Start the New Year RIGHT—

EVERY Carpenter, Contractor or Builder—as an enterprising man—is ambitious to get ahead in the world. Start the New Year right by putting yourself in the way of earning larger wages and taking on larger contracts. The more you know about your work the more money you will earn and the bigger positions you will hold. Use these long Winter nights for Home Study and so increase your earning powers. Radford's Cyclopedia of Construction will give you just the practical help you need. Let me send this wonderful Set of Books to you on approval as per Special Offer following page 98.

I wish you a Happy and a Prosperous New Year.
He Likes His Atkins Saw

For thirteen long years, this Carpenter and his ATKINS SILVER STEEL SAW have been inseparable friends. It has gone to work with him each day and has been his tried and trusted friend all through the busy hours. Like its owner, this saw is a veteran, but he tells us that the same tough, even temper, that withstands the hard knocks, the constant filing and hard usage is there—now as always.

He would not part with it. It’s been his true and tried friend. It has never failed him and he clings to it.

That’s the Kind of Saw to Buy

A Saw that will stand up to its work day after day—year after year—and never fail you.

Someone May Tell You.
That other saws are “just as good.” Because others are trying and trying honestly to equal SILVER STEEL—but they have not done it yet. In the effort to equal ATKINS SILVER STEEL, others have produced good Saws—that’s true. But there are none so uniform in Quality. There are none who so seldom fail. That’s why we can cover ATKINS SILVER STEEL SAWS by this Guarantee.

All SILVER STEEL SAWS, bearing the name of E. C. ATKINS & CO., are not simply guaranteed against imperfections—they are Guaranteed to RUN EASIER, CUT FASTER AND HOLD THEIR EDGE LONGER THAN ANY OTHER SAW. Order one from your dealer and if it does not prove more satisfactory than any other Saw you ever used, except an ATKINS—if you, for any reason whatever, have any fault to find with the saw—take it back to your Dealer and GET YOUR MONEY BACK. If he won’t give it to you—show him this advertisement or report him to us. We’ll see that you get your money back mighty quick. We do not want a single man to own an ATKINS SILVER STEEL SAW unless he is convinced that it is the finest Saw he ever used.

Why We Know.
We can cover our Saws by this Guarantee because we have discovered the only correct method for producing ABSOLUTE UNIFORMITY. We know better than any one else how to make one Saw just like the other—how to protect ourselves against variation. And so we have established our standard and maintain it.

This Is The Kind.
This is the kind of Saw you want to buy and try. Go to your Dealer—ask for an ATKINS SILVER STEEL SAW with our name on the blade and take no other. If he does not happen to have them in stock, he will be glad to order from his wholesale house. If he won’t—he’ll just let us have his name and we’ll fix you up quick. You love fine tools. Here is a chance to get the “Finest Saws on Earth.”

Here’s Another Suggestion.
If you want to know more about ATKINS SILVER STEEL SAWS—if you are not convinced that we are telling you the facts—drop us a line and we will send you, FREE, our “Saw Sense” book on Saws with instructions for buying and fitting Saws.

Here’s Another.
If you send us ten cents, to pay postage, we will mail you FREE, a fine stong NAIL APRON, our “Saw Sense” Book and a package that you’ll appreciate.

Our Appeal.
We appeal to the best mechanics, who want the best tools, who appreciate quality. If you are in this class, now is the time to act. Try an ATKINS. BUY ONE NOW.—You’ll never regret it.

E. C. ATKINS & CO., Inc.,
The Largest Exclusive Manufacturers of Saws and Saw Tools in the World.
INDIANAPOLIS, INDIANA.
Having used your Portable Saw Rig now almost continuously for six months and in that period of time built several large residences and also a large wood frame Church capable of seating 500 people, we are in position to speak with authority on what your Rig really will do.

We are highly pleased with the machine; it fulfills all your claims for it and more, taking into consideration its absurdly small cost and the very small quantity of gasoline necessary to run it, we can only say that it is a wonderful money saver and no Contractor can really afford to be without it.

With the help of your machine, we have been able to figure so close as to secure every contract we have tendered on, since buying it.

We are, yours truly,

CHAPMAN BROS.,
Per A. C. Chapman

IRON TABLE ACCURATELY PLANED IS STRONG AND RIGID 22 INCHES WIDE BY 30 INCHES LONG CAN BE RAISED OR LOWERED FOR DEPTH OF DADO CUT.
CUT OFF GAUGE IS ADJUSTABLE FROM SQUARE TO MITER IN EITHER DIRECTION
8" JAW WILL RIP TWO INCH LUMBER
NO SAW DUST CAN FALL ON ENGINE AS IT RUNS OUTSIDE OF PARTITION
RIP GUIDE SET IN DOVE TAIL GROOVE
FRAME BUILT OF NO 1 MAPLE STRONGLY BOLTED
3 HP ENGINE RUNS 550 REVOLUTIONS PER MINUTE DRIVING SAW WITH 3" WIDTH OF BELT
STARTING HANDLE
GOVERNOR TO REGULATE SPEED OF ENGINE
INLET PIPE
SMALL PET COCK: WATER CAN BE DRAWN OFF IN COLD WEATHER
GASOLINE TANK HOLDS ONE GALLON AND WILL RUN THE ENGINE EIGHT HOURS WITHOUT REFILLING INSURANCE LAWS ALLOW ONE GALLON ON THE JOB

WRITE FOR OUR ATTRACTIVE FOLDER

GEORGE D. SMITH
414 FISHER BLDG., CHICAGO, ILL.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
The American Floor Surfacing Machine

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

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

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

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

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

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

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

Manufactured by

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

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

Only Perfect Floor Surfacing Machine

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

A BOY CAN OPERATE IT.

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

Write for further Information.

MARSH COMPANY, 970 Old Colony Building
CHICAGO, ILL
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"

UN SOLICITED TESTIMONIALS

Gentlemen:

The flooring has arrived and we have scraped it with your machine and I find it does all you claim for it. I enclosed you will find check as per agreement.

Thanking you for your kindness in allowing me to try this machine and for extending the time for trial.

Your truly,

FRED L WALTERS.

THE DAISY MFG. CO.,

South Bend, Ind.

Belle Fourche, S. Dak., Aug 4 '10.

The Daisy Mfg. Co., South Bend, Ind.

Gentlemen:

After using the three Floor scrapers a trial we have decided that the "Daisy" is the one we want.

Enclosed find draft to pay for same.

NELSON & GOLDING.

THE DAISY MFG. CO.,

South Bend, Ind.

P. L. SCHULTZ,


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 a job up 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 come any where near the Triple "A".

Enclosed find draft for amount of your bill.

Yours respectfully,

P. L. SCHULTZ.

TRIPLE "A" MACHINE COMPANY

114 South Clark Street

Chicago, Illinois

PUT THAT MONEY IN THE BANK

When you scrape a floor by hand you pay out money that you might have put in the bank.

This is the age of machine work, for the simple reason that hand work is too expensive. To keep abreast of the times you should avoid hand work wherever it is possible to use a machine. The TRIPLE "A" SPRING DRIVE FLOOR SMOOTHER will put money into the bank for you.

Remember the TRIPLE "A" is a power machine. It has necessary adjustments that no other machine has. Our Automatic Sandpapering Attachment is years ahead of other devices of like nature. Awkward and impractical filing devices are not needed with the TRIPLE "A." The Blade is filed and the edge turned in the machine.

We are specialists in Scraper Blades and Sharpening Tools, and those furnished with our machine are unequaled.

In short, the TRIPLE "A" FLOOR SMOOTHING OUTFIT is complete in every respect and is a strictly high grade article. It is a necessary part of every up-to-date Contractor's equipment.

Write for our special offer; Good for 30 Days.

An Unsolicited Letter

P. L. SCHULTZ,

GENERAL CONTRACTOR

Jefferson, Ia., December 14, 1910.


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 a job up 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 come anywhere near the Triple "A".

Enclosed find draft for amount of your bill.

Yours respectfully,

P. L. SCHULTZ.
A Contractor's Resolution

for the new year should be "To stop scraping floors by hand or with an inferior machine and use the Acme Floor Scraping Outfit instead."

You, Mr. Contractor, do not have to adopt this resolution on your own responsibility or at your expense—I assume this until you are thoroughly satisfied that the Acme Outfit is just what you want.

Start the new year with a determination to cut down labor expense (at the same time make the work easier for your men) by investigating into the merits of my equipment for scraping your flooring. I will send the Acme Floor Scraping Outfit to you on One Week's Free Trial. Give it a severe test and if you are not convinced that it will save you many dollars and do the work better than you have ever had it done, then do not buy it, but simply send it back to me at my expense.

Let me mail you booklet and more details of my free trial offer. Drop me a line today.

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

Perfect Results Are Easily Obtained By
Using Schluter Rapid Floor Surfacer

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

Made in three sizes:
18 x15 and 8x12 in. Roller
Send for prices and Free Trial Proposition.
M. L. SCHLUETER, Chicago, Ill.

THE BOSS JUNIOR
FLOOR SCRAPER

Has ball socket allowing knife to be set to any position. Gauge can be set for any thickness of shaving and knive from making deformities in floor. Given knife double support. The poor placed wheel which is in the front to the right in the illustration. The support is very strong. The knife is now set to the right. The gauge is set at the right hand end of the wheel. The gauge can be removed instantly. Sanding attachment. Prices very low. Write for descriptive circular. Dept. A.
George J. Keplinger
Dwight, Ill.

Sent on FREE Trial—anywhere
If you want the best—get
the Ackermann Floor Scraper

The Ackermann is the best floor scraper. We guarantee it to do more, better and safer work than any other machine on the market. If it doesn't you get one free. Send for details of our offer under which any contractor may test the Ackermann Rapid Floor Scraper and Ackermann's New Knife Sharpener free at our expense.
J. B. ACKERMANN CO., 100 Pearl Street, GRAND RAPIDS, Mich.
PERFECT work can be done with this scraper on any kind of flooring and with or across grain.

It acts precisely on the principle of hand work—the knives are held firm and true by a blade holder attached to a flexible frame by means of "half-ball-and-socket" joints. And either of the two blades may be quickly adjusted to any angle desired for any kind of flooring. The Weber Scraper scrapes every inch of floor space as smooth and even as a table top. It can't chatter or leave waves.

Floors may be scraped clear up to the very edge of the base board without tearing the wall with the sides of the machines. The handle and blades are so adjustable that they may be set to either side, allowing easy access for the body of the machine along the wall.

Much time is saved by having two blades ready for use at all times.

5 TO 10 DAYS' FREE TRIAL

You can have this valuable aid to use in your own work for five to ten days absolutely free.

We make this generous offer to show you better than we can tell you just what the Weber Scraper can do.

SEND FOR PARTICULARS AT ONCE

John F. Weber, President, WEBER MFG. CO., 670 71st Ave., WEST ALLIS, WIS.
Iron Plinths for Porch Columns

Wood columns soon decay at base, caused by the warping of the floor boards and opening of the joints, allowing water to enter and keeping the base damp.

This can be averted by using Iron Plinths which allow the water to run off the floor without wetting the base of column, also providing thorough ventilation of the inside of column.

Should be used in all good work. The life of the column will be increased tenfold by the use of these plinths.

Provision is made for securing column to plinth and plinth to the floor by screws. The plinth is screwed to the wood base of the column before the column is set up.

Send for our booklet showing also our iron coal window and fireplace dampers.

H. W. Covert Company
168 Duane Street, New York City
Start With Two Machines

MACHINE No. 1

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

MACHINE No. 2

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

These Two Machines for $150.00, including belt for saw arbor, countershafts, 1 1/4" rip saw, 1 1/4" cut off saw, 5 boring bits—1/4", 3/8", 1/2", 3/4" and 1-inch pair of jointer knives. We will sell you one of them now and the other later on at the same price.

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.
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

MACHINE CO.
2211 FRONT STREET
Grand Rapids, Mich.

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

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

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

YOU CAN BUILD A HOUSE WITH OUR No. 62
UNIVERSAL WOODWORKER

Carpenters & Contractors, especially find this machine indispensable as it will shape practically any piece of wood entering into the construction of a house.

With this machine, you can plane out of wind; Surface straight or tapering; rabbet door frames; Rabbet and face inside blinds; joint, bevel, gain; Chamfer, Plow; Make glue joints; Square up posts, Banisters & Newels; Raise panels, either square, bevel or ogee; Stick Beads; Work circular mouldings; Rip; Cross-cut; Tenon; Bore; Rout; Rabbet; Joint and Bead window blinds; Work edge mouldings, etc.

If you are a Carpenter, Builder, Sash, Door & Blind Maker, or Contractor, write us for Large Illustrated Circular.

J. A. FAY & EGAN CO.,
545-565 West Front Street
CINCINNATI, OHIO
Goodell-Pratt's

BUTT GAUGE

This Butt or Mortising Gauge should be in the possession of every carpenter. It is of ALL STEEL CONSTRUCTION and is shown a little less than full size. Handsomely finished in nickel plate. Catalog on Application.

GOODELL-PRATT COMPANY

Toolsmiths

GREENFIELD, MASS., U. S. A.

L. S. STARRETT SAYS:

“If you find any tools better than Starrett Tools, buy them.”

Send for free Catalogue No. 186.

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

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

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.
"A Bit Of Utility"

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

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

Unequaled for Delicate Work

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

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

The Progressive Mfg. Co.
Torrington, Conn.

THE "LIGHTNING" AUGER BIT

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.

You Can’t Afford Poor Roofing

"Mastic" Means Safety and Quality

A contractor cannot afford to stake his reputation on poor or cheap roofing. The best are none too good and nothing but the best should be used.

Mastic Roofing costs perhaps a little more, but it is better and more durable. Ask to-day for samples and our proposition. It will make money for you.

National Roofing Materials Co.
Office & Factory, EDWARDSVILLE, ILL.

CHAMPION FLOOR SCRAPERS

WHY PAY EXORBITANT PRICES?

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

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

SEND FOR OUR CIRCULAR.

THE DOSCH MFG. CO. Bridgeport, Conn.
MAYHEW 60° MITRE BOX

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

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

PRICE EACH, $10.00

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

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

SEND FOR CATALOG
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

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

LUFKIN Tapes & Rules are Standards of Accuracy, Durability and Workmanship
SEND FOR CATALOG
THE LUFKIN RULE CO.
SAGINAW, MICH.
The Ideal Power For Woodworkers

**FAIRBANKS-MORSE Electric Motors**

They represent the highest efficiency in power and convenience for factories. The saving in fuel and in floor space alone is important. Our engineers understand your power problems. They will be glad to furnish accurate figures showing the actual saving of time and money effected by up-to-date motor drives in your factory.

Send for Bulletin No. 1409 FD

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**C. E. JENNINGS**

**AUGER BITS No. 1 1/2**

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

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

**Insist on Having Genuine C. E. JENNINGS ARROW HEAD AUGER BITS**

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

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**MILLER'S Lever Lock Mortiser**

**It Chisels the Opening for Locks Greatest Time and Labor Saver**

One builder wrote us last month: I was surprised, I did not think it would do the work so quick, when one gets use to it, he can cut an opening in two minutes.

**Think This Over Builder**

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

**Sent on trial to any reliable builder.**

**A.W. Miller Mfg. Co.**

Main Office: CINCINNATI, O.

Western Office: RIVERSIDE, CAL.
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.

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.

Send for Booklet Called "Tools That Last"

OUR "CHISEL" GUARANTEE

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

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

SPECIAL OFFER

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

BRAUNSDORF-MUELLER CO., Elizabeth, N. J.
"Last a Lifetime and Give Satisfaction To the End"

**BUTT CHISEL**

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

**THE CELEBRATED BARTON TOOLS**

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

MACK & COMPANY, 50 BROWN'S BACCHUS, ROCHESTER, N.Y.

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**FREE TOOL BOXES**

Our standard auger bits and our quick-boring bits are put up in SETS of 324 quarters, 13 bits, 4-16 to 16-16. A finely finished hard wood tool box is furnished free with each set. The boxes are never sold separate from the bits.

It pays to keep

**RUSSELL JENNINGS AUGER BITS**

in good condition by protecting them from moisture and accident. Sets cost no more in boxes or rolls. Sets other than 32 quarters are packed in paper boxes only.

RUSSELL JENNINGS MFG. CO.

Chester, Conn., U. S. A.

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**ASHLAND Folding Scaffold Bracket**

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

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Foundation FUEL CHUTE
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The shield protects the rubber glass.
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Both styles are made in 3 sizes.

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You can use the entire surface of the stone. You get the rotary motion so necessary in the sharpening of chisels, planer irons and so forth—and, as it is made of Carborundum you get the fastest cutting, most efficient sharpening stone on earth.
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You will have to Buy yourself one

SAW TOOTH ROLLER WHEEL

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Made in 5 sizes, and all builders' hardware finishes.

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TRADE MARK
Be sure that the cord you buy has SAMSON AND THE LION on the label, and that the braid is marked with the COLORED SPOT. You may be sure you'll get the best.
WE'RE GLAD TO SEND SAMPLES AND FULL INFORMATION.

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(PATENTED)
NEVER BREAK

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

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MADE IN TWO SIZES AND ALL FURNISHED BY
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Geneva, Ohio

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with steel roller bearings, easy to push and to pull, cannot be thrown off the track—spray, lift and drop—smooth, quiet and effective. Write for descriptive circular and prices, given to night party who will buy in quantity.
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| brackets, every pair of which will carry a ton in weight without even springing, does it pay to go on using wooden brackets, or putting up staging?

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Besides, there's a big gain in time:
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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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**Made to Order Neatly and Promptly**

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**FLY SCREENS**

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

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Today, before winter sets in, now is the time to put on an American Sea Green or Purple Slate Roof on old buildings and put a stop to all roofing troubles.

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You will be interested in "Roofs" a little book of many practical and helpful hints that shows how to Save Money in selecting a new roofing. Sign and mail the Coupon today.

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Morrill's No.1 Sawset.

A Lot of Set to Their Saws

To these we recommend the Nos 1 and 11 Sawsets.

In the hands of an experienced mechanic no other saw set will give better results.

Chas. Morrill
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Marsh-Ayer Boxes cost more to manufacture than any other; but they cost you no more. We are satisfied with a small profit, and you get more for your money.

Saw and all attachments are included.

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<thead>
<tr>
<th>Size</th>
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<th>Price</th>
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<tr>
<td>A26</td>
<td>26x4</td>
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<td>B28</td>
<td>28x3</td>
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Illustrated circular on request.

H. C. Marsh Company
606 Race Street
Rockford, Illinois
American Carpenter and Builder
Entered as second-class matter July 1, 1905, at the postoffice at Chicago, Ill., under the Act of Congress of March 3, 1879.
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WE WISH you all a happy and a prosperous New Year.

BE FRIENDLY—write occasionally. Make it your New Year's resolution to write us whenever you have a question to ask or a suggestion to offer.

THE ONLY SURE WAY
A BUILDING contractor operating round and about St. Louis at last appears to have a sure-enough strangle hold on an old enemy of the building fraternity. He has discovered a sure and exact method of drawing plans so that they shall conform in detail and in cost with the completed work, and that without the necessity of making any changes in the drawings.

According to a report in one of the local papers, this is the way he does it:

"Mr. and Mrs. S. P. Rhoades are building an artistic annex on the west side of their pleasant home on Monticello avenue. The lady says it is to be a pergola. Mr. Rhoades is of the opinion that it will turn out to be an open air sleeping porch, and the contractor, Mr. Hogg, who is building it, intimates that it may possibly be a fernery. He says: 'You can't tell until you see the plans. When I get the plans drawn, anyone can tell at a glance what it is. I shall not draw any plans until it is finished. Some builders draw their plans first, but, if you notice, they change them a whole lot. When it is all done I will draw my plans, and it will not be necessary to make any changes. They will all have been made. Then we will know whether it is a pergola or a sewing room.'"

THE BUSY LITTLE VENTILATING ARROW
NEARLY everyone has had his laugh at the liberal use often made of arrows to show the course supposed to be followed by air in ventilating systems or hot gases through heating apparatus. A writer in the Chicago Post shows a keenness that would not ordinarily be looked for in a layman when he says:

"We have sometimes wondered if there was any exercise of the mind more purely speculative than the attempts to work out mechanical systems of ventilation. Given a hall or a public building, the problem is to trace a steady stream of graceful flowing arrows from the outside air through the place, including all the nooks and corners, and out again.

"The more graceful and enterprising the arrows, the better the system. A really good diagrammatic arrow has imagination, indignation, a sense of duty. It gets inside the room or hall and looks around and sees a lot of lowering carbon dioxide in a corner and sweeps straight at it. 'Out with you!' says the ventilating arrow, 'these precincts are mine.'"

"Every architect has his quiver full of these arrows,
but very, few of his clients ever succeed in getting a glimpse of them. Sometimes—it may be—it is their own fault. They don't meet the architect and his arrows half way. They complain of drafts down the back of their necks or around their feet. And in the case of most public halls and schoolrooms the carbon dioxide gets so heavy and inert that it takes complete possession of the place and the fresh air arrows scarcely get a peep within."

**No More Coal Bins of White Enamel**

REPORT has it that no more bath tubs will be installed in the houses to be built for the foreign workmen employed by the various subsidiary companies of the United States Steel Corporation at Gary, Ind.

Early last month Architect D. F. Creighton of Pittsburgh made application for a building permit in behalf of the American Bridge Company, which intends to erect a score of concrete houses in the western part of the city. It was noticed that the plans called for all modern conveniences, with the exception of the bathroom.

"Three years ago," said a steel corporation official, "we erected sixty well-appointed houses for foreign workmen and their families, and placed bath tubs in each one. A year later a report was wanted from New York as to how they were taking to the tubs. An inspection revealed the fact that not in one instance was the bath tub ever used. We found that they were being utilized as coal bins, etc. So we decided that it was best to omit the tubs."

**To Encourage Good Construction**

THE secretary of the Minnesota Chapter of the American Institute of Architects, L. A. Lamorieux, suggests that municipalities should encourage the construction of fire proof buildings by reducing the taxes on such buildings for a term of years. He holds that fire proof construction is so great a benefit to the community as a whole, because of its value as a fire stop in the case of a conflagration, that the municipalities can well afford to encourage it. The saving in insurance rates, material as it is, is often not sufficient to induce owners to adopt the safest construction, but if the municipalities would add another inducement by the reduction of taxation, the number of such structures would be greatly increased.

