deep and 18 inches thick. The mixture was 7 parts coarse gravel and sand, one part cement; estimated cost \$3.00 per cubic yard; while stone at the same place would cost \$6.00.

I think that a department of your paper devoted to the estimated cost of building, labor and material in different parts of the country would be a benefit.

J. S. CHASE.

A Problem Laid

To the Editor: Boston, Mass.
 Allow me to present a solution for the problem proposed in the November number by Mr. Sadler. I would be much interested to know what brought it up.



The areas of similar triangles are to each other as the squares of their like sides.

Let "Δ" denote triangle; "s" unknown side. Then, in ΔXYZ, let ZY=8 feet.

$$8^2 : s^2 :: 4 : 1 = \frac{8^2 \times 1}{4} = 16 = s^2, \text{ then } s = \sqrt{16} = 4$$

= side of first Δ as shown at ab.

$$\text{Similarly, } 8^2 : s^2 :: 4 : 2 = \frac{8^2 \times 2}{4} = 32 = s^2, s = \sqrt{32} = 5.7$$

= side of second Δ as shown at cd.

$$\text{And, } 8^2 : s^2 :: 4 : 3 = \frac{8^2 \times 3}{4} = 48 = s^2, s = \sqrt{48} = 6.9+$$

= side of third Δ as shown at ef.

Triangles constructed on sides so calculated will fill the conditions of the problem.

E. G. GROVES.

Attractive Cottage

To the Editor: Seagoville, Texas.
 The inclosed is a picture of a building I have just com-



pleted. It may be of interest to your readers and I would like you to put it in the AMERICAN CARPENTER AND BUILDER.

E. A. ROBINSON.

To Brace Up a Roof

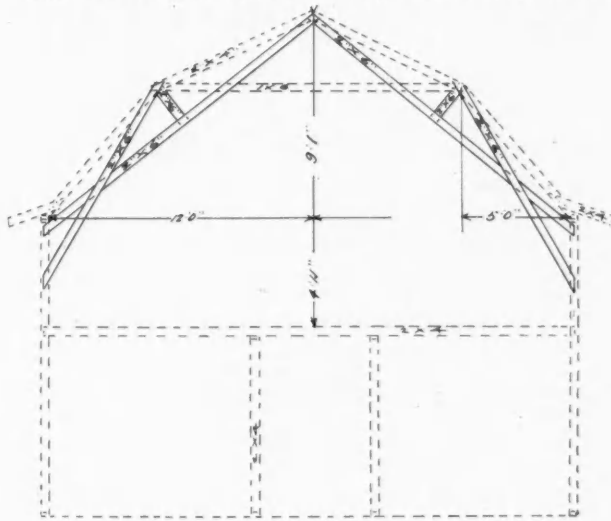
To the Editor:

Ionia, Mich.

About two years ago a good farmer hired a *bum* carpenter to build a nice hog house 24 by 48 feet, 12 feet high, with self-supporting roof. My sketch will show you the construction. The studs are 3 feet on centers, the rafters 2 feet on centers; every third pair are tied with a 1 by 6 inch piece.

Now the roof has sagged and spread till it looks as though it might fall in any moment. The plates are sprung out at least 6 inches on a side.

The farmer has asked me to *fix it*. I am a carpenter and



have taken the AMERICAN CARPENTER AND BUILDER for a long time, and appreciate it. I notice you answer some such questions as this and I ask you to kindly suggest some practical way of fixing it. The owner wants an unobstructed loft if possible.

W. H. SOMERS.

Answer: The accompanying drawing shows your sketch of the hog house, with the present construction in dotted lines and the timbers which should be added to brace up the roof in solid lines. We believe this system of framing will brace up this roof in good shape and will leave the loft unobstructed. The drawing shows the size of the timbers and how they are arranged.

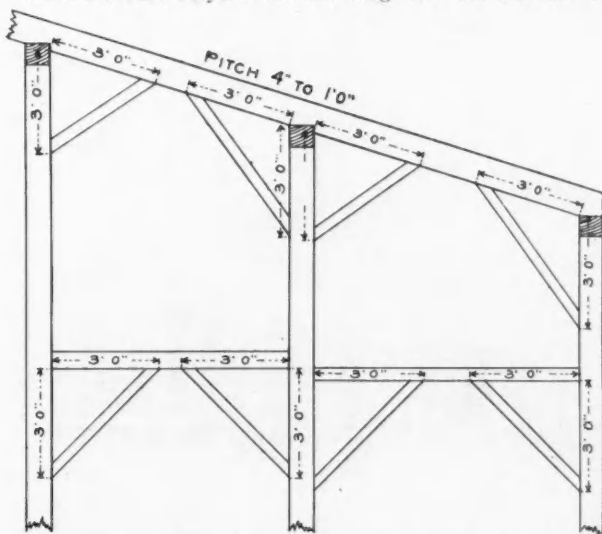
EDITOR.

Problem in Trestle Work

To the Editor:

Justus, Ohio.

I am a reader of your valuable magazine and I would like



to ask for a little space in the columns of the paper for the purpose of submitting a question which I have not as yet seen

presented. It relates to trestle work and is illustrated in the sketch, which I present. It shows an inclined plane, the pitch of which is 4 inches to the foot. There are braces framed from post to stringers and as will be readily observed, the runs of these braces are not at right angles with each other, but they are to have a 3-foot run up the stringers and down the posts. I would like very much to have the readers explain the method of obtaining the length of such braces as well as their cuts, both practically and theoretically, irrespective of the runs or the pitch. I think if the readers would take more interest in heavy framing, we could make the paper very interesting.

HARRY BUXSER.

A Badly Cut-Up Roof

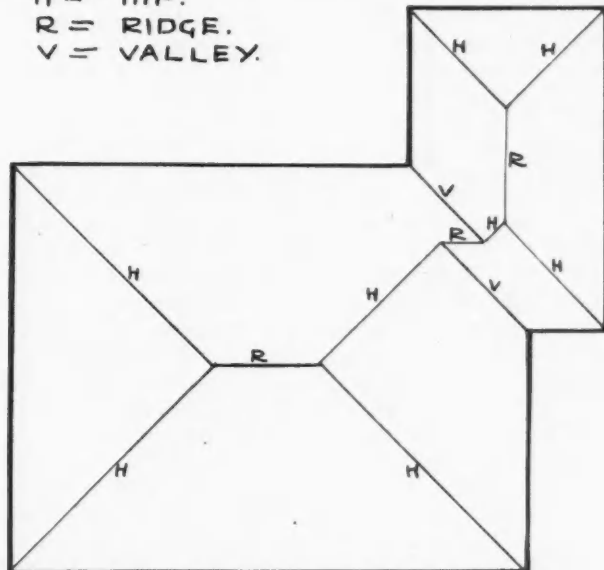
To the Editor:

Flushing, N. Y.

As a regular reader of your magazine, I take the liberty of sending you a sketch and asking several questions about it. It is the roof outline of a small 2-story cottage, plans of which I am making. There is no third story. I want to use a shingle roof if possible and want as low a pitch as possible, as the desired effect is that the house look "squat" and sit close to the ground.

Will you make a sketch showing the best way of framing the roof, both for a plain gable roof and also for a hip roof? Indicate hips and valleys by letters. Will you also say what

H = HIP.
R = RIDGE.
V = VALLEY.



is the minimum pitch I should use? The exterior is to be entirely of shingles, and the trim, both exterior and interior, cypress throughout.

SPEER ANDREWS.

Answer: No roof will look good on a house planned in this way. The accompanying sketch shows about the only way a hip roof could be put on; but it is very badly cut up and will be expensive and ill-appearing. A second-floor balcony over the projection, used with a hip roof on the main part, might work out all right. It would not be possible to plan a gable roof for such a shaped building. No pitch less than 1/4 can be used for shingled roofs.

EDITOR.

Backing of the Hip

To the Editor:

Blyth South, Cal.

I am sending herewith a sketch of how to back the hip. It lacks a trifle of being exact, but will stand the test and prove practical.

RULE: Any line equal to half the thickness of hip rafter projected from edge of same parallel with seat cut terminates nearly at the line for backing the rafter. Good only for square roofs.

TYNDALE BOYCE.

Answer: The accompanying illustration shown in Fig. 1,

is a reproduction of Mr. Boyce's sketch, which he says is nearly correct. We will go him a little better, by saying that it is absolutely correct and applies to any pitch, as far as the square corner is concerned, provided the pitch is the same on both sides of the hip. The same rule applies to any of the polygonal shaped corners or any other for that matter.

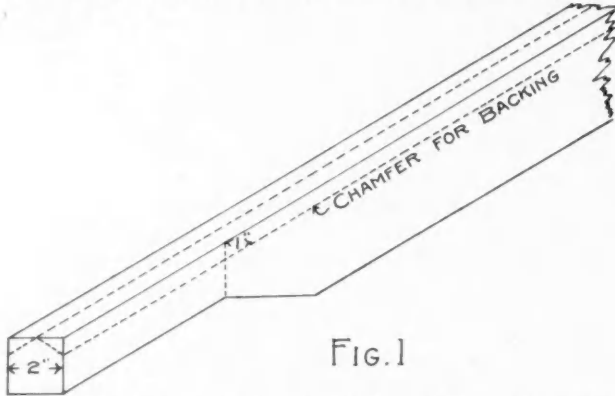


FIG. 1

The only thing is that when it gets into the irregular, or the intersection of different pitches, it requires a calculation that is quite beyond the mental caliber of most woodworkers, but may readily be obtained by a simple diagram.

Suppose a post is set perpendicular and at equal angles to a square corner, so that its sides at the seat would rest at the same angle as that of the hip. The seat cut of the post would be a square end cut. Now, if desired to remove the outer corners, so as to co-incide with the corner of the plate, as shown in Fig. 2, it is very plain that one-half of its thickness set off on the seat cut, or any line parallel to it will give the backing, or gauge line. The fact that the hip rests at an incline makes no difference. One-half of its thickness set off along the seat cut line will give the proper point for the gauge line on the side of the rafter, just the same as in the case of the post, because the swing of the seat line in relation to the edge of the rafter regulates the gauge line. In the case of the post, the seat being at right angles to the edge of the post, the gauge line is as far out as it can be.

The same rule applies to the valley, but the gauge line on the side of the rafter represents the depth at the center of the back from which the wood should be removed, to the outer edge of the rafter; thereby making a V shape in the back of the rafter, or just the reverse of that for the hip. In short, the backing of the hip may be reckoned from the miter of the corner on which it rests, as equal figures on the steel square will give the miter for the square corner. Equal distance from the center of the hip set off on the seat line, gives gauge line, or let half the thickness of the hip represent one, just the same as 12 on the steel square represents one foot, then it would be the one to set off on the seat cut.

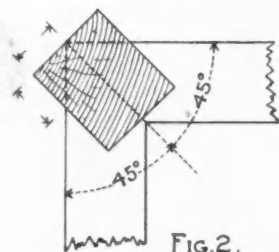


FIG. 2.

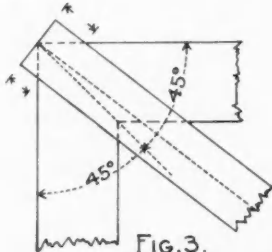


FIG. 3.

In the case of the octagon 5 and 12 give the miter; then 5/12 of half the hip's thickness is the amount to set off.

In the hexagon 7 and 12 (practically) give the miter, and 7/12 of half the hips thickness is the amount to set off.

20 19/24 and 12 give the miter for the triangle, then 20 19/24, say 21/12 or 1 3/4 times half the thickness of the hip is the amount to set off for a three-cornered building, and so on to the end.

But this is a juggling in figures and without one has more

than the average experience in handling them, better depend on simple diagrams, as shown in Figs. 2 and 3, in which are shown the regular and irregular, and applies to any shaped corner.

However, before passing on, we wish to call attention to the fact that the mathematical calculations as given above, aside from the square corner, are not absolutely correct, but as near as workable common fractions can give them, and are therefore so near that nobody could distinguish the difference. The backing of hip in actual practice is more often omitted than done, when the reverse should be the case.

To frame the rafter correctly as to length, the effect of the backing and how to place the steel square must be thoroughly understood. A. W. Woods.

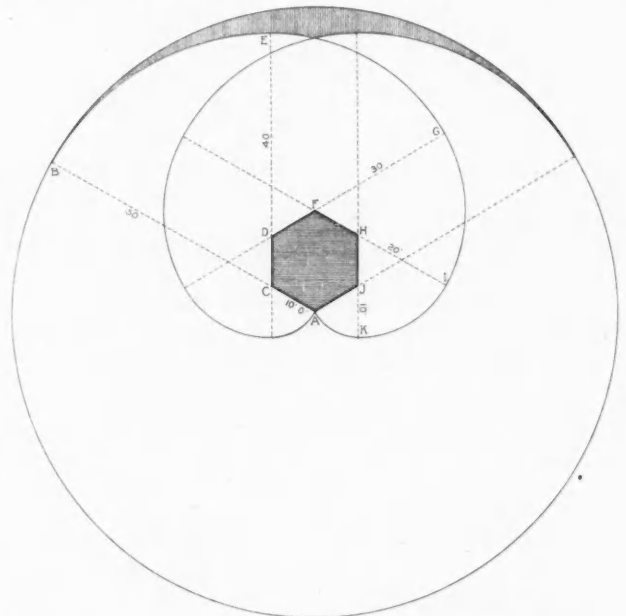


The Cow Pasture Again

To the Editor:

Detroit, Mich.

As a reader of the AMERICAN CARPENTER AND BUILDER, I am greatly interested in the question and answer department. I was especially interested in Mr. Liffingwell's cow pasture problem, given some time ago, of how much ground can a cow graze over tied with a 100-foot rope to the corner of a barn 25 feet square. At first sight, this looks like a simple problem, but the answers were many and varied. Now, I wonder



what the result would be, if the rope was 60 feet long and the barn was hexagonal in shape, with 10 feet on all sides? This looks like it ought to be easier than the first problem, but what do the Brother Chips say? The longest radius is from A to B, and would of course be the full length of the rope, or 60 feet; B C would be 50 feet, D E 40, F G 30, H I 20 and J K 10 feet. The evenings are long now and it is a good time for the mathematically inclined to get busy.

JOHN W. WILKENS.



How Large a Furnace?

To the Editor:

Denver, Colo.

In your last journal you ask "How do you tell how large a furnace will be required to heat that house." Here's how I tell:

Figure the number of square feet of outside side wall and multiply by 50 for 10 degrees below zero; the product will be the number of British thermal units (approximately) required per hour to maintain a temperature of 70 degrees inside. A pound of coal burned in a good furnace will give an efficiency of 8,000 B. t. u. You can burn 5 pounds of coal

per hour on each square foot of grate area.

Example.—House is 24 by 30 on the ground with 19-foot sidewall, of good construction. How large a furnace?

One hundred and eight times 19 equals 2,052, times 50 equals 102,600 B. t. u. per hour for 10 degrees below zero outside, up to 70 degrees inside. Now since a pound of coal gives an efficiency of 8,000 B. t. u. we find it will require $12\frac{3}{4}$ pounds of coal per hour. Now, since you can burn 5 pounds per hour per foot of grate surface it will require $2\frac{1}{2}$ plus square feet of grate surface or one that is 22 inches in diameter.

For a variation of 10 degrees in temperature outside change your multiplier 5. Thus: For zero multiply by 45, for 10 above multiply by 40. Here in Denver our low temperature is 10 degrees below, hence we figure 50. CHAS. M. GATES.



Log Balancing Problem Solved

To the Editor:

Hanford, Cal.

Mr. S. F. Kennedy wants us to determine the balancing point of a log of uniform density, 24 inches in diameter at one end, 36 inches in diameter at the other, and 40 feet long.

It will balance horizontally, when placed on a "pivot," 17.368 feet from the large end, measured altitudinally.

The log will not balance at such distance as would divide the log into equal volumes.

I assume the responsibility of correctly stating the answer. Relative to the problems and answers, I can truthfully state that the AMERICAN CARPENTER AND BUILDER is awaited by many here on account of its problems and answers.

C. W. TALBOT.



Heavy Timber Barn

To the Editor:

Walnut, Ill.

Enclosed find photo of barn I am building. It is 42 feet wide, 70 feet long, 16-foot posts; sills 8 by 8, posts 6 by 8; cross timbers 6 by 6, mortised and pinned; plates 2 by 8 upright and two 2 by 6 spiked on top flat; purlins 6 by 6; girts 2 by 6 upright, with one 2 by 6 spiked on top flat; braces 4 by 4, joists 2 by 8, rafters 2 by 6; end plate double 2 by 8, trussed in a way that can never budge; cross ties 2 by 8 each side of post, with 2 by 10 spiked on top between the purlins; 6 by 6 supports every 8 feet under cross timbers.

This barn is boarded up and down and battened. It has an 8-foot driveway, stalls for 20 horses, has solid concrete foundation and concrete floor 4 inches below walls. This picture shows unnecessary timbers in center. I use them for getting up center rafters. Myself and two men framed and raised this barn in four days.

I am sending the photograph just to exchange ideas with the boys. I am a charter member and think our AMERICAN CARPENTER AND BUILDER can't be beat. E. W. WHITE.

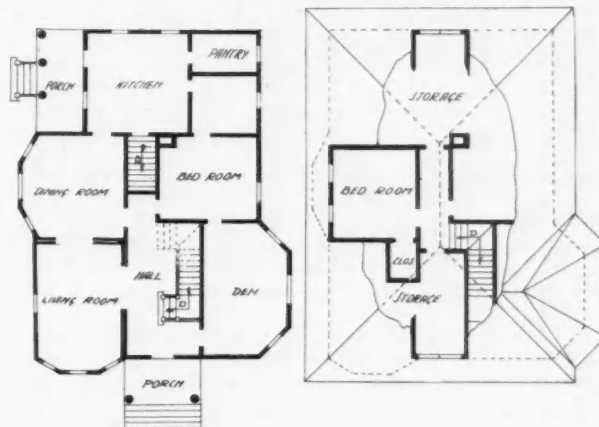


Floor Plans for Cottage

To the Editor:

Elma, Iowa.

I send you a plan of a cottage. The height is to be 10-foot posts, or rather 10-foot ceiling. Now I would like to have you help me plan a roof on this to have one bedroom, a store-room and one closet upstairs. I want it to look good on the outside. I am a charter member of the AMERICAN CARPENTER

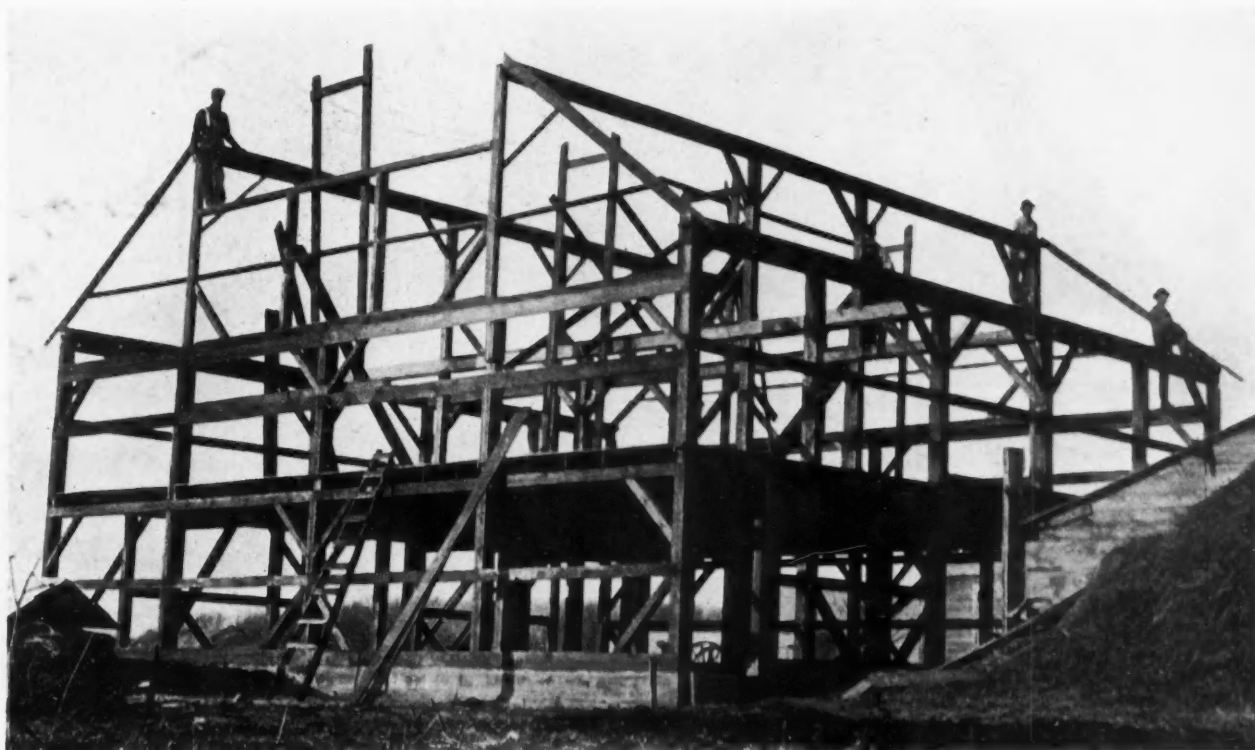


AND BUILDER and agree that it is indeed "The World's Greatest Building Paper."

AUG. WOLF.

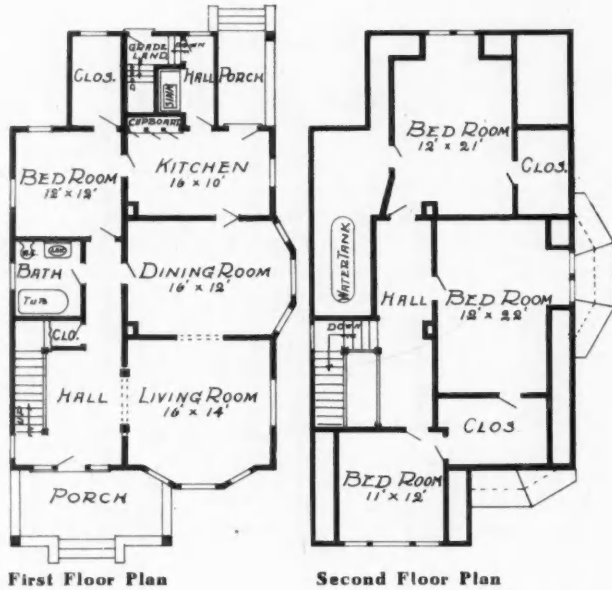
Answer: The accompanying drawing shows your first floor plan and our suggestions for a suitable roof plan and second story arrangement to provide one bedroom and storage space.

EDITOR.



Our Designs Have Helped

To the Editor: Castalia, Ohio.
 I am a charter member of this great paper and consider it one of the best in the country. I can't express in words the great help it has been to me. I am mailing you under separate cover a photograph and plan of a cottage I built this summer and would like to have you put it in the paper for I



got the plan out of the paper; and maybe it will help someone else to build a nice home that will please them.
 This cottage is 28 by 46 feet, 12-foot posts, finished throughout with yellow pine and covered with best grade of black Bangor slate. It cost \$3,500 complete. The foundation is split hard heads, all different colors, and is a very pretty thing.

I have built eight or ten houses from plans taken out of this great paper. Wishing you a merry Christmas and a happy New Year, I remain your friend and reader.
 S. J. PALMER.

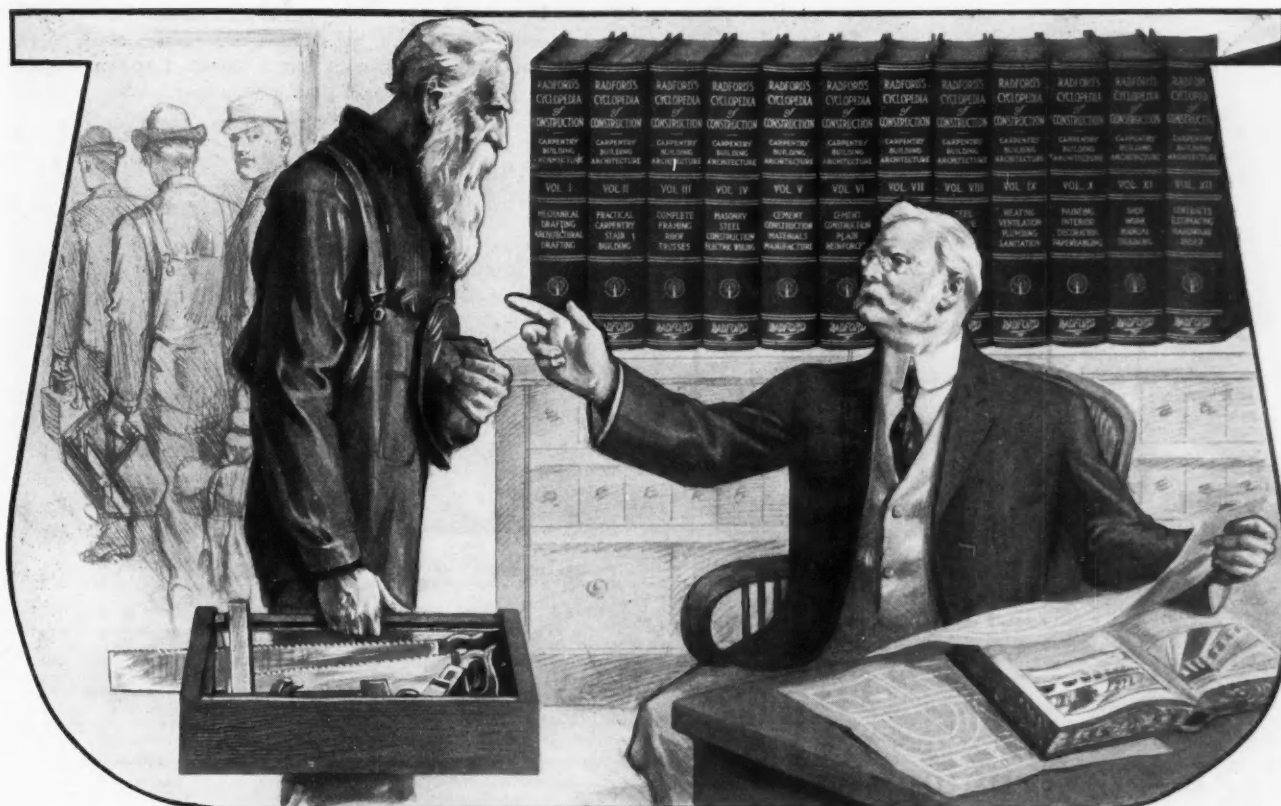
What Do You Suggest?

