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See pages 235, 236, 237, 238
An Edwards Metal Spanish Tile Roof—Rightly Termed the "Most Beautiful Roof in the World."

A good architect figures on the roof to give the proper tone and finish to the house, and no other material—regardless of expense—will do this as effectively as Edwards Metal Spanish Tile.

Wood Shingles are scarce—hard to get—and at best last only from eight to ten years. Then there is the danger of fire—statistics prove that in nearly every case fires are caused by flying sparks or embers being communicated from one building to another through the roof.

Slate makes a good roof, were it not for the fact that it will break, crack and slide off, besides weighing about eight hundred pounds to the one hundred square feet.

Tin is the natural covering for a roof. It has qualities possessed by no other metal or material which peculiarly fit it for roofing purposes. We have known of instances where buildings erected 75, and in some cases 100, years ago outlived their usefulness and had to give way to more pretentious structures; when it came to taking off the tin roof, it was found to be in as good condition, practically, as the day it was put on. The objection heretofore to the ordinary tin roof has been that it was dull, flat, lifeless, monotonous, possessed nothing except that it made a very excellent roof as to quality and durability.

With our improved methods of manufacture, however, we are able to offer you in The Edwards Metal Spanish Tile the only logical solution to the roofing question of today. Using our own special brand of tin plate, the sheets are perfectly squared and cut to the required size; they are then fed into a powerful press, which stamps out the design, each tile being a perfect counterpart of the other, so that laying them on the roof is but a matter of following straight lines. They can be applied without soldering, the use of special tools, and by an ordinary mechanic, at a very moderate cost. The method of interlocking forms the only perfect system of expansion and contraction, so essential in securing an absolutely water-tight roof. While in the majority of cases our Shingles and Tile have been applied only on new buildings, they can just as readily be used on old buildings.

"QUEEN ANNE" METAL SHINGLE
Size 10 x 14 inches

THE EDWARDS MANUFACTURING CO.
"THE SHEET METAL FOLKS"
Largest Manufacturers of SHEET METAL BUILDING MATERIAL in the World
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ON THE JOB
OR IN YOUR SHOP

THESE portable saw rigs will do all of your millwork and can be moved from job to job with ease. The engines furnished with these rigs are strong and water-hopper cooled. The rigs, ready to start when they reach you, include cross-cut and rip saws; dado head for plowing window and door frames, belt tightener, emery wheel for sharpening your tools, wrenches, etc. Two years were spent in getting these rigs to balance perfectly, and there is a total absence of vibration.

The All-Iron Rig, as shown here, weighs 1150 pounds, crated—the Engine being a strong six-horse, and pulls 14-inch saws.

These two Rigs are strong and will stand the very hardest kind of usage. They make you independent. We absolutely guarantee these outfits or return at our expense.

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Old Colony Building :: :: :: :: :: CHICAGO, ILL.
THE NEW SASGEN Circle Swing Derrick
Light in weight, speedy in operation. All metal-to-metal connections; weight 250 lbs. CAPACITY 1000 to 1500 LBS.
Manufactured by SASGEN BROS.
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For Cabinet Makers and Wood Workers. Simplest—Strongest—Cheapest—Best
Send for Catalogue of all kinds of Vises
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HERALDS THE NEW ERA IN FLOOR SCRAPING
Eliminates all defects found in other floor machines. Does away with the man-killing toil of the heavy-weight machine. It embodies the mechanical principle of the plane. Planes and scrapes floor at one operation. Does better work than most hand work. Most rapid scraper on the market.
"Wavy" Floors an Impossibility
Makes floor scraping simple and agreeable. Particulars on request.

THE HAVEN MFG. CO.

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WHY the
"ACME" is the Best

- BECAUSE, it is the easiest floor scraper to operate ever manufactured, owing to the fact that its working action is entirely automatic. The position of the operator when scraping is erect. No stooping, no lifting, no pumping motion necessary.
- BECAUSE, there are two small cams attached to the blade holder part that regulate each cutting stroke and prevent the blade from butting into or in any way marring the surface of the floor.
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- BECAUSE, it has a removable weight.
- BECAUSE, it has a brake, which, when set, permits you to pull or push the scraper about at will, without injury to the floor or blade.
- BECAUSE, the outfit includes the ACME BLADE SHARPENER, which is the only device on the market that assures you of having just the right cutting edge on a blade.
- BECAUSE, the outfit includes the ACME SANDER which is easily attached to the scraper.
- BECAUSE, the blades and other tools sent with the outfit are the best that can be obtained.

The above reasons are not imaginary ones, but are based on absolute facts. I am ready to prove this by offering to send the ACME FLOOR SCRAPING OUTFIT to you on a week's free trial. I will allow you to work with the machines as much as you like, and if at the end of the week they do not meet with your approval, just send them back at my expense.

Does this proposition sound fair to you? If it does, write me to-day for further information and booklet.

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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.

"Last a Lifetime and give Satisfaction to the end"

The Celebrated Barton Planes and Edge Tools for carpenters and all other woodworkers are unequaled by any other make for keen hard, smooth cutting edges. If your hardware dealer does not handle them, send direct for catalog. Be sure and specify "CARPENTER'S CATALOG".

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

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This machine is a dandy. It is strongly built. The arbor moves up and down in an arc so that the belt is always tight. Equipped with four gauges, two saws and counter shaft, including our splendid gear operated double acting, tilting, ripping fence.

Send for complete catalog of Saw Benches.

THE CRESCENT MACHINE WORKS
38-50 SOUTH FRONT STREET, GRAND RAPIDS, MICH.
"LOOK! before you invest. It pays to get the best."

Carpenters and Contractors who have used the "SPRING-DRIVEN" all agree that one day's work with it is better than three with an old-style "DEAD-WEIGHT."

As to hand-scraping a floor, let that be buried with the dead past.

The ANDERSON SPRING-DRIVEN AUTOMATIC ADJUSTABLE Floor Smoother has the necessary Weight, Adjustability and Power to do speedy, first-class work on any kind of floors—old or new, hard or soft.

Try this machine on your next job, whether you have any other machine or not. We will send it to you on approval. If you cannot see a big saving over what you have, send it back. Your decision is final.

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These three features form the Ackermann New Knife Sharpener—the invention that ensures a perfect cutting edge all the time. It means better floor scraping than hitherto—it means quicker floor scraping. Not a talking point but a device that saves dollars for every user.

Ackermann Floor Scraper

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

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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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You Will Never Regret Buying One

Wide Heel Brick Trowel
Made of Best Quality Crucible Trowel Steel.
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Best Quality Crucible Trowel Steel.
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Genuine Marshalltown Trowel
Ten Rivets. Imitated because they are good.

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On account of their self-evident Superiority in point of Accuracy, Convenience and Durability "STERLING" Transits and Levels are the recognised standard for Building Construction. Special facilities for promptly and economically repairing Instruments of all makes.

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ARE INDISPENSABLE FOR ACCURATE WORK
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For Sale Everywhere.
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THAT’S ABSOLUTELY PERFECT

Of all the floor scrapers on the market not one can be quite as good as the Star, because no other embraces such durable features.

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The Star does clean work. A patented Ball and Socket device allows the blade to be set diagonally at any angle. This gives a shearing cut to the machine. It means a finished floor free from planer marks and "waves." It works the same on old floors as it does on new.

Star Scraper Co. - Elkhart, Ind.

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The Union Floor Scraper

The Union will pay for itself in two days.

WE PAY THE FREIGHT

10 Days FREE

A Floor Scraper That Scrapes

One that actually does the work you want it to— that is the reputation that has been enjoyed by the WEBER Double Acting Floor Scraper for years.

Do you know why?

Because the Weber is the only Floor Scraper that has adjustable blade holders that can be set at the correct angle to scrape any wood—and a flexible frame which prevents chattering—makes no difference what the wood may be, the Weber will not leave waves in the floor.

You don’t have to take my word for it—try it ten days FREE of all cost to you—let me pay the freight charges—and when you get it give it a hard trial. Then if you’re not satisfied—send it back—at my expense—That’s liberal, isn’t it?

Write today for further information. Ask for my booklet and 1909 Price List of my 10 different models.

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THE UNION FLOOR SCRAPER

Price $35.00

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

The Union will pay for itself in two days.

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

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

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

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

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

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

Manufactured by:

The American Floor Surfacing Machine Company

TOLEDO, OHIO

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Portable Combination
Woodworker

GAS, GASOLINE or ELECTRIC POWER

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

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

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Builders' Exchange
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HAND AND FOOT - POWER
MACHINERY

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GENUINE CRUCIBLE
STEEL

THE STANDARD
FOR 70 YEARS

BE SURE YOU SEE
Russell Jennings

On the round of the bit. If the name is there it's the best bit you can buy

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“YANKEE” Breast Drill
with Automatic Double Ratchet
Adjustable Ball Bearings

Notice the little shifter between the gears:—
Notch 1—gives you a plain drill.
Notch 2—A Left Hand Ratchet for removing taps, etc.
Notch 3—A Right Hand Rachet.
Notch 4—An Automatic, Alternating Right and Left Hand Rachet, the bit turning continually to the right regardless of the motion of the crank. A great advantage at close quarters where only a short throw of crank can be obtained. A true time saver.
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Your Dealer sells “YANKEE” TOOLS

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Carpenter’s Boring Machine

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

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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.
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Complete ready to erect for $18.50
SELF RETAINING MACHINE
HARDWOOD CAR
SECTIONAL WEIGHT
ROPE, GUIDES, HARDWARE,
knocked down and shipped with the only complete directions for erecting ever issued

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CHAPLIN’S IMPROVED PLANES

We invite the
Severest
Comparative
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We want you to have a copy of our booklet
“A ‘Plane’ Talk About a Good Plane!”

We’ll gladly send you this booklet with our compliments, promptly upon receipt of your request.

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

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

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

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Think how convenient is this

ROTHMOTOR BAND SAW

Place it anywhere, no shafts or belts to bother with—Absolutely Dependable!

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Our Experience is valuable to you.

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Let us equip your shop with ROTHMOTORS.

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

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Makes Openings in All Sizes for MORTISE LOCKS

In hard or soft wood, complete job in three minutes.

Actual use of tool, one-half minute.

Thin Doors Handled as Easily as Thick Doors

Five Cutters with each machine to cover locks from ½ to 1½ inch thick. It cuts all the different lengths of openings for locks. Durable in construction; practical in results; weighs 12 pounds; will stand any strain. Inches cast in frame to show how far the cutter enters the door. The best mortiser made; saves time and money. Notched fingers continually keep the mortise clear of shavings. The clamps are provided with pads. Sent on ten days' trial to any reliable Contractor or Builder.

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The "Foote" Hammer Saw Set

Operated entirely by foot power, allowing both hands to control the saw, the stroke being absolutely uniform.

The "Foote" Hammer Saw Set is popular and a rapid seller for the reason that it is a pleasure to operate it and every user is delighted with the machine. It weighs three pounds, and is made of the best iron and has steel anvil and hammer.

Write for our special proposition to agents.

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Here is a **Gimlet**

Equal in quality and usefulness to any Brace Bit

**HANDLE OF SELECTED COCOBOLO WOOD**

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

**Price Postpaid** 15 cents each

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You will make no mistake in writing us before ordering elsewhere.

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**Standard Shutter Worker**

Opens and closes the blinds without raising the window.

Automatically locks the blinds in any position desired.

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

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

**The "AUTOMATIC" SASH HOLDER**

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

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

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

Automatic Sash Holder Company
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Every carpenter and builder can afford to invest in one, or more, of these machines. From our stock of 500 new and rebuilt machines contractors can obtain sufficient machinery to make them independent of local mills and their attendant delays and high charges.

Stop paying somebody else profit—put it in your own pocket. Be in a position to estimate under competitors. You can do this by installing your own machinery. All our machinery is of special construction to secure line finished surfaces and to reduce sandpapering to a minimum.

Prices are lower than you think. Send today for our monthly list of rebuilt machines (free to carpenters and builders).

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LUMBER, ROOFING AND PLUMBING
2,000,000 ft. new and second hand lumber at $8 per M. ft. and up. Laths, shingles, doors, windows, finish moldings, etc. New bath tubs with nickel plated fittings, $8 to $17.50. Low tank combination closets, complete, $10. White enameled lavatories, $4.50 to $9.

SEND US YOUR BILL FOR OUR PRICES
CHICAGO WRECKING and SUPPLY CO., 3640 Manchester Avenue, St. Louis, U. S. A.

Are You Interested?
The SAW or DADO HEAD brought into the work by a foot treadle, thus leaving both hands free to handle the lumber.
Gauges furnished for Ripping, Cross Cutting and Mitering.
For further particulars address
H. B. SMITH MACHINE CO.
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**ARE YOUR CLAMPS GIVING BEST RESULTS?**

Do you know about our improved gripping device?

**IT SAVES TIME!**

The special grade of steel we use?

Our Clamps are warranted unbreakable in use.

Catalogue showing 19 styles sent on request.

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**A Swell Head and A Swell Door**

are both pretty stiff propositions, but the latter is a mere trifle when you have

**The Taylor Door Jamb Adjuster**

A few turns of the screws make a perfect fit, whether the door swells or shrinks.

Send for folder explaining this cut.

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**STEEL SCAFFOLD BRACKET**

**THE TAYLOR**

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**JAMES L. TAYLOR MFG. CO., Bloomfield, N. J.**

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

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

**PARKER VISES**

Made Especially for Wood Workers

For Sale by Dealers

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**PARKS’ COMBINATION WOODWORKING MACHINES**

Make a Complete and Economical Operating Mill for Carpenters and Contractors

Take our No. 410 for instance—here is a Combination of Three Machines in One—

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

Ready for Instant Use
No Line shafts and large amount of floor space

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

Prices and Catalogue on Request.

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**SELF-SETTING PLANE**

No planes like it. See this paper for December, pages 301, 320 and 322, for large and large pictures. This advertisement contains only better to sell the same SELF-SETTING PLANE in any town on our regular 30-day trial guarantee. If it is not more than satisfactory to your customers, the dealer may return it to us within 30 days of this date, and we will refund the amount he sent us. If your dealer does not care to supply you, send us list prices and we will deliver the planes, charge prepaid, and if it is not just what you want, return it to us. No workmen, and we will make any change you desire. The GAGE TOOL CO., Vineland, N. J.

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

Ask your hardware dealer or write for free sample and catalog.

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In workmanship this saw possesses all the skilled mechanical features known to the art of saw making. The hang of the blade has been carefully studied and adjusted, to suit the fancy of the most critical.

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[November]

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For Seventy Years the Standard of Excellence

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Write us the request for a trial on your business letterhead. Mention if you prefer them mild, medium or strong.

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7. Automatic stops for holding saw.

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Carpenters in general are an ambitious lot. The apprentice wants to become a skilled journeyman; the journeyman carpenter works to get to be foreman; and the foremen, without exception, are ambitious to become building contractors, structural engineers and architects.

This spirit of self-improvement is good, for certainly every man owes it to himself to better his condition—to learn more so that he can earn more.

To this end carpenters and builders are in a most fortunate position. The approaching winter months, with the long evenings, offer a prime chance to get well started on a line of practical reading and study that will open up new possibilities for them, will explain the practice as well as the theory of building construction with all its allied branches, and will present a clear "perspective view" of the whole subject of modern construction and design. A superb, twelve-volume set of practical books has been especially prepared for this purpose, covering the entire subject. You will find them announced on pages 235, 236, 237 and 238 of this number. We want to recommend them to you for examination and study.

"To earn more, learn more."

Building and Loan Associations’ Prosper

The seventeenth annual convention of the United States League of Local Building Associations met and the home-seeking population of the country was represented by more than 500 delegates who at various times during the sessions of the convention announced that the condition of the many societies in the United States is better than it has ever been in the history of the organization.

According to the report Pennsylvania still leads in the roll of states from the standpoint of the number of branch associations, total assets and number of members enrolled. Ohio is a close second. Last year’s figures from every state show a marked increase over the previous year.

"The local building and loan associations," says the
report, "have been enjoying a practically uninterrupted period of prosperity, which has not even been retarded to any appreciable degree by the financial depression of last year. The figures for 1908 continue to show a marked increase in the membership and the total assets, as well as an increase in the total number of associations.

"According to the present report, there are 5,599 local building and loan associations in the United States, with a total membership of 1,908,811, and assets amounting to $775,665,008. This is an increase in membership over last year of 69,692, and an increase for the year in assets of $44,156,562. With the unsatisfactory business conditions prevalent last year, this must be regarded as a most remarkable showing and unmistakably indicates the stability and generally healthy condition of these associations. With reviving prosperity, they should, during the present year, make much greater gains.

"The volume of business transacted was not much in excess of the preceding year, due largely to the number of laboring men out of work and, consequently the usual amount was not saved. This condition naturally also increases the amount of withdrawals and did not admit of as many loans being made by the associations.

"The total receipts were $519,721,576, and of this sum $134,085,170 was loaned out on mortgages as against $209,925,072 in the preceding year. The total business transacted was at an expense of $5,548,504, or seven-tenths of 1 per cent., based on the assets. This fully sustains the contention made on behalf of these associations that they are economically managed. On the whole, the record of the year must be regarded as exceedingly satisfactory, considering the unfavorable conditions heretofore noted.

IT TAKES a bigger man to accept suggestions than commands.

France Prohibits White Lead in Paint

A FIGHT against the use of white lead in paint was started in France in 1904, and since then the battle progressed through different stages until July of this year a law prohibiting its use was finally passed. It was claimed that white lead was injurious to the health of the painters, but as the death rate was very low, averaging only one in every 7,000 or 8,000 painters, the contemplated law was fought for some time.

Another point upon which the two French houses differed was whether an indemnity should be allowed to manufacturers of white lead for damages they might sustain from the loss of the market for the goods they had in hand. The law as finally passed prohibits the use of white lead in painting buildings, inside or outside, after the expiration of three years. Within that time it is believed the manufacturers will be able to dispose of their product now on hand.

The Hole Will Shrink

A CORRESPONDENT asks if a hole bored in a piece of green wood will become smaller or larger as the wood shrinks. Although the answer seems almost absurdly self-evident to one who knows, there are very many who ask the question; or, not asking, believe that the hole will expand. Their idea is that the wood, shrinking, will draw away from the hole; but a few moments' thought will serve to remove this delusion. Suppose a 1-inch hole is bored through a stick 1 1/16 inches wide; and that the stick shrinks 3/8 inch—what then? If the stick was 2 inches wide—or a foot wide—and the shrinkage proportional, would the case not be the same?

The hole would shrink. One will readily understand if he imagines the hole to have been cut with a plug cutter having no thickness. He knows that the plug will shrink; and that if it was left in place, the surrounding wood would remain in contact with it as the whole dries. Why, then, should the mere removal of the plug cause a complete change in the direction of shrinkage?

Again: Suppose the hole bored in the center of a circular piece, leaving but a slender ring of wood. It will, I think, be perfectly clear that the ring will shrink; and that the hole will become smaller. Increasing the thickness of the ring, provided the wood is all of the same grain and texture, will make no difference in the shrinkage of the hole.

In the days when the old-fashioned rush-bottomed chairs were made in the backwoods it was the custom to make the legs of green wood; while the stretchers were made of seasoned stuff. The tenons on the stretchers were made to fit the holes tightly at the end; while they were slightly reduced in size toward the shoulder. Thus, when the wood of the legs shrunk, the stretchers were dovetailed in. No glue was used or needed.

The lumbermen "down in Maine" used to—and perhaps still do—put up spruce gum in miniature barrels which were something of a puzzle to the uninitiated. They would take a piece of white birch, say 3 inches in diameter and of proper proportional length, and bore a 2-inch hole through it lengthwise. They would then whittle the outside to the similitude of a barrel, and cut a croze in each end. Heads of seasoned wood, 2 inches in diameter, were then fitted; and, the barrel being filled with gum, temporarily secured in position. As the little barrel seasoned it closed on the heads till each filled its croze tightly; and they could be removed only by cutting them out. The shrinkage of a ring of sap wood of this sort is quite considerable, and the heads would extend deeply enough into the crozes to make them very secure indeed.

W. D. Graves.

SO MANY young men seem to forget that the first half of their years should make provision for the last.
How to Save Money—Put your Rent Money into a Home of Your Own
O IMPORTANT a part do tiles play in building construction in Spain, and of such varied use and interest are they, that they deserve special consideration. Their use is the thing which gives Spanish building construction its distinctiveness, its difference from that of other countries, to a large degree. Were the tiles and the arabesques eliminated from Spanish buildings the greater portion of them would indeed become poor examples of man’s handiwork.

As there is almost nothing in Spain today for which the Spaniards are not to a greater or less extent indebted to the Moors, who once maintained supremacy there, so it is with tiles. Those which are today used by Spanish builders are of the same designs—though usually of inferior quality—as those used by the Moors who centuries ago built the Alhambra at Granada, the great Mosque at Cordova, the Giralda at Seville, and the palaces of the Sultans at Fez, in Morocco. The Moors were not the first people to use tiles—they have been found by antiquarians in the older countries of the world so deep in the earth that the cities in which they were used must have fallen into ruins and had other cities built upon them long before the beginning of the Christian era—but they were made so well that mankind has not been able to improve upon them, either in material, color, or artistic design, for the last five hundred years. Just as the Egyptians, the Greeks and the Romans each perfected a style of architecture which mankind since has been unable to improve, so
the old Moors perfected their tiles and the peculiar decoration, half writing, half design, known as arabesque, to a point where further improvement was impossible.

Unfortunately one today sees much misuse of both these elements in Moorish architecture. In the cities of Spain, and in the "infidel" city of Tangier, Morocco, one finds tiles and arabesques prostituted to uses for which they were never intended, and with sad effect; just as the adaptation of a thing to purposes other than those for which it was designed almost invariably results in grotesque productions. The application of ornate decoration, "gingerbread work," scrollsaw designs—all right in the right place—to the exterior of houses and other buildings has produced facades that were either caused by, or were the cause of, a nightmare. And so the use of arabesques on railway stations, or of colored tiles on tombstones, has not been productive of the very best results. But in the old Moorish buildings, whether in Spain or Morocco, where they were used by men who knew how to handle them, and in some modern buildings, in cases where the builder had a superior artistic sense or had studied the old methods to better effect, the tile and arabesque are invariably the life of the building.

Tiles may be divided into two classes: those which are used as an integral part of the building or for elementary constructional purposes, and those which are used for decoration. While it is, naturally, in the use of the latter that the most striking results are apparent, the value of the former is by no means inconsiderable, either from the structural or the artistic viewpoints. The impression of mossy coolness given to a white-walled building by roofs of dark green tile runs very near to art, and is productive of physical refreshment as well as pleasure to the eye. To the person accustomed to looking upon roofs of dead gray shingles or brick-red clay tiles, the first glance over
a Spanish city with its white walls and green or pink tiled roofs is like looking upon a cool garden. Not all the roof tiles are green. Red ones are also largely used, but not the scarlet, clamoring red which one finds in certain other cities. They are more of a pink color, shading to crimson. Like the green ones they are usually glazed.

The title illustration shows a roof scene—a cluster of roofs which, with wooden shingles, would be indescribably ugly. The picture also shows better than words can tell the shapes of the Spanish roofing tiles and the manner in which they are used. It may be necessary to explain, however, that they are held together by small protuberances, or pegs, on the underside at the bottom of each tile, which fit into holes near the upper edge of the tile beneath it, or by a flange in place of the projections, which fits into a groove in the underlying tile.

The manufacture of building tiles is quite an industry in Spain, as may be imagined. At Granada and at Seville we visited tile yards. There is not much to be said of the method of their manufacture except that they are fashioned out of red or gray clay, colored or left in the natural shade, and then baked or glazed in big ovens. Our photographs show several views in the factories, or yards, at the two Spanish cities above mentioned. The tiles are produced at very small cost and are much cheaper than wood.

The purposes for which decorative tiles can be, and are, used is almost unlimited, and in every instance where their use is directed by an artistic and intelligent mind, the results are good. Modern artisans have never been able to handle the Moorish tile as the Moors handled it—or, rather, to produce the same glorious results. But that is undoubtedly due to the same reason that it is impossible for the modern artists to equal the old masters. Undoubtedly the colors of the old Moorish tiles—the finest obtainable—have improved with age. Also it is almost impossible for the modern artisan to absorb enough of the oriental atmosphere to produce the ultra-oriental results attained by the old builders. And yet another great drawback of the present day is the fact that while in the olden times each color and shape of tile was made separately, nowadays an entire design, with its different colors, is made on one tile.
Most of the tiles used in the old days were not over an inch in length, and often smaller. But now they are usually 6 inches square, the designs upon them formerly calling for the use of from 40 to 100 tiny tiles. It is quite apparent how this difference in materials produces difference in results. In a few places the smaller tiles are still made. In Tetuan, Morocco, for example, good imitations of the old Moorish tiles are produced, but the industry is carried on on such a small scale as to prohibit their general use. While it is true that the old Moors sometimes made and used large tiles, they were never imitations of the designs produced by the smaller tiles, and were only used where a heavy effect was desired.

The accompanying illustrations will serve to illustrate the difference in the new and old tiles. It will be seen that in the old style each color of tile is separate. In the new style, on the other hand, the entire figure or, in some cases, four of them, are on one tile.

Modern Spanish builders find tile work very useful—and supposedly ornamental—in many ways. In many buildings of Spanish construction a dado of tiles will be around each room, extending to perhaps 4 feet above the floor and topped off by a wooden molding. Fireplaces are usually faced with tiles and window sills and frames are frequently tiled. Stairways usually have a dado of figured tiles running on either side, and frequently the steps are made of white or gray tiles. Occasionally the front of the step will be of colored tiles. In many cases both plain and figured tiles are worked into the outside wall of a building, especially that surrounding the patio, or interior court or garden, in which case the effect is more pleasing to the eye than when they are used as a dado upon the front of a building, or when the windows and doorways are outlined with them, or when perhaps a row of figured ones run along the sidewalk and the sides of the steps, as may sometimes be seen.

In many cases—although not so much in buildings of today as of a few years ago—tiles are also generously used in business buildings. They have some advantages. They are sanitary, easily cleaned and do not gather dirt, and are durable. But they seem just a little out of place—like a statue of Venus de Milo would seem in a boiler factory.
Old Houses Made New by "Overcoating"

The argument most frequently made against frame houses is that the outside woodwork, siding and trim, is too short-lived. It is asserted, and with a good deal of truth, that the lumber now generally obtainable will not stand the weather. Even when frequently painted, it seems to go to pieces in a surprisingly short time, and adds its bill for repairs to the already large painting bill.

Prospective home builders, considering this matter, are deterred from building, or are persuaded to use some of the more expensive forms of construction.

Cement plaster "overcoating," to be applied at some future time, may solve the problem for such; certainly this overcoating finish is doing wonders in the restoring and remodeling of many old frame dwellings which seemed to have reached the very last stage of their usefulness.

The method is simplicity itself. When the clapboarding, shingles, or other outside timber work has become too much weatherbeaten to longer keep the house trim and snug, or when for any reason it is desired to renew the exterior, metal lath is nailed right on and the cement plaster, in two coats, is applied to it. This plaster coat is thoroughly weather and water-proof; and the lime in it, acting as a preservative for wood, stops all further decay of the timbers underneath. This is all done at a cost hardly more than double the expense of a good job of painting.

All the various finishes in use for ordinary cement surfacing are equally well adapted to this overcoating process. So the success of such a job from an artistic point of view has been tested and is assured.