Many towns make a practice of giving new industries free sites or building, exemption from taxation for a term of years, cheap fuel or free water as an inducement to locate. It would be quite as proper and as much a public benefit to offer concessions to secure superior construction, as in addition to the greater protection to life and property of tenants, every such building serves as a fire stop instead of a conflagration breeder.
A Garden Gate Architecturally Treated

In this country we seldom appreciate the full artistic possibilities of gate ways. At least we make very little use of them architecturally, either for entrance gates of noble proportions and imposing character or for the more intimate yet no less attractive garden gate ways.

Back in England and in Germany these features have been employed with fine effect for many years. Every place, big and little, has one; and it is said that one can tell not only the size of the estate but also the disposition and religion of its owner by the looks of the entrance gate.

The illustration herewith is a half-tone reproduction of a very beautiful water color painting by a skilled artist. It shows a design especially worked out for a sheltered gate way in a stone wall. It would make an appropriate and striking adjunct to a suburban house of Elizabethan design.
The Oldest Buildings in America

By George E. Walsh

Photographs By W. J. Harris

If one were asked where the oldest houses in the United States could be found, he might at first think of the old New England towns and then possibly suggest the crumbling Missions of California or some old Dutch structure on Manhattan. But in all of these guesses he would be far from right. We must go South—far South—to find the oldest existing buildings. St. Augustine in Florida is not only the oldest city in the United States, but it has still in fair condition a number of the oldest structures in this country. St. Augustine disputes with Santa Fe, N. M., the honor of being our oldest continuously populated settlement. Founded in 1565, many of the buildings and fortifications erected by the Spaniards in the early days of the community are yet standing.

The old and new St. Augustine is a city of contrasts. The old Spanish quarters are still untouched by the hand of the vandal so far as possible, and the relics of the earliest settlers offer attractions to the sightseers. Alongside of these queer old Spanish houses, paired a good many times since that date. Still the simple classical lines of the building are preserved. It is naturally one of the sights of the town. It was not originally built as a postoffice, and through its long period of existence it has witnessed many changing conditions. Sleepy old St. Augustine has always been a little outside of the great internal revolutions and
excitements that have disturbed the calmness of the country's life, and her buildings have not been injured or demolished by riots, wars or fires. The old post-office building is further enhanced in beauty by the tropical setting of trees and shrubbery.

The oldest Trinity Episcopal church in the United States is also located in St. Augustine. It is another one of the landmarks of the town. It is a remarkably fine example of early church architecture, and contrasts sharply with the first Catholic Church in America located in the same city. The latter shows its distinct Spanish or Moorish origin, and suggests the Californian missions, while the former is purely old English in its architecture. The shingled tower and steeple are well proportioned and carry out simply the lines of the rest of the building. The whole building is suggestive of rest and simplicity, and its quiet grandeur is one of the features of its effectiveness. The Roman Catholic Cathedral, which is claimed to be the oldest Catholic church in this country, was built in 1793. The tower has four embrasures with bells hanging in them. The building itself is in excellent state of preservation, and the walls and foundations show great strength and durability. The church has been repaired and renovated at various times, but not rebuilt in the ordinary meaning of that term. All improvements have been made with the idea of preserving the original architectural lines.
The oldest existing house in the United States is a small two-story Spanish structure, with the lower half built of coquina rock and the upper part finished off with wood and shingles. This house has the reputation of being over three centuries old. Not far from it on another narrow Spanish street is the oldest frame house in the country. Neither one of these buildings has anything to recommend it except extreme age. They are interesting to those looking for very old things, but not to one interested in the early classical buildings of the country.

The other three structures, however, are quite different, and they offer fine studies in early architecture. The old postoffice building was originally the old Spanish governor's house, and was consequently built on generous lines and with considerable attempt at beauty. The old Spanish cathedral with its Moorish belfry was also the highest expression of the religious architecture of the day. The Episcopal church is of modern Gothic and represented the religious mind of the English settlers.

The old fort of San Marco (now called Fort Marion) in the northern part of St. Augustine is an ancient and well preserved specimen of Spanish military architecture. This is undoubtedly the oldest fort in the country, for while it was not completed until 1756 it was commenced shortly after the Spanish settled on the site of St. Augustine in 1565. This old fort is constructed of coquina, a curious shelly conglomerate from Anastasia island, which is easily quarried, but which grows very hard from exposure. The old fort covered four acres, and it has a moat and outworks, walls 21 feet high, bastions at the corners, dungeons and subterranean passages. It overlooks the sea, and is a fine relic of the long ago. The walls in places have crumbled somewhat, but they still show the good work of their builders.

**Goverment to Build Workingmen's Houses**

A recent dispatch from Vienna, Austria, states that the government has decided to devote $5,000,000 to the erection of workingmen's dwellings in that city.

The money will be lent at 4 per cent interest to public bodies and building societies to the extent of nine-tenths of the value of the property owned by them.

It is hoped through the creation of this fund to relieve the present hardship suffered by the workmen, who are compelled to pay exorbitant rents for miserable accommodations and who frequently are unable to find any shelter, especially if they have families of children.
Use of Tile in the Modern Home

THE ORNAMENTAL, SANITARY AND ENDURING QUALITIES OF BAKED CLAY TILE WHICH RECOMMEND
A FREER USE OF THIS MATERIAL IN MODERN WORK

By F. W. Walker

One of the strongest indications of the material prosperity of this country at the beginning of the twentieth century is the extensive building of new homes in the outskirts of all our cities and in the suburban districts. What might be termed the average twentieth century home is a house costing only a few thousand dollars, the purchase of which is within the power of almost any hard-working American citizen who is willing to invest each year a part of his income to establish a home. Yet the average American house is today a far more substantial structure than that of only a few years ago. The building materials are usually stone, brick, cement or other inorganic substances, which are claimed to be more substantial and durable than the wood which they have replaced.

Modern conveniences and sanitary arrangements, which a few years ago were even unthought of, are to be found today in almost every new building. The extensive use of the tiled floor and wall is but one of the several indications of the gradual substitution of inorganic and sanitary building materials for wood.

It is not much more than a generation ago that tile was introduced as a floor and wall covering in the American home. Its water-proof and sanitary properties made the tiled floor and wall especially appropriate for the bathroom. As it was used almost exclusively because of its cleanliness, the first bath-room tiling in this country was nearly always white. Gradually, however, the ornamental possibilities of tiling, known for centuries in Europe, began to be realized also in this country. However unintentional it may have been, the American tiled bathroom, with its modern open plumbing fixtures, soon became in appearance one of the most attractive rooms in the house. The somewhat glaring monotony of the white floors and wall was relieved more and more by the use of colored tile, both glazed and unglazed and by the application of ceramic mosaic designs worked out in color.

In addition to cleanliness and beauty, one of the strongest points in favor of tiling as a floor and wall covering is its durability. The clay out of which it is made can be baked so hard that even a steel blade of a knife will not scratch it. This fact makes it especially good as a floor covering, because it is not injured by the nails of the shoe which are the most destructive agents of every other flooring material.

The appearance of the vestibule of a house is especially important because it is the first part which the stranger sees, while waiting for the door-bell to be answered. Consequently every house-keeper who takes pride in the appearance of her home should pay proper attention to the vestibule. About the only material which always looks bright and clean, which can be easily rinsed off with the hose and which never shows signs of wear or age is clay tile. Its substantial appearance always makes it appropriate as a covering for the floor and wainscoting of the vestibule. As the clay tile can be molded into any shape and baked in almost any color, the decorative possibilities of tiling or ceramic mosaic are practically unlimited. Ceramic mosaic makes an excellent flooring for the vestibule and it is now being used also for the wainscoting.

The spread of modern ideas of sanitation and scientific cleanliness has brought about the adoption of tiling as the most suitable covering for the floors and walls of the kitchen. In culinary operations, the spilling of grease or food products of some kinds upon the floor is almost inevitable. If the kitchen floor is made of wood, this organic matter is absorbed by it, or passes into the cracks between the boards. Here it decomposes and breeds micro-organisms of all kinds. No amount of scrubbing will keep the wooden floor in the kitchen in a sanitary condition. It may be made to look very bright and clean, but that is all. The usual oilcloth, linoleum, or rubber tile covering which is laid over the wooden floor of the kitchen lessens the work of the domestic servants and prevents the wood from absorbing some of the organic matter that is
spilled upon the floor. Some dirt and moisture, however, works its way under them, cannot evaporate, and causes the floor to rot. The dirt between the floor and the covering remains there until the latter is replaced, owing to its having been worn out.

A Modern Bathroom

The tiled floor to the contrary is non-absorbent; and any dirt spilled upon its surface may be removed as easily and as thoroughly as from an ordinary dinner plate. These facts make tiling a most appropriate covering for the floor and wainscoting of the kitchen which according to modern ideas must be as sanitary in all of its arrangements, as is the operating room of a hospital. The idea of a sanitary kitchen is fast becoming popular in this country and to those who are quite familiar with the subject, sanitation in the kitchen means a tiled floor and wall together with modern exposed plumbing. A truly sanitary kitchen can be quite safely flushed out with a hose.

In suburban dwellings, where out door life is a special feature, the porch is quite an important part of the house. The same arguments that favor tiling in the vestibule apply with even greater force to the porch floor. In suburban residences, the porch floor is beyond all doubt the most abused part of the house. During several months of the year it is covered with snow or rain; during others dried by a baking hot sun. The only condition under which wood or any other organic substance can withstand this action of the elements is where it is so slanted that rain water will run off of it. As the wooden porch floor cannot be sufficiently slanted it is always the first part of the house to show signs of wear and decay. The clay tile, however, is so durable that a tiled porch will outlast the building in which it is placed. If its design is selected with taste and made appropriate to the surroundings, the tiled porch will always be ornamental. It is likewise very easy to clean. Owing to the importance of the appearance of the porch a tiled floor is as appropriate here as in the vestibule.

Shop Kinks

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

By Wm. C. Jasbury

OFTIMES mechanics in ordering such material as stair strings, treads, counter tops, wide window stools and other pieces of considerable width, will reject the material when it is delivered to them and send it back to the mill because of its being warped. The best and only way to straighten or warp back a piece of wide stuff is to put, on the floor or other suitable place, a layer of wet saw dust (from soft wood) the same width and length of the warped board; then lay the concave side down and in ten or twelve hours it will be as flat as the proverbial pan cake.

Carpenters and cabinet makers when doweling two pieces together should try to put the dowels in on the slant so that the piece can be hammered on the end to make a tight joint; also such a joint cannot pull apart as easily as if the dowels were placed in straight. This form of doweling can be used in many places to better satisfaction than the straight dowel.

A friend of mine (I haven't many) told me that yellow locust posts in the ground would last forever; he knew it to be a fact for his father had tried it.

In doweling hard wood together where strength must be assured, rip a slot or kerf through the dowel lengthwise to let out the air; this also gives the glue a better hold. (See the illustration. It is not a cigarette; it is meant to represent the dowel.)

I once heard of a shop that had a job of panel work for quick delivery. Not having good stuff at hand for the panels some sound knot stuff was used; and the knots covered with thin canvas, then painted white. (They were to be finished in white enamel later.) How is that for taking a long shot? The backs were painted lead color to help out the fake.
I have seen this done many times in getting out rail. The sawyer would cut up a 6 by 6 inch square timber into four pieces, 2½ by 3½ inches in size, out of the one piece and have a 1 by 1 inch piece to spare.

The proper way to put paper veneer on a round column, pillar, cylinder, etc., is first to wet the outside of the veneer, then spread the glue on the inside, care being taken not to get it on too thick, then wrap, letting the ends pass over each other, as shown in the sectional drawing. Mark on each end of the column, where the joint is wanted; then cut through both thicknesses with a sharp knife, or thin chisel, then use a flat pean veneering hammer to rub the joint briskly until the glue adheres properly.

A very good way to make a joint with two or more boards, such as a table top, sign board, drawing boards, etc., is to joint them together while clamped in the vise face to face. It matters not whether the joint is square across or not. Then take them apart and flop them apart and put edges together. The illustration at A shows the position of the boards when making the joint and at B shows them put together.

Some mechanics say that by putting soap on a nail in order to make it drive easily will also let it pull out easily. Others say that the soap will be scraped off as the nail finds new pasture. Who is who?

It is a well-known fact with cabinet makers that glue will not stick stuff to end wood, because the end fiber, or cells, take up the glue. I've seen men overcome this by taking a piece of blacksmith's coarse rasp and placing it on the end of the piece and hitting it several times with a hammer to make indentures; some make saw kerfs for the same purpose.

What would you think of a man of means like this? After starting to dig a cellar on his place for a residence, he did not like the looks of the dirt and had the hole filled up again and bought elsewhere, where the underground was more to his liking. Say! he must have been some kind of a ground hog prodigy. Eh?

Let me say something about the odd uses I've made and seen made of chain clamps. I have used them to hold columns together, large caps, bases, etc. I saw a millwright hook six 5-foot chains together in order to help hoist a machine from one story to another, also to hold up a line shaft while the hangers were being changed or replaced. Also for dragging a log out of the shop with the yard team attached.

Very few carpenters and cabinet makers know how to kerf a piece of stuff to make the kerfs close up properly, or in other words, the proper spacing of the kerfs. Thus,—say the diameter of a circle is 4 feet. Take the radius (2 feet) on a rod measured back from one end, cut kerf the same depth as in the real piece and with the same saw that the real kerfs are to be cut with. Hold the opposite end of the rod down on bench and spring the 2-foot rod end up till the kerf closes, then meas-

Here is one. I know this was never in print, for I think I am the inventor. In bending moulding around a curved corner, porch or such places, run the moulding over a circle saw cutting the kerfs from the back, cutting nearly through; then rip edgings to fit the kerfs, then take a thin-bladed pocket knife and run along the face of the moulding through the thin shell in a member if possible. Tack the whole together and pull out the nails just before nailing the mould in place. The parts will creep a little when putting on but that will not matter. Referring to the illustration, "X" is where the knife cuts are to be made; a, b, c and d show the strips set into the kerfs before the knife is used. I have used this method with good success.
The Trick of Putting Up Inside Trim

SOME PRACTICAL IDEAS AND SUGGESTIONS FROM AN OLD TIME CARPENTER CONCERNING THE SUPPOSEDLY DIFFICULT TASK OF WORKING ON FINE INTERIOR FINISH

By D. L. Stoddard

THOUSANDS of good mechanics go through this world and make fine outside workmen able to do all kinds of outside work including the most difficult roof work and framing, but never feel as if they are finished mechanics enough to put up interior finish, or do not think their tools are in sufficient trim to tackle putting up trim.

We see in the papers article after article on roof framing. Every year there appear articles on how to frame roofs with the steel square; also all kinds of articles on all kinds of framing and other kinds of rough outside work. But who ever saw an article on finishing, or how to put up trim?

Many good mechanics work all their lives on rough work—and much of it of a difficult nature too—and do not realize they are doing anything difficult, yet if you should ask them to put up some real fine trim they would get scared out and think that was something too fine and difficult for them.

Some years ago I was at headquarters and there came in a call for carpenters. Work was at the time pretty scarce; and one good mechanic there, who had grown gray in the service, looked very cheerful at the prospect of work; for he was needing money bad. But my how his countenance did drop when he learned they wanted them to put up hard wood finish, and he said his tools were not in shape! So he was not one of the lucky ones that time; and no one was to blame only himself, who had worked all those years afraid of a good job of trim.

I felt sorry for him and one day when the opportunity came I took him with me and put up some fine finish. He at first begged off, saying his tools were not in shape.

But I would not let him off that easy and told him to come on. I would put his tools in good shape so he could do the work. Not being able to get out of it he came—and at a good old age learned that finishing was not a difficult job at all! He soon saw how foolish he had been all his life, and learned to have confidence in himself until today I know of no mechanic that I would trust with a real difficult and nice close job of finish as I would trust him, even if he is well along in years. He isn’t one of these fellows who know it all; but he has learned to know that he can put up any ordinary finish just as well as most any of them and he can thoroughly be depended on.

Several years ago a bunch of carpenters that were formerly from all parts of the country got together on a millionaire’s house in Cheyenne mountains. We all laughed to see one carpenter put up the trim as illustrated in Fig. 1. You will note the first thing he did was to put up the corner blocks, then he cut the head between, put the apron and then the stool; and then cut in the side casings. Now he did a good job and was not very long about it either; and I never knew whether that was the way they put up trim in the part of the country where he came from or not; but I just took it for granted that it was simply his style. However, I noticed after he saw we were laughing at him he noticed how we were getting at it, and he worked on more like the rest of us.

Now any careful mechanic who can saw to a line and drive a nail without missing it and knocking the wood work all to pieces can put up finish; and there’s no great difference whether he puts it up like this carpenter or as some other carpenters do.

Fig 2 illustrates the way I case a window. Put in the stool, then the apron, left side casing, then the right and the head casing; and then put in the corner blocks and finish with the little mould under the stool.

Now I do not claim that this is the right way, and will admit it can be changed some and not make any
material difference; but I think the best mechanics will agree with me that it is a little more the convenient way to get at it than the method first described.

Fig. 3 shows the casing for a door. You will note the corner block at the top is not square as in the first illustrations, but is longer than wide, a style that is used now and used to be used a great deal. Now you will note the left-hand one is put on up and down, or in other words put on right, while the one at the right is put on cross ways, or you might say put on the wrong way. I will admit that I never remember seeing one actually put on that way, yet how often we see some one foolish enough to put square ones on the wrong way and contend with all kinds of argument that it is put on the right way.

I have come to the conclusion that, regardless of all argument, corner blocks should be put on with the grain of the wood running up and down and never running the other way, I care not what other say. And while I am perfectly willing to hear any one’s different opinion and suppose every one has a right to his own opinion, the only excuse I am going to offer at this time is the simple reason that that’s the way the architects originally intended them to be and the way the general custom of real mechanics has established.

Now I do not believe any one will look at this illustration, Fig. 3, and claim that the block on the right side is right, and the one on the left side is wrong. If any one thinks so I will be glad to hear from him.

Now the left side shows the way some good mechanics put the work up. Put the base down first, then the base block and then the casing and the quarter round or similar piece put down last. This is a good way and a way that I often do; but the right side shows a way that suits me better generally; base block first, then casing, and if its a shoe that goes down next the base sits in it.

Fig. 4 shows a mitered casing. As anyone can see, this is the easiest thing out; just take a miter box and cut them and nail them up. Yet it is not quite that easy, simply because the mechanic is not quite that accurate; for the side jamb will not be exactly plumb or the top will not be exactly level, or the plastering will not be exactly perfect, so the joint will have to be worked off the back just a bit; sometimes considerable. Once in a while a bit in the front has to be worked off, therefore as we have all these things to contend with I have generally found it the easiest to case the left side (of course if it was handler for some one else to case the other side first it would make no difference), nail that up and then fit the top to it; then put up the other side casing, and with the left end fit mark the right end of the head casing, getting the length at both top and bottom edge which will give the cut to fit the side casing whether the opening is square or not.

Now if the work is really in good shape as good work ought to be and everything pretty square a miter box is all right and quite handy; but if the openings are much out of square or the plastering has shrunk back or sticks out over the jamb, it is just as well or a little better to cut them without the aid of any miter box.

Now while I have found this way a good one for a simple, one-piece casing, as illustrated, the same rule would naturally apply for all mitered casings, I care not how many members there might be.

Most casings with heads that extend across the side casings as in Fig. 5, are generally made on a bench and then nailed in place after the side casings are put up. This only shows a two-piece casing. A regular stock moulding and head casing is all there is of it. The little piece (pilaster finish) is nailed on the top of the side casings. Care should be given that the side casings are cut to line up with the head; and if you are casing a double or more windows together it is well to put your head casing up and mark the top of your casings so you will get them all cut in perfect line and exact length.

Fig. 6 shows a sample head made of four pieces, which is generally best to nail together before putting up, though of course, there are times and places where it works to an advantage to nail them up piece at a time. Now there are a great number of heads of this style, as well as a great number other styles; but I do not think it at all necessary to take the matter up further. In fact I have now made my article much longer than I intended, but trust the readers will excuse me as this is a subject little written about and I had to cover a good deal of ground to do it justice at all; and I am not sure that I have at that; but I am certainly in earnest for I firmly believe this is a subject most shamefully neglected. I hope the real writers will give it a little consideration in the future.

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PROBLEMS OF ROOF FRAMING SOLVED

THIRTEENTH ARTICLE—FRAMING FOR STEEP ROOFS AND TOWERS—A SIMPLE METHOD OF FINDING THE PRINCIPLE CUTS FOR ANY ROOF BY SCALE

WE HAVE been asked by one of the readers of this magazine, to illustrate steep framing in a plain, simple way, showing what parts to take on the steel square, and that too without any given size for the base or the steepness of the pitch.

To begin with, we trust it is understood that there can be no difference between a low or high pitch, as far as the parts to take on the steel square are concerned, though it is necessary to use different scales to obtain the cuts with the aid of the steel square. The most convenient scale to use is to let one inch on the square represent one foot, which can be done for all ordinary pitches used for the general run of residence work. But for the very steep pitches, such as those used sometimes for steeples on church buildings, etc., it becomes necessary to reduce the scale so as to bring the work within the range of the steel square; that is, by letting the half inches on the square represent one foot. Thus the blade of the square being twenty-four inches long, would represent a forty-eight foot rise. For roofs steeper than this, it would be necessary to reduce the scale still more. This requires very accurate work, however, in placing the steel square to maintain the proper lengths, as the least variation from the correct placing of the square will be magnified many times in the actual work. In fact, it would be well nigh impossible to place the square so as to be sure of obtaining absolutely correct lengths.

Did it ever occur to you that in cutting rafters for a steep pitch, you are also at the same time cutting rafters for a lower pitch? For example, 12 and 18 give the seat and plumb cut for the \( \frac{3}{4} \) pitch, they also, by reversing the run and rise, give the same cuts for the \( \frac{1}{3} \) pitch. See Fig. 37. Therefore, when the square is set for a very steep pitch, it also answers for a very low pitch. Twelve and 24 give the cuts for the full pitch; they also give the same for the \( \frac{3}{4} \) pitch. Working from both ways of the quadrant, 90 degrees, the pitches become more and more equalized till they come together at the meeting, or half-way place (45 degrees) when the cuts are the same on either side of the square.

But back to the question. In Fig. 38 is shown the plan and elevation of a moderately steep pitch. No dimension figures are given, simply the terms or names are given for the different parts of the roof. By these parts we will illustrate the parts to take on the steel square as follows:

The run and rise of the common rafter taken on the steel square, will give the seat and plum cuts. A line diagonally across from one member of the square to the other from these parts, will represent the length of the common rafter. The same parts as given for the hip will give the cuts and length, as mentioned above, for the hip. (In the illustration, the lengths of the rafters are illustrated to scale.)

