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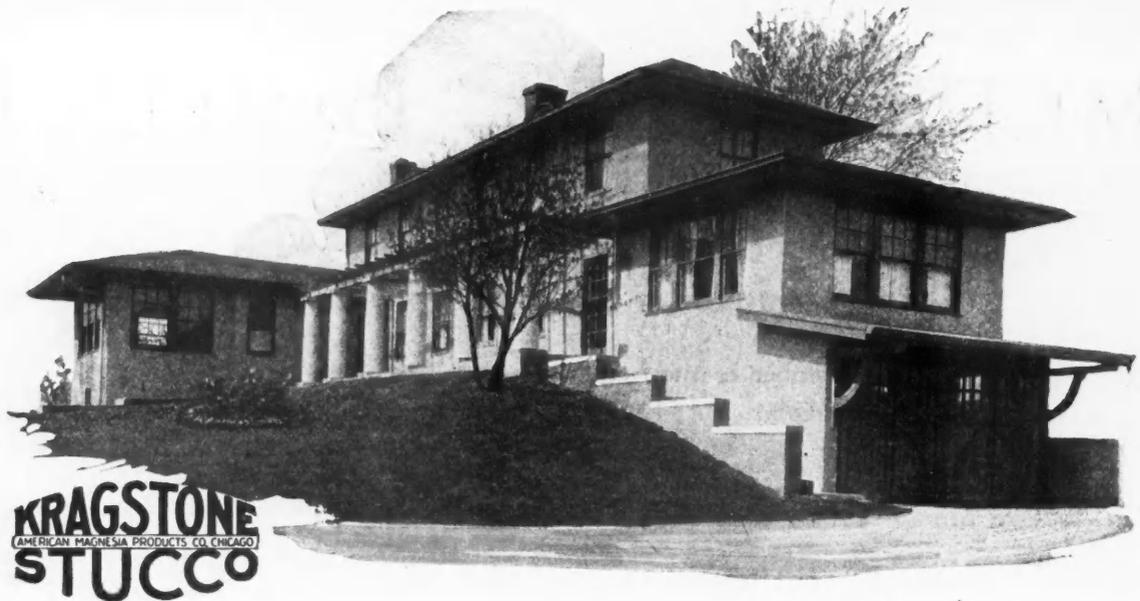
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The STUCCO BEAUTIFUL

Short Talks by the Editor

Reading Your Way to Success

AMBITION made the son of lowly peasants of Corsica emperor of France, and a "printer's devil" in a small town president of the United States. Ambition is the dominating impulse of all progress.

It is the thirst for knowledge that can only be satisfied by practical experience and study.

"Reading makes a full man," said Bacon. It broadens him, gives him a firmer grip on things, and enables him to do his work better. Better work brings with it reward.

That is why the stir of ambition in the heart of the apprentice causes him to aspire to be a journeyman, the carpenter a foreman, the foreman a builder, the builder a general contractor, and the contractor an architect. Always this striving to go one step higher in his work so that he can increase his earning power and his ability to make money. The thirst for knowledge has caused new discoveries, new inventions, and new methods.

The builder and the contractor who hopes to be somebody in his field must study just as well as the lawyer or doctor. His opportunity for more knowledge lies in books. By reading more he can earn more and increase his profits.

That is what the AMERICAN BUILDER wants every one of its readers to do and it proposes to help them by offering at a very low price a valuable cyclopedia on carpentry, building and architecture. This set of books is not only a treasure house of compact, readable information, but it is guide to practical building. Knowledge is useless unless properly applied.

Elsewhere in this issue read the story of "The Man Who Stood Still." It is an epic on the value of reading and study.

During the long winter evenings that will soon be here every builder should be increasing his fund of knowledge by reading and study. And for this purpose we can recommend no better material than this practical builders' cyclopedia.



Are You Two-Fisted?

"If Carpentier Had Had a Good Left He Would Have Won the Fight in the Second Round"

THIS remark has been made more than once since the big fight. The Frenchman staggered Dempsey twice with his right but could not follow with the left because he did not know how to use it.

How many builders have lefts which they do not know how to use? But can they deliver the punch that will get the big jobs and the extra profits? Every man is endowed with a certain amount in skill in one hand but how many are ambidextrous? How many have trained the other to be equally skillful?

That is the difference between champions and their opponents.

The live, wide-awake builder has a punch in both hands. If he cannot get contracts for new building, he knows how to get remodeling jobs and when he is busy all summer on new work he manages to keep busy during the Fall and Winter on sidelines. The two-fisted builder is the man who is getting his clients to remodel their old homes, he is the man who is selling furnaces, electric light plants, weatherstrips, store fronts.

If you are one of the one-fisted kind, take particular note of the articles on remodeling which are appearing in the AMERICAN BUILDER. They contain some valuable hints on this work which will help you to get contracts. And if you are one of the two-fisted variety who have been scoring knockouts, right along, write us and tell us how you do it. Perhaps you can help out the other fellow.



"GENERAL business thruout the United States has been slowing improving. It is very good in some of the Western States. There is an abundance of new business with both the ability and inclination to place it, waiting for further adjustments which will put costs of living, selling price, wage rates and other general increases on a relative parity. As usual, many will wait too long."
ELBERT H. GARY.

A CHANCE TO KILL TWO BIRDS AT ONCE

(Copyright: APCA: By The Chicago Tribune.)



Carrey Orr in the Chicago "Tribune."

Why Not Hunt Bigger Game Than Deer or Duck? There Is a Big Chance This Fall To Make a Killing in the Building Line.



NEW BEACON LIGHT OF THE FAMOUS "BOUL MICH," CHICAGO. This is the new Wrigley Building as it appears illuminated at night, a snow-white mass of terra cotta towering thirty-four stories above the street below. The entire front of the building and four sides of the tower are floodlighted by batteries of powerful electric light reflectors. It can be seen clearly fifteen miles away. The building is of irregular shape and stands 400 feet above the street level. It is lighted every night until midnight.

High Rents Are Stimulating Home Building

EXORBITANT COST OF RENTED APARTMENTS ARE MAKING PEOPLE THINK OF HOMES OF THEIR OWN

IT IS a sad commentary on home-loving qualities of the American family to note that only 40 per cent of the population own their own homes and that the rate of decrease from this percentage each year is 3 per cent. At this rate the race is gradually deteriorating into a race of renters.

But there is one thing that is going to save the situation. High rents!

We don't want to be considered charter members of the "I-told-you-so" club but we can't help but think over some of the things we have said during the last year especially at this time when city landlords are again putting over a new increase in rents starting in October. There are many people we know who did not listen to us last year—no, they bought silk shirts and a new car and had a season ticket for the opera. It was a case of "easy come—easy go" with them in those profligate days.

Now they are lamenting and gnashing their teeth because they did not use the money when they had it to buy a home. But it isn't too late. This habit of putting off things until tomorrow gets a hold that is hard to shake off. Indecision is the thing the builder will have to fight against but this year he has conditions with him. *The people are thinking homes just now more than they have in years!* Their minds have tired of the nonessential things of life and unconsciously they have been coming around to the more serious things. They have been bumped by adversity or by increased rentals and are in a workable mood.

All you have to do now days to get a crowd interested is to show a display of houses and floor plans. They are all ears. Booths at pageants, fairs and the like which deal with home building are the most popular. It shows people are thinking about that subject. They are considering the most practical way to end the rent problem—and housing shortage—by building a home of their own.

Sometimes Billy Sunday is wrong but sometimes he is right and he certainly said a mouthful when he expressed the sentiment in his vernacular that "the man who sings Home Sweet Home in a rented apartment is kidding himself." It is almost as pathetically humorous as singers in a renovated cabaret warbling *Il Trovatore* or some other operatic score.

When a man hangs up that little sign "God Bless Our Home" over the parlor door, he generally pictures peace, contentment and independence or else he has a distorted sense of humor. For it is certainly difficult to feel that way if you are thinking about an increase in rent on the first of October. There "ain't no sich animal" as peace of mind under these conditions.

But it is just like the case of the little darky when asked to explain how he was so lucky in that elusive game of dice, emphatically replied, "You all got to talk to 'em." That's what builders have to do. These people need a little talking to like naughty children who have gone and spent their money on candy instead of buying the groceries. There are lots of big children who have squandered their money on silks and gewgaws instead of investing it in a home and now they are repentant.

But building costs, they argue. Prices are higher than before the war, to be sure, but just let them figure out what their new lease will call for. Much less than that paid each month will buy a home that eventually will be entirely paid up and then their rent is free. But under the lease arrangement they never get paid up and their rent is never free. Chances are it is going up all the time.

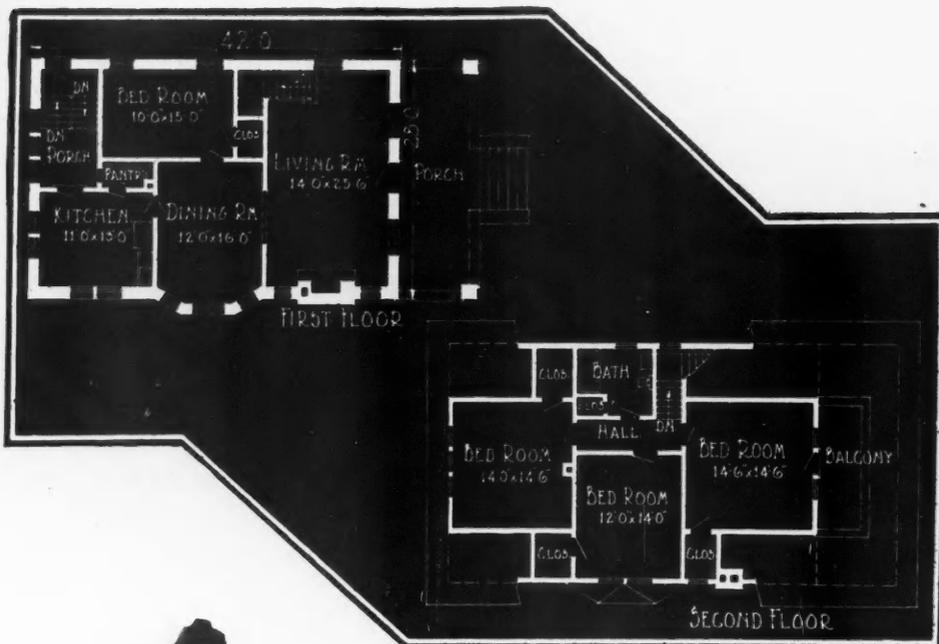
It is not exactly sportsmanlike to tackle a man when he is down, but if the builder goes after a client now he is doing it for the latter's own good and in after years he will appreciate it. There are a lot of people in every town who are on the fence. It is not a bad stunt for the builders to push them over.



Small, Modest Homes But They Are Homes and That is What Counts. "Be It Ever So Humble"—Is the Sentiment That is Gradually Coming Back Into Its Own. High Rents Are Directly Responsible.

PRACTICAL
&
ARTISTIC

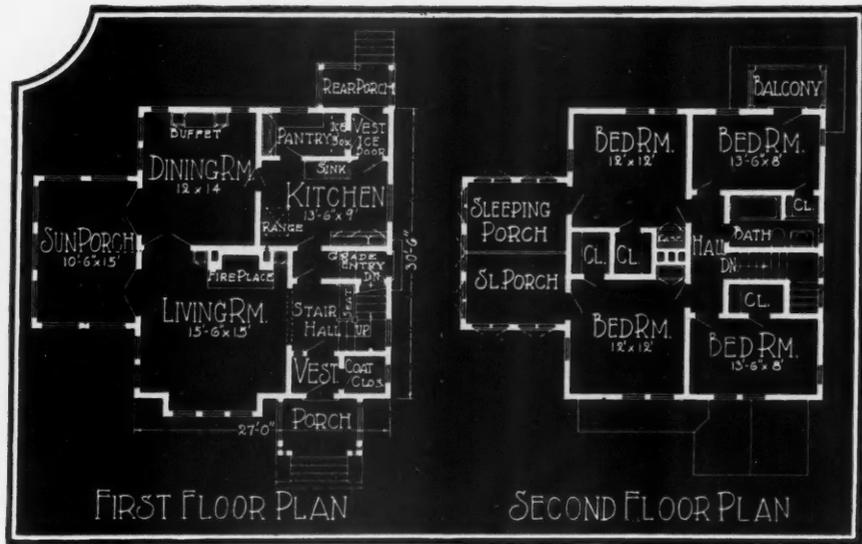
BLUE RIBBON HOMES



CHARMING BRICK AND STUCCO HOME. Here is a house that will recommend itself. It embodies beauty, comfort and strength, three qualities which will find attention from prospective homeowners. Up to the second floor it is brick, above to the roof gables, stucco with a half timber modified English effect. Across the front of the house is a broad open porch approached by concrete steps and brick railings. The bedroom windows in front look out upon a small balcony. Four of the seven rooms are on the first floor, three on the second. Extending the full width of the house is the living room, a spacious lounging place, 14 by 23 feet 6 inches. Besides the dining room and kitchen, there is one bedroom and three more bedrooms on the upper floor. In the rear is a brick garage. Size of house 28 by 42 feet.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



INEXPENSIVE, WELL-BUILT HOME OF ATTRACTIVE DESIGN. There is nothing pretentious about this substantial frame home of eight rooms, but it is evident that it was built for solid comfort and convenience. The exterior design is pleasing without being ornate and there are several features in the floor plan arrangement that will meet the favor of many prospective homebuilders with families. Of importance are the sun parlor and sleeping porches. The rather nospitable appearing front entrance with its colonial hood opens into a reception hall. To the left is the living room of good size splendidly lighted by windows on two sides and in the sunparlor which adjoins the living room. The sun porch is also connected with the dining room and can be used as a breakfast room. Built-in devices have been provided in the kitchen. Four bedrooms and a sleeping porch are on the second floor. The house is 27 by 30 feet 6 inches.

Suggestions for Laying Asphalt Shingles

DON'T FEAR UNEVENNESS OF COLOR—THE ARCHITECTS AND YOUR CLIENTS PREFER IT—
MIX UP THE COLORS

THERE is a popular song going the rounds which is based on the idea "I want what I want when I want it." That expresses the thought of the public very succinctly. They are inclined to insist upon what they want when they want it. And that is just what they are doing in the matter of prepared roofing.

For a long time the idea has been held by builders, strangely enough, that only a uniform color in prepared roofing would be acceptable to the homebuilder. For that reason where there was a little variation in tone in various sheets of roofing, they were not used for fear the reaction of the customer would be such that a new roof would have to be installed.

But the homebuilders want variation in tone to add to the life and beauty of the roof. And to meet this demand the manufacturers have devised several arrangements for laying asphalt shingles in very attractive ways.

The very shingles which have been rejected because of difference in color tones can be so laid as to make a delightful roof of harmonious colors. It is important that builders and those interested in roofing work should know how these results are obtained.

Take the mottled effect for instance. This is very popular among home owners. Here is how it is done. Take up on the roof at least three bundles of shingles at once. Let each be of a different color or shade. Use out of all, and assort the colors with studied irreg-

ularity. In the house on the right (Fig. 1) the red and green shingles have been sorted so as to take away the flat look from the asphalt shingle roof.

Two or three green shingles are laid in the same row horizontally, then a few of red. Where three green shingles are laid, very often you will find two



Fig. 2. Thatched Roof Effect with Composition Shingles. The Shingles Are Laid in Courses with Slight Elevations at Regular Intervals Made by Laying Two Layers of Bevel Siding.

red ones in the row above them. On the right-hand side of the roof you will note that the rows are staggered; in fact the different colors are interspersed with studied irregularity.

In the other house in the same picture the roofer started with a larger percentage of green shingles than red. At the extreme left hand corner there are three or even four rows of green above the other with an occasional red shingle thrown in. As you go up the roof you will note that the percentage of red is increased, and at the top there is a zig-zag pattern, red and green, alternately. Note the hips and ridges are alternate red and green. This effect can be easily



Fig. 1. Two Houses Covered with Asphalt Shingles. Notice How the Red and Green Shingles Have Been Placed on the House on the Right. This Mottled Effect Is Very Pleasing and Popular with Home Owners. This Roof Does Not Call for a Special Brand of Shingles.



Fig 3. Street of Attractive Homes Showing Various Types of Composition Roofs. The Second House To the Left Has Been Covered with Shingles Thatched Style, Also the Third House, While on the Next Two, the Gabled Roofs Have Been Covered with Asphalt Shingles of Even Color. It Makes a Very Pleasing Variety of Roofs.

overdone and spoiled by putting large patches of green or red shingles in the same group.

This roof does not call for a special brand or color of shingles, it merely means exercising a little care in laying the colors. The result will be quite pleasing to the client and certainly will add materially to the beauty of the roof and the home. It eliminates all necessity for insisting on one brand or stock.

Another unique and attractive way of laying asphalt shingles is the thatched effect. In this case, you start the first course as usual, that is, two layers of shingles at the eaves, then expose every 4 inches to the weather and lay four or five courses. Then apply parallel with the eaves two layers of bevel siding—one on top of the other—both thick edges down. This will raise the next course of shingles about $\frac{3}{4}$ of an inch. Paint the thick edges of the siding dark green or black before applying them to the roof boards. Apply directly on top of this one layer of slate-surfaced roll roofing same color as the shingles, 8 to 10 inches wide, then start in laying the shingles the regular way until four or five courses have been laid again. Then repeat the operation of applying the bevel siding.

On roofs with short rafters, 15 to 18 feet long, it is recommended to lay four courses of shingles, then applying the bevel siding. On roofs with longer rafters, 18 to 36 feet, five courses are recommended, which means that the lower edge of the bevel siding would be 20 inches apart.

Both these thatched and mottled effects have been received with great favor by home owners of all types of homes.

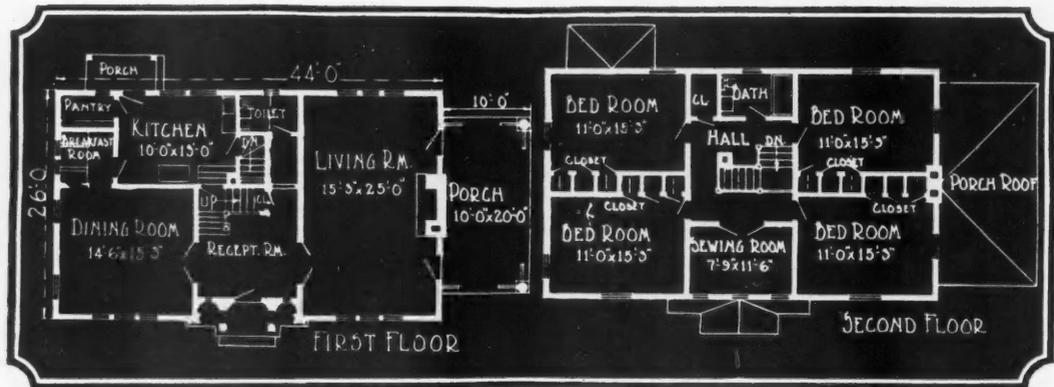
Some revisions have been made in the directions

for laying shingle with which every carpenter and builder should be familiar. They were made after strict tests and thoro investigation.

Composition shingles should not be recommended for roofs having a pitch less than 4 inches to the foot. Commence laying the shingles at the eaves extending the first course of shingles $\frac{1}{4}$ inch beyond to form a drip edge. Individual shingles are to be exposed 4 inches to the weather and space $\frac{1}{2}$ inch. For the first and second course cut sufficient shingles crosswise into two portions measuring respectively $\frac{1}{3}$ to $\frac{2}{3}$ of the depth of a full shingle. For the first course use the $4\frac{1}{4}$ by 8-inch portion and start with one of full width. For the second course use the $8\frac{1}{2}$ by 8-inch portion and start with a $\frac{2}{3}$ width shingle laying the butts flush with those of the first course. For the third course use shingles of full depth $12\frac{3}{4}$ inches and use these for ensuing courses. Each shingle should be fastened with two nails driven $4\frac{1}{2}$ inches from the butt and 1 inch from either side with the exception of the first course, which is fastened by two nails 2 inches from the butt.

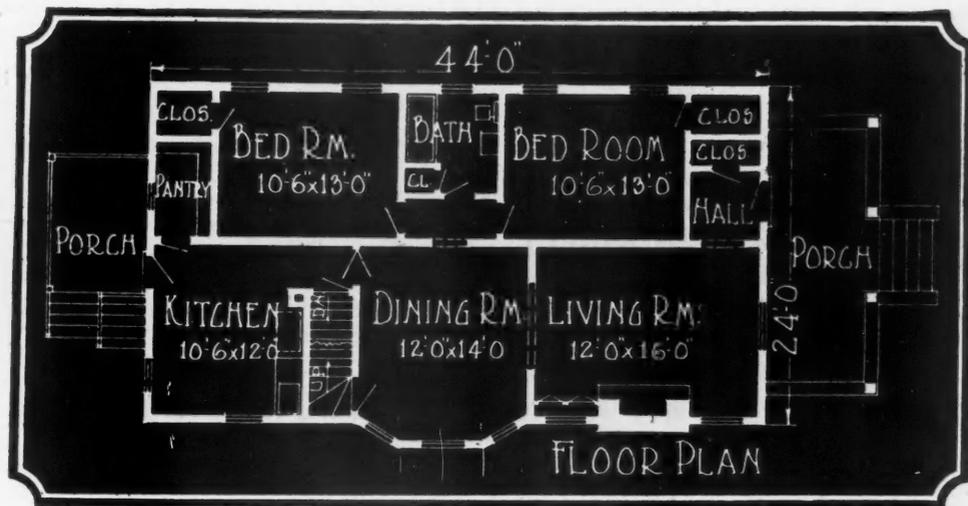
Shingle slabs are laid exposed 4 inches to the weather and laid closely together at the ends. For the first and second courses cut sufficient shingle slabs crosswise in half. For the first course use 5 by 32-inch solid portions. For the second course use 5 by 32-inch portions bearing the tabs laying the butts flush with those of the first course and starting with a slab cut to contain $1\frac{1}{2}$ tabs. For the third course use slabs of full depth (10 inches) laying the butts flush with those of the first two courses commencing

(Continued to page 140.)



HANDSOME AND HOSPITABLE COLONIAL HOME. We never get tired of looking at Colonial designs and know most of our readers feel the same way about it. This charming home of frame is an excellent design and will be strong in its appeal to many of your clients. The white exterior, the quaint entrance, and brick landing, splendidly placed windows with their old fashioned shutters, and the vine covered porch supported by the customary white pillars, are responsible for the pleasing effect of the house as a whole. There are seven comfortable rooms, three on the first floor, and sun parlor and four on the second floor. The living room lives up to the true tradition of the Colonial home, being large, spacious and homelike. There is also a small breakfast room adjoining the kitchen for light meals. On the upper floor a sewing room is also provided. The house is 44 feet wide and 26 feet long.

BLUE RIBBON HOMES
 PRACTICAL & ARTISTIC



MODEST ATTRACTIVE COTTAGE BUNGALOW. Cozy comfort combined with a pleasing exterior design makes this dwelling one to be sought after. It is designed for the average family of three or four. The foundation siding is shingles, while the main walls of the building are rough boards. The ornamental features of the trim, painted white in vivid contrast to the brown stain of the sides, make the home look very attractive. Five rooms are shown in the floor plan, a living room 12 by 16 feet with brick fireplace, a dining room to its rear with bay window, kitchen and two bedrooms of good size. The front door opens into a small hall with closet. Leading from the short hall, which joins the kitchen and dining room is an inside stairs to the cellar. There is a roomy attic above which can be used for storage space. The house is 24 by 44 feet.

Effective Lumber Yard Plan

HOW WE MAKE USE OF EVERY FOOT OF GROUND IN OUR NEW YARD.

By J. S. Fifield

WE recently purchased a new piece of ground for our yards, and by a little planning have been able to make effective use of each foot of land. In the first place, we moved a little farther away from the center of town. This was made possible by moving our main office to a building in the center of town. We occupy a part of the first floor, and the second floor of this building, so that orders and the payment of bills may be handled conveniently by our customers without going to our yards. As a matter of fact, we do not encourage customers to go to our yards at all, for leaving orders. We prefer to have the orders handled through the downtown office.

The land we purchased made it possible to build buildings with two levels. The land had formerly been occupied by a railroad roundhouse, and the regular street level was arranged just right so that we could build a building in the shape of an L, with entrance to the upper floor from the street, and an entrance to the lower floor from the level of the railroad track.

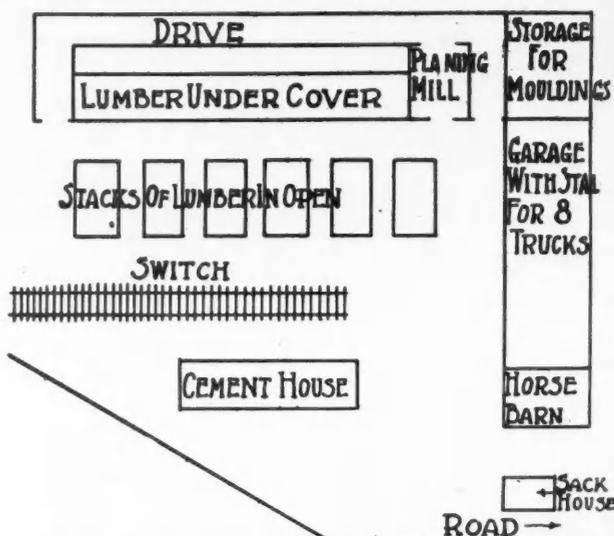
The diagram which is reproduced on this page will show you how the level of the railroad track is arranged. You will see that we have two rows of lumber stacked under cover, with a driveway around the edge. At one end of this row of stacks is a room set apart as a planing mill. We have quite a little work of this kind to do, and keep from one to two, and sometimes three men busy in this mill all of the time.

