



The
**World's Greatest
Building Paper**

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The Versatile Carpenter and Builder

THERE doesn't seem to be any limit to the number of things a carpenter and builder can be and still remain a first-class carpenter and builder.

There must be something in the training a carpenter's work gives him, causing him to use his head and figure out puzzlers without outside help, that makes an all-around mechanic of him.

The small town and country carpenter and builder especially is a versatile fellow. We might call him a Jack-of-all-trades; but he is better than that. Everything pertaining to building, from laying the concrete foundation to painting the weather-vane he understands and takes as his particular province without question or contention.

He does it all well too; and is as keen and wide-awake as the next to introduce new things, if they seem to be any improvement over the old.

Here is a man, for instance, who adds this postscript to a letter, sending in \$2.00 for his renewal to the AMERICAN CARPENTER AND BUILDER. It has a world of significance for all interested in present-day building.

"I enclose a photo of a job I just finished for the Dayton Cemetery, built of cement, steel and cobble stones. It is my own design and construction. I am a carpenter and builder; also a cement worker, and the two trades are closely linked together.—S. P. Paul, Dayton, Ind."

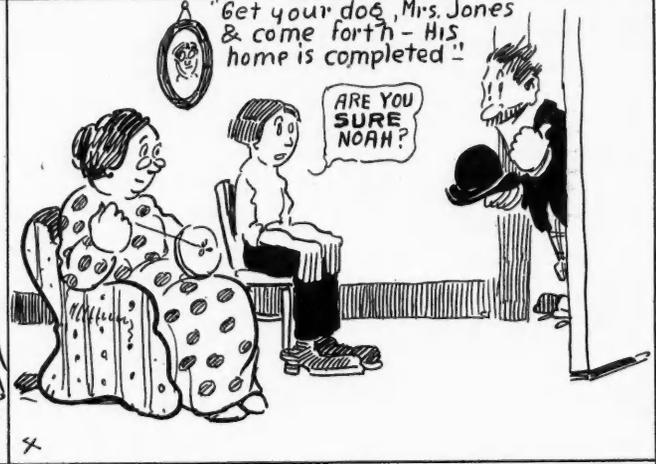
THE carpentry trade, together with the general field of carpentry and building, is a training school for successful men in the building world. Carpenters and builders handle any and all kinds of building work for which there is a demand in their localities; and what is more, they are doing real missionary work by helping to create a demand among their customers for new methods and materials which they have become acquainted with through advertising announcements in the responsible building journals, but which the average layman who thinks of building knows little about and cares less.

Carpenters and builders are introducing these new things. They are winning new converts to the cause of better building and at the same time, are pleasing their customers.

HERE'S to the carpenter and builder who is first a good carpenter and builder and then a cement worker, brick and structural tile man, furnace expert, advocate of modern plumbing, painter, decorator, and all the rest! Here's to the builder who keeps posted!—He is responsible for all of the building improvements of whatever kind in his community. Even though he may not actually do the work himself, it is done under his supervision, and it is being done well.

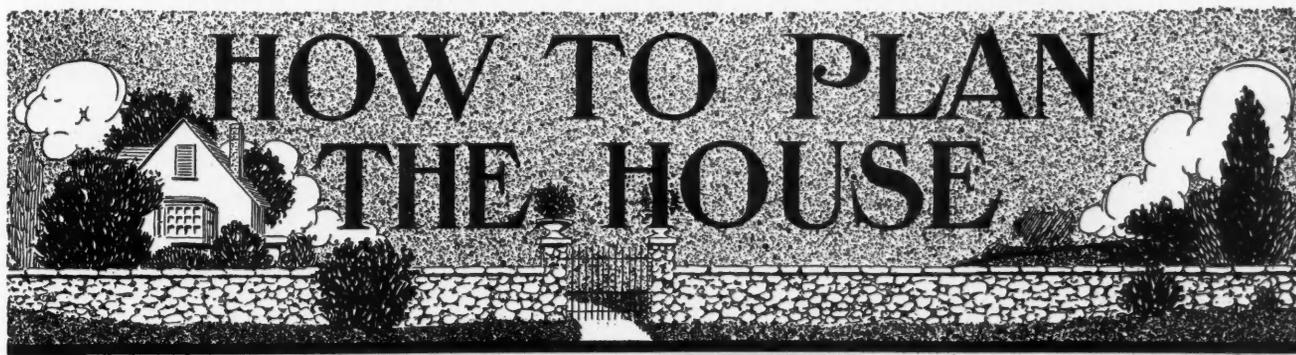


Cement and Cobble Stone Gateway, Designed and Built by a Carpenter and Builder



HOME BUILDERS SECTION

A Timely and Reliable Guide to All that is Practical, Satisfactory and Attractive in the Planning, Building Finishing, and Furnishing of the Up-to-Date American Home



The Hallway in American Homes

By Mary H. Northend

Photos by E. J. Hall and the Author

THE development of the hallway in American homes constitutes an interesting architectural study. In the early pioneer dwellings, where all things were arranged for comfort rather than for effect, the outer door opened directly into the main, and frequently the only, room in the house. Sometimes it was sheltered on the outside by a quaint closed porch to afford additional warmth and protection from the driving storms of rain or snow, but it was never anything more than a mere comfort seeking appendage, boasting no pretensions whatever to architectural merit.

Later, when unwearied toil had made living easier, and the people found themselves able to afford more desirable homes, there sprang up, both North and South, those charming colonial mansions that were the fit abode of a brave race. However severely their simplicity of design may have been criticised by later generations, the fact remains that no other style of architecture has yet appeared that so fully satisfied, in all respects, the conditions of comfort, dignity and beauty of outline, so essential to the success of any structure, as did these homes of the eighteenth century.

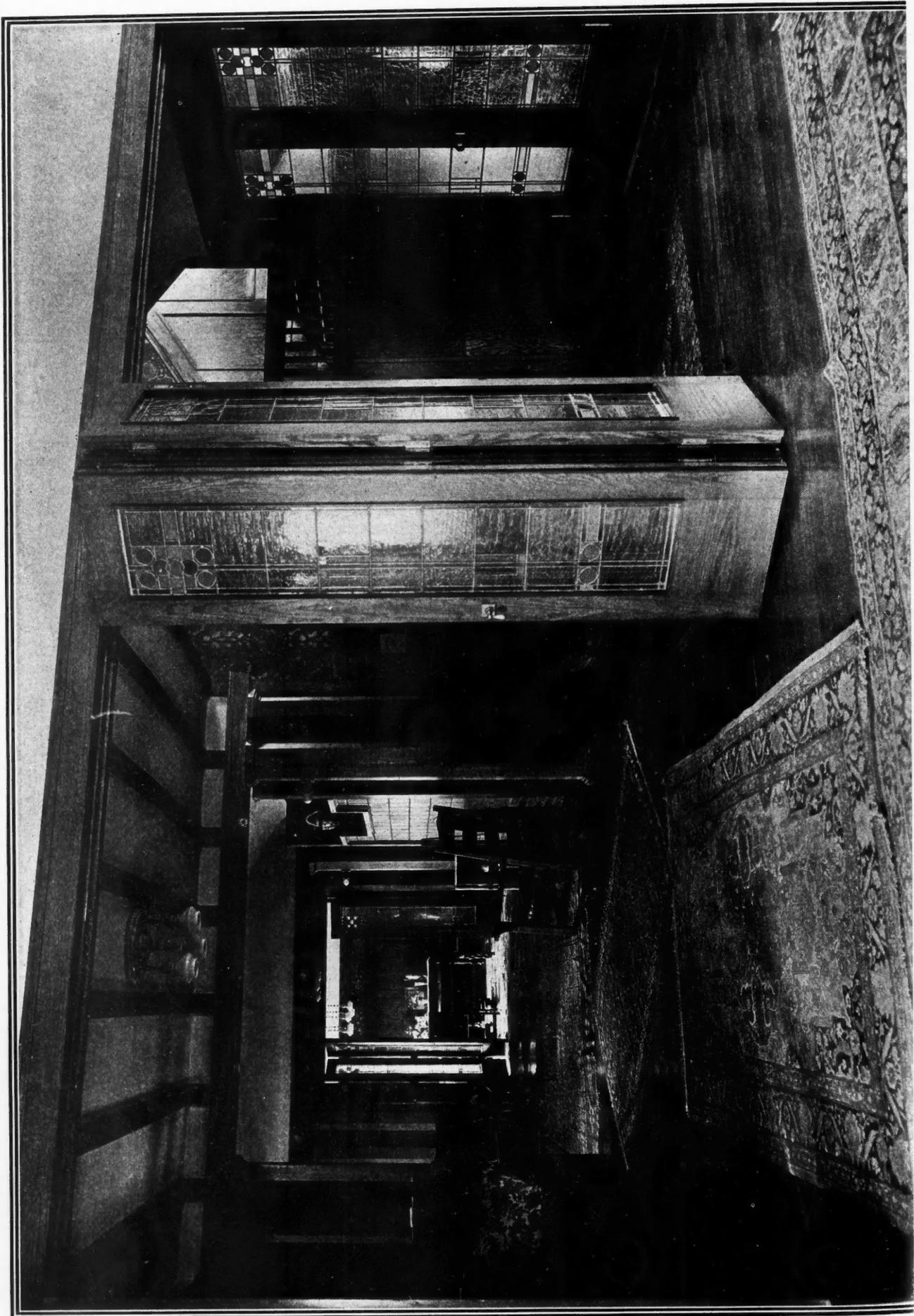
The distinctive type these dwellings represented demanded a hallway of spacious dimensions, extending quite through the center of the house, from the pillared portico and stately entrance door, with its fan lights and brazen knocker, to another door at the rear, through whose glazed upper panels tantalizing glimpses could be obtained of tall hollyhocks and climbing roses growing in the fine old-fashioned garden just without. When both doors were set wide open, in the summer season, the hall was the coolest spot in the entire dwelling.

With the gradual decline in popular favor of the colonial type of dwelling, the hallway became less and less spacious until toward the middle of the

nineteenth century it was little more than an entry. A mirror and a hat-rack generally constituted the furnishings, and frequently these two pieces



Simple Colonial Hall and Stairway of the Best Type. Treads and Hand Rail are Finished in Mahogany, the Balance in White Enamel



An Interior Designed by Frank Lloyd Wright which, Like All of His Work, Shows Many Features of Much Worth. Hallway Opens to Living Room by Broad Openings Hung with Art Glass Accordion Folding Doors. Ceiling Beam Ends are Dropped to the Wood Lintels. Stairway is Paneled. Lighting Fixtures Up-to-date

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were combined into one. If besides these, the hall was large enough to hold a table and a chair, it was considered spacious, and if, in addition, it allowed of the arrangement of a lounge, the owner felt obliged to apologize for its extensiveness.

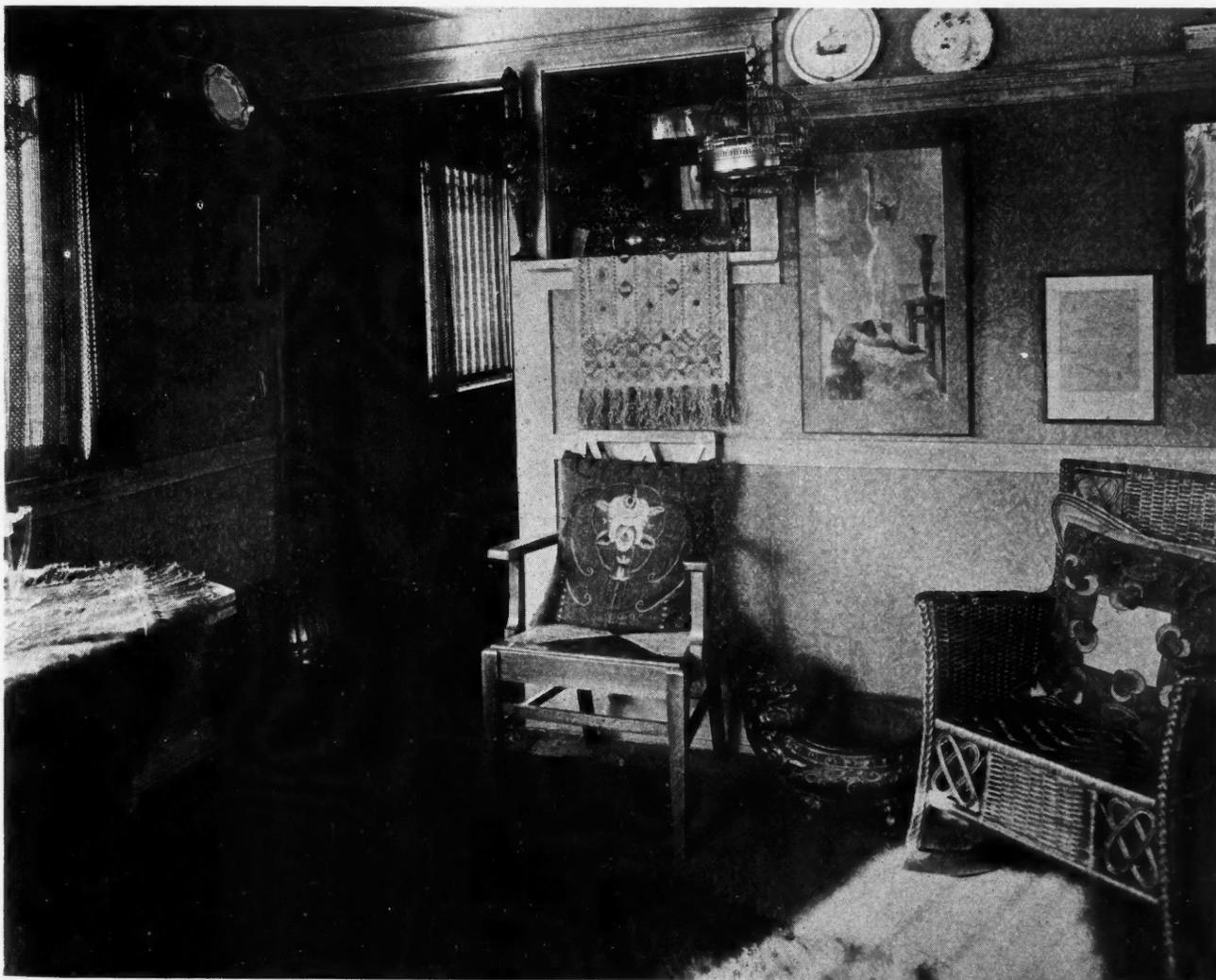
Happily, present day house builders are coming to a realizing sense of the importance of the hallway, and are beginning to appreciate the fact that to be attractive, the hall must be ample, well lighted, and of pleasing character. Surely no feature of the interior is capable of greater architectural develop-

and arrangement depends to a considerable extent the success of the interior.

Sometimes the hallway is made to serve the purpose of the living-room. While this plan works fairly well in a summer house, where entertainments are more or less informal, it is rarely employed with satisfactory results in a winter residence. The reasons for this are obvious. It is too public; it lacks the "homey" feeling of a real living-room; and it does not satisfy the demand for separation between public and private positions, which is as old as architecture itself.

dimensions of the whole and should express that atmosphere of welcome which is one of the chief assets to its success.

But whatever the size of the hall or the dimensions of the house of which it forms a part, simplicity and dignity should be its chief characteristics. Well marked lines of construction and details that have relief in form and color are always to be preferred to irregular, oddly planned effects, that while attractive, are apt to give an overcrowded and unbalanced appearance. Even in the more modest houses, strong, simple effects are the most impressive, and for



A Good Idea for a Stairway Approach, the Stairs to go up back of the Shoulder High Partition. High Plate Rail is Used in this Room

ment, and no feature presents such wonderful possibilities for unusual and artistic treatment.

The hall gives the first as well as the final impression of the interior. It serves as the introduction to the house, and its character reflects the taste of the owner. It has the power to make or mar the general effect of the apartments adjoining it, no matter how charming in proportion and equipment they may be, and upon its construction

To best serve its purpose the hallway should be distinct from, and not a part of, the living-room. This is especially true in bleak Northern climates, where the hall must necessarily serve as a buffer against the cold, stormy outer world, and should thus be shut off from the inner sanctuary of the home. This does not mean that it should be cramped or lacking in comfort; on the contrary, even the hallway in the small house should be ample in proportion to the

this reason a little touch of the monumental treatment is desirable. Walls are often paneled in wood or plaster, with stucco reliefs to bring about this result, and even when expense is an item to be contended with, handsome effects may be produced by simply fastening wood mouldings on the plaster walls and painting the whole a uniform color, a treatment which is comparatively inexpensive.

If one has a preference for papered

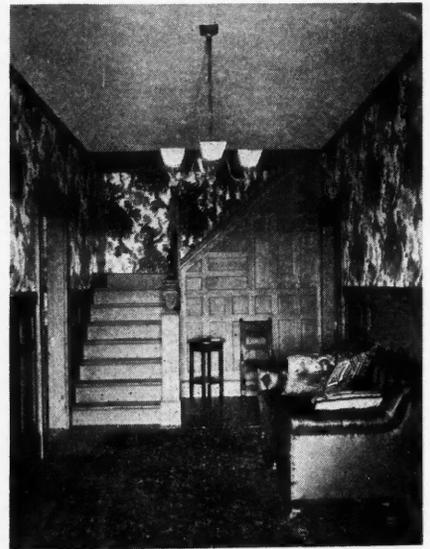
walls, there is a variety of styles to choose from, but care should be exercised in the selection for much depends upon its conformity with the general finish of the whole. All-over patterns are rarely attractive, and if employed, should be small in size and subdued in coloring. Patterns destroy simplicity, which is the most important thing to preserve in the hall, and when used in connection with structural motifs, such as arches, columns, etc., impart an ordinary appearance and frequently spoil an otherwise successful interior. Plain papers or plain fabrics, or two-toned papers, are all to be preferred to patterned papers, and are frequently employed with excellent results, especially if the woodwork is painted white. But whatever the type of paper used, it should be selected with a view to its harmony not only with the finish of the apartment it is to adorn, but also with

the wall coverings of the rooms adjoining the hall.

The walls of the hall are well adapted for the hanging of tapestries, or for strong, low-toned decorations. If pictures are used, they should be few and of good size, but prints have no place in this apartment.

The rugs used to cover the floor of the hall, whether it be constructed of marble, stone, mosaic or wood, should be simple, both in design and color.

For the furnishing of the hallway, heavy wooden benches, high straight back chairs and solid tables or consoles are best suited, for they not only contribute much character to the general effect, but in addition they impress the fact that this apartment is not a place for solid comfort and lounging, but simply the outward expression of the inner coziness of the main part of the house, thus giving to the hall the atmos-



Inviting Stairhall with Paneled one-turn stair

phere it should possess.

The lighting of the hall, both by natural and artificial means, is one of the difficulties that requires careful consideration to arrange satisfactorily. Sometimes it is possible to insert windows at one side of the hallway, and this treatment should be employed whenever possible. Again, when the hall is the central feature of the house, as is frequently the case in modern dwellings, a broad window can often be arranged at the first staircase landing. This feature not only furnishes light but frequently permits of artistic treatment, thus adding to the general attractiveness of the whole. When neither of these can be brought about, the hall is dependent for natural light upon the windows in the apartments adjoining it, sometimes helped out by narrow glass inserts on either side of the entrance door. For artificial light, gas and electric fixtures afford an almost unlimited scope for pleasing treatment, and lanterns and sconces are also often effectively used.

As regards the staircase, which has come to be associated with the hall, the same general principles that govern the style and finish of the hall should be followed in its construction. Both practically and theoretically, stairs are better when separated from the main hall by a screen, or when placed in an ante-chamber, but of course this is not always possible. Stairs that are in constant use should be of the easiest possible ascent, with broad, low treads. If the story height is very high, it is not a good plan to carry the stairs up in a straight run without a landing, to ease the strain. A landing should always occur at a turn, and it should always be ample and of solid appearance.



A Novel Stairway Approach Consisting of Two Built out Cabinets (one for dishes the other for books.) A Curtain Screens the Stairs

The Home Builders' Scrapbook

Ideas Worth Remembering



A Kitchen Window Awning

By Aug. C. Schnake

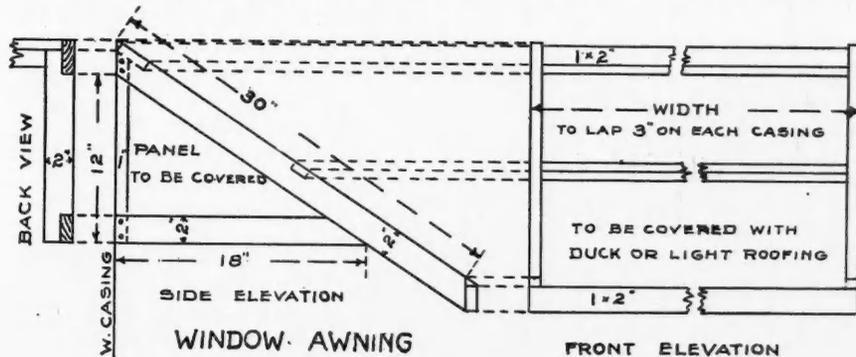
Apropos to the hot season, I would like to ask the readers how many of you realize and appreciate the value of an awning over those windows exposed to the hot rays of a summer sun?

I am willing to "fess up" I had to have my nose put down on it, before I tumbled. It is hard to believe, yet it is a fact, that a carpenter can be mar-

or the window on the back side of the house, most anyone can make them himself to look fairly well and answer the purpose admirably.

I enclose a sketch showing how I made mine, simple yet strong and very effective. A few pieces of 1 by 2 inches, a small piece of ready roofing, a few rippings to cleat it on with, an hour's work, 50 cents material, and presto! there was my awning.

They can, of course, be changed to



WINDOW AWNING

Working Drawing of Simple Window Awning Frame

ried thirteen years, and live in the same house eleven years, and yet never think of shading the south and west kitchen windows, and had to have his wife to suggest it first, and finally insist on having awnings over the windows. That is my case.

In all seriousness, you do not know how much cooler it keeps the room, by keeping the sun out, until you try it. Even though you have a shade or curtain on the side, the effect of the sun shining through the glass, penetrates into the building, besides you have to keep the curtain up part way, to admit light and ventilation.

It is with this, like a great many other undesirable things, we growl and fuss, and take on, but never as much as make an attempt to rectify or modify such matters. It is of course true, an awning over the window will not affect the temperature on the outside, just the same it goes a good ways toward keeping it down on the inside; and that is the object in view.

Now for the construction:—Awnings can be bought in all sizes and colors, and for all purposes; and for certain purposes, they may be preferable to the home made article. Yet for a kitchen,

suit the taste and conditions and can be made to either nail, screw, or hook on. Centralia, Ill.

A Bark-Covered Mail Box

By Albert Marple

A unique mail box has been built at Long Beach, Calif. As it stands this box measures four feet in height and a foot in diameter. The slice at the top is about eighteen inches in length, the cut being made diagonally. Five inches



A Bark Covered Mail Box

below the first cut the second cut is started. This cut continues possibly two-thirds through the log, and at this point a counter cut is made from the top surface, severing the piece to be used as the lid or top. With this piece out of the way, the center of the log is hollowed

out a sufficient size to receive ordinary mail parcels. In the lid a slot is cut through which the mail is to drop. A peg handle is inserted into the lower end of the lid.

There are more expensive mail boxes than this one, but one cannot be found that is more artistic.

Slow Setting Plaster of Paris Hand

Plaster of paris can be prepared so it will stand about three hours before setting, by mixing the plaster with equal parts of water and vinegar.



Notis!

Trapaser will be persekuted to the full exten of 2 mean mungrel dogs wich aint never be overly soshilbit with strangers and 1 dubbel barl shot gun which aint loaded with no sofy pillars dam if I aint tire of this hel-raisin on my property. CY FLEMING.

Always Something New

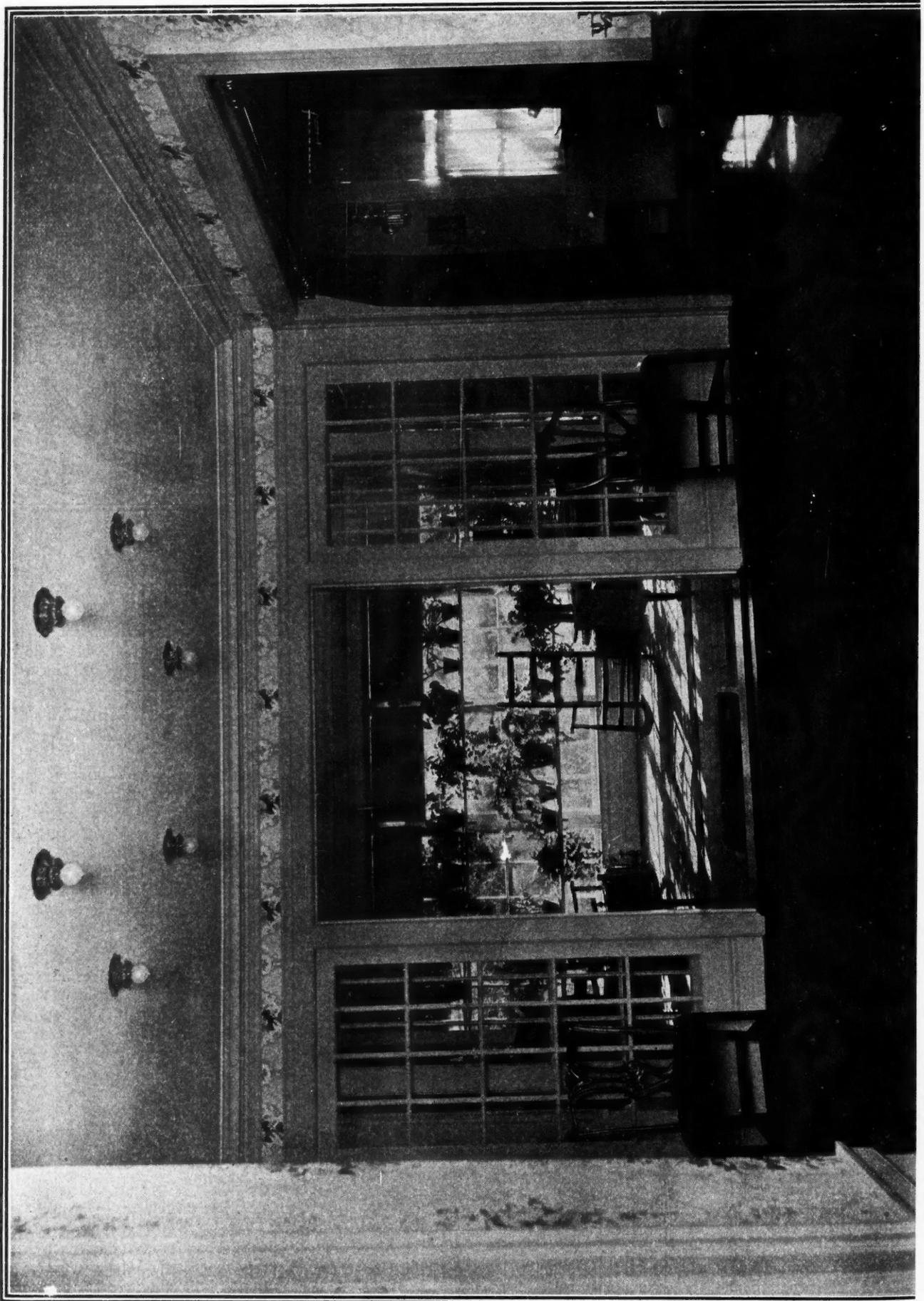
The mother of a schoolboy in Vermilion, Kan., sent the following note to the teacher: "Dere teacher: you keep telling my boy to brethe with his diafram. Maybe rich children has got diaframs but how about it when their father only makes \$1.50 a day and has got five children to keep? First it's one thing and then another and now it's diaframs. That's the worst yet."

House Numbers

The present year is the four hundredth anniversary of the numbering of houses. It was in the year of 1512 that this idea struck an architect to have numbers painted on the houses in a certain quarter of Paris, but it was not until 1870 that the system became general.

In Berlin about a decade later an eccentric method of numbering the houses was adopted. They numbered them without any reference to the streets; thus a tenant's address would be described merely as, say, "1000 Berlin."

In St. Petersburg they have an excellent way of displaying the numbers of houses by little lanterns bearing the numbers on the glass, a most useful notion after dark.



One of the Best Features Possible in the Modern Home is a Sun Parlor or Screened Porch. This View Shows the Approved Idea of a Glazed Partition with Double Glazed Doors Between Porch and Living Room. The Ceiling Lighting Arrangement—6 Bulbs Set in a Circle—Deserves Notice

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Warding off the Fire Fiend

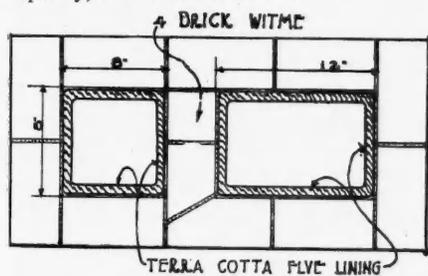


Making Chimneys and Flues Safe

Third Paper in a Series Dealing with Simple Fireproofing Precautions

THE safest chimney, and the only kind which the best building laws allow, is of hard-burned brick not less than eight inches thick, with continuous smoke flues of hard-burned clay or terra cotta pipe, the sections smoothly fitted together with the cemented joints struck smooth, and built into the flue as this is carried up. The only four-inch brickwork in such a chimney are the withes or partitions between the tile flues inside the chimney.

No smoke flue should be smaller than eight by eight inches, and those for a furnace, fireplace, or large stoves will need to be eight by twelve, or greater capacity, inside measurements.



Cross Section of Safe Double Chimney

If a chimney is built without a flue lining, it must not be of less than eight inches thickness of brickwork, the joints filled solid with mortar and be struck smooth on the inside, which insures care in laying, and avoids rough projections of mortar on which soot will accumulate to finally cause a fire inside and high up in the chimney. Parging or lining a chimney with mortar to make a smooth flue is a bad practice and not to be compared with the treatment recommended in the preceding sentence, because it is apt to be relied upon to fill up joints in carelessly laid brickwork, and when pieces crack off, the crevices of the brick work which thus lose their protection transmit sparks and a fire results, and the fallen pieces may stop up the flue and prevent good draught.

Every chimney should rest upon a suitable foundation in the ground or on ample brick piers, which is practically the same thing. If a chimney cannot

be supported directly from the ground, it should never be supported by wood, but by brick, stone, or iron of ample strength to prevent settling; and if in a brick wall, should never be corbeled out more than eight inches, the corbeling to consist of at least five courses of brick. It is dangerous to set a chimney on wood, because wood shrinks and the chimney settles unevenly and cracks and because the warmth may char the wood.

A chimney should be straight and perpendicular. It should be so located in the first place that it will not be necessary to offset it, principally because the unequal amount of settling of chimney and houseframing may bring timbers into contact with shoulders of the chimney to cause strains which may crack it. This is especially the case when the chimney is built with an enlargement just above the roof, where the greater settling of the chimney causes a dangerous crack just at the roof.

Every chimney should be carried three feet higher than adjacent roofs, both for better draught and to lessen the chance of fire from sparks when such roofs are of shingles.

Although a clay or terra cotta flue makes a good lining for a brick chimney, it is not safe to use such a flue alone, for the material is thin and gets hot enough to char wood and is quite apt to crack. An iron-pipe flue is very objectionable, for it becomes hot and rusts out. Such chimneys as these are seldom found in a dwelling except an inexpensive camp or beach cottage; their use is always dangerous.

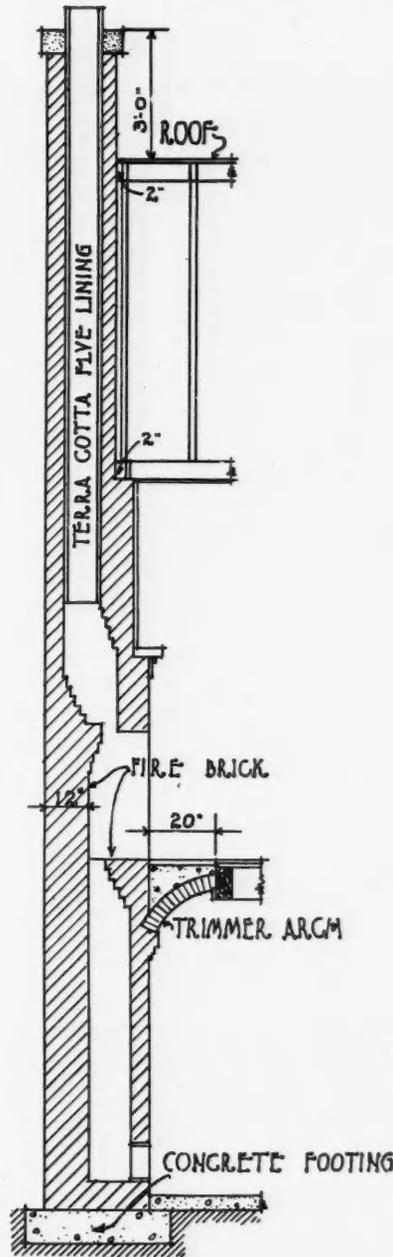
No wooden beams or joists should enter the brickwork of any chimney or flue of any sort, but should be supported on a header the face of which is not less than two inches from the outside of the flue and the trimmer beams four inches.

A header supporting floor beams in front of a fireplace, carrying the trimmer arch on which the hearth is laid, should not be less than twenty inches from the outside of the fireplace flue, for in this case the hearth itself is heated for a considerable distance by the open fire, and requires to be at least twenty inches wide to be safe.

Such a hearth must be the full width of the fireplace and be of brick, stone, burnt clay, or concrete, supported on a brick arch—in a word, fire-proof. The arch is built on wooden centering, and particular care should be taken to remove it, for it is likely to be hidden by a ceiling and forgotten. If it is left in place, the heat of the hearth may ultimately cause it to take fire.

The back of the fireplace must be of at least eight inches thickness of brick-

work, better twelve, and if a grate is set, the eight-inch brick wall needs a facing of fire-bricks or stone, iron, or other equivalent additional protection, as the heat is longer sustained and hotter.



Vertical Section of Approved Fireplace

Wooden mantels should not be used without the greatest care to get all parts of them far enough away from the fire; and where heaters are set in fireplaces the mantel is more apt to be exposed because the heater projects. Therefore, mantels should be incombustible.

It is not uncommon to see a wooden mantel dangerously exposed by a gas-log which is often used in a false fireplace which never was intended for a fire of any kind.

To protect the contents of the room from sparks out of the fireplace, the opening should always be completely protected by a screen.

The Plan Shop

Practical House Designs "That are Different"



Three Interesting Successful Homes

Photos and Plans of Some Medium Size Bungalows and Two-Story Dwellings that Have Made Good

THE word "bungalow" has a charm that is peculiarly its own. The suggestion which it carries of low, cool, simply yet cozily furnished rooms is exceedingly attractive, but when one adds that all these rooms are to be conveniently located on one floor, the appeal is especially pertinent to every housewife who is desirous of economizing as far as possible in her time and strength. The possibilities of room arrangement in a bungalow are manifold and it is therefore of the utmost importance that discriminating care be taken in the drawing up of plans. The artistic devices which may be employed to make such a home attractive are also deserving of careful attention in order that all glaring inconsistencies, so painfully apparent in many houses, may be conspicuously absent. The true test of a home is in its "homey" atmosphere and this may be felt as soon as one comes within range of the house if

its members have that instinctive ability for home-making which we should endeavor to cultivate.

One very charming bungalow is seen in the accompanying illustrations. It is the property of Mr. Charles A. Archer of Danvers, Massachusetts, and was planned by Mr. Guy Lowell, architect, of Boston. It is in a type of this kind that we see the ideal working out of the bungalow idea. Built primarily for comfort, it obtains it without the sacrifice of artistic arrangement or decoration.

The location, which is most happily chosen, affords the most appropriate surroundings possible, and so much depends upon one's neighborhood, even if it be only of trees. This dwelling is situated in the center of tall, graceful birches with occasional openings to afford glimpses of distant meadow lands. But the house, instead of being an eyesore in the midst of natural beauty, is so well adapted to its environment that



A Built-in Corner Seat Near the Door is an Inviting Place

it seems but a part of it.

The outside suggests the spacious, comfortable rooms which a glimpse of the interior fully justifies. The two wing-like projections at either end and the main part form the three sides of a hollow square, the open space between the wings making a large platform, the outer edge of which is marked by small evergreen trees potted in square tubs.

Across the front is a broad veranda with its pergola top supported by heavy, square, white pillars. This may easily be dignified by the name of outdoor living-room, it is so charming in its woodland surroundings.

The front door, of Dutch design, admits one straightway into the indoor living-room. No space is wasted in hallways or vestibules, which in a house of this sort would necessarily have to be small and dark. This living-room, as can be seen from the illustration, is a delightfully furnished room. The large fieldstone fireplace, the comfortable easy-chairs, the cozy built-in seat beneath the group of windows, the splendid hard wood floor with its richly colored rugs give just that touch of warmth and hospitality which should dominate the most commonly used room in the house. The walls are of plaster with ivory white finish and batted in deep brown.



The Living Room in the Archer Bungalow is 17 by 22 Feet and Open to the Roof. The Big Field Stone Fireplace is Its Commanding Feature

Above are the huge rafters, the entire room being open to the roof.

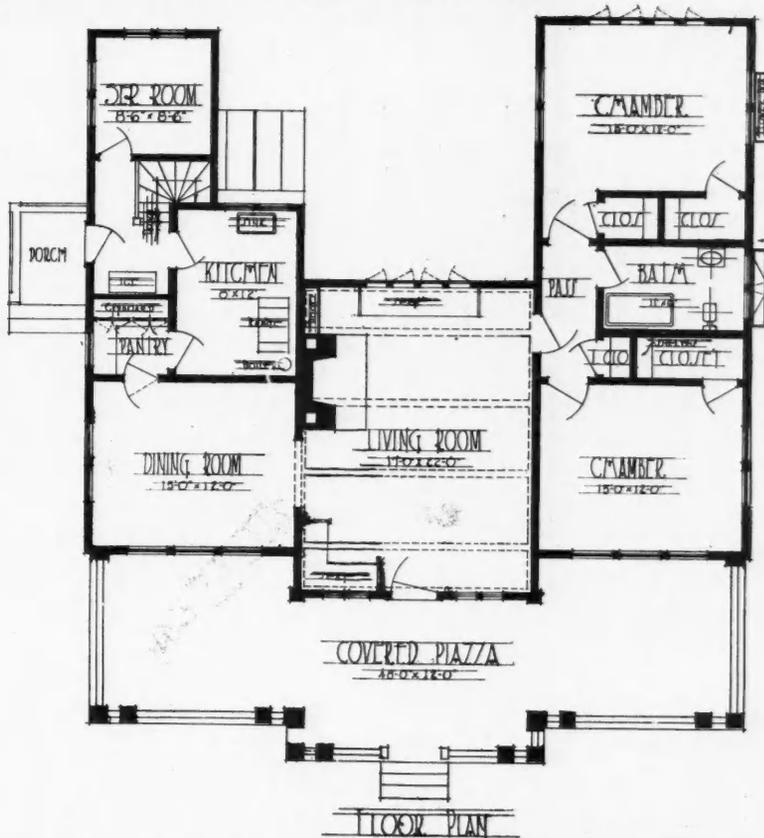
The dining-room, located just beyond the living-room, is also finished in plaster, of a rose pink shade, and battened in dark brown. The uniquely grouped windows admit plenty of sunlight and the whole room is charming in its simplicity.

In convenient proximity to the dining-room are the kitchen, with all its modern appliances, the pantry, and the servant's room.

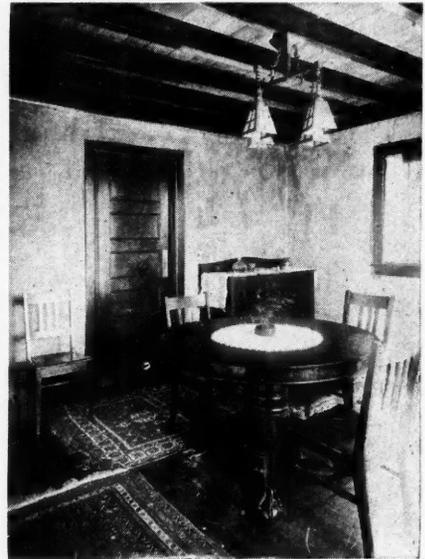
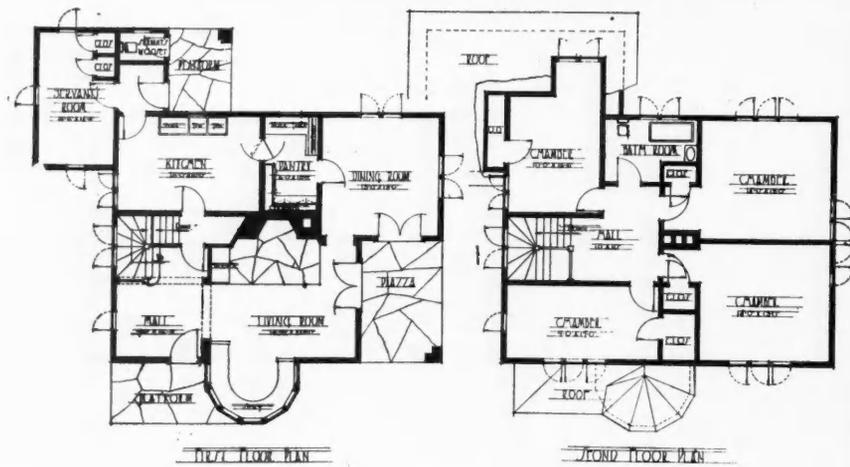
The sleeping chambers, also finished in plaster, and the perfectly equipped bathroom are in the opposite wing. The sleeping rooms are large, bright, and cheery, fresh air and sunshine pouring in through the numerous windows. Simplicity, coupled with convenience and comfort, is the keynote of this fascinating home, and the idea is most admirably carried out.

An English Cottage Design

AN eight-room dwelling of more than ordinary interest is the new home of Mr. Kirtland Gibson of Nanepashemet, Mass. It was designed by Bacon & Hill, architects, of Boston, and built



Six-Room Bungalow of Mr. Chas. A. Archer at Danvers, Mass. Designed by Guy Lowell, of Boston



Dining Room Has Real Ceiling Beams—
Matched Under-Floor Used in Place
of Plastered Ceiling



Eight-Room "English Cottage" Design, Built at Nanepashemet, Mass., for Mr. Kirtland Gibson

by Mr. Robert C. Bridge.

The first thing one notices about this house is the roof. The wood shingles are laid in a way that gives the impression of thatch. The eaves and hips are rounded off, and the rounding mould with which the eaves are finished, makes the roof covering seem about a foot thick. As a matter of fact, only about the ordinary number of shingles are used and they are laid with alternate wide and narrow exposures.

This house, standing on the crest of a high hill, shows the architectural points to advantage. The approach is by English stepping-stones, grass growing between, to the stone steps. Not everyone is fortunate enough to have

a picturesque New England building site, but on the other hand, there are many rough and rugged building sites that might easily be treated this way, but are spoiled by too much leveling and too much clearing off of trees and natural shrubs.

This house is of frame construction, sided with cement plaster on metal lath. All of the details are carried out in harmony, modeled after the cozy cottages of England. The shallow curved dormers, the casement windows with their small panes of glass, the hip roof with its large central chimney, are all decidedly English. The two outside piazzas as well as the big fireplace hearth in the living room, are floored with stone flags

in the approved English style.

Entering the stair hall by way of the stone flag platform under the flat copper canopy, one finds the interior very simply finished in cedar. The living room, 16 by 22 feet in size, opens through a broad archway on the right. The circular bay window with built-in seat is one of the striking features of this apartment. Nothing could be conceived of more inviting and homelike than this, especially of a chilly evening with a bright fire crackling on the hearth across the room.

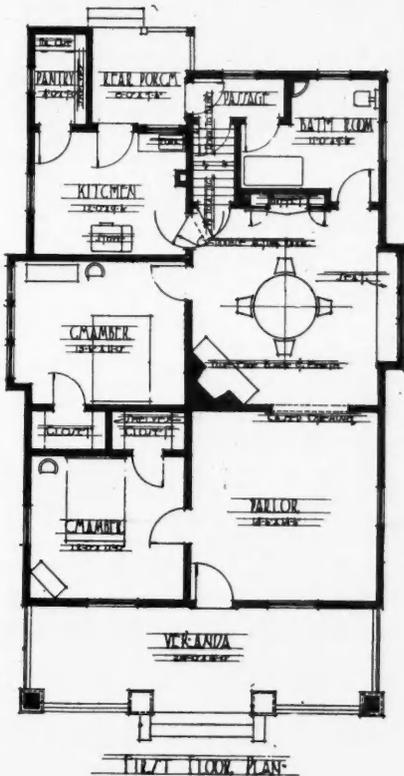
This living room is finished in cypress, stained golden brown. This room, as well as the dining room, have genuine beamed ceilings.

Double French doors open from the corner piazza to both the living room and the dining room. Meals can be served here in hot weather. The view from this point, overlooking Old Ocean, is magnificent.

A study of the floor plans will show how nicely this dwelling is arranged for convenience. A good-sized serving pantry, well lighted, separates the kitchen and dining room. The servant's quarters are in the lean-to addition at the rear corner, by the kitchen. There is a short and direct connection between



Detail of Front—This Bungalow Cost Complete \$2,000



the kitchen and the front door. Many otherwise desirable small residences, are spoiled because the maid has to pass through the living rooms every time in answering the door.

On the second floor there are four good-sized chambers with plenty of closet room. There is a commodious bath room conveniently located.

This house is lighted by electricity, the fixtures being largely hand made of copper and iron. This house is said to have cost \$5,000 to build.

Attractive 5-Room Bungalow

HERE is a very neat bungalow designed and built by Mr. Charles A. Lawson, an AMERICAN CARPENTER AND BUILDER subscriber at Monroe City, Mo. Everyone who sees it, calls it a beauty. It contains five good-sized rooms on the

first floor, nicely arranged, with a floored attic above. The all-over dimensions of this bungalow are 28 by 52 feet.

The wide span across the front porch with no supporting columns gives a very spacious effect. The porch piers are of concrete capped with stone. The two corner porch columns are very large, six-sided box columns, a rather unusual style that looks very well. The bungalow is sided with narrow, beveled siding up to the window heads. The gable ends together with a narrow strip all around under the cornice are shingled.

This house cost \$2,000 to build, using yellow pine inside trim, cedar shingles, and outside walls covered all over with building paper under the siding. Electric wiring is complete, and was figured in this price; but plumbing and heating were not included.



Very Well Designed Five-Room Bungalow, Planned and Built by Chas. A. Lawson at Monroe City, Mo.



Here is a Homelike Small Living Room Having Brick Mantel with Hammered Iron Hood and "Bungalow" Side Lights; Simple Ceiling Beams are Attractive; Waist-high Opening Into Hall can be Seen at the Extreme Left—this is a Good Trick for Widening a Colonnade Doorway in a Small House



Found His Niche by Accepting Minor Job By James A. Patterson

AS a result of stagnation in building contracts, during the winter of 1911-12, Morris Alkins, a Denver carpenter, found himself out of employment, with funds close to the zero mark. At carpenters' union headquarters, records showed that there were approximately 200 idle men with chances of getting regular work before the first of April rather doubtful. In this dilemma he decided that discretion was the better part of valor, that half a loaf was better than no bread. He packed his working clothes in a suit case, told his landlady that he was going out of town for a few days; boarded a train that carried him to a coal mining camp forty miles away in the foothills, where he got a job as cook's helper.

When applying for a place to do any kind of work, he said nothing about being a carpenter, lest it be construed that he was taking the job only as a make-shift and would quit on the first monthly payday. Two weeks after taking the place, he one day overheard the foreman talking with the time-keeper about sending to town for a carpenter to make some repairs, and to put up a small building to be used as office and supply room.

At the first opportunity he broached the subject to the foreman, telling him that he was a carpenter and could do the work under consideration. His interview ended with the foreman's remark: "Well send for your tools, and begin the work on Monday." Next evening Morris and the foreman met in the large dining hall where they drew up plans and made out a list of material required for the proposed building.

At this meeting Morris demonstrated to the satisfaction of the foreman that he knew his business as a carpenter. As the office building neared completion, the foreman inquired: "Can you paint the building?" To which Morris replied, "I'm not an expert, but can do a job of plain work." This being all that was wanted, a supply of oil, lead, varnish, and colors was

ordered and Morris painted the building inside and out.

About this time the superintendent of the company arrived on a visit to the mine. Glancing over the new building he expressed his approval to the foreman by saying: "This work shows the ear-marks of an artisan." It caught his fancy to the extent that he, Morris, and the foreman met in the new building that same evening and drew up plans for two new cottages, to be built for the use of married men employed by the company. One of the camp men was detailed to assist Morris and the work was begun at once.

Three months later, these two cottages being finished, Morris and his helper were successively transferred to two other mining camps operated by the same company, where they repaired old buildings, laid sidewalks, and built additions to the men's quarters. At the last visit of the superintendent, Morris was given a hint that the company had enough work in view to keep him employed indefinitely.

For all his time, except the first two weeks, Morris has received the regular union wages, less \$4 a week, deducted for board and lodging. In a confidential mood one day Morris said to his helper: "While bumping round this old world for 35 years I've discovered that I can always land a real job quicker by taking a small one than I can by hanging around the lodge room, or standing on the corner denouncing the trusts and storming against conditions that now control the labor market."



Provide Definite Specifications

TIME, worry and money are saved every time a builder bases a contract on exact and definite specifications.

The carpenter and builder may be acting as his own architect—and many are doing very good architectural work—and he may feel that he doesn't need to bother with fully drawn out plans and specifications. That's all very well, but it's satisfied customers you are really working for and while they may not know much about materials and construction, they like to know definitely before-hand just what they are going to get.