The photographs presented herewith will show how easy it is to effect a complete transformation in the appearance of an old frame house by an exterior application of cement mortar. It is confidently hoped that a general adoption of this method will soon revolutionize the appearance of American residences in both town and country. With Portland cement in a plastic state it is possible to bring out in the most attractive way every artistic idea; and as the material is practically indestructible by time or the elements, every house so treated will be given a long lease of life under conditions conducive to the comfort and satisfaction.
of both owner, occupant and building contractor.

If no alterations of plan or design are intended, the method of procedure may be as mentioned above, for the most inexpensive job; or it may be as indicated in the accompanying working drawings. In the latter case it will be necessary only to rip off the window and door trim, and after nailing wood or metal furring vertically to the weather boarding on 12-inch centers, attach metal lath outside of the furring to cover all sides of the house. If extra warmth is desired it has been suggested that building paper could be first applied, over the siding and under the furring strips.
The cost of such cement plaster work complete, including lath, furring strips, and sheathing paper ranges from 8 to 12 cents per square foot, including contractor's profit. This cost applies to the straight run of wall; extras, of course, should be added for framing around doors, windows, copings, cornices, etc.

In some cases it has seemed wise to remove the shingles or siding before the overcoating is done. The job at Niles, Mich., illustrated, was of this kind. The
total cost for labor and material on this job was 62 cents per square yard.

In considering this expenditure in the light of an investment, it has been the experience of many that the saving in fuel and repairs otherwise necessary has been equal to from 10 to 20 per cent annually on the cost of the work.

The preparation of the cement plaster and its application on such a job is practically the same as for other stucco work. The following is a good specification for it:

**Specifications for Cement Stucco**

1. **Intent.**—It is the intent of these specifications to obtain a sound, permanent and water-proof stucco.

2. **Materials.**—The materials composing the stucco shall consist of,

   (a). Portland cement which has been carefully tested and found to satisfactorily meet the requirements of the specification of the American Society of Testing Materials.

   (b). Sand which is practically free from organic matter and uniformly graded in size from coarse to fine. Preference shall be given to a sand of spherical grains.

   (c). Hydrated lime which has been slaked with excess of water from double strength lump lime and allowed to stand at least a week before being used.

3. **Proportions.**—The proportions of the above specified materials by volume shall be five parts cement, twelve parts of sand and one part lime paste.

4. **Mixing.**—The cement shall be thoroughly mixed with the dampened sand and sufficient water added to give proper working consistency. The lime paste shall then be added and the whole composition most thoroughly worked until perfectly homogeneous. This composition shall only be made up in lots that can be immediately applied and any material that has been mixed with water over thirty minutes before applying shall be rejected.

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Artistic Little Home at Kenilworth, Ill., Rough Finished with Cement Plaster on Metal Lath
Starting the New Furnace Right

The first few days a new furnace is in operation is apt to determine its character, if furnaces have a character. If the furnace starts off well, as a good furnace should, the members of the household will be convinced that their furnace is a good one, and it will require a number of furnace misfortunes to remove the favorable impression after it has once been formed, says the Metal Worker. On the other hand, if the furnace behaves in an improper manner at first, doubts may be entertained regarding its future warming abilities. It is supposed the dampers in the hot air pipes have been turned in the proper direction to allow the heat to pass, and that the damper rods were put in the proper way, so the handle or ring will indicate whether the damper is closed or open. A mistake made in putting in a damper rod may cause much trouble, as the damper will appear to be open when it is closed, and much furnace talk may be required to explain why heat does not come up the register. If the cold air box is provided with a slide or damper, such appliance may have been left closed, so the furnace does not receive a supply of fresh air. There may be a wide crack under the hall door so the outer air may enter and quietly run down the hall register, thus preventing any warm air from coming up. This is not in use, too much air may be carried up the various flues, resulting in a great loss of heat. If there is not a good fire in the furnace the air may pass through without being properly heated, and then the furnace may be blamed for not warming the house, or the grate flues may be taking away the heat as fast as it is produced.

In some houses there are one or more rooms that require long pipes to convey the heat to them, and on this account the rooms do not receive the required amount of heat. A remedy may be found by incasing the pipes with tin or some of the various pipe coverings that are nonconductors of heat. If a room is closed tight it can hardly be expected that a supply of hot air can enter, there being no provision made for the escape of the cool air.

How do you determine the size of a furnace required to heat a house? Some look the house over casually and wind up with: "I guess a No. 28 will heat her all right."

The Much Maligned Cabbage

Wigg—What kind of cigars does Closefist smoke?
Wagg—Well, when you light one of them you instinctively look around for corned beef.

Common Sense

This question was asked upon an examination paper: "What steps would you take in determining the height of a building, using an aneroid barometer?"

The answer was: "I would lower the barometer by a string and measure the string."
Details of Modern Framing

SKETCHES MADE "ON THE JOB" SHOWING HOW CERTAIN FRAMING PROBLEMS ARE NOW BEING SOLVED—GOOD AND BAD IN MODERN CARPENTRY CONSTRUCTION

By C. Bryant Schaefer

These framing illustrations show what is going on in present-day carpentry construction. Methods that are believed to be most practical may not prove so when the last spike has been driven. Unless one has had considerable experience one may work out model details only to find it necessary to modify them when it comes to the actual work. It is therefore wise to be familiar with work as it is being done as well as to know what is best theoretically. One need not necessarily copy other people’s ideas; but they may get their own ideas whetted down in studying out the why and wherefor of this and that.

The framing of the overhanging bay illustrated in Fig. 1 is probably done in about the average way. The studding is set and the joists are laid up to the double trimmers. Then the distance is measured from there out as far as the desired projection and the outlookers cut and fitted accordingly.

A careful builder will not rely absolutely on his diagrams, but will always prove the figures by the actual work as he goes along. Where it is not convenient to fit and compare the work before cutting it out, care should be taken that there is room for a little adjustment. It saves time and material.

After the projecting joist come the face pieces. Then the short lengths of joist can be fitted in, and the flooring nailed down. The corner studding and window plates then follow. But a spiked together frame is no security against sagging and shrinkage; or against windows that stick and cracks that open in the future; or against a floor that humps up in the middle of the room; and plastering that buckles and cracks. Two mortised joints at the inner end of the projecting pair of joist would save the owner from future trouble. This particular building might have been constructed in this way; but cheap commercial work is never known to have such provision for strength and durability. If it did it would be widely advertised.

While those who sell houses call attention to good construction in a general way it would be more convincing to purchasers to have the good points explained more definitely and in detail. If builders would see that information like this is not lacking it would be a great help to the cause of good, strong workmanship.

The framing of a small gable, Fig. 2, takes in an entire attic room in a one-story cottage. The studs, plates and rafters are first set, leaving a space for the gable.

The gable studding is the full height of the story. They are continued back and around the inner side of the room with an opening for a doorway. The dotted lines show where a diagonal brace has to be
nailed while putting the framing together. The short rafters in the upper part of the roof are not yet in place. The gable rafters will probably be first set and then the valley rafters fitted in place to the ridge.

It seems to be a custom in some parts of the country to omit the ridge pole. It shows how weak and skimpy methods spread until it takes some determination to stand against them. In construction, as in politics, the majority is not always right.

A new problem for carpenters comes with the introduction of cement. It involves furring out to secure thickness and proportions resembling masonry work. Anyone acquainted with steel construction would call this skeleton construction in wood and solve its difficulties in a workmanlike manner. This is especially true of the roomy porches people like for their modern houses. The interior of a corner column, Fig. 3, is about as large as a small closet in a city flat. A mitered frame of 2 by 4 inch has to be made to hold the four corner studs in place, top and bottom.

A 2 by 10 lintel is put in place and rafters extended out over the same from the building. A like cornice framework is secured at the ends by spiking on a row of Outlookers. Another is mitered at the corner. The lintel is then increased in width by diagonal furring, usually on the back, the lintel having been placed far enough forward of the center of the column for that purpose. When this framing is complete the mill work can be put on, then the ceiling and crown molding.

Where the lintel is to be cement plastered it has to be furred out on both sides for lathing. A firm ground must, however, always be secured. The columns and porch rail are usually extended from the basement line up past the floor. A deep, firm foundation is absolutely necessary.

Convenience has established two methods of finishing a frame house. In the more expensive building the mill work is brought to the place already complete in its several parts and ready to be put in. The rough carpentry is finished for its reception. But in smaller houses or buildings planned with little mill work the moldings, and so on, with which to finish the job are cut and fitted at the building. This is illustrated in Fig. 4, which is a sketch of a cornice in progress of construction with part of the molding in place.

A form for this cornice is built of plain boards and the crown molding put on with the finishing touches. The sketch shows the board ends before being cut for matching with the gable finish. A frieze board will cover the sheathing ends under the gable. The gutter will probably be of a type nailed onto the roof sheathing with a narrow strip with brackets behind it and tin flashing to finish.

A cottage can be built just as strong and tight, putting everything together on the building, as where much ready-made mill work is employed. In combinations of shingles, cement plaster and sheathing, with bays and porches finished in the same material, some of the most artistic effects may be produced.

Many builders put up houses that look unintentionally plain and stiff. The thing to do is to have a perspective view so as to study it out before hand. It will then be seen how some slight alterations will produce the desired effect when applied to the building. A little change in the proportions of the porch, manner of connecting the bay to the exterior wall, a splay on a few rafters, or more prominence to some insignificant feature, all without calling for extra mill work, will enable the builder to keep up with the best taste of the day.

### Prize Designs for Cement Show

The Cement Products Exhibition Company offers a first prize of $200, a second prize of $100, and a third prize of $50 for a design for an ornamental center-piece to be constructed in the Coliseum, Chicago, for the third annual cement show, Feb. 18-26, 1910. Information as to the conditions is given in a circular that has been sent out. It is hoped that there will be a large number of competitors for this centerpiece. It is to be circular in form, 17 feet 6 inches in diameter, with a 9-foot aisle surrounding it. The
limit of height is 65 feet. We quote from the circular:

"The purpose of the competition is to secure a design for an ornamental center-piece to be built of cement or concrete and to be the central feature of the decorative scheme at the cement show. Those entering the competition will not be limited in form or type of construction. Each competitor will make his own suggestion for a center-piece and submit a design for it. The competition is open to all persons desiring to enter it.

"Location.—The center-piece is to be placed in the center of the main floor of the Coliseum, as shown on the official diagram of the cement show.

"Cost.—The cost of the center-piece complete is not to exceed $2,000. Each design must be accompanied by a brief typewritten statement of materials and methods of construction proposed and itemized cost based upon prices of material and labor in Chicago.

"Construction. The center-piece may be of either plain or reinforced concrete, concrete blocks or cement plaster; if of blocks, the so-called rock-face must not be used. The center-piece may be finished in any manner which will produce, in the opinion of the designer, a pleasing effect. The use of color is admissible, as well as decorative detail in relief which can be cast in molds. The designer must bear in mind that only four days are available for the construction of the center-piece in the Coliseum. Structural members or parts may be made in advance, however, and moved into the building four days before the opening of the show.

"Drawings Required.—A floor plan and a section at the working scale of ¼ inch to the foot and one elevation at a scale of ½ inch to the foot. An accurate perspective drawing at a scale of ½ inch to the foot to be rendered in color. Graphic scales are to be shown on all designs except the perspective. Additional drawings of details may be submitted if desired.

"All drawings must be mounted on heavy pulp board.

"All drawings must be completed and delivered to the offices of the Cement Products Exhibition Company, 115 Adams street, Chicago, not later than 5 o'clock, December 1, 1909. To each design entered in this competition there must be attached a plain, blank envelope, sealed, containing the competitor's name and address. No cipher or nom de plume, identifying name or mark, shall appear on the drawing or wrapper.

"The drawings will be judged by a jury of three disinterested parties, two of whom will be appointed by the Cement Products Exhibition Company, and the third by the Chicago Architectural Club.

"The announcement of the jury's awards will be made as soon after the close of the competition as possible. The jury's awards will be based upon:

1.—Appropriateness of design—
2.—General attractiveness of design—
3.—Its adaptability to concrete construction—
4.—Cost of construction—

"If in the opinion of the jury no designs submitted are sufficiently meritorious the first and second prizes will not be given.

"The prize drawings are to become the property of the Cement Products Exhibition Company. The right is reserved to publish or exhibit any or all of the drawings. The right is also reserved to adopt any design submitted for the construction of the center-piece or to adopt any part of any design presented. Some or all of the drawings will be exhibited at the cement show."

Intending competitors will address the Cement Products Exhibition Company, eighteenth floor, Commercial Bank building, Chicago.
How to Use the Steel Square

IT SOMETIMES occurs in framing a roof that the span, or width of gables, are of odd measurements instead of being in even feet. In fact, this is the case in most all buildings. The framework of the walls may be laid out without fractions; but the architect in order to work out the detail of the cornice to suit his fancy, may shove the seat of the rafter beyond or back of the plate line, regardless of what may be the width of the framework below the cornice, and thereby throw the roof calculations into fractions. He does not stop to think, nor does he care, what kinds of trouble he is piling up in store for the carpenter so long as it looks good to him.

Now, as a matter of fact, the fractions in the run or rise of the rafters need not bother, for they may be just as easily handled as even feet, and that too without using more than a mental calculation in handling the steel square. The lengths need not cause any worry as it is not necessary that the manipulator of the steel square even know the exact lengths as that part will take care of itself.

In most all of the work in this department we have illustrated on the full scale for 1 foot run, which we think is preferable to the 1-inch scale to the foot. However, as the fractional part of the run is not as easily grasped and handled with it as with the latter, by the average workman, we will use the 1 inch scale to the foot run. In using the side of the square that is divided into twelfths of an inch, it is to be observed that these divisions are made to represent inches in the actual framing; so, if a measurement is off 1/12 of an inch, it means a whole inch off in the framework. It cannot therefore be called an absolutely accurate method, but nearly enough so for practical purposes in woodwork. Where accurate work is required, as in steel framing for trusses, etc., the lengths of the diagonals should be found by the method of extracting the square root.

In Fig. 265 is shown a roof plan with odd runs, the main roof having a gable 23 feet 9 1/2 inches wide at one end and 21 feet 6 inches wide at the other. A side gable 19 feet 7 inches wide is thrown in on the side with a 3 foot 4 inch projection, and set at an odd distance from either end of the main part. The run of the common rafter for the widest gable will be 11 feet 10 3/4 inches, and that for the next will be 10 feet 9 inches, while that for the side gable will be 9 feet 9 1/2 inches. Very well. The length of the rafters for these runs are the easiest to find, because they need no further calculations as to their runs.

Suppose the rise we wish to use to be 8 1/2 inches to the foot. Now, take a straight edge board and place the steel square as shown in Fig. 264 and draw a line from 12 and passing at 8 1/2 which will represent the pitch line. Sliding the square along the edge of the board, let the figures on the tongue represent the run resting at the foot of the line. Then that part covered by the square will represent the length of the rafter and the figures intersected by the line will give the seat and plumb cut. Thus, the figures to use for the run of the longest common rafter would be eleven, and ten and three-fourth twelfths inches. In other words, read feet as inches, inches as twelfths and fractions of an inch as that part of a twelfth of an inch.

To find the length of the jacks—suppose they are placed on 2-foot centers—begin at the upper right hand corner; the projection of the side gable is shown to be 3 feet 4 inches. Now, if the center of the second rafter is set 2 feet from the corner, there would be 1 foot 4 inches left to the corner, or 8 inches short of that of the run for the corresponding common rafter, which would be 9 feet 1 1/2 inches. For the remainder of the jacks, move in the square 2 inches each time.

Proceed in the same manner for those on the other side, the length of the plate being 5 feet 6 inches, which would necessitate that the run of the first jack from the common rafter be 6 inches shorter, or 11 feet 4 1/2 inches.
In the plan is shown another kind of a jack that taxes the ingenuity of some carpenters to find the length and cuts. It is the jack that rests in between the hip and valley rafter, the cuts of which are the same at both ends, that is, a plumb and side cut. Its run is determined by the difference in the width of

Fig. 265.
the building. In the example, the width at one end
is 23 feet 9½ inches and the other 21 feet 6 inches,
which makes a difference of 2 feet 3½ inches and
represents the run of the jack in question, generally
known as a cripple jack.

The lengths of the hips are found in the same man-
ner, that is, the same figures for the run are used as
for the common rafter, but the pitch line, instead of
being from 12 on the tongue, is changed to 17 because
the gain of the hip run is 5/12 more than that of the
common rafter.

The seat and plumb cuts may be found at any of
the places that the lengths are found as described
above. In finding the net lengths, allowance should
be made for the ridge board, and the hips and valley.
This may be found by deducting from the run one-
half the thickness of the ridge board for the common
rafter, one-half of the diagonal thickness of the hip or
valley and all the diagonal thickness for cripple jacks.

The side cuts of the jacks may be found in this case
by taking its own run and length or the same for that
of the common rafter. The side of the square on
which the length is taken will give the cut. The side
cut of the hip may be found by taking its own run
and its length. Cut on length. The run of the hip
may be found by measuring diagonally from like fig-
ures on both blade and tongue that represent the run
of the corresponding common rafter.

How to Lay Out a Square Corner

THE "RADIUS TOOL" AND HOW TO USE IT—HOW
EASILY MADE—THE

By James F. Hobart, M. E.

THE matter of accurately laying out a "square," or
more correctly speaking, a right angle, is
often quite a problem, especially where consid-
erable accuracy is required, or where the given line
is not well defined. Especially in laying out the sides of
a building, it is found difficult to determine the squared
corner with the necessary accuracy. Not only is
the instrument about to be described very convenient when
made 10 or 12 feet long, but it is also very handy
when made in sizes from 6 inches to 2 feet.

For the want of a better name, this tool, which was
invented by the writer, is called a "radius tool," from
the fact that it employs three radii of a circle in deter-
mining a right angle about a given point in a line.
Before describing the method of using the tool, its
construction will be explained, for it is so exceedingly
simple that any carpenter can make one in ten min-
utes. If made more elaborately in metal, it proves a
worthy addition to the tools of any mechanic.

To make up this tool, first get out the radius strip,
as shown by Fig. 1. This may be of any convenient
length, of any material, and a split sapling may be
used in case a strip of board is not at hand. All the
detail necessary is that it be one-half the length of the
longer strip shown by Fig. 2. Bore two holes through
the strip, one at A, the other at B, and take exceed-
ingly good care that both holes are square with the
face side of the strip, and that the face side is out
of wind. Better use a trysquare in boring the holes,
which should be just large enough to allow a wire
nail to be driven through them without splitting the
strip.

Having completed strip A, Fig. 1, proceed with the
longer strip shown by Fig. 2, which, as stated, is twice
the length of A, Fig. 1. Place one end of the short
strip on the long strip, at D, which must be exactly
in the middle of strip G, H, both lengthwise and cross-
wise. Mark a straight fine line along the middle of
strip G, H, and bore all the holes exactly in the line.
Put nail, D, in place and insert a nail at E, then mark
across the center line at G, which gives the place to
bore for another wire nail. All the nails used in this
instrument should be filed to a point, with its center
fair in the axis of the nail. That is—don't file the
point on one side of the nail. If you do, the instru-
ment will not work accurately.

For a more elaborate instrument, the points to be
inserted at E, G and H may be made of tool steel,
and they may be threaded and screwed into the holes.
The nail at D may be replaced by a well-fitting car-
rriage bolt, and a number of other refinements may be
made in the instrument to suit the wish and the inge-
nuity of the maker.

After hole G has been located as described, revolve
the short radius strip and make another mark at H.
Bore a hole here and insert another nail or hardened
point. Then the tool is ready for business without
further trouble.
Fig. 3 gives an idea of the use of this tool. Consider that a line, I, J, has been laid down, and it is necessary to establish another line, K, L, exactly at right angles to I, J. The principle upon which this tool works is that theorem in geometry, that “an angle in a semi-circle is always a right angle”. In the tool, the line, G, H, represents the diameter of a semi-circle, and D, E is a radius of this circle. Then, according to the geometrical rule, the three points, G, H, and E, must always form a right angle should they be connected together with lines. This being the case, to “erect a perpendicular” through L, Fig. 3, or through any other point from the line, I, J, it is only necessary to place two points of the instrument on the line I, J, one directly under L, and the remaining point of the instrument must surely (if the instrument has been accurately made) lie at right angles to the other points of the tool.

The matter above noted is well illustrated by Fig. 4. The line, M, N, has been given, and it is desired to “square out” from point M. All that is necessary is to place the point M on the point from which the perpendicular is to be erected. It will be observed that the point on the short arm of the instrument, is the one which should be always placed on the point from which the line is to be squared out.

With point M on the place from which the line is to start, the other point, N, may be placed anywhere in line M, N, and point P will always fall in a line perpendicular to (square with) line M, N. It is found that with one point of the tool at N, the other will fall at P while should point P be removed to O, the tool will immediately take the position shown by the dotted lines, and point P will be pushed out to Q, but it will still fall in the “square” line P, M, which is the one we have been trying to locate.

For some kinds of work, the pins may be omitted and the ends of the strips sharpened to points. The tool thus made is used exactly as before, with the exception that marks cannot be made by the nail points, but must be marked by some other tool upon the work which is to be squared. A hundred uses soon develop for this tool, once a man has one at hand, and it applies itself to the greatest number of novel uses imaginable.

**Portland Cement Grindstone for Glass**

What is claimed as an important discovery in the glass industry has been made, which will tend to revolu-

The householder smothered his wrath and descended to the basement. “Are you the plumber?” he asked of the grimy-looking individual who was tinkering with the pipes in the cellar.

“Yes, guv’nur,” answered the man.

“Been long in the trade?”

“Bout a year, guv’nor.”

“Ever make mistakes?”

“Bles yer, no, guv’nor.”

“Oh, then, I suppose it’s all right. I imagined you had connected up the wrong pipes, for the chandelier in the drawing-room is spraying like a fountain, and the bathroom tap’s on fire!”
Aluminum Gives Way to Wood for Air Ships

NEW FORM OF AIR SHIP OR DIRIGIBLE BALLOON FRAMING—FIRST PUBLISHED PHOTOGRAPH OF COUNT ZEPPELIN’S HUGE BALLOONSHED AT FRIEDRICHSHAFEN

By Oskar Herwig

THERE went stirring news through the German daily papers some days ago to the effect that Count Zeppelin, the first man in aeronautics, intends no longer to use aluminum for his airships, but some lighter material, namely, wood.

It is said the saddest day he ever experienced was the day of the terrible disaster at Echterdingen in August last, when his brand-new ship, Zeppelin II, exploded in a thunderstorm and was completely wrecked. There was an instant rising of feeling with the German people who at once subscribed large sums to enable the unfortunate Count to resume his experiments. He himself and experts meditated however what could have been the cause of the catastrophe, and it is now certain that the immense mass of metal, contained in the rigid skeleton and cars, attracted atmospheric electricity and conducted sparks from the metal to the gas, causing the explosion.

It is clear that if wood had been used for the frame the accident could never have been possible. A model of such an airship has been completed; the wooden frame work of it is illustrated herewith. The inventor is a Berlin architect of good reputation and many and varied accomplishments. He designed the German parliament buildings. He has also designed and constructed many successful racing-boats, so he may be called an expert in wood. According to his model and plan the airships or dirigible balloons of the future are to have hollow rods connected with glue. These rods are of solid cross-section only at the crossings.

The specific weight of Canadian pine employed is 0.38 to 0.4 while that of aluminum is eight times as much. On the other hand this metal is three times as strong as the wood; so a stick of the same strength is about one-third the weight. Considering the large size of our modern airships and the immense weight of frame, etc., much could be saved in dead load if...
wood is substituted. One result is that such a bal- 
on can be made much smaller and yet has the same 
lifting power. The Zeppelin reached its smallest pos-
sible size with 11,000 cubic meters; with wood fram-
ing the lower limit is 8,500 cubic meters. 
The shape of this new type is that of an ellipse.
The diameter is largest amidships which is a decided advantage as there the bending force is greatest. A cylinder of the Zeppelin types would be bent or broken in the middle unless the frame were strengthened there at the expense of the dead load. In the Zeppelin the load was divided into two cars 198 feet apart which is more expensive, increases the dead load and minimizes the manœuvreing ability. In this new ship the gondola is attached in the center. The shape of a spindle also gives less surface; the capacity being the same and less envelope material is needed. This form of framing added to the natural resiliency of the wood is said to withstand shocks and bending or breaking much better than the earlier types. With it, there is also a minimum of air resistance.

Wood is, as we know, not sensitive to moistness, heat or cold if coated with a weather-proof varnish while metal expands and oxydizes, loosing strength. These points seem to be sufficient to show the superiority of such an airship, and it will not be long before large balloons of wooden construction will be built. The model shown here is exhibited at the aeronautical exposition in Frankfort this year where it received much attention and favorable comment.

Water Hammer in Steam Heating Pipes

**RIGHT AND WRONG METHODS OF GETTING RID OF WATER CONDENSATION—PROPER ARRANGEMENT OF PIPING—SOME COMMON ERRORS IN CONSTRUCTION**

By J. P. Lisk, M. E.

The design of a system of piping to carry the steam to the radiators and return the water of condensation to the boiler without the noise so frequently heard, in steam-heated buildings, is an easy matter for a practical heating engineer to accomplish, but is quite difficult for the ordinary steamfitter, or the man with the mere theoretical knowledge. I am not obliged to prove this statement by argument, as there are numerous installations that will speak for themselves, when fired up.

Fig. 1 shows wrong method of relieving a steam main of its water of condensation, yet in practice I have met with such arrangements of piping so often that I am led to believe it is a very common fault throughout the entire field of steam-heating work. Referring to Fig. 1, A is a horizontal main supply pipe, C is a vertical riser supplying steam to a higher level through outlet D. After rising as high as the floor beams will allow, the main A' is continued on to other parts of the building. The main return pipe B and B', taking the water of condensation back to a pump receiver or to the boiler direct, have connection, E, to the bottom of the steam main; which is intended to remove the water of condensation from this low point (the low point is made necessary by pitching the main in the direction in which the steam flows to the radiating surfaces) and returning it through the main return pipe to the receiver, or boiler, as the case may be. Right here is where the trouble begins if this connection is not properly made, and if, as I said in the beginning, it is made according to Fig. 1, it will not work satisfactorily. The system...
will pound and hammer, the radiator fill up with water which will rush back flooding the receiver, causing the pump to race, and quite frequently doing itself serious damage.

The reason for this action is explained as follows: A heating system is a condenser of steam. The supply pipes carry the steam to the condensing surfaces. The return pipes carry the water of condensation back to the boiler. There is a varying difference of pressure between the steam and return pipes. This difference is greatest at the points where the steam first enters the system, and where the water finally leaves it. That is at the reducing valve and the receiver of the pump, or at the outlet of the boiler, and in the return pipe near the boiler.

To be better understood, I will explain, for the benefit of those not entirely familiar with heating work, that the water in the return pipe of a gravity system of heating is from 12 inches to 3 feet higher than the water level in the boiler. This condition is brought about by the difference in pressure, caused by the steam being condensed as it gives up its heat through the radiating surfaces, thereby occupying less space in the system, consequently less pressure. This difference is greatest at the two extremes of the system, as mentioned above. Now, it will be easy to understand the trouble brought about in making a drip connection as shown in Fig. 1.