One corner is used for the storage of moulding. We store these mouldings by standing them on end. We find this a much more convenient way, and we also believe that it keeps the moulding in a much better condition.

The other side of the L is used for our garage and horse barn. We have fourteen trucks, and when we

built the garage we divided it into eight stalls above and eight below. We still have a few horses, and space is provided for them at the end. The horses are kept on the lower floor, the hay and straw are stored above.

You will also see from the diagram that we have plenty of space for outside stacks of lumber. Besides a railroad switch that runs into the yards, we built a cement house, 40 feet wide and 96 feet long. Then



Plot Plan of Fifield Lumber Co.'s Yard, Showing Buildings.

in another location, which is shown on the diagram, we have a sack house, in which all empty cement sacks are thrown to be cleaned and baled, ready for returning to the cement manufacturers.

In the diagram showing the floor plan of the upper level of the shed you will see that we have a space about 60 feet wide and 260 feet long, in which we store sash, doors, windows, plaster boards, and so on. There are nine doors thru which this material may be loaded into our trucks on the street level. This has proved to be a mighty good arrangement.

Notice also, that between this part of the storage space and the office, and the automobile repair shop, we have a fire wall. The principal reason for this is that our repair shop houses our trucks when they are being repaired and gasoline is stored nearby. This fire wall saves a great deal on our insurance and also helps protect against a rapid spread of fire in case one should occur.

The photograph reproduced on this page shows the street level of our yards, and you will see



Sash and Door Department of Fifield Lumber Co., Janesville, Wis., Showing Nine Doors Thru Which Material Can Be Loaded Onto Trucks. This Is One of the Buildings in the Efficient Group in Their New Yard.



Trucks and Trailers Are Used Extensively Because They Save Hauling Cost and Increase the Business Radius. A Trailer Is Shown Here Loaded and Ready to Be Hauled to the Job.

This is outdoor storage, but it is near the railroad track and is easily accessible.

It seems to me that we have made rather novel use of the space between two switch-tracks. The photograph reproduced on this page shows how we make use of this space. It is where we store our brick and tile into the yards from the other side. This is rather an odd shaped piece of land and rather an odd location, but we have made unusually good use of it. That is, I mean it is quite an advantage to us to have so much unloading space. You will see that we can spot anywhere from one to ten or twelve cars at one time. Of course it

the nine doors thru which the sash and doors are loaded onto the trucks. Another picture shows the lower level, where a trailer and a truck are being loaded with lumber. Still another picture shows the lower level of our garage and horse barn. There isn't anything particularly unusual about this part of our construction, except that we have taken full advantage of both levels.

doesn't very often happen that we want to spot as ten or twelve cars, but the spotting is easy and there

Our cement storage house was made large, especially to take care of storage work for outside concerns. Right now there is a great deal of highway construction, and the cement is loaded into our cement house and hauled by highway commissioners from there. This gives us a little added revenue from this source.



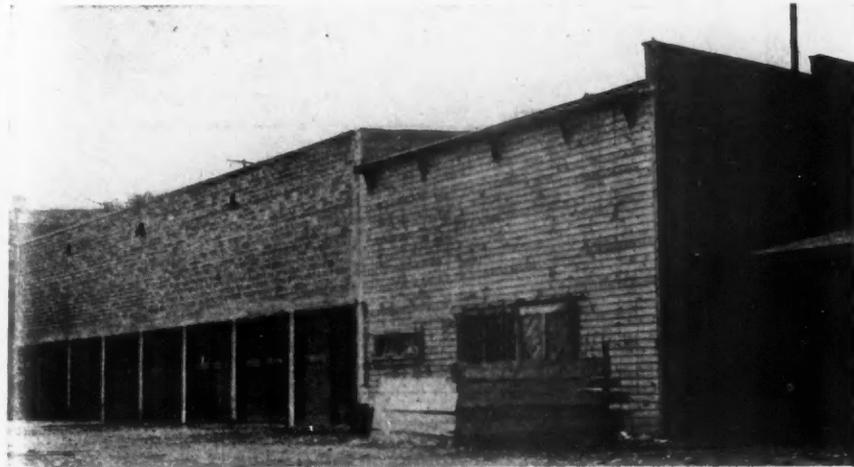
Cement Storage House. This Building Was Made Large to Take Care of Storage for Outside Concerns. This Means Added Revenue. This Concern Stores Cement for the Highway Commission.

We use another space nearby for storing shingles and fence posts.

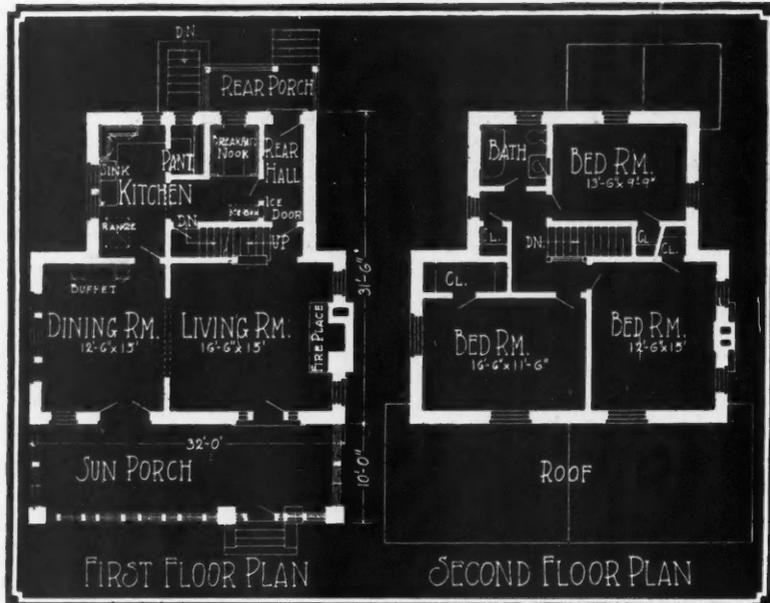
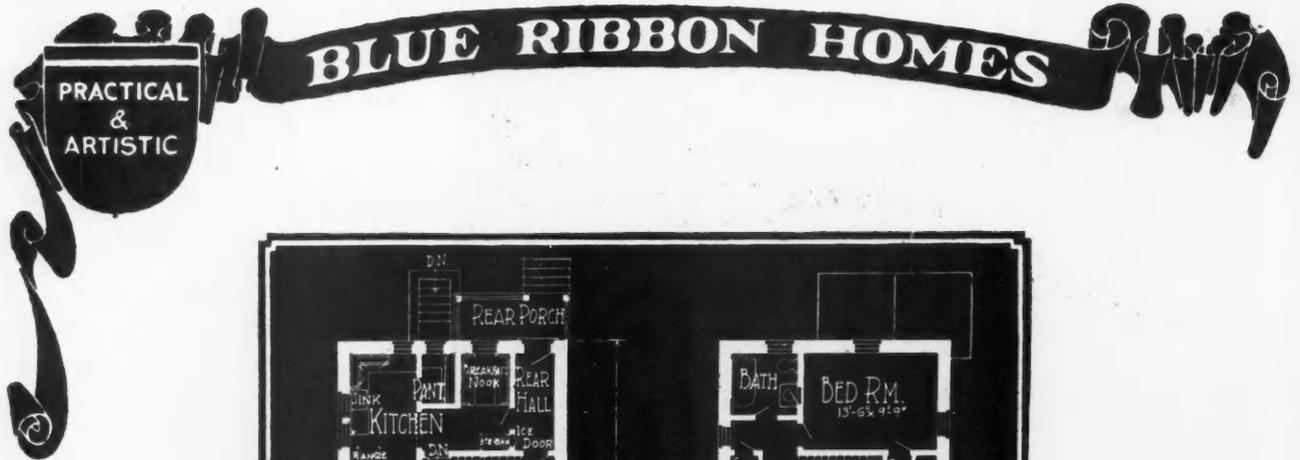
is no delay in unloading when we have several cars arrive at the same time.

In these days when every item of cost must be carefully scanned, we all have an opportunity to rearrange our yards and make better use of our facilities. We aren't so busy now in making deliveries but what we have the time to make a better layout for our storage space.

While I realize that almost every yard is a different shape and size, still I think that some of the fundamental principles we have followed in making use of our space will be of suggestive value to other yard owners.



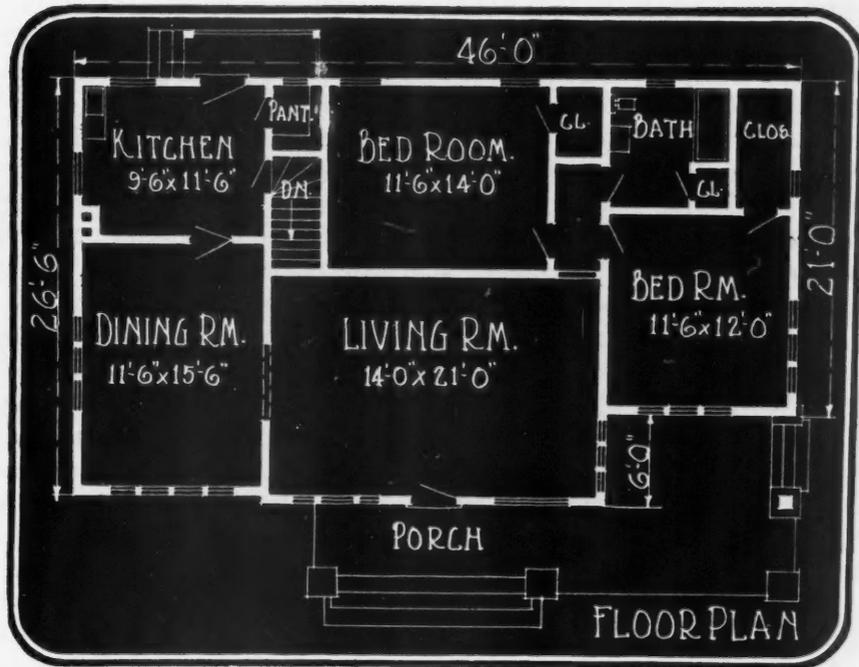
Lower Level of Garage and Horse Barn. The Fifield Lumber Co. Has Endeavored to Make Every Square Foot of Their Site Count. The Street Level Is Higher Than the Yard Level.



SUBSTANTIAL BRICK HOUSE WITH ENCLOSED PORCH. Altho square in shape, which means economy in construction costs, this house does not offer the impression of blockiness because the general scheme has been relieved by attractive angles such as the front porch roof and the dormer above. It is a substantial building with solid brick walls, heavy brick balustrades and porch columns, and concrete steps and porch floor. The large front porch has been enclosed by narrow artistic casement windows which look very pleasing. On the first floor there is the living room, dining room, kitchen, and breakfast nook with built-in furniture. On the second floor are three bedrooms of good size with windows on two sides. The large attic is available in case more living room is needed. The house is 32 by 31 feet 6 inches. The porch is 10 feet deep.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



COZY, ARTISTIC WESTERN BUNGALOW. This is the type of small home that came out of the west like a modern Lochinvar and swept the country. Exterior adornment is one of the features while the location of all rooms on the ground floor appeals to housewives. It saves steps and work. Here a broad inviting concrete steps approaches the hospitable open front terrace porch. Looking out upon this porch thru large windows is the living room, 14 by 21 feet, a real lounging place for the family. To the left is the dining room, tucked away, as it were, in a bright and cheerful corner and conveniently near the small kitchen at the rear. On the other side of the bungalow one bedroom looks out upon the front terrace and has triple windows on two sides. There is another bedroom in the rear of the house with bath between the two. Size 26 by 46 feet.

Code Requirements for Concrete Block

PROPER ENFORCEMENT HAMPERED BECAUSE OF LACK OF FUNDS—BUILDING INSPECTION WILL HELP IN MANY CITIES.

By A. J. R. CURTIS

SECRETARY of Commerce Hoover struck the nail on the head when he started, a few days after assuming office, an investigation which he hopes to make the forerunner of a general movement for the standardization of city and state building laws. Mr. Hoover points out that unscientific and archaic regulations have added millions to the cost of building and that many expensive provisions obtain in each locality, which are recognized in other places as expensive and not particularly helpful.

Unfortunately, the irregular quality of concrete building block in various parts of the country until recent times, led to the enactment of local protective legislation of one kind or another, with the result that today we find wide variance in the code requirements for these block. Not a few are irrational in view of present conditions and a large number are wasteful of materials and in other ways burdensome.

It is discouraging to realize that of an estimated number of 270 cities which have building regulations in force, only a small proportion appropriate sufficient funds to insure proper enforcement. Less legislation and more enforcement would help tremendously; the latter would show up some of the fallacies of certain theories which have crept into statutes and might lead

to more rational legislation. For this reason and others, builders generally should favor the strengthening of city building inspection departments.

Fundamentally, a mandatory regulation seldom, if ever, should prescribe both the method of manufacture of a product and the strength and other service requirements. Manufacturing methods frequently change faster than legislation and regulations limiting these methods have often delayed improvement of the product. Service requirements belong in the ordinance and these should be accompanied by provision for testing or inspection, as the case may be.

Of the provisions indicated in the accompanying tabulation, it is our belief that compressive strength of 1,000 pounds per square inch on the gross area of hollow block and of 1,500 pounds per square inch on solid block and on the net area of hollow block (where net area is figured rather than gross area), is fair, and can be obtained in any well regulated concrete products plant. The absorption when immersed in water is a rather secondary requirement, and is not so important. Perhaps 7 per cent to 10 per cent represent fair figures, but a block showing even 15 per cent when totally immersed might prove to have an absorption of practically nothing when in the wall, because it

Important Features of City Building Codes Relating to Concrete Block

City.	Average Compressive Strength of Hollow Block, Lbs. per sq. in. of Net Area.	Maximum Absorption in 48 Hours.	Age of Block (in days) When Used.	Max. Working Stresses in lbs. sq. in. for Hollow Block.	Percentage of Air Space Permitted in Block	Max. Height of Block Building Walls.	Branding of Block with Name or Mark of Mfr. Required.
Akron, Ohio.....	.....	..	..	...	50%	..	Yes
Albany, N. Y.....	800	10%	28	75 lbs.	33%	48 ft.	No
Augusta, Ga.....	*800	10%	28	80 lbs.	..	40 ft.	Yes
Baltimore, Md.....	1500	7%	28	..	45%	4 stories	No
Birmingham, Ala.....	1000	15%	7-21	**8 tons	25%	..	Yes
Bridgeport, Conn.....	1000	..	28	**8 tons	20-33%	5 stories	Yes
Cleveland, Ohio.....	1200	6%	28	200 lbs.	..	3 stories	Yes
Davenport, Iowa.....	750	5%	..	..	..	4 stories	No
Denver, Colo.....	1000	..	20	..	33%	..	No
Detroit, Mich.....	1000	7%	..	200 lbs.	35-45%	3 stories	Yes
Evanston, Ill.....	*450	15%	21-28	**8 tons	35-45%	3 stories	Yes
Flint, Mich.....	1200	..	14-21	..	..	40 ft.	Yes
Indianapolis, Ind.....	*800	10%	20	..	33%	2 stories	Yes
Los Angeles, Calif.....	.....	..	..	**8 tons	..	2 stories	No
Louisville, Ky.....	1500	7%	21	..	50%	3 stories	Yes
Manchester, N. H.....	1500	..	28	..	25-33%	3 stories	Yes
Milwaukee, Wis.....	700	8%	28	..	35%	..	Yes
Minneapolis, Minn.....	800	..	21	..	25-33%	3 stories	Yes
Newark, N. J.....	1000	..	21	**8 tons	33%	3 stories	Yes
Philadelphia, Pa.....	*1000	..	21	**8 tons	20-33%	2 stories	Yes
Pittsburgh, Pa.....	*900	10%	..	..	..	No restriction	Yes
Portland, Maine.....	2000	..	28	**8 tons	..	3 stories	Yes
Portland, Oregon.....	1500	10%	21	..	40%	3 stories	..
Rochester, N. Y.....	*450	..	5-15	..	33%	3 stories	Yes
Salt Lake City, Utah.....	*1200	10%	..	..	..	40 ft.	..
Shreveport, La.....	*800	..	28	80 lbs.	..	40 ft.	Yes
Syracuse, N. Y.....	1000	15%	28	**8 tons	25-33%	35 ft.	Yes
Trenton, N. J.....	*1000	15%	14	**8 tons	25-33%	6 stories	Yes
Washington, D. C.....	.....	..	..	..	33%	3 stories	No

* On Gross Area.

** Tons per square foot gross, including weight of wall.

exposes only a vertical, impervious face.

It is recognized almost everywhere as good practice to allow the block to age three or four weeks before use, even under the best curing conditions, but building inspectors should, in emergency cases, pass steam cured block in 10 days to two weeks, if they can meet all prescribed 28-day requirements at the end of the shortened period.

Percentage of air space in a block has very little to do with its ability to support the usual structural loads. It seems harmful to prevent the use of units which pass all compressive and absorption tests and may actually be more desirable because of greater insulation qualities or better design, because they have greater percentage of air space than commonly used heretofore. In fact the most recent tendency in the block industry is to pare down the thickness of the walls, increasing the strength of the mixture and obtaining block which are denser, lighter and generally more desirable without interfering with structural strength.

Most cities place the same restrictions as to minimum wall thickness on concrete block that are placed on common brick, and while this is illogical from some viewpoints, and in many cases actually is wasteful of concrete, the usual argument is that common masonry wall dimensions are thereby followed. The ordinary run of building mechanics no doubt are used

to working to these dimensions.

A few of the recent building code revisions have shown a very important improvement in the treatment of concrete block in respect to the height of wall in which these units may be used. Block which have passed all strength and absorption requirements should be allowed to go into walls up to any height when not imposing a load to exceed the working stresses permitted. This has been done in the new Pittsburgh ordinance, generally conceded to be one of the best recent codes and a model of compactness and thoro handling.

It is important that concrete block should bear some mark to indicate by whom made. Such a mark gets the confidence of the purchaser because of the implied, if not actual guarantee of quality, which goes with it; poor block may be easily traced to their source by the building inspector and the careless manufacturer more easily eliminated with consequent benefit to the quality manufacturer. The mark may be made a regular super-quality trade mark and furnish the basic material for a most effective advertising campaign. Marked products bring top prices—be it soda crackers, overalls or building materials. The quality appeal should be strongest in the case of building materials, because they are not consumed currently, but if of high quality are expected to give almost perpetual service.

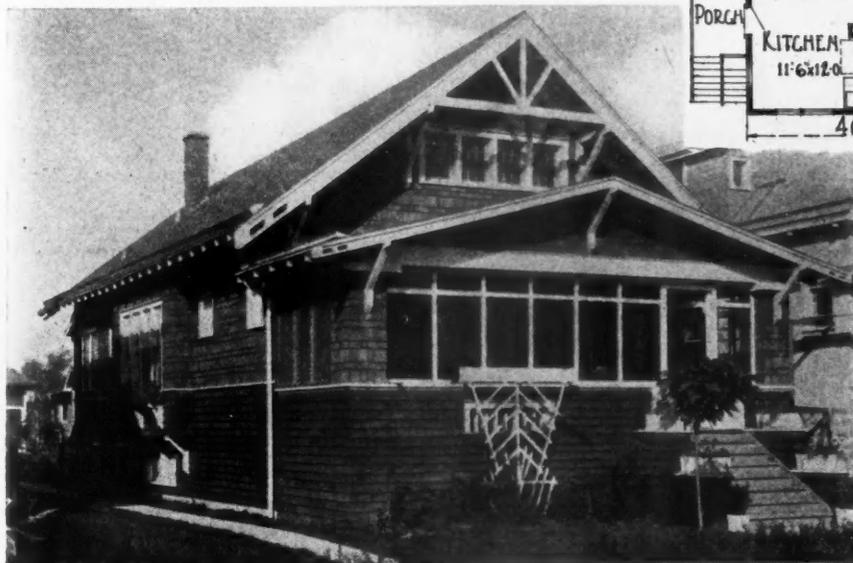
Attractive Small Home Design

FRAME BUNGALOW HAS VERY PLEASING EXTERIOR AND FIVE COMFORTABLE ROOMS

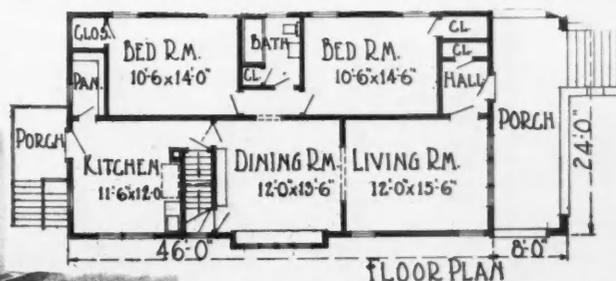
SHOWN in the illustration is a very attractive looking small bungalow house of frame. It has a large screened-in front porch and clapboard and shingle siding. The floor plan shows five well-apportioned, comfortable rooms, a living room 12 by 15 feet 6 inches, dining room, kitchen, and two bright and

well-ventilated bedrooms.

Contractors can recommend a house of this type and design with confidence, as it very adequately fills



Small Frame Bungalow of Cottage Type Which Is Quite Popular with Many Prospective Home-Builders. The Large Closed-In Porch Is a Real Asset. There Are Five Rooms and High Attic.

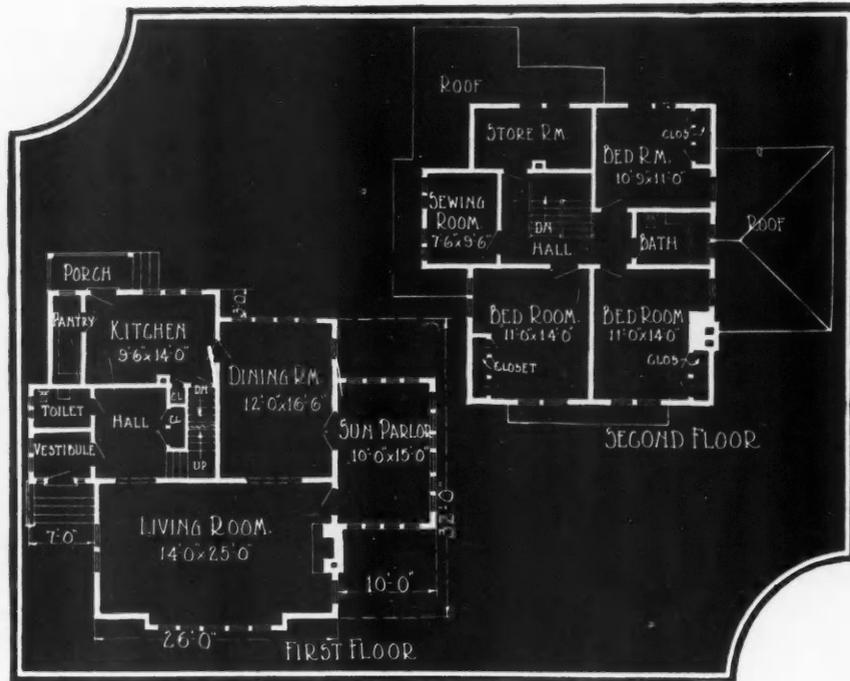
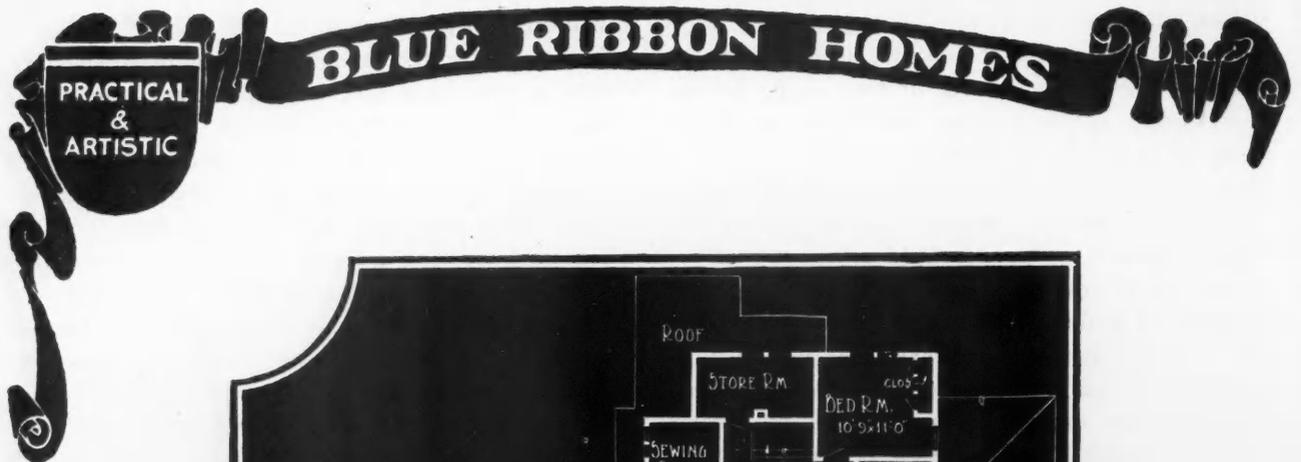


Floor Plan Arrangement of Bungalow.

the requirements of the man of small means and is well built. The high attic can be converted into extra rooms whenever the occasion demands. The house is 24 by 46 feet exclusive of the depth of the front porch, which is 8 feet.