A building contract should always be based on a definite specification, telling exactly what the builder will furnish.

An average example of what happens from going ahead without a definitely detailed understanding came up in court recently.

A man had pointed out to his contractor a house which filled his requirements, and the contractor agreed, in a brief written statement, to build the home he wanted and include "the best of everything." There were no carefully drawn plans or detailed specifications to tell just what "the best of everything" would include, with the result that when the home was turned over to the disappointed homebuilder as complete, the matter of settlement was carried into court. On the witness stand the contractor declared that he had furnished "all open enamel iron plumbing"; that he had furnished "No. 1 maple flooring, oak finish for casing, doors," etc., "A shingles," etc., all of which sounded very good to the judge.



An architect was engaged as technical witness, and promptly informed the judge that he could not find the maker's name upon the plumbing, which would indicate that there was no guarantee of permanency on the enamel, that bathtubs cost from \$18 to \$125, and that under the technical wording of the agreement, the contractor could be made to furnish a solid porcelain tub weighing 1,200 pounds, at the highest price. He also informed the court that No. 1 maple flooring was the third quality, and not the first; that oak finish with no technical grading might mean anything from a very poor grade of red oak to a very high grade of quarter-sawed white oak, and that the poorest grade had been furnished in this instance; that "A" shingles are a very poor quality, the best quality being known as extra star "a" star, etc., down through the list of items under contention.

The finish hardware was also criticised. Door locks had been put on that cost \$10.50 a dozen with hinges at 5 cents apiece—rather poor quality for any home. On the other hand,

had the contractor furnished him "the best of everything" in hardware, he would have furnished gold-plated hardware trim at a cost of about \$60 a door. The result of the matter was, that upon a suggestion from the judge the case was taken out of court and settled by an arbitration board of competent builders appointed by both men. It was easily seen that the house which the contractor had agreed to build for \$3,500 would have cost him more than \$10,000 to build had he furnished "the best of everything," and that this would not have been putting a reasonable construction upon the contract. The board of arbitration decided that the contract had been let at too low a figure; that the home-builder had received nearly all that he could expect for the price, but they allowed him \$150 with which to fix up some plainly defective work.

This job cost both the home-builder and his contractor a lot of unnecessary worry, time and money which they can charge up to experience.

Advertising Puzzle Makes Big Hit

HUNDREDS OF BUILDERS PROVE FAMILIARITY WITH ADVERTISED GOODS—ALL ENJOY THE FUN OF THE CONTEST—PRIZE WINNERS ANNOUNCED—ANOTHER BIG CONTEST THIS MONTH

THE avalanche of letters that began descending on the desk of the Advertising Editor immediately our July issue was in the hands of the subscribers, surprised even the most optimistic of us who have contended all along that AMERICAN CARPENTER AND BUILDER readers really are interested in our advertising pages.

It was easy to see that all were having good fun hunting out the puzzle answers. Certainly it was no hardship either to find fifty words with which to ex-

press the feeling of absolute confidence, which all of these ad. fans seem to have in everything they see published in the AMERICAN CARPENTER AND BUILDER.

It has been a monumental task, though a very agreeable one, to read these letters and select the prize winners. And every letter, without exception, was good—so full of real sincere endorsement of our well-known policy of permitting only reliable concerns to advertise to our readers, that it was hard to make any choice between them.

The Prize Winners in the July Ad. Puzzle Contest Are the Following:

First prize, \$10.00 worth of goods selected from our ad. pages—

C. D. ELDRIDGE, of the firm of Eldredge & Pew, Architects and Builders, Warren, Ohio.

Two second prizes, each consisting of \$5.00 worth of goods selected from our ad. pages—

JOHN J. ROE, Real Estate Builder, Patchogue, L. I., New York, and

R. N. ADAMS, Contractor and Builder, Corvallis, Ore.

Thirteen prizes, each consisting of \$1.00 worth of goods selected from our ad. pages—

JOHN G. SNYDER, Supervisor of Manual Training, Ottawa, Ill.

JAS. H. ECKER, General Contractor, Columbus, Ohio,

FRANK H. SCHMITZ, Foreman of Construction Company, Madison, Wis.,

C. M. STAINS, Contractor and Builder, Roswell, N. Mex.,

CARL F. WOLF, General Builder and Contractor, Elyria, Ohio,

CHAS. H. ARTHUR, Architect, General Contractor and Builder, Lowville, N. Y.,

C. H. SHARP, Manager Dyer-Williams Lumber Co., Maury City, Tenn.,

FRANK G. MYERS, Building Contractor, Fort Frances, Ont.,

EUGENE D. GRISWOLD, Carpenter and Builder, and Dealer in Building Materials, Buckland, Mass.,

O. P. BARROWS, Contractor and Builder, Grove City, Minn.

Get Busy With the August Puzzle

HERE is a chance for even more fun than was offered last month. On the page opposite, are shown fragments from twenty advertisements appearing in this number of the AMERICAN CARPENTER AND BUILDER. You know some of these without even looking them up. However, you must list the page number on which each ad. appears. Study all of the advertisements this month. You will be surprised at the amount of real information and help you will get out of them.

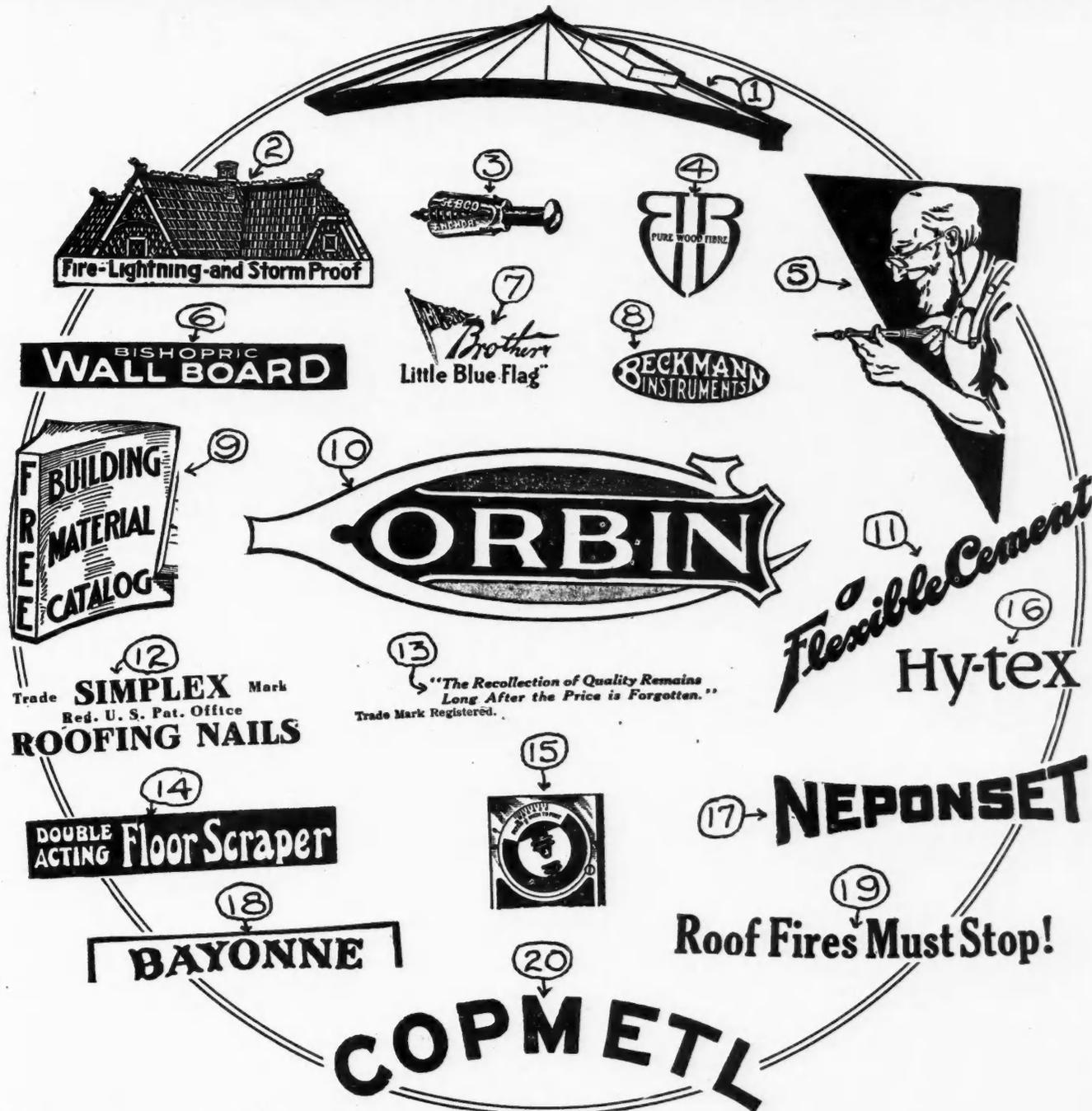
The concerns advertising in the AMERICAN CARPENTER AND BUILDER make it a point to list their best offers here as they value highly the business wide-awake, ambitious carpenters and builders can bring them. For this reason you will find many surprising offers of free samples, illustrated books and catalogs

full of real information for builders, offered in these ads. in our pages.

When you have studied these ad. pages all over, you will find it very easy to locate these twenty announcements needed to solve this month's puzzle. Make a careful list of these and then write us a straightforward letter of not more than one hundred words on this subject:—"How I Use the AMERICAN CARPENTER AND BUILDER to Help Me in My Work."

We want to know just how our readers are using the material we are offering them each month, so that possibly we can make it even more useful and practical than ever before. We want you to help us to help you and are willing to pay you for this assistance. The prizes offered this month are listed on the opposite page.

MORE PRIZES AND FUN FOR ALL WHO READ OUR ADVERTISING PAGES!



AUGUST AD. PUZZLE PRIZE CONTEST Above are fragments of 20 advertisements appearing in this issue. Can you identify them? Some are old friends; some you will have to hunt a little to locate. Study our advertising pages this month; read every offer. Then list the 20 ads. these were clipped from. Be sure to give the page numbers. Also write a brief, straightforward letter of 100 words on this subject: "How I Use the American Carpenter and Builder to Help Me in My Work."

13 Prizes

WE WILL AWARD THESE PRIZES

\$30 in Prizes

- For the best letter (and correct Puzzle solution) \$10.00 worth of goods selected from our Ad. pages
- For the 2 next best letters (and correct Puzzle solution) \$5.00 worth of goods selected from our Ad. pages
- For the 10 next best letters (and correct Puzzle solution) \$1 worth of goods selected from our Ad. pages

When sending in your Puzzle Answer and Letter be sure to state the goods you select from our Ad. Pages in case you win a prize; goods of ANY value may be selected, and prizes will apply either in whole or part payment on them

Address your letters to, Your Friend,

This Contest Closes Friday, Sept. 15th.

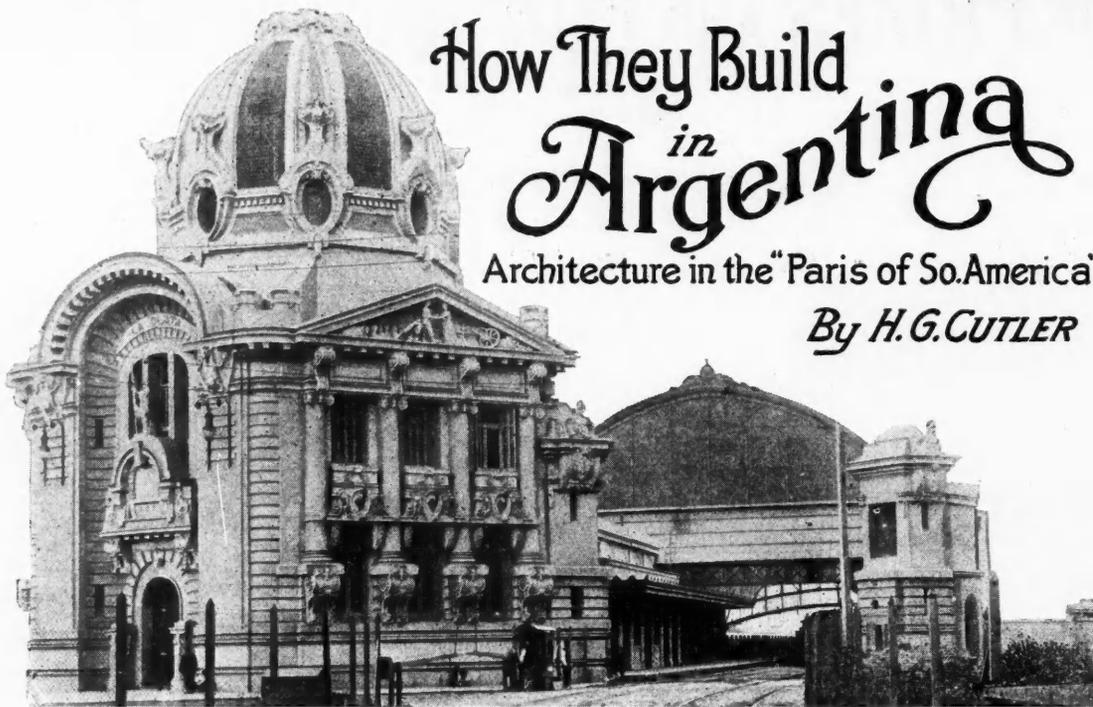
Prize winners will be announced in September issue

**THE ADVERTISING EDITOR,
American Carpenter and Builder Chicago**

How They Build in Argentina

Architecture in the "Paris of So. America"

By H. G. CUTLER



New Railway Station of the Great Southern at La Plata, Showing Customary Wealth of Ornamental Detail

AS in Spain, the mother of Southern South America, the facts which have largely determined the fundamentals of construction and architecture in the Argentina country are the scarcity of wood and the ample supply of clay. Briefly, the basic principle in the mode of construction long prevalent in South America is the erection of a brick wall over which is laid a thin coat of plaster or cement. For the majority of the buildings erected in the urban centers of Argentine and Uruguay, imported cement is used, virtually all of it coming from Europe and the great bulk of it from Belgium.

Most of the forests of South America, especially of the Southern sections, are of hardwood, which cannot be utilized for general building purposes, chiefly on account of hardness of texture and irregularity of grain. The most valuable variety of wood comes in yearly quantities of half a million tons from the region three to seven hundred miles north of Buenos Aires. It is the "quebracho," widely known in that portion of the hemisphere, but not for anything it has done in the promotion of the structural interests.

The South American carpenter, however, has cause to be thankful for the adaptability of this wood in other forms. Of course, the red tough quebracho beams, with their fine interlaced grain, have been used in the foundations of large buildings, but more often the timber has gone into railway sleepers, fence

Building of the Paris of South America—Drawbacks in the Structural Expansion of the Great City of Buenos Aires, Argentina—Forests Mostly of Hard Wood and Far Away—Quebracho, Oak and Other Varieties Used for Limited Building Purposes—Even Building Stone Scarce and Monopolized by the Railways—White Buildings Virtually All Cemented—Domestic Architecture—The Structure Over Three Stories Still the Exception in a Great City of 1,400,000 People—Despite Narrow Streets Her Great Plazas Save the Architectural Situation—A Mixture of Schools—General Aspect Most Pleasing—The Era of Higher Buildings and Steel Frameworks—Prominence of United States Builders in the Transformation of Buenos Aires Into a Great Permanent Metropolis.

posts, paving blocks, fire wood and charcoal. The principal export value of quebracho, and the quality which has most advertised it abroad, consists in its high percentage of tannin, so indispensable to the finishing of leather.

In some of the northern provinces of Argentina are small forests of cedar and other fine woods which are used to a limited extent in the manufacture of furniture and interior wood work, such as wainscoting and flooring, and for general decorative purposes. In the southern districts, stretching far into Patagonia, are large tracts wooded with oak and other hard varieties. They all lack the tannin element; otherwise they are used for much the same purposes as quebracho. Patagonia oak, which is considered the soundest wood of its kind in South America, is also being made into casks (largely by hand) to meet the rapidly increasing demand of the wine-producing country of western Argentina. But whatever point of view you take regarding the woods of southern South America, you are brought to the realizing fact that they play little part in the erection of its buildings.

The same holds true as to its stone. It is rare that granite is worked into its structures, and when it is the material is usually imported from Uruguay. The Argentina granite of the Andes region is too far away, too hard to reach when you get there and has been so little used that it is of uncertain quality.

With the erection of a larger class of buildings in late years, limestone is being used to some extent in the foundations of structures. But the quarries are few, quite distant and scattered, and their product is monopolized by the railways, which utilize it chiefly in the furtherance of their own projects, such as the building of bridges, docks, road beds and irrigation works. When these matters have been attended to, there is little limestone left for the general building interest.

Consequently, one of the most striking features of the country to the average North American is the sight of miles upon miles of city streets, and vast expanses of open country, showing solid rows of one-story cement-covered houses, or plain white huts and pretty villas of Spanish aspect sprinkled over the landscape. No wooden cottages or home; no finished brick or stone residence in sight anywhere.

Yet this may be said in favor of the Argentine and Uruguayan style of home building and architecture: It is monotonous, as an exterior view, but the Spanish and oriental plan of grouping the interior living rooms, and even shops, around a common court, is

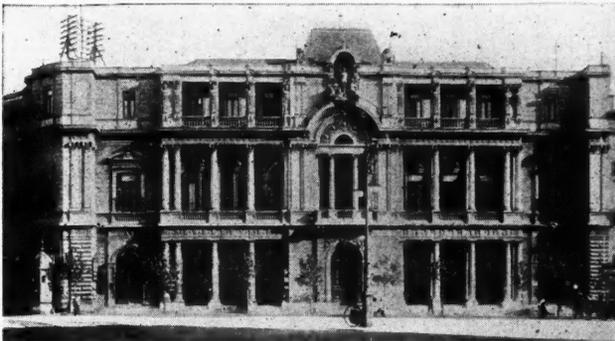
largely carried into the construction of office buildings and the larger business edifices, and partially accounts for the apathy of the people toward American promoters of what we have come to believe are the scientific and up-to-date systems of ventilation and temperature regulation. Down there, although they have some pretty chilly weather in July and August, they virtually are without fires throughout



Typical Residence of the Rich

the year, and in December, January and February, when the well-to-do are rushing to the seashore and "camp" (country) for relief, the toilers throw open all their doors and roofs and let scientific ventilation take care of itself.

Even now that Buenos Aires has reached a population of nearly a million and a half, is the metropolis of South America, the largest Latin city in the world except Paris, and one of the three most-rapidly increasing of the great centers of population in the universe, few of its leading business structures are over three stories in height, and many of them still cling to the primitive one story. The chief exceptions to the rule in this matter of mercantile buildings are found along the Avenida de Mayo, a wide boulevard running for over a mile east and west through the down town business district, and Calle Florida, one of the many narrow thoroughfares passing from north to south for about the same distance from the Avenida to Plaza San Martin, around which are massed the foreign consulates, some of the government buildings and many palatial residences. In scattered spots the low buildings are



Stock Exchange, Buenos Aires

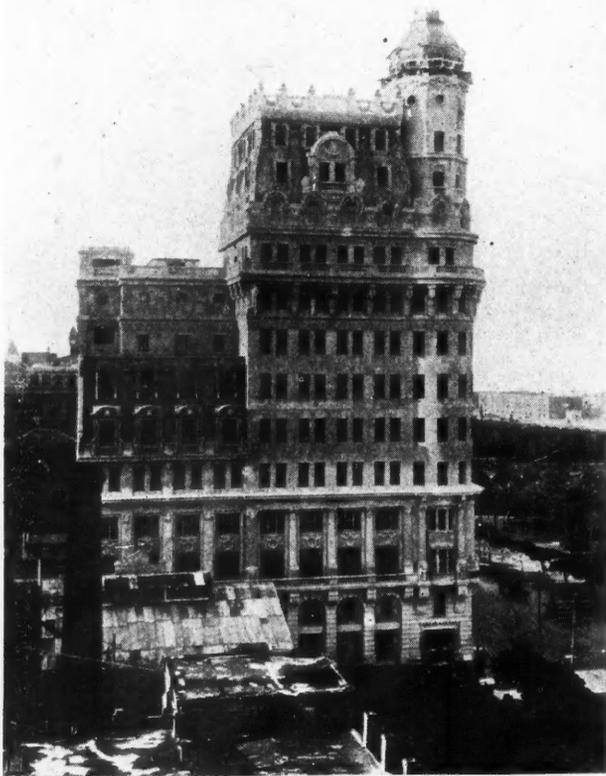
both cheerful and sanitary. This common breathing space is always ornamented with plants and flowers, even in the most homely neighborhood, and ample provision is made for the opening of the court roof to the fresh air and sunshine. So that while toilet accommodations and scientific ventilation of living and working quarters are often neglected, on the whole there are many things to be said in favor of the court system of construction. This style is also



A Typical Business Street of the Old Style—These Low Shops are Now Giving Place to Skyscrapers

being razed and higher ones, on the modern plan, erected, but the area of the city as a whole is still covered by one, two and three story business structures.

Buenos Aires has been so busy growing, and providing ways and means to move her people about, that she has just commenced to keenly realize how far she is behind other great metropolises in the build-



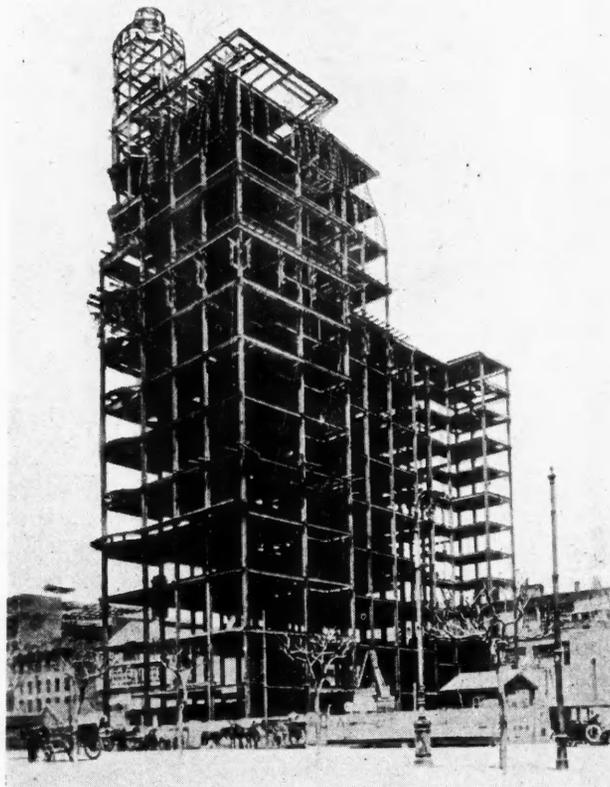
The Finished Structure of the Railway Clearing House, the First Skyscraper of Buenos Aires

ing line. A city which has grown from 200,000 to 1,400,000 people in forty years, and gained a million of her population in twenty-five years, has an excuse for getting a trifle behind in one or two particulars.

Despite her comparatively low buildings and her narrow streets, Buenos Aires is a most attractive and interesting city from the standpoint of the architect and builder. The patience and care with which the mason lays the walls of rough brick which are to serve as the frame work of the structure, in the eyes of the more energetic northern craftsman border on the field of laziness. Then comes the plasterer with his little trowel and pail of cement, already mixed with sand and otherwise prepared as a finisher. He has also his "smoothers," made of scantling and boards, for the finishing of the vertical walls and window ledges, which he slowly and critically works up and down and back and forth, until the apparatus has scraped and leveled down all the surplus cement and his frame runs over every inch without friction. And the work of filling in the stucco ornamentations — leaves, wreathes, flowers, figures and conventional designs of all kinds—is delegated

to the final artist of the building, whether it be one story or more. He wields a smaller trowel and a little brush as lovingly as a child applies the finishing touches to a toy house. I do not wish to excuse the dilatory tactics of the average Argentine workman, but my observation leads me to believe that the superior "finisher" takes more pride in his work, seems to love it more, than the average expert workmen in the North American building lines. It may be that the stress of business in the States—the push all along the line—prevents the building artist of the north from any outward exhibition of his affection for his work.

Certain it is that the appearance of the white buildings even lined along the thirty-foot streets of Buenos Aires is finished and pleasing. The fact that most of the down town thoroughfares are contracted into lane-like proportions detracts greatly from the architectural effects of some of the really beautiful buildings. Few indeed are the magnificent vistas or perspectives in Buenos Aires. This municipal misfortune is partially remedied by the grouping of many of the most imposing of its buildings around or near the fine



The First Steel Frame Skyscraper—North America's Contribution to Argentine Architecture

plazas of the city and by planting them along half a dozen of its broadest avenues, which debauch into the more open districts of the outlying suburbs.

The public buildings, the banks, the hotels, the newspaper edifices, the railway depots and the few imposing office structures have a certain harmony because they are all white and cemented and really carry with them a Spanish air of mingled lightness

and stateliness. Examine them in detail and you see that their domes and minarets are Oriental, many of the entrances Gothic or Grecian, while the bodies may be Italian—but all harmonious and pleasing because of a general architectural atmosphere of purity and freshness. Brazilian architecture has much the same effect on the North American, with the difference that in the more northern republic blue, green, yellow and red appear as tints or splashes on most of the buildings, whether urban or suburban. One might imagine that the characteristic tastes of the large colored elements in the Brazilian character had found vent in such embellishments. In Argentine the bright colors are used so sparingly that they hardly seem to exist; the prevailing architecture and decorations are along the lines of Latin refinement and uphold its modern christening as the Paris of South America.

Most of the higher buildings in Buenos Aires have gone up within the past seven or eight years and have been chiefly pushed along by North American construction companies. In the prosecution of this work considerable spaces have been cleared of outgrown stores and houses, and it is nothing uncommon to see their sites covered with huge piles of granulated masonry, which has been ground up by machinery and is being used in the construction of the cellars or foundations of larger buildings in other sections of the city. This is but one of the many evidences of the scarcity of building material, a difficulty which is being overcome by the great southern city and which does not stand in the way of the structural progress of any metropolis in the United States. This drawback is further illustrated by the government statistics showing the enormous amount of building materials which Argentina is obliged to import in order to meet the necessities of her expansion. Last December the figures for the first nine months of 1912 were published, indicating that for this period materials for building purposes were imported to the value of \$24,290,776. The sum men-

tioned covered these items: Glazed tiles, 18,052 tons; galvanized iron pipes, 10,537 tons; other iron pipes, 18,864 tons; iron columns, 2,604 tons (an Argentine ton is 2,500 pounds); white pine, 80,965 cubic metres; pitch pine, 427,402 metres; spruce pine, 194,088 metres (a metre is 39.37 inches); cement, 327,782 tons and iron girders, 64,131 tons.

As I have intimated, there has been little devel-



Breaking Ground for a Modern Building in the Heart of Buenos Aires opment and certainly very slight change in this southern land in the direction of North American ideals of home-building and domestic architecture. So grained into the national character are the Spanish traditions in these regards that it will be years before the most enthusiastic can hope for any reformation by the northern standard of what constitutes a sanitary, convenient and pleasant residence. Yet great progress has been made in the building of commercial and business edifices, this era dating back perhaps a dozen years when the people commenced to recognize the necessity of higher structures of stancher frameworks than they had been accustomed to. It dates from the time when the people of Buenos Aires proudly realized that their city was not of mushroom growth, but was to substantially expand and endow its choicest sites with a rapidly accelerating increase of values. They could no longer afford to erect unsubstantial buildings of one, two and three stories. The first period of this era was dominated by European builders—principally English, French and Belgium—who taught the people to accept the principle of light steel frameworks. In a word, their



Villa on an Argentine Country Estate

policy, was to "go easy at first," and, furthermore, the tendency of all European builders in this line is toward light construction.

North American builders are the originators of steel framework sky scrapers, and also of the principle that all structures should be erected on the basic estimate of the greatest possible strain to which any part may be subjected rather than upon the calculation of an average strain. Even in the erection of the smaller buildings American construction companies have fought for this principle, with the result that their work is now recognized at a glance, and they are also being accorded the lasting credit of laying the foundation of a greater Buenos Aires by giving her a



Bank of Italy in Buenos Aires, Typical of Elaborate Architecture

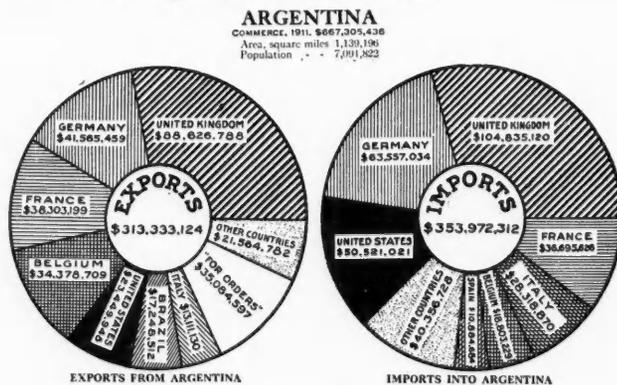
massive and enduring class of buildings in accord with her splendid future.

The steel structural builders of the United States were fairly planted in the field when the mammoth and magnificent Plaza Hotel was completed on Plaza San Martin in 1906. This was the work of the United States Steel Products Company, of New York, which, under the general management of Pemberton Smith, has since erected several other great buildings of like construction. The most noteworthy of these is the thirteen-story building of the Railway Clearing House, the tallest completed structure in Buenos Aires, and generally conceded to be its finest example of North American construction, from all the view-points of rapidity of execution, durability of work, convenience of interior arrangement and mechanisms, and architectural impressiveness. Elevator service, fire protection, lighting arrangements and other interior features are modern, and worked out with a view of meeting all the requirements of the great Railway Clearing House, and scores of other tenants who are to be "officed" there.

This massive Railway Building on the Plaza Colon was completed as to its skeleton in 289 days, and 1,500 tons of steel were worked into its frame. It

was commenced on January 18, 1910, and finished on November 3rd, of the same year. As a safeguard against accidents a solid platform or scaffolding was erected at the commencement of each story and only removed when it was completed. The public was therefore unable to follow its uprising in every detail, but its progress was a revelation to the people of the southern city who stood in crowds below, day after day, gazing upward with unfeigned astonishment as story after story was uncovered. Later, when such steel buildings were in progress, as the structure being erected by H. C. Thompson & Company on Calle Florida, the curiosity and wonder of spectators were somewhat eased, as the structural steel workers were in full view and their daring but necessary feats became common property. Several other massive buildings are being erected according to the American idea of permanence, which our builders claim should never be obscured by those who have at heart and brain the best interests of Buenos Aires. Although not a sky scraper, the new station of the Central Argentine Railway, in the eastern part of the city near the Rio de la Plata, illustrates one of the marked accomplishments of steel construction in Buenos Aires. That imposing monument to modern building and railway management is virtually completed. In this building as in most other structures of like nature, the ceilings are of metal lathing.

I have just returned from a visit to Buenos Aires and southern South America and do not pretend to have more than covered several of the prominent features connected with the building interests and peculiarities of that very interesting part of the world. I only hope to be able to convey a general, yet a clear picture to those who have not been there, and especially to show the drawbacks in the building of a modern city which are being steadily overcome, largely—I am proud and happy to say—through the energy, genius and honest work of North American contractors, engineers and architects.



EXPORTS: Live animals, hides and skins. Meat products. Agricultural products, principally wheat, Indian corn and linseed. Lumber. Copper. Onyx. Wolfram ore. Borate of lime.

IMPORTS: Live animals. Food products. Tobacco. Wines, liquor and other beverages. Textiles and manufactures thereof. Oils, greases, etc. Chemical and pharmaceutical products. Paints, dyes, etc. Timber, woods, straw and manufactures thereof. Paper and manufactures thereof. Hides, skins and their manufactures. Iron, steel and their manufactures. Other metals and their manufactures. Agricultural implements and machinery. Railway cars, their equipment, rails, etc.; carriages, wagons, automobiles, bicycles, etc. Earths, stones, coal etc. Building materials. Electrical apparatus.



Noon Hour Talks by the Boss Carpenter

Talk No. 13

THE BOSS TELLS ABOUT THE USE OF BOLSTERS AND BEARING PLATES UNDER LOADED COLUMNS AND GIRDERS

“DURING the last three talks,” said the Boss, “we have considered the methods for figuring both timber and cast iron columns. Today we will look into the proper way of applying the load to a column so that our methods of calculation may be of service.

“If you will remember, we have made it a point to see that the loads which were carried by our columns were evenly balanced wherever possible so as to produce the effect of a single, centrally applied load. Loads which were carried on single side brackets were spoken of as eccentric loads and a special calculation outlined.

“Direct and definite action of loads is made possible by the use of bolsters, post caps, and bearing or base-plates.

“Whenever timber posts are used one above the other to support loads on different floors of a building, each post, except the top one, should have an iron or steel cap-plate, and the upper posts should set on the cap of the post below, and not on the girder. Where a timber post supports only a girder, a timber bolster may be used instead of the iron or steel cap.”

The Boss then constructed Fig. 27 in the “log book” and explained that it was intended to show the use of the caps and plates shown in detail in Figs. 28, 29, 30, and 31, which he drew on another page.

“The use of the bolster from a mechanics standpoint,” said the Boss, “is to distribute the load from the girders shown in Fig. 27 so that it will bear evenly and centrally on the column, and at the same time provide a greater bearing area and a means of fastening for the ends of the girders themselves. Timber is not as strong against crushing by a load acting perpendicular to the grain as it is when the load acts with the grain. This may be readily seen by comparing the values for crushing strength given in Talk No. 6 with those in the following table:

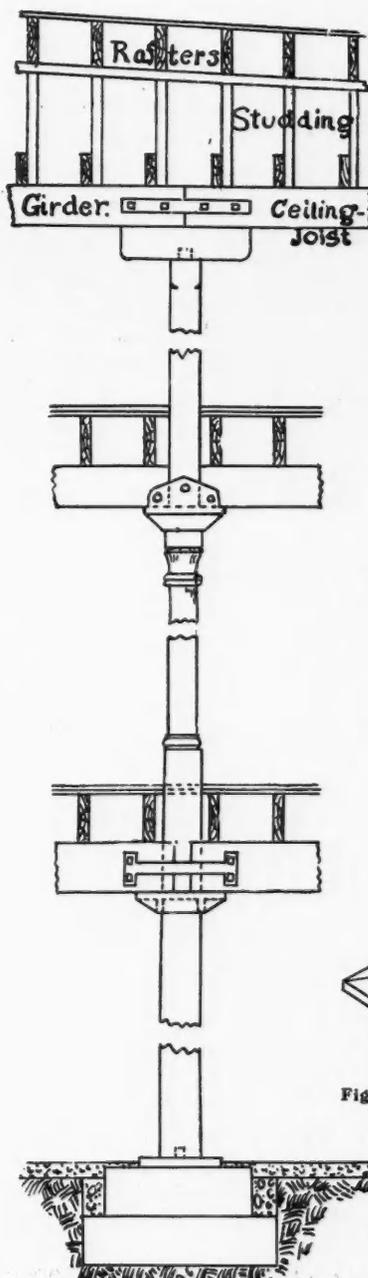


Fig. 27. Use of Bolsters, Column Caps, and Base-Plates in Heavy Construction

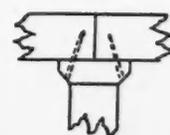


Fig. 28. Method of fastening Girders to Bolster

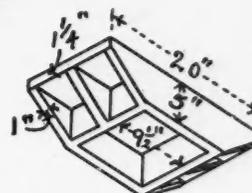


Fig. 29. Plain Post Cap

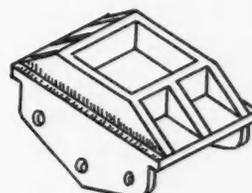


Fig. 30. Post Cap with sides for Bolting girders

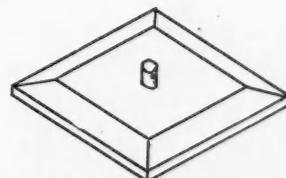


Fig. 31. Cast Iron Base-Plate

CRUSHING STRENGTH OF TIMBER PERPENDICULAR TO THE GRAIN, IN POUNDS PER SQUARE INCH.

White Oak	2,000
White Pine	700
Long-leaf Yellow Pine.....	1,400
Douglas Fir	800
Short-leaf Yellow Pine.....	1,000
Norway Pine	800
Spruce and Eastern Fir.....	700
Hemlock	600
Cypress	700
Cedar	700
Chestnut	900
California Redwood	600

"Since this condition is to be met where a heavy girder rests with a small area on each side of the middle of a column top, the bolster shown simply takes the place of the small area at the end of the girder and provides a larger bearing area for the load, thereby bringing down the intensity of the unit crushing stress on the girder material. The bolster is made of the hardest wood obtainable, which is generally oak.

"The top of the post or column is doweled into the under side of the bolster or held by two square drift bolts. The ends of the girders should also be spiked or bolted to the bolster. Fig. 28 shows one method of holding the ends of the girders onto the bolster.

"It will be noticed in Fig. 27 that the load caused by the roof and different floors is carried straight down to the foundations by a continuous line of columns. The second-story columns rest on iron caps placed on top of the first-story columns, and the first-story columns rest on the caps of the basement columns, which in turn are supported on iron plates resting on the foundations. The girders at the different floors rest upon ledges cast as a part of the column caps and are held together at the ends by bolts, as shown in the second-story cap, or by iron straps, as shown on the first floor or at the roof. If expense will allow, it is well to cut the ends of the girders so that they will fit closely around the sides of the columns at the cap.

"The caps should be of such a size that the girders will have a bearing of at least 5 lineal inches at each end, and the edge of the plate should not project more than 6 inches beyond the post, unless absolutely necessary to get a sufficient bearing area. This bearing area required for the end of a girder should be found by dividing one-half of the total load on the girder by one-fourth of the unit crushing strength of the timber used, and taken from the table of crushing strengths given above. If the area thus found when divided by the width of the girder is less than 5 inches, this latter distance should always be used, except in case of girders with very light loads.

"As an example, suppose that we have an 8 inch by 12 inch short-leaf yellow pine girder which carries a uniformly distributed load of 12,800 pounds. Each end would carry 6,400 pounds. Looking in the table of crushing strengths we find that the value to use for this timber would be 1,000 pounds per square inch divided by 4, or 250 pounds per square inch. Then 6,400 pounds divided by 250 would give about 25 square inches of bearing area needed. Since the beam is 8 inches wide, the length necessary to make up this

area would be a little over 3 inches. For practical reasons, this bearing length should be increased to 5 inches, and in no case should the bearing length be less than that determined by the above rule.

"Figs. 29 and 30 show two common types of iron post caps for square columns. These caps fulfill all requirements for strength and allow the use of girders wider than the column. When the girders are in place and held by iron straps as indicated earlier in the talk, there is no danger of either girders or posts slipping on the cap. The dimensions given in Fig. 29 are intended for a cap to be used on a 10-inch square column, and show the general thickness of metal and proportions to be used. The hole in the cap is of smaller size than the column top so that a close fit will result. The cap shown in Fig. 29 is not patented and may be cast in any foundry.

"The cap shown in Fig. 30 is similar to that shown in Fig. 29 except that it has side braces for holding the girder in place without the use of straps. This cap, when used without lugs for holding the ends of the girder onto the plate, is also unpatented.

"For small columns and timber posts with light loads, a base-plate of plain cast iron is commonly used as shown at the foundation pier in Fig. 27. One style of base-plate for use with square timber columns is shown in Fig. 31.

"The use of plates of this type under columns is necessary in many cases, since the distribution of the weight from a column end bearing on a small surface might crush the masonry or concrete on which the column rests. As in the case of girders, the base-plate should be made of such a size that the load from the column divided by the area of the plate will not exceed a safe crushing value for the masonry or concrete. The following list of values will be of service in this connection.

WORKING LOADS IN POUNDS PER SQUARE INCH FOR MASONRY UNDER BASE PLATES.

Granite	1,000
Rubble	200
Hard Brick Work in Cement Mortar.....	150
Hard Brick Work in Lime Mortar.....	125
Common Brick Work.....	100
Portland Cement Concrete.....	200

"Base-plates may have a raised ring or cross on the top to fit inside a hollow column, or, for a solid timber column may have a dowel or pin as shown in Fig. 31. This pin should be 1½ inches or 2 inches in diameter. The edges of thick plates may be beveled as shown in order to reduce the weight of the plate. The outer edge should not be made less than ⅞ inch in thickness. Plates of this type should not be used if

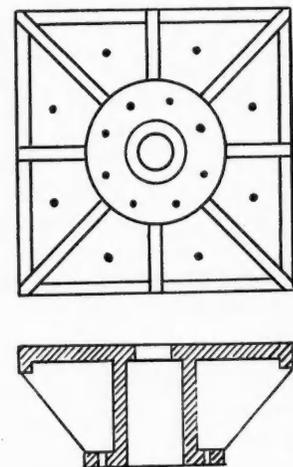


Fig. 32. Cast Iron Base-Plate for Heavy Loads

the edges project more than 6 inches from the sides of the column, since a special web-type of base similar to Fig. 32 will be needed in such a case. For a rectangular post, the plate should project equally on all sides of the post.

"Base-plates are bedded or jointed in cement from 1/2-inch to 3/4-inch thick, and the plate rammed down true and level.

"After the size of the plate has been determined by the rule given above, the thickness of the metal in a plate similar to Fig. 31 may be found by the following rule from Kidder's Handbook:

$$t = \sqrt{\frac{w \times P \times A}{D}} \quad (\text{Formula No. 10})$$

"This value of t should be divided by 80 for cast iron and by 220 for steel.

"In Formula No. 10, t is the thickness in inches; w is the unit pressure under the plate in pounds per square inch; P is the projection of edge of plate beyond column, in inches; A is the difference between area of plate and sectional area of column; and D is the diameter of round column or side of square post, in inches. The square root sign has been referred to in earlier talks."



What a Young Carpenter Should Know

In a recent issue of the Manual Training Magazine, Mr. Joseph Berg, instructor in woodwork and building construction at the Lane Technical High School, Chicago, gives this list—knowledge that may be fairly expected of boys who have had two years of manual training, or of apprentice boys and other young carpenters:

- How to read a rule (not ruler).
- How to add and subtract fractions of an inch.
- That sandpaper is graded numerically, the average being No. 1.
- The correct method of tearing sandpaper.
- That a block should be used when sanding flat unfinished surfaces.
- That sandpaper should be torn into rectangular pieces to fit block.
- That a sandpaper block should always be of soft wood.
- That no sanding should be done until all tool work is finished.
- That worn sandpaper becomes useful later.
- To call a bit by name and size.
- That a bit is not a bore.
- That a bit is not a drill.
- That the figure "9" on a bit means 9/16 inch, not No. 9.
- That a brace is not an "auger" or "borer."
- That bits should never be filed on outside.
- That bits should never be filed by pupils.
- That direction should not be reversed when drawing out bit.
- That a properly filed bit needs little pressure.
- That holes are generally measured center to center.
- That the use of a file be avoided wherever possible.
- That a file when used cuts only one way.
- That grinding without water heats to a blue and destroys temper.
- That "sharpen" does not mean "grind."
- Never use center of oilstone or grindstone for narrow tools.
- That flat side of plane blade or chisel should never be ground.

That flat side of plane blade or chisel should never be raised when whetting.

To lay the plane on its side to avoid dulling blade and cutting bench.

That cap iron, for bench work, should be set about 1/16 inch from edge.

That a modern iron jack-plane is not a scrub-plane, as the old fashioned wooden one was.

That the plane should not be held diagonally, except when cutting across the grain.

That good work is impossible with dull tools.

That the scraper should be reversed for curly grained wood.

That the sharpening of a scraper should not be done by pupils.

How a rip-saw differs from a crosscut-saw.

That the number on a saw indicates number of teeth per inch.

That a rip-saw is not always numbered 8 and a crosscut-saw, 10.

That the back-saw be reversed for close work.

That it is necessary to have a line squared across two adjacent faces to cut off square.

That no time or labor is saved by sawing around the piece.

That a large chisel will do better work than a small one.

That chiseling across the grain is possible and correct in many cases.

That a mallet should not be used except for heavy duty.

To watch the chisel edge, not the handle, when using mallet.

That mallet or hammer should be held one-third the handle length from end.

That a bevel should not be called a "bevel square"

That gauge and square are useless if not used properly.

That they should be held firmly against the work when testing or gauging.

That the gauge point should be filed like a knife edge and should actually cut a line.

That the gauge point should not project beyond 1/16 inch.

That the gauge should be tilted slightly in direction of motion.

That a screwdriver should never be sharpened like a wedge.

How to determine size of nail or screw.

That "12 D" means 12 penny and is about 3 1/2 inches long, etc.

That screws have a gauge (diameter) as well as length.

That screws should never be driven without first boring through top piece.

That size of bit is determined by gauge of screw.

What "toe-nailing" means.

That a nailset is not a punch.

That a handscrew is not a clamp.

How to adjust a handscrew.

That a vise will hold the work without placing entire weight on handle.

That Le Page's glue is only one kind of glue.

That "the more glue, the stronger" is a mistaken idea.

That a loose joint with much glue is weaker than a tight one with less glue.

That a thick glue is worse than none.

That shellac does not dry in half an hour as is generally believed, it merely sets.

That shellac must be thin and applied quickly.

That the work must not be handled the same day, if possible.

That wood filler is not intended to fill bad joints and ruts on surface.

That "Sawdust and Glue" is a poor workman's Motto.

The Canadian government has supplied twenty-five million tree seedlings to farmers, principally in the Alberta and Regina plains region. The United States does not supply young trees to the public, except in a limited area in Nebraska, under the terms of the Kinkaid Act.

More Shop Kinks

HELPFUL IDEAS AND SUGGESTIONS FOR CARPENTERS, CABINET MAKERS AND MACHINE WOODWORKERS

By Wm. C. Jasbury

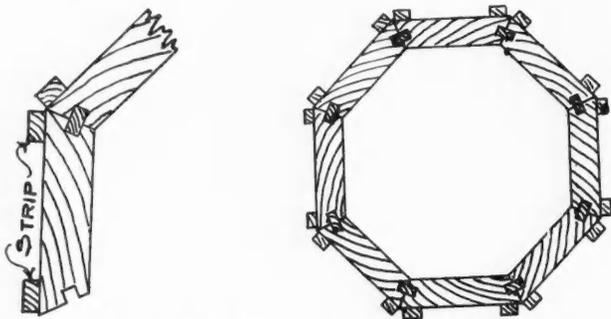
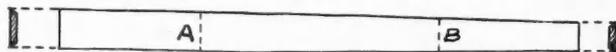
AFTER one thing comes another. After the rent, the landlord, after the landlord, the rent, etc. So after my letter of this week, I send this just to keep the good cause afloat. In my last letter, I said something about traveling and odd sights.

I saw a center table in the upper part of this state; the wood was mahogany, the inlaying of which was, to my mind, a masterpiece of work, not only in the varieties of wood used, the arrangement of colors, but the design the maker had wrought out in the work. I cannot begin to describe the shape of the characters, figures, birds, scrolls, etc., brought out, but who ever he, or they were, it sure was some piece of mechanical skill,—that required much time and patience.

Now, as to the price it was bought for, is where the question comes in. The present owner, a contractor, was on a business trip to Newark, N. J. While passing down Market Street, he saw a crowd, and looking in, he saw a man standing in the gutter with this masterpiece of furniture, trying to get \$15 for it. The builder said casually: "I will give you \$10 for it, and here is my card," then passed on. One week later, the table was delivered at his house, in the upper part of the state, C. O. D., and had then come from New York. He asked no questions, but immediately put the table to use.

I saw and touched this piece of craft and when asked what it was worth to build, I said "\$150." Then the builder told the odd story of this mysterious table. I have seen and repaired much marquetry furniture, have seen furniture exhibitions, but to the best of my knowledge, I have never seen one that surpassed this. The mystery is, who made it, and how did it come to be in the gutter of a city, awaiting an owner, at such a price. This is one of the odd things that help to make up a diary of a traveling mechanic.

BUILDING OCTAGON COLUMNS. I recently had four octagon columns to build, 24 inches in diameter at base, 18 inches at top and 22 feet long, made of 2½-inch cypress. Now, as these columns were finished octagon, the entasis had to be there when they were being made, instead of turning it on, as in the

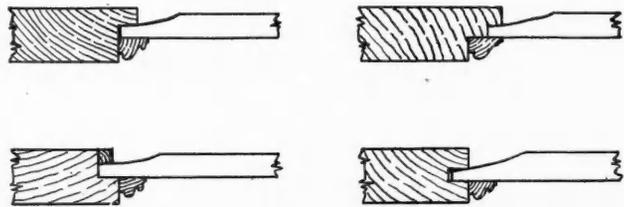


Gluing and Protecting a Built up Column

case of round columns—which usually are straight taper in the rough. Some of the men suggested straight tapering the staves and making the top and bottom larger, to be worked off, in order to give the entasis; also starting at the one-third of the way from the bottom up; and many other similar suggestions. But the way we did was to give each stave the proper shape; then we ran the miter, or rather cut the miter, on the rip saw and finished with fore plane at bench. Then we ran them over the rip saw, with a ½-inch wobble in the saw, for a plough, as they were slip-tongued together at the joints. These staves were halved together, as the longest lengths we had were 16 feet; we reversed or dodged the joints, *i.e.*, put one at the top, B, and the next at the bottom, A, all the way around, so that no two joints would come together.

We then tacked strips on the edges so that when we put the column chains on, then the corners would not be mashed,—(on columns to be later turned, this does not matter). We used white lead joints, as the glue would chill too quickly, as it took some time to put one of these columns together. Then big head zod. nails were applied. As this was exterior work, it made a very good job, and they are now in place and will be in service for a long time to come, barring, of course, the elements.

IN MAKING PANEL WORK—such as panel backs, or panel work that is nailed up against a wall,



Four Styles of Wall Panels

it is always better to put the panels in from the front, in case they may have to be taken out some time, if split, or as in some cases I have seen where the panels would be taken out to be rubbed separately. If the framework is rabbeted from the back, or ploughed, this could not be done without taking down a whole mess of work. So here is the wall panel idea.