The steam entering the main through the reducing valve, or from the boiler direct, flows out until it reaches the point of relief, where it crosses over into the return pipe and feeds both ways. The water of condensation coming back through the return pipe meets an ever-increasing retardant in the steam flowing in the opposite direction, and as the volume of water increases the area of the steam space in the pipe decreases. The velocity of the steam increases in proportion to the contracted area through which it flows, eventually stopping the return water from flowing toward the boiler. The return water now fills the pipe, cutting off the supply of steam from the return pipe side. The steam beyond this immediately condenses, forming a vacuum. The water now begins to flow, with high velocity, assisted by the pressure of steam back of it, until it meets with some obstruction, such as water from the radiating surfaces forced on by the steam from the feed main or an elbow where the pipe changes direction, producing the shock called water hammer. This shock is frequently great enough to rupture the pipe and do a great deal of damage to the building.

Having pointed out a very common defect in the arrangement of a piping system for steam heating, and showing the results obtained as well as giving the reason for such results, let us see how the trouble may be avoided. Looking at Fig. 2 in the diagram, we see at once how this is accomplished. Instead of making connection, E, directly into the return pipe, B, the loop, F, is carried about 3 feet 6 inches below the level of the return pipe, as shown. This effectually prevents the steam from short circuiting into the return pipe. At the same time it allows the water of condensation to pass freely from the steam main A, and riser D, into the return pipe B, through which it passes to the receiver or boiler.

The loop, while acting as a seal, also adjusts itself to the varying inequalities of pressure in the system, due to rapid change in working conditions. I have frequently seen the temperature of a building drop 20 degrees, during extremely cold weather, within a period of fifteen minutes. Such a large variation in condition naturally subjects the heating apparatus to greater duty, which means more heat units transmitted per square foot of surface, consequently more steam from the boiler and more water going back through the return pipes and a greater difference in pressure between the two extremes of the system. If a system is properly designed, it will adjust itself to wide variation in working conditions, but if errors of construction exist, as shown in Fig. 1, there will certainly be more noise than agreeable. There is also the probability of having to make repairs to a leaky system.

Summed up, the cause of water hammer consists in the fact that certain parts of the system, after being filled with steam, become so isolated from their source of supply by the water that is free to move in the system, that the steam in the isolated parts is condensed, leaving a vacuum, into which the water rushes until it meets with some obstruction that interrupts its movement. The intensity of the blow delivered depends on many varying conditions. It ranges, however, all the way from a light shock, to a blow that ruptures pipe and fittings.—Engineering Review.

**Got There First**

Mrs. Hicks (relating burglar scare)—"Yes, I heard a noise and got up, and there under the bed I saw a man's legs."

Mrs. Hicks (relating burglar scare)—"Yes, I heard a noise and got up, and there under the bed I saw a man's legs."

Mrs. Wicks—"Mercy! The burglar's?"

Mrs. Hicks—"No, my husband's—he had heard the noise, too."

**Baldwin Breaks Dirigible Height Records**

Captain Baldwin, builder of the U. S. army dirigible airship, broke the world's record for height of flight in dirigibles by flying to an altitude of 3,500 feet while testing the airship he used during the Hudson-Fulton exposition. The great height reached, which is claimed to be 500 feet higher than Count Zeppelin's record, was not intended at the start, but he found the wind sufficiently strong at an altitude of 1,500 feet to force him to go higher or give up the flight. At an altitude of 2,000 feet the wind was also too turbulent, therefore he rose to an altitude of 3,500 feet, where he found a steady current of air. At this altitude he carried on a series of maneuvers at a speed of more than 25 miles an hour. The flight occurred at Worcester, Mass.
WHEN a man, or a woman, becomes discontented with the renter's lot and gets to longing for the comforts and satisfaction of a home of his own he suddenly takes an interest he never had before in all the new houses, built or in the process of building, in his vicinity, that seem to be anywhere near in size and in cost what he would want himself. He wants to know the special merits of the cement plaster coating Jones is using on his house, and why Brown is finishing the outside of his new house with rough boards, stained, instead of the ordinary siding. He wants to know how the heating problems are being worked out and whether the private water supply plant Smith has put in is practical. For the first time in his life he forms a definite opinion in regard to interior finish and finds out what he prefers in builders' hardware. Moreover he finds out what things cost—how much he can build for the two, three or four thousand dollars he figures on spending. All this is good, a necessary and desirable part of the very desirable and praiseworthy process of becoming.

Modern Successful Residence Designs

Photographs and Floor Plans of Several Houses Erected This Year Pronounced by Their Owners Thoroughly Practical and Satisfactory
ing a home owner. It shows proper interest in the project. In the absence of actual first-hand inquiry and observation of this kind the next best course is to study the published records of recent home-building. A good photographic view may be just as good as the building itself to show the external appearance of the design; and the floor plans, giving the size and arrangement of rooms, serve better even than the house itself to show what is the most convenient and desirable arrangement.
The accompanying designs, like all the others we have published, should prove very helpful in this way. Carpenters and builders will do well to loan them out for study to prospective builders. The “home-hunger” will grow if it has anything to feed on!

The first two houses, those shown on pages 202 and 203, are quite similar in their general arrangement and cost. The first one, put up by Fluor Bros. Construc-

SECTION OF MAIN WAll SHEET  

The first one, put up by Fluor Bros. Construction Company, at Oshkosh, Wis., is an exceedingly practical design and makes an attractive residence. The second is an example of the gambrel-

SECOND FLOOR PLAN

roof house that is very well proportioned. The builders, C. G. Reichel & Son, submit the following schedule as the actual cost of this house: Mason work, $281; sewerage, $35; plastering, $150; plumbing, $65; tinsmith, $80; furnace, $135; kitchen sink and bathroom,
Keeping Cupid on the Job

"That widow is a good manager, isn't she?"

"Manager? I should say so. She got that house of hers practically fixed up like new for nothing."

"How did she manage it?"

"She was engaged to the carpenter till all the woodwork was finished, and then she broke it off and married the plumber."—Baltimore American.

$90; electric wiring, $40; hardware, $38; painting, $150; dray, $30; lumber, $64; millwork, $320; carpenter work, $600; shingles, $60; grading and walks, $143; total, $2,700.

The third design is a fine brick veneer house with second story plastered. Full architect's drawings, including details of interior finish, are given for this design.
INTERIOR DETAILS
Designs for Piano Bench and Chair

THE piano bench shown this month is of very thorough construction. The side rails are grooved into the legs in such a manner as to make the piece very rigid. Select good clear quartersawed white oak, taking especial care to get a piece with good "markings" for the top.

STOCK BILL FOR PIANO BENCH

<table>
<thead>
<tr>
<th>Thick</th>
<th>Wide</th>
<th>Long</th>
</tr>
</thead>
<tbody>
<tr>
<td>For the top, 1 piece 1 1/4 in. 16 in. 43 in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the legs, 2 pieces 1 3/4 in. 16 in. 18 1/2 in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the rails, 2 pieces 1 3/4 in. 4 3/4 in. 41 1/2 in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the stretcher, 1 piece 1 1/4 in. 4 3/4 in. 43 in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the keys, 2 pieces 3/4 in. 1 1/4 in. 3 1/4 in.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>For the cleats, 2 pieces 3/4 in. 3/4 in. 9 in.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

These pieces are all specified a little wider and longer than will be needed in the finished piece to allow for squaring up the ends and sides. They should be got mill-planed on two sides, however, to the thicknesses specified.

The top may be made first by squaring it to the width and length shown on the accompanying drawing. Be careful to remove all signs of the mill-marks. A sharp cabinet scraper will be needed for this. Round the top edges off a little—about a quarter of an inch down the edges and back on the face.

The two legs may next be prepared. While the two edges are cut sloping, it will be necessary to put a joint edge on each piece from which to square up the ends of the legs and to assist in properly laying out the mortises.

It will be necessary to make a paper pattern by which to lay off the design at the bottom of the legs. The easiest way is to take a piece of paper and shape it the size of the bottom of the leg, fold it along its center line and, having penciled one-half of the design freehand, with the scissors cut along this line while the paper is folded. Place this pattern on the wood and trace around it. The turning saw or compass saw will be needed to cut out the curves on the wood.

Before cutting out these curves, however, it will be the better part of wisdom to lay out the mortises for the stretchers and to cut them. The pounding neces-
Fit the rails in place but do not fasten them yet.
While fitted, secure the length of the stretcher from
shoulder to shoulder by measuring between the two
mortises of the legs. Transfer this to the stretcher
top surface three-quarters of an inch and for the bot-
tom surface one-half an inch. Chamfer the ends of
the tenons slightly.
Cut the keys to a length of three inches. Lay off
Thoroughly scrape and sandpaper the various parts
and assemble them. The top is fastened to the frame
by means of cleats, one at each end. Screws, through
these cleats into the legs and into the under side of
the top hold the top firmly in place.

How to Make a Utility Chair

The chair shown this month may appropriately be
used as a desk chair, a hall chair, a chair for the
bedroom, etc. It should be made of some hard wood,
preferably quarter-sawed white oak.

<table>
<thead>
<tr>
<th>Stock Bill for Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thick</td>
</tr>
<tr>
<td>2 Posts</td>
</tr>
<tr>
<td>1 Post</td>
</tr>
<tr>
<td>1 Rail</td>
</tr>
<tr>
<td>1 Slat</td>
</tr>
<tr>
<td>2 Slats</td>
</tr>
<tr>
<td>3 Slats</td>
</tr>
<tr>
<td>4 pieces for seat</td>
</tr>
</tbody>
</table>

There is nothing unusual in the construction of this
chair. The rails enter the legs at right angles, mak-
ing the shoulders all square and therefore easily cut
and fitted. The front posts are straight throughout
their entire length, but the rear posts are sloped back-
ward three inches, as shown in the drawing. All the
stock is ordered mill-planed on four surfaces except
that for the back posts. This stock is ordered mill-
planed on two surfaces. Out of this piece the two posts can be got by using a little forethought.

The rails should be tenoned into the posts thoroughly, being shouldered on each of the four sides. Tenons three-eighths of an inch thick with each edge shouldered back the same amount as the sides will answer for all the rails except those that form the seat. These rails should be seven-eighths of an inch thick, as are the others, but shouldered on the upper edges only. Shoulder these upper edges back sufficiently to insure the leg not being split out on the top end.

The slats are not to be shouldered at all but are to have the whole ends “let in.” A quarter of an inch will be deep enough.

The seat may be made of a piece of leather drawn over a frame and this fastened in the chair between the rails as shown. Or, it may be upholstered as follows: First stretch a canvas over and around the seat rails and tack on their under side. On this cross weave and fasten underneath upholsterer’s webbing. On this place a stuffing of hair or elastic felt. A piece of muslin draws this in place; and on top of the muslin comes the final covering of Spanish leather.

A Mission oak finish will be appropriate for these pieces. The color of Mission oak is a shade between the English and dark golden finishes, the quarterings being in less pronounced contrast to the field than in either the dark golden or English finishes.

For the above finish use a light paste filler colored withumber and Venetian red; 12 ounces ofumber and 4 ounces of the red to 20 pounds of filler will give about the shade required.

For an eggshell gloss specify one coat of Mission oak water stain; when dry sand with fine sandpaper and apply a second coat of stain diluted with about one-half water. Follow with a light coat of thin shellac, sand lightly and fill with paste filler to match the color of the stain. When dry sand lightly with 00 sandpaper, and give a coat of orange shellac. Sand lightly again and follow with two or three coats of some good rubbing varnish; rub first coats with haircloth or curled hair, and the last coat with pulverized pumice stone and crude oil or raw linseed oil.

For a polished finish specify that the last coat be rubbed first with pulverized pumice stone and water, and for a piano finish specify a further rubbing with a furniture polish, used with a little pulverized rotten stone, applied with a piece of soft felt or flannel.

If a rubbed finish is not desired, omit the specifications for rubbing the last coat.

Silver Plating Without a Battery

Dissolve eight silver quarters (money) or silver of equivalent amount in two ounces of nitric acid (strong), and to this add four ounces of common salt dissolved in as little water as possible. A heavy precipitate is silver chloride. Decant the liquid, add more salt solution to see if all the silver has been taken out. Wash the silver chloride precipitate with water and then dissolve it in a solution composed of two ounces potassium cyanide and three ounces sodium hyposulphite in six ounces of water. Filter the solution, if necessary, and make up to two quarts with pure rain water. Hang the articles to be plated in the solution suspended by a strip of lead or immerse the articles and boil them for ten to twenty minutes, according to the thickness of the plating desired. The articles to be plated must be free from grease, fat and dirt. By this method we get a durable and handsome silver plating on watch chains, rings, medals, watches, ornaments and German silver articles.

Annual Convention of Architects

The Executive Board announces the annual convention of the Architectural League of America will be held at the Willard hotel, Washington, D. C., December 11, 12, 13 and 14, 1909.

Further information can be obtained from the president, 1103 Union Trust building, Detroit, Mich., or from the office of the permanent secretary, 729 15th street, Washington, D. C.

He (nervously)—Er—er—Margaret—er—er—there’s something has been trembling on my lips for the last two months.”

She—Yes, so I see. Why don’t you shave it off?—Princeton Tiger.
The accompanying plans show a modern four-room school recently designed by G. W. Ashby, architect. It is especially suited to new and growing communities, for it can be made into an eight-room building by simply attaching an identical four-room section to the rear and so improving the design. The materials to be used for this building are red brick and Bedford limestone.
Wisconsin's Model Country School

HERE was on exhibition at the Wisconsin State Fair this year a model one-room country school building, placed there by the state superintendent of public instruction. This was one of the eleven designs now furnished the district schools of Wisconsin by the state school department under act of legislature of 1907. All district schools now built must follow the plans of one of these models. Or, in case the district board decides to make its own plans, they must be approved by the county superintendent. The lighting, heating and ventilating system, however, must follow along the same lines as those used in the model buildings.

Some time ago the state superintendent held a competition among architects to secure the best designs possible for these model schools. The design here presented, the one erected at the state fair, was designed by Knapp & West, architects, Seattle, Wash.

The building is estimated to hold fifty pupils and cost $1,650, not including stove, blackboards and furnishings. The steel stack leading from the stove passes through a ventilation duct leading from the floor so that the room can be cleared of foul air in fifteen minutes. The room is very well lighted, yet all the light comes from one side so as not to injure the children's eyes.

The specifications in part for this model building follow:

MASONRY AND LUMBER

Concrete.—Note: Brick is shown for the construction of the foundation of the building, but concrete or stone may be used.

Cement the exterior walls above grade lines in cement mortar, in medium rough cast finish.

Use sound, hard, well-burned red brick. Point up above grade lines in struck joints.

Lumber.—Where no particular lumber is specified, it shall be No. 1 fir, yellow pine, or Norway hemlock.
Girders and Joists.—All girders and joists shown in connection with this work shall be set with crowning edge upward, and hung on approved joist hangers, no bearing to come closer than 2 inches to any flue. No joists to rest less than 4 inches on the masonry. All joists shown to run parallel with partitions and under partitions are to be doubled and spiked together and hung on above hangers.

In framing the roof around chimney the trimmer rafters shall be placed crowning edge upwards, and to be necessary to cut them for pipes or other fixtures. Place trusses over all openings more than 4 feet wide.

Sizes of Timbers

1. Sills, 2 by 8 inches laid flat, bedded in cement mortar.
2. Floor joists, 2 by 12 inches, spaced 16 inches on center.
3. Ceiling joists, 2 by 10 inches, spaced 16 inches on center.
4. Headers and trimmers, 2 by 12 inches, doubled and tripled.
5. Plates, 2 by 4 inches, and 2 by 6 inches.

Framing.—The sills shall be bedded in cement mortar and set perfectly level. The floor joists and other important timbers shall be so framed that it may not
(6) Studs, 2 by 4 inches, spaced 16 inches on center.
(7) Partitions, 2 by 4 inches, doubled and spiked, etc. See details of construction.
(8) Rafters, 2 by 6 inches, 16 inches on center.
(9) Ridge boards, 1 by 8 inches.
(10) Porch joists, 2 by 8 inches, 16 inches on center.
(11) Lookouts, 2 by 6 inches, 9 feet long, dressed four sides, spiked to rafters.

Bridging.—All floor joists are to be cross bridged as follows: Once in every 10 feet, twice in every 18 feet, four times in every span over 18 feet, all cross bridging is to be 2 by 4 inches securely fastened with 10-d. nails, two to each joist.

All outside walls, and inside partitions shall be bridged once in their height, with 2 by 4 inch cut in diagonally and nailed at each end with 2 10-d. nails.

Brace all exterior corners with 2 by 4 inch at an angle of 45 degrees from floor to ceiling.

Grounds and Furring Strips.—Put in place ¾-inch grounds for all base, wainscot caps, door openings, and blackboard caps. Provide grounds, cleats, etc., for hooks, etc., for all wardrobes. Build in blocking on outside of outside walls and other walls for the support of furring strips.

Rough Flooring.—Lay a fir or pine under floor throughout the first floor, using No. 1 ¾x8 inch shiplap laid diagonally on joists, and well nailed twice at every bearing. Run this flooring closely around all studs, and up to the outside sheathing boards, breaking joints only on joists.

Floor Work.—Place two-ply approved water-proof paper over all shiplap floors, and run up walls 6 inches.

Wall Work.—Place single-ply quilt over all exterior sheathing.

Sheathing.—Sheathe the entire exterior of building with No. 1, 8-inch or 6-inch D. & M., well nailed twice to each bearing.

Shingles.—Place shingles on walls and roofs of Star A Star Washington red cedar shingles, laid 4½ inches to the weather, using 4-d. galvanized iron nails. Form the hips and ridges of 4-inch dimension shingles.

Porch Floors.—Lay over porch floor joists No. 1 ¾ by 4 inch T. & G. pine flooring laid in white lead.

Roof Sheathing.—The entire roof of building is to be sheathed with No. 1 ¾ by 6 inch shiplap or 6-inch D. & M., nailed with two 8-d. nails to each bearing.

Stairs.—Outside stringers to be not less than 2 by 12 inches, 3 feet on center, treads to be composed of two 2 by 6 inch spaced ½ inch apart, all to be dressed and well nailed to stringers.

Finished Floors.—Place over entire first floor, No. 1 1 by 3 inch D. & M. IXL vertical grained kiln-dried hard maple flooring, blind nailed and smoothed down to an even surface, and end matched.

Window Frames.—The pulley stiles and parting strips for all double-hung windows shall be of clear fir, coated with raw linseed oil before assembling. The frames for double-hung sash to be hung on all steel sash pulleys, with 2-inch ball-bearing bronze finish wheel.

Pulley stiles shall be 1½ inches thick, heads ¾ inch, openings to be left to repair ropes, each frame to be provided with molded hanging stile.

Inside Trim.—All inside finish to be selected slash grained fir or pine.

Wainscot Caps.—Place the detailed 6-8 by 2¾ inch plain wainscot caps in the classroom, corridors and wardrobes.
NO MONEY spent on a house will add more to its selling value than that expended in taste and material on the roof. The roof is the first thing seen, and first impressions are most lasting. Poor roofing is expensive at any price, as the damage that results from its use often amounts to more than the cost of a half dozen good roofs. So, good roofing is a consideration of the highest importance to every builder and property owner.

There have been so many different kinds of roofing material offered the public in recent years—many of which proved unworthy of the name—that the average man is apt to listen with incredulity to recommendations of the merits and quality of any roofing that is proposed to him.

It should be remembered, however, that primarily the duty of a roof is to afford shelter and protection from the elements. If a building is erected for temporary purposes only, most anything will do for a roof, but when erecting a barn, church, dwelling, or public building, the owner wants a roof that will not only give the greatest protection, but one that will last as long as the building stands without constantly needing repairs.

Also, looking at the matter in a broader aspect, a roof should be something more than a protection. It should ornament and increase the value of the building.

Few people realize the great effect the appearance of the roof has upon that of the entire structure, and to what extent a good roof adds to its worth.

A roof should be looked upon as an investment or, rather, as a protection to the investment that is represented by the building and its contents.

It does not take long for a leaky roof to rot the sills and timbers, to injure the walls and cause the plaster to break, and render the building damp and unsanitary. With such a roof, repairs are necessary within a few years, and their cost is not only considerable, but they depreciate the investment.

With these points in mind it is well for builders and owners to consider the merits of the various permanent roofings. We have, already, in recent numbers of this magazine discussed the desirability and use of slate and of tile roofings. So now we want to give particular attention to the various styles of sheet metal roofing and shingles. We know that "comparisons are odious," but when you are intending to spend good money for a roof it is advisable to compare the relative merits of the different kinds.

The wooden shingles that are supplied by the lumbermen today are very poor roofing, and for permanency and utility are not to be considered. In the old days, when shingles were hand grooved and sawed, and made from well matured lumber, they performed the service demanded of them and made good roofs.
Now they are made by machinery, too often from green, sappy and unseasoned timber; are sold without being assorted, and will not last over three or four years without repair.

While cheaper at the start, the expensive repairs that are necessary to make wooden shingles do anything like the service that is required of a good roof, make their purchase poor economy. Compared with the wooden article, metal shingles, or other metal roofing, will not rot, split, curl up or burn. They are more durable; more easily laid; more ornamental; and will not need constant repair. They are fireproof and reduce the cost of insurance on buildings where they are used—this saving in a few years amounts to considerable. A metal roof is also a protection against lightning—no building so covered has been known to be injured by lightning. Should lightning strike a metal roof, the electricity is scattered and passes off harmlessly into the atmosphere.

An incident related by the *Metal Worker* illustrates well the merits of corrugated roofing as a fire protection. "In a recent fire, consuming the storehouse and barns of one of our subscribers, a building adjacent to a large storage warehouse filled with combustible goods, had a corrugated iron roof laid on over old shingles. There had been an unusually long dry spell, but although long tongues of flame at times seemed to envelop the entire roof, and the heat was so great as to peel the galvanizing off, yet it resisted the fire, and in so doing, stayed the path of the flames which otherwise would have lain in ashes a prosperous business section. The corrugated iron by its very shape maintains an insulated air space between the under side of the iron and the roof, and during a fire in all probability cool air passes from the eaves to the peak, thereby further preventing ignition with the wooden parts of the building. In this respect corrugated iron is far superior to tin, especially for farm buildings and other structures where the cost of frequent painting would not permit of so good a material as tin being used."

The cost of metal shingles, while more than other forms of metal roofing, is less than the first quality of slate, and is as low, and cheaper in some localities than good wooden shingles when their service and permanency are considered. A comparison of the initial expense is not to be accounted, because it takes but a few years for the saving they effect in repairs and other ways to greatly outweigh their first cost.

Metal shingles are applied by the same rules that govern the laying of wooden shingles or slate. The roof should be covered with sheathing boards laid with tight joints. Good common boards will answer, but they should be of even thickness. Sheathing boards should be laid either parallel with the ridge and eaves or diagonally—never lay sheathing boards up and down.

The use of sheathing paper with any form of metal roofing is recommended. Being a non-conductor, it adds much to the warmth of the house in winter, makes the house cooler in hot weather, and adds but little to the cost of the roof. Tarred paper, however, should never be used under metal roofing; the acid in the tar injures the metal.

In flashing against a side wall bend shingles or flashing strips so that they project up the side of the wall 3 inches or more, and counter-flash down to within 1 inch of the roof line. These directions apply also to dormers, chimneys, skylights, etc.

Any good carpenter or workman, who understands the simple rules for applying wood shingles or slate, will have no trouble in laying metal shingles.
Large Combination Stock Barn

COMPLETE PLANS INCLUDING DETAILS OF FRAMING FOR A LARGE BARN FOR HORSES AND CATTLE AND HAY AND GRAIN STORAGE

The accompanying architect's drawings were prepared for Montgomery Bros., of Edgar, Neb., and have been used by them with much success. They call for a barn 65 feet long by 48 feet wide, 13 feet high at the plates and 30 feet high at the ridge. The roof is of the favorite double gambrel type, enclosing a maximum amount of hay storage space at the minimum of expense for roofing.

The cross section shows very well the method of heavy-timber framing. The arrangement of the cow stable on the ground level with its concrete floor, feeding trough and gutter is also well shown in this drawing.

Reference to the floor plan will show the interior of this barn. There is a central driveway 15 feet wide for unloading and storage purposes. On the right are the horse stalls and across on the other side are the cattle. Feeding alleys extend clear through in front of all the animals; similar passageways back of them serve in the care of the stock. The stalls and passageways are ceiled over and the floor is cemented. The siding of this barn is of inch boards set vertically. These are stayed by horizontal 2 by 4's set 24 inches apart.
After an absence of ten years I dropped in to see a little factory in a small town where I once lived. A wood yard has the place, the factory having failed long ago. It was one of those small places where it seemed to be a peculiarity of the owner to let things run on as they might, until, like the one-horse chaise of the story, there was a break-down all over at once. In it I watched the progress of a countershaft from a condition of inefficiency at the start to a final breakdown, all the time wondering if the owner did not realize that stops for temporary repairs were costing him about twice the value of shaft had it been taken out and a new one with pulleys put in its place. The price of the shaft with one-half its cost added for putting up would have been about $7 if new shafting was used. But in this case the same shaft would do by using a compression coupling in place of the flange coupling in use, the keyway of which was worn beyond repair. For some reason that will always be a mystery to me, the old shaft had been allowed to run on, stopping the whole shop from two to ten times a day. As a matter of curiosity, the cost of the stops was figured up, taking the labor cost only and making no allowance for the shortage of the output of the mill. Twenty-two stops in two weeks cost a little over $33. This had gone on for about a month when a $2 coupling would have fixed it up in good shape. This is an example why there is no money in the mill business—for some people.

Consider the Grain

Did you ever make a water or eaves trough of a piece of 4 by 4 or 6 by 6? If you did, have you ever thought of the probable effect of the weather on it in its exposed condition when in use? If it is made right and of heart timber it will outlast most of the metal gutters made of tin or of light galvanized iron. But if it is made so that the wrong side of the grain is left on the work it would be better to leave the timber for some other purpose. On an order for five pieces that I saw got out, three of the sticks were sawed with the grain the wrong way, leaving the heart corner on the gutter, while the other two were sawed to take the heart grain out, leaving the long grain of the sap or outside to hold the piece together and resist the action of the weather. This was only an accident, as the man who sawed the sticks did not pay any attention to the grain, nor did he seem to know that it made any difference. There is not any difference in the amount of work required to get out the finished piece either way, but it means the difference between success and failure, between lasting and cracking open after the gutter is in use.

Saw Teeth

Little matters of common knowledge are very uncommon to some operatives of woodworking machinery, as, for instance, the proper way to file a resaw or a rip saw for any purpose. A resaw in a shop in which the writer took a look seemed to be sawing very slowly, but was doing fairly straight work. Another visitor was curious about the matter also, and as soon as the saw was stopped the teeth were examined and found to be filed just like a cut-off saw, with the bevel on the back and the front straight and very little pitch. Some people file cut-off saws this way, while some file with the bevel in front, but this was the first saw for ripping I had ever seen filed in this manner. The dust showed how the work was being done, but the man who did the filing thought it was the proper thing.