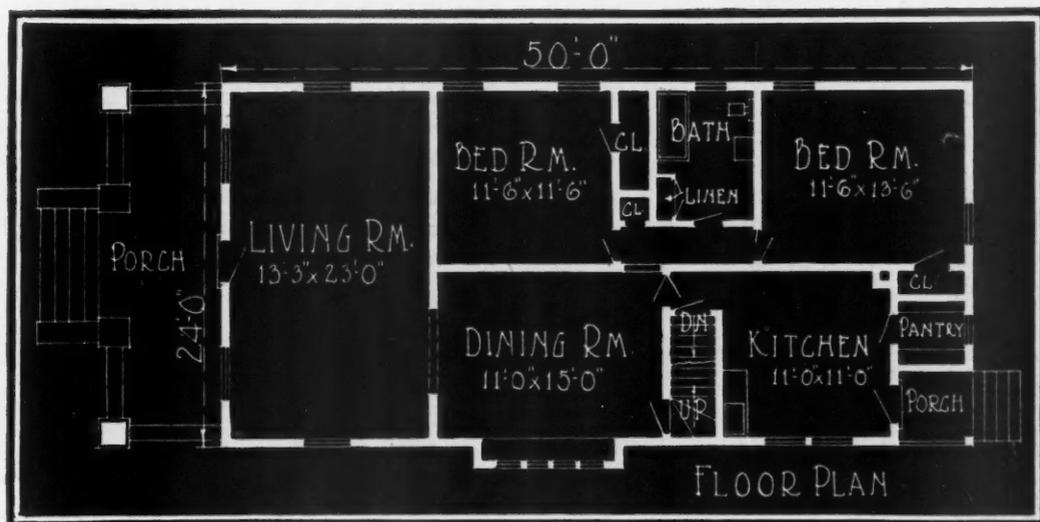
THE American business world is now more and more thinking prosperity, and more and more working for the return of better times.



CHARMING HOME OF ORIGINAL DESIGN. The quality about this well-built house that makes it interesting and appealing in its individuality and strength. It represents dignified comfort and well-balanced arrangement. The exterior is quite attractive and just quaint enough to give an impression of quiet hospitality and solid comfort. Brick up to the first floor window sills, it is stucco above and surmounted by a hip roof with slight variations that make it distinctive. The entrance is on the side of the house, giving the full expanse of the front for the living room with its array of five windows. This room, which is a feature of the interior plan is 14 by 25 feet, opening at one end into the sun parlor. French doors connect this sun porch with the dining room and admit plenty of light and cheer into this room. Three bedrooms are provided. Size, 26 by 32 feet.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



“ALL ON THE GROUND FLOOR.” One of the big reasons for the popularity of the bungalow with many people is the fact that there are no stairs to climb. This charming cottage bungalow has many other features which make it attractive. For instance the broad open front porch where the family can spend quiet evenings in summer months, the narrow beveled siding, the broad eaves and artistic trim. The foundation is brick and the whole house gives an impression of solidity and permanency. Across the front of the interior extends a large living room, 13 feet 3 inches by 23 feet. To the rear of this room on one side is the dining room and kitchen and on the other side two bedrooms and bath opening off a long hall which is entered thru the dining room. The attic may be finished at once if needed, or used as storage space. Size, 24 by 50 feet.

Front Cover Home in Three Materials

BEAUTIFUL HOME IS SHOWN IN STUCCO, BRICK AND FRAME—ATTRACTIVE DESIGN CAN BE FINISHED IN VARIETY OF WAYS

VERY often when submitting a plan for a new home to a client, the builder is asked this question: "How will that look in stucco"—or brick or frame as it happens to be. He can only give a word picture which is not always satisfactory.

But when discussing the design of the September Front Cover he will not have this difficulty for the home is shown as it would look built of stucco, frame or brick. In a glance the customer can get a perfect idea of what his future home will look like.

This beautiful home is Colonial in type, wide frontage, quaint artistic doorway of inviting appearance, regularly placed windows with shutters, and a roominess and well-apportioned floor plan that makes it one of the most popular and yet one of the most economi-

cal types of house to build. Simplicity and dignity are the distinguishing qualities of the Colonial home, comfort its essential feature.

The floor plans show seven rooms, three on the first floor and four on the second. Particularly inviting is the great big living room, 13 by 25 feet, extending from front to rear of the house. A large bay window in front, two on the side and a double window in the rear make it especially bright and cheery. In the center of the side wall is a real fireplace that "burns." It is not difficult to conjure up a picture of this room on a cold winter night.

The dining room is across the central hall and the kitchen is in rear of the dining room. These rooms are considerably smaller than the living room as they

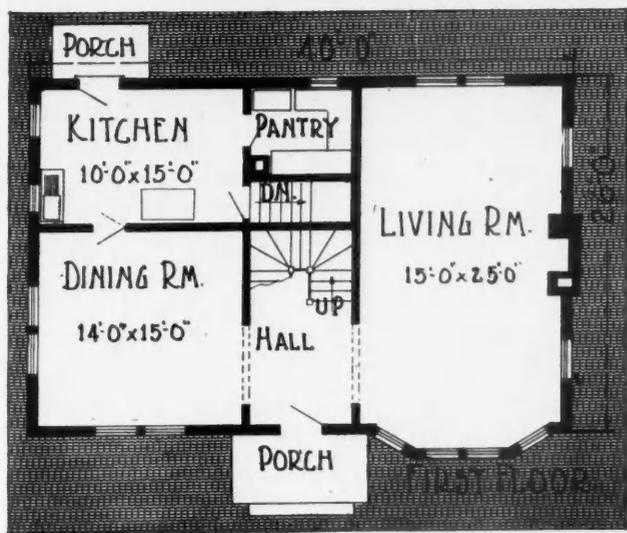


Beautiful September Front Cover Home Design as It Appears with Stucco Finish. This Is a Real Colonial Design with All the Hospitality and Quaintness That Makes That Type of Architecture So Everlastingly Popular. This Same Design Is Shown in Brick and Frame on the Following Pages.

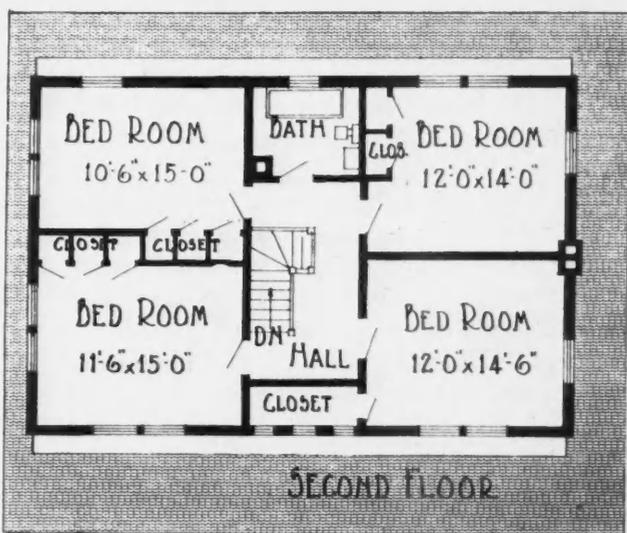
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As the Front Cover Home Design Appears Finished in Brick. Solid Brick Walls with Face Brick Veneer Make This Home Not Only Beautiful but Fire-Safe. The Front Entrance Design Has Been Slightly Modified.



First Floor Plan of Front Cover Home Showing the Three Main Rooms. Note the Size of the Living Room and Provisions for Ultimate Comfort.



Second Floor Plan, Showing Sleeping Rooms, Four in Number. They Are of Good Size and Bright and Cheery. Plenty of Window Space Insures Health and Comfort in Sleeping.



Built of Frame. The Same Front Cover Home Design Shown Built of Frame. Again a Slight Change in the Design Makes It a Most Delightful Dwelling Place and One That Will Appeal Strongly to Home Builders of Family.

should be and so arranged as to help the housewife in her work.

Upstairs we find the sleeping quarters consisting of four real comfortable bedrooms, well lighted and airy. They have space-saving closets and are grouped about a central hall.

In some localities the stucco will be the favorite, in others brick and so on. Slight modifications can be made very easily to meet the needs of the home-builder's particular requirements. But regardless of the material used, the design is one that will prove satisfactory in all sections of the country.

There is no doubt that two considerations determine the prospective home-builder's course of action—comfort and economy. Forced by exorbitant rent for a limited space, he takes up the matter of home building with these two ideas firmly fixed in his mind. It is up to the builder to offer something in design that will fill these requirements. This front cover home should prove itself excellently adapted for just such a pur-

pose.

The advantage that lies in building homes of different material is that it prevents monotony. Nothing is so drab, so depressing as homes all alike. A good builder should be able to build all equally well provided he uses standard and recommended materials.



READ more—study more—earn and make more. Don't overlook the advantages which can be derived by studying your business and reading reliable books. There is a story on pages 35-39 that will interest you because it is a story for all builders. Abe Lincoln practically read himself into the presidency. He had no schooling but got his education from books. Why don't you read yourself into bigger work, bigger profits. Reading and study will enable you to advance in your profession and increase your earning power. Are you going to stand still and let opportunity pass you by, or are you going to be among those who lead the way?



Building Convenience Into the Modern Home

By Grace T. Hadley,

Society for Electrical Development, Inc.

MORE and more modern homes are acquiring as a permanent feature, some special built-in convenience, such as built-in bookcases, built-in cupboards, built-in dressers and dressing tables, recessed sideboards, the built-in breakfast nook in the modern kitchen, and built-in steel kitchens.

A kitchen is a work shop for the preparation of food. Preparing food and clearing it away are two distinct processes and require different equipment. Housekeepers have walked miles and miles, or as it has been otherwise expressed, they have traveled extensively because of poorly planned kitchens in which the equipment was badly arranged.

A stove or range, refrigerator, sink, work table together with sufficient shelving for dishes, utensils and other ware are essentials in the kitchen today. Women are insistent in their demand that the stove and the sink shall be near each other. In a certain efficient kitchen used for demonstration purposes in

New York, there is a sink of correct height having the left-hand drain board hinged. Underneath this board an electric dishwasher is installed; when not in use the drain board covers and conceals the dishwasher and makes an added working surface. Near by and working from left to right is the electric range, correctly installed.

In most kitchens the order of work is something like this: Materials are brought from cellar, icebox cooler or cupboard first to sink for preparation, then to the stove or range for cooking; from the stove they are dished up and carried to dining room or better still, they are wheeled in on the kitchen wagon. One process of work is to prepare the meal, the other process is to clear away. In preparing meals the accepted rule is to work from left to right. Avoid zigzagging and useless walking by proper planning with a view of the work to be done in the most convenient manner.

When the equipment of the kitchen has been ar-



"They Are Doing It in Hawaii." Even Out There the Electric Sewing Machine and Other Labor-Saving Appliances Are Getting a Strong Foothold Among the Housewives.



The American Version. This is a Condensed Sewing Room and Writing Desk. The Whole Tendency Is to Save Housing Space and Cut Down Building Costs.

ranged to very best advantage so that the work may be done with fewest possible steps, then each task should be studied and a place provided for the right tools with which to do it. For example, there should be a shelf built over the sink on which to keep soap, and other necessities, or better still a built-in cupboard which will not only contain but conceal the soap boxes, the cups, the various kinds of cleansers. Skillets, sauce-pans, long spoons and utensils needed for use with the range should be placed where they are easily obtainable without taking numberless steps.

New Homes Have Broom Closet

A small built-in closet for keeping the electric vacuum cleaner, the tools that go with it, the brushes, the polishing cloths, is a feature of many modern homes. Some kitchens have a panel closet containing a small folding pressing board which is a great convenience for ironing napkins or pressing out a table cloth. This closet also contains the electric pressing iron which is too often thrown carelessly into a kitchen drawer, after using. A convenient outlet for the use of this iron is a necessary part of kitchen equipment. This outlet is also useful for an electric mixer which is coming to be considered an important part of equipment in the modern kitchen. Many, many are the uses of this extra outlet in the kitchen on account of the number of appliances that

are available for assisting with the work in the kitchen.

A Much Neglected Room

The sewing room is a much neglected room even in the homes of good housekeepers. A small hall room or a maid's room is taken for a sewing room. The equipment consists of a wardrobe for garments, a chest of drawers for patterns and patches, a discarded hand mirror, and an old-fashioned sewing machine. Behind the door is a dress form, which is generally in the way but there is no other place to put it.

The sewing machine has always been an ugly emblem of toil and if not placed in a small room like the above, then it stood in living room or dining room or bedroom or wherever there was space for it. Moving it was a hard job because it was so heavy. Making it light and portable was quite a step forward. The portable electric sewing machine eliminated the heavy iron standard and has lightened up sewing work considerably. It can be carried about with comparative ease, connected to any convenient lamp socket and the sewing done much quicker than by the old treadle method. In Honolulu even the small Hawaiian maids master the use of the portable electric sewing machine and do their work outdoors, the machine being connected to a porch outlet.

Another new idea is to make the sewing machine serve as a table or a writing desk, or a useful piece of furniture. It then fits most anywhere and becomes a part of the furnishings, instead of a discordant note. Such a machine has a built-in-motor, knee control and the source of power in electric current from a lamp socket.

A clever woman inventor has designed and patented an electric sewing cabinet into which she has put all of the sewing equipment, the motor-driven machine, the dress form, the boxes, the garment hangers, a pressing board and electric iron, in the most efficient and economical manner. The doors swing open and mirror-lined, the machine runs out on tiny tracks, a light can be adjusted over it for use on a dark day; there are garment hangers galore of the most improved type, everything necessary is within reach. The sewing room problem has been solved and all the equipment can be made to fit into a space 5 feet 9 inches high, 4 feet 6 inches wide and 22 inches deep. It seems as if the day of the built-in sewing cabinet is at hand.



Electric Sewing Machine Cabinet Designed by a Woman. It is Used for Storing All Sewing Equipment, Including Machine, Dress Form, Ironing Board, Etc. It Has Garment Hangers of the Space-Saving Type, Doors Mirrored on the Inside. It is Designed to Take the Place of the Regular Sewing Room.

How Builders Boost the Furnace Business

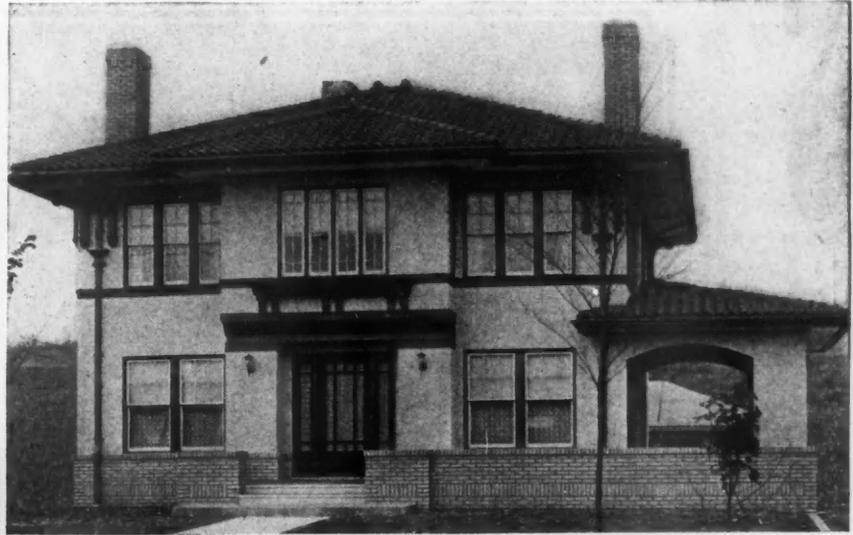
SOUTH DAKOTA BUILDER WAS FIRST TO USE FURNACE IN HIS SECTION AND IN SIX YEARS HAS INSTALLED MORE THAN FIFTEEN

I BOUGHT a furnace six years ago and was so impressed with it that since then I have installed over fifteen in new houses that I have built. They are all giving good results."

That is what one builder did for a furnace manufacturer in his town. He bought a furnace, one of the first in the community, for his own home, and was so impressed by it that he has been recommending and selling that brand ever since. As he is the sole adviser of home-builders in the town his word is accepted as law. The furnace manufacturer made a sound product

them a good basement heating plant.

"Lumber dealers and building contractors have been our most active salesmen." reports one large furnace

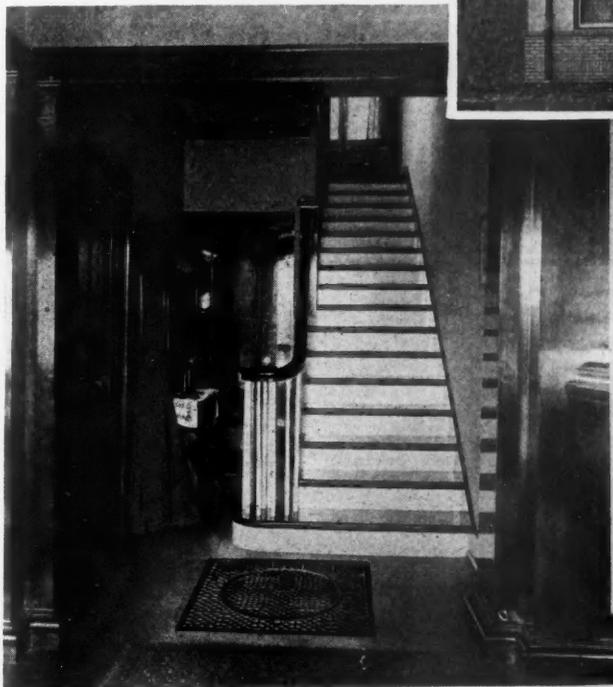


E. S. Worsham, Knoxville, Tenn., Heats This Large and Beautiful Home by a Pipeless Furnace. In Many Towns Builders Have Made Unusual Success Installing Furnaces in the Homes They Build.

manufacturer. "We find that they sell furnaces readily because they are the advisors of people who are planning new homes. Their recommendations carry considerable weight in influencing their client's plans. The latter to a great extent depends upon them for final advice."

Which is all very logical, is it not? In many towns the lumber yard furnishes the building plans to the

(Continued to page 109.)



Hallway of Worsham Home, Showing Location of Pipeless Furnace Register. Note the Arrangement for Hot Air and Cold Air. The Hot Air Rises Thru the Center Section and the Cold Air from the House Descends Thru the Outer Part.

and as a result has reaped the benefits of increased business.

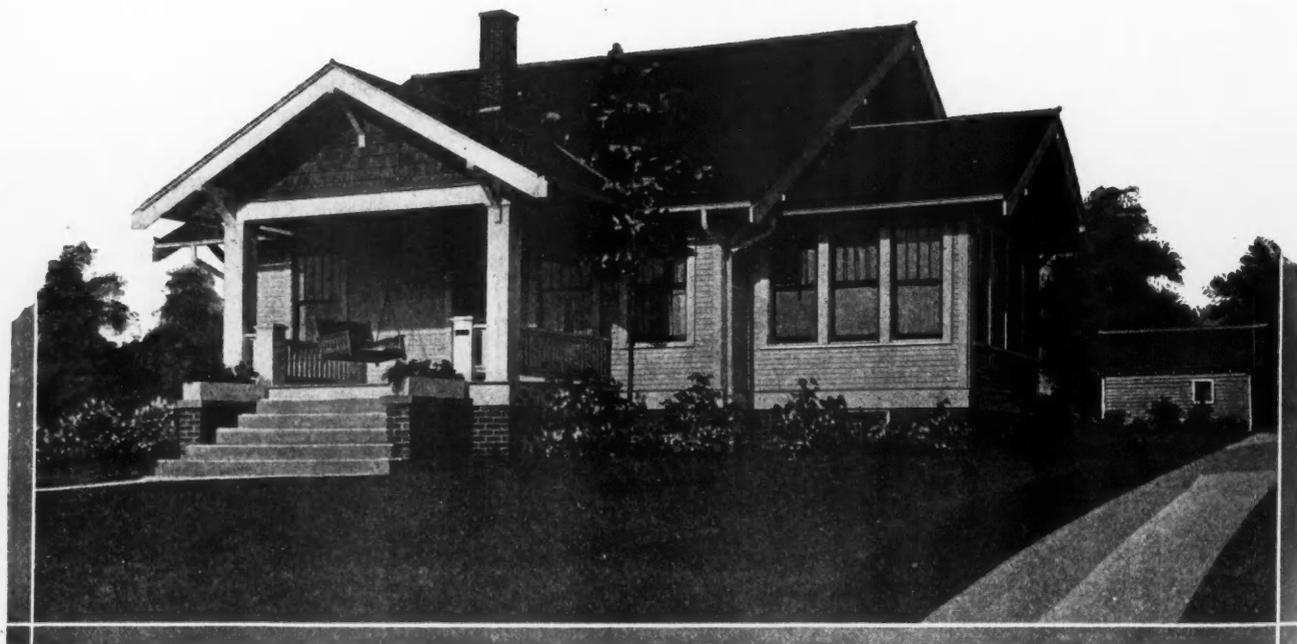
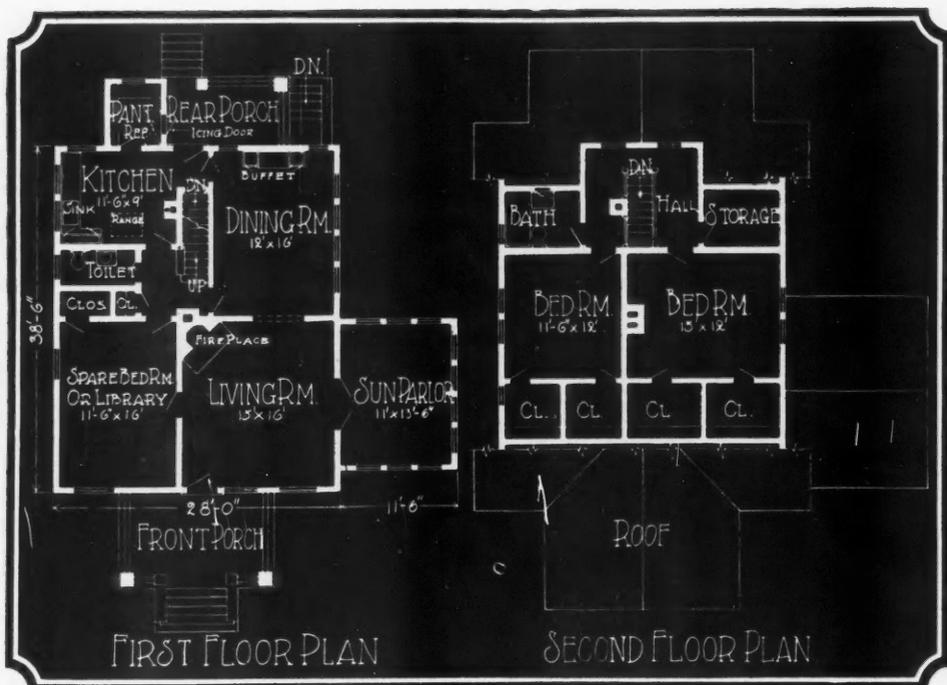
What this builder, Paul G. Tosch, out in Groton, South Dakota, did in the way of selling furnaces, hundreds of builders in hundreds of other towns can do. They can start the right way of affiliating themselves with a reliable manufacturer. Unless they do they will not get very far. And when they build new homes for customers, make them as comfortable as possible by selling



View of Living Room in Worsham Home. The Register is Located in the Doorway and the Warm Rising Air Circulates Thru the Entire Room. This Type of Furnace Has Been Installed with Success by Thousands of Builders.

BLUE RIBBON HOMES

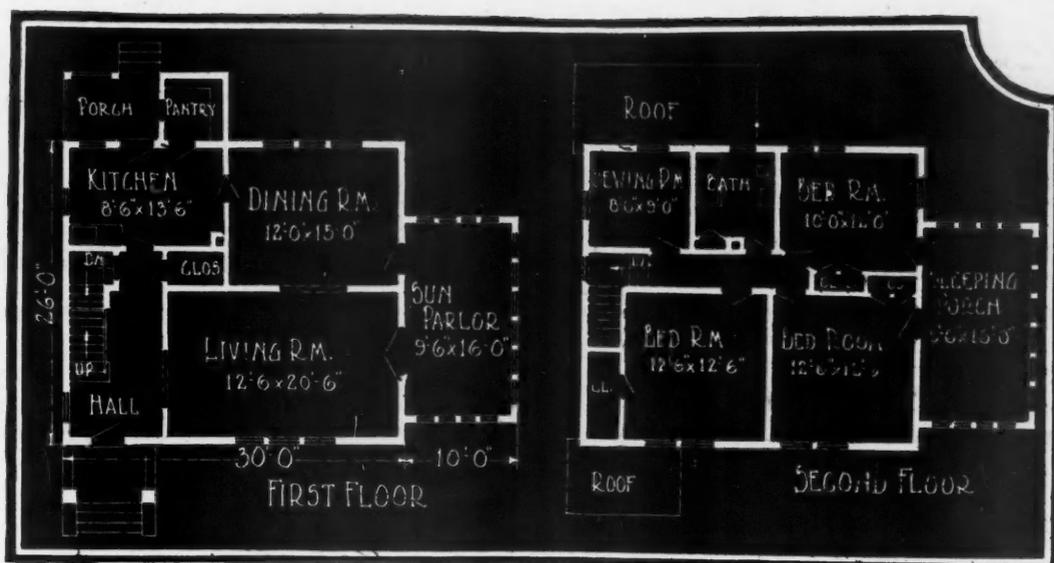
PRACTICAL & ARTISTIC



COMPACT, SUBSTANTIAL STORY-AND-HALF HOME. There is an air of comfort about this little home that appeals very strongly. In addition to the open front porch there is a sun porch on the side, an ideal playroom for the children on rainy days, also a breakfast room for the less important meals. The house is low with broad overhanging eaves and has plenty of good sized windows. The rooms are well apportioned, four on the first floor and two above. A room on the lower floor can be used as a library or extra bedroom. The living room opens out on to the sunporch and gets the benefit of this extra light and air. It has a brick fireplace. The kitchen has the latest built-in facilities to relieve the duties of the housewife. This is an ideal home for the small family and one that will last. It is 28 feet wide and 38 feet 6 inches long, with frame garage in rear.