The seat and plumb cuts for the common rafter also answer for the jack; but as the jack must rest against the hip, the plumb cut cannot run square across the back of the rafter but must be at an angle, which is generally known among carpenters as the “Side cut of the jack.” A more proper name would be “top cut”; but custom rules, and we will call it side cut. To find this cut, take the distance from the foot of the jack to the corner and the jack’s length, to scale on the square; and the side on which the length is taken will give the proper angle for the cut. Having found the angle for one, it answers for all of the others.

This is a general rule and applies to any building, square or out of square.

For the side cut of the hip, take its run and its...
length to scale on the square and cut on the latter.

In the case of a tower, as in the illustration, the side cuts would run to a feather edge, which is not practical, as the ends do not have direct bearings against each other.

A better plan is shown in Fig. 39. The first pair, as in No. 1, rest square against each other. The second pair require a reduction in the length of the rafter, which is found by measuring square back from the plumb cut as found for the full length of the rafter and laying off another plumb line for the cut. The common rafters will also have to be reduced from their original lengths to fit in the angle formed by the angle of the hips, which is found by measuring square back from the plumb cut one-half the diagonal of the hip's thickness, which will give the proper length at the point. To obtain the plumb line, however, on the side for the proper cut, it is necessary to measure back still further, one-half of its own thickness. The angle across the back, of course, is the same as that of the jack.

For the backing of the hip, take the length of the hip and its rise and the latter will give the proper bevel; this, however, applies only to the square corner. The proportions taken for the side cut of the jack will also give the cut across the face of the roof boards to fit over the hip, but the cut is the reverse on the square. For the miter for same, take the length of the common rafter and its rise and the cut will be found on the latter.

Machine to Paint Under Side of Flooring

Numerous architects have long appreciated the advantage of protecting flooring on the back, and some have specified that it be painted before being laid, the object being that after the flooring is laid at the building and the top surface filled, the porous wood is protected both top and bottom from the effect of moisture. The principal difficulty up to the present has been the expense of labor in handling so many short pieces incidental to end-matched flooring, and the time required to paint each piece separately without daubing the face side. An ingenious machine has recently been perfected, according to the Woodworker, which consists of mechanism for feeding flooring through the machine and spreading paint evenly on the under surface of the stock. This is done at the rate of 100 feet in length per minute. In connection with the machine are a conveyor and dryer. The flooring, in coming from the machine, is received by the conveyor and is moved automatically to the dryer, which receives it and delivers it after an interval thoroughly dry and ready to bundle. The flooring is not touched by hand from the time it is put into the machine until it is received from the dryer, thoroughly dry. In this way the danger of daubing the face side by handling is avoided.
How to Build a Canoe

TIMELY POINTERS CONCERNING THIS ENJOYABLE AND PROFITABLE EMPLOYMENT FOR THE WINTER SEASON—AN APPROVED METHOD CLEARLY DESCRIBED

To the average boy or young man there are few enterprises more fascinating than the building of a canoe. Our innumerable small inland lakes and rivers furnish the required watery setting for this sport in almost every locality; and with the natural love of boating that every young fellow has, it is not strange that the building of boats and canoes should be such a popular undertaking for both the amateur and skilled workman during the dull winter season.

Carpenters, especially, take to this kind of work, building canoes sometimes for their own use, sometimes for others; their skill with fine tools and the care they are accustomed to use in their work making it very easy for them to turn out canoes to be proud of. As this is the season of the year when home and shop work of this kind is in order, the practical suggestions for canoe building presented here will be especially interesting. The methods are those employed in the manual training work of a well-known eastern preparatory school, and are to be recommended. It is through the courtesy of the Manual Training Magazine that both the illustrations and the text of this article are presented here.

Mr. Egbert S. Cary in describing the methods used writes as follows:

Our construction is quite different from that usually seen in that we use a narrow three-ply rib instead of the thin broad rib of the common type. This makes a light and exceedingly rigid boat, but is open to the objections that better wood must be used and that a grating in the bottom is more necessary than in the usual form.

The following specifications cover the most important features of our canoes:

Length, 15, 15½, and 17 feet; beam, 31 inches; depth amidships, 12 inches; planking, 3/16-inch white cedar; ribs, 3-ply, 2 cedar, 3/16-inch by ½-inch, 1 elm, ½-inch by ½-inch, half round; stem and stern pieces, ½-inch by ½-inch, elm; nails, 1-inch, No. 15, copper; inwale, 1-inch by ½-inch, spruce; canvas, No. 10, finished with one coat filler, two enamel, one spar composition; woodwork finished one coat oil, one No. 1 preservative, two spar composition; decks and seat frames, oak or mahogany; rubbing and cap strips, ½-inch by ¾-inch, spruce; bang irons, ¾-inch, half round, brass; keel, flat, ½-inch by 3 inches at center, tapering to 1 inch.

We use the lines as shown in the drawing for all lengths of canoes, spacing the patterns proportionally. The following table gives the dimensions for making full-size drawings in the different sizes:

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The patterns are made by drawing the cross-section lines full size and then making a companion line inside of each at a distance depending upon the thickness of the planking, ribs and mold battens. In our case, using ¾-inch battens, this distance is 1 ½
inches. These lines are then transferred to the boards that are to form the pattern, taking off both the curved and the vertical line, and some arbitrary point, at which a 3/4-inch hole is to be bored.

The patterns are mounted on a heavy plank as shown in the accompanying cuts and accurately lined by sighting through the holes and adjusting to the vertical with a plumb-line. When fastened firmly in place the battens, which are free from knots to insure smooth curves, are nailed on. If there is difficulty in bending them to the sharper curves at the bow and stern, the battens are sawed lengthwise for a few feet at the ends. One batten is nailed on the patterns following the sheer line or top edge of the canoe and another about two inches below this. The others are spaced about 6 inches apart on the center pattern except at the bilge or turn where they are not more than 3 inches apart. At this turn the battens have their projecting corners shaped down to the contour of the mold.

The pattern of the bow and stern is made in the same manner as the above, allowing for the thickness of the stem and stern pieces and is split vertically so that the canoe can be lifted off the molds.

We buy white cedar in 1 1/4-inch plank, resawed to 3/16-inch S-2-S, and crated for shipment. From these boards we cut strips 3 to 4 inches in width and use the waste for ribs. The elm ribs are worked at a nearby planing-mill from stock grown on our farm. The three-ply rib as specified gives a very strong and light rib that requires only soaking before bending. The half-round elm strip on the inside takes the wear and firmly holds the clinched nails. As the ribs are bent on to the molds in planes parallel to the patterns, they are nailed to the middle and to the lower battens and at such other points as may be necessary to make them fit snugly to the mold.

The stern pieces are steamed before bending and when dry they and the ribs are shaped down so that a batten placed along the mold will bear against a flat surface at every contact. Also the outside strip of each rib is beveled down for about 4 inches so that...
at the sheer line there are but two strips. This is
done to avoid using an excessively thick inwale. Al-
lowance is made on the pattern for this bevel which is
shown in the section drawing of the gunwale.

The following points are observed in putting on the
boards:

1. Use full length strips when possible.
2. Splice under ribs using 1/2-inch bevel joint. (With wide
   rib construction use butt joint.)
3. Do not force boards to position. Cut them to fit.
4. Remember that it is the inside that shows when done.
5. Drill holes for all nails with a drill but little smaller
   than the nail and space about 1 inch apart.
6. Fasten boards to the stern pieces with 5/8-inch F. H.
   brass screws.
7. Most important of all, as the planking proceeds remove
   the nails with which the ribs were fastened to the battens.

It is our practice to use an oak strip, 1 1/4 by 1/16
inches, for the last board or sheer strake, which is
soaked and bent into place. This makes a strong and
neat finish and gives a hard wood into which to drive
the tacks for the canvas. There are no nails placed
below the middle of this strip because the ends of the
ribs are cut off at least 1/2 inch below the top edge of
the completed canoe. (See gunwale section.)

After the sheer strake is in place the ribs are sawed
off below it and a little careful effort, pulling outward
and upward at successive points, lifts the canoe from
the mold. To prevent spreading, the gunwales are
tied across in a few places and as soon as possible,
the nails, beginning at the center, are clinched with
light strokes turning the points along the grain of the
rib.

Two extra ribs are now put in at each end where
there is quite a space, the ribs for which could not
easily be bent on to the mold.

The inwale, which is usually put in before stretching
the canvas, is made of straight-grained spruce soaked
and bent on a form. When dry it is clamped in place
while the positions of the ribs are marked, after which
the holes are bored and cut out “U”-shaped and the
strips beveled so that water and dirt will run out freely
from the completed canoe.

A cap strip of 1/4-inch elm is next bent around the
stem and stern to give a good holding for the canvas
tacks; then the outside is rasped to remove all in-
equalities and the boat is given a coat of raw oil.

The canoe is now ready for the canvas which is
first stretched lengthwise as much as possible and kept
under tension while stretching and tacking the sides.
With carpenter’s pincers and the edge of the canoe as
a fulcrum the canvas is stretched to its limit and fast-
ened with 1/2-ounce tacks spaced 3/4 inch apart.
Beginning in the center, a few inches on each side alter-
nately are tacked until near the ends there develops
a tendency to wrinkle. The canvas is then cut on the
middle line from the end to the point where it is under
tension and after coating the surfaces to be joined with
white lead, it is pulled around the end and tacked.
Alternately working at the end and edge completes

the stretching without a wrinkle.

After many experiments we have settled upon the
ordinary quartz paste as a canvas filler, although, if
properly seasoned, white lead putty does very well.
The filler is mixed with oil and japan drier to a con-
sistency that will work easily with a brush, and a heavy
coat is applied to the canvas. After standing for an
hour or more the excess of oil is absorbed and the
filler can then be rubbed down with a leather glove
to a smooth finish.

Canoe enamel can be purchased at sporting goods
stores, but we make our own by straining through
cheesecloth a mixture of japan, ground color, and spar
varnish.

No description of the finishing touches seems neces-
sary except to mention that the rubbing strip is soaked
and bent on the form used for the inwale, and that
the keel is fastened from the inside with R. H. brass,
screws in copper washers, all holes through the can-
vas being treated with white lead.

A few years ago we made a small canvas-covered
motorboat which proved quite satisfactory in spite of
its rather crude design. Profiting by this experience
we have obtained from the board of G. F. Crouch,
naval architect, plans for an 18-foot runabout. These
are well adapted to our construction, and the two boats
in course of building give promise of being staunch
and speedy little craft.

Keeping Putty Soft

The question was recently asked a reader of Brush
and Pail as to how to keep putty soft. He replied
that the following will do the work all right:

Kneed the putty to the consistency used for general
use, then dip it in linseed oil, and cover it over with
soft water (rain water is the best) and keep it air
tight in a bucket. This trick might save a great many
painters several nickels and dimes for fresh putty.

To Estimate Weight of Castings

The following table is very useful for determining
the weight of any casting before it is made by simply
weighing the pattern. It should be noted that the
weight of the core prints, if any, should be deducted.

<table>
<thead>
<tr>
<th>Proportionate Weight of Castings to Weight of Patterns</th>
</tr>
</thead>
<tbody>
<tr>
<td>A Pattern Weighing One Pound Made of</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Cast Iron</td>
</tr>
<tr>
<td>-----------</td>
</tr>
<tr>
<td>Pine of Fir</td>
</tr>
<tr>
<td>Oak</td>
</tr>
<tr>
<td>Beech</td>
</tr>
<tr>
<td>Linden</td>
</tr>
<tr>
<td>Pear</td>
</tr>
<tr>
<td>Birch</td>
</tr>
<tr>
<td>Alder</td>
</tr>
<tr>
<td>Mahogany</td>
</tr>
<tr>
<td>Brass</td>
</tr>
</tbody>
</table>
**Dining Room with Buffet—Colonial Stairway**

CLEARLY DRAWN WORKING DETAILS TO SCALE SHOWING THE DESIGN AND CONSTRUCTION OF A BEAUTIFUL ARCHED CEILING DINING ROOM WITH BUILT IN BUFFET—ALSO ARRANGEMENT OF COLONIAL STAIRWAY

Many dining-rooms are now being built without the plate rail. In order to keep the room from being too plain many schemes have been proposed, one of the most effective being similar to that shown and detailed in the accompanying plate. This room has an arched ceiling, easily constructed by simply nailing 1 by 12 inch boards, sawed to the curve, to the regular joists before the lathing is done. An unusual and attractive effect is thus obtained at small cost. Directly below this arch the head casing of the doors and windows is continued entirely around the room, and forms the top also of the buffet.

Every room should have some structural or built-in feature as the center of interest, and in this case it is the buffet—low and broad in design and worked out in perfect conformity to the rest of the room. There are numerous mirrors and ample shelf, drawer and cupboard space. The adjoining closet fitted with shelves will prove a great convenience to the housekeeper.

The plan of the dining-room is given in the illustration at a scale of 1/4-inch equals 1 foot. There are also two half-room elevations, one showing buffet, and one the outside wall; two sections and two plans of the buffet are shown, all at the scale of 3/4-inch equals 1 foot. Details of all portions of the trim and construction are shown at the scale of 1 1/2 inch equals 1 foot.

All woodwork is plain and without moulding of any sort. Almost all of this work could be done, if desired, by the carpenters on the job with but little help from the mill, and probably at a saving in cost. For this work we would suggest oak, stained a dark brown and finished dull as being the most appropriate wood.

A tinted ceiling in light yellow, and lower wall in dark yellow grass-cloth, a narrow freize in yellows and browns just below the head casing would make a beautiful and home-like room.

**A Colonial Stairway**

In the smaller cities there are erected a great many good residences, so-called Colonial in style; and it is common in these houses to give the hall a prominent place and something of its old time dignity as one of the important rooms of the house. This is as it should be. However, in the small house there are often many considerations which prevent the use of the large hall, and many people object to the waste of the room and heat entailed by the open stairway, and prefer a living room containing a secluded stair or one entirely closed in and having merely a small entrance hall. In this case it is preferable by far to do away with the Colonial style entirely, and to have the house designed in a manner more appropriate to the requirements of the owner.

That the interior features may be carried out in the same general style as the outside, and as an assistance in the planning and building, we illustrate this month a simple Colonial stairway for use in a Colonial house with a central hall.

Two plans and two elevations are shown drawn to the scale of 3/4-inch equals 1 foot. Every essential part is detailed one-half full size.

This entire stairway, as well as the hall which contains it, should be done in red birch. All treads, and the hand rail and all doors should be stained mahogany, varnished and rubbed, and all the balance of the woodwork should be finished in white enamel. Many ways in which the stair wall might be decorated could be described; one attractive way being to finish the plastered ceiling and cornice in white enamel, and paper the side walls, either in a forestry design in green or in a narrow yellow stripe with a narrow white "cut-out" as a finish at the top below the cornice.

**To Avoid Damage from Leaking Pipes**

In most houses, if a water-pipe happens to leak somewhere between the partitions, the water runs down, soaks through the ceiling, causes the plaster to fall and ruins the rugs. No such catastrophe is possible in the house of an Evanston, Ill., man, however, for there is a drain surrounding each pipe, so that if a break should occur, the waste water would be carried through the laundry, where there is a valve, so that the water in each pipe may be shut off when repairs are required.
Library Table and Piano Bench

Complete detailed instructions with working drawings showing how to make these two valuable and interesting pieces of furniture in the home shop.

The first piece shown this month is a general utility table. It may be put to various uses. It is not difficult of construction. While the drawing shows no drawer, one may be made and inserted if so desired. If the table is to be used in the living portion of the house, it should be made of some hard wood, such as oak, so that it may be given a suitable finish. The following pieces will be needed:

Stock bill for table:

All stock except the posts is of 3/4-inch thickness.
Top, 1 piece, 24 1/2 by 43 inches, S-2-S.
Side rails, 2 pieces, 4 by 35 inches, S-4-S.
End rails, 2 pieces, 4 by 17 inches, S-4-S.
Lower end rails, 2 pieces, 4 by 17 inches, S-4-S.
Stretcher, 1 piece, 5 by 37 1/2 inches, S-4-S.
Posts, 4 pieces, 2 1/4 by 2 1/4 inches by 29 inches, S-4-S.

If possible, it will be found advantageous to have the top built up at the mill. The surfacing of a piece as large as this can be more easily and cheaply done there. In this day of scarce lumber it is possible that the legs or posts may best be got of veneered stock. A post of this size made by veneering a hard wood of selected grain on a soft pine core has its advantages. The difficulty in seasoning large pieces of oak in a short time without the wood checking makes solid pieces expensive as well as hard to get. The lighter weight, too, of the veneered stock is in its favor.

Begin work by planing the edges and ends of the top so that it shall have the length and width specified in the drawing. Next square up the ends of the posts so that they shall all have the same length, twenty-nine inches. The top rails may now be cut to length. The ends need not be planed, merely sawed square; they are to be tenoned.

Since these rails are to rest within a small distance from the outer edges of the posts, it is best to shoulder them on one side only, the outer side. In shouldering the edges it will be well to give the upper edge a pretty
good shoulder to prevent any danger of its splitting out the end of the post when fitted.

The lower end rails are to be fitted in the center of the post and may, therefore, be tenoned with shoulders on all four surfaces.

The stretcher is to be tenoned with shoulders on the two edges only. The ends of the stretchers are to be chamfered as shown.

Lay out and cut the mortises in the posts, taking care to locate them properly. Beginners may aid their visualizing by setting the posts upright in the positions they are to occupy in the finished table and marking roughly as with penciled circle the locations of the mortises. The posts may then be taken down and laid on the bench side by side, their ends evened and the cross lines laid out accurately with rule and trysquare.

Thoroughly scrape and sandpaper all the parts and then assemble them, using good hot glue. Cabinet makers bar clamps will be needed to hold the parts together until the glue has set. Cold glues are often used, but they soften in moist atmosphere and loosen the joint. Put the ends of the table together first and after the glue has had time to set, place the stretcher and the side rails. The rails should make right angles with the posts; use the trysquare. The frame should square itself. To tell whether the frame is square or not, use two sticks and measure the diagonals. If they are not equal in length, saw a stick of length equal to the average length of the two diagonals and force it in place on what was the shorter diagonal.

There are various ways of fastening the top to the frame. An examination of any table that happens to be at hand will show how this can be done.

The table shown in the picture was made by a high school boy.

**How to Make the Piano Bench**

The piano bench is constructed plainly and with a receptacle for holding the music. The stock needed is as follows:

**STOCK BILL FOR PIANO BENCH.**

Top, 1 piece, 7/8 by 14 1/2 by 37 1/2 inches, S-2-S.
Bottom, 1 piece, 7/8 by 13 by 36 inches, S-2-S.
Side rails, 2 pieces, 7/8 by 3 3/4 by 36 1/2 inches, S-2-S.
End rails, 2 pieces, 7/8 by 3 3/4 by 13 1/2 inches, S-2-S.
Legs, 4 pieces, 2 1/4 by 2 1/4 by 20 1/2 inches, S-4-S.
Corner blocks, 2 pieces, 1 1/2 by 1 1/2 by 2 1/2 inches, S-4-S.

The top may be made first. After this, shape the posts. The outer surfaces are straight but the inner area is to have a slanting surface. Lay out and rip the tops of the posts so they may receive the rails, as shown in the drawing.

The rails are to be cut to length, mitering both ends of each rail. A miter box will be convenient.

Scrape the parts and assemble by affixing the rails to the legs with screws as shown in the detail drawing. It will be best to glue and fasten the mitered joints of the rails before placing the legs. Next fit and place the bottom. Before the side rails are placed they should have their lower edges rebated as the drawing shows, so that the bottom may be set therein.

After setting the bottom place the corner blocks as in the detail, using glue to keep them in position. These blocks help to stiffen the frame and also serve to do away with sharp corners that would catch and hold dust.

Place the top and hinge it as shown. Ordinary butt hinges are used—not loose pins—and they are set entirely in the rail. A lock and key might be added if desired. Ordinarily this is not necessary.

**Best Method of Finishing**

A good finish for both the table and the piano bench which is described herewith, is obtainable as follows: If the wood is coarse grained, such as oak, mahogany, walnut, etc., put on a coat of stain of whatever tint is desired. Water stains are best as they penetrate hard woods better than oil stains. Oil stains if used are applied with a brush and then wiped off clean with old clothes before they become set. Otherwise the grain of the wood would be obscured. The stain will want to be lighter in color than what is desired for the final color. Stain is used to color the highlights, the close grain; the filler, which is much darker, forms a background by filling the pores of the open grain. If the water stain is too dark for the effect desired it can be lightened by the addition of water.
After the first coat of stain has dried, sand it lightly and apply a second diluted by the addition of an equal volume of water. Allow this to dry and sand lightly. Apply a thin coat of shellac. This is to keep the coloring matter in the filler which follows from discoloring the highlights just stained with the water color. Being thin, it does not interfere with the filler entering the pores of the wood.

Apply a coat of filler colored to match the satin but darker. After the filler has flattened, that is, after the gloss has disappeared, rub off the surplus filler, using excelsior or wood shavings. Finish by polishing with an old cloth. Rub across the grain at first.

On the filler, after it has hardened, put a coat of orange shellac. On this shellac put two or three coats of some good quality rubbing varnish. The first coats should be rubbed down, after they have hardened, with steel wool or hair cloth. Rub the last coat with pulverized pumice stone and water and wipe clean with a sponge. Finish with furniture polish and a little pulverized rotten stone applied with the palm of the hand or with soft felt or flannel.

**Do Gable Dormers Increase the Roof Area?**

By A. W. Woods

To find the area of a gable roof having gable side dormers is a problem that puzzles many carpenters who are not up in figures. They think since the roof is broken up with hips and valleys, that it must certainly contain more area than the plain gable roof, but such is not the case. The broken roof will of course take more lumber, because of the waste to frame it, but the area remains the same.

For example, let us take a building 26 by 32 feet and with a $\frac{3}{4}$ pitch (12-inch rise to the foot) and with $18\frac{5}{12}$ feet, multiplied by the length of the roof (32 feet) gives the number of feet in one of the sides, thus $18\frac{5}{12} \times 32 = 589 \frac{1}{3}$ square feet. This multiplied by 2 gives the total number of feet in the roof, which is 1178 $\frac{2}{3}$ square feet.