FAKE BUILDING. I once worked for a concern that erected a pavillion at a "Fair." The work was to be executed quickly and the chief did not want to put too much money into it, so when we came to the columns, he said: "I do not like to cut up a dozen good 8-inch posts for colonial columns." Just then one of the laborers brought a roll of buck skin building paper 7 inches in diameter, 3 feet long. That was an inspiration. Twelve of these were used, decorated, etc., and another trick in the fake building business was let loose.



In this issue will be found several of the Honorable Mention Designs from Our Recent Prize Competition. They show the uniform high quality of the work the American Carpenter and Builder readers are doing.

Cosy Five-Room Bungalow

Photo and Plan of Clever California Dwelling

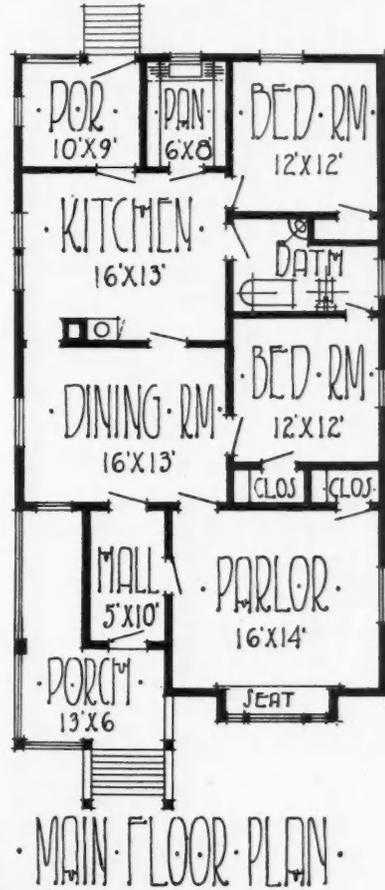
Planned and Built by J. H. Starr, Napa, Calif.

Editor AMERICAN CARPENTER AND BUILDER:

ENCLOSED you will find photograph and floor plan of a bungalow I built for myself, about a year ago. I have built a good many houses from plans drawn by architects, but drew this myself; and for convenience I think it is hard to beat. It has a basement under the entire house, five feet above ground and two feet below the surface. Concrete foundation extends 12 inches above the grade at the highest point. The basement is enclosed with three lap red wood rustic, to a level with the porch floors, then cedar shingle to the crest.

All surfaced lumber on the outside is California redwood, covered with three coats of white lead and oil. The windows are all of the two light style, as they are the easiest to clean, (I am saving work for the wife). The floors are vertical grain Oregon pine, the kitchen, pantry, rear porch and closets are finished with 1 by 4 T. & G, V and center V, slash grain pine. Bath room has imitation tile wainscoting, 4 feet high; balance hard wall plaster finished in white. The bed rooms are also white plaster finish. Parlor and hall are plastered with sand finish. Walls are tinted a medium green and ceilings cream.

The dining room is paneled 6 ft.



A California Shingle Covered Bungalow of Six Rooms

high, with plate rail. Panels are 24 inches wide, veneered elm, stained fumed oak. Balance of wood work is slash grain Oregon pine, finished with one coat of filler and two coats of varnish. The front door is Wisconsin birch, with plate glass panel. All other doors are cypress, five panel.

Under the chimney on the dining room side are two small closets one above the other, with panel doors to correspond with the other panels, the lower one is used as a wood box, for the dining room heater, and is about 4 feet high; the upper one is



HONORABLE MENTION DESIGNS

(Not the AMERICAN CARPENTER AND BUILDER, I have another place for them.)

This is my second year in the AMERICAN CARPENTER AND BUILDER family, but I hope it will not be the last. The AMERICAN CARPENTER AND BUILDER is the best paper for a carpenter, and for that matter others in the building trades, that I have found. New ideas all the time.

J. H. STARR,

Contractor and Builder, Napa, Cal.

[August, 1913

about 18 inches high, and is used to store away the daily papers after they are read, and to use to start the fire.

Two Gothic Roof Barns

Planned and Built by Frank Balbough,

Contractor and Builder, Ewen, Mich.

Editor AMERICAN CARPENTER AND BUILDER:

I AM enclosing photos of two barns I planned and built last summer; size 36 by 80 feet. I completed one of these barns in three weeks with four men. One is sided vertically and one horizontally.

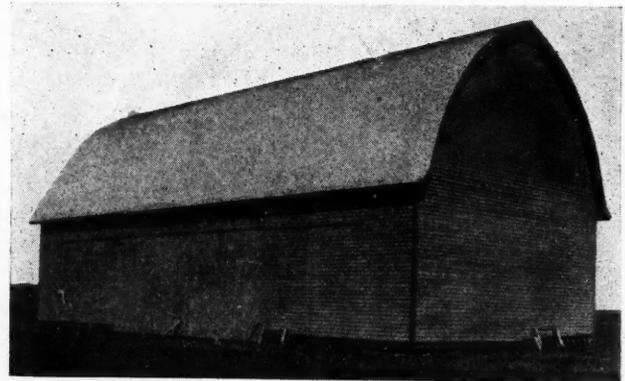
Note the way the barn is braced, which I think is the best for a balloon frame.

I am a reader of the AMERICAN CARPENTER AND BUILDER and like it very much.

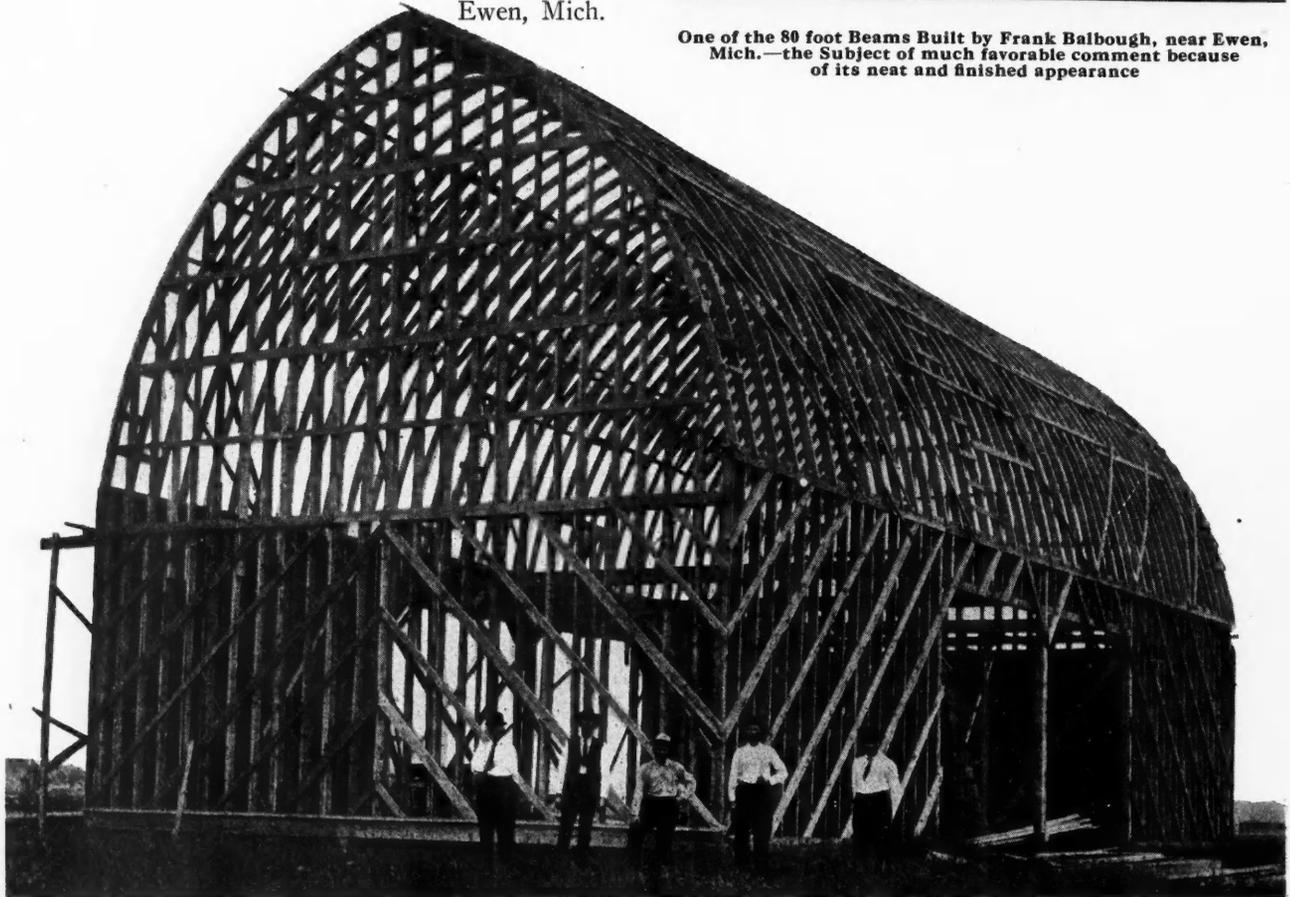
FRANK BALBOUGH.

Contractor and Builder,

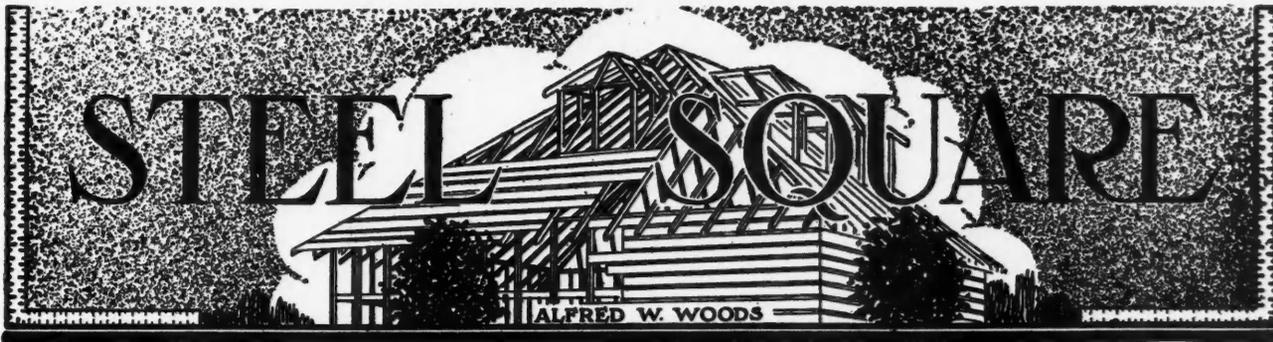
Ewen, Mich.



One of the 80 foot Beams Built by Frank Balbough, near Ewen, Mich.—the Subject of much favorable comment because of its neat and finished appearance



Frame of Gothic Roof Barn 36x80 Feet—Note Special Bracing both of Sides and of Roof. Contractor Balbough (marked with X) and his Four Men Finished this Barn complete in three weeks



Roof Framing Problems Solved

A SIMPLE METHOD OF ILLUSTRATING ROOF FRAMING UNDER DIFFERENT CONDITIONS

D ID you ever stop to think of the many ways roof framing can be illustrated, showing the length of cuts of the various rafters? Well, there are a lot of ways of arriving at the same result. Probably it is on account of these many ways that this subject has been so little understood. Too many ways of getting there, so that the would-be learner strayed off unconsciously into a byway and lost the highway to the goal of his ambition. The old saying that all roads lead to Rome is a good one and just as applicable to-day as it ever was. All roads lead there; but there are some ways shorter and better than others. You can start in the opposite direction and finally after much traveling come to it and see it in all of its splendor; but you took a round about and a laborious way of getting there. It is just so about getting there in roof framing, you can take the long road or the short road, the rough one or the smooth one.

It is not our intention to cite any particular one in this article, but just give a little talk on some phase of the subject. We always like to talk on the direct way of getting there but this is July and it is awful hot weather and so we will just loiter along and take in the sights.

Let us look at a common roof plan, as shown in Fig. 1. Here is a hip roof, oblong in shape. The joining at the ridge shows square cuts for the common rafters; and the angle for the side cut of the jacks is at 45 degrees. They remain so regardless of what pitch the roof may have. In other words, if there was no pitch at all, the lines would show just the same as if there was a whole pitch (24-inch rise), consequently there is nothing in the plan to indicate what the pitch is because the view taken is as if looking down from a point above. Therefore we must look to the elevation for the pitch, because in this are shown the run and the rise of the common rafter, from which the seat and plumb cuts are determined.

Now, as we said before, we cannot see the rise from our perch above the plan, because it is standing endways; but suppose we should take a tumble from our lofty perch and alight on our roof with a gentle thud,—sufficiently enough force that the joinings of the rafters to the plates and hips and valleys should

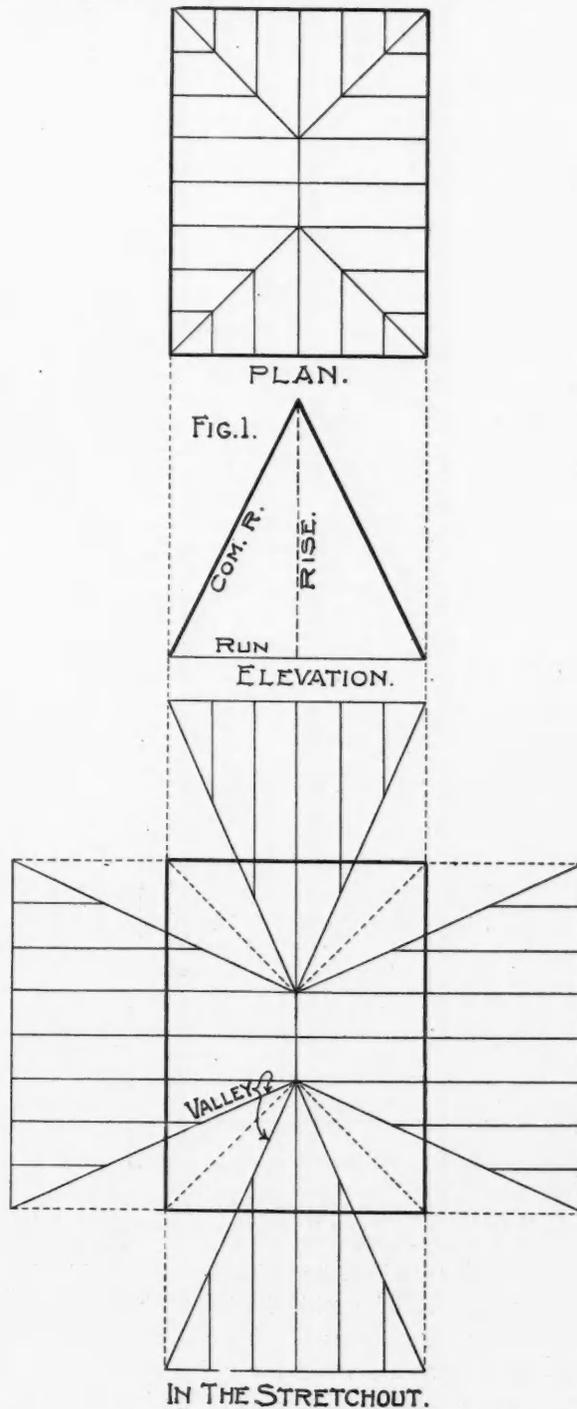


Diagram of Oblong Hip Roof Laid Out to Show Elements of Steel Square Work

give way and every part of the roof should settle vertically to a common level, as it were, of the proverbial pan-cake. The roof would then show as in the stretchout of the rafters; and every piece here shown would represent its true length; and the angles thus

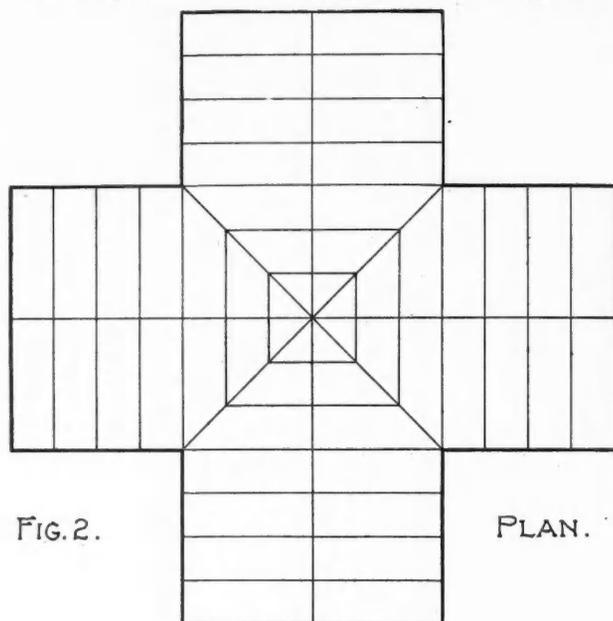
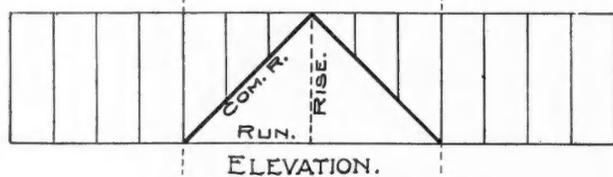
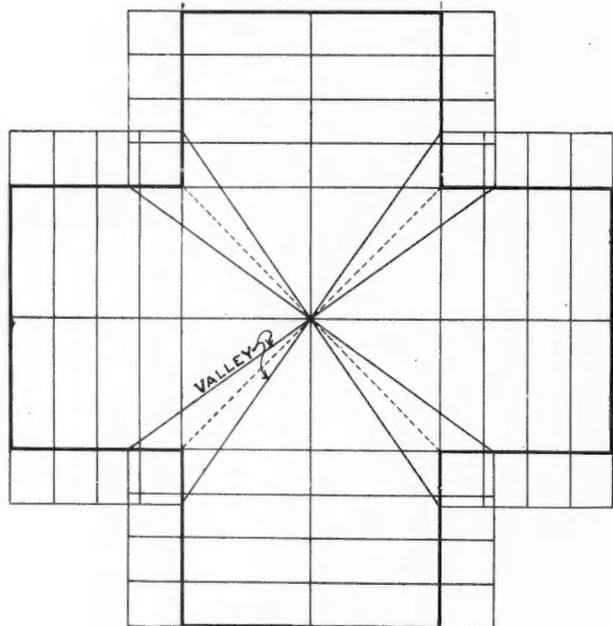


FIG. 2.

PLAN.



ELEVATION.



IN THE STRETCHOUT.

Intersecting Roofs with Valleys, Showing Steel Square Elements

formed by this sudden transformation would show the true angles to take with the bevel or steel square to obtain the cuts across the back of the rafters to make the proper cuts when the rafters are set up in their respective places. The illustration in the stretchout is that for the full pitch or 24-inch rise to the foot.

But what is true of this is true of any other pitch; the steeper the pitch, the longer the rafters would show in the stretchout. In other words, if there was no pitch at all, there would have been nothing to give away at the plates and hips when our ponderous weight came in contact with same. Consequently, there would be no shoving out of the rafters and the angles would not only show at 45 degrees, as shown on the plan, but would remain at that, and in reality they still remain at that when there is a pitch given the roof, but the steel square must be placed on the rafter at a plane to correspond with that of the roof plane.

Now, it will be seen that in the case of an external corner, as shown in Fig. 1, the rafters do not collide with those of the joining side in the shoving out process, but not so in the case of an internal corner where a valley is required, as shown in Fig. 2. Here in the shoving out of the rafters they naturally have to overlap parts of the adjoining sides, but otherwise there is no difference in the procedure. The overlapping complicates the illustration somewhat; but if we could get under it and raise it up at the center until the foot of the rafters draw into the plate lines, it would again show as the plan from which we started.



Harry Says—

ORDER IN THE SHOULDER BOX. Ever notice how many men put all sorts of tools in a shoulder box, pell mell, back of the hatchet and tooth of the saw, end of a chisel and a hammer's claw; chalk line mixed with the end of a tape and all of them mixed in horrible shape? It is easy to put a thin partition strip lengthways of the box and keep saws in these, points down—saves fingers and teeth—your fingers and the saw's teeth.

TOO MUCH "NERVE." A man needs a certain amount of "nerve" to carry him through, but some men have too much. I had part of my crew screening the Big Boss' house, and one of the men found a quart bottle of whiskey and drank all of it in the course of an hour. I expected to get orders to "fire" him, but the boss laughed and said the joke was on him. I haven't yet seen where the joke comes in.

FIXING LEAKY CHIMNEY. Had a roof leaking badly around the chimney which had been built up through an iron covering and the water poured in at the sides. This was remedied by wrapping a number of strands of wire loosely around the chimney at the roof and putting a heavy flushing of concrete over it, the wire being for reinforcing. It stopped the leak and made the chimney look more finished at the roof.

WELL DRIVING TRICK WORTH KNOWING. We had to drive a well to get drinking water at a new building out in the country and after going 34 feet found we had 10 feet of water in the pipe, but the pitcher pump would not raise it, so were getting ready to pull the pipe and try again when a farmer boy came along; and, after the manner of country boys, asked questions as to the cause of the trouble. He advised us to fill the pipe with water after taking off the pump and make a plug to fit in the pipe just loose enough to drive easy, and while the pipe was full, hit the plug a hard blow with a maul. We did this and the impact of the blow drove the obstruction at the point out of the way and water came to within six feet of the top and the pump worked fine and is still furnishing plenty of water. The jar of striking the plug made the water force the openings in the strainer at the point. Do you see the point?

H. C. HANER.

ADVENTURES IN HEATING



Builders Experiences in Handling Warm Air Furnace Work and Installing Steam and Hot Water Systems

Hot Water Heating

SOME EXPERIENCES BY WHICH I LEARNED THE DIFFERENCES BETWEEN HOT WATER AND STEAM—FIGURING RADIATOR AND PIPE SIZES—PIPING SYSTEMS

By Cecil F. Herington

“MY next experience in heating which came soon after I had finished my investigations into the mysteries of steam was with hot water systems.” The Old Builder smiled and looked around for sympathy—several of his listeners nodded with a misery-likes-company expression. “Of all the methods of heat I think hot water makes the most trouble and is the hardest to remedy,” he went on, reflectively. “This, however, is not so much the fault of the system as it is the lack of proper knowledge on the part of the installers.

“The reason that I took up the hot water method in the first place is the fact that this is the only method of heating inherently suitable for rooms located on the same floor level with the heater. All you builders know that no furnace will properly supply hot air at its own floor level since the whole scheme of furnace heating depends on the rising of the air when it becomes heated, and as for steam heating, why a radiator must be set with its bottom anywhere from 12 to 20 inches above the waterline of the boiler to prevent its getting waterlogged.

“Besides this, many persons living in structures which do not readily lend themselves to furnace heating and finding steam too intense and difficult to graduate, compromise on hot water which can be heated

to any degree desired and the radiators partially shut off (if too warm) without incurring any bad results.

Figuring Radiator Sizes

“The figuring of radiator sizes for hot water heating proved to be the least of all my troubles, for anyone who can figure steam radiation can also determine hot water. You will remember that steam radiators give off on an average about 275 heat units per square foot, but hot water radiators owing to the lower average temperature of the water only give off about 175 heat units. This means that the hot water radiators must be 275 divided by 175 or 1.57 times as large. Therefore, by increasing our radiators by about 60% we have the proper amount of surface for hot water. This gives:

Sewing Room	.....	Steam 16 plus 60% (10) equals	26 sq. ft.
Front Bed Room	.....	40 " (24)	64 " "
Bath	.....	16 " (10)	26 " "
Rear Bed Room	.....	48 " (29)	77 " "
Alcove	.....	24 " (14)	38 " "
Side Bed Room	.....	20 " (12)	32 " "
Hall	.....	40 " (24)	64 " "
Vestibule	.....	14 " (8)	22 " "
Parlor	.....	48 " (29)	77 " "
Dining Room	.....	48 " (29)	77 " "
Kitchen	.....	40 " (24)	64 " "
6 Risers	.....		12 " "
			Total 579 " "

“You will notice that the second floor risers are figured at twice as much surface as the steam risers; this is because a hot water radiator requires two pipes, one to supply the hot water, and the other to carry the cooled water away.

To Prevent Radiators Freezing

“As far as the location of the radiators is concerned there is no radical departure from the rules for locating steam radiators except to be careful not to place them too exposed. One of my first forcible lessons on what you must not do with hot water was delivered to me when I installed a hot water radiator in a vestibule somewhat as has already been shown in our house plans except that this vestibule was built out onto the porch so as to have three sides of it exposed to the weather with a cold porch roof over the top and an open porch floor beneath it.

“Everything worked all right until the radiator was not turned on one cold night when there was a high

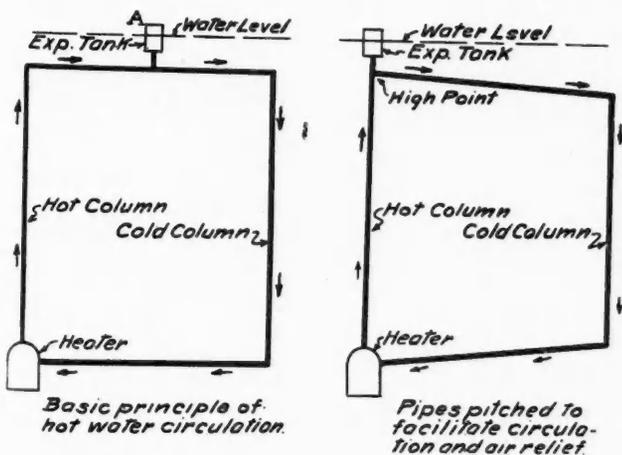


FIG. 1 How and Why Hot Water Circulates

FIG. 2 Pipes pitched to facilitate circulation and air relief.

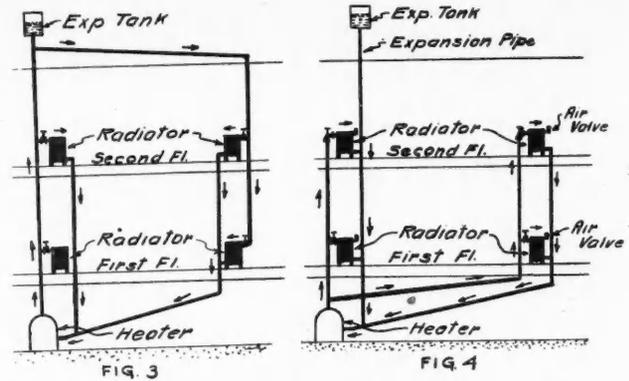
wind which resulted in the temperature in the vestibule going down to below freezing and promptly bursting the radiator—putting the whole heating system out of commission and doing quite a little damage from water.

“The danger of freezing, I have found, may be minimized by drilling the gates of all radiator valves with a 1/8-in. diameter drill so as to make it impossible to completely stop the flow through the radiator even when the valve is shut; this will result in the hot water which leaks in through the hole having a sufficient warming effect to prevent freezing.

The Principle of Hot Water Circulation

“Those who have followed through the operation of a hot air furnace will experience little difficulty in grasping the essentials of hot water heating. The two are largely alike but simply employ different mediums to transmit the heat from the fire to the various rooms. Like the air in the furnace, the water in a hot water system becomes lighter when it is heated on account of its expansion and tends to rise to the highest point of the system. Owing to hot water systems being gravity systems they, like the furnace, are liable to be less positive in action and more mild in effect; and for this reason there are very few hot water heating jobs where every radiator is heated as evenly and as rapidly as the rest.

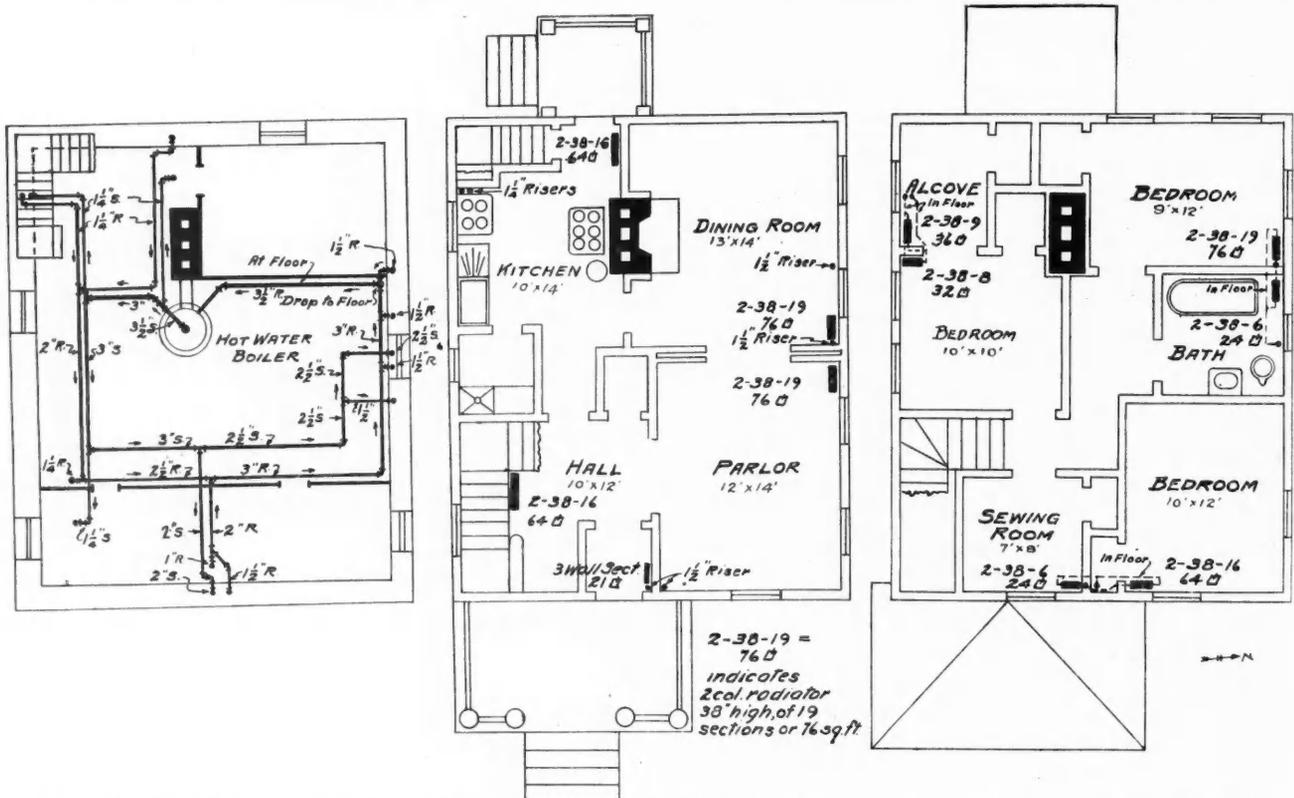
“If we have a loop of pipe full of water as shown in Fig. 1 and heat one side of the loop until the expansion of the water makes the heated side, say one pound lighter than the cold side, the heated water will tend to equalize conditions by rising and crossing



Two Recommended Methods of Hot Water Piping

over to the cold side at the top while the cold water column sinks and passes over to the warm side at the bottom. This movement continues until the two columns exactly counterbalance each other in weight, which condition is arrived at when both columns contain equal quantities of hot and cold water. However, if the application of heat is continued as at first, the cold water is heated at the heater after it comes across the bottom and the hot column will always be at a higher temperature than the other side so that a condition of equal weight is never reached.

“Now, there are two things to be looked out for; the first is not to confine the water so it cannot expand without bursting the pipes or radiators, and the second is to leave an outlet for the escapement of any air which may collect in the pipes. You see, all water contains minute particles of air and these will collect at the high points of a system, only as a small bubble at first, but gradually increasing until the bubble occu-



Plan of Residence Showing Hot Water Heating System as Installed by the Old Builder—The Hot Air System for This Same House was presented in the May Issue, page 63; and the Steam Heating System in the June Issue, page, 50

pies the entire pipe and excludes the water. Of course, this stops the circulation and makes a lot of trouble.

"The way the expansion is taken care of is to use an expansion tank which sits at some high point above the pipes and radiators as shown at "A," Fig. 1. Then when the heat is applied the water expands and gradually rises up into the tank; on cooling down it recedes, the water in the tank coming down and refilling the system again to its original amount.

Systems of Hot Water Piping

"To prevent air binding two methods are in use—one automatic, and therefore desirable—and the other manually operated, and therefore liable to be neglected. The first method is illustrated in Fig. 2, the hot water being carried direct from the boiler to the highest point of the circulating system; then the expansion pipe running up to the expansion tank is connected at this point; from this point the mains all slope down toward the drops which feed the various radiators. Since air in water naturally rises it follows that it will collect at the high point and find its way up the expansion pipe into the tank from which it is harmlessly dissipated.

"The second method consists of running all mains in the cellar with supply risers and return drops from the various radiators, the connection to the expansion tank being taken from the cellar or one of the risers to the highest radiators. This leaves the top radiators as the highest points in their respective circuits, and therefore, subject to the collection of air. This air must be relieved from time to time by air valves on the radiators in order to prevent the radiators gradually filling with accumulated air bubbles.

"Another advantage of hot water heating consists of the fact that the valves can be placed at the top of the radiator instead of at the bottom as with steam. This is plainly apparent in Figs. 3 and 4, which show the method of piping that I think gives most general satisfaction. Some fitters try to save pipe by connect-

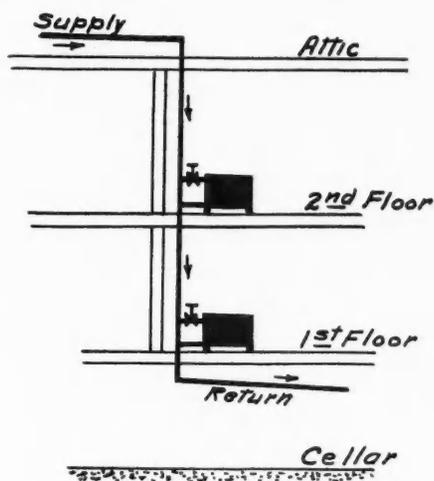


FIG. 5

Improper Piping Method Sometimes Used in the Effort to Save Pipe

ing both top and bottom of the radiator to the same vertical pipe as shown in Fig. 5, but there is a tendency for the water to short circuit the radiator by dropping straight down the riser and not entering the radiator, thus leaving it standing cold.

"Let us now take a look at the steam heating we laid out for that house and see what changes have been necessary to turn it over into the hot water system as shown in the floor plans herewith.

"The hot water radiators are usually tapped for an inlet at the top and an outlet at the bottom of the opposite end, although some have both tappings at the bottom or sometimes at the same end. In any case the tappings are both of the same size, one large manufacturer using:

- 1-in. pipe for radiators up to 41 sq. ft.
- 1 1/4-in. pipe for radiators from 41 to 73 sq. ft.
- 1 1/2-in. pipe for radiators from 73 sq. ft. or over.

"Having already found the necessary sizes of the hot water radiators by adding about 60% to the steam figures it now remains only to hook up our pipes properly so as to supply an amount of water in proportion to the radiating surface they must heat. To do this we must allow for friction which produces the following equivalents:

1 -in. pipe will feed	one 1 -in. connection	to a radiator
1 1/4 -in. " " "	two 1 -in. connections	" " "
	or one 1 1/4 -in. connection	" " "
1 1/2 -in. " " "	three 1 -in. connections	" " "
	or two 1 1/4 -in. connections	" " "
	or one 1 1/2 -in. connection	" " "
2 -in. " " supply	seven 1 -in. connections	to radiator
	or four 1 1/4 -in. connections	" " "
	or two 1 1/2 -in. connections	" " "
	or one 2 -in. connection	" " "
2 1/2 -in. " " "	eleven 1 -in. connections	" " "
	or six 1 1/4 -in. connections	" " "
	or three 1 1/2 -in. connections	" " "
	or one 2 -in. connection	" " "
	or one 2 1/2 -in. connection	" " "
3 -in. " " "	21 1 -in. connections	" " "
	or 14 1 1/4 -in. connections	" " "
	or six 1 1/2 -in. connections	" " "
	or three 2 -in. connections	" " "
	or two 2 1/2 -in. connections	" " "

"These equivalents seem quite definite at first glance but the difficulty comes when all the branches are not the same size; for instance, a 3-in. pipe may supply twenty-one 1-in. pipes but how many 1-in. pipes will it carry after feeding a 2-in. supply?

"The easiest way to get the sizes of the mains is to figure the branches as all 1-in. in size or the equivalent.

"This means that if we have two radiators on the second floor fed from a single riser and if one radiator has an 1 1/2-in. connection and the other an 1 1/4-in. we would say that the 1 1/2-in. supply pipe is equal to three 1-in. pipes, and the 1 1/4-in. supply pipe is equal to two 1-in. pipes, and the main must feed an equivalent of five 1-in. pipes; as a 2-in. main will feed seven, it is plenty large enough. If, on the first floor, we should have another 2-in. connection we would say that the 2-in. equals seven 1-in. pipes, with the equivalent of five 1-in. pipes from above, produced a total of twelve 1-in. pipes requiring a 2 1/2-in. main; which is tabled as equal to eleven 1-in. pipes—or very close to what we require.

"By going over the house carefully we find there are a total of:

- Four 1-in. supplies or four 1-in. pipes,
- Three 1 1/4-in. supplies or six 1-in. pipes,
- Three 1 1/2-in. supplies or nine 1-in. pipes.

TotalNineteen 1-in. or a 3-in. main required.

"Owing to the additional surface added by risers and runs, a 3 1/2-in. main would be about the best size."



MAKING POWER

Jimmie's Combination Machine Part I.

IN SPITE OF MY PREJUDICES JIMMIE UP AND BUYS ONE—HE MAY CONVERT ME YET

By W. D. Graves

"WELL, Dad," said Jimmie, as we settled ourselves for a smoke while Harriet and Lorna were "doing the dishes," "have you gotten over your grouch against combination machines?"

"I don't know as I ever had a 'grouch,' but you can't convince me that half a dozen machines, the lightest of which, in its most approved form, weighs twelve or fourteen hundred pounds, can be combined into one, weighing ten hundred pounds, which will do the work of the six."

"No, that isn't the idea," said he. "I don't think any of the manufacturers even claim that the combinations have quite as wide a range of usefulness as would a group of the individual machines; but they do claim, quite justly I think, that the combinations may often be made highly profitable in places where the individual machines would be utterly impracticable. Most individual machines are built for a wider range of work than any contractor would be likely to want to do 'on the job.' Take a buzz-planer, for instance. Father thinks it necessary and profitable for him to have one with 16-inch knives and with a table about eight feet long; which is all right for his line of jointer work. For mine, ninety per cent of which is merely taking the rough off the edge of inch stock, a light table half as long and a head with two inch knives would serve just as well. Why, the power it takes to run his machine *light* would serve to do most of my work."

"But suppose you wanted to make a long glue joint, or face up a plane?"

"It's mighty few glue joints a builder has to make now-a-days; and not many use wooden planes. Of course, one is apt to have occasional jobs beyond the capacity of a light machine, but one couldn't afford to support any big plant for the sake of them. When I

buy a combination machine it will not be with the idea of competing with the mills, but of supplementing their work. Of course, a man can't get out the mill work for a large job, with a light combination machine, anything like as cheaply as a well equipped mill can do it. I don't figure on reducing my mill bills materially, though I'll do that to some extent, but on reducing the cost of what is now hand work."

"You ought to figure your mill bills so as to get all possible machine work into them."

"Perhaps one ought, but I can't—and I never saw anyone who could. No matter how perfectly one may have planned his work, there are pretty sure to be lots of little strips to be ripped and planed by hand, as well as little oversights, omissions or changes for which one has to run back to the mill. You never used to do these little jobs for nothing, did you?"

Jimmy very well knows that, though we never advertised that way; his father and I always reckoned on those little errors and omissions of the contractor's paying the cost of similar ones of our own—and perhaps a little more. His question was wholly uncalled for, and the grin with which he asked it was offensive; but I let it pass in silence.

"But to say nothing of the cost of such little jobs," he continued, "the time it takes to go after them will usually suffice to *do* them several times over."

I took my pipe out of my mouth and was just about to show him the error of his argument—though I fear I wouldn't have convinced him—when Lorna slipped one hand over my mouth, ruffled my hair with the other; then saying, "Come on, Jimmie," ran down the walk. Of course, Jimmie followed. Well, if I can't argue him out of his fool notions, I know a girl who can make him keep still about them—if she wants to.

As she and Harriet parted at the gate (for however hastily a woman may rush a man away, she can't part from another woman in less than half an hour), I heard her say that "We bought a combination machine in Chicago." "We," think of that! When Harriet reproved her for assuming to have a share in Jimmie's business she laughed; and, while I didn't hear all her reply, I caught the words, "No more than you," and "Only Jimmie knows, and Papa doesn't." However,

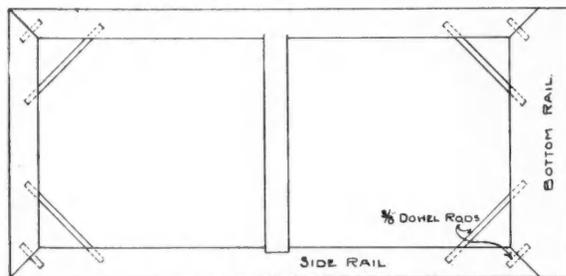


Fig. 1. Frame for Screen Door, as Made on Jimmie's New Combination Woodworker

WOOD WORKERS PAY



I never pay any attention to the women's chatter.

"Come over in the morning, Dad, and I'll show you something," called Jimmie as they got away.

Jimmie Makes Some Screen Doors on His New Hybrid

Next morning I went over and, sure enough, he had, set up under a shed, the most hybridized piece of machinery I ever saw. I'll not undertake to describe it for the good and sufficient reason that I don't yet know just how much there is of it; though, when I hefted one end of it, I found that two or three men could easily move it around. To test it, as he said, Jimmie was making some window screen frames which, though they were not made just as Blaysdell and I used to make them, may merit description.

He sawed his stock—rather narrower than usual—from common thickness boards S2S, jointed it on his dinky little buzz-planer "attachment," mitered the corners, and fastened them together with dowels as shown in Figure 1. Jimmie always keeps on hand a small stock of dowel rods, mostly $\frac{3}{8}$ ", for they represent a very small investment and come in handy for some use almost every day.

When I got there Jimmie was just scratching his head in an attempt to dig up a method of boring the dowel holes accurately as to spacing and angle. He didn't have any trouble about the first ones, those inside the miters, as for them he simply raised the table so as to bore accurately in the center line of the thickness, and clamped a stop on the table as shown at S in Figure 2. It was the others, the ones for the longer dowels, which bothered him. He wanted them all at an angle of 45 degrees and equidistant from the inside corners; so he could not use the outside corners to gauge from—at least not on the bottom rail, and one doesn't want to mix his measurements on a job. Also he found that when he started the bit it

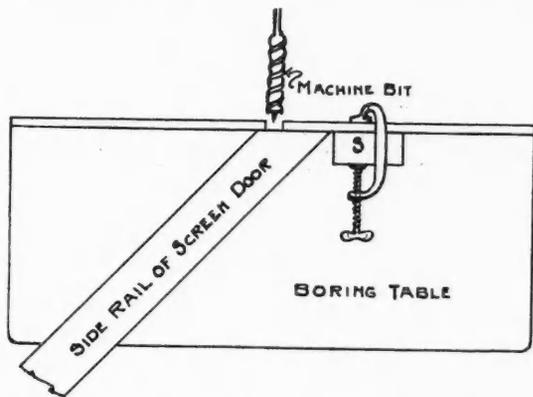


Fig 2. Block Clamped to Table Edge Acts as Gauge for Boring Dowel Holes

was almost impossible to prevent it from "run-

ning" a little with the grain of the wood before the worm would get a firm hold. The whole difficulty was overcome by clamping on the table a triangular block, as shown in Figure 3. This was sawed from a piece of board, clamped on the table and the bit run through it; then, without loosening the clamp, the slot, A, was sawed and chiseled out in order to give free clearance for the shavings. It will be noted that this slot is so cut as to leave the whole left half of the hole,

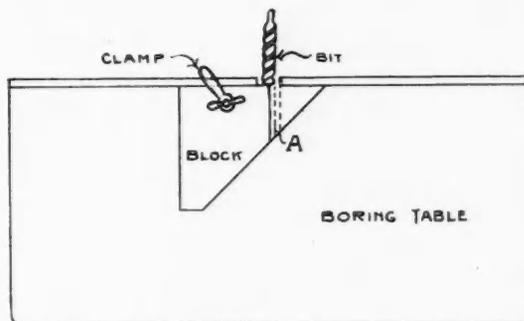


Fig. 3. Gauge Block for Boring Dowel Holes at an Angle

or of the periphery of the hole, intact; so that it will serve to steady the bit and prevent it from springing when it first strikes the sloping side of the work.

Assembling and Gluing the Screens

Everything now went along smoothly till Jimmie undertook to drive the first one together; then he got "rattled." In getting the last corner together the side pieces had to be sprung, of course, and as he wasn't much used to handling glue, he opened up the other joints at this time, failing to get around to them again before the glue was set too much to permit of their being driven up tightly. After that he systematized his work a little more carefully. He had, by the way, set a stop on his boring machine so that the holes were all bored to the same depth; and only two lengths of dowels were required. These he first cut, making them about an eighth of an inch shorter than the distance between the bottoms of the holes; then he took the corners off the ends with a wood file. He next drove the dowels in all the rails, carefully coating the inside of each hole with glue by the use of a stick whittled for the purpose, as he did so.

This process completed, he laid all the pieces of each kind in a pile by itself, all within handy reach; and

then proceeded to put his frames together. Working in this way he was able to get a frame together and then go over the whole of it, driving each joint up snugly, before the glue set in any. The middle rail was slipped into the dadoes made for it and secured with a couple of long finish nails in each end; and, to make all secure, a small brad was put through each end of each dowel.

Various Boring Arrangements

"Say Dad," said Jimmie, after he had stood the frames aside, "there are a number of things about boring machines which have puzzled me somewhat. I notice that some of those attached to these machines are made with the vertical sides of the table next to the bit, while others have it on the outer edge, on the side next the operator. Then among the regular boring machines there are the vertical and horizontal; while among both kinds are those in which the bit is pushed against the work and those in which the work is pushed against the bit. Why are all these differences?"

"Most of the variations are introduced to meet the requirements of different kinds of work; while a good many of them are merely matters of individual preference. It is impossible to state any fixed rule for the selection of a boring machine; as, especially for what we would term general purposes, you and I might select quite different machines and each get equally satisfactory results. Broadly speaking, however, where the larger part of the work to be bored is very heavy one would want a machine so built that the bit could be pushed forward or down; but, as this involves more complication in the machine, it is better to move the work when it is light enough. Where one has to do much work whereon the location of the holes must be determined by marks, rather than by gauges, the vertical machine is better than the horizontal in that it enables one to see better where the bit enters. There are thousands of variations in form and operation, each of which has its advantages for different lines of work or different people; but for all around light work such as yours, the simple form you have there is perhaps as good as any, while it is about the cheapest and lightest possible. As to whether the upright side of the table is to the front or back, most such machines are so made that it can be put on either way. In boring end wood, or in using a bit without the threaded worm (you have noticed that some machine bits are made that way) you will need to apply some pressure to force it in. In such cases it is generally preferable to have the work supported behind. Boring at right angles with the grain, in most kinds of wood, and with the bit in as good order as it should be, the screw worm will draw the work on and you will need a rigid stop to insure against boring too far. Then you want the upright side of the table toward the arbor."



"DO you keep dates?" asked the kindly old gentleman, as he sauntered up to the girl at the grocery counter in the department store.

"Always," she replied; "but I don't remember ever making any with an old geezer like you."

One for the Married Men

Irate Intruder—"Look here, you've been in there half an hour and never said a word."

Man in the Telephone Booth—"I am speaking to my wife, sir."—*Sketch.*

Corned Beef and—

Bragg (of Connecticut): How did you find those cigars, colonel?

Wagg: Delicious, old man. We had them for dinner last evening, boiled with corned beef.—*Truth.*

Foolish Question No. (?)

It was a very hot day and the fat drummer who wanted the 12:20 train, got through the gate at just 12:21. The ensuing handicap was watched with absorbing interest, both from the train and the station platform. At its conclusion the breathless and perspiring knight of the road wearily took the back trail, and a vacant-faced "red cap" came out to relieve him of his grip.

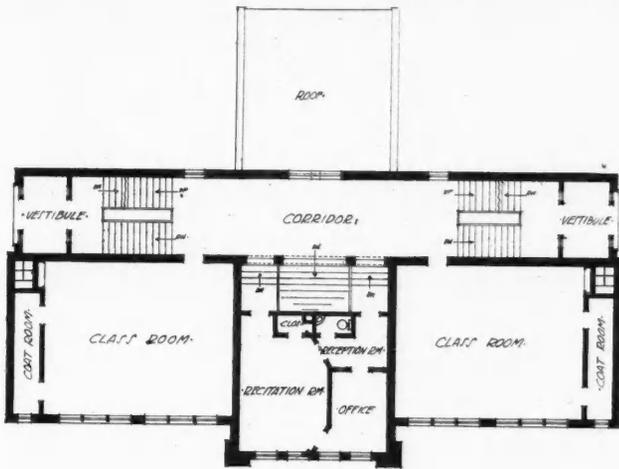
"Mister," he inquired, "was you tryin' to ketch that Pennsylvania train?"

