### Special Features—March Number

| One Hundred Years of Portland Cement | Motor Trucks for Building Contractors |
| Complete Plans for Modern Residence | Details of Inside Trim—Living and Dining Room |
| What is Best Location for Radiators? | Idea for Non-Opening Floor-Line Joint |
| How to Make a Morris Chair | Exhibits at Chicago Cement Show |
| Shop Kinks | Questions and Answers |
MANY readers of the American Carpenter and Builder have made up their minds that they are ready to buy Atkins Silver Steel Saws. We know this because every mail brings us letters from high class mechanics who write to tell us how much they are pleased with their Silver Steel Saws or to say that they are just about to buy one. If you have not bought yet, we wish to say now is the time. Don't wait until you stub your toe against the Spring rush of business, but order your Silver Steel Saws now while there is time to make a careful selection.

ORDER THROUGH YOUR DEALER
He is entitled to your business and can serve you better than anyone else. Most likely he already sells them. Even if he does not order them yet, he will get them for you from his wholesale house. But try your dealer first.

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

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

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

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

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

E. C. Atkins & Company, Inc.
Indianapolis, Ind.
$165.00

FOR THIS

PORTABLE SAW RIG

With the Following Attachments Included

Ready to Run when Outfit Reaches You

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

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

- Boring Attachment complete with sliding table, bolts, chuck and two boring bits.
- Sanding Disk.
- Special Moulding Knives.
- Different sized Dado Heads, Etc.

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

WE ARE THE PIONEERS

IN THE MANUFACTURE OF PORTABLE SAW RIGS

Over 1000 Rigs in Actual Use

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

Designed and built to run continuously under full load.

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

Will rip 2" and cross cut 3" lumber.

Cuts hours to minutes. Cuts cost to pennies.

Cuts out the wear and tear on muscles.

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

Write for Descriptive Folder

GEORGE D. SMITH,

414 Fisher Building, Chicago, Ill.
The American Floor Surfacing Machine

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

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

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

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

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

Manufactured by
The American Floor Surfacing Machine Co., TOLEDO, O.

TRY BEFORE YOU BUY

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

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

TRY IT ON YOUR OWN FLOOR

You can try the "Little Giant" Floor Scraper on your own floor and the trial costs you nothing. All that we ask is that you give it a fair trial. You be the judge and jury.

Every carpenter and contractor can afford to invest in one as the time and money saved will pay for the machine in a very short time. By using the "Little Giant" Floor Scraper you will be in a position to estimate much lower than your competitor and therefore have more work. Can you afford to be without this machine?

Write us for our Special Price

Hurley Machine Company
31 South Clinton Street, CHICAGO
1011 Flatiron Building, NEW YORK
246 Woodward Ave., DETROIT

A NEW MACHINE

That Will Not Only Do the Work of 10 Floor Planers and Scrapers

But will do it more perfectly

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

Miller's Hand Mortiser

WILL SEND ON APPROVAL

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

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

The job is clean, true and parallel with sides of door. The labor is performed with slight exertion. The care is practically none, as the tool does not get out of order. The adjustment is done in a moment's time for the different sizes. The cutters are five in number and give locks from 4 inch to 14 inches thick. Thin doors are handled as easily as thick doors.

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

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

DOUBLE SCAFFOLD BRACKET

is the only one that can be adjusted for use on any kind of buildings. Will not swing sideways, and has two scaffold boards which make it ideal for putting up corners. Weights only 22 lbs., but is much stronger than the old heavy scaffold. Can be folded without loosening a single bolt. When folded, 24 brackets take up space only 3 x 4 x 5 feet. In use 10 years.

WEBER

Double-Acting Floor Scraper

improved model, has two knives—one for pulling and one for pushing. Adjustable handle enables you to scrape right up to the wall. Half-ball-and-socket joints insure perfect work on any kind of wood—with or against the grain—with no waves or chattering. We guarantee this scraper sent to any reliable contractor on free trial.

FOLDING SAW VISE

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

Cabinet Scraper and Sander

affords a firm grip and can be controlled with ease in the tightest corners. Knife is fastened with a clamp, not with bolts or screws, and can be used till but a half inch remains. Scraper can be quickly reversed and used for sandpapering and polishing. Weight 22 oz. Handiest tool ever made for the purpose.

SHARPENING DEVICE

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

SEND FOR CATALOGUE


670 71st Avenue, WEST ALLIS, WIS.

AS SURE AS 2 AND 2 IS 4

A SHEARING CUT GETS BEST RESULTS IN FLOOR SCRAPING

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

A Shearing Cut is ALWAYS made with the

"DAISY" FLOOR SCRAPER

With One Ten-Inch Blade Single Shearing Cut is Made

With Two Five-Inch Blades Double Shearing Cut is Made

The "Daisy"

Cuts either with or across the grain

Is easier on the operator than any other in the same length of time

Will do perfect straight edged work and will please you

Clamps are instantly fastened

Edge-turning device is a wonder

UNSOLICITED TESTIMONIALS

Gillette, N. J., Oct. 11th, 1910

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

Gentlemen:—
The floor has arrived and we have scraped it with your machine and I find it does exactly what you claimed for it. I plan to use it and will check as per agreement.

Thanking you for your kindness in allowing us this opportunity for extending the time for trial, I am

Yours truly,

FRED L. WALTERS.

Dubuque, Iowa, Sept. lst, '10

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

Gentlemen:—

Immediately after using the scraper we have found it to be satisfactory and superior to any we have seen in use. We herewith enclose draft in full payment of the same.

Yours truly,

KUUSCH BROTHERS, per 1. P. E.

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

Unsolicted Testimonials

Belle Fourche, S. Dak., Aug. 4th, 1910

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

Gentlemen:—

After giving the three floor scrapers a trial we have decided that the "Daisy" is the one we want. We have found it to be satisfactory and superior to any we have seen in use.

We herewith enclose draft in full payment of the same.

Yours truly,

NELSON & GOLDING.

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

Unsolicted Testimonials

WE WILL SHIP A "DAISY" OUTFIT TO ANY RESPONSIBLE CONTRACTOR WHO INTENDS PURCHASING A FLOOR SCRAPER AND WANTS TO TRY IT FREE FOR TEN DAYS. WE WILL PAY ALL FREIGHT CHARGES.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Look This Over Carefully

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

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

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

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

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

JOSEPH MIOTKE, 247 Lake Street, MILWAUKEE, WIS.

Perfect Results Are Easily Obtained By
Using Schlueter Rapid Floor Surfacer

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

The Schlueter will remove all joints or warped edges, and oil, wax, lime stains, or the "muck" from skate wheels, in a most satisfactory manner. Earning capacity, $20.00 to $35.00 per day.

Send for prices and Free Trial Proposition.

M. L. SCHLUETER, Chicago, Ill.

The Only Self-Setting Plane

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

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

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

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

GAGE TOOL CO., Vineland, N. J.
Start With Two Machines

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

MACHINE No. 1
Chicago No. 2 Combination Saw Table

MACHINE No. 2
Chicago 12" Jointer and Planer

These Two Machines

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

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

for $180.00, including belt for saw arbor, countershafts, 1 1/4" rip saw, 1 1/4" cut off saw, 5 boring bits—1/2", 3/8", 5/32", 1/2", 3/32" and 1-inch pair of jointer knives. Ask for price on one if you cannot use both.

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

Chicago Machinery Exchange
159-161 North Canal Street
CHICAGO, ILL.
C. E. JENNINGS  
TRADE ARROW HEAD  
MARK

AUGER BITS No. 1\(\frac{1}{2}\)

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

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

Insist on Having Genuine  
C. E. JENNINGS  
TRADE ARROW HEAD  
MARK.

TOOLS

Accept no substitute—Order by name and number

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

C. E. JENNINGS & CO.  
42 MURRAY ST.  
NEW YORK

E-Z ELECTRIC FLOOR  
SANDPAPERING  
and POLISHING MACHINE

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

The E-Z will clean, scrub, sandpaper or polish anything—from a common WOOD floor to the finest Polished Oak floor. It is FOOL PROOF and dust-proof, noiseless in operation; weight, 50 pounds. Can be attached to any lamp socket, requiring no special wiring or "inspection."

Machine interchangeable for direct or alternating current. Driven by a 1-4 horse power motor. It grinds and polishes MOSAIC, TERRAZZO and MARBLE floors.

Write For Free Trial Offer

53 Merchants Bldg.  
PHILADELPHIA, PA.

STANLEY TOOLS

Among the Gauges shown herewith, we call particular attention to

No. 94, A NEW BUTT GAUGE.

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

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

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

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

SEND FOR CATALOGUE.

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

Copyrighted, 1909, by the Stanley Rule & Level Co.

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

When writing advertisers please mention the American Carpenter and Builder.
A MACHINE YOU CAN USE
IN THE SHOP OR ON THE JOB

The GRIMM WOODWORKER

The Kind of Letters We Receive


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

(Signed) A. J. Kent.

Write for Booklet and Selling Plans

Grimm Manufacturing Company
46 Erie Street, Buffalo, N.Y.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Universal Trimmers

No Pattern Shop Complete Without a Fox Trimmer

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

20,000 Satisfied Users Testify to FOX EFFICIENCY

Prices Range From $22.50 to $150

WRITE TODAY FOR OUR COMPLETE CATALOG OF TRIMMERS

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

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

Address for Literature

H. B. SMITH MACHINE COMPANY
SMITHVILLE, N. J., U. S. A.
Branches: New York, Chicago, Atlanta, Memphis

PAYS FOR ITSELF

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

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

Write for full description, price, terms, etc.

J. A. FAY & EGAN CO.
545-565 West Front Street,
CINCINNATI, OHIO
GOODELL-PRATT'S NO. 111
SHORTER, LIGHTER,
HANGS BETTER, yet
HAS GREATER POWER

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

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

GOODELL-PRATT COMPANY
Toolsmiths
GREENFIELD, MASS., U. S. A.

New Starrett Protractor
One of the most useful tools a carpenter ever had. See full description in free Catalogue No. 106. With this tool in your chest you can give away half a dozen or more which it will render back numbers.

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

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

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

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

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

THE TAPLIN, RICE-CLERKIN CO., MFRS., AKRON, OHIO
The Only Stove and Furnace Firms
Send for Catalogues
"A Bit Of Utility"

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

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

Unequaled for Delicate Work

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

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

The Progressive Mfg. Co.
Torrington, Conn.

THE "LIGHTNING" AUGER BIT

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.

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

Next machine you buy, order a—Rothmotor to drive it individually. You will be pleased. You will be gaining some profitable experience in economy.

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

74 RUBY ST.
Rockford, Ill.

CHAMPION FLOOR SCRAPERS

WHY PAY EXORBITANT PRICES?

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

We Can Save You Money Both first cost and every day machine is used.

THE DOSCH MFG. CO. Bridgeport, Conn.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
MAYHEW 60° MITRE BOX

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

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

PRICE EACH, $10.00

H. H. MAYHEW COMPANY, SHELBURNE FALLS, MASS.

GOODELL MITRE BOX

Made of STEEL - Cannot Break
First in Quality and Improvements
Automatic Stops for holding up saw.
Corrugated Backs Graduated.
Gauge for duplicate cuts and many other features

SEND FOR CIRCULAR "C"

GOODELL MFG. CO., Greenfield Mass.

"SEAVEY" MITRE BOX

Meets Every Requirement

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

Portable — Can be carried in the Tool Kit

Weights 2

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

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
The Master Bit Brace

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

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

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

THIS IS THE MITRE BOX YOU WANT

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

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

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

Sent on 10 Days Trial

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

Our "Chisel" Guarantee

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

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

Special Offer

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

Braunsdorf-Mueller Co., Elizabeth, N. J.

When writing advertisers please mention the American Carpenter and Builder.
Make the Roof as Permanent as the Foundation

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

J-M Asbestos Roofing

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

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

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<tr>
<th>No. 107</th>
<th>$1.00</th>
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<tbody>
<tr>
<td>With quartered oak box holder</td>
<td>1.50</td>
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<tr>
<td>Carborundum Pocket Stone in leather case</td>
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They are properly applied when hung with Richards Ball Bearing Swivel Hangers specially made for this purpose. Every builder should know about these.

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Cellar Window COMBINED

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Both styles are made in 3 sizes.

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Postage Prepaid

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**The Taylor Bracket**

*THE TAYLOR MFG. CO.*, Bloomfield, N. J., U.S.A.

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

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

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

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

Makes sashes work perfectly.

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

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

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

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AT POPULAR PRICES

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

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

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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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Horizontal Furnaces with large doors or larger furnaces and more piping at proportionately low prices.

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See and all attachments are included.

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<tr>
<th>Size</th>
<th>Saw Capacity at Miter</th>
<th>Price</th>
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<td>C30</td>
<td>30&quot; x 6 inches</td>
<td>15.50</td>
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American Carpenter and Builder
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NEW YORK OFFICE, 178 FULTON STREET

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Vol. X March, 1911. No. 6

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

O MATTER how well you may do a thing today, there will be a better way of doing that thing tomorrow.

P ERSEVERANCE was thus defined by a colored preacher: "It means, firstly, to take hold; secondly, to hold on; thirdly, to never let go." The man who possesses these qualities is bound to be successful in any field of work.

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

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

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

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

He is making his living by it.

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

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

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

Against the Narrow Building Lot

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

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

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

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

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

Candor in the Home

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

Anatomical

Artist—"Madam, it is not faces alone that I paint, it is souls."
Madam—"Oh, you do interiors, then?"—Boston Transcript.

On the Level

"Do you assimilate your food, aunty?"
"No, I doesn't, sah. I buys it open an' honest, sah."
—Baltimore American.

A Hero

Kicker—My great-grandfather carried that drum all through the Revolution.
Snicker—And whenever he sighted the enemy he beat it, I suppose.—Brooklyn Life.

Easily Explained

"Do you understand this building loan scheme?"
"Sure! They build you a house and you pay so much a month. By the time you are thoroughly dissatisfied with the place it's yours."—Ladies' Home Journal.

Boy Nature

"What's the matter, little boy?"
"M-maw's gone an' drown'ed all the kittens."
"Dear! dear! Now that's too bad."
"Yep, she p-promised—boo hoo!—'at I c'u'd do it."
—Harper's Weekly.

Possibly So

After staring at the minister straight through the fish course, Adeline inquired: "Mamma, why is that man's hair so black when his beard is white?"
She was hushed by the stricken family, and stayed hushed until the salad was brought in.
Then she saw her chance. "I know," she said, "it's 'cause he uses his jaw more'n he does his head."
—Success.
ALTHOUGH not patented until October 21, 1824, it was in 1811—just one hundred years ago—that the first Portland cement was produced. It was the invention of Joseph Aspdin, a bricklayer living in the city of Leeds, in Yorkshire, England.

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

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

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

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

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

The text and illustrations of this booklet are reproduced in full, in Volume IV of "Radford's Cyclopedia of Cement Construction."
Joseph Aspdin, recorded in the British High Court of Chancery, December 15, 1824, as required by terms of the Letters Patent granted him under the royal seal on October 21 in the same year. The specification describes the inventor’s method of making Portland cement and artificial stone.

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

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

Joseph Aspdin had one daughter and two sons, James and William. Both sons were associated with him in the manufacture of cement, which he appears to have carried on in Wakefield until his death in 1855, after which his son James continued the business for some years. The earliest instance of the use of Portland cement in important construction work was in the building of the Thames tunnel in London about 1828.

After careful tests, the eminent engineer, Sir Isambard Brunel, who had in charge the building of the tunnel, adopted Aspdin’s Portland cement as the chief material of construction.

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

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

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

All cements made prior to the invention of Portland were of the class we term “natural”—made, in some instances, as was that of the ancient Romans, without calcining, by simply mixing slaked lime with powdered volcanic ash called Pozzuolana, and in other instances produced by the calcining of cement rock. Calcined cements are a distinctively modern invention, having apparently been unknown to the ancients. They were developed during the eighteenth century in England, France, and Germany, to meet a revived demand for hydraulic mortars, which had fallen into disuse during the Middle Ages; but it was only by slow steps that knowledge of the principles essential to
the making of a uniform and reliable product was acquired.

In searching for a reliable hydraulic mortar for use in marine construction, John Smeaton, the English engineer who built the third Eddystone Lighthouse (completed in 1759), developed a form of natural hydraulic cement after experimenting on limestones containing different proportions of clay. He demonstrated that pure limestone would not produce a hydraulic lime, but, on the contrary, the property of setting under water depended on the use of very impure, clayey limestones. Smeaton's discovery, however, had no immediate effect on engineering practice in general, for no record of his experiments was published until 1791; yet he is entitled to the honor of being placed on record as the first investigator who demonstrated the practical importance of chemical analysis in cement-making—now insisted on as an indispensable prerequisite for intelligent regulation of the processes of manufacture.

The next important step in advance was the invention, in 1796, in England, and almost at the same time in France, of a form of natural cement known as "Roman," which soon came into general use in England and also attained considerable vogue on the Continent. "Roman" cement was the invention of Joseph Parker, an Englishman, who took out a patent for his product in 1796. According to Parker's specifications, the raw material from which "Roman" cement was made consisted of certain argillaceous or clayey limestones common in some of the English coastal formations—essentially natural mixtures of clay and limey material mixed with small amounts of calcite, barite, or other minerals, and known geologically as "Septaria." This material was calcined "with a heat stronger than that used for burning lime"; and the resulting clinker was finely pulverized, to develop its hydraulic activity. As might naturally be expected, the product varied considerably in quality; and in many respects—notably its strength and fire-resisting powers—it fell far below the high standards of true Portland cement.

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

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

It will be noticed that Mr. Aspdin's specification makes no statement as to the relative amounts of lime and clay to be mixed together, or as to the degree of temperature necessary in the calcining process. These, as shown by the development of the industry in later times, are features of vital importance; but it is possible that at the time of taking out his patent, Mr. Aspdin did not have sufficiently explicit data to justify him in giving what might be considered a final word. He designated his cement "Portland," because of its resemblance, when set, to the popular building stone obtained from the famous limestone quarries on the Isle of Portland in Dorsetshire, on the southern coast of England, from which many churches, public buildings, and other structures in England, such as St. Paul's Cathedral, the Eddystone Light, etc., were built.

It was not to be expected that, in its beginnings, the manufacture of Portland cement should be characterized by the careful technical supervision and scientific accuracy that mark every detail of the process to-day. This was a problem for a later generation, and not all of its details have even to this
day been fully and finally solved. For many years, undoubtedly, the manufacture of Portland cement in England was carried on in an empirical manner, the proportioning being done by "rule of thumb" methods. "Even in the beginning of the seventies," says a German writer* on this subject, "there was as good as no chemical supervision in the English cements works."

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

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

Several independent investigators, early in the last century, approached quite closely the production of real Portland cement by experimenting in the calcining of artificial mixtures of chalk and clay. This is true of the hydraulic cement produced by M. Vicat in France; of the similar product made at the Chatham Dockyard about 1833, by Colonel (afterwards General) Pasley; and of the form of cement known as "Frost's Cement," first made at Swanscombe in Kent, about the same time. Frost's cement was made as follows:

Two parts by weight of chalk and one part by weight of Medway clay thoroughly mixed with a considerable quantity of water, and allowed to settle. The water was then drained off the surface, and the sediment left to dry by atmospheric action. When sufficiently dry, the mixture was lightly burned in kilns—not to vitrification, as that would have destroyed its setting properties—and then ground in mills. Had Vicat, Pasley, or Frost used a larger quantity of chalk in proportion to the clay, and had they carried their burning to the point of incipient fusion, they would have produced true Portland cement. In all these cases, however, the product contained a great excess of clay (alumina), was only lightly burned, was very quick setting, and was much inferior in weight and strength to Portland cement, being rather of the nature of hydraulic lime.

The approximate relative proportions of lime and clay (5 to 2) required to give a reliable and uniform product, were determined experimentally, in the forties, by Mr. Isaac Charles Johnson, founder of the firm of I. C. Johnson & Co., cement makers, now of Gateshead-on-Tyne and Greenhithe-on-Thames, and were by him first made public. Mr. Johnson subsequently invented several mechanical improvements in the manufacture, one of these being known as the Johnson "Chamber System," utilizing the waste heat of combustion for drying the ground raw-material mixture, and providing a simplified method of charging the kilns; but this chamber system was soon superseded by the modern rotary kiln now in almost universal use.

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

Sacred

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

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

Contractors' Costs Cut Down by Use of Motor Trucks

(An article for wide-awake builders.)

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

The great difference in the final figures submitted on this contract, by the several bidders, proved extremely puzzling, ranging from $12,000.00 to $22,000.00. Exactly the same specifications were furnished to each of the contractors and the same guarantee was required of each. The material was to be standard throughout and could be recognized as such by the layman, as well as the contractor. The element of risk on weather conditions and the labor market were speculative and were no doubt the determining factors in the mind of each bidder. Some men are willing to take greater chances than others, believing in the efficiency of their equipment to speed up and accomplish seeming miracles.

The lowest bidder in the case was recognized as reliable in every way and, to insure a faithful carrying out of the contract, gave a bond.

In telling of this incident the manager of the manufacturing concern stated that while not particularly interested in acquiring a knowledge of the contracting
business, but in order to reconcile in his own mind the great difference in the figures presented, he sought out the successful contractor to get his explanation and find out how it was that he was able to so underbid all the rest. He found at the head of this firm an individual who had kept abreast of the rapid development of mechanical aids in his business.

As weather and labor conditions were to determine the profits on this contract, provision for every emergency had to be made. The time of the employees had to be conserved in every possible manner. Living in widely separated districts and having to depend upon an inadequate street car service to reach the job which was a long way out, many hours of lost time of their men were staring the contractors in the face—time that meant money both to the employer and employee. Now the partners of this firm each owned his own automobile and realized the immense saving of time these machines had afforded in getting about on inspection trips, looking after material, and transferring skilled men from one job to another. So an investment in a passenger motor car for the use of their employees was discussed and determined upon.