A Dangerous Practice

The self-feed ripsaw table is often used as a plain ripping table with the feed works raised up out of the way, and is as dangerous as the proverbial kicking mule. The guide or fence on this kind of a machine usually extends past the back of the saw and stock does not have a chance to "drop away" as easily as from the tail of the saw as it does on a common rip table. If the feed wheel is raised just enough to let the stock feed under clear, any strip catching on the saw is thrown off by the wheel, but if the wheel is too high, the saw will throw the strip out ahead, and, as a strip that catches on the back of a saw is thrown at a speed equal to the travel of the rim of the saw, it is a dangerous thing to be in range of
when it comes back. In one instance a saw fired back
a strip of 1 by 3, 16 feet long, which broke off a post
of 3 by 3, knocked a water pail into splinters, took
two pickets off the yard fence and went clear across
the street, where its force was spent in a pile of rub-
bish in a carpenter shop. Better use the feed on these
machines when you can, or hold the feed wheel down
as a safety guard.

Babbitting

While it is possible to use a mandrel of a machine
for a babbitting mandrel, it is not advisable to do so
at any time, the only exception being such a time as
the work must be done at once. Then the mandrel
should be wrapped with paper and the metal poured
at as low a heat as will allow of its running free, at
the same time pouring both top and bottom boxes.
To pour one-half of the box and then the other will
almost invariably spring the mandrel in the bearing.
On a felloe machine in a wagon shop where this rule
was disregarded I have seen a mandrel sprung one-
eighth of an inch in its length, and that right after
the mandrel had come from the lathe and had been
straightened from similar treatment. Once a steel
mandrel springs from this cause, it is going back to
the same spring every time the metal is poured on it
hot. There is hardly any more troublesome thing
than a mandrel sprung from this cause, as the effect
can never be permanently removed.

There Is a Reason

While the same general principle covers the opera-
tion of a shaper, probably no two operators do a
piece of work in the same way, owing to surround-
ings and equipment. The practice of using only one knife
to do the cutting is often condemned, while it is not
strictly "mechanical" in a sense, it is no worse
than many other things that are done by men who
should (and do) know better, but are forced by their
surroundings and want of proper material to adopt
means for getting out the work or have to look else-
where for a job. If those who are disposed to criti-
cize the practice could look in at some of the shops the
writer sees, they would not wonder at what the men
do. If they had to work in a little dark cuddyhole of
a filing room, often under a stairway, and make
molder bits from old planer knives or pieces of saw
plate from the mill, use up the stubs of old emery
wheels left from the sawmill grinder, they would not
wonder at a man using only one knife. While
not defending the practice at all, there are certain kinds
of work on which one knife can be used at a good
deal of saving of time and material, but that does not
alter the fact that there are many places where prac-
tices equally bad are not only tolerated, but made nec-
essary by sheer want of material.

Flooring

Every machine designed for making flooring as one
of its products has a set of stops arranged to hold the
stock in line after the cutters have worked it, but it is
no infrequent thing to find flooring with stubbed ends,
showing that the stops have been neglected and as the
strip leaves the guide, the cutters will bite off a little
more than they should, and this leaves a bad end,
which, if laid next to a straight board will show a
crack in the floor. Nothing short of neglect can pro-
duce such a piece of work and it looks bad for both
the machine man and the man who inspects the work.
Sometimes these stops get broken, and as the work is
always faulty without them, such repairs should be
made without any delay.

Help and Hints

In tempering molding bits of irregular shape, where
some of the bit will draw to color before it reaches
the longer members, a small piece of wet waste in the
hand will be found a handy thing with which to check
the color as it progresses until the whole edge is right.
Quickly done, this will prevent hard or soft spots in a
knife.

It is best to run a new engine for a day at least
with low pressure and a light load and look for pos-
sible defects then. Engines are so often needed at
once that this is not always permissible, so the next
best thing is to run with things slacked up just a little
and take up as you progress. No one knows the pec-
uliarities of a new machine until it has been run
awhile.

Lumber Piling and Drying

When lumber is piled to dry and the last top courses
are doubled for a water shed, it is a good idea to lay
a strip across the pile near the center and one through
it a few layers down, and secure the ends of each to-
gether at the sides of the pile. It helps to keep the
top courses straight and prevents the wind from blow-
ning off the covering. This is especially true in the
case of thin lumber.

Experiments with old boilers as heaters for dry
kilns have often been made, and usually with disas-
trous results, the loss not always being confined to the
condition of the lumber alone. The last one noted
was at a mill where the motive power had been
changed from steam to gasoline engine, and then the
boiler fixed up as it stood for a heater by removing the
tubes and firing internally, building a kiln room over
the boiler. Careless firing did the trick of spoiling
the plan, as want of means of controlling the heat set
fire to the kiln and came near destroying the whole
plant. A home-made drykiln is a good deal like a
mule, in that it is very uncertain and hard to manage.

+ Found Out!

"Would you like to hear a secret involving Mrs.
Nextdoor in a dreadful scandal?"
"Yes, oh yes! Tell it to me!"
"I don't know any such secret. You have certainly
got a mean disposition."—Houston Post.
Complete Plans for Seven-Room Cottage

Full Working Drawings of an Artistic Plastered Cottage of Seven Rooms and Containing All Modern Improvements

The architect's drawings here reproduced were prepared for Mr. A. J. Launch, of Kankakee, Ill., and have been successfully carried out by him there, producing an exceedingly convenient and homelike residence. A study of the plans will reveal many desirable features and points of interest.

The exterior treatment is cement plaster on expanded metal lath, or if preferred on wood lath, a pleasing effect being gained by the use of a rough pebble dash finish from the foundation up to the continuous window sill course and a smooth plaster finish above.

The interior arrangement leaves nothing to be desired for a house of this size. The lighting is well handled, and closets and built-in fixtures are well provided for.
The Swiss Chalet

In adopting the chalet as a solution of their architectural problem the Swiss have produced a strongly individual architecture and have not been influenced in any way by the architecture of other countries, says William Neil Smith, in the Delineator.

No other people have produced in the past anything even resembling the Swiss chalet. No architecture in any other country, except possibly Spain, seems so much a part of the environment.

It is hard to picture Switzerland to ourselves without thinking of this form of house as part of the natural surroundings. Besides being beautiful, the homes of the Swiss are eminently practical. In fact, the reasons for the individuality that they have attained, upon close study, are found to be that they have first solved the needful considerations made necessary by the unusual severity of the climate. The other influence shown in the houses of the Swiss and one that reveals the traits of the people, is the fearless honesty in showing the construction of their buildings and making this construction beautiful.

There is no mask about a Swiss home, no false plastering-over of honest construction. They are frankly wooden houses, a true application of the material nearest at hand, a true type for a forest country. In this respect the architecture of the Swiss is entirely opposed to the school of which the French are per
haps the greatest exponents of the present time.

The French are artistic, carrying artificiality to its highest development. But in the Swiss national architecture—and the Swiss chalet is the true type of Swiss national architecture—we reach the highest form of natural architectural expression.

It is through this sheer force of honesty and frankness in construction that the Swiss have arrived at an almost perfect national style, through which we can clearly see, as the homes of the people invariably reveal, the true character of the nation.

THE SUMPTUOUS COUNTRY RESIDENCE OF MR. E. B. GEORGE AT ROWLEY, MASS. DESIGNED BY C. H. BLACKALL, ARCHITECT, OF BOSTON

THIRTY miles from Boston, near the little town of Rowley and overlooking Cape Ann, stands a country residence which is notable—not for its size nor magnificence but because of its rich simplicity. It was designed to be the home of a gentleman of moderate means, but of artistic tastes and desires. A dignified and at the same time a homelike simplicity has been the keynote of the design, the arrangement and the furnishings.

The house stands just underneath the crest of a hill and the view of the surrounding country is far and unbroken on every side. To the south stretch green meadows where purple shadows linger; to the east lies the blue line of the ocean, with here and there a white sail, and to the north the hills lift their stately peaks heavenward.

The exterior of the house is of brick. The color is very dark dull red; selected common brick with dark headers were used. The work was laid up in Flemish bond; and after the mortar was set slightly, the joints were raked out to a depth of 1⁄2 to 3⁄4 inch. In consequence, the wall presents a texture which could not be obtained if the joints were filled and joined in the usual manner. Each brick counts for itself, and the fact that the bricks are rough is an advantage rather than a detriment, as it gives to the wall surface much the texture of a pencil sketch. Wide overhanging eaves and broad dormers help to bring the scale of the house down close to the ground; and the dignity is supplied by the tall columns and the pediment marking the center of the south front.

The interior arrangement of the house, as will be seen from the floor plans, is commodious. On the left of the square entrance hall, which occupies the center, is the living-room, 25 feet square, with large windows on three sides and a huge fireplace with built-in seats on the north. To the right are the library and dining room. There are large fireplaces, built for use, in all the rooms, the house being heated in the good oldfashioned way. A study of the interior views will reveal more than words can express, the charm and simple beauty of this well-planned country place.
View of the Living Room and Detail of Fireplace, Showing Burnt Wood Decorative Panel
Entrance Hall and Library—Home of Mr. E. B. George at Rowley, Mass.
Details for Window Seat

To the Editor: Kenedy, Texas.

Will you kindly give details of inside finish for window seat as per enclosed plan?

We carpenters in small country towns usually have to be the architect, contractor, foreman and carpenter all rolled into one. We are the whole cheese, but when we wish to do something extra nice or up-to-date we find ourselves up against it.

(PLAN)

My greatest trouble is with inside finish generally. Can you refer me to some book that gives inside details?

T. C. McCoy.

Answer: The accompanying sketch will show you details that will work out very well indeed for the window seat in question.

T. W. Worm.

Which Is Your Way?

To the Editor: Maywood, Ill.

The undersigned would like to hear from your big family as to which is the more common practice in squaring up mill-planed stock (1) to smooth-plane the two broad surfaces after the edges and ends have been straightened and squared or (2) to plane one broad surface first, then the edges and then the second broad surface. It is assumed that the stock is S-2-S and level enough for the work in hand so that all that is to be done to the broad surfaces is merely to smooth off the mill marks.

John Lawrence Heaton.

How to Build a Boat

To the Editor: Nevinger, Mo.

For the benefit of Robt. Mathews and others who may be interested in plain boat building, will say that I build a boat for four persons 16 feet long and from 22 to 24 inches wide on bottom at widest point, with sides from 14 to 16 inches wide, flaring from center to back, set at an angle corresponding to a 9-inch to 12-inch rise. The sides are 14 inches wide at the center, drawn up to 10 inches wide at the front.

Fasten sides to frame, first letting them project below the frame. Then place stem, which should be 1/5 of widest point on bottom. Place it at an angle of 6 on 12 inches.

Next bring sides to bow-blocks; set at same angle by means of strips clamped across sides to prevent splitting in twisting. Then with foreplane proceed to secure level edges below by using straight edge crossways.

Surface all bottom planking to remove planer marks, and use heavy white lead in all joints; these should be screwed every 2 inches or less.

Never use basswood; it rots. Cedar is rather too brittle to insure bending. Edge grain cypress is surest and best.

Will someone please inform me through these columns how to build a fireless cooker?

Chas. E. Otto.

Truss for Church Roof

To the Editor: Scott, Kan.

I enclose you a rough sketch of a church that is to be built here. I will be pleased to have you tell me the proper way to frame the roof of this building, the roof being 3/4-pitch, also the proper height of walls in order to have the best acoustic properties in the auditorium, the ceiling to be of pressed steel. It is proposed to give the floor a drop of 18 inches from rear to front. What is the proper way to frame this with basement under the entire building?

Don S. Farmen.

Answer: The accompanying sketch shows the details of a truss which will meet the requirements of the case. These trusses are to be placed about 14 feet apart with a roof as low as 3/4 pitch. It is necessary to make the ceiling flat. Your walls should probably be 12 feet or 14 feet in height.

We would suggest that much the better way in a case of this kind is to secure from a competent architect complete plans and specifications for the building.

Editor.
Mr. Talbot Has a Last Word

To the Editor: Hanford, Cal.

I send coincidentally with this letter diagram upon tracing cloth showing very suitably the features of the "hand-spike problem" that P. Schneider, of Milwaukee, as well as J. G. Weatherby, of Marshalltown, Iowa, got stuck on. As they each have got started wrongly, I fear it will take something like the article here enclosed to fully enlighten them. The article is copyrighted, and if you choose to publish article with reproduced illustration, I herewith give permission.

I consider this one of my very best treatises upon a mathematical question. You will agree with me, if you notice it. It is very seldom that a person is dragged into a controversy in which the contestants are wrong upon every proposition and yet they don't know it.

The Hand Spike Problem

Let A. L. in the diagram be a sill 30 feet long and weighing the same at every point of its length; required point where hand-spike should be placed to carry two-thirds of the weight of the sill.

Answer: The hand-spike should be placed one-quarter of the distance or 7½ feet from the end. By placing the hand-spike one-fourth of the length of the sill from the end, in any given case of evenly weighing timber, it will sustain two-thirds of the weight of that timber.

The diagram illustrates the reason of the rule as well as the accuracy of it. The principle of the "steel-yards" and that of one of the "mechanical powers" called the "lever" must each be considered in order to fully understand the reason of the rule. Upon placing the hand-spike under the 30-foot sill 7½ feet from end, as shown in the diagram, there is three times as much weight of the sill upon the other side of the pivot as there is weight in the 7½ feet overlapping the pivot or hand-spike. But weight of timber in long end has a balancing power of nine times that in short end on account of being further from the pivot. The purpose of the diagram is to illustrate this feature. The author of this article feels assured of having, by the diagram made simple -that which was complex; as most every child knows enough to tell the yet smaller child, while riding upon the plank in "seesaw," "Get nearer to the end in order to balance me." Almost every adult person has watched some one move the pea on the beam of the "steel-yards" closer or further away from the pivot so that it will sustain in equipoise the article being weighed.

With diagram facing you, showing the sum of the series on one end to be so much greater than the similar set of series on the short end side of the pivot, you will readily see that the 7½ feet reaching over the hand-spike, with no other support outward to the end of the timber from the hand-spike, will sustain or deduct from the "natural weight" of the sill on the long end side of the pivot exactly one-ninth of its weight. It would not do this except the premises of the problem are such that long end is to be held up and its natural gravity to the earth resisted; but no condition of the problem has the effect to deprive the 7½ feet from acting as a lever to sustain one-ninth of the natural weight upon the end at the other side of the pivot.

Recapitulation: There will rest upon the hand-spike exactly two-thirds of the weight of the sill, when the timber throughout weighs uniformly the same, when the hand-spike is placed one-fourth of the length of the sill from the end. This weight is: First, one-fourth; then one-ninth of three-fourths; and then also one-half of the remaining weight, eight-ninths of three-fourths. Thus, if sill in its entirety weighs 360 pounds, the hand-spike thus placed would sustain 240 pounds.

Illustration and article copyrighted. C. W. TALBOT.

He Wants It on the Square

To the Editor: Clinton, Okla.

Will you please give me a rule by which to cut the bevel on the bottom of the hip rafter in the enclosed cut, taken from your October number? I can get the length and top cut, but I want both bevels on the bottom "by the square."

Please answer in the next number of the AMERICAN CARPENTER AND BUILDER. A. P. BROWN.

Answer: The sketch enclosed shows the rafter in question to be a hip resting against the corner of a deck and with the lower end against the ridge board of a gable. The cut at the bottom is a plumb and side cut just the same as at the upper end. However, at the top, the side cut should be right and left, cut in half way to fit against the corner of the deck.

Water-proof Stable Floors

To the Editor: Greenwich, Conn.

Will you please advise me as to the method of laying watertight floors in a barn where horse stables come over cow stables.

Fred W. Hobbs.

Answer: One way suggested is to lay a tight floor of ¾-inch matching, then cover that first with asphalt about ½ to ¾ inch, and on that lay a 1¼-inch matched floor. This floor should be properly graded, so as to drain to a trough for carrying off fluids.

This method is all right, but it would prove to be expensive in the course of a few years. Another and possibly a better way would be to lay a rough floor on the joists, and put on this floor four of five inches of good concrete, well laid down, not leaving more than 25 square feet in one block, using ¼-inch expansion joints filled with pitch. This will keep the floor from cracking, and will also be water tight. There should be a gutter just behind the horses, and the floor should have at least ½-inch fall to each foot. The floor should not be troweled smooth, but left rough, except in the...
gutter; put on this concrete (after it has been down six or seven days) about two inches of clay. Wet it thoroughly and tamp lightly into place. Clay is one of the best materials for horses to stand on.

If it seems preferable to have wood for the animals to stand on, lay a floor of rough planks, somewhat open, over the concrete, leaving cracks wide enough so that all liquid will immediately run through to the concrete and be drained to the desired points.

**How to Develop Corner Brackets**

To the Editor: Cleveland, Ohio.

Would like to see published through your magazine how to lay out the corner cove brackets for a room with cove ceiling, as you know they cannot be the same size as for those that go around the walls.

Answer: There are several ways of solving problems of this kind, but the method most generally used is shown in the accompanying illustration, which explains itself.

The curve of the side wall brackets can be anything desired and should be laid off full size. In the illustration A B represents the run of the curve bracket for the side walls and C B the same for the run of the bracket to fit in the angle. B D represents the drop on the wall, and it necessarily follows that A D represents the curve of the side wall brackets and C D' the same for the angle bracket, which for a square-cornered room would rest at 45 degrees from that of the wall brackets. Next lay off any number of lines parallel to the run of the wall bracket (A B), as at 1, 2, 3, etc. Then lay off a like number of lines of same distance apart, parallel to C B, but of indefinite lengths. Now draw lines from the curve A D and at right angles to the run A B, intersecting the run of the angle bracket (C B), thence at right angles indefinitely. At the intersection of like numbered lines of the angle bracket will be the points through which to run an off-hand curve to coincide with that of the wall bracket.

The corresponding curved rafters for any shaped building may be developed in like manner, provided the angle that the hip rests with that of the common rafter is correctly maintained in the diagram. For particular work, the curve of the hip should be backed, which may be found by measuring back one-half of the thickness of the hip on the parallel lines, which will give the gauge line along the side of the hip from which to remove the wood to the center of its back.

In case of interior work, as for a cove ceiling, as above described, the backing, instead of being beveled off as for the hip, would be just the reverse, or V-shape in the back or curve of the bracket, and in that case it is better to get out two brackets and back them one way, right and left, and then nail them together, so that the V-shape will be formed, and thus give a solid bearing for the nailing of lath or other material.

A. W. Woons.

**Mr. Schneider Hopes This Settles It**

To the Editor: Milwaukee, Wis.

In the October number of your valuable magazine, Mr. C. J. Talbot, in his defense of the "steelyard" proposition says, that we (Mr. J. G. Weatherby and I) attempted in our contributions to enlighten your readers about the "handspike problem." He is right in that, for as far as I am concerned, it was my intention to do so, but I see now, that my attempt did not produce the least effect upon him. It seems to me that he overlooked my remark, or else he wouldn't have said, I was inconsistent. I said, A and B will have to carry any length of the timber alone which would balance upon this handspike, whether cut off from the rest or not, because this piece does neither increase nor diminish the length or weight of the remaining part, and C had to carry only one-half of the remaining part. If the handspike is 5 feet from the end, the balancing piece is then 10 feet and the remaining part 25 as Mr. Talbot said. If his text book teaches very correctly, that two men with a handspike will carry two-thirds of a sill with one man at the extreme end when the handspike is 7 5/6 feet from the center, then his text book is mistaken. The two men with the handspike at this distance would carry three-fourths of the sill and the other man one-fourth. Now in order to enlighten those readers who may have been misled by Mr. Talbot's text book, I will give here the rule for placing the handspike for any number of feet, the man at the end is to carry from one foot up to one-half of the timber. The man at the end will carry as many feet as the handspike is placed from the center. The man with the handspike in the center would carry the whole timber, leaving nothing for the other man. If he is to carry one foot, place the handspike one foot from the center; if he is to carry 7 5/6 feet, place the handspike as many feet from the center, and so on to the end of the timber. I hope this will settle the "handspike" controversy.

P. SCHNEIDER.

**A Slap and a Hunch**

To the Editor: Irondale, Wash.

I see in the September issue, under the heading "Comments from a Reader," that a Mr. W. P. Hubbard takes the stand that a little careful thought by a practical man is often as good as strict mathematical knowledge, and cites the question of S. H. Hay, of Enfield, N. H., regarding a taper stick, as something that may be solved without pencil and paper by a practical man. He goes on to show that the board measure in a stick 12 by 12 inches at one end and 6 by 6 inches at the other and 12 feet long, is 81 feet. Now, the funny part of it is that he is wrong, as the actual board measure is 84 feet.

I take the liberty of drawing attention to this to try and instill a little wholesome respect for mathematics into the minds of mechanics, especially the younger men.

Wm. Moore.

**Claims to Simplify Degree Framing**

To the Editor: Crookston, Minn.

We notice on page 58 of the October number you have an article on the possibilities of the steel square, and you explain how to lay out a roof given in degrees. A case of this kind...
is just where our "A B C protractor square" would do the work without figuring and without any effort on the part of the carpenter at all. All that he would have to do with our tool would be to set member C to member A at 12 (or rather at 6, as he would have to use a scale of 1/4 inch to a foot), then set member B to 42 degrees with A, and C would then coincide with B at 5 9/24 which, multiplied with 2, would give 1 9/24. This is done in a minute without any figuring at all. Furthermore, member B would at the same time give the length 8 1/12 which, multiplied by 2, would make the rafter 16 feet and 2 inches. By using member B as straight edge, A will give the upper cut, and B the lower cut of the rafter.

It is so easy to do those things with our tool that we believe it would be to your interest as well as ours to call the attention of the carpenters to it in your columns. Any kind of degree work would be just as easy.

We should like to get you people so interested in the "A B C protractor square" that you would give articles explaining its use like you are doing with the common square. Crookston Tool Company.

House Design
To the Editor: Port Angeles, Wash.
This is a picture of a house I have just finished, built for Mr. A. I. Filion at Port Angeles, Wash. It was designed by the owner and was constructed at a cost of $5,000.
J. A. Epperson.

Advice for Mr. Knowlton
In answer to Albion Knowlton's question, "What Is the Trouble?" I would say: Your upper window over the bay either leaks at lower end of outside casing and sill or at the top. To prevent leaking, take off window stool and apron and let your tin run clear through the wall and turn up on the inside of the sill. Also let the tin turn up a little on the studding. That will form a trough which will carry off all water. I have repaired several and it proved satisfactory.
C. D. Fisher.

A New Word Coined
To the Editor: Collinwood, Ohio.
There is a growing tendency to call the larger particles that go into concrete with sand and cement, aggregates, when in fact the whole mixture is the aggregate or sum.
A very close study of the word fails to reveal any definition that would imply that it could be used as a name of an object, and since the broken stone, slag, cinder or other things put in with the cement and sand are objects, such a term, that means the whole, is out of place. Hence, I suggest the word copard, to mean anything of a larger size that will be used in concrete with sand and cement.
Copards are the co-partners of the sand and cement, to make up the aggregate or sum total, which is the concrete. Using the word in a sentence something like this: "The copards in the concrete mixture were slag," or, "A washer for copards should be built near the source of supply." Or, if no new word is needed, do not use aggregate as it is confusing and improper. W. D. Browning.

Cutting Pockets in Jamb
To the Editor: Harveyville, Kan.
Enclosed find drawing of my plan for cutting pockets in jambs. I find it very quickly done, neat and much better than using the saw. I use a 1/4-inch chisel ground very thin.
H. McPherson.

Plank Splicing Question
To the Editor: Ewen, Mich.
Being a charter member, I wish to learn which is right? A brother carpenter and I had a dispute over splicing out a joist, 2 by 12 inches, 22 feet long, to make it 24 feet long. He wanted to put on 2 feet more, making it 24 feet. I told him that if I had it to do I would cut a 2-foot piece from another plank and butt the ends together, and then cut from a 1 by 12 inch board 2 pieces 3 feet long, and nail one to each side of the plank. Now his way was to take a plank 2 by 12 inches, 10 feet long, and laying it 2 feet past the 22-foot piece, nailing the balance to the joist. My claim was that the 8 feet of plank was wasted and no benefit to the joist, for it only adds needless weight to it and the weak point in the joist would be at the end of the 10-foot splice plank.
Which is right? C. M. Udall.
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See Pages 235, 236, 237, 238

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Device for Squaring Frames

To the Editor: Youngstown, Ohio.

Seeing a query some time ago for a device to square window frames, and to do it quickly, I herewith enclose sketch.

Make a board table 3 feet 6 inches wide by 7 feet long. Up one side screw on two pieces 1½ by 2 inches, leaving a space in the center about 1 foot 6 inches for nailing on sill; also on one end same thing, leaving corner open for nailing head. Make a triangular piece having one square corner 1 foot 6 inches by 2 feet 3 inches, as per sketch. Also make two irregular circular pieces of wood; in these bore a hole a little out of center and put in an iron bolt, so that when turned it will wedge the square into the corner. The lower irregular circle is to wedge pulley stile to the side. The dotted lines on sketch is where the pulley stile and head are placed.

I think the quickness of this device will soon make up for first cost on construction of the table. R. R. Atkenson.

Church Roofing Problem

To the Editor: Hickman, Neb.

I have the contract to build a new church at Cheney, Neb., 30 by 36 feet, with a 12 by 26 foot addition, tower 8 by 8, as per the enclosed diagram. What I want to know is this: Could I make the comb of the 26-foot addition even with the main comb, which is one-half pitch or 15-foot rise on the 30 feet? I would like to make the rise on 26-foot the same; but in this case, will my ceiling meet together nicely on my arched hips? Or would you advise to give one-half pitch to 26-foot addition also?

Answer: It will be better to make all roofs of the same pitch with the plates the same height, letting the ridges come where they will. J. E. Offer.

Interesting Problem

To the Editor: Argyle, N. Y.

I am a charter member of your large family. I have run up against it in the following problem and am wondering if there is any rule to govern the division of polygons. The problem that struck me is as follows:

To divide a given triangle into any number of similar concentric triangles so that the open area between each triangle and the next succeeding concentric one will be equal; or, in the figure that the spaces A, B, C and D may all be equal.

Geo. Sailer.
Nailing Hints

To the Editor: Greenleaf, Ore.

A man who has spent his life on the finer side of carpenter work called my attention recently to the fact that a brace or any temporary board was usually nailed in the middle. Then when the hammer was clawed under the edge of the board to pull it off, a split board was the result. He said a nail in the edge of the board would do the same work, and the board could be pulled off without spoiling. See?

Marion P. Wheeler.

Mission Cabinet Design

To the Editor: Grand Rapids, Mich.

In the September number of the AMERICAN CARPENTER AND BUILDER Harry C. Lewis requests a mission cabinet design. I enclose a design which may be of some assistance.

Thomas Wienand.

Suggestions Wanted

To the Editor: Florence, Mont.

"There is a man in our town" who proposes building a house of "monolithic concrete." His idea is, not to make complete molds at once, but to build them up about 2 feet; and, after filling that much and allowing it to set, to move the molds up. For the face of the mold he intends to take galvanized iron siding, pressed in imitation of chipped stone, fill the face of the sheets with plaster, and nail them on a board backing.

In the openings he proposes to place rough frames of 2 by 6—the walls being 6 inches thick—to which to nail 3/4-inch stuff for jambs and finish. He is not a mechanic, and proposes to use "cheap help" in getting up the concrete work. The intention is to make the walls solid, furring for lath and plaster on the inside.

There seems to be some elements of novelty in his design—and some of virtue—but what kind of a fix are the carpenters going to be in when called on to finish the job? I would like to hear from the practical readers of the CARPENTER AND BUILDER, if, in their opinion, he is on the track of "something good"; and what slight modifications he should be induced to make in order to render the carpenter work tolerable. I know that building has been done by methods similar to those he proposes; but the details and results of such process seem to have been but little discussed. It would seem to be of interest.