This is simple enough and we trust so far everyone at all interested in such problems, fully understands it.

But the question is, does a similar roof containing a side gable, contain any more area than the plain straight roof? Let us see. Taking the same example with the side gable, it would show as in Fig. 1. We have found that the side of the plain roof contains $589 \frac{1}{3}$ square feet. Now, we will consider the side containing the gable of like pitch. In the illustration it will be seen that the mean of the main roof, is $9\frac{1}{2}$ feet and of the gable $6\frac{1}{2}$ feet, a total of 16 feet. This multiplied by the length of the common rafter ($18\frac{5}{12}$) will give the number of square feet to the ridge of the gable as $16 \times 18\frac{5}{12} = 294 \frac{2}{3}$ feet. Now, since the gable is in the center of the roof, by multiplying the above by 2, it will be found to contain $589 \frac{1}{3}$ feet which is just the same as found for the plain side of the roof.

Perhaps this might be made more clearly understood by showing the same in pattern form, something that can be cut out and folded up, so as to form the roof in miniature shape.

In Fig. 2 is shown the layout for such a pattern and when properly folded, the points at like letters will come together and form a perfect model of the roof.

For proof of this example, lay out a pattern as per the diagram on light weight paste board, then trim to the outer lines and fold, and it will be seen that the roof will fit to the valley lines, as shown on the main roof.

What is true of this, is also true of any other example that we might use provided the main roof and gable are of the same pitch.

The consciousness of a day's work well done is a mighty good thing to take home to supper and to sleep on.
Rip Saw and Scrap Pile

THE USEFULNESS OF A SMALL POWER SAW FOR ANY CONTRACTOR OR CARPENTER SHOP OWNER—HOW SUCH A MACHINE PAYS ITS WAY ON ALMOST EVERY JOB

By J. Crow Taylor

The ripsaw is undoubtedly convertible to more uses than any other one machine. Other machines are useful and worth while, but it is doubtful if there is any other one machine that covers as wide a range of usefulness for the same amount of initial cost as the ripsaw.

Take the ripsaw and the scrap pile, for example. Every carpenter that builds a house has left over something like a wagon load of scrap of one kind and another. He probably has a certain amount of good stock that can be put back or piled away and saved to be used on the next job; but generally there is a wagon load of scrap pure and simple. This is often left in the cellar as a present for the owner of the house. Often, also, the builder’s profits—or a good portion of them—are given away right in that scrap pile.

Have a ripsaw, even if you have no other power driven shop equipment; and if you have no shop put it under a shed out in the yard where you store your left overs. Then when you finish a job haul all of your scrap to that ripsaw and see what you can make of it.

You will find that there is no end to its usefulness. In the first place, if you are going to start another new job somewhere, the first thing you will want can be made right from this scrap pile.

You will want almost a wagon load of stakes and stubs of one kind and another before your foundation is completed, if it is a house of much size. You will probably take some of the lumber sent out for the new job, cut it up and make these, some of the framing and some of the sheathing; or you may order a lot of bridging and work it up. All of this costs money.

Now, generally you can take the scrap pile and not only get these stakes and things from the material in it, but you can do the work of making them. Instead of having to chop them with a hand ax at the job you can take an ordinary table ripsaw and rip your scraps into dimensions for the stakes and then taper the stakes to a point; and there you are. You can prepare more in an hour with a ripsaw than you can in a day with a hand ax and prepare them from scrap which you would otherwise give away, and be that much ahead of the game.

And the best of it is that is only a start. Some of these scraps can be made into bridging, which is always useful, many of them can be trimmed into short stock for use in form making in the concrete work. Some can be converted to one use and some to another. You can take a few minutes off and make a lot of shims and wedges and thus save lots of time on the part of carpenters when they are at work. If you don’t know just how to do this, go into some sash and door factory and watch a boy making wedges for doors on a little ripsaw and see how he makes thousands of them from pieces of scrap, then you will understand how you can make everything from a little short wedge to a long keen shim out of your pile of scrap.

Another thing you can do is refine some of your cull lumber and rough sheathing and get some clear dimension stock. Some of it can be ripped into narrow widths and cut up into short lengths; and thus from No. 3 boards you may be able to get high grade finish for the cornice and finish around dormer windows and something of that kind. By this means you make cheap lumber, that might go to waste, into stuff that will save your buying some high grade, high priced stock in short lengths and narrow widths.

In speaking of the ripsaw here, it is meant the combination table saw, carrying both ripsaws and cross cuts. Such a machine as can be had in various prices anywhere from $50.00 up to $250.00, depending on just what it is that you may choose in the way of a machine. And no matter what you get, if you use them and develop their possibilities you will find that out of the scrap pile alone the ripsaw will pay you more in the way of returns than can be gotten out of any other investment of the same amount of money.

Cork floor slabs, compressed from an original thickness of 14 inches to less than 5/8 inch, are being tried on one of the new steel dining cars of the Pennsylvania Railway.
A GREAT many people have a hazy idea as to just what white lead is and how it is used. Not long ago the writer had occasion to consult with an artist about some illustrations to be used in connection with a series of white lead advertisements and the artist had absolutely no conception as to what white lead really was.

He asked the writer if white lead was used in connection with machinery. When told it was paint he admitted his ignorance and seemed very much interested in knowing the facts about this wonderful paint product.

The story so interested this particular gentleman that the writer feels it may be of interest to others and it is hoped the following facts about pure white lead, the great standard paint pigment, will prove interesting to the readers of The American Carpenter and Builder.

Recently a writer of some reputation after delving into the subject of white lead and tracing it back through history gives the following very interesting facts:

"Closely related to the house beautiful is the white lead that makes it so. We have often heard about the house ceiled with vermillion being beautiful and desirable, still the house that is painted with pure white lead, the great standard paint pigment, will prove interesting to the readers of The American Carpenter and Builder.

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result is a more uniform and perfect product.

In the Carter process the pure metallic lead is first melted. The molten lead is made as fine as flour by a jet of steam which strikes it as it passes through the pipe from the melting pot. The atomized metallic lead is then placed in cylinders, 10 to 12 feet long and 6 feet in diameter, which make six revolutions an hour.

Purified carbonic acid gas flows into these cylinders constantly, while at intervals trained men spray the contents with a weak solution of acetic acid and water. As the cylinders slowly revolve the lead is constantly shifted so that every particle is exposed to the corroding agencies. The progress of corrosion, therefore, as well as the composition of the finished product, is under absolute control. By this modern process it is possible to thoroughly corrode white lead in about fifteen days because an atom is the unit worked upon rather than a pound disk as in the old process. The old Dutch process requires a much longer time and the finished product is absolutely the same in chemical construction, although it is claimed that the white lead produced in the modern, more scientific way is whiter and finer; and this has its advantages.

Use of White Lead

Pure white lead reaches the painter in the form of a thick paste. It has been thoroughly ground and the pigment is extremely fine. All that is necessary is to thin the white lead paste down with pure linen seed oil and necessary thinners, and color to suit any particular purpose desired.

Pure white lead has a natural affinity for pure linseed oil. The linseed oil and white lead combine into one perfect product—paint—just as sugar and water combine into syrup. Because of this perfect combination of linseed oil and white lead the house painted with a pure white lead mixture is certain to be well protected; and a beautiful job results. When pure white lead is used there is an entire absence of cracking and scaling paint.

Pure white lead paint wears long and evenly, no burning or scraping of the old paint is required when a new coat of paint is applied over the old white lead coat. Pure white lead has been the standard of paint excellence for hundreds of years and will continue as the best paint material because of its ability to give the most exacting service and to maintain under the most violent elemental disturbances a fabric of undiminished depth and surface solidity.

Pure white lead wars defiantly against such enemies as unseasoned wood, prevailing gases, if any, and a great multitude of forces inimical to its appearance and durability. While it is not always successful in resisting the advances of these untoward and disturbing conditions, it invariably wages a good fight and surrenders without discredit.
Prize Plans for Stock Barn

THE design for a small stock barn, which has been awarded first prize for convenience and general desirability in a contest recently conducted by one of the leading western farm journals, is illustrated herewith. The design was submitted by a farmer of Farlington, Kansas, where this barn stands. His description is as follows:

"This is a sketch of a barn I know of that is the most convenient for taking care of stock I have yet seen. There is a 14-foot shed attached to the south side, with a large manger along the side next to the barn that can be filled from a wagon driven through the shed, or from the driveway door in bad weather. I cannot give the cost as it has been built several years, the sills, posts and joists having been hewn out of native timber. This barn is 32 by 60 feet and is 20 feet high to the eaves. It has what I call a double pitch or gambrel roof. The hay chute in the feedway is four feet square, boarded solid on two sides from mow floor nearly to the comb of the roof, the other two sides being fitted with loose boards which can be put on or removed as the amount of hay requires."
The readers of the American Carpenter and Builder will find a great many points in this design that will help them in planning barns for a similar purpose.

Raising a Ladder

When you raise a ladder, do not raise it with one leg alone resting on the ground, but see that both legs are resting there. This will prevent strain on the ladder, which in turn causes the rounds to become loose. Also, in taking the ladder down, be careful and do not take it down on a strain, remembering that there is a right and a wrong way for doing even so simple a thing as this. A little care of this kind is often the means of preventing serious accidents.

A New Size for Damp Walls

A California architect a reader of Brush and Pail, contributes a good idea:

Whenever a wall is damp, or loaded with lime enough to "burn" tints, or where a wall simply "burns" and stains tint through pure cussedness, I have a remedy, one that is inexpensive to apply, dries very quickly and is positively effectual. My remedy consists in making a solution of rubber in carbon disulphide, solution almost as thick as cream. This dries very quickly and coats wall with rubber, which effectually seals over all dampness, etc. We use old rubber boots, old hose and old tires to make this and it don't come high. I have used this on a wall so damp that it was mildewed, yet the tint put on never spotted or stained.

When you get stuck with a bad wall try this.
HE requirements for a modern high school building are essentially different from those of a primary or grammar school. High school life centers around the general assembly room, all of the students being seated there and going to the various class rooms for their class periods. The assembly room is therefore the general meeting place and study room. Lectures, concerts and entertainments are also held there. All school authorities agree that safety demands that the assembly room or hall should be located on the main floor, so that in case of fire it could be easily emptied without danger of loss of life. For an assembly room of considerable size it is also desirable to have a good high ceiling, making the central laboratories, one each for physics, chemistry and biology, besides a general science lecture room.

To provide these necessary accommodations in an economical and satisfactory manner is the special problem of high school designing. The accompanying perspective and floor plans of the new Proviso Township High School, located at the corner of First avenue and Madison street, Maywood, Ill., show a very interesting solution of this problem. The design is by Architect G. W. Ashby, of Chicago.

Conforming with the best modern ideas for safety in large public school buildings, the structure is but two stories in height. There is also, however, a high basement well lighted which furnishes just the proper ac-

part of the hall equal in height to two stories. This permits a good balcony around the hall, accessible from the second floor, greatly increasing the total seating capacity of the room.

In a high school building there are also special rooms required for the science work. There should be three accommodations for the manual training workshops and domestic science department.

The building is of simple, dignified design, constructed of brick with trimmings and basement courses of light colored stone. It is a conservative design with nothing in the way of over-ornamentation to become
delapidated. The appearance is of solid efficiency, being typical of the high school work to be carried on within its walls.

A study of the floor plans which are here reproduced will show many interesting and desirable features of arrangement and planning. Especial attention is called to the way the rooms for each department of the work or branch of studies are grouped together. The library and principal’s office are conveniently placed on the main floor near the entrance. A special feature is the open fireplace in the main hall.

**Reason for “Hollow Backing”**

A mild discussion has been going on in the Woodworker as to the reason for “hollow backing” interior trim, flooring, etc. To this W. D. Graves offers the following:

It may be that cutting away the back would tend to somewhat lessen the ill effects of dampness, but I do not think that was the primary reason for making finish in that way.

In plastering up to a ground or frame, the plaster, almost invariably, is left slightly projecting or rounding outwards, as shown, somewhat exaggerated, in the accompanying sketch. It would thus be practically impossible to so nail a straight-backed casing as to make it come down on both edges. Whether this fullness of the plaster is avoidable or not, deponent sayeth not; but it is very rarely absent. Well do I remember hearing, in my boyhood days, the grumbling of joiners who had to gouge out the backs of their casings by hand; and I have often seen some such hand work necessary on modern casings. Modern plasterers, it is true, do somewhat better than of old, but still casings could but rarely be properly put on unless the back was hollowed in some way.

The hollowing out is not quite as essential in the case of baseboards, but it often saves a lot of work and bother. In the case of flooring, one cannot shift all the responsibility to the shoulders of the plasterer, nor can it be successfully argued that the necessity is quite as great; but, as the lower floor is apt to be somewhat uneven, the hollow-back generally tends to a better job.

**Painting Materials**

Mixtures of color are of three kinds and may be termed, oil, flatting and distemper. The first is bright and glossy, the second is perfectly flat or dead (without gloss) and the third is like the second in effect, but without its durability.

The chief body in oil and flatting color is white lead, but in distemper or water color whiting is substituted.

The three ordinary vehicles in mixing are oil for oil color, turpentine for flatting, and water for distemper. In addition to these for ensuring the drying of the mixtures patent dryer is used in oil color, Japanner’s gold-size and varnish in the flatting, and glue size in distemper.
Francis J. Plym, President Kawneer Mfg. Co.

The story of the rise to prominence in the building world of Francis J. Plym is the record of the struggle of a new idea to win its rightful place. It has been said that every human mind is favorably inclined to receive a suggestion. Yet when we consider the long ages through which, year after year, the building world has been content to keep right on in the same old track, totally oblivious of all possibility of improvement, yet grumbling and dissatisfied all the while, we realize the true rarity and worth of an improvement idea that is really new.

About four years ago Francis J. Plym was a young and progressive architect of Kansas City, a graduate of the University of Illinois and a member of the American Institute of Architects. In designing commercial buildings he realized the fact that while the manufacturers of building materials were developing new ideas for that class of structures, nevertheless there had not been offered to his profession a modern method of glass setting for store fronts. Like other architects, he was forced to accept the old antiquated method of setting plate glass. This was unsatisfactory to the thoughtful architects, and also the merchant client was calling for a glass setting that would give a great exposure of plate glass, with lower insurance, and a store front wherein they could display their goods as attractively in winter as in summer without being annoyed by frost, sweat and dust.

Mr. Plym became restless and impatient for the introduction of some sort of system to supply the requirements of his clients. He began to experiment with various models and materials, until he at last evolved an idea, crude as it was at first, to be afterwards so architecturally and mechanically improved as to attract the attention of his professional brethren. Following in quick succession came the patents and the organization of the Kawneer Manufacturing Company—the name being derived from "near the Kaw" (river) or "Kawneer." Mr. Plym was made president of the company, and it has been under his forceful direction that it has attained its present position of prominence in the building world. After operating for a short time in Kansas City the company transferred its main office and factory to Niles, Michigan, and from there the store front business is handled through branch offices in all the large cities of the country.
Complete Plans for Kansas City House
ARCHITECT’S SCALE DRAWINGS REPRODUCED IN
AND WELL-PLANNED
FULL SHOWING HOW THIS LARGE, SUBSTANTIAL
HOUSE IS BUILT

This house is of solid frame construction, with the
first story and up to the second story window sills
covered with a veneer of dark brown face brick.
Above the brick and in the gable ends cement plaster
stucco on wood lath is used.

This dwelling contains a surprising amount of room.
A glance at the floor plans will show the arrangement.
There are five good sized rooms on the first floor,
three bedrooms and a bath on the second and two

large pleasant rooms on the third floor under the
roof. This house is said to have cost $6,000 complete,
including heating, plumbing and lighting.

Well Built Ten-Room House of Stucco and Brick Veneer for Mr. H. C. Klock, Kansas City, Mo.
SECOND FLOOR PLAN

(PERSPECTIVE ON PAGE 53)
FOUNDATION PLAN
(PERSPECTIVE ON PAGE 53)
Attic Plan.

(Perspective on Page 53)
SIDE ELEVATION

(PERSPECTIVE ON PAGE 53)
Warm Air Piping Criticised

To the Editor: Buffalo, N. Y.

I want to enter my protest as to the manner in which the usual hot air furnace plant is installed in ordinary dwellings. A short time ago I saw an illustration like the sketch. The heating pipe is 9 inches in diameter. As there was a joist under the partition, a gash 1 inch deep was cut in the joist and the flue passed through the “slit,” the area being 14 square inches instead of 64 square inches, that of main pipe, or about 20 per cent of the original area.

Again I have seen pipes twisted almost like a letter S to reach certain places. And again joist almost cut in two, stud above not being placed correctly. No wonder hot air heating has fallen in bad repute.

EMILE LOW,
M. Am. Soc. C. E.

Day's Work for a Carpenter

To the Editor: Oakpark, Calif.

I want to find out how to estimate labor on carpenter work. I want to know about how much a man can do; about how much siding he can put on; how many doors he can case and hang; how many window frames he can set; how much base he can put down; how many sash he can put in; how much tile he can lay; how many shingles he can put on. Also how much to charge for rough lumber per thousand at the rate of $5.00 per day for eight hours.

Answer: In reply we wish to state that while we are submitting the following extracts from various authorities on the subject, we do not recommend or guarantee any of them to be exact under all conditions. They must be treated simply as approximate quantities to be used in forming a rough estimate on general work; and if a close figure is desired, it is recommended that you analyze each operation of the work in hand, applying your own judgment as to length of time needed and basing this cost upon your local rate of wages.

The following amounts are based upon a nine-hour day:

1. Two men will put on about 700 feet of drop siding in one day when window casings and corner boards are placed over the siding. Where joints are made, 400 to 500 feet per day. With lap siding, about 600 feet.

2. One man will place five door frames per day with ordinary casing. He can also hang and finish five doors per day.

3. “Hodgson” states that about 14 ordinary window frames may be set per day, and that about 14 sash can be put in. We believe these figures to be a trifle large.

4. A good man will lay about 200 linear feet of plain base, or about 100 linear feet of moulded base per day before plastering. After plastering, about 50 as much.

5. For cheap rough work about 500 feet of 1 by 6 inch matched flooring or 700 feet of 1 by 4 inch, may be laid per man per day. For a better class of work, an average day’s work in a small house is about 300 feet. Maple floor, in small rooms, 150 feet. An average day’s work, maple floor, end matched, large rooms, about 400 feet.

6. About 1,500 shingles per day is an average day’s work for one man.

7. Two men will put on about 2,000 feet of rough barn boards per day.

Wood Corner Fillet

To the Editor: Missoula, Mont.

Inside corners are the special aversion of all housekeepers and it seems curious that so little is done to avoid or mitigate them. It is practically impossible to clean a square inside corner without the use of a knife, or other hard pointed instrument; so they are apt to go uncleaned or to have the adjacent surface badly marred. We occasionally see a public stairway in the corners of which metal fillets are secured; but these are rather unsightly and not permissible on finely finished work.

It is a comparatively simple matter to get out wooden fillets which may be nailed or glued in place before the job is turned over to the painter, and which will not mar the continuity of the surface nor be at all conspicuous. To make these, get out a strip of right triangular section, as at A, having the widest side show the desired grain. This may be cut...
up in a miter box, as at B, B, forming the desired fillets, one of which is shown in place at C. Half of the strip will be waste, it is true, but that is of small moment.

If the work is to be painted this fillet may be nailed through the center; or it may be sufficiently secured with glue alone. Such fillets greatly facilitate the work of the painter and housecleaner; while they add strength and beauty to the job. If it is desired to put them on old painted work a smear of white lead on the back and a nail through the center secures one in place and takes care of irregularities which such work is apt to have.

W. D. Graves.

To Frame an Uneven Pitch Hip Roof

To the Editor: Welland, Ontario.

As I have only lately become a subscriber of the American Carpenter and Builder, I would like a little information on one point.

Suppose I have a hip roof to build and say the main part is one-half pitch and the ends one-third pitch. How can I arrange it to make the rafters suit the sheathing and cornice and give the roof all the same projection?

I had a job of this kind to do lately and got the cornice on half decent with some twisting and prying. I thought by writing to you that you could put me on to some plan to do the work more nearly correct. Publishing the same in the American Carpenter and Builder, might be useful to some others as well as myself.

Answer: This furnishes a problem that is quite beyond the average man to solve in figures. We have answered this, or similar questions, many times through the American Carpenter and Builder. We will now try and answer the question without the use of technical figuring.

To begin with, bear in mind that the toes of the rafters on all sides must rest on a dead level at the top edge where the facia mould is nailed on. Then the reckoning point for the run should be from the toe to a point under the ridge or intersection of the rafters instead of the outer edge of the plate. This will require different heights of the plate for the different rafters. Note, too, that the hip does not pass over the corner of the plate as will be seen by the accompanying plan, as shown in Fig. 1. The elevation of the rafters, shown in connection with the plan, show the pitches relative to one another. And the elevation of the same, as shown in Fig. 2, illustrates a simple way of arriving at the different heights required for the plates and seat cuts of the rafters.

This should be laid off full size. Mr. J. W. does not ask for the side cuts of the rafters, but as the subject is too good to omit this important part, we will give it as follows:

Take A B and B C for the side cut of jack on the half pitch side. Cut on the latter. Take A D and D E for the side cut of jack on the one-third pitch. Cut on the latter. Take F A and A G for the side cut of the hip to fit against the common rafter on the one-half pitch side and A H and A G the same for the one-third pitch side, the cut in either case being on the latter.

Another thing too, that we wish to call attention to in the different height of plates, as shown in Fig. 2, is that the higher plate cannot extend to the corner else it will project through the roof on the lower pitch side. The hip will rest on the higher plate, as will be seen by the pitch lines in Fig. 1, but can extend but a very little beyond the seat of the hip for the reason as above mentioned.

A. W. Woods.

To Construct a Floor Dumb Waiter

To the Editor: Kind, Mich.

Kindly publish in your next number of the American Carpenter and Builder a dumb waiter 42 by 14 inches and to run down into basement, which is 6 feet 6 inches high in the clear. When let down in basement, the top of the dumb waiter should be flush with the pantry floor.

R. S. Hanchett.

Answer: It would be an easy matter to construct a dumb waiter to work with weights provided that an even load is maintained, but since the weight of load will necessarily
fluctuate, it will require a governing device to regulate the uneven loading without overhead working. Better write to some of the manufacturers that make a specialty of dumb waiters of which there are several advertised in this magazine.

Editor.