BLUE RIBBON HOMES

PRACTICAL
&
ARTISTIC



ATTRACTIVE, INEXPENSIVE HOME WITH ENCLOSED PORCHES. The combination of pleasing appearance and economy in cost of construction is a powerful one and that is just what this eight-room stucco and frame dwelling offers. Simple and modest in design, it can be constructed very reasonably. The large wing enclosing a sun parlor on the first floor and sleeping porch above is an important addition and certainly one that will add to the general comfort of the home. The front entrance is located to one side with a small Colonial style hood and opens into a small reception hall which leads the way to the large living room. The dining room and kitchen are located on the first floor and three bedrooms and sewing room on the upper floor. This roomy, well-planned home is 30 by 26 feet.



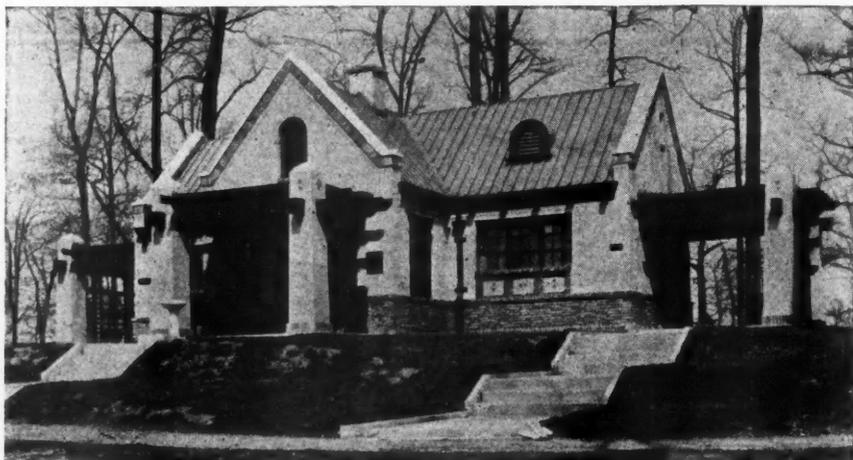
View of Combination Band Stand and Comfort Station at Vernon Park, Philadelphia. This Is a Good Example of Utility and Beauty Combined in a Building Design.

Some Ideas in Comfort Stations

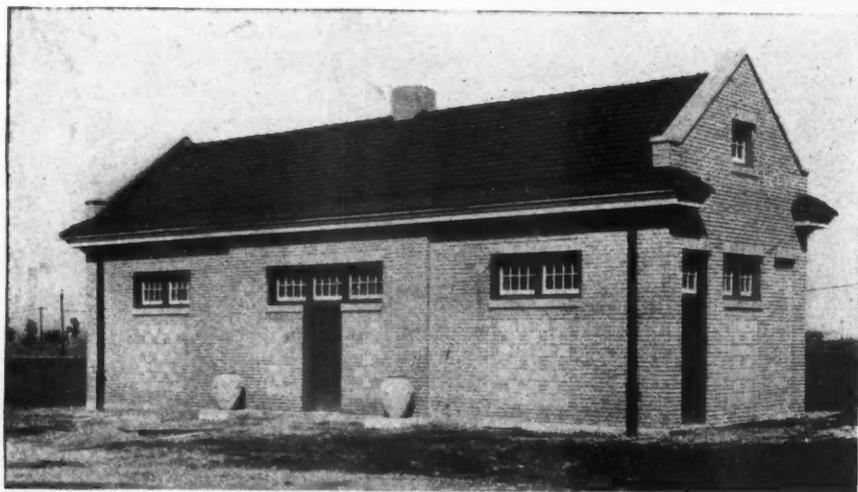
NEW BUILDINGS IN PHILADELPHIA PARKS ARE EXCELLENT EXAMPLES OF BEAUTY AND UTILITY.

By John F. McClarren

THE great progress that is being made in producing buildings of artistic appearance and great utility is noticeable everywhere, but nowhere any more than in the line of buildings which are not discussed much but which are highly important, small park buildings, such as comfort stations, shelters, bandstands and the like. These buildings, once most ordinary in design, are now not only so designed as to add beauty to the place where they may be constructed but to afford, as well, a maximum of utility and conve-



Close Up View of Combination Shelter and Comfort Station in Juniata Park, Philadelphia.

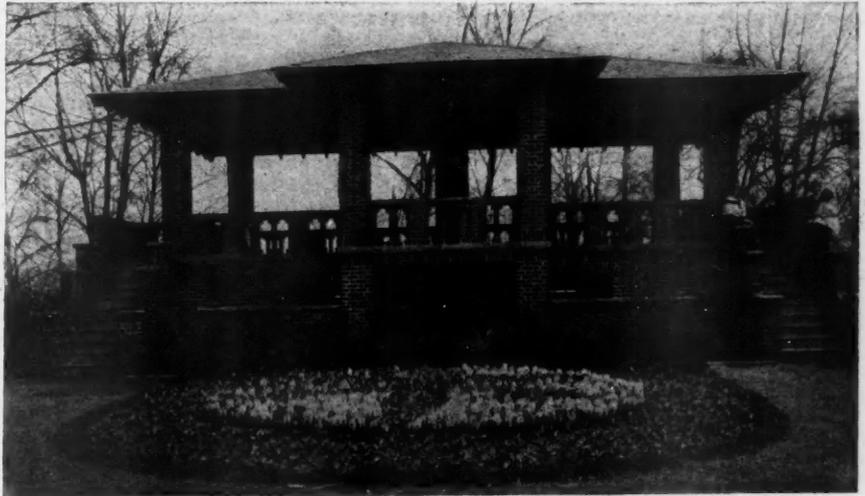


Comfort Station Recently Completed in Small Park in Philadelphia. It Represents a Fine Example of Simple but Artistic Design. Comfort Station Facilities Are Woefully Inadequate in Most Cities in the United States and Far Behind European Centers.

nience to all citizens.

Some striking examples of the advancement made in the designing of such buildings are afforded in several small parks of Philadelphia where several buildings of the type were recently completed. Three of these examples are presented herewith. Two of them represent efforts to combine in artistic buildings band stands and comfort stations. One of these is the building in Wissinoming Park, Philadelphia, and the other in Vernon Park in the same city. The building in Wissinoming Park is most pleasing to the eye, constructed largely of brick, attractively set and trimmed

with limestone. The comfort station section in the lower part of the building is so designed as to afford all modern toilet facilities. The building in Vernon Park is an altogether different type. It is constructed of stone with the Italian pergola effect. The third building, located in Juniata Park, Philadelphia, is still another type. It represents efforts to produce a shelter combined with a comfort station. It is considered very attractive. It not only serves a combination purpose, but in its design there is developed several styles, among them the old English, Italian and modern.



How a Band Stand and Comfort Station Can Be Combined Effectively and Artistically. This Building Is Located in Wissinoming Park, Philadelphia, Pa. It Is Built of Texture Brick with Limestone Trim.

In the matter of comfort stations a building of this kind which has just been completed in another of the small parks of the city is considered an exceptionally fine specimen of simple but artistic design. This build-

ing constructed of brick with limestone trimmings and a tiled roof has attracted much attention and been the subject of much praise by architects. The interior is largely of white tile.

Construction of Slate Blackboards

HOW MATERIAL IS INSTALLED IN SCHOOL ROOMS—DETAILS OF CONSTRUCTION SHOWN IN BLUEPRINT FORM ON FOLLOWING PAGE.

BLACKBOARD slate, while possessing the attributes found in all slate is different as a finished product because infinitely more care is needed to prepare it for its requirements than in the case of ordinary roofing and structural slate. This material is selected from great slabs and made into available sizes by huge steel saws.

Unless otherwise specified, slate blackboard is finished with working surface on one side only, the back or wall side being left with a planed surface for economy. Slate blackboards are, as a rule, made in three widths—3 feet, 3 feet 6 inches and 4 feet. These widths comply with the usual requirements of classrooms. The board is not less than $\frac{1}{4}$ -inch thick and not more than $\frac{3}{8}$. For spaces 4 feet 6 inches or under, a single slab is used in length; for spaces 4 feet 6 inches to 9 feet, two slabs, etc.

The space to be filled by blackboard should be selected so as to combine the maximum amount of direct light with the greatest amount of comfort for all of the pupils when seated, thereby lessening eye-strain and discomfort caused by twisting and turning to see work on the blackboard. No blackboard should be placed on the window side of the room, because it will not receive sufficient light.

Blackboards should be set at the proper height for children depending upon their age. It will vary in kindergarten, grades and high school. Boards of education thruout the country have requirements specifying the exact height at which the board should be installed, and also the width of the board.

In setting slate blackboards on new walls, it is essen-

tial that the frame or grounds and especially the lower member (see construction details on next page) have a proper background and be firmly secured in place so as to eliminate all possibility of settlement. On old walls, if not plastered, the installation is identical with the construction of new work.

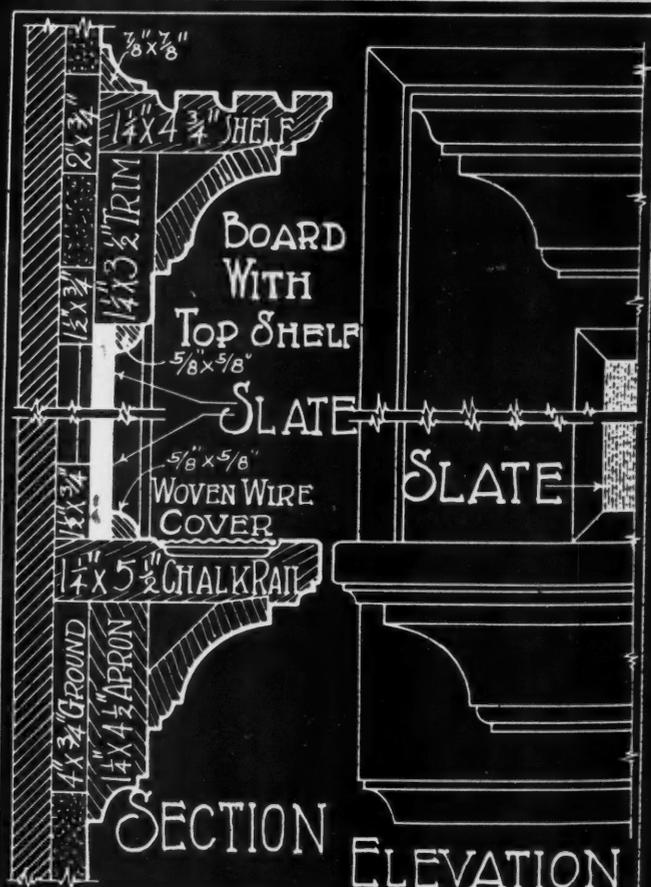
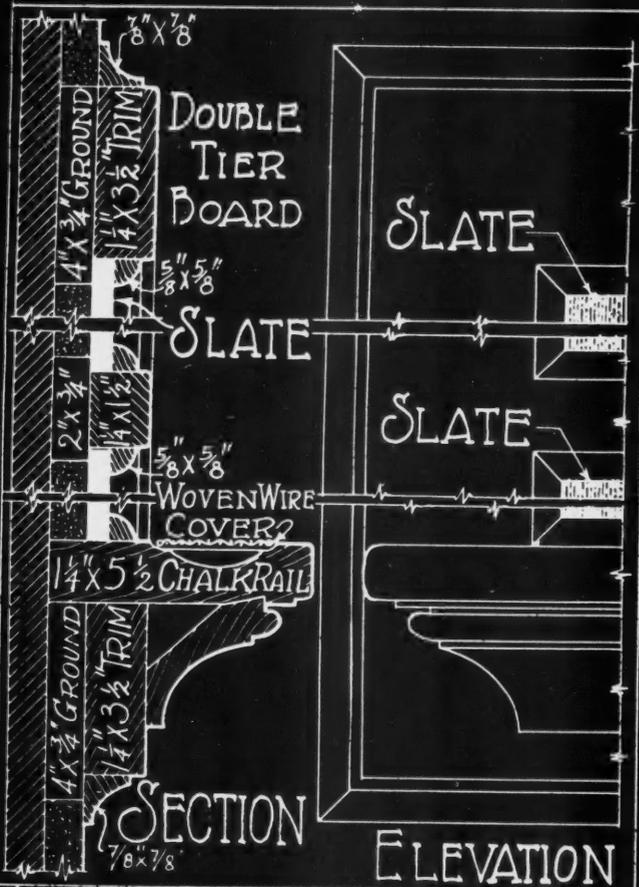
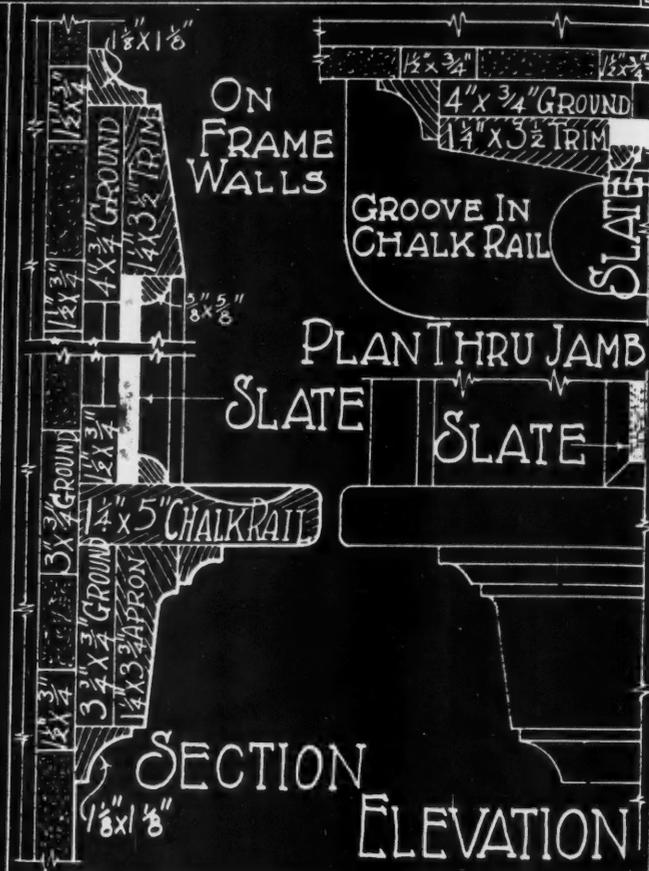
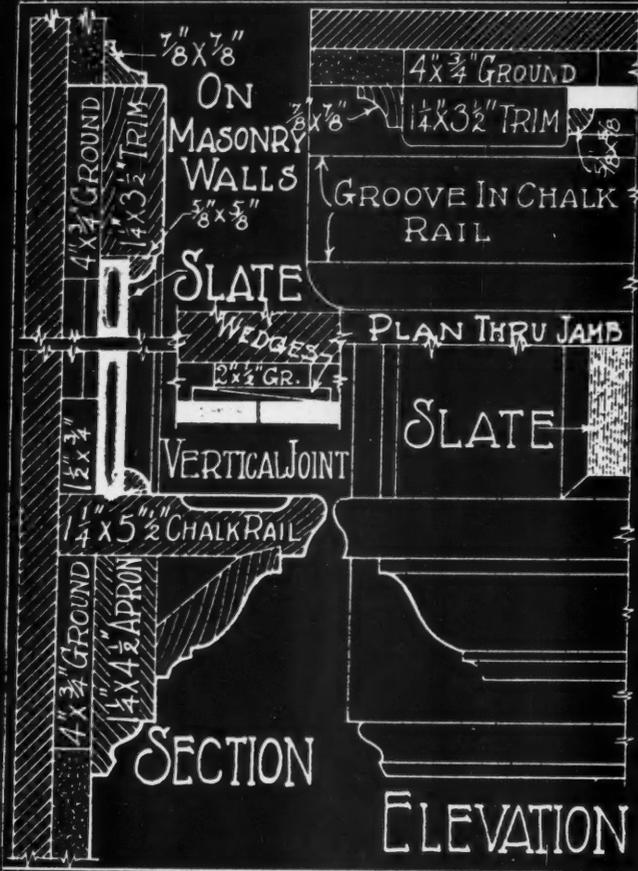
It is especially important that the top of the chalk rail and the lower and supporting ground be set perfectly level. The joints in the slate are accurately fitted at the mill for a level frame, and unless the supporting surface is level the joints will not be true.

Slate for blackboards is fitted at the mill to fill definite spaces, and each piece is marked with an identifying number. In setting the slate blackboard it is advisable to start always at the left of the space. Set piece No. 1, making sure that the frame affords a solid bearing at the bottom, top and end, and that the edge marked top is up and that all bearings are firm. Then apply a small amount of special glue or joining compound to joint edge of block No. 1 and adjoining edge of block No. 2, and set block No. 2 in the same manner.

Behind the joint between each block tap wood wedges so as to bring the finished surfaces of the slabs flush. These wedges should be placed not over 12 inches apart. In some sections of the country slate blackboards are set with mortar or slow setting plaster of paris. The method discribed above, however, is simpler.

The slate is secured in the finished frame by means of a quarter round mould not less than $\frac{5}{8}$ inch, placed in the angle between the slate and frame.

RECOMMENDED CONSTRUCTION



SLATE BLACKBOARDS

Advertising His Business

HOW A MISSOURI BUILDER ATTRACTED ATTENTION OF TOWN BY INTERESTING AND UNIQUE FLOAT
IN FOURTH OF JULY PARADE

"Early to bed,
Early to rise,
Work like —
And advertise.."

THAT is what C. A. Lawson, contractor and builder in Monroe City, Mo., believes. He is not satisfied to sit and wait in his office for business. He goes after it. And here is one way he did:

Every Fourth of July, Monroe City stages a big annual parade in which all the business men take an active part. There is the queen in her palatial car, and many interesting floats in line. Every branch of business in the town is represented.

Why not the building business? thought Mr. Lawson. Everybody is vitally interested in that subject just now. So he got together with the Robey-Robinson Lumber Co. and built an unique float. This was in the form of a bungalow 12 by 18 feet built on a Ford. Needless to say it attracted quite a bit of attention when it passed by in the parade.

The driver kept his place in line by looking thru the front window of the house. No part of the car

was visible from the outside. The two little "kiddies shown in the picture seated on the front porch remained there during the parade and operated the phonograph. The bungalow has a red roof, green gabled body, two tan shades and white trim. It proved to be an excellent advertisement for both the lumber company and Mr. Lawson, who designed and built it.



Spare the Rod

"WHY are children so much worse than they used to be?"

"I attribute it to improved ideas in building."

"How so?"

"Shingles are scarce, and you can't spank a boy with a tin roof."—Life.



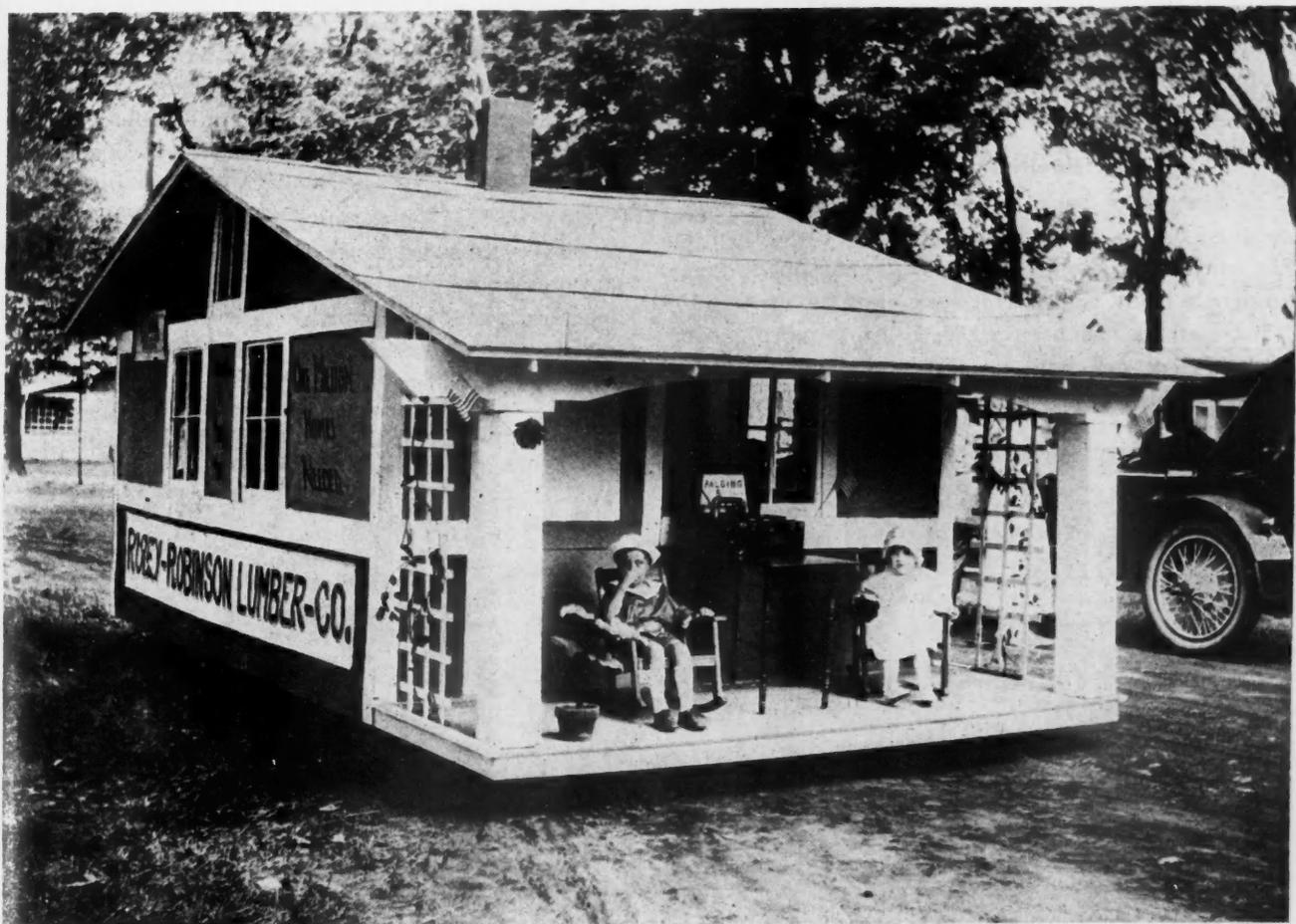
Reproof

"WHO was Shylock, Aunt Ethel?"

"My dear! And you go to Sunday-school and don't know that!"—Life.



THERE is an announcement of vital interest to every builder and contractor on pages 35-39.



Interesting Float Built by C. A. Lawson, Contractor, of Monroe City, Mo., for Annual Fourth of July Parade. He Co-operated with the Lumber Company in Building This Model Home Which Is Mounted on an Automobile. It Created Quite a Stir in the Town and Stimulated Business.

Remodeling Jobs That Pay

MANY WAYS IN WHICH BUILDING CONTRACTOR CAN KEEP HIS FORCE BUSY THE YEAR ROUND.

MEMORIES of pleasant days gone by entwine themselves so firmly about the heartstrings that most people hate to leave the old home. Contractors can use this sentiment to advantage in getting remodeling jobs. The opportunities in wall board work were explained in detail in the August AMERICAN BUILDER. In the paragraphs that follow some other jobs that can be done to improve the old home are suggested and explained. One of these may be just what you want.

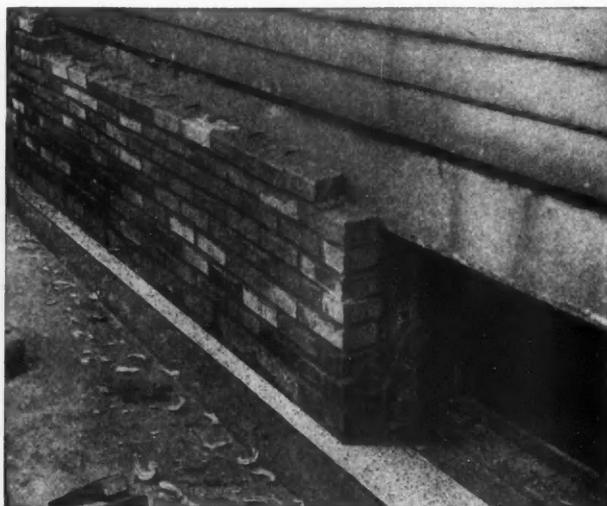
Building New Foundation

In many cases the original foundation of the house is not as substantial as the house warrants and the cellar facilities are wholly inadequate. Especially is this the case in farmhouses. Consequently the contractor in a rural community is often called upon to install a new concrete, stone or brick foundation.