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

While the car was designed to carry but 20 persons, 25 and 30 were comfortably transported on each trip to the job and the entire force were always ready to begin work at the appointed hour. When not used in passenger service, the car was used to haul light loads of materials needed in a hurry. Sometimes it was sash and doors, which had been ordered in plenty of time from the manufacturers, but on account of inadequate delivery equipment, would have hindered the progress
Influenced by the complete success of this innovation and looking at it from the viewpoint of economy, a three-ton heavy duty truck was then placed in commission to haul the heavier materials used. It was found that one of these trucks, with one driver, accomplished the work of four teams and four drivers and the time consumed in making deliveries was reduced over one-half.

**Other Examples of Costs Cut Down**

Another striking example of the saving of time and money through the wise use of motor trucks in connection with building work is in upper New York City where a three-ton motor truck with self-dumping steel body has been used for some time in fulfilling a contract taken by McDonald & Barry to fill in a tract of low ground at Broadway and 204th street. The truck hauls loads of wet ashes from a power house about a mile away. Each load contains seven cubic yards, or just double the load hauled in a horse-drawn wagon. The motor truck makes ten to twelve trips a day as compared with an average of five or six trips made in a working day with horses. Thus the power vehicle is doing the work of four horse-drawn wagons, and is hauling from seventy to eighty-four cubic yards of material a day. In this case the saving in time is of especial importance because the filled ground is to be used for the construction of buildings that are badly needed by the owners.

The large photograph on the first page is a typical example of how much time is lost in transporting lumber by the horse-drawn vehicles. Four loads became stalled on this hill, and it was necessary to unhitch all four teams and hitch them to each load to negotiate the hill. The time lost, not only by the four drivers, but by the men waiting at the other end for the lumber, is one of the speculative elements in the contracting business that is rapidly becoming eliminated by the use of the commercial motor car. Record loads of lumber, steel, roofing in rolls, cement in sacks and even heavy granite blocks are commonly seen on the streets of the larger cities threading their way through narrow streets and over steep hills at a ten-mile-an-hour pace.
The ordinary obstacles that horses seem to experience difficulty in overcoming are as child's play for the contractor's motor trucks which are as fresh at 6 o'clock p.m. as at 7 o'clock a.m.

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

The Schmied-Sisman Co. have always on hand a large number of building contracts in all parts of Detroit, covering a radius of about twenty miles. In his daily rounds with a “Hupmobile” in the course of superintending these constructions, Mr. Hurlburt's speedometer shows an average register of from sixty to eighty miles. Mr. Hurlburt, of course, runs his car every day in the year regardless of weather conditions, and the car is subject to much harder use than the average. Mr. Hurlburt has made as high as thirty-two miles on a gallon of gasoline and states that the little car will average about twenty-seven miles to the gallon the year around.

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

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

“On account of the light weight it is infinitely easier on tires. One set of tires will last an entire season of hard usage. In fact, I am still using one of the original front wheel tires after a season and a half of hard usage.

“Of course working around buildings and excavations I find it convenient to drive into vacant lots and places where there is no road way. Often the going is soft and I would not dare attempt it with a heavy car. But with my little light car I never have any trouble in getting through.”
other cars used for business purposes some figures based on actual experience will prove interesting. Not long ago averages were compiled from the records of twenty-eight motor express and delivery wagons operating in as many different lines of trade in the city of Syracuse, New York. These figures, although not based exclusively on motor trucks and inspection runabout cars in use by building contractors, nevertheless, may be taken as fairly applicable to this line.

For periods of time ranging from six to twenty-two months the annual operation and maintenance costs averaged as follows: Fuel and oil, $168; depreciation estimated at 20 per cent, $180; repairs and replacements, exclusive of tires and ignition batteries but including repairs due to accidents and drivers' carelessness, $150; driver's wages, at $12 a week, $624; tires, $50; interest on investment at 5 per cent, $45. This gives a total cost per wagon of $1,217 a year.

The machines average 50 miles a day. Assuming that two single-horse wagons could do the work of one of the motor wagons, and that the cost of stabling, shoeing, drivers' wages and other items averaged $22 a week, the horse service would cost $2,112 a year, or $895 more than the motor wagon. Syracuse is subject to very severe winter conditions and in general has very poor pavements, while many streets are not paved at all. Hence the actual figure of $13.25 per month per car for repairs arrived at by the records of a score of wagons in a variety of services is considered an excellent average upon which to base estimates for maintenance repairs for this particular type of power vehicle.

The commercial motor car has undoubtedly reached a stage of development which entitles it to recognition as a great time saver, and an economical factor in modern building operations. Wide awake men will do well to investigate its possibilities individually as applied to the needs of their own particular line of work. Both the motor trucks for heavy hauling and the lighter machines used for inspection trips should be looked into. They are money makers and money savers for many building contractors.

How to Remove Old Putty

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

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

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

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

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

The drawings show a plan, section and the four elevations of the room, drawn to the scale of one-eighth of an inch equals one foot; scale drawings of the principal built-in or structural features, drawn to a scale of three-eighths inch equals one foot; and every principal part of the woodwork in the room is detailed to the scale of three inches equals one foot.
Combined Living and Dining Room in One-Story Wing Showing Plan and Details of Interior Finish
Additional Details of Interior Finish—Fire Place with Wood Mantel—Book Case—Buffet
How to Put on Base to Hide Joint at the Floor Line

By B. L. Jenks

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

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

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

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

There are several ways of overcoming this trouble, as follows: Fig. 1 shows the different members of the base and their relation to each other and to the floor as well. When originally put on, the base itself and the carpet mold came down tight to the floor. The base was put in place and varnished separately and then the mold was nailed to the base. In drying, both base and carpet mold remained fixed, while the floor shrunk away. To overcome this it was only necessary to take off the carpet mold, lower it to the floor and nail it back in place. This was easily done, and it did not leave any mark on the base; but it meant a loss of time as the carpenter had gone with his tools to another job in a distant part of the city.

This method, while effective in correcting the difficulty, has not been very satisfactory, in that it is not automatic. In other words, the shrinkage of the joists and the change necessary to hide that fact has been altogether too apparent to the occupant of the premises. Another method, sometimes used to overcome the same trouble, is shown in Fig. 2, in which the base is set into a shoe, which is nailed to the floor. In this case the shoe is put down first and the base fitted into it and when, in that position, these two members are varnished, and afterwards shrink, the base will show a strip of unfinished wood or at least a rough line where the varnish has pulled away from the other
member. This requires the attention of a painter instead of a carpenter, but it is equally annoying and expensive.

There is a third method of handling this matter, which, if carried out properly, will not only prevent nervous strain to the owner, but will save the time of the carpenter or the painter, or both, and will do it quietly, unobtrusively and withal, effectively. This method is shown in Fig. 3. Under this plan, assume that the wide member of the base is to be 7½ inches and the carpet mold is ¾ by 1¾ inches. Then instead of ordering the base 7½ inches wide, order it 6¾ inches, and order the same number of lineal feet of hemlock, pine or other cheap wood of the same thickness as the base, and ¾ inch wide. Set this piece on edge around the room in line with the base, and nail it to the floor, and not to the studding or furring. Then on this member set the base, nailing it to the studding or grounds in the usual manner. Then paint or varnish the base in its fixed position on the wall and paint or varnish the carpet mold apart from the base. After both members are thoroughly dry, set the carpet mold in position and nail it firmly to the strip which is nailed to the floor. It thus becomes a part of the floor itself and will move up or down with the floor and having, upon the basis of measurements used above, a lap of ¾ inch on the base, it will readily hide even an unusual shrinkage, and, better still, there will be no tell-tale marks of varnish or lack of varnish, to disturb the owner with fears of disaster or visions of repair bills, and no incentive to withhold the contractor's final payment, as might be the case otherwise.

Something About Chimneys

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

By A. W. Woods

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

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

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

How to calculate the number of brick required in a chimney furnishes a little problem that is not generally understood and especially in the arrangement of laying them to obtain the greatest flue space with the least number of brick. The size of a common brick on its bed is about 4 by 8 inches or 32 square inches. To this of course must be allowed the mortar joint but for illustration purposes, we will not take that part into consideration.
In Fig. 1 is shown what is called a five-brick chimney which gives an opening of 32 square inches, which is entirely too small for a smoke flue for any purpose.

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

Better use the number of brick shown in Fig. 3 which gives an area of 64 square inches and is sufficiently large for an ordinary sized stove, or fire place; but if more than one stove is to connect with the flue it should be larger and by adding another brick, the flue area is increased to 256 square inches. This is sufficient for two stoves or for the heating plant for an eight or ten room house.

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

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

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

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

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

+ A Sailor's Yarn

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

—Le Rire.
Practical Uses of the Steel Square

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

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

In Fig. 1 is shown the elevation of the purlin resting on the truss, or in other words, it is resting with the rake of the roof. In connection with it is shown the plan of the corner. It will be seen that this is just the same as the hopper cut.

Now, we will try and illustrate how to obtain the cut with the aid of the steel square in the simplest way possible. But before giving the parts to take on the square, let us see what relation, or similarity this part has to some other parts of the roof. How about the roof boards that intersect at the valley? Do they not lie in exactly the same position as the purlin? To be sure they do. The only difference is in the thickness of the timbers. One is a board about an inch thick and the other a timber eight or more inches in depth. But that does not make any difference, as far
as the cut is concerned. Again it is the same as the miter for a standing gutter at the hip. One is a board set edgewise with the pitch of the roof; the other is a timber sitting in the same position but several inches thick, but the angle across their face and edge are the same and consequently the cut must be the same.

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

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

Referring again to Fig 1, there are shown three letters A B C, forming a triangle. A B represents the run, B C the rise and A C the pitch. NOTE the diagram is governed by the thickness of the purlin and by the pitch given the roof and constitutes the same parts that give the seat and plumb cuts of the common rafter. A C and A B taken on the square will give the angle across the bed of the purlin; the side on which the latter is taken giving the cut. For the miter, take A C and C B on the square and the side on which the latter is taken will give the cut across the side of the purlin.

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

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

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

A Screw Driver Suggestion

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

Double Glazing to Exclude Noise

In these days of trolley cars and other noise-producing agencies, the exclusion of this noise from sickrooms, from studies and from lecture-rooms has become an important practical problem. An English builder has tried, with success, the plan of double-glazing the windows exposed to such annoyances. He found that the noise of heavy wagons and trolley cars was reduced to a bearable degree, and that conversation through a window having two thicknesses of glass, with an air-space between, was almost impossible. Of course, where such a device is adopted, suitable arrangements other than the windows must be made for ventilation, but this ought not to cause any great difficulty.
I will start off talking about stair work. Oftimes when going out to measure a job, we find the stairs horsed up between two plastered walls, commonly called boxed stairs. Now to house out the strings, the risers and treads cannot be gotten in their place, for the want of room; and the stairs cannot always be built up elsewhere and slipped in place, so just notch out a couple of strings, right and left, the same rise and tread as the rough horses.

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

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

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

This is how to kerf risers or other pieces so the kerf will exactly close up and not leave the face bunchy. Take the piece of stuff the same thickness as the riser, say 7/16 inch; measure back from one end a distance equal to the radius on which the riser is to be bent; cut on band saw against a stop the required depth, then lay it on a flat surface with kerf up and lift up the radius end until the kerf closes; then measure the distance from the lifted up end to the bench, which will be the distance the kerfs should be apart in the back of the riser. Soak the face of the riser well with water, drive a nail in the end; tie a piece of string to the nail and bend over to the required shape; then take a thin piece of veneer waste, such as comes around stuff from veneer factories, or even take a piece of canvas and glue over the inside or kerfed side and let lie until dry, then clean up face, etc.

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

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

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

Here is a spring made of wood, which can be used to advantage in the mill every day in the week. Take a piece of any kind of wood and on the band saw rip kerfs in it lengthwise about ½-inch apart; then cut the corner round, clamp on table and commence. A slick being ripped, B spring with pressure, C saw gauge, D saw, E clamp.

Here's one for getting out drip cap. I have seen mills where they put thousands of feet of 1 by 4 inch stuff in front of a machine and run it through. Here's the way to save the strip. Rip out the strip first, then stick on the moulder. This not only saves the strip but saves the heavy cut on the moulder. Here is the way to cut the strip out. Run the stuff on edge on a self-teed saw and where the cut, X, comes the operator had an oak block in which two pocket knife blades were fastened. These knives nearly cut the strip loose, in fact the pull-out man could take a hold of one end and rip it off easily. Here it is. See sectional drawing. A is the oak piece, B feed wheel, C drip cap being cut, D saw gauge, E saw, F saw table, F knife blades. The same letters represent like parts in the plan.

A Few of the Tools You Can't Buy

By Emery H. Chase

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

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

Another useful thing in my chest is the very fine and thin saw. I, of course, could not buy one so I took a corset steel ½ of an inch wide and about 10 inches long and filed fourteen teeth to the inch and did not set it. It works finely. I use it in pattern making; the main object of its use is to avoid much width in the saw kerf. It leaves a kerf only wide enough to admit thick writing paper; and cuts smoothly and rapidly and two pieces sawn in two with this saw and then put together again do not lose much of their original dimensions from the thickness of the saw kerf. It has to be used in a hack saw frame, however. Just try it though!

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

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

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

To Locate Gas Leaks

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

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

By Frederick Nye

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

The position of radiators near a wall that has no windows, but at right angles to and near the wall which has the windows in it, I believe, will give better results than any other. My attention was first called to it in a house in which I lived some years ago, one room in which was warmed more effectively than the others without any apparent reason. I need scarcely say that I went to all reasonable trouble in trying to find a cause—after once realizing that there was something that wanted accounting for—taking into consideration position of room, temperature of water in the radiator (as compared with the others), the area of radiation, and all that could be thought of or done, and was finally forced to believe the position of the radiator had something to do with it.

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

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

I have not noticed that the position of the fireplace (with its air-extracting chimney) affects the good results, but I have noticed, sufficiently to feel tolerably certain, that if one of the radiators stands flat against the window wall, the good effect is greatly reduced.

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

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

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

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

Gasoline engines are in such general use by building contractors and carpenter and woodworking shop men that the following brief and clearly stated principles telling how such engines “work” will be of real interest to many.

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

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

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

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

The crank-pin is at one end of the arm called the crank, on the other end of which is the shaft or crank-shaft.

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

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

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

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

There are certain other engines, with different valve arrangements, which may complete a series of operations in two strokes, and these are called two-cycle engines.

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

This moving forward of the piston is accompanied
by an opening of the inlet valve, permitting the explosive mixture to follow the piston, and fill the cylinder.

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

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

At the end of compression, an electric spark explodes the charge, causing the pressure to rise two to four and one-half times the compression-pressure. This high pressure in the clearance space will then drive the piston forward.

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

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

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

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

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

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

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

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

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

In conclusion; don't put in a gasoline engine with the idea that it will take care of itself. It won't do that, but there is no prime mover made, unless it may be a water wheel, which will do its work with as little attention. Kept supplied with fuel and lubricating oil, and with proper attention given to keeping the cylinder from overheating, it comes about as near perpetual motion as is possible. Troubles there are, but investigation is very apt to reveal the fact that they are due to slight oversights which may be quickly remedied.
How to Make a Morris Chair and a Rocker

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

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

The Morris chair, an English importation, finds just as favorable reception and is rapidly becoming looked upon as a necessity. It so readily supplants the use of the rocker that we are inclined to doubt the above mentioned philosophy.

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

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

STURDY, HAND MADE FURNITURE IN THE HOME
Complete Directions are Given with Working Drawings for Making the Morris Chair and the Rocker.
is for the Morris chair and provides for the most economical use of mill and hand tools.

**Stock Bill for Morris Chair.**

- Posts, 4 pieces, 2½ by 2½ by 22¼ inches, S-4-S.
- Front and back rails, 2 pieces, 1 by 4 by 28 inches, S-4-S.
- Side rails, 2 pieces, 1 by 3 by 27 inches, S-4-S.
- Side slats, 10 pieces, ½ by 3 by 17¼ inches, S-4-S.
- Arms, 2 pieces, 1 by 5 by 38½ inches, S-4-S.
- Brackets, 4 pieces, 1½ by 2½ by 5 inches, S-2-S.
- Cleats, 2 pieces, 1 by 1 by 22½ inches, S-4-S.
- Seat slats, 5 pieces, ¾ by 3 by 26 inches, S-4-S.
- Back verticals, 2 pieces, 1½ by 2 by 28½ inches, S-4-S.
- Back horizontals, 4 pieces, ½ by 2½ by 19½ inches, S-4-S.
- Back stick, 1 piece, ¼ by 1½ by 24½ inches, S-4-S.

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

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

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

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

The posts should be worked first. Square up the top ends of each. The lower ends need not be squared as they are to be cut off on slopes after the chair has been put together. From the top ends measure off and lay out the mortises in the posts. To help in the visualizing of the locations of these mortises it will be well to stand the posts up in the positions they are to occupy relative to one another in the finished chair and mark roughly, as with penciled circle, their approximate locations. After this has been done the posts may be laid down on the bench and measured and marked accurately, placing them side by side in pairs and making their top ends even with the trysquare.

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

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

Next shape the arms as shown in the working drawing and cut the side slats to length. Now lay the arms and side rails side by side and lay out for the location of the mortises which are to receive the ends of the slats. It will be found much easier to "house" the whole end of the slat in both arm and lower rail than to attempt to shoulder them. Any slight variation in the straightness of the arm or the edge of the rail will then make no difference in the way the joints fit. The lower rail is thick enough to permit this. These ends should not be let in any more than is necessary, about ¼ to ½ of an inch at each end.

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

The brackets are to be fastened in place with dowels and glue, also.
back stick according to the working drawing and cut the recesses for it in the arms. Hinge the back and cut off the bottoms of the posts as shown. To lay off for the cuts on the posts lay a straight-edge across both posts at once.

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

**How to Make the Mission Rocker**

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

- **Stock Bill for Mission Rocker.**
- Front posts, 2 pieces, 1½ by 1¾ by 21 inches, S-4-S.
- Back posts, 1 piece, 1¼ by 6 by 35 inches, S-2-S.
- Front rail, 1 piece, ¾ by 4 by 23 inches, S-4-S.
- Back rail, 1 piece, ¾ by 4 by 22 inches, S-4-S.
- Back rails, 4 pieces, ¾ by 2½ by 22 inches, S-4-S.
- Side rails, 2 pieces, ¾ by 4 by 25½ inches, S-4-S.
- Side slats, 10 pieces, ¾ by 2½ by 12 inches, S-4-S.
- Brackets, 2 pieces, 1½ by 2¼ by 5 inches, S-2-S.
- Arms, 2 pieces, 1 by 4½ by 27½ inches, S-4-S.
- Seat slats, 5 pieces, ¾ by 2 by 12 inches, S-4-S.
- Rockers, 1 piece, 1½ by 6½ by 35½ inches, S-2-S.

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

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

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

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

**Painting a Metal Roof White**

A recent number of the Painter's Magazine tells of a tin roof to be painted white, the former coating being metallic brown. Their advice is that when a tin roof is painted white it is usually done to deflect the rays of the sun, so as to have the space below the roof somewhat cooler than when a dark paint has been employed. One cannot expect, however, to produce a well-covered white job with one coat of white lead paint, even if made from pure lead and linseed oil. Use pure white lead in oil, as the basis of the paint, omitting zinc white as being too brittle, and if pure white lead paint is too high in cost, add whiting and barytes as cheapeners, but not in excess. Ten per cent whiting and twenty per cent barytes should be the limit. Use pure raw linseed oil only with very little drier and only enough turpentine or turps. substitute to make the paint work freely. Brush the roof well with a stiff broom, so as to remove all that is loose of the brown paint, and add to the white paint for first coat a trifle of lampblack to make it a light lead color, upon which the second coat of paint will be pure white.
Pen Sketching Simplified

An additional article on this subject following the series of three concluded in the May, 1910, number—Valuable sketching points for all who draw plans

By Conrad H. B. Schaefer

Every medium with which one can draw pictures has its own peculiarities. These, instead of being defects, may be developed into characteristics of unusual beauty. Thus in the charcoal drawing the impossibility of making clear outlines is developed into a beautiful softness and blending of light and shade. The indistinct half printed lines of an etching are utilized to secure an effect of atmosphere. After sufficient practice in pen and ink drawing to have learned the difficulty of securing some artistic effects, it will be seen that the beauty of the pen sketch lies in accenting the variety of outline and brilliancy of light and shade to be found.

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

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

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

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

One of the most important duties is to carefully plan the rendering of the drawing. Think it out before-
hand—the kind of lines to be used, how much and the best position in which to draw them, and so on. Even in drawing a single line, make a dot at the other end towards which to train the movement. It will save crookedness and erasures.

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

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

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

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

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

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

The spirited rendering of the flat ornamental subject, in the fourth illustration, shows how much more attractive the sketch is than the full line methods of the shell wood cuts that were once so much copied.

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

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

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

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

**Fees of Architects**

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

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

"Nevertheless, some of us do, and if it were not for the capital invested, the arduous labor required and the great responsibilities incurred.

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

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

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

**Fillial Generosity**

"Your father looks very nice with his gray hairs."

"Yes, dear old chap! I gave him those."
The problem presented by the design of a modern city school building is threefold. In the first place it must be so designed that the floor plans will suit the scholastic and administrative needs of the school. Second, the building must conform to the latest practice in economical, safe and sanitary construction. And third, satisfactory and ready maintenance must be assured. Added to these three necessary, practical requirements, there is also the architectural appearance of the building to be taken into consideration. The public school building usually occupies a rather prominent location; and so an attractive outward appearance, while not as essentially important as the interior arrangement, is nevertheless highly desirable.

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

The perspective and floor plans presented herewith show what may be taken as a model city school building, in which all these various factors have been rated at their true worth. This building has been designed by the architect, G. W. Ashby, with the idea of keeping the front of the building as plain as possible,
consistent with good appearance, while putting the main emphasis on the solution of the complicated school-house planning problem as outlined above. There result is an exceedingly practical design, economical considering the accommodations provided, and in all a dignified, well-appearing structure.