Carl Townsend.

Framing for Projecting Bay

To the Editor: Wharton, Ohio.

I am sending you a sketch of bay end that is in course of construction here where I am working. I don't know whether or not it bothers the contractor that is doing the work, but I know it doesn't look right to me!

Could you suggest how the roof ought to be framed to look right? Would like to have you explain through your correspondence column. I have taken your paper since it has been published.

David W. Brandt.

Answer: Fig. 1 shows the plan of the roof as it has been built and Fig. 2 shows the proper method of framing same. There should be a ridge at "A" equal in length to projection of bay, exactly the same as if the bay had been a square projection as shown by the dotted lines.

Editor.

To Cut Jack Rafters in a Miter Box

To the Editor: San Francisco, Cal.

Can jack rafters be cut in a miter box so as to make the plumb and back bevel with one cut? If so, at least 64 cuts could be saved in framing a hip roof with timber long enough to cut right and left jacks with one cut.

Answer: Sure; jack rafters can be cut in a miter box; but an experienced framer would not take the time to bother with a mitre box as he can do as well without it. To begin with, the cuts on the box must be to the angles required on the rafter, which would save laying them off on each rafter. The box would have its advantage in furnishing a guide to cut by, which might be quite a help to some, as not all can cut on a diagonal line across the back of a rafter and at the same time maintain the plumb lines on the sides without laying off the lines clear around the timber.

Editor.
By the Farrington process copal can now be handled with certainty, rapidity and ease. Hitherto it has been impossible to use copal successfully. But now, as a result of the Farrington process, copal can be used more easily, with perfect certainty and greater economy and satisfaction, than shellac or any other method of finishing floors. Copal is harder, more elastic, more durable, more serviceable.

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**THESE LETTERS TELL YOU WHAT FARRINGTON FINISH IS AND DOES**

Ludlow, VT.—Let me add my testimony to the superior qualities of Farrington Floor Finish over all other finishes I have ever used. I have been in the business forty years. During that time I have tried every kind of finish that is known to the trade. I will testify to the exact truth to every one of the claims you see are making in your advertisements and I will stand ready to prove it. I have clipped and kept your advertisements in my safes for my customers. And I add something you have not mentioned. I recommend my customers to use Farrington Finish in places where shellac is used. It is a better filler. It goes on smoother. It does not raise the grain. And it does not color the most delicate wood. It is ten times more elastic than any other finish. It does not cost more than one-third. I have tried Farrington Floor Finish on all kinds of fine-grained woods, and it bears up so perfectly that I can do a first-class job with one coat for filler and two finishing coats. It won’t scratch while like shellac and all other finishes will. The difference between Farrington Floor Finish and all others is its durability, lower cost of up-keep, its beauty, conveniences and ease of application. Costs less than half, wears twice as long, work of applying it is reduced one-half, cost and labor of keeping it in condition is insignificant. It has given genuine satisfaction to every one I have ever used it for. E. P. Saunders, Decorator and Painter.

Dorchester, Mass.—Let me write a good word for you in praise of your Farrington Floor Finish. For re-finishing old floors of rooms that are in constant use, your finish saves all kinds of trouble. Folks I work for have asked many times what materials I have used as they want some for their own use. I think the specially commendable points about Farrington Floor Finish are—1. Its durability—2. Its body—3. Its quick drying qualities—4. Its freedom from varnish odors—5. Its economy. In fact I find that, for my line of work, there is no comparison between any of the other floor finishes and Farrington Finish. It would be in more general use, I suppose, if painters generally understood hardwood finishing, and if they were not afraid to tackle an innovation. I ran across a sample of your finish when I was with the Shawmut Furniture Company and found that it was all that you claimed. After that time they never used anything else while I was with them, and I believe they are using it yet. I know you have a big success coming to you with Farrington Floor Finish—M. H. Donnelly, Antique and Modern Furniture, 237 Bowdoin Street.

Milford, N. H.—We find Farrington Floor Finish will do all you claim. When I placed my first order, you will remember I said it would be in more general use, if painters generally understood hardwood finishing, and if they were not afraid to tackles an innovation. I ran across a sample of your finish when I was with the Shawmut Furniture Company and found that it was all that you claimed. After that time they never used anything else while I was with them, and I believe they are using it yet. I know you have a big success coming to you with Farrington Floor Finish.—M. H. Donnelly, Antique and Modern Furniture, 237 Bowdoin Street.

The price of Farrington Floor Finish is $2.50 per gallon, freight paid to the Mississipii river. Discounts on quantities.

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You may send, without cost to me, materials for an easy and thorough test of the Farrington Method of finishing floors—a test that I can make without leaving my desk.

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I am interested in (Owner, Supt., Mgr., Art., Architect, Bldr., Decorator) in (No. of) (kind of) buildings with a total of about sq. ft. of floors on which some sort of finish must be used.
Valuable Catalogue for All Builders’ Tools and Hardware

The editor has received a copy of the new catalogue of the Stebbins Hardware Company, the same being a complete general catalogue showing the entire line of mechanics’ tools, cutlery and builders’ hardware carried by this well-known firm.

It is safe to say that no book of more genuine value and interest to carpenters and builders has been issued than this. Although compiled, printed and bound at large expense to the Stebbins Hardware Company this book is being mailed free upon request to readers of the AMERICAN CARPENTER AND BUILDER. It is expected that the demand for the book will be so great that the first edition will soon be exhausted. So it is urged that copies be secured at once.

The catalogue is fully illustrated and much valuable information concerning standard sizes and weights, prices, general supplies, etc., is given. The fact that the index covers 22 double-column pages indicates the completeness and scope of the work.

In the foreword we find the following:

“In issuing this general catalogue, we present what we believe to be the most practical compilation possible, considering the fact that the name “hardware” embraces so many different kinds of goods that an absolutely hardware catalogue is an impossibility. We would ask that whenever our customers want an article which is not listed herein they make their want known to us as we probably have the desired article in stock.

“Tool buyers are of two kinds—the skilled mechanic and the man who wants a good tool but is unable to tell a good one from a poor one, and this paragraph is particularly for the latter’s instruction. As every skilled mechanic knows, reputable manufacturers of high-grade standard tools will not allow their product to be sold under any name or trademark but their own, so that wherever you find a dealer handling a so-called standard line of tools marked ‘manufactured especially for us’ and bearing his (the dealer’s) name or trademark, or some high-sounding fanciful name, it is a safe guess that the article is of inferior grade. Our tools are the product of the foremost manufacturers; tools with well-earned reputations for quality—such goods as the skilled artisan asks for and insists on having, and we handle no goods that the maker is ashamed to brand with his name.

(Continued on page 246)
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S. C. Johnson & Son, Racine, Wis.

"The Wood Finishing Authorities"
Did you ever get hold of a varnish that would dry hard in half an hour—and wouldn't show scratches or heel prints?

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You can use it wherever you would use shellac or varnish. Over stain, dye, filler or on bare wood. To brighten up old varnished, oiled or shellacked surfaces. To preserve and beautify linoleum, oil cloth, etc.

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S. C. Johnson & Son
Racine, Wis.

"The Wood Finishing Authorities"

S. C. Johnson & Son, Racine, Wis.

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Ever since the beginning of time the question of roofing, from the most primitive form, as seen in the straw-thatched hut, has been looked into by everyone contemplating—a roof of some sort.

When the Moors were driven out of Spain they left behind them the art of making those beautiful earthenware roofing tiles that lend such a charm to the many ancient buildings, many of which are still standing in that historic country.

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A roof covering that is architectural and ornamental in appearance, and one of extreme lightness and durability.

One that is absolutely wind, weather, storm, fire and lightning-proof.

One that can be applied without soldering, the use of special tools, and by any ordinary mechanic, at a very moderate cost.

The method of interlocking Edwards metal shingles and Spanish tile forms the only perfect system of contraction and expansion so essential in securing an absolutely water-tight roof.

Edwards metal shingles, metal slate and metal Spanish tile are manufactured from the best quality Worcester grade tin plate, furnished either painted or galvanized (galvanized after formation) in the following sizes:

- Metal slate, 7x10, 10x14, 14x20 inches.
- Queen Anne and Rookwood metal shingles, 10x14 inches.
- Metal Spanish tile, 10x14 inches.

In addition to their metal shingles and metal Spanish tile, this company manufactures a complete line of metal ceilings and side walls, hip shingles, metal roofing and siding, steel cluster shingles, imitation brick and stone siding, roof cresting, valleys, ridge roll, skylights, cornice, finials, metal fireproof window frames and sash, etc. A handsome catalogue illustrating their complete line will be sent free on request. Address The Edwards Manufacturing Company, "The Sheet Metal Folks," 401-419 Eggleston avenue, Cincinnati, Ohio.

Amatite Growing Popular

The tremendous popularity of Amatite ready roofing shows how the idea of a roofing which you don't have to paint has been seized upon by practical Americans all over the country.

There is no doubt that the great trouble with the old-style smooth-surfaced roofings was the fact that they required so much care. They had to be painted every two years to keep them in proper condition.

A free sample of Amatite can be had by addressing nearest office of the Barrett Manufacturing Company, New York, Chicago, Philadelphia, Boston, St. Louis, Cleveland, Pittsburgh, Cincinnati, Kansas City, Minneapolis, New Orleans.

Atkins "AAA" Hand Saw Clamp

This is a new device, weighing a trifle over one pound and occupying about the same space as a chisel.

It can be instantly attached to or removed from any flat (Continued on page 250)
The Ball-bearing Chuck is the Strongest Gripping Device Ever Put on a Brace

It is the greatest improvement ever made in brace construction. It tightens and releases more easily, and has a firmer grip on any type of shank than the chuck of any other brace. The only brace made with this patented chuck is the P. S. & W. SAMSON BRACE

What the Chuck Will Do

Tenpenny nails, held in this chuck, have been bored through solid oak.
Five-sixteenth inch rods with one end in a vise have been twisted by the Samson to the breaking point.
You can tighten it with the bare hand to a firmer grip than you can get on any other chuck with the help of a vise.
No matter how firm the grip, it releases so easily that a child could do it.

"No Other Brace Would Do That"

The following speaks for itself. It is an extract from a letter by a man who writes from practical experience.

"I purchased one of your Samson Braces about two weeks ago and like it better than any Brace I ever used. I hardly expected it would hold a straight shank drill only 1-16 inch in diameter, but it did grip it perfectly. No other brace that I have used would do that."

J. R. REEDY,
132 E. Kossuth St.,
Columbus, O.

The Steel Clad Head

The head has dust-proof steel ball-bearings.
It is securely protected from splitting by a steel cap, surrounding the head to a height of 3/16 of an inch.
The Alligator Jaw is another good feature of the Samson Brace. It adjusts itself perfectly to suit the shape of the drill shank. The spring cannot be broken by jamming in the drill.

Sold by leading dealers in all cities—Write us for the "Handy List"
OUR GREATEST SALE OF

Never before, in our twenty years' experience of continually giving the building trades "bargains upon bargains," have we been able to approach such great values as we offer you today. For we have just completed some enormous purchases of Lumber, Mill Work, Builders' Hardware, Roofing, etc., at Sheriffs' Sales, Receivers' Sales and from Manufacturers who were forced to sacrifice their stocks for ready cash.

To enable you to take advantage of this great sale, we have placed all of these purchases into our new 500-page Catalog, for which you should write today and begin saving 25 to 50 per cent on almost every article you buy.

Quality. We believe in the best grades and positively refuse to handle shoddy or cheap goods, and confine our purchases only to the better qualities such as we can absolutely guarantee to give you satisfaction or refund your money.

OUR MONEY SAVING LUMBER PRICES—SAVE YOU 25% to 50% on EVERY ORDER

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FLOORING
4 in. Clear Oregon Fir Drop Siding | $0.39
6 in. Clear Oregon Fir Drop Siding | $0.50

SHINGLES AND LATH
4 in. Star Red Cedar Shingles | $0.50
6 in. Star Red Cedar Shingles | $0.75

SEND US YOUR LUMBER BILL FOR OUR ESTIMATE

"EXTRACTS" from our NEW MAMMOTH CATALOG—ON ITEMS YOU BUY DAILY

FRAMES
Window Frames with % in outside casing without pulleys or pockets. Price $1.35
With % in outside casing and policy $1.95

WRITE AT ONCE FOR OUR BIG CATALOG AND SAVE MONEY

WINDBOARDS
Made of soft pine, double "A" quality, strictly first class. For Catalog No. 10-A-100, a 2 ft. by 7 ft., 1¼ inches thick, $8.10

CHICAGO HOUSE WRECKING CO.
35TH AND IRON STS., CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
NEW BUILDING MATERIAL

OUR PLAN BOOK BRINGS CUSTOMERS TO EVERY CONTRACTOR AND BUILDER.

WE FURNISH YOU OUR BOOK OF PLANS ABSOLUTELY FREE, which is a great help to you in getting business. This is the handsomest book of its kind ever published. It contains a large number of House and Barn designs, showing photographs, illustrations, floor plans, and gives a general description of houses from $290.00 up. It contains plans that are positively the most desirable of their kind. Not only are they up-to-date, but they are practical in every way as well. Have all been built and the low prices for material for them will be a pleasant surprise for you.

BUILDERS' HARDWARE 47c

PREMIER Ready-Mixed House Paints $1.95 FOR THIS BEAUTIFUL MANTEL

BUILDING PAPERS

STEEL ROOFING

RUBBERIZED GALVO ROOFING

BRICK SIDING

100,000 squares of New Steel Roofing, which we are selling at the following prices, F.O.B. Chicago.

Our catalog shows over fifty different shades and styles but this is an example of only the best ready-to-use roofing on the market. Price includes nails, caps and cement sufficient to make the job and we will pay the freight at this price to all points within 400 miles of Chicago. Pay at $1.40; 2 at $1.30; 10 at $1.20; 50 at $1.10; 100 at $1.00.

Any items quoted on these two pages sent C.O.D. upon receipt of 25 per cent deposit with order.

CHICAGO HOUSE WRECKING CO.,
35th and Iron Sts., Chicago

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Draftsmen Wanted

CONSTANT DEMAND FOR PRACTICAL TRAINED DRAFTSMEN OFFERS PERMANENT POSITION WITH BEST SALARY

It is perhaps not known to most of our readers, but especially to the ambitious, wideawake and progressive man, and to the large number of mechanics reading our paper that there is no better field or opportunity for advancement than there is to the practical and well-trained draftsman in this line.

But not that man is wanted who has the largest or most expensive library of technical or school books "at home;" neither the one that carries along with him under his arm when applying for a position a nicely engraved "beautiful diploma" on paper (costing $50 to $75 per square foot), nor the "would be" draftsman that can "copy" a nice looking picture from another picture with given dimensions.

No, the demand is for draftsmen with practical drafting room training, such draftsmen are wanted badly all the time, and the better the man the better the salary, $25-$75 per week, and more for the best men.

F. V. DOBE

The quickest and best way to be trained on practical drafting room work and to get the required practical experience is to receive personal and individual instruction from a high-grade, practical man at the trade, with a reputation as the most experienced man in training men to become competent and successful draftsmen.

An ordinary draftsman, even the best draftsman, cannot teach this trade unless he has many years' experience as an instructor, and has ability to impart knowledge that is understood and that will stick forever—a special gift that ninety-nine out of 100 do not have.

Mr. F. V. Dobe, Chief Draftsman of the Engineers' Equipment Co. (Inc.), Chicago, with twenty years' experience in training and handling men has for a good many years given personal individual instruction by mail with the most deserving success, because his instruction work consists of actual practical drafting room work that gives his personal student and apprentice the required practical experience.

Mr. Dobe has been an advertiser in our paper for a good many years, and will send his "Successful Draftsmanship" Prospectus, 6x9, also list of 250 open positions for draftsmen, and full information free.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Why Carey's Roofing Insures Right Results

The Philip Carey Mfg. Company are the oldest and largest manufacturers in the United States of a uniform grade and quality of roofing. Because their organization covers this entire country and Canada; they are thoroughly equipped to handle any contract roofing work, and to apply the Carey Roof Standard to any class of buildings for Architects, Builders or Property Owners.

Carey's Roofing is finished and completed at the factory under their direct supervision.

Satisfaction is guaranteed on all contract work entrusted to their care.

means absolute uniformity. It is standard in manufacture, quality and weight—year in and year out—the world over.

Carey's Roofing has been on the market for over twenty years, and the original design and plan of construction and same uniform grade of materials have been strictly adhered to—because they have proved their superiority as a roofing construction.

The materials of the Carey Roof actually improve with age and exposure, and may be perpetuated to last the life of the building. The inner cement compound retains its elasticity. The manufacturers have samples of Carey roofs that have given 15, 18 and 20 years of service that are as flexible—in as good condition—as when first applied.

The Patented Wide Lap (a special Carey feature) thoroughly protects the nail-heads and seam, and insures an absolutely water-tight and wind-proof joint.

A sample of Carey's Roofing and Carey's Roofing Book will be gladly sent on application. Detailed estimates and specific information on any point desired. Address

The Philip Carey Manufacturing Company
30 Wayne Avenue, Cincinnati, Ohio

[FOURTY-FIVE BRANCH OFFICES AND DISTRIBUTING POINTS]

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
received. The Inter-State Equipment and Engineering Company, whose ad appears in this issue, will be pleased to send you their descriptive folder and quote you their attractive price.

**The Coal Chute “Puzzle” Solved**

Last month we published in these columns an illustration which proved to be quite a puzzle. A large number of our readers have already solved it correctly, and for their trouble have been sent copies of the valuable catalogue of the Taylor Coal Chute & Manufacturing Company, as offered.

The illustration here reproduced gives the proper explanation of the puzzle; the words to accompany it are, “In the Cellar Out of Sight.” It shows the standard chute of the Taylor Company when put away in the coal cellar. In this position it does not interfere with the window sash and takes up only 4½ inches space next to the ceiling. It is easily operated from the outside by means of the handle.

It is stated that the reason the Taylor steel folding coal chute came to be made was that the old wooden coal chute in the front yard of a fine residence always seemed very much out of place. The coal window with the frame battered and the base board above shattered and broken, is usually the most unsightly thing to be seen around a good residence.

In these modern times it was thought that such nuisances should be done away with. As a result, the Taylor steel folding coal chute was designed; and it fills the bill perfectly, with the house thoroughly protected and the chute out of sight.

Over four hundred chutes are now in use in Kewanee alone and not $5.00 has been paid out for repairs in seven years. This proves their durability. Duplicates of orders prove the merits of the chute.

If you are interested write the Taylor Coal Chute & Manufacturing Company, Kewanee, Ill., and they will send you their catalogue which tells you all about their product, showing the class of buildings in which it is installed and much information that will be of

---

**Mastic Roofing**

**Makes Many Customers**

We regard carpenters as those who have the most right to share our profits. We argue that our interests are mutual.

The man who lays the roofing is held responsible for its worth. He ought to know which is the most reliable. His reputation is based upon his own work.

Contractors who use cheap roofing, when Mastic—a good roofing—costs so little more, are committing business suicide. Conscientious dealers use—and recommend—Mastic Roofing for service.

Then here’s the proposition:

Under the MASTIC banner are hundreds of carpenters who sell Mastic Roofing.

They have found by experience that it’s “the roofing that fulfills the claims.” They are enthusiastic over Mastic because they actually know “it delivers the goods.”

Consequently they act as our selling agents with profit to themselves. They use Mastic Roofing in their daily work and are naturally the most competent to sell it.

---

We Co-operate with Carpenters, Builders and Contractors—especially

There is more territory open. Write for details.

We offer special inducements to contractors, carpenters and builders putting on the first Mastic roof in localities where it has not been introduced. Write for particulars, free sample and literature.

**National Roofing Materials Co.**

Edwardsville, Illinois
60 Winter Days
Free Test at Our Risk and Cost

We Furnish Plans and Tools for Installing

As manufacturers, directly responsible to you for satisfactory results, we will send you a Hess Steel Furnace and complete heating outfit, including pipes, registers, fittings and everything needed, made to fit your measurements, with correct plans and instructions for installing, at $25 to $100 less than you can buy from others. We deliver the outfit at your station freight prepaid. You place the purchase price in the hands of your local banker, who will hold the money 60 days while you test the heater.

In case the test is not satisfactory in every way, you may return the goods at our expense and the banker will refund your money.

Don't Pay an Exorbitant Price for a Heating Outfit
We Save You From $25 to $100

Send us a rough sketch of any building you wish to heat. Without any charge or obligation on your part, we will have our expert furnace draughtsmen prepare a plan which you can easily understand, showing the best way to heat your building, including every detail of the furnace, pipes, registers, etc., in their proper places, with the exact cost to you of the complete equipment. No Charge for this.

By following our simple, clear plans and directions any man handy with tools can easily install a Hess Furnace and outfit. We loan all the necessary tools, free.

Our free booklet, "Modern Furnace Heating," clearly explains the principles of furnace heating. This booklet is so simply written anyone can easily understand the text, plans and illustrations it contains. It covers the entire heating proposition thoroughly and gives information of much value to the intending builder.

The booklet, "These Bear Witness," gives the names and addresses of hundreds of people in every state and territory (many of them, perhaps, your neighbors) who have, and are using the Hess Steel Furnace and outfit, and to whom we refer as to the success of our heater and the advantages we offer to buyers.

Heats 7 or 8 Rooms Burns Any Fuel

Our Leader No. 45 is an economical furnace. It will heat seven or eight rooms, a small church, store, school or similar building.

Besides any kind of coal or wood, any other fuel, such as gas, coke, chips, twisted straw, corn cobs, etc., may be utilized in the Hess Furnace and money saved.

We Fill Rush Orders Promptly

We are prepared to fill rush orders promptly and can ship complete outfits within a few days after receipt of order.

Send us a Rough Sketch of any Building you wish to Heat. Our Plans, Estimate and Advice, Cost You Nothing, Whether You Buy of Us or Not.

Hess Warming & Ventilating Co.

920 Tacoma Bldg.

CHICAGO
benefit to you. The catalogue costs nothing and the coal chutes themselves can be bought very reasonably.

**Miller’s Lock Mortiser**

“it’s a peach.” “it’s a little beauty.” “it has saved me $65 in four weeks.” “Wouldn’t be without it for ten times its price.” And so ‘the buyers of the Miller Lock Mortiser keep reporting. They are men who appreciate what new labor-saving tools will do for them.

The Miller Lock Mortiser is a tool made on scientific principles to reduce the labor and time required in cutting an opening in a door for a lock. It cuts this opening in one-half minute. The whole operation of placing the tool in position, etc., and doing the actual cutting requires but three minutes. Anyone knows that this is saving considerable time. Besides this, a carpenter sometimes has an unusually thin door to cut the opening in. With a Miller mortiser he can make a cleaner job and without any danger of cracking or injuring the door.

The Albert W. Miller Manufacturing Company, Nevada building, Cincinnati, Ohio, have so much faith in their mortiser that they offer to give every carpenter and contractor a chance to thoroughly examine and test it before buying. Their proposition gives the prospective buyer every chance of seeing just what he is getting before he pays a cent. The mortiser has been on the market for over four years, and there are many already in use by men who believe in getting the latest and best labor-saving tools as soon as possible. Circulards and prices on request.

**“Sebco” Extension Drill**

The Star Expansion Bolt Company, Cedar and Washington streets, New York City, has just introduced another live wire specialty. Their latest is a line of improved extension drill heads which can be used with any ordinary piece of gas or water pipe.

The four drill heads most frequently desired are the Nos. 2, 3, 4, 5, which drill holes 9/16, 11/16, 7/8 and 1 inch respectively. No. 2 requires a piece of 3/4-inch pipe for a handle. No. 3 requires a piece of 3/4-inch pipe. No. 4 a piece of 3/4-inch and No. 5 a piece of 5/8-inch. These four sizes come packed one each in a neat wooden box and comprise a set. It is decidedly worthy of note that seven entirely new sizes have been introduced in “Sebco” extension drill heads. In addition to the above four sizes, the following closely graduated range of sizes is made: 11/16, 13/16, 15/16, 13/8, 7/4, 3/4, 3/8, 3/8, and 4-inch.

Compare this list with the sizes you’ve been able to buy heretofore, and you’ll notice a lot of important additions.

For all the larger sizes only three different sizes of pipe are required for handles. A piece of 3/4-inch pipe serves as a handle for either the 11/16, 13/8 or 15/16-inch drill heads. A piece of 1-inch pipe fits drill heads 7/8 to 3-inch, inclusive, and the 3/4, 3/8 and 4-inch drills all work equally well with a 1/2-inch pipe for a handle. This feature constitutes a

---

**Hess Sanitary Bath Room Locker (Medicine Cabinet)**

Something New For Your Home

Made of Solid, Smooth Steel Throughout, and Finished Inside and Out in Finest Everlasting Baked White Enamel—Snow White—with Adjustable Enameled Steel Shelves, Nickel Plated Hinges and Handle.

**Better Than Wood and Costs**

No home is complete without a Hess Sanitary Bathroom Locker. It is suitable for the finest bath room. It is dust, germ and vermin proof and easily cleaned with warm water.

Style “A” Locker is made to recess into the wall and projects 1 1/8 inches from the face of wall. It has a beveled plate mirror 16x20 inches and measures 19 1/4 x 23 1/2 inches inside. Below the mirror is an open shelf 19 1/4 x 5 1/2 inches. Style “C” is the same size and finish; made not to recess into the wall, but to be suspended on the wall.

**Price of Style “A”** $8.00

**Price of Style “C”** 0.00

Without Mirror deduct $1.50. Without Open Shelf deduct $1.00.

We will prepay freight charges anywhere east of Missouri and north of Ohio rivers on orders for two or more Lockers.

The same cabinets with a different arrangement inside, are used in office buildings, clubs and institutions for Toilets.

**Send for Illustrated Circular Showing Several Sizes**

We are makers of the Hess Steel Furnace. Important booklet, “Modern Furnace Heating” Sent Free.

Hess Warming & Ventilating Co. 920 L Tacoma Bldg. CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
It is no longer necessary for the progressive dealer to buy roofing from a half dozen manufacturers to meet the requirements of his trade—you can secure from the Ford Line any style and price of roofing your trade demands.

The Ford Trade Mark on a roll of roofing signifies quality—dependability. Forty years of reputation stands behind it.

The man who comes into your store to buy roofing, can’t walk out without leaving his order, if you handle the Ford Line—whether he calls for a roof to cover a hen-house, his barn, his factory, or his mansion, he will find a “Special” roof to meet his requirements.

The Ford Line provides roofs for every building purpose. To appreciate this, you must see the samples.

Use the coupon and send it in today.

Ford Manufacturing Co.
2333 La Salle Street, CHICAGO

Ford Mfg. Co.
Chicago, U.S.A.

Please send samples of and full information about Ford’s Special Roofs.

Name ________________________________

Town ________________________________

State ________________________________

A. C. & B.—November, 1909
forward step in the manufacture of "extension drill heads." In the past, each separate size of drill head required a different size pipe for a handle.

The enviable reputation which the Star people have already established for their standard line of Star expansion bolts and Star screw anchors is sufficient of a guarantee that there is good stuff in "Sebo" drills.

**Variety Saw Bench**

This saw bench of the Crescent Machine Works is built to supply the popular demand for a strong, convenient bench for all-around service. It is said to be stronger, better, heavier made and has more improvements than any other saw bench on the market selling at the price.