A Point in Reading Plans
To the Editor: Milwaukee, Wis.
In your magazine for November, 1910, you have plans for a bungalow. In the first floor plan you show broken lines in the floor of the dining room as in the attached sketch, which I don't understand.

Answer: The dotted lines referred to represent wood beams in the ceiling. The sheet of details ought to show the design and construction of these in detail and, ordinarily, they would be mentioned also in the specifications for the building. It is one of the conventions of architectural drafting that anything shown on a floor plan in dotted lines applies to something above the plane of that floor, such as a cased opening, plaster beam, beamed or paneled ceiling, etc.

Editor.

Barn Framing
To the Editor: Cherry Valley, N.Y.
Enclosed you will find photograph of barn I built for J. G. Blumengstalk of Cherry Valley. Would like to have it put in the American Carpenter and Builder to show the brother carpenters how we build barns in New York state. This barn is 40 by 80 feet with 20 feet outside posts and 32 feet purlin posts. The barn is sided up and down with 20 foot boards and batens. The basement is sided with beveled siding. There are no cross tier from one end to the other. Notice the braces between outside and purlin post; it cannot spread.

We raised this barn with five men in 2½ days, which, I think, is better than having a raising. If any brother carpenter has a better way to build a barn would like to hear from him, as we can all learn from one another and do learn from the American Carpenter and Builder.

Wm. Granger.

Shingled Roofs with Doubled Courses
To the Editor: Grand Forks, N. Dak.
We had a shingling discussion here the other day. A house was to be shingled and the specifications called for every fourth course double. Will you please tell the proper understanding of that and also make a detail. My opinion is that there shall be three single courses between each double course.

Answer: The sketch will show you how the shingles should be arranged in such a case. The course at the eaves is doubled; and then, laying three single courses, the fourth course each time is doubled.

This device makes strong horizontal lines on the roof—an effect thought by some to add to the attractiveness.

Editor.
Cutthroat Tactics

To the Editor: Scotland, Texas.

Please answer this question for me.

A. has two contractors, B. and C. to figure on the cost of building his house. B. puts in a bid like this, "I will build your house for $100.00 less than C."

C. puts in this bid, "$186.50."

Who gets the job?

Answer: Your question would be answered a good deal according to the business principles of the man letting the job. If the owner, "A," is really an honest man himself and is wise enough in the ways of the world to know that integrity and square dealing are the points he must be absolutely sure of when letting his work, he will, without hesitation, give the job to "C," although on the face of the bids $10.00 higher than the other contractor. He could be pretty certain that a contractor who would put in such a bid: "I will build your house for $10.00 less than "C,"" is either dishonest or unbusinesslike; and either of these traits would be bad for the job. Such a bid would hardly inspire confidence, and the saving of $10.00 would be no inducement to make up for taking chances with such a man.

In some cities the law provides that public work should be given to the lowest responsible bidder; and the method of sealed bids is used. However, it is certain that even there such a bid as this would not be considered honest, or at least the bidder not responsible.

Who do you think would get the job?

Editor.

How the Hole Shrinks

To the Editor: Missoula, Mont.

Some time since inquiry was made as to whether a hole, bored in green wood, would shrink. At the time the writer demonstrated (to his own satisfaction, at least) that it would, but with a view to more graphic demonstration he cut and bored some sections of green apple wood. Although rather unfortunate in his photographs and in having the sections destroyed before the inferior nature of the plates became known, close scrutiny of the cuts will show the material points in issue.

One view shows several sections cut at right angles with the grain and bored along the line of the heart. The wires (and, in the case of the small hole, the slip of paper) were cut to the diameter of the holes when bored. The shrinkage of the holes was much more than expected, and the smallest hole appears to have shrunk much more in proportion to its size than the others. Some of this appearance, however, is due to the use of the white paper instead of wire.

It will be noted that the small hole was insufficient to prevent the piece from checking when it dried. It occurred that perhaps apple wood shrunk more than other kinds, but the appearance of the sections at the left, cut from the same log at the same time, would not seem to indicate this.

In the other view are illustrated several sections cut as boards are sawn, lengthwise of the log. The smaller pieces were taken off the sides, representing "flat-sawed" lumber; while the larger piece with the three holes in it, was cut directly through the center of the log, giving a "quarter-sawed" grain. It will be noted that the holes in the "flat-sawed" stock are noticeably oval, the shrinkage lengthwise of the grain not having been appreciable, while it was considerable the other way. In the case of the "quarter-sawed" piece the shrinkage was hardly perceptible either way. Aside from the matter of the shrinkage of the holes, this seems a very striking illustration of the difference of the amount of shrinkage in plain and quarter-sawed stock. W. D. GRAVES.

To Finish a Fir Floor

To the Editor: Spokane, Wash.

Please let me know the best way to finish a fir floor.

H. Woodcock.

Answer: Let us suppose it is what is locally known as Washington fir. This wood belongs to the class of close-grained woods, along with white pine, yellow pine, Oregon pine, spruce, tamarack, basswood, whitewood, poplar, California redwood, cedar and gum wood. Hence we must use liquid, not paste filler, on fir. The flooring having been made smooth and clean, apply a coat of best liquid wood filler, or preferably, though costlier, thin shellac varnish. When dry (and shellac is not dry as soon as it seems so, for it requires some hours to become perfectly dry, this varying with the thinners used, wood alcohol and grain or denatured alcohol differing in this respect), rub smooth with sandpaper, dust off and give it a coat of good copal varnish. When dry apply a second coat of the varnish, and in turn a finishing coat of the best elastic floor varnish. If a waxed finish is desired, then give about three coats thin shellac to the floor, sandpaper each coat, and then rub on the wax polish. The French method of waxing a floor omits shellac, but applies plenty of wax, well rubbed into the wood. First make the floor perfectly clean and smooth, then coat it over with turpentine, then wax it.

There are several ways of finishing a floor, but the correspondent does not state which he would prefer. A varnished floor will give very good wear if the varnish is right, and there are some very durable or tough yet elastic floor varnishes on the market. To make a good finish use only the best materials, and skilled labor. If done well the floor will be a constant source of satisfaction. Otherwise not.

A. Ashmum Kelly.
Successfully Planned Double House

To the Editor: Cleveland, Ohio.

For some time past I have been an interested reader of your valuable paper and have noticed that you publish plans and elevations of various styles of houses from different cities; but have not seen any from Cleveland.

I have lately completed a style of house that is common to this city. It is for two families and is built on a corner lot with separate porches and entrances.

The first story is pressed brick veneer of a light color; the upper story is of siding painted a light slate color, trimmed with white; the tower, gables and dormer windows are shingled and left to weather.

The features which have been particularly noticed by most of my friends are:

- **Treatment of entrances:** You will note from the plans that these are entirely separate, so that on entering or leaving either of the two sides, one will not come in contact with occupants of the other side.
- **Closet space:** As I had always experienced a lack of closet room, this feature was carefully considered.
- The living rooms are finished in birch, stained mahogany; the dining room in oak, with plate rail; also beam ceilings and built-in china cabinets; the two principal bed rooms and bath rooms are white enamel; the back chambers are pine, stained a medium brown; the kitchen and third floor are natural pine, finished; the floors throughout are oak, with the exception of the third floor and kitchens, which are pine.

The house was built on a percentage basis, as I did not have the time to supervise the construction, personally.
However, I took care of all bids, and let the various parts of the work after consulting with my head carpenter, who is a general contractor, and who is in close touch with all lines of construction work.

Following is a list of the larger items of cost:

- Excavation and masonry, except pressed brick which I furnished: $1447.00
- Lumber: 1062.00
- Sash, doors and interior trimmings: 760.00
- Plumbing: 492.00
- Furnaces: 230.00
- Painting: 300.00
- Plastering: 500.00

The total cost including the above items and the percentage paid to my head carpenter for supervision, was $750.16.

The plans and specifications were my own work, executed during spare time last winter, so that I might begin as soon as the weather conditions would permit. The excavating was begun March 15th, and I moved in August 4th. I have had the other side rented since September 1st, and am realizing a good return on my investment.

H. L. McFarland.

Some Features of Interior Trim Used in Mr. McFarland's Double House
Cement Cistern for Drinking Water

To the Editor: Eads, Colo.

I am building a new house here; and the parties want me to build them a cement cistern, and they would like to have it so it would not taste of the cement. Is there a chemical used that would keep the water from tasting of the cement? Could one put in a filter that would purify the water and keep it from tasting of the new shingles? Also would like or clayey matter put into the concrete for the cistern walls. In some cases impurities of this kind, dissolving out slowly, have been known to discolor the water. That is not the fault of the concrete however, but is the fault of the poor work. Dirty materials should not be permitted in any concrete work, especially for such purposes as this.

Where cistern water is used for drinking purposes a filter made of alternate layers of sand and charcoal, all about one foot in thickness, is often put in. Such a filter is contained in a small compartment at one side of the cistern proper and through this the water is conducted into a main tank. A filter of this kind needs to be renewed occasionally, or it will itself become a source of pollution to the water. Such a filter will help appreciably the discoloration and taste due to new shingles. New shingles are only a temporary source of annoyance in this way as they soon become weathered.
The concrete arch covering the cistern may be built up over a sand core, though this means considerable labor in shoveling out the sand through the manhole after the concrete has set. A flat slab would, in most cases, be just as good as the arch. If made of four inches of concrete reinforced strongly with steel reinforcing mesh, such a slab would bear all the weight that would ever come upon it. Such a slab can be moulded at one side and then placed as a whole over the cistern top.

**Roof Framing for a Church**

To the Editor: Ashbury, Mo.

I enclosed please find plate plan for a cement block church which I have to roof. Would like to know if it will support a self supporting roof on the common roof part; would hold it and tie the hips straight across above the collar beams. The ceiling is to run up the rafters about four feet.

I intend to construct this roof according to the sketch given in *Practical Carpentry*, Vol. 1, Fig. 138, with about 3/8 or 5/12 pitch. Will say we intend to bolt two 2 by 8 inch plates on this church and it will be covered with shingles.

Answer: The sketch in question (which is reproduced here) should be all right for this building. The span shown is 2 feet greater than what you have; so it is certain that it would be amply strong.

**Concrete Base for Floor Tiles**

To the Editor: Morris, Ill.

I wrote specifications for the concrete floor to be put under the tile floor at the court house here in Morris. The committee is going to take up the board floor and want to put in 4 inches of concrete with the tile on top of that. They asked me to write the specifications and give them a figure on the job. I did so, but one of the committee thinks the specifications are not rich enough. I specified a 1 to 7 mixture, 1 cement, 3 sand and 4 crushed stone. I expected to use crushed stone from 2 inches to 3/4 inch in size. I have plenty 3/4 inch stones. Which would you recommend, and what do you think of the mixture; is it right? A false floor will be put in between the floor joists, the top of the floor joists to be sharpened.

Please tell me what you think of this mixture, whether it is strong enough or not.

C. H. BLACK.

Answer: The member of the committee who criticised your 1:7 mixture is right. The concrete under a tile floor should be absolutely water-tight, and in order to secure this, a rich mixture is needed, and we would recommend, therefore, that you use a carefully graded mixture, not leaner than 1 cement to 2 sand to 4 crushed stone, and mixed rather wet. As your concrete is to be 4 inches thick, you might lay 3 inches of the above mixture, then on top of that, as a base for the tile to rest on, you should lay 3/4 or 1 inch of rich concrete mortar, say 1 cement to 3 sand, and the joints between the tile should be well grouted with this rich mortar. The joints should be wide enough to make the floor appear as obviously a tile floor. If the joints are too narrow, this would suggest that you were trying to avoid the appearance of tiling, and the artistic effect would not be so good. A 2-inch size for your crushed stone, we think, would be rather large in a floor of this depth, and would recommend that you use a smaller size, say 1 inch down.

The top edges of the floor joists should be beveled, as this will tend to prevent cracks developing. The false floor on which the concrete is to be laid, should be put in very near the top of the joists, so that the beveled tops of the joists will be buried to considerable depth under the upper surface of the concrete. There should be about one and a half to two inches of concrete and mortar above the top level of the joists.

**To Lay Out Circle Work**

To the Editor: Topeka, Kans.

Can you give, through the column of our much esteemed paper, the solution of the following problem: Within a given circle, draw three smaller circles, which shall be tangent to the larger given circle and to each other.

WERNER A. RICHTER.

Answer: The following will give a solution. As per sketch,

you will see that the larger circle is first divided into six equal parts by the diameters AE, CD, etc. Extend any diameter, as AE to G, making EG equal to the radius of the given circle. Join CG. Bisect the angle OGC by GH, intersecting OC in H. With center O and radius OH, draw the circle HKLM. K, L and M are the centers of the required circles.
Popular Style for Barns

To the Editor: Alton, Iowa.
Under separate cover I am sending pictures of a barn that another carpenter and myself built this fall for a farmer in this vicinity. It is 38 by 60 feet and is 16 feet high with a gambrel roof and a concrete foundation. This style of barn seems to take first place in this part of the country. The cornice is something new, at least I have not seen anything like it.
I have been a subscriber to the American Carpenter and Builder for some time.

J. F. Douma.

Fuming, Bleaching and Rusting

To the Editor: Bloomington, Ill.
Please find $2.00 enclosed for which renew by subscription for another year. I will say that I like the paper very much. I see questions asked and answered in this paper. I have two questions I would like to ask.
I have read in your paper about fumed oak finish, saying to put it in air tight box with ammonia. May I ask how long it takes to give a nice brown finish? I tried my luck but failed for some cause. I let it stay 24 hours but got no results. I pasted newspapers over the cracks in a box; then turned the box over and banked dirt up around the edge; but yet it failed. What was the trouble?
I also want to know if there is any way to take out rust stain caused by the nails rusting and the stain coming through the wood; is there any way to remove this rust stain? The heads of the nails were sunk in and the hole filled with crack filler, but the nails rusted and the rust came through making a black spot on the wood all around the nail. The lumber is cherry and the black spots and the red wood look bad. What can be done?
I also like to ask is there any way to treat the nails before driven to keep them from rusting and showing the rust stain on finished stain work.

Answer: Your failure to make the ammonia fuming process of oak finishing work nicely is probably due to the fact that your ammonia was not strong enough to do the work. Ordinary household ammonia is diluted very much. It has to be in order not to blister the hands of those using it for ordinary household purposes. The ammonia for fuming should be strong; about 26 degrees Baumé. This may be secured at a drug store.
Iron rust stain in wood makes a hard problem to deal with especially if it is in some very fine piece of work; for the wood is sometimes injured slightly by the bleaching process. You might try bleaching the spots with chlorine water. Go to the drug store and they will tell you how to make and use this.
The most practical way of keeping nails from rusting in finished stain work is to use galvanized nails. These are now made so perfectly and at such a relatively low cost that anyone can well afford to use them in any work that is subjected to the danger of rusting.

Editor.

A Bird House

To the Editor: Cadiz, Ohio.
Those who enjoy the company of our little feathered friends will be interested in this bird house which has been built near here. It is something of a palace for the colony of martins which make it their home.

John T. Timmons.

Snug Shelter for the Birds
A Cedar Chest

For keeping furs, woolen goods, etc., cedar chests or boxes are highly esteemed and they are frequently made by woodworkers for individual use, and are also manufactured for the stores supplying material of this kind.

Cedar is used because it is commonly believed that the aromatic odor given off by the oil of the cedar-wood chest will prevent insects from attacking material stored therein. The cedar frequently used for this purpose is the ordinary red or incense cedar.

The stock for such boxes should be well seasoned so as to avoid warping. The interior should not be oiled or varnished. Such surface treatment would seal up the aromatic odor under an impervious layer of varnish or oil and defeat the purpose for which the box is made.

If the box is made of one thickness of cedar the outside may be finished by varnishing and polishing. This is accomplished by giving the wood one or more coats of shellac and then rubbing it down with a rag covered with shellac and oil which will give a very good polish.

Another way of treating the surface is to lightly sandpaper the first two or three coats of shellac and then rub the final coat with oil. Sometimes a good grade of furniture varnish is used in place of shellac. Either one of these agencies brings out the natural color of the wood very nicely.

In some cases the outside of the box is made of a different wood to harmonize with the finish of the room in which the chest is to be placed. In this case the cedar lining is simply tacked onto the inside of the box, the cedar boards being unvarnished on both faces.

Cutting Glass Tubing

Small tubing may be broken so as to have the ends perfectly square by making a nick with a three-cornered file at the point where the break is wanted. Without the file-nick the tube would break irregularly and would be very apt to splinter. If the tube should be much larger than what is known as "mill" size, it will be best to carry the nick clear around.

Building a Sleeping-Porch

A reader writes to Suburban Life, asking if it would be feasible and how much it would cost to build a small sleeping-porch over the roof of a piazza, with a canvas awning which will roll up. The reply of the architect to whom the question was referred, is of interest:

The sleeping-porch could be built, as you suggest, over the roof of a piazza. I know of one which was built under almost similar conditions.

Joists were laid over the tin roof and furred up to a level, and on these a cheap wooden floor was laid, with open cracks. Posts 4 by 4-inch were set at the corners, and 2 by 4-inch ones against the house, to support the 3 by 4-inch plates and the roof rafters, which were 2 by 4-inch, spaced 16 inches on centers and sloped to shed water. There was a cross stud 2 by 4-inch all the way around the porch 4 feet from the floor, and the space between this and the floor was made proof against passing glances from the street, by a canvas curtain stretched tight around and buttoned to the cross stud, sill and posts, against the house.

Besides the permanent side-curtain, there were additional ones which were attached to the plate, and had rope and pulley arrangements, by which they could be let down, to fill the remaining space between the plate and cross stud. The curtains were necessary to keep out driving rain-storms.

The roof was covered with a rolling canvas curtain, which was, however, never rolled up, because sudden showers were found to occur with little warning. This canvas had to be of the best quality in order to be really waterproof. In your case, the roof could be made permanent and the porch used...
throughout the year, by using a cheap boarding over the rafters and covering this with a good quality of roofing material, but it must have a slope sufficient to shed both snow and water. Built in this way, it would be more expensive than the waterproof canvas rolling curtain. The cost was as follows:

- Carpenter's labor and materials, including hardware: $30.00
- Curtain for roof, or permanent roof of rough boarding and prepared roofing: $12.00
- Side-curtains and curtain around base: $18.00

Total: $60.00

This includes no painter's finish. A khaki covering for the bed will keep out any dampness, and, with two of the side-curtains down during the day, there ought to be no damage from rain.

**New Bronze Doors for National Capital**

Seven years ago Congress awarded to L. Amatois, a citizen of Washington, a prize of $10,000 for the design, declared by a board of judges to be the most meritorious, for the western doors of the Capitol.

**New Western Doors of the National Capital**

The doors have been completed and cast in bronze. The panels symbolize Jurisprudence, Science, Art, Mining, Agriculture, Electricity, Engineering and Commerce. The doors represent the apotheosis of America. According to the *American Architect*, they contain designs which bring the history of the nation down to the present time.

It is seventy-two years since the first bronze doors were placed at the eastern portal of the Capitol. They were by Rogers, and are known as the Columbus doors. Afterward the Crawford bronze doors, on which were designs depicting scenes in the history of the republic, were placed at the Senate and House entrances.

**Inlaid Chess Board**

The chess board shown in the accompanying illustration is the work of a seventh grade Icelandic boy, sixteen years of age, in Winnipeg. The *Manual Training Magazine* states that before making the board the boy made a drawing and blueprint of it. The design for the carving was adapted to the size of the frame from a design given him for a frame two inches larger.

**Melting Points**

The melting points of some of the more common metals are as follows:

- Steel: 2920 deg. Fahr.
- Copper: 2160 deg. Fahr.
- Brass: 1900 deg. Fahr.
- Tin: 446 deg. Fahr.

**Rope-End Neatness**

A very effective method of keeping rope ends in good condition yet at the same time small enough to pass easily through pulley blocks, small holes, etc., is the "spliced wall knot" described by a reader of *Farm and Fireside*. Fig. 1 shows the wall knot started and Fig. 2 shows all of the strands pulled tight.

Fig. 3 shows the first step in splicing the ends of the loose strands back into the rope. Strand B (shaded) in this case is used as an illustration and all of the other strands are treated in a like manner with respect to the adjoining strands. After all of the strands have been treated as shown in Fig. 3 they should be drawn as tightly as possible into their places and cut off so that about one-half of an inch of each strand protrudes from the rope. The rope is then laid on a smooth board and rolled with the foot until it assumes a smooth, round finish as shown in Fig. 4.
Standard Automatic Brush

An ingenious painter's outfit has been perfected by the Standard Automatic Manufacturing Company, of New York, which will prove to be a great time and money saver in all woodworking shops where any considerable amount of painting is done. It will be especially useful for the manufacturers of automobiles, automobile bodies and wheels, all kinds of vehicles, carriages, etc. It will also be very useful for the manufacture of furniture.

This painting appliance is called the Standard Automatic Brush. Its arrangement and use are clearly shown in the accompanying illustration. By means of this labor-saving appliance painting is done better and more quickly, eliminating all waste of paint. With it there is an absolutely even flow at all times, the brush being easily and accurately adjusted to put on any thickness of coat desired.

Unlike the air brush, the Standard Automatic system requires no air pressure and is claimed to be far superior to the spray, for with it the paint is rubbed into the grain of the wood. Any kind of paint can be used with it. The Standard Automatic Brush is absolutely clean and is fire-proof.

The ordinary outfit complete consists of a large paint tank with automatic valve, and 6 feet of flexible tubing with the automatic adjustable brush which is made of aluminum. For factory or shop use the paint tank is stationary and is placed in an elevated position. The outfit is also made with a tank to be strapped on the back for house and sign painting, work on structural steel, etc.

For all these purposes the Standard Automatic Brush will reduce the cost of painting. Readers of the AMERICAN CARPENTER AND BUILDER are urged to make a test with one outfit and be convinced of the money-saving features of the Standard Automatic system. Since the apparatus will last a lifetime, the first cost would be the only expense. It does not matter what you are manufacturing or what special line you are engaged in, if you are having painting work done, it will pay you to investigate this method.

Address the Standard Automatic Manufacturing Company, 50 Church street, New York, N. Y., and they will send you immediately, their booklet describing this system in full.

The Hammer as a Wire Stretcher

The accompanying picture shows how some farmers use a hammer for splicing wires. A loop is made and the loose end of the wire pulled through it and wrapped around the hammer head and fastened in the claws. The head is inserted in the loops as shown, and by winding the wire onto the hammer head, it is stretched. As the unwinding is done, the wire is wound in such a way as to complete the splice.