To do this without jarring the house or causing any damage to walls, follow this procedure: Tear out a small portion of the wall. Then dig new trench down to required depth which is generally 5 to 6 feet and lay in new section of concrete, stone, brick or whatever material is specified. Repeat this operation until sufficient new wall has been built to underpin the sills of the building above. Then tear out remaining portions of the wall and rebuild with new material, bonding well to first work. This method is quite simple and eliminates the use of special jacks.

Roofing the Home

A few years back the process of roofing was a tedious, expensive and disagreeable task. It meant the tearing off of old shingles, with consequent danger to people below and extra work cleaning up the dirt. This method has been replaced by a more modern and efficient one with no dirt and danger involved. The new shingles are placed directly over the old ones.

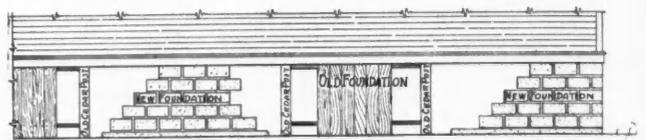


Start of Brick Veneering Over Frame. Note Footing Below, Wall Ties Above.

To give the old home a new cover now does not call for the ripping off of a single shingle. Rig up a scaffold, tack down the shingles that may have become loose or turned up, snap a few guide lines and proceed with the work. This re-roofing job can be done with asbestos shingles, asphalt shingles, or prepared roofing. A new roof will go farther in making an old house look new than any other improvement with the exception of a new exterior finish or veneer.

New Veneers and Finishes

Which brings us to the subject of over-coating the house. Your client feels that his house is good for



METHOD OF BUILDING A NEW FOUNDATION UNDER OLD BUILDINGS

Diagram Showing How Old Foundation Is Replaced by New Brick or Concrete Substructure.

a long span of years, yet he is not satisfied with its exterior appearance. It looks rather shabby. What he wants is a new dress for the house.

Nothing is easier for the contractor to accomplish. He has at his service several materials and the method involved in making this transformation is far from difficult. Manufacturers of these materials have made a very complete study of this problem of remodeling and have prepared lucid and complete directions.

Take stucco for instance. This material has become very popular as an exterior finish for both old and new homes. It gives the building a clean, snappy appearance and is reasonable in cost. As a finish for old frame or brick houses it is excellent material and very easily applied. In the following paragraph the



Veneering Above Kitchen Roof. Steel Angles Are Placed Against the Sheathing and Attached To the Studs So That No Weight of the Brickwork Comes on the Roof.

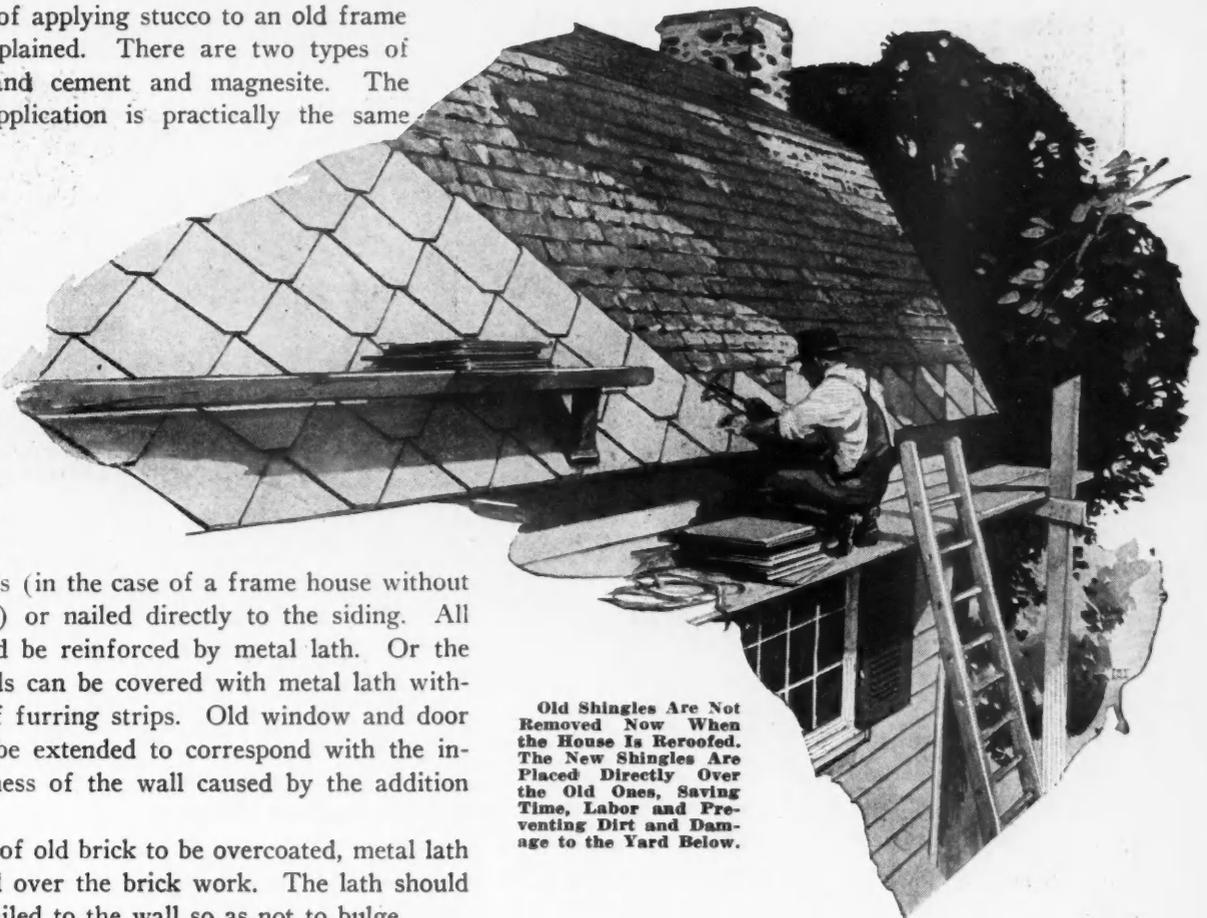
best methods of applying stucco to an old frame house are explained. There are two types of stucco, portland cement and magnesite. The method of application is practically the same in both.

As every house has its own peculiar features of construction it must be treated accordingly. Wood lath may be applied diagonally over the weather boards (in the case of a frame house without furring strips) or nailed directly to the siding. All corners should be reinforced by metal lath. Or the weather boards can be covered with metal lath without the use of furring strips. Old window and door frames must be extended to correspond with the increased thickness of the wall caused by the addition of stucco.

In the case of old brick to be overcoated, metal lath may be placed over the brick work. The lath should be securely nailed to the wall so as not to bulge.

Finally a brick veneer can be applied to a frame wall to take the place of clapboard or shingles. Suppose your client has an old wood house built on a substantial frame, but a little dilapidated in exterior appearance. You can show him how he can improve that building at very small cost by putting on a face brick veneer. An 8-inch concrete foundation should be placed against the outside of the existing foundation wall extending from grade to below the frost line and resting on good solid soil.

In putting on a brick veneer the siding should be covered with building paper held in place with 2 by 1 or 1 by $\frac{3}{8}$ -inch furring strips laid on horizontally or vertically over each lap of paper and once between. The face brick are set 1 inch from the sheathing and are fastened to the frame work by metal ties spaced horizontally about on every stud and vertically every four or five courses. These ties are generally corrugated metal strips with one end nailed to the sheathing or siding and the other laid in the bed joints, or thirty penny wire nails. In this construction the sills are the same as for solid masonry construction except that the inner ends of the brick must be cut to fit against the siding.

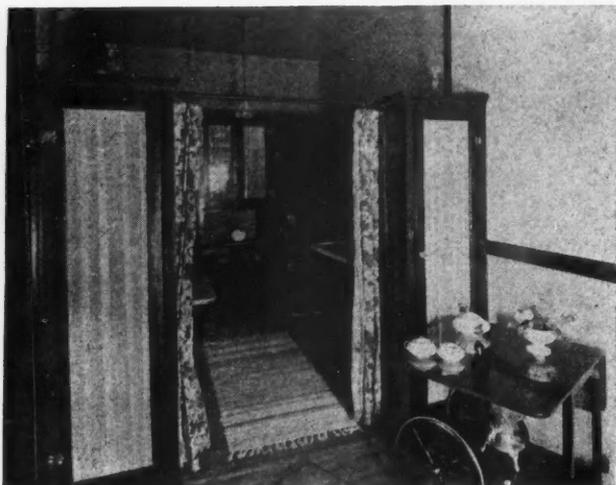


Old Shingles Are Not Removed Now When the House Is Reroofed. The New Shingles Are Placed Directly Over the Old Ones, Saving Time, Labor and Preventing Dirt and Damage to the Yard Below.

The usual steel lintels are used over door and window openings. Where the veneer is to be carried over porches or other low additions, the siding immediately above the roof should be removed and a steel angle placed against the sheathing and securely attached to the studs by lag screws so that no weight of the brick work comes on the roof. The brick work is laid up to the door and a staff bead moulding in the corner formed by the brick securely nailed to the old trim making a tight joint.



The Addition of a Sun Parlor To an Old House Increases Its Comfort and Appearance Many Fold. Casement Windows Like These Shown Here Are Handy as They Can Be Opened Up Full Width in the Warm Weather and Supplemented by Screens.



Many Large Homes Are Waste Space. These Old Dwellings Can Be Converted Into Small Kitchenette Apartments By Dividing Them Up Into Smaller Rooms and Installing Wall Beds.

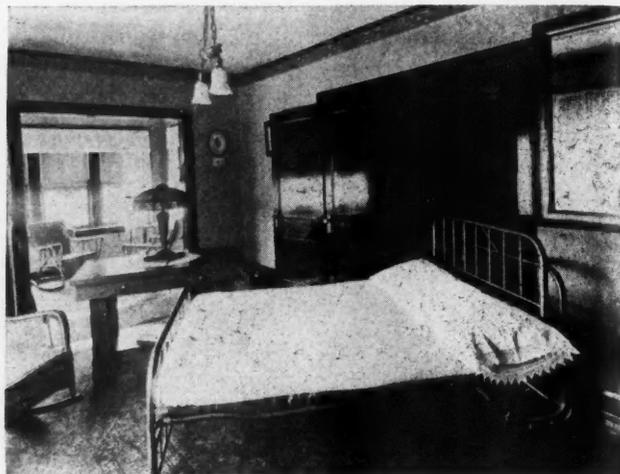
Building a New Porch

Very often a new front porch will do wonders towards improving the outward appearance of an old home. There are several ways in which this porch can be built. It can be built of stucco, or of brick with brick pillars and concrete or wooden floor. Then to make it an ideal sun porch, casement windows can be installed, insuring an extra room as comfortable in the winter as in the summer. These windows can be moved back out of position in the warm months and supplemented by screens. While all of the changes suggested here can be accomplished at very small cost, they will add immeasurably to the appearance and value of the home.

Dividing Large Homes Into Apartments

In the August number of the *AMERICAN BUILDER*, we discussed how large attics which are waste space can be quickly and cheaply converted into living rooms by the use of wallboard. There is another phase of the housing situation that should bear the attention of every builder. In your town as in hundreds of others there are one or more large homes, built many years ago are either deserted, occupied only part of the time, or given over to lodging purposes. There is plenty of reason why these houses should be converted into two or more apartments that will rent at a fair and reasonable return and provide that many more families with living quarters. The appalling waste of housing space has become one of the important problems in this country. If only half of the deserted housing space was utilized it would have a profound effect on the scarcity of homes and make good to a considerable extent the present shortage. In most cases the owners of these buildings are anxious to find some way in which they can convert this property into revenue producing assets instead of a costly liability.

As a builder, why don't you show them the way? The buildings are too substantial to be destroyed. All they need is remodeling. Large rooms can be cut in



Two-Room Apartments Can Be Made Out of Great Old Style Houses Which Are Unoccupied or Only Partly So. This Work of Remodeling Will Benefit Both Owner and Contractor and Also Relieve the Housing Shortage.

two, converted into kitchenette apartments by the installation of wallbeds and baths. There is no reason why a house of nine or more rooms cannot be converted into two or more small apartments which will be strictly modern in every sense of the word. It should not take much argument to convince the owner that the expense will soon be offset by the attractive remuneration in these times of high rentals. Each year he pays a large tax—each year there is some expense to maintain the house in fairly decent condition which is necessary if he ever hopes to sell it. Only recently in Chicago two old dilapidated buildings, structurally sound, but out of date, were remodeled in an unique way into studios and shops with several apartments. The rentals on these new quarters more than offsets the cost of remodeling.

Changing Room Arrangement

Very often in old dwellings there were many rooms on the first floor but all were of about the same size. Today the real home is not complete without the large living room. All that is necessary to have a room of this kind in the house which is being remodeled is to remove a partition between two of the rooms. Then by the addition of a few ceiling beams your building will have a large attractive modern living room.

In adding a new bathroom, as in the case of large homes being subdivided into smaller apartments, it is important as well as economical to have the bathrooms in the same section of each floor. Then one stack pipe can take care of all of them.

Heating Plants

In many old homes the heating facilities must be revamped in order to measure up to modern requirements. In some cases stoves have been used and of course today a modern home is not heated by stoves. For this the builder can very wisely suggest a furnace, either the pipeless or piped method; in the case of a farm home, the former, as the farm home must have a cool cellar for storage of footstuffs.

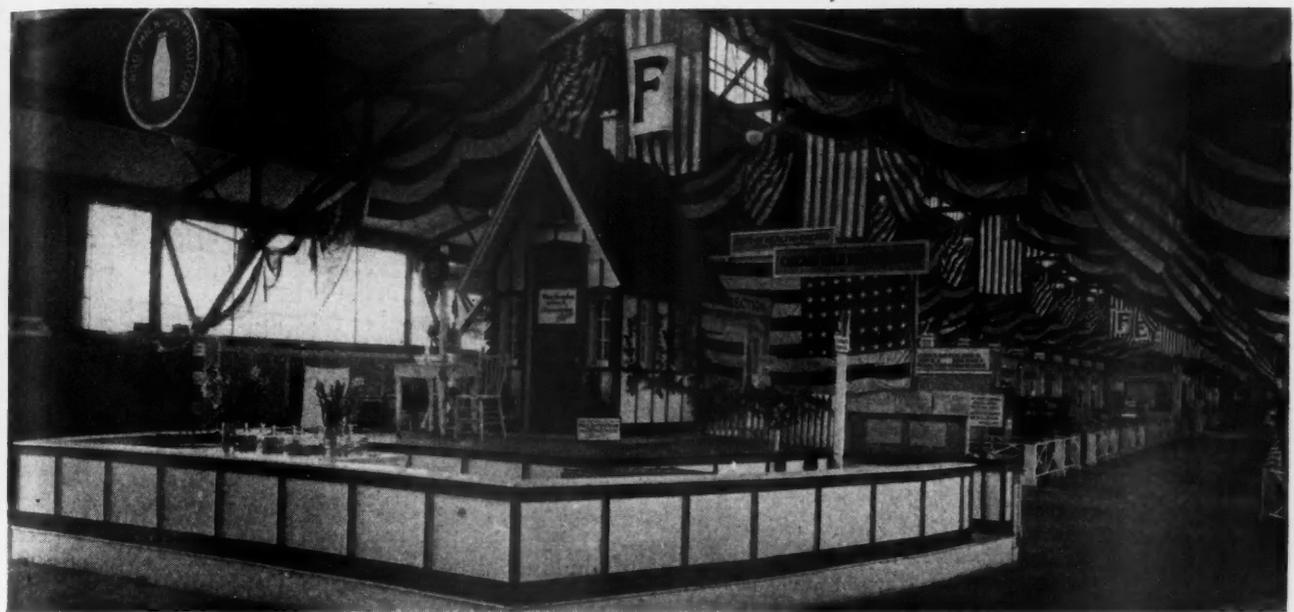


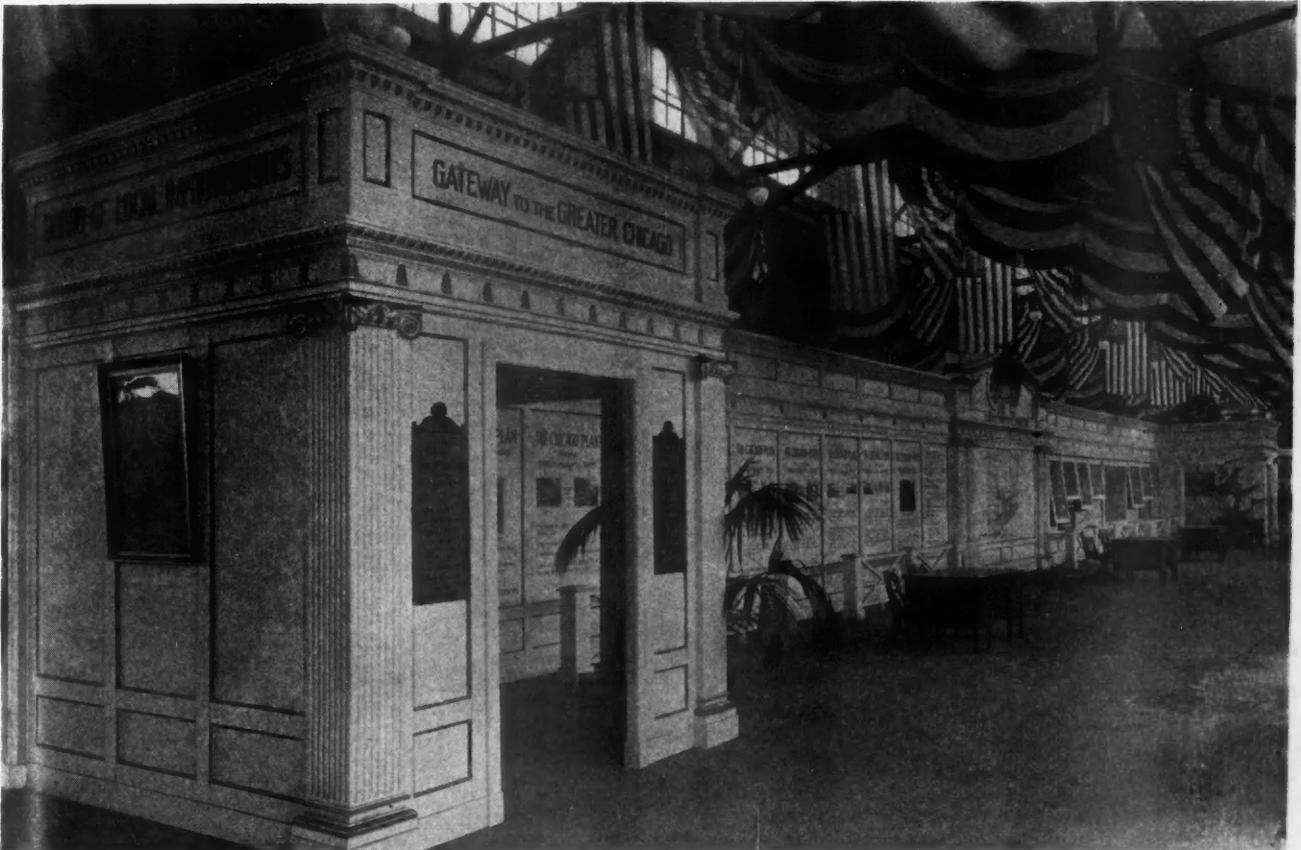
Exhibit of Chicago Milk Distributors Showing How Wallboard Was Used in Variety of Ways. The Little House Is Made of This Material.

Wallboard in Monster Exposition

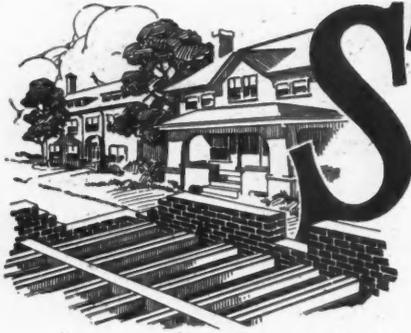
THOUSANDS OF SQUARE FEET USED FOR BOOTHS, BACKGROUNDS, ETC., AT PAGEANT OF PROGRESS IN CHICAGO.

THESE pictures illustrate very strikingly the wonderful possibilities for the use of wallboard at expositions, county fairs and other large displays. Over 150,000 square feet of wallboard was used at the monster Pageant of Progress held last month at the Municipal Pier in Chicago. This material

was used in the construction of all backgrounds. As there are many builders who are called upon from time to time to prepare and construct booths, these pictures will be of particular interest to them and especially at this season when the county fair program opens in full swing.



This Entire Exhibit Is Wallboard. Over 150,000 Square Feet Were Used at the Monster Pageant of Progress Recently Held in Chicago. With the State and County Fair Season Under Way There Is Plenty of Work for the Builder in This Field.



STEEL LUMBER Construction

Steel Roofs and Floor Additions

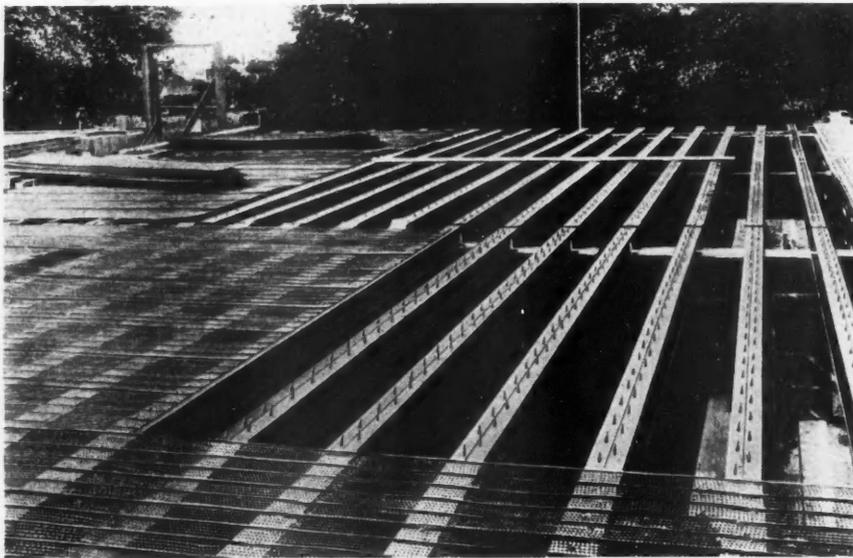
METHODS OF BUILDING STEEL LUMBER ROOFS, FIRE-SAFE FLOORS AND LIGHT WEIGHT ADDITIONS TO BUILDINGS ARE EXPLAINED.

By Gilbert Canterbury

EDITOR'S NOTE—This is the ninth article of a series on the use of steel lumber in modern construction. Readers are invited to ask questions pertaining to this subject. Answers to all inquiries of general interest will appear each month in this department. Write in your problems now.

BUILDING a fire-safe first floor with steel lumber across brick foundation walls resolves itself into five simple operations. The joists will have been shipped to the job cut to proper length and the first operation is the placing of these joists at specified spacings and nailing down the steel strap bridging. The second operation is the placing of metal lath. Both of these operations are shown clearly on the accompanying photograph reproduction.

When the joists and lath are in place, two-by-two wood nailing screeds are nailed into the webs of the joists. Next the 2-inch concrete filler is applied and after that there remains only the hard-wood surface to be applied. Any workman without previous skill in steel lumber construction can do any or all of these operations. The total time required for building this type of floor will compare with that required for building a combustible floor and will be less than is required for building any other kind of fireproof construction.



Steel Lumber Fireproof Floor Construction Over Brick Foundation Walls. The Lath Is Placed Over the Joists and Nailing Screeds Over the Lath Then Concrete Is Applied. The Wood Finish Comes Last.

Steel Roof Rafters

Extra emphasis has been laid on the importance of building fireproof roofs. Such roofs, to be sure, are highly desirable, but the actual statistics of all fires in the United States have never shown a percentage of more than 24 per cent caused by fires originating outside the building. Most fires originate inside the building. The roof, of course, offers protection only from the fire originating on the outside.

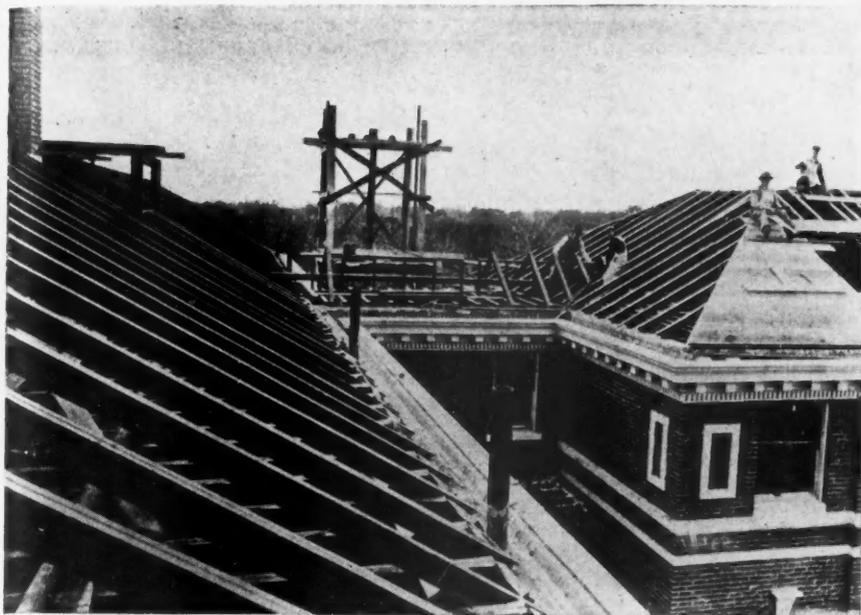
Be that as it may, a thoroly incombustible roof may be built with steel lumber joists. Some punching and cold riveting or bolting is necessary where the roof is of "hip" construction. Metal lath is attached to the tops of the joists and a concrete slab spread over the lath just the same as in floor construction. Some sort of felt or other waterproof covering is necessary for the concrete slab. The accompanying photograph reproduction shows a good example of hip roof construction with steel lumber joists used as roof rafters.