The base is stronger, larger and heavier than is customary. The yoke ways are cast solid with it. The floor bearing is extremely large, giving substantial support. It does not interfere with the operator's feet. The yoke is extremely large and free from vibration. It travels in an arc concentric with the counter-shaft. The arbor belt is always at the same tension regardless of the position of the saw. No stronger and neater construction, giving a tight belt at all times, is found in any saw bench. The yoke has a bearing on each side of the base 20 inches in length. It is raised and lowered by a spiral gear and rack operated by the large hand wheel on the front of the machine. The yoke remains locked in any position.

The arbor is made of 1 3/4-inch ground crucible steel. The pulley is 4 1/2 by 5 1/2 inches, turned inside and outside and grooved. Provision is made for taking up end play. The arbor is left sufficiently long to permit the use of a boring attachment. The bearings are 6 inches in length, lined with genuine babbitt, hand scraped and self-oiling from ample reservoirs. When specified the threaded end of arbor is left long enough to accommodate 2-inch dado heads.

The table is 38 by 48 inches in size. It is extremely well ribbed to insure a true surface. It has double ribs around the sides to permit the use of clamps. The table tilts to 45 degrees on heavy, durable semi-machined hinges. The degree of tilt is registered by a graduated segment and pointer. The table is quickly tilted and rigidly clamped in any position. The angle required is accurately obtained by use of the micrometer attachment. The method is quicker than the long screw and nut employed in other saw benches. As will be noticed, the table does not raise and lower as on other saw benches. This insures a solid table at all times.

The gauges are four in number, two cut-off gauges, one plain ripping gauge and one tilting ripping gauge. This superior ripping gauge is not furnished on other makes of saw benches.

The regular countershaft, made of 1 3/4-inch shafting with heavy hangers and 6-inch self-oiling bearings, is furnished.

---

**Carpenters and Builders**

Looking for the Latest and Best Methods of Approved Construction should be informed on OVERCOATED HOUSES

**SEND FOR OUR ILLUSTRATED BOOKLET—FREE**

**NORTH WESTERN EXPANDED METAL CO.**

930-950 Old Colony Bldg. - - - - - Chicago

**KNO-BURN**

The Perfection of Metal Lath

**BEST for OVERCOATING**

Best for all Plastering —

**PERFECT KEY**

STIFFEST—EASIEST TO HANDLE

RIGHT in every respect

North Western Expanded Metal Co.

930-950 Old Colony Bldg. - CHICAGO, ILL. ASK FOR PRICES. LOCAL STOCKS EVERYWHERE.
Largest and Newest of All Plan Books

280 Pages -- 250 Designs

“Radford’s Artistic Homes” is an absolutely brand-new book, illustrating the newest and most up-to-date designs in modern homes. This is the largest single book of house designs ever published, consisting of 280 pages and showing 250 designs of houses, together with complete plans, and giving the arrangement and dimensions of all rooms.

Homes to Suit Any and Every Taste

There is a wide diversity of design shown in the houses. This is done because the taste in home architecture is as wide as that in any other field. There are houses for people of moderate means and there are others for the more wealthy, but in every case the design is made with reference to comfort and economy.

Homes Designed by the Best Architects

Every design shown has been made by the best architects in the world, who have made a study of home architecture and that alone. This volume has received the benefit of the most careful attention. In a word, the designs are the best that could be secured.

Marvelous Advance in Home Architecture

One will wonder, in glancing over the beautiful structures shown in this book, at the marvelous advance in home architecture in recent years. Yet it has been a development slow and sure, keeping pace with the advancement of the race along all lines.

Homes Planned for Comfort and Convenience

Every design shown has been made with reference to comfort, convenience and economy in materials. Every house is planned from the inside and not from the outside; that is to say, the convenience of arrangement has been the first consideration.

Accurate and Economical Plans

Every design in this book is drawn with a faithful regard for mathematical accuracy, and there is no error to bother the builder. There are designs here that will be found adapted to any community, for the dweller in rural hamlets, small towns or in cities. In house building, as well as in all other things in which men engage, the purpose should be improvement and betterment.

How to Obtain This Book FREE

Our Great Special Offer

The AMERICAN CARPENTER AND BUILDER will give a copy of this valuable book, “RADFORD’S ARTISTIC HOMES,” absolutely free, postage prepaid, to all new and old subscribers whose subscriptions or renewals are received before Dec. 1, 1909. In all cases cash in full to cover one year’s subscription to the AMERICAN CARPENTER AND BUILDER ($2.00) must accompany the order. All renewals will be credited from the date present subscriptions expire. Address

American Carpenter and Builder

185 JACKSON BOULEVARD
CHICAGO
with this machine. The loose pulley is self-oiling. Belt shifter attachments provided. Size of tight and loose pulleys is 10 by 6 inches; size of driving pulley, 16 by 6 inches. Speed of countershaft, 500.

Range: Cutting off, 18 inches wide; ripping, 24 inches wide and 13 inches thick; beveling and mitering from 0 to 45 degrees.

Equipment: One 16-inch rip saw, one 16-inch cut-off saw, two cut-off gauges, one plain ripping gauge, one tilting ripping gauge throat piece, countershaft, self-oiling loose pulley, wrenches, etc.

Weight, 1,600 pounds; crated weight, 1,100 pounds; boxed weight, 1,250 pounds. Cubic contents, 56 feet.

For further information concerning this new type "D" variety saw bench address Crescent Machine Works, manufacturers of patented and improved wood-working machinery, Grand Rapids, Mich., U. S. A.

Will Appoint Selling Agents

Rather a novel proposition is being offered by the National Roofing Materials Company, of Edwardsville, Illinois, to carpenters, builders, and contractors generally. Arguing that the men who use prepared roofing are the ones most competent to recommend it to others, they are appointing carpenters as their selling agents for Mastic roofing.

The sales departments of roofing manufacturers have hitherto not taken carpenters into their calculations as being likely men to sell roofing. Their efforts have been directed chiefly towards the building material dealers who carry large stocks of prepared roofing and are generally supposed to induce the contractor and consumer to purchase whatever they may recommend.

That this method has faults is easily discernible. Dealers are naturally in business to make money and are only acting upon principles when they push the goods that pay the most profit. Cheap, inferior roofings are often sold to unsuspecting carpenters as being of good quality and upon him falls the blame when the goods are not satisfactory. It's the carpenter—not the dealer—who suffers in reputation.

The National Roofing Materials Company, therefore offer to make carpenters their local selling agents, knowing that they will put their best efforts into a proposition that is good without question. Large numbers of builders and contractors have entered into the spirit of the thing and are enthusiastic over its success. We understand there are many localities

The New Carborundum Sharpening Stone for Carpenters

It's a combination stone and IT IS ROUND
Its shape and size allow for the rotary motion required in sharpening chisels, planer iron, etc.
With the ordinary rectangular stone a square inch or two is used and the rest scarcely ever touched—
With the round stone all of the cutting surface—twelve inches—enough for the largest tools—is brought into play and there is no unused surface.
Besides, it has the fast, keen edge producing Carborundum qualities.

PRICE ONE DOLLAR
QUARTERED OAK BOX HOLDER FIFTY CENTS.
ASK YOUR DEALER, OR SEND DIRECT TO
THE CARBORUNDUM COMPANY
NIAGARA FALLS, N. Y.
Peerless Plaster Board

Peerless Plaster Board is Superior to All Other Kinds of Plaster Board Now on the Market and Excels the Kinds That Are Now Being Sold for 4 to 5 Cents per Square Foot

Peerless Plaster Board, the Best and Cheapest Substitute for Lath and Plaster. Peerless Plaster Board will not buckle or show ridges after being nailed. It is the cleanest kind of material that can be used for covering a wall or ceiling. By using Peerless Plaster Board you do away with all the mess and dirt of sand, hair, water, etc., that are used for making plaster. It can be laid in less than one-quarter of the time and does not require skilled labor to lay it; anyone handy with a hammer can tack it on and make a first class job.

Avoid Dampness by Using Peerless Plaster Board. Common plaster contains a big percentage of water, water causes moisture, and moisture spreads and is absorbed by the woodwork, causing it to crack and check at a later date. Peerless Plaster Board is perfectly dry and comes to you in long sheets, 32 inches wide, just wide enough to span every third stud. Peerless Plaster Board Does Not Crack Like Common Plaster. All buildings sooner or later are sure to settle; the settling of a building or a house causes cracks and crevices in the plaster, making an unsightly wall and permitting dampness and cold air to penetrate. This is entirely overcome by using Peerless Plaster Board.

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Avoid Dampness by Using Peerless Plaster Board. Common plaster contains a big percentage of water, water causes moisture, and moisture spreads and is absorbed by the woodwork, causing it to crack and check at a later date. Peerless Plaster Board is perfectly dry and comes to you in long sheets, 32 inches wide, just wide enough to span every third stud. Peerless Plaster Board Does Not Crack Like Common Plaster. All buildings sooner or later are sure to settle; the settling of a building or a house causes cracks and crevices in the plaster, making an unsightly wall and permitting dampness and cold air to penetrate. This is entirely overcome by using Peerless Plaster Board.

WHAT IT IS MADE OF

The smaller illustration below shows a sheet of Peerless Plaster Board in readiness to place on the wall, showing the three heavy pieces of heavy compressed board with the two layers of heavy grade of asphalt. The three heavy pieces of the fiber board are cemented together under hydraulic pressure, forming one solid piece. This method of manufacture makes a most satisfactory wall covering. If one piece of the heavy fiber board can be covered together by this method, it makes it stronger and much warmer than if made of solid wood or porous plaster, yet it is light in weight and so prepared that it will readily take whitewash, balkosime, wall paper or any other kind of finish.

SHEETS ARE 32 INCHES WIDE

Just the proper width to span every third stud. Formed into one solid piece by being cemented together with two layers of refined asphalt under hydraulic pressure.

SOLD IN FROM 8 TO 12-FOOT LENGTHS

Sheets are 32 inches wide, just the proper width to span every third stud. They are sold in lengths from 8 to 12 feet.

25 cents per square foot in lots of 500 square feet or more. 25 cents per square foot in lots of less than 500 square feet.

This illustration gives a sectional view showing how the heavy fiber board are cemented together with two layers of refined asphalt under hydraulic pressure.

Send for Our Big 1910 Catalog of Building Materials and Mill Work, Containing a Full and Complete Line of the Following, the Highest Grades of Material Absolutely Guaranteed:

Ovver900 Kinds and Sizes of Doors, 960 Kinds and Sizes of Windows and Sash, Many New Lines Added, in our Building Materials and Mill Work Catalog. This catalog contains over 900 kinds of doors, 960 kinds of windows and sash, and contains the most recent and improved designs of Craftsman and Mission doors, with a complete line of trim to match, and many other doors, that are strictly up to the minute.

We Save You from 33 1/3 to 50 PER CENT on all orders with work or build for 50 cents equal to the average $8.60 or $10.00. Outside Trimmings

MANY NEW LINES ADDED

In our Building Materials and Mill Work Catalog. This catalog contains over 900 kinds of doors, 960 kinds of windows and sash, and contains the most recent and improved designs of Craftsman and Mission doors, with a complete line of trim to match, and many other doors, that are strictly up to the minute.

Sears, Roebuck and Co., Chicago

When Writing Advertisers Please Mention the American Carpenter and Builder
needng local selling agents and readers of this paper are ad-
vised to send particulars. The current advertisement this
company offer on another page contains an interesting an-
nouncement of special inducements that are offered to carpen-
ters putting on the first Mastic roof in their locality.

**Victory for Milwaukee Corrugating Co.**

Chicago, Ill., Oct. 8.—In a suit of Ferdinand Dieckmann
vs. Milwaukee Corrugating Company, for infringement of
patent No. 540584, for “sheet metal elbow and process of
making same,” of June 4, 1895, on final hearing January 6,
1908, Circuit Judge Seaman ordered the bill dismissed for
want of equity. This decision was appealed to the United
States Circuit Court of Appeals for the Seventh circuit, which
affirmed the decision made by the United States Circuit Court,
Eastern district of Wisconsin.

The officers of the Milwaukee Corrugating Company are
Louis Kuehn, president, and August J. Luedke, secretary,
with offices at 76 South Bay street.

"**Their Misfortune Your Opportunity**"

Under the above title the Washington and Choctaw Land
Company, Times building, St. Louis, Mo., are explaining in
an interesting little booklet the facts concerning Alabama
railroad lands now being offered for sale to investors and
settlers.

It appears that it has been an unfortunate thing for the
south, and especially Alabama, that so much of her beautiful
lands have been tied up under timber leases for so many
years. More than anything else has this very cause retarded
the development of that resourceful state.

"At the same time," we read, "it is an ill wind that blows
nobody good, and the very fact of this retarded development
has made it possible to purchase at this late day and age
some of the very best and most productive farm lands in
this country at $17.50 per acre.

"This price seems all the more incredible when lands such
as the Washington and Choctaw reservation are the ones
offered, because here conditions of market and transportation,
freight rates, and ample natural rainfall
are added to the opportunities of the soil.

"The Washington and Choctaw lands, now opened for set-
tlement for the first time, have been tied up with timber
leases for many years. No one could buy the land until a
few weeks ago when the ownership changed.

"Naturally, there will be a big rush to take up these farms,
and as there is less than 100,000 acres, over half of which
is within one and one-half miles of railway, it will not nearly
go around. Like every other good chance in this world, a few
far-seeing investors and settlers who are quick will get the
property.

"Some of them will move upon the land, erect homes, cul-
tivate the soil, and grow rich in a few years.

"Others will buy as an investment or speculation and resell
again in a year or so at tremendous profit.

"Be among the progressive element and you will profit ex-
ceedingly as either a settler or investor.

"It is only a few years ago that Illinois lands were offered
at a few dollars per acre; your father well remembers it.

"Now it is worth $250 an acre.

"And Illinois land is only one-crop-a-year land. This land
of ours is capable of from two to five crops a year.

"Population increased slowly those times; now it is in-
creasing at the rate of twenty persons a minute. Just think
of it! Where must land soar to?

"It is predicted that this W. and C. land, with its super-
ior railroad facilities, its nearness to markets, its healthy climate
and its productive soil, must quickly advance to $300 an
Asbestos
“Century” Shingles

“The Roof that Outlives the Building”

Who gets the blame when a house-owner’s roof rusts, or rots, or cracks, or needs painting, or does anything that annoys him, or costs him money?

The owner forgets his insistence on “saving”—and comes back on the architect or builder who let him buy such a roof.

Asbestos “Century” Shingles preserve good feeling all around. Their first cost is no higher than any other roofing regarded as first class, and there is no cost of upkeep—no painting or repairs. They cannot decay. They are proof against fire.

Asbestos “Century” Shingles are dense and elastic shingle-like sheets of asbestos-fibre cement. Made in three colors—Newport Gray (silver gray), Slate (blue black), and Indian Red, in numerous shapes and several sizes. Ask your Roofer for new quotations. Write for Booklet “Roofing 1909.”

The KEASBEY & MATTISON COMPANY, Factors, Ambler, Pennsylvania

BIG ORDERS—BUSY MEN

Our very biggest orders come from the very busiest men. They haven’t the time to waste with cheap ready roofings of questionable quality. They roof with GAL-VA-NITE because they know then that the owner will be satisfied.

Don’t risk your reputation by using a poor roofing. GAL-VA-NITE will stand up under the most adverse climatic conditions.

We want every good live contractor, carpenter and builder in the country to know GAL-VA-NITE.

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

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Store Ladders Etc.
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Hay Tools of all kinds Write for circulars and prices.

Myers Stayon Flexible Door Hangers

with steel roller bearings, easy to push and to pull, with no track—none like others—“Stayon.” Write for descriptive circular and price. Exclusive agency who will buy in quantity.

F. E. MYERS & BRO. Oakland, Ohio.

DUMB WAITERS AND HAND ELEVATORS

OF THE MOST IMPROVED AUTOMATIC CONSTRUCTION

INVALID LIFTS 
TRUNK, CARRIAGE, SIDEWALK AND FREIGHT ELEVATORS

SEDGWICK MACHINE WORKS
POUGHKEEPSIE, N. Y.
AND 120 LIBERTY ST. NEW YORK

CATALOGS AND ESTIMATES FURNISHED
SEE SWEETS INDEX
acre—and then up and up. "And you get this land now for $17.50 an acre."

The Washington and Choctaw Land Company, Times building, St. Louis, Mo., will gladly send full information concerning this opportunity to all interested parties.

**Gossett Hinge vs. The Housefly**

"Hitherto the fly has been regarded complacently as a harmless nuisance, and considered to be an annoying creature with great persistence and excessive familiarity. Regarded in the light of recent knowledge, the fly is more dangerous than the tiger or the cobra. Worse than that, he is, at least in our climate, much more to be feared than the mosquito, and may easily be classed the world over, as the most dangerous animal on earth."

Scientific investigation has demonstrated that twenty-five to thirty thousand deaths in this country each year are directly traceable to the common house fly.

The fly spreads diseases of a distinctly dangerous nature—typhoid fever, dysentery, tuberculosis, all the children's diseases, and practically all of the complaints from which people most do suffer in the summer months.

On its fuzzy, hairy little legs and body it can carry millions of bacteria. It does not infect by its bite. It merely trails through the filth that it loves. Then it strews the gathered bacilli on our food, on the baby's face, or wherever it happens to light.

Public health officers are urging the adoption of unusual precautions for cleanliness. All possible breeding places of the pest should be destroyed.

Flies travel long distances. In self-defence every householder should screen the doors and windows to keep the flies from entering and infecting the food, milk and water.

Screens which cover only the lower part of the windows will not keep out all the flies. If the windows are lowered from the top or raised part way from the bottom, half screens leave openings through which the flies enter.

Entire screens are the only real protection. Outside screens cover the entire window. Then only can the windows be raised or lowered to permit a free circulation of air, without the slightest danger or annoyance from flies or mosquitoes.

Entire screens also protect the window from hail.

These screens are inexpensive, and can be made by any carpenter or planing mill.

But there is a wrong way to attach full length screens. Screens attached with common hinges, turn buttons or screws,
Mantels of Wood, Brick or Tile

furnished direct from factory at attractive prices, freight paid

TILE and GRATES of every description

Our No. 51 Grate is guaranteed to heat from 8,000 to 10,000 cubic feet of space in zero weather.

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Contractors and Architects, send us the names of your clients requiring Mantels, Grates and Tile for same as well as Tile Floors and Wainscoting of every description. We will make it interesting for you. Send plans for estimates.

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No. 127 South Fifth St., QUINCY, ILL.

HINTS FOR CARPENTERS

A BRAND new book, containing a collection of useful practical hints, ideas, shop notes, and suggestions, giving directions for making various tools and appliances that will enable the carpenter and joiner to do more and better work in less time.

Compiled by ALBERT FAIR

The book contains 144 large (5x7-inch) pages, illustrated by 100 engravings in the text, finely printed on ivory-finish paper and handsomely bound in green art canvas. You run no risk in ordering this book, as we will cheerfully refund your money if you are not pleased.

PRICE ONLY 50 CENTS POSTPAID

The object of this book is to bring together in a convenient form some of the best schemes contributed by various practical men, not a mere one-man or one-idea book, but the ideas of various bright carpenters, all carefully verified and edited by a well-known writer on carpentry subjects.

One of the most useful books of shop notes ever gotten out. Get a copy and start anywhere, and you will get some good useful ideas to apply to your daily work.

Many rules and recipes for carpenters are given, among them, how to make tools, keeping tools from rusting, filing saws, planing, oil stones, scrapers, levels, bench stops, 10 designs of tool boxes, nails, screws, glue pots, scaffold brackets, fitting doors, door holders, door checks, floors, fire proof wood, removing dents, cement for wood, polishing wood, shelves, flour bins, truck, siding hints, roof framing hints, spacing balusters, transoms, saving windows, removing putty, looking into dark places, removing splinters, ropes, and many other hints and schemes that will lessen the work of the carpenter and joiner, etc., etc.

Industrial Book Co., 178 Fulton St., New York
are not easily put in place or taken off. A ladder and tools must be used. This work must be done every time the windows are washed as well as in the spring and fall.

On the other hand full length screens hung with Gossett hinges can be put in place and taken off in a jiffy. Simply swing the screens out and unhook them at the top. No ladder or tools are needed even on upper stories. Yet they are always perfectly secure.

When fly time comes the screens are simply hooked into place. When it is over they are unhooked and removed just as easily. Any one can do this.

The screens last longer, for they will not be exposed to the weather after their season is past.

The hinges are made of stamped steel, amply strong. They never break. Every part is japanned, even the screws. The japan is baked on, so they will not rust.

The side flanges on the upper halves guide the lower parts into place. This feature is patented.

A "Gossett hinge" consists of two separate pieces. One part is attached to the screen and the other to the window casing. Two hinges like the illustration constitute a set or pair.

When once they are screwed into place it is never necessary to remove them. There are no loose pins or other parts to rust tight, or to be lost or misplaced.

The side flanges on the upper halves guide the lower parts into place. This feature is patented.

A large Philadelphia firm ordered three carloads. Numerous orders are being received from persons all over the country, who are erecting houses, barns and other buildings, and who recognize the superior value of Montross metal shingles over all other kinds of roofing.

Montross metal shingles are fire, lightning and stormproof; light, attractive and inexpensive. With proper care they will last the life of the building. They are very easily laid with hammer and nails, and have a special locking device which prevents them from rattling, besides making them give much better service. No soldering is needed. They make a very

You Can Put Every Cent of the Dealer’s Profit Into Your Own Pocket

You can save not only the dealer’s profits but his excessive charges for installation and repairs.

You can deal direct with the manufacturers.

The Jahant Down-Draft Furnace

Only Ten Dollars Down and Ten Dollars a Month With Freight Prepaid East of the Mississippi River.

This wonderful furnace has proven its superiority over others during the last thirty years. It is without a doubt the best heating system ever devised.

It saves from one-third to one-half in fuel bills, because the patented down-draft burns hard or soft coal, wood or lignite, without cinders or clinkers, giving the full heating value of every particle of fuel.

THE JAHANT DOWN-DRAFT FURNACE

is scientifically correct. Every part is cast of the best New Gray Pig Iron; no sheet steel is used; the fire pot will last a lifetime; cracking is impossible.

A strong “Guaranty Bond” goes with every JAHANT, which allows a three hundred and sixty day free use of the furnace.

You run no risk, as we supply special plans, full instructions and give free, all necessary tools, so that any man who can drive a nail can successfully install a JAHANT.

Let us tell you something about the conveniences and good points of our furnace, its economy, its healthfulness and how you can save money.

We have an interesting and money-making proposition to make to every carpenter and builder.

Write today for our book.

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100 Main Street, AKRON, OHIO

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Ventilation Without Risk
IVES PATENT VENTILATING LOCK
A safeguard for ventilating rooms, allowing windows to be left open
at the top, the bottom, or both top and bottom with entire security
against intrusion, a permanent fixture easily applied and quickly
operated, affording three times more protection to the window than the
ordinary sash fastener.
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meets every requirement
Cuts any angle—
special or regular.
Needs no special
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Lightest box made
Can be instantly
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Box.
Made so that it is attachable to inside or outside work
without a special attachment.
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Pioneer Roofing has stood the test of time—
since 1888. Beginning in a small way, the Com-
pany manufactured ready roofings and sold them
locally. The business extended, until today
Pioneer “Rubber Sanded” and Pioneer “Rubber
Flaxine” Roofings cover the coast—from Mexico
City to Alaska, and are rapidly gaining headway
east of the Rocky Mountains.
Write for Booklet “A”—samples of Roofing—
and name of your nearest agent.
REFINERS OF ASPHALT
The Pioneer Roll Paper Company are refiners
of Asphalt, and manufacturers of Asphalt Paint—
which they supply direct from their factory in
Los Angeles.
California Agents for Northwestern
Compo-Board Company.
Pioneer Roll Paper Co.
Dept. 21 Los Angeles, California

Storm Sash and Screen
Hanger No. 1
The time is drawing near at hand when carpenters and
builders begin putting up storm sash, and it might be well to
say that the best and most convenient goods are always the
cheapest in the end.
We make the only Ball and Socket Hangers on the market.
One trial will convince you that they are the best.
Our No. 1 Fastener is made of the best steel wire.
It holds the Sash firmly against the bling stop
and prevents rattling.
MANUFACTURED BY THE
DIEHL NOVELTY CO.
SHEBOYGAN, WIS.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Look for this trade mark etched on every saw.

Simonds Saws are the Best—and They ARE the Best

A fair trial by any fair minded carpenter. That's all that is necessary to prove our claim of high quality in Simonds Saws. You want a saw that has the right temper, holds its cutting edge, hangs right, saws true and has a well shaped handle correctly set on the blade. These are the points to be considered when you buy a hand saw. Points essential to a good saw. Points that will be found in Simonds Saws.

Made of Simonds Steel

Simonds Steel is made in a Simonds Steel mill exclusively for saws. We make any size or point, straight or skew back, hand, panel, or rip saw also compass keyhole and back saws. Tell us what saw you want and we will send address of Hardware Dealer near you handling Simonds Saws and will also send you a free copy of Simonds Carpenter Guide.

SIMONDS MFG. CO.
FITCHBURG, MASS.

Chicago New York New Orleans Montreal
San Francisco Portland Seattle London

attractive appearance, being embossed in conventional designs, and are lighter than slate roofs. They outclass wood shingles in every particular.

The manufacturers will be pleased to send to anyone their catalogue, giving prices, testimonials, many illustrations and detailed information why it is better to lay Montross metal shingles than any other kind of roofing. Write to them today.

Triple “A” Floor Smoothers Well Liked

We are informed that already in the three months the “Spring-Driven” floor smoother of the Triple “A” Machine Company, Chicago, Ill., has been on the market a large number of machines have been sold and inquiries every day, by the score, have been received concerning it. We are told that this company have yet to receive their first complaint or criticism on the efficiency of the “Spring-Driven” floor smoother.

The general opinion of practical men who see and use this machine seems to be that it covers everything that could be required in a practical floor surfacing machine and, that it is the very thing that has been needed for this line of work.

It is a well-known fact that floor scraping has been one of the most difficult problems that the people connected with the building trades have had to solve. There is nothing about a building or an apartment that stands out more prominently than the floors, and nothing is more pleasing to the eye than a well-finished job of floor surfacing. It is the strongest advertising card that a contractor can place upon a building.

In the course of many years' experience, the inventor of this machine has found that there are three very essential requirements that go to make up a practical floor surfacing machine.

They are, namely: weight, adjustability and power. Lacking any of these, a floor smoothing machine cannot do first-class and profitable work for the contractor.

The great secret of success in the Anderson automatic adjustable floor smoother lies in its powerful motor spring, which pulls more than half the load on the cutting stroke and aids the operator in a simple and most effective manner. Ordinarily, the work of operating a floor scraper comes
The kind that good workmen need. They don't break just in the midst of some particular layout—don't scratch—work easily and smoothly and are tough as iron.
The wood is straight-grained, selected cedar. These pencils are put out by the makers of the famous Keen Kutter Tools and are consequently made for quality only.
If you have been annoyed with the shortcomings of ordinary kinds, ask for the E. C. S. Carpenter Pencils.
If your dealer does not have them we will tell you where they may be purchased in your vicinity. Write for free sample.

Address Div. No. A. C. SIMMONS HARDWARE COMPANY (Inc.), St. Louis and New York, U. S. A.