To the Editor: Clinton, Iowa.
 I have been a reader of your valuable paper for a long time and have read the questions and answers submitted by many of the subscribers.
 About a year ago we built a new parochial school at a cost of \$50,000. The auditorium is in the basement. A cement floor was laid and the dance floor was laid on the cement floor. The dance floor is built with 4-inch maple and has warped quite a bit, especially during damp weather. At the present time we cannot afford to build a new floor.
 What do you think is the best that we could do to put the floor in good condition? What do you and also your readers say?
 Answer: We do not know of any sure method of taking the warp out of your floor. You might try boring a row of holes along the sides of the room close to the baseboard, letting the air in under the floor between the joists.

For a Mothproof Room

To the Editor: Burlington, Ohio.
 I am just finishing up a house here and would like to have one of the upstairs closets mothproof. Can you tell me of any way to do this without using moth balls or camphor, or without going to the expense of lining it with red cedar? This room is 5 feet wide by 9 feet long and has a small window at one side. It is in a corner of the house which has a low hip roof. Any suggestions bearing on this matter, either from yourself or your readers, will be greatly appreciated.





This picture shows how the MAN WHO IS BACKED BY KNOWLEDGE CONTINUES TO DIRECT long after the TRAINED HAND has lost its skill.

You can almost hear the man at the desk say: "Kelly, this job has got to be done **right**. I haven't anyone else to send and **you will have to do**. If you had ever studied that set of books **there you would know how** to do this work **now**. But there is no time now to find out: do the best you can and let this be a lesson to you to learn more about **your own work**. Why, man, I am finding out new things every day: finding them out through these books. It is the way I have built up my business—**THAT'S MY TOOL CHEST.**"

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 IRA S. GRIFFITH, A. B., Supervisor of Manual Training, Oak Park, Ill.; Member Editorial Board Western Drawing and Manual Training Association; formerly Professor of Mathematics, Eureka College; author of "Essentials of Woodworking."
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 ALFRED W. WOOD, Architect, Inventor of "Wood's Key to the Steel Square"; Joint Author of "The Steel Square and Its Uses."
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Points in Brick Construction

To the Editor:

Dayton, Ohio.

I would like to have some one of your worthy staff, or some of the readers who are expert in brick construction, give me some suggestions on the following points:

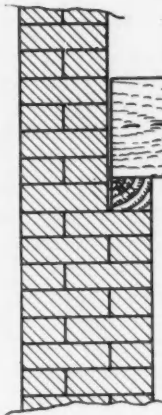


Fig. 1

1. How thick ought the walls to be of a brick building 32 feet square and 20 feet high from the foundation to the eaves?
2. What is the best way to fasten the second story joists to the outside wall?
3. How should the outside trim such as porches, cornices, casings, etc., be fastened to brick walls?
4. What is the best construction for the inside, that is for attaching baseboards, lathing strips, etc.?

If you will give me some information through the correspondence department on these questions it will be a great help to me and possibly to others as well.

TOM L. JONES.

Answer:

1. For a building of the size mentioned, the walls should be brick-and-half for lower story and one brick above.

2. The joists are carried on the offset formed by the reduction of the walls from brick-and-half to one brick; a plate being laid on the offset to receive the ends of the joists, as in Fig. 1.

If the walls are the same thickness from top to bottom, the joists are usually placed in pockets left in the wall to receive them. The ends of the joists should not be built in closely, but left with an air space about them to prevent dry rot.

Fig. 2 shows another method, in which oversailing courses are laid far enough out to carry the plate. The oversailing courses are all headers and no course must overhang the one next below it more than 2 inches when 8-inch bricks are used. Fig. 3 shows the plate carried on wrought iron straps, let into the wall at intervals of about 2 feet.

3. For light stuff, such as casings, etc., the best method is to rake out a joint and insert a "plug," or rough wedge of wood, driving it well in and sawing it off flush. The finish is nailed to these plugs, which are put in about 18 inches apart. These plugs should not be sawn to a wedge shape, but tapered off on opposite corners with a hatchet, to the form shown in Fig. 4. The fact that the plug is thus twisted prevents it becoming loose should it shrink very much. The best wood for plugs is elm, as it holds nails well and does not split easily.

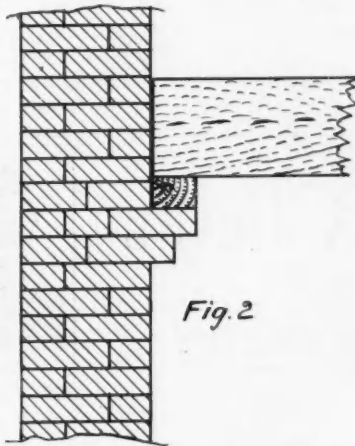


Fig. 2

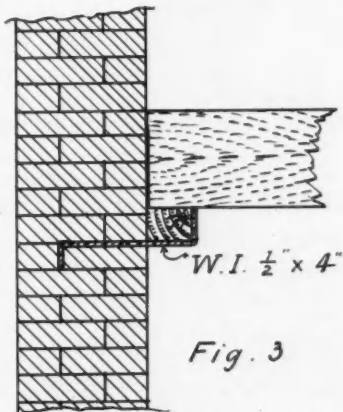


Fig. 3

The common method of inserting, at intervals of a few courses, wooden building blocks to which the finish may be nailed, is not to be recommended, as they are liable to shrink as the building dries out. A better method is to build into the joints, at intervals, narrow strips of wood for nailing purposes. But while this is to be preferred to the building blocks, it is not so good as plugs driven in after the walls are up.

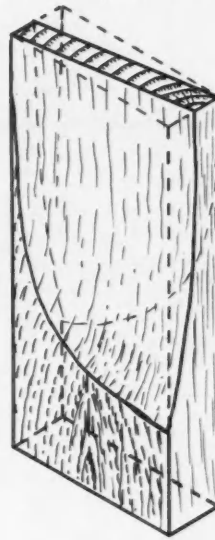
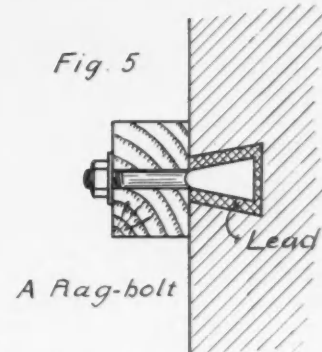


Fig. 4, A "Plug"

For fixing heavier stuff, such as porch framing, etc., expanding bolts are the best. Several makes are obtainable, some excellent ones being shown in our advertising columns. A



A Rag-bolt

hole is cut in the brickwork with a cold chisel, and the nut inserted in it. The bolt is passed through the woodwork into the nut, which expands on its inner end and, so to speak, dovetails itself in the wall.

Another method of fixing heavy stuff to brick walls is shown in Fig. 5, where a rag bolt is let into a dovetailed hole and poured round either with lead, brimstone or engineers' fusible cement.

4. The methods suggested for the light stuff in Answer No. 3 are those generally used for inside fixing. In first-class fireproof construction, however, even the small amounts of wood called for in those methods are not allowed in the walls. Instead, special fixing blocks, the size of a brick, are formed of coarse coke screenings (breeze), Portland cement and linseed oil. This mixture will set hard and is fireproof, but nails may be driven into it and will hold well.

T. B. KIDNER.

Pattern for Laying Off Rafters

To the Editor:

Middleton, Ohio.

I herewith submit a draft for a rafter pattern, which I have worked out and find it a very convenient thing to have in framing.



Take a light piece, suitable for pattern, and lay off heel and lookout cuts. Then, from point of lookout, measure off difference in length of jacks, by usual method; from this point make plumb cut. Next lay off side cuts of jacks on back of pattern, as shown. This will give all lengths and cuts of jacks.

GUY MORGAN.

Rafter Lengths by Figures

To the Editor:

Duson, La.

To keep in line, would like you or some of the brothers to tell me through the correspondence column how to find the length of common rafter in a roof of, say, 1/3-pitch, by figures or mathematically.

ROBT. F. HOFFFAUR.



PRACTICAL TRADE APPLIANCES

Rawson and Evans—Glass

Very frequently contractors and material dealers are called on for special work along the lines of chipped and etched glass for signs, decorative windows, etc. In order to facilitate this business, Rawson & Evans, the well-known glass workers, 151-153 West Washington street, Chicago, Ill., have arranged a department to do this work for them, shipping in their own name direct to their trade.

This is often a great convenience. In fact, Rawson & Evans want to be considered at all times the special headquarters for the building trades in glass in chipping, grinding, enameling, embossing, etching, silvering, beveling, mitring, wheel cutting, lettering, sign work, etc.

The line of their work is largely devoted to sand blast work, art sand blast, enameled glass, chipped glass, double chipped glass, geometric chipped glass, combined geometric, ornamental chipping, embossed glass, etched glass, silvering and gilding and chipped glass signs. A remarkably complete and attractive line of designs is produced.

Rawson & Evans will be glad to mail their beautifully illustrated catalogue to all readers of the AMERICAN CARPENTER AND BUILDER who are interested, and will co-operate with them at all times.

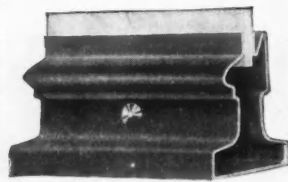
"Hercules" Cash Prize Contest

The offering of cash prizes by the Century Cement Machine Company of Rochester, N. Y., for photographs of buildings erected with blocks made on "Hercules" block machines is a step in the right direction, and it is to be hoped that every man who operates a "Hercules" machine will respond by sending a photograph of his work.

It is the intention of the company to issue an elaborate portfolio immediately after the close of the contest. This portfolio, containing cuts of different types of buildings, will be sent free of cost to all who contribute photographs. It is the desire of the Century Cement Machine Company to make this portfolio one of the finest ever offered by any concern manufacturing block machinery.

All operators of Hercules machines should send in photographs of work without delay, as the contest will be decided at the cement exhibit, to be held in Chicago next February, so act promptly.

Hercules machines and their product are becoming so well known that the Century Cement Machine Company often receive letters from architects and engineers asking as to the location of the nearest plant where Hercules stone can be secured. This enables the manufacturers to often assist users



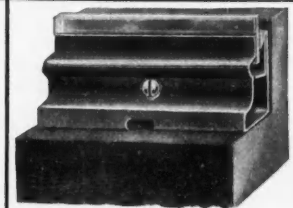
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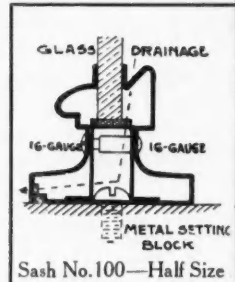
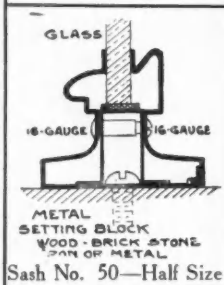
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SEE SWEET'S INDEX, PAGES 650-651

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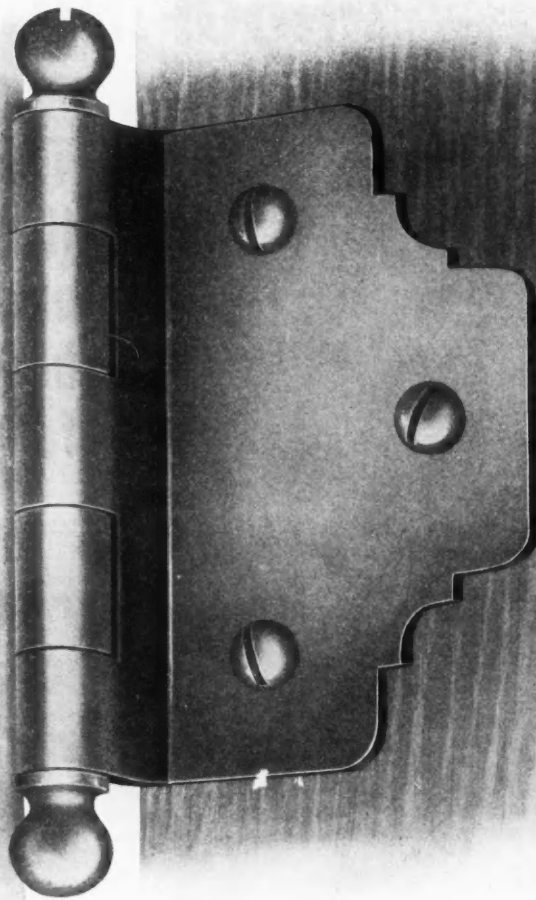
of their machines in the securing of good-sized contracts.

The prize contest, together with the portfolio, should do much to assist operators of Hercules machines in the securing of contracts, especially those who are represented in the portfolio, which will be in the hands of architects and engineers everywhere.

Full information regarding the contest can be had by addressing the Century Cement Machine Company, Rochester, N. Y.

A New Tip

The attention of the contractor and carpenter is called to the new tips with which the National Manufacturing Com-



pany, of Sterling, Ill., are now equipping their butts, both the common and ornamental designs. By referring to the cut shown herewith it will be noticed that the lower tip is slotted for a screw driver. The tips are threaded and screw into the butt. Should the threads become corroded after having stood for some time, it is a very easy matter to remove the tips by using a screw driver.

Another advantage of the slot which has proven very popular with the building trade, is the fact that it indicates instantly which is the bottom of the butt, and avoids all possibility of the butts being hung upside down. Should occasion ever require the door to be removed from the opening after once being hung, it is very easy to draw the pin, as the tip can be screwed out and the pin removed by using a nail or nail set.

This tip is an exclusive "National" feature, and is worthy of the consideration of the contractor and builder.

Further information can be obtained from the booklet, "Ornamental Ideas," which will gladly be mailed by the National Manufacturing Company to those interested.

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The Ford Manufacturing Company, of Chicago, was established in 1865. Since then their growth has been phenomenal. They are at present making extensive additions to their plant, which will double its present capacity. When these additions are completed, the Ford plant will be one of the largest and most complete in the world. One of the modern features is the installation of special machines which will turn out more roofing at a single operation than any other in existence. They are one of the few independent manufacturers in the country that have had the stamina to win out against the trust combinations. Honest methods, reliable goods and a fair margin of profit, form the keynote of their success.

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A prize was recently offered by H. T. D. Wilson, Houston, Texas, to the car that would make a quarter of a mile in high gear at the slowest rate of speed.

By the rules of this contest the drivers were compelled to use the high gear throughout the race.

The object of the race was to demonstrate which machine could best be operated on a crowded thoroughfare on high speed without danger of colliding with other vehicles.

Four cars entered. Two were disqualified, being unable to travel this distance on high gear at such a low rate of speed without killing the engine.

The Rambler won the event, consuming four minutes and thirty-five seconds of time.

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(Continued on page 532.)

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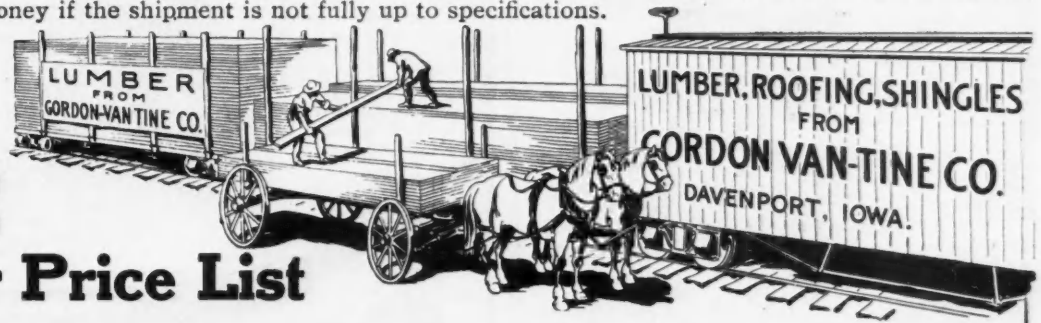
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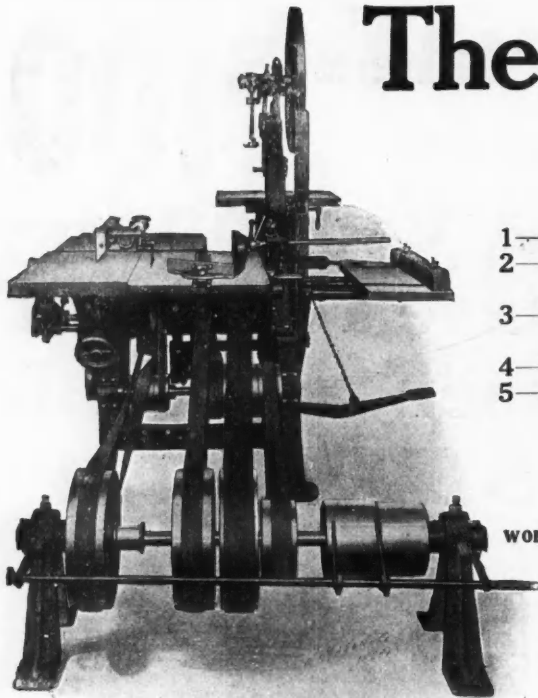
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| 2—Saw Table with Saw Arbor that may be raised and lowered | 7—Power-Feed Sander |
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| | 11—Emery Grinder |
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Herewith are shown five different illustrations photographed direct from one and the same machine—The "Famous" Universal Woodworker. The pictures show the machine as equipped for various operations.



The picture at the left shows our Standard No. 14 "Famous" Universal Woodworker equipped with a 12-inch jointer, single spindle shaper, two-side molder, rip and cut-off saw table, band saw, boring machine, mortiser, dado and grooving machine. It is not necessary to make any changes whatever to do any or all of the above mentioned work on this machine and it is the **only** machine that has ever been put on the market with which it is possible to make these joint operations without making a number of changes.

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Two very important and special features about this machine are **First**—The Saw Table has raised and lowered Arbor and carries a 14-inch blade which can be lowered entirely out of the way of the operator when the saw is not in use or wanted.

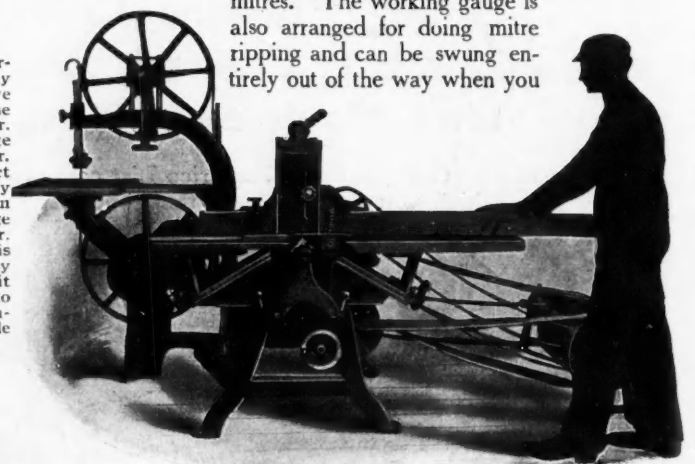
Picture below, at the right, shows the "Famous" Universal Woodworker being operated as a power feed planer having infed rolls, and so arranged that the operator may plane, in thickness, from a sixteenth of an inch to six inches and in width up to twelve inches. This attachment may also be used as a power feed sander. By removing the jointer head and placing sand-drum on the Arbor, it gives you a complete power sander. With this attachment this machine may also be used as a power-feed molder and a two-edge matcher and molder.

The machine in fact will do almost any kind of work that can be done on an average power feed molder. Each attachment is driven separately by separate belts and it is not necessary to run the entire machine to make single operations.

The saw table is arranged with a wooden throat which can be taken out when you wish to use wide dado or grooving heads. Cut-off gauge on the saw table is adjustable for cutting all the different mitres. The working gauge is also arranged for doing mitre ripping and can be swung entirely out of the way when you



The above cut shows the "Famous" Universal Woodworker fitted with direct-connected motor drive and arranged as a jointer, shaper and bore. Any or all of the other attachments can be applied to this machine. It can be equipped with motor drive at the time it is ordered or any time in the future, as all numbers on machine are drilled by jigs. We furnish this machine either with the motor or arranged so that the motor can be put on in the future.



SIDNEY TOOL CO.

Instead of 12

sal Woodworker

Unequaled in Durability, Economy, Convenience and Quality of Work Produced

wish to use the saw table for cutting off. Please understand that it is not necessary to remove the saw table when using any of the other attachments on the machine.

Second—The Special Boring Spindle that we furnish on this woodworker enables the operator to do all kinds of boring, routing, and hollow chisel work without running the complete machine, as this spindle is driven separately from any other attachment.

The day you install a "Famous" Universal Woodworker, you discount competition and will be able to **make profits** you cannot earn without one.

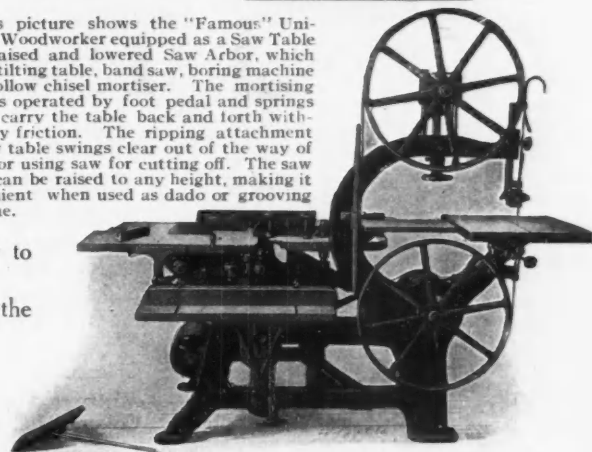
A strong statement that, but a true one. Why? Because the **earning capacity** of you and your help is **vastly increased** by a saving of from 25 to 50% in the time (real money) required on every job, and in addition, **your reputation for quality** work will be quickly **advanced**. The last is an asset you can't measure in actual money. The purchase of one of these machines **does not** mean a big investment in money for machinery and additional shop space.

The claims we make **are not** merely extravagant statements, set forth to induce you to buy. **We stand ready to prove every claim** and back each sale with a good **guarantee**. All we ask you to do is to send **now** for additional information and get our special offer, good only for 60 days. (Use the Coupon.)

The "Famous" Universal Woodworker is a machine of real durability. Every inch of every part is **built right**. It will not require tinkering or repairing after a few years of service. Each machine comes equipped with every attachment necessary and can be **quickly** and almost instantly changed to perform the various woodworking operations described.

The picture below, at the left, shows the "Famous" Universal Woodworker being operated as a two-side molder or edger with the saw lowered entirely out of the way of the operator. Springs are furnished, as shown in cut, to hold work in perfect position, making it possible to make just as perfect a mold or to do any kind of two-side edging as can be done on any molding machine. The outside bearing is conveniently arranged to be swung out of the way so that the jointer head may be taken off, thus allowing any kind of special heads to be used. The shaper head is also adjustable and can be had in any length in case the user wishes to do special wide work. If operator wishes to do circular work, such as making circle molds, he simply removes the two gauges, shown in the cut, and has a complete single spindle shaper. The extra large table makes it very convenient to do either light or heavy work on this machine.

This picture shows the "Famous" Universal Woodworker equipped as a Saw Table with raised and lowered Saw Arbor, which has a tilting table, band saw, boring machine and hollow chisel mortiser. The mortising table is operated by foot pedal and springs which carry the table back and forth without any friction. The ripping attachment on saw table swings clear out of the way of operator using saw for cutting off. The saw arbor can be raised to any height, making it convenient when used as dado or grooving machine.

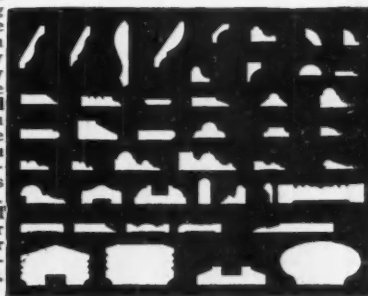


MOLDINGS
That May Be Made on Universal Woodworker
(See Illustration Below)

Hundreds of different styles of moldings can be made on the "Famous" Universal Woodworker.