Steel Top Additions

Frequently it comes to pass that additional floor space is required in an old building when the presence of surrounding structures makes it impossible to cover any more ground space. The answer to such a problem is the construction of additional stories on top of the old building.

Lightness is the big word then in connection with the additional structure. The old walls or columns can carry just so much additional load. Every pound that can be saved means additional space.

Naturally, in the handling of such a problem, structural steel columns and girders would be used and the light dead load of steel lumber joist floor construction also stands in the forefront. The full fireproof steel lumber joist floor never weighs more than forty pounds to the square foot. No other fireproof floor construction



Steel Lumber Used as Structural Support in Permanent Roof Construction. This Is a Hip Roof With Steel Joists Used as Roof Rafters.

ing of wood. This study, it is believed, will be of extreme interest to the lumber manufacturer and to the wood-using industries. The purpose is to determine the piling practice which will result in the fastest drying rates consistent with the least depreciation of stock, the least amount of required yard space and the least handling costs. The study will be carried on concurrently on both hardwoods and softwoods. All the important commercial woods of the United States will eventually receive consideration.

The air seasoning of wood is an old practice. No systematic attempt has ever been made, however, to work out the exact conditions under which drying time and drying costs

can equal this lightness and most other systems weigh more than twice as much.

An example of this class of construction is shown on the accompanying photograph reproduction of the Brandeis Building at Omaha, Neb. The additional stories were erected on this building which stands in the heart of Omaha. The size of this structure is scarcely indicated in the photograph. As a matter of fact, the two extra floors had a space of 110,000 square foot.

The steel joist fireproof floors weighed dead load not more than 40 pounds to the square foot. If some other type of fireproof floor weighing 80 pounds to the square foot had been used it would have meant that 4,400,000 additional pounds of materials would have been piled on top of that old structure, and yet the new floor space available for use would not have been any more. It would have cost a lot to buy that extra material and hoist it up to the top of the building where it was to be used even if the old walls would have been strong enough to support it.

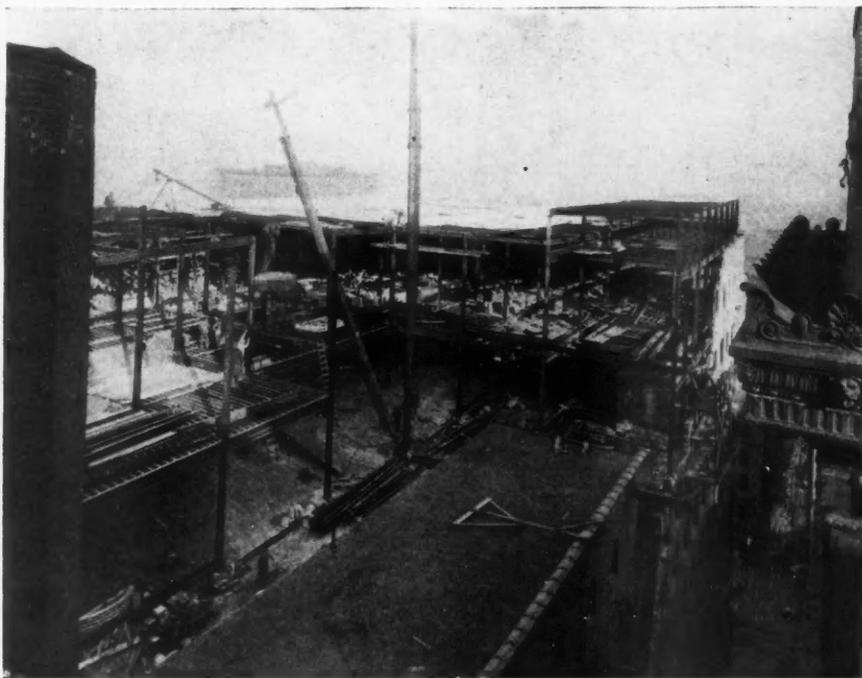


Plan to Reduce the Time and Cost of Air Seasoning Wood

IN co-operation with the sawmills and wood utilization plants thruout the country, the Forest Products Laboratory, Madison, Wisconsin, is organizing an extensive field study on the air season-

can be reduced to a minimum. It is not actually known which of the numberless methods of piling will give the quickest and the cheapest results under given climatic conditions. The new project will furnish a comparison of the effects of such piling variables as sticker heights, the spacings of boards in layers, the heights of pile foundations, and the directions of piling with relation to prevailing winds and yard alleyways.

The study is expected to decide whether from a business standpoint lumber should be dried partly at the mill and partly at the plant of utilization, or whether it should be completely dried at the mill, also whether air or kiln drying is the more profitable.



Additional Stories Being Erected on Brandeis Bldg., Omaha, Neb. Steel Lumber Was Used Because of Its Lightness, the Dead Load Being About 40 lbs. to the Square Foot. Other Fireproof Floor Material Runs as High as 80 Lbs.

An Adaptable Plan Service

HOW LUMBER CONCERN FILES PLANS AND BLUEPRINTS IN INDIVIDUAL ENVELOPES AND CHANGES THEM TO MEET CUSTOMER'S REQUIREMENTS

By Oscar J. Weberg

Central Lumber Co., River Falls, Wis.

USUALLY when a person thinks of building he has a rather hazy idea of what he wants. The thing which is an everyday occurrence with us is a new thing to him and possibly the biggest step he ever took. Naturally he will want to go to someone who can help him plan his home.

If he lives in a large city and is building an elaborate home, he will doubtless go to an architect to get the help he needs, but in the small communities, and especially for the smaller homes, this type of service is not available. It is in these communities and rural districts where the great bulk of the home building is actually done.

If the lumber dealer or the building contractor in these communities has created the proper confidence, the prospective builder will come direct to him with his problem. He will come to him when possibly no one else even knows he is thinking of building.

The usual method for the dealer or contractor to follow when the prospect comes to him for information, is to start leafing thru some plan book, hoping to find some suitable plan for him. This system is no better, possibly not so effective as the one used by the mail order houses in sending out their catalogues for the customer to select from. It is an attempt to force the customer into a ready made plan. No stock plan no matter how cleverly gotten up will exactly fit the ideas of the individual who wants to build, nor can any one plan book be expected to be adapted to a wide range of communities.

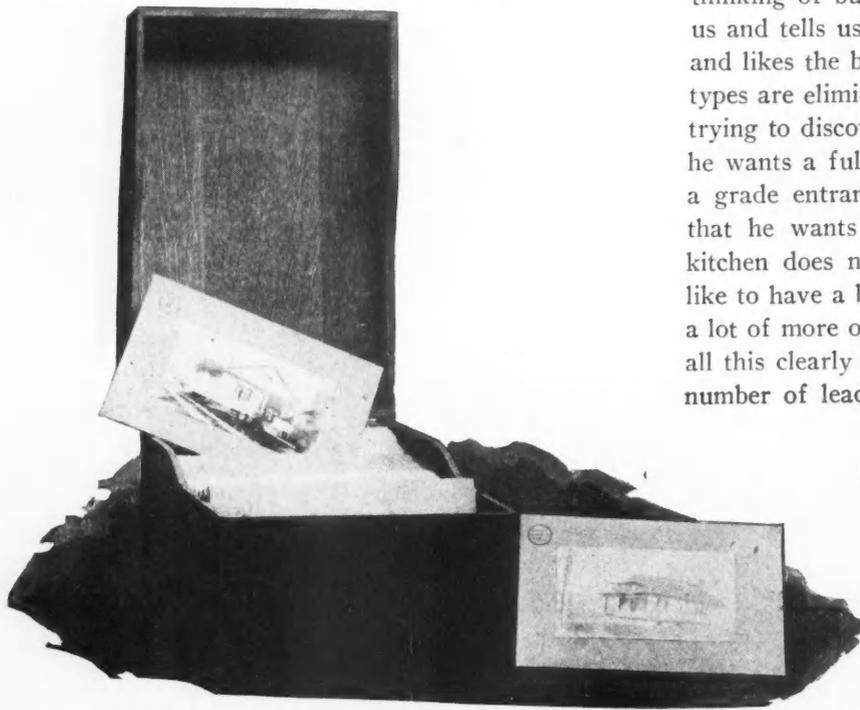
The more satisfactory method of handling the prospective builder would be to find out what he likes in a home and build a plan on his own ideas. This brings up two problems. The first one is to discover these ideas and the second one is to place them in plan form.

To meet the first problem we have developed the envelope design system, which we have found very simple to operate and very effective. Some time ago we started photographing homes which had been built from our plans. We mounted these photographs on 5x8 envelopes. In the envelopes we placed blueprints of the floor plans. We are now using four different tints of envelopes to aid in classifying and filing; for instance, we have one tint of envelope for the standard farm homes, one for the one-story bungalows, one for the story and a half type, and one for the full two-story.

Later thru the courtesy of the AMERICAN BUILDER, we selected plans from their magazine which we thought would appeal to people in our locality. We reproduced the pictures of these to our standard size and built up the floor plans to our quarter-inch scale, making use of these pictures and blueprints in the same manner as we use our own. This has added a very fine collection of homes to our service.

The whole idea of the envelope design system is to solve the first problem stated above, that is, to discover and develop the customer's ideas of what he wants in a home. We will suppose a prospect is thinking of building a small bungalow. He comes to us and tells us that he is figuring on building a home and likes the bungalow type. At once the other three types are eliminated. We lead him on with questions, trying to discover what he likes. He may tell us that he wants a full basement, that he would like to have a grade entrance, that he must have two bedrooms, that he wants a rather large living room, that the kitchen does not need to be so large, but he would like to have a breakfast nook. In this way we gather a lot of more or less unconnected data. He may have all this clearly in mind or we may have to ask him a number of leading questions.

When we have fairly well in mind what he wants, a number of plans in our design envelopes will come to mind. We then turn to our filing case and select the design envelope coming nearest to his ideas. This one envelope which we select contains everything our prospect needs to see at this stage. We are pinning his thoughts to one design. Whereas, if we were using a plan book,



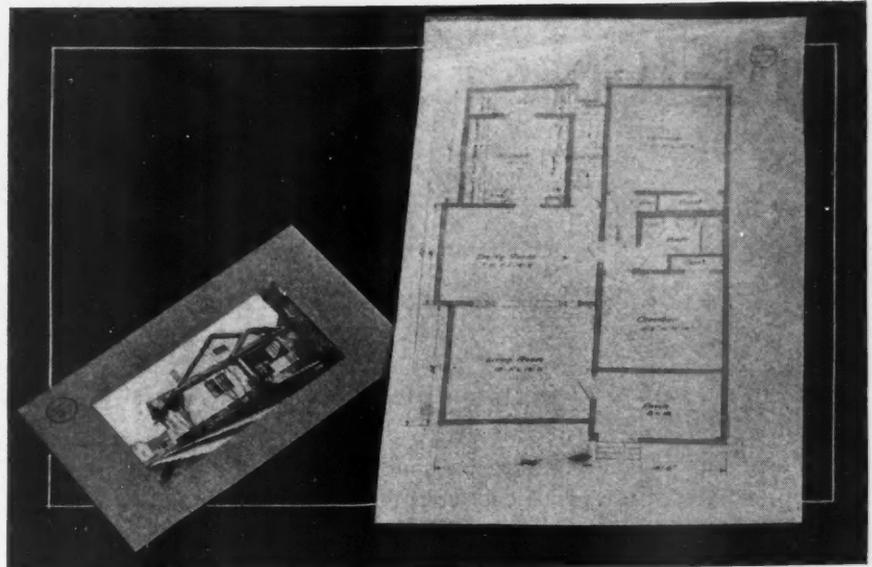
Unique Filing Cabinet Used by Central Lumber Co. Each Design Is Placed in Envelope and Numbered. The Customer Can Indicate Changes and Floor Plan Will Be Revised Quickly.

the tendency would be to leaf over a number of designs, thus scattering his thoughts. The picture on the outside of the envelope shows him what this home will look like and the floor plans show him the arrangement of the rooms and conveniences. In discussing this plan with him we show him where the various features conform to his ideas and also where changes will need to be made.

With this plan before him we lead him on further in developing his ideas. We mark directly on the blueprints the changes he suggests and make mental notes of his requirements. Possibly the plan of the home he is developing will be very different from this plan we are showing him, yet it is the nearest we have to his ideas and gives us something to tie these ideas to. It often happens in discussions of this kind that we discover that one of our other design envelopes really comes nearer to his ideas than the one we selected first. If this happens, we remove the plan and bring out this other envelope. We always prefer to have just the one plan before the prospect at a time. It is possible that this process of eliminating design envelopes will need to be repeated several times in the course of our talk, but all the time we are getting additional data for his individual plan. When we feel we know pretty well what our man wants, we tell him that we will have a sketch ready for him in a few days.

Our prospect will leave feeling that he has really accomplished something in showing us what he wants in a home. He also feels the personal interest we have taken in him and will be intensely interested to see the plan which we are developing for him. There is little danger of his going to anyone else with his home ideas because he will feel that we have it well in hand. Whereas, if we had shown him a plan book and let him leaf thru it, possibly letting him take it home with him, we would have given him no better service than a competitor could have done. No doubt he has several plan books at home sent him by mail order houses and local competitors. Ours would merely add another to this collection.

Now that the customer has gone and we have our plan data we have accomplished our first problem. We are now ready to draw his plans. In drawing these plans we keep in mind the builder's ideas of construction and conform to them as nearly as possible. We know that some of our carpenter and contractor friends do not care for a lot of elaborate details, while others want everything planned in full. In all cases we try to adapt the plans to the mechanic



Perspective Mounted with Floor Plan. These Are Filed and Easily Found When Customers Ask to See House Designs.

who will do the work as well as to the owner. We pay especial attention to any hobby that an owner may have as we have found that when he comes back to examine his plans, he will first look for his hobby and if that has been developed properly, he will pay comparatively little attention to the balance of the plan.



How Builders Boost the Furnace Business

(Continued from page 95.)

builder, who in turn discusses them with the customer. This home will be just as modern as the builder wants to make it, providing, of course, the client can pay the price. It will not be a difficult matter for the builder or lumber dealer to convince the home-builder of the advantages of a furnace as compared to the old-style, one-room heating stove. And this is certainly true in the case of farmer clients who do most of their building work thru the local lumber dealer or carpenter and builder.

Within the last ten years the furnace has been introduced in thousands of farm homes. It has added immeasurably to the comfort of the home.

When talking to a prospective home-builder it is important to emphasize the fact that the comfort and health of himself and family are dependent upon what he puts in the new home. He can make them happy in no easier way than by installing an efficient heating plant that will insure comfort when the winter is in control.



A WELL built, well lighted and well ventilated, and well planned barn is a necessity on nearly every live stock farm.



BUILD a barn large enough to meet future needs and to permit the handling of maximum capacity of the farm. If the new barn just holds the stock at time of building another barn will be needed soon.

DESIGN OF SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

Stresses in Truss Carrying Roof and Ceiling Loads

ARTICLE TWENTY-ONE OF AN EXTENSIVE SERIES OF STRENGTH OF MATERIALS

IN preceding articles of this series methods were shown for calculating the loads at joints of a roof truss and the graphical determination of the resultant stresses in the members of the truss in some simple cases. In the present article I will consider a roof truss of the type shown in Fig. 1. The span $l = 42$ feet, the pitch $\frac{1}{3}$, making the height 14 feet, and the trusses are spaced 12 feet apart. The jack rafters are spaced 16 inches from center to center, and are 2 by 8-inch timbers. The purlins are 8 by 10 inches. The roof is sheathed with 1-inch spruce sheathing and covered with metal shingles. The ceiling is lath and plaster, held in place by 2 by 6-inch joists spaced 16 inches center to center.

The first thing is to determine the total weight carried by the truss on the upper chord due to the rafters, purlins and roof. The length of the upper chord AD of Fig. 1 is found as follows: ACD is a right triangle shown in Fig. 2. Then $\overline{AD}^2 = \overline{AC}^2 + \overline{CD}^2 = 441 + 196 = 637$.

$$AD = 25.2 \text{ feet}$$

Now the roof projects beyond the end of the rafters. Suppose we assume that the length of the roof is 26 feet. Since the trusses are spaced 12 feet apart, the roof area carried by each truss is $26 \times 12 \times 2 = 624$ square feet. Hand books give spruce sheathing 1 inch thick an average weight of 2 pounds per square foot. Also metal shingles 1 pound per square foot. Then the total roof weight is $624 \times 3 = 1,872$ pounds.

To find the weight of lumber, first find the number of board feet of lumber used. Hand books give the weight of lumber per cubic foot. Divide this weight

by 12 and we have the weight per board foot. This quotient times the number of board feet gives the total weight of the lumber. To find the board feet, multiply the breadth and height in inches by the length in feet and divide the product by 12. Thus for the jack rafters 2 by 8 inches and 26 feet long, the board feet in one is:

$$\frac{2 \times 8 \times 26}{12} = 34.7 \text{ board feet}$$

The rafter would not be 26 feet long, but made of two lengths, which together made 26 feet. Now, since the rafters are spaced 16 inches apart, the number required from truss to

$$\frac{12 \times 12}{16} = 9$$

truss is in each side. The total number of board feet in the rafters for each truss is:

$$2 \times 9 \times 34.7 = 625 \text{ board feet}$$

There are seven purlins 8 by 10 inches and 12 feet long. Then:

$$7 \times \frac{8 \times 10 \times 12}{12} = 560 \text{ board feet.}$$

The total number of board feet is:

$$625 + 560 = 1,185$$

If we use yellow pine weighing about 45 pounds per cubic foot, then each board foot will weigh $45 \div 12 = 3.75$ pounds. Call it 4 pounds. The total weight of lumber is:

$$1,185 \times 4 = 4,740 \text{ pounds}$$

In calculating the weight of a roof truss, Merri-man's "Roofs and Bridges" gives the following formula:

$$W = \frac{AL}{2} \left(1 + \frac{L}{10} \right)$$

Where W = total weight of one truss in pounds,

A = the distance between trusses in feet.

L = the span of the truss in feet,

$A = 12$ feet and $L = 42$ feet.

$$W = \frac{12 \times 42}{2} \left(1 + \frac{42}{10} \right) = \frac{504 \times 5.2}{2} = 1,310 \text{ pounds}$$

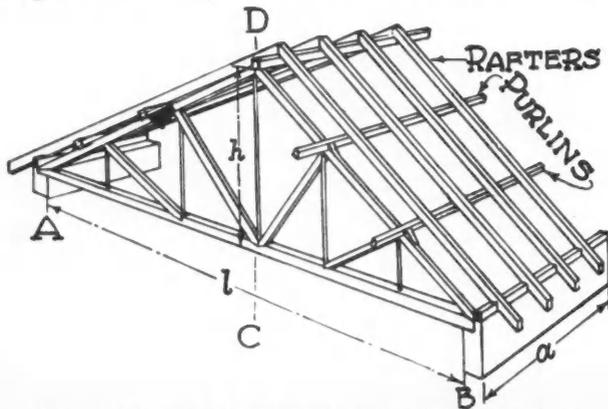


Fig. 1. Roof Supported by Trusses, Purlins and Rafters.

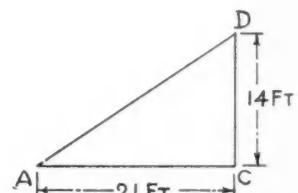


Fig. 2. Showing the Upper Chord, Height and Half Lower Chord.

The total load carried at the joints of the upper chord is:

Roof covering.....	1,872
Rafters and purlins.....	4,740
Truss	1,310

Total7,922 pounds

Works such as Malcolm's Graphic Statics give for a roof with covering such as we assumed a weight of from 10 to 12 pounds per square foot of roof surface to care for covering rafters and purlins. In our problem the roof area is 624 square feet. If we assume 11 pounds per square foot then the total weight is:

$$11 \times 624 = 6,864 \text{ pounds}$$

By our calculations $1,872 + 4,740 = 6,612$, which agrees quite closely.

We will assume a snow load of 25 pounds per square foot of horizontal projection of roof, or what amounts to the same thing, the floor covered by the roof. This area is $42 \times 12 = 504$. Then snow load is:

$$504 \times 25 = 12,600 \text{ pounds}$$

The entire upper chord load is:

$$7,922 + 12,600 = 20,522, \text{ say } 20,500 \text{ pounds}$$

Fig. 1 shows that there are five joints of the truss carrying full loads and two end joints carrying half loads. The load is then divided into six equal parts, or $20,500 \div 6 = 3,420$ pounds

for each joint except the ends. They carry 1,710 pounds each. Fig. 3 shows the truss and loads.

In figuring the ceiling loads it may be calculated by the method previously used, taking plastering and lath from 6 to 8 pounds, or use 10 pounds per square to include the plastering, lath and joists. Since there are $42 \times 12 = 504$ square feet of ceiling, the total ceiling load is $10 \times 504 = 5,040$ pounds. There are six panel loads on the lower chord. Then

$$5,040 \div 6 = 840 \text{ pounds}$$

is the joint loads for the lower chord except the ends, which is $840 \div 2 = 420$ each. Fig. 3 shows the load.

The total load carried by the truss is

$$20,500 + 5,040 = 25,540$$

Since the load is symmetrical, each reaction is one-half the load, or 12,770 pounds.

Now, instead of having 1,710 pounds and 420 pounds down at A, with 12,770 pounds up it is customary to replace them by one load, the resultant. This force is $12,770 - 1,710 - 420 = 10,640$ pounds

This change of forces has no effect on the resultant stresses and makes the work easier because there are fewer forces to work with. Fig. 4 shows the loads as changed. The spaces are represented by small letters, a, b, c, etc., beginning with the space to the extreme left, first taking the loads and reactions in the direction of the hands of a watch. Then take the spaces formed by the members of the truss going from left to right.

For the stress diagram, Fig. 5, choose a line 1 inch in length for 3,420 pounds. Since there are five such

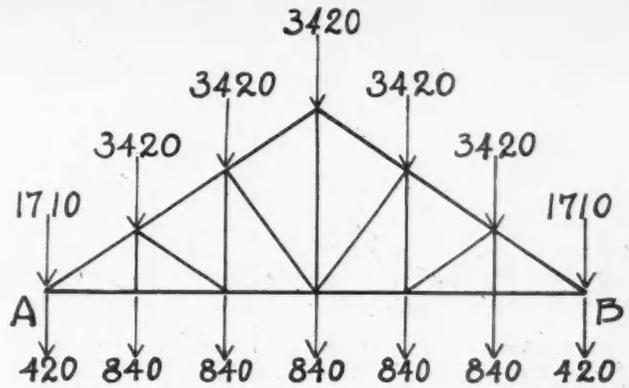


Fig. 3. Showing the Truss of Fig. 1, with the Joint Loads.

loads we draw a line 5 inches long to represent the loads on the upper chord and thus determine points A, B, C, D, E and F. The next load is the right reaction of 10,640 pounds. We then go from F to G to scale. Then 840 down to H, 840 to I, etc., until L is located. The next load is the left reaction upward, which takes us from L to A. The accuracy of the work up to this point is thus determined as LA should scale 10,640 pounds exactly.

We now begin with the joint at the extreme left end, because it has hit unknown quantities to determine, we begin with force *l* because it is completely known. From L go to A. From A draw a line parallel to a *m* indefinite in length. Since the forces at the joint are in equilibrium, they must form a closed figure—that is, our diagram must close at L. Then from L draw a line parallel to *m l* to meet the one drawn from A. This locates point M. Now place arrow heads at the joint of Fig. 4, in just the same direction taken in drawing L A M A. This shows a *m* in compression because it pushes against the joint, and *m l* in tension because it pulls away from the joint.

We must go next to the joint on the lower chord found by *m n*—*n k*, *k l* and *l m*, as this is the only one containing two unknown forces. Begin with *K l* starting at *k* we go to L, then from L to M. From M draw a line parallel to *m n*. Since the diagram must close again at K, from K draw a line parallel to *n k* to meet the second line drawn. This determines the point N. Putting the arrow heads as before in the direction in which K L M N K was drawn, *l m* is in tension as before, *m n* is in tension and also *n k*.

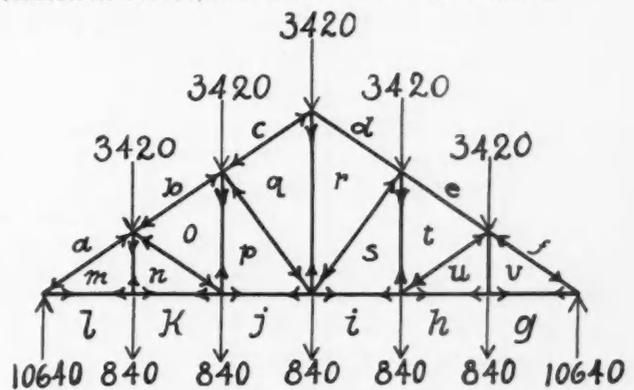


Fig. 4. Showing the Truss with the Loads and Space Lettering.