This building is laid out in a modified E form, a two-story auditorium or assembly room forming the middle bar of the letter. On the first or basement floor are the manual training and domestic science rooms, also the locker and toilet rooms and the heating plant, this latter being in the central extension under the assembly hall. On the first floor are eight class rooms, 21 by 26 feet in size, a library, biological laboratory and the main floor of the auditorium. The principal’s office is on this floor, situated immediately above the main entrance to the building. The third floor is laid out in the same way as the main floor, the same number of rooms being provided. The chemical and physical laboratories are on this floor and from it entrance is had to the balcony of the assembly hall.

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

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

**To Prevent Dusting of Concrete Floors**

By Albert Moyer

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

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

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

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

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

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

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

This is a combined brick and shingle house of the square-cut, hip-roof design which is now so popular. The basement wall is of concrete, 13 inches thick, resting on 10 by 24 inch footings. From the grade gola arrangement covering the section at each side. The arrangement of the space inside shows many good features. On the first floor the living room takes up practically one-half the entire space of the house. It extends clear across the front, being approximately 16 by 32 feet in size. It is very attractively finished
with beamed ceiling and a large fireplace at one end; a nook with built-in seats, and a simple grille work separating it from the rest of the room. The arrangement of the stairway is unusual—an open stairway out of the living room, yet going up between closed walls. To the right of the stairway is the square dining room; a very cheerful and home-like apartment. To the left of the stairway a small room opens which serves as a lavatory. This opens into the kitchen and is a very desirable feature of this plan. The pantry is well placed for convenience and gives a large amount of case and cabinet space.
On the second floor there are four large-sized bedrooms, with plenty of closet space. The bathroom is on this floor and is located directly above the kitchen, thereby simplifying the plumbing installation and making it a great deal less expensive than when the various plumbing fixtures are widely separated. The balcony at the back of the house opens out of the upstairs hall. This is a very desirable feature. An interesting feature of the basement of this house is the square-cornered cement cistern built in one corner.
FIRST FLOOR PLAN

House Shown on Page 66
Wire Glass as a Fire Stop

The efficacy of wire glass in preventing the spread of conflagration was shown by a recent hot fire in the lumber yard of the Staudte-Rueckholdt Manufacturing Co., of St. Louis, makers of interior fixtures. Two of their buildings, one with the windows equipped with wired glass in metal sashes and the other with ordinary windows, were equally exposed to the blazing lumber.

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

Co., of St. Louis, makers of interior fixtures. Two of their buildings, one with the windows equipped with wired glass in metal sashes and the other with ordinary windows, were equally exposed to the blazing lumber. tratred the wired glass which held intact, setting fire to wood 15 3/4 inches from the glass, according to a measurement made by H. C. Henley, chief inspector of the St. Louis Fire Prevention Bureau. This incip-
ient blaze was promptly extinguished by the sprinklers. In the building not equipped with wired glass windows, 117 sprinkler heads were opened, causing serious injury to cabinet work through the softening of the glue, water damage, etc.

Carpenters Elect National Officers

The count of the referendum vote for general officers of the United Brotherhood of Carpenters and Joiners has been completed by the tellers, at national headquarters in Indianapolis, showing the election of the following general officers: President, William D. Huber, Indianapolis; first vice-president, Arthur A. Quinn, Perth Amboy, N. J.; second vice-president, J. D. McKinley, Chicago; secretary, Frank Duffy, Indianapolis; treasurer, Thomas Neale, Indianapolis; member of the general executive board, First district, Charles H. Bausher, New York; Second district, D. A. Post, Wilkes-Barre, Pa.; Third district, John H. Potts, Fourth district, R. E. L. Connolly, Birmingham, Ala.; Fifth district, John Valquist, Minneapolis; Sixth district, W. A. Cole, San Francisco; Seventh district, A. Martel, Montreal, Canada. All these officers are the present incumbents with the exceptions of McKinley, Potts and Martel.

The vote for president was as follows: William D. Huber, Indianapolis, 20,446; William G. Schardt, Chicago, 20,315; Harry Payne, Rock Island, Ill., 5,760. For first vice-president, Arthur A. Quinn had no opposition and received 36,430 votes. For second vice-president the vote was as follows: J. D. McKinley, 16,669; Fred J. Cheshire, Spokane, Wash., 9,856; W. W. Reynolds, Peoria, Ill., 9,674; Charles W. Paine, New Orleans, 7,858. For secretary, Frank Duffy had no opposition and received 38,750 votes. Thomas Neale received 20,729 votes for treasurer and his only opponent, William Michaels, of St. Louis, received 13,819. Bausher had one opponent, as did also Post. Potts had six opponents and Valquist two opponents, but Connolly, Cole and Martel ran for their respective position on the executive board without opposition. The officers are elected for two years.
Clarence J. Luther

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

During the spring and summer months even the services of a boy could not be dispensed with; schooling had to be left out for the more important farm work.

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

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

When he was 28, a bad debt he could collect in another way put him in possession of a state right to a patented sickle grinder. It was a simple affair, equipped with an emery wheel. With this as a starter, Mr. Luther spent a great deal of time and thought in perfecting it. He made many changes, adding the improvements from time to time he found by experience were advisable. He began to see also the opportunity for making something out of this grinder. The latent demand for an efficient and thoroughly reliable machine of this type appealed to him until he decided to start a company for the manufacture of them. The money was raised and the C. J. Luther Company organized at Port Washington. At first the factory employed only a few hands, with more added from time to time as the business increased. The machines put out were equipped with emery wheels and a comparatively simple gearing. Many of these are yet in use throughout the country, still doing good service for their owners.

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

It was at the time it left Port Washington that the radical change was made from emery to carborundum as a grinding substance. The emery wheel was superior to the grind stone, provided the operator had sufficient skill in using it; but carborundum possessed all of the good points of a grind stone and none of the poor ones of the emery wheel. Carborundum cuts 25 times as fast as a grind stone while at the same time there is no friction to draw the temper from steel tools. The grains never wear smooth so that little pressure is necessary. Its continued use has demonstrated the truth of its claim as the ideal abrasive.

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

To the Editor: Elgin, Iowa.

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

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

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

ALEX. PAGAN.

Church Built in Nine Hours

To the Editor: Austin, Texas.

In this era of development and upbuilding which is going on in Texas, things are done with a rush. The establishment of new towns is carried on with almost magical quickness in this state, but it remained for a minister of the gospel to recently direct a building enterprise that in shortness of time of its accomplishment eclipses anything in construction work yet accomplished in Texas. Through his well directed management a church was erected in less than nine hours, every part of the edifice being finished within that time.

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

By actual time, the edifice was completed in a little less than nine hours, and religious services were held therein the same evening. The site of the proposed church was entirely bare at 8 o'clock on the morning of January 11. At 8:30 teams began arriving with stone for the foundation, lumber and other construction material. By 9 o'clock the foundation was well along towards completion. When the foundation was finished, forty carpenters went to work on the superstructure, under the direction of Oscar Myer. The "house raising" took place at 10 o'clock, and the work of placing on the weather boarding and interior ceiling began. As fast as a board was placed in position the painters gave it a coat of paint. The church was well advanced towards completion at 12 o'clock, when all work ceased for an hour for rest and dinner. The entire frame was then up, the front steps and vestibule about finished, part of the floor laid and rafters placed in position.

The ladies of the congregation and of the neighborhood provided a good lunch for the workers and at 1 o'clock the army of men resumed the construction operations with renewed vigor and enthusiasm. Fifty men were employed by
this time in rushing the different parts of the structure to a rapid finish. As soon as the rafters and roof-boards were in place an additional force of 28 roofers went to work on that part of the job. By this time the ceiling, electric wiring and other interior details were finished and the paper-hangers went to work, and the painters and varnishers were giving the finishing touches to their respective features of the contract.

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

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

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

Men who had participated in the construction of the edifice gave experience talks. Rev. Munger related how he came to Waco a stranger without a dollar or a friend, and awakening to a realization that a new church was needed in his neighborhood, he had set about arranging for its construction. It was announced that the cost of the building was $2,500.

Subscriptions were called for to pay for the edifice and within a few minutes the entire sum was raised. The services came to an end at 7 o'clock, and the congregation dispersed.

W. D. Hornaday.

 Wants an Inexpensive Dry Kiln
To the Editor: Wichita, Kansas.
We have been subscribers to the American Carpenter and Builder for a long time. We are well pleased with it; and never have as yet asked for a settlement of our troubles. We have a small planing mill and wish to construct some kind of a dry kiln that will be inexpensive and at the same time do the business. We have in mind to build one of cement stone that will accommodate about 10,000 feet of lumber. Can you enlighten me as to the method employed by the mill men?

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

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

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

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

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

He Wants Advice
To the Editor: Prince Albert, Sask.
I should be obliged if you would give in the American Carpenter and Builder the most inexpensive methods of getting up heavy timbers on 3 and 4-story buildings, say 30 by 80 feet in size, also 24-foot built-up girders 12 by 16 inches, over store fronts.

Connection for Bit-Brace Bows


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

Gravity Sash-Lock


This invention relates to an improvement in sash locks and has for its object the provision of a gravity lock which shall be automatic in its operation, simple, durable and free from the objections of spring locks. The lock comprises a pivoted tumbler (13) secured to the upper sash and adapted to normally overlie the top of the lower sash. To raise the lower sash the tumbler is swung to the dotted line position and the engagement of the upper rail in passing throws it over the center and causes it to return to normal position so as to again engage the sash when it is lowered.

Portable Ladder Scaffold

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

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

Skewback for Hollow-Tile Arches

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

The object of this invention is to provide a skewback of a single pattern which may be used in constructing arches of different inclinations. The two figures of the illustration show the same skewback A applied to eye-beams of different depths and two arches of different inclinations. The adjustment is accomplished by rocking the part A upon the base flange of the eye-beam to the desired position and then filling in the crevices such as b, s, c, and d, with cement.

Nondripping Skylight

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

This is a skylight which will not leak nor permit the moisture condensation to drip. The main supporting beams (4) are of special construction comprising vertical and horizontal webs serving to support the packing and also being formed with grooves (8) to catch the drip. Beneath the member (4) extends a trough (1) into which trough traverse troughs (26) are adapted to discharge whatever water of condensation they may have collected.
THE CEMENT INDUSTRY IN ALL ITS PHASES SET FORTH BY ELABORATE DISPLAYS REVEALING THE REMARKABLE PROGRESS MADE IN STRUCTURAL AND INDUSTRIAL APPLICATIONS OF CEMENT, AND AFFORDING A POPULAR EDUCATION ON THE NATURE AND USES OF CONCRETE.

THE fourth annual Cement Show at the Coliseum in Chicago, under the auspices of the Cement Products Exhibition Company, was declared by all who witnessed the marvelous display to be the greatest in the history of the industry. One of the striking features of the show was the interest taken in the number of exhibits illustrating to the public the actual products in which cement is used; and the hope was expressed by many, that even more would be shown next year. For it is through these displays of articles made from cement, and of the methods employed in its practical use, that the uninformed public gains its ideas of cement construction, and recruits are secured for the growing army of cement users. The decorations in the great Coliseum were tastefully arranged and in keeping with the character of the show. Commencing Thursday evening, Feb. 16, and continuing till near midnight on the 23d, the show was visited by great crowds daily. Carpenters and builders, especially, were interested in the exhibition; and large numbers of them attended to learn the methods of using cement in connection with woodwork.

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

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

- **Advance Concrete Mixer Co., Jackson, Mich.** —In this exhibit was shown the operation of the 'Advance' type of concrete mixer, its points of advantage being explained by Dr. H. F. Abbott, President of the company. Those in attendance at the booth were J. W. Bragstad, President, and A. N. Bragstad, Secretary and Treasurer; also Joe Juel, Joe Oleson, and D. N. Johnson.


- **American Mason Safety Tread Co., Boston, Mass.** —M. H. Eddy in charge, and very busy pointing out the merits of the Mason Safety Tread. Those who wear while the slip of lead or carborundum is proof against slipping. An interesting line of concrete treads for sidewalks and skids.

- **American Saw Mill Machinery Co., Hackettstown, N. J.** —Portable saw bench and wood-worker, self-contained with gasoline engine. This machinery is used for cutting timbers, etc., done on the job. W. E. Swanger, secretary of company, in charge, assisted by A. C. Ewing.

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

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

- **Anchor Concrete Stone Co., Rock Rapids, Iowa.** —The exhibit in charge of Mr. Blaker, inventor and patentee, in charge, assisted by Mrs. Blaker, inventor and patentee, in charge.

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

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

- **Brooklyn Concrete Machinery Co., Brooklyn, Mich.** —This company had the Oliver Block Machine on display. The company was represented by Ralph Steepson, J. H. Bond, E. D. Franciscus, and D. M. Fyles.

- **Brown Insulating Concrete Co., Cleveland, Ohio.** —Here a very interesting exhibit was presented consisting of a concrete bungalow for the purpose of showing the beautiful result of working on the new building. E. E. Wright, L. Thomas, and W. J. Pees were in charge of the exhibit, consisting of the Blystone Batch Mixer mounted on a gasoline engine and belted to a gasoline engine.

- **Boito Manufacturing Co., Kearney, Neb.** —Mr. T. H. Boito in charge. The exhibit consisted of a concrete spreader machine for building and sidewalk work, and a motor-powered wagon for asphalt street paving.

- **Butler Concrete Machinery Co., Butler, Ind.** —Mr. L. D. Knisely, Secretary and Treasurer, was in charge, and invited to view the special features of the 20th Century Gasoline Concrete Mixer.

- **Campbell, J. C., & Co., Chicago, Ill.** —Here was exhibited the "Browncoy" Mortar Mixer, and the special claims made. Mr. K. C. Buckeye himself was in charge.
American Carpenter and Builder [March

Eureka Stone & Ore Crusher Co., Cedar Rapids, Iowa.—A business exhibit showing the Eureka Starch and Ores Crusher in operation. Messrs. H. G. Muhlheid, W. I. Alling, and H. J. Becker were in charge.


Carpenter & Co., Geo. B., Chicago, Ill.—Pumps for sewer work were among the novelties in charge of W. R. Seav, H. G. Watson, and M. Kaplin.

Channen Co., Chicago, Ill.—This company had on display chimney moulds, sill, cap, and step moulds, brick and block machines, drain-tile moulds, the Systematic mixer, and numerous other accessories. Those in charge were Sid Willett, W. G. Smith, H. H. Hartigan, and E. H. Van Wyck.

Chicago Architectural Photographing Co., Chicago, Ill.—An interesting exhibit showing many architectural subjects—especially concrete construction, which is a specialty of the company. E. L. Eriksen and O. N. Martin were in charge.

Chicago Architectural Photographing Co., Chicago, Ill.—An interesting exhibit showing the No. 14 Chicago mixer on trucks, equipped with a steam engine, boiler and side loader. The exhibit was in charge of W. M. Redish.

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Illinois Copeandel Portable Wall Co., Chicago, Ill.—Reinforced glass-faced wall construction and fastening devices for tile for various purposes. James Merrillat, chief engineer, was in charge, assisted by Joseph Kugel, Joseph Schenk and Geo. R. Kahle.

Illinois Steel Co., Chicago, Ill.—In conjunction with the Carnegie Steel Co., this company had a very interesting exhibit of its products, consisting of steel bars for reinforcement, which are of three kinds—plain, cold-twisted and deformed, alsosheet steel pilings. The exhibit was in charge of C. R. Pollard, Jr., in charge, assisted by Geo. Barret and J. R. Milburn.

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

Incurite Chemical Co., Aurora, Ill.—The exhibit was in charge of Mr. R. H. Chase, with assistants in the booth. The 100-lb. bottles of the Incurite company's waterproofing, a mastic coating for cement floor covering, and an iron preservative.

Ironite Company, Chicago, Ill.—This company had a display showing how Ironite is used in waterproofing. E. I. Bucklin, V. R. Inman, and O. R. Pollard, Jr., in charge, assisted by Geo. Barret and J. C. Jones.

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

Knickerbocker Co., Jackson, Mich.—The company had on display the Pilgrim concrete mixer and the Jordan tile machine, all being manufactured by the company. The display was formed with cement pillars and the "Pittsburg Standardized Reinforcement." Those in charge were Richard R. Harris, General Mgr. of Sales; E. E. Seyfert, Chief Engineer; D. S. Bright, Wm. L. Rowe, S. A. Binner, and Geo. A. Dickson.

Locke Drill Co., New York, N. Y.—A demonstration of the use of an electric percussion drill for making holes in concrete for hanging signs and other purposes. The equipment was furnished by the Locke Drill Co., New York, N. Y.

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


Leitch Co., Costaasuna, Pa.—Electrically operated shifting pulleys and clutches; also Dunn's Uniform Pulverized Fuel Device. R. R. W. and C. H. Wolf, Jr., in charge.

Lehigh Portland Cement Company, Allentown, Pa.—A fountain and other devices. The 100-lb. bags were shown. Food Wards were shown, and their staff were from Indiana. They were Bert Sweet, Learned, W. L. Coulter, E. L. Martin, and J. B. Bruner.

Koehler Chuck Co., Chicago, III.—The company had a display of the "Koehring" power mixer. Those in charge were F. A. Koehring, R. M. Moss, W. A. Goodell, and John Donahue.

Kromer Automatic Tamper Co., Peoria, Ill.—Here was an effective demonstration of the use of automatic tamping tools for the point of view of labor-saving and at the same time securing uniformity of product. This exhibit was in charge of W. H. Jansen.

La Grange Specialty Co., La Grange, Ind.—The visitor was here shown the way in which "Castile Glass" or cement brick is manufactured. The fine points were shown by W. C.方形, the inventor, or by one of his assistants, J. E. McIntyre or John Stacey.


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

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

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

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Raynor Hardware Co., St. Paul, Minn.—An exhibit of the "Eric-" son," the "Ray," and "Rosedale" was shown by Mr. George A. Raynor, president, assisted by E. S. Fish."Raymond Concrete Pile Co., Chicago, Ill.—A model of the well-known Raymond steel-embellished concrete piles was shown and the methods of construction demonstrated by Mr. J. W. Manig represented the company.

Rogers Mfg. Co., Milwaukee, Wis.—Here were shown the special advantages of a new type of steel forms—the "Reichert," for monolithic re-enforced concrete work. Mr. Ike Reichert was in charge.

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

Roebling, Astrid S., Chicago, Ill.—An interesting exhibit of sewer and drain pipe and fittings was shown. Mr. W. F. H. Roebling, secretary, Mr. R. M. Johnson, sales manager, and Miss E. A. Benecke, exhibited their wares.

Ross & Co., J. A., Chicago, III.—The block machine put out by this company was much admired. Mr. Bill Ross himself was always watching its operation. The exhibit was in charge of Frank Gross and two assistants.

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

Sackett Screen & Chute Co., Chicago, Ill.—The line manufactured by this company covers a wide range, including dump cars and buckets, deck cars and trucks, turntables and switches, screens, elevators, and sheet-rolling equipment. C. E. Sackett, president, and L. F. Stimson, general manager, were in charge.

Sandusky Portland Cement Co., Sandusky, Ohio.—This exhibit consisted of a reproduction of an Italian garden in Medusa White, which formed a most effective display. Those in charge were Mr. R. G. H. Timpany, Mr. J. H. E. Blood, and Mr. J. H. H. K. Timpany.

Sasgen Brothers, Chicago, Ill.—This company showed a circle switch, many grades of special rail and track, hand and power pile drivers, power, pole and setter derricks, etc. M. T. and M. J. Sasgen were present, assisted by Mrs. M. J. Sasgen of the New York office, and M. D. O'Keefe of Plainfield, N. J.

Schenck, L., Chicago, Ill.—Rapid and flexible floor construction, concrete floors, Mr. H. K. Schenck, in charge, with H. W. Niewo.

Sioux City Cement Machinery Co., Sioux City, Iowa.—The Mc- Gilloway block-type machine shown by Mr. J. W. Sanderson was in charge.

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

Smith Co., T. L., Chicago, Ill.—Exhibit in charge of Mr. A. G. Tiffender, and Mr. W. D. Eastman, who represented all claims along the line of "Tiffender," a type of cement mill machine, which is the most modern in the world, with the facts of the case concerning the large dam at Keokuk, IA., across the Mississippi, which has been built in the country. Mr. H. G. Simpson and A. W. Ross were in charge of the exhibit.

Snuggs Mfg. Co., Columbus, Ohio.—No cement show would be complete without the Simpson exhibit. This one was of the double type, consisting of iron molds for making concrete columns, newalls, balustrades, rails, vases, and other ornamental work, together with examples of the finished products. Mr. H. G. Simpson and A. W. Ross were in charge of the exhibit.

Snuggs Mfg. Co., Jackson, Mich.—The "Little Wonder" tile machine was here in operation, turning out perfect tiles with neatness and dispatch. The exhibit was in charge of Will and Frank McCracken and Chas. Young.

Studebaker Bros. Mfg., South Bend, Ind.—The exhibit of this well-known company, which has a branch house in Chicago, showed a very attractive display of the "Studebaker" Sewer-pipe. Mr. R. H. Mower represented the company.

Taylor, John L., Chicago, Ill.—The "Taylor" portable steel der- rick was shown. Mr. W. H. Taylor and his assistants were in charge.

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

Trusted Concrete Steel Co., Detroit, Mich.—The display showed the "Trusted" system of reinforcing, with a new form of tie, etc. Mr. W. H. Taylor, who was in charge, gave a comprehensive display. Those in the booth were Mr. S. M. Feh- britt, Mr. R. A. Plumb, L. L. Hirshman, E. N. Ayres, T. W. Murray, W. L. Page, C. B. Mayer, and W. B. Tyner.

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

Union Pacific Wheel Co., Fort Washington, Pa.—An interesting exhibit of all-steady adjustable forms and accessories for cement sidewalk construc- tion. In charge of Mr. Ubhih, who is assisted by his son, Wm. J. Ubhih, and Frank A. Kendall.

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

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

United States Metal Products Co., Chicago, Ill.—A very out- standing exhibit of metal and metal-covered doors, windows, partitions, etc.; hollow-metal wainscoting, molding, and all interior trim; all-metal medical cabinets and cut-out boxes; window sash and frame; and all kinds of steel doors and windows; steel automobile bodies; and section safety stair treads. C. Dickens Sternfels, Adv. Mgr., in charge, with Geo. Karbureck, Sales Mgr.