"No, my son," replied the patient man. "No; I was merely chasing it out of the yard."—*Saturday Evening Post.*

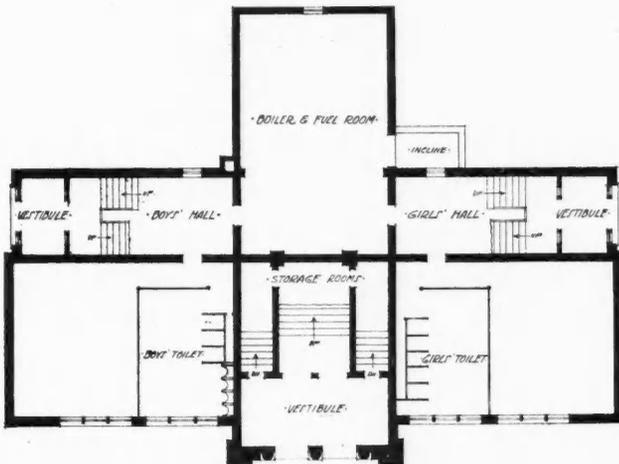
TRIALS OF THE NEW AUTO OWNER



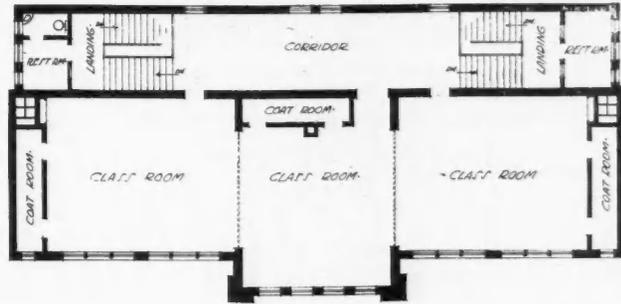
That's Right, Blame it on the Carpenter



Main Floor Plan



Basement Floor Plan

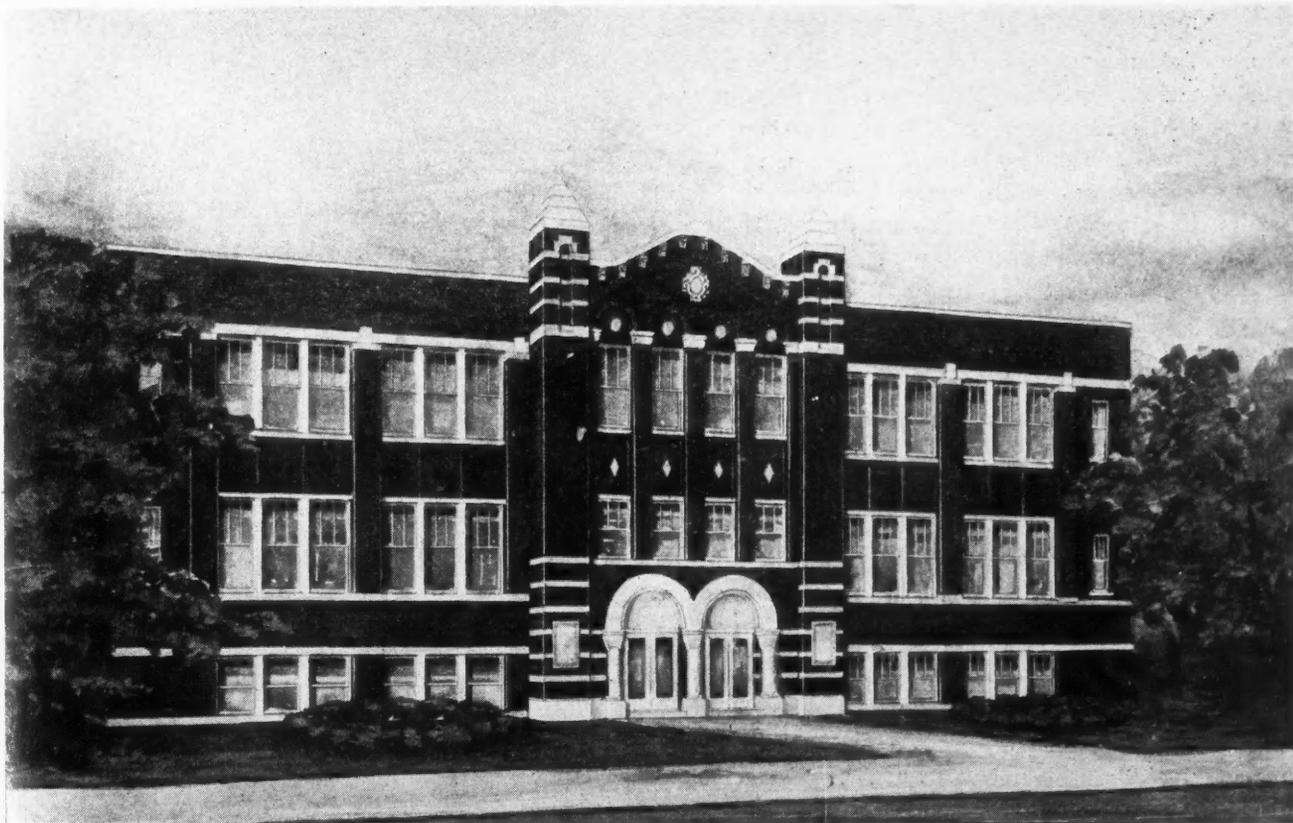


Second Floor Plan

New School for North Berwyn, Ill.

ANOTHER imposing school building conceived by that prolific architect, G. W. Ashby of Chicago is illustrated,—this time the new North Berwyn grammar school. A noticeable feature of Mr. Ashby's work is the fact that he makes the original structure a nucleus for later additions to accomodate increased attendance. This design, for instance, is identical in plan to the central portion of the Cicero school shown last month.

In the semi-basement are the vocational training, toilet and boiler rooms; two class rooms occupy either end of the main floor; the central portion is allotted to the recitation room and principal's offices. The second floor has three class rooms of excellent size, the ends of the corridor on this floor being converted into rest rooms. In all no greater convenience or business like arrangement could be found in the modern school.



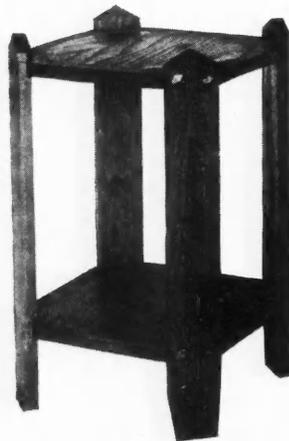
New Grammar School Now Being Built at North Berwyn, Ill.—G. W. Ashby, Architect



How to Make a Taboret

PHOTO, WORKING DRAWING AND FULL DIRECTIONS FOR MAKING THIS USEFUL PIECE OF FURNITURE
By Ira S. Griffith

THE taboret, which is shown in the accompanying working drawing and perspective, is of comparatively simple construction. Any cabinet wood will be suitable. Chestnut, because of its softness, is easily worked, and being coarse grained, takes a very fine finish.



The Taboret as Finished

There will be needed for the shelves, two pieces $12\frac{1}{2}$ by $12\frac{1}{2}$ inches and for the legs four pieces $3\frac{1}{2}$ by $20\frac{1}{2}$ inches. All of these pieces should be got mill-planed on two surfaces to a thickness of three-fourths of an inch. Stock a little thicker could be used just as well, of course, should the lumberman not have this particular thickness.

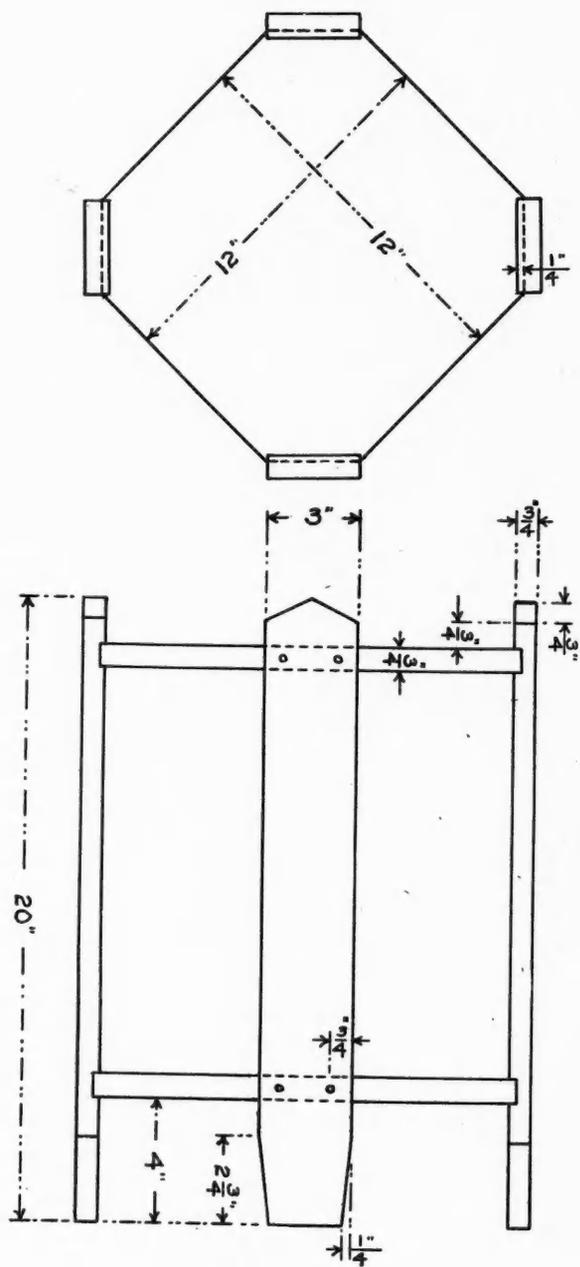
Begin work by squaring up the top and shelf to the size indicated by the working drawing, twelve inches by twelve inches. Next plane the four legs to the required width, also one end of each should be made squared to the face—side and face-edge. It is not necessary to square the second end of each piece, because these top ends are to be cut on a slant. Lay off the slant as shown in the drawing, after measuring the length of the leg, and saw so as to have a slight margin for planing.

Instead of measuring the length on each leg separately, measure on one leg only and then place all the four pieces on the bench, edges up and lower ends evened, and score a knife line across all four edges at the point measured on the first leg. The pieces may now be separated and the lines scored across the broad surfaces of each. This not only saves time, but insures accuracy.

The next step consists in setting the plane iron very shallow, so as to take fine shavings and removing the mill-marks from the broad surfaces of all the pieces. These mill-marks are the little ridges and hollows left by the planer knives which, instead of having a horizontal motion as in hand planing, have a revolving motion. Unless they are removed by means of the hand plane, they show badly in the finished piece,

every little hollow being accentuated by the filler of the finish.

The grooves—dadoes they are called by woodworkers—are to be made next. Lay the four pieces on the bench, as was done in measuring the length, measure



TABORET.

off the locations of the grooves carefully, and score across the four edges with the knife against the try-square. Separate the pieces and score line across the inner surfaces and down the second edges corresponding to those just made across the first edge. Gauge the depths of the grooves, one-quarter of an inch, on the two edges. Saw and chisel out the waste material testing the grooves as they are made by placing the shelf edge therein. It will be well to lay out and cut the corners of the shelves before this fitting is done. As soon as a corner is fitted to a groove, it and the bottom of the groove should be given corresponding marks—chiseled Roman numerals—so that no other part may be fitted therein. Plan the positions of the parts so that the grain of the two shelves shall extend in the same direction and the posts or legs fit corresponding corner of the shelves. A good plan to aid in this visualizing—seeing in the mind's eye the proper relation of parts—is to stand the legs up in the positions they are to have in the finished taboret and place the shelves. While they are in this position, mark roughly the corresponding parts with lead pencil.

After the parts have been fitted, all surfaces should be sandpapered smooth and clean. Use a block with the paper so as to keep the corners or arrises sharp and true as well as to make the surfaces flat.

There are several fastenings suitable for this kind of construction. Round head screws are excellent. An easier way and one that is just as strong where the joints have been fairly well made, is to use common wire nails, placed at regular spaces, and over these place heads of old-fashioned hand-wrought nails, such as can be purchased at the nail dealers.

If a coarse-grained wood has been used, a good finish is obtained as follows: Apply a coat of filler. Fillers for coarse-grained woods are in paste form and can be got colored in a variety of shades. Directions for applying them will be found upon the cans in which they are sold. Over the filler, after it has hardened, brush a thin coat of shellac. Sandpaper this very lightly after it has hardened over night, and then apply one or more coatings of floor wax. Directions for applying the wax will be found upon the cans in which it is sold.



Forest Notes

France has spent \$35,000,000 in planting trees on the watersheds of important streams.

According to the Canadian Forestry association 50 per cent of Canada is capable of growing nothing but timber crops.

Ammonia bombs are being tried out on some of the national forests for the purpose of extinguishing forest fires. They are said to have worked well in the case of brush fires where the fire-fighters find difficulty in getting near enough to the burning area to beat out the flames. Each bomb exploded will extinguish fire in a circle of about five yards in diameter.

How to Make a Hit and Drive Nails

THERE are good lessons for many carpenters and builders in this bit of philosophy, which caught our attention in "Ideal Power"—and which we have had illustrated and pass along to you—May you all drive your nails straight and in the right places.

Select a good healthy nail, straight, sharp, with a good head, and if possible one that has never been driven before. Grasp it firmly by the spinal column with the thumb and forefinger of the left hand—its point away from you, its head toward you.

Next select a place to drive it. This should not be difficult, as there are many loose, scattering, wabby places in this world that need nails and into which no nail has ever been driven.

Next find a hammer, or a stone, or a hairbrush with which to drive it. A hammer is preferred, because most people know how to use one and it can frequently be found when required for immediate use.

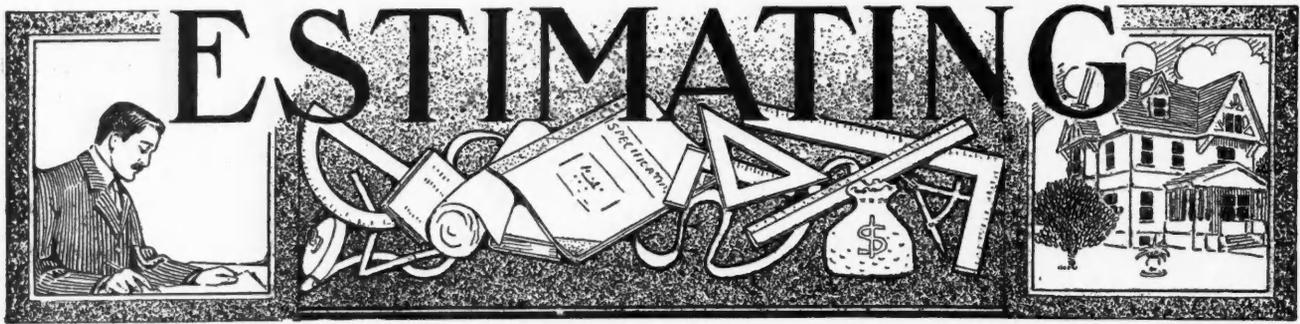


Many are the loose boards with gaping ends and creak joints that might become useful—

Do not sneer, do not laugh. Many people drive nails in just this way and carry their fingers in slings, most of the time. Some people, while fortunate in their selection of nails, can find no place to drive them, or when they do find a place, can find no hammer with which to make the drive. Others have good nails, have excellent places to drive them, have good hammers—but when they strike they do not hit the nail on the head. The results are the same in these cases—failure.

Many a bright, shiny nail, shapely, pointed, straight and with a good head, lies unnoticed in the workshop, or is lost in the crevices of the busy artisan's work-bench. Many are the loose boards with gaping ends and creak joints that might become useful and diverted to noble purposes could they be brought together with a good nail. Many are the hammers lying in convenient places, inviting willing hands to take them up and use them.

For the nail is the happy thought which, when driven home, becomes a deed worth while. The loose boards are the opportunities lying fallow until restored to usefulness by the nail, and the hammer is the vim, the persistent energy with which anything must be struck if it is to be driven home.



Plea for a Better System of Estimating the Cost of Buildings

(Continued from July Issue)

By G. Alexander Wright, Architect

IT is, to say the least, disappointing to a careful bidder on a large job to find his bid just above the lowest, and after the low man has signed up the contract, it develops that the painting, or some such item was left out. This, however, could not occur with the Quantity System.

This is no overdrawn picture, as I know from personal experience. The competent bidder who gets in all his items today is usually under a disadvantage, unless he happens to be figuring against men of his own stamp. Meanwhile it would appear that the chances are in favor of the owner, most of the time, and it seems to be a case of "heads I win, tails you lose." Surely it is time there was a change.

The existence of present conditions, whilst much to be regretted, is due to a blind continuance of early-day custom. It is no way up to date, nor conducive to progress, nor to that business success to which a bona fide contractor is entitled. It is entirely unsuited to modern construction and modern methods. The tallow candle, years ago, was a great invention, but how many of us would light our homes today by this method? And yet our estimating methods of today date from the same identical period as the tallow candle. Other countries have long ago graduated from such primitive methods, but we are content to stand still, and we are, in this respect, away behind the times. It seems to be almost inconceivable that shrewd business men are still willing to spend their time, all going over the same ground, figuring against each other on quantities, knowing all the time that they are all, save one (and sometimes even that one), simply wasting their time. By the adoption of some sensible system, all this quantity taking could be done by one competent person.

The great difference we find in bids arises, in my opinion, not so much in the prices or money values placed against the quantities, as it does from errors in the quantities themselves, the accurate preparation of which calls for special training and continuous con-

Building contractors are throwing away thousands of dollars every year in useless estimating—laboriously figuring jobs that the other fellow gets. This plan proposed by Mr. Wright does away with this. It puts the expense of estimating where it belongs—on the owner. It is the system in successful operation abroad. It should be given a trial here.

Editor.

centration of mind, which the busy contractor of today can seldom find time to acquire.

The Bill of Quantities

Now we will investigate a bill of quantities, such as we are considering. What is it? and how is it used?

First of all, it is a document, handed free of expense

to each bidder, mimeographed or similarly duplicated, in order that all bidders' copies may be exactly alike. It will contain everything which is essential for a contractor to know when making up a figure, with a separate section for each trade, such as excavation, concrete, brickwork, and so forth. A general summary is provided at the end of the bill, in which is entered the net cost of each trade; this summary is footed up, the profit the bidder expects to make is added, plus the cost of the quantities, the result being, of course, the amount of the bid.

The methods of measurement must conform to the standards used by each individual trade, and through the bill the greatest care is taken to have everything systematized; all cubic, square and lineal feet, and numbers of items, will be found all together under their respective heads. In this way, immediate reference may be made to any item required, even though the entire bill may contain hundreds of items, and so every item has its proper place—nothing is left to chance. Detail sketches also appear in the margins whenever necessary, to show a bidder at a glance what is required. These, as we know, are of more value to an estimator than the long written descriptions one sometimes finds in specifications. The keynote of the Quantity Surveyor is accuracy. In going through the drawings and specifications he has come across all those doubtful questions which always crop up when figuring under present methods. He will have taken them all up with the architect, and adjusted them, before the quantities are handed to bidders, so that everything is all plain sailing.

Nothing is "near enough" for a Quantity Surveyor—he scrutinizes every part of the work closely, clears

up any doubts, or anything capable of a double interpretation, and his work leaves no loopholes for either the owner, the contractor or the architect to take advantage of. The result is that it is seldom necessary for a bidder to ask questions of the architect when making up a figure. If he should wish to do so probably he would be referred to the surveyor, who is familiar with every minute detail of the work.

Accurate Bids Without Studying Plans

Further, and right here, lies one of the greatest advantages of the Quantity System. It is not necessary, except in a general way, for a bidder to study the drawings and specifications at all, and he certainly does not have to figure them. He simply prices the bill of quantities, and, in these days of hurry and bustle, this is as much as a contractor can be expected to do for nothing. This enables the competent contractor (the one who has unit prices at his finger ends) to make up a bid for, say a \$100,000 building, in a few hours, and he has the satisfaction of knowing, when the unit price is placed against each item, that nothing has been forgotten; in other words, he only contracts to furnish so much material and labor—and surely this is absolutely right in principle. Good reasons exist why the general contractor should have faith in his own judgment and accustom himself to price items in every trade which goes to make up the building business. It is the only consistent method of estimating, for anyone who claims to be a general contractor. Experience has taught most competent men that it pays to do it. *The mere getting together of figures from sub-bidders, and footing up the totals of the lowest, is not estimating at all. That is mere schoolboy work.* However, I am led to believe that this is now the exception among general contractors in San Francisco rather than the rule. The ideal contractor is the one who makes up his own estimates, and not he who is dependent, for any reason, upon sub-contractors, *who thus become the real estimators.* If every general contractor would keep a prime-cost book of all trades, and quantities were supplied to him, he would soon be in a position to give a fairly close figure upon any sized structure, without first taking sub-bids, and this I suggest is the most consistent, satisfactory, and profitable method to pursue, when bidding upon work as a whole; but of course it requires care and experience.

Further, one of the greatest arguments in favor of letting contracts as a whole is, of course, the fact that a general contractor has the ability to figure all trades in his own office, and that he knows how to, and will supervise the work of sub-contractors, if any. If architects can be assured of this being done, it would be better for all concerned.

In general practice I believe the accuracy of the bill of quantities should be guaranteed. Such a document

might well be made the basis of the contract, equally with the drawings and specifications; if this were done, the chief causes of disputes between owner and contractor would be removed.

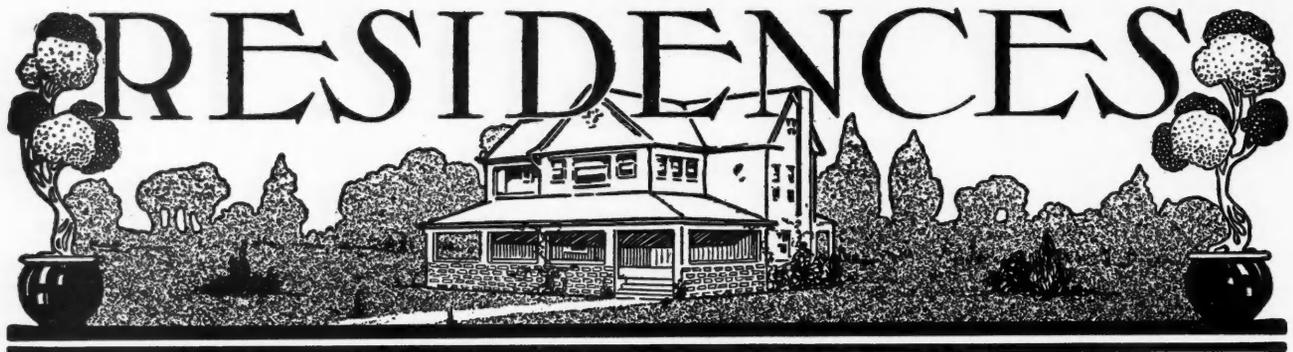
This, I submit, is entirely logical and right—a certain quantity of work for a certain sum of money, the owner to determine the former and the contractor to fix the latter. Surely this is morally just and fair.

Competent Surveyors Needed

It may be asked, Where are these competent surveyors to be found? And it would be a natural inquiry, as it is no part of the duty of architects to prepare such quantities. In fact, the relation of the architect to the contractor should preclude him from having anything to do with furnishing quantities. This should be attended to by a disinterested specialist—the quantity surveyor. In older countries, young men of education are now apprenticed to practicing surveyors, and it has become a recognized profession. Years ago these quantity surveyors frequently came from the ranks of the architects; others possessing the necessary education were possibly contractors, building superintendents or estimators. I have known contractors' representatives who commenced life in the workshop, who, after securing the advantages of special training, made experienced and very competent quantity surveyors. There must be a beginning to everything, and doubtless there are many men in this country who, after some little training in the technique of this work, should make reliable quantity surveyors. The principal qualifications are honesty of purpose and a knowledge of architecture and construction. The surveyor should be a neat draftsman and have actual experience in conducting building operations. He should possess the ability to readily detect discrepancies or conditions which might give rise to misunderstandings during construction, and last, but not least, the necessary mentality to act disinterestedly. He must do what is right in measuring, as between the contractor and the owner. The usual custom is for the architect to furnish the quantity surveyor with a set of the drawings and a draft specification, and the latter then commences work in his own offices. During this period the architect and surveyor are in frequent consultation, to the end that all uncertainties are cleared up and adjusted upon the drawings and specifications. In short, no effort is spared to obtain perfect clearness and accuracy before bidders commence figuring.

Such uncertainties are bound to crop up; they are unavoidable. They nevertheless perplex the contractor when he is figuring, and his foreman on the job, and create unnecessary trouble and sometimes bitter disputes; and then, in such cases, one of the parties to the contract is usually a loser.

(This article will be continued in the September issue.)



Plans for Modern 6-Room Bungalow

ARCHITECT'S PERSPECTIVE AND COMPLETE SET OF WORKING DRAWINGS
OF THIS VERY DESIRABLE LITTLE HOME PLACE

THIS month we present an artistic small house that will provide ample accommodations for the family of usual size. The design partakes somewhat of the bungalow design with enough of other details to give a well proportioned effect to the story and a half building. The red brick porch and the outside chimney give a bright attractiveness that can be further enhanced by the color scheme dominating the clapboarded sides and the shingled roof.

Glancing over the working plans we find on the first floor a nice large living room equipped with a fine fireplace. This room is separated from the hall by a

colonnaded opening—see detail sheet for novel design of this. The front door opens into the hall instead of into the living room thus providing a variation from the usual bungalow arrangement. A cased opening gives access to the dining room in which there is a shallow bay window with a window seat. The kitchen is conveniently placed alongside the dining room, the two rooms being separated by a swinging door. The screened porch at the rear may be reached either from the kitchen or the dining room. Up stairs are the three bedrooms opening off the second floor hall. It will be noticed that each bed-



Story-and-a-half Residence of Bungalow Design Planned for Mr. O. M. Fisher
COMPLETE WORKING DRAWINGS FOR THIS HOUSE ARE PRESENTED ON THE SIX PAGES FOLLOWING

Architect's Service

In an action for the value of an architect's service in preparing plans for a building there was expert evidence that the value of the drawings made, which had proceeded somewhat further than the stage of preliminary plans, would be one per cent of the cost of the building. There was evidence that the defendant intended to erect a building to cost \$50,000 and that this was known to the plaintiff. The plaintiff sought to recover \$3,000 as one per cent of the estimated cost of a building to cost \$300,000. It was held that the architect was only entitled to recover one per cent upon a \$50,000 building.

Lee v. Firch, 38 Pennsylvania Co. Ct. 395.

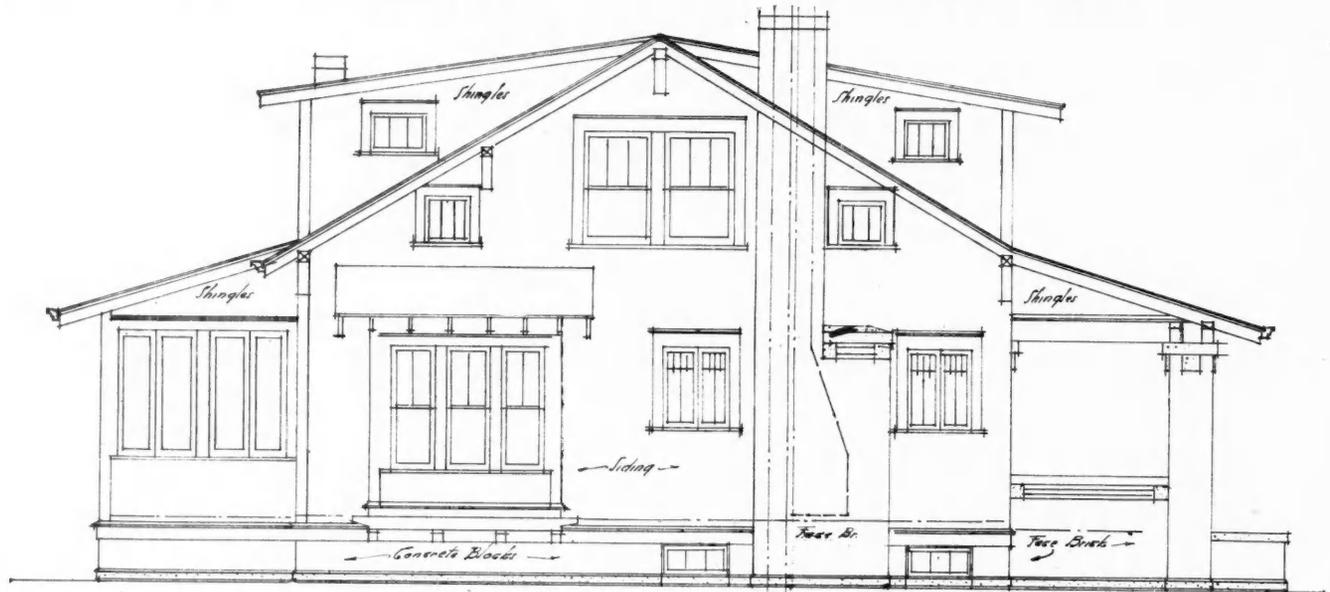
Completion by Owner—Effect

A contract for the erection of a church and rectory provided for the owner's taking possession on the builder's failure to perform any part of the contract; after the work was finished, the excess of the contract price above the expense incurred by the owner in completing it to be paid to the contractor. The owner terminated the contractor's employment by notice and took possession, using the building as it was and expending nothing for its completion. It was held that the owner was bound to pay the unpaid balance of the contract price.

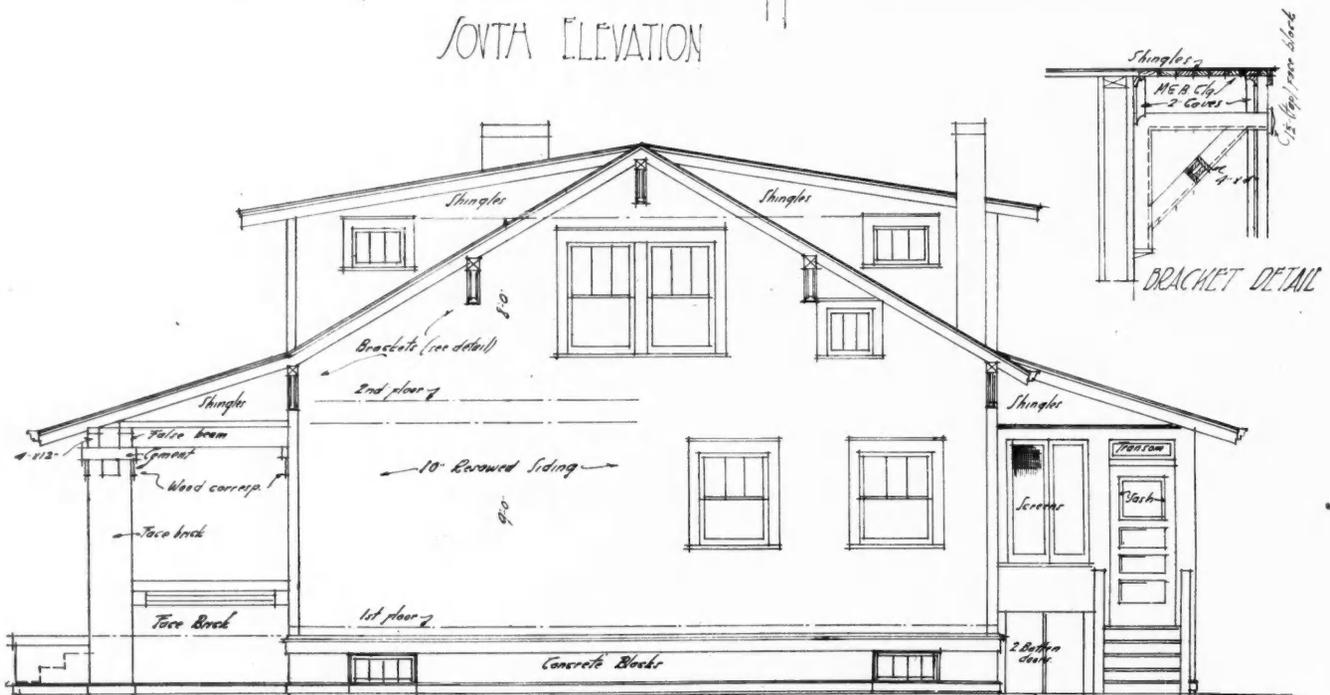
Wakeham & Miller v. Church of St. Paul, N. Y. Ap. Div., 134 Sup. 736.

The new Chinese republic has established a department of agriculture and forestry. For a long time China had been pointed out as the most backward nation in forest work.

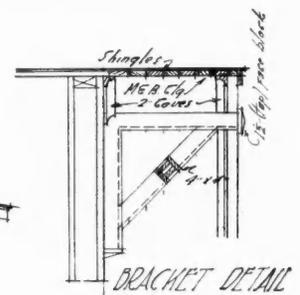
A shingle mill in Maine uses 2,000 cords of paper birch each year in the manufacture of toothpicks.



SOUTH ELEVATION

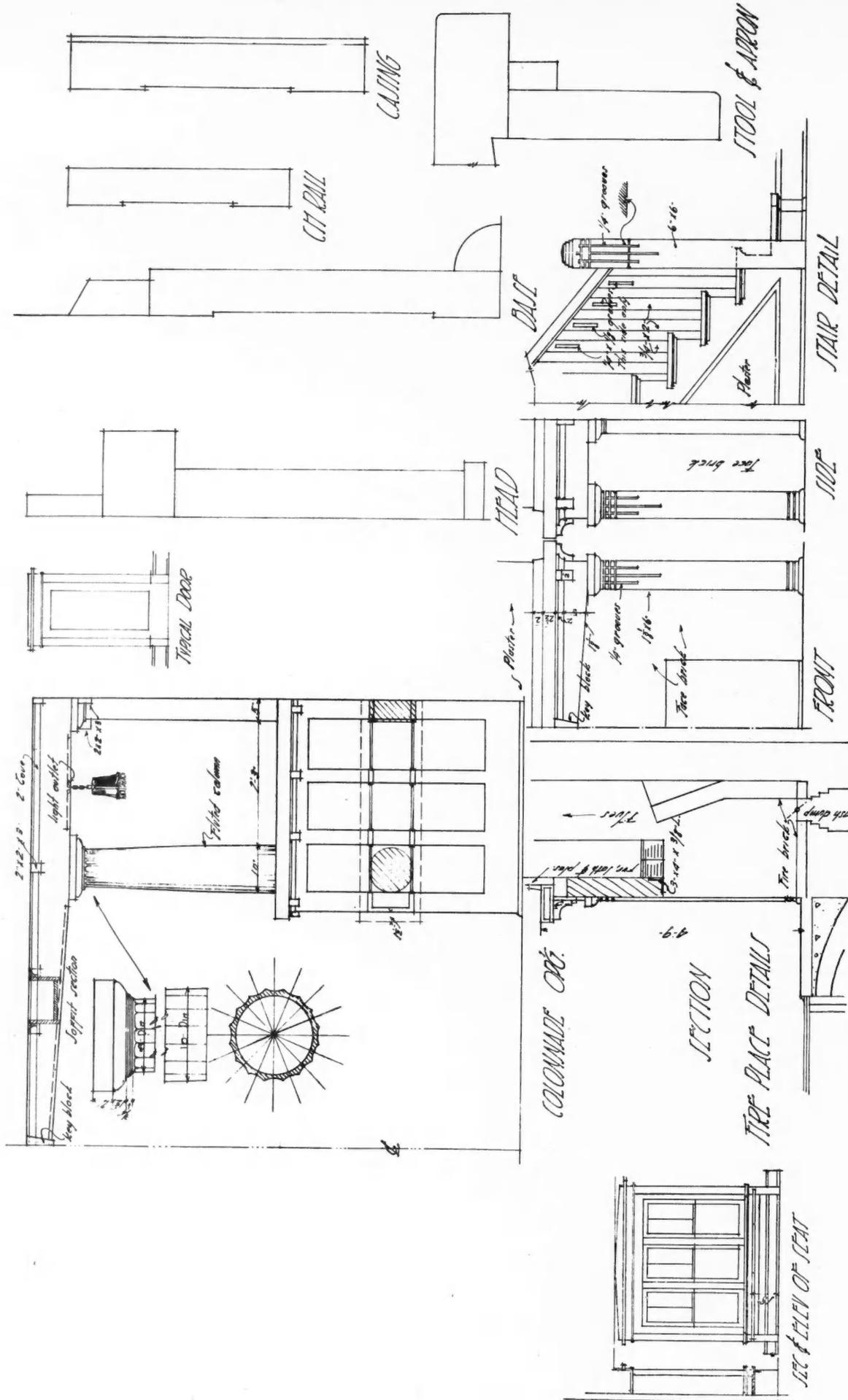


NORTH ELEVATION



BRACKET DETAIL

ELEVATIONS OF BUNGALOW SHOWN ON PAGE 78



INTERIOR DETAILS OF BUNGALOW SHOWN ON PAGE 78



Our Readers are Requested and Urged to Make Free Use of These Columns for the Discussion of all Questions of Interest to Carpenters and Builders

Hot Shot from Blacklidge

To the Editor: San Rafael, Cal.

Are we, or are we *not*, ambitious? Point to the contractor and say, "At least three-fourths of the contractors are recruited from the ranks of the carpenters. Who ever heard of a plumber becoming a contractor and builder? Or a painter, or electrician? Of course we are ambitious!"

But again, Look at the dozens,—aye, hundreds,—of old men who have been plodding along as carpenters all their lives. Never even been foreman on a job. Seemingly content to "just saw wood." Raises a doubt about our ambitions, to say the least, doesn't it?

Certainly there never has been a better outlook for the young carpenter than there is today. Manual training is going into hundreds of our schools; and not only the high schools either, but the grammar schools as well. Technical schools are turning out large numbers of young men who are well along the road to "Good-Mechanics-ville." Books are published by the score and light is so cheap that no one need study by the light of the historic pine knot nowadays. Libraries are in all the towns and some of the villages. They are accessible, with their mines of information, to any ambitious man. And here he will find many books that he cannot himself afford to own. And right here we might say that the books published by "our own" AMERICAN CARPENTER AND BUILDER people are among the best to be had anywhere. Radford's Cyclopedia of Construction is—well, the young mechanic should ask himself if he can afford to go without it rather than can he afford to get it.

Then there is *this* building journal itself. Who would want a better text book of his business? It is better than a text book, it is a regular correspondence course. For the Editors are always "tickled to death" to answer your questions. And best of all, it is a course that is always right up to the minute. Take a recent issue—I never saw or heard of those Detachable Screen Door Hinges nor the Inclined Gravity Hinge, until I saw them in the A. C. & B. But say, aren't they *dandies*? They ought to bring a man at least two other jobs every time he uses them. But the Ambitious Carpenter!

With all these avenues of advancement open to the members, why do so many of our craft remain *just carpenters*? There is the contracting field just one step ahead and always open. And always "just over the rise" there is Architecture beckoning us on. Why stop at "Just carpenter"? Why not go on to "Contractorville" and finally get off at "Architect-town"?

Why poke around Laverne's cigar store all evening? Or Choynski's billiard hall, or O'Flaherty's, or the movies, when the very same hours spent with some of those books or in the library would—well, in a few years you might be going to the Van Ness instead of the movies; or the Fairmont instead of O'Flaherty's.

If you are a young man, not a journeyman carpenter as yet, I would be willing to bet that inside of three months the boss

will give you a raise if you will study only the advertising pages of the AMERICAN CARPENTER AND BUILDER for that time. That is to say nothing of the large number of good things among the other pages. And always provided you have brains enough to USE the knowledge you gain.

There is no earthly reason for a young man to remain "just a carpenter" if he is ambitious and industrious. Any mutt will gradually absorb the general rudiments of the trade by simply *working at it*. But the younker who spends his spare hours over books and drawings and building magazines is "that young mechanic" who *runs the job* before many years.

And not only the *young* man, but the same thing applies to older ones as well. Not a blessed one of them but can take up a copy of A. C. & B. and learn *something*. Every last one of us needs, and *can*, brush up nowadays if we will, and if we are going to keep our craft up to the notch and not let it develop into a lot of specialisms. Shingling has already gone to the specialist. Hardwood flooring is going. Soon we will have joist specialists, stud specialists, spike specialists, and specialists for plynth blocks and specialists for picture moulding, and drain board flutters and—bah!

Let every male man among us cultivate a better acquaintance with Ambition and resolve to make, and *keep*, ours the cleanest, straightest, brainiest trade of all the building craft.

H. J. BLACKLIDGE.



A Grindstone Tool Holder

To the Editor: Saginaw, Mich.

Last summer, in an attempt to devise a good form of simple grindstone tool-holder, for use by boys in one of the manual training shops the writer hit upon the contrivance shown in Fig. 1. This worked perfectly—as a holder must work in order for school boys to make a success with it—and the device will be worth duplicating by any mechanic who has need for such a thing.

The table-bar, A, is made from 1½-in. stock, maple being preferable, although almost any hard wood will do. It should be as wide as the stone is thick, and long enough to reach from a trestles spreader to the stone, with the approximate angle illustrated. The lower end is connected to the spreader with a strong butt hinge; the other end is rounded below.

In the under side of the table-bar, back from its forward end the proper distance to keep the bar off the stone, is

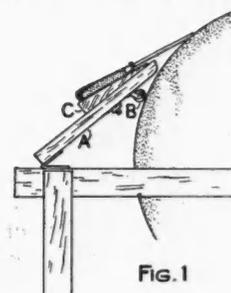


FIG. 1

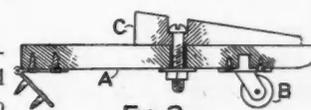


FIG. 2

Holder in Use; and Detail Sketch

set a plate caster, B. In use, this bears constantly against the face edge of the stone.

The tool-rest, C, is a wedge-shaped stick cut from 2-in. soft wood 5 in. long. (See Fig. 2.) A countersunk $\frac{1}{4}$ -in. stove bolt passes through it and the table-arm, as shown, for the purpose of confining the two pieces together. The hole in the arm is quite large, so that, when it is desired to change the sharpening angle on any tool, thin pieces of wood may be inserted between the rest and arm, and the nut beneath again tightened. A groove made along the upper edge of the tool-rest will seat chisels more firmly than otherwise, and not interfere with the holding of plane cutters, etc.

In grinding, one hand holds the tool to the rest, and the other hand presses down upon the steel, over the stone.

C. C. FRASER.

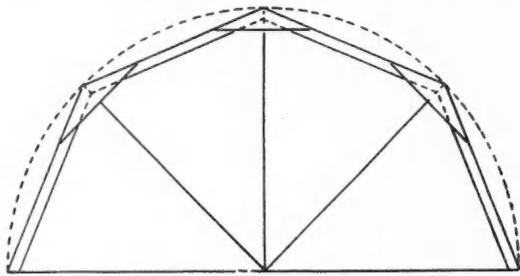


Gambrel Roof Proposition

To the Editor:

East Otto, N. Y.

I am sending you a sketch of a gambrel roof for the benefit of Mr. Geo. H. Craner. I have used this method for years and consider it a good way of arriving at the proportion of



Gambrel Roof Points are on the Circle and Divide it into Eighths

the roof. It gives the best of satisfaction in our locality. The plasters, as we call them on the corners, or joints, are of $1\frac{1}{4}$ by 12-inch stuff nailed on both sides.

W. W. COLVIN.



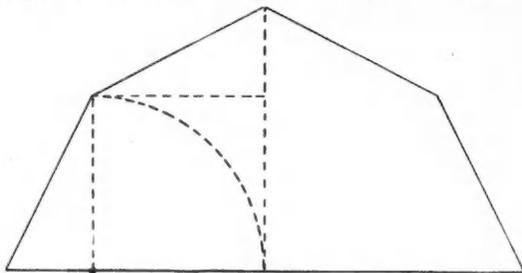
The Half Thrd Rule

To the Editor:

Norwood, Colo.

I have been a reader of the AMERICAN CARPENTER AND BUILDER since its first issue and have every number on file up to the present issue.

In reply to Mr. Craner's question on gambrel roof pitches,



One third of the half widths Marks the Gambrel Joint

I like the rule that is used by most all builders in this section of the country. It makes a very good looking roof.

Take one-half the width of the building and divide by one-third. The accompanying sketch explains itself.

L. E. BRUNDAGE.



Wants Boat Building Pointers

To the Editor:

Millers Falls, Mass.

If you will publish an article on boat building with lines of a boat of small size and explain the manner of joiner work necessary I think it would make a hit.

ALDEN H. ADAMS.

A Novel and Artistic Inlaid Table

To the Editor:

Buffalo, N. Y.

A most unique and beautiful table has been designed and constructed as seen in the accompanying illustration. There are 34,473 pieces of wood in the table,—wood from every state in the Union. It is constructed of material having historical value. There is piece of wood from the farm on which Daniel Webster was born. Part of the wood was taken from

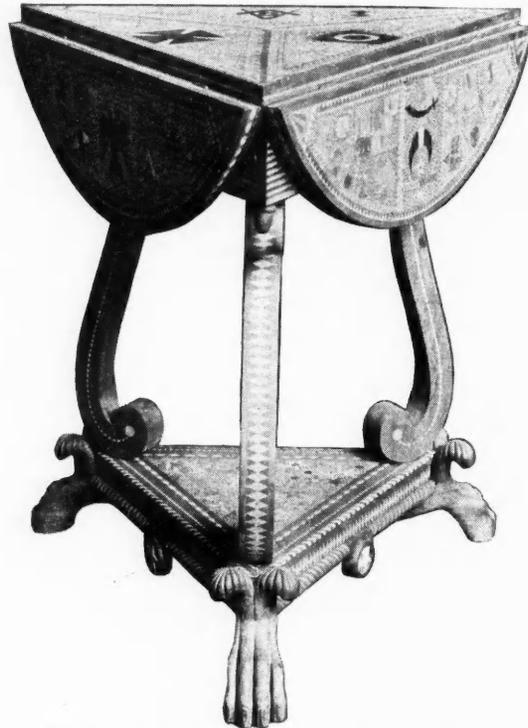


Table Inlaid with with 34,473 Pieces, many of them of Historical Interest

a Masonic Master's chair made in the early 60's, and there is a piece of wood taken from the old Washington Elm, at Cambridge, Mass., a piece from President Jefferson's old home at Monticello, Va., as well as one from Lincoln's old home at Springfield, Ill., and from President Pierce's old farm; a piece of an old Liberty Pole that was raised in 1865 in Bow, New Hampshire and one from the old belfry in Lexington, Mass., in which the bell was rung to call out the minute men at the commencement of the revolutionary war.

There was also used in the construction, a piece of wood from the General Stark Home of Revolutionary fame and one from the old house in which Mary Baker G. Eddy was born. It includes material from Dartmouth College, Princeton, Yale, Cornell, Nebraska University, Vassar, Universities of Indiana, Minnesota and Illinois, Williams College, University of Oregon, Purdue University and from the old chestnut tree made famous by Longfellow's poem, "The Village Blacksmith."

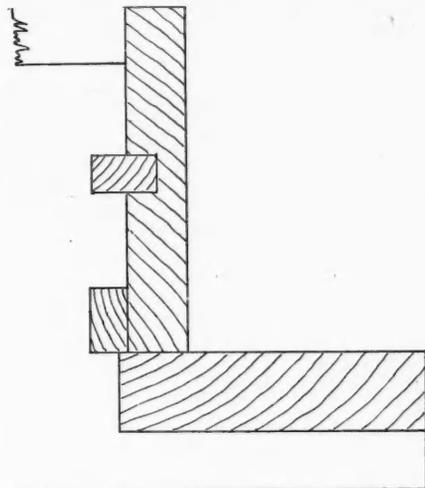
The table also is made from pieces of wood from Japan, Mexico, Siam, Joppa, Cuba, Argentine Republic, Alaska, Samoan Islands, Philippine Islands, Scotland, England, Canada, Germany, Italy and France. It also includes a part of the original floor in Libby prison and a piece of the log house in which Jesse James was born, in Missouri, as well as a piece of the old scaffold on which 28 Indians were hanged in the 60's in Mankato, Minn.

A piece of Olive wood from the San Juan Mission in California. The tree is said to have been set out by the priest while the mission was under control of the Spanish. Finally there is a piece of wood from the Garden of Gethsemane and a stone from quarries of King Solomon underneath Jerusalem.

FRANK C. PERKINS

Carpenter Kinks

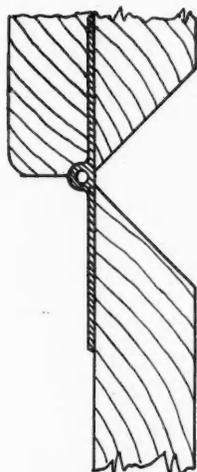
To the Editor: Highland, Mich.
 When placing a window over a projecting bay, or any place directly over a ceiling, I make the frame with full width jambs and nail a piece of parting strip in for blind stop. Instead of nailing the casing flush with the jambs, I



Method of Framing Window Over a Projecting Bay

set it over the thickness of my rule, thus covering the joint. I saw a little notch at the bottom of this projection and have the blind stop about 1/4 inch short at the bottom, which allows drainage. This frame, when set together with good paint is practically water tight. There should be flashing under it though, to make it doubly sure.

I built three lake cottages last year that were to be put up as cheaply as possible and yet have them attractive. I economized some by placing the window studs the right distance apart to serve as jambs. I then put on cove siding all around to bottom of windows and placed the window sills. Then continued the siding on up to top of windows, fitting around the sill and allowing it to project inside the window studs 1/2 inch, which served as a blind stop. Casings were put on outside and screened full length. Both sash could be pushed up above the opening.

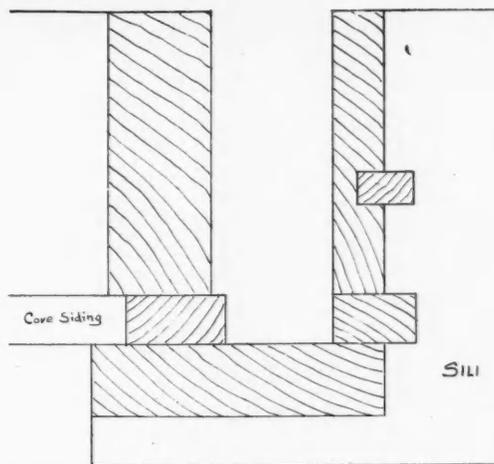


Hinge for Inward Swinging Clothes Chute Door

I recently built a clothes chute, the doors of which were hung from the top to swing in. By placing the hinges on face of door, the weight keeps them tightly closed. The casings were put on after door was hung and covered top half of hinge and served as stops for doors. Ornamental strap hinges that would open back as far as possible, were used.