Locking Ships at Panama

With the wonderful progress being made in the construction of the Panama Canal and the near approach of the time when it will be finished, the operation of the locks takes on new interest.

Recent estimates fix the time to be spent in ascending or descending the lock stairs at Gatun at an hour and a half, and in all probability the three locks at the Pacific end will be passed with equal quickness. Under ordinary circumstances it is thought that a lock chamber can be filled in about fifteen minutes. The remaining quarter of an hour may be needed of the operation of the gates and entrance to and departure from the lock. If there is need for haste, though, it is asserted that the work can be conducted twice as quickly. Once inside the lock, steamers will not be permitted to move under their own power. They will be towed by electric locomotives. In approaching a lock a safety chain in front will check any excessive speed. In crossing the isthmus a vessel will take ten or twelve hours. Hence it is likely that passengers will leave it temporarily at one end of the canal and make the journey by rail, going on board again at the other terminus. In this way several hours can be saved for sightseeing at Colon and Panama.

The largest steamships built for the transatlantic service belong to the White Star Line. One of them, the Olympic, is nearly completed. The other will be ready next year. These vessels are 890 feet in length, 92 feet wide at the broadest part, and very much larger than the Mauretania and the Lusitania of the Cunard Line. Yet the Olympic and her sister ship will have plenty of room in the locks of the Panama Canal if they ever have reason to use the new waterway. The interior measurements of each lock give a breadth of 110 feet and length of 1,000.

Valuable Cabinet as a Hen's Nest

At a farm sale in Warwickshire a beautifully carved old Jacobean cabinet realized about $380. Up to the time of the sale it had been used as a medicine chest in the cow house, and at one time was made the nesting place of poultry.

There is no absolute need of painting zinc work, for exposing it to the atmosphere has the effect of coating it with a thin film of oxide, which protects it as effectively as paint.
A Parallel Bench Vise

Herewith is given a sketch showing the construction of a parallel vise for carpenters, as suggested by Popular Mechanics. The jaws of the vise, A and B, are made from 2 by 6 inch material of the right length for the bench. A hole is bored through the leg, C, of the bench to make a guide for the screw. This hole should be of such a size to make a close fit for the screw. Two pieces of 1 by 3-in. material, D, are mortised into the jaw, A, and fastened with screws, and also loose mortises are cut in the stationary jaw, B, to allow the pieces, D, to slide freely. These two sliding pieces, D, should be longer than the screw. The block, E, is 4 by 4 inches square and 6 inches long and fastened between the ends, D. The screw is an ordinary vise screw that can be purchased at any hardware store.

To Take Heat Stains Out of Polished Wood

Take three or four thicknesses of blotting paper and lay on the spot and place a hot smoothing iron on the paper. Have ready at hand some pieces of flannel, also folded and made quite hot. As soon as the iron has made the surface of the wood quite warm, remove the paper and go over the surface with a piece of paraffine, rubbing it hard enough to leave a coating of the substance. Then with one of the pieces of flannel rub the injured surface. Continue the rubbing, using freshly warmed cloths until the whiteness leaves the varnish or polish. The operation may have to be repeated one or twice, but it always succeeds at last.

Flexible Paint for Canvas

Take 2 1/2 pounds of good yellow soap; cut it into thin slices and dissolve it in 1 1/2 gallons of boiling water. While hot, grind the solution with 3 1/2 gallons of good oil paint. This paint is impervious to water, but does not diminish the flexibility of the canvas or other fabric to which it may be applied.

A Ladder Elevator

One of the newest appliances for the use of stucco workers and painters is the ladder elevator shown in accompanying cut. One notable feature about this device is that it takes away entirely the necessity for erecting scaffolds, even for work on stucco houses. These ladders do not lean against the building. Only a narrow steel brace just touches it at two points, and is not fastened in any way.

Using these elevators, a couple of workmen can erect a perfectly safe scaffold and be at work on it in 10 minutes; they can afterwards raise or lower themselves at will with ease, for the elevators can be operated from the ground, from the scaffold, or from any point necessary on the ladder. It locks automatically and positively every foot.

A second smaller platform is provided, about 2 ft. above the one on which the men stand; this holds tools, material, etc., within easy reach, and its advantage can scarcely be overestimated, for it saves the workmen stooping every little while, which is the heaviest part of the work, besides saving considerable time.

Elevators are run on and off after ladders are up, and can be folded for shipment after removing two wing nuts. There is nothing about them to get out of order, and if properly taken care of, they are good for a life-time of use.

Any wide-awake contractor who studies into it will quickly appreciate what the returns will be from investment in this equipment; in fact it will be hard for the man who does not use it to compete with estimates from those who do.

These elevators are being manufactured by the James I. Taylor Mfg. Co., Bloomfield, N. J., who will be glad to furnish circulars and full particulars on request.
Novel Boom-Seat for Hoisting Derrick

In the execution of building contracts novel expedients are often devised with a view to facilitating the performance of some detail of the work, or some peculiar form of construction is adopted in connection with the apparatus which is likely to command the immediate attention of the contractor or builder who may see it. In connection with the recent erection of a reinforced concrete building a rather novel fastening of the boom to the upright of a derrick was adopted by the concern executing the contract for the work. The boom seat was attached to a construction elevator tower, the elevator being used for hoisting concrete and the derricks for raising reinforcing steel and forms to the various floors of the building. The seat consisted of two pairs of castings 8 inches wide by 5 inches deep by 4½ inches thick cast to fit a 6 by 6 inch timber diagonally. Each pair of these castings was tightly clamped to an upright of the elevator tower by two 7½ by 11 inch bolts, a 12 by 5 by ½ inch steel plate and a 5 by 5 by ½ inch angle 12 inches long. The two pairs of castings were spaced so that there was a distance of 12 inches from top to top of the outward flanges of the angles. In the horizontal flanges were holes through which passed a 2-inch steel pin, held in place by a collar resting on each angle. The head of the pin was bent slightly out from the upright, upset and drilled for a ¾-inch bolt. This bolt held a 5½ by 3 inch strap to either side of the head of the 2-inch pin, and the 6 by 6 inch boom was tightly bolted to these straps by four ¾-inch bolts.

A New Jointer or Hand Planer

H. B. Smith and his successors the H. B. Smith Machine Company, have been building jointers for many years. Those which were made forty to fifty years ago had each table mounted on four links which were of the same radius as the cutting circle, then known as the Carey style. Subsequently they built them with the table mounted on four slides, and a few with only one large or long slide to each table, later (some twenty-five years ago), they built them with four slides or inclines to each table in such a manner that the tables were made to adjust radially with the cutting circle; and while the design did not indicate it the base was made so that it could rest on the floor in three places like a three-legged stool. As indicated by the illustrations they have now brought out a new design in which the frame is cast whole and rests upon the floor in three places so that it cannot be twisted out of line by changing floors. And the longer table comes first so as to handle long materials with better facility. The following description will give an idea of the details and adjustments:

The frame is of box form, very rigid and is provided with a chute for delivering the shavings to the rear, where connection should be made to the exhaust pipe system. The top of the frame for supporting the table inclines is 74 inches in length, while the base is 46 inches long by 24 inches at the rear end of the 12-inch and 16-inch machines. The larger machines have wider frames.

The tables are extra wide and conjointly are 86 inches over all, the front table being 48 inches long. These tables are deeply ribbed so as not to sag or twist out of truth, and are raised and lowered by hand wheels and screws at each end on inclines which are locked together and tongued to the carriage, making it practically impossible to get the tables out of alignment. The rear table has a rabbeting groove ½ inch deep and a plain rabbeting bracket is furnished with each machine. Both of the tables are faced with steel next to the cutter-head and can approach one another so as to reduce the throat to 1½ inches.

The carriages on which the tables are mounted, are secured to the main frame in dove-tail slides, and can be drawn away from the cutter-head for projecting or molding knives, and for changing and sharpening the cutters. Four small hand wheels serve to clamp the carriages on the position desired.
front box being 6\(\frac{1}{2}\) inches and the rear box 7\(\frac{3}{4}\) inches long.

The new cutter-head is made round and is arranged to carry two thin self-hardening knives which are held on by two steel caps and screws; the other two sides of the head are slotted and provided with bolts and nuts for holding the projecting cutters which may project to cut to the depth of 1 inch. These slots are covered by sectional caps which can be removed when cutters are used, as shown in one of the cuts. The angle of cut is the same as any regular 4-slotted head and therefore offers no beating resistance to the cut. The head proper is made of high grade crucible steel with the lips for self-hardening knives faced with hardened tool steel, and the journals which are forged solid thereon are turned and ground to 1\(\frac{1}{4}\)-inch to fit the clamp bearings above referred to. The head is driven by a 4\(\frac{1}{2}\) by 5-inch pulley.

The guide or fence is 54 inches long, tilts to 45 degrees for bevel planing, may be set slightly diagonally and adjusts entirely across the tables.

The countershaft is provided, consisting of a shaft of suitable size with pressed steel hangers, and tight and loose pulleys 10-inch diameter by 5-inch face, the loose pulley being fitted with the Gleason patent self-oiling bush.

The equipment for regular jointers consists of one pair of thin, self-hardening cutters, and bolts and nuts for the other two sides of the head including sectional caps; also the countershaft described above.

For further particulars address H. B. Smith Machine Company, Smithville, N. J., U. S. A.

To Dull Brass

One part by weight of iron rust, 1 part white arsenic, 12 parts hydrochloric acid. Clean the brass thoroughly, and apply with a brush until the color desired is obtained, then rinse well, dry and lacquer.

Improved Expansive Bit

Carpenters and builders generally will undoubtedly be interested in the accompanying illustration showing the improved Steer's patent expansive bit, made and sold by C. E. Jennings & Co., 42 Murray street, New York. Particular attention is called to the micrometer screw by means of which the cutter can be instantly adjusted to the thousandth part of an inch.

There is a bevel on the cap and the cutter; and this, with the teeth, prevents the cutter from slipping and creeping. Bits are made for large cutting, from 7\(\frac{1}{2}\) to 3 inches, and for small cutting from 9\(\frac{1}{2}\) to 1\(\frac{1}{4}\) inches. The cutters, caps and screws can be obtained in various sizes.

These bits come packed in waterproof canvas case, so made as to prevent damage to the tools. C. E. Jennings & Co. are manufacturers of the "Arrow Head" line of carpenters' tools, and will be glad to send catalogs and price lists to any address on request.

M. P. DURABLE FLOOR VARNISH

Price $3.00 per gallon; Quarts 85c each

Exhaustive tests conducted during many years show this varnish to be the most durable and elastic Floor Varnish on the market. It is impervious to water and does not mar my scratch white. It is light in color, thus preserving the natural beauty of the grain. It can be used with equally good results over painted or grained surfaces. It dries hard in from 15 to 24 hours, and can be rubbed and polished or left in the gloss.

For sale by paint dealers everywhere. If not at yours, we will send by prepaid express upon receipt of price. Full descriptive price list upon application.

THE GLIDDEN VARNISH CO.

Makers of High Grade Varnishes for all purposes

GLIDDEN BLDG., CLEVELAND, OHIO

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GREEN LABEL VARNISHES

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
He said to himself, "Great Scott, if there's as big a saving as that, me for Gordon-Van Tine!"

He made careful comparison of our quotations with the prices asked on the same class of stuff by local retail lumber dealers and millwork men. He decided to risk a trial order, as he found our bank references O.K. and our rating in Dun and Bradstreet satisfactory.

Comparison of Our Prices With Local Dealers' Made Him "SIT UP AND TAKE NOTICE"

He said to himself, "Great Scott, if there's as big a saving as that, me for Gordon-Van Tine!"

He made careful comparison of our quotations with the prices asked on the same class of stuff by local retail lumber dealers and millwork men. He decided to risk a trial order, as he found our bank references O.K. and our rating in Dun and Bradstreet satisfactory.

Sent Us a "TRIAL ORDER"—Goods Shipped Quick and Proved to be HIGHEST QUALITY

We filled the order in the usual way—promptly, carefully, conscientiously. We didn't know he had "150 houses up his sleeve." It wouldn't have made any difference even if we had. The contractor was delighted with our stuff.

Orders Material for 150 HOUSES and Becomes a STEADY CUSTOMER of the Gordon-Van Tine Co.

The pictures at the top show the class of houses which this wide-awake contractor built from our materials exclusively.

He made a barrel of money on those 150 houses and is a steady buyer of our materials. There are over half a million fellows throughout the country who have also "seen a great light" out in Iowa.

Honestly, MR. CONTRACTOR, Why Not Investigate?

Our immense concrete warehouses are packed and with bargains in sash, doors, millwork, stair and porch material, flooring, roofing. Everything ready for quick shipment anywhere; quality, safe delivery and satisfaction guaranteed. Get the Free Catalogs. Compare prices, note the big saving, and send us a trial order.

GORDON-VAN TINE CO., 553 Federal Street, Davenport, Iowa
What is Marble?

The most recent authority on marble defines it as follows: "The name marble is given to any calcareous or magnesium rock sufficiently beautiful to be utilized in decorative work. Commercially this includes limestones, magnesium limestone and dolomites, onyx or travertines, serpentine and alabaster, in short all varieties that are capable of taking and retaining a polished face and that are adapted to and available for decorative purposes."

By a critical investigation of a manufactured marble, "Tesco," a product recently placed on the market, it is found to display all the analytical features of a real marble—a multitude of crystals twined together to make up the whole, displaying natural colors that closely resemble the quarried marbles of France, Italy, Belgium, Greece and those of this country and so easily distinguishable in its characteristics as to be recognized by name.

The advantage of a surface that is crystallized, translucent and without any fractures gives it merit, and furnishes the building trades a marble product that will create a new market peculiarly its own.

The results finally attained in this manufactured marble came after 28 years of experimenting, in which time the product seems to have been perfected to withstand the exposure of the elements. Since its price is low it undoubtedly will be given a trial, and will prove successful, if its claims are borne out—which time will tell when put in general use.

Fireplace Construction

A genuine, old-fashioned fireplace for burning logs is a most delightful feature in any home. Family life centers around it and it has a charm that no other feature has. A gas log or a small coal grate is a poor substitute for the genuine wood fire. Unfortunately, many an attempt at such a fireplace is a failure simply from the lack of knowledge on the part of the average builder, of a few simple rules for building such a fireplace.

There is no mystery nor any great difficulty in building a fireplace that will burn wood without smoking: proper proportioning of the flue to the fireplace opening, proper forming of the throat and smoke chamber—with this knowledge any mason can build a successful fireplace.

Clear and explicit rules for the above are found in "Hints on Fireplace Construction," published by the H. W. Covert Company, No. 168 Duane Street, New York City, and a copy of this booklet will be sent free to any one who will apply to them.

To Whiten Brass or Copper

Three pounds cream of tartar, 2 gallons water, 4 pounds finely-divided tin.

The Covert Fireplace Throat and Damper

Cortright Metal Roofing Company

Philadelphia and Chicago

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
This 165-page book should be in every carpenter’s tool chest

It contains a complete catalog of 200 mechanics’ hand-tools, the largest line offered by any one manufacturer, and 35 pages of handy reference tables and useful information.

It is important to know the factory where your tools are made, for otherwise you have no one to hold finally responsible for the quality.

The MARK of the MAKER tells you

1. That the tool has been made by us and has over 90 years of supremacy in tool-making back of it.
2. That it is guaranteed perfect in quality and workmanship, and is the best tool made for the work it has to do.
3. That we assume the full responsibility.

Our four large lines of Guaranteed Hand Tools for Carpenters, Electricians, Machinists, and Tin-smiths, are sold by practically all 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 Co.
MF’RS of the Largest Line of Mechanics Hand Tools offered by any Maker
Address all Correspondence to 122 Murray St., New York City
Established 1819 Five Large Factories
Be they NEW or OLD
Ready-To-Lay
BURMITE
FLEXIBLE-CEMENT-
BURLAP INSERTED
MATERIAL
(PATENT APPLIED FOR)
WILL BE FOUND NOT ONLY THE
MOST DURABLE AND INEXPENSIVE
BUT THE
HANDSOMEST AND MOST PRACTICAL
FOR
ROOFING and SIDING
Factory, Residence and Business Buildings. Churches,
Warehouses. Summer Homes, Outbuildings,
Bungalows, Garages, Barns, Etc.
MADE, IN TWO SURFACES
BIRD-SAND and "TWOLAYR" SLATE-CHIPS
TO MEET EXTREME WEATHER CONDITIONS
Sparks, Hail, Sleet, Sliding Ice, Rain, Snow or the Extremes of
Cold and Hot Weather do not affect the Storm-Resisting and Fire-
Retardative Qualities of BURMITE.
For the "Twolayr" Slate-Surfaced Material, Natural 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 sur-
face (there being two layers of the Slate Chips) is the result,
thus securing the well known IMPERVIOUSNESS and
WEATHER-RESISTING QUALITIES OF SLATE, AT ONE-
FOURTH THE COST.
THE BEST BY TEST
Sold on its MERITS and LASTING QUALITIES
The First Cost—The Only Expense
As a rule, other grades must be coated at least three times in 7
years; and if the cost of paint and labor is added to the original
cost of the material and applying, it will be at once apparent that
"Burmite" will be found not only the Most Durable but More
Economical than others.
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Illustrated with buildings, beautifully printed in colors, showing
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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
While the cost of food and clothes has materially increased, the underfeed coal-burning way has in far greater measure decreased the cost of heating. Carpenters and builders are invited to take advantage of this economic certainty which adds to the renting and selling value of any building. Thousands who have thoroughly tested underfeed heating systems are willing and able to prove that.

The Peck-Williamson Underfeed Heating Systems

There is nothing mysterious in this. The underfeed burns coal in the logical way. Coal is fed from below. All fire is on top. Smoke and gases wasted in other heating plants must pass through the flames, are consumed and make more heat. Pea sizes of hard and soft coal or cheapest slack, which would put out fire in ordinary furnaces and boilers, yield in the underfeed as much clean, even heat as highest-priced coal. This means you save the big difference in coal cost. The few ashes are easily removed by shaking the grate bar as in ordinary furnaces and boilers.

G. M. Stanton, of 127 Pennsylvania Ave., Binghamton, N. Y., is a good witness for underfeed saving qualities. He writes:

"I have heated ten rooms, keeping the temperature at 70 degrees. I have used 7 tons of buckwheat coal at a cost of $23.80 and have heretofore used 9 tons of chestnut coal at a cost of $57.60, making a saving of $33.80. I have saved one-half the work of caring for the furnace. I would not let the underfeed go out of my cellar for $1,000 if I could not purchase another like it."

Let us send you an underfeed furnace booklet and fac-similes of other cheerful testimonials like this, or our special catalog of steam and water boilers—both FREE. Heating plans of our engineering corps are FREE. Write today, giving name of local dealer with whom you prefer to deal.

The Peck-Williamson Co., 436 West Fifth Street, Cincinnati, Ohio
largest giving satisfaction in homes that include 14 or 15 rooms.

Underfeed boilers made in fifteen sizes each, steam and water, with ratings ranging between 450 and 2725 square feet. The Underfeed contains all the good points of the best top-feed furnaces and boilers, with the addition of the Underfeed method of combustion and operation, which is just the reverse of the ordinary way of firing.

This enables the successful use of the cheapest grades of hard or soft coal, which could not possibly be burned in the ordinary furnaces and boilers, and the consequent saving is claimed to be one-half to two-thirds in coal bills.

The cuts clearly show the operation of the Underfeed feeding devices. Coal is placed in the hopper at the side of the boilers and furnaces and pumped up through the feed chute by means of a wooden lever which operates the plunger, onto the grate and underneath the body of burning coal. The fire is pushed upward and outward, and the fresh coal is thus surrounded on all sides and the top by fire. Smoke and gases released by combustion are consumed, thus utilizing every heat unit and bringing the fire in direct contact with the most effective heating surfaces of the heater. The few ashes are removed as in ordinary furnaces and boilers.

Carpenters and builders are urged to specify Underfeed heating plants, because in so doing, they will confer favor upon the house-owner or renter, because the Underfeed soon pays for itself and then keeps on saving money by reducing cost of heat.

Carpenters and builders are invited to write to The Peck-Williamson Company, 436 West Fifth street, Cincinnati, Ohio,

We are manufacturers of a complete line of high grade

**SHEET AND TIN MILL PRODUCTS**

Of every description and for every known purpose. The following products are carefully manufactured, high in quality, and are specially adapted to the requirements of modern building construction. American products are always standard—will give maximum service.

**Apollo Best Bloom Galvanized Sheets—Gauges 10 to 30**  
**Formed Roofings and Sidings—Black, Painted, Galvanized**  
**Terne Plates—MF, American Old Style, American Numethod**

Write nearest District Sales Office for full information and quotations. Send for Weight Cards and Booklet, and for our valuable Pocket Reference Book.

**American Sheet and Tin Plate Company**

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago  Cincinnati  Denver  Detroit  New Orleans  New York  Philadelphia  Pittsburgh  Portland  San Francisco  St. Louis

*WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER*
"RICHMOND"
CONCEALED TRANSOM LIFT

"Simply turn the Knob"

The RICHMOND Concealed Transom Lift is in a class by itself. Scientific principles have been applied in its design with joints and contacts reduced to a minimum.

It is easily set in position, operates by the turn of a knob, has a positive action and the knob is the only part exposed.

The operating knob is about on a level with the door knob, turns almost as easily as a latch and locks the transom in any position.

The knob is the prominent feature of this device, and the fact that a transom can be operated by turning a knob will appeal to owners—the fact that all mechanism is concealed should appeal to architects.

We have an interesting booklet on this device, which tells more about it, and we will gladly mail a copy to any architect upon request.

The McCrum-Howell Co.
NEW YORK: 41st Street and Park Avenue
CHICAGO: Rush and Michigan Streets

Manufacturers of
RICHMOND Modern Improvements
For Heating, Vacuum Cleaning
Ventilation and Sanitation

If it's RICHMOND it's right

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Money Making Offer on Portable Baths

Through the inventive genius of a Toledo man, Mr. Willard E. Allen, it appears that the blessings of modern bathing facilities are now to be enjoyed by all. It is a rather startling fact, when you come to think of it, that with all the progress that has been made in sanitation and in the matter of household conveniences of other kinds, there has been no improvement for the great majority of families in the matter of bathing facilities.

Most people are still obliged to use the same crude appliances that were used hundreds of years ago. For everyone knows the sorrowful fact that modern bathrooms are possible only where there is running water, supplied either by public water works or private water pressure systems, and then only at great expense.