E. C. S. Carpenter Pencils

The Guaranteed Roofing

Congo is really a better purchase than ever before. In addition to the Surety Bond, we furnish with every roll galvanized caps instead of the tin caps or nails supplied by others. The galvanized caps can't rust or bend or break. Liquid cement is also furnished free.
We mean to get the roofing trade of the country and think these special features will come pretty near landing it.
Send today for free Sample of Congo and a copy of the Guarantee Bond.

Congo Never Leak ROOFING

The Guaranteed Roofing

Congo is really a better purchase than ever before. In addition to the Surety Bond, we furnish with every roll galvanized caps instead of the tin caps or nails supplied by others. The galvanized caps can't rust or bend or break. Liquid cement is also furnished free.
We mean to get the roofing trade of the country and think these special features will come pretty near landing it.
Send today for free Sample of Congo and a copy of the Guarantee Bond.

Congo is made of the right stuff—durable and lasting, is attested to by the fact that the Surety Company was willing to back it, and for so long a period."

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555 West End Trust Building, Philadelphia, Pa.
Chicago
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The Practical Man

who considers both safety and appearance when choosing a Saf for his new store front will insist on the Petz Bar.
It allows you to have handsome and artistic display windows, but at the same time insures safety to your plate glass, thereby reducing the cost of your plate glass insurance and freeing you from the delays and annoyances often caused by broken glass.
Write today for our booklet on "Modern Store Front Construction" and testimonials of leading architects throughout the country.

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For sale by Pittsburg Plate Glass Co. at all branches

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Unlatch the screen, swing it out, and the flies are outside the house. Brush them off and close the screen. Do this once a day and the house will be clear of flies.

Only four screws to set instead of twelve, a saving in labor of two-thirds. A carpenter who has bought other hangers, could afford to throw them away, buy the Watrous No. 17, and make more money on the job. Mounted working model sent free postpaid to dealers or carpenters. Write today.

Finish either japanned or galvanized, with galvanized screws.

E. L. WATROUS MFG. CO.
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Big, Practical, Up-to-the-Minute Book
FOR THE
Carpenter, Builder, Contractor, Architect and Draftsman

“FRAMING” contains the boiled-down essence of all the accurate information on this subject possible to obtain. It is indispensable to the man who in any way has anything to do with construction. It deals with the problems of framing in its multitude of forms and designs in a most thorough manner.

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“FRAMING” is just from the press. It is entirely new, having been copyrighted in August, 1909. Nothing is omitted that will help and guide in the construction of houses, barns, roofs, etc., while care has been taken to exclude any and every method of framing that has not been given a practical test by experienced builders.

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“FRAMING” is illustrated with over 100 pages of detail drawings, diagrams, detail plates, etc., never before published, reproducing architects’ original drawings and also details of buildings in all stages of construction.

Practical Features of this Great Book

General Synopsis of Contents

Part I.—Framing for all Types of Houses
Chapter 1. Ordinary Frame Houses — Framing complete from foundation to roof.
Chapter 2. Roof framing simplified.
Chapter 3. Stair building simplified.
Chapter 4. Cement plastered and English Half-timbered Houses.
Chapter 5. Wood framing for brick veneered houses.
Chapter 6. Wood framing for stone and brick houses.

Part II.—Barn Framing Complete
Chapter 1. Heavy timber barns.
Chapter 2. Plank framing.
Chapter 3. Balloon or Self-supporting construction.

Part III.—Framing of Factories, Stores and Public Buildings
Chapter 1. Mill construction.
Chapter 2. Wood trusses of all kinds.
Chapter 3. Architectural framing, as in churches, gymnasiums, halls, etc.

Part IV.—Miscellaneous Framing
Chapter 1. Scaffolding and shoring.
Chapter 2. Wooden bridges.
Chapter 3. False wood for concrete.

Part V.—Useful Tables and Data
Part VI.—Dictionary of Terms and Index

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“FRAMING” is the largest book of its kind ever published. It consists of 356 pages, size 6x9 inches, and printed from large, clear type on high grade book paper. This large new book is written so that any reader can understand every page, every term used and every detail shown. It is entirely free from technicalities, and yet its pages are meaty with instructions to all classes of builders.

Handsomely Bound in Cloth, Price $1.00

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The AMERICAN CARPENTER AND BUILDER will give a copy of this valuable book, “FRAMING,” absolutely free, postage prepaid, to all new and old subscribers whose subscriptions or renewals are received before Dec. 1, 1909. In all cases cash in full to cover one year’s subscription to the AMERICAN CARPENTER AND BUILDER ($2.00) must accompany the order. All renewals will be credited from the date present subscriptions expire. Address

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And TIME is the real test of the durability of Wood Finishes.

Bridgeport Standard Wood Finishes develop the natural beauty of the wood—and TIME can never cloud or obscure it. Without raising the grain they emphasize Nature's artistic markings—and TIME can never suppress them.

And Bridgeport Standard Wood Finishes give a deep, elastic, tough finish that TIME—with its parade of washings, hard knocks, and wear—finds almost invulnerable.

Because Bridgeport Standard Wood Finishes balk TIME, leading architects, contractors and furniture, piano and car manufacturers have for years used them in preference to all other sorts.

Specify Bridgeport Standard Wood Finishes. Your client will thank you for both their beauty and permanence.

Send for Sample Panels

We will be very glad to mail you on request a series of sample panels showing numerous wood finishes in new and staple effects. You will find them useful and practical.

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THE WOOD FINISHING
NEW MILFORD, CONN.
NEW YORK · CHICAGO · PHILADELPHIA · BOSTON

**Prong Lock** Steel Studs

We have received from the Berger Manufacturing Company, Canton, Ohio, a very interesting catalogue describing their "Prong Lock" steel studs and furring and telling how to use them. It might be stated that these "Prong Lock" steel studs (patented) in conjunction with expanded metal lath or wire lath form the Berger "Prong Lock" system for erecting partitions, ceilings and roofs. They are used also for light structures where the floor loads are low.

These studs combine strength, lightness, ease of putting to place and efficiency. They increase the speed and ease of applying the lath, and giving satisfactory results. They effectively fasten the lath and secure a smooth, even surface for up-to-date direct-drive. The motor is of a special design, having a supporting ring at one end which is bolted against the band-saw frame. A special long bearing is used at the band wheel end, which extends through the band-saw frame, and the band wheel fits on the motor shaft close up to this bearing.

This motor runs at a slow speed so as to adapt it to directly driving the band-saw wheel. There are only two bearings, no pulley or belts; consequently the maximum efficiency of operation is obtained. The bearing which supports the shaft at the band wheel end is very long, and the shaft is of large diameter. Brass rings revolve with the shaft and dip into an oil chamber and carry the oil up into the oil grooves, thus insuring constant and good lubrication.

The motor is fully enclosed and protected against dust and mechanical injury. The general construction and materials entering into the manufacture of these Roth band-saw motors is up to the usual high standard of Roth apparatus. Steady power is obtained by this construction because there are no belts to slip, and this, with the elimination of vibration insures better work.

The floor space occupied is reduced to the minimum, and as the motor is up, out of the dirt, it will have a long life. Cleaning and sweeping around the machine is easy, and all parts of the machine are easily accessible. Being a self-contained and complete machine it can be set in any part of the shop, independent of line shaft, belts, etc., and having in view only the best location for efficient operation.

The neat and clean cut appearance of this outfit must appeal strongly to the buyer who desires the most efficient, up-to-date apparatus.

**The Modern Kind of Roofing**

There was a day when the words "ready roofing" meant some kind of painted paper which was only good enough for hen coops.

Later it meant a tough felted fabric which would last for 5 to 10 years, provided it is covered with a heavy coat of paint at regular intervals.

The third step in the progression is the advent of Amatite roofing which is made with two heavy layers of pitch (the material which forms the basis of most roofing paints), and a top surface of mineral matter. A roofing so constructed naturally requires no paint to protect it; and accordingly Amatite roofing is intended to be left unpainted. It may reasonably be expected to last for 10 years or more and in all that time will require no attention whatever.

The price is astonishingly low and our readers who buy roofings from time to time should become familiar with its merits.

A sample will be sent free for the asking to any inquirer.

METALLIC WEATHER STRIP

MEANS "SNUG-FIT WINDOWS"

Keep Out the

Cold Wintry Blasts

No more of that "Cold Air" coming in through doors and windows. Keeps out the dust, too, and the smoke and noise of street traffic. Stops rattling windows. Solid comfort for home, shop or office.

Pleased clients for architects and contractors recommending its use.

STATE AND COUNTY AGENTS WANTED.

Write for particulars.

Metallic Weather Strip Co.
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LET US SHOW YOU

how to make Perfect Blocks at the Maximum Speed and at the Minimum Cost.

Our Machine makes Blocks which can't be beat in appearance—Blocks which will stand the test—Blocks which are accurate as to shape and size.

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Successor to
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For over twenty years we have manufactured

MONTROSS
METAL SHINGLES

Octagon Metal Shingles

They last the life of the building, are ornamental, lighter than slate and very easily laid by carpenters. They outfit wood shingles and other roofings, insure against fire and lightning, are stormproof, inexpensive and offer your customers a dependable, permanent roof.

You make a good profit when you lay Montross Metal Shingle roofs, and they bring you more business. It will pay you to send for our catalogue, containing prices, testimonials, discounts and many illustrations; it explains fully their superior value over all other roofings.

Montross Victor Metal Shingles
102 Erie Street
Camden, N. J.

Just a Common Job

Just a common job means just a common salary.

Imagine for a moment that from twenty to forty years have been added to your life—that you have reached the age of fifty or sixty.

What are you doing to-day that will enable you to forecast something better for this later period, than just a common job and a common salary.

Only one class of men are absolutely sure of being able to maintain their full earning capacity after fifty. These are the trained men—men who have fortified themselves in youth against the common job problem which confronts the untrained man at any time in life.

Why not give yourself the advantages of something better than a common education and insure against the common job problem before it is too late and you have lost ambition?

Don't give old age a chance. Let the American School train you so your services will be desired and sought after—not endured or overlooked.

Fill in and mail us the coupon. Let us tell you how you can qualify for the position to which you aspire in either the great fields of Engineering or Business.

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Please send me your Bulletin and advise me how I can qualify for position marked "X."

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American Carp. & Bld., 11, '09.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Do You Wear a Blindfold?

If you use old-style saws, you’re wasting time, muscle and money. Be fair to yourself! Try an Atkins—try it at our risk!

You don’t buy cheap saws, Mr. Carpenter. You pay the price and you want the best—we know that! You may think you have the best—but you haven’t, unless you own an Atkins.

If you want to know which is really the best saw, if you’re willing to be shown, test the Atkins. Our guaranty protects you!

ATKINS Silver Steel Saws

“Made of Silver Steel—the finest crucible steel the world has ever known. Our secret formula. Better steel than you’ll find in most of the high-grade razors.

The blade is light, flexible, and holds its edge longer than any other saw blade on the market.

It is taper-ground—thickest at the tooth-edge. We don’t merely grind a little bevel along the back—the Atkins blade tapers all the way from tooth edge to back.

Wherever the teeth go, the rest of the blade follows without a struggle. No binding! No buckling! The easiest running, fastest cutting saw you ever touched.

The Atkins Perfection Handle prevents strain on the wrist—more strength saved!

Here’s Our Offer to You

Buy an Atkins Silver Steel Saw. If it isn’t exactly what we claim, if it isn’t the best saw you ever put through a board, take it back to your dealer and your money will be refunded.

That guaranty protects you. You don’t risk a cent.

Be sure the blade bears our name and says “Silver Steel”—that’s our best saw.

FREE to Carpenters

Write us today (enclosing 10 cents in stamps to cover postage) and we’ll send you free a good strong Nail Apron, together with our Carpenter’s Time Book and our handy booklet, “Saw Sense.”

Address Carpenter’s Department
E. C. Atkins & Co. Inc. Indianapolis, Ind.

Largest Exclusive Saw Manufacturers in the world.

the plasterer to work on. Result: Success, popularity and increasing demand.

“Prong Lock” steel studs are ordinarily made of Nos. 18 and 20 gauge steel sheet formed into various shapes, and with prongs punched out on the members for attaching metal lath. These prongs clinch over the lath and hold it rigidly and securely. All that is necessary to obtain this result is to hang the lath on the prongs and clinch them up over the lath with a hammer. The workman can get along twice as fast as if he had to wire the lath on. An additional advantage is that the lath is held securely even before the plaster hardens, which is not the case with the makeshift of wiring. Moreover, as the prongs are only about 4 inches apart, a greater number of fastenings are secured than is customary where lath is wired on, yet less time is taken.

The studs are held in position at top and bottom by individual sockets or by socket strips. They can hence be used for partition work in any type of building, whether reinforced concrete, steel skeleton or wood frame, where floors are self-sustaining; also in other structures when studs are specially designed for the purpose.

Weber Cabinet Scraper and Sandpaperer

What has been wanted and needed for years by carpenters, cabinet-makers and builders the world over has just made its appearance in the market, a cabinet scraper and sandpaperer that can be controlled absolutely.

The Weber cabinet scraper and sandpaperer, as it is called, is an entirely new departure and has features that have long been sought by the users of devices of this nature, and which are to be found in no other article of its kind.

It is the only one upon which a firm hold can be obtained, in the tightest corners, under the most adverse circumstances, the operator does not for one instant doubt his ability to control it.

The knife in the Weber cabinet scraper and sandpaperer is fastened with a clamp—has no holes or slots in it and any length of knife may be used until but a half inch of it remains.

Only an instant is required to reverse from a scraper to a sandpaperer and vice versa.

It works very easily and quickly, and specimens of work seen are certainly indicative of its efficiency. This handy little article can be purchased at dealer’s or direct from its manufacturers, the Weber Manufacturing Company, 670 71st avenue, West Allis, Wis.

No More Fireplace Troubles!

No more smoke! No flimsy dampers to get out of order! No uneven heating of room! No soiling of hands or clothing while attempting to regulate drafts! That is the delightful state of affairs when the Colonial fireplace head is used. It is said to solve the problem of fireplace construction. It insures the greatest amount of heat radiation with the most
Just Off the Press

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Designs of Schools and Libraries
display a composition of utility, durability and good, pure architecture without any "gingerbread."

No buildings are too large or too small for our personal and prompt attention.

We develop your own ideas into a practical set of plans and specifications which can be executed to the smallest details into a building that can be built within your means and to your entire satisfaction.

Ashby's "Designs of Schools and Libraries" will be sent to parties interested in the erection of a school building or library for which plans have not yet been procured.

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11th Floor, Medinah Bldg.
CHICAGO, ILL.
Are YOU One of the "Hands"?

There are two classes of workers—head workers and hand workers. Are you one of the hands? **What you get on pay day determines it.** The man who works with his hands does imitative manual labor which thousands of others can do just as well. He is hired at will and may be discharged on a minute's notice. If he loses his time he loses his earnings. He has long hours, and receives low wages. The ranks of the hand workers are eminently honorable, but the man who stays in these ranks all his life greatly wrongs himself. He must advance as years go by to the head worker's class. A specially trained man holds a place hard to fill, is employed by the month or year, has regular vacations on full pay, short hours of work, and does not lose his salary on account of sickness.

It is by no means a difficult thing for the hand worker to become a head worker. The largest institution of its kind in the world has for the last 18 years been training hand workers to hold the high-salaried positions of the head workers. This great institution will take up your individual case and tell you how it can help you, in your spare time at home, to gain a better position, increased earnings, and a successful future. It puts you under no obligation to send the coupon. **Mail it today.**

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**International Correspondence Schools**
Box 910, SCRANTON, PA.

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

---

**Increase Profits From the Use of Machinery**

Every wideawake contractor is on the alert to discover where he can use machinery in place of day labor on any part of a contract, realizing that any work that can be done by machinery is done not only very much better, but at a fraction of the cost of hand labor.

The demands for better floors in all classes of buildings such as residences, office buildings, storerooms, etc., which but a few years ago were considered a luxury, have now become a necessity, whereby comparatively few modern buildings will be accepted unless the floors are properly surfaced and finished to harmonize with the balance of the interior finish.

The ordinary method of scraping has always been unsatisfactory, as well as expensive, and various contrivances have been put on the market. Some of these are small machines, pushed around by hand, with a single abrading roll, which has proven unsatisfactory for the reason that it was impossible to regulate the speed of the machine to correspond with that of the space covered by pushing it over the floor. All these machines are more or less crude imitations of the machine that was originally invented and put on the market in 1903 by the American Floor Surfacing Machine Company, which has been in general use from the Pacific coast to New England and from Quebec to Texas, as well as in the principal countries of Europe.

There are good reasons for its popularity, not only for its efficiency, but also from the fact that it is built of the best materials and is sold entirely on its merits. This machine is the original and only two-roll self-propelling, dust-collecting reversible floor surfacing machine, protected by the original and basic patents on floor-surfacing machines in the United States and foreign countries. The superiority of its work has been demonstrated for nearly seven years on millions of square feet of the finest floors in the best buildings in the world and its work is specified by leading architects wherever used.

Many carpenters now working by the day can, with this machine, make more in a week than it is possible to do in a month by hand labor. Besides they are building up and
This New Lorenzen Catalog
Shows 227 Fine Illustrations of Tile, Wood and Brick Mantels, Fireplaces, Parlor Consoles, Grilles, Etc.

In decorative value, character of design and fireproof qualities The Lorenzen Line of Mantels and Fireplaces is unequalled. Our new "Faience Effects" are the latest creations and mark an advanced step in mantel and fireplace construction.

Because of our enormous output we can undersell any competitor. Our designs are distinctive and not easily duplicated. We have wood mantels as low as $3.00 and as high as $250.

The Entire Lorenzen Line is Sold Under Guaranteed Conditions

If you are an Architect—If you are a Contractor—If you are a Home Builder and you specify or purchase anything in The Lorenzen Line, you do so with our strict guarantee as to satisfaction or money refunded.

Imported and Domestic Wall and Floor Tiles

We are National Headquarters for Imported and Domestic Wall and Floor Tiles, Ceramic Mosaics, and we also make Mural Decorations and offer a specialty of Encaustic Floor Tiles in all Patterns and Colors. We make quick shipments. Estimates and designs furnished.

Write today for Catalog which is Mailed Free.

Chas. F. Lorenzen & Co.,
719 N. Ashland Ave.,
CHICAGO

THE BRUSH RUNABOUT

No car in the world compares with the Brush Runabout in low cost of maintenance or in economy, simplicity, durability, convenience, reliability and ease of operation.

We make those claims knowing our ground absolutely. They are based on facts we have proved during the many years we have been connected with the automobile business, as well as during the years we have been manufacturing and selling the Brush.

You are probably surprised at that statement. You may even say, "Why, I don't believe I ever saw one of your cars."

Well, we don't doubt it, even though there are about 20,000 Brush Runabouts in use. When you drive the Brush, you drive the largest number over the United States and eleven foreign countries they can't be very thin in every locality.

But in a few months you will see the Brush everywhere. Watch for the little gray car with the black stripes—and you will always see it deliver the goods.

There is a larger demand for the Brush this year than we can supply, even though we are running our factories twenty-one hours a day.

We know also that the car is right, so it's only a question of increasing our capacity to meet the demand for a simple, reliable, runabout which will do all that is demanded of it.

Please understand this isn't a speed car—one of the mile-a-minute kind. It's not an imitation of a big automobile with all the complications left in and the strength left out. It's a runabout.

You see, we know how to design a car. We have a patent on the idea, but we don't believe in wasting a minute trying to copy any of the big cars. He didn't have to. Brush had taught him that more is expected of a runabout than of a big car, and that's why he spends a year on the original design.

Don't lose sight of the fact that Brush is self-taught. He has studied the original designs of the very, very many automobiles in his design are to use.

Have you noticed what the foreign manufacturers are doing? The manufacturers of such prominent machines as Renault, Chalmers, Darracq, and Darracq are building cars similar to the Brush.

BRUSH RUNABOUT CO.
761 Baltimore Ave., DETROIT, MICH.
Established 1906
Members A. M. C. M. A.
There's Money For You in Steel Ceiling Work

And you can easily handle it. Our construction is planned to simplify erection and reduce number of pieces to handle, thus saving time, labor and expense. Any good mechanic with the aid of our working drawings can easily do the work and secure a neat, snug-fitting, workmanlike job.

We help you by preparing free suggestion drawings and estimates. Send sketch and dimensions of room or rooms to be covered and we will submit suggestions and quote exact prices.

Berger's "CLASSIK"

is the most complete line of artistic Steel Ceilings in existence AND OUR CATALOG PROVES IT.

Write for it TODAY. Ask for No. D-55.

THE BERGER MFG. CO., Canton, O.

New York Philadelphia Boston Chicago
Atlanta Minneapolis San Francisco St. Louis

The Never Leak Metal Shingle


UNIQUE FEATURES OF A UNIQUE ROOFING

First: A roof fitted with this shingle cannot leak. The interlocking principle is so complete that for water to get through the shingles is against the laws of nature. Water cannot run uphill, yet that's the only way it could enter a roof of "Never Leak" Shingles.

Cannot warp, rot, split or absorb water and remain damp.
And, of course, they're fire-proof.

Cost Compared With Wood

Figure what wood shingles cost. Consider the repair bills and all around disadvantages. Compare the cost with everlasting "Never Leak" Shingles that remain as good as new so long as the building lasts. "Never Leak" Shingles are cheaper. Send for samples and be convinced.

About Metal Ceilings

Your success depends on the fit. Our construction makes thoroughly dust proof, invisible joints. Interesting Prices. Attractive Designs.

Get our catalog right away
THE TIFFIN ART METAL CO.
TIFFIN, OHIO

Street Lighting for Small Towns

An innovation in street lighting that will be hailed with delight by those living in vilages and small towns is the establishment of a permanent business as stable as anything connected with the building trades. This they can do by making a specialty of surfacing floors for contractors, and especially by surfacing old floors, which are made as bright, clean, level and smooth as new.

This machine is at present used in nearly all the principal countries of Europe. Inquiries for it from many places in South America and Mexico have been received with the result that the company has been obliged to steadily increase its working force and capacity for turning out this machine.

It will pay every contractor and hardwood floor company or mechanic who is seeking to establish a business of his own to get detailed information concerning it from the American Flooring Surfacing Machine Company, Toledo, Ohio.

The Problem Solved

"Your success is our necessity; we want to show you why." That is the interesting message that comes to the builder from the manufacturer. It has the ring of sincerity, of truth. It's different from many messages sent out nowadays, that are only curiosity exciters, originated by clever sales managers or advertising specialists.

This message refers to metal ceilings and side walls. Here as in other lines appear quality differences. All produce art designs. But the builder finds variations in the practical application of different makers' ceilings. The successful contractor is successful for good reasons, one of which is his desire to use that material, which, other things being equal, is most simple, therefore most easily and most simply applied.

The solving of the problem of applying metal ceilings lies with the maker in deciding how the plates shall be joined. The lock joint has its supporters, the butt joint its followers and the standard single bead lap joint has many adherents.

But it has remained for the manufacturer with the message to produce the double bead lap-lock. That is simplicity itself. Easy to fit, therefore economical to erect.

Most of the builder's success depends on the fit, much of his profit on the economy in applying the metal. That's why The Tiffin Art Metal Company, of Tiffin, Ohio, send out the message, "Your success is our necessity."

The company has another specialty of high quality, the Never-Leak galvanized metal shingle, advertised in this issue. Samples of Never-Leak shingles may be obtained, also illustrated printed matter referring to shingles and their complete catalogue of art metal ceilings and side walls may be had by addressing the company at its home office in Tiffin, Ohio.
Radford’s Stores and Flat Buildings

A Brand-New Book—Just Off the Press

Absolutely the first and only book of its kind ever published. No more valuable book could possibly be imagined for the use of any one contemplating building, or for the study of carpenters, contractors and builders. Every plan guaranteed to be complete and accurate in every detail.

The Latest Ideas in Two, Four, Six and Nine Flat Buildings, Stores and Lodge Halls, Bank Buildings and Double Houses.

This book illustrates over fifty popular designs in low-priced flats, store buildings, bank buildings and double houses in different constructions: cement plaster, concrete block, brick, stone, and frame. Every building illustrated was designed by a licensed architect standing at the head of his profession, who has made a study of economy in construction. Perspective views and floor plans of each and every design are shown, giving a picture of the completed building and detailed drawings of the interior arrangement.

Designs for Large or Small Towns

Included in this collection of designs are a large number of stores and bank buildings suitable for the small town or village as well as the large city. An approximate estimate of the cost of the building, together with a description, is given under each design.

Everything Brand New

All of the perspective views and floor plans in this valuable book are brand-new. None have ever before been published. The illustrations and text are printed on the finest grade of enamel paper from the very best half-tones and zinc etchings.

Handsomely Bound in Silk Cloth. Price, $1.00

HOW TO OBTAIN THIS BOOK FREE

OUR GREAT SPECIAL OFFER

THE AMERICAN CARPENTER AND BUILDER will give a copy of this valuable book, “RADFORD’S STORES AND FLAT BUILDINGS,” absolutely free, postage prepaid, to all new and old subscribers whose subscriptions or renewals are received before Dec. 1, 1909. In all cases cash in full to cover one year’s subscription to the AMERICAN CARPENTER AND BUILDER ($2.00) must accompany the order. All renewals will be credited from the date present subscriptions expire. Address

AMERICAN CARPENTER AND BUILDER
185 Jackson Boulevard

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Why did Simonds Hand Saws win the Grand Prize at the Seattle Exposition?

Why were they judged superior to other older saws? Just this. The Jury consisted of five thoroughly practical men, men versed in the hardware and mechanical business, men of unquestioned integrity. They made actual tests. They knew Simonds Saws sold for a little more money and were by actual reputation better Saws. These men were willing to recognize the new leader among saws and voted the highest award of merit accordingly. Remember the name is always SIMONDS. There is never any nick name. Simonds Saws are sold by Hardware and Supply Dealers throughout the world. Made by

SIMONDS MFG. COMPANY

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

"Standard" boulevard gasoline arc lamp made by the Standard-Gillett Light Company, Chicago, Ill. This gasoline, unit-system, arc lamp, without any question, will supply a want which has been severely felt by nearly all municipalities, cities, villages, towns, or small, in the United States today. The success which this company have had with their boulevard arcs which have already been distributed fully confirm the above statement.

Any town can have 1,200-candlepower boulevard arc lamps upon the streets at a cost of one-seventh of what the same electric power would cost, and with scarcely no investment in comparison.

This boulevard arc is constructed broadly upon the principles of the "Simplicity" gasoline lighting system. It contains within the post a tank holding two gallons of gasoline, a pump and a pressure gauge, and a patented automatic shut-off valve. The lantern part is of cast iron with porcelain enameled steel dome.

The gasoline is forced through the valve to the Simplicity generator, where it is transformed into gas and carried direct to the mantles overhead, where it is lighted like ordinary city gas might be. An accurate clock arrangement is furnished with each lamp, so that a village or town marshall may set the time at which he wishes to extinguish the light. After winding up this clock he may go home, resting safely assured that the lights will be extinguished at the proper time. This is attributable entirely to the very effective valve, which has never failed to operate.