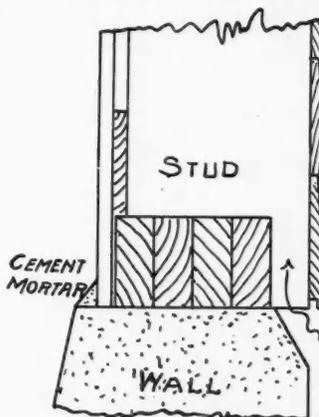
I have seen barns and other buildings—even houses—that were sided with cove, or novelty siding, said siding being cut flush with the studding at the door and window openings and the casings set on the outside. This left holes for cold air to penetrate directly into the building, if it was not cased inside. On jobs of this kind, I cut the siding back on the stud and place a strip the same thickness at the ends of it, spacing the studding so that the casing will overlap the joint about 1/2 inch, as shown.

I built a silo last fall, 14 feet in diameter by 30 feet high. I made the sills by bending four 7/8 by 2 1/2-inch swamp white



Method of Framing Around Windows to Keep Out Wind Where Cove Siding is Used

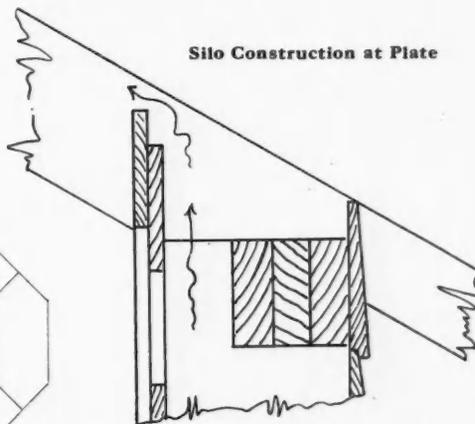
oak strips around a form in the same way that I made rafters for a round roof, as previously described in the AMERICAN CARPENTER AND BUILDER.



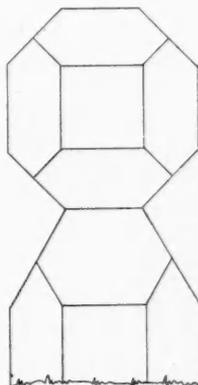
Silo Sill Affords Ventilation and Prevents Decay

The blocks for this form were set back the thickness of five of these strips from the circumference line and the studding framed to lap down on outside of sill, being spaced 12-inch centers. This affords ventilation and retards decay.

I used only three strips for the plate in making this silo—which I put the thickness of two strips on the face of form blocks. The top ends of studding were notched to fit around it. This silo is covered outside with 5-inch beveled siding, rabbeted to fit over thin edge. The inside is ceiled with two layers of 1/2 by 4-inch swamp oak with paper between and as the sill was 1/2 inch wider than the studding, it formed a ledge to start the ceiling on for breaking joints.



Silo Construction at Plate



An Octagon Ball On Top of an 8x8

Here is an octagon ball I made from a piece of 8 by 8-inch for a finial for this silo.

A dormer on one side of the octagon shingled roof is used for filling the silo and there is a chute between silo and barn. The neighboring farmers call it a "dandy" silo.

A. GONNE.

His Specialty is Round Barns

To the Editor:

Indianapolis, Ind.

I am sending you photographs of one of my round dairy barns that I built last year for Mr. Seymour Clendenning at Mulberry, Ind.

This barn is 70 feet in diameter. For the amount of material it contains, this barn will accommodate more live stock and farm produce than any other design a farmer can choose. We think they make a very striking appearance. Farmers come from miles around to see every large barn we put up. These are several in this same vicinity which I have designed and built.

The central thought of a round barn for dairy farms is the silo. A round stave silo is erected at the center of the barn and the cows are arranged around it in a circle, facing in. As the dairy cow is a wedge-shaped animal, considering wider through the flanks than at the shoulders, such a circular arrangement works out to the best possible advantage. Also a silo at the center makes a short carry for the feeding of every animal.

As I arrange these barns there is usually a broad doorway at the head of a slight incline to the main floor. In this barn the double doors and driveway are 12 feet 5 inches wide. The silo at the center is 12 feet in diameter and all the way around it is a 19 foot driveway. The farmer can drive in with a load of hay and circle around the silo and then out again through the same door. No need of backing out as with most barns.

From the interior view you will see how I build up the curving beams by spiking together one-inch boards bent to the proper curve. 20,000 feet of lumber were used in the construction of this barn, also 150 barrels of cement and



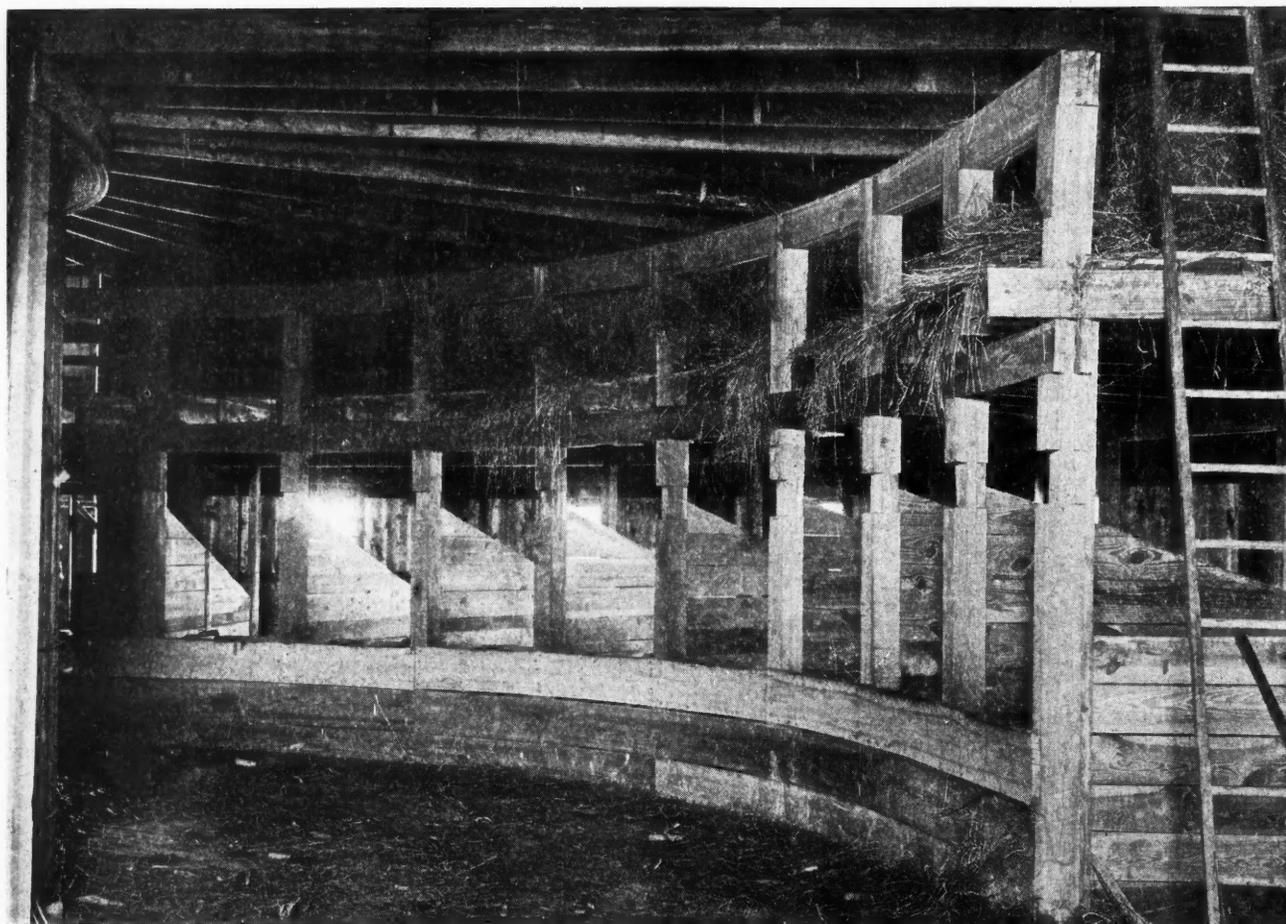
Rear View of 70-Foot Round Barn, Built for Seymour Clendenning, at Seymour, Ind.

5,700 pounds of steel reinforcing. The height at the center from foundation to silo top is 50 feet.

Over the cow stalls and driveway is the haymow and it has an awful capacity for hay storage. There is a circular hay track in this barn arranged so that the hay can be taken up in two places.

This barn has a high basement which will be used for the winter quarters for fattening about 100 head of steers.

The roof of this barn is a true semi-circular dome. I



Interior of Round Barn Built by Mr. E. N. Myers for Seymour Clendenning—Note Edge of Silo Just Showing at the Left—Driveway Circles Around This



This Barn is an Object of Wonder and Pride to All the Farmers Around Seymour, Ind. It was Planned and Built by E. N. Myers, of Indianapolis

could write a long letter telling how we framed this roof and laid the shingles. We have built so many big barns of this style that we are getting to be experts now and think nothing of the problems that used to worry us when I first began with the round barns. E. N. MYERS.



"Human Interest" for Builders

To the Editor:

Mulvane, Kansas.

My subscription has expired. I should have renewed ere this, but have been too busy hunting jobs.

Enclosed herewith find order for which continue my AMERICAN CARPENTER AND BUILDER to Mulvane, Kans. I am not at home much of the time and do not get to read my AMERICAN CARPENTER AND BUILDER hot from the press. I get them in bunches, and then they are like the biscuits I have to eat sometimes—cold, but better than none.

I take an interest in several of the departments, but the deepest in the "Noon Hour Talks by the Boss Carpenter." I wish I knew where he is; I would like to work for him.

"Making Woodworkers Pay" is worthy of time, but what in the name of common sense does Harriet and Lorna have to do with *Power* woodworkers. Suffice me to say I would feel sorry for poor, innocent Lorna, should she ever marry Jimmy. I have seen and worked with carpenters just as shrewd as Jimmy and only one of them was worthy of a wife. I am not kicking or knocking because we have a few lady correspondents. What I cannot see is the why of Harriet and Lorna in "Making Power Woodworkers Pay."

A. W. Woods is a good one too. No matter how concise he is in all his demonstrations, I'll bet nine out of ten of the people who read his Steel Square articles do not know what they are reading about. I don't think much of Jasbury's "Shop Kinks." because I think he is an industrial school

teacher; and ought to be in the penitentiary making mallets and nail boxes, because he encourages the innocent young men to take up with the trade for a living. I, for one, would never advise or encourage a young man to learn the carpenter trade and will not teach him a single thing I know about the business, because the carpenter trade is a poor nag to ride for a living. The only safe bet you can place upon it is that the man who rides it will never get anywhere in the world.

Carpentry is a tough job, too. I have been working at the business for thirteen years; and time and time again, I have been up against propositions where I needed asbestos on my psychic boiler. Why, I have been bald headed and made so just by working for a few different contractors. Some of them would make a man stop and recite all the lamentations of Jeremiah, pack his tools and get just as far away from that contractor as he could get. Such is the see-saw life of a carpenter. However, for those who cannot make a living at anything else, the AMERICAN CARPENTER AND BUILDER is the best thing going to-day. J. W. SIEGFREID.



Frame Wall Construction

To the Editor:

Louisville, Ky.

Replying to P. H. Lebak, who asks which is the best way to build a house, to board it up inside and outside or just board it up on the outside and lath on the 2 by 4 studs.

The point he is evidently trying to get at is whether two thicknesses of storm sheathing, one inside and one outside, is better than one thickness with a back plaster on the inside. The ideal frame wall for warmth in a cold climate is to use a storm sheathing on the outside with a building paper between it and the weather boarding, then sheath on the inside with Byrkets' Patent Sheathing Lath, which is worked with

a dovetailed groove to hold plaster right on the board, or else use a rough sheathing and plaster on it like the back plaster described, with either 1 by 2 strips or, as some use, strips of plastering lath running up and down to hold the plaster far enough away from the wall to allow for clinching.

There are many different types of frame wall construction but it is not often that storm sheathing is used both inside and outside, because unless one is near the woods where lumber is cheap, it would be just as economical and better to build a brick wall.



J. CROW TAYLOR.

Better than Back Plastering

To the Editor:

Glendive Mont.

I noticed your advice about back plastering and I think we have a better method. We use hair carpet between studs, nailed in with a lath on each side. The lumber we get here will always shrink away from plastering and leave a crack. I have taken out a great deal of back plastering and always found it that way.

FRANK VAILE.



Wall Construction

To the Editor:

Thomasville, Penna.

Noticing the inquiry of P. H. Lebak in the July number and your comment thereon, I submit herewith the method I use in all my work. I use only single sheathing, always placing it on the inside of the studs. Next to the sheathing I place regular plastering laths in an upright manner, either 16 or 24 inches apart. The lathing and plastering is then placed on these upright strips.

I claim four distinct advantages for my method, which has stood the test of many years and has always given entire satisfaction in all my work.

First, the small space between the laths and sheathing will require less plastering, while at the same time insuring a more solid inside partition. Second, a more compact air space is secured, thus adding greatly to the warmth of the house. Third, since there is no sheathing directly under the boarding, it is impossible for water to collect there, which necessarily adds to the life of the boarding. Fourth, for the same reason I find that the paint lasts longer where the sheathing is done on the inside.

I might add that I consider the AMERICAN CARPENTER AND BUILDER an indispensable addition to my desk equipment. The numerous perplexing problems solved and suggestions contained therein are invaluable to any contractor or foreman.

JOHN A. HOKE.



An Artistic Residence

To the Editor:

Clinton, Conn.

I have been a subscriber to the AMERICAN CARPENTER AND



BUILDER since its first issue and am now enclosing my check for renewal for another year. I am sending you also a photograph of one of my recent buildings. This residence is very nicely designed and built. The owner is well pleased with it.

A. H. PIERSON.

A Collection of Rare Woods

To the Editor:

Hillsboro, Ohio.

I wish to write a line of thanks to the fellow readers of the best trade journal on earth for the interest they have taken in answering my call for wood samples in the May number. I now have quite a collection. Of course, it is not complete but I have a piece of every kind of wood I could secure that would do for inlaying.

Recently there was a call in this department for a complete list of rare woods. Here are the kinds I have so far in my collection:

Rattan	White Elm	Naval Orange
Zangolico	Balm of Gilead	Oleander
Michigan Maple	Wild Goose Plum	Blue Gum (Eucalyptus)
Yellow Poplar	Honey Locust	California Willow Ash
Mexican Oak	Spice Wood	Gray Gum (Eucalyptus)
Palo Maria	Red Haw	Rubber
Camphor	Yellow Willow	Lime
Juniper	Witch Hazel	Coconina Pine
Tepehuaga	Grease Wood	Big Tree (Calif.)
Sassafras	Corral Cactus	Black Thorn
Sabien (Cuba)	Sycamore	Oldfield Pine (Va.)
Bass Wood	Horse Bean	Chinquapin
Chestnut	Indian Hedge	Ivory
Cotton Wood	Hackberry	Olive
Satin Wood	Red Sassafras	Paper Birch
Rosewood	Donquilla	Red Bay
Soft Maple	Coffee Nut	Hickory Pecan
White Cedar	White Poplar	Glossy Leaf Willow
Circassian Walnut	White Pine	White Mulberry
Curley Maple	Green Heart	Silky Willow
Red Birch	English Box	Papaw
Sweet Gum	Apple	Red Persimmon
Bethabesa	Cherry	Waho
White Sassafras	Balsam Fir	Mt. Mahogany
Lemon	Bristol Cone Pine	Engleman Spruce
Gravilla	Red Gum	Madrone
Silver Poplar	Frazer Umbrella	Red Bud (Arizona)
Red Elm	Catalpa (Speciosa)	Victorian Bottle Tree
Lygnum Vitae	Iron Wood	Yellow Guava
Yellow Locust	Alanthus	Monia
Embaranado	Yellow Thorn	June Berry
Spanish Oak	Sumac	Eugenia Jambos
Jack Oak	Wild Cucumber	Cedar of Lebanon
Hard Maple	Box Elder	Acacia Saligna
Buckeye	Magnolia	Yucca
Yellow Gum	Weeping Willow	Norfolk Island Pine
Arkansas Pine	Servisberry	Sugar Gum
Cypress	Pussy or Goat Willow	(Eucalyptus)
Macuil	Button Willow	Acacia Verticillata
Mexican Mahogany	Lilac	Mormon tea
Cocobolo	Pin Elm	Yellow Birch
Bird's eye Maple	Cat Claw	Hog Hawthorn
Hickory Poplar	Dwarf Maple	White Hickory
Thorn	Gray Ash	Virginia Holly
Bear Oak	Yellow Cottonwood	Pecan
Chestnut Oak	Silver Maple	Wisteria
White Oak	Red Walnut	Cotton Gum
Jacoma (Cuba)	Red Oak	Black Willow
Peppertree	White Walnut	Red Pine
Boxelder	Black Walnut	Ink Berry
Black Locust	Moose Hedge	Poplar Leaf Fig
Tolotote	Red Cedar	Angelica Tree
Mesquite	Redwood	Peach
Zapote	California White Oak	Pignut
Orange	Osage Orange	Apricot
Mauzanita	Pacific Dogwood	Wild Lilac
Gray Ash	Lumber Pine	English Myrtle
Yellow Pine	Umbrella China Tree	Strawberry Tree
White Holly (N. J.)	Black Cottonwood	Strawberry Bush
South Amer. Mahogany	Pear	Indian Willow
Palo Colorado	Indian Squaw	Bay Rum
Yucatan Dye Wood	Black Haw	Red Guava
Castor	Fir	Cascara Sagrada
Water Poplar	Coffee Tree	Guadalorpe Cypress
Bull Pine	Marsh Elder	California Mulberry
White Asa	Swamp Dogwood	Scrub Oak (Arizona)
White Beech	Snowball	Pinon (Pinus Edulis)
Black Gum	Mulberry	Pittosporum
Virginia Hazel	Agerito	Undulatum
Beech	Hazel Nut	Indian Quinine
African Mahogany	Spanish Oak	Ceanothis
Cacahuanano	Japanese Catalpa	Jesseri Pine
Snake Wood (S. D.)	Water Beech	Weepin Ash
Sugar Maple	Butter Nut	Silver Poplar
Black Hickory	Pignut Hickory	Huckleberry
Ebony	Texas Ash	Georgia Locust
Georgia Poplar	Lanceleaf Alder	Bamboo
Spar	Slippery Elm	Damkon Plum
Hemlock	Sassafras	Quince
Red Beech	Aspen	Utah Juniper
Locust	Linden	St. John's Bread
Cork	Mesquite	Black Persimmon
Maderia	Prickly Ash	Chiquite
Loblolly Bay	Green Gauge Plum	Black Wattle (Acasia)
White Willow	Fig	Silver Birch
Yellow Cedar	Escalonia Viebra	Wild Crab Apple
Yellow Birch	Monterey Cypress	Bottle Brush
American Holly	Swamp Mahogany	Horse Alder
Texas Oak	Spirea	Sun Briar (Va.)
Plum	Lupin	Populus Heterophylla
Japonica	Spanish Broom	

You will notice I have given the botanical name in some cases.

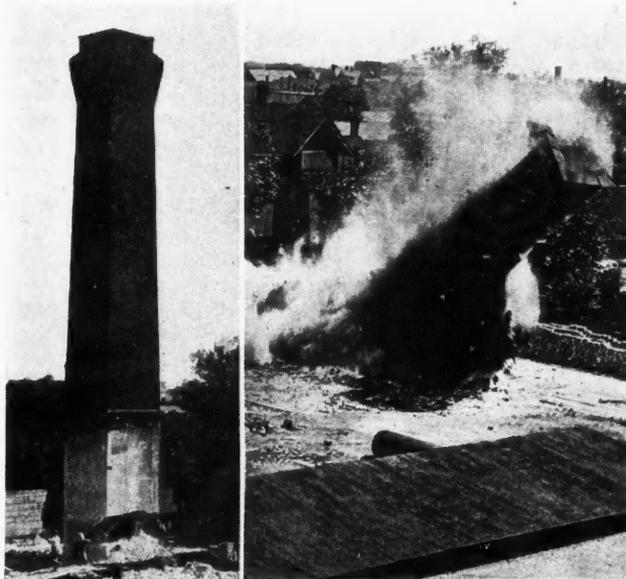
THOMAS BROWN.

Throwing a Brick Stack

To the Editor:

Buffalo, N. Y.

The accompanying illustrations show a chimney ready to be thrown like a tree and also the stack when falling to the ground. This stack was 10 feet square at the base and 100



Cutting Away the Base
As a Tree is Felled

The Stack Comes Crashing Down
Just Where Planned

feet high and was built of common bricks, lined with fire brick and topped out with a cast iron cap.

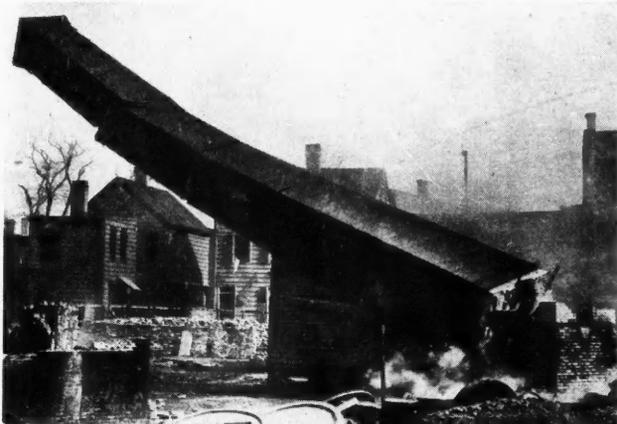
It will be seen that the method of throwing this stack was quite similar to the cutting down of a large tree. Brick work on the south side of the stack was cut out, extreme care being taken to make the cut symmetrical on each side of the center line of the stack.

The cutting was continued until the weight of the stack began to crush the brick work at the edge of the cutting, and as soon as this occurred, the stack of course fell to the south.

It is stated that so accurately was the work done that the fallen stack lay exactly parallel with the sidewalk as was intended. The outer shell of the stack crushed downward, while the inner lining maintained its original shape until the falling stack struck the ground.

This stack was originally part of the Brush Electric Plant, in Cleveland, Ohio, the site of which is now occupied by some of the factories of the National Electric Lamp Association.

The accompanying illustration, Fig. 3, shows another method of taking down a tall chimney by cutting away part of the



View of Falling Stack Showing How Top Lags Behind the Base

chimney just above the base. In some cases the method used is to insert wooden wedges and timbers in the slot and these are covered with some inflammable material, so that the whole underpinning can be set on fire and weakened in this way let the chimney fall over. There are several ways of doing this, but the principle is the same in all of them.

It is pointed out that when a chimney falls from this cause, the motion begins at the bottom and the top drags back, like the tip of a whip; and this effect of inertia results in the breaking of the chimney long before it reaches the ground. The accompanying photograph was taken as the chimney was beginning to break, and illustrate certain principles of applied mechanics in the most perfect manner.

FRANK PERKINS.



Protection Against Lightning

To the Editor:

New York City.

The question of personal safety during a thunder storm is perhaps the most interesting to the majority of people, and we offer herewith a few general suggestions:

If in a building which is isolated in the open country or is higher than surrounding buildings in a group, avoid chimneys or other flues, opens windows or draughts, especially warm currents of air, directly below a high tower or flag pole, peak or angle of the structure. Keep away from overhead wires entering a building—although these are generally protected by lightning arresters, the current is not always "arrested."

If in the open, avoid trees, wire fences or poles, and if you happen to be the most prominent object in the landscape, as in an open field or on a beach, do not raise a steel rod umbrella or in fact, any umbrella, as you may become a living lightning rod without an approved ground connection. If you should happen to be caught in such open space, with lightning discharges coming very close (as may be determined by the lessening intervals between flash and report) it is better to lie flat on the ground and risk a soaking, than to offer a possible path for a discharge. The reason for this is that the body being warm offers a better conductor than the surrounding air and but a few feet rise is necessary to attract lightning on flat ground.

The question of the action of lightning in striking a building, is frequently asked and is somewhat difficult to answer without going into a lengthy discussion of the various kinds of discharges and other matters of a more or less technical nature. Let us, however, take the most frequent case—that of the ordinary "forked lightning," as seen at a distance, which at close range becomes the blinding flash with the accompanying instantaneous crash, often causing disastrous results to life and property. This discharge is caused by a difference of potential between earth and cloud, that is, the one is heavily charged with positive electricity, the other with negative, with the air between acting as an insulator. If the air is sufficient to keep apart the two currents, no discharge will take place except from one cloud to another. Now as the storm moves on it comes closer to the earth or meets some object in its path which offers less resistance than the air—maybe a tree, pole, building, etc. The electrical pressure is so great that the slight decrease in resistance offered by such object is sufficient to cause the current to jump the intervening space and we have the destructive discharge. This explanation will be clearer to those who have seen the spark gap from coils used on automobiles, motor boats, wireless apparatus, etc. The action and principle is essentially the same increased infinitely, of course.

Now let us assume that instead of the object before mentioned, such as a tree, pole, building, etc., we have a perfect conductor of electricity, as a steel building, steel tower or pole in electrical contact with the earth, the current passes through this into the earth silently, the pressure is relieved

and in the great majority of cases there is no violent or explosive discharge. This action may perhaps be better understood by comparing the current in the cloud overhead, to a huge water tank on a roof. If the water is flowing into the tank and no outlet is provided, the water finally overflows or bursts the tank. The comparison is imperfect but may serve to illustrate the point.

Here is where the function of the lightning rod appears similar to pipes tapping the tank and drawing off the water before dangerous pressure is brought to bear on the tank. A properly constructed lightning rod will, in the vast majority of cases act in this manner by silently discharging the current from cloud to earth, thus preventing the violent discharge which we call the thunderbolt.

How any one in this enlightened age can doubt the efficacy of lightning rods with so many concrete examples at hand, is one of the mysteries of the times. It can only be attributed to ignorance or indifference, the same attitude shown to other great questions of the day, as scientific farming, the conservation of natural resources, etc.

THOMAS W. JONES,
By H. K. JONES.

NOTE: Mr. Jones has made a life long study of lightning and lightning protection; and his remarks on this subject may therefore be received with much confidence. Doubtless many of our readers have had numerous opportunities, in the course of their work, to note methods of lightning protection—also peculiar effects of lightning bolts, and other interesting facts. We want to have a full discussion of this matter from our readers.

EDITOR.



Block-and-Holes Puzzle

To the Editor:

Saginaw, Mich.

Anyone who will take a little time to make this puzzle, will have a great deal of fun with it by carrying it about in his pocket, or having it at hand in his room when his friends call. They are first shown the board (Fig. 3), and asked if they can devise, or suggest the shape of a wooden block that will fit all of the various holes cut through the board. These apertures are indicated in the Figure mentioned by the numerals, 1, 2, 3, 4 and 5. So different are

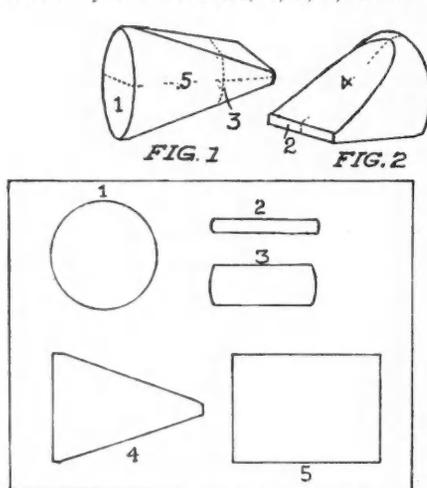


FIG. 3
Block-and-Holes Puzzle

the shapes, as you may see, that nine times out of ten, your friends will declare with conviction that it is simply impossible for any one to whittle out one single block that will snugly fit all of these holes.

In reality it is a very easy matter, as you can then proceed to show them by drawing out your block, two views of which are shown in Figs. 1 and 2, and try-

ing it in first one opening and then in another. The result will astonish them, and it is safe to say that those same friends will soon be trying their best to make a similar puzzle for themselves.

And it is really a very easy matter to make the block-and-holes puzzle, the only material required being easy to obtain, and the drawings showing how the parts are fashioned.

C. C. FRASER.

Oil Mixed Concrete

To the Editor:

Marinette, Wis.

It is too well known a fact to dispute that Portland cement concrete, with all its advantages, has the decided disadvantage of readily absorbing moisture and hence being anything but waterproof. In view of this condition a recent discovery in the Bureau of Roads, of the U. S. Department of Agriculture, bids fair to greatly extend the value of Portland cement concrete. It was found that a heavy residual petroleum oil will mix with either concrete or cement mortar—that it entirely disappears in the mixture—and that it does not separate from the other ingredients when the concrete has become hard.

Careful experimenting proved that a weight of oil not to exceed 10 per cent of the weight of the cement used in a mixture does not noticeably affect the strength of the concrete while it renders it impervious to water even under the pressure of a very considerable head. Concrete can be rendered damp proof by adding a weight of oil equal to only 5 per cent of the weight of cement in the mixture. Since the low grade of oil used weighs about 7¾ pounds per gallon it means that from 2½ to 5 quarts of oil will suffice for each bag of cement used, according to whether damp proof or water proof concrete is desired. The price of this oil is so low that this is undoubtedly the cheapest means of waterproofing yet discovered.

The only important differences discovered between the oil mixed and the common concrete are the following:

1st. It requires about 50 per cent longer for oil mixed concrete to make its initial set, but once hard, it has all the strength of the common mixture.

2nd. Oil mixed concrete does not hold as well to smooth reinforcement, but no trouble is experienced when mesh, bent rods, or expanded metal is used for reinforcement.

Mixing. In mixing by hand, the cement is spread on the sand, the two are thoroughly mixed, water is added, and the whole is mixed to a mushy consistency, then the desired amount of oil is added and the batch is mixed until the oil disappears; the stone is then wet down, thrown upon the above described mixture and the whole is turned the desired number of times. In making oil mixed mortar the process is the same as that above described, except that no stone is added. In machine mixing, the sand, cement and water are mixed to a mortar, then quantities of oil and rock are added in alternation until the necessary quantity of each has been incorporated in the mixture. No matter how the mixing is done, no trace of oil should show after the batch is mixed.

Uses of Oil Mixed Concrete. The uses of this concrete are sure to be almost unlimited but the following may be suggestive:

Basement Floors: These may be rendered waterproof by incorporating in the 1:2 top mixture a weight of oil equal to 5 per cent of the weight of cement used. An old cellar or basement floor can be waterproofed by applying an inch of this same mixture on top of the old surface. To insure a good bond, wash the old floor with a solution of one part hydrochloric acid to five parts of water—leave this on for half an hour and then clean with a wire brush and flush thoroughly with water before applying the top mixture.

Cellar Walls: A 1:2½:5 mixture containing 5 per cent of the oil has been found waterproof for this purpose. An old wall can be rendered dampproof, if it is plastered *when dry*, with the mixture given above for waterproofing floors. This will adhere best if the wall is washed with a rich grout before the mortar is applied.

Water Tanks: A 1:2:4 mixture, containing 10 per cent of oil, is reported to give perfect results. Tanks and cisterns painted over with a cream mixture of cement to which 3 per

cent of oil is added will be greatly improved, even if no oil was used in the mixture employed in constructing them.

Cisterns: Same as water tanks.

Barn Walls, Cement Blocks, etc.: Five per cent of oil added to the mixtures from which either of these are made has been found sufficient to waterproof them, and if used in the first coat of stucco work it will ensure a damp proof wall.

Since a public patent has been granted for the use of oil mixed concrete, as described above, anyone is free to use the process without restraint.

Anyone desiring detailed descriptions of the uses of this process can obtain them by getting bulletin No. 46 of the Office of Public Roads, U. S. Department of Agriculture.

W. E. MORTON,
Professor of Agricultural Engineering,
Stephenson Training School.



Rule for Figuring Volumes

To the Editor: Clymer, Pa.
Here is a rule for Cofer Bros. & Webb, which will solve their problem in the July issue of the AMERICAN CARPENTER AND BUILDER.

It will find the contents of the following figures:

1st. Prisms, wedges, pyramids, cones, etc., regular or irregular, right or oblique.

2nd. Spheres, hemispheres and spherical segments.

3rd. Any section of a cylinder where the cutting plane passes through both ends.

4th. Any section of a cone where the cutting plane passes through the apex and base.

5th. Frustrums of pyramids and cones, or

6th. Any solid figure having two parallel faces, united by surfaces through every point of which a straight line may be made to connect the two faces.

RULE: Multiply the sum of both end areas and four times the area of a section half way between them, by one-sixth the altitude.

Note. In the cone one base is 0. In the sphere both bases are 0.

Solution of Cofer's problem:

$$\begin{aligned} B = \text{base} &= 6 \times 6 = 36 \\ b = \text{top} &= 5 \times 4 = 20 \\ 4m = 4 \text{ mid} &= 5\frac{1}{2} \times 5 = 110 \end{aligned}$$

$$\text{Sum} = 166$$

$$\frac{1}{6} \text{ Alt.} = \frac{1}{6} \text{ of } 16 \text{ ft.} = 32 \text{ in.}$$

$$166 \times 32 = 5312 \text{ or } 368\frac{8}{9} \text{ board ft.}$$

E. E. HOLSOPPLE,
Contracting Builder.



Size of Tapering Posts

To the Editor: Mason City, Iowa.

In reply to Mr. F. M. Cofer of Elkland, Mo., will say that the correct method of finding the number of board feet in the timbers described or any others of a like nature is to use this rule for finding the volume of the frustum of a pyramid: To the sum of the areas of both bases add the square root of the product, and multiply this sum by one-third of the altitude.

Applying this to the problem to find board feet in tapering sticks 16 feet long, 6 by 6 inches at one end and 5 by 4 inches at other. Solution:

$$6^2 + (5 \times 4) = 56 \quad (56 + \sqrt{36 \times 20}) \times 16\frac{2}{3} = 441.76.$$

This result must be divided by 12 to get board feet, because two dimensions used are in inches. Each piece contains 36.81 board feet.

C. S. MARTZ.

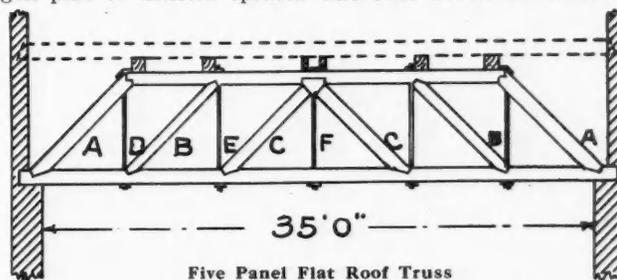
Supporting a Flat Roof

To the Editor: Pikeville, Ky.
What size truss will carry tin roof and plaster ceiling for room 35 feet wide, 72 feet long; this is in the clear. Walls will be 13-inch, brick. Send me sketch of same to be made out of wood. Roof will run from front to rear.

W. T. CURNUTT.

Answer: Here is a timber and steel truss of a type recommended by Kidder for use in the location to which you refer. The sizes for the members recommended by Kidder are given below.

For a 35-foot span these trusses should be placed 12 feet apart and should not be less than 5 feet 6 inches from center of top chord to center of bottom chord. The top chord should be made of 6 by 8-inch timber; the bottom chord of 6 by 8-inch timber; the braces marked "A," of 6 by 6-inch timber; the braces marked "B," of 6 by 6-inch timber; the braces marked "C," of 6 by 4-inch timber. The steel rods marked "D," should be 1 1/8 inches diameter; the rods "E," 3/4 inch diameter, and the rods marked "F," 5/8 inch diameter. The sizes for timbers given above are for Norway pine, Oregon pine or Eastern spruce. The rods should be made of



steel of a strength of about 60,000 pounds per square inch. It is understood that this truss is not to be made of a height less than that given above, and is to support all roof loads by means of purlins located at the joints of the upper chord as shown. The sizes given are for a flat roof of tin, sheet iron or composition and for a snow load of 16 pounds per square foot, which is equivalent to about 24 inches of light, dry snow. The lower chord is supposed to support a lath and plaster ceiling.

This is a good truss all right, but in speaking of flat roofs it is generally understood that they should have enough slope to shed the water freely. This should be not less than 3/8 inch to the foot. This building being 72 feet long should have a fall of 2 feet 3 inches. The trusses should all be of the same height and the pitch taken care of by building up on top of the trusses to give the required grade.

The dimensions given for the upper chord are not sufficient to allow placing the rafters spaced at equal intervals along the upper chord, as is done in some instances. This type of construction work needs a special calculation for the size of the upper chord of the truss.

EDITOR.



Will Some One Come to the Rescue?

To the Editor: Cache, Okla.

As a subscriber of your publications, I would like some expert information, as I have failed to find it elsewhere. It may be you thought any chump of a builder should know it, but as none of us know anything but what we have learned and sometimes we forget that, and we learn only what we have had an opportunity to learn. Now, I would like to know how best to flash around a dormer window in a tile roof with stucco on the side of the dormer. The window sill is above the tile in front. Also how to place the valley so that it will open onto the tile where the dormer roof joins the main roof? The eaves of the roof to be cased. What would be the shortest radius that would be practical for the easement, using 13-inch tile?

CHAS. B. JARVIS.

Jasbury Jasburies

To the Editor: Asbury Park, N. Y.

Now that I have the 4th of July spirit with all its noise and odor of punk and things, passed off into space, I shall try (between the parboiling agent, Mr. Sun, and land breeze mosquito visitations) to give vent to a few of my work-a-day feelings in the shape of wood workers tricks, stunts, kinks, short cuts, hot ones, etc.

Here's the one I shall call No. 1. Speaking about the new, up-to-date American manufacture of carpenters' tools, I have known many foreigners to work over here for a while and then go back (for a visit only). When they go back they most always take some of the modern tools with them, such as the Yankee screw driver, planes, saws and numerous other American tricks that would indicate the American kind, the more natty, *i. e.*, more skilled-like. Then I have known these "across men" to make their own planes; in fact I have done that thing myself.

I know one German cabinet maker who recently got a piece of maple, worked it into a fore plane, soaked it into boiling linseed oil; it then began to twist. He showed it to a shop-mate, who said: "I never saw a maple plane that was any good." The G. c. m. said: "That is true; but this one is beech." Then the argument. The German is near-sighted to a pitiful degree, having thought the maple "Beech." This man told me the part of Germany where he came from was known as the weak-eye province, he having bum eyes, was not obliged to join the army. This man, by the way, has made very many of his own tools. Handicapped as he is, you will see this near-sighted chap, with such a gob of home-made tools, get away with more work in 9 hours than some of the nickel plated boys can in twice the time.

As I was saying, I have seen men on the bench do a job as quickly as a man could set up the machine and do it. Then I have seen this case reversed; some old hard-headed geezer of the 1842 vintage of a cabinet maker would muss over a job on the bench when one of the machine men could have done it in a jiffy.

And as to rivalry or perhaps jealousy in a shop, every well-regulated shop has its fusses of this kind. Many jobs that go through a big shop during a month are to the outsider, very wonderful; and if the non woodworker makes a pleasing comment on it to the man who did it, he wags his tail so that a dust is kicked up which looks like a Kansas back yard, the morning after. Should the same man make the same comment to another workman about the same piece of work, this fellow would give a look that would resemble the sky when Vesuvius hurts her pet corn. All this goes to make up a day in a big shop.

The shop problem in this light is like a town which has a volunteer fire company. A certain amount of rivalry makes the department more efficient, but if the firemen let their rivalry get puss in it and develop into a *sore* quarrel, that is a step backward. So be it in the large shop, to keep the mechanics on the qui vive.

I am at present employed in a mill that has such a variety of mechanics that at night, when we turn out, it looks like one of these rice flake guns exploded, except we are not so much alike. One amusing thing about a cosmopolitan bunch like ours, is during election time. The politicians come around to pay us a friendly call, hand shake, and all that friendly greeting (?) that goes to make up a reinforced ward heeler. As they pass from man to man in the shop and hand out their bunk, the look on the faces of some of the men (the foreigners) is certainly well worth the price. Some of them think Mr. Politician a customs inspector, book agent, panhandler, bunco man, new boss, detective, etc., etc. It is amusing to hear them try to explain their impression of a poor, innocent (?) politician, but that is not all. After he has made his get-away, to see the look on "his" facade, well,

if he wasn't a dyed in the wool old rounder, he would hunt some loney spot and smoke a Pittsburgh stogie. So much for Mr. Politics.

Then there comes a time when some good meaning man starts a paper around the shop collecting money for the *family* of one of the men. Naturally one would think all hands would dive down in their pockets far enough to lose an arm, but not always so. There are some of the most decrepit excuses offered and some of the most cheerful givers. And when one of the bunch gets cut, which is not an uncommon thing in one of these institutions. some of the boys are as cold and clammy as a flounder, while others are so feminine-like, they assume the role of a red cross nurse. In fact, I saw a man shed tears on one of these occasions, so large and plentiful, he had to put his rubbers on to keep him from getting pneumonia in the wet. "Some tears." To study the makeup of a shop filled with men of all kinds is indeed worth the trouble to one interested in human nature and all woodworkers at that.

I want to say a few words about that human animal known as the apprentice boy, in another letter later.

WM. C. JASBURY.



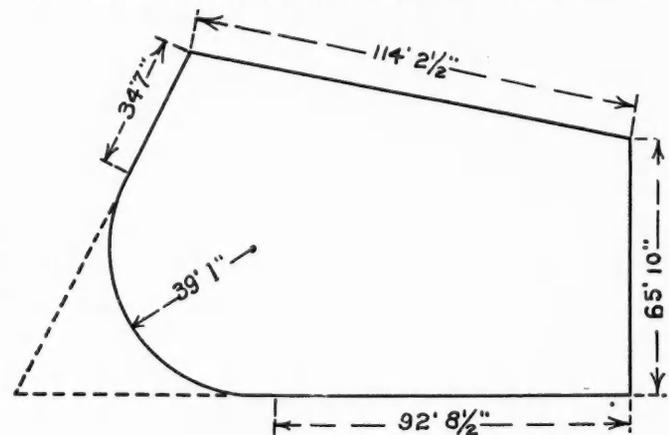
Inaccessible Point of Radius

To the Editor: Burlington, Iowa.

I have a problem on hand that might be interesting to the readers, anyway it is interesting me a great deal just at present. I have a lot that was at one time what is known as a sharp corner lot. The City took off a portion of this ground, leaving it a round corner, as shown by the diagram. What I want to know is how to get this circle, as where the center point is located a building now stands and therefore I cannot get at the center from which to strike the circle. Of course I can get this by striking a like circle in the open and from this make a pattern, but can this be done by the square, or otherwise? The sketch enclosed gives measurement as per plot; the radius is 39 feet 1 inch.

DUSTIN GILSON.

Answer: Yes, engineers have a way of figuring out curves



for railroad and other work, but for your problem you will find it more satisfactory to lay off, as you say, a part of a circle in the open and from that make a pattern, at least long enough to catch the bisecting line. By a little trying from the given points at the sides, locate the intersecting point on the center or bisecting line and the arc will be complete.

A. W. WOODS.

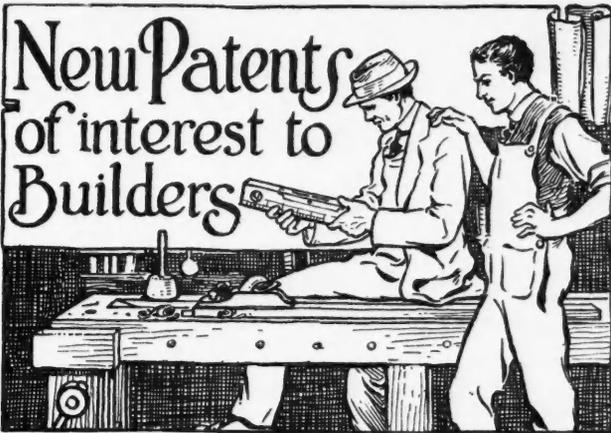


Wants to See Building Contract

To the Editor: Sardis, B. C., Can.

If it is in order I would like to see a form of building contract, say for an ordinary residence, in one of your future issues.

H. E. WALKER.



Conducted by **Watson & Boyden**
Patent Attorneys, Washington, D. C.

A Newel Post in 30 Seconds

"Impossible" you say. Not with a new machine that is now being marketed. It is possible to turn out round or square or octagonal table legs, chair parts, dresser and bed posts, piano trusses and pilasters in less time than it takes to tell about it.



Transformed in 30 Seconds

Five minutes and the mechanism of the machine is mastered. Slip in the square piece of timber and push the lever. B-z-z, whir-r-r and there is your newel post or whatever it is as neat and perfect as a pin. The machine cuts very smooth and the most delicate beads can be made with-

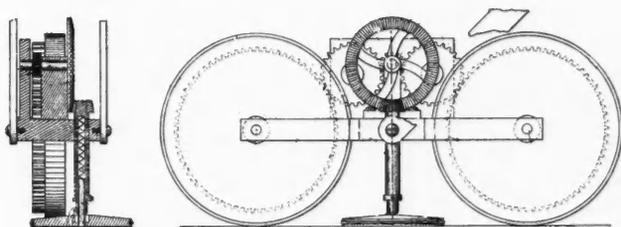
out tearing out or breaking off the corners. The machine is certainly a wonder. Can you see what possibilities it opens up for any machine woodworker?



Machine for Surfacing Wood Floors

1,039,983—Patented Oct. 1, 1912, by Arthur I. Maltby and Elbridge C. Doolittle, of Wallingford, Connecticut.

This invention relates to an improvement in machines for surfacing wood floors either by grinding with sand paper or other similar material, or by oil, wax or other substance used in finishing floors, the object of the invention being to produce a device by which the surface of the floor may be ground or polished in a convenient manner and with but little effort.

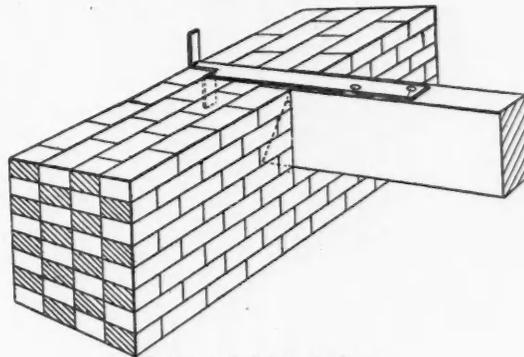


New Floor Surfacing Machine

Anchor for Building Construction

Patent 1,008,118. Patented Nov. 7, 1911, by Daniel O. Crilly, Chicago, Ill.

A really simple thing is this strip of metal with ends turned upward and downward to engage the brick work. The illustration will explain its use. It can be employed in stringing girders and placing joists.



Improved Joist Anchor

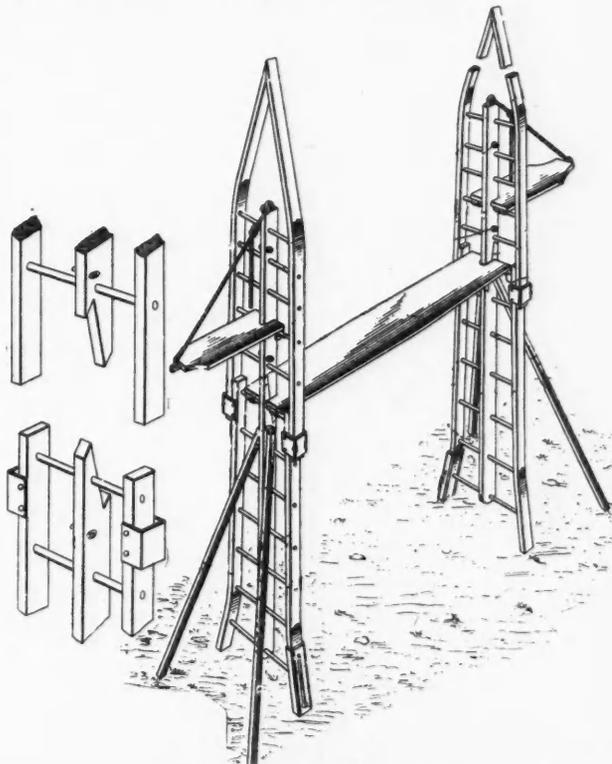


Portable Scaffold

1,043,172—Patented Nov. 5, 1912, by William H. Trew, of Edgewater, Colorado.

This invention relates to improvements in portable scaffolds, and more particularly in the construction of the ladders forming a part thereof.

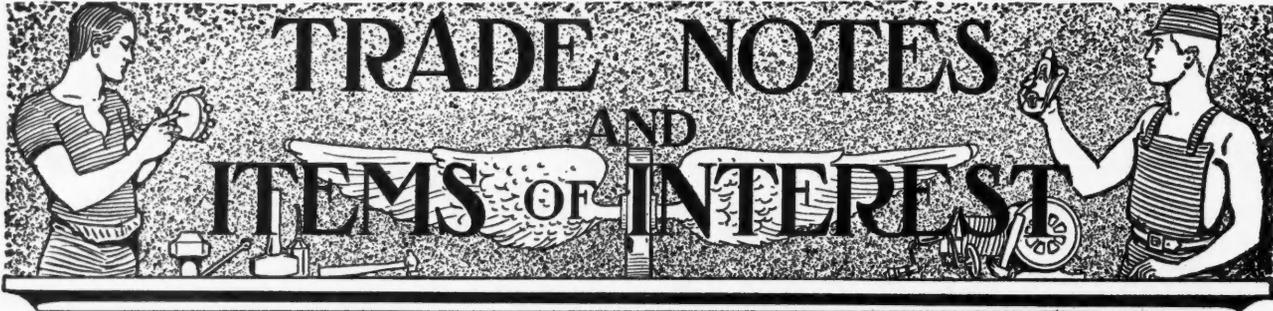
One object of the invention is to provide a scaffold having its supporting members in the form of extension ladders which, when not in use for forming a scaffold may be employed as ordinary ladders or as step-ladders.