United States Tile Co., Chicago, Ill.—R. E. Hyatt and H. E. Blood, Jr., were in charge of a very interesting exhibit of white glazed and various kinds of floor tiles. Mr. Hyatt was in charge, and most powerful crushers in the world were set up and running.

Universal Concrete Machinery Co., Waterloo, Iowa.—Block ma- chines, hand and power mixers, well-curb moulds, etc. J. L. Shan- non, Pres., in charge, with O. R. Taylor, contractor, of Rockford, Ill.

Universal Crushers Co., Cedar Rapids, Iowa.—E. A. Yelde, Sales Mgr., F. R. Mason, Asst. Mgr., and Geo. Kiernan, Salesman, were in charge, explaining the good points of the "Universal" crusher, of which a number of sizes were shown. What are claimed to be the smallest and most powerful crushers in the world were set up and running. These, it is explained, are used in assay.

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

Universal Sanitary Appliance Co., Chicago, Ill.—An exhibit of concrete garbage and sink receptacles, being the first concrete water closet ever manufactured by this company. Mr. H. H. Timpany, who was in charge, showed the operation of the well-known "Stieglitz" open-to-view batch mixer, and an automatic revolving cut-off machine. A. Hunabarger, president of the company, was in attendance, with G. W. Moon, assistant in charge, and J. H. Adams, the Chicago agent.

Unges Mfg. Co., Jackson, Mich.—The "Little Wonder" tile machine was in charge.

Urschel Bates Valve Bag Co., Toledo, Ohio.—This exhibit was of bag-filling machinery and valve bags, which are now used in a large proportion of the cement mills. L. H. Urschel and B. R. Bates were in charge.

Wabash Portland Cement Co., Detroit, Mich.—A very attractive exhibit showing the possibilities of plain and ornamental brick and cement. W. B. Gibson, with Geo. K. Harrington, were in charge, using Wabash Portland cement. Mr. S. P. Selby and Mr. G. O. Dill were in charge, welcoming visitors to the company's factory.

Wadsworth-Howland & Co., Inc., Boston, Mass.—Measures, H. M. Gordon and L. L. Turner had on exhibition a number of attractive panels, showing the use of "Bay State" brick and cement coating the exterior and protection of brick, cement, and concrete surfaces. It was stated that this coating is the "Grandfather of them all," being the first waterproof coating for cement on the market.

Wallace Concrete Machinery Co., Los Angeles, Cal.—This company showed a few power mixers, etc., in charge of Mr. R. B. Sumner, S. T. Wallace, and M. J. Griffith.

Wallentine Cement Machinery Corporation, Waterloo, Iowa.—This was a spacious exhibit showing special features of the well-known "Wallentine" type of mixer mounted on truck with gasoline engine and power loader. The company's line also included carts, wheelbarrows, dump cars, stone crushers, screens, etc. C. D. Walworth was in charge.

Weltz, C. B., Kendallville, Ind.—Mr. Weltz, the inventor, was himself in charge of the exhibit, which included a "Super Weltz" block machine, and the "Perfect" line of wall, easter, fence, and curb, and cap machines for making the honors.

Western Brick Machine Co., La Crosse, Wis.—"Western" and 'Leader' brick machines and well-curbing machines. Wm. Garbers, Pres., in charge, assisted by Ang. Horner, was manager.

Wolverine Portland Cement Co., Coldwater, Mich.—A very attractive booth, consisting of cement railing, urns, and pedestals concealing water closet pipes. W. D. Reed, C. J. E. Appleyard, and C. J. E. Appleyard, were in charge.

X-All Manufacturing Co., Chicago, Ill.—The "X-All" line of concrete block and tile machines and mixers was shown by Mr. L. H. F. K. J. A. Bal- lard, President, Ralph Burrell, C. B. Russell, and H. Dubois.

Zagelmeyer Cast Stone Co., Bay City, Mich.—This exhibit of the company's system of block casting machinery was shown. Alex. E. E. Zagelmeyer was in charge, with Frank E. E. Zagelmeyer, W. H. R. Jenkins, and W. E. Jenkins.

Swiss Concrete Machinery Co., Dayton, O.—A brick, block and tile machine with revolving molds, adapted for making strong and compact products of all kinds. Mr. E. J. Mitchell, president.

Trench Concrete Machinery Co., Detroit, Mich.—The display showed the "Trench" system of reinforcing, with many new and improved devices, including a comprehensive display. Those in charge were Mr. S. M. Feh- britt, Mr. R. A. Plumb, L. L. Hirshman, E. N. Ayres, T. W. Murray, W. L. Page, C. B. Mayer, and W. B. Tyman.
The Watch as a Compass

The points of the compass may be determined with the aid of an ordinary watch if held in a position so that the hour hand is directed toward the sun. The south then lies exactly midway between whatever hour it may happen to be and the numeral XII on the dial.

Let us suppose, for instance, that it is four o'clock, and the timepiece is held in the position indicated. The direction of the numeral II will then be the exact south. If it be eight o'clock, the numeral X will indicate the exact southerly point.

Try this, and make sure you understand how it is done. It's a pretty handy thing to know sometimes.

Handle for Carrying Tools

Carpenters, electricians, plumbers and others having to carry tools any distance, may find the following suggestion offered by the Woodworker of considerable assistance: Arrange tools into a compact parcel, leaving the brace out. Having procured two straps, put one around each end of bundle. Before buckling straps, place the brace on top of pack, then fasten straps over each end of brace, and you have a handle which will greatly reduce the tedium of carrying tools any distance.

New Idea for Curtain Stretchers

There is hardly a household in which a curtain stretcher does not, at some period of the year, play an important part.

Good Money Building Concrete Cisterns

Big returns for contractors and builders are promised by the Kuhn Cistern Form Co., of Columbus, O., to all who will take up their proposition for the building of concrete cisterns.

It is stated that the Kuhn cistern form is almost completely revolutionizing the process of cistern building. Through its use the best and most lasting cisterns can be constructed at a saving of time, labor and material; and the mechanism is so simple that even the most inexperienced laborer can set up a form and build the cistern as satisfactorily as an expert mechanic. We know of no business that promises larger returns to the contractor, or even the unskilled laborer, with so small an outlay of money, as the making of cisterns and tanks with these forms.
This apparatus consists of a form made up of sections to be placed in the ground, the excavation having been made large enough to allow a four-inch space between the form and the earth. Concrete is then poured around the form where it is allowed to harden for a period of three or four days. The form is then removed and after a solution of clear cement and water-proof compound is applied to the rough surface in the same manner as paint, the cistern is complete.

The forms are made of sheet steel, the hooks and latches of malleable iron—all parts being practically indestructible. Scaffolding rods are provided with all cistern forms. One of the illustrations shows the use of these rods for supporting the scaffold boards during the process of erecting. Each circular section is one foot high, consisting of four parts, all interchangeable. Any number of sections may be used—varying with the contents desired. For example, the No. 4 form will make cisterns eight feet in diameter, containing any number of barrels up to one hundred. The sections are wired together for shipping, the entire weight ranging from three hundred to two thousand pounds.

It is stated that the prices are very reasonable. There are no state or county rights to buy. The only restriction is that the form is sold under a guarantee that it will not be used in Franklin county, Ohio, the patentee reserving full rights in that county. All interested should write the Kuhn Cistern Form Co., Columbus, O.

**Underfeed Saves Money**

There has never been a year since the introduction of the Peck-Williamson Co. Underfeed Furnaces and Boilers which has not been marked by tremendous increases in sales. The popularity of the Underfeed is universal and emphasized in multiplying letters of appreciation. The fact that Peck-Williamson Underfeed heaters save—as it is claimed—one-half to two-thirds of coal bills is information just as cheerful in the states where zero is rarely felt as in Manitoba or other Canadian provinces where the mercury slips far into the bulb of thermometers.

Underfeed furnaces and boilers possess so many points of exclusive heating value that it is really no surprise to learn that the Peck-Williamson Company recently carried off the biggest contract in heating history. Through their Columbus representatives, forty furnaces were installed in several buildings at the Ohio State Fair grounds at Columbus. Their efficiency was fully tested and approved during the cold days of February conventions in the Capital city of the Buckeye State.

The Underfeed coal-burning plan has been adopted by many municipalities as best for health, because the Underfeed system with all fire on top and coal fed from below, does away with the smoke nuisance. Smoke and gases contain many heat units which, wasted in other heating plants, are conserved and utilized as heat in the Underfeed. Smoke must pass through the fire, is burned and transformed into more heat.
American "Contractors" Portable Saw

Bench and Variety Wood Worker

This machine comprises a rip saw, a cut-off saw, a mitre saw, a dado machine, a rabbetting machine, a joiner, a boring machine, a gaining machine, a groover, a matcher, and a moulder.

Capacity in 1 inch lumber, 75 to 125 lineal feet per minute; in 2 inch lumber 25 to 50 feet per minute. Will rip 3 inch lumber easily and can be utilized to work 4 inch stock.

Well designed and strongly constructed to stand hard, continuous service.

We are prepared to furnish this machine equipped with electric motor, to suit any current or voltage, or with gasoline engine.

Write for folder containing complete specifications.

AMERICAN SAW MILL MACHINERY CO.

Main Street, HACKETTSTOWN, N. J.    Hudson Terminal Bldg., NEW YORK, N. Y.

Our Catalogue Completely Describes Everything Used in the Saw Mill, Including:

- Portable Mills in Five Sizes
- Stationary Mills, all sizes
- Planers and Matchers
- Edgers
- Trimmers
- Surfacers
- Shingle Machines
- Excelcor Machines
- Wood Splitters
- Lath Mills
- Drag Saws
- Rip and Cut-Off Saws
- Log Hauls and Turners
- Gasoline Engines
- Engines and Boilers

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Millwork Bargains! Lumber Bargains!  
Carefully Packed for Long Shipment!

The 1911 Spring Season finds the Gordon-Van Tine Company in readiness to handle the biggest business ever known in the building material industry. It's coming! The advance orders are rolling in at a rate that indicates a highly prosperous season for builders everywhere.

We are going to help swell the profits of every carpenter, every contractor, every home builder who patronizes this great building material supply depot.

Grand Spring 1911 Catalog

The new Gordon-Van Tine Building Material Catalog, now ready for the mails, is the most important document we have ever issued. It is as far in advance of our last year's offering as our mammoth new concrete building material plant is ahead of the one wiped out by fire in November, 1909. Send for a copy at once.

Big Reductions on Staple Items of Building Material

Vastly increased facilities and corresponding gain in volume of business have enabled us to still further reduce our prices on staple items of Doors, Windows, Mouldings, Inside and Outside Finish, Flooring, Stair and Porch Work. A positive saving of at least one-third of retail dealers' prices.

OUR GREAT FACILITIES  
At Your Service

We want you to feel a proprietary interest in this great institution. Our immense facilities, our wonderful resources, our big organization of experts, are freely at your service.

Use our Estimating Department, our Plans Department, our Contractor's Advisory Bureau—all branches of our service—just as if you owned the place.

Gordon-Van Tine Co.
One-Third Under Dealers’ Prices!
Deliveries Immediate—Stocks Immense!

The pictures shown here give merely a hint of the huge proportions of our plant and the great facilities for fast handling and quick shipping of Gordon-Van Tine Millwork and Lumber.

Our plant has 14 acres of concrete floor space. Two railroad switch tracks and triple loading platforms have capacity of 25 cars at a time. We ship most stock size orders same day received—always within 48 hours. And we handle special orders more promptly and at 40 per cent saving in price over any plant in America.

Springs Many Surprises

On nearly every building job there are a number of odd items in doors, windows, etc., that must be made to order at considerable excess cost.

Our new “special” designs, at “stock” prices, solve the problem, saving time and money for the contractor.

Many New Styles of Art Doors, Windows and Interior Combinations

In the new catalog we have devoted many pages to color illustrations and complete descriptions of magnificent Art Doors in Craftsman, Colonial and Mission Styles, Exquisite Art Nouveau Glass Windows set in Metal, and a great variety of Venetian Art Glass in strikingly handsome designs.

Consider the economy of buying “special” designs at “stock” prices, saving “made-to-order” expense.

OUR GRAND CATALOGS
Swell Your Profits

Drop us a line today—ask for our Spring Catalog of Building Material.
Ask for our Lumber Catalog.
Use our time-saving, money-saving facilities and make more money on every building job.

569 Federal St., Davenport, Iowa

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
It is claimed that pea and buckwheat sizes of hard and soft coal and cheapest slack will yield as much clean, even heat in the Underfeed as highest priced coal; this is another factor in proving that while the cost of living has increased, the cost of heating has been successfully hammered down by the Underfeed. Contractors and builders are especially interested in the easily proved declaration that an Underfeed heating plant adds to the renting or selling value of any building.

The Peck-Williamson Co. will cheerfully send to anyone who writes for them, books of their Underfeed line—regular encyclopedias of heating facts. Fac-simile letters of appreciation will also be sent. Heating plans and services of their Engineering Corps are free. Progressive carpenters and builders should write to the Peck-Williamson Company, for their literature. Address The Peck-Williamson Co., 436 West Fifth St., Cincinnati, Ohio.

The Little Giant Mixer

The Little Giant concrete mixers manufactured by the Ballou Manufacturing Company, Belding, Mich., were one of the leading attractions at the recent cement show in Chicago. The striking feature of the Ballou concrete mixers is the accuracy of the proportioning device. The materials are fed into their respective hoppers which are provided with adjustable gates that regulate the flow of materials in greater or less amounts as required. The materials being forced toward the gates by a special cork screw agitator are drawn out by a heavy conveyor belt in the exact proportions desired, and as determined by the adjustment of the gate. Thus, a maximum output of 15 yards an hour may be obtained or less than half that amount, according to the setting of the gates. The aggregate is then delivered into the upper end of the revolving drum, the rotary action of which thoroughly blends the material before the water is used, thereby making the balling of the cement impossible. Having passed two-thirds down the drum the water is introduced and sprayed over the rotating mass, the volume being regulated by valves according to the consistency to be obtained.

The company claims that these machines possess the greatest strength in proportion to their weight of any built, the frames being trussed angle iron. The wearing parts are reduced to a minimum, and the cost for repairs and upkeep is therefore claimed to be a fraction of that of most continuous mixers. The mechanism is so simple that anyone can operate the machine. All power mixers are mounted, having high rear wheels, as they are most convenient to move.

The Ballou Manufacturing Company makes a number of different models of mixers. Three of them are Model A, the hand mixer; Model B, the two-hopper power; and Model C, the three-hopper power. They will be glad to answer all inquiries in regard to any of these mixers. Address correspondence to the Ballou Manufacturing Company, Belding, Mich.

Arthur Michaudel—Stained Glass

The accompanying illustration shows a beautiful stained glass window recently placed in St. Columbkille’s Church, Paulina St. and Grand Ave., Chicago, by the well known art

Carpenters and Builders: Take up slate roofing in unoccupied territory everywhere. It's a money maker. Only a few simple, inexpensive tools and small capital necessary. Slating is easy to learn. Very much like laying shingles. Can be carried on in connection with your present line with no extra trouble or expense and will give good returns. A profitable, growing slate roofing business can be established anywhere. Besides the new work that comes up every year there are simply hundreds of worn-out shingle, metal, tin and composition roofs in every locality that must soon be replaced.

Sea Green or Purple Slate Roofs

OUTLAST ANY BUILDING

They can't wear out, rust, warp or decay. Are fire and spark proof. Reduce insurance rates. Afford clean cistern water. Don't require constant repairs and attention. Your neighbors are tired of paying good money for short-lived roofing—high-priced shingles that soon decay—tin and metal roofs that cause frequent Fire and spark proof. Never需 Wear-Out Sea Green or Purple Slate Roofs that last forever. For a free book of instructions. Don't Delay. Write Today.

AMERICAN SEA GREEN SLATE CO., Box 125, Granville, N. Y.

This special proposition does not apply to any territory now covered by a Slate Roofer.

Sea Green and Purple ROOFING SLATE

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
We have made the dreams of home come true for over 600,000 people, in every community and in every walk of life; from the humble cottage to the pretentious mansion, from the smallest hamlet to the largest city, the Spiegel, May, Stern Co. has been making happy homes for over a half century.

Rich and poor alike have been extended exactly the same terms, exactly the same low prices. There has been no favoritism shown—everybody gets the same liberal, generous treatment. And there isn't any magic about our way of doing business. Just a simple business proposition that has been wonderfully successful and which has built up during the last century the greatest business of its kind in the world.

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3,000 Bargains in Furniture, Carpets, Rugs, Stoves, Ranges, Draperies, Chinaware, Silverware, Sewing Machines, Washing Machines, Lamps, Clocks, Baby Carriages, etc.

We sell at cash prices—factory prices. No middlemen, no jobbers—all these expenses and profits are cut out entirely. We sell from the factory direct to you by means of this catalog only. This is essentially a book of bargains. We are always in the market with plenty of money to take advantage of every possible bargain that is offered. We snap up everything in sight if we can get it at the right price, and we give you the advantage of our quantity-buying, adding only one small profit. We guarantee a saving under prices quoted by any mail order house or by dealers of 15 to 50 per cent.

And if it is not convenient to pay cash you may buy on our liberal open account credit plan at the same prices as if you pay cash. No other concern in America does that. We are going to prove that to you, as we have to over 600,000 people. This concern has become the largest of its kind in existence.

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Anything shown in this book will be sent to you on 30 days' free trial. If it's not convenient to pay cash, send the first payment—about 15 cents on each dollar. Then the goods will be shipped, and you will have them in your home for a month before anything more is due.

If they are not satisfactory—not cheaper than anywhere else—you return them at our expense. Every penny you have paid, including the freight charges, will then be returned to you. Thus you see the goods before buying them. More than that, you actually use them a month. You have every chance to compare our prices with others. And we leave the decision to you. Isn't that immensely fair?

Our Guaranteed Saving

There are some things in this book which some mail order houses sell pretty close to our prices. Even on these things, however, we guarantee a saving of at least 15 per cent. Compared with dealers' prices, the saving on most things runs as high as 50 per cent. We also guarantee that.

We send the goods on approval under our guarantee to undersell all other prices—either cash or credit—by from 15 to 50 per cent. You can easily tell, when you see the goods, if we do that.

It is on this plan that we have built up this business with its 600,000 customers and its combined capital of $7,000,000, with its six acres of floor space and its thousands of employees. Let us tell you the story in detail.

SPIEGEL, MAY, STERN CO.

1451 35th Street

CHICAGO, ILL.
Every Carpenter Should Investigate

BEAVER BOARD

BEAVER BOARD offers the carpenter a great opportunity for fine work that brings increased reputation. It is easily put up, but the owner must go to you if he wants a high-class job.

Your work shows more in a good-looking BEAVER BOARD wall or ceiling than anywhere else in the house—and you get the credit.

Every good job is a standing ad for you. It won’t crack, deteriorate or have to be done over like lath and plaster.

Some of the Advantages of BEAVER BOARD

BEAVER BOARD is made of selected woods, reduced to fibrous form and pressed into panels of uniform thickness, with pebbled surface admirably suited to tinting, stenciling or hand painting. The panels are nailed directly to the studding of new rooms, or may be put on over the lath and plaster of old walls. The seams are covered with decorative panel strips.

BEAVER BOARD resists the passage of heat, cold and sound; it withstands shock, strain or vibration; it is quickly and easily put up; it costs less than lumber or than lath and plaster.

Samples and Booklets Free

Write today for samples, booklets and special information to carpenters—how BEAVER BOARD is put up and decorated; directions for working out different designs; pictures of finished interiors; how to make partitions, drop ceilings, etc.

Sold by lumber, hardware, paint, wall-paper and builder’s supply dealers and decorators, in sizes to meet all requirements. If not handled by your dealer, write us, mentioning his name.

The Beaver Company

of Buffalo

In U. S.—Address 281 Beaver Road, Buffalo, N. Y.

In Canada—Address 331 Beaver Triangle, Ottawa, Canada.

How to Lay “Neverleak” Metal Shingles

The directions for laying “Neverleak” metal shingles—the roof that’s water proof—as given by their manufacturers, the Tiffin Art Metal Co., Tiffin, Ohio, are as follows:

Commence at lower left-hand corner of roof. In starting be particular to see that first course is started straight.

Draw a chalk-line parallel with the eaves. Get it high enough on the roof to permit first course of shingles to project about two inches over eaves. This is usually enough.

The shingle is nailed to the roof boards at nailing flange
Great Little Power Plant for WORKSHOPS!

Fuller & Johnson
MULTI-MOTOR
The “Right-Hand Man” of Carpenter and Contractor

Get this MULTI-MOTOR going in your shop. It makes machinery hum. It takes the place of man-power on many kinds of work.

Saves treadle-pushing and crank-turning. Saves time, money and muscle. Does a big day’s work indoors or out for less than a cent an hour.

Little Engine—Big Power!
Compact, Complete and Portable

The engine weighs only 250 pounds. It is an air-cooled, fool-proof Gasoline Engine—complete in itself. Important working parts protected by dust-proof crank case. Comes on its own base. Ready to run when uncrated.

Set it anywhere, fill the tank, oil up and start the engine! Cannot freeze or overheat. Needs no attention while running. The Multi-Motor is the handiest engine ever built. For indoor use has outdoor fuel tank, insuring perfect safety.

Take the Engine to the Work!

You can load the Multi-Motor on an ordinary wheelbarrow and take it to any building in process of construction. It will help rush the job to completion. Saves many trips to the planing mill or repair shop. Always ready for business. A turn of the fly wheel starts it.

Fuller & Johnson
MULTI-MOTOR
“Works Like Ten Men"

Runs All Kinds of Light Machines!
The Multi-Motor runs jig saws, lathes, grindstones, sanders and all other light machines used by carpenters and builders. Runs small electric lighting plants, water pressure systems, etc.

Power for Less Than a Cent an Hour!

This engine will quickly pay its cost in the saving of workmen’s wages. Think of having ample and instantly available power for less than a cent an hour! Consider the great convenience of this little Portable Power Plant.

Fuller & Johnson
MULTI-MOTOR
Built and Guaranteed by Fuller & Johnson
Sold by Leading Dealers in U. S. and Canada

The engine is as high grade in materials and workmanship as best automobile engines.