The group of moldings shown below, we believe to be the most practical for general work. As equipped with power feed planing attachment, the "Famous" Universal Woodworker is especially convenient for making these different kinds of moldings, as, with this attachment you can turn the machine into a power feed molder and manufacture any of the moldings shown below.

We are prepared to furnish molding knives for any of these styles. The prices on these knives are very reasonable, and by purchasing one of the "Famous" Universal Woodworkers, we can fit you up with the molding knives so you will not have to depend on outside mills for your mill work. Do your own mill work and increase your dividends. Get our special offer in connection with these knives. (Use the Coupon.)



Mail This Coupon

Special Offer

Sidney Tool Co.,
Sidney, O.

Please send full details and information regarding the Special Offer you are making, good for sixty days, on the "Famous" Universal Woodworker.

Name

Town

State

SIDNEY, OHIO

designs have been eliminated, and only such have been retained as meet with public favor. In presenting this book the company desire particularly to call attention to their surpassing facilities for the manufacturing of special work. They make a feature of furnishing special designs, and cheerfully give estimates on architect's plans and specifications.

All woods used are carefully selected from thoroughly seasoned and perfectly kiln-dried stock, which is very essential. This, combined with the best workmanship, enables them to guarantee all work.

Careful attention is given to small orders; their aim is to satisfy everyone dealing with them; a satisfied customer is the best advertisement.

This valuable collection of designs, Catalogue No. 16, will be mailed free to those interested.

A Carpenter's Investment

Haven't you often expressed the desire to own a nice little outfit of machines. You have undoubtedly experienced a lot of trouble from time to time in securing your work promptly, and the delay usually occurs when you are in need of it badly.



The Chicago Machinery Exchange, 159-161 North Canal street, Chicago, Ill., are offering a combination of machines which will make you independent of your local mills. This company do not want you to get the impression that it requires a skilled mechanic to operate machines; any man of ordinary intelligence can turn out good work on these machines.

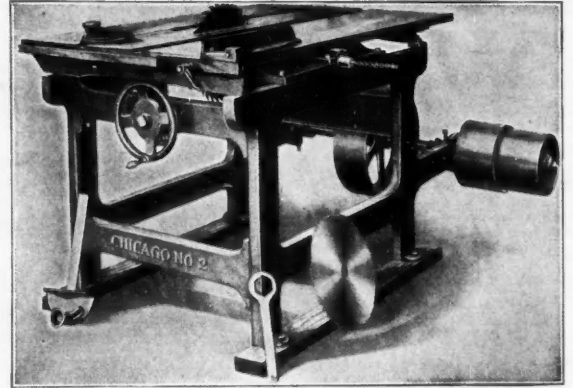
This machine is especially adapted for all kinds of ripping,

cutting off, boring, tenoning, dadoing, grooving and mitering your lumber.

A machine of this kind is especially adapted for planing, tonguing, grooving, rabbetting, chamfering, squaring up, gaining, and to make moldings.

Both of the above machines are offered you at so small an amount that you can save it on one contract alone.

Don't neglect the opportunity of starting now.

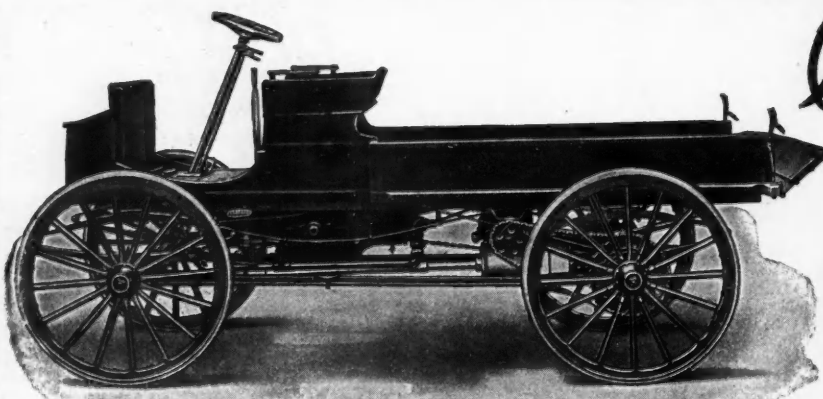


Any further information regarding the above machines can be had by addressing the Chicago Machinery Exchange, 159-161 North Canal street, Chicago, Ill.

Crescent Variety Wood-Worker

This machine is a combination jointer, borer, saw-table, pole-rounder, shaper and emery grinder. It is said to be the most popular machine of the Crescent Machine Company,

(Continued on page 536.)



McIntyre

Motor
Wagons

For Contractors and Builders

A Motor Wagon to increase your profits. Save 50 per cent of your present driving time and give that additional time for work. You can handle your supplies easier and quicker with one motor wagon than with two wagons and horses.

"It's cheaper to feed gasoline to a McINTYRE than oats to a horse," yet a "McINTYRE" will do the work of three horses. Always ready, never tires, can make an extra trip or a hurry call any time day or night. Equally good in town or on country roads.

"Twice the distance—half the time"

Ask for Catalog 105. Write today.

W. H. McINTYRE CO., AUBURN,
IND.

1730 Grand Ave.,
KANSAS CITY, MO.

418 Third Ave. South.
MINNEAPOLIS, MINN.



BISHOPRIC WALL BOARD

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



Applied Dry, Winter or Summer

lath, embedded in hot Asphalt Mastic, surfaced with sized cardboard and cut at the factory into 4x4 ft. sheets, which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap or other decoration.

It is applied dry; is guaranteed not to swell, shrink, warp, crack, flake or blister; is clean, sanitary and odorless; is proof against moisture, cold, heat and vermin; saves fuel in winter and keeps out summer heat; also deadens sound.



It is suitable for dwellings, factories, new partitions in old buildings, finishing attics, porches, laundries, cellar ceilings, garages, etc.

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: Crate of 16 sheets, covering 256 sq. ft. of surface, \$6.40 per crate, or \$2.50 per 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, or Alma, Mich. We ship from nearest point.

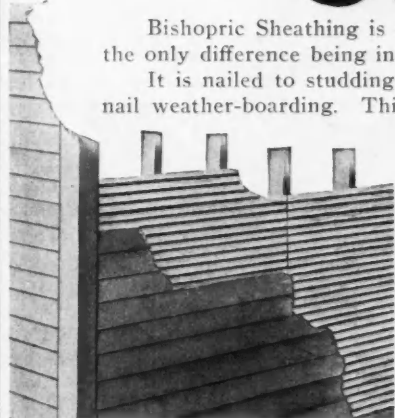
Saves labor. Does away with building Paper. Cheaper than lumber.

BISHOPRIC SHEATHING

Proof against heat, cold, moisture and vermin. Patented.

Bishopric Sheathing is made of the same materials used in Bishopric Wall Board; made the same way, the only difference being in the finish, which is not necessarily so smooth, therefore costs less.

It is nailed to studding on the outside of building, with lath and Asphalt Mastic exposed. Over this nail weather-boarding. This gives solid sheathing with dead air space between lath and siding. Ideal



material for cement exterior or stucco work. Cement firmly adheres to lath and Asphalt Mastic, making a solid, smooth exterior. For factory or residence, this form of cement construction is the cheapest and best known.

Bishopric Sheathing is cheaper than lumber; is free from holes and rough spots; is nailed to studding in half the time required for lumber; does away with expense of buying and applying building paper; is proof against heat, cold, dampness, frost, wind and vermin. Being a non-conductor, it keeps the building cooler in summer and saves fuel in winter. It is used with excellent results as a lining for dairy barns, poultry houses, driving stables or other outdoor buildings.

Price and Shipment: Crate of 16 sheets, covering 256 sq. ft. of surface, \$5.12, or \$2 per square of 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, or Alma, Mich. We ship from nearest point.

Standard Quality Asphalt Mastic. Patented Self-Protecting Composition.

BISHOPRIC ROOFING

Requires No Paint or Other Coating. Handsome and Durable.

Standard Quality, Bishopric Asphalt Mastic Roofing will not dry out; therefore requires no paint. The asphalt is toughened and perpetuated by an exclusive process, which converts asphaltum into Asphalt Mastic. May be exposed direct to weather in any climate without danger of softening, drying out, cracking or crumbling. The only asphalt roofing which successfully stands the direct exposure test.

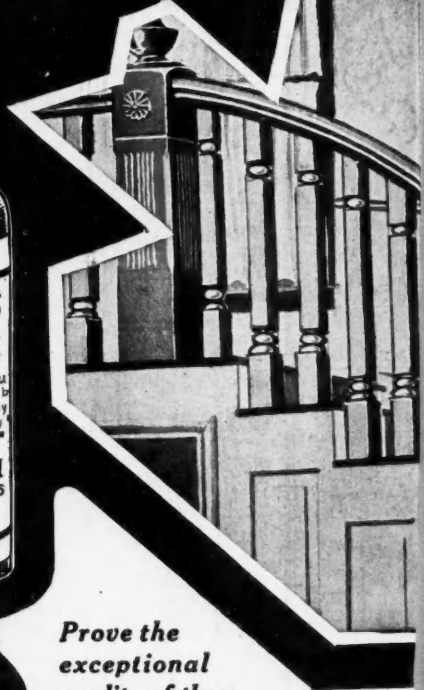
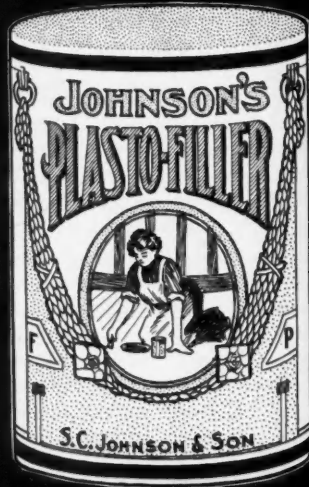
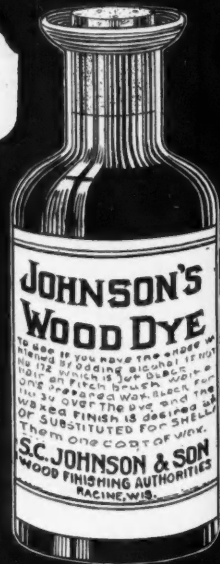
Bishopric Roofing is made of pure woolen felt, coated on both sides with pure Asphalt Mastic and flaked mica, making a neat, clean, artistic, durable roof, which never needs paint. Absolutely proof against cold, heat, moisture, wind and weather; will not crack, curl or break; wholly unaffected by climatic conditions. Will reduce fire insurance. Easily laid.

Prices: Freight Prepaid East of the West Line of Minnesota, Iowa, Missouri, Oklahoma and Texas:
3-ply..\$2.50 per square of 108 sq. ft. 2-ply..\$3.25 per square of 108 sq. ft. 1-ply..\$1.75 per square of 108 sq. ft.

Write for descriptive booklet and samples of Bishopric Wall Board, Bishopric Sheathing and Bishopric Roofing—all sent free.

The Mastic Wall Board & Roofing Mfg. Co., 38 E. Third St., Cincinnati, O.

These



Free

Prove the exceptional quality of these Johnson Preparations by actual test --AT OUR EXPENSE.

More than likely, you've heard a great deal about Johnson Materials for finishing and refinishing wood. Now, we ask you to get better acquainted with these preparations—by trying the samples which we will send you free. Mail back the coupon—right now—and we will send you post-paid samples of all three of these Johnson preparations:

Johnson's Wood Dye

For the artistic coloring of all wood. It is a deep-seated stain and a proper finish must be applied over it. Johnson's Wood Dye is made in fourteen shades as follows:

No. 126 Light Oak	No. 128 Light Mahogany
No. 123 Dark Oak	No. 129 Dark Mahogany
No. 125 Mission Oak	No. 130 Weathered Oak
No. 140 Manila Oak	No. 131 Brown Weather'd Oak
No. 110 Bog Oak	No. 132 Green Weather'd Oak
No. 121 Moss Green	No. 172 Flemish Oak
No. 122 Forest Green	No. 178 Brown Flemish Oak

Half Gallon, . . . \$1.50

Johnson's Under-Lac

Is better than shellac or varnish, and may be used wherever either of these preparations may be used. It dries in a half-hour. Gallons, . . . \$2.50

Johnson's Plasto-Filler

This preparation comes in powdered form. Mix with water and it is ready for use. Better and cheaper than any paste crack fillers on the market.

One and Two-pound packages, 20 cents per pound

S. C. JOHNSON & SONS

The Wood-Finishing Authorities

RACINE, WISCONSIN

Working Samples Of Johnson's Finishes Sent To You Free, Postpaid

Fill out the Coupon and mail to us today and we will send you working samples of Johnson's Plasto-Filler, Johnson's Under-Lac and Johnson's Wood-Dye in any shade you select. (See list of shades on opposite page.)

With the samples we will send you our illustrated guide book containing complete color card and full directions for finishing and refinishing wood. You need this book—and you need the samples. We'll send both immediately upon receipt of the Coupon.

Partial List of Jobbers of Johnson's Wood Finishes

- | | | |
|---|--|---|
| Kohler-McLister & Co., Denver, Col. | Carlson-Lusk Hdw. Co., Boise, Idaho. | Barber & Ross, Washington, D. C. |
| Carpenter-Morton Co., Boston, Mass. | Gamble & Ludwig, Minneapolis, Minn. | Noyes Bros. & Cutler, St. Paul, Minn. |
| The Knight & Wall Co., Tampa, Fla. | Pittsburg Plate Glass Co., Atlanta, Ga. | Bridges-Smith & Co., Louisville, Ky. |
| Chas. Moser Co., Cincinnati, Ohio. | Pittsburg Plate Glass Co., Pittsburg, Pa. | J. J. Hockenjos & Co., Newark, N. J. |
| Walker & Gibson, Albany, N.Y. | Becker-Moore Paint Co., St. Louis, Mo. | Louis Gallaher Co., Savannah, Ga. |
| H. M. Hooker Co., 128 W. Washington Street, Chicago, Ill. | Cleveland Window Glass & Door Co., Cleveland, Ohio. | Schroeder Paint & Glass Co., Detroit, Mich. |
| Bennett Glass & Paint Co., Salt Lake City, Utah. | Western Paint, Oil & Glass Co., Lincoln, Neb. | The Bond & Bours Co., Jacksonville, Fla. |
| Ilsley & Held, 2264 3rd Ave., New York, N.Y. | Pittsburg Plate Glass Co., New York, N.Y. | Barnard, Porter & Viall, Rochester, N. Y. |
| Barnes & Nuss, Grand Forks, N. D. | Fred Hummert, San Antonio, Texas. | Johnson-Woodbridge Co., Indianapolis, Ind. |
| C. W. Keenan, Brooklyn, N. Y. | Campbell Glass & Paint Company, Kansas City, Missouri. | Marshall-Wells Hdw. Co., Duluth, Minn. |
| David Bernhardt Paint Company, New Orleans, Louisiana. | Westcott, Slade & Balcom, Providence, Rhode Island. | Marshall-Wells Hdw. Co., Winnipeg, Can. |
| H. M. Hodges & Brothers, New Haven, Connecticut. | United Sash & Door Company, Wichita, Kansas. | Irvin, Jewell & Vinson Co., Dayton, Ohio. |
| Heystek & Canfield Co., Grand Rapids, Mich. | Fred'k Neeseman & Co., Baltimore, Md. | The Chas. M. Hay Paint Co., Portland, Me. |
| W. P. Fuller & Co., San Francisco, | Los Angeles, Sacramento, | |
| Stockton, Oakland, San | Diego, Cal.; Portland, | |
| Ore.: Spokane, | Tacoma, | |
| Seattle, | Wash. | |

Why We Make This Offer

We have learned this: The quickest way to convince the Wood Finisher of the superior qualities of the Johnson preparations is to furnish him with samples so he can see for himself that we do not exaggerate the excellence of our products. And so we ask you to send for these samples and make your own tests. You'll never go back to putty or plaster of paris for filling cracks after you have tried Plasto-Filler. After a test of its quality, you will use Under-Lac in place of varnish or shellac.

And just as surely, no ordinary stains will satisfy you once you see for yourself how perfectly Johnson's Wood Dye brings out the natural beauty of the wood:

A. C. B-1.

S. C. JOHNSON & SONS,
Racine, Wis.

Please send samples of Johnson's
Plasto-Filler, Under-Lac and Wood-Dye
shade No. _____ Also booklet.

Name _____

Address _____

City and State _____

My dealer's name is _____

Leetonia, Ohio. In selecting machinery it is usually advisable to buy separate machines for the different kinds of work. But when working space does not permit of this, or when there is not enough of each kind of work to justify the expense of separate machines, then a good combination machine may be an advantage. Care should be exercised in buying a combination machine, for the reason that most of the machines of this kind have some one or all of the following ailments: Inconvenient or too light, or dangerous to operate, or of too small capacity, or designed to



suit the physical combinations of the machine itself, rather than to suit the various operations to be performed, or turn out bad work, or takes too much time to change from one use to another—sometimes more than for doing

the actual work, or takes too much floor space by having to place countershaft on floor, or enough impractical freak ideas incorporated to make machines mere mechanical curiosities unfit for actual use. But the usual objections as above outlined cannot be said to apply for the Crescent variety wood-worker. It would therefore be unfair to compare this machine as to quality or price with the toy size and quality of other makes. In buying this machine you get all that Crescent quality and reputation stand for; and as good a value for the money, as on any of the Crescent line machines.

It will be noted that the regular 8-inch Crescent jointer is used for the body for this machine, and in adding the various attachments, its use as a jointer is in no way changed or impaired; it is then, first of all, a thoroughly first-class jointer, answering all the description of the regular 8-inch Crescent jointer given elsewhere. The other sizes of Crescent jointers are not furnished with these various attachments.

The countershaft may be placed where most convenient; on ceiling above the machine, or under the floor, or to front or rear of machine. The machine can be used as a jointer, a borer and a saw-table without making any adjustments or changes whatever in the machine; as these three features are practically independent of each other. It is therefore an easy matter to straighten one edge of a board on the jointer, then rip it to the desired width on the saw-table, then dress the other edge on the jointer, making a finished piece without stopping or making any changes on the machine. About 6½ inches of the jointer knife is available when saw-table is in use. The change from saw-table to pole-rounder is easily and quickly made as follows: Raise the saw-table to extreme height with handwheel to take off the saw. Then remove one hand screw and set the saw-table aside; then put knives on where saw was on; put the pole-rounder to place and fasten with the hand screw. Can be done about as quick as said, and without the use even of wrench, except for the mandrel-nut, which wrench is furnished with the machine.

A Few Points on Estimating

Upon estimating the cost correctly depends your success. If you guess, nine times in ten you are too high or too low. If you sit down and take off every item separately it takes too much time. It means a great risk of omissions on account of interruptions or overlooking something because you have so many items and figures to handle. The need of a system in taking off quantities is one cause of omissions also. Do you neglect your business many times because you have a job to figure? Do you worry and lie awake nights? Most builders bid too low for fear of losing the job. If they knew just what the job was worth they would not want it for any less. If you want to adopt a system that is easy, simple, accurate, reliable and practical, the **NEW SIXTH EDITION** of *The Lightning Estimator* will teach you.

You Need the Lightning Estimator

This method shows you the actual time and material involved in each part of your work, but so cleverly combined and systematized that a large job may be estimated in a very short time and omissions are almost impossible. Shows you how to dissect and analyze unfamiliar work in order to get at the cost. By showing time and material required as well as prices you may adjust this method to any scale of prices in any part of the country. Written by a successful builder from actual experience, not theory. Valuable hints for the concrete block maker and setter. The carpenter builder who sublets everything but the carpenter work can learn how to estimate the walls, brickwork, concrete work, chimneys, plastering, etc., so that he can handle this work by the day himself and save the subcontractors' profits.

Now is the Time to Become a Master Builder

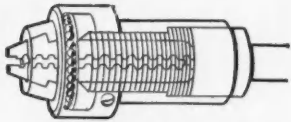
If you are a journeyman here is your opportunity to become a master builder and if an old timer, a chance to get new ideas and become more proficient; if you know it all, pass it along.

This edition is bound in cloth and is amply illustrated, a feature that has been overlooked in most books on this subject. Can you afford to hesitate? Will you do yourself justice and send one dollar today and get on the road to success?

BRADT PUBLISHING COMPANY

1260 Michigan Avenue

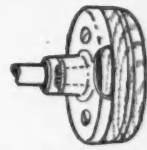
JACKSON, MICH.



The Ball-bearing Chuck, Found in No Other Brace.

You can tighten it with your bare hand to a tighter grip than you can any other chuck with the aid of a vise. It holds round, square, or taper shank drills.

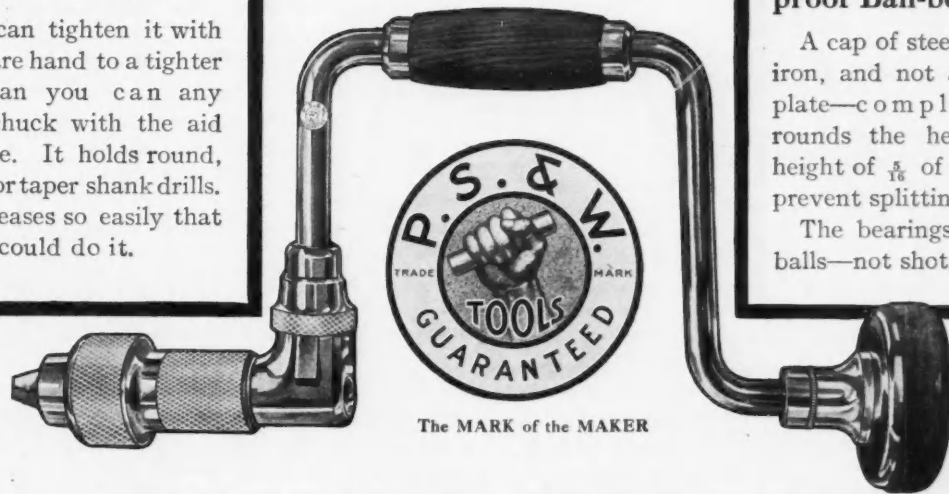
It releases so easily that a child could do it.



The Steel-clad Head, with Dust-proof Ball-bearings.

A cap of steel—not cast iron, and not a flat steel plate—completely surrounds the head to the height of $\frac{1}{8}$ of an inch to prevent splitting.

The bearings are steel balls—not shot.



The MARK of the MAKER

The P. S. & W. SAMSON BRACE

The brace that has bored ten-penny nails through solid oak. The brace that has twisted 5-16 inch steel rods to the breaking point. Like all P. S. & W. Guaranteed Tools, it is

branded with The MARK of the MAKER

Send for our 160 page "Mechanics' Handy List," containing valuable information and a list of over 200 tools for Carpenters, Machinists, Electricians and Tinsmiths, sent free at your request. It should be in every carpenter's tool kit.

P. S. & W. tools are sold by hardware dealers the world over. Look for The MARK of the MAKER and insist upon having it. If you have the least trouble in getting the protection of this trade mark, write us direct.

The Peck, Stow & Wilcox Co.

MFRS. of the Largest Line of Mechanics' Hand Tools Offered by Any Maker

Address Correspondence to 22 Murray St., New York City

ESTABLISHED
1819

FIVE LARGE
FACTORIES



The saw-table attachment is fastened to front side of machine. By means of a sliding yoke and handwheel it adjusts up and down in planed ways; and is held rigidly at any point by a hand screw. The size of table is 12 by 30 inches, planed off true on top, and has a wooden throat-piece inserted. This makes a very convenient arrangement for sawing, or for using groover or dado head. Grooves of any exact depth may be cut. A head 7 inches in diameter will cut grooves from 0 to 1 inch deep. A saw 10 inches in diameter will cut through a piece $2\frac{1}{2}$ inches thick. Machine is not made for larger saws, as the high speed of the machine makes the use of larger saws impractical. Size of mandrel hole in saws is 1 inch. An extension arm is attached to side of the table for holding the ripping fence. This arm can be attached to either side of the table, so that the fence may be used on either the right-hand or left-hand side of the saw. When used on the left side of the saw, the jointer knife is left exposed, so that the saw-table and jointer may be used successively without making any adjustments, as before stated; a valuable feature in actual practice. The fence will open to a distance of 12 inches from saw, a graduation on top of table and arm shows width being ripped. A sliding cut-off gauge is furnished that adjusts to any angle from 45 degrees right to left mitre.

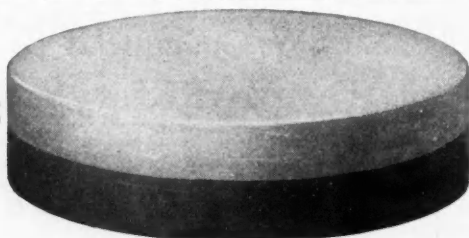
The pole-rounder attachment consists of a sliding yoke fastened to same bracket, and in same manner as the saw-table. It can be used at the same time as the jointer, so that a pole may first be straightened and dressed on the jointer, then, without stopping or changing the machine, it may be run over the rounder to round off the corners. The knives used for this purpose are fastened between grooved collars, same as knives on a regular shaper spindle. The curved supports, or guides, above the knife, are adjustable to suit knives of any radius. They serve to keep the work properly centered over the knives, and will work as well on curved or

tapering stock as on straight stock. The knives, cutting but one corner at a time, are easy to keep in order and easy to set. By using molding knives, or straight knives, the same arrangement will answer for chamfering the corners of square porch columns, or other similar work.