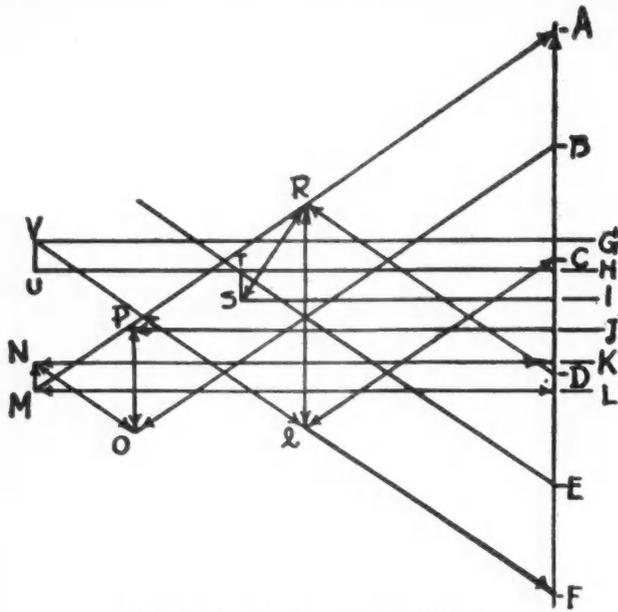


Fig. 5. Showing the Stress Diagram.

Next use the second joint in the upper chord, starting at N. From N go to M, then from M to A, from A to B. Now from B draw a line parallel to b o indefinite in length. The diagram must close at N. Then from N draw a line parallel to o n to meet the line parallel to b o. This determines the point O. Inserting the arrow heads as before shows n m in tension, m a compression, b o compression and o n compression.

Take next the third joint of the lower chord, beginning at J, since force j k is completely known. From J go to K, from K to N, from N to O. Now, from O draw a line parallel to o p and from J draw one parallel to p j. The intersection locates point P. The arrow heads show k n in tension, n o compression, o p tension and p j tension.

Now take the third joint of the upper chord, starting with point P. From P go to O, from O to B, from B to C. From C draw a line parallel to c q, and from P a line parallel to q p. The intersection gives joint J. P o is in tension, o b compression, c q compression and q p compression. The reader has undoubtedly noticed that the stress in any member is found at two different joints. The results should give the same kind of stress, say compression at both joints.

We must now use the joints at the vertex of the roof as the next one in the lower chord has three unknown. Begin at the joint J. From J go to C, from C to D. From D draw a line parallel to d r, and from J draw one parallel to r p. The intersection locates R. The diagram shows d r in compression and r q in tension.

Since the truss is symmetrical, and the loads symmetrically placed, the stresses in members similarly placed are equal. Thus m n = n v, a m = f v, p q = s r, etc. However, as a check on the work the reader could continue the operation thru all the joints.

The lines of the stress diagram may now be meas-

ured and reduced to pounds by the scale 3,420 pounds.

The final results should be arranged as follows, remembering that a tension stress is + and a compression one -.

a m	b o	c q	m l	n k	h j	m n	n o	o p	p q
v f	e f	d r	v g	n h	s i	n v	f u	f s	r s
-	-	-	+	+	+	+	-	+	-
						840			

The lower line is left for the insertion of the loads.

The span pitch and kind of roof truss is governed by the load, locality and character of the building or bridge. I have attempted to outline the method to follow in any of the simpler cases for a dead load. The next article will consider a wind load in combination with a dead load on some other type of roof truss.



Hoover Wants Building Material Prices

IN connection with the increased activity of the Department of Commerce in gathering economic data, the Bureau of Census is preparing to gather monthly the prices of building materials.

These prices will cover approximately 25 items which include such commodities as lumber, brick, cement, wall board, sand, crushed stone, nails, glass, tile, pipe, reinforcement bars, structural steel, paint materials, slate and building paper. The lumber items embrace 2 by 4-inch 16-foot dimension, 1 by 6-inch common boards, 1 by 4-inch flooring, and shingles.

Price information is to be secured from builders' exchanges thruout the country. The figures which are to be asked for are the prices paid on the first of each month by contractors delivered at a local distributing point such as car, siding, pier, yard, or warehouse. Approximately 150 exchanges, it is said, have been solicited to co-operate in the project.



Edison Says

"I HAVE been thru several depressions during my business life. They all act alike. The men whose business fell off 66 per cent increased their selling effort 75 per cent, managed to pull thru as if there were no depression, and the efforts of such men tend to shorten the periods of depression."



ONCE a year the newsboys of a certain district in London are taken for an outing up the Thames by a gentleman of the neighborhood. At this time they can bathe to their heart's content. As one little boy was getting into the water a friend observed, "I say, Bill, ain't you a little dirty?"

"Yes," replied Bill. "I missed the train last year."

SMALL JOBS FOR RURAL BUILDERS

Vegetable Storage Cellar

CONTRACTORS who specialize in farm work will be interested in the concrete vegetable cellar shown here. It is something different and was built for the Colorado Potato Experiment Station, Greeley, Colo.

This cellar is 30 feet wide, 48 feet long and 7 feet high. It was designed by Dr. C. F. Clarke, in charge of the station. Joe Gibson, a Greeley contractor, did the construction work.

One of the unusual features of this vegetable cellar is the roof. As can be seen in one of the illustrations, woven wire fencing is stretched taut on top of the rafters and on this is a thick layer of straw which is in turn covered with a layer of dry earth about one foot thick which is kept dry by a roof supported on a second set of rafters.

The walls of the cellar are double concrete walls, each about 8 inches thick. The space between these two walls is filled with earth. The upper set of rafters rests on the outer wall, the lower set on the inner wall. As a result, roof and inner wall are insulated against outside temperature. In a test in which a thermometer was hung in the cellar during an entire winter, it registered a constant temperature of 39 degrees F. during that time. This is ideal temperature for potato storage.

The essential requirement in every good vegetable storage cellar is ventilation and this is secured thru four ventilators on the roof equipped with double

dampers controlled by a cord hanging within easy reach in the cellar. Free circulation of air about stored products is insured by the construction of bin partitions which are composed of 1 by 4's space 1 inch apart. On the floor and against the wall are 2 by 4's covered with 1 by 4-inch boards, making a 2-inch space for movement of air.

There are two pairs of large entrance doors, a foot apart. When open these doors allow plenty of room



Concrete Vegetable Storage Cellar, a Handy Building on the Farm for Storing Produce. This Building Is 30 Feet Wide, 48 Feet Long and 7 Feet High. It Is Built of Concrete and Insulated in an Unusual Way.

for a wagon or truck to back into the cellar for loading and unloading. There is a big demand for good storage cellars among big potato growers and farmers of all kinds who want to keep their produce in the best of condition until they are ready to market it. Potatoes are always sold for more attractive prices in the spring, but unless the farmer has adequate storage facilities he cannot hold them over.



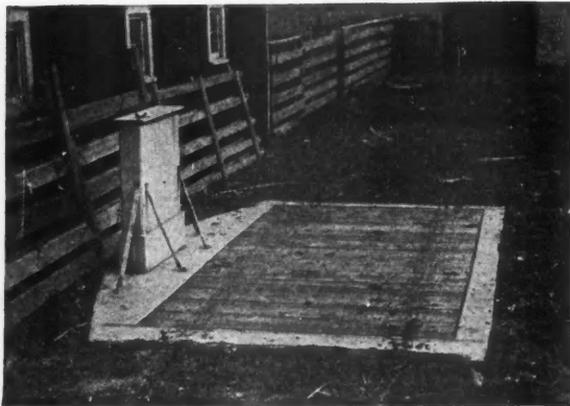
Concrete Pit for Farm Scales

HAS every farmer in your territory a pit scale? Every stock farm needs a platform scale and this scale calls for a pit. This is one small job that can be done in spare time or dull periods.

The modern farmer is no longer selling his produce by guess weight because he wants to get full value for his goods. That is why he has a platform scale. The cattle and hog feeder needs a scale to run his stock over at frequent intervals to get some idea of how rapidly they are gaining. If they are not making satisfactory gains he knows something is wrong and can change his rations to remedy the condition.



View of Cellar Inside. Note the Bins for Storing Potatoes and Other Vegetables. The Walls Are Double with the Space in Between Filled with Dry Earth. The Temperature During the Winter Was Constant at 39 Degrees.



Platform Scale with Concrete Pit. This Device is Necessary on Most Farms.

Moreover if farmers who are fattening stock buy grain from outside sources they need this scale to see that they get full weight. The scale is not complete unless installed in a concrete pit. This is nothing more than a foundation to carry the framework that supports the scale platform and weighing mechanism. A cross section view of one is shown below. This will give an idea of how the pit is constructed. Most firms manufacturing platform scales furnish specifications and since every scale requires different design and dimension of pit it is advisable to follow the instructions of the manufacturer.

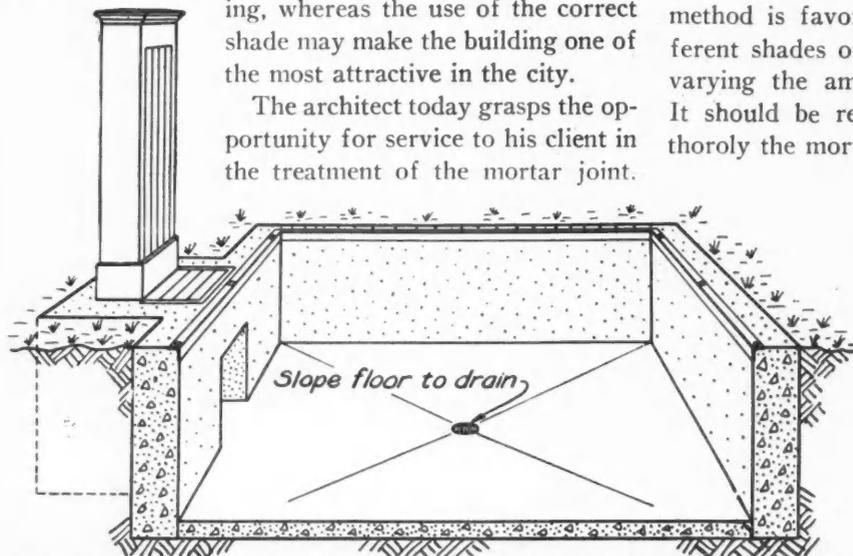


Colored Mortar

MANY architects make it a standard practice to specify colored mortar in harmony with the color tone of the brick. This greatly increases the effectiveness of the color possibilities of brick and makes available many beautiful combinations.

The difference between a brick structure of permanent beauty and a mere building lies in the detail, the care, and the thought that the manufacturer, architect, and builder put in their work. The manufacturer of brick naturally wishes to see the full beauty of his product realized. The wrong color used in the mortar may cause the whole structure to look dull and uninviting, whereas the use of the correct shade may make the building one of the most attractive in the city.

The architect today grasps the opportunity for service to his client in the treatment of the mortar joint.



Cross Section view of Pit for Platform scale showing Construction Details. The Outer Walls Are Concrete.

He realizes that in producing a harmonious effect he must study not only the brick and bond, but also the color and texture of the mortar. By such care he is able to design a structure that is both artistic and durable. In all brick work, and particularly in ornamental design, the character of the mortar plays an important part. A very pleasant contrast may be secured by using a clear white lime mortar with white sand. Such a color is always appropriate, and furthermore, does not stain or become discolored as time passes. Both color and strength are permanent.

As mortar joints sometimes occupy nearly one-fourth of the wall area, the question of the amount of color necessary, the possible tones, and the durability of the color under exposure become important considerations. Only pure mineral colors should be used as they are permanent in character and rich in tone.

Amount of Color Required

One well-known manufacturer of mortar colors recommends the following amounts of color to be added to the mortar required to lay 1,000 brick with a three-eighths inch joint.

Color	Pounds
Mortar brown.....	90
Hematite red.....	75
Special chocolate.....	75
Colonial buff.....	90
Pompeian buff.....	90
Mortar black.....	125
Double strength black.....	75

The dry colors should first be thoroly mixed with the sand. Blending colors is not advisable. Only one color should be used. In order to get uniform results, the mortar and color must be carefully measured or weighed as well as thoroly mixed. After mixing the sand and color, the slaked lime paste or hydrated lime should be added. The paste should never be added while hot. If it is preferred, the colors may be made into a paste by the addition of water and then added to the mixed mortar. This method is favored by many contractors. Many different shades or tones of color are made possible by varying the amount of color added to the mortar. It should be remembered that the longer and more thoroly the mortar is mixed the less color is required.



BUILDERS of moderate means who would be unable to complete proposed or partially finished buildings without financial assistance thru mortgage loans are to be assisted by a group of leading financial institutions. These banks have pledged \$2,900,000 for this purpose as a result of a recent conference held at the invitation of the Title Guarantee Trust Company of New York.

Raising Hogs Efficiently

COLDSTREAM FARMS USE MODERN BUILDINGS, FULLY EQUIPPED, TO MAKE HOG BREEDING PROFITABLE

FRESH air, sunshine, warmth in winter and shade in summer—coupled there with proper feed and the road to success in hog raising is pretty well assured.

Coldstream Farms use modern methods to make hog breeding and raising for market profitable. The hog barn, two views of which are shown in the accompanying illustration, is a modern structure, in which the breeding sows and their litters are comfortably housed; the interior is so arranged and equipped that the work of caring for the animals can be done with the least possible amount of work.

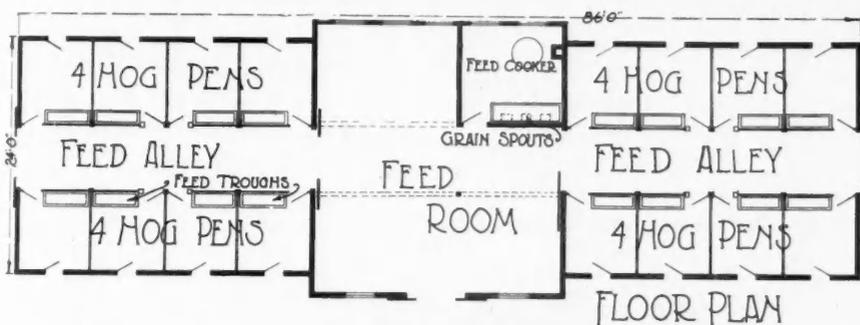
The monitor roof hog barns at either side of the central part of the building each houses eight sows and their pigs. The center part of the building is used for feed storage and the preparation of the

feed, which is stored on the second floor and spouted to the feedroom. The cooker is located in the feedroom, an interior view of which is also shown.



Modern Hog House on Coldstream Farms. The Hog Is no Longer a Neglected Animal. He Is Getting Better Housing and Attention.

A cross-section of the building is shown in the architect's drawing. This gives a good idea of the construction of the monitor roof, in which are set the windows which admit sunlight to the pens and permit good ventilation. Thru the center of the barn runs a feeding alley, wide enough to permit a wagon to be driven thru for removal of litter and distribution of feed.



Floor Plan of Hog House, Showing Pen Arrangement and Feed Room.

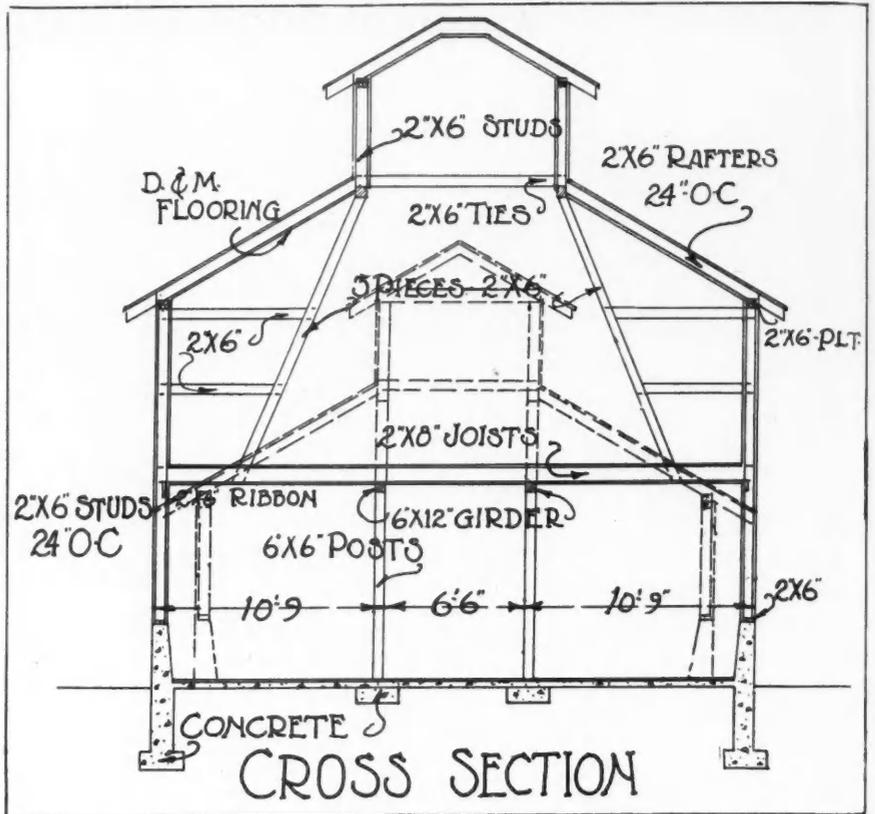


Another View of Hog House, Showing Monitor Roof with Windows. This Building Provides Excellent Ventilation for the Animals and Admits Sunshine to All of the Pens Thruout the Day. This is a Type Well Worth While Copying by Contractors Who Make a Specialty of Farm Building Construction.

While this may be a larger hog barn than is needed by the average farmer, it was designed in the light of the experiences that have shown how to cut costs and at the same time provide for the health of the animals.

There is quite an interesting arrangement of equipment in the feedroom as shown in the large illustration below. At the right of the picture can be seen the lower end of the feed spouts in the wall leading from the bins above. When the plug is removed the grain pours into the trough below where it is mixed. Then it is put in the weighing box and weighed. The equipment at the left is used for cooking the feed.

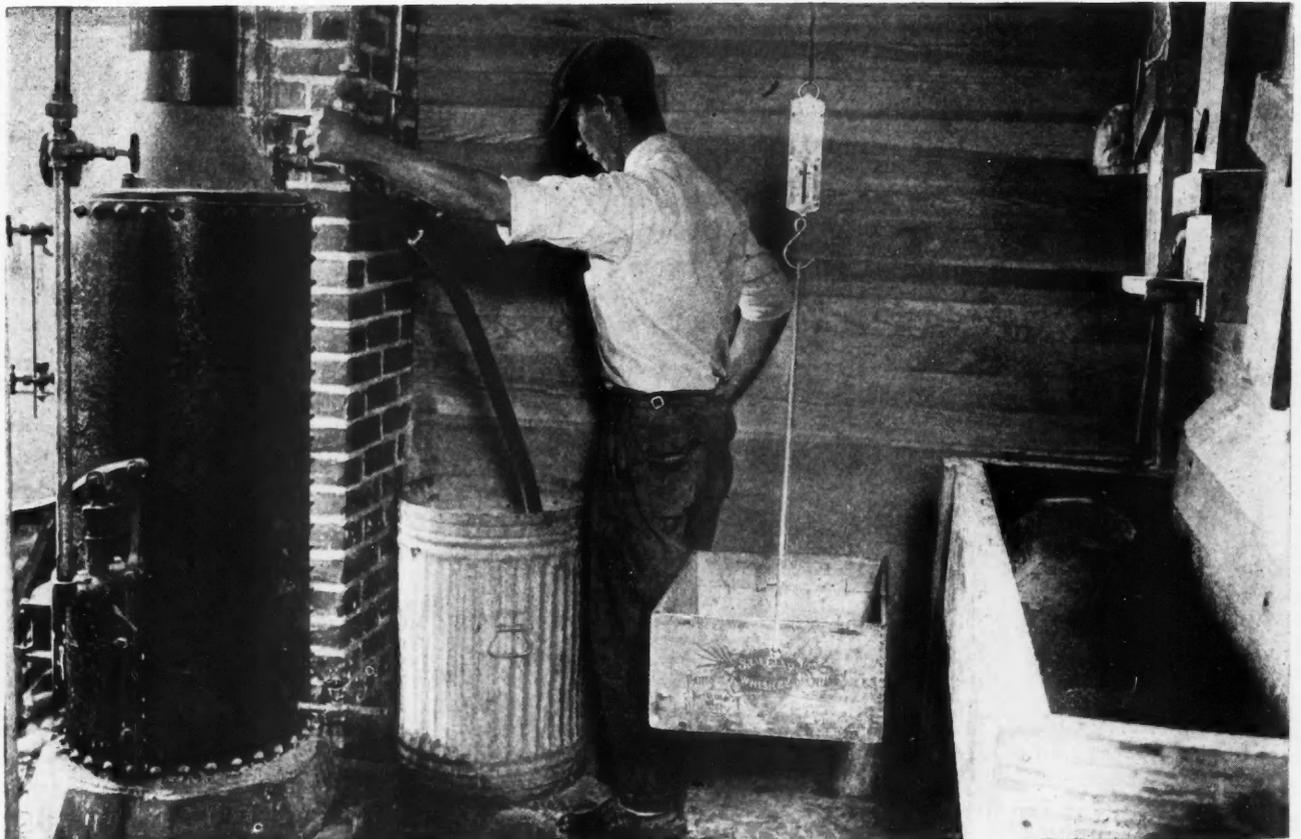
An essential feature of the hog house is running water which greatly aids the men in doing their work of cleaning the building and feeding and watering the stock.



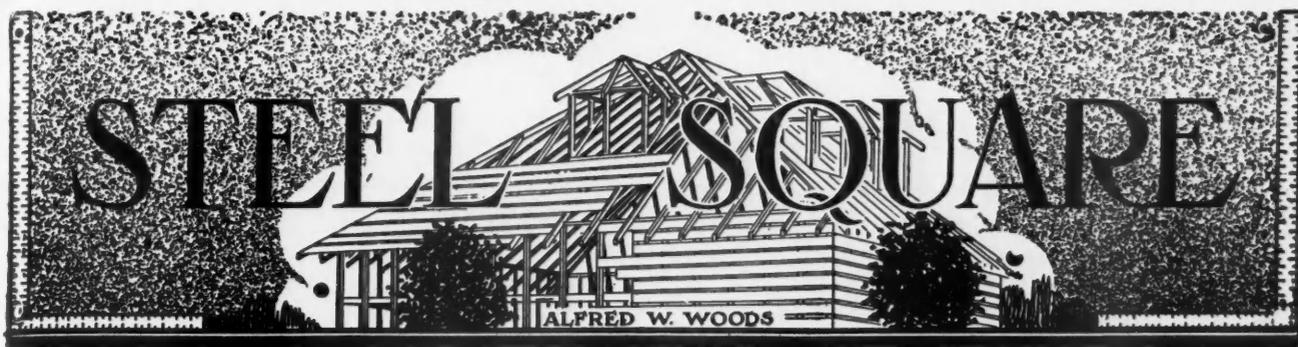
Cross-Section of Hog House on Coldstream Farms, Showing Foundation and Framework.

ARE you always chasing rain-bows? Why not grasp an opportunity that is within reach by availing yourself of the offer on pages 35-39. It shows you the way to find a *real* pot of gold. There is nothing vague or intangible about this

proposition, just a matter of cold practical facts. The builder who reads and studies during his spare hours is improving his chances in the unceasing fight for a place in the sun. He is building for success.



Running Water Is One of the Features of This Modern Hog House. Builders Have Been an Important Influence in Getting Farmers to Equip Their Building with Labor-Saving Machinery and Appliances.



How to Use the Steel Square

FRAMING A DORMER GABLE—OBTAINING THE VALLEY CUTS

FOR our subject this month we will take that of framing a dormer gable where long and short valleys are used at the intersection of the roofs. The subject has been well covered in previous issues, but in order to cover the subject of framing with the aid of the steel square in the course of these articles, it is necessary that some of the questions be taken up that have been previously answered. However, in doing so we will endeavor to present the subject in new clothes, both in description and illustration, so that they will at least furnish as good matter, if not a little better, than in their former shape.

Fig. 1 represents the plan and the corresponding elevation of the valleys in the roof. For an example, 14 feet is taken for the run of the main roof and 8 feet for that of the gable. The roof of the main part

and that of the gable being of the same pitch, it is evident that the ridge of the latter will be below that of the former, as the rise is to the difference in their runs. A-B represents the run of the long valley and A-D that of the short valley. Thus it will be seen that valleys framed in this way are self-supporting. That part from D to B is what is generally termed

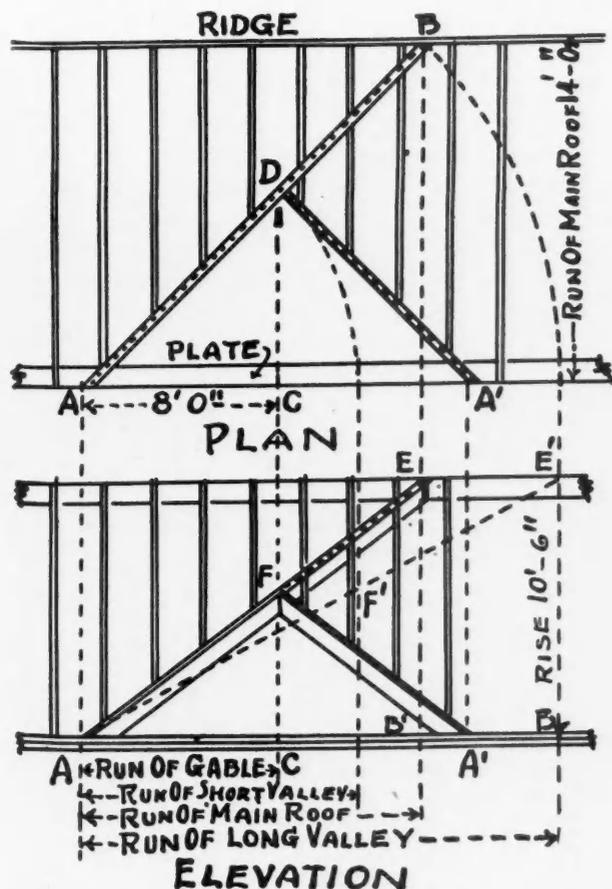


Fig. 1. Showing Plan and Corresponding Elevation of the Valleys in the Roof.