Ingenious Portable Scaffold

Another object is to provide a scaffold of this character which will be simple, strong and durable in construction, efficient and reliable in operation and which is particularly adapted for use in picking fruit.

With these and other objects in view, the invention consists of certain novel features of construction, and the combination and arrangement of parts as illustrated.



Through this department the editors aim to keep builders, contractors, carpenters and architects in touch with what their friends, the manufacturers, are doing for them in new or improved tools and machinery, methods and materials—pertaining to building. Items for these columns must have real news value; they are offered here as interesting information for our readers; they are not advertising. No matter will be printed here simply because some advertiser wishes it. Likewise, no matter will be excluded simply because the article described is not advertised in this magazine. Suggestions for the betterment of this department are requested of our readers.

Wiping Out a Motor Truck Investment
By H. S. Daniels

Taking the operating cost of a three ton KisselKar Truck in the service of Henry Frerk Sons of Chicago, dealers in building material, as a basis, the Kissel Motor Car Company offer some interesting figures on the comparative expense of maintaining horses sufficient to deliver the same tonnage.

Henry Frerk Sons report the cost of maintaining and operating their truck for a period of 363 days. During this period the truck traveled 10,241 miles or an average of about 39 miles a day. The Frerks figure that it would take two teams and a single rig to haul an equal amount of tonnage the same distance in the same period of time.

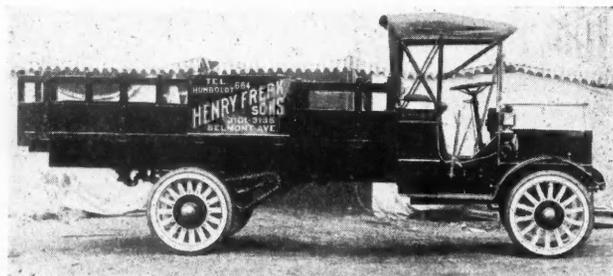
The average working year for horses or trucks consists of 312 days. Applying the Frerk figures to this period, and placing the initial investment at \$3,600, which allows for a 3 ton chassis, standard body and sundry equipment, the annual cost of operating the Frerk truck is set down as follows:

ANNUAL OPERATING COST OF A 3 TON TRUCK	
Interest on investment, 4%	\$ 144.00
Depreciation, 20%	720.00
Insurance (?)	110.00
Tires and repairs	443.04
Gasoline	496.18
Oil and grease	32.50
Drivers wages @ \$15 a week	780.00
	\$2,725.72

Against this is placed the cost of five good horses at the rather low figure of \$250 each or \$1,250, three wagons totaling \$550, three sets of harness \$140, and incidental purchases at \$100, a total investment in horse equipment of \$2,040:

ANNUAL OPERATING COST OF 2½ TEAMS.	
Interest on investment, 4%	\$ 81.60
Depreciation, horses, 10%	125.00
Depreciation, wagons, 10%	55.00
Depreciation, harness, 20%	28.00
Feeding and grooming horses @ 75c a day, each	1,370.75
Care of three wagons, 50c a day	182.50
Supplies, repairs, attendance	100.00
3 drivers at \$12 a week each	1,872.00
	\$3,813.85

\$3,813.85 less \$2,725.72 leaves a saving in favor of the truck of \$1,088.13. Thus the interest and \$944.00 of the purchase price is wiped off the books the first year. So, in this case, the entire investment would be saved in a little more than three years.



Three-Ton KisselKar in Use by Chicago Supply Concern

Some of these figures cannot be given with perfect accuracy on account of changing conditions. For instance, tires will cost nothing for the first 10,000 miles, as the truck comes equipped with tires guaranteed for that amount of service. Insurance is another fluctuating item and in our estimate we have included both fire and accident insurance. Depreciation on the truck is figured high and on the horse equipment low.

In addition to this there are these considerations: superior reliability of the truck, capacity for extra hours and service and a reduction of the element of chance. A horse is affected seriously by weather and road conditions. When you need him most on a very hot or a very cold day—when snow or mud is deep or roads slippery—it is either impossible or dangerous to drive him. Again he has to rest frequently—a motor truck never. A horse's working hours are limited—a motor truck's is unlimited.

A horse is liable to break a leg or die the day after you buy him. He is subject to more diseases than any living thing. A motor truck may be placed out of commission temporarily, but nothing vital can occur to it, except by collision or other accident, that is not covered by the manufacturers guarantee.

Customer-satisfaction through quicker and more prompt deliveries is another consideration that does not want to escape you, for that is an all-important element in any business.

There is a further element that must appeal to the business man who owns his own stables, especially in cities where land is valuable. It takes 50 square feet to house a horse standing still. Five horses will occupy, therefore, 250 square feet. For three wagons about 230 more square feet is required, or a total of 480 square feet. For turning radius, storage of feed, harness, blankets, etc., 240 more feet are required, bringing the amount of square feet to 720. A three ton KisselKar truck, on the other hand, occupies standing about 115 square feet of floor space and about 120 square feet for manipulation, a total of 235 square feet, as against 720 square feet occupied by its haulage equivalent in horse flesh. Rather astonishing to one who has never considered it, but here is a saving in housing expense of 485 square feet—some real estate.

In the above estimates I am using the Frerk figures while, as a matter of fact, there are three ton KisselKar trucks that are making a much lower maintenance expense. The Frerk truck travels in the streets of Chicago, mostly over cobblestone pavements, and is naturally hard on tires, is liable to more frequent repairs, and does not cover ground as quickly as trucks used in less congested territory.

Business men with any considerable amount of cartage may very profitably take the time to look into the items of horse haulage expense, not forgetting the important ones of wages, depreciation and real estate occupied, as well as general efficiency.

\$1210

**Buys Lumber,
Millwork, Hard-
ware and Paint
for this Beautiful
Bungalow**



House Plan No. 106

More Profit Per Job!

Note the low cost of Lumber and Millwork for this beautiful Bungalow and the fine 8-room Stucco House illustrated on this page. Thousands of carpenters and contractors are making a **bigger net profit on every job** than ever before by buying their building material **at wholesale prices** direct from our great Building Material Plant.

The contractor's extra profit on a single house bill averages from \$300 to \$500, and sometimes runs over \$1,000. **Isn't that worth while?** Here's the kind of letters we receive right along from contractors and builders:

Brownville, N. Y., May 25, 1912.
Gordon-Van Tine Company, Davenport, Iowa.
Gentlemen: I received shipment on the 22nd, all in fine condition. I was surprised at the good quality of the material in same. Saved \$600 on this deal and got better goods. DANIEL WOODWARD.

Lebanon, Neb., November 14, 1912.
Gordon-Van Tine Company, Davenport, Iowa.
Gentlemen: The material I have bought of you is just as represented. Has given the best of satisfaction, and your prices are the

cheapest I can find anywhere. I save about one-half on the millwork since I commenced ordering from you. D. A. McCARTY, Contractor and Builder.

Bogota, N. J., February 5, 1912.
Gordon-Van Tine Company, Davenport, Iowa.
Gentlemen: I am entirely satisfied with the material you furnished and I can safely recommend your firm to anyone wishing to save money and at the same time get the best of material. It was all that you recommended it to be. JOSEPH MALLON.

Fall Offers—Just Out—5,000 Bargains

Write at Once for Our Latest Quotations

We have at the present moment the largest and finest stock in the history of our business. Our Fall Quotations are on a bed-rock basis—offering to Contractors and Builders a sensational bargain opportunity.

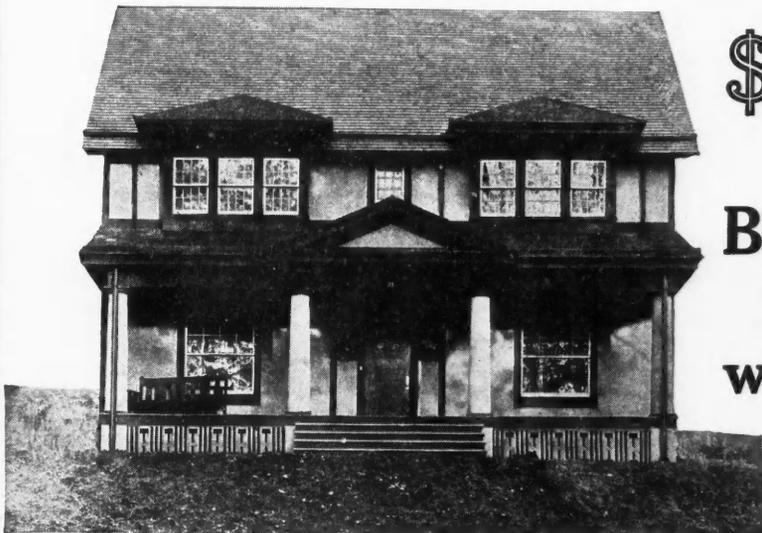
This stock includes everything that goes into a building—Sash, Doors, Lumber, Mouldings, Hardware, Paints and Oils, Mantels and Grates, Grilles and Colonnades, Stair Work, Porch Work, Finishing Lumber, Fancy Doors, Art Glass Windows, Cupboards, Built-in Sideboards, Ceiling, Flooring, Plaster Board, Roofing, Building Paper and the thousand-and-one items that go to make up a complete house.

We have unexcelled facilities for getting out special millwork at lowest prices, in double-quick time.

We guarantee quality, safe delivery and satisfaction.

We will be glad to refer you to contractors near you who have put Gordon-Van Tine Quality, Prices and Service to the test. Don't fail to write for new Fall Catalog, with latest price quotations.

Gordon-Van Tine Company, 659 Federal Street, Davenport, Iowa

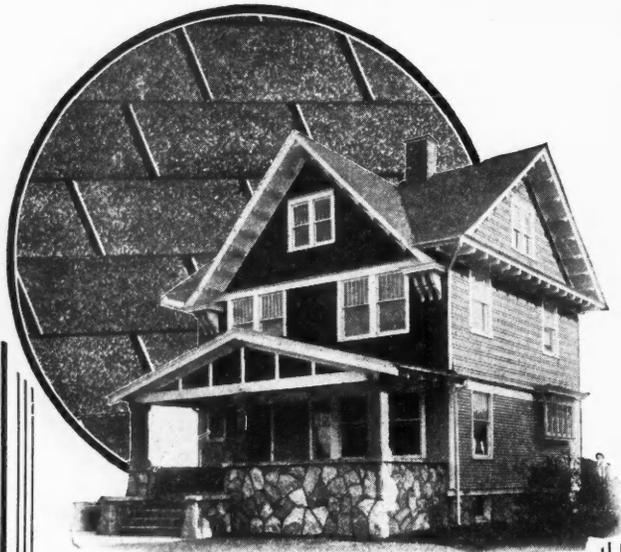


House Plan No. 124

\$1449

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Millwork, Hard-
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8-Room Stucco House**

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BEAUTIFUL HOUSES

From Illinois to Massachusetts
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REYNOLDS FLEXIBLE ASPHALT SHINGLES

A multitude of pretentious residences in a score of states are giving ample proof of the long-lasting surface of Reynolds Flexible Asphalt Shingles. Every type of modern home can be protected and beautified, at lower cost, with these time-tried, weather-tested shingles. They withstand the ravages of driving rain, pelting hail, hottest sun and heaviest snow without warping, cracking, splitting, curling or blowing off. Sparks cannot set them on fire. Long exposure cannot dull their rich color. Adaptable to every style of pitched roof, and make possible unusual architectural effects, such as roll edges, thatch effects and rounded corners.

Reynolds Asphalt Shingles

GUARANTEED for 10 Years

Will Last Many Years Longer

Rough-surfaced weather defiers made of crushed slate or granite securely embedded in pure asphalt. Natural colors of garnet, red or gray-green, which *never fade and never need painting*. We are the original makers of flexible asphalt slate shingles, and tested them for ten years before putting them on the market. Right here in Grand Rapids, where climatic changes are extreme, our shingles, after ten years' exposure to all kinds of weather, look as good as the day they were nailed on. They are uniform in size—8 inches by 12½ inches—and are laid 4 inches to the weather. Easily and quickly laid. Every far-seeing architect and builder should specify and use them.

Let us send you a booklet showing photographs of modern houses roofed with Reynolds Asphalt Shingles—signed opinions of owners are included. Also opinions of leading architects and builders.

WRITE FOR A COPY TO-DAY

H. M. REYNOLDS ASPHALT SHINGLE CO.

151 Grant St., West, Grand Rapids, Mich.

Established 1868

Improved Mitre Boxes

Improvements are being constantly made in carpenters' tools so why not improved mitre boxes? Perfect work means a whole lot to the carpenter but with the average mitre box it is not always possible to cut a slightly mitre.

In Fig. 1, we show a hardwood mitre box solidly constructed, the slots of which are accurately gauged. The irons are slotted where the screws pass through them so the space between can be adjusted to fit any thickness of saw blade. An ordinary cross cut saw as well as a back saw can

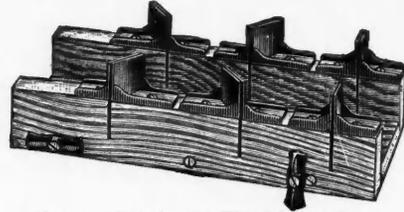


Fig. 1. Reinforced Wood Mitre Box

be used, for the blade cannot spring in this mitre box. And because the saw is held in a perfectly upright position, it will not cut the frame away. Turn buttons are provided which when placed vertically form a stop or catch when the mitre box is used on a table or bench.

In the second illustration is shown a steel mitre box with a swinging bar which can easily be placed at any desired angle. A board fastened to the bottom protects the saw teeth.

These are only two specimens of the improved mitre boxes. There are other styles and sizes to take work from 1½ inches by 3 inches up to 4 inches by 6 inches. Among other articles of interest to our readers are the power hack saw

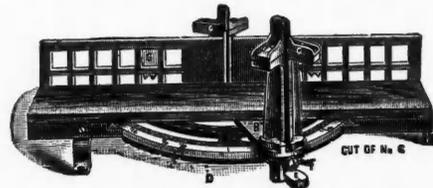


Fig. 2. Steel Mitre Box with Swinging Bar

machines, knife, tool and scissor grinders manufactured by the same concern—L. H. Olmsted's Son, Terrace Ave., Hasbrouck Heights, New Jersey. The catalog of this company will gladly tell you all you want to know about the articles they make.



Big Taxicab Sale by White Company

The biggest taxicab sale in years was announced by the White Company of Cleveland when a telegram was received from San Francisco reporting the signing of contracts for the purchase of sixty-three White taxicabs by the Taxicab Company of California.

The purchase was a result of the service rendered by a fleet of nineteen White taxicabs for twenty months during which they were subjected to the hardest kind of service in a city that is unrivaled in the severity of taxicab operation.

With the added equipment the Taxicab Company of California will have a completely standardized installation of 82 White taxicabs. In addition to buying cabs, the company placed an order for five White six-cylinder, 60-horsepower, seven-passenger touring cars.



Neponset Proslate Roofing

This is a colored roofing manufactured by Bird & Son, East Walpole, Mass. It is especially intended for cottages, club houses, garages and other buildings which require an artistic roofing. This roofing is furnished in plain red, plain green and in red hexagonal pattern. It not only makes

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Better Lumber

At 40% to 60% Saving

Read that heading again. *Better lumber at 40% to 60% saving!* Think what that means to you, Mr. American Carpenter and Builder! It means you can underbid competing bidders—then give your customers a better grade of lumber and millwork than the other men could give at the higher figure. Can't you see what an increase in your business and your profit must follow such an ideal arrangement for getting your materials? There is no secret nor magic to our ability to give you low prices.

We sell you direct—from six big mills supplied with lumber from our own forests

Our forests cover thousands of acres. Comprise some of the choicest timber in the famous Puget Sound region. We do all our own cutting, logging, hauling. Own and operate our own logging railroads and six big mills. Our daily output is 20 to 30 carloads of highest quality lumber and millwork. Not one middleman gets a penny of profit. You buy at our mill price and that price is the cost of the producer plus just one profit.

Everything for building—complete. Quick delivery anywhere in U. S.

No matter where you do business or for what purposes you want lumber and millwork, we can supply you and get your shipment to you quickly from our six mills in the west and two eastern mills—one in St. Louis, one near Shreveport, La. Seattle has 7 railroads, St. Louis, 26; Shreveport, 8.

Quality and satisfaction guaranteed

We back every shipment of materials from the West with the guarantee that it will grade better than trust or combine standards. Our yellow pine is manufactured in strict accordance with the Yellow Pine Manufacturers' Association grading rules.

One estimate will convince you

We handle everything for building, complete. Send us your complete lists or schedules for the work on which you are figuring. See what a big saving we can make you and how much bigger profit we put you in the way of getting. Send lists or schedules today. Use the coupon, at any rate.



Is yours a farming neighborhood?

If so, here's a big chance for making some good profit. We furnish complete, the finest silo in America. Staves are one piece clear fir. No sap or knots. The choicest stock.

The swinging doors are a new invention. All the adjusting of the hoops can be done from ladder which is formed by the iron door bars. A great idea which makes the biggest kind of a hit with farmers.

Make a lot of money with Seattle Silos

Our prices on the staves are so low, especially if you get them with a carload of other materials that you can make an exceedingly low price on a silo including your services in erecting.

Write for our proposition on silos—then get out a letter to the farmers who are likely prospects and you'll get orders.

Write for special Silo folder and information today

Hewitt-Lea-Funck Co.

408 Crary Bldg., Seattle, Wash.

Kindly send following, with price list:

- Catalog of lumber and millwork.
- Special silo folder.

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very handsome roofs but also affords positive fire protection for the building it covers as this material is fire resisting.

Neponset Proslate is of the same quality as Neponset Paroid which has been one of the standard ready roofings in every part of the world ever since ready roofings were first introduced.

Besides being suited for the buildings mentioned above, Neponset Proslate Roofing is also used specially on porch and veranda roofs which are too flat for shingles.



New Low Angle Plane

A new Self-Setting-lowest angle, iron block plane was patented April 15, 1913 by John P. Gage of the Gage Tool Co., of Vineland, N. J., who have been for more than a quarter of a century making the celebrated self-setting bench planes, (which have been advertised continuously in every issue of this paper), and who will also manufacture this new block plane.

It is claimed by the Gage Tool Co., that the cut iron of this Self-Setting block Plane lies at a lower angle than any other and that it has all of the many advantages possessed by their Self-Setting bench planes so favorably known by schools and best mechanics.



Tiger's Head in Veneer

A curiosity which aroused much interest in Boston some months ago is a portrait of a tiger in the natural markings of veneer, which was displayed in the window of the Derby Desk Company. The find, or discovery, is credited to W. F. Wholey, of the sales force of that company. Mr. Wholey has been with the concern a number of years and started in to learn the business "from the ground up." While in the factory he caught sight of one piece of veneer which showed one-half of a tiger's head. It was a long search to find the



Portrait of a Tiger in Natural Wood Grain

duplicate; in fact, the perfectly symmetrical veneer could not be found, but a near-duplicate was discovered and the two pieces were mounted, finished and placed in the window, where it attracted much attention as a freak of nature.

STAR Ventilators



Fire Retarding Damper Showing Open

THE BEST AND MOST USED

Experience and the public demand show that STAR Ventilators are the most efficient ventilators made—most modern, most durable, highest speed exhaust and absolutely stormproof.

The illustration shows the STAR Fire retarding Model with damper open. In case of fire the fusible link parts permitting the damper to close automatically, thus preventing an upward draft from fanning the flames.

STAR Ventilators are made in the Standard Stationary Type (Glass or Metal Top) and the Standard Fire Retarding Type (Glass or Metal Top). Sizes to suit all purposes. Made in copper and galvanized iron.

Write for instructive ventilation booklet

COPMETL OLD STYLE ROOFING TIN



THE PROOF OF SUPERIORITY

Tests have demonstrated the unquestionable superiority of COPMETL Old Style Roofing Tin. The upper portion of the illustration shows a roof of regular corrugated steel almost decomposed. The lower portion is of COPMETL in practically the same condition as the day it was laid. Both Sections are of No. 27 Standard Gauge and were laid simultaneously.

The superiority of COPMETL Old Style Roofing Tin lies in its base being scientifically alloyed with copper which is then manufactured into the finished product by our famous Special Palm Oil Process.

We will gladly furnish samples and descriptive matter on COPMETL and likewise Merchant's Old Method (the standard of excellence in highest grade roofing tins for a generation) and our other brands. Send for samples and prices.

Fire Prevention Engineering—Complete Automatic Sprinkler and Standpipe Systems

MERCHANT & EVANS COMPANY



PHILADELPHIA
CLEVELAND

NEW YORK
CHICAGO

BROOKLYN
KANSAS CITY

BALTIMORE
WHEELING



Works: PHILADELPHIA, WHEELING AND CHICAGO

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

=== NATURE MARKS ===

Arkansas Soft Pine

With

INIMITATABLE FIGURE

Beautiful, varied, pleasing, harmonious. The figure is not a monotonous design. Some of it is freaky, some of it might be called normal but every piece is different from every other piece.

Reproduced in connection herewith are two samples from photographs that were not retouched.

Desirability of figure is not Arkansas Soft Pine's only claim for recognition. Coupled therewith is uniformity of texture which makes possible its easy and smooth working by hand or machine and either agent will produce a satin-like surface.

Retail Lumbermen, your own local dealer, can furnish stock or special patterns of casing, base, mouldings, door and window jambs and other planing mill products including dressed lumber for outside trim.

It is highly important that this stock come from one of our group of eleven mills, for that is a guaranty of quality to which every user of Arkansas Soft Pine is entitled.

Ask your dealer this pertinent question: "from whom do you buy your Arkansas Soft Pine?"

In your behalf:

Because of the widespread interest in our product and the impossibility of handling inquiries addressed to the several companies in a satisfactory manner we have opened a central bureau of information through which we desire to co-operate with those who believe good buildings can be made with good materials. Address all future inquiries to

ARKANSAS SOFT PINE

308 South Canal Street

:::

Chicago, Ill.



You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



Guaranteed Tools for Carpenters

P. S. & W. Carpenters' Tools have nearly a century of manufacturing ability, experience and progress back of them.

They include the largest and best lines of braces, auger bits, steel squares, chisels, gouges, drawing-knives, pliers, etc., etc.

These and other P. S. & W. Lines have become the largest in their respective fields, because of the confidence of hundreds of thousands of mechanics in the guarantee of excellence that goes with

"The MARK of the MAKER"

Send for valuable free book, the "Mechanics' Handy List" Describes over 200 tools; 35 pages of handy reference tables.

The Peck, Stow & Wilcox Co.

Mfrs. of the Largest Line of Mechanics' Hand-Tools Offered by Any Maker

Southington, Conn. New York, N. Y. Cleveland, Ohio
Address correspondence, 22 Murray St., New York City

A Book for Your Library

It is quite impossible to give you in a few words an adequate idea of what a valuable book "Kahn System Standards" is. This book, now in its fifth edition, has been revised and added to and is recognized by engineers, architects and builders as an authority on reinforced concrete. Many universities and technical schools also use it.

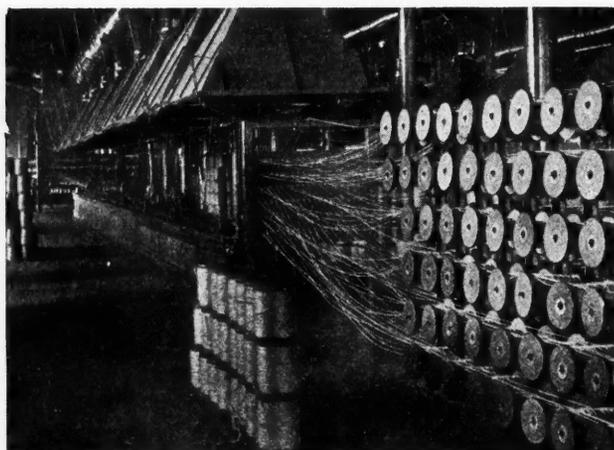
The volume contains 127 pages of specifications and theory of reinforced concrete, illustrations of floor and ceiling construction besides tables in relation to every phase of reinforced concrete construction. It is freely illustrated and we are sure that you will consider it a welcome addition to your library of building books. As the edition is limited you had better send for your copy at once. "Kahn System Standards" is sent free to builders by the Trussed Concrete Steel Co., 344 Trussed Concrete Bldg., Detroit, Mich.



How Lath Yarn is Tared

The production of tarred rope is an important branch of the rope making industry, although of course not as important as when extensively used as tarred rigging on ship-board. One class of tarred rope—lath yarn—is consumed in quantities that surprise those not close to the lumber industry. The method of impregnating the yarn with tar is described in the "Plymouth Products" as follows:

"To penetrate and adhere to the yarn the tar must be heated to 200° or over. This is begun in tanks from which the liquid feeds into the long copper-lined troughs, where the tarring takes place. Through these 'coppers,' so called, run steam pipes to further regulate the temperature. Excessive heating would cause the loss of the tar's good qualities and to prevent this the supply in the 'coppers' must be freshened frequently.



Saturating Lath Yarn with Tar at Plymouth Cordage Works

"As the yarns, heavily saturated with tar, come from the 'copper' they are compressed between two rollers, adjusted to leave in the yarn as much or as little tar as needed for the particular goods being made and to turn back the surplus.

"The pull which carries the yarn through the tar and between the rollers comes from two large drums around which the yarns travel preparatory to reeling onto the friction-driven receiving bobbins."

Visitors to the Plymouth Cordage Co.'s tar house frequently remark upon the rich golden brown of the tarred goods. Those who use and sell them have come to look upon that color—an outward sign of right materials and methods—as the Plymouth mark of the weather resisting qualities contained in the goods.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Run this adv. in Carpenters, Builders, as it stands - they'll appreciate it even better than the general public - G.E.W. (Note below)

WHO SAID ALL THIS ABOUT CYPRESS?

"THE WOOD ETERNAL" "THE WOOD ETERNAL"

(Here's a part of the good things they said:)

"CYPRESS is put to almost every use as an interior trim for houses.....natural color or stained.....contains little resin.....thus affords a GOOD SURFACE FOR PAINT, WHICH IT HOLDS WELL..... popular.....for kitchens, where it is subjected to dampness and heat..... shrinks, swells or warps but little..... For the parts of houses exposed to the weather it serves equally well. AS SIDING IT PRACTICALLY WEARS OUT BEFORE IT DECAYS.....made into porch columns it retains its shape, holds paint, and has sufficient strength.....It is placed as cornice, gutters, blinds.....and railing, and is much used for Porch Floors and steps..... Much CYPRESS lumber is employed in the construction of SILOS..... The FARMER puts the wood to many uses.....ITS LASTING PROPERTIES FIT IT WELL for curbs..... Resistance to decay fits it for stable floors and timbers near the ground, as well as for..... gates, and especially for fence posts.....one of the best available woods for picket fences, because it shows paint well and holds it for many years, but lasts a long time without it.....widely used for this purpose.....in regions remote from its range..... It is PRE-EMINENTLY FITTED for (greenhouse construction).....where it is called upon to resist dampness, excessive heat, and all the elements that hasten decay.....sash, frames, benches, boxes, and practically all else.....the builder needs.....Agricultural implement manufacturers make seed boxes of it, wagon makers.....for beds.....carriage builders and automobile makers work it into panels for fine bodies..... Its slight tendency to warp has caused its employment for incubators.....freight-car siding.....many builders of gasoline launches are said to be using Cypress exclusively for hull planking.....makes handsome church pews.....Telephone boxes and switchboards of CYPRESS are coming into use.....spools.....beehives;.....seine floats;.....tables.....curtain poles;patterns;.....shelving and counter tops;.....shims;.....tool boxes. CYPRESS has been substituted for white oak for wine barrels....The same....freedom from taste is claimed for it by pump makers, who recommend it for that reason," (etc.)

(Here's who said it—) a reprint from:

U. S. GOVT. REP., Bulletin 95, June 30, 1911, pp. 44-46.



WHEN YOU BUILD (palace, cottage or pasture fence) Why not "Stop Depreciation Before it Begins— Use CYPRESS At First!"



WHEN "FIXING UP" (big new porch or little back steps) "Why Replace Rotten Wood with Wood that Will Rot?" (Use CYPRESS, of course.)

WRITE TODAY for VOLUME ONE of the CYPRESS POCKET LIBRARY, with Full Text of OFFICIAL GOVT. REPT. Also Full List of 37 Other Volumes. (FREE on request.)

Let our "ALL ROUND HELPS DEPARTMENT" help YOU. Our entire resources are at your service with Reliable Counsel SOUTHERN CYPRESS MANUFACTURERS' ASSOCIATION 1216 HIBERNIA BANK BUILDING, NEW ORLEANS, LA.

INSIST ON CYPRESS AT YOUR LOCAL DEALER'S. IF HE HASN'T IT, LET US KNOW IMMEDIATELY.

The best Carpenters are more and more favoring Cypress because it is easy to work, easy on edged tools and is such a laster that owners are pleased, and that's a good thing for the reputation of the builder who "put him wise" - G.E.W.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

New Tannewitz Woodworker

The "Tannewitz" Type "C" Woodworker is shown here with having a hollow chisel mortiser attachment in place of the boring attachment. This is valuable to carpenter and screen door shops for the mortises as well as the tenons can now be readily turned out on this machine. A dado head mounted on the saw arbor and set to project thru the

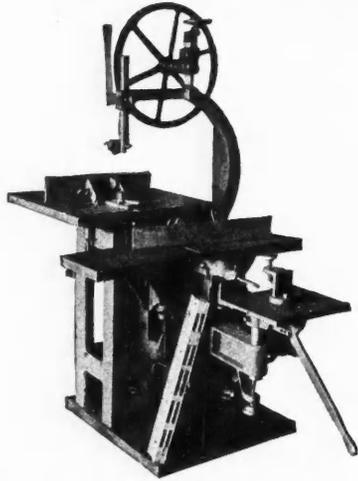


table the desired height is just the thing for quickly cutting tenons.

The additional machines furnished together with a saw bench and a mortising attachment are the band saw and the hand planer. The band saw is a regular 20-inch size and will take 11 inches under the guide. The table will permit of tilting for bevel band sawing. The band saw arm will swing to one side at the convenience of the operator to permit

wide ripping on the saw bench. The planer is an 8-inch machine with the tables so constructed that grooving and moulding can easily be done. The moulding knives bolt on the cylinder and pressure springs are used to hold the stock down while passing over the knives.

A solid cast iron machine such as this can be had at a reasonable price, with a slight extra charge for the hollow chisel attachment. The makers allow a thirty day trial privilege to prove the great value of this machine. Write The Tannewitz Works, Grand Rapids, Mich., for further information regarding trial privilege.



Diuguid with Canton Concern

Mr. M. Diuguid, formerly of the Diuguid, Noel, Hardware Co., of Lynchburg, Va., is the latest addition to the sales force of The Canton Art Metal Co., and expects to cover North Carolina, South Carolina, and a part of Virginia. He has had considerable experience in the shop and on the road and has a wide circle of friends in the territories mentioned.



Large Belt Conveyor Installed

The Dow Wire & Iron Works, Louisville, Ky., have just completed the installation of a very efficient conveyor system for the Stitzel Distillery Company of that city.

This conveyor will be used for unloading cars of grain and coal. The coal falls from the cars into a large sheet iron hopper. From the hopper a belt conveyor 60 feet long carries the coal to another running at right angles to the first. This conveyor, 90 feet in length, extends through the distillery to the boiler house. It is figured that this system will save a great deal of time in unloading the cars.

Prevent Cold Water Pipes Sweating

Careful consideration should be given to the proper insulation of Cold Water Pipes. In high class Office Buildings, Apartment Houses, Hotels, and similar buildings, considerable damage results to plaster, furnishings, etc., through condensation dripping from unprotected pipes.

J-M Wire-Stitched Anti-Sweat Pipe Covering

is the most economical and efficient insulation for the purpose. It is made of alternate layers of waterproof and insulating felts, so that the covering cannot become water soaked through leaky joints and lose its efficiency. It positively prevents sweating.

Cold Water Drinking Systems

J-M Anti-Sweat Pipe Covering 1 inch thick is being specified generally, for insulating cold water drinking systems. It can be depended upon for satisfactory results.

Write nearest Branch for Booklet

H. W. JOHNS-MANVILLE Co.

MANUFACTURERS OF ASBESTOS
AND MAGNESIA PRODUCTS

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THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED Toronto Montreal Winnipeg Vancouver 1412

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Free

Helps To Better Business

For Contractor—Builder—Wood Finisher

THIS Dollar Portfolio of Wood Panels and Instruction Book are two fine examples of the Johnson Service—we offer them free and postpaid—send the coupon today.

The Portfolio shows the beautiful effects obtainable with Johnson's Artistic Wood Finishes on oak, pine, cypress, birch, gum, etc. With it you can show your clients just how their work will look when finished the Johnson way.

The book gives full instructions for finishing all wood—soft or hard; covering capacities, prices, etc.

Johnson's Wood Dye

penetrates deeply, coloring the wood permanently—it dries quickly without a lap or streak. Made in seventeen popular shades, all of which can easily be lightened or darkened.

Johnson's Prepared Wax

imparts a velvety, protecting finish which will not chip, mar or scratch.

Fill out the coupon and mail to us TODAY. The Portfolio and Book will be sent promptly—free and postpaid—you are placed under no obligation whatever.

S. C. Johnson & Son Racine, Wisconsin
"The Wood Finishing Authorities"

S. C. Johnson & Son, Racine, Wis. Value \$1.25—FREE

Please send me, free, your \$1.00 Portfolio of Wood Panels with specifications and instructions, also your 1913 Book—BOTH FREE

Name _____

Address _____

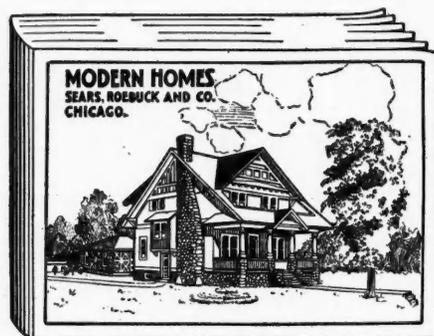
My Dealer's Name _____

His Address _____

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Get Our New Also our Book of Modern -See for yourself how much we save you on the Best Lumber Milled!

WRITE FOR OUR
BOOK OF MODERN HOMES.



SAVED \$500.00. MATERIAL FIRST CLASS.

Box No. 6, Ossining, N. Y.
Sears, Roebuck and Co., Chicago, Ill.
Gentlemen:—I consider that I have saved about \$500.00 by purchasing the materials for my new house from you, and take pleasure in recommending Sears, Roebuck and Co. to anyone intending to build.
Very truly yours, SAMUEL T. DAVIS.



SAVED NEARLY \$700.00. MATERIAL AWAY ABOVE THE AVERAGE.

Evansville, Ind.
Sears, Roebuck and Co., Chicago, Ill.
Gentlemen:—I wish to state that I am extremely well pleased not only with the plans and material furnished but with the way in which you handled this order. I will further add that I feel satisfied I saved anywhere from \$500.00 to \$700.00 by buying from you.
Very truly yours, F. N. HILLS.

**East and West We Ship
Complete Houses Daily**

Get Our Price on a Complete House!

Any shrewd lumber buyer can easily understand why we are in a position to undersell anyone else on lumber and mill work.

First of all, we buy raw lumber direct from the greatest timber tracts in America.

Second, our mills are located right in the heart of the yellow pine districts.

Third, we buy and sell in immense quantities. Competition is keen among forest owners to secure our immense business. We secure every possible discount—we pay spot cash.

Fourth, we sell direct to the consumer. You pay for lumber and mill work alone—not three or four extra profits.

Fifth, you buy in any quantity—a bundle of shingles or a trainload assortment.

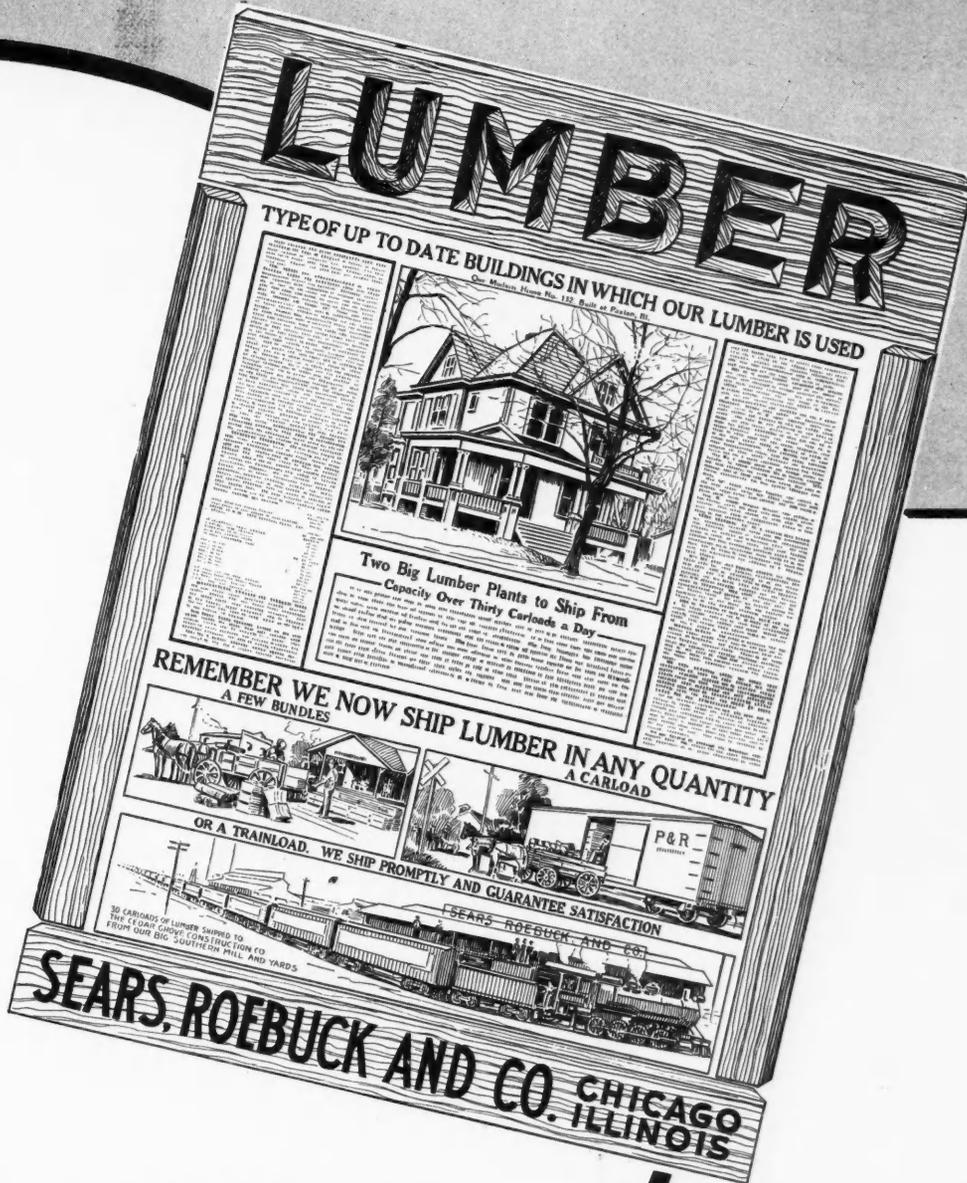
Sixth, we sell 1st grade, 2d grade and 3d grade, and *call them by their right grades*. No one ever bought second grade lumber from us under the impression that it was first grade.

Seventh, you are dealing with Sears, Roebuck and Co., the largest mercantile establishment in the world.

Our guarantee makes your satisfaction absolutely certain—either with the merchandise you purchase or by our returning your money on request.

**Sears, Roebuck
Chicago,**

Lumber List Homes and Millwork Catalog



Mail
Coupon
or a
Postal
Today

You cannot afford to buy lumber or mill work in any quantity until you first see our new Lumber List and Mill Work Catalog. You will be amazed at the savings we make for our customers. With the book we send proof positive—absolute evidence—showing what we have saved for hundreds of others. Mail the coupon or a postal card now. Please request Lumber List No. 56A12.

and Company
Illinois

56A12

SEARS, ROEBUCK AND CO.,
CHICAGO.

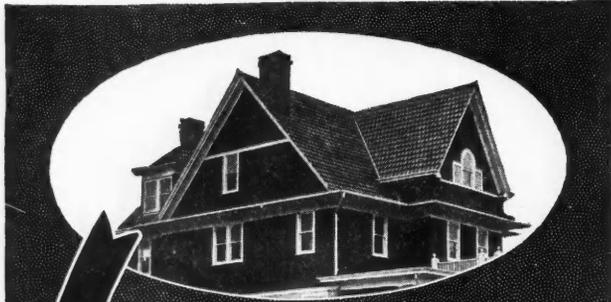
Please send me the books I have checked below.

Lumber List Mill Work Modern Homes

Name _____

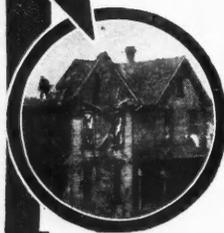
Address _____

City _____ State _____



Roof Fires Must Stop!

Safety Engineering reports five recent fires, aggregating a loss of \$150,000, due to sparks on *wood shingle roofs!*



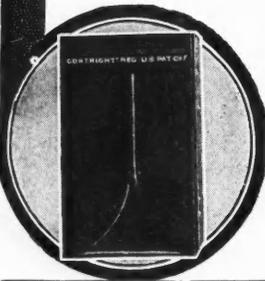
Each one of these fires could have been prevented with

CORTRIGHT Metal Shingles

"The Permanent Roofing"

These shingles are fitted for every purpose for which stone, slate, or wood shingles are now used, and *fitted better*. Fire-proof, stormproof, wearproof. Cortright Metal Shingles last as long as the building and never need repairs.

Take a minute right now to send a postcard or the coupon, for our free book, "Concerning That Roof."



Cortright Metal Roofing Company

PHILADELPHIA CHICAGO

CLIP, SIGN and RETURN

Gentlemen: Send me your free book, "Concerning That Roof."

Name

Address

City..... State.....

A.C.B.-8-13.

"Red Devil" Glass Cutter

The "Red Devil" Tool Factory, manufacturers of "Red Devil" glaziers' tools and drop forged tools, have brought out a new and improved self-oiling glass cutter with turret head.

The oiling device shown in this little tool is behind the six wheels.

Unlike other glass cutters of this type they use a very hard tempered pinion so that the wheels run uniform and true. This can be adjusted to use either 1, 2, 3, 4, 5, 6, thereby getting the full benefit of the service of all wheels.

The frame is so designed that it protects the wheels and prevents them from coming in contact with moisture.

The manufacturers of "Red Devil" tools have adopted the



New Improved Self-Oiling Glass Cutter

scientific handle, which is universally used in their glass cutters.

It might not be amiss to state that we are informed by the manufacturers that upwards of two and one-half million "Red Devil" glaziers' tools are sold annually. These are shipped to every country on the globe.

These are packed in special prepared paraffine paper, a dozen in a box.

Any one interested in this tool will confer a favor by mentioning this paper and writing to the manufacturers direct.

The tool is beautifully finished having a solid steel head (not cast iron) coppered and nickeled.

We are informed by the manufacturers that they use the highest class "Red Devil" hand honed wheels that they produce in this tool. This has made the "Red Devil" wheel famous, in fact, we believe their slogan is, "It's all in the Wheel."



How to Give the Best Edge to a Chisel or Plane Bit

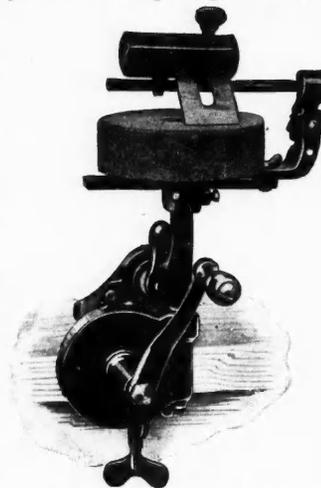
Every carpenter knows that the best edge can be given to a chisel and plane bit by sharpening on a hone and giving the tool a circular motion, as it is being sharpened. Luther's plane bit Sharpening and Honing Attachment gives just this

sort of an edge, absolutely perfect and in a twentieth of the time it takes to do it on a hone.

The chisel and plane bit is held rigidly in a clamp and is moved back and forth across the side face of the wheel. This insures a perfect angle and a perfectly smooth edge for the wheel. The wheel is run in a horizontal plane. The Best Maide type of machines have a double grit wheel, the side face of the wheel on which the hone runs being extra fine for finishing purposes.

This same attachment can also be used on the round

face of the wheel and the machine clamped into the horizontal position. This gives an even edge, but one that is slightly hollow-ground. Whichever kind of an edge is preferred, that is either a perfectly straight edge or a hollow-ground edge, can be given with this new honing attachment. It will fit only on Luther Grinders of the Best Maide Type.



Grinder for Chisel and Plane Sharpening

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Wherever There's a Floor—

to be finished RIGHT you should use a

PEERLESS FLOOR SURFACER

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Peerless Floor Surfacing Machine Co.,
Oshkosh, Wisconsin.

The work done by your machine, surfacing the large floor, 7,800 square feet, at the new DREAMLAND dancing pavilion, is highly satisfactory,—the best ever. You have made of the floor the finest, highly-finished and most perfect dancing surface known. Your machine is also ideal for new or old floors in homes, being practically dustless with vacuum attachment.

PROF. A. C. WIRTH, Mgr. Dreamland.

HIGHLY SATISFACTORY RESULTS

Everyone who has used the PEERLESS FLOOR SURFACER, or who has seen the work done by it, is delighted with the results. Here is a real surfacer that will remove paint, varnish, grease or oil from any floor. It will even up the rough places and work as close to the baseboard as you wish. The finished floor will be as smooth and even as glass. PEERLESS SURFACERS do neat and well finished jobs. The Vacuum Dust Collector on the PEERLESS enables the operator to do work in the finest homes without pictures and draperies having to be removed.

PEERLESS machines are furnished for 110-volt direct current, or we will furnish a machine to meet the requirements of your power plant. Portable outfits are supplied to those living in places where no electric current can be had.

A PEERLESS FLOOR SURFACER is a steady source of income. We can show you figures to prove the average earnings of a PEERLESS are TEN DOLLARS a day net.

Write now for further particulars and price.

Peerless Floor Surfacing Mach. Co., Oshkosh, Wis.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

A Time Lock for Carpenters' Chest

Every office and home has need of a "strong box" for the safe keeping of private papers, letters, contracts, mortgages, jewelry and other valuables. Consequently many will find the treasure box shown here, a great boon.

This box is really a little safety deposit vault. It is made of extra heavy tin plate steel nicely japanned inside and out. The lid, securely braced and hinged, overlaps the box and is provided with a flush handle. A brass time lock which



Strong Box with Combination Lock—Carpenters are Also Putting These Locks on their Chests

is both rust and dust proof is the really great feature of this box. There are no keys to be lost, mislaid or duplicated and the box can be opened only by the owner who is in possession of the combination. This combination is a secret and can be changed when desired.

These time locks may also be bought separately. Many carpenters are putting them on their tool chests thus thwarting tool thieves.

The Miller Lock Co., Frankford, Philadelphia, Pa., will tell you all about these locks and quote a reasonable price if you write them.

The Oshkosh "Four-Way" Mixer

By thorough mixing, mechanical simplicity, and economy of operating power—the prime essentials in a good concrete mixer—the Oshkosh "Four-Way" Mixer seems to have elicited unusual attention of late. Consequently, for the benefit of those interested in mixers, we have secured data in regard to the more striking features of this mixer.

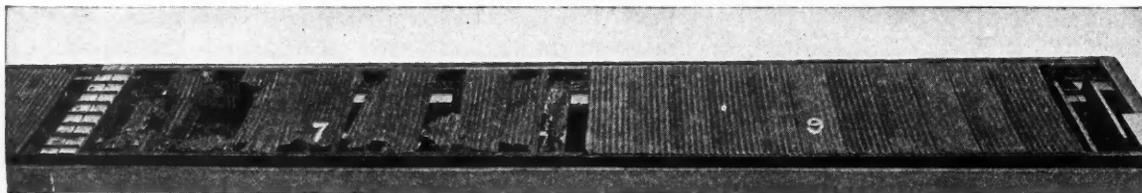
The quadruple or "Four-Way" mix is described in their literature thus: "As the material enters the drum, it is rolled, or folded, by the rounded corners of the drum-heads. It is then forced toward the vortex by the shape of the transverse blades, and the portion that is above the height of the blade falls or flows over it to the bottom of the drum. The best mixed concrete is next hoisted to the upper part of the drum and allowed to fall onto the drum, where, striking the discharge chute, it is baffled over to the charging side, ready to be put through the same series of motions again." In this way, at each drum revolution, the entire batch is turned, poured, kneaded and flowed. All of this takes place in such an amazingly short time that one perfectly-mixed batch of concrete is turned out every forty or fifty minutes, the manufacturers say.

The drum is made of semi-steel, in two sections, bolted together at the flange on a machined joint. Attached to this joint, in the center of the drum, is the sprocket ring; but, unlike the ordinary ring, this one is in segments. The wisdom of this is plain, for, should some unforeseen accident occur to this ring, instead of breaking the entire ring, only a small segment would be damaged. This could be replaced at small cost and with little loss of time. To make the change, it is only necessary to remove a couple of cap-screws. Such a sprocket ring, it is said, is a big money saver for the mixer user.