Fuller & Johnson Farm Pump Engine
Fits Any Pump and Makes It Hump!

This engine has a pumping capacity of 400 to 1,000 gallons per hour. It fits any pump. No belts, arms, jacks, anchor posts or special platforms needed. It is practically the same as the Multi-Motor, equipped for pumping service. Runs all hand-power or foot-power machines.

A Remarkable Engine Book FREE!
The Fuller & Johnson Engine Book gives full details regarding both the Multi-Motor and the Farm Pump Engine. Investigate the possibilities of one of these engines for your special uses.

Book is yours for the asking. Send today. Address

FULLER & JOHNSON MFG. CO.
3 Ames Street (Established 1840) Madison, Wis.

If interested in large engines, ask for catalog of our famous Double-Efficiency Engines.
Durable, Attractive and Weatherproof Roof of "Neverleak" Shingles

On right side of shingle.

Two nails should be used, one at top and one at bottom, each about two inches from end of shingle.

Do not hammer down the locks of the shingle. All that is required is to nail them. Every other course begins with a half shingle.

If it is desired to have the finish flush with the eaves begin at the lower left-hand corner as above, being careful to get the first course of shingles parallel with the eave, by nailing a cleat to butt the shingles against, put on six or seven shingles, loosely nailed to make sure that you are starting right. Then nail on a strip of gable end finish, beginning at the eaves and complete nailing the finish as you go toward the peak or ridge.

Before you nail on all the shingles, put on the Ridge Roll or Hip Cap and fit the shingles into it, putting the shingles up into the fold of the cap, not under it. Do not nail through the cap and shingle.

"Neverleak" Metal Shingles are laid on the same rules that govern the laying of wood shingles or slate. In flashing against a side wall, bend the shingles so as to project up the side of the wall three inches and counterflash down to the roof line. These directions apply to dormers, chimneys, skylights, etc.

$10 to $35 SAVED

on every frame house you build by using Wheeler's Safety Scaffold Brackets

Strongest and best brackets made.

Safety. They are self-locking and rigidly firm when put in place. With them the scaffold cannot swing or vibrate and men feel as safe as if working on the ground. This condition enables them to work faster and better.

Economy. One man can put up a dozen in fifteen minutes without assistance and take them down in less time. No nails or lumber used.

Convenience. They are adjustable to any thickness of board. They fold in compact form and take up but little room when handling. There are no separate or loose parts to come off and get lost. Always ready for use.

Durability. They are made of T shaped steel, which gives additional strength, and never wear out.

Capacity. Our 3½ ft. brackets carry 1500 pounds.

Figure the benefits. You will find they will pay for themselves several times in a season. Write us now and prepare for your busy season. Prices and terms upon application.

American Steel Scaffold Co.

501 Woodward Ave.—Detroit, Mich.
But do you know its uses today, and their significance to you?

CYPRESS is the wood of Scriptural history, and of romance; CYPRESS was the mystic wood of mythology—and it was the reliance of the sturdy builders of early America; CYPRESS always has been a magnet for those who have wrought sentiment and beauty into useful things—and CYPRESS is today the staple wood of the hard-headed calculating buyer who seeks the most lasting values for his lumber-money.

This concerns YOU—if you like to avoid repair bills on anything made of wood.

It was of CYPRESS, according to Pliny, that the famous statue of Jupiter was carved; it existed more than six centuries without a sign of decay.

The historic Gates of Constantinople were of CYPRESS; they were on duty for eleven centuries without a furlough.

The CYPRESS doors of ancient St. Peter's, in Rome, were in a state of perfect preservation when removed by Eugenius IV; they had been swinging on the faithful for twelve centuries.

The only Egyptian mummies that survive intact and unblemished are those whose executors filed them in CYPRESS receptacles.

To bring the record nearer home—there was Thomas Lyon, who in 1640 built him a house in Greenwich, Connecticut. He put CYPRESS shingles on its roof and sides. With no exterior repairs of consequence, this house is today occupied as a residence.

THIS WAS AMERICAN CYPRESS—the kind we own and cut and are selling you.

CYPRESS is in truth "the wood eternal." He who uses Cypress builds but once. If you are putting up a palace or a pasture-fence, and want to build it "for keeps"—USE CYPRESS.

There is going to be a liberal education (and a wonderful investment value for you) in the CYPRESS advertising here begun—and in the detailed information and reliable counsel to be had promptly, WITHOUT COST, if you will WRITE US YOUR OWN NEEDS (big or little), and ASK YOUR OWN QUESTIONS of the "Contractors' Department" of the

Southern Cypress Manufacturers' Association
1216 Hibernia Bank Building, New Orleans, La.
Selling Talk No. 11
4186 BUILDINGS BURNED

A recent issue of a publication devoted to insurance interests records 4186 fires which they directly attribute to the use of wood shingle roofs.

From this same article under the heading "The Folly of Wooden Roofs," we quote the following opinion, expressed before the Chamber of Commerce of Richmond, Va., in a discussion of wood roofs:

"They are wholly bad and should not be tolerated in any state or city—Twenty-seven per cent of all fire losses are due to exposure; that is they spread from one building to another and the main cause of exposure fires, apart from unprotected windows is that of (wood) shingle roofs."

In view of these appalling facts why is it that property owners still continue to risk the total loss of building after building by roofing them with wood shingles? Especially when the remedy is so readily obtainable in Cortright Metal Shingles.

Cortright Metal Shingles are fireproof and storm-proof besides being more handsome and durable than either wood or slate. Cortrights as a matter of fact will outlast the building itself and flying embers from a neighboring fire such as shown in the picture above can have no effect on a roof of Cortright Metal Shingles.

Will you let us send you the proofs of all this? All we're waiting for is your name. A postal will do.

Cortright Metal Roofing Co.
Philadelphia and Chicago

"Hoosier" Cement Columns

The tendency of the property owner is to have not only an attractive home, but one that has as many conveniences for comfort as possible. The roomy veranda or porch is rightfully becoming more popular every day. When well designed and built it adds to the attractiveness of the house. The Colonial column is being specified and used in nearly every part of the country by owners desiring a building detail which seldom fails to add greatly to the fine appearance of the home. The "Hoosier" Moulds now being placed on the market by the Hoosier Mfg. Co., Goshen, Ind., will give contractors and cement workers a mould which makes a Colonial column of cement, complete with top and base, without flutings or sections, all in one solid piece.

The "Hoosier" porch column mould makes columns 54 and 60 inches high. The top is 9½ inches; base, 11¾ inches square, and the diameter is 9 inches. Two or three of these cement columns can be made each day with a "Hoosier" mold.

The company claim that a cement Colonial column made in their moulds retails at from $3.50 to $7.50 each. The cost of manufacturing is said to be 50 cents, or, where made of Medusa Portland cement and white silica sand, about $1.00. Only two buckets of cement, five buckets of sand, and one hour's time are required for each column. This, therefore, presents a very attractive proposition as a money maker for the man who wants to manufacture his own porch columns or for the cement workers who desire to make them to sell.

Everyone knows that a well-made cement column has many advantages—and there ought to be a ready market for cement Colonial columns. As a striking testimonial to the popularity of the "Hoosier" cement columns in places where they have been introduced, it is stated that in Goshen, Ind., a city of 9,000 people, there are 300 houses, in the building of which these columns have been used; 19 building contractors use them exclusively.

The Hoosier Mfg. Co. will send full information on request.

Economy Roofing and Siding

The Economy Roofing and Siding Co., West Main street, Tarrytown, N. Y., are directing the attention of carpenters and builders to a new roofing and siding, which does away with sheathing and building paper; and at the same time, it is claimed, makes a house just as weatherproof and strong. An illustration showing this material is printed herewith. This siding will apply to a building in any position similar to the styles of siding now in use, and is made in any width desired by the trade. By the use of an extra member the siding may be used in various ways, as shown in this company's new catalog. It is also made in different styles, and is arranged so that the water table is joined on by the siding.
GOOD service for many years in the hands of skilled mechanics is the best standing advertisement of the SAMSON Brace and other items in the large line of P. S. & W. Carpenters' Tools.

Look for The MARK of the MAKER; it is branded on our highest-grade tools, and is an absolutely dependable guarantee of excellence.

The P. S. & W. Samson, or "Big Chuck" Brace has a ball-bearing chuck which grips tighter and releases more easily than any other ever made. It has also a steel-clad, lignum vitae head with dust-proof ball-bearings; a forged steel alligator jaw; solid steel sleeves; coco bolo center, etc.

Other P. S. & W. Tools for Carpenters include the largest line of braces and auger bits, and the most complete line of chisels and gouges on the market. Also highest grade drawing knives, squares, calipers, hammers, hatchets and many other carpenters' tools. These are all superior in finish, workmanship and fitness for their several uses.

Write today for our 165-page "Mechanics' Handy List." It contains 35 pages of valuable shop information and a catalog of over 200 tools. Sent free at your request.

Our four large Lines of Guaranteed Hand Tools for Electricians, Machinists, Tinsmiths and Carpenters are sold by leading dealers in the United States and Canada, or can be ordered by them from any hardware jobber. Insist on The MARK of the MAKER and accept no substitute.

The Peck, Stow & Wilcox Company
MANUFR'S
of the Largest Line of Mechanics' Hand-tools Offered by Any Maker

Est. 1819 Address correspondence to 22 Murray St., NEW YORK CITY 5 Large Factories

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Other uses include trim, base, Dutch shelf, picture molding, base molding, etc.; the odds and ends can then be turned upside down and used for flooring, or as a good trim for rafter ends, etc.

When used for roofing it is somewhat heavier than the siding and should be painted all over, and then painted or tarred or sanded after laying. Well taken care of, when made of cypress, it will last as long as the house and it makes a strong and light roof. The roof should not be too flat and the rafters should be either set closer together or filled in between with something lighter, such as 2 by 4's, on account of the nailing. The valleys and chimney can be flashed the same as for shingles by setting a board flush with the rafter to hold the flashing, finishing the end the same as the course of shingles. The hips and peaks are finished in the same manner as a slate roof, or in other ways.

The company will sell this material direct, or will dispose of rights to make and sell it, under patent license. Architects, millmen, carpenters and builders should write for this firm's new catalog.

The Framing Problem Solved

The ABC Protractor Square which is being introduced by the Crookston Tool Company, Crookston, Minn., is certainly a wonder in its line.

Every carpenter knows how difficult it is to use the common square and apply it intelligently to all framing. Every day we find out how little we know about it when we come to do it, and with this in mind the Crookston Tool Company constructed the ABC Protractor Square. They have produced a tool, which they claim, solves the problem, and which it is possible to readily understand.

The ABC Protractor Square is an adjustable triangle combined with a degree circle. A triangle that is adjustable makes it possible to get all lengths and bevels without any figuring. There are no imaginary lines with the ABC Protractor square, but three members complete the triangle. The rise, run and the hypotenuse which represents the plum, base cut and the length of a rafter.

The degree circle is another one of the important parts of the ABC Protractor Square, for the reason that so many architects are now drawing their plans in degrees. Having the ABC Protractor Square it makes no difference which way the specifications read. The illustrated directions, which go with every tool, explain plainly how to do it, and anyone can grasp it at once. They detail the work all the way through. We understand the Crookston Tool Co. guarantees the tool to give satisfaction. They will furnish readers of this paper with full information of this tool on request.

“Contractors’ Portable Saw Bench

This machine, manufactured by the American Saw Mill Machinery Company, 50 Church St., New York City, is particularly adapted to the use of general contractors, concrete workers, contractors and builders, and engineers. It is portable, compact, self-contained and very substantially built throughout so as to stand the hardest kind of service. It is intended to be taken right to the job where it will do in a most satisfactory manner a large variety of light and medium mill work. No contractor's equipment is complete without one or more of these machines.

It consists of a combined rip and cut-off saw bench with boring attachment, jointer and dado heads, with a gasoline
You may never use a varnish brush, but you ought to know the best varnish. The way to know is by this label.

When you recommend Berry Brothers' varnishes to your customers, you are not only giving them good advice, but you are insuring the permanent beauty and protection of your handiwork. Good carpentry and cabinet work deserve good finishing with the best varnish you can get.

**Berry Brothers' Architectural Varnishes**

**TRADE LIQUID GRANITE FINISH**

For finishing floors in the most durable manner possible. Its quality has made it the best-known and most widely used of all varnishes. There is no substitute.

**WOOD LUXEBERRY FINISH**

For the finest rubbed (dull) or polished finish on interior woodwork. It has for years been the standard to which all other varnish makers have worked.

**ELASTIC INTERIOR FINISH**

For interior woodwork exposed to severe wear and finished in full gloss, such as window sills and sash, bathroom and kitchen woodwork, and stands the action of soap and water to an unusual degree.

**ELASTIC OUTSIDE FINISH**

For front doors and all other surfaces exposed to the weather. Dries dust free in a short time and possesses great durability under the most trying weather conditions.

SEND FOR OUR FREE BOOKLET:

"NATURAL WOODS AND HOW TO FINISH THEM."

**BERRY BROTHERS, Limited**

The very first step taken toward making a Simonds Saw—the making of the steel—is specialized under a Simonds Process. By it we produce Simonds Special Crucible Steel—for Simonds Saws only.

No other process produces a better steel for saws. It is tough, flexible, with a temper taking quality that makes it when treated, tempered, ground, finished and made into a saw blade, in the Simonds way, in the Simonds shops, the best saw that can be bought at any price.

Another thing: should even the slightest defect crop up in a Simonds Saw, while in the process of making, that condemns it to the scrap heap. Remember you can always be sure of buying high grade quality when you buy a Simonds.

To buy the right saw, let it be rip, hand, or panel, see that the Simonds (Si-monds) name is on the BLADE.

Let us send you a free copy of "Simonds Carpenter Guide." Tell us what kind of a saw you will need soon.

Simonds Manufacturing Company
Fitchburg, Mass.

"Contractors' Portable Saw with Gasoline Engine"

The frame and top are made of seasoned hard wood accurately framed and securely bolted together, insuring rigidity and durability, and is handsomely finished in natural color. The top is strongly hinged to the rear of the frame, and is readily raised and lowered by the hand screw and firmly held in any position by the clamps on each side. The mandrel is steel 13/16-inch with self-oiling babbitted boxes strongly yoked together, thus securing rigidity and permanent alignment. The end has a 3/4-inch hole to receive the bit shank, and a hollow safety set screw to hold it securely. The boring table has steel slide, a travel of 6 inches in line with the spindle and a vertical adjustment of 3 1/2 inches. Adjustable ripping and cut-off gauges are furnished. The ripping gauge is provided with a tilting fence for bevel sawing and has rapid, fine adjustment and may be secured at any point. The cut-off gauge slides in an accurately-planed iron groove, the entire length of the table, and can be set to cut any angle from square or any angle to 45 degrees. The engine is of the hopper-cooled type, strong, durable, simple and reliable. It starts easily, runs smoothly and steadily; has an ingenious speed regulator and carries sufficient gasoline to run eight hours steadily.

The regular equipment consists of engine with batteries, spark coil and connections, driving belt, rip and cut-off gauges, one 12-inch rip saw, one 12-inch cut-off saw, one 1 1/2-inch and
CONTRACTING Carpenters, Builders and architects who specify the UNDERFEED insure clean, even heat at least cost and add to the renting or selling value of the building. With living expenses in general climbing higher, Underfeed Warm Air Furnaces and Steam and Hot Water Boilers are hammering down the cost of heating to the lowest possible notch.

In thousands of American homes clean, even heat is enjoyed at least cost. The Underfeed has made this possible. There's no guess work about it. Those who have thoroughly tested the Underfeed and proved its merits, give voluntary testimony that they know by their own experience that

The Peck-Williamson Underfeed
HEATING SYSTEMS WARM AIR FURNACES - BOILERS

Save 2 to 3 of Coal Bills

This saving of from 50% to 66% is assured alike in modest home or largest building. Pea or buckwheat sizes of hard and soft coal and cheapest slack which would smother a fire in an ordinary heater yield as much heat as highest priced coal. The Underfeed coal-burning way is responsible for this seeming miracle of economy. Coal is pumped from below. All fire is on top—the sensible heat-conserving way. Smoke and gases, wasted in other heaters, must pass through the flames and are consumed. That settles the smoke nuisance and nets more heat. The few ashes are removed by shaking the grate bar as in ordinary furnaces and boilers. Satisfaction with the Underfeed grows with the years. Abundant testimony in proof of this truth is at hand.

Here's H. C. Beman, of Meadville, Pennsylvania, who writes:

"My Underfeed furnace now in its fourth year of service proves itself BETTER every season: no cost for repairs whatever: still perfect as new. The average cost of coal to heat my eleven-room house THOROUGH-LY through complete winter seasons is $22.50 per year. I don't think that can be beaten."

We could publish a book as big as an encyclopedia filled with letters like this. Let us send you FREE a lot of similar testimonials and our Underfeed Furnace Booklet or Special Catalog of Steam and Hot Water Boilers. Heating plans and services of our Engineering Corps FREE.

Carpenters—Cut This Out, Fill in and Mail Today

THE WILLIAMSON CO.,
436 W. Fifth Street, Cincinnati, Ohio

I would like to know more about the Heating Plants which cut down the cost of Coal Bills from 50% to 66%. Send me—FREE—

UNDERFEED FURNACE BOOKLET
BOILER BOOKLET

(Indicate by X Booklet you desire)

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
one 7-inch dado head; one jointer head with four 2-inch knives, and one each ½-inch and 1-inch auger bits; one cast iron jointer table with adjustable section for rabbitting, one throat piece for dado head, one throat piece for saws, oil can and wrenches.

These people are prepared also to furnish this machine equipped with electric motor to suit any current or voltage, when so ordered, at extra cost.

Dimensions: Floor space required 54 by 54 inches; table, 54 by 30 by 1½ inches; total height, 36 inches; frame timbers, 3½ by 3½ inches; Mandrel takes saws with 1-inch hole; weight, complete as described, 900 pounds; weight, without boring attachment, 900 pounds.

For further information and prices address the American Saw Mill Machinery Co., 50 Church St., New York City.

Key to the Steel Square

The above is the name given to an ingenious little instrument, perfected by Mr. A. W. Woods, Associate Editor of the AMERICAN CARPENTER AND BUILDER and steel square authority, who has contributed many valuable articles on the use of the steel square.

Many thousands of these instruments are now in use in this and other countries; and it is safe to say that there is nothing on the market to-day that so clearly illustrates the use of the common steel square, as does this simple little instrument. It is true that not every carpenter needs this instrument, but every carpenter should have it. The banker would be considered an incompetent indeed, if he could not readily figure interest, discounts, etc., yet he finds it very convenient to have a book of interest tables close at hand for ready reference. He finds it a head-rest and a great time saver. The progressive mechanic, like the banker, is quick to see the advantage of these helps; and for that reason he forges ahead of the crowd.

With the Key anyone can instantly find what figures to use on the common steel square for the rafter cuts, together with the lengths of all rafters for all pitches, from one to twenty-four inch rise per foot run. Having the lengths given decimally for one foot run, it is an easy matter to find the lengths for any run.

The instrument is about three inches in diameter. On each side there is a disk, pivoted at the center; one side gives the length and cuts of the rafters, the other gives the table for finding any angle in degrees. By turning the disk until the slot in same rests opposite the pitch or angle desired, only the figures for the lengths and cuts for that pitch, or angle, will be exposed, thereby preventing errors.

Much other valuable information is contained in the Key, all points being fully explained in the small book of instructions. A neat morocco case for carrying the book and Key and of suitable size for the pocket, is given with each Key.

The retail price is $1.50, postpaid, and can be had from the AMERICAN CARPENTER AND BUILDER, 185 Jackson Boulevard, Chicago.

Keep Your Eye on Diehl

We are pleased to call the attention of our readers to the fact that the Diehl Novelty Company of Sheboygan, Wis., are manufacturing a very fine line of builders' hardware specialties. They are making several new additions this season and will be able to furnish their customers with almost anything that they desire in the specialty line. We are not at liberty just now to mention their new additions for the reason that they wish to put a few in stock before informing their customers, so as to be able to send out samples upon request. Their new catalogue for 1911 will be ready for distribution about March 1st, and we feel that it would be of interest to our readers to keep in touch with them for anything new in the specialty line.

ASBESTOS "CENTURY" SHINGLES

"The Roof that Outlives the Building"

Loss by fire is the one risk that the property owner dreads most. He is so entirely at the mercy of carelessness or negligence on the part of his neighbors.

In nine cases out of ten where a fire starts outside the building it catches the roof. Asbestos "Century" Shingles are absolutely fireproof because they are made of reinforced concrete. And more than that—they are light in weight and can be laid so they hold up even when the roof frame is weakened by fire within the building.

Asbestos "Century" Shingles are made of hydraulic cement reinforced with interlacing Asbestos fibers—compacted by tremendous pressure.

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania.


They are indestructible by weather or time and they grow harder and tougher with exposure.

No repair—no painting.

You can get Asbestos "Century" Shingles in numerous shapes and sizes to fit any architectural scheme. Three Colors—Newport Gray (silver gray), Slate (blue black), and Indian Red. Ask your Roofer for new quotations. Write for booklet "Everlasting 1911."


WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
EVERY CONTRACTOR IN AMERICA

CAN OWN A Hupmobile GUARANTEED FOR LIFE

Runabout $750 f.o.b. Detroit
including three oil lamps, tools and horn.
Gas lamps and tank, top, windshield, etc., extra. Detachable doors, $25.

Touring Car for Four, $900. Four-Door Touring Car, $925
Torpedo, $850

If you have more time, you could supervise more work—keep more jobs going.
If you could superintend more work you could employ more men, and your profits would be greater.

A Hupmobile is the key to the situation.
Because a Hupmobile would give you more time—save money for you—save you a vast amount of inconvenience—keep you in closer touch with your men and your work every day.

We are not making unsupported statements when we say this.
We are telling you facts—facts from the experience of other contractors and builders, who long ago saw the value of the Hupmobile to them and their business and speedily adopted it.