Emery grinder. When the shaper table is removed, a suitable rest is fastened to the pole-rounder yoke, then a small emery wheel is placed on the spindle, thus forming a convenient grinder, for grinding cutters and other light work. Emery wheels larger than 5 inches in diameter should not be used, owing to the high speed of the machine. The speed of the machine as given is, however, correct for this size wheel. The emery grinder is sold only in connection with the pole-rounder, as it cannot be used without the pole-rounder yoke.

The shaper. By removing the curved guides of the pole-rounder, the vertical table may be attached in their place, thus adapting the machine for making edge molding and other similar work. The grooved collars will admit knives of any width up to $2\frac{1}{2}$ inches. The shaper table is 8 by 18 inches, planed off true, and has slotted holes to admit of lateral adjustment. The spindle revolves only in one direction, so that slow feeding is necessary when cutting against the grain. The shaper table is sold only in connection with the pole-rounder, as it is mounted on the regular pole-rounder yoke.

The borer is attached to a bracket at the rear side of machine, where its adjustments need not be disturbed in any way when using the machine for other purposes. The table slides on two steel shafts, with stop-collars to regulate depth of holes. It is made of wood 8 by 24 inches, and has a horizontal travel of 8 inches. The vertical adjustment, by screw and crank, is 5 inches. The yoke slides on planed ways with gib for taking up wear. A self-centering chuck



The New Carborundum Sharpening Stone for Carpenters

It's a combination stone and IT IS ROUND

Its shape and size allow for the rotary motion required in sharpening chisels, planer iron, etc.

With the ordinary rectangular stone a square inch or two is used and the rest scarcely ever touched—

With the round stone all of the cutting surface—twelve inches—enough for the largest tools—is brought into play and there is no unused surface.

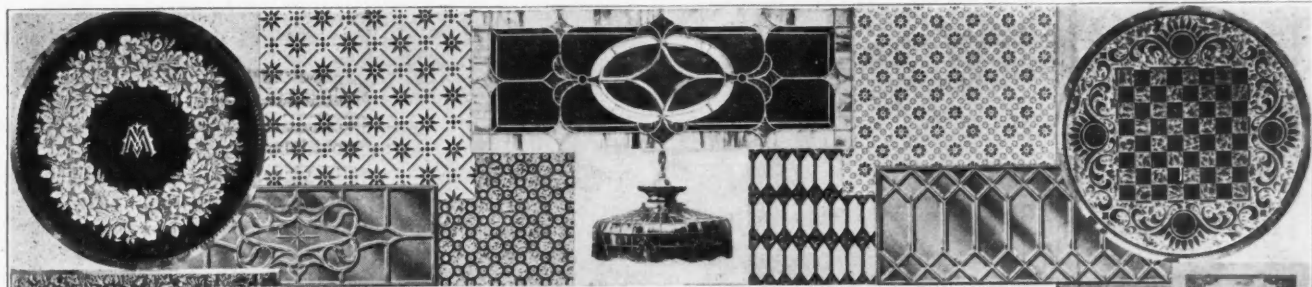
Besides, it has the fast, keen edge producing Carborundum qualities.

PRICE ONE DOLLAR

QUARTERED OAK BOX HOLDER FIFTY CENTS. ASK YOUR DEALER, OR SEND DIRECT TO

THE CARBORUNDUM COMPANY

NIAGARA FALLS, N. Y.



Ornamental Building Glass for Every Purpose

You, Mr. Contractor, will find it to your advantage in every way to use Ornamental Glass made by the Rawson & Evans Co.

You'll have more designs to select from in all kinds of Decorative Glass. You'll be able to satisfy every one for whom you do work.

You'll get every order on time—when you want it. Twenty-six railroad systems with through fast freight connections to every State in the Union, Canada and Mexico assure prompt deliveries and low freight rates.

We make and sell more Ornamental Glass for Residences, Churches, Schools, Public Buildings, Offices and buildings of all kinds than any other manufacturer. We have the largest and most completely equipped factory in the United States for making glass for Front Doors, Transoms, Windows, China Closets, Sideboards, Bookcases, Bathrooms, Lettered Doors, Name Plates, Emblems, etc.

A staff of skilled artists and expert workmen are at your service. You can have special orders executed in the shortest possible time. We will work up your designs or submit designs to you, if you prefer.

We manufacture superior Ornamental Glass of every kind and for every purpose in thousands of designs. We show a few of our patterns on this page and enumerate below several of our products.

- | | | | |
|-------------------|----------------|------------------|----------------|
| Ground Chipped | Etched Beveled | Leaded Art Glass | Glass Signs |
| Embossed | Mirrors | Metal Sash | Name Plates |
| Enameled | Mitered | Art Shades | Lantern Signs |
| Wheel-cut | Colored | Cathedral | Electric Signs |
| Sand Blast | Lettering | Opalescent | Lodge Emblems |
| Geometric Chipped | Acid Stippled | Picture Lights | Checkerboards |
| | | | Table Plaques |

Our Sand Blast Door Lights and Transoms are made by true photographic Art Sand Blast Process. We reproduce on glass, with absolute accuracy, pictures of every description—Landscapes, Portraits, Public Buildings, Masterpieces by famous artists, etc. Our reproductions of rare Lace Designs on Door and Transom Lights are so true as to deceive an expert. All this work is ground into the glass and is as enduring as the glass itself.

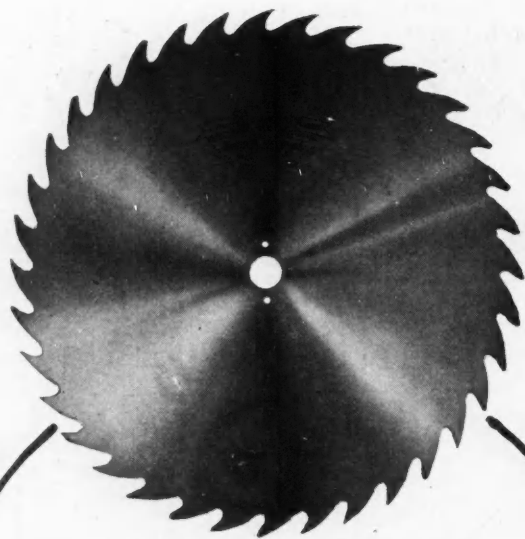
Send us your orders and inquiries for anything you need in Ornamental Building Glass or the other specialties enumerated. We can furnish it, and at a saving to you. An order for a single light has the same prompt attention as one for a carload.

Write today, telling what you want in Ornamental Glass. We will answer by return mail, sending designs, prices and terms.

RAWSON & EVANS CO.

Washington and Union Streets
CHICAGO





SIMONDS SAWS

Why you should buy them

There is only one reason why you should buy one thing rather than another when there is a choice of several kinds.

That reason is the best value for your money.

Simonds Saws will give you full value for every cent you pay for them. That's the way they are made. That's the way they are warranted.

We are not talking about cheap goods—you pay a fair price, but you get what you pay for. They are **Made of Simonds Steel**, the best saw steel in the country. Teeth that hold their cutting edge longer and require less filing than other saws: A blade that saws true. Evenly tempered. Nicely finished. Well fitted, carved and polished apple handles. These are some of the evidences of quality in our saws.

Tell us what saw you want and we will send address of Hardware Dealers near you handling Simonds Saws, and we will also send you a free copy of an interesting booklet, "Simonds Carpenters Guide"

SIMONDS MFG. CO.

Fitchburg, Mass.

Chicago San Francisco
New Orleans Seattle
Portland New York
London, Eng.
Montreal



Look for this trade mark etched on every saw.

for holding the bits is furnished with the machine. Bits not furnished.

Safety guards are furnished with each machine to cover over running parts while such parts are not being used. By the proper use of these guards, the machine is rendered as safe as separate machines would be for doing same class of work. They are quickly set to place, two of them being held by dowel pins and a third one by one cap-screw.

A hold-down spring is furnished for use in the jointer fence for holding down work on the head. It may be used in various ways for special work, being useful when working small stock, such as light moldings, or finished strips.

Combinations. Usually the machine is sold with all the attachments included. But when so desired the boring attachment may be omitted, or the saw-table may be omitted, or the pole-rounder, shaper and grinder may be omitted, and a corresponding allowance will be made in the price. The pole-rounder, grinder and shaper are inseparable, and will not be priced in separate parts, as they all use the same yoke. The saw-table yoke and pole-rounder yoke fit interchangeably into the bracket at side of machine. If either the saw-table or the pole-rounder is omitted when machine is purchased, they may be added at any later time.

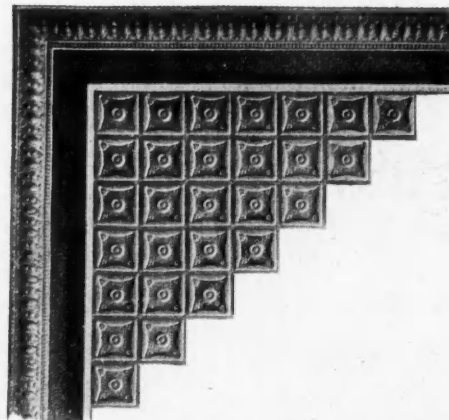
Dimensions given below are for complete machine. If some of the attachments are omitted, it will make a corresponding difference in weight, floor space, etc.

Size of tight and loose pulleys.....	.8 by 3 in.
Speed of countershaft per minute.....	800 rev.
Giving head a speed per minute of.....	3,650 rev.
Width of belt, to head.....	2½ in.
Floor space, over all.....	.58 by 64 in.
Cubic measure, boxed for export.....	.36 ft.
Gross weight, boxed for export.....	1,275 lbs.
Domestic shipping weight.....	1,125 lbs.

A Roof That's Waterproof

Many of our readers are looking for a durable, artistic, and water-tight roof covering. We suggest that they try the Never-leak metallic shingle, which we can recommend very highly.

Take it from us—a roof covered with this shingle cannot leak. The interlocking principle is so complete that for water to get through the shingles is against the law of nature. Water cannot run up hill, yet that's the only way it could enter the "Never Leak" shingles.

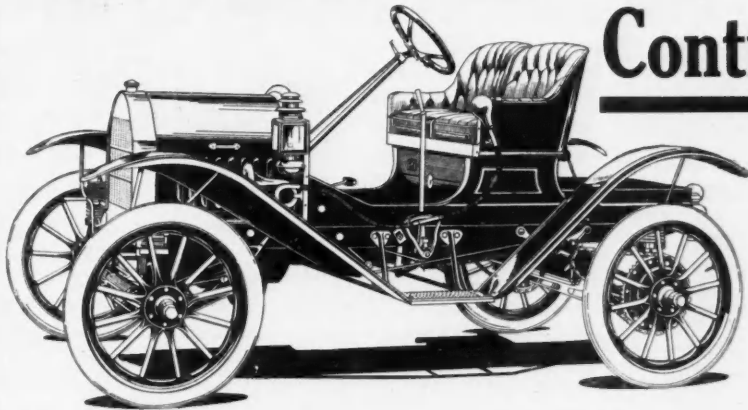


Their fireproof qualities reduce cost of insurance, as they often prevent fire and the spreading of fires. They will not warp, rot, split or absorb water and remain damp.

Any good carpenter or workman who understands the simple rule of applying wood shingles or slate will have no trouble in laying the Never Leak metallic shingle. Requires no solder and only hammer and shears necessary in applying.

Should any of our subscribers contemplate building we be-

The Right Car for the Architect Contractor and Builder



1910 Brush \$485.00

How Often Have You Said—

"When they get a reliable Automobile down to the price of a good horse and buggy, I'll buy one."

Here it is—and not a big, complicated, multi-cylinder car cut down to sell at a low price; not a designer's dream, but a real "Runabout," the only car built in this country that can properly be called by that name.

The **Brush** is the one car that is different and still a proven success.

No automobile of any size or any price adapts itself to so many practical uses for the architect, contractor and builder.

It can be operated more economically than any other automobile. There is nothing to get out of order. No big repair bills are possible.

You can use the **Brush** many times every day for work that ordinarily would require a horse and buggy or a team, with one-half the time usually spent upon visiting the buildings under your supervision, and, further, it will provide you and your entire family a pleasure vehicle in which you can take many trips and go many places you otherwise could not.

The **Brush**, with its frame and axles of oil-treated oak, hickory and maple will stand up under tests more severe than actual use could subject them to.

Its spiral spring suspension is found on no other car and the **Brush** rides easier than any car, big or little, at any price. Its single cylinder, 10-horsepower motor, with its new balanced gear, is quiet and free from all vibration. Speed up to 30 miles an hour is easy, faster if you specify special gearing.

Its brakes are strong enough to literally "stand it on its head." The flat deck in the rear is suitable for carrying heavy loads, and this space can also be used for a double rumble seat, making it a practical four-passenger car.

No car at any price can go so far on one gallon of gasoline. It has shown in tests as high as 41 and a fraction miles per gallon, and its oil consumption is correspondingly small.

Every part of the **Brush** is easily ac-

cessible—no trouble to keep it in perfect order.

cessible—no trouble to keep it in perfect order.

We have hundreds of letters from users in all parts of the country telling us what good service they are getting from **Brush** cars. They tell us no hill is too steep, no road too muddy or sandy to ever worry it.

Mr. C. A. Puariea, Portland, Oregon, writes: "Measured by what it can do and does do in the way of negotiating rough roads and hills with a big load, the **Brush** is the highest power car I ever saw."

Mr. E. C. Peterson, Warsaw, Neb., says: "It runs smoother and rides easier than any car I have ever been in. It is remarkable how little gasoline it takes. I have climbed every hill I have come to."

A **Brush** covered 2036 miles in the last Glidden Tour and finished in good shape at Kansas City. In the "Little Glidden," from Minneapolis to Fargo, N. D., and return, 567 miles, it made a perfect road and mechanical score and won the Gregg Trophy from three 4-cylinder cars.

As a car for business and pleasure, as a car for the architect, contractor and builder, it has no equal. Its price, **\$485.00**, makes it an investment that every architect, contractor and builder should investigate at once.

Write to-day, or, better still, fill out the coupon and let us tell you all about it.

Brush Runabout Company
162 Baltimore Avenue
Detroit, Michigan

The Right Car Because:

Simple
Light
Strong
Handy
Reliable
Economical
Thoroughly
Proven—

There is no limit to its usefulness. Then consider the price, **\$485.00**. It is an investment—not a luxury.

Please Mail This Coupon To-day

A. C. & B.—1
Brush Runabout Company,
Detroit, Mich.

Please send your Brush catalog to

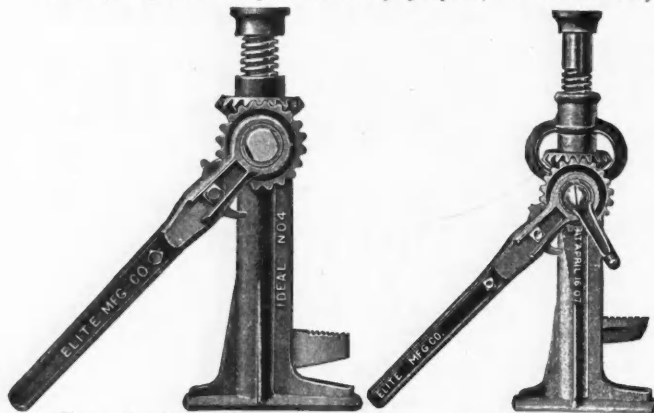
lieve it would be to their interest to write the Tiffin Art Metal Company, of Tiffin, Ohio, who are the manufacturers of the Never Leak shingle.

They also manufacture art metal ceilings, painted and galvanized, corrugated and V-cripped roofings, eaves trough, conductor pipe, etc.

Write for samples of the Never Leak metal shingles, also complete art metal catalogue with net prices.

Lifting Jacks for Contractors

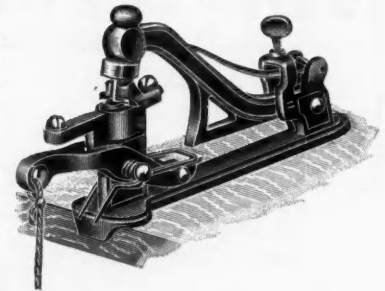
The Elite Manufacturing Company, Ashland, Ohio, have just put out a new line of lifting jacks, especially adapted to the needs of the carpenter and building contractor. This company's line of lifting jacks, varying in sizes from one to ten ton capacity and adapted to every purpose, have been very



well received and have become known as the standard in equipment of this kind. We feel sure that this new special contractor's jack will meet the approval of the reader of the AMERICAN CARPENTER AND BUILDER.

Hammer Saw Set

There have been saw sets almost without number, invented and placed on the market, each one claiming certain advantages over others; some, ease of operation; others speed, while others claim uniformity of set, but in all heretofore manufactured the principle has been about the same, requiring the muscles of the wrist for power, and absolute guesswork as to the degree of set. When we have had occasion to have a saw dressed and desired a particularly good job by a professional saw dresser, we noticed that he would invariably resort to a little block of steel with a bevel filed in it, and his steel punch and hammer. By this means he could get a hammer set at the end of the tooth and do a better job than he could in any other way.



It is a recognized fact that the "hammer" set is the only correct method of setting a saw and we find that first-class mechanics will have this kind of work even though they have to resort to the crude method above mentioned.

This fact led the Buckeye Saw Vise Company, 2044-50 West 55th street, Cleveland, Ohio, to devise and place on the market the hammer saw set, which embodies all the features of ease of operation, speed and positive uniformity of set, and which will set a saw from the finest to the coarsest gauge, three times quicker, three times easier, and exactly right, as the hammer strikes every tooth with the same force.

This machine will give as good results when operated by a

TO OWNERS AND ARCHITECTS

Owners, architects and plumbers should investigate the many advantages of the Peerless Kitchen Boiler, the simplest, safest, cleanest, most economical system of hot water supply yet perfected.

The Peerless contains "the best of all the rest," and several exclusive features that make it unequalled for all hot water needs in flats, homes, bungalows, hotels, clubs, restaurants, laundries, etc. Thousands of modern, up-to-date structures all over the country are now equipped with the Peerless, which is giving perfect satisfaction to owners and tenants wherever it has been installed. The Peerless Heater is guaranteed three years. See Wolf's Catalogue H—pages 150 and 151.

PEERLESS KITCHEN BOILER

contains no coils nor "dead arms." This gives it big advantage—first, because it takes considerable fire to heat the coils—and second, sediment from the water in the coils blocks the flow and makes the water impure—third, in the Peerless the hot water is separated from the cold water, as it goes down cold from the water-main and comes up hot, saving from 40 per cent to 60 per cent in gas.

REQUIRES NO OUTSIDE HEAT

The Peerless is a self-contained heater, 98 per cent of the heat it generates goes directly into the water. Always clean, pure and sanitary because the water never stands, but is heated fresh as it comes without interruption to the flow. The Peerless is the only water heater with a circulating system—noiseless, odorless, no dirt, soot or waste.

THE PEERLESS WAY AVOIDS DELAY

The Peerless Kitchen Boiler provides an unfailing, unlimited volume of fresh water, heated to 185 degrees, ready day or night.

The installation of the Peerless is the same as with the old-style boiler. Connection with the nearest small gas pipe is sufficient—no extra pipes to be put in, nor is connection with an extra water motor necessary. The Peerless makes you absolutely independent of any other hot-water fixtures in the building. They may all go wrong, but the Peerless never fails. Burns natural and artificial gas or gasoline.

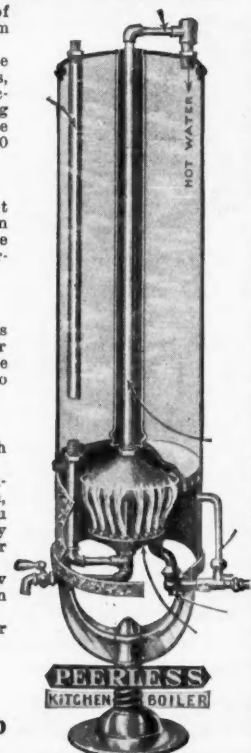
The flame does not come in contact with the bottom of the boiler, but a hollow disk is so arranged that the water circulates through the disk and is heated in circulating.

The Peerless will be demonstrated in a working exhibit in New York, December 14th-21st inclusive, at the Madison Square Garden, Booth No. 144.

Send for illustrated book free, fully describing the Peerless Kitchen Boiler.

Department A

Peerless Heater Co., 39 State Street, Chicago



DRAW GOOD PLANS AND DRAW GOOD MONEY

WITHOUT DOUBT many readers have in the past wished to be successful, first-class Draftsmen and Designers, and probably often looked for a long time at plans and drawings, trying very hard to figure out certain lines, or experienced an intense desire to be able to do the best work in most up-to-date manner; and many men in most any kind of business, especially in Architectural lines, have often felt greatly embarrassed simply because unable to read even a simple sketch or unable to make any kind of businesslike drawing.

No Carpenter is first-class and competent unless he is an A-1 Draftsman in addition. Without this knowledge he can never rise any higher and will remain only a Carpenter paid by the hour or day.

To become a successful Draftsman it is necessary, first of all, to receive

the most practical and personal training. Not a lot of school or book knowledge, but practical Drafting room work.

Mr. F. V. Dobe, Chief Draftsman of the Engineers Equipment Company (Inc.), Chicago, has for many years made a practice of giving personal and individual Drafting instruction in complete Architectural Drawing and Building design; and is prepared to accept a few more personal students, young or old.

His instruction is given by mail, but must not be compared with ordinary "for all alike" correspondence school lessons, as all the work is laid out personally by himself and prepared especially for your individual requirements and advancement. He treats each student according to the student's ability; and with his individual practical method, which consists of actual Architects' work.

Good Draftsmen in Demand

JUDGING by the manner in which many carpenters and contractors are getting in communication with Mr. F. V. Dobe, of the Engineers' Equipment Company, and signing up for his personal instructions in architectural draftsmanship, they are realizing the necessity and pleasure of making more money. The opportunities offered today for ambitious, wide awake and progressive men capable of making from \$25.00 to \$75.00 per week as architectural draftsmen are better than ever. The immense amount of building which is going on and



the increasing demand for more and larger structures, gives the man with actual drafting-room experience splendid opportunities for steady employment at high wages, besides the chance for advancement. There is no class of men who make better architectural draftsmen than the carpenter and contractor.

The experience gained by actual work on all kinds of buildings makes it much easier in studying and also in holding a responsible position afterwards. No employer cares for diplomas—neither does he care or will pay big wages to just a mere copier. What the employer wants today is originality and practical ability, and this requires practical training. The quickest and best way to be trained on

practical drafting-room work and to get the required practical experience is to receive personal and individual instruction from a high-grade practical man at the trade, with a reputation as the most experienced man in training men to become competent and successful draftsmen.

An ordinary draftsman, not even the best draftsman, can teach this trade unless he has had many years of experience as an instructor, and has ability to impart knowledge that is understood and will stick forever—a special gift that 99 out of 100 do not have.

Mr. F. V. Dobe, chief draftsman of the Engineers' Equipment Company (Inc.), Chicago, with twenty years' experience in training and handling men, has for a good many years given personal individual instruction by mail with the most deserving success, because his instruction work consists of actual drafting-room work that gives his personal student and apprentice the required practical experience.

Mr. Dobe has been an advertiser in this paper for a good many years and will send his "Successful Draftsmanship" prospectus, 6 by 9, also list of open draftsman positions, and full information free. His advertisement appears on page 555 of this paper. Anyone interested should write to him.



This outfit, value \$13.85, furnished free by Mr. Dobe to his students

novice as by an experienced operator. There are a number of places of adjustment and an inexperienced operator can set a saw just as perfect as when it first came from the factory.

The method of operation is so simple that it is almost explained by the illustration. All mechanics should write the Buckeye people at once for full information and prices of this hammer saw set.

How to Put Up the "Ideal" Eaves Trough

The "trough with the lid" has aroused a good deal of favorable comment of late in the building world; and a few notes concerning the method of erecting them may be of interest. These directions are furnished by the makers of this "Ideal" eaves trough, the Cassens Manufacturing Company, Edwardsville, Ill.

Fasten front end of brace in trough by using ordinary rivets. Hold brace sideways while riveting, and no special tools will be needed. Turn in place by hand or with a pair of pliers after riveting. It is not necessary to rivet back of brace. Drive a nail through either one or both holes in back of brace when nailing trough to fascia. As no leaves and other trash can accumulate in the Ideal, it requires less pitch than an open gutter; about one-half to one inch on ten feet is sufficient, and even less. After trough is nailed to building, put on the covers, which come in five-foot sections. Lap them about one-half inch. They lock automatically and require no soldering.

Should there be a moulding on cornice, this may be removed, or small blocks cut off a 2 by 4 pine may be nailed

to corner at intervals, with the braces in trough, i. e., every two feet apart. If fascia is cut square with rafter, use blocks, and if this style of fascia also has a moulding, attach blocks, or remove moulding and attach.