Another feature that reduces repair bills and increases

Mr. Roofer and Builder—

"It is a condition and not a theory that now confronts you"



Steel without Copper (black—uncoated)

Same Steel with Copper (black—uncoated)

Copper Bearing Steel is beyond the theoretical stage

The above illustration is but one from a series of actual *service* tests which prove this assertion. Our booklet "Copper in Steel—the influence on Corrosion" sets forth the facts in an interesting and convincing manner. All buyers and users of roofing should read it.

We Use Copper Bearing Open Hearth Steel Exclusively for Roofing Tin.

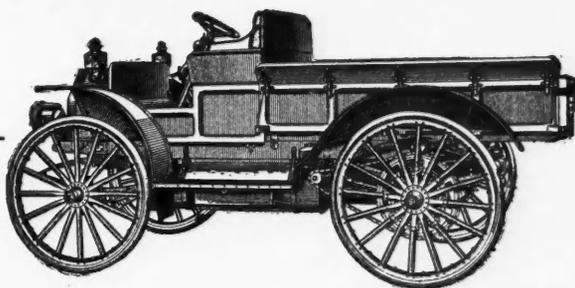
It is to your interest to insist upon having plates that bear the stamp "C. B. OPEN HEARTH" in addition to the brand and weight of coating. Write for full information on our Tin and Terne Plates, Apollo Best Bloom Galvanized Sheets, Corrugated Sheets, Roofing and Siding Products, Etc.

American Sheet and Tin Plate Company
General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES:

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis
Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City
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You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



Take a Second Look at This Truck

THE International Motor Truck meets the need of carpenters, contractors and builders everywhere. It reduces the expense of delivering supplies. It shortens the time required for making trips with tools or equipment. It increases by one hundred to two hundred per cent the amount of light hauling that can be done in a given time. It easily takes the place of two single wagons, and of three or four where the average haul is a mile or more.

The International Motor Truck

is powerful and has road clearance enough to travel anywhere that horses can go. It is ready to work twenty-four hours a day if necessary, and will do as much work in the last hour as in the first. If worn, or injured by accident, it is easily repaired and made as good as new.

An International Motor Truck may be the means of largely increasing your present business. At any rate it costs you nothing to find out what it will do for you. A post card brings catalogue and full particulars. Write to us.

INTERNATIONAL HARVESTER COMPANY OF AMERICA
70 Harvester Building (Incorporated) CHICAGO

Smoke is Unburned Carbon

And Carbon is "the stuff that burns and makes heat."

So, every time you see smoke sailing grimly from the top of a stack think about poor "Mr.-Man-to-man-who-pays-the-bills". He is spending money to help turn his city black.

KEWANEE Smokeless Firebox Boilers

Get the maximum of heat from the coal.

They take from the coal—and turn it into heat—20% more of the heat giving carbon than ordinary boilers. Tests made prove this.

Let us send copies of tests made. We will do so gladly if you will tell us you are interested.

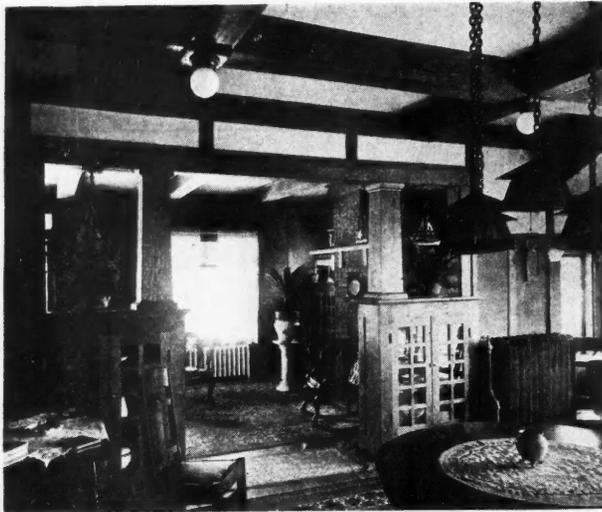
KEWANEE BOILER COMPANY

Steel Power and Heating Boilers
Radiators, Tanks & Garbage Burners

Kewanee, Ills.

Branches: Chicago, St. Louis, Kansas City, New York, Salt Lake City

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Building Better for a bigger business

The quality of your work will reveal itself in the test of time. And you builders and carpenters who want to see your business grow and prosper should consider

UTILITY Wall Board

a tough, non-porous moisture-proof fibre board material that makes a firm friend of every building owner. The convenient lengths and widths are easily and speedily put on by nailing directly to the studding. And it is sanitary, vermin-proof and never chips, checks or cracks. Then, too, it makes a smoother, more satisfactory wall for decorative purposes than plaster. And where the home owner desires to remodel only one or two rooms, Utility Wall Board will save the heaviest expense of plaster and lath building—that of mixing the plaster—and will eliminate all the usual dust and muss and keep the furnishings free from lime and plaster droppings.

For YOUR own PROFIT write TODAY
for a SAMPLE and the Book of Interiors

THE HEPPE'S CO.

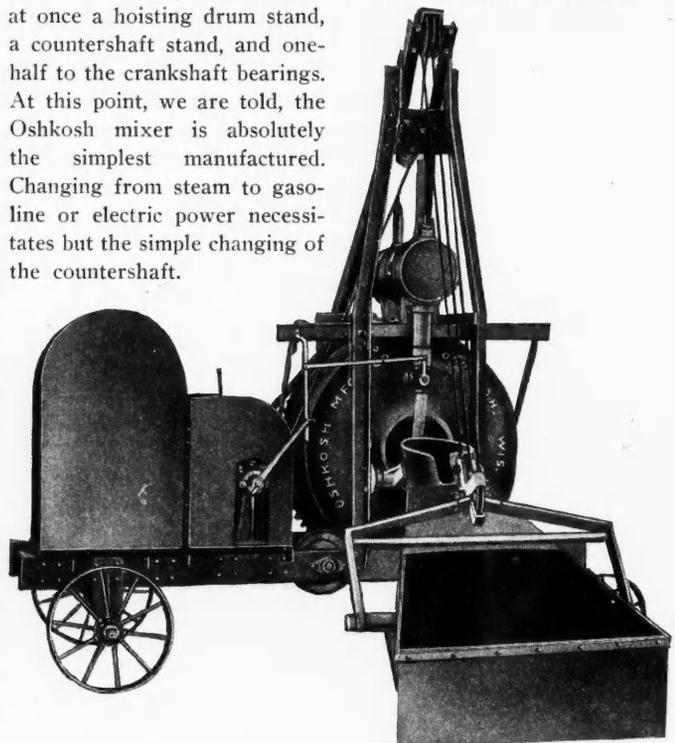
Also manufacturers of Flex-A-Tile Asphalt Shingles, Asphalt Paint and Asphalt Roofing in any Finish.

4503 FILLMORE ST., CHICAGO, ILL.

efficiency, is the Oshkosh chain drive, which does entirely away with cast gears that cut out and cause untold annoyance and loss of time.

Much time is lost with not a few mixers because the material refuses to flow freely through the power charging hopper. This makes it necessary to pound it or else stand on top of the mixer and assist the flow with a shovel. The Oshkosh hopper has an extra long spout, which causes the material to spread along its length during the hoisting, so that it is well started by the time the absolute pouring position is reached and does not clog.

The countershaft of the Oshkosh Mixer is also the crankshaft of their steam engine; that is, the crankshaft of the engine carries the sprocket that engages and operates the large drum chain. Thus, there exists only one chain of mechanism direct from engine to drum. The usual mechanism from the engine crankshaft to the hoisting drum is also absent. This drum is simply keyed onto the crankshaft itself. The crankshaft is mounted on a semi-steel yoke, which is at once a hoisting drum stand, a countershaft stand, and one-half to the crankshaft bearings. At this point, we are told, the Oshkosh mixer is absolutely the simplest manufactured. Changing from steam to gasoline or electric power necessitates but the simple changing of the countershaft.



The Oshkosh "Four-Way" Mixer

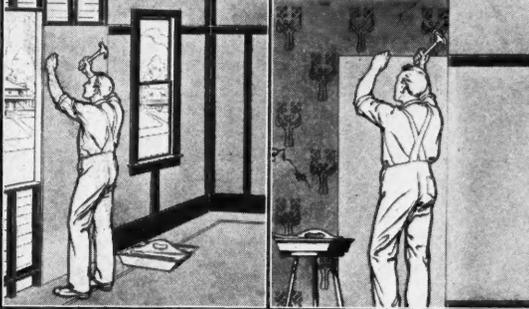
The gasoline engine used in the No. 5 mixer is a high-grade, powerful, well-balanced engine, good for far more than its rated horsepower. It is connected to the drum by a very direct, simple mechanism, embodying a multiple disc friction clutch. In regard to this clutch the manufacturers say: "Not finding any clutch in use today of the quality that we wanted, or of the reliability necessary to run a concrete mixer, we designed a special one for this use. It is a multiple disc friction clutch having fiber 'friction' or disc running between metal discs. This makes a smooth-starting, positive-holding clutch, easy to operate, simple to adjust."

All parts of Oshkosh mixers are standardized and can be interchanged in the field with ordinary tools.

Oshkosh Mixers are built in all sizes, for steam, gasoline, or electric power. Those interested, can secure prices and terms and a very complete description of the entire line by writing to The Oshkosh Mfg. Co. 316 S. Main St., Oshkosh, Wis., to their Chicago office, 1452 Monadnock Blk., or to Dodge & Dodge, 1133 Broadway, New York City.

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BEAVER BOARD



Beaver Board construction is easy for the man who knows

The Man Who Knows How

IF that's you, there is a good Beaver Board business in your community waiting for you.

Beaver Board is one of the most widely known and advertised building-materials on the market today. The carpenter, builder or contractor who thoroughly understands the proposition, and can assure the owner of A-1 workmanship, has things coming his way.

Write us today for further details.

The Beaver Companies

United States: 185 Beaver Road, Buffalo, N. Y.
 Canada: 385 Wall St., Beverdale, Ottawa
 Great Britain: 4 Southampton Row, London, W C.



Trade Mark

THE National BRAND Plaster Board

THE Modern Lath

enables you to do your lathing in one-third the time and provides a stronger and smoother base for the plaster.

NATIONAL PLASTERBOARD

is applied in sheets. It will not warp, buckle or crack. It is fire-proof, saves time in plastering and deadens sound. National Plasterboard makes buildings warmer in winter and cooler in summer, and is inexpensive because it

Requires Less Plaster Than Wooden Lath

Plaster forms a perfect bond with this board and a thinner coat can be applied. Besides you avoid all lath cracks and stains. If desired the cracks can be filled and the Plasterboard decorated in any way desired.

Decide now that you will write for samples and prices of National Plasterboard, the kind that takes the place of either lath or sheathing, and saves the builder money by saving time and material.

THE National BRAND Plaster Board

NATIONAL PLASTERBOARD CO.
 Cleveland, Ohio

PLASTERGON WALL-BOARD

TREATED WOOD FIBRE

In the Dull Season

THE enterprising builder finds jobs from which to make money with Plastergon.

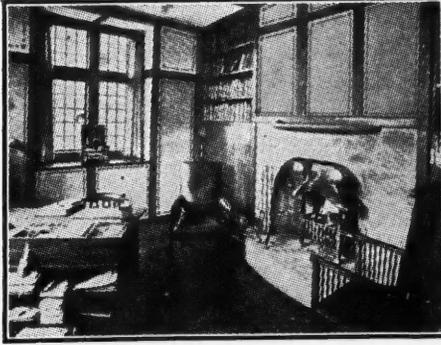
Building runs in seasons—remodelling and repair work is always in season.

And for remodelling nothing can be used to better advantage than Plastergon, as it can be applied over old plaster or to new studding, as found necessary.

Plastergon is not "just as good" as lath and plaster—IT'S BETTER. It's initial cost is less than lath and plaster, and it give the builder a handsome margin of profit.

We want you to investigate Plastergon— get samples, prices and uses—make a nice little profit you have never, heretofore, had.

PLASTERGON WALL BOARD COMPANY
 Dept. A. Tonawanda, N. Y.



There is Only One



IT is not classed with the cheap substitutes for lath and plaster. It is not like so-called "wall boards." It is a wall lining in a class by itself—the most practical, the most successful. Thirteen years of severe tests in thousands of homes have proven its superiority.

How You Can Know the Genuine

Get the sample as illustrated above—notice the construction. It is built with kiln-dried wood slats as the foundation, pressed between layers of airtight cement and specially prepared paper into a stiff, straight sheet 1/4 inch thick.

Why Contractors and Builders Should Use Compo-Board

It is stronger, more durable than lath and plaster, or any of its substitutes. Impervious to cold, heat and moisture. Its smooth surface can be decorated with paint, kalsomine or wall paper—with or without panels.

It enables you to complete a house 15 to 30 days sooner—give greater satisfaction to your client and get a higher price.

Sample and book free—(Tells in an interesting way all about this modern wall lining).

Northwestern Compo-Board Co.
 5777 Lyndale Ave., North :: Minneapolis, Minn.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



Interesting Post Card from Abroad, Showing Wide Popularity of Atkins Saws

from me with a Atkins saw in the hand, I work with your article with pleasure in Holland, have also work with your saws in German. Will you do the honor write me to accept from me."

Atkins Silver Steel Saws in Holland

We reproduce a very interesting postcard which has recently been received by the Silver Steel saw people.

This gives a practical demonstration of the growth of American made products on the other side of the "big pond."

Mr. Cooper has reproduced a likeness of himself and on the reverse side has written as follows:

"Please I send you for my pleasure one photographic

Wrong Address Given

In the July number of the AMERICAN CARPENTER AND BUILDER, mention was made of the Reversible Ideal Hoist made by the Universal Hoist & Mfg. Co. Through error the address of this company was given at Cedar Rapids, Iowa, instead of at 193 State St., Cedar Falls, Iowa.

The Reversible Ideal Hoist is one that will interest our builders. Drop a line to the manufacturers and have them send you their descriptive literature.

"He Who Hesitates Has Lost"

an opportunity to increase his profits, his prestige and his business.

We have tried to show progressive carpenters and builders in our previous talks on this page, that it would be to their interest to consider advocating and putting on slate roofs on their buildings.

Naturally, we realize that we cannot ask you to listen to us, unless we can show you that it is to your distinct and great advantage to do so.

Many progressive carpenters and builders have given us the opportunity.

You have not yet done so. Which prompts us to suggest the thought that by not writing us you will lose much more than we will.

Genuine Bangor Slate Roofs

Genuine Bangor Slate Co., Easton Pa.

are gaining more popularity every day. Each roof you put on with this slate will make you more money and friends. It will be a monument to your craftmanship, to which the owner will point with pride, and which will bring you much additional business through his recommendations.

Please send me particulars about your ability to help me make more money. We maintain a special Trade Help Department that will also help you to land more business, and show you how to get a better price for your workmanship. We have done this for many others and we can do it for you.

Why give your competitor a chance to be the first in your town to take advantage of our offer? It costs you only a postage stamp to get full information by return mail. It may cost you much more in business lost to your competitor if you don't send for this information. Fill out the attached coupon and mail today.

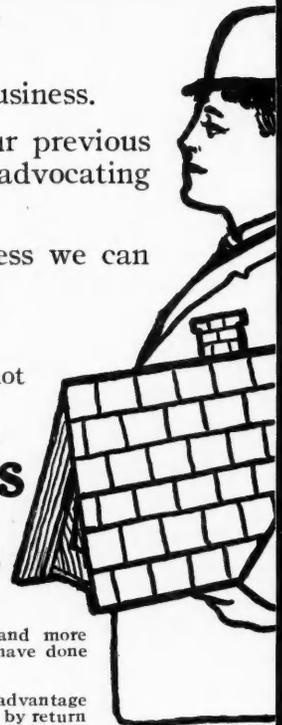
Name.....

Address.....

Genuine Bangor Slate Co.

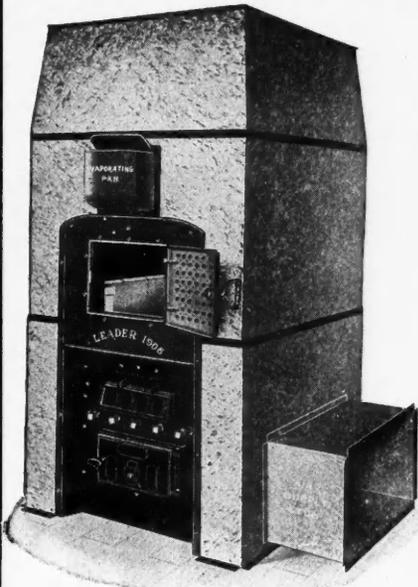
Drake Building, EASTON, PA.

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FURNACES

YOUR furnaces are costing you too much, and a good share of the cost goes where it does not add to the value of the heater. Furnaces generally are made "for the trade," and one or two middlemen must have a profit besides the manufacturer. The contractor and consumer pay the profit and receive no benefit for that portion of the price.



We Are Manufacturers and we sell direct to contractors and consumers. We save you a lot of money, but we accomplish more than this, for we study the plan of your house, and we furnish you, besides the furnace, a drawing showing just how the work should be arranged; just what size of pipes and registers should be used, and where to put them, and when we have done this, and you have carried out our plan, we guarantee that the furnace will warm your rooms comfortably in coldest weather. We back up that guarantee with an agreement that your local banker may hold the purchase money until you have tested the equipment and proved that it is satisfactory, then the money is sent to us. If the furnace does not please you it may be returned at our expense for freight both ways, and your banker will hand back your money.

There never was a more liberal nor fairer offer than this. We take all of the risk; we sell to you at a price which saves you the middleman's profit; we plan the arrangement of your house; we give you full directions for setting up and installing, and loan you any tools you need, and then we wait for our money until you have tested the equipment and know that it is going to please you.

Send us a sketch of any house you want to heat, and we will tell you what it will cost, and we will show you by a complete plan we will send with our bid just how we would arrange the work. You don't have to buy our furnace, and our proposal puts you under no obligation. If it doesn't look good to you, buy something else, and we won't feel hurt.

We are selling thousands of furnaces in this way, and our customers come back to us again and again. We can refer you to customers who have bought direct from us in this manner in almost any neighborhood, from Alaska to Florida.

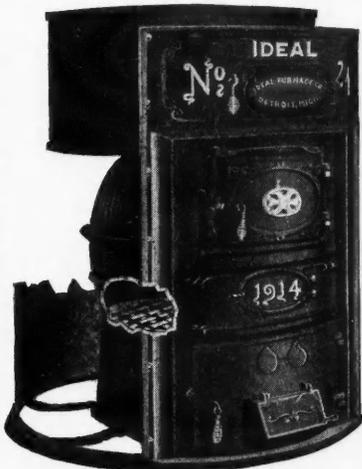
Now let us hear from you and let us show you what we can do. We issue a forty-eight page booklet on furnace heating. Send us your name on a postal card and we will mail this booklet to you without delay.

Hess Warming & Ventilating Co., 1220 Tacoma Bldg., Chicago, Ill.

Money Talks!

*And this space costs money,
so here is OUR STORY*

We will furnish our customers complete equipment including furnace, pipes, registers, etc., at the following prices for ordinary sized houses:



- 5 Room House, \$60
- 6 Room House, \$70
- 7 Room House, \$80
- 8 Room House, \$90

No good business man will pay more.

All that you need to know is that it will be an "IDEAL" Heater.

Guaranteed for 10 years and will last a lifetime. Our enormous output enables us to make this offer. 30,000

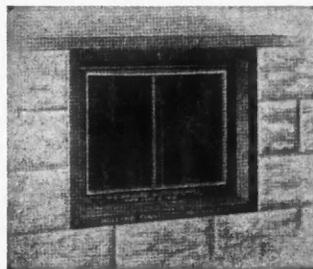
Ideal Furnaces in use. Actual output 9,000 annually.

**WE SPEND OUR MONEY IN MAKING GOOD FURNACES,
NOT IN LARGE ADVERTISING SPACE**

Special Proposition for Contractors.

Catalogs and Details for the Asking

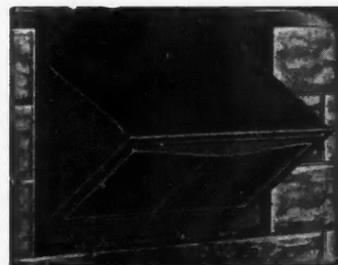
IDEAL FURNACE CO., DETROIT, MICH.



The Window Chute

A Real Window—A Perfect Coal Chute

Useful 364 days in the year for light and one day for the coal man.



A Burglar-Proof, Air-Tight Window which conforms with architectural lines. Looks best and is best. Write for booklet giving full description.

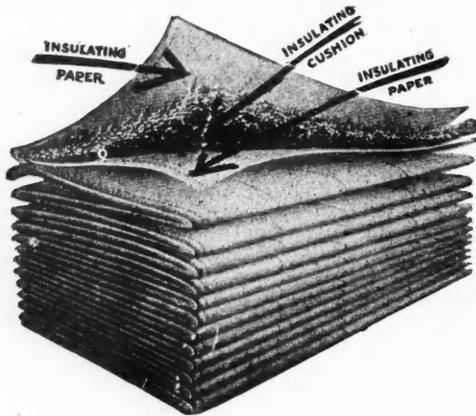
Holland Furnace Co.

Dept. "A. C." :: Holland, Mich.

—"Holland Furnaces Make Warm Friends"—

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12 Reasons Why You Should Use



Keystone Hair Insulator

Keeps buildings warm in winter, cool in summer, comfortable always.

Saves its cost in reduced coal bills in a short time.

Makes the top floor habitable.

An efficient non-conductor of sound.

Prevents condensation under tin and iron roofs, thus lengthening their life.

One layer of Keystone is equal to many layers of ordinary sheathing paper.

Has no odor.

Vermin-proof.

Easily applied; flexible and fits odd corners.

Fire-resisting; prevents flames from spreading.

An efficient insulation for refrigerating and cold storage plants, packing houses, etc.

Permanently durable; lasts as long as the building.

Write our nearest Branch for Booklet

H. W. JOHNS-MANVILLE CO.

Manufacturers of
Asbestos and Magnesia Products

ASBESTOS

Asbestos Roofings,
Packings, Electrical
Supplies, Etc.

Albany
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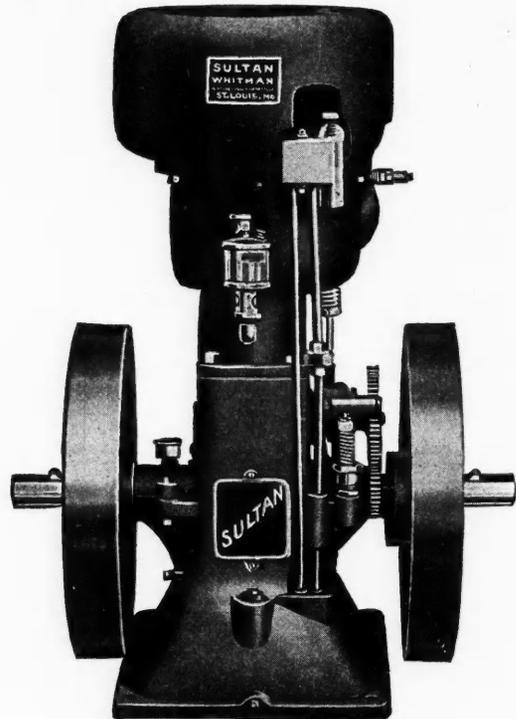
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THE CANADIAN H. W. JOHNS-MANVILLE CO., LIMITED
Toronto Montreal Winnipeg Vancouver 1491

A New Kind of Engine for Concrete Mixers

Whitman Agricultural Co., St. Louis, have recently placed on the market the Sultan gasoline engine, which is particularly adapted to use with concrete mixers and for other purposes in which contractors are directly interested. Most contractors have some idea of the peculiar and unusual strains and stresses that hay press operation would throw on an internal combustion motor or, in fact, on any prime mover.

The story of the Sultan is that the Whitman concern could find no gas engine which would satisfactorily drive their hay press under working conditions, and were forced to develop a motor which could do the work. Farmers these days demand that hay presses be motor-driven—and the Sultan line is the result. A gas engine that will satisfactorily drive a hay press under field conditions, will stand



Sultan Engine—Runs with Either
Kerosene or Gasoline

up to a contractor's requirements at all times; and intending purchasers of gasoline engines will do well to look into the Sultan before closing any deal. Remember there are only 54 parts to the Sultan. Less parts—less trouble. All these parts are of the finest material money can buy; finished to an absolute accuracy. No chance of burning out connecting rods, as die cast bearings are used which can be replaced in a few minutes time by any novice. The valve in the head gives the engine the extreme power and can be removed in a minute's time.

Write for free engine catalog. Whitman Agricultural Company, St. Louis, Missouri, U. S. A.

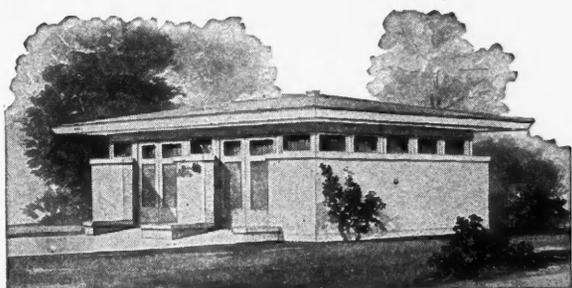


Pouring Houses in Steel Forms, The One Day Process:

Progress is today so rapid in building construction that we have ceased to marvel at the daily progress made on the skyscraper. A story a day is not an unusual record. However, it is not at all unlikely that within the next few years we will look back upon the present methods of construction as crude and almost primitive.

Reinforced concrete construction will undoubtedly replace present methods for buildings other than skyscrapers and

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



Garages and How to Build Them

A book containing 158 (8 x 11 inch) pages giving 55 new, original and artistic designs for up-to-date private and public garages adapted to frame, brick, stone, cement, stucco, or concrete construction together with estimates of cost. Also remarks on garage construction explaining the advantages of each form of construction and giving details about the manner of erection, selection of materials, hints on supervision, etc., etc. There is also an extensive chapter on garage equipment and accessories in which is described the construction and operation of turn tables; gasoline storage and pumping; oil cabinets; constructing a repair bench and tool cabinet; lockers; rules to prevent freezing of water in cylinders, radiators, etc.; washing apparatus, lighting apparatus, etc., etc.

This Book Will Help You

To get a copy Free, postage paid, simply send us your subscription at regular rates and it will be sent by return mail. Regular subscription \$2.00 per year.

American Carpenter and Builder

1827 Prairie Ave.

CHICAGO, ILLINOIS

NEPONSET WATERPROOF BUILDING PAPER

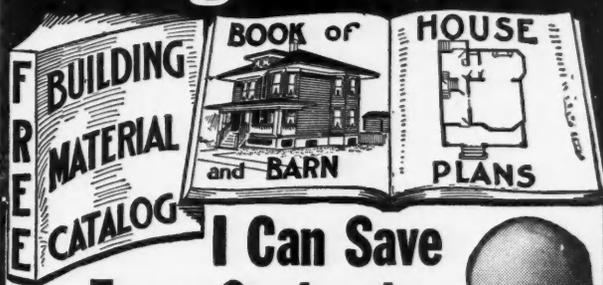
made scientifically of only highest grade material and its quality never fluctuates—positively waterproof.

BIRD & SON
(F. W. Bird & Son)

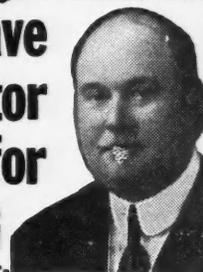
28 RIVER ST., EAST WALPOLE, MASS.

New York Chicago Washington
Portland, Ore. San Francisco
Canadian Plant, Hamilton, Ont.

Going to Build?



I Can Save Every Contractor Who Will Send for These Books BIG MONEY



Every contractor, carpenter and builder should have these two books. One is our catalog which features everything needed in lumber, flooring, doors, windows, porchwork, moulding, building paper, hardware, paint, roofing—all kinds, at wholesale prices that save one-third to one-half.

The other is our handsome Plan Book showing views and floor plans of over 50 houses, barns and garages priced from \$80 to \$6,000. We guarantee everything to be brand new stuff—no wreckage. We also guarantee safe delivery and satisfaction. Don't pay local dealers' prices when you can buy from manufacturers direct and save money.

Mail the coupon or a postal today for these books—be independent of local men and have your choice of

Over 8000 Bargains Like These

<p>100 ft. Quarter Round Dealer's Price \$1 Our Price 30c</p>	<p>Doors Glazed Windows of all kinds Ready for quick shipment—2 light 68c up; 4 light 77c up; 12 light 83c up.</p>
<p>Clear Lattice 30c per 100 ft.</p>	<p>Door and Window Screens We can supply any kind and style. Rustless galvanized, bronze or black wire—clear pine and oak frames. Window screens for 24x28 2 light windows full size 79c. Catalog shows all sizes and prices.</p>
<p>Wearwell Paint Perfect, guaranteed house paint—Gal. only \$1.20 in 5 gal. kits. Also packed in 1/4 gal. up to 50 gal. barrels. We have all kinds of paint at wholesale prices.</p>	<p>Hardware Panel Doors \$1.07 up Glass Doors \$1.77 up</p>

Send in Your List of Items for Estimate.
When we know exactly what you want, we can tell you just what it will cost with all freight charges prepaid by us direct to your railroad station.

Economy Rubber Roofing
1 Ply, 35 lbs., guaranteed 5 years **\$1.10**
2 Ply, 45 lbs., guaranteed 7 years **\$1.35**
3 Ply, 55 lbs., guaranteed 10 years **\$1.60**
Rolls Contain 108 Square Feet

Outside Lock Sets 21c up.

FOR \$1104 We furnish all building hardware. You can't beat our goods or our wholesale prices. Complete—except masonry—for this attractive 5-room Bungalow. No. 147.

In writing ask for Catalog No. 43 and if you expect to build and want plan book also, ask for Plan Book No. 53

Chicago Millwork Supply Co., 1422 W. 37th St., Chicago, Ill.

TEAR OFF AND MAIL TODAY

Chicago Millwork Supply Co., 1422 W. 37th Street, Chicago, Ill.

Please send your books to

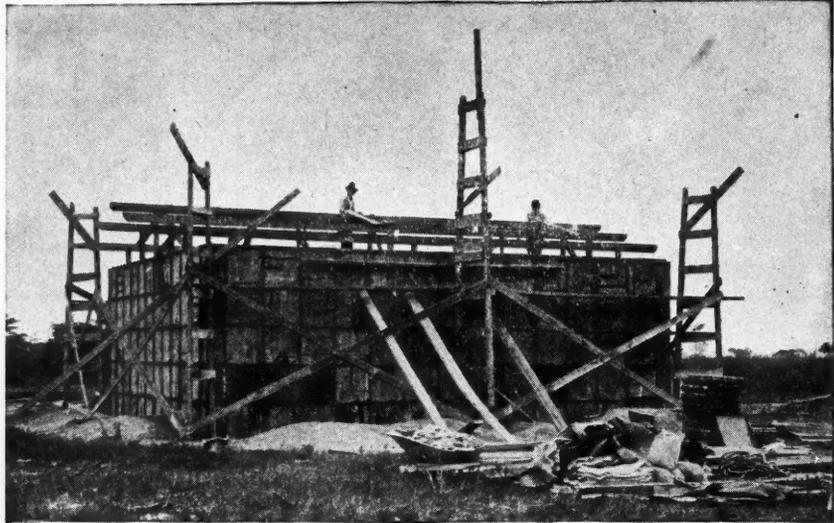
Name.....
Address.....
Catalog No. 43 Plan Book No. 53

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concrete will be largely used in floors and in fire-proofing even the steel structure. The only draw-back to the increased use of concrete has been the great lumber and labor waste in wood forming; but notwithstanding this great waste, concrete is fast displacing other materials and is today used for floor slabs and fire-proofing in 90 per cent of the large buildings being erected in New York City.

Milton Dana Morrill, architect of Read & Morrill, Inc., 179 Joralemon St., Brooklyn, N. Y., has made an especial study and development of steel forms to cut out this lumber and labor waste. These forms were first designed and have been successfully utilized for foundations and walls for residences by what is known as the swing-up or two tier process. In the accompanying illustration the forms are shown set up at one time for the entire walls of a one story house, all the concrete being poured in a single day. This was done as an advertising feature in connection with the suburban development at Virginia Highlands, near Washington, D. C., where twenty-five different types and design houses have been constructed with the same equipment. The window and door frames were dropped into the forms where desired; plates being perforated with a drill for nailing these frames rigidly into place to prevent sagging or bending when the concrete was poured. This experiment was entirely successful, and the building while constructed of cinder concrete throughout has shown no cracks from shrinkage.

This process has proved of great value in building foundations, as after the footing courses are in place, two men can set up the forms while the others are pouring concrete,



Morrill Forms in Place, Ready to Pour Entire Walls of House at Once

and the foundations for the ordinary house can be completed in one day's time.

Equipment has also been designed and is being put on the market which will be utilized for hollow panel walls and floors. This will make a light ribbed construction with the exterior concrete slab between the panels only 2 inches in thickness. These ribs which run in both directions will be reinforced. For floors this new construction will make a light flat slab cutting out much of the material and the dead load.

Besides the saving in lumber and labor effected by steel forms a straight smooth finished surface is left, and in over 50 buildings, the plastering has been altogether omitted. This effects a considerable saving in cost.



SAVING TIME and MONEY

with a

KisselKar Motor Wagon

KisselKar Motor Wagons not only carry all kinds of heavy building material, but are saving time and money in light haulage for carpenters and builders.

Saving time is a vital matter in building operations. Getting the men and tools "on the job" quickly, carrying necessary supplies so the least possible time is lost, being able to reach a half dozen widely separated contracts, without overdriving—these are elements that have greatly to do with the measure of your success.

KISSELKAR TRUCKS

1500 lbs.—1—1½—2½—3½ and 6 Tons

KisselKar Motor Wagons are tested under a rigid system. They have four speed transmission—an engine of tried and unquestioned power and ability—left hand drive and center control—plenty of reserve strength—general construction that will resist vibration. Whether you require a light delivery wagon or a heavy service truck, one of the six KisselKar models will exactly meet your needs.

KisselKar Service

insures prompt and skillful attention to truck owners, offering a definite and liberal service policy, ample and accessible facilities and factory-trained mechanics. KisselKar Service Buildings are at all principal points, where a written and specific service contract is issued with every motor wagon and truck sale.

Send for truck portfolio with hundreds of illustrations of KisselKar Motor Wagons and Trucks in actual use.

KISSEL MOTOR CAR CO.
546 Kissel Ave. Hartford, Wis.

New York, Minneapolis, Chicago, Philadelphia, Milwaukee, Los Angeles, San Francisco, Dallas, Boston, St. Paul, Kansas City, and 200 Other Leading Points

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

MONTROSS METAL SHINGLES



The Roof Question Touches YOU

If it's poor YOU get the blame;
If it's good YOU get the credit

Now, if you furnish Montross Metal Shingles you know just what you are buying—just how long and how strong you can make your guarantee to your customer.

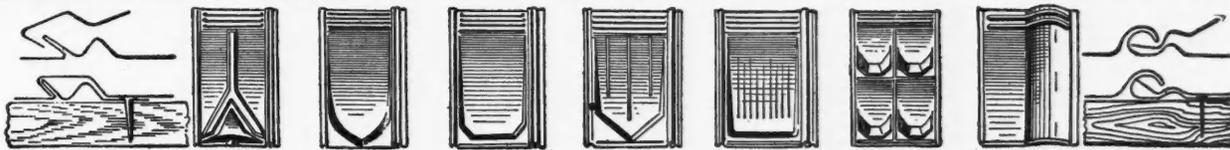
Montross Metal Shingles are made in four grades and each grade carries an absolute guarantee. Our best grade is warranted for thirty years—Shingles of this grade have been in actual use for 34 years and look practically as good as the day they were laid.

Forty years of practical roofing knowledge and a full and particular description of Montross Shingles is given in our new catalogue. It's worth money to you—write for it Today.

You owe it to yourself to write for this booklet NOW—while you think of it.

AGENTS WANTED

Montross Metal Roofing Co., 2nd and Erie Sts., Camden, N. J.



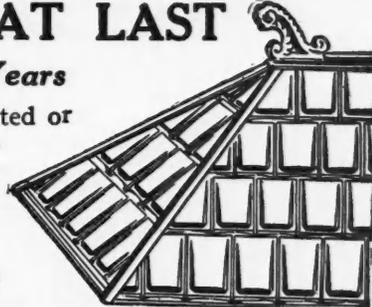
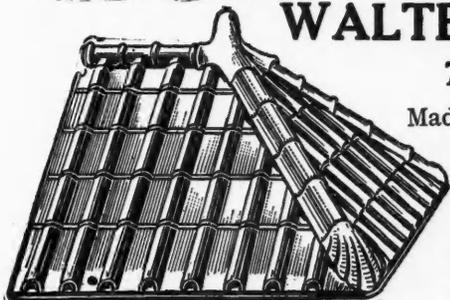
WALTER'S SHINGLES THAT LAST

The Leaders for Twenty-nine Years

Made from I. C. full weight roofing tin, painted or galvanized after stamping. Rust-, storm- and fire-proof. The most complete line of metal shingles and tiles manufactured.

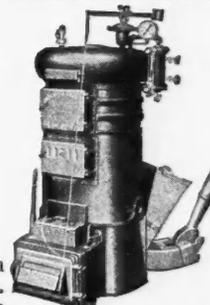
Agents wanted in every community

National Sheet Metal Roofing Co.
JERSEY CITY, N. J.



UNDERFEED

FURNACE OR BOILER $\frac{1}{2}$ to $\frac{2}{3}$
CUTS YOUR COAL BILL



Boiler

CARPENTERS and BUILDERS—Now is the time to install an UNDERFEED, which will positively cut your coal bills one-half to two-thirds next winter and every winter. By getting an Underfeed you will escape paying out every year more than twice as much as you need to for coal. Don't double your coal bills. Send rough sketch or blue print of your floors and basement and we will forward FREE Heating Plans and estimate of cost. An Underfeed will soon pay for itself. This is the Underfeed argument which will be read by millions in August publications of national circulation. You can ADD to the RENTING and SELLING value of any building by specifying the Underfeed.

Thousands of American and Canadian home owners whose opinions are highly respected in their various communities enthusiastically tell of their UNDERFEED experience. Write for names of users in your locality.

SAVES DOLLARS! The UNDERFEED will save you \$2.00 to \$3.00 on every ton of coal you use. It will require no more tons of cheaper hard or soft coal, slack or pea and buckwheat sizes costing \$2.00 or \$3.00 less per ton than expensive grades used in ordinary plants.

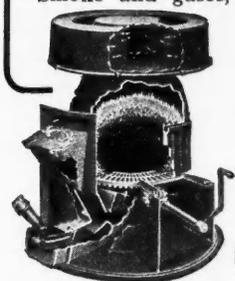
SAVES WASTE! The UNDERFEED will utilize all heat values. Smoke and gases, at least fifty per cent of heat values, wasted in topfeed heaters, in the Underfeed are forced by the draft to pass right through the fire and are entirely consumed.

THE PECK Williamson Underfeed FURNACES BOILERS

SAVES HEAT! In the UNDERFEED burning coals are on top, close to heating surfaces. Underfeed heat, therefore, isn't lost after it's generated. It's utilized for your comfort.

SAVES TROUBLE! No soot-covered, hard-to-clean heating surfaces. No clinkers to be "fished out." Few ashes to be removed. Easily operated. Infrequent firing periods. Requires less attention.

Send us your building plans, Mr. Builder, and we will furnish FREE engineering plans and actual installation cost. Underfeed heaters are adapted for both large and small buildings. Installed in unit or battery form in residences, apartment houses, halls, churches, theaters, schools, etc. Write TODAY for FREE Furnace or Boiler Book.



Furnace

THE PECK WILLIAMSON CO.,

436 W. Fifth Street

Cincinnati, Ohio

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



The Closest Examination

Always results in the most favorable judgment of Flex-A-Tile Shingles. No better testimonial of the thorough goodness of a builder's work could be had than a Flex-A-Tile Roof.

FLEX-A-TILE Asphalt Shingles

cost no more than stained wood shingles and their large size enables you to lay them in half the usual time. They are strongly made of fibrous asphalt, into the surface of which is rolled under tremendous pressure carefully graded chipped slate or granite. And the rich natural coloring of the slate or granite never fades and eliminates the need of paint. Flex-A-Tile shingles never rot or rust and can be relied upon to give perfect roof satisfaction.

For YOUR own PROFIT write TODAY for a SAMPLE which we will gladly send and for the Flex-a-Tile Book.

THE HEPPEES CO.

Also manufacturers Asphalt Paint, Asphalt Roofing in any Finish and Utility Wall Board.

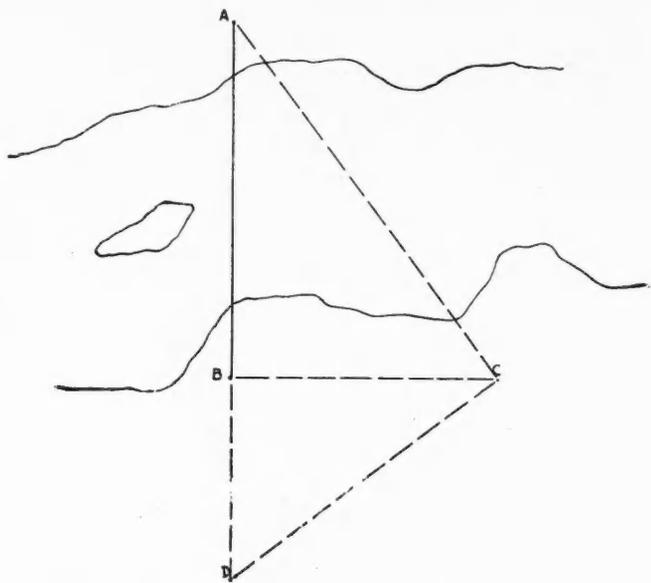
1010 45th AVENUE CHICAGO, ILL.

FLEX-A-TILE Shingles come in Red, Garnet, Greenish-Gray, Emerald and Brown Colorings.

How to Measure Distances Across Water

NOTE: Previous installments of these instructive papers on the use of the Transit and Level appears on page 110 April, page 96 June, and page 110 July.

If the distance across a gully, or marsh, or across water as a stream or pond is too great to be measured by a tape, an inexpensive transit, such as the Starrett, will give the distance without much trouble. For example, if the distance AB is wanted, get the instrument at E and direct it so as to make a right angle ABC. Measure off on BC any convenient distance (preferably not less than half the estimated distance AB.) Set the instrument at C and make a right-



Simple Method of Measuring Accurately Across Water

angle ACD such that the point D will fall on both the lines CD and AB extended. Then we have a proportion AB: BC as BC: BD from which

$$AB = \frac{(BC)^2}{BD}$$

If BC is 300 feet, and BD is found to be 200 feet, then $AB = \frac{300 \times 300}{200} = 450$ feet.

It is understood that the reader knows how to set up the instrument, for those not familiar with the proceedings, the following brief explanation is given. The legs of the instrument are first set firmly into the ground so that the adjustment may not be disturbed. Then the transit is made as nearly level as possible by adjusting the lower parts of the extension legs. Perfect level is secured by the use of the leveling screws between the plate and the tripod head. This is done by bringing the level over one of the leveling screws and turning one screw in and another out until the bubble appears in the center of the level glass. The sight tube or telescope is now turned through an angle of about 90 degrees, and the bubble again adjusted to the center of the glass by means of two leveling screws. The operation should be continued until the bubble stands in the center of the glass, no matter what direction the level may be turned.



H. W. Johns-Manville Opens New Branch

In accordance with its long established policy of business expansion, this concern has recently opened a branch office at Charlotte, N. C. The new office, which is located in the Commercial Bank Building, is in charge of Mr. E. U. Heslop, who is assisted in covering the western section of North Carolina by Mr. P. J. McCusker and Mr. Paul W. Whitlock.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



STAMPED STEEL TILING

Just the thing for
Bathrooms, Kitchens, Restaurants,
Butcher Shops, etc.

AND ITS RIGHT IN YOUR LINE

Real tile frequently becomes loose and falls off. This cannot. The studding or plaster is first sheathed with narrow, dry boards and the metal put on with small nails

SIX PATTERNS

Furnished with Baked White Enamel finish—or simply prime painted Metal trim Cap Base, Corners, etc., supplied or you can use wood trim.

NORTHROP, COBURN & DODGE CO.
29 Cherry Street, New York

**Bungalow Design
And Plan Book**



Free

"Be the Bungalow Man of Your Town"

Did you know that you can build the most unique dwelling in the city. In the country, in the suburb, in fact, anywhere, with RED CEDAR SHINGLES "from crest to foundation" and for less money than with any conventional exterior finish? Our Bungalow Book will furnish you with many new ideas and suggestions. It contains reproductions from actual photographs and floor plans of true and modified types of Pacific Coast bungalows, and cost of same. We have no books or plans to sell but are manufacturers of Red Cedar Shingles, anxious to tell you about their beauty, utility, extreme durability, and the different grades. Our book, a most valuable aid to the prospective builder, is sent free upon request. RED CEDAR SHINGLE MANUFACTURERS ASS'N. 400 Arcade Bldg., Seattle, Wash.

WINTHROP

Tapered

Asphalt Shingles

Made at ARGO, ILLS.

—By the—

Winthrop Asphalt Shingle Co.

Sales Office: Room 1414, 19 So. La Salle St.
Chicago, Ill.



Three Bungalows of Louis Kuehnles, Atlantic City, N. J., roofed with Asbestos "Century" Shingles by Wm. C. Sharp, Contractor, Pleasantville, N. J., and J. R. Ogden, Architect, of Atlantic City. Reproduced from an Artist's drawing.

**Asbestos
"Century"
Shingles**

"The Roof that Outlives the Building"

DO you know that you can have a red roof at about the same cost as the plain gray?

Ask your representative roofer or building contractor for Veneered Red Asbestos "Century" Shingles. Made by the celebrated "Century" process. Uniform in texture. Practically indestructible. A most attractive roof at a minimum price.

Write for the names of representative roofers who can supply Asbestos "Century" Shingles; and Booklet, "Roofing: a Practical Talk."

Keasby & Mattison Co.

Factors

Dept. B, Ambler, Penna.

Branch Offices in Principal Cities of the United States

This advertisement appears in August Magazines read by the owners and tenants of the better class of buildings. Write to above address for terms and trade prices.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

American Pulley Co. Moves N. Y. Store

The American Pulley Company has moved its New York branch from 203 Lafayette Street into more commodious quarters at the corner of Grand and Greene Streets.

At the new address is carried a complete stock of "American" belt pulleys. Orders will be received for reels, spools, beams, sash pulleys and pressed steel shapes.



The Care of Saws

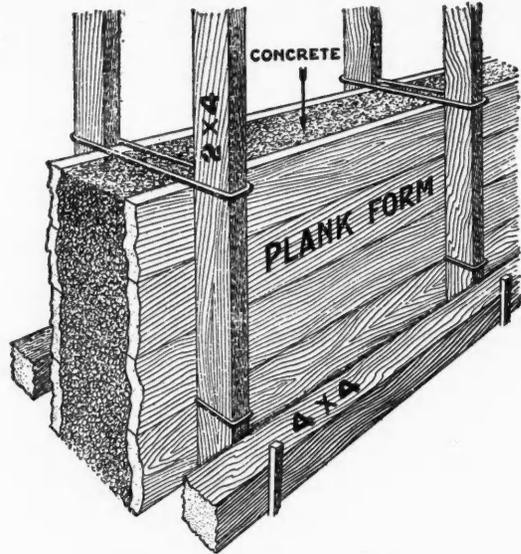
Are you interested in the care of your saws? If so you will find the little book called "Saw Points" most useful to you. In dealing with the jointing, setting and sharpening of all kinds of saws, this book offers many good pointers that can be classed as helpful hints to the carpenter. None of us knows it all but the makers of saw sets certainly ought to know a good deal about saws and their care so their message ought to be worth reading. We have read "Saw Points" and feel that the explanations therein are both informative and clear. You can have this book free by sending a request to Chas. Morrill, 275 Broadway, New York City.



"Van" Wall Ties Save Expense

Many carpenters are taking it upon themselves to construct foundations for the buildings they put up, and in so doing find that concrete foundations are the ones they can handle to best advantage.

In the use of poured concrete foundation work, a very substantial saving can be made in setting up or knocking forms by the use of "Van" Wall Ties. The diagram accompanying this article shows how they are used; but a great deal more can be learned from the circular sent out by the manufacturers. "Van" Wall Ties dispense with nails, spikes, bolts and wood strips and so leave the forms uninjured. By bind-

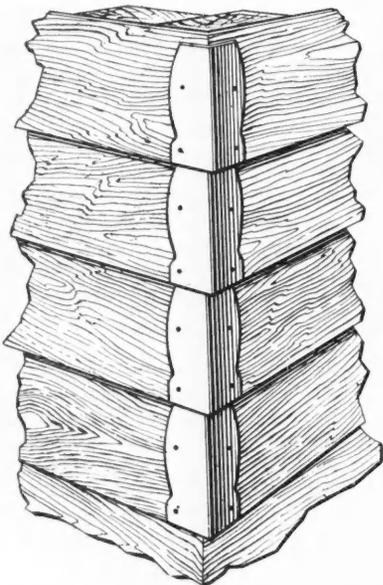


Van Concrete Wall Ties In Use

ing the forms close together they prevent the leakage of concrete, insure perfect alignment and prevent bulging; which ordinarily results in a disfigured wall that is not as strong as one that is in line.

"Van" Wall Ties are made of No. 9 steel wire electrically welded, and safely withstand any stress put upon them. They may be had in various lengths to accommodate different thicknesses of wall or lumber dimensions. We wish to bring to the notice of our readers the special trial offer rates made by the Van Expansion Bolt Mfg. Co., 1210A Fort Dearborn Bldg., Chicago, Ill. Get particulars and consider the use of "Van" Wall Ties.

CONTRACTORS!