The vast number of people living in small communities or in rural districts where water pressure systems are unknown still have to rely on the old bothersome and unsatisfactory utensils of long ago.

Any one who has experienced the inconvenience of carrying water to pour into a tub or basin, the nuisance of slopping water, to say nothing of the incompleteness of the old cleansing process, will appreciate at once the wonderful advantages of a simple equipment which will do the work claimed for this invention of Mr. Allen's.

Being naturally of an inventive turn of mind, Mr. Allen perfected what is known as the Allen Portable Bath Apparatus for his own use. The success of the invention was so remarkable, however, that friends and neighbors in large numbers immediately wanted to share in its benefits also. The Allen Manufacturing Company was accordingly organized, with Mr. Willard E. Allen as president, and the project was undertaken to manufacture the Portable Bath Apparatus in sufficient quantities to supply the huge demand which immediately developed.

The apparatus itself proved so efficient in operation, so simple in construction and so easily used, at the same time being extremely moderate as to cost, that its use quickly spread throughout all parts of the country. It is now stated that after having been thoroughly tested throughout a considerable period of years, a quarter of a million of these portable bath outfits have been sold.

The Allen Manufacturing Company, 3221 Allen Bldg., Toledo, Ohio, are making a very attractive offer to readers of the AMERICAN CARPENTER AND BUILDER to act as district agents for the Allen Portable Bath Apparatus. It will pay you to drop them a line requesting details of their agency plan and information concerning the apparatus itself. You will find this very interesting and well worth investigating.

New Light on Vacuum Cleaning

The McCrum-Howell Co., manufacturers of the well known "Richmond" line, have just issued two new booklets dealing with the subject of vacuum cleaning.

These booklets are entitled "What it Means to Be Clean" and "Vacuum Cleaning and School Hygiene," written in a very fresh and attractive style, offering many good ideas on this new branch of industry.

Vacuum cleaning, both built-in and portable, is certain to have a great future in this progressive country. Carpenters and builders should see to it that they keep fully informed as to all its developments.

We understand that these booklets will be mailed with other information, to all readers of the AMERICAN CARPENTER AND BUILDER requesting the McCrum-Howell Company, New York City, for details of the vacuum cleaning business.

Concrete and Cement Floors Wear Dusty Sweeping Makes Them Constantly Dustier

KONKRETO

gives them a surface like Tiling—smooth, sweepable, dustproof and dampproof.

Used everywhere in Factories, Stores, Storerooms, Schoolhouses, Residences, Garages and R. R. Stations.

The Varnish That Lasts Longest

Murphy Varnish Company

FRANKLIN MURPHY, President

NEWARK, N. J.

Associated with Dougall Varnish Company, Limited, Montreal, Canada

BOSTON

CLEVELAND

ST. LOUIS

CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Will You Answer This Advertisement
And Get These Samples Delivered Free?

RIGHT by actual test we want you to know all about Johnson's Wood Dye and Under-Lac. A single trial will prove their superior merits. We will gladly bear the expense of sending samples that you may be familiar with the quality of our goods. There's a great difference between

Johnson's Wood Dye

and a mere stain. It is a real deep-seated dye that penetrates the wood, giving a rich, permanent color that will not raise the grain in the slightest. Johnson's Wood Dye is made in fourteen standard shades, as follows:

- No. 126—Light Oak
- No. 123—Dark Oak
- No. 125—Mission Oak
- No. 140—Manila Oak
- No. 110—Bog Oak
- No. 128—Light Mahogany
- No. 129—Dark Mahogany

Johnson's Under-Lac

is a spirit varnish which will not chip, mar or scratch. It is better than shellac or varnish, as it can be easily applied and does not raise the grain, nor is it thick and sticky like varnish—dries in half an hour. Gallons $2.50. In answering, use attached coupon for samples of Johnson's Under-Lac and Dyes. State carefully the number of shades wanted. With samples we will also send a copy of our booklet, "The Proper Treatment for Floors, Woodwork and Furniture," showing all shades of dye.

S. C. Johnson & Son
"The Wood Finishing Authorities"

Racine, Wisconsin, U. S. A.

Free Sample of Under-Lac

Free Sample of Under-Lac

Free Book

Free Book

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Beaver Board
Offers the Good Carpenter
Another Good Opportunity

You build and finish most of the house, why not the walls and ceilings, too? You can if you know how to put up Beaver Board.

The picture below shows how easy it is for a good workman to turn out a classy job and get the reputation and steady employment that goes with it. When it's done it's a standing ad for you, for Beaver Board Walls and Ceilings last. They don't crack, peel off and deteriorate like lath, plaster and wall-paper; they cost less and look better.

Write today for samples, booklets and special information to carpenters—How Beaver Board is nailed direct to stud- ing of new buildings or over the lath and plaster of remodel- ed buildings of every kind; directions for working out different designs; pictures of finished interiors; how to make partitions, drop ceilings, etc.

Sold by lumber, hardware, paint, wallpaper 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
In U. S. address 279 Beaver Road, Buffalo, N. Y.
In Canada address 329 Beaver Triangle, Ottawa, Can.

A Popular Tool

The great popularity of Fay & Egan Company's No. 61 hand planer and jointer is evinced by the fact of its general introduction into the best woodworking shops in the land.

This machine is said to be remarkably simple. The accuracy, precision and superiority of work performed, together with the immense saving effected over hand labor, has made it a universal favorite among carpenters, contractors and retail lumbermen.

The manufacturers designed this machine for general, jointing and rabbing, planing straight or out of wind, cornering, chamfering, making glue joints, and a great variety of similar work.

In its construction, the manufacturers have given special attention to the frame, casting it sufficiently heavy—making it perfectly free from vibration.

Tables are planed perfectly true, and are each vertically and horizontally adjustable, independent of each other. They are mounted on inclines tongued into each other. Each incline has an independent micrometer adjustment, for perfectly aligning the tables. They can be instantly drawn away from cutter head on each side to facilitate the setting, and sharpening knives and for swinging larger cutters.

Cylinder is of forged steel, four sided and slotted, running in reservoir of self-oiling bearings. The manufacturers furnish their safety cylindrical cutter head with this machine when ordered.

Fence bevels to 45 degrees and is equipped with spring post for holding down material while passing over head.

For further information regarding this machine, you are invited by the manufacturers to write for large illustrated circular. The proper address of the manufacturers is J. A. Fay & Egan Company, 545-565 West Front street, Cincinnati, Ohio.

American Ingot Iron—Non-Rusting

The American Rolling Mill Company began operation January 1st, 1900, at Middletown, Ohio. This site was chosen because of the exceptional shipping advantages, the proximity of the coal fields and the central location; in fact, the most advantageous location for shipping finished material to all parts of the United States. The growth of this company has been very fast.

In the year 1904 the output was increased by purchasing the Curtis Plant at Zanesville, Ohio. The company is now turning out a total of 60,000 tons per year.

In February, 1910, four hundred and eighty acres of ground were purchased at Middletown for the erection of a new $3,000,000 addition, which will treble the present output of the company.

Since its inception, the present officers have had charge of the management of this company and have gained a reputation not only in this country, but abroad, for fair dealing and
Know this label and you know all you need to know about the quality and value of varnish.

It can be your sole guide to the purchase or recommendation of varnish for any grade or character of work.

It is always the sign of honest quality.

Berry Brothers' Architectural Varnishes

Meet all requirements for highest grade finishing in buildings.

**TRADE LIQUID GRANITE**

Mark

For finishing doors 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**

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, Ltd.

Established 1858.

Largest Varnish Makers in the World.

Factories: Detroit, Mich., and Walkerville, Ont.

The FAMOUS JUNIOR
for $150.00 is the greatest offer in Woodworking
Machinery ever made

This extraordinary bargain in woodworking machinery gives every carpenter, builder and contractor in America the opportunity to install a machine-shop for the total investment of $150.00. The offer holds good until February 1st—after that the price will be increased. The present low price is about 50 per cent below the usual cost; it's made for the sole purpose of competing with inferior machines, and to convince the trade how much extra profit a FAMOUS Universal Woodworker will put in their pocket.

The FAMOUS JUNIOR does eight different kinds of work, and embodies the following eight machines: 20" Band Saw, 8" Jointer, Felloe Rounder, Emery Grinder, Saw Table with raising or lowering arbor, Boring Machine, Dadoing Machine, Vertical Shaper. One man, with no previous experience, can operate the machine; there is nothing complicated, nothing to wear out, nothing to cause the least trouble. It means an end to the planing-mill bugbear, because in addition to saving planing-mill bills, there is the saving in time and trouble. Buying a FAMOUS JUNIOR is like putting money in the bank—only the dividends are bigger.

Half Price—Until February 1st

Hundreds upon hundreds of contractors have already taken advantage of our “half-price” offer. You have a clear month to make your application and to lay the foundation for a more profitable business. The year of 1911 will be a busy one for contractors and builders—prepare to meet it by installing the FAMOUS JUNIOR. Think of it—a complete machine-shop for only $150.00 (there are positively no extras).

The FAMOUS JUNIOR is for hard service. We guarantee it—not for a year but for LIFE. Doesn’t matter how long you have it, our guarantee is always good. No other manufacturers of woodworkers in the world can afford to make such a sweeping guarantee. But we know what the FAMOUS JUNIOR IS. We know how strong it is—how simple in construction and operation, and how it will live up to its guarantee. Yet the total outlay that you are called upon to make is $150.00. And then we sell on trial and will take time payments.

Send Today for Special Literature

We have special literature telling all the details which will be sent free upon request. Don’t think you do not need a woodworker—you DO. Don’t think you cannot afford this FAMOUS JUNIOR—because you CAN. Once you get the machine installed it will pay for itself each month—and save money in the bargain. Write for literature at once—before you do another thing.

The Sidney

SIDNEY,

The A. R. Williams Machinery Co.
Front Street
TORONTO, CANADA

The A. R. Williams Machinery Co.
87-61 Alexander St.
VANCOUVER, B. C.
The FAMOUS No. 14 is an ideal Woodworker for Contractors' use

While our FAMOUS JUNIOR is the best universal woodworker on the market today for small contractors and builders, this No. 14 FAMOUS is unquestionably the most satisfactory for carpenters, builders and contractors who have a large amount of millwork done, and a great variety, as on the one machine SIXTEEN DIFFERENT KINDS OF MILLWORK CAN BE DONE, SIMPLY BY MAKING A FEW SIMPLE ADJUSTMENTS.

The No. 14 FAMOUS Universal Woodworker is, without the shadow of a doubt, the most unique piece of woodworking machinery, and the greatest time and labor saver, ever invented.

On the one base are embodied the following sixteen woodworking machines:

1. 27" Band Saw
2. 12" Jointer
3. Saw Table with raising and lowering
4. Single Spindle Shaper
5. Boring Attachment arranged on Special
6. Poney 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

Record Sales for 1910

Over five hundred contractors bought FAMOUS woodworkers during the past year; over a thousand will buy during 1911. We have never had a machine returned for repairs—we have never had an unsatisfactory report. Such a record points to a machine possessing REAL MERIT—a proposition which every contractor should inquire into.

Think what it means to install a machine which does the work of sixteen. Consider the saving in initial cost—in ultimate cost—in power transmission equipment—in floor space—in time—in labor. And remember that we guarantee the machine for life. Only the highest quality materials obtainable are used; the durability is wonderful. Yet, notwithstanding the adaptability of the machine there is absolutely nothing complicated—nothing beyond the knowledge of any machinist.

A Prosperous New Year

Begin your business year by sending for full information about this wonderful woodworker. Installing this FAMOUS means more profits for you and greater satisfaction to your customers. Catalog sent upon request.

16 Machines in One

The machine does sixteen different kinds of work and can be adjusted to perform the necessary woodworking operations almost instantly. The whole thing is so simple to operate that anyone with no previous experience can readily understand the principle.
the production of the best quality of electrical sheets manufactured in the world.

In 1904 extensive experiments were begun to ascertain the real causes of the rapid corrosion of steel in its various forms. Following out the line of reasoning of one of the most prominent chemists and metallurgists in the United States, Dr. A. S. Cushman, Department of Agriculture, a metal was manufactured with the manganese eliminated.

In July, 1908, these experiments were culminated in a metal being produced in which the total amount of sulphur, phosphorus, carbon, manganese and silicon was reduced to 6/100 of 1 per cent. This was the purest iron ever manufactured commercially in this country or abroad. The metal was termed "American Ingot Iron" and has made the American Rolling Mill Company famous throughout the United States, Canada and Mexico as the manufacturer of the purest and very best grade of rust-resisting iron produced.

This iron is especially adapted for all purposes where resistance to corrosion is essential and is being specified and used extensively throughout this country for metal lath, roofing, siding, conductor, eaves trough, tanks, metal window frames, ventilators, cresting, corrugated culverts, etc.

Making the Cribs Rat Proof

One way to build a rat-proof corn-crib is to set the crib on posts 22 inches from the ground and place glazed sewer tile 24 inches long around the posts before the crib floor is laid. The tile will settle enough so that the crib will rest on the posts. With the posts incased in tile it is impossible for rats to climb up the smooth surface and into the crib.

Agents Wanted for Keyless Locks

The Dayton Keyless Lock Co., Dayton, Ohio, have perfected a combination door lock which, being unlocked by pressing down the levers in the proper way, is predicted will put an end forever to the "Great Key Nuisance."

The Dayton Keyless Door Locks are the equal of the best key locks in appearance, material and mechanism, and give you double the protection, and their superior convenience make them worth many times more, though they sell for the same price.

It is confidently expected that the Dayton Keyless Door Locks will soon be used on old and new doors of all homes, shops, stores and offices. With old locks, just lay aside the spindle, and the outside escutcheon and place the keyless attachment on the outside. It is much easier put on than a mortise lock, and cannot be removed from the outside.

This company is offering a high-grade, special chance to local agents with exclusive territory. A few places are also open to first-class men as state managers.

M. J. Gibbons, Dept. B., Gibbons Arcade Dayton, O.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
THE STANDARD AUTOMATIC BRUSH
does your painting work in a new way, better, quicker, cheaper, eliminating all waste of paint. An equal flow at all times; thickness of coat can be accurately adjusted. Absolutely clean and fireproof.

THE STANDARD AUTOMATIC SYSTEM
does away with the paint can. It eliminates the dip and is far superior to the spray, but it does rub it in. No air pressure is needed. Will work with any kind of paint. Get next to this method. Made especially for manufacturers of automobiles, automobile bodies and wheels, all kinds of vehicles, carriages, etc. It is most useful for manufacturers of furniture. It will also save a lot of time in painting structural work, such as bridges, elevated roads, etc. House and sign painting can be done effectively and quick.

Whenever duplication of work exists, this device will increase your output and reduce the cost. Buy just one outfit today and be convinced. We are sure that we will have to equip your entire plant. Special equipments can be made to suit your purpose.

Complete outfit consisting of a large paint tank, either stationary or movable, with automatic valve and six feet of flexible tubing together with the automatic adjustable brush made of aluminum, costs $7.50 and it is still cheaper than the ordinary brush. The outfit is also made with a tank, to be strapped on the back, which will cost $2.50 extra. Our booklet will tell you why. Write for one today. Our booklet will tell you why. Write for one today. Send in your order. Your outlay will only be once. Apparatus will last a lifetime. Let us know today what you are manufacturing and we will effect a saving for you.

JOBBERS AND DEALERS WANTED EVERYWHERE

Standard Automatic Manufacturing Co.
50 Church Street - - - - - NEW YORK

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
New Catalog of Coltrin Mixers

A catalog of more than usual value and interest has been issued by the Knickerbocker Company of Jackson, Mich., covering their complete line of "Coltrin" Concrete Mixers. The machines of various sizes are very clearly illustrated and described and the construction of the various parts is shown in such a way as to be easily understood.

Every contractor or cement worker should have this catalog so as to examine the merits of this line. We note from the foreword that the Knickerbocker Company ships on five days' trial to trustworthy parties anywhere in the United States, the mixer to be accepted if it will do as they claim. If the mixer is not accepted, it will be taken off your hands.

Johns-Manville Remove to Larger Quarters

Owing to greatly increased business the H. W. Johns-Manville Company announces the removal of its offices now located at 85 Sheldon street, Houghton, Mich., to more commodious and convenient quarters at 96 Sheldon street, where they will be better prepared to serve their patrons.

As in the past, Mr. S. T. Harris, who has been associated with the company for a number of years, will be in charge of the offices at the new address.

Wood Shingles Not a Proper Roofing

At a recent meeting of the Board of Trade of the city of Worcester, Mass., F. H. Wentworth, secretary of the National Fire Protection Association, discussed the subject of the shingle roof. In his opinion the wooden shingle is not a roof covering, but its use for this purpose is a genuine crime. "Except that they are not placed with malicious intent, wooden shingles have all the dire qualities of fagots piled about the victim to be burned at the stake. Any person who witnessed the Chelsea conflagration cannot be other than the enemy of the shingle roof.

"If the roofs of a city are incombustible, any conflagration in it will have a distinct fire line, and this fire line will, of course extend itself, as the conflagration advances. In Chelsea, after the first hour, there was no fire line. The whole city was awre from the different centers, caught from shingle roofs. The belated citizens who sought to save their goods knew not where to fly. Horses, dogs, men, women, children, cats, and swarms of rats ran in the streets together, the live coals dropping upon them as they sought avenues of escape. They were impoverished victims of the shingle roof, but for which half the household goods in Chelsea might have been saved."

These words of Mr. Wentworth should be pondered by all builders. The shingle roof is a relic of the days when our
"The Clear Track"

Two men, a thousand miles apart, talk to each other by telephone without leaving their desks.

Two wires of copper form the track over which the talk travels from point to point throughout a continent.

Moving along one railroad track at the same time are scores of trains carrying thousands of passengers. The telephone track must be clear from end to end to carry the voice of one customer.

The Bell system has more than ten million miles of wire and reaches over five million telephones. This system is operated by a force of one hundred thousand people and makes seven billion connections a year—twenty million "clear tracks" a day for the local and long-distance communication of the American people.

*The efficiency of the Bell system depends upon "One System, One Policy, Universal Service."*

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES
A six inch lap is better than a three inch lap. It gives better satisfaction against leaks and permits nailing down on the under sheet only, so that no nail heads appear on the surface. Otherwise this is the same Granite Roofing that we have sold for 25 years for use on great factories. It is immune from damage by coal smoke or cinders, and it has a sea grit surface which makes painting entirely needless. Behind it is a reputation that has Passed the Quarter Century Mark.

**EASTERN GRANITE ROOFING CO.**
Chicago

WE WANT TO ESTABLISH
Tesco Marble Factories
IN THE FOLLOWING CITIES

New York
Philadelphia

Indianapolis
Atlanta

Kansas City
New Orleans

Chicago
Minneapolis

Dcnver
Seattle

Los Angeles
Cuba—Havana

Canada—Montreal, Winnipeg and Vancouver

Since Tesco Marble is a real marble in its analysis and surface appearance the demand has come from all sections of the United States and overwhelmed our present factory facilities in Milwaukee, consequently it becomes absolutely essential to meet the demands.

We are ready to open negotiations with responsible parties for the manufacturing rights in the above named cities. Our marble is thoroughly covered by patent rights exclusively our own, thus assuring you absolute safety on your investment.

Tesco Marble is the marble of the age. Best financial references required. Full information regarding investment, profits, etc., will be mailed.

**Tesco Products Company**
N. W. NORRIS, President
Main Offices: 1-3 Builders and Traders Exchange
MILWAUKEE

population was small, in comparison with its present size, and large cities were not crowded with buildings. The notion of protection against fire had scarcely been thought of in those times, so little was the chance of serious danger from this source. Should a fire occur in a house, it could generally be extinguished without communicating to another. But in these days when large areas are covered with adjoining buildings, the power of flames to spread has been multiplied enormously, and the protection of the roof is one of the first necessities which the growth of this destructive power has created. Non-combustible roofs should be one of the leading demands of the cautious home builder now.

In this connection we wish to call the attention of our readers to a new metal shingle that is being placed on the market by The Edwards Manufacturing Company, known as Edwards Interlocking "Ajax." They claim it to be the most perfect metal shingle ever invented. Note particularly the perfect embossing and sharpness of pattern.

Then there is the interlocking device, which provides for expansion and contraction and conceals all nails from the weather. These shingles when properly applied are absolutely guaranteed to be wind, weather, storm, fire and lightning proof. The patented interlocking device is so constructed that it is impossible for the hardest rain or driving snow to penetrate. Manufactured from best quality Worcester grade terne plate, furnished painted or galvanized (regalvanized after formation), size 10 by 14 inches.

Further information, samples, prices, etc., can be had by addressing The Edwards Manufacturing Company, 401-417 Eggleston Ave., Cincinnati, Ohio.

**Chicago Machinery Exchange**

About the first of February the Chicago Machinery Exchange will move into its new building on Washington Boul. near Ann St. This building, illustrated herewith, is of mill construction, three stories high and with a floor space of 60,000 square feet. Everything, from office equipment to facilities for manufacture and repairing, will be modern and up-to-date and will be installed with a view to facilitating, to as great a degree as possible, the ability of this concern to handle its trade.

Under the direction of Mr. Waldemar Giertsen, its owner, the Chicago Machinery Exchange has had a remarkable growth, and now enters a new era. The original business of the company consisted in dealing in second-hand machinery, but this stock was soon replaced by a complete line of the best types of woodworking machines. The remarkable success of the Exchange is undoubtedly due to the quality of the goods handled, the unusual facilities for the best service on all sales and exceptional reputation Mr. Giertsen has acquired for fair dealing with all customers.
Thin Hardwood Flooring
Will Increase Your Profits

You can easily build up a big business right in your home town, Mr. Carpenter, by laying "Thin Flooring." There's big money in it for you and it gives you the chance of replacing the high priced floor specialist.

Our flooring is the best hardwood flooring on the market because:
- It requires less labor to lay. Our special tongue and groove, found on no other flooring, makes it the easiest to put together.
- It is absolutely level. Each piece is absolutely uniform and perfect, producing a uniform and perfect finished floor.
- It is most beautiful. The finished floor looks just like a solid expanse of hardwood. No nails can show and it seldom requires scraping.

- It is most sanitary. No dirt, dust or disease germs can catch or lodge in the floor, because there are no seams.
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Cast iron can not be gilded or silvered well by direct deposit. Copper or bronze deposits are better, though not perfect; but if the iron is tinned, the coat is adherent, and will readily receive the other metals.