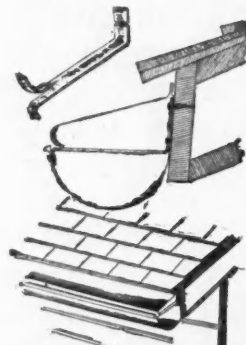
If it is inconvenient to use blocks, a wire hanger is furnished so that the Ideal can be hung the same as an open gutter. For this, fasten front end of brace as usual and also rivet back of brace; solder gutter and put on lid before erecting. Take a six or eight-penny nail, punch hole in back of trough, place hanger sideways, enter end of stay wire in hole-punched, hook-curved end under brace, and your gutter is ready to hang.

With a little practice the "trough with the lid" may be erected very easily; besides, a rigid and neat looking job will be had.

The Cassens Manufacturing Company, Edwardsville, Ill., will be pleased to send full information with net prices to interested parties.

A New Wood Polishing Machine

The H. B. Smith Machine Company, Smithville, N. J., have perfected and placed on the market a new style of triple drum sander in which the feed is that of an endless bed, faced with rubber, and the polishing drums are placed over the work. From this arrangement many valuable advantages are said to be obtained as compared with roller-feeding machines. That is to say the principle involved enables the operator to do a better class of work, and owing to the yielding feed-bed he can do from 200 to 600 per cent more work than possible on the best roller feeding sanders. The new sander will polish as many pieces as can be laid side by side on the feed-bed even if narrow, short and of slightly different thicknesses, hence the greater capacity referred to above. The machine is substantially and durably constructed and may be



CASSENS IDEAL EAVES TROUGH
SACRAMENTO, CALIFORNIA

Handy Lamp

GASOLINE LIGHTING SYSTEM

The Latest and Greatest Invention since the Introduction of Gasoline Lighting

A 300 or 600 Candle Power Shadowless Light that can be turned up and down same as gas or electricity. Just push the lever and down comes a flood of dazzling 300 or 600 candle power light; pull the lever back again and down goes the light to one candle power that can be left burning day and night, and will burn 400 to 500 hours on one gallon of gasoline and can be turned up instantly to 300 to 600 candle power, which will last 30 to 50 hours on a gallon of gasoline, and longer if the light is turned lower.



It will save five times its cost over gas, kerosene or electricity and will flood a 30-foot room with light as brilliant as day at less than one-half cent an hour.

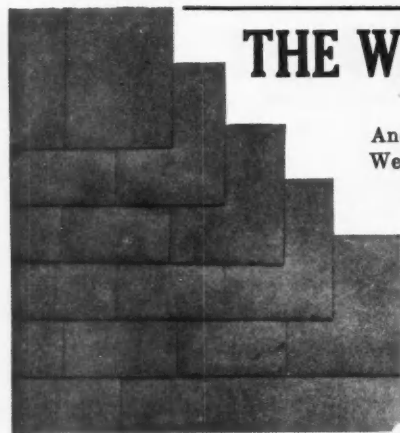
It is handsome and attractively made in single and double burners, suitable for Home, Store, Church, Factory or wherever strong, powerful, simple and absolutely safe light is desired. Other lamps may look well at the outset, but there is no other inverted lamp or system that will give the service or satisfaction as the Handy Lamp. Write Desk 20 for A, C, B Catalog.



BRILLIANT GAS LAMP CO.

42 State Street

CHICAGO, U. S. A.



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.

WINTHROP ASPHALT SHINGLE CO. 1101 1/2 The Temple CHICAGO, ILL.



**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

Commonwealth Hotel

OPPOSITE STATE HOUSE, BOSTON, MASS.



Offers rooms with hot and cold water for \$1.00 per day and up, which includes free use of public shower baths.

Nothing To Equal This in New England

Rooms with private baths for \$1.50 per day and up. Suites of two rooms and bath for \$4.00 per day and up. Dining Room and Cafe First-Class. European Plan.

Absolutely Fireproof

Stone floors, nothing wood but the doors. Equipped with its own Sanitary Vacuum Cleaning Plant.

Long Distance Telephone in Every Room

Strictly a Temperance Hotel

SEND FOR BOOKLET

STORER F. CRAFTS, Prop.

**BRIDGEPORT
STANDARD
WOOD FINISHES**

Beauty

in wood work is Nature's artistic markings of the grain. One of the prime objects in wood finishing is to emphasize Nature.

Yet some wood finishes apparently are merely made to cover woodwork—with no consideration for the grain, no thought of its BEAUTY.

Those are the sort you want to avoid. To be sure of avoiding them, specify

**Bridgeport Standard
Wood Finishes**

The Bridgeport Standard Wood Finishes are transparent wood finishes that develop Nature's artistic markings of the grain and never raise, obscure or cloud it.

They insure permanence to the BEAUTY of the woodwork because they give a tough, elastic finish that stands the test of time without fading, rubbing off, or "showing white."

Men who know wood finishes and wood finishing prefer them to all others. They are practical, easy to apply, economical and always of uniform best quality.

Architects specify them. Furniture, piano and car-building concerns use them, wherever BEAUTY and DURABILITY are desired. If you want to know how Bridgeport Standard Wood Finishes develop the natural beauty of the wood,

Write for Sample Panels

We will be very glad to mail you on request a neat case of sample panels showing numerous wood finishes in new and staple effects. You will find them useful and practical.

Address Dept. L3

THE BRIDGEPORT CO.

NEW MILFORD, CONN.

NEW YORK.

CHICAGO.

BOSTON.

Porcelite

Results Count

WE HAVE 20 YEARS' RECORD
OF SATISFIED CUSTOMERS

Admit No Superior for
ENAMEL FINISHES on
Cement, Metal
Ceilings, Wood,
Plaster, Brick, Etc.

Exterior or Interior
HIGH GLOSS - DULL
FINISH - EGG SHELL

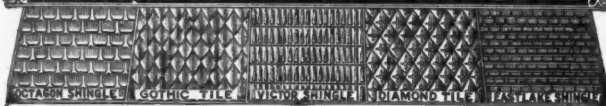
An Enamel and Undercoat for Every Purpose

Is Made By

The Thomson Wood Finishing Co.
PHILADELPHIA, PENNSYLVANIA

Enamels

MONTROSS METAL SHINGLES



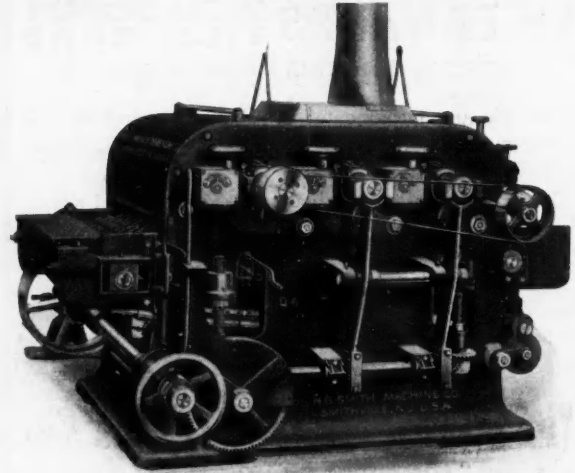
CARPENTERS and Builders who want more business and increased profits should lay MONTROSS METAL SHINGLES. They make pleased customers, who speak well of your work, and greatly helps you to get new business. They are no experiment; we have manufactured them over twenty years, and they are giving complete satisfaction on the buildings where they were first laid. MONTROSS METAL SHINGLES are easily and quickly laid, and are Fire, Storm and Lightning-proof. Ornamental and Inexpensive. Embossed, then galvanized or painted. Lighter than slate, and outlast wood shingles and other roofings. They do away with roofing troubles of all kinds. Write today for catalog, giving prices, discounts, testimonials, many illustrations, and full information why it is better to lay a MONTROSS METAL SHINGLE roof than any other kind.
Address 102 Erie Street.

MONTROSS METAL SHINGLE CO. CAMDEN, NEW JERSEY

described as follows:

The frame is of box form and therefore very rigid. It consists of a deep-section baseplate upon which are mounted the sides and solid top cross-girts carrying the platens and supporting the hood, all being firmly bolted together.

The endless-bed feed is composed of steel lags joined together by chains which are constructed in such a manner that the pins do not move in the links, hence no wear, and the bearings in the lugs are made extra long and self-lubricating so as to require attention only about once a month. The feed-bed as a whole is drawn by gear-cut sprockets over replaceable ways which are provided with mechanical lubrication, hence we are assured of easy running qualities and



great durability. The feed-bed and ways are mounted on four stiff springs which in addition to the rubber pads serve to hold the materials to the platens while being polished. It adjusts up and down by power to take in as thick as 6 inches and provision is made so that the bed cannot run into the polishing drums. The feed is about 12 feet per minute.

A patent revolving brush beneath keeps the rubber bed clean, thereby increasing its tractive force and insuring a positive feed so that all pieces both large and small will pass through the machine without stoppage or hesitation. Therefore the supplemental feed rolls heretofore recommended are not now needed and would be in the way.

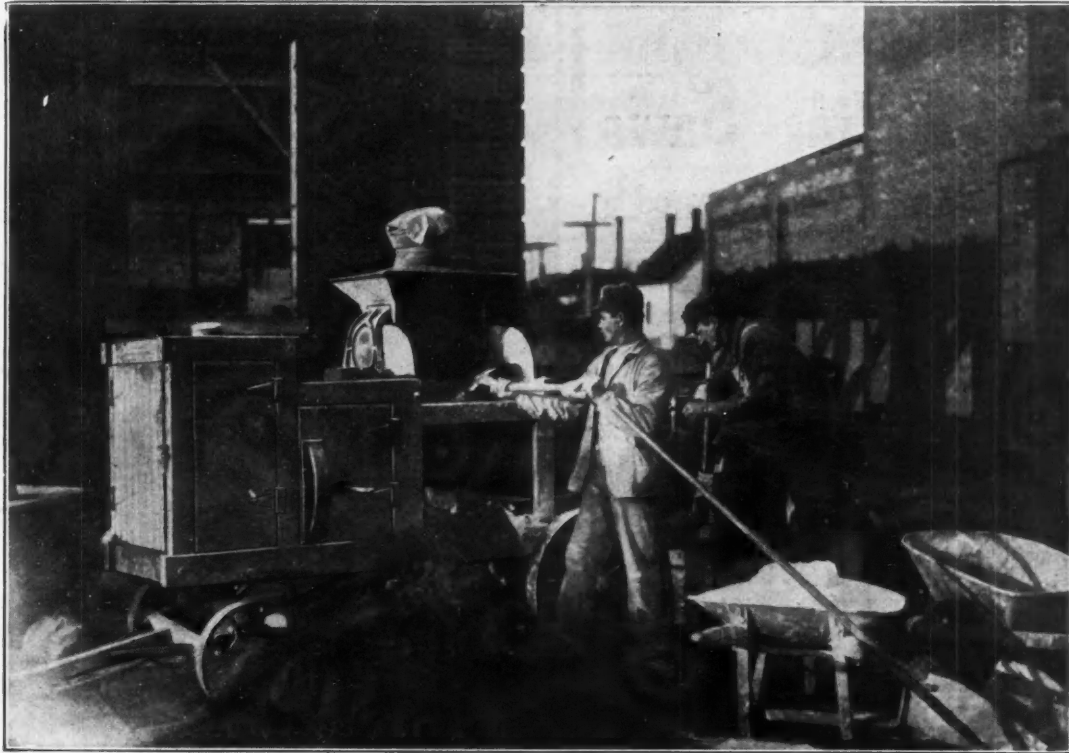
The sand polishing drums are over the work and by their action assist a second rotary brush in lifting the dust into an improved hood over-head, whence it is withdrawn by the usual exhaust fans, hence the working parts are always clean. We preferably oscillate the second and third drums so as to balance one another and it allows the first drum to have its own free oscillation so as to cut more freely. These drums are adjustable for alignment to the platens and have indices to indicate the amount of contact.

The automatic take-up on these drums is patented and is a valuable improvement. The clamping jaws hold the paper so that it cannot come off and are arranged to automatically take up all slack due to heat or moisture; hence after the paper is put on it requires no further attention until worn out ready to come off, when it can easily be replaced by simply removing the hood which exposes all of the drums to ready access. These automatic drums handle paper very economically because every particle of it can be used up before necessary to remove.

The idlers to the drum-belt are now mounted on a frame so as to adjust up or down to keep the drum-belt taut. This adjustable belt-binder feature is applicable to any size or style of machine whether belted from above, below or on the floor.

These improved sand polishing machines are made in three

One Coltrin Mixer and 2 Men Equal 20 Masons



No. 9 on "Allyne Brass Foundry Co.'s" Plant, Chene Street, Detroit, Michigan.
Two Men Mixing all the Mortar for Twenty Bricklayers.

TAYLOR & WINN CONSTRUCTION COMPANY
Contractors and Builders
201-202 Massachusetts Building

Messrs. A. H. Dunn & Co.,
Kansas City, Mo.

Kansas City, Mo., November 29, 1909.

Dear Sirs:—It was with much doubt we tried your Coltrin Concrete Mixer on lime and cement mortar. However, we are glad to admit that your contentions were right and the machine is doing splendid work.

On the Hellmers building at Leavenworth, Kans., we are working from twelve to twenty masons, and two men are mixing all the mortar on the Coltrin. Call on us any time for further endorsements. We would not be without a Coltrin for twice the amount they cost.

Respectfully yours,

TAYLOR & WINN CONSTRUCTION CO.,
Per E. L. Winn, Pres.

The Coltrin Concrete and Mortar Mixers

Manufactured Exclusively by

THE KNICKERBOCKER CO.,

Jackson, Michigan

See Coltrin Mixers at Cement Show—Coliseum—Sections 38 - 39

Which wrist will do the most work?



Why Atkins Saws Save Time and Strength

Why be content with an old-style saw when the Atkins offers you so many improvements! Try one at our risk!

The Atkins "Perfection Handle" gives the wrist an easy, natural position—lets it work without cramp or strain.

Until you try it, you've no idea what a difference this makes in a big day's work.

Use this Perfection Handle for a day or so, get accustomed to it, and you would never part with it.

However, you can buy an Atkins Saw with the old-style handle, if you prefer.

Atkins Saws Cut Fast and Easy

Made of Atkins "Silver Steel"—our secret formula. Better steel than you'll find in most razors. Light, strong and rigid. Holds its edge three to four times as long as any other saw.

The Atkins blade is not merely beveled along the back, but tapers **all the way** from tooth-edge to back. The tooth-edge needs very little set, because the rest of the blade is ground thinner than the teeth.

Wherever the teeth go, the rest of the blade follows without a struggle. No binding! No buckling!

The easiest running, fastest cutting saw you ever touched!

Try It, Under This Offer:

Buy an Atkins "Silver Steel" Saw. If it isn't exactly what we claim, if it isn't the best saw you ever put through a board, simply take it back to your dealer and your money will be refunded.

We're glad to protect you fully in this way. If you have never used an Atkins Saw, try one *entirely at our risk*.

But be sure the blade bears our name and says "Silver Steel"—that's our best saw.

FREE To Carpenters

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

Address Carpenter's Department

E. C. ATKINS & CO., Inc.
INDIANAPOLIS, IND.

Largest Exclusive Saw Manufacturers in the World.

sizes as stated in the condensed information below.

DATA AS TO WEIGHT, FLOOR SPACE, POWER, Etc.

Size	Weight in Pounds	Floor Space Required	Size of T. & L. Pulleys	Speed of C. S.	Average H. P.
30 in. wide	9000	6 by 8 ft.	14 by 10 in.	400 revs.	12 to 15.
42 in. wide	10670	6 by 9 ft.	16 by 10 in.	400 revs.	15 to 20.
48 in. wide	11500	6 by 10 ft.	16 by 10 in.	400 revs.	15 to 25.

Prompt Sheet Metal Work

The Illinois Metal Ceiling and Supply Company, 23 Lake street, Chicago, Ill., are now equipped to handle very promptly all kinds of galvanized iron work, both regular and special. Their line includes metal ceilings and side walls, metal hip shingles, crestings, skylights, cornices, galvanized roof gutters, ridge rolls, valley tins, galvanized quarter circles, ogee and box gutters, metal window caps, scuttles, skylights, etc.

Their business is very extensive along these lines and all their customers, without exception, seem to be very well pleased.

They are prepared to make estimates on short notice at any time. You will be interested in their complete catalogue—which they are now sending out on request.

Brilliant Gas Lamp Company

Every reader of the AMERICAN CARPENTER AND BUILDER will find it to his advantage, when making a study of modern lighting, to write

the Brilliant Gas Lamp Company, Chicago, Ill., requesting their 12th annual catalog, "A Story of Progress in Gasoline Lighting." They will find it brim full of up-to-date and authentic information on gasoline lamps.

From this book it seems that the "Brilliant" is the lamp for everybody.

Any one can use it, without fuss or worry, and nothing less than downright abuse or tampering will get it out of order. No matter where you live, be it farm, ranch or mountain village, it will pay you to use the "Brilliant" lamp and save money over kerosene, gas, electricity or any other light you may now be using. Not only that, but your home or shop will be as brightly lighted as the palace of a millionaire, or the store of a merchant prince. None of them will have any advantage over you, so far as light goes, if you use the "Brilliant" lamp, and your light bills will be less than half what theirs are. To be explicit, a "Brilliant" lamp, on one gallon of gasoline at about 15 cents, will burn about sixty-five hours and produce more actual candle-power hours of light than five gallons of kerosene, no matter how you burn it.

The people who promoted the "Brilliant" lamp, under the original patents, are the people who sell it to-day, and more "Brilliant" are said to be now in use than all other makes combined.

When several lamps are to be operated, nothing approaches in convenience and utility, the hollow-wire system, which takes its supply from a main gasoline tank (under low pressure) and sends it up and down, around corners, anywhere you want it, with the utmost ease and flexibility.

The "handy-lamp" and "climax" hollow-wire systems are both perfect in every detail, choice between the two being mainly a matter of style and requirement. Their installation



We Save You Money on Lumber

Millwork and Building Materials

No concern on earth can make you such low prices as we do.
We buy brand-new stocks, often at less than maker's cost

Sheriffs', Receivers' and Manufacturers' Sales

Our stock is ever changing, so always keep in touch with us
and send us your Lumber and Millwork bill for our estimate.



BUILT-UP COLONIAL COLUMNS

No. 1 Quality Fir with Cap and Base

LOT 10-S-1.

6-in. diam., 6 ft. long at.....	\$1.19
6-in. diam., 8 ft. long at.....	1.30
6-in. diam., 9 ft. long at.....	1.46
8-in. diam., 8 ft. long at.....	1.66
8-in. diam., 9 ft. long at.....	1.84
10-in. diam., 8 ft. long at.....	2.20
10-in. diam., 9 ft. long at.....	2.44
12-in. diam., 8 ft. long at.....	3.67
12-in. diam., 9 ft. long at.....	3.92



SOLID TURNED CLEAR CALIFORNIA REDWOOD COLUMNS

LOT 10-S-2.

4x4x8 ft. long at 55c each
5x5x8 ft. long at 86c each
5x5x9 ft. long at 99c each

BALUSTERS.

Clear Fir—Turned.
Lots 10-S-3, 10-S-4.

1 1/4 x 1 1/4 x 20 in.

1 1/4 x 1 1/4 x 24 in.

At \$3.38 per 100.

Orders accepted for any items advertised on this page.



CLEAR CALIFORNIA REDWOOD BALUSTER STOCK

LOT 10-S-5.

1 1/2 x 1 1/2, 75c... per 100 lin. ft.
1 1/2 x 1 1/2, \$1.94... per 100 lin. ft.



LOT 10-6—1 1/2 x 2 1/2 top rail @ \$2.75 per 100 lin. ft.



LOT 10-7—1 1/2 x 2 1/2 bott. rail @ \$2.75 per 100 lin. ft.



LOT 10-8—2 1/2 x 3 1/2 column rail @ \$4.12 per 100 lin. ft.

PORCH LUMBER

1/2 x 3 1/2" face clear fir flooring @.....\$32.00 per M

No. 1 Y. P. Ceiling, D. M. & Beaded....\$18.50 per M

COMPARE OUR PRICES WITH OTHERS AND NOTE SAVING ON GUARANTEED QUALITIES

SHEATHING AND SHIPLAP.

No. 1.—4-in. Hemlock, S-1-S.....	\$13.50
No. 1.—5-in. White Pine, S-2-S.....	22.00
No. 2.—8-in. White Pine Shiplap.....	22.00

FLOORING.

Clear 4-in. Y. P. Flooring.....	\$25.00
Quarter-sawed 4-in. Y. P. Flooring.....	28.50
No. 1.—6-in. Y. P. Flooring.....	21.00

BEVELED SIDING

"C" and Better 4-in. W. P. Bevel Siding.....	\$22.00
"D" Select 4-in. W. P. Bevel Siding.....	13.50
"B" and Better 6-in. Red Cedar Bevel Siding.....	20.00

SHINGLES AND LATH

Red Cedar 5/2-16 8-in. Clear Butt.....	\$2.75
White Cedar 5/2-16 Best Quality.....	3.25
No. 1 White Pine 32-in. Lath.....	1.75



\$720 Buys The Material To Build \$650 These Houses

HOUSE DESIGN No. 130.
Here is a handsome eight-room house. Size 25 ft. 20 in. by 29 ft. 6 in. Large front porch. Reception hall, living-room, dining-room and pantry on first floor. Front and rear vestibules. Second floor, four good sized bedrooms, bathroom, closet in each room. A modern plan. Can be built at a minimum cost.

HOUSE DESIGN No. 6.
This is our leader. The best seller of any house ever designed anywhere by anybody, at any price. Why? Because it comes nearer filling all requirements than any house of its size ever built. It is 23 ft. wide by 33 ft. 3 in. long. It has 7 rooms and bath, pantry and large front porch. A perfect home.



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Our Mammoth Catalog is the greatest price maker ever produced. A book of 500 pages, profusely illustrated, showing over 50,000 bargains in everything that a Carpenter, Contractor or Builder buys or needs. This book should be in your hands and while it costs us \$1.00 to produce, we will send it to you free for the asking. Tear out coupon, mail it today and this book will be sent you immediately.

Our Book of Plans is the handsomest illustrated book of designs ever produced. A thoroughly practical work of art, produced by the best architects. It contains reproductions of photos and is true to life in every way. Explains in detail our wonderful building offer which will interest every carpenter, contractor and builder, and this book is a great business getter for you. Sent you absolutely free, and you should write for a copy today.



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A \$75,000 Course of Home Training in Architecture

The truly ideal method of instruction is the knowledge and experience of the very best experts combined into a course of instruction and taught in a way most easy to understand, remember, and apply to practical problems. The training that most nearly meets these qualifications is that provided by the International Correspondence Schools, of Scranton, Pa. At a cost of over \$75,000 there has been prepared a complete Course in Architecture, written by the very best experts that could be obtained and taught after a manner that 18 years of experience with the most practical correspondence method of instruction in the world has proved to be thoroughly efficient and practical. The experience in training thousands of men and women has proved that it is as possible for a man to become a proficient architect through this method of study as with any other known. To quote from an editorial in the Architectural Annual: "A college education is by no means necessary for it will be remembered that at the first Civil Service examination for positions at Washington it was not a college graduate or *beaux arts* man (though many of each class competed) that passed the highest examination, but a student of the International Correspondence Schools, of Scranton, Pa." The I. C. S. Complete Architectural Course contains nearly 6,000 pages of text and over 3,500 illustrations. It has enabled hundreds of ambitious young men to secure responsible positions in this field of work and has been of much assistance to those already holding the higher positions. Full description, terms, etc. sent free upon request. Mark and mail the coupon today.



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Architect	Estimating Clerk	Foreman Mach't
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Struct'l Draftsman	Mechan'l Drafts'n	Stenographer
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Supt. of Plumbing	Electrical Engineer	Window Trimmer
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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

is equivalent to a private gas plant in efficiency. They are adapted to any home or business lighting requirements, and produce an abundance of the most beautiful, clear white light at a cost far below what the same volume of light would cost from kerosene, gas or electric current.

Some idea of their lighting power may be had from the fact that 1 gallon of common stove gasoline yields, through these systems, from 200 to 500 candlepower for a 30 to 50 hour period. It doesn't take but a few months at this rate of economizing to pay the entire cost of system installation.

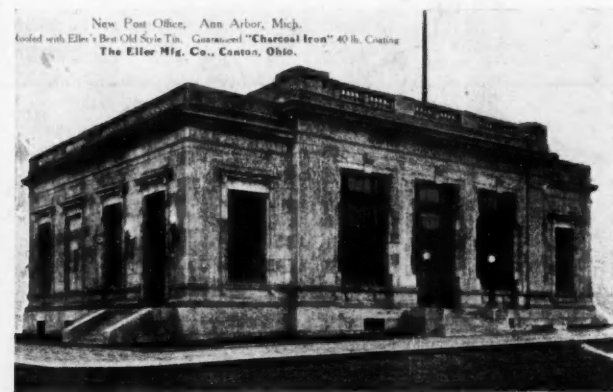
The "Climax" is said to be one of the best lamps of its type for system lighting, in fact it might properly be claimed to symbolize the hollow-wire idea, because so many "Climax" lamps have been so long in use that people can hardly think of a wire system without thinking of "Climax," the original system lamp. Genuine "Climax" lamps, operating on system wires, are in successful use not only in remote parts of the country, but in many thriving towns where their economy over city gas and other forms of lighting has been appreciated.