The keep of a Hupmobile would cost you no more—if indeed it cost as much—as the means of transportation you now employ.
This, too, has been established time after time.
The Hupmobile is pre-eminently fitted for the quick get-about work of the busy builder.
First, it is simple in construction and simple to operate.
It is light and compact. It turns in a narrow street without backing.
Its lightness is easy on tires—easy on the car—cuts down the quantity of oil and gasoline required for its operation.
It is efficient from one week’s end to the next; and its repairs are few, because it is built with the same care and of the same fine materials that characterize the largest and most expensive cars.
Can you really afford to be without a car in your business—and that car a Hupmobile?

CARPENTERS

THE GREATEST MILL WORK ORGANIZATION IN EXISTENCE IS NOW AT YOUR SERVICE.

In these great warehouses you can make one dollar do the work of two. You can always be sure of getting quickly, just what you want in the sizes and grades you order.

The few prices quoted below have been selected at random from our new Building Materials and Mill-work Catalog which we will be glad to mail you free upon request. Our line is complete. It includes a full assortment of the new and popular Craftsman doors, Craftsman trim, Craftsman buffets and China Closets at about one half usual prices.

EXPERIENCED BUILDERS WILL APPRECIATE QUICK SERVICE. We have over seven hundred people engaged at our factory to handle your orders.

YOUR ORDER WILL BE shipped at once. No order is too large and no order is too small for us to handle. We are equipped for handling orders amounting to from $500.00 to $10,000.00 just as promptly as orders amounting to from $5.00 to $10.00. Our shipping facilities are unexcelled anywhere.

Want a Carload of Mill Work in a Hurry? Here's the Place to Get It.

$1,000.00 SAVED ON A HOUSE

113 Bridge St., Cohoes, N. Y.

Sears, Roebuck & Co., Chicago, Ill.

Gentlemen:—I am sending you a photograph of the house built from material shipped from you and according to your plans. I am well satisfied with the quality of materials and your prompt shipment. After a close estimate I can say that I have saved on this property $1,000.00.

Very truly yours,

Frank Chamberlain.
CONTRACTORS

WE CAN SHIP COMPLETE HOUSE BILLS IN 48 HOURS. WHERE ELSE CAN YOU GET SUCH PROMPT SERVICE?

You will never lose a contract on account of not getting your goods on time. Our big stock and our immense working force of mechanics, packers and shippers make it possible for us to give you better service in the way of prompt shipment than any other concern.

You can realize a saving of from $500.00 to $1000.00 in the cost of materials for a single house when by ordering from us. Read below the letters from two people who have built according to our plans and with our material. Write for our catalog. It's free.

This Four-Panel Front $2.85

We ship our mill work into every state in the Union and save our customers from 25 to 50%.

Our Factory is Equipped with the most up to date machinery, best qualified mechanics are employed. The mill work is manufactured in quantities ordinarily large enough to supply a hundred good size dealers. This is why we can sell a $1.75 four panel door at 95 cents, and a 24x28-inch window fully worth $2.00 for only $1.10.

OUR FACTORY IS EQUIPPED with the most up to date machinery; best qualified mechanics are employed. The mill work is manufactured in quantities ordinarily large enough to supply a hundred good size dealers. This is why we can sell a $1.75 four panel door at 95 cents, and a 24x28-inch window fully worth $2.00 for only $1.10.

Thinking of sending a trial order? We'll ship it "In a Jiffy" and pack it right.

CO., CHICAGO, ILL.
The Ideal Sash Ventilator

The need of a contrivance for the admittance of pure air in sleeping rooms, hospitals and offices, has been apparent for years and has been quite a problem for architects and contractors until the Ideal Mfg. Co., Erie, Pa., invented their Sash Ventilator.

When natural ventilation is properly and scientifically applied it invariably proves more successful than mechanical or other forms of artificial ventilation and it has the advantage that it can not get out of order or break down and costs but little to apply and nothing to maintain. This fact is confirmed by the medical fraternities, who say natural ventilation is much to be preferred to any and every artificial system.

Modern Plumbing at 1/2 Ordinary Cost

Plans and instructions free with every plant

WATER SUPPLY OUTFITS
From $42.00 Upward

Hot Water and Steam Plants
SAVE $100 to $250 on a Heating System

Pumps, Pipe, Valves, Fittings at lowest prices. Farmers' Tanks for every purpose. Acetylene Lighting Plants, Gas and Electric Fixtures. All high grade, strictly guaranteed goods. BIG CATALOG FREE.

M.J. GIBBONS ARCADE DAYTON, O.
Send Coupon Now For Free Samples of Johnson’s Artistic Wood Finishes

EVERY practical contractor and builder can better his work, better his profits and better his reputation by using Johnson’s Wood Finishes. You can prove this at our expense—it will cost you nothing—save you much. We want to send you free working samples and Johnson’s Illustrated Color Book—"The Proper Treatment for Floors, Woodwork and Furniture"—giving complete directions for their use.

We want every contractor and builder to accept this free offer. Mail coupon or postal today.

Johnson’s Wood Dye

is not a mere surface stain—but a deep-seated dye, penetrating the wood and fixing a deep, rich, permanent color entirely different from ordinary stains, which are only "skin-deep." Made in fourteen attractive shades.

When used in combination with Johnson’s Prepared Wax or Johnson’s Under-Lac, inexpensive soft woods such as pine, fir and cypress may be made as beautiful and artistic as costly hardwoods. Ask your dealer for free samples and prove it for yourself.

Johnson’s Color Panels and Illustrated Book

Let us send you free a complete set of wood panels showing all shades of Johnson’s Wood Dye on various woods. These panels are conveniently put up so that you can easily show them to prospective customers—by doing so we are sure you will procure many contracts at profitable prices for work to be finished with Johnson’s Artistic Wood Finishes. The dye always matches the panels.

We will also send you a copy of our new book illustrated in many colors and containing color plates of the dye. This book gives full instructions for finishing and refinish- ing all wood—soft and hard. It is invaluable. Present the attached coupon to your leading paint dealer for samples, wood panels and book. Or mail coupon to us giving dealer’s name and we will send them to you from Racine.

Johnson’s Under-Lac

A spirit finish vastly superior to shellac and varnish—not thick, sticky and slow drying like varnish, neither does it dry too quickly like shellac. Under-Lac should be used over Johnson’s Wood Dye and Paste Wood Filler where a higher gloss than a waxed finish is desired.

For a first-coater, where varnish is to be used, Under-Lac is unsurpassed—one coat of Under-Lac and one coat of varnish will give a better finish than three coats of varnish without the Under-Lac.

Under-Lac is particularly adapted for finishing linoleum and oilcloth—dries hard so the floor may be walked on in an hour. Ask your dealer for free samples and convince yourself of the merit of Johnson’s Under-Lac. Gallons, $2.50.

COUPON

ACB-3

For S. C. Johnson & Son’s Free Illustrated Book and Wood Panels—also free samples of the following Johnson’s Wood Finishes.

(State plainly just which samples you wish to try.)

Name

Address

Dealer’s Name

Dealer’s Address

Present this coupon at your dealers, or mail direct to us for free samples

S. C. JOHNSON & SON

Racine, Wisconsin

Wood Finishing Authorities

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
The Chicago Grille Works

A word is in order concerning the Chicago Grille Works and the position that the managers of this concern have built up for it in the estimation of practical contractors and builders. They have a record of eighteen years in their present location at 826-836 Wells street, Chicago, with satisfied customers from Maine to California, never having a complaint from one of them. This record makes them feel (without egotism) that their work is of the class called "perfection."

These people put out a new catalog every year presenting their many new and attractive designs in grilles, parlor columns, colonnade openings and consoles. A special feature of their catalog 18, is a combination console parlor library cabinet, said to be the first of its kind to appear in print in any catalog, as they are the originators of this useful, ornamental, piece of furniture, which is so compact and so serviceable, that we believe one of these handsome cabinets will soon adorn every modern home.

In these catalogs their different designs are described in such a plain clear way, that there can be no misunderstanding in ordering. The accompanying illustrations shows one of their designs. It is a beautiful piece of interior decoration, something entirely new; massive in appearance, with octagon pedestals, composition caps and ornamentation on beam, designed especially for openings not less than 7 feet and upwards. Electric lights are shown dropping through the beam, which is constructed with this idea in view. Total drop on sides 3 feet 2 inches, beam is 4 inches thick and 8 inches face; columns 6 inches, composition caps 5 inches; plain, reeded or fluted columns.

Modern Merchandising

For some time it has been a favorite boast of the packers of Chicago's famous union stock yards that the business of packing pork has been so perfected that nothing is lost in the killing process except the squeal of the hog.

It would seem that the house of Sears, Roebuck & Co. is striving for a similar standard of development in the merchandising business. Visitors at the great plant in Chicago are impressed with the fact that this institution is prepared today to supply Mr. and Mrs. American Citizen everything required for the construction of their dwelling and everything needed to furnish and equip it for habitation, except the squeal—of the baby. Indeed no surprise will be occasioned if the next catalog issued by this house lists babies, of either sex and any color, at their famous one profit prices, shipped direct from Chicago's orphan asylums.

Speaking seriously it may be noted that so rapid has been the growth and development of this wonderful business that even its oldest customers have not been able to keep pace with it and few know that it actually owns outright, or controls by contracting for the entire output, at least two score manufacturing plants for the production of building material and supplies; farm implements, shoes, buggies, clothing, women's apparel, bicycles, automobiles, furniture, cream separators, etc., etc.

COVER YOUR OLD ROOF WITH Walter's OR Cooper's LASTING METAL SHINGLES

Put them right on over the old Wooden Shingles. Saves Time, Money and Work. Old Shingles add Warmth and Save Sheathing.

WALTER'S AND COOPER'S METAL SHINGLES Were the First Metal Shingles Made. Are The Best Today

Made in many designs and of painted tin, galvanized tin and copper. The Original Side Locks invented by Mr. Chas. B. Cooper in 1882, are still the Only Locks which will positively exclude All moisture. Cheapest and Best. The Corinthian Tile here shown is fine for Colonial Residences. Need Not remove old shingle roof. Better to allow it to remain. Tin Roofers, Contractors and Architects, write to undersigned, sole manufacturers, for booklet and particulars. Samples on request, also price list, directions for measuring, laying with coat of paint, nails, etc.

Cooper's Corinthian Tile

National Sheet Metal Roofing Company, JERSEY CITY, NEW JERSEY

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Artistic and Attractive in Appearance—Durable and Inexpensive, Practical and Easily Applied with Superior Fire-Resistant and Storm-Resisting Qualities to meet Extreme Weather Conditions—Sparks, Heat, Sleet, Sledding Foes, Rain, Snow, or the Extreme of Cold and HEAT do not affect the Superior Outer Coating of “Burmite” proven The BEST by TEST.

Ready-To-Lay "Burmite"

REG. U. S. PAT. OFF.
FLEXIBLE-CEMENT-BURLAP INSERTED MATERIAL
GUARANTEED FOR 10 YEARS without Coating. Made with two Separate and Distinct Surfaces, i.e.,
BIRD-SAND and "Twolayer"
SLATE-CHIPS PATENT PENDING

For the "Twolayer" Slate-Surfaced Material, colored Slate of Unfading Quality is used, the fine slab-shaped Slate Chips being embedded into the pure Asphalt Composition so thoroughly—and put there to stay—that a smooth, even, upper Mineral Surface (there being two layers of Slate Chips) is the result; thus securing the well-known Impermeability and Weather-Resisting qualities of Slate AT ONE-FOURTH THE COST.

Used in any Climate, can be applied in cold weather, and is equally well adapted to uneven, flat or steep surfaces; can be laid over old Shingles or Tin. Lasts longer than Shingles, costs less. Sold on its merits and lasting qualities. The First Cost—The Only Cost.

The resisting qualities of our Slate-surfaced Material are such that it is especially recommended for, and is being largely used as a Roofing on Pulp Mills, Chemical Works, Acid and Fertilizer Plants, and other buildings used for like purposes, where the roofs are affected by Acids, Casses or Fumes.

As a rule, other grades must be coated at least three times in from seven to ten years, the expense of which, added to the original cost of material, as compared to total cost of "Burmite" for same time, will show a great saving in favor of the latter; besides the satisfaction of having the ARTISTIC APPEARANCE.

Buy Burmite and be through with your Roofing Troubles for from 15 to 20 years.

To make yourself acquainted with this up-to-date Material for Roofing and Siding Residences, Business and Factory Buildings, Summer Homes, Bungalows, Barns, Garages, Churches, Plants, Warehouses, Depots, etc., of CONCRETE, BRICK, STONE, FRAME or other Construction—be they NEW or OLD, WRITE TODAY for our SAMPLES and BOOKLET.

"Burmite Quality Counts"
Illustrated with Buildings, Beautifully printed in colors, showing effect of BURMITE MATERIAL applied as a Roofing and Siding. Mailed free of all charges and obligation.

Bermingham & Seaman Co., Roofing Chicago
GEN. OFFICES: 1208-1226 Tribune Bldg. PLANT: 50th, Armitage and Grand Ave.

CHICAGO

1911 AMERICAN CARPENTER AND BUILDER
Particularly will it surprise many carpenters and builders to learn that since its invasion, only a short time ago, of the building supply business for the purpose of demonstrating the applicability and feasibility of mail order methods in this line, it has acquired or obtained entire control of its own factories for the production of lumber and mill work, paints, and varnishes, wall paper, plumbing goods, lighting fixtures, furnaces and hot water heating plants, stoves, roofing material of every kind as well as wall board, interior hardware, etc., etc. In fact the intending builder can depend upon it that he will not have to buy so much as a nail elsewhere when he has sent in his order for a Sears, Roebuck & Co. model home.

Nor does the intending purchaser of one of these homes have to content himself with a "hand-me-down" house. The widest latitude is provided for, so that his finished house may express to the smallest detail his individual and personal taste and preference. This is how the plan works.

The expectant builder first sends to the firm for its Book of Modern Homes, containing half-tone pictures of more than 100 bungalows and cottages of up-to-date and artistic design. After deciding which one suits him best he writes for the blue prints and bill of specifications, all of which, like the first book, are supplied free of charge. With the blue print and bill of materials is sent a large, illustrated catalog of lumber, millwork (including everything used in interior and exterior trim) roofing, furnaces, bathtubs, plumbing, etc. The plans and specifications are specially prepared for the layman and are so simple that even the housewife may understand them readily. The customer then proceeds to compare every piece of material designated on his blue print by number with the article as described and pictured in the catalog under the same number. He may decide for instance, that he prefers another one of the 64 doors illustrated in the catalog, in which case he has only to change the number in his bill of mate-

---

**The No. 21 Watrous Screen Door Catch**

*The Latest and Best Thing in Screen Door Catches*

**THE CATCH WITH THE POSITIVE LOCK**

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

_Sells at Sight_

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

---

**WILLIS SKYLIGHTS**

*A WATER-TIGHT LIGHT—QUICKLY SET UP—WITHOUT TOOLS*

IT COSTS NO MORE TO HAVE THE BEST AND THIS IS WHAT YOU GET IN Willis Skylights

All our skylights are set up in our shop and then knocked down for shipment when practical to do so, thus reducing freight charges and insuring safe delivery.

They are erected without the use of any tools other than a hammer and screw driver. No soldering is necessary. They are water-tight without setting glass in putty.

Every light is guaranteed against defects as to workmanship or material.

We also make a full line of Cornices, Ventilators, Crestings, Finials and Architectural Sheet Metal.

Our Catalogue "B" on Perfect Light and Ventilation; also, our general Catalogue No. 5 will be sent on request.

Estimates given from plans or specifications.

WILLIS MANUFACTURING CO. GALESBURG, ILL.
The Famous Universal Woodworker is worth more to your business than sixteen ordinary woodworking machines.

The Famous No. 14 is the best Investment of the Century for Carpenters, Contractors and Builders.

YES, SIR. The best investment they can ever make for all who have millwork done—especially those who have been paying out their profits to planing mills.

The Famous No. 14 Universal Woodworker is a 27" Band Saw—a 12" Jointer—a Hollow Chisel Mortiser—and thirteen other woodworking machines besides. Here are the machines—sixteen of them—combined on one base for reasons of economy.

(1) 27" Band Saw; (2) 12" Jointer; (3) Saw Table, with raising or lowering arbor; (4) Single Spindle Shaper; (5) Boring Attachment, arranged on Special Boring Spindle; (6) Pony Planer; (7) Tongue and Pole Rounder; (8) Hollow Chisel Mortiser; (9) Single End Tenoner; (10) Drum Sander; (11) Disc Sander; (12) Knife Grinder; (13) Emery Grinder; (14) Band Re-Saw; (15) Spoke Tenoner, Rim Borer and Wheel Equalizer; (16) Adjustable Felloe Rounder.

Adjustments for the different operations are made almost instantly; you can use the machine as a band saw one hour and as a drum sander the next. No machine could be more simple in operation, or to understand. No machine could be durable or practical.

There are many good reasons why it's better for your business than sixteen different machines. First, it costs but a fraction of what a number of machines would amount to; secondly, only one belt or motor is required for power; third, only a small amount of floor space is necessary; fourth, one machinist can do all the work; fifth, cost of maintenance is practically eliminated.

You should install a FAMOUS No. 14

If you have been paying planing mill bills you have been putting money in somebody else's pocket — with a FAMOUS all the profits are yours. If you have your own machinery and need more sell out what you already have and buy a FAMOUS—get sixteen in one beginning of better profits for you.

If you want a free trial, say so. Convince yourself at our expense. Write for full details and literature. It will be the beginning of better profits for you.
rials, and so on through the entire plan.

Three advantages accrue to the builder from this method of buying houses by mail from Sears, Roebuck & Co. First, the saving of all those unnecessary commissions and profits incident to the marketing of materials through devious channels; second, the elimination of vexations and expensive delays in the arrival of the supplies as needed; third, the sense of satisfaction that comes from an absolute personal knowledge of the exact character and quality of every piece of material that has gone into the building when it is finished.

One cannot refrain from contrasting this wonderful retail establishment with the largest stores of a few years ago whose size evoked expressions of wonder from all who visited them. Think of being able to buy from a single “store” not only everything needed for the construction of your dwelling from foundation posts to roofing, from paint and varnish to wall paper, from bathroom plumbing to lighting fixtures and fur-

nace, but also everything required to furnish the completed house from kitchen utensils to piano as well as everything necessary to make it habitable from linens and provender to wearing apparel and medicines. Nor does the concern stop there in its ministrations to the needs of the American citizen, for when the span of life approaches its close the provident householder may turn to his Sears, Roebuck & Co. catalog and place his order for a monument to commemorate his life, at one-profit prices shipped direct from its own quarries in Vermont.—Adv.

THE IDEAL SASH VENTILATOR—a simple, scientific device that admits fresh air in a room and expels carbonic acid gas or air from which the oxygen has been exhausted. It takes up no room nor does it disfigure a window it insures fresh air without draughts and dust, expels all foul air. Just the thing for the toilet or sleeping room.

THE IDEAL SASH VENTILATOR is designed to fit any window sash (old or new) top or bottom rail and has an opening of 8 square inches. It is made of sheet brass throughout (a non-rustable material) is simple in operation, and the easiest ventilator on the market to install.

THE IDEAL SASH VENTILATOR may be used in any sash 1½ inches or more in thickness.

Send today for full details, and special discount we are quoting American Carpenter & Builder Subscribers to sort of celebrate this our first appearance before them.

IDEAL SASH VENTILATOR CO., State St., ERIE, PA.
You Need This FREE Illustrated Book on Concrete Machinery

The biggest, most modern and up-to-date line of concrete machinery, moulds, tools and appliances are illustrated and described in our 1911 big wholesale concrete machinery catalog. It is a regular concrete encyclopedia, containing hundreds of beautiful illustrations and shows practically everything required in this line—machines and moulds for every conceivable purpose, including block machines, brick machines, post machines, tile moulds, bend tile machines, tombstone and burial vault moulds, wheelbarrows, block cars, engines, grave markers, ornamental moulds of all kinds, trowels, pointers, tuckers, mortar gauges, etc. The reader will see the most modern and up-to-date machines ever produced.

You cannot afford to be without a copy as it will show what you ought to have and prices you ought to pay.

This volume will prove immensely valuable to everyone interested in concrete, from the biggest contractor to the smallest concrete worker.

Everything is Sold by the Pound

Our entire line of machines and moulds is sold at wholesale prices. You can purchase these machines or moulds at lower prices than those of any other reliable line of concrete machinery manufactured.

No Money Down
10 Days Trial

We back our goods with a satisfaction clause and make you the judge of the practicability and adaptability to your use.

SEND NOW FOR THIS CATALOG AND OUR SPECIAL PROPOSITION

NORTHWESTERN STEEL & IRON WORKS

CATALOG L

907 Spring St. EAU CLAIRE, WISCONSIN
Will YOU Be Ready
When YOUR Chance Comes?

Will YOU be chosen as the right man when the big opportunity comes? Are YOU better prepared to rise from the ranks than the men beside you?

Could you fill satisfactorily a position requiring knowledge of "hows" and "whys"? Could you direct the work of others so as to get the best results? Would any employer be safe to trust your planning and figuring and doing?

To make it short, have you any special equipment? Is there anything in you to command big pay?

Through the study of I. C. S. Courses, shop hands have become draftsmen, foremen, and superintendents; carpenters and masons have made themselves contractors, architects, or structural engineers; clerks have advanced to high-salaried places as advertising men, window trimmers, show-card writers, or chemists; young men have prepared for Civil Service positions, or studied successfully surveying and mapping, illustrating and designing, automobile running, sanitary plumbing, mining, textile work, navigation, or some other occupation covered by one of the 214 Courses of the I. C. S.

It will cost you nothing but postage to learn all about the salary-raising plan of the I. C. S.

Mark and mail the Coupon NOW

International Correspondence Schools
Box 910, SCRANTON, PA.

Please explain, without further obligation on my part, how I can qualify for a larger salary and advancement to the position, trade, or profession before which I have marked X.