Are you aware that the most improved Time, Labor and Money Saving construction of Building Corners is obtained by using

MERWIN METAL BUILDING CORNERS

No mitreing or beveling of board corners—no time consumed making joints of the clapboards and no warping possible.

**ABSOLUTELY DURABLE
ATTRACTIVE APPEARANCE**

Send for Sample and Prices

MERWIN MANUFACTURING CO., Erie, Pa.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Contractors!—Builders!

OUR PROPOSITION TO AGENTS IS A GOOD ONE

You'll like it. We want a good, live contractor in every community to represent us. To such a man we have an attractive offer to make. Anyhow investigate. Jahant furnaces save $\frac{1}{3}$ to $\frac{1}{2}$ on fuel



bills, operate on the down-draft principle, and assure fresh, healthy even distributed heat at all times.

JUST OUT

"Solid Reasons"—a big, new circular with a 19-inch X-Ray picture of the Jahant—showing it inside and out. It's free. Handiest bundle of furnace facts ever issued. Write today for the circular and our proposition. It will mean more furnace business for you and increased profits.

The
Jahant Heating Co.
Akron, Ohio

The Bovee Furnaces

AT
Manufacturer's Prices



Will give every one of your patrons most perfect results. They last longer and actually require about one-half the fuel used by other furnaces.

They are made heavy, of the very best material and workmanship. Take your rule and measure the fire pots, the large combustion chamber and the long travel of heat and compare it with all other furnaces and see **WHY** the Bovee

uses less fuel and lasts longer than others. Get our special prices. We can save you 40% on a heating plant. Any handy man can install them.

Bovee Furnace Works

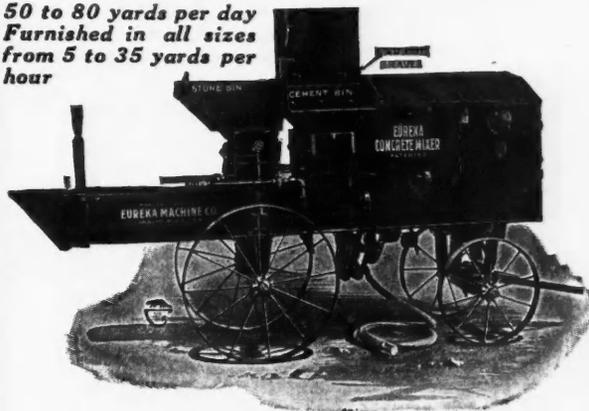
50 Eighth Street Waterloo, Iowa



Eureka

Mixer for Building Contractors

50 to 80 yards per day
Furnished in all sizes
from 5 to 35 yards per
hour



Over 300 Eureka's used in New York City

These Striking Eureka Advantages Compel Attention

It will save one-half in labor over hand mixing.

A thorough uniform mix is guaranteed and full rated capacity.

The average life is six to eight years. It can be operated by three men or will accommodate a dozen.

Costs about 50 cents a day for gasoline. Built extra strong and can be depended upon for hard, continuous service.

Easy to move and operate. Material shoveled direct into bins—no wheeling.

Only necessary to keep bins supplied with material—measured automatically.

One lever stops and starts mixer—another the feeders.

Equipped with a strictly high-grade engine Bosch magneto if desired.

Eureka mixers are in use everywhere and always satisfactory.

On this satisfaction to the user Eureka prestige has been built.

Ask for catalog No. 30 and names of Eureka users in your territory.

EUREKA MACHINE CO.
85 Handy Street LANSING, MICHIGAN

W. V. JOHNSON & CO., General Eastern Agents
1 Madison Avenue, New York City

Atlanta	Detroit	Minneapolis
Cedar Rapids	Ft. Wayne	Peoria
Chicago	Houston	Pittsburgh
Cincinnati	Indianapolis	Salt Lake City
Dallas	Kansas City	Winnipeg
Dayton		

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



Every Builder Knows

That the perfect wall covering must not crack, shrink or buckle. It must withstand settling of the building. It must be damp-proof, sound-proof and fire-retarding. It must take wall paper or paint beautifully, and it must be as permanent as the building itself.

Carey Ceil-Board

combines the merits of all the above "musts" and is the only wall covering that does. Its unique four-ply construction makes it the most durable wall covering made.

The three intervening layers of pure asphalt cement make it damp-proof, vermin-proof and fire resisting.

Use Ceil-Board and you'll save money, time, and make a job that's better looking and infinitely more satisfactory to your patrons than the old lath and plaster kind.

Send today for our book "Beautiful Walls" and a convincing sample of Ceil-Board.

THE PHILIP CAREY COMPANY 58 Wayne Avenue Lockland, Cincinnati, Ohio

Allentown Pa. Atlanta. Baltimore. Birmingham. Boston. Buffalo. Charlotte. Chattanooga. Chicago. Cincinnati.



Cleveland, Dallas, Denver, Detroit, Harrisburg, Havana, Jacksonville, Kansas City, Knoxville, Little Rock, Los Angeles, Memphis, Minneapolis, Montreal, Nashville, New Orleans, New York, Oklahoma City, Omaha, Philadelphia, Pittsburgh, Portland, Rochester, San Francisco, Scranton, Seattle, Spokane, St. Louis, Syracuse, Toledo, Toronto, Wheeling, Winnipeg, Washington.

Stucco House Resists Fury of Tornado

The recent cyclone in Omaha which caused widespread loss of life and damage to property, afforded a practical demonstration of the strength of various building materials.

Probably the most noteworthy examples in this connection is the residence of Mr. Lee Huff, a prominent citizen of Omaha, whose home is located at 39th and Chicago Streets.

This building was covered with three coats of asbestos stucco, a material which is famous for its durable qualities. Although the Huff residence was directly in the path of the



House at Omaha Built of J-M Asbestos Stucco which Weathered the Cyclone

tornado, the exterior walls remained practically unharmed, while the other dwellings on all sides, including brick and frame structures, were demolished as if they had been built of cardboard.

That this house escaped destruction is all the more remarkable from the fact that parts of the shingle roof were blown away, and a heavy brick chimney was completely torn off. Every window was blown out, the plaster torn from its lath, and the interior woodwork damaged beyond repair.

Storms of this character have a tendency to create a tremendous suction which literally draws the interior furnishings and furniture out of a building. The internal air pressure produced by this suction is sufficient, in cases of light or inferior construction, to push the building outward, thereby causing it to become a total wreck. To withstand such a strain requires building materials of the strongest kind. In the case of the Huff residence, the framing, reinforced by the asbestos stucco, formed a combination of such structural strength that it resisted a cyclonic force which even a brick house could not withstand.

After the storm the rough-coat surface of the stucco was deeply discolored by the dust and dirt carried by the wind. A hose was turned on the exterior and after a thorough washing it was restored to its natural color.

This material, which is known by the trade name of J-M Asbestos Stucco, is entirely different from all other stuccos. It is composed of one part Asbestic (asbestos fibres and finely ground asbestos rock) and two parts of Portland Cement—two of nature's most lasting products.

It is said this is the only stucco on the market which has no sand in its makeup. Stuccos made with sand contain vegetable matter and traces of iron which often prevent proper setting and cause the walls to crack, flake and discolor.

The countless small asbestos fibres, interlaced with the cement, form a closely woven yet resilient mass that is not affected by climatic changes. Hence the contraction and expansion of walls is not liable to produce cracks.

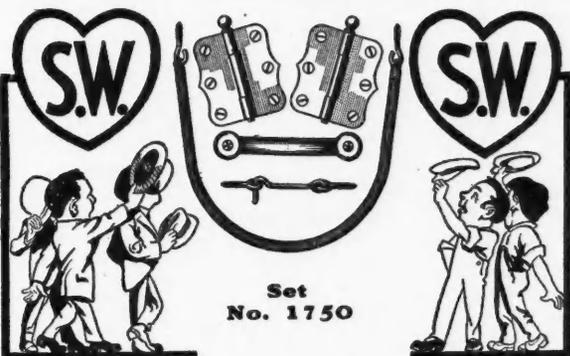
This stucco is absolutely fireproof and keeps buildings warm in winter and cool in summer. It has a handsome white finish but can be made any desired shade by the addition of colors.

To anyone interested in the subject, an instructive little book giving full information about this material will be sent by the manufacturers, the H. W. Johns-Manville Co., New York.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

STANLEY'S

Wrought Steel Screen Door Hardware



Each Set Complete with Screws Ready to go on the Screen Door

Owners and Builders alike are pleased with the high quality of the hardware and the convenient way it is packed ready for use. Butts, pull, spring, hook and eye and screws, all of the highest quality of material and workmanship. They can be furnished in Japan, Antique Copper, Brass or "Stanley" Sherardized rust-proof finish, the proper finish for outside doors. Write us for Circular "A". It tells the story.

THE STANLEY WORKS
New York New Britain, Conn., Chicago



KEEN KUTTER

Quality Bits



Economy in bits is to buy the best produced. No others equal those bearing the trade mark "Keen Kutter," famous for over 45 years.

Every Keen Kutter bit, like every other Keen Kutter tool, is sold you with an absolute guarantee that it is the finest made and that the dealer will return the purchase price or give you a new tool if any flaw develops.



"The Recollection of Quality Remains Long After the Price is Forgotten."
Trade Mark Registered. —E. C. SIMMONS.

If not at your dealer's, write us.

SIMMONS HARDWARE CO., Inc.

St. Louis New York Philadelphia
Toledo Minneapolis Sioux City Wichita



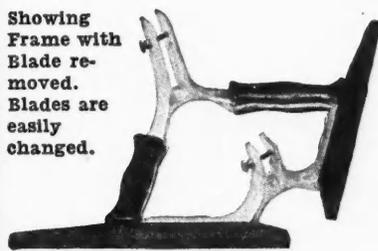
This Mould Makes Perfect Plaster Cornices

WILL YOU TRY IT FREE?

Frame with Blade in Place, ready to mould cornice.



Showing Frame with Blade removed. Blades are easily changed.



Send No Money—Merely Mail the Coupon—Today

Set Includes Frame and Ten Blades. Special Blades Made To Order.

Further Information Gladly Furnished. WRITE.

It won't cost you a cent to give the MONARCH PATENT CORNICE MOULD a fair trial. I'll even pay the transportation charges on it and you are not bound in any way to buy the mould if it doesn't suit you.

I have been in the building business long enough to know what a bother it is to make cornices the old fashioned way. I designed this tool and it works perfectly. This MOULD has a wall guide and a ceiling guide and it can be used either right or left hand. It can't do poor work.

Take my word for it that the MONARCH PATENT CORNICE MOULD will make straight cornices and perfect corners better than you have ever seen it done. I want to show you.

I am making a special discount of 40% on the first 500 sets sold after this date. Get in on this good thing. The regular price is \$50. Take off 40%. That makes the price \$30. If you want to buy this mould on the installment plan, you can do it and pay for the mould out of its own earnings—\$3 a month for 11 months. YOU NEED THIS MOULD; so take advantage of my offer now.

TIMOTHY F. HORAN
10 Maple Street
COOPERSTOWN, - NEW YORK

THIS IS THE COUPON—MAIL IT NOW
Dear Sir—You say the Monarch Patent Cornice Mould does perfect work. Prove it. Send the mould on Five Day's Free Trial. You are to pay transportation charges. If I don't like the mould I don't have to pay you \$30 else I'll pay you \$30 less 40% discount for 11 months. If I decide to buy it, I agree to pay you \$30 else I'll pay you \$3 a month for 11 months.

Name.....
Address.....
Town & State.....

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Oak Flooring

ITS COMMERCIAL WORTH WHEN LAID IN ANY KIND OF A BUILDING. IMPROVED MILLING—TEXTURE AND COLOR

By W. L. Claffey

Did you ever observe when entering a room in a residence or any building you instinctively first look at the flooring? There is nothing so quickly noticed as the flooring. If the floors of a building are oak floors you will immediately catch the note of character and quality throughout. Any building floored with oak flooring is distinctive and individual; it possesses the extra commercial worth and salability that belongs to distinctive things. Some idea of the value of oak flooring can be secured by glancing down the "For rent" or "For sale" columns of any daily or Sunday paper where they so very often emphasize the fact that oak flooring is used. It has proven to be a big factor in making sales as oak flooring even in an unfurnished house creates an atmosphere that is friendly, and when furnished it will harmonize with any kind of furniture or decoration; its color is rich and cheerful and is considered America's best flooring by architects and decorators who know.

As an example of the commercial worth of oak flooring—In Detroit a short time ago two duplicate houses were sold; one brought \$6,000, and the other only \$5,000. The \$6,000 house was floored with $\frac{3}{8}$ -inch select plain oak flooring at only a total cost of \$280—this included the finishing. The house that brought \$5,000 contained the original soft pine floors. The real estate man who made the deal, and who caused the oak floor to be laid over the old pine floor, knew the value of oak flooring.

The modern machinery that is used in the oak flooring factories today is entirely different from that used, say ten years ago. Oak flooring is milled today with an exactness

under expert inspectors that now requires but very little scraping on the part of floor layers. From time to time these factories make up floors in about ten feet square for the purpose of analyzing and reducing the floor scraping process to a minimum after it leaves the factory. Expert testers constantly inspect the product at the different machines. Every known device that brains could design and money could buy to make a perfect floor has been put into use by these modern oak flooring plants. It is a common practice for the manufacturers to follow up their oak flooring shipments personally and watch the floor layers in the handling, laying, nailing and finishing. In this way they oft times get some valuable pointers and are able at times to give some valuable advice to floor layers who may not know the game.

Oak flooring after being milled and separated into the different grades is tied up into bundles, and each bundle



BUILDERS!

WEATHER VANES AND LIGHTNING RODS

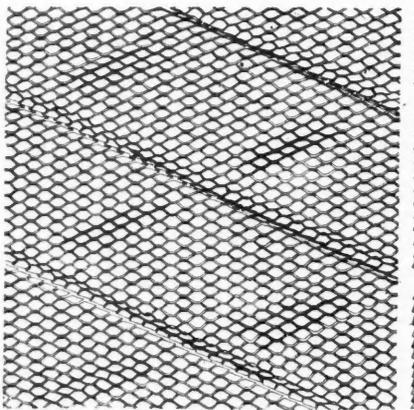
can be used on almost every building. They are attractive, as well as useful.

We make all styles of vanes, church crosses, flag poles, lightning rods, finials and cresting, emblematic signs, interior indicating vanes, copper balls, etc. Special prices to the trade.

Write for Catalog.

Thomas W. Jones 155 Maiden Lane, New York

The Lasting Qualities of Stucco



KNO-FUR METAL LATH

DEPEND ON THE BASE. Stucco cannot crack or fall off when laid on

KNO-FUR Metal Lath

The mesh of Kno-Fur completely imbeds itself in the plaster and grips with a tenacity that wear and weather do not affect. Kno-Fur is extremely rigid because of its mesh work ribs which run obliquely across the sheets. It can be used successfully on centers up to 32 inches for side walls and 24 inches on ceilings.

Use Kno-Fur lath and build for permanence on

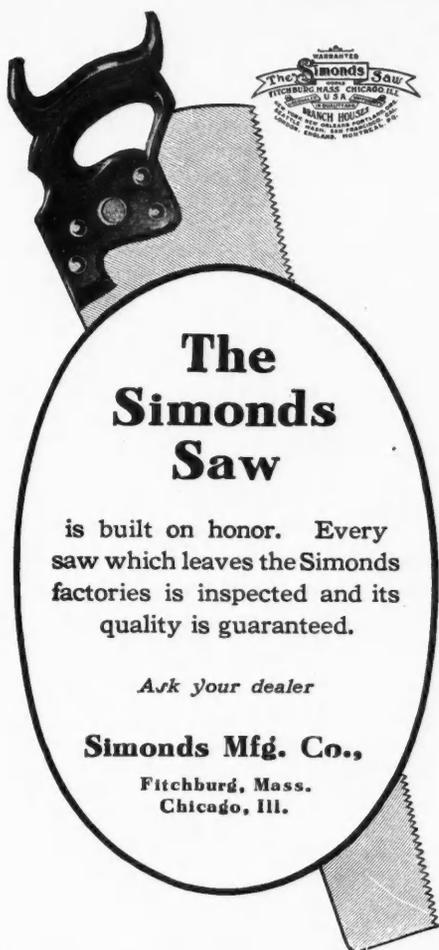
The Mesh that Makes the Plaster Stick

Write for Booklet 37, giving full information on KNO-FUR Metal Lath. It will interest you

NORTH WESTERN EXPANDED METAL CO.
903 Old Colony Building CHICAGO

We also make Econo Reinforcing, and Kno-Burn and XX Century Metal Laths

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



The Simonds Saw

is built on honor. Every saw which leaves the Simonds factories is inspected and its quality is guaranteed.

Ask your dealer

Simonds Mfg. Co.,
Fitchburg, Mass.
Chicago, Ill.



Thousands of Carpenters Apprentices, and Laborers Have Salaries Raised

You can be safe in judging what a man can do by what has been done—past performances—past records. In the files at the International Correspondence Schools are more than 27,000 letters that are witnesses to the marvelous results accomplished by students of the International Correspondence Schools. These letters came from all sorts and conditions of men who started with no more opportunities than you have—no more money—no more education, but today we find them in positions of responsibility and power.

A recent tabulation of the records of 1,000 students shows that the average salary at the time of enrolment for I. C. S. Courses was \$54 per month, but today, or at the time the letters of indorsement were written, the salaries have increased to an average of \$183 per month.

Such results are not due to chance. They are the reward of conscientious effort, and they should appeal to the ambitious, comfort-loving element of laboring people.

There is not in all the world a greater force than the I. C. S. to put new hope in the hearts of laboring men and teach them to attain success.

The I. C. S. are ready and willing to help you. Are you willing to be helped? Then determine what you want to be and

Mark and Mail the Coupon NOW

International Correspondence Schools

Box 910, SCRANTON, PA.

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

<ul style="list-style-type: none"> • Architect • Arch'l Draftsman • Contract'g & Build. • Building Inspector • Structural Engineer • Structural Draftsman • Plum. & Heat. Con. • Supt. of Plumbing • Foreman Steam Fit. • Plumbing Inspector • Heat. & Vent. Eng. 	<ul style="list-style-type: none"> • Estimating Clerk • Civil Engineer • Surveying • Mining Engineering • Mechanical Engineer • Mechanical Drafts. • Stationary Engineer • Electrical Engineer • Electric Lighting • Electric Railways • Concrete Construct'n 	<ul style="list-style-type: none"> • Automobile Running • Foreman Machinist • Sh.-Met. Pat. Drafts. • Textile Manufact'g • Bookkeeper • Stenographer • Advertising Man • Window Trimming • Commerci'l Illustrat'g • Civil Service Exams. • Chemist
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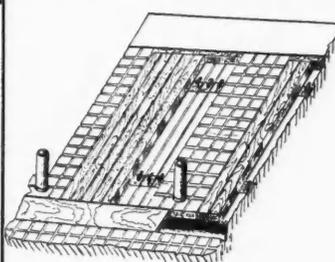
Name _____

Street and No. _____

City _____ State _____

Present Occupation _____

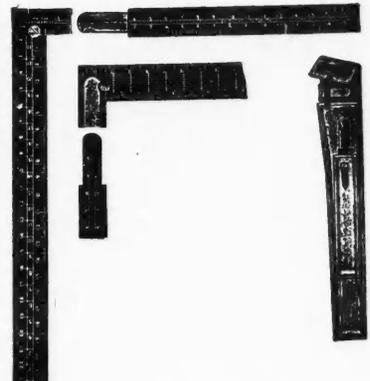
The SCHOULER STALL FLOOR



Put in a Schouler Patent Sanitary Stall Floor. Slats removable and interchangeable. Over 10,000 in use. Cheapest stall on the market.

Catalog and circulars FREE—Write today.

Schouler Cement Construction Co.
144 Frelinghuysen Ave. NEWARK, N. J.



This is the **Standard Take Down Square.**

It makes good with the user.

Send and know more about it.

Southington Hardware Co.
Southington, Conn.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

Clow Cast Iron Specialties



A-2187
Ex. Hy. Cesspool, Long Outlet

Size of top..... In.	12x12	16x16	18x18
Depth..... In.	10	10	10
Size of outlet... In.	3	4	6
Length of outlet In.	10	10	10
Painted, net Each	3.09	3.58	7.15



A-2185
Extra Heavy Cesspool

Size of top..... Inches	16x16
Depth..... Inches	10
Size of outlet..... Inches	4
Painted, net..... Each	2.00



A-1700.
Cleanout Cover and Frame

Size.....Inches 27x27
Size of frame, outside...Inches 27 1/4 x 27 1/4
Height of frame.....Inches 4
Price, Standard, net..... Each \$ 9.00
Price, Extra Heavy, net, Each 18.00



A-2015
Grating with Loose Frame

Size, inches 8x8 10x10 13 1/4 x 13 1/4 18x18
Grate only net.60 .98 1.43 1.80
Grate and frame, net .83 1.28 1.88 2.25



A-2020
Grating

Size, inches..... 9x9 13 1/4 x 13 1/4
Price, each, net... .75 \$1.13



A-1945
Concave Grating

Concave, diam. 19 in., net, each \$3.38
Convex, diam. 22 1/4 in., net, each 3.75



A-1950
Convex Cast-Iron Grating

	inch	Each net
Diameter.....	14	\$1.88
Diameter.....	16	2.06
Diameter.....	18	2.25
Diameter.....	20	2.43
Diameter.....	21 1/2	2.81
Diameter.....	23	3.19
Diameter.....	28	3.56
Diameter.....	30	3.94



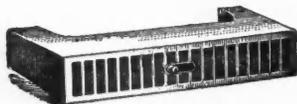
A-1955
Cast Iron Bar Strainer

Diameter . 4 5 6 7 8 9 10
Net, each. .07 .09 .11 .15 .23 .28 .37



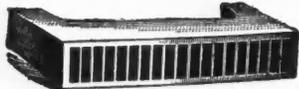
A-1710.
Cleanout Cover and Frame

Opening, diam., in. 18 24 34
Top, outside, diam., in. 22 28 38
Price, net, ea \$4.13 \$6.00 \$9.00



A-2200
Air Brick with Sliding Ventilator

Size.....Inches 8 1/2 x 5 17 x 2 1/2 17 x 5
Price, net...Each 2.59 2.59 5.17



A-2201.
Air Brick

Size.....Inches 8 1/2 x 5 17 x 2 1/2 17 x 5
Price, net...Each 2.20 2.20 4.40



A-1720.
Cleanout Cover and Frame

Opening, diameter, inches... 18
Top, outside diam., inches... 22
Base, outside diam., inches... 28
Price, net, each.....\$4.88

is marked with a rubber stamp to indicate its color and the grade. The temperature of the warehouses is carefully regulated to keep the oak flooring stock in normal condition, and when it is shipped it leaves in perfect physical condition. Many dealers through ignorance or carelessness handle oak flooring like they would rough lumber and store it in damp places. This is a grave mistake as dampness swells oak flooring on the face very often as much as 1/16 of an inch, so if some bundles are, say 2 1/4 inches and some 1/16 inch over, it naturally makes unsightly crevices. Floor layers should see that oak flooring has been properly cared for by the dealers.

The subject of laying, nailing and finishing oak floors is thoroughly covered in a booklet that is issued by the oak flooring manufacturers and can be secured through the dealers or by addressing The Oak Flooring Bureau, Detroit, Michigan, which will be mailed free upon request.



SANITARY AUTOMATIC DUMBWAITER

saves carrying food to and from the cellar. Perfectly ventilated; screened openings and finished inside with durable white enamel. Keeps food perfectly. Occupies no space as top lies flush with kitchen floor. You can walk over it. Operates simply with push button or lever.

Write for Particulars and Price.
YORK AUTOMATIC DUMBWAITER WORKS
639 W. Market St. YORK, PA.

VANADIUM SAWS The Saw that "Smiles at Nails."

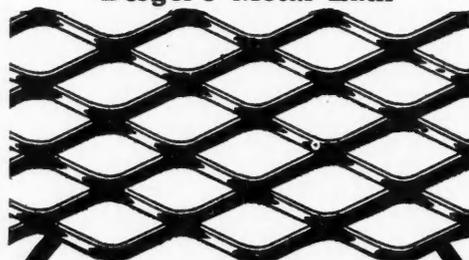
Hold cutting edge five times longer than any other saw.



Write for circular and prices.

PENNSYLVANIA SAW CO., 1000 Betz Bldg., Philadelphia, Pa.

Berger's Metal Lath



Write for catalog.

The Berger Mfg. Co. Canton, Ohio

For the best service address nearest branch.
New York Minneapolis Philadelphia
Boston San Francisco St. Louis

BUTTS

that save

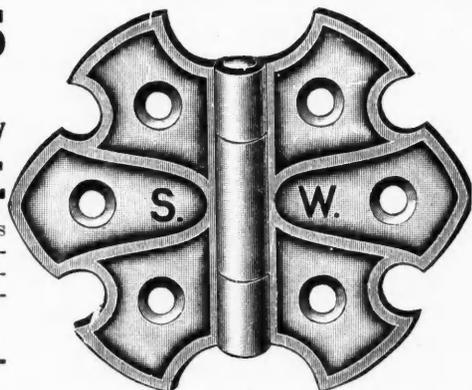
Time ^A Money ^D

FREE

No. 5 Builders Catalog to Contractors, Carpenters and Material Men.

REHM Hardware Co.

1501 Blue Island Av. No. 3979. Surface Hinges Antique Copper finish
CHICAGO Per Dozen Pr.....95c.

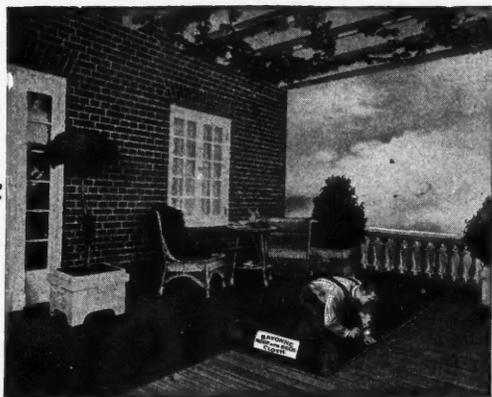


Send For Catalogue 39

James B. Clow & Sons

CHICAGO, ILL.

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.



Architects who Specify Bayonne Roof and Deck Cloth are justified by the satisfaction this specially prepared Canvas gives to builders and owners everywhere.

**BAYONNE
ROOF AND DECK
CLOTH**

This guaranteed roof and deck cloth requires but one coat of paint—is easy to lay—gives exceptional service—is waterproof—and costs less than most roof and deck coverings.

It will pay you to investigate—write for sample card and Booklet—N.

JOHN BOYLE & CO., Inc.
112-114 Duane St. 70-72 Reade St.
NEW YORK CITY

Most Beautiful Varnish Finishes

You can secure best results, either gloss or rubbed finish by relying upon the admitted high standard

Lowe Brothers
"Little Blue Flag"
VARNISHES

They are made of choice materials by the most expert varnish makers. We further your interests and reputation by making it easy to produce perfect results.

There's a Lowe Brothers Paint, Varnish, Enamel, or Stain for every purpose, scientifically adapted to your needs. Write for free booklet, "Paint and Painting" and details.

THE LOWE BROTHERS CO.,
457 E. Third St., Dayton, Ohio
Boston, New York, Chicago, Kansas City, Minneapolis
Lowe Brothers, Limited, Toronto, Canada

BUILDING CONTRACTOR AGENTS

to use and sell
the RAPID FLOOR SCRAPER

FREE TRIAL
USE IT FIRST—THEN PAY US

Saves its cost in 10 days.

Send for our special proposition and catalog.

MONARCH MFG. CO.
287 Shepard Bldg.
GRAND RAPIDS, Mich.

WOOD

FREE TRIAL
5,000 in use

RAPID, FLEXIBLE, SELF-PROPELLING WHEN RAISING HANDLE

Send for our new list and free trial proposition.

M. L. Schlueter
107 N. Canal St.
Chicago, Ill.

Made in three sizes:
8 x 18, 8 x 15 and 8 x 12 in. Flexible Roller.
Edge Roller easily adjusted to either side.

Your Biggest Asset Is Your Reputation

You can add a notch or two to your reputation by using

ART KRAFT

METAL CEILINGS, TILE and SHINGLE ROOFS

Nothing Better in Quality Newer in Designs or Lower in Cost

Satisfy Yourself Now
Don't Put It Off
You Will Profit By Asking Us

Catalogs, Samples and Prices Free. Send Name.

The Canton Metal Ceiling Company
1947 Harrison Ave., Canton, Ohio

You will get **SPECIAL ATTENTION** if you tell Advertisers you read American Carpenter and Builder.

The Builder Who Gets the Business

The builder who gets the business is generally the one who understands human nature, provided his prices are within reason.

Don't submit specifications that are just like those of your competitors. That puts everything on a mere price basis.

Remember that a man and his wife want a home that has some points of difference from other homes. They want individuality in their abode—individuality as marked, yet conservative, as characterizes the pages of Good Housekeeping Magazine.

You can get this individuality, without making a freak house, by specifying some of the beautiful and convenient things that are now widely advertised.

Attractive Specifications

Consult the advertising pages of Good Housekeeping Magazine. You will find numbers of construction specialties. Bear in mind they are all guaranteed absolutely by the magazine. The makers are thoroughly reputable concerns. Their products will satisfy your customers and build up your reputation. Some of these products are as follows:

Monarch Metal Weather Strip	Morgan Doors
Utility Wall Board	Corbin Builders' Hardware
Trus-Con Aseptico	Valspar
Lowe Bros. Mellotone Wall Finish, High Standard Liquid Paint and Oil Stains.	Vudor Porch Shades
Congoleum Rug Border	Snerwin-Williams Paints and Varnishes
Beaver Board	Standard Sanitary Plumbing Fixtures
Sanitas Wall Covering	Glidden's Green Label Varnishes, White Enamels, Endurance Wood Stains, Waterproof Flat Wall Finishes and Cement Coatings
Western Electric Inter-Phones	Pratt & Lambert's "61" Floor Varnish & Vitralite White Enamel
Stiwelcio Noiseless Closet	Southern Cypress
Alabastine Wall Tints and Alabasco Flat Wall Paint	Pearl Wire Cloth
Macbeth-Evans Glass Shades and Globes	McCray Built-in Refrigerators
Elastica Floor Finish, Kleartone Stains, Etc.	Aerolux No Whip Porch Shades
Wild's Parquet Inlaid Linoleum	Sturtevant Ready to Run Ventilating Set
Brenlin Window Shades	Benjamin Plug Current Tap
Pompeian Bronze Screen Cloth	Johnson's Wood Dye
Cyclone Fences and Gates	
Cabot's Creosote Stains	
Tapestry Brick	

Give the Public What It Wants It Wants Advertised Goods

The magazine publishes GOOD STOREKEEPING, a quarterly devoted to this question of cashing in on the wide demand for advertised products. A copy of it, and a copy of Good Housekeeping Magazine, will be sent free on request to any contractor or builder. Address:

Dealers' Service Dep't.

Good Housekeeping Magazine

119 D. West 40th St., New York City

"Safety" Clothes Hanger

A fearful death toll is taken each year by women attempting to hang clothes on a line from a window, where the line runs from a pulley on or near the window casing out to a yard pole. Reaching too far out the woman loses her balance and the inevitable follows. To eliminate any possibility of these sad happenings the patent Safety Clothes



Safety Clothes Hanger in Use

Hanging Machine Co., 624 East 13th street, New York, have invented and are now manufacturing the "Safety" Clothes Hanger. Two screw brackets are fastened to the outside of window casing. To the upper one is secured a swivel arm 25 inches long,

having a free running grooved pulley near each end over which the clothes line runs. To the lower bracket is attached one end of a folding arm or brace. When the latter is in position it will hold up a line full of clothes. When not in use the device swings around as shown in the photograph. Swinging the arms inside the window, push the folding arm into place and the Hanger is in position to use. The clothes can be put on or off the line, and that, too, without the user even leaning out the window at all. The device is of iron, and retails at a popular price. The manufacturers have a good proposition for agents and offer a liberal discount to carpenters and builders who will introduce this device.

Single 5 H.P. **MONARCH** Twin 10 H.P.
\$225 **MONARCH** \$275



Power - Speed - Durability - Class

The last word in Motorcycle construction. The 10 h. p. twin is indeed the ideal mount. Power enough to go anywhere and more speed than you will care to use, and yet so flexible that it will start on a walk and operate with ease in the busiest traffic.

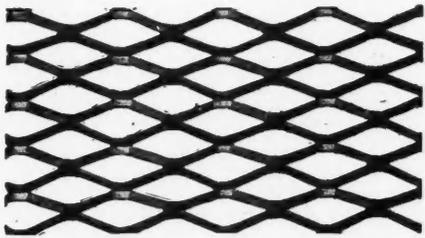
The single in either V belt or chain is the only machine for the man that wants plenty of power but does not care for a twin.

We would like to post you further; so please address Sales Dept.

IVES MOTORCYCLE CORPORATION
OWEGO TIOGA CO. NEW YORK

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

METAL LATH



Sykes Expanded Cup Lath

FURNISHED WITH EITHER AN

**"Anti-Rust" Coating, Painted Black
or Galvanized**

WE ALSO MANUFACTURE

Sykes Trough Sheet Lath

WRITE US TODAY FOR
PRICES AND SAMPLES

The Sykes Metal Lath & Roofing Co.
NILES, OHIO

SARGENT

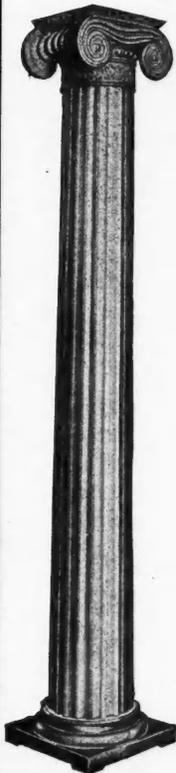
LOCKS

The Sign of Quality

SARGENT & COMPANY
New Haven, Conn.

New York Boston Philadelphia Chicago

Durability, Strength and Beauty,



the three essential requisites for
an ideal column are embodied in

Union Metal Columns

(PATENTED)

They are made of combination high-grade steel and cast iron, and are therefore free from such serious defects as splitting, opening up of glued joints, warping, rotting, etc., etc.

UNION METAL COLUMNS are made of the same high-grade materials, and by the same processes, dies and machines, that we use in the production of our popular lines of ornamental lamp posts which are in universal use on the streets of the leading cities and towns throughout the U. S. and Canada. This is the evidence of their real substantial nature as compared with a column made of wood.

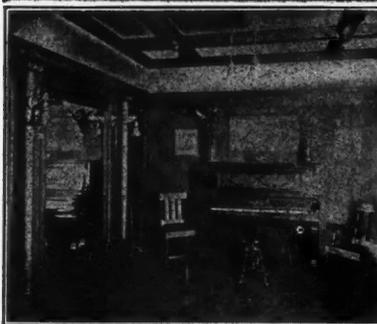
How long would a lamp post made of glued-up scrap lumber last, if placed upon the public streets of a city?

UNION METAL COLUMNS are made in all sizes, from the smallest to the largest. Prices are very reasonable.

Send for our new art catalog, mailed free of cost to you on application.

The Union Metal Manufacturing Co.
SOLE MANUFACTURERS
1400 Maple Avenue - CANTON, OHIO

Design No. 214



TWO Rooms in ONE

Utilize every inch of space in building—make 3 rooms equal 5.

Save space for the owner and yet

build an attractive, convenient home for either his use or rental.

PERFECT WALL BEDS have solved the space question. An attractive, richly furnished console or side board conceals bed. Ample ventilation is provided. Entirely sanitary. Space beneath bed easily cleaned—no moving of bed necessary.

Builders investigate PERFECT WALL BEDS. Let us explain them to you in detail—show you how and why your clients like them. Write for full FREE particulars.

Perfect Wall Bed Co.

430-2 S. Wabash Ave.
CHICAGO ILLINOIS



You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

A New Store Front Bar

Four new styles of Petz store front bars have been completed within the past month and are now brought to the attention of architects and builders. The new bars are more compact than any now being manufactured by the Detroit Show Case Co., and compose a series of a sash, two corner posts and a division bar.



One of the New Petz Bars of the Detroit Show Case Co.

Although small and neat, these bars follow the safe Petz principle of holding the glass in a cushion of wood, the metal does not touch the glass at all, so the danger of breakage from the meeting of the two hard substances,

metal and glass, is avoided. These bars are also reinforced with the steel backbone if so ordered. The same simple method of installation is used: The inner core is first put in position, the glass then laid in the rabbets and the outer core screwed on.

Further information, catalog, prices and discounts may be obtained from the Detroit Show Case Co., of Detroit, Mich.

Plan for Big Cement Show

The Chicago Cement Show in February 1914, will be featured by the convention of a number of organizations to be held in conjunction with the exhibition. The plans of the National Association of Cement Users, which will convene in the Auditorium Hotel, February 16-20, have already been announced by President Humphrey. Secretary E. S. Hanson of the Interstate Cement Tile Manufacturers Association is completing arrangements for holding the convention of that organization in Chicago February 17, 18 and 19, 1914. The National Association of Sand & Gravel Producers, through President F. W. Renwick and the Executive Committee, have expressed their intention of holding their next annual convention during the period of the Chicago Cement Show. Detailed arrangements for the convention are progressing. According to announcements made by Secretary George Wilson-Jones of the Illinois Lumber & Builders' Supply Dealers Association and C. E. Mateer, Executive Secretary, of the Illinois Association of Municipal Contractors, the convention of both of these Associations will be held in Chicago on dates to be selected falling between February 12 and 21, 1914. Several other organizations are considering the advisability of convening in Chicago during the national Cement Show.

The advantages of holding joint meetings in this way are many. Builders, dealers, engineers, contractors and cement products manufacturers are able to attend the conventions and inspect the exhibits by making but one trip to Chicago. Exhibitors and their salesmen are enabled to make a display which will reach the membership of all the associations.

The Seventh Chicago Cement Show promises to eclipse all the exhibitions of the past. Exhibition space is being reserved rapidly and a wider range of noteworthy and substantial exhibits are in prospect. The recent development of concrete road construction has led a number of manufacturers of concrete road building equipment to make application for spaces. It is expected that there will be an extensive representation of manufacturers of road machinery and large concrete mixers and concrete handling apparatus.

These Building Material Prices Limited To 60 Days

Design No. 73
Eight Rooms and bath, all rooms convenient and roomy. Size 28x24 feet.

Design No. 93
7 Rooms and bath, very attractive exterior; sleeping porch, balcony. Size 30x22 feet.



\$890



\$899

Freight Prepaid No Money Down

Here is an opportunity for any man to own a home of his own, no matter how limited his means. Even if you have not definitely settled on any building plans for the summer, it will pay you big to take advantage of this sensational offer. Order your material NOW and build later. We are determined that the summer of 1913 shall be the biggest, busiest season in the history of this company. Hence these unprecedented offerings, the like of which have never before been made in the history of building material business.

Think of the Enormous Saving Nowhere else, in all the world, can you duplicate these prices. We will save you from 1/2 to 2/3 what you would have to pay elsewhere. Look well at the illustrations of the 4 homes here shown—note the brief descriptions. We will furnish you the material needed to construct any of these homes strictly according to our Plans, Specifications and Material list at the prices quoted for each. But that is not all. We will deliver all of this material right to your railroad shipping point, FREIGHT PREPAID BY US—no charge to be paid by you at all. You are not even required to pay one cent down. We ship subject to examination wholly at our own risk. We positively guarantee every item we send you to be high grade, clean, brand new stock. We would not dare ship from \$500 to \$1000 worth of material on these liberal, no-money-down, freight prepaid terms, were it otherwise.

Special Notice: These freight prepaid prices are for all points in Ill., Ind., Ohio, Southern part of Mich. and Wis. and Eastern part of Ia. and hold good for these 4 designs only. Special freight prepaid prices to any point outside of above territory.

These Prices Good Only For 60 Days

Please remember, the prices quoted in this advertisement hold good only for 60 days. After that they will positively be withdrawn. If you are wise you will not let this chance go by, as it may never come again. So be sure to write us today.

50c Buys Complete Set This is the first time we have ever offered a complete set of plans for only 50c. Plans offered at this price are only for the designs shown in this advertisement. This is a part of the building material offer and like it, is good only for 60 days. Usually, when you go to an architect, plans like these would cost you about \$50. If you buy the bill of material from us we will absorb the 50c charge and the plans will cost you nothing.

\$10,000 Book of Plans Free

The houses here shown are four of our regular designs taken from our wonderful Book of Plans, containing 100 pages of beautiful modern homes. Let us send you a copy of this magnificent book FREE. Not only do we save you from 25% to 50% on your complete building, but we give you all the assistance you need for its proper and economical construction free of charge.

Plumbing Material

Write for prices on our complete bathroom outfits. We guarantee a saving of 30% to 50%.

Heating Plants

Steam, Hot Water and Warm Air. Let us estimate on your requirements. Big saving.



\$736



Design No. 57
Six Rooms and bath. A Modern Home, Excellent Interior. Size, 24 ft. by 26 ft.

Our Guarantee Your Protection We guarantee all brand new stock, sufficient quantity, prompt shipment. Guarantee backed by \$10,000,000 capital.

CHICAGO HOUSEWRECKING CO.

Prominently known to the public for 20 years as the great "Price Wreckers", and now owned by the Harris Bros. Co., have decided that their best interests require that the name of the principal owners of the company be more prominently brought to the public's notice. There is no change in our business, except that the four Harris Brothers will, in the future, advertise and sell their goods, heretofore advertised and sold under the name of THE CHICAGO HOUSE WRECKING COMPANY, under the name of the Harris Brothers Company.



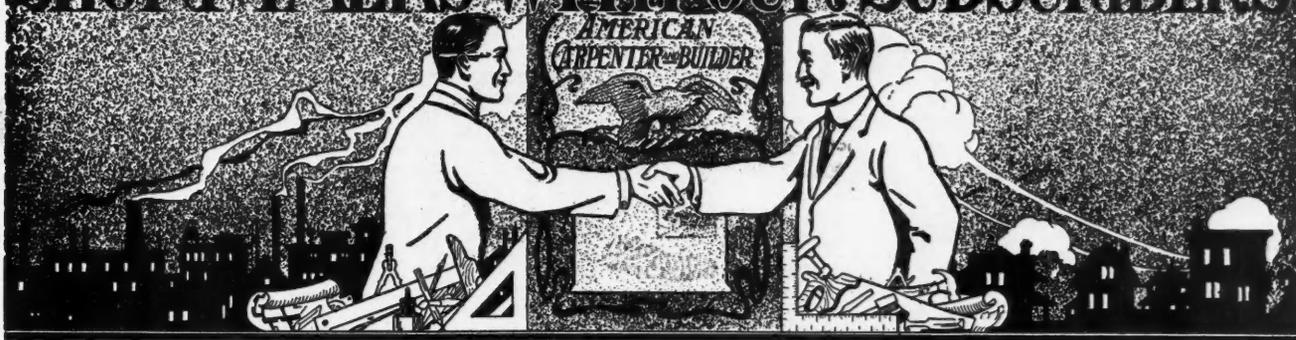
Design No. 60
Five Rooms, bath. Large Living room; Private Porches, Modern in every respect. Size 37x29 ft.

\$762

Harris Bros Co. 35th and IRON Sts. Chicago Dept BH-149

You will get SPECIAL ATTENTION if you tell Advertisers you read American Carpenter and Builder.

SHORT TALKS WITH OUR SUBSCRIBERS



Now for the Finish

MY how good these cool days seem. How fine they are for work!

The frost will soon be on the pumpkin; and the outside work of the carpenter and builder must be rushed to a close.

This has been a busy season for the majority of Our Folks. They have had about all they could do, and now are hustling to finish up their contracts in good shape and probably get a few more good building operations started and well under way this fall before the freeze-up comes.

Some say there won't be many new corn cribs needed this fall; but there will be a good many silos put up in a hurry in order to save the food values that are already in the corn fodder, even if, as they say, the long dry spell throughout the Southwest has prevented the ears from maturing. And in all other lines—residences, barns, store and factory buildings, we look for a long and busy fall building season this year.

Season for Study

THESE long cool evenings from now on invite one to sit down under the study lamp and really invest some time to good purpose. Builders must keep posted. Carpenters if they are ambitious to get ahead in the world, must read and study and so fit themselves for larger places in the building world.

There are several very helpful new books just offered which no carpenter or builder can afford to be without. Take our new "Radford's Estimating and Contracting," for instance. This big book which is now on the press and will be ready for distribution within a few weeks is the result of years of practical experience, study, and observation. We have been appealed to many times by ambitious carpenters who wanted some reliable guide to help them in getting into contracting and by contractors who constantly need an accurate record of material and labor costs, to compile and publish a satisfactory, comprehensive estimator and contractors' guide.

Now this is no small task. However, realizing strongly the need and being familiar with the shortcomings of the estimating books that have been all carpenters and builders have

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had to guide them in the past, we undertook the work and have been quietly and persistently going forward with it. On another page you will find a photograph and brief description of this new book. We know it will earn money for you if you will study it this fall and winter and have it constantly at hand for ready reference.

Bind Your Magazines

THIS issue completes another volume and we have an A-1 binder ready for you. Bind up your copies of the AMERICAN CARPENTER AND BUILDER so that none of them will get lost or torn. On page 90 you will see what these binding covers look like. They are the best binders made,—strong, durable, covered with dark red art canvas and lettered in gold leaf. The binding principle, using the well-known "Torsion" steel wire binder, is very simple and satisfactory.

We want you to preserve your copies of the AMERICAN CARPENTER AND BUILDER for future reference. This is the best text book for carpenters, contractors, and architects. The building plans and designs illustrated in every issue will interest your customers and help you to get and keep their business. We want you to use the AMERICAN CARPENTER AND BUILDER every issue as it reaches you, and also the back numbers for reference, when you need them. We have therefore placed a very low price on these binders so that every subscriber can afford to keep his magazines in good shape.

Winter Work Contest

MANY will remember with pleasure the prize letters we published early last winter, giving personal experiences of how our readers manage "to keep the dollars coming in during the winter months." Many have asked for more along the same lines this fall. We are getting plans ready for a big winter work contest and will announce them next month. This is going to be another of your own departments. Watch for the details of it next month and be thinking what one of your own experiences you will contribute to the good cause this year.

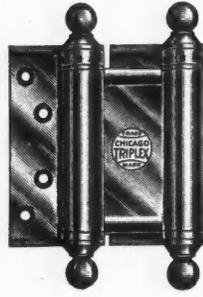
Cordially yours,
Editor AMERICAN CARPENTER
AND BUILDER.

CHICAGO

SPRING BUTTS

A SUGGESTION

Do you specify a spring hinge with distinctive features which will appeal to your client and assure satisfaction to all concerned?



Chicago "Triplex" Spring Butts

offer this advantage to you. The appearance, durability and finish of this article are unsurpassed, and in consideration of prices that are conservative in respect to value, the up-to-date builder cannot afford to risk his reputation with goods that are unsatisfactory.

Send for Catalogue C 29. It illustrates and describes the most complete line of Spring Hinges manufactured.

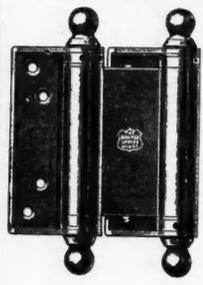
Chicago Spring Butt Company,

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Yes! the World does Move!

Facts are Stubborn Things



Don't Buy
SPRING HINGES
OF
OBSOLETE
CONSTRUCTION



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Spring Butt Hinges

Carry the load on the true bearings

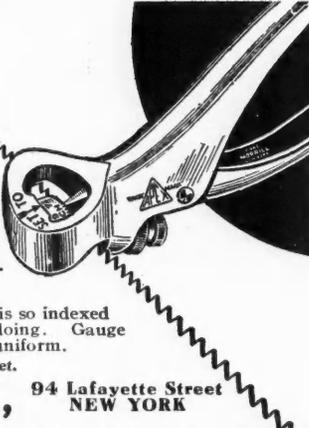
and look alike at both sides of the opening when both doors of a pair of doors are opened in or out. The carpenter can scribe for both doors of a pair from the same side, and avoid guesswork, as he can see what he is doing while fitting the doors.

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Simple and accurate. The only Saw Set a carpenter should use. Takes out the wrong set and puts in the right set at one operation.

The eccentrically beveled anvil is so indexed that you can see what you are doing. Gauge screw and locknut keeps work uniform.

FREE "Saw Points" a valuable Booklet.

Chas. Morrill, 94 Lafayette Street
NEW YORK

You Can Pick Out

The houses that have been stained with

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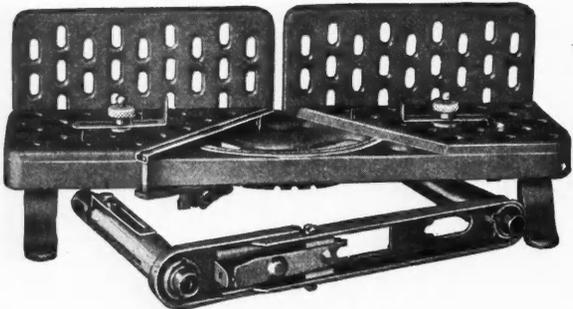


The colors are so soft and rich and durable that all other exterior stains look cheap and tawdry in comparison. They go farther, last longer, preserve the wood better, and are infinitely more artistic. The genuine creosote wood-preserving stains. Every gallon guaranteed. Don't use stains that smell of kerosene, benzine or other worthless and inflammable cheapners.

This is the residence of Mr. H. S. Kramer, E. St. Louis, Ill. (E. G. Garden, Architect, St. Louis, Mo.) and this is what Mr. Kramer says about Cabot's Creosote Stains: "The Stains have proven very satisfactory, and the most noticeable value of Cabot's Stains is to compare the colors with others that have been stained with some other kind. I used brown No. 249 for siding and green No. 305 for roofs."

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