The "Handy Lamp" is the highest achievement of inventive skill in system gasoline lighting. It is an inverted lamp, throwing an enormous flood of light directly downward without any shadows to dwarf its power, and having a simple lever or key whereby the light may be turned up or down, high or low, with all the ease and certainty of a city gas jet.

Any number of them up to the tank's capacity may be connected with the same wire, and burned absolutely independent of each other—some high, some low, all high or all low—any way you want them, and the various types of the lamp whether indoor or outdoor, can be burned simultaneously and can be connected with any existing hollow-wire system using 20 to 30 pounds pressure or systems that have been discarded can be utilized and made better than new by connecting the "Handy Lamp."

"Eller's Best Old Style" Used

The accompanying photograph is of the new post office at Ann Arbor, Mich. This postoffice was roofed with the Eller



Manufacturing Company's 40-pound charcoal iron tin which is sold under the brand of Eller's Best Old Style. The fitness of this kind of roof for a beautiful, permanent building of this kind is apparent.

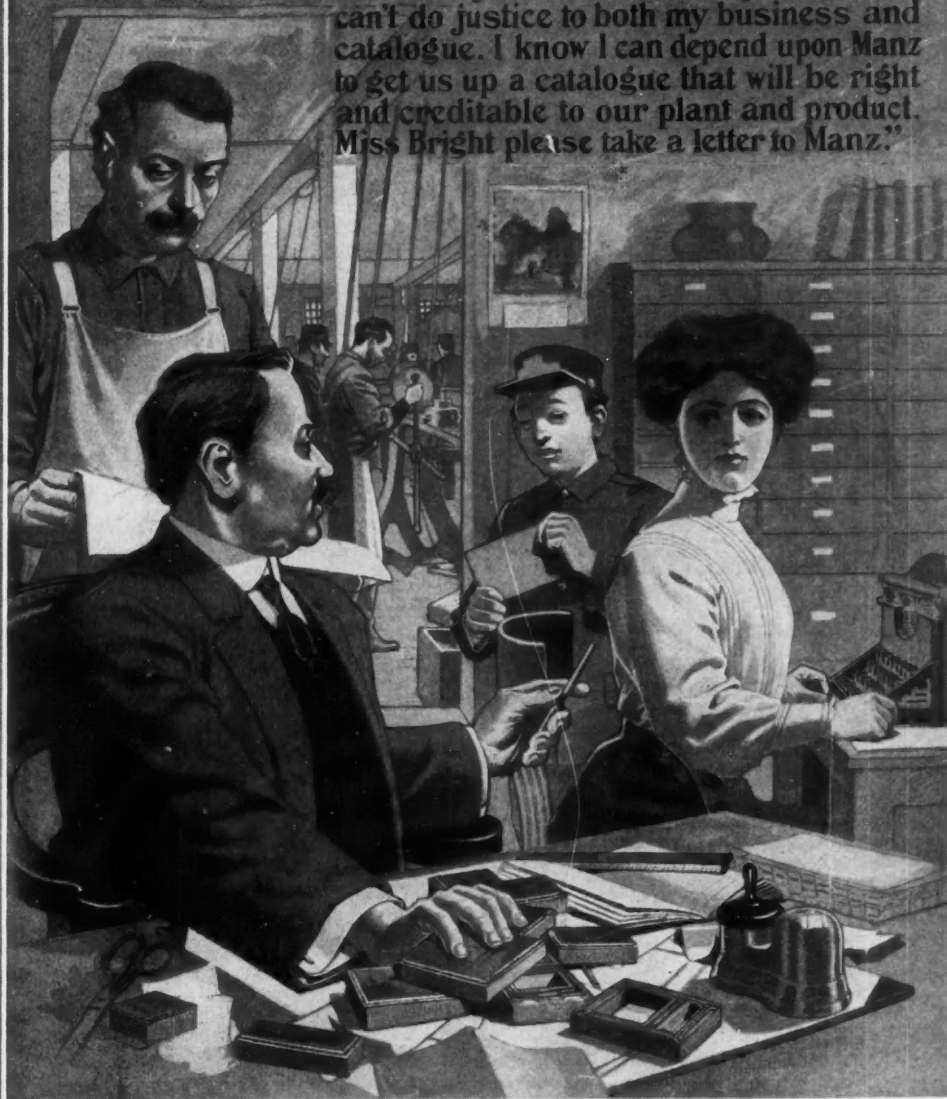
A Fine Xmas or New Year's Present

It sometimes pays to make one's self a handsome present, especially if you are a builder and place that present where all your neighbors will see it. If it is something fine and new in the building line, it's a cinch some friend will want one just like it.

Being in the building business yourself and in close touch with the manufacturers, you get wholesale prices. If you take the trouble to show your friends something new and they want you to order it for them and see that it is properly placed in their home you are entitled to make a little profit for

WRITE TO MANZ

"Here - Pack up all these cuts and this copy and send them to Manz at once. With the necessary business interruptions here I can't do justice to both my business and catalogue. I know I can depend upon Manz to get us up a catalogue that will be right and creditable to our plant and product. Miss Bright please take a letter to Manz."



MANZ ENGRAVING COMPANY, CHICAGO.



Granite
TRADE MARK
ROOFING
Penn. R. R. Station
Washington

Good Material and Plenty of It

Many ready roofings are made of flimsy, light-weight paper, scantily coated, which last only a year or two.

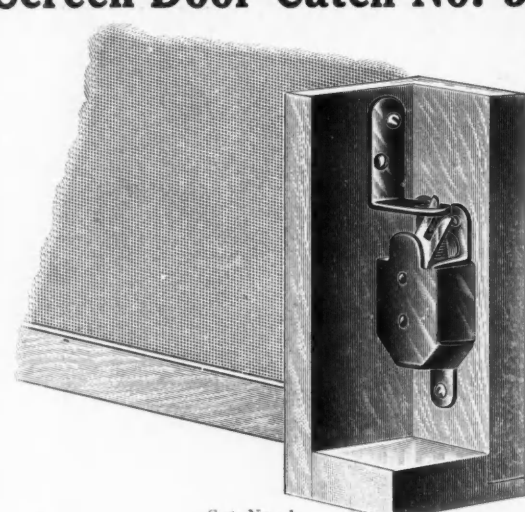
Granite Roofing does not belong in that class. Good materials and plenty of them are used in making it. There is nothing flimsy or fragile about *Granite Roofing*. It has a heavy sea-grit surface, which takes the place of the usual coat of paint, and wears indefinitely.

Other roofings require coating with some special compound every year or two, but *Granite Roofing* never requires any coating. After the roof is laid, it will take care of itself.

A Free Sample will be sent "for the asking." You will be astonished to see how heavy, firm and durable a ready roofing can be made.

EASTERN GRANITE ROOFING CO.
1 Hudson Street, NEW YORK.
CHICAGO ST. LOUIS

DIEHL'S
Screen Door Catch No. 51



Cut No. 1

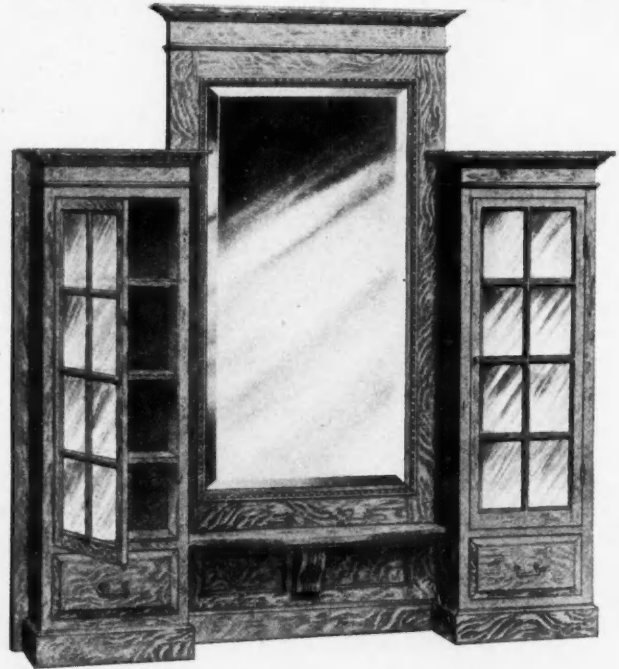
Cut No. 1 shows the Catch in position on door. The Catch is placed on the jam of the door, always right side up on either side of the door, whether right or left. Place the angle iron on door so that the loop will engage in the forks of the catch.

DIEHL NOVELTY CO.
SHEBOYGAN, WIS.

your work. So if you like the looks of the illustration in this article, drop the Chicago Grille Works Company, 826-838 Wells street, Chicago, a line for description and prices on their new combination console and parlor library cabinet.

This is a piece of work for interior decoration which is entirely new. It is something which the manufacturers believe will be liked at once, and very much so, in flat buildings, where tenants are not always supplied with book cases.

The console frame stands 7 feet 2 inches high. The mirror is 30 by 56 inches. The cabinets are 20 inches wide, 10 inches deep and 5 feet 7 inches high, with a drawer under each. The entire piece being in four sections, it is easily put together,



Combination Console and Library Cabinet

the cabinets fastening on to the mirror frame from behind. The total width, set up, is 6 feet 10 inches. The cabinets have 6 movable shelves. If desired doors can be made for one square light of glass.

The ladies of the house will enjoy having this new piece of furniture, for what is more convenient than a full length mirror to see how the new skirt fits or hangs. Our subscribers will all like the book case feature and the drawers at the bottom.

The Chicago Grille Works state that they will make THE AMERICAN CARPENTER AND BUILDER readers a very low price on this beautiful piece of furniture, as they are anxious to show the building trade what they have.

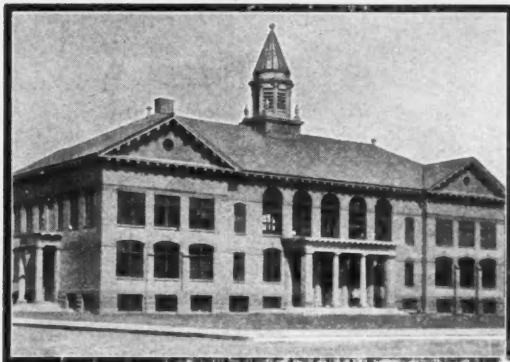
The Chicago Grille Works have been doing business at the same location for many years. Their work has always been of the highest order and no manufacturer takes more pleasure than they in giving our readers their money's worth. Their new 1910 catalogue No. 18 is now ready, containing full information on their line. It is a fine reference book. But order this new piece of furniture as a Christmas present for yourself and at the same time increase the value of your property just that much more.

Gasoline Engines

There isn't a national issue of greater interest to woodworkers and builders than the live subject of gasoline engines.

What makes one engine better than another? What are the points to consider in buying an engine? A satisfactory answer to these two questions is worth a whole lot to the farmer who can't afford to waste any money or time experimenting.

A booklet recently came into our hands called "16 Reasons." It is sent out by the Temple Engine Manufacturing Company



Asbestos "Century" Shingle Roof—Bessemer High School, Bessemer, Mich.: D. Fred Charlton, Marquette, Mich., Architect; A. H. Krieger Co., Houghton, Mich., Roofing Contractors.

Asbestos "Century" Shingles

"The Roof that Outlives the Building"

The house owner has to depend on **your** knowledge in choosing a roofing—and he is especially open to suggestions that affect his pocketbook.

Asbestos "Century" Shingles protect the house absolutely—are impervious to weather, proof against fire, free from accidental breakage. They are the most attractive roofing made. They cost no more to lay than any other roofing regarded as first-class, and nothing afterward for painting or repairs.

Can there be any doubt as to what roofing you shall recommend?

Asbestos "Century" Shingles are dense and elastic shingle-like sheets of asbestos fibro-cement. Made in three colors—Newport Gray (silver gray), Slate (blue-black), and Indian Red, in numerous shapes and several sizes. Ask your Roofer for new quotations. Write for Booklet "Everlasting 1910."

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania

Exposed Sheet Metal Work

Will last longest and give best service if made from



APOLLO BEST BLOOM Galvanized Sheets

"A Product without a peer"

For cornices, skylights, gables—in fact, any place requiring good working qualities and durability—Apollo Sheets are at their best. These are tough, pliable, uniform, and always up to their known high standard of excellence. Send for an Apollo Weight Card, showing sizes, weights, gauges, and number of sheets in each package.

American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh Portland San Francisco St. Louis



There's Money for You in Steel Ceiling Work

And you can easily handle it. Our construction is planned to simplify erection and reduce number of pieces to handle, thus saving time, labor and expense. Any good mechanic with the aid of our working drawings can easily do the work and secure a neat, snug-fitting, workmanlike job.

We help you by preparing free suggestion drawings and estimates. Send sketch and dimensions of room or rooms to be covered and we will submit suggestions and quote exact prices on the material delivered at your depot.

Berger's "CLASSIK"

is the most complete line of artistic Steel Ceilings in existence AND OUR CATALOG PROVES IT.

Write for it TODAY. Ask for No. D-55.

THE BERGER MFG. CO., Canton, O.

New York Philadelphia Boston Chicago
Atlanta Minneapolis San Francisco St. Louis

of Chicago. They state very plainly and to the point sixteen reasons why their "2 in 1" Master Workman gasoline engines are superior to other engines.

Because these people have been in business over half a century and are recognized everywhere as authorities on all-power engines, we reprint some of the most important of these reasons.

In the first place the Master Workman is a 2-cylinder engine so adjusted that two cylinders are used for heavy work and one for light work, built on the inverted, vertical principle.

The first reason is that it starts quicker and easier than any single-cylinder engine made.

Third, it weighs less than other engines without losing durability.

Fourth, the vibration in the Master Workman engine is practically overcome, which means less trouble, less expense, more power and longer life for the engine.

Other important reasons are that the Master Workman engine occupies less space than any horizontal engine, and can therefore be used most conveniently where room is limited. It also has more uses and works under more various conditions than any other engine.

One particular point is that the Master Workman engine has absolutely perfect lubrication and therefore runs steady with full use of power, and lasts longer. Then again, the mechanism is in full view, which is a most important advantage, and makes it especially adaptable for beginners. Another reason is—its full power is available up to the limit—which is not the case in a single cylinder engine.

Especially strong is the reason that the Master Workman engine is the only gas engine that runs successfully with gas, gasoline, distillate kerosene or alcohol without change of mixers or other expensive changes.

Another reason is that it possesses up-to-date ignition, which reduces the cost of batteries and igniting troubles.

The Master Workman is 50 per cent more reliable than a single-cylinder engine because there are double chances of having at all times a running engine, and it can be used on light and heavy loads—using the single cylinder for the former and reserving both cylinders for the heavy work. This is an advantage of utmost importance that is obtained in no other engine than the Master Workman.

The last reason given in this booklet is that Master Workman engines are built by a company who guarantee protection to every buyer. Coming from a company in the fifty-sixth year of its business life, this guarantee has a very strong meaning.

We have not seen any more convincing evidence of trustworthiness in any engine than is given in these "Sixteen Reasons."

We suggest that this booklet is well worth the attention of everyone contemplating buying a gasoline engine.

Myers' 1910 Calendar Poster

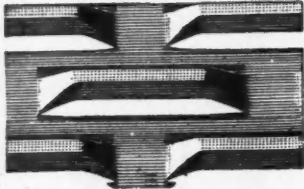
We have received a most beautiful and remarkable 1910 calendar poster from F. E. Myers and Bro., showing in a very striking way the many styles of well pumps, power pumps, tank pumps, spray pumps, windmill pumps, hay unloaders, forks, pulleys, door hangers, etc., made by this well-known company.

We understand that this poster is now being mailed to over 30,000 dealers handling Myers pumps, hay tools, etc., at an expense of between \$3,000 and \$4,000, in support of the advertising the Myers company are doing in trade papers.

New Lock for Casement Windows and French Doors

The Pullman Manufacturing Company, Rochester, N. Y., are now offering a double extension bolt for casement win-

SYKES METAL LATH



The lath that is positively different to anything else made; different because it combines more good features.

Cup lath is the only Expanded Metal Lath

that can be plastered on either side—cannot be applied wrong because both sides

are alike.

We make two kinds—Sykes Expanded Cup Lath, and Sykes Trough Lath. Both are supreme for their own purpose.

The top illustration shows Trough Lath, bottom cut depicts Cup Lath.

NO PICKLED LATH

Sykes Lath is absolutely guaranteed not to have been pickled in an acid bath. This means that the weight and thickness is not reduced and is less susceptible to rust. Requires no furring out from studs because it is self furring.

It has been approved by U. S. Government and by leading architects, carpenters and builders throughout the country. In fact, when we say it is the best ever made we are simply stating a proven fact.

Samples and prices mailed upon request.

Sykes Metal Lath & Roofing Co.

NILES, OHIO



SUCCESSFUL DRAFTSMEN

Draw Good Plans Draw Good Money

**If You are Tired Being
— a Hard Working —
Carpenter or Builder
then Make Yourself the
Highest Grade and Highest
Priced Man in Your Place**

To do this you must be a good *Draftsman*, not one of those "*would be*" ones, *no*, but a first-class man, with actual, practical *drafting room experience*.

It will pay you well to learn this right from a practical man with twenty years' experience who will instruct *you* personally —individually on high-class *architectural* drawing, complete building designing and detailing in all branches;

Who will qualify you at home in a few months to double your earning capacity

Don't waste time and money trying to learn from books or printed lessons made for all alike, the same as patent medicine; you can only learn this right on *practical work* from a practical man.

Free This Month A high-grade Complete Drawing Outfit, including a \$13.85 Set of German Silver Tools.



If you want to be the "BEST MAN" write me to-day. Address—

Chief Draftsman

Div. 5 Eng's Equip't Co. (Inc.) Chicago



Chief
Drafts
man



Chief
Drafts
man

Trinidad Lake Asphalt
gives Genasco the life that makes it resist the weather and last for years.

Genasco
Ready Roofing
doesn't crack, rot, rust or break. How long do you suppose roofing lasts that's made of—who can tell?

Get Genasco—the roofing you know about. Guaranteed in writing by a thirty-two-million-dollar organization. Mineral and smooth surface. Look for the trade-mark. 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



PUMPS, DOOR-HANGERS, STORE LADDERS


the Pump hat Pumps **SPRAY PUMPS** Double-acting, Lift, Tank and Spray
MYERS PUMPS Store Ladders Etc.
Hay Tools of all kinds Write for circulars and prices.
Myers Stayon Flexible Door Hangers with steel roller bearings, easy to push and to pull, cannot be thrown off the track—hence its name—“Stayon.” Write for descriptive circular and prices. Exclusive agency given to right party who will buy in quantity.
F. E. MYERS & BRO.
Ashland, Ohio.



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



dows and French doors which seems to possess a good deal of merit and to fill a long-felt want. This bolt, together with the method of its application on a double casement, is shown in the accompanying illustrations.

It does the same work as any surface casement or French door bolt and eliminates the large expanse of metal on the surface of the door. It takes the place of all other double mortise extension bolts. The entire bolt is concealed in the door with only a small knob or lever handle visible. It locks door at both top and bottom with one-quarter turn of handle.

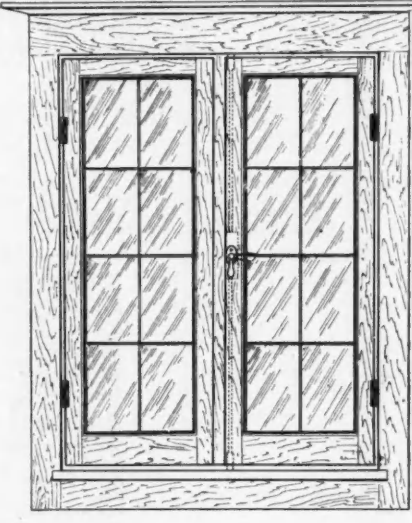
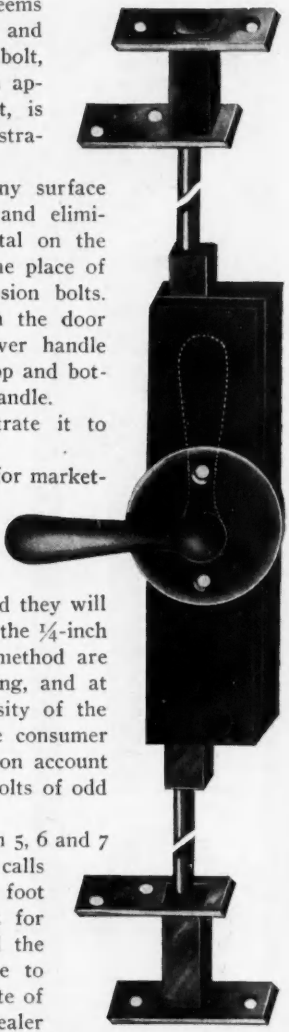
Ask your dealer to demonstrate it to you. It will prove interesting.

A new plan has been adopted for marketing these bolts through the dealer which will prove beneficial both to the dealer and user. Each bolt will be put in a box 5 3/8 by 2 by 2 1/4 inches, and they will be shipped to the dealer without the 1/4-inch rods. The advantages of this method are that it will facilitate the shipping, and at the same time avoid the necessity of the dealers sustaining a loss or the consumer having to pay an expected loss on account of specifications which call for bolts of odd lengths.

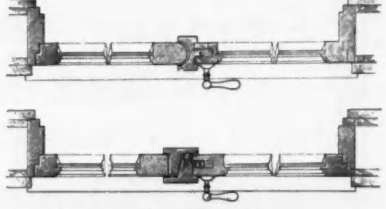
If these bolts were furnished in 5, 6 and 7 foot lengths and the dealers had calls for bolts of 5 1/2, 6 1/2 or 7 1/2 foot lengths, it would be necessary for him to cut down and re-thread the bolt, and somebody would have to stand the loss on account of waste of stock. Now every hardware dealer carries in stock 1/4-inch round stock, and therefore when they

supply "Pullman" bolts it will be a simple matter for them to include in the price of the bolt their price on the required number of feet of this 1/4-inch round stock, and also their charge (if any) for threading the rods at both ends; and in that way fill according to specifications all orders accurately.

If the dealers do not have 1/4-inch stock they can, of course, purchase it from the Pullman Manufacturing Company in lengths as desired.



Application on Two Styles of Meeting Rails





WE tell you to put on a "Pioneer Roof," and forget it. Needs no paint or repairs. Sun-proof and rain-proof. Not affected by extremes of heat or cold. Suitable for all kinds of buildings, pitched or flat roofs. Comes in handy rolls. Easy to lay; anybody can do it; no special tools needed.

Now then, let us send you samples, a copy of our 32-page Roofing Booklet "A," and the name of our nearest dealer.

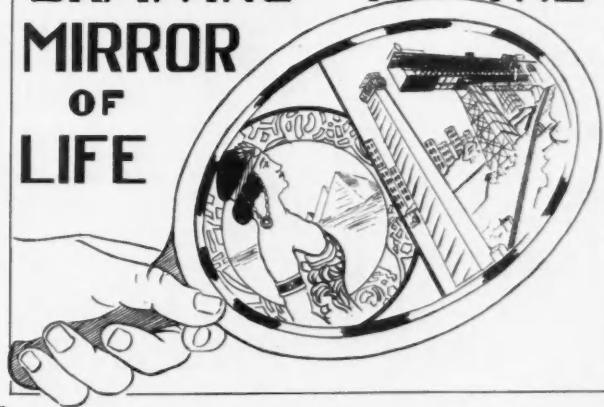
Asphalt and Asphalt Paint

The Pioneer Roll Paper Company are refiners of Asphalt and manufacturers of Asphalt Paint, which they supply direct from their factories in Los Angeles.

California Agents for Northwestern Compo-Board Company

PIONEER ROLL PAPER CO.
Department 21 :: LOS ANGELES, CALIFORNIA

DRAWING IS THE MIRROR OF LIFE



From Egypt to modern America, in all ages, among all peoples, the artist's talent and the draftsman's ability have helped the march of Progress. The intellectual, social and material advancement of every period is mirrored in the pictures of the Artists and the drawn plans of the Architect or the Mechanical Draftsman. And while men have eyes to see, the universal method of conveying thoughts and ideas will be by picture-making; because all nationalities can see and understand pictures, even though their language be different.

A single newspaper cartoon, timely in its suggestion, skillfully executed, has often turned the tide of victory and defeat in great political battles. Legislatures have been influenced by the artist's pen and brush; great reforms have been wrought, and yet this is only one side of the artist's influence and power.

IN THE GREAT INDUSTRIAL WORLD the draftsman is indispensable. The greatest enterprises are first put in tangible form by the draftsman—the man who draws the plans—who has the trained ability to picture the completed structure before even a stroke of work is done. He talks a universal language to the engineers and workmen who are carrying out these great enterprises. **NOTHING IS LEFT TO THE IMAGINATION:** no written words of instruction which may be easily misunderstood. But instead, the artist actually represents the structure just as it will appear in its finished form, and the workers upon the structure follow his planning with care and precision.