Architect
Arch'! Draftsman
Contractor & Build.
Building Inspector
Structural Eng.
Structural Draftsman
Plum. & Heat, Con.
Supt. of Plumbing
Foreman, Steam Fit.
Plumbing Inspector
Heat. & Vent. Eng.
Estimating Clerk
Civil Engineer
Surveying
Mining Engineering
Mechanical Eng.
Mechanical Draftsman
Stationary Eng.
Electrical Engineer
Electric Lighting
Electric Railway
Concrete Contr'G
Automobile Runn'G
Foreman, Machines
Sh. Met. Pat. Drafts
Textile Manufacturer's Bookkeeper
Stenographer
Advertising Man
Window Trimming
Commercial Illustrator
Civ. Service Exams.
Chemist

A fireplace will bring a
better price for the
homes you are building.

Nothing adds to the attractiveness of a home like a fireplace with an appropriate Wood Mantel.

It takes away all the bareness of a room—gives it a finished appearance.

Write today for our book of designs and let us show you how the use of fireplaces and wood mantels in every room, will positively bring returns in better rentals, increased selling prices and preference for your houses.

Write today

The Home Fireplace and Mantel Co.
Room 611 State Life Building
INDIANAPOLIS, IND.
We want every Carpenter, Contractor and Mechanic in the United States to grind any and all their tools on the LUTHER CARBORUNDUM PERFECTED GRINDER for the next SIX MONTHS, in order that they may realize that it is a money earner, and also its great value. If after this trial you decide not to keep it, return it to us—no hard feelings—just send it back. The SIX MONTHS' USE WILL HAVE COST YOU NOTHING?

Special Offer on Shop Outfit

LUTHER DIAMOND TOOL GRINDER

10 TOOLS IN ONE

The Mechanics' Special Shop Outfit, on which we are making this special offer, embraces ten sharpening appliances. The special attachments make it easy for even inexperienced persons to do difficult grinding, such as twist drills, chisels, etc. The outfit consists of one Mechanics' Special, with the following accessories:

1. One rough genuine Carborundum wheel
2. One fine genuine Carborundum wheel
3. One Chisel grinding attachment
4. One twist drill attachment
5. One buffer
6. One polisher
7. One genuine Carborundum oil stone
8. One genuine Carborundum hone in leather case
9. One genuine Carborundum sickle stone
10. One foot power attachment.

The Greatest Labor-Saving Tool Ever Made

The Luther Grinder is built like a high-priced Lathe and is Guaranteed for five years.

It's construction is mechanically perfect—machine cut spur gears—dust proof and bronze bearings—all machined parts run in bath of oil.

The Luther Grinder cannot fail to please owing to its solid construction and because it makes it easy to have keen edged tools without drudgery.

READ WHAT OTHERS SAY ABOUT THIS GRINDER:

"Our machinist is very much pleased. He tells us that he ground a chisel on this tool grinder in two minutes which would have taken an hour on the grindstone."


"Enclosed find remittance for grinder which I find to be as good as recommended."

S. SCHRANTZ, Stonington, Ill.

"In many respects I like the machine better than a power machine, since its speed can be varied instantly at will."


"The grinder has been placed in our workroom and proves satisfactory. I heartily recommend it."

GEORGE LEONARD, Pioneer, Ohio.

"We consider your Mechanics' Special the best thing on the market for grinding tools. It will give us pleasure to recommend the grinder to our friends."

MACLEAN & CARRICK, Palmer, Mass.

RETURN THIS COUPON FOR OUR SIX MONTHS' TRIAL OFFER

25 Times Faster Than Grindstones—6 Times Faster Than Emery—Will Not Draw Temper—Not Emery Called by a Fancy Name. But

GENUINE CARBORUNDUM WILL NOT DRAW TEMPER

Luther Grinder Mfg. Co.

Address 56 Madison St. MILWAUKEE, WIS.


Gentlemen—Please send me particulars of your Six Months' Free Trial Offer, also your booklet about Carborundum. This does not obligate me in any way or mean that I will buy. It means simply that I want full details.

Name:

Address:

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
INVESTIGATE

Compo-Board

BEST FOR WALLS AND CEILINGS

Better than lath and plaster. More economical and durable. Can be put on in any weather and will stay up and look well as long as the building lasts.

Compo-Board is made of strips of thoroughly dried lumber well glued. These strips are then covered with a specially prepared moisture proof paper, which is cemented under intense heat and pressure. This makes a wall lining that will last indefinitely. Cannot crack or crumble off. Cannot chip off or mar by banging furniture into it. It is moisture and cold proof and fire resisting. Warm in winter and cool in hot weather.

Besides being a wall lining, Compo-Board has many other uses around the house and in the yard, in the office and factory, in the kitchen and in the bathroom and basement. It is ideal. Summer cottages can be made as warm as the city home. Use it for partitions or back plastering.

Compo-Board can be had in strips four feet wide and one to 18 feet long, in any length in even feet. Send for Sample and Booklet. Fully describes Compo-Board and its many uses and advantages and the sample will show you what it is.

NORTHWESTERN COMPO BOARD CO.

5777 Lyndale Ave. No. Minneapolis, Minn.

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

$13,245 IN 110 DAYS

R. V. Zimmerman, an Indiana farmer, (address upon application), as sales agent for our

NEW INVENTION

ordered $13,245 worth in 110 days, and his orders for 9 months total OVER $30,000.00

His first experience selling goods. Started at home in spare time while farming. Another agent, M. G. Stoneman, an artist, of Nebraska (address upon application), placing one order for only $6,000. He writes: “Best thing ever sold. Not one complaint from 2,000 customers.” Another agent, W. W. McQuirie, a student of Kansas (address upon application), comes next, with total orders of OVER $8,000.00

Another agent, C. A. Korstad, a carpenter, of Minnesota (address upon application), furnishes added proof that we offer an extraordinary winner, by ordering

$2,212 WORTH IN 2 WEEKS

These are just a few of hundreds who have made big money as agents

ALLEN’S POWERFUL PORTABLE BATH APPARATUS

Nothing like it. Gives every home that long desired blessing—Modern bathing facilities for only $6.50. Abolishes tubs, bowls, buckets, wash rags, and sponges. Turns any room into a bath room, with hot or cold running water. Think of it. So energizes water, one gallon ample; cleanses almost automatically: no plumbing—no water works—self heating. Gives cleansing, friction, massage, and shower baths. Makes bathing 10 minutes operation. Operates wherever water is obtainable. Easily carried from room to room or packed in grip when travelling. So simple—child can operate. Totally disinfectable, baking within the drudgery. Convenience, annoyance, mess of lugging water, filling tubs, emptying, cleaning, putting away. Surely it has all the features of a permanent, easy, quick seller. Think of millions who need—want modern bathing facilities—who will welcome this chance to modernize their homes.

Agents very successful. See what others are doing. Actual results that make you want to seize this opportunity. Investigate anyhow. See what these agents have ordered. (Address supplied upon application).

M. Juel, Canada. (Clerk) over $7,200; C. C. Fritzel, Iowa (lawyer) over $6,800; W. S. Hartlow, Nebraska (Junior) over $6,400; E. Edwards, Nebraska (solicitor) over $6,200; B. F. Magee, Florida (Physical Director) over $6,100; A. J. Wilson, Kentucky (Bank Organizer) over $5,400, and many others.

"First 12 Hours' Work Sold 30 Outfits"

F. Oviatt, Iowa, (Minister), over $800 in 11 days, $4,000 to date; A. Rogers, Kansas, (Solicitor) over $3,200, and writes: "Making baths put me one piece of property." W. H. Byrd, North Carolina, (Mechanic) over $2,200, and it goes. O. F. Schleicher, Ohio, (Minister), writes: "First 12 Hours' Work Sold 30 Outfits"

M. Stoneman (PROFIT $107.25)

A. P. Lodewick, Maine, (Solicitor), writes: "Lucky I answered ad; it's great; money coming fast; 17 orders to-day; sells on sight." B. Hart, Texas, (Carpenter), total orders exceed $5,000 and writes: "Sold 16 orders in 3 hours. Appeals to all. Can't keep from selling it if it is properly demonstrated." Rees of Pennsylvania (Carpenter) solicited 50 people—sold 55

Don't Envy These People—Let Us Give You an Appointment with exclusive right to demonstrate, sell, deliver, collect, appoint, supply and control sub-agencies, at home or travelling, all or spare time. Previous experience, capital, unnecessary.

FREE SAMPLE AND CREDIT to active agents. Test your ability once, with a real opportunity. Surprising what a little hustle will do. Think what this business means. No competition. New patent—field unworked—demand enormous—price insignificant—fashioning, significant, exciting work—everything just right for a good business. Allen's Powerful Portable Bath Apparatus is an experiment. No other one on the market already sold. Used by U. S. Government. Praised by thousands. Delighted customers say don't see how they ever got along without it.

SEND NO MONEY—INVESTIGATE FIRST

Just spend $1 and to-day—a free catalogue and high grade agency plan. Act now—be first—don't let someone else get territory you want.

The Allen Mfg. Co.

3271 Allen Building, Toledo, O.
A Problem and Its Solution

When you are in the market for a floor scraper, and you look through the ads of the different machines and find that all claim to have the best

WHAT’S THE ANSWER?

In hopes of solving the problem, you may write for further information and receive prices and circulars, together with more claims. After wading through all this matter, you will find that you are scarcely any nearer to a solution than before.

No one, of course, will admit that theirs is not the best, even if it can be manufactured and sold for 30 cents.

Price, therefore, being about the only point of difference, it would seem that you may as well buy the cheapest—while the claims of one appear to be as good as that of another.

There’s where you are most apt to make a mistake. Judge not by the price alone, nor by the manufacturers claim, but judge by the machine itself.

To those who believe that there is economy in buying the best, and who are in the market for a Floor Scraper, we will send our machine on a week’s free trial.

There is satisfaction in knowing you have the best. You can satisfy yourself positively on this point by trying different makes. Take any one of the old style Dead Weight Machines (there’s practically no difference between them except in the name or some auxiliary sharpening contraptions) and try it out, together with the new Triple “A” Spring Driven, and you will get a fair comparison on the two classes of floor scrapers on the market today.

After you have made such a test, the problem is simple enough. You will be just as enthusiastic about the Triple “A” as any one of the following writers, who are now satisfied owners.

Hamilton, Montana.
Gentlemen—We have delayed answering your letter of recent date regarding the Triple “A” Floor Smoother that we purchased from you, as the work for which we had intended it was not ready. Since then, however, we have had occasion to use it, and are pleased to state that it has given the fullest satisfaction and has done all you claim for it.
Yours truly,
Valley Mercantile Company,
H. A. Stewart.
Manager Hardware Department.
Upland, California.
Gentlemen—Your Triple “A” Floor Smoother has made good on my trial. I gave it a hard trial and it worked all right. I am very much pleased with the machine. The first test was an oak floor that had been filled and waxed and used for two months. It had been scraped with another machine and left full of marks and holes. I went on it with your machine and made a good job of it.
Enclosed find check in payment of same.
Yours very truly,
W. Wilkins.
Jefferson, Iowa.
Triple “A” Machine Co., Chicago, Ill.
Gentlemen—I wish to express my appreciation for the work your machine has done. I think it is the only machine of the kind today that comes anywhere near filling the requirements of a floor surfacing machine. I can clean up a job in a very short time and do a fine job of surfacing.
I can say the Triple “A” is the only machine. It’s in a class by itself. No others which I have tried comes anywhere near the Triple “A.” Enclosed find draft for amount of your bill.
Yours respectfully,
P. L. Shultz.

The Triple “A” Spring Driven Floor Smoother combines the advantages of the hand machine and the power machine.

No more expense in operation than the former—Yet the capacity and ease of operation of the latter.

NO WASTED ENERGY—that’s all.

Triple “A” Machine Co.
114 South Clark Street, CHICAGO
A Portion of a Theatre Ceiling

Interior Effects Like This Get Business for You.

The illustration shows clearly what is possible in the way of design when handling

“BERGER’S”

The richness and depth of embossing are made possible by the special analysis open hearth steel used by us—it’s one of the many points that make them the world’s standard.

Secure the agency—there’s money in it

Boston New York Philadelphia
The Berger Mfg. Co. Canton, Ohio
Minneapolis St. Louis Chicago
San Francisco

Low Prices : Quality : Quick Shipments

(Our Headliners)

COTTAGE WINDOW
8 in. x 6 in. Glazed Clear - - - $3.75
CYPRESS
Colonial Column
With Leaded Top - - 4.50
8 in. x 8 ft.
$2.10
With cap as shown add 65c.

FRONT DOOR
SURROUNDED
By EXTRAORDINARY Bargains
which are only a few of the many Money Savers shown in our new Catalog of HIGH Grade Sash, Doors, Frames, Blinds, Mouldings, Inside Trim, Grilles, Columns, Stair and Porch Work, Mantels, Grates, Tiling, Art Glass, Roofing and Building Papers, Wall Boards, Hardware, Paints, Hardwood and Parquet Flooring, Rolling Partitions, Screens, Steel Ceilings, Gutters, Shingles, etc.

Write Today for Free Copy

The Huber Builders Material Co.
45-49 Vine St., Cincinnati, O.

White Cement Porch Columns

A more beautiful column cannot be made of any material at any price. Will not warp, check or rot like wood columns.

Last Forever

The HOOSIER COLUMN MOLD makes this beautiful porch column, with top and base all in one solid piece. Any one can operate it. No flutes or sections to cause imperfections in removing mold. Columns either 4½ or 5 feet in length and can be made in white or gray cement.

No CONTRACTOR, LUMBER DEALER, or CEMENT WOKER should be without the “Hoosier” Column Mold.

Catalog, porch views and testimonials from Contractors Free.

HOOSIER MFG. CO.
GOSHEN, Ind., Dept. H.

THERE is no method for heating the American Home that excels a Warm Air Heating and Ventilating System for pure air, warm floors, fuel economy, cleanliness, ease of operation, durability, and saving of space in the rooms. Besides, registers are ornamental and do not make any noises like steam and hot water radiators do.

A Holland Furnace, properly installed, and of the right capacity, can not help but please the most fastidious and exacting house owner. The construction is so simple and the furnace is so easy to operate that it will be a continual delight to the user.

Send us your floor plans and we will send you correct diagram for heating and cost of outfit complete without any expense or obligation on your part.

HOLLAND FURNACE CO.
HOLLAND, MICHIGAN
Sole Manufacturers and Patentees

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Write For This Catalog
If Interested In Hardwood Flooring

We have just published our new illustrated Catalog of Ornamental and Plain Hardwood Floors. It is the most elaborate and complete catalog of its kind ever issued and should be in the hands of every Carpenter and Builder. We will gladly send it FREE to any interested person who will write for it—(see coupon below).

This catalog contains interesting information about the different kinds of floors—Ornamental, Plain and Parquetry and about the various kinds of woods.

We have been making fine hardwood floors for over twenty years and are in position to give you the best value and prompt service for your money. We are located where we can obtain all the different hard woods to good advantages. We employ skilled workmen only—nearly all our men have been with us for years.

We ship our floors anywhere. Any good carpenter can easily lay our floors over old floors. When you want good hardwood floors get

JOHNSON'S ORNAMENTAL HARDWOOD FLOORS

"The World's Standard of Excellence"

Here are two beautiful designs with prices. We have hundreds of others.

Border No. 787—8-inch. Oak, Maple, Cherry and Dark Oak. 20c. linear foot. Corners 35c. each.

Border No. 836—10-inch. Oak and Dark Oak. 25c. linear foot. Corners 40c. each.

In this age of keen competition quality is often sacrificed for price. This is particularly disastrous in our line, for if a floor is not made of wood carefully selected and cured and extreme caution used in every detail of manufacture, the floor, instead of being one of the most beautiful and satisfactory features of the home, will be a source of constant care, annoyance and expense. The fact that we have been in business for so long, and have built it up until our trade extends all over the world, is evidence that our goods are satisfactory and our methods right.

Don't forget—send coupon today for this catalog. It will interest you and it's absolutely FREE.

S. C. JOHNSON & SON, Racine, Wis.

"The Wood-Finishing Authorities"

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
WANTED—A position with builder or cabinet maker. Have had course in Mechanics Institute, Rochester, N. Y. Can furnish the best of references. Address 760 Harvard Street, Rochester, N. Y.

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112 AMERICAN CARPENTER AND BUILDER [March

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
AIRGAS—LATEST INVENTION

The Standard Vacuum Gas Machine has revolutionized Gas Production by means of a Vacuum Cold Process. Airgas can be used for Lighting, Heating, Cooking and Industrial Purposes. Airgas is made without the application of any heat and consists of 97 per cent of air that you breathe and 3 per cent of Gas. Machines are made in different sizes, for small homes, big residences, large buildings, or can be made to supply gas for entire towns up to 20,000 people. Gas made automatically throughout. No cleaning. No work filling machine. It runs itself. Use Gasoline, Benzole or Naptha, also called Petrol, or Motorspirit of any grade. Standard Vacuum Airgas can be made for 15 cents per 1,000 cubic feet. 32 times cheaper than electricity, 25 times cheaper than acetylene. 12 times cheaper than common kerosene oil lamps and 10 times cheaper than Coal or City Gas. Machine makes gas only when needed, otherwise stands idle. It is always ready. Gas produced instantly. No waiting. All conveniences of city gas, with none of its dangers and its disadvantages.

The illustration above shows an entire Standard Vacuum Gas Plant for a Private Residence

Agents Wanted: We want a representative in each town or community. Agents will be fully protected. No experience of any kind required. Plants can be delivered ready for any location and for any country or climate. Systems will last a lifetime. Always satisfactory. No trouble. No worry. Contractors & Builders visiting the coming Cement Show in Chicago are cordially invited to call on us where we have a Machine on demonstration.

THE STANDARD-GILLETT LIGHT COMPANY,
CHICAGO, ILL. Portable Hydrocarbon Lighting Devices. Write for particulars.

CASSENS IDEAL EAVES TROUGH
TAKES WATER ONLY

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

Ice Will Positively Not Break Down the Trough

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

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

Special Propositions to Contractors, Builders and Architects

Write for free booklet

CASSENS MFG. CO.
Edwardsville, Ill.
The man who stood still! You pass him on the street every day. If you take one moment now, you can easily recall at least one man who reminds you of this picture. Day after day he follows in the same groove. In good health and in bad he has got to work. Growing older and older, he sees ahead no relief from the ceaseless toil that he has known all through his life. There is no opportunity for him to cease for a single day the everlasting "humdrum" that he has known for so long. He is the man who stood still.

When he had the chance he failed to seize it. He allowed other men, no smarter, no ableer, no better than he, to crowd him out. One by one his fellow workers passed him by to better and more profitable work. They left him always standing on the threshold of success. But they left him behind. He heeded not the beckonings of opportunity. He is the man who stood still.

And now at sixty, at seventy or at eighty years you may see him any day if you care to look—a good carpenter, a good builder, a good contractor perhaps—but that's all; good in the sense that he can do certain things simply because he has done the same thing over and over again—but not good enough to try the new difficult work, the modern up-to-date jobs; the kind that pay good money. No, he cannot do these things—he never learned how. He is the man who stood still.

You don't want to stick to the plane, the saw and the hammer all your life. If you are a contractor or a builder don't you want bigger work than just barns, sheds and now and then a house or two?

If you are a draftsman, an apprentice or assistant in an architect's office you don't want to remain in your present position any longer than you have to; you want to make your present work the stepping stone to a bigger position, which will be your life's work.

You don't want to stand still and see your friends step ahead to enjoyable, well paid, independent work, simply because they "snap up" the same opportunities, the same chances that are offered you. It is the natural ambition of man to want to keep up with his fellows.

The only way that you or any other man can keep up is through study—study of your chosen work. If there is a certain part of your work that you don't thoroughly understand then some time when that kind of work has got to be done some other man is going to step up ahead of you and do it. He learned how. KNOWLEDGE IS THE GREAT LEVELER. There is no true independence where there is lack of training.

You have the chance now within your grasp to get this necessary training. This advertisement is an absolutely direct appeal to you. No matter how good a position you hold now—no matter how much work you are getting—no matter how well you are paid for it—this advertisement holds as much interest for you as the man who is actually looking for work.

At no risk to you—without the slightest obligation on your part—we offer you the really great opportunity of perfecting yourself in your life's chosen work. Don't pass this page by until you have made up your mind to give the rest of this advertisement careful study. Look at the picture again at the top of this page—look at it carefully. You owe it to yourself and to those who may be dependent upon you to take advantage of every possible chance for bettering yourself.

You cannot afford to be the man who stood still.

Radford's Cyclopedia of Construction
The up-to-date mechanic in every kind of work trains his brain even more carefully than he ever trained his hand. That is the slogan of Twentieth Century Success — the trained mind in a trained body.

The man who uses the compass, the steel square, the chisel or the saw has got to have a true eye and steady hand. He learns in his apprenticeship how to train his eye and hand to the top notch of efficiency. Too often, however, this same man of the trained body forgets to train the mind that directs the work of the body. This kind of a man with the untrained mind, while he may be able to do mechanical work well enough, cannot do brain work and is bound to get in a rut in the long run. It takes a trained mind to read plans and blue prints; that's why so many workers live and die in the same kind of a position. You have seen the result on the first page of this advertisement. The untrained man becomes THE MAN WHO STOOD STILL.

At the cost of thousands of dollars and years of experience of hundreds of the best known practical building experts, architects and construction engineers, we have collected and prepared the material for the greatest, most comprehensive, the most practical, thorough and understandable

CYCLOPEDIA of
CONSTRUCTION,
CARPENTRY, BUILDING,
and ARCHITECTURE
ever before even conceived.

Twelve Great Big Massive Volumes
and one extra large volume of 300 pages of actual plans, drawn by foremost architects.
Selected for their excellence, economy of design and popularity along with the building classes. The volume of plans is portfolio size, and in itself worth the special price asked for the complete set.

 Subscription to the AMERICAN CARPENTER AND BUILDER

The Greatest Building Paper in the World

Yours For $1

COMPLETE Set of Blue Prints FREE!

13 VOLUMES 5,000 PAGES

12 BIG VOLUMES SENT FOR ONLY $1.00

We positively guarantee to furnish, free of all extra cost, one complete set of working blue prints, to be selected from any of the 300 plans shown in the big portfolio — the appendix of plans. These blue prints are guaranteed in every way for accuracy in printing, measurement and design.