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- Comparative tests.
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- Ways of making product.
- Selecting materials.
- Forming the product.
- Steam curing.
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- Weights of materials.
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- Profits in concrete.

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How did your superintendent, or general manager, or foreman, or department chief and the position he holds? By showing knowledge of his work; by proving that he had ability; by getting ready when he was in the same job you now hold.

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Mining Engineering
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When Writing Advertisers Please Mention the American Carpenter and Builder.
YOU DON'T HAVE TO WAIT for good building weather when you use Bishopric Wall Board. This substitute for lath and plaster is made of kiln-dried, dressed lath, imbedded in hot Asphalt Mastic under pressure of 500 pounds to the square inch, surfaced with sized cardboard and cut at the factory into 4x4 ft. sheets, of uniform thickness (\(\frac{1}{2}\) inch), which are easily and quickly nailed to studding, ready for immediate application of wall paper, paint, burlap or other decorations.

The lath forms a perfect binder—a guarantee against warping or twisting out of shape. Furthermore, insures perfect adhesion when nailed to studding. Beware of cheap imitations. Bishopric Wall Board is protected by U. S. patents. Prosecution will follow infringement.

PRICE AND SHIPMENT: From Nearest Point: Crate of 16 sheets, covering 256 sq. ft. of surface, $6.40 or $2.50 per 100 sq. ft., f. o. b. New Orleans, La., Cincinnati, O., or Alma, Mich.

Bishopric Sheathing is made of same materials as Wall Board, but finish is not necessarily so fine, and therefore costs less. It is of uniform thickness, insuring a perfectly even surface when applied. It is nailed to studs, with lath and asphalt side exposed. Over laths weatherboards are nailed or cement is 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 Sheathing is a non-conductor; keeps the building cooler in summer and warmer in winter. Moisture cannot penetrate it; is proof against vermin. The pests cannot bore through the tough, gummy Asphalt Mastic. In applying weather-boards over the laths, dead air spaces are left between the laths, forming splendid insulation. Bishopric Sheathing does away with the expense of building paper and cost of its application. One wagon load of sheathing covers an area from six to ten times as great as one load of lumber—a tremendous saving in hauling. The cost of applying ordinary wood sheathing is from $5 to $10 per 1000 feet, whereas the cost of applying Bishopric Sheathing is but $2.50 per 1000 feet.

—A saving of about 75%. Furthermore, 1,000 square feet of wood sheathing covers but 750 feet of surface, 20% less being due to tongue and groove. In applying ordinary lumber, heavier scaffolding, more tools and greater scaffold floor-space are required. In applying Bishopric Sheathing one man drives a few nails in each sheet; a common laborer or boy can finish the nailing. 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.

Bishopric Sheathing is used with splendid result under flooring and roofing boards. Under floors it serves as a sound deadener and keeps out dampness; under the shingles it keeps out summer heat.

Illustration to right shows Bishopric Sheathing nailed to outside of studding and exposed lath and Asphalt Mastic coated with cement. The artist has indicated with arrow exposed lath. This form of cement construction is most durable as well as economical; is fire-proof, moisture-proof, wind proof as well as proof against heat and cold. The cement firmly adheres to the laths, making a solid, smooth exterior. Spaces between parts of laths not fully imbedded in Asphalt Mastic form an excellent key for firmly holding the cement. For factory or residence this form of cement or stucco construction is the cheapest and best known.

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Write for descriptive booklet and samples of Bishopric Wall Board, Sheathing and Roofing—ALL SENT FREE.

The Mastic Wall Board & Roofing Mfg. Co., 24 E. Third St., Cincinnati, O.
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"DEFIANCE PATENT WOOD WORKING MACHINES"
have been 60 years making themselves known all over the world "as the trustworthy kind"

Modern American tools for making spokes, hubs, rims, wheels of every kind, wagon, carriage and automobile woodwork, shafts, poles, neck-yokes and single-trees, handles of every description, spools and bobbins, chair and table legs, golf sticks, gun stocks, insulator pins, oval wood dishes and general wood working.

We issue a 535 page cloth bound and illustrated catalogue. If you are interested, write for a copy.

Modern American tools for making spokes, hubs, rims, wheels of every kind, wagon, carriage and automobile woodwork, shafts, poles, neck-yokes and single-trees, handles of every description, spools and bobbins, chair and table legs, golf sticks, gun stocks, insulator pins, oval wood dishes and general wood working.

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IMPROVED STEEL SQUARE

The difference between good and indifferent Carpenters' Squares lies in something more than excellence of material and workmanship, which are, of course, among other "Sargent" features—it is in the qualities that increase its all-round efficiency. That is why the practical "Sargent" Standard Steel Square is the universal favorite wherever Squares are used. Our latest model has the scales and markings which enable the carpenter to lay out all kinds of work and to calculate quantities with an ease and accuracy never before thought possible. "A practical treatise on Steel Square" is what several recipients have declared our little publication. Copy free simply by mentioning you saw this ad in the American Carpenter and Builder.

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INSTALL YOUR OWN FURNACE—SAVE MONEY THROUGHOUT

Buy a Jahant Down-Draft Furnace direct from the manufacturer and save the middleman's profit. Set it up yourself and save the cost of installation. The Jahant consumes every bit of fuel—that cuts down bills. No complicated parts to break—no repair bills. We pay the freight. The Jahant Down-Draft Furnace can easily be installed with our set of free tools. We guarantee to refund your money and take back the furnace after a years trial if you are not satisfied

Our Free Furnace Book contains a vast amount of information on different methods of heating. It should be read by all who depend on artificial heat. Sent free on request

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If you have an unsatisfactory job of hot water heating, we can cure it at a very small cost and without remodeling.

Write us for full information regarding this eminently successful system that has revolutionized hot water heating.

In use throughout the U.S., Canada and Foreign Countries.

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EVERSON VACUUM CLEANER

WHAT YOU HAVE BEEN WAITING FOR

A high grade, noiseless type, non-vibrating vacuum cleaner. Conceded by experts to be the most perfect type of a portable (weight 35 lbs.) vacuum cleaner yet invented.

Price $60.00 complete, which includes a full set of tools for every purpose of cleaning.

FULLY GUARANTEED

Our principle of dust separation maintains efficiency from start to finish of cleaning. Something unusual in other makes of vacuum cleaners.

We use Holtzer-Cabot Motors exclusively.

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Improved Star Furnace

Meets every requirement for durability, simplicity and ease of management.

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Its heating power is wonderful and cost of upkeep is the minimum.

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CONTRACTORS and BUILDERS

THIS WILL INTEREST YOU

A furnace for small houses, cottages and bungalows, at a small price.

NO PIPES—NO LOST HEAT

Write us for particulars about the

Great Bell Furnace.

American Bell & Foundry Company

NORTHVILLE, MICH.
Universal Wood-Worker

Planes, Joints, makes moulding, Rips, Cross-cuts, Gains, Dadoes, Rabbets, Tenons, Raises Panels, Bores, Mortises, in fact its range in general work is unlimited.

It is a machine every shop of any importance should have. It is ten years ahead of any other wood-worker on the market. Write for photographs, circulars, prices, etc.

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In This Improved Swing Saw Machine the Saw Arbor Travels in a Perfectly Straight Line

P. Pryibil No. 5 Parallel Swing Saw

Also for grooving, gaining, rabbeting, tenoning, etc. Send for prices and catalog.

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"That Coupon Gave Me MY Start"

"It's only a little while ago that I was just where you are now. My work was unpleasant; my pay was small. I had my mother to take care of, and it was tough sledding trying to make ends meet. I hadn't had much schooling. I didn't know enough to fill any better job than the one I had.

"One day I saw an advertisement of the American School. It told how other men got better positions and bigger salaries by taking their courses. I didn't see how a correspondence course could benefit me, but as long as it didn't cost anything to mark the coupon I thought it was worth investigating at least. I marked the coupon and sent it in on the next mail.

"That was two years ago last April, and now I'm drawing more every week than I used to get in a month."

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.
1911 ANNOUNCEMENT

Our 1910 catalog of concrete machinery will be the most magnificent publication of its kind ever issued. It will describe the entire line of "Northwestern" Concrete Machinery, molds and tools. It will contain hundreds of beautiful half-tone engravings taken from actual photographs. It describes everything in the concrete machinery line and is an encyclopedia of what you ought to have at prices you ought to pay. It is valuable as a reference book, whether you buy our machinery or not.

WHOLESALE PRICES

Block Machines, $10 to $250; Brick Machines $15 to $47; Mixers $22 to $508; Porch Column and Baluster Outfits $15 to $40; Cap and Sill Moulds $11 to $25; Lawn Vases $15 to $25; Ball Moulds $2 to $17; Grave-stone Moulds $7 to $64; Well Curbing Moulds $4 to $7; Drain and Sewer Tile Moulds $6 to $68; Block Cars $11 to $17; Fence Post Moulds $7 to $12; Gasoline Engines $40 to $500; and dozens of other articles such as Trowels, Pointers, Rollers, Groovers, Levels, Shovels, Wheelbarrows, etc.

We figure our prices at so much per pound and charge no fancy prices on account of patents, territory rights, etc.

WE ARE CONCRETE MACHINERY EXPERTS

We are distinctly manufacturers and own and operate the largest factory of its kind in existence. During 1910, we have added to our plant another foundry, 200 ft. long by 100 ft. wide, giving us room for one hundred additional moulders. We have also added three new buildings to our manufacturing plant and very extensively to our machinery equipment.

Besides the Northwestern line, we manufacture complete lines of several other large concrete machinery concerns, and we are in the market for manufacturing propositions of this kind at any time. With a moulding capacity of fifteen tons of iron per day in our foundry, and a floor space of over one hundred thousand square feet in our shops; with a large force of pattern makers, moulders and machinists who are experts in this business, we are naturally in a position to negotiate for the largest contracts.

OUR WHOLESALE CATALOG IS AT YOUR DISPOSAL

We want everyone interested in concrete machinery, to have one of these catalogs. Send us your name and address and state what particular machine, or moulds you are interested in.

NORTHWESTERN STEEL & IRON WORKS

ASK FOR CATALOG D

Eau Claire, Wisconsin

TAYLOR FOLDING COAL CHUTES

FIT ANY WINDOW • • • • • ARE OUT OF SIGHT WHEN NOT IN USE

They are handy and durable, keeping basement windows in harmony, and they afford a light coal bin. Handles either wood or coal. Ours is the complete line.

WE CATER TO THOSE WHO WANT THE BEST

TAYLOR COAL CHUTE CO. KEWANEE, ILL.

GENUINE BANGOR

Roofing Slate Structural Slate Blackboards

Large Facilities, Prompt Deliveries

EAST BANGOR CONSOLIDATED SLATE CO. East Bangor, Pa.

DOW Wire & Iron Works

Iron Lintels

(Beams, Angles, Anchors, Hangers. Ornamental Cast Iron Fronts and Stairways.

Improved Hand Plumb and Level

S AVES its cost every day in the year. Takes place of the old style plumb and level. Can be worn on either hand without hindrance. Guaranteed absolutely accurate. Its price is the only cheap thing about it. It will last a lifetime. Send us $1.50 and if not satisfied money will be refunded.

Armstrong & Edwards

Centralia, Ill. Ref.; Old National Bank

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
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

“TRUS-E-CON” JOIST HANGERS

Strongest
as shown by University Tests

Made from OPEN HEARTH STEEL.

SAVES cutting and weakening of timber.

SAVES labor in installation.

LOWEST FIRST COST

All styles and sizes for brick and Concrete Walls, Steel and Wooden beams.

WRITE TODAY FOR PRICES TO SPECIALTY DEPT.

At the Chicago Cement Show, Feb. 17th to 23rd.
Spaces 77, 78 and 79.

TRUSSED CONCRETE STEEL CO.
344 Trussed Concrete Bldg., DETROIT, MICH.

Measured by its Ability
to expand to meet every requirement of a growing plant—its method of operation, allowing for the use of a coarse wet mixture, with fine facing—its simplicity of construction and ease of operation.

THE Hercules IS THE BEST
Block machine value that money can buy. Hundreds of these machines are in daily use everywhere. They have a world-wide reputation.

If you are interested in the manufacture of concrete blocks, it will pay you to write for catalog.

Century Cement Machine Co. 258-278 St. Paul Street Rochester, N. Y.

Willis Skylights

Our method of shipping Skylights—Knock Down—saves freight rates and also insures their safe carriage. They are quickly set up without using any putty.

Our equipment is complete, so let us figure with you on anything you may need in Sheet Metal Building Materials.

Our new free book on Skylights and Ventilators is just off the press. Send for it today.

WILLIS MFG. CO., Galesburg, Ill.

The most beautiful, practicable and durable Bar in the world.

Makes any angle. Allows for the settling of building. The most beautiful, practicable and durable Bar in the world. "Holds with a grip of iron yet with a touch of Velvet".

Glass set from the outside. More good features explained in our catalog. Send for a copy before you repair or build. Write today.

VOLTZ MFGR. CO.
1101-1103 S. 8th St. ST. JOSEPH, MO.
"WOULD BUY NO OTHER"

ALBION, ILL., Sept. 6, 1910

THE KNICKERBOCKER CO.,
Jackson, Mich.

DEAR SIRS:
The Coltrin Concrete Mixer, bought of you last April has proven an entire success. Have run it steadily since last May without one cent for repairs. I put in one job of 45,000 sq. ft. 3-inch concrete, 1-inch topping, with 15 gallons of gasoline. Would buy no other mixer.

Yours truly,
R. A. McHENRY.

Coltrin Concrete Mixers

MANUFACTURED EXCLUSIVELY BY

THE KNICKERBOCKER CO.
JACKSON, MICHIGAN

STEAM—GASOLINE ENGINE—ELECTRIC—HAND POWER

Write for 1911 Catalog
See them at
COLISEUM, CHICAGO, FEB’Y 17-23, 1911
SPACES 39-40

SHIPPED ANYWHERE IN UNITED STATES ON
FIVE DAYS TRIAL.

THE MILES SIMPLEX MIXER

Continuous Feed, Batch Mix, Low Down Steel Frame, 3 Hoppers, Positive Feed. Attractive Price.

"The Miles" No. 5,
Down Face, Wet
Concrete Block
Machine

Makes Stone in Lengths,
4", 6", 8", 10", 12", 16", 18"
20", 22", 24". In Width,
4", 6", 8", 10", 12". In
Height, 4", 6", 8". Also
Angle Stone, Circle Stone,
Gable Stone, Hollow or
Solid Stone.
The Contractor’s Friend
Simple, Strong and
Rapid. Lowest in Price.

WRITE FOR NEW 1910 CATALOGUE

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CONCRETE MEN ATTENTION

Galloway Engines are made in all sizes from 1½ to 28 H. P. They run on gasoline, naphtha, kerosene or distillate. We are furnishing complete mixing outfits and also double air space block presses. The engine is built on the same foundation as a locomotive and is run on the engine you buy. You have the privilege of trying the outfit 30 days. If it is in any way unsatisfactory we refund your money with interest and pay freight both ways.

The Galloway Gasoline Engine
SIMPLEST ENGINE BUILT

Only four things to do:
Turn on the switch, turn on the oil, turn on the gasoline, give the fly wheel a start and the Galloway will go right along all day without further attention. It is ideal power for a small shop, and it's got the capacity to take care of your growing needs.

The Galloway has been classed as a standard, high-grade engine for fifteen years. Over 4,000 in use in Iowa alone. Thousands in every other State and Territory.

If you try the Galloway engine you will find that it is not pretentious. Remember, the bore and stroke count, and you don't have to drive your engine faster than you ought to drive it to get the rated horse power. Rated by actual brake tests.

On the larger sizes, if it is not entirely convenient for you to pay all cash, we will give you a note for the balance at the regular rate of interest for six months. We make the best, and we price them at a reasonable figure. Write today.

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WATERLOO, IOWA

EVERYBODY Knows that this Block

is frost and moisture proof. That is why no other block can be sold where this is made. No cutting prices to meet competition, because the Miracle Double Air Space Block has no competition.

Our Automatic Machine is within reach of everyone.

Write now for catalog and prices—and be ready to fill orders March 1st.

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CHICAGO

YOU CAN MAKE BIG MONEY in Concrete

This FREE Book Tells How

You can start with little capital, make $10.00 to $50.00 a day. Experience not required.

SEND the coupon and get this free illustrated book. Every carpenter and contractor, in fact, every reader of this paper, should have a copy. It will give you the actual experience of many successful concrete factory owners in their own words. It will tell you all about this business.

All You Need is a HELM COMBINATION PRESS For Dry Wall

—80,000 POUNDS PRESSURE—
Very rapid—Easy work—No tamping

Send for the Free Book and learn about date improved press and building process. It will surely pay you.

We will also send you a hand book on brick and block making

Every concrete man should have this. It illustrates and explains the entire process, including steam curing and gives many valuable reference tables. If you own a plant or think of starting one, send for these two valuable free books today. Just send the coupon and get them free. No obligation on your part.

Helm Brick Machine Co.
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Traverse City, Mich.

Please send me Free the two complete books as advertised in The American Carpenter and Builder.

Name...........................
Address........................

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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.
MADE IN ALL GAUGES, ONE STANDARD SIZE 16\(\frac{1}{2}\) 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.

A Detail Drawing Of The Only Practical Double Gutter Ever Made
Park's double gutter and cornice mould combined. Just what you have been looking for.
Ask your dealer or write to us for the detail sheet showing our eight styles of this gutter and a complete line of sheet metal roof trimmings. Every architect should have this detail sheet to specify from.
We manufacture a complete line of sheet metal work for buildings (watch this space).

MESSENGER & PARKS MFG. CO.
The Prompt Shippers.
Aurora, ILLINOIS

Practical Art Metal Ceilings
Quickly and easily applied. We are the only manufacturer 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


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NOTICE TO ADVERTISERS

Forms for the February number of the American Carpenter and Builder will close promptly on January 20. New Copy, changes and orders for omissions of advertisements must reach our business office, 185 Jackson Boulevard, Chicago, not later than the above date to insure attention.

AMERICAN CARPENTER & BUILDER Co.
Let The Brush Runabout Help Do Your Day's Work

If you are a contractor, carpenter, an architect, or have anything to do with building, you need the Brush Runabout in your business.

Stop and figure up how much time you lose going from one job to another on which you or your men are engaged.

It would mean a good deal to you—in actual dollars and cents—to cut down this lost time, to go quickly from one job to another at a moment's notice without waiting for uncertain street cars, or relying on the slow horse and buggy. It would enable you to keep in closer touch with your work.

Scores of firms connected with the building trades have found the Brush Runabout a valuable business asset. The photographs above show a few of these. The accompanying list—a partial one—is given to suggest the many allied businesses in which the Brush is in constant profitable use. These concerns have given the car a thorough tryout. Profit by their experience and let the Brush save you time and money.

The Brush is dependable—it's perfect score in the arduous Munsey Tour and other contests (where many big cars couldn't stand the pace) proves this. It is economical—the experience of thousands of owners shows an operating cost of scarcely a cent a mile. It is simple to operate—9-year-old Louie Abernathy drove a Brush Runabout all the way from New York to Oklahoma. You don't have to employ a chauffeur or be an expert mechanic to drive the Brush.

Let us demonstrate what the Brush can do for you. Just send us a postal and say "Show me what the Brush will do for me in my business."

Our local dealer will be glad to demonstrate the car to you. If we haven't a dealer in your town, it will pay you to communicate with us direct.

BRUSH RUNABOUT COMPANY, 162 Rhode Island Avenue, DETROIT, MICH.
(Division of United States Motor Company)

SOME BRUSH USERS AMONG THE BUILDING TRADES

Contractors
E. H. Bush Oklahoma City, Okla.
W. E. Hayworth Lexington, Iowa
J. E. Latham Geddes, S. D.
Wm. Smith Valentine, Neb.
Guy Salisbury Geddes, S. D.
Sutton & Stephenson Philadelphia
Cement Contractors
J. H. Hinkle & Co. Philadelphia
Cement Block Works
L. L. Robinson Belgrade, Neb.
Calciminers
M. Ewing Fox Co. Chicago
Decorators and Painters
Sam Severson Eau Claire, Iowa
Kayser & Allman Philadelphia
Lumber Dealers
Carpenter, Kendall & Naylor Co. Detroit
Hunton, Weeks Co. Detroit
Lowrie & Robinson Detroit
Plumbers and Gas Fitters
Ernst Bros. Detroit
J. C. Flinknagen Chicago
Walls, Owen & Stambach Philadelphia
Plumbers' Supplies
D. M. Gilmore Co. Minneapolis
Roofing
Philip Carey Co. Detroit
Roofing Materials
Sheet Metal Roofers
M. L. Jennings & Co. Chicago
HERE are two special slim taper files—the slimmest taper files made. Just the kind you need for fine tooth saws. They go right to the bottom of the teeth, cutting true and quickly. These two files will be sent you absolutely free when you mail the coupon. Then test the files in every possible way. You will find

**E. C. S.**

**KEEN KUTTER**

**Special Slim Taper Files**

are of a whitey-grey color throughout—a sure indication of uniform temper. You will find every tooth of the same depth. This means 100% cutting efficiency compared with the 65% of ordinary files. You will find they are very long-lived. In one particular case a single file sharpened 35 saws.

Fill out the attached coupon to-day and the two files will be sent you absolutely free. Then test them yourself. That's all we ask.

"The Recollection of Quality Remains Long After the Price is Forgotten."

Trademark Registered - E. C. SIMMONS.

If not at your dealer's, write us.

**SIMMONS HARDWARE COMPANY (Inc.)**

St. Louis and New York, U. S. A.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
WE INITIATE - NEVER IMITATE

Time-Savers

50%

of the time required to hang a door can be saved by using "NATIONAL" ornamental Butts. Some contractors say they can save more. Figure up the time spent in a year in hanging doors and you will see how much it is to your advantage to use them.

Another exclusive feature—the new false tip is threaded and screws into the butt. The slot is for a screwdriver, making it easy to remove the pin. Also shows which is the bottom of the butt.

STYLE No. 400B

here illustrated can be furnished in any finish and in all sizes from 1½-inch to 4½-inches inclusive.

Ask for Booklet Ornamental Ideas and give us your dealer's name.

Directions—Attach butt part "A" to jamb first, then set and wedge door or into position and attach Ornamental Leaf to surface of the door. Simple, isn't it?

Be sure to look for the flag—it's stamped on all "National" Butts—It stands for quality.

National Manufacturing Co. STERLING, ILL.