The study of Drawing is a stepping-stone to a career whose golden opportunities are unlimited. The **ACME** plan of study enables you to start at the very beginning and to proceed by careful study to the completion of the course which you select. It is not necessary that you should be born a full-fledged artist, because that is not and has never been true of anyone. Natural born talent must have training like every other human faculty. If you feel that you have a natural bent or a liking for Drawing, it is for you to develop, to use it, and to profit by it. It is an inheritance worth more than any endowment ever bestowed upon any man. **YOU CAN SUCCEED IF YOU WILL**—and the first step toward making something out of your latent talent is to clip the coupon at the bottom of this announcement, **WHICH COSTS YOU NOTHING**, mail to us, so we can advise you step by step just how to proceed in order to get the most out of your ability.

If you have any doubt about the money-making possibilities in this particular field of work, we have only to remind you of the artists who are making from \$10,000 to \$60,000 and even \$100,000 a year in the field of magazine and book illustrating. Mechanical, Architectural, or Sheet Metal Pattern Draftsmen can always earn good money and are always in demand. Among the highest salaried men in the country are our famous cartoonists whose names are household words.

When you consider that there are nearly 30,000 newspapers published in the United States, not counting the magazines, and that nearly every one of them uses more or less cartoons and comic illustrations, is it any wonder that such princely salaries are paid?

Some of our ordinary commercial artists and designers employed by our large engraving houses demand \$50.00 or more a week the year 'round. The beginner is always assured of at least a good salary.

Every business man needs letter-heads, card designs, and perhaps catalogs, illustrations for booklets, advertising matter, etc. The advertisers of the country alone would keep a vast army of artists busy, and of late years this kind of work is becoming the very highest priced.

If you are earning less than \$25.00 a week, wouldn't it pay you to investigate the **ACME** way of teaching Drawing? There is no reason for your believing that you cannot earn that amount if you will apply yourself as we shall advise. The **ACME** School is a pioneer school—founded 1898—in preparing students to do practical art work and drafting.

Do not waste another minute. All you need to do is to clip the coupon, mark the particular course that you would like to study, and mail it to us at once. This costs you only a two-cent stamp, and we will put our time against yours to advise you how to make the most of your talents.

The Acme School of Drawing, 1010 S St., Kalamazoo, Mich.

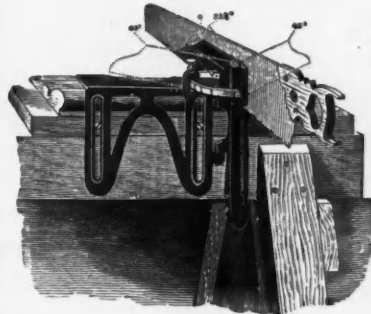
FREE ADVICE COUPON

Please send me your **FREE** catalogs about the course I have marked (X):

- Illustrating.
- Mechanical Drawing.
- Cartooning.
- Architectural Drawing.
- Commercial Designing.
- Sheet Metal Pattern Drafting.

Name Address

"SEAVEY" MITRE BOX
meets every requirement



- Cuts any angle—special or regular.
- Needs no special saw.
- Lightest box made
- Can be instantly applied.
- The *only* Mitre Box.

Made so that it is attachable to inside or outside work without a special attachment.

Prices to-day from your jobber or write for the "Green Book"

SMITH & HEMENWAY CO.

108-110 Duane Street,
NEW YORK :: U. S. A.

Accurate Estimating Brings Success

The Bradt Publishing Company emphasize this month in their ad. that only accurate estimating can bring success, and they offer a few pointed suggestions on this subject of vital interest to every builder. They point out the importance of simple, reliable, practical, systematic methods, together with rapidity in their use. The builder who does an average amount of business must sacrifice a great deal of time from his work if he employs the old tedious methods of estimating or else he must utilize all his time after the regular day's work is over. The question is, "Can he afford to do it?" The worried and sleepless nights put in by many builders are chiefly due to their not being sure of their ground when tendering a bid on a job.

For mastering this important part of the builder's work the Bradt Publishing Company have recently placed upon the market the sixth edition of the "Lightning Estimator." It is written by a successful contractor from experience, not from theories. It shows the labor and material required for each part of the work, as well as the prices; so that the methods can be made to apply to any scale of prices in any locality. It not only covers carpentry for house work but also walls, brick work, plastering, concrete work, cisterns, chimneys, etc.; so that the carpenter builder can learn to estimate these branches of the work and be able to handle them the same as the carpentry work—thus saving several sub-contractors' profits. This edition has many valuable pointers for the concrete block builder and setter. The book is bound in cloth and handsomely illustrated.

The Bradt Publishing Company conclude their ad. this month by asking if any builder can afford to do himself the injustice of longer being without their methods of estimating. We might add that this concern has advertised in every issue of this journal, and we know them to be reliable.

Wood Grilles, Etc.

C. A. Ravenstein, 653-659 West 12th Place, Chicago, Ill., is offering carpenters and builders a very attractive line of wood grilles, arches and consoles. In his large new catalogue we find arches illustrated suitable for any size opening over 7 feet in width and height. The grilles are for any size opening.

It is stated that close estimates will be given on receipt of exact measurements and paper pattern giving sweep desired for circle segment. The wood used in the construction of the grilles is 3/8-inch red oak, or any other native wood of equal value. It is carefully selected, thoroughly seasoned and kiln-dried.

The consoles are of the latest designs.

C. A. Ravenstein is prepared to make estimates and furnish special designs on architect's plans and specification. His methods of manufacture and his long experience assure for his customers the benefit of work that is both artistic and beneficial.

Awards Made in Cement Show Competition

The competition which has been conducted by the Cement Products Exhibition Company, 115 Adams street, Chicago, for a design for an ornamental centerpiece to be erected at the third annual cement show, was successfully closed on December 1st. A large number of most interesting and attractive designs were submitted from all portions of the country. Architects of repute, engineers, contractors, sculptors and designers from New York to San Francisco, participated in the competition, showing the widespread national interest being taken in the next cement show.



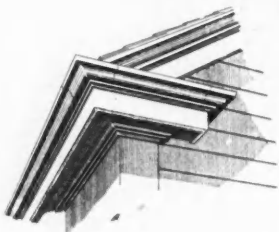
Modern Lighting Methods

call for plate glass fronts with as little obstruction to the view as possible. To have this and at the same time give utmost protection to the plate glass, you should insist upon the use of Petz Bars. They are strong, rigid, artistic, require less space, afford more light, and are easier to install. With them the glass is set from outside. Petz Bars are endorsed by the best architects and by insurance companies. Write for our booklet, "Modern Store Front Construction," which tells all about them.

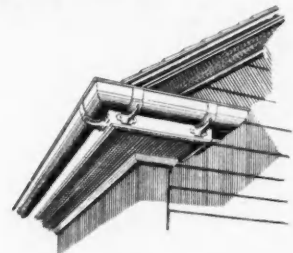
DETROIT SHOW CASE CO.
SOLE MAKERS
491 West Fort Street DETROIT, MICH



Cast Iron Gutters Last



Easily put up. Once up, always up. Do not bend or break by pressure of ladder against them. Will stand greater weight of snow or accumulation of ice than any other gutter. Not affected by acid fumes that in some vicinities play hob with all other metal gutters. They are adaptable to any kind of building or type of construction. Cast with moulded face to form part of cornice, or rounded to serve as a hanging gutter. Used almost exclusively in England and all over Europe. Supplied in 6 feet lengths. Joints fitted ready to erect. No soldering required. Send at once for circular and prices.



HITCHINGS @ COMPANY, Elizabeth, N. J.

The Eller Manufacturing Co.

CANTON, OHIO

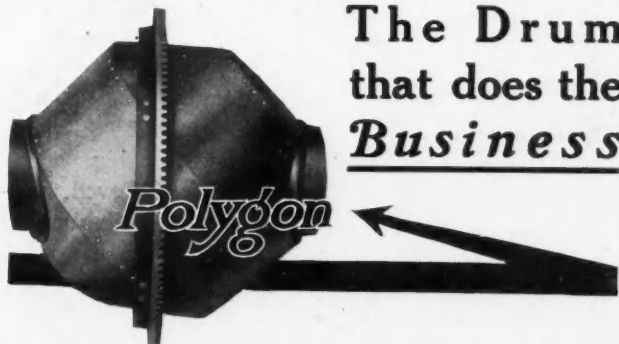
Makers of

**ELLER'S
"Perfect-Fit"
Steel Ceilings**

SEND FOR CATALOGUE

Also manufacturers of Cornices and Skylights, Eaves Trough and Conductor Pipe, Ventilators, Metal Roofing, Tin Plate and Lock Joint Metal Shingles

NEW YORK OFFICE AND WAREHOUSE
29-31 LEXINGTON AVENUE



**The Drum
that does the
Business**

Protect your reputation by the excellency and the permanency of your work.

The Polygon Concrete Mixer

is your insurance. It mixes more thoroughly, more quickly, less wastefully than any other concrete mixer.

The POLYGON possesses the good points of all other mixers. Its distinguishing feature lies in the shape and movement of the drum. It combines every mixing motion and makes the one perfect, unassailable mixture—either concrete or mortar.

The Polygon is the mixer of quickest action, biggest earning power, smallest maintenance and is most simple in construction.

Portable—durable—incomparable. Approved—authorized—used in government works. It's the drum that does the business.

Send for descriptive catalogue and prices

Waterloo Cement Machinery Corp.
WATERLOO, IOWA



**Surrounded
by Knowledge**

With this complete ten-volume set of

Architecture, Carpentry and Building

you can practically surround yourself by the knowledge you need in your everyday work. You can have at your fingers' ends, for instant use, the help and advice of forty experts.

The Reference Value Is Guaranteed

by the fact that the books are compiled from text books used in the correspondence courses of the American School.

Read What It Comprises This great work is the most exhaustive, comprehensive and authoritative work on the building trades ever published. Covers every branch of building construction, from plans to finishing touches. Bound in half morocco; 4,670 pages, 7x10 inches, printed on special paper; large, clear type.

Contains: Plans, color plates and photos of buildings completed and in course of construction. Diagrams and sections showing all details. Over 400 full-page plates. 3,000 detail drawings, diagrams, etc. Just the thing for the student and a practical guide for the experienced carpenter and an ever ready reference work for the expert.

Our Liberal Offer: To introduce our Correspondence Courses, from which the Cyclopedias is compiled, we offer this set of books at the special price of \$24.00, payable \$2.00 after 5 days and \$2.00 a month. Regular price is \$50.00. Order now and save over 50 per cent.

IMPORTANT SUBJECTS COVERED

Building Superintendence—Building Materials—Carpentry—Stair Building—Reinforced Concrete—Masonry—Estimating—Contracts and Specifications—The Law of Contracts and Liens—Hardware—Plastering—Painting—Heating—Ventilation—Wiring for Door Bells—Burglar Alarms—Steel Construction—Elevators—Sheet Metal Pattern Drafting—Mechanical, Architectural, Freehand and Perspective Drawing—Lettering—Blue Printing—Shades and Shadows—The Greek and Roman Orders of Architecture—Rendering in Pen, Ink and Wash—Water Color Hints for Draftsmen.

SPECIAL OFFER IF YOU SEND THE COUPON PROMPTLY

For a short time we will include, as a monthly supplement, for one year, the TECHNICAL WORLD MAGAZINE. This is a regular \$1.50 monthly, full of Twentieth Century scientific facts, written in popular form. Also contains the latest discussions on timely topics in invention, discovery, industry, etc.

AMERICAN SCHOOL OF CORRESPONDENCE
CHICAGO, U. S. A.

FREE OFFER COUPON

American School of Correspondence:

Please send set Cyclopedias of Architecture, Carpentry and Building for 5 days' free examination; also Technical World for 1 year. I will send \$2.00 within 5 days and \$2.00 a month until I have paid \$24.00; or notify you and hold the books subject to your order. Title not to pass until fully paid.

NAME.....
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OCCUPATION.....
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Amer. Carp. and Bldr. 1-10

Give Your Shoulders FREE PLAY

Don't make them sore and tired by wearing the old-style rigid-back suspenders, which tug, strain, and chafe with every move you make. Get a pair of



President Suspenders

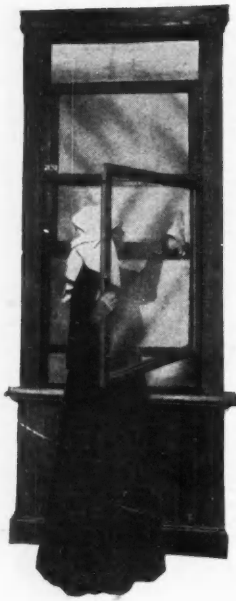
and learn what real suspender comfort is. The sliding cord in the back of President Suspenders (which is not found in any other suspender) permits them to "give and take" with every motion of the body. They rest lightly upon your shoulders and allow you perfect freedom of movement. The Extra Heavy Weight, made especially for workers, outlasts several pairs of ordinary suspenders. Light and medium weight for dress wear. Extra lengths for tall men. Every pair sold with the maker's guarantee—satisfaction, new pair or money back. If your store-keeper cannot supply you, we will, postpaid, upon receipt of price, 50c. Get a pair today.

THE C. A. EDGARTON MFG. CO.

739 Main Street : : : SHIRLEY, MASS.

Turnbull Universal Window

THE LADIES ALL APPROVE IT



This window can be washed outside and in, the cleaner standing on the floor.

It is dust-proof, also air-tight and waterproof.

There is no danger to life or limb in cleaning this window, as the cleaner stands on the floor inside the building.

This is the window people have been looking for, for years.

It can be made both in sheet steel and wood.

It is cheap and durable.

This window slides up and down the same as any ordinary window.

Estimates submitted for any building
Write for circular and descriptive literature.

TURNBULL CO., 771, 263 La Salle St., CHICAGO

The jury which passed upon the designs was composed of three members; one was appointed by the Chicago Architectural Club, and two by the Cement Products Exhibition Company. The appointee of the former was Mr. Thomas E. Talmadge, of the firm of Talmadge & Watson, Chicago architects, while the Cement Products Exhibition Company appointed Mr. Hugh M. G. Garden, of Schmidt, Garden & Martin, also Chicago architects, and Mr. Murdock Campbell, building commissioner of Chicago. The judges met on December 3rd, and after a careful study of the drawings, awarded the prizes as follows:

First prize, of \$200, to Mr. Wilbur Karl Howenstein, of Chicago.

Second prize, of \$100, to Mr. Ernest V. Price, of Spokane, Wash.

Third prize, of \$50, to Mr. George Aswumb, of Chicago.

The design chosen for first prize, which will, in all probability, be erected, represents a monument to the cement industry of large proportions. It is composed of a gigantic pedestal, ornamented with figures in relief, supporting a shaft some 35 feet high, the whole surmounted by a figure of heroic size, typifying the strength and durability of concrete. The four sides of the base were decorated with plaques, the upper part being a briquette shield, and the lower portion a design representing the four ages of mankind, namely, the stone, bronze, iron and cement ages. This design, properly erected, will make an imposing center-piece for the coming cement show, and illustrates the expensive and careful preparation which is being made for this exhibition.

The Cement Products Exhibition Company is now experiencing considerable difficulty in finding a contractor who will undertake to erect the big center-piece in the short time necessary. It is believed, however, that the project will be carried through successfully.

Only a few spaces on the second floor are now available for exhibits at the show. Most of the exhibitors, who have been fortunate enough to secure locations, are making elaborate preparations for elegant displays. The Coliseum will be handsomely decorated with appropriate designs, paintings and scenic effects, and the whole promises to be a spectacle hitherto unequalled in cement exhibitions.

Powerful efforts have been put forth this year to secure favorable concessions in regard to reduced rates to the show. The Cement Products Exhibition Company have just brought to a successful conclusion, negotiations with the Central Passenger Association, which embraces the lines operating principally in the territory between Chicago and Peoria, Ill., to Pittsburg. These roads have offered a reduced rate of a fare and a half. Tickets to Chicago, from points in this territory, may be purchased on any day from February 16-25, inclusive.

Under the arrangement this year, every one who

HOLLOW-WIRE

LIGHT FOR HOMES, STORES, FACTORIES AND STREETS
 The best light under the sun is produced by the STANDARD AND SIMPLICITY LIGHTING SYSTEMS. Better than electricity or city gas, cheaper than kerosene or candles, with none of their objections. No smoke—no soot—no odor—no work filling lamps or trimming wicks. A light that does not befoul the air. Suitable for the cottage or for the mansion, for the city or country home. Anyone can operate them and be entirely independent of gas and electric companies. Produces a Hydro-Carbon Light—white, brilliant and penetrating. Does not change or affect colors at night nor cause eye strain. Endorsed by insurance underwriters, recommended by users.

BIG MONEY FOR LIVE AGENTS.
 We want a live, wideawake hustler to represent us in every community. Exclusive territory given. A well organized "Sales System" aids the agent in his work. Write today for large illustrated catalogue and further particulars.

THE STANDARD-GILLETT LIGHT COMPANY, 6 West Michigan Street, CHICAGO, ILL.

**WANTED
 CARPENTERS
 AND
 BUILDERS**

to take up Slate Roofing in unoccupied territory everywhere. Only a few inexpensive tools needed. Slating easy to learn.

**Sea Green and Purple
 Slate Roofs**

outlast any building. They won't wear out, rust or decay. Are fire-proof. Afford clean cistern water and don't require constant repairs and attention. A profitable, growing Slate Roofing business can be established anywhere. Besides new work, there are hundreds of wornout tin, shingle, metal and composition roofs to be replaced. Your neighbors are tired of paying out good money for short-lived roofings. Furnish them with handsome, sanitary, fire-proof "Never-wear-out" Slate Roofs.

Carpenters and Builders: This is a money-making proposition, it costs nothing to investigate. **LOOK INTO IT. WRITE TO US IMMEDIATELY FOR FREE BOOK OF INSTRUCTIONS AND PRICES ON SLATE AND TOOLS. WRITE TODAY.**

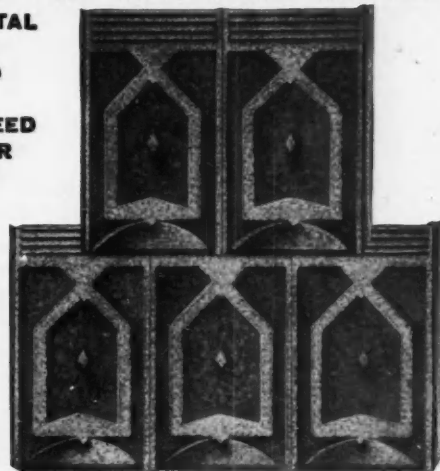
**American Sea Green Slate Co.
 Box 36, Granville, N. Y.**

This proposition only applies to territories not now covered by a Slate Roofer.

STANDARD—Lock Joint—METAL SHINGLES

**ORNAMENTAL
 EASILY
 APPLIED
 —
 GUARANTEED
 WEATHER
 PROOF**

We can save you money on
**CORNICES
 SKYLIGHTS
 VENTILATORS
 METAL
 CEILING
 ROOFINGS
 SIDINGS
 EAVE
 TROUGH
 CONDUCTOR
 PIPE**



**CANTON
 Manufacturing
 Company**

1310 to 1320
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**CANTON
 OHIO**

Your Success is our Necessity

We Want to Show You Why

CAN you afford to figure a job of Metal Ceiling unless you are sure the cost of erecting will not exceed your estimate? Your success is our necessity because you will not buy our ceilings unless there is profit in them for you and satisfaction for your customers. Most of your success depends upon the fit.

We Have Solved the Problem

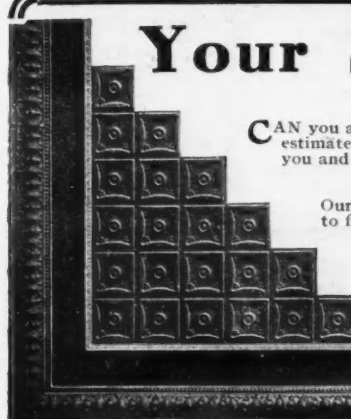
Our Double Bead Lap produces a thoroughly dust proof and invisible joint. It is simplicity itself. Easy to fit, therefore cheapest to erect. This means profit and satisfied customers to you.

Another Secret

The great variety and high character of our Art Metal Ceiling and Sidewall Designs insure the customer's preference when shown our Catalogue. Send us plans with all measurements and we will suggest appropriate ceilings, and name you low price on all material, F. O. B. your station.

About Metal Shingles. We make everlasting "Never Leak" Metallic Shingles, of painted tin and Apollo Vandergrift galvanized iron sheets. They cannot leak, warp, rot, split or absorb water and remain damp. Of course they are fire proof. Send for samples and be convinced.

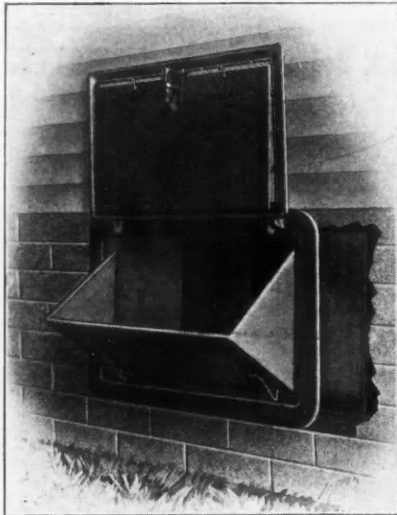
THE TIFFIN ART METAL COMPANY : : : Tiffin, Ohio



purchases one of these reduced rate tickets, with certificate, will be positively guaranteed of the half fare on the return trip from Chicago. In the past there has always been some trouble in making the reduced rate operative, on account of the fact that one thousand certificates had to be turned in before any could be validated at Chicago. This year this will not be necessary, and certificates for the return trip from Chicago will be validated as promptly as turned in. Complete details about the reduced rate will be published later.

Coal and Wood Chutes

The Majestic Furnace & Foundry Company, Huntington, Ind., are now offering a superior line of coal, wood and vegetable chutes, all



equipped with the transparent, non-breakable "rubber glass," which is the exclusive feature of this company.

The "Model" coal chute is both chute and window, being constructed and fitted with a transparent, flexible composition known as "rubber glass," which admits of a clear light into the basement. This glass is non-breakable, and is very lasting, and is guaranteed to stand heat

and all kinds of climatic conditions. The same protective features as applied to the protection of building and lawn are embodied in the "Model" the same as in the "Majestic," except that the door, when opened, allows the steel shield to

cover the glass, thus protecting it from the most careless coal shoveler.

The "Model" window chute is considered by present users to be the highest type of its kind on the market, and judging from the tremendous sales in this particular chute of this year, we feel justified in saying that it has no equal.

All the Majestic Furnace and Foundry Company chutes are guaranteed absolutely, and it is their aim to give their customers the very best for their money, both as regards quality and material.

Their chutes are all fitted with a heavy gravity latch which locks them securely on the inside, making them impregnable from the outside. These "Model" chutes come to you ready for use. You do not have to buy extra glass.

They are also constructed so a screen can be used in the summer in place of the glass, thus allowing pure ventilation during the heated period.

It will be to the advantage of every builder to get in touch with these people and learn the merits of this line.

Salaries

The way languages are built up is very interesting, and the derivation of the word "salary" is curious as well. In ancient times Roman soldiers received a daily portion of salt as part of their pay. Sal is the Latin for salt, and when the salt was in course of time commuted for money, the amount was called salarium, or salt money. Hence our word "salary," and hence, doubtless; the expression "not worth his salt," that is, not worth his "salt money" or salary.

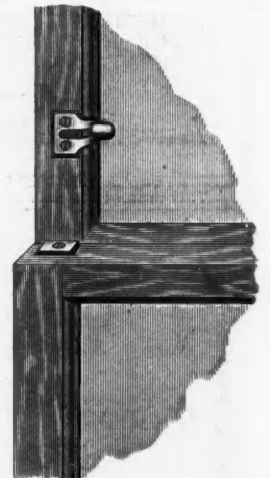
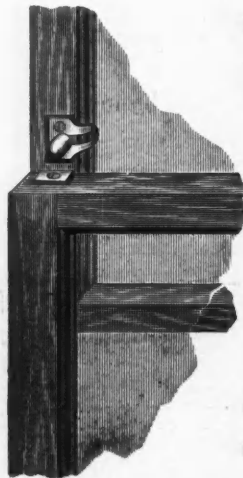
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A safeguard for ventilating rooms, allowing windows to be left open at the top, the bottom, or both top and bottom with entire security against intrusion, a permanent fixture easily applied and quickly operated, affording three times more protection to the window than the ordinary sash fastener.

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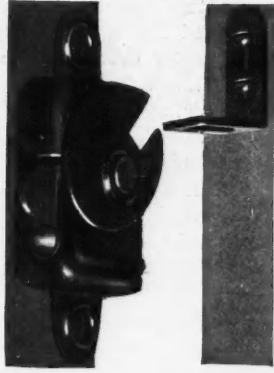
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THE CATCH WITH THE POSITIVE LOCK

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.