The contractor and builder can use these plans to get business by showing them to prospective builders. The man who intends to build will find exactly what he wants, saving time, money and expense. The carpenter, draftsman and apprentice can use them to immense advantage for study and improvement in connection with the regular features of the Cyclopaedia.

The only reason that we can make you an offer like this is because The Radford Architectural Company, publishers of the Cyclopaedia, are the largest publishers of architectural and building books in the world and in addition the Radford Architectural Company is the largest architectural establishment in the world.
The difference between the man at the desk and the man at the bench is training—the kind of training that demands well paid positions of dignity and importance.

We don't mean by this that the desk job is always better than the bench job. We don't mean that you should change your present work. We do mean, however, that you must combine more of the desk man's kind of training with your work if you want to continue a live factor in your trade.

The desk man uses one kind of tool that too often the bench man neglects entirely. That tool—the best one in the whole kit—is book practical books that tell how to do your work in the easiest, the best and latest ways; books that tell you all about each and every feature of your work to the smallest detail; books that keep you in touch with the biggest and smallest details of building construction.

Government Statistics prove that the average desk man earns $22,000.00 more in a lifetime than the average bench man simply because of this main fact—he trains the brain as well as the eye and hand.

We have made special arrangements with the publishers of the American Carpenter and Builder so that we can offer a few sets of the Cyclopedia to readers of the paper simply as an advertisement. We have further arranged to include the paper in our offer. We know that you will be interested in this stupendous work which applies so particularly to you.

We are shipping the books now, on the second edition.

Cheaper than even Second-hand Books were ever sold

One-Fourth Regular Price

ONE THOUSAND SETS AT TWENTY-ONE CENTS ON THE DOLLAR

We are just off the press with the Brand New Second Edition. The cost of getting together this set of books has been incalculable. The task of preparing it has been gigantic. It has taken the entire time of hundreds of writers and editors. Our entire organization has had a hand in preparing it and we have picked outside help here and there from the best and most practical material available. We want to advertise this set of books at the start in the most effective way, and we believe that we can do this by selling a few sets if necessary at a loss for the sake of the advertising it will give future editions. You can reserve a complete set now for $23.80 instead of $79.00.

Free on five days' approval—No risk to you—No obligation

No expense, all express charges prepaid

Yours For $1.00

Blue Prints Alone Worth $50 to $75

We do this simply because we know you will advertise the books—you will recommend them to your friends if you find them as good as we say they are. We are willing to put out the first one thousand sets at a loss simply for the sake of your good will. Any printer friend of yours will tell you that thirteen such volumes and a complete set of blue prints (regular price of blue prints $50 to $75) cannot be sold for $23.80 at any profit.

Price without magazine is $22.80.

5,000 pages—thousands of illustrations, diagrams, charts, plans and working drawings; handsomely and durably bound; de luxe books in every particular.

MASSIVE PORTFOLIO SIZE VOLUME OF PLANS EXTRA!

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

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To Realize their Tremendous Scope You Must See the Books

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The Radford Architectural Company

11th Floor, Medinah Building, Chicago

Please send set of your 13-volume Cyclopedia of Construction to me for five days' free examination, express prepaid, under the terms of your Advance Offer. I enclose $1.00 deposit which you agree to return if I decide not to buy the books after examination. If I keep the books I will pay $2.00 a month until the special price $23.80 is paid (including your subscription to Am. Carp. & Bldg., otherwise I will notify you within five days after receipt of them. You also agree to furnish set of blue prints, if ordered within 2 months after acceptance of books.

Name ____________________________________________________________
Address _________________________________________________________
Employer _________________________________________________________

**SENT FOR ONLY $1.00 IMMEDIATE DELIVERY**
Cold Weather Troubles
in shingling
overcome by
PEARSON’S NAILER
for it works as well in one season as another. Wear your gloves or mittens
and (with it) drive more nails than you ever did. Quit using your mouth
as a nail pouch.

10,000 Shingles in Ten Hours
is the Experience of Mr. Connell

***The Nailer more than meets
my expectations, and has more than
paid for itself on one job of thirty
thousand shingles. With my boy
of fifteen years of age, I carried
up and put on ten thousand
shingles in one day of ten hours.
Would not take $10.00 for it if I
could not get another.***—P. M.
CONNELL, Greeley, Neb.
Your experience should be just as good.
The Blue Nailer is for common 3d No. 14 wire nails
and the Red Nailer is for the galvanized 3d No. 13,
1½ in. wire nails. Order from us direct, being care-
ful to state the nailer wanted, according to the kind
of nail to be used.

Price, $5.00, express prepaid. Money cheer-
fully returned if Nailer is not as represented.

PEARSON MFG. CO.
Robbinsdale Minnesota

MONITOR
SASH LOCKS

NEVER BREAK

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

If the upper plate drops, the Monitor “Never Break”
Sash Lock will pick it up from a lower point than any
other, adjust the sashies perfectly, prevent all vibration
and lock securely, so it cannot be opened from the outside

MADE IN TWO SIZES AND ALL FURNISHED BY
The Champion Safety Lock Co.
Geneva, Ohio

Established 1872
Largest and Most Complete Stock of
Builders and General
Hardware—Cutlery—
Tools—Contractors
Supplies etc.
in the Country

High Grade Goods
and
High Grade Service

Orr & Lockett Hardware Co.
71-73 Randolph Street
CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
IMPERIAL "SPIRAL" "AMERICAN" INGOT IRON LATH
THE MOST SUPERIOR RUST-RESISTING

Government Approves It—Architects Specify It, Contractors Demand It.

RUSTPROOF
Made From
"AMERICAN INGOT IRON"
The Attainment of the Highest Purity in Iron

99.94% PURE
Imperial "Spiral"
Is unequalled by any expanded lath made, NOTE that "Spiral" Twist SAVING of THREE to FOUR cents Per Yard IN labor AND Plaster.

FIREPROOF
Equal Distribution of the Metal Giving Maximum Rigidity

Equal Distribution of the Metal Giving Maximum Rigidity

99.94% PURE
Imperial "Spiral"
Is unequalled by any expanded lath made, NOTE that "Spiral" Twist SAVING of THREE to FOUR cents Per Yard IN labor AND Plaster.

MADE IN ALL GAUGES, ONE STANDARD SIZE 16 INCHES x 96 INCHES

Samples and Prices Furnished on Request.

WRITE DEPT. R. C.
THE AMERICAN ROLLING MILL CO. - Middletown, Ohio

Cast Iron Gutters Last

Easily put up. Once up, always up. Do not bend or break by pressure of ladder against them. Will stand 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.

EVERY CONTRACTOR AND BUILDER should know about our Hoist direct connected with Gasoline Engine for use with Double Platform Material Elevators. We furnish Hoist and Elevator complete ready to run. This outfit will elevate more building material at a less cost than by any other known method. Our Bulletin No. 5 will give you all particulars.

BATES & EDMONDS MOTOR CO. LANSING, MICHIGAN

Practical Art Metal Ceilings

Quickly and easily applied. We are the only manufacturers who cut the heads in the dies after casting. Result—Square and accurate plates—which will save you time and labor in cost of erection.

Send for Catalogue No. 2 which shows 200 new and original designs.

Manufactured by Wm. Foster & Son Co., Inc.
Springfield, Illinois

All manufacturers of Radiator Shields, Fire Proof Window Frames and Sash, Galvanized Iron Fronts, Hip Shingles, Cornices, Skylights
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

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**TRUS-CON Joist Hangers**

Made in all sizes and styles, for use with brick or concrete block walls or with wooden or steel beams

Avoid cutting away and weakening of timbers and walls—save labor, time and money.

Trus-Con Joist Hangers are made from open hearth steel plates, and are proven by actual test to be the strongest on the market. Note the bulb-shaped reinforcement at upper angle.

We also furnish Post Caps, Post Bases, Wall Plates and Base Plates made in rolled steel, malleable iron, or cast iron.

Write for catalog and prices.

TRUSSED CONCRETE STEEL CO., 344 Trussed Concrete Bldg., Detroit, Mich.

---

**Wire Lathing**

The Secret of the durability of the woven wire lathing is owed to the fabric being completely embedded in the mortar, and thus secured from the corrosive action of the atmosphere; and also to the fact that rust will not attack the smooth round wire as it does the thin cut edges of a metal fabric.

"Why not use the proper kind of lath that lasts?"

Before building, write for our booklet No. 6 A and Prices

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**Architects & Engineers' Supply Co.**

**Drawing & Surveyors Instruments**

BOUGHT, SOLD AND REPAIRED

ARTISTS' MATERIALS

1010 Grand Avenue :: Kansas City, Mo.
SEE THAT CORNER—Notice that rails lap over stiles, which prevents the splitting of planed edges, so common with most screens, but not with ours. They cost no more than the inferior.

Your local mill cannot compete with us. We are SPECIALISTS of WINDOW and DOOR SCREENS and run our factory all the year around. Get your screens direct.

Fly Screens and Screen Doors
for residences, apartment houses, hotels, clubs, hospitals, schools, and all places requiring ventilation.

Made to Order Neatly and Promptly
in a single screen or door to a thousand. We use the best grades of wire, black enamel, galvanized and copper bronze, etc., fastened by the most improved Standard Shoulder Strip Method; can never sag nor pull away, which makes the wire taut and firm.

MR. CARPENTER, BUILDER or CONTRACTOR, write for FREE copy of our 1910 illustrated catalogue.

STANDARD SCREEN CO. 1848-1950 W. 14th St.
CHICAGO, ILLINOIS

GEO. H. BISHOP & CO., Lawrenceburg, Indiana, U.S.A.

Makers of Fine Hand Made Hand Saws
The Purest of Quality Our "GREYHOUND" Hand Saw

In introducing our " GREYHOUND " brand of Saws to the trade, we have departed from our usual custom in naming instead of numbering the saw. This saw will be known as our " GREYHOUND " and will be the only Bishop brand of saw known by name.

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

We had to name it and we have christened it Bishop's Refined " GREYHOUND " Steel, associating our trade mark with its name. We have in this " GREYHOUND " Saw blade a purity of steel that is tough, tempers accurately and even—together with the special way it is made—enables us to guarantee that this " GREYHOUND " brand of Saws will cut faster and run easier in all kinds of wood, hold its sharpness and set longer than any other makes of good Saws in the world. We Refund the Money if 30 days' trial does not prove our guarantee. Our pride is quality with an honest opportunity for the purchaser to judge. Each Saw is tagged with our warranty on it. No expense has been spared to make this Saw the most perfect in the world. We invite correspondence with anyone who has our " GREYHOUND " brand of saws in use.

Made in both straight and skew back. Packed One in a Box.

In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

If this saw cannot be found in the Hardware Store and they will not order it for you, write to us. Price for 26 in. saw, $3.00 delivered. We make anything in Carpenters' Saws.

Roennius Wood and Coal Chutes
A NECESSITY TO EVERY MODERN HOME
NO MORE DAMAGED CASINGS OR SASH

Roennius Chutes are equally desirable for houses of low or high cost.

Nearly 20,000 in Use
Safe from outside tampering or entrance and weather-proof. Are easily opened and locked.

Write for Catalog
Grand Rapids Foundry Co.
High Street - Grand Rapids, Wis.
Strength

of construction, combined with artistic appearance and absolute reliability, is the particular feature of Petz Store Front Construction. An unparalleled record of "no breakage" tells the story. It explains why insurance companies recommend them and why careful men insist on having Petz Bars in their store fronts.

When Petz Bars are used the plate glass is set in from outside, making the installation both quick and easy.

A booklet on "Modern Store Front Construction" is yours for the asking. Write today.

DETOUR SHOW CASE CO.,
Sole Makers,
491 West Fort Street, Detroit, Mich.

If You Have Any Pride

In keeping up the appearance of your premises as well as your motor car you cannot possibly afford to overlook the sanitary, clean and practical annular Ball Bearing.

PITLESS TURNTABLE

Can be installed in thirty minutes by an ordinary workman without the slightest muss or as much as a nail scratch in your public or private garage. Out of doors or in basement, on any floor or story of house, in an old style turntable or in a Pitless Turntable because they are guaranteed FOREVER and besides, the first cost is absolutely less than the installation expense of the hazards, filth and danger from of the old style turntables requiring a Pit or Building Alteration.

To concrete your yard in front of garage for purpose of washing and backing car around is not only to make an otherwise neat and attractive yard an eyesore but the expense of such concrete work alone will buy several Pitless Turntables.

The cheapest accident insurance ever offered the Motorists is an investment in a PITLESS TURNTABLE—because it is not only saving to back your car continually but extremely dangerous to life, limb and car, irrespective of how expert you may be in handling an automobile. The expense of one accident to car will pay for several Turntables.

Write today for our ART CATALOG Giving full particulars, weights, dimensions, etc.

PITLESS AUTO TURNTABLE CO.
FULLY PATENTED MISSOURI FULLY PROTECTED BY PATENTS

If YOU want a better position, if YOU want to get into congenial work, if YOU want a salary that's worth while—

Sign the Coupon NOW

American School of Correspondence
CHICAGO, U. S. A.

Opportunity Coupon

American School of Correspondence, Chicago, U. S. A.

Please send me your Bulletin and advise me how I can qualify for the position marked "X."

---

Bookkeeper Draftman
Stenographer Architect
Accountant Civil Engineer
Cost Accountant Automobile Operator
Systematic Electrical Engineer
Secretary Mechanical Engineer
Auditor Moving Picture Operator
Business Manager Steam Engineer
Commercial Law Fire Insurance Engineer
Reclamation Engineer College Preparatory

NAME
ADDRESS
OCCUPATION

Amer. Car. & Bldg. 3-11
THE WINTHROP SOLID 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.

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Winthrop Asphalt Shingles are Fire-resisting, Weather-proof, Wind- and Sun-proof, and never Crack, Break or Fall Off.

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EASY TO BUY $10 DOWN AND $10 a Month
Our monthly payment plan makes it easy for anyone to have the best heating system. Buy direct and save the dealer’s big profits and excessive charges for installation and repairs. Saves one-third the cost.

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Annual Output Eight Million Barrels
The uniform high quality, the regular setting properties and good popular color of Universal Portland Cement recommend it to the building contractor for concrete work of all kinds.

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Quarry Operators
BLACK, GREEN, PURPLE, RED
Booklet, Samples and Prices on Application

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and

SIDEWALLS

We show here one of the many handsome designs shown in our new catalogue of metal ceilings and sidewalls. Your copy is waiting for you. Write for it today.

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Corner of Taylor and Coldbrook Streets

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it will pay you to investigate why the "STERLING" is the strongest and most accurate Convertible Level made, and how its use will save you its cost in one season's work.

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Double Acting Ball Bearing Surface Floor Hinges are used by more Carpenters and Builders than any other floor hinge on the market.—Why?

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AMERICAN CARPENTER & BUILDER
185 Jackson Boulevard, CHICAGO

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Newest and Safest—Absolute Protection For Sliding or Swinging Barn, Storm or House Doors
These door latches have just been patented and no storm door or barn door is complete without one. Doors and buildings fitted with these latches not only last much longer by being held firmly, open or shut, thereby saving breakage from slamming, but the new locking device baffles intruders and insures complete protection.
Write for prices and descriptions of various designs.

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THE most artistic and best metal ceiling on the market.
Beautiful designs—double beaded invisible dust-proof joint—easiest ceiling to apply and costs no more than the other kind.
Let us convince you. Send us dimensions of surface to be covered and we will submit plans and prices that will interest you.
If you are in need of good goods at a moderate price write to us for our catalogue before placing your order.

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Manufacturers of
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BROAD AND SECOND AVE.
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Scheel’s Door Latches
Newest and Safest—Absolute Protection For Sliding or Swinging Barn, Storm or House Doors
These door latches have just been patented and no storm door or barn door is complete without one. Doors and buildings fitted with these latches not only last much longer by being held firmly, open or shut, thereby saving breakage from slamming, but the new locking device baffles intruders and insures complete protection.
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At an average of $5.00 each or 6,000 at $50.00 each gives you an idea of the annual capacity of our plant.
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SIZES SEVEN SIZES
Steam — Gasoline Engine — Electric — Hand Power
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The most
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The Peerless tamps (does not press) every brick and will turn out 7,000 perfect bricks in 10 hours, making 10 bricks at each operation.

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If you are, our machine will appeal to you, as it makes perfect brick at minimum cost.

OUR 1910 MODEL IS A WONDER
Write us so we can tell you more about it

Peerless Brick Machine Co.
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THE MILES SIMPLEX MIXER
Continuous Feed, Batch Mix.
Low Down Steel Frame, 3 Hoppers, Positive Feed, Attractive Price
"The Miles" No. 5, Down Face, Wet Concrete Block Machine

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That's a safe way to buy. And, you know it is one meritorious article that can be sold this way. The molds which make this pier and chimney will make a variety of other things.

Molds to make the chimney and pier

$19.00

Send for a Catalogue

You'll see how one mold will make different sized blocks from two to twenty-four inches — how another set of molds makes twenty-one different sizes. Do not overlook this, send today.

The HERCULES Concrete Block Machine

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Hercules Block Machines have a world-wide reputation. You can make no mistake in buying a tried, proved, known machine backed by reputation, popularity and a reliable company.

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Big Returns for the Contractor.

Kuhn Collapsible Steel Cistern Form

No state or county rights to buy. Cost of steel form, only capital required. You can build a concrete cistern with this form 50% less than you can a brick and command a higher price.

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Wet Process is Right. Face down is Right. Three blocks at a time is Right. Triple Tiering is Right. Damp Curing is Right.

The Mogul Invincible Block Machine

Combines all these

IT IS RIGHT

It is 46 inches long and will make three 16" or two 24" blocks at one operation. It makes sills, caps, copings, rails and steps, faster and better than a special sill machine. It has every adjustment that any other machine has and many that no other machine has.

PRICE—Machine and Outfit, $75.00

WRITE FOR CATALOG

THE PETTYJOHN COMPANY
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**NOTICE TO ADVERTISERS**

Forms for the April number of the American Carpenter and Builder will close promptly on March 20. New copy, changes and orders for omissions of advertisements must reach our business office, 185 Jackson Boulevard, Chicago, not later than the above date."To insure attention."
ANY WEATHER is "Good Building Weather" when you use Bishopric Wall Board as a substitute for lath and plaster. It is cheaper and better and does away with all delays in building. It is nailed to studding dry, ready for immediate application of paper, paint, burlap, or any other kind of decoration.

This substitute for lath and plaster is made of kiln-dried, dressed lath, imbedded in hot Asphalt Mastic surfaced with sized cardboard and cut at the factory into 4x4 foot 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.

PRICE OF WALL BOARD AND SHIPMENT—Crane of 16 sheets, covering 256 sq. ft. of surface, $6.40 per crate, or $2.50 per 100 sq. ft., f. o. b. New Orleans, Cincinnati, or Alma, Mich. We ship from nearest point.

Bishopric Sheathing is Cheaper than Lumber; saves 75% in Labor; does away with Building Paper

Bishopric Sheathing is made of same materials as Wall Board, but finish is not necessarily so fine, therefore costs less. It is of uniform thickness, insuring a perfectly even surface when applied.

Bishopric Sheathing is nailed to studs, with lath and asphalt side exposed. Over laths weather boards are nailed or cement applied.

Bishopric Sheathing makes a more solid and substantial wall than lumber. There are no gaping joints; no widening cracks due to shrinkage; no knot holes.

The Asphalt Mastic in Bishopric Sheathing is a non-conductor, moisture cannot penetrate it. It is proof against vermin. The pests cannot bore through the tough, genuine Asphalt Mastic. In applying weather-boards over laths, dead air space is left between the laths; forming splendid insulation. Does away with the expense of building paper and cost of its application.

One wagon load of Bishopric Sheathing covers an area from six to ten times as great as one load of lumber—a tremendous saving in hauling. Five thousand feet can be hauled in an ordinary wagon.

The cost of applying Bishopric Sheathing is but $2.50 per 1,000 feet—A SAVING OF ABOUT 75 PER CENT. Furthermore, 1,000 square feet of wood sheathing covers but 750 feet of surface, 20% less being due to tongue and groove. In Bishopric Sheathing 1000 sq. ft. covers 1000 square feet of space.

In applying ordinary lumber, heavier scaffolding, more tools and greater scaffold door-space are required. In applying Bishopric Sheathing, one man drives a few nails in each sheet; a common laborer or boy can finish the nailing.

Bishopric Sheathing insures comfort during the construction of the building. As soon as the building is closed in with Bishopric Sheathing, the men may work in comfort on the inside during bad weather; finishing the outside on suitable days. This insures continuous work, without loss of time, enabling the contractor to hold his men and complete the work in the least possible time.

Write for Descriptive Booklet and Samples of Bishopric Wall Board, Sheathing and Roofing—All sent FREE.

THE MASTIC WALL BOARD AND ROOFING MFG. CO., E. Third St., Cincinnati, O.
Special Files of Special Quality

When you need an extra slim taper file, ask your dealer for this Keen Kutter file. It is the slimmest taper file made.

No other file should be used with fine tooth saws. It cuts to the bottom of the tooth at the proper angle, without skipping or slighting its work. Its surface has a cutting efficiency of 100%. Compare this with the 60% efficiency of the ordinary file.

E. C. S.
KEEN KUTTER
Special Slim Taper Files

are made from blanks of finest tool steel, accurately cut by improved methods and tempered in that faultless Keen Kutter way. The amount of work you can get out of one of these files is surprising. Several cases are on record where one file sharpened 15 to 20 saws. There is a dealer near you who has Keen Kutter tools of all kinds.

Remember the Keen Kutter trademark means money back if not satisfied. Keen Kutter Tools and Cutlery have been sold over 40 years under this motto:

"The Recollection of Quality Remains Long After the Price is Forgotten."

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A GOOD TIP

DESIGN No. 490B

An Exclusive “National” Feature

The Tip is threaded and screws into the Butt. It is also slotted for a screw driver, making it easy to remove the Tip and affords ready access to the Pin. The slot also indicates instantly which is the bottom of the Butt. Send dealer’s name and get booklet “Ornamental Ideas.”

National Manufacturing Company
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