The party in charge of the nightly lighting of the lamps, after generating and lighting same, will wind up the clock, including the alarm, setting the alarm dial at the hour at which the lights are to be extinguished. After replacing the clock in the lower section of the lamp, and seeing that all is well with the light, he may retire with the assurance that at the hour set the lamp will be automatically extinguished by the Standard Automatic Shut-off. In other words but one visit per night is necessary to the light, for after lighting it takes care of itself. The one great feature of this shut-off outside of its automatic features is the wonderful saving in oil and time it represents. Some street lamps are allowed to burn all night, while others must be shut off by hand (which is always unreliable). In either case the waste of fuel and time would pay for an automatic shut-off many times over in one year.

The generator will not cool in the coldest weather, nor will the gas become chilled, owing to the fact that the gas is carried through an interior pipe to the mantles and this pipe carrying the mantles is encased in a larger pipe, forming a space between these two, so that the heat rising from the generator serves to keep the gas within the smaller pipe thoroughly heated until it reaches the mantles. An outlet pipe for the heat may be seen at the top of and to one side of the lamp.

Comparing the cost of gasoline lighting with electric (not considering at all the enormous difference in the first cost) we find the advantage all on the side of the gasoline system.

The price of electric lighting varies in different towns from 8c to 15c per 1,000 watts, but a good average anywhere is 10c per 1,000 watts.

An enclosed electric street arc, rated at 800-candlepower, consumes 550 watts per hour, costing $.0375.

An average burning is six hours per night for ten months in the year, allowing for moonlight nights, or 1,800 hours.
SKYLIGHTS
FOR ALL PURPOSES

Send Plans for
LOW PRICES

The Canton Art Metal Co., = Canton, Ohio

The Galloway Gasoline Engine
Owned and made exclusively by the William Galloway Co., Waterloo, Iowa,
will run your shop at several times its present capacity and enable you to take lots of jobs that you have to turn down now because you have not the capacity.

Only four things to do:

1. 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.
2. 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.
3. If you try the Galloway engine, you will find that it is not OVERSPEEDED. Remember, the bore and stroke count, and you don't have to drive your engine faster than you ought to drive it to get the rated horse power. Rated by actual brake tests.
4. On the larger sizes, if it is not entirely convenient for you to pay all cash, we will take your note for the balance at the regular rate of interest for six months.

The price given is for the five-horse power only, but we make these engines in seven sizes.

"Reputation and Quality Count" columns, full length or double as shown in cut. Dealer's price not less than $40.

CENTRAL MANTELS
are distinctive in workmanship, finish and style. Twenty years' experience enables us to know and satisfy the needs of those who want mantels of quality, different from the rest.

We build all styles—Colonial to Mission.

CATALOGUE FREE—Will send our 112 page catalogue, the finest ever issued, free, to carpenters, builders, and those building a home.

CENTRAL MANTEL COMPANY,
1247 Olive Street, St. Louis, Mo.
There is no doubt about what is in

Genasco
Ready Roofing

It is Trinidad Lake Asphalt. We are not afraid to tell you.
There's no doubt about whether this asphalt will last. It has already lasted twenty-five years in streets and roofs.
There's no doubt that Genasco will last.


THE BARBER ASPHALT PAVING COMPANY

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

PHILADELPHIA
New York San Francisco Chicago

BUY A BOVEE FURNACE

Direct from the Factory
AND SAVE $10.00 TO $100.00 ON YOUR HEATING PLANT

They Actually Save from One-third to One-half of the Fuel

We have one of the best equipped furnace factories in the west and make more than 30 different sizes of service heating stoves and furnaces. We also have ready made any size of stove or style of furnace they may desire, either for the average home, the large business house, to heat a large church or school house, down to a cottage heating plan complete with air pipes, registers and tile flue, stove and all.

Our furnaces are the only furnaces having a perfect ventilating system for every part of the house. We ship our furnaces cut to fit. Any handy man can install them without the aid of a expert.

Catalogue and full specifications free.

F. Bovee Grinder & Furnace Works
50, 8th Street Waterloo, Ia.

A Booklet telling how to get water Fresh from the well for suburban homes. How to avoid storage of water. The most economically operated independent water system, etc.

Sent Free on Request

UNITED PUMP & POWER CO.
495 Old Colony Bldg.

CHICAGO

Kno-Burn Lath for "Overcoating"

In another part of this magazine will be found an article describing how old frame houses are being made new by "Overcoating." Some very interesting illustrations are shown, being examples of this kind of rejuvenating work recently done.

Knowing that the Northwestern Expanded Metal Company has been quite the pioneer in this field and has vigorously advocated this method of reconstruction, we were not at all surprised to learn that their "Kno-Burn" expanded metal lath was the material used on two of the jobs illustrated. Mr. O. F. Kritzner, whose house at Niles, Mich., was recently made new by this process of overcoating, using cement plaster on Kno-Burn metal lath, writes as follows:

Northwestern Expanded Metal Company, Chicago, Ill.

Dear Sirs: I have finished overcoating my house. Considering that to the carpenters, the plasterers and myself it was entirely a new experience, the results are very satisfactory.

It may be of interest to you to know that the total cost for labor and all material was 62 cents per yard.

Respectfully,

O. F. Kritzner.

Other letters of this kind show what is being accomplished by local mechanics, without previous experience, in "Overcoating" an old dwelling by putting Kno-Burn expanded metal lath on the exterior and covering it with Portland cement plaster.

It may be explained that this Kno-Burn lath is the original small mesh metal lath with a mesh ½ inch wide and with a considerable dip of a broad strand to retain the mortar.

This form of expanded metal lath permits enough mortar to go through so that a perfect key is formed and the mortar protects the metal nicely. Nothing is known today that protects steel so thoroughly as cement, and the form of strand and the form and size of mesh of Kno-Burn expanded metal plastering lath combine to make the protection ideal.

Kno-Burn expanded metal lath made by the Northwestern Expanded Metal Company requires less mortar per square yard than any other form, and none drops behind to be wasted.

"Overcoating" is a term applied to the finishing of old houses with cement-stucco mortar laid on metal lath. Brick as well as wooden houses are so treated. Always use furring. This may be wooden lath or narrow wooden strips to which the lath is stapled, or better still, use crimped metal furring by stapling it directly to the old wooden siding, or to plugs in the brickwork joints.

When the overcoating is done over the old siding it is total cost, $99.00. A standard boulevard arc rated at 1,200-candlepower will consume one gallon of gasoline in fourteen hours. A good average cost per gallon is 15c; therefore, in 1,800 hours 129 gallons of gasoline will cost $19.35.

The light of the Standard boulevard arc is white, steady and penetrating; of the electric arc, unsteady, blue, non-radiating. The cost of globes and labor in each is similar, and the cost of mantles offset by electric carbons.

Summed up on an equal candlepower basis, the electric arc costs more than seven times as much as the Standard boulevard arc.

Every mayor, president of village, councilman, alderman or public-spirited man should become apprised of the cheapness of operation and brilliancy of the lighting qualities of this device. It will save any municipality money and be decidedly an ornamental acquisition.

"An Ounce of Prevention"

It is easier to prevent a disastrous fire than it is to stop one.

The weak point in all buildings is through the windows. These openings can be made as fireproof as the walls themselves by installing Mullins Fire Proof Windows.

Mullins
Fire Proof—Storm Proof—Dust Proof Windows

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necessary to bring out the door and window trim unless the plaster is to finish flush with the old trim. The furring then makes an air space between the old surface and the back of the plaster that will take care of moisture and condensation.

When the owner believes it will be better to keep the old frames and have them project it will be necessary to remove the siding and staple the crimped furring directly to the old studding.

Frequently the trim is removed and the lath brought around the casing, thus getting a recessed window with no wood showing.

Overcoated houses have all the advantages of cement exterior houses, and the appearance is so improved by this treatment that the fashion rapidly spreads in every city where old houses are so treated.

Every reader of the AMERICAN CARPENTER AND BUILDER should become acquainted with the possibilities with this modernizing and remodeling process. The Northwestern Expanded Metal Company, Chicago, Ill., has prepared a very interesting and valuable book, "Overcoated Houses," fully treating this work. It will be sent free on request.

Disston Improvements

The Disstons have just completed the first of a group of new additions to their already huge plant at Tacony. This latest addition is a complete machine shop, thoroughly modern in every detail. Its size and equipment is such that it can duplicate the largest machinery found anywhere in the great 50-acre plant.

The building itself is 180 feet long, by 80 feet wide, two stories high. Comparatively little brick is used, the major portion of the walls being composed of glass framing, which makes the interior as bright as daylight in every corner.

The first floor is completely served with narrow-gauge railway tracks—the latter connecting at the main entrance with a 40-foot railroad spur, running lengthwise of the structure, a 10-ton electric crane lifts from truck and serves any machine on the first floor, or to the landing platforms of the second floor galleries.

The usual machine equipment of a complete modern plant is found within the four walls, planers, grinding machines, lathes, shapers, milling machines, drill presses, boring mills, etc., etc., of the latest pattern are built by the best machine tool builders. The heavier machines are, of course, on foundations. The lighter machines are bolted to the concrete floor, while the array of lighter tools are placed in the galleries.

Mr. Charleton, the superintendent, drew particular attention not only to the arrangement of the tools, but also to the ease and comfort in which the workmen could go about their special tasks. From the "floor plate" to the uttermost corner there is a flood of daylight.

The whole plant is operated with electric power, coming from a central station. Further economy is gained through running the various machines in groups.

The Disston management's experience that the best class of workmanship is gained where the comfort of the workmen is attended to is evidenced in not a few details. A good heating and ventilating plant keeps the atmosphere clean and fresh, never permitting it to go below a temperature of 70 degrees even when the thermometer outside registers zero.

In the basement under the office end of the shop a men's room is completely equipped with individual metal lockers, modern toilet arrangements and washstands.

Capping the full length of the roof is a monster electric sign, 6-foot letters forming "Disston Saws," which is visible at night for miles up and down the Delaware, New Jersey and over Tacony.

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The trouble is, the average man who reads a furnace catalogue is not in a position to distinguish between furnace wisdom and furnace folly. He cannot separate the wheat from the chaff. He has no experience to enable him to detect the flaws in a fine-spin theory—to determine how much of a manufacturer’s argument is founded on common sense, and how much is but the sounding brass of advertising exaggeration. Furnace selection becomes, under such conditions, not a choice of the proven best, but merely a belief in the most plausible argument. The real issue is lost sight of in consideration of conflicting theories and mechanical details, and it is often the best salesman, not the best furnace, that takes the order.

Realizing these difficulties of the intending purchaser, and realizing, too, that a furnace is not by any means the whole of a heating installation, the Jahant Heating Company, Akron, Ohio, have evolved a selling plan which is said absolutely to eliminate all risk, and to base your dealings with them on the heat they prove they can deliver in each room of your home or building.

In a new and very interesting catalogue just received concerning their well-known “Down-Draft” furnaces, their proposition and selling plan are fully explained. Referring to this selling plan, we read as follows:

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**Town Moved by Train**

Moving small town or settlements bodily seems to be a growing item of railroad traffic in the western states, several instances having already been recorded. The creosote tie plant of the Missouri, Kansas & Texas railroad at Greenville, Tex., was recently destroyed by fire. A decision to rebuild the plant at Denison, Tex., necessitated the moving of the homes of the men to that locality. Consequently, homes and portions of homes were loaded onto a train of 20 flat cars.

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Mr. A. H. Dunn,
Kansas City, Mo., Sept. 29, 1909

Dear Sir:
The Coltrin Mixer that we bought of you some time since is giving us the best of satisfaction. We wish to particularly call your attention to one job we had. It was a concrete foundation for a flat. We placed 113 cu. yds. of concrete in 16 hrs. with 8 men. Each man had to wheel the concrete 140 ft. To place the same amount of concrete with the same number of men, using the old style of mixing on a board, it would have easily taken three times as long to do the same work.

We are more than pleased with the machine and would not attempt to do concrete work without one of your machines.

Very truly yours,
HORTON CONCRETE CONSTRUCTION CO.
C. J. Doxsee, Mgr.

THE KNICKERBOCKER CO.
JACKSON, MICHIGAN

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
THE SIDE-LOCK OF

CORTRIGHT METAL SHINGLES

And the overlap insure a building from any damage by rain or snow, for the roof is **locked together** and is absolutely stormproof. They’re fireproof, too, and last as long as the building without needing repairs.

And as time goes on, they win the favor of your clients—they make them stick to you. This is in addition to the profit you make, which is undoubtedly larger than you could make handling any other roofing, for Cortright Metal Shingles are so easily laid that any handy man can do the job and do it right.

Send for our free book, “**Rightly Roofed Buildings**,” and learn about them.

CORTRIGHT Metal Roofing Company

PHILADELPHIA and CHICAGO

On the Square

every builder **should** have my little works and be a constant reader of the “Cement World,” the leading paper of its kind published.

STEEL SQUARE POCKET BOOK ........ $ .50
FOLDER (in case with pockets) ........ .25
DESIGNING (slightly illustrated) ....... 1.50
CEMENT WORLD ..................... 1.00

All for $1.75.

Dwight L. Stoddard, Author of “Steel Square Pocket Book,” 328 W. Raymond St., Indianapolis, Ind. Send for other Combination Offers.
By NAME 

**PEERLESS**

**THE WONDER OF THE PRESENT DAY**

By use of the "Peerless" with material mixed, one man can turn out over 12,000 Brick Per Day

The Sensation of ALL the Shows

THIS machine is a marvel of simplicity and durability. It has been brought to the highest standard of labor-saving and profit-sharing efficiency, and stands alone and in a class by itself.

No other machine of like character has ever been invented, so far as we know, that can produce one-quarter the number of brick in the same time as the Peerless.

The Peerless is in general use throughout the United States, and its friends are numbered by the thousand.

WHY?

BECAUSE Brick are made face down and delivered face up. Brick are of uniform size with sharp edges and true to the square. Brick are more firm and durable than pressed brick. Brick are tamped, not pressed. The Peerless makes ten bricks at one operation.

Our catalogue tells you all about it. Write for one today.

Peerless Brick Machine Co. Minneapolis, Minn.

---

**Anchor Machines Make Continuous Air Space Blocks**

The wall that's guaranteed frost and moisture proof.

A perfect dead air space from cellar to garret. Standard Machine makes blocks 8x24 in.—any width from 8 to 12 in.

Junior Machine makes blocks 8x16 in.—any width from 8 to 12 in.

All blocks tied together in construction by four quarter-inch galvanized iron rods 8 in. long and turned 1 in. at each end. Guaranteed rust-proof and everlasting.

Write for Catalogue and Special Prices. All Machines sold direct to the trade.

Anchor Concrete Stone Co., Rock Rapids, la.

---

**"TRUS-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.

TRUSSED CONCRETE STEEL CO.

624 Trussed Concrete Bldg., DETROIT, MICH.
SHORT CUTS IN CARPENTRY

A COLLECTION OF NEW AND IMPROVED METHODS OF LAYING OUT AND ERECTING CARPENTERS’ WORK

By ALBERT FAIR

TOLAY OUT and erect carpenters’ work accurately and quickly is an accomplishment desired by all progressive carpenters. In this book, not only the simple rules for the short cut are given, but also the “reason why,” so that the carpenter can apply his knowledge to many problems besides those given in this book.

The book contains 90 large (5x7-inch) pages, illustrated by 75 engravings in the text and a large folding plate, finely printed on ivory-finish paper and handsomely bound in green art canvas. You run no risk in ordering this book as we will cheerfully refund your money if you are not pleased.

PRICE ONLY 50 CENTS POSTPAID

This useful, practical and unique instruction book contains remarks about the carpenter and his work; the difference between carpenters and joiners. Description of the various carpenter and joiners’ work about a house illustrated with a large folding plate giving the names of the various parts of doors, windows, trim, etc. (This chart alone is worth the price of the book.) The practical use of geometry in laying out carpenters’ work explained in a different way so the reader will know “why.” How to obtain various miters, both for straight and curved work. How to make a miter box. Descriptions of different kinds of moldings. Bending moldings around circles and the art of kerfing explained simply and accurately, telling why it is done and how to do it. Rake moldings and how to lay them out fully explained, and several short-cut ways of doing it. How to find the corner brackets for coves. The use of the steel square in finding various pitches, degrees, miter cuts for polygons, etc. Use of the 2-foot rule in describing various figures when no other tool is at hand. The selection and use of glue. Hints on saving time when working on hardwood. The art of blind nailing. Setting door jambs, fitting and hanging doors. Fitting windows. How to cut pockets in window frames. Remarks on framing. Short cuts in placing siding. Siding a circular tower. Shingles required to cover a given roof area. Laying out octagon shingles. Quick method in finding bevel of shingles for gable. Framing a floor with short timbers. Building up a beam. Laying floors. Laying wood carpet. Constructing dished floors. The art of veneering on a small scale. Hints on inlaying. Roof framing explained on a new principle whereby you know the reason why the square is used and how to use it for different forms of roofs. How to find the sizes and cuts of braces. Bevels for hoppers. Making wheat bins. Quick method for beveling fence posts. Shaping a flag pole. Quick method of obtaining the bevel of tank staves. Making and placing well curbs, etc., etc.

INDUSTRIAL BOOK CO., 178 Fulton St., New York

What kind of a Cement Block Machine do you expect to buy?

If you want a machine which builds the best and strongest hollow blocks, 6", 8", 10" and 12" thick, veneer blocks 3", 4", 5" and 6" thick, all of these rock bevel and plain face, 6" and 8" high, and all lengths up to 24", a machine which builds circular blocks, angle blocks of any desired degree, porch piers 12" to 24" square chimney blocks of all sizes, gable blocks, joint blocks, in fact everything in the block line, then drop us a line and we will acquaint you with the most complete machine ever made.

The U. S. Standard Continuous Concrete Mixer

ACCRUATE
AUTOMATIC
CONVENIENT
CONTINUOUS
REASONABLE
RELIABLE

For bridges, abutments, culverts, retaining walls, sidewalks, basements, foundations, blocks and tile factories it has no equal. Absolutely accurate in measuring the ingredients. Built with two or three hoppers. Mechanical principles essentially new and patented.

MANUFACTURED BY

The Ashland Steel Range & Mfg. Co.,
ASHLAND, OHIO, U. S. A.

Government & Foreign Sales Department,
B21 Produce Exchange, N. Y., U. S. A.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
Builders' Hardware

Prices Smashed!

GET OUR LATEST CATALOG
OF ASTONISHING BARGAINS

Every Page Means Dollars of Savings to You!

The prices are way below what your local dealer charges you, and the articles are the very latest improved styles in every finish. This catalog is a veritable treasury of bargains, everything you need in building hardware for houses, barns and structures of all kinds. Big saving in builders' hardware.

Put The Dealer's Profit in Your Own Pocket

Save From 25% to 50% on Supplies

The Gordon-Van Tine Co. has a reputation from Portland, Maine, to Portland, Oregon, for lowest prices and most dependable values. Just look over a few of the items shown on this page, and then think what you have to pay elsewhere. Figure up what this means on the whole house. See what you save on Lock Sets, Hinges, Sash Lifts, Butts, Knobs, Latches and the hundreds of other trimmings and hardware you need. The difference will surprise you.

Get the Gordon-Van Tine Co. catalog and you won't have to guess what your profits will be. You can figure closer and make more money on every job, whether you are building for yourself or someone else. By placing our orders in gigantic lots we are able to buy below any one else, and you get the benefit.

Every Contractor, Builder and Farmer Should Have Our Books To Go By

Write for our "Hardware" catalog showing hundreds of items from Bolts to Building Paper, Nails, Screws, Locks, Ladders, Glass, Paint, Hinges, and everything you can think of or require. It may save you from $10 to $100 on a single order. At the same time we will send you Grand Free Builders' Catalog of 5,000 Big Bargains in Building Material, Sash, Doors, Mouldings—everything needed for building or repairing.

Write For Books Today. We Will Mail Them FREE

With the new Gordon-Van Tine Hardware Catalog and the Grand Builders' Catalog of 5,000 Bargains in Building Material before you, you can tell to a penny how much you can save, whether you are building a modest cottage or a palatial residence. Thousands of pleased customers are constantly re-ordering. Write for the catalogs today.

GORDON-VAN TINE COMPANY

500 FEDERAL STREET

DAVENPORT, IOWA

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER
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## NOTICE TO ADVERTISERS

New copy, changes and corrections for advertisements must reach office of American Carpenter and Builder, 155 Jackson Boulevard, Chicago, not later than November 15 in order to insure insertion in December number.
A 10-Acre Farm For You

WITH SEVEN-ROOM HOUSE

WILL YIELD $400 DOWN $400 TIME

YOU CAN AFFORD A SPECIAL WINTER HOME HERE

Homesseekers!

JUST THINK OF IT! Ten acres of productive land located near townsites along the W. & C. Railroad, with a fine 7-room house ready for occupancy—all for $400 down and $400 on long time—if you ACT NOW. Or a 10-acre tract with 4-room house for $500—$250 down, balance on time.

What A Northern Man Says:
Mr. Herman H. Wefel, Jr., who went south and located near the Washington and Choctaw lands, in a letter to this company, says, in part: “This section must become one of the Nation’s most productive and valuable properties. I am personally familiar with the tract of land you have just purchased at Yellow Pine, Alabama, and consider it one of the best agricultural propositions in the whole Southeast Gulf Coast. Resources are practically boundless and opportunities to make money in farming and investment unsurpassed.”

What a Southern Man Says:
Hon. L. C. Irvine, of Mobile, says, in a letter to us, in part: “My study and experience with this country extend over 10 years. In that time I have beheld successive demonstrations of the production and controllable character of our soils. They value is proven for fruits, nuts, vegetables, and especially corn, cotton, grain and grasses of the highest value. I know absolutely that modern machinery (very seldom seen here) will make any man independently rich on ten acres in ten years.”

This is a three and four-crop-a-year country, with ideal climate and National Fame as a Health Resort.

It’s the only part of the country absolutely free from local diseases. THE LAND IS SITUATED AT YELLOW PINE, IN WASHINGTON COUNTY, ALABAMA. This is a proposition that must appeal favorably to carpenters, woodworkers, mechanics and other men with a trade, to get to acres of ground and a house in this beautiful country where it will yield an income of $3,000 to $5,000 a year. Doesn’t this sound good to you—to you who have struggled along for years as a dependent, paying rent and saving little?

The Washington and Choctaw reservation has just been thrown open, after being relinquished by a lumber company that had cleared out all of the best lumber. They left the soil, however, and you will look a good ways to find soil that is more productive.

Experience is not necessary. A city man can do it. It simply requires a moderate amount of brains and the nerve to get started. This is a most inviting opportunity to procure at a very low price on easy terms a home for yourself, where climate, natural rainfall and soil unite in creating bountiful harvests. Two, three and even four crops a year are grown on the same ground.

No swamps; no irrigation; no stones; no dry spells; mild, pleasant summers and balmy winters; sweet, pure water.

The soil is suitable for most anything—general farming, fruit, truck, livestock, nuts, poultry, etc.

There is over 100,000 acres in this tract, now being offered at $17.50 an acre on easy terms.

There are only a few of these tracts bordering on townsites, with homes, so you should ACT without delay.

The investor won’t get rich as quickly as the settler—but he’ll get rich just the same.

OWN A WINTER HOME

Possibly you have good work in the north for nine months in the year, why not spend your winter months in this beautiful country developing your farm, and incidentally raise a crop or two.

WRITE TO-DAY FOR OUR FREE BOOKLET

It tells the story of this land truly and sincerely. It is sure to interest you. A postal will bring it.

WASHINGTON AND CHOCOTAW LAND CO.
6198 Times Building, - St. Louis, Mo.

MARKETS
Excellent markets.
Sixty miles from the coast; 21 hours from St. Louis; 29 hours from Chicago. One railroad through the tract, one on the west and one on the east. Half the land within 1½ miles of a railroad.
Model Q-3 Four Cylinder 22 H.P. Touring Car

The classiest of four-passenger touring cars—powerful on hills—speedy. Sliding gear transmission, 3 speeds forward, magneto equipped, 4 styles of body, namely, as a two-passenger runabout, $850; with detachable rear seat for one, $900; with detachable rear seat for two, $950, and as a touring car, $1,000.

Most Ever for $1000

A Standard Every feature in this car is standard—every feature is recognized as the best by competent engineering authorities. Investigate and you will find a four-cylinder motor 3 ½ x 4 inches, developing 22 actual horse-power; you will find a sliding gear transmission, three speeds forward, a type used on the highest priced cars; here is every Maxwell principle of unit construction, three-point suspension, disc clutch, thermo-syphon cooling, and straight line shaft drive—all a part of this $1,000 car.

An Economical car At every point you will find the factor of safety large; the tires, 30 x 3 ½, are over-sized, but that means economy; the carburetor is economical in gasoline, the lubrication is automatic, the % scroll rear springs absorb the jars of rough roads, the brakes are large and powerful. At every point the car will prove up to your highest expectations. No car is so thoroughly satisfactory to own—no car costs so little to maintain. 

A Public Test Eighteen months of testing showed us what this car could do. To prove publicly all our claims, we entered it in competition. At Wilkes Barre, Pa., on the famous hill Giant's Despair, we defeated every car in our class, winning the event. At Sunset Hill, Osaining, N. Y., this model furnished the surprise of the year by defeating the entire field of 11 American cars, three of which were of the six-cylinder type, costing $8,000 and over. At Lowell, Mass., in the race for the Merrimac cup, this model finished second, third and sixth, the most consistent work of any team. We do not build racing cars, nor do we believe in racing, except as it shows reliability. Now the car is out—examine it, secure a demonstration, and you will see why we do that for $850 to $1,000 (price depending on style of body) we have no competition.

SALE OF MAXWELLS TO DATE
Sold to Aug. 31, '09 - 18,278
Sold during Sept., '09 - 681
Maxwells in use today - 18,959
WATCH THE FIGURES GROW

Maxwell-Briscoe Motor Co.
Main Office and Factory
FORK STREET, TARRYTOWN, N. Y.

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

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN CARPENTER AND BUILDER

What Do The final analysis of the value of an automobile is the verdict of the man who owns one. Please read Owners Say this letter:

Versailles, Ky., Aug. 16, '09
Gentlemen—
I desire to say that I purchased a Maxwell July 14, and have had it in active service every day. Have never been delayed on the road by any fault of the car, have had no tire trouble—not even a puncture to date. Motor is running splendidly, and the car has proven a joy and a delight.

Yours truly, W. C. McCAULEY.

Style That indefinable something called style is reflected in every line, yet we have not attempted to get the racing lines that in some cars provoke smiles on the part of those who really know. We do not believe that the American business man or his family desire a "freakishness" car—a cheap imitation of the racer, but rather a car in accordance with good taste, conservative yet stylish, one which avoids the extremes of the commonplace on one side and freakishness on the other—such a car is this new model.

We Model E, a big, powerful, roomy, 4-cylinder, 30 H. P. 6-passenger touring car, equipped with gas lamps, generator and magneto, $1,500; also supplied as roadster with detachable top, $1,050.

Also Make Our model A. A. 12 H. P. runabout at $550—now magneto equipped—is even better this season—a perfect car for business and pleasure. Our catalogue fully describes all models. Write for it.
"National" Butts can now be supplied with ball tips in all the usual sizes on both Common and Ornamental Butts.

The new false tip is threaded and screws into the butt. The slot for a screw driver is also an exclusive feature. It makes it easy to remove the pin and shows also which is the bottom of the butt.

**Style No. 450B,**
Here illustrated, is the latest design and a beauty. It has beveled edges, is highly polished and double plated. All sizes from 1 1/2-inch to 4-inch, inclusive. Any finish desired.

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

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

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

National Manufacturing Co. Sterling, Ill.