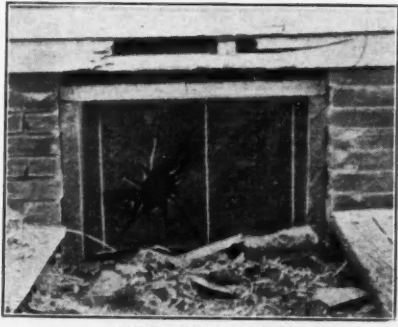
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SIDEWALK AND
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SEE SWEET'S INDEX



30 Tons' Pressure

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THE SOMERS
uses the "wettest" mix of any block machine on the market.

The Somers Makes Money

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OUR CATALOG IS FREE

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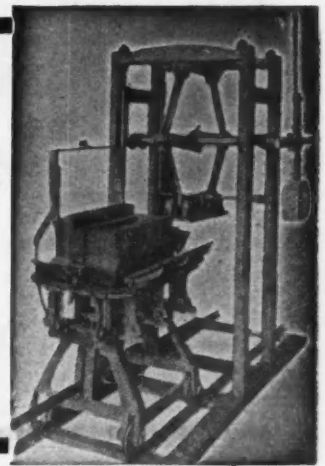
FASTEST MACHINE MANUFACTURED

The machine does the work, not the man

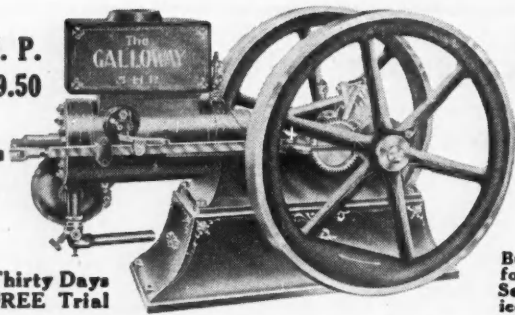
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\$119.50



Thirty Days
FREE Trial

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The Galloway Gasoline Engine

Owned and made exclusively by the
William Galloway Co., Waterloo, Iowa.

will run your shop at several times its present capacity and enable you to take lots of jobs that you have to turn down now because you have not the capacity.

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Turn on the switch, turn on the oil, turn on the gasoline give the fly wheel a start, and the Galloway will go right along all day without further attention. It is ideal power for a small shop, and it's got the capacity to take care of your growing needs.

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If you try the Galloway engine, you will find that it is not overspeeded. Remember, the bore and stroke count, and you don't have to drive your engine faster than you ought to drive it to get the rated horse power. Rated by actual brake tests.

On the larger sizes, if it is not entirely convenient for you to pay all cash, we will take your note for the balance at the regular rate of interest for six months.

The price given is for the five-horse power only, but we make these engines in seven sizes.

Ask for free information on stationary and portable gasoline engines from two to twenty-eight horse power. We make the best, and we price them at a reasonable figure. Write today.

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1145 Galloway Station

WATERLOO, IOWA

An Amatite Inspiration

Users of Amatite roofing appreciate the fact that it never has to be painted, but it has remained for E. L. Krouse, of Binghampton, N. Y., to burst into poetry over it in the following effusion sent to the manufacturers.

My neighbor, William Thorn, and I,

Two years ago or more,

Were both a-buying roofings

Up at the hardware store.

We had our choice of several kinds;

Some heavy and some light,

Bill bought the smooth old rubber kind

And I bought Amatite.

I passed Bill's place the other day.

And there he was a-sweating,—

Daubing thick paint on his roof

For fear it would get a wetting.

So I sat down to josh him,

And said I'd watch him smear,

While telling him I wouldn't paint

My roof for twenty year!

Reminded him we paid the same,

And figured up the cost

Of painting every year or two,

And showed how much he lost;

Till he was getting grouchy.

Then I took up my rein

And said I'd come next painting-time

And laugh at him again.

Readers who desire to know more about Amatite can get a free sample of it by addressing the Barrett Manufacturing Company, New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburg, Cincinnati, Kansas City, Minneapolis, New Orleans, London, Eng.



Daylight in Dark Places

LUXFER PRISMS focus daylight. The light rays from the sky are drawn to basements or any dark place. The use of artificial light is minimized.

LUXFER PRISMS are best for all buildings. They are the most practical for Transoms, Canopies, Skylights, Floors and Sidewalks.

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PITTSBURG, 1022 Fulton Bldg.

PHILADELPHIA, 807 Chestnut St.

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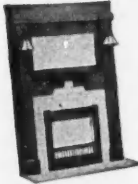


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Imported and Domestic Wall and Floor Tiles

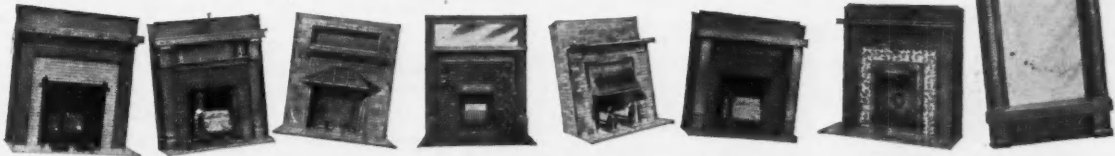
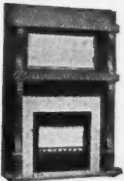
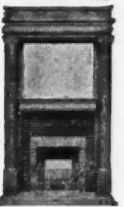
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Remit 25 cents to cover postage and packing on the most valuable mantel catalog ever issued. This amount will be deducted from the first order received.

Write today for Catalog before the Edition is Exhausted.

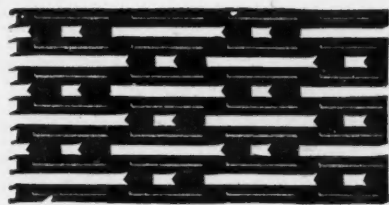
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Coming right down to the economy question Clincher Lath has got everything beaten.

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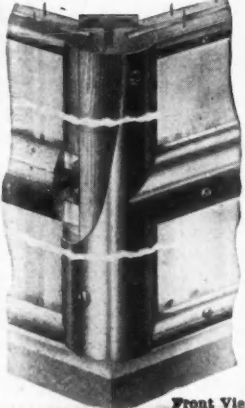
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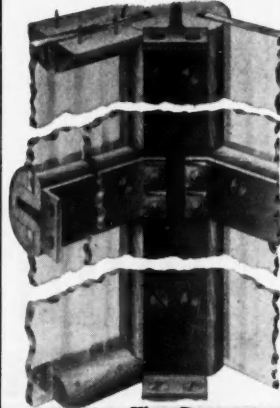
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Patent Store Front Construction

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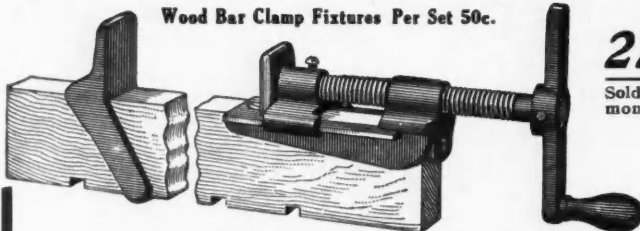
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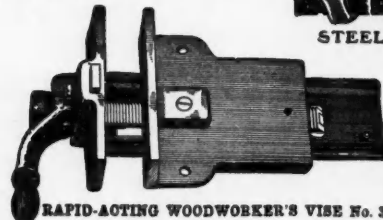
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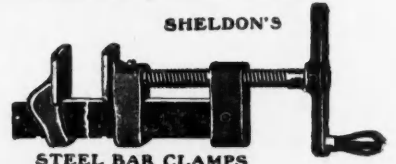
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22,000 Sheldon Steel Rack Vises

Sold on approval, an unconditional money back guarantee.



RAPID-ACTING WOODWORKER'S VISE No. 3



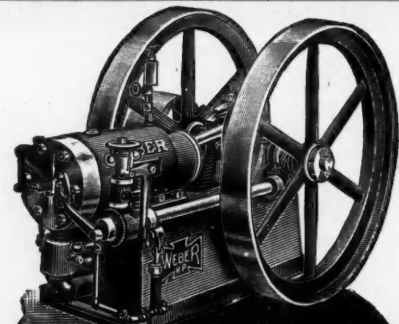
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Sheffield Gas Power Co.
127 Winchester Place Kansas City, Mo.

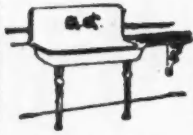
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This is a fair illustration of what our molds will do, but it is only one of the many purposes to which they can be adapted. You can make Porch Piers, Porch Columns, Chimney Blocks, Ornamental Posts, and a variety of other things.

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21 Sizes for \$25.00

Every mold is aluminum finished to prevent rusting. Every mold is perfectly square and rigid.

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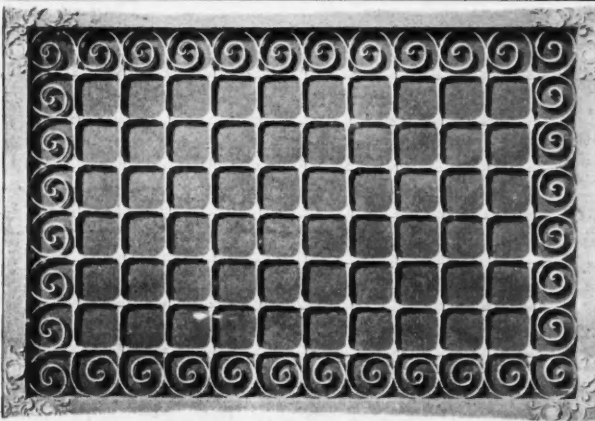
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WE MAKE ALL THREE KINDS

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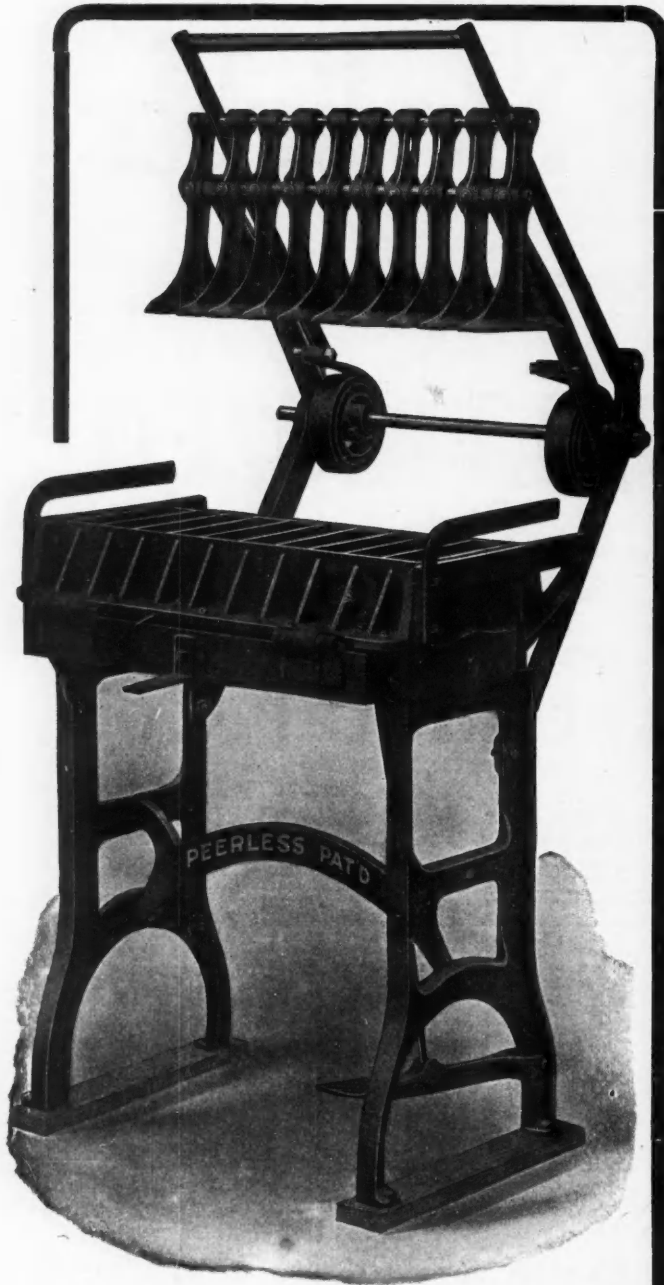
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By NAME**

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THIS machine is a marvel of simplicity and durability. It has been brought to the highest standard of labor-saving and profit-sharing efficiency, and stands alone and in a class by itself.

No other machine of like character has ever been invented, so far as we know, that can produce one-quarter the number of brick in the same time as the Peerless.

The Peerless is in general use throughout the United States, and its friends are numbered by the thousand.

WHY? BECAUSE Brick are made face down and delivered face up. Brick are of uniform size with sharp edges and true to the square. Brick are more firm and durable than pressed brick. Brick are tamped, not pressed. The Peerless makes ten bricks at one operation.

Our catalogue tells you all about it. Write for one to-day.

Peerless Brick Machine Co. 7 North Sixth St. Minneapolis, Minn.



\$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

"Reputation and Quality Count"

columns, full length or double as shown in cut. Dealer's price not less than \$40.

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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

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JOIST HANGERS**

Strongest

as shown by University Tests.

Made from OPEN HEARTH STEEL.

SAVES cutting and weakening of timber.

SAVES labor in installation.

LOWEST FIRST COST.

All styles and sizes for brick and Concrete Walls, Steel and Wooden Beams.



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TO SPECIALTY DEPT.**

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624 Trussed Concrete Bldg., DETROIT, MICH.



Miracle Collapsible Steel Forms

For
Culvert
Conduit and
Continuous
Sewer Work

12 to 60 inches
in diameter; 6 to
10 ft. lengths.

What Others Say of Miracle Steel Forms:

Mankato, Minn., July 29th, 1909
Miracle PRESSED Stone Co.,
Minneapolis, Minn.
Dear Sirs:—Our County Board was so well pleased with the 36-inch collapsible culvert forms recently purchased from you that they have instructed me to place an order with you for shipment at once, for two 10-foot lengths of the 24-inch collapsible culvert forms; these to be shipped to Mankato. Yours truly,
Walter F. Brooks,
Supt. of Construction.

Warrensburg, Mo., June 19, 1909
Miracle PRESSED Stone Co.,
Minneapolis, Minn.
Dear Sirs:—We are using the 3 and 4 foot Steel Collapsible Culvert forms that we bought from you for building the one hundred concrete culverts for Johnson County, Mo. I am seeing after the work, and we have finished 21 at this date. We are well pleased with your forms and think them a saving of more than 25% over the wooden forms. We are in position to know, as we built 62 culverts on wood forms last year. I thank you for your prompt shipment of the web I ordered, also for furnishing it too without cost. Very respectfully,
David Mohler.

Little Rock, Ark., July 30, 1909
Miracle PRESSED Stone Co.,
Minneapolis, Minn.
Gentlemen:—I would thank you to forward me the following Collapsible Culvert Forms for the use of Pulaski County, to-wit:
2 pieces 2 ft. in diam. 10 ft. long
2 " 3 " " " 10 " "
2 " 4 " " " 10 " "
Kindly ship the same via St. Louis, Iron Mountain and Southern R. R. Co. as soon as possible and send your account to me for the payment of same. Yours very truly,
Joe Asher,
County and Probate Judge.

Omaha, Neb., June 7th, 1909
Miracle PRESSED Stone Co.,
Minneapolis, Minn.
Gentlemen:—We have just completed a concrete stone culvert, using your four-foot collapsible form, and your representative, Mr. Cook, supervised the work. The culvert is 85 feet in length, and having just completed an estimate of the cost, find it to be \$1.95 per foot. We are well pleased with the culvert. Yours truly,
Os. J. Pickard,
Chairman of Road and Bridge Co.

MIRACLE PRESSED STONE CO., Dept. K, Minneapolis, Minn.

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BLOCK MACHINES

ARE THE FASTEST, SIMPLEST,
STRONGEST AND

BEST MACHINES BUILT

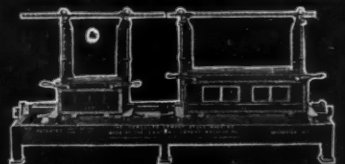
AND WE CAN PROVE IT.

THEY EXPAND TO MEET EVERY DEMAND

THE ONLY machine making any size of stone from a 3 inch block to a 6 foot water table.

THE ONLY face down machine that allows for a really coarse WET mixture with fine facing.

THE ONLY machine on which four 16 inch stone can be made at ONE time, or two 20 inch, 24 inch or 32 inch stone at one time.



THE HERCULES IS AN OLD ESTABLISHED MACHINE

built along correct lines and endorsed by the leading contractors and builders. They are used in all parts of the world.

THE HERCULES POWER TAMPER

Will Save You Money

It will increase your capacity and enable you to produce:

A Better Grade of CONCRETE BUILDING BLOCKS

BLOCKS THAT ARE TAMPED EVENLY—THOROUGHLY PERFECTLY

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The Perry

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Benjamin L. Jenks,

Sole Publisher
908 Williamson Bldg.,
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OHIO



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FOR RESIDENCES, HOTELS, OFFICE AND APARTMENT BUILDINGS

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Price \$1.50

No. 141 24 inches, adjustable. Also made in 30, 36, 42 and 48 inch lengths at slightly higher prices.

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Adjustable glass towel shelves, \$3.50, \$4.00, \$6.00

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Won't Crack Like Slate**

1883 - 1909

It is a superlative article that increases in demand after 26 years in use.



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Shingles That Last. Never Leak. Never Need Repairs. Made in Painted Tin, Galvanized Tin and Copper.

We want an Agent in every city and town. A profitable business and satisfied customers is the experience of the man who handles WALTER'S Shingles and Tiles. Write for Catalogue, Samples and Price.

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Six Million Barrels

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ANTI-SAG STRAP HINGE



SEE THIS FLANGE CANNOT SAG OR TWIST

TWO BOLTS WHERE THE WEIGHT IS CARRIED

Ask your jobber or write us.

Highest Award Jamestown Exposition.
Easily attached for Heavy Barn and Fire Doors, Gates, Fire Shutters. 22 sizes. 6 inches to 6 feet. The strongest hinge ever offered: superior to blacksmith hinge.

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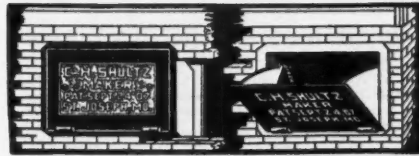
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AS WELL AS ROOFING

CORTRIGHT METAL SHINGLES

ANOTHER advantage of Cortright Metal Shingles that makes the list still longer. They're fireproof, stormproof, lightning-proof, never need repairs, last as long as the building, and require no attention except a coat of paint every few years.

These are some of the reasons why they sell so rapidly and why you should handle them. Your profit is larger because they can be laid more quickly than other roofings and any of your own mechanics can do it, for all he needs are hammer and shears.

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every builder should have my little works and be a constant reader of the "Cement World," the leading paper of its kind published.

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Send for other Combination Offers.



MULLINS METAL TILE ROOFING

is simple in construction — secure — durable—absolutely storm and water tight. As expansion and contraction are provided for, it is guaranteed, when put on according to directions, to remain perfect for years.

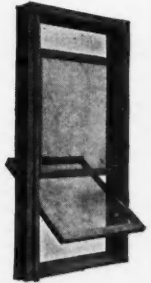
This handsome metal tile roofing is used on many of the finest buildings in the United States. It is beyond question the most attractive and satisfactory roofing made.

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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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We have catalogues showing our various lines of product. Please specify the particular class of sheet metal work you are interested in and we will send you the proper catalogue for same.



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We want you to get Metal Ceiling orders for us.

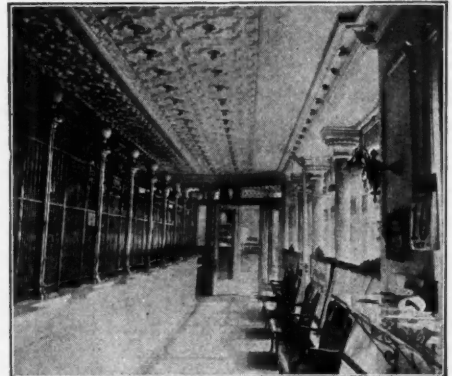
The building season is about closed so far as outside work is concerned for the contractor and builder, so we want to ask you to look after **inside work this winter.**

We have made plain in our new catalogue the measuring and erection of metal ceilings and explain in special drawings just how you shall do it. This puts you into a position to go after **metal ceiling business** in your town this winter.

Send us a postal card or letter for our complete catalogues on metal ceilings and other sheet metal building material. We want a man in every town. We make expanded metal lath and Spanish tile roofing. Write us a card to-day.

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Branches: Chicago, Milwaukee, Boston, Cleveland and San Francisco

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put a
good pencil
in your hand.

The Mark of



a Good Tool.

E. C. S.

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—E. C. Simmons.

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HDW. CO.,**
(Div. A. C.)
St. Louis, Mo.

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(Incorporated)

**ST. LOUIS and
NEW YORK,**

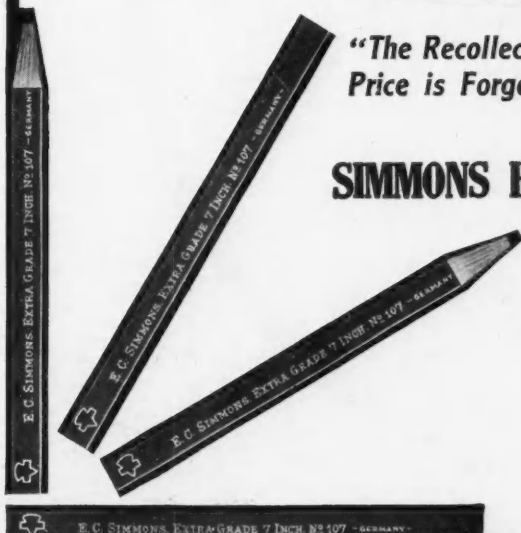
U. S. A.

Dear Sirs:

Please send me
**FREE, Charges Prepaid, one
E. C. Simmons Carpenter
Pencil, as per your offer,**
with the understanding that I am
under no obligation to buy.

NAME _____

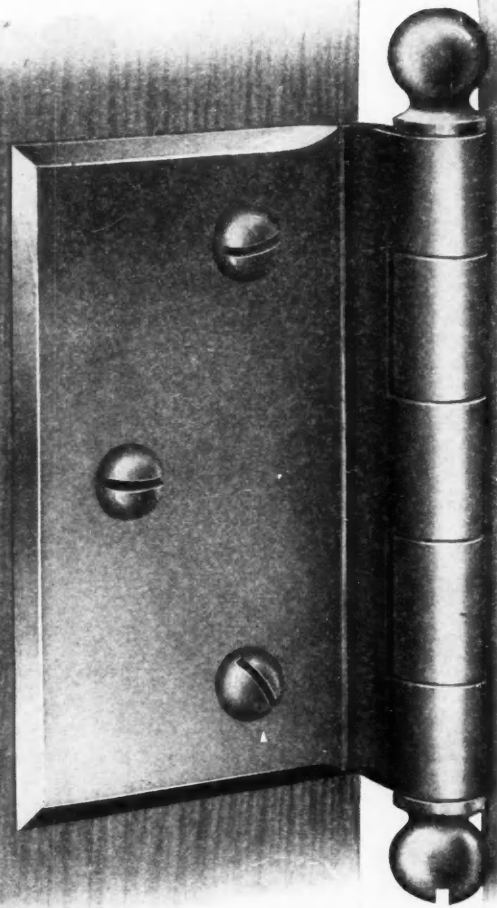
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E. C. SIMMONS, EXTRA-GRADE 7 INCH NO. 107 - GERMANY

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

WE INITIATE — NEVER IMITATE A-BIG-HIT



Is the new tip with which "National" Butts are now equipped, both common and ornamental.

The **Tip** is threaded and screws into the butt in both the Japanned and Plated finishes.

It is also **Slotted** for a screw driver, making it easy to remove the tip and affords ready access to the pin.

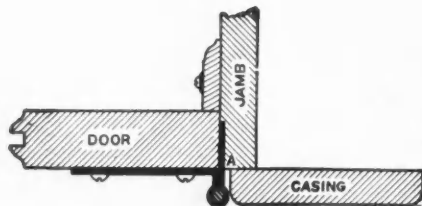
The **Slot** also indicates which is the bottom of the butt — a point greatly appreciated by the carpenter.

*These are exclusive
"National" features.*

Style No. 450B

here illustrated is a very popular design and can be furnished in all sizes from 1½" to 4" inclusive. These Butts are highly polished, have beveled edges and are double plated. They match the escutcheon plates with beveled edges.

No. 450B



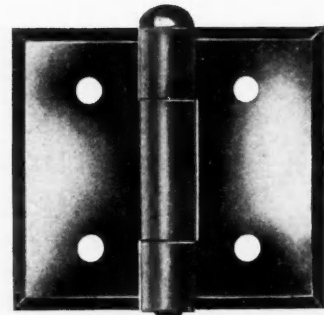
Ask for Booklet, "Ornamental Ideas," and give us your dealer's name.

Directions—Attach butt part "A" to jamb first, then set and wedge door into position and attach Ornamental Leaf to surface of the door. Simple, isn't it?



Trade-Mark

Be sure to look for the flag — it's stamped on all "National" Butts. — It stands for quality.



Surface Hinge

National Manufacturing Co., STERLING,
ILLINOIS