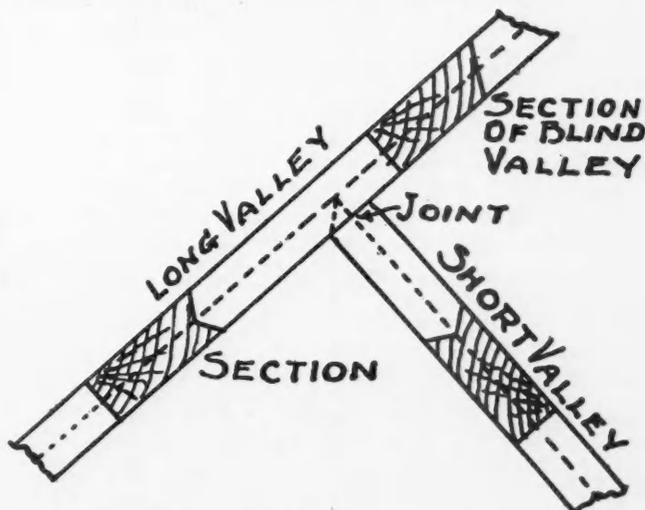


Fig. 2. Showing Plan of Valleys at Intersection.

“blind valley,” because it is concealed in the plane of the main roof. The measurement should be taken along the center of the back of the valley, as shown by the dotted lines, and if backed, or more properly speaking, grooved, so that the roof boards will have a solid bearing at all points, then the seat cut should be made so as to bring the grooves in the plane with that of the back of the common rafters. This furnishes a problem in itself that is not so easily understood as it may appear at first sight, especially so where there is a projection of the rafter to form the cornice. However, it is not usual to groove the valleys, as they are generally concealed from view and otherwise not of enough advantage to warrant the extra work required. Where they are not grooved, they should set proportionately lower than the common rafter so that the under edge of the roof boards will intersect the center of the back of the valley. Even then, that part from D to B would have to be backed or beveled on one side the same as for a hip to bring

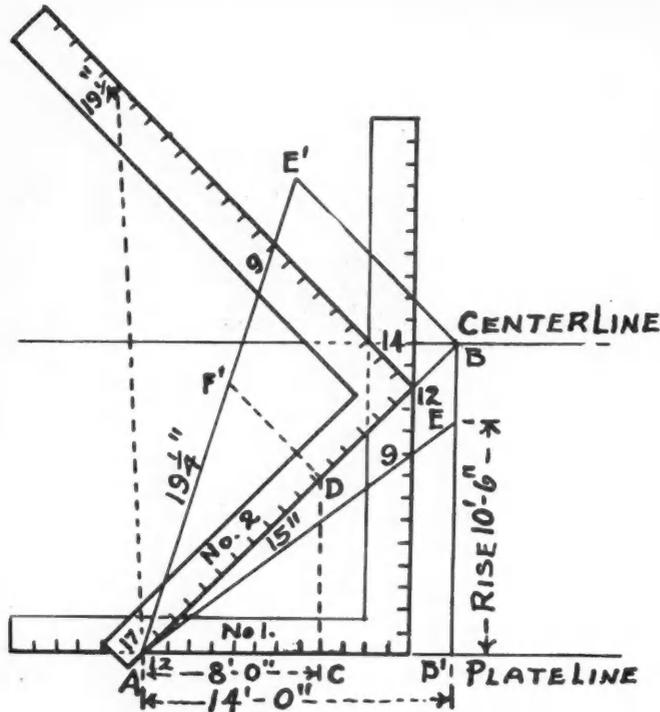


Fig. 3. Showing How Two Steel Squares Are Used to Get Seat and Plumb Cut.

the center in plane with the common rafter.

Fig. 2 shows the plan of the valleys at the intersection on a larger scale. In this, the sections are shown grooved below the intersection, and in that case that part called the blind valley should be beveled one way, as shown. This part, while it may look out of place in the illustration, will be found to conform with the roof planes when set in position. In large or heavy roofs, the valleys should be doubled and in that case it is an easy matter to groove the backs by simply backing them one way only and then spike them together so as to form the groove. In other words, they would show the same as in the illustration by letting the center line represent the joining of the two pieces.

Another point comes up in this connection that should not be overlooked before passing on, and that is the joining of the short valley to the long one. Simple as it is, builders sometimes do not readily grasp that it is nothing more than the plumb cut for the valley. It rests at right angles from the long valley and therefore must rest square against it just the same as if against a level piece, and in this example the pitch being $\frac{3}{8}$, 17 and 9 will give the cut. However, this is not the case where the gable is of different pitch from the main roof, but we will not dwell on this point now, because that will come up in connection with irregular pitches, which we will shortly take up and will treat it along with such.

Referring to the elevation part of Fig. 1, the valleys are shown in position in the roof. They also show the same as the common rafters in their true position, but the valleys resting at an angle of 45 degrees from the common rafter, their lengths per scale are not easily arrived at without a few extra

lines, which may be obtained as shown by the dotted lines from the plan to the elevation, as follows:

A-E represents the long valley in position from the point of sight, while A-E' shows its length. The same is true of the short valley. It is the same as A-F on the long valley. On a straight view, it represents the length of the common rafter for the gable, but its (the valley) length is found at A-F'. Now we will illustrate the above by simple lines on the steel square, as shown in Fig. 3, using the same reference letters for the different parts, as shown in Fig. 1. The pitch being $\frac{3}{8}$ or 9-inch rise to the foot, we let 12 on the tongue of square No. 1 represent the starting point, and 9 on the blade the rise. The run of the main roof being 14 feet, measure back 14 inches along the line of the tongue and draw a line parallel to the blade to opposite 14 inches on that member, as at B' B. The line from A to B will represent the run of the long valley. Now by placing 17 on the tongue of square No. 2 at 12 on the square No. 1 and with the tongue along the line A-B the heel will rest at 12 on square No. 1. Since the rise is 9 inches to the foot, a line from A passing at 9 on the square No. 2 and intersecting the line B-E' (the rise of the main roof) will represent the long valley and the line passing at 9 on square No. 1 intersecting the line B' B as at E will represent the common rafter for the main part.

Now since the run of the small gable is 8 feet, measure back 8 inches on square No. 1 and draw the lines C-D and D-F at right angles from the tongue of the respective squares. A-F' will represent the short valley and A-F the corresponding common rafter to a scale of 1 inch to the foot. The figures shown on the square intersected by the lines A-E and A-E' will

(Continued to page 140.)

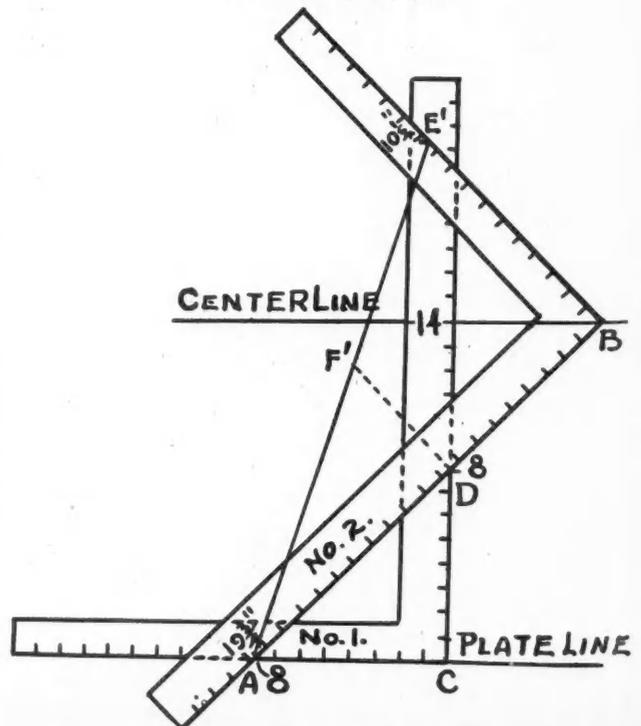


Fig. 4. Showing How Problem Is Solved with One Square.



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

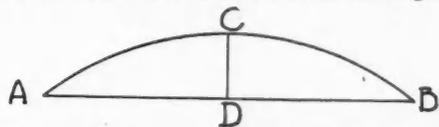
Question on Door Hinges

To the Editor: West Van Lear, Ky.
 There are so many ways to do things, I often wonder whether or not my way is right. The question that I would like to have answered is, where is the proper place to put hinges and locks on doors? I always put hinges 11 inches up from the bottom and 7 inches down from the top and locks 34 inches from the floor to the center of the bolt or knob, regardless of panels, which my superintendent says is not right.

JAMES T. FAIRCHILD.

Wants Formula for Finding Arc

To the Editor: Eureka Springs, Ark.
 How can we find the distance around an arc from the length of its chord and versed sine?



How Do You Find the Length of This Arc? Mr. Calloway Would Like To Know.

The following diagram will illustrate just what I mean:

Being given lengths AB and CD to find length ACB. Please give me a formula in figures for above.

LOREN W. CALLAWAY.

Needs Pointers on Fireplace Construction

To the Editor: Chestnut Hill, Conn.
 Will someone who has had experience in building stone fireplaces and chimneys of rough field stone, using dampers, and smoke chamber formers of iron or steel, kindly give me some points on their proper construction?

E. E. CAPLES.

Data on Shingling

To the Editor: Represa, California.
 Replying to the query of Mr. Heinrichs of Breda, Iowa, in the June issue of AMERICAN BUILDER regarding the number of shingles a man should lay in one day.

I have made a considerable study of the time required to perform the various units of work in general construction, and have made a tabulation covering the time necessary for the average man to complete a certain unit of work.

For shingles I find this to be as follows:
 Wood shingles, per 100 superficial feet.3.1 hrs.
 Asbestos shingles, same unit.....3.4 hrs.
 Slate, same unit2.9 hrs.
 Prepared roofing, same unit.....1.5 hrs.

I have found that the unit base is the more easily handled when estimates of time are required and have so arranged all of the data that is available for immediate reference. If there are any other similar questions that arise, would be pleased to have a chance to offer the results of my study.

I will appreciate your entering a notice in

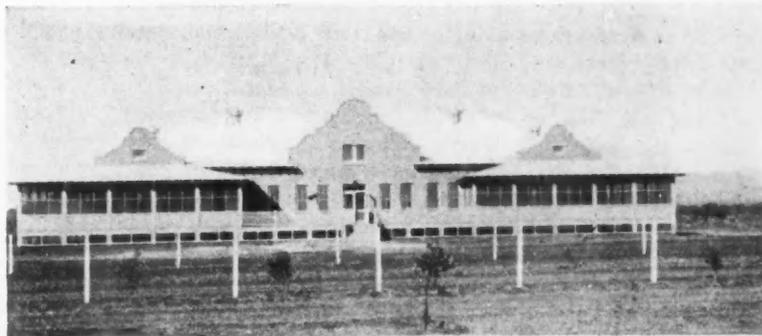
the correspondence section requesting the receipt of catalogs and descriptive material covering building specialties, machinery and methods. JAMES F. ADAMS, Industrial Engineer.

Interesting Letter on Adobe Construction

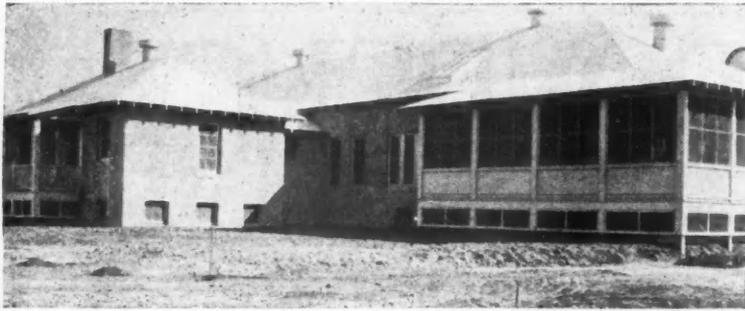
To the Editor: Sells, Ariz.
 Being engaged in the construction of adobe buildings I was interested in the one shown and described in the April number of the AMERICAN BUILDER. The writer has supervised the construction of nine adobe buildings, each with floor area of approximately 5,000 square feet, and one a little larger with screened sleeping porches 12 feet wide and, as shown in the pictures, extending across the ends and part of the rear of building. The latter building is a government hospital located 65 miles southwest of Tucson, Ariz., the nearest railroad point, and 20 miles from the International line, on the Papago Indian reservation.

Water for building purposes was obtained from various sources: From "Charflas (Indian ponds) into which during the rainy season they divert flood waters from mountain washes. Ponds are made shallow in order not to go below the top soil and penetrate the porous decomposed granite formation below which would not hold water. Owing to high temperature, ranging from 100 to 116, and lack of humidity during the long summers, evaporation is high, approximately 72 inches per year. Ponds usually go dry before the summer rains and the water question is a serious one. The Indians often haul water 20 miles or more and cattle famish for lack of it.

Water for two buildings, on the Pima reservation north of here, was secured from drilled wells before pumping plants were installed. One of the wells was 10 inches in diameter and 160 feet deep. A bucket a little smaller than well casing and 8 feet long with foot valve was used, a tripod being set over the well and by means of pulleys and cable bucket was hoisted with team and set over peg in spout which tripped the valve and water was carried to wagon tank, then hauled to building site. At another place it was obtained from an Indian trader's well at \$1 a tank and hauled with four-horse team 20 miles to the building,



Front View of U. S. Hospital Near Tucson, Arizona, Built of "Dobe" Brick. O. G. Carner Was Superintendent of Construction on This Job.



Rear View of Hospital Showing Adobe Walls. In the Southwest This Is Used Extensively. Mr. Carner Writes a Very Interesting Account of How It Is Made.

two days being required to make the round trip because of bad roads or trails, which when they become impassable are abandoned and others made. There are no fences or established roads and you are free to select your route, only mountains, buttes and sandy washes to prevent going as the crow flies. On each trip the horses had to be watered two or three times, the workmen supplied for drinking and camp purposes and many Indians came with small cans for a drink and could not be refused, leaving only part of each tank for making adobe, concrete and mortar for plastering.

In making adobe it is customary to dig a pit, depth depending on the material found, into which water is poured. Then the adobe maker, usually a Mexican, removes his shoes and socks, if he possesses such luxuries, and rolls his pants well above the knees, or removes them entirely, and goes into the pit and spades up and thoroly mixes the sticky adobe mud which is then covered with a layer of straw and left to "soak" until the next morning, when the whole is mixed again and is ready for moulding. The moulding ground is cleared of brush, etc., and leveled. Form for making four adobe 12 inches by 18, the usual size, is made of surfaced 1 by 4's; two side pieces 58 inches long and five 18-inch cross pieces placed 12 inches apart and nailed. Wires are then drawn thru the projecting end pieces and twisted to further strengthen the form and to provide handles.

The adobe moulder, who considers himself a real artist and boss of the crew—usually three or four men—with pail of water and rag in hand is now ready for the art that has been carried on since Pharaoh's time. With the wet rag he swabs the form, places it on the ground and the mud is dumped from carrying platform, or wheelbarrow, if he has such modern invention, on to the form and pushed in with fists, mixing at the same time; when full a little water is sprinkled over the top and with a circular motion of the flat hand the mixture is smoothed off level with top of form. Form is then removed; if one end is raised faster than the other the end of adobe will not form a right angle with the face—in other words, it will be out of square. Or if mud is too thin it will settle as the form is being raised and the top side will be larger than the bottom, either of which will cause an uneven surface on inside of wall and require more mortar when plastered. The main skill of the moulder seems to be in removing the form. Adobe are left on the ground as moulded for a day or two, then stood on edge and left until thoroly sun baked when the dirt adhering to the bottom is scraped off and then stacked on edge.

Adobe are laid as stretchers or headers as preferred, making the walls 12 inches or 18 inches thick. The thicker wall makes a cooler building, but is more expensive, principally because of the thicker foundation, which should extend well above grade to protect the walls from moisture. Wide projecting eaves are also advisable.

There are various methods of laying and finishing adobe walls. Quite generally adobe mortar is used, however, if plaster is to be applied directly to the walls good lime mortar should be used in laying adobe. A common practice is to

cover the walls with 1-inch mesh poultry netting fastened with large nails driven into adobe. As hospital walls were laid 1 by 4's were placed in every fifth course (about 25 inches apart), set even with outer face of wall and nailed to adobe, then furred vertically with 1 by 2, 12 inches on centers, and plastered with lime-cement mortar with pebble dash finish over metal lath. Interior walls were given a coat of adobe plaster to true them up, which when thoroly dry was followed by two coats of hard wall plaster. Similar plaster was used on wood partitions and ceilings. Walls in wards and wainscoting in hall, bathrooms, kitchens, etc., were finished with Keene's white cement and other walls and ceilings with plaster of paris finish.

One of the chief difficulties in doing stucco work in this desert country is to protect it from sun and wind while curing. At the time most of the building was done on this reservation the government was having wells drilled (from 400 to 800 feet deep) to furnish water for the Indians' stock. Pumping plants had not yet been installed and the expense of drawing water from wells with buckets, or hauling it from shallow wells in the mountains, was too great to use for spraying walls, and with high temperature and scorching winds the small quantities that could be had when wanted would be of little benefit.

O. G. CARNER.



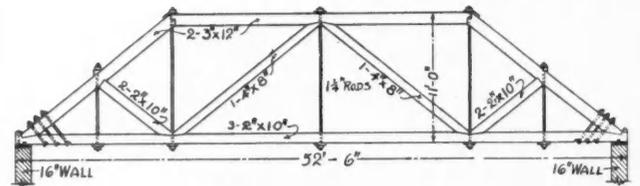
Question on Truss

To the Editor:

Cuthbert, Ga.

Is this truss strong enough to hold a gravel roof? What are the defects and how can they be remedied? Joints are all bolted and well braced. The truss is spaced 8 feet. o. c.

LEE AMUSEMENT CO.



Is This Truss Strong Enough To Hold a Gravel Roof, Asks the Lee Amusement Co. Builders Are Invited to Offer Suggestions.

How Can He Fasten Pump to Floor?

To the Editor:

North Little Rock, Ark.

I have built a concrete cellar and want to place in position a force pump and motor about $\frac{1}{4}$ horsepower. What kind of toggle bolts should I use or how would you fasten the pump and pump jack down to the basement floor?

A. R. FINKE.



Hints on Learning the Cabinet Makers' Trade

To the Editor:

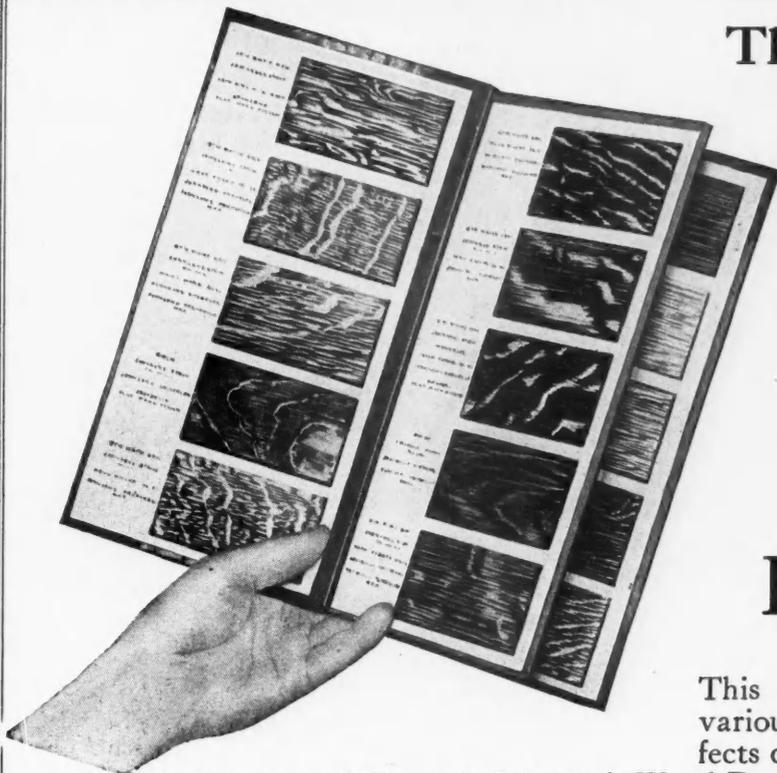
Westwood, Mass.

In the July number, page 115, Alvin Reinhard asks as to the best line to get into to become a good cabinet maker.

Under the present system of specialized production it is difficult to become a good all around man. If he learns stair work where he is now working and then leaves his job and goes into other branches of cabinet work, constantly changing from one kind of work to another, both machine and bench work, he may, after a number of years, become an all around man.

This is the substance of a talk which I heard a manufacturing piano-maker, who was deploring the lack of all around men, give as the present day solution of the question.

GEO. E. HARRIS.



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PORTFOLIO
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This beautiful portfolio shows on various woods the many beautiful effects obtainable with Johnson's Per-

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Every portfolio costs two dollars, so we can't afford to send them out generally, but we are glad to furnish them gratis to contractors who use Johnson's Artistic Wood Finishes in their work.

The attached coupon will bring you the portfolio promptly, all charges prepaid. You will find it very convenient to show clients and prospects the effects you can give them with Johnson's Artistic Wood Finishes.

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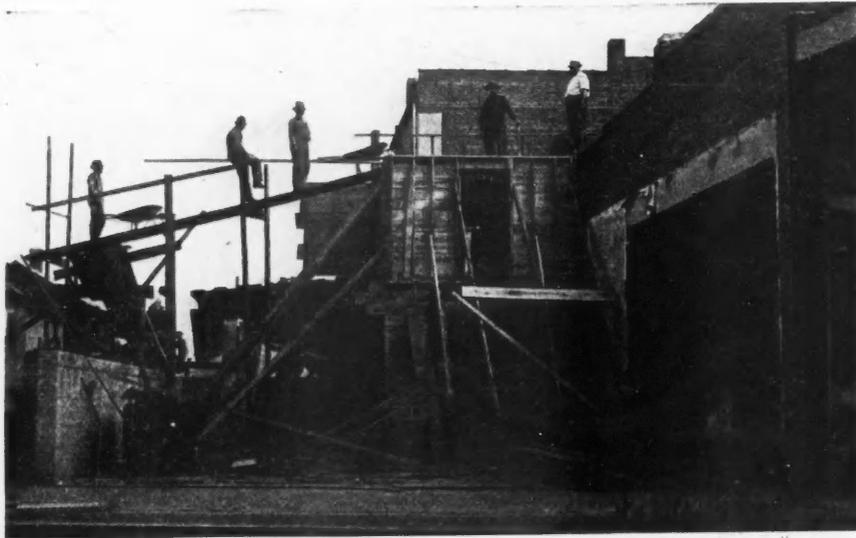
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| <input type="checkbox"/> Perfectone Undercoat | <input type="checkbox"/> Electric Solvo
(Varnish Remover) |

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Building a Concrete Wall for a Bank Safe at Wellington, Mo. Henry Reinhart Wants Some Information on Concrete Septic Tanks.

Wants Suggestion on Septic Tank

To the Editor: Wellington, Mo.
I am a contractor and builder. I would like to have information and details of a septic tank capable of taking care of about five people. How do they work and how often must they be cleaned?

The photograph above shows a job of concrete work that I did for a new bank at Wellington, Mo. I also built a reinforced concrete cistern 8 feet below the basement and 8 feet above with 6-inch walls.

HENRY H. REINHART.

Mexican Contractor Has Difficulty

To the Editor: 2a. Sta. Teresa No. 44, Mexico, D. F.
I have difficulty in getting good alignment in nailing asphalt shingles. At noon the shingles become so warm I cannot handle them. Can any reader suggest a possible method of taking care of this trouble? I would also like to get some suggestions on bungalow building from brother builders.

JOAQUIN SEGURA, JR., C. E.

Some Questions on Saws

To the Editor: Edgerton, Wis.
Can you give me any information as to size of the pulleys needed on the counter-shaft of a bandsaw to obtain the proper speed? The size of wheels on bandsaw frame are 20 inches and pulley is $6\frac{1}{2}$ inches. There is a 6-inch pulley on the motor at 1,750 r.p.m.

Where can I get, in book form, standard rules of speed for different size of circular saws, emery wheels, dado heads and bandsaws?

J. C. RUOSCH.

What Would You Advise

To the Editor: Canal Fulton, Ohio.
I would like to have some reader of the AMERICAN BUILDER explain why paint scales off a house. It appears to be worse where weather exposure is the least, as on porches and underneath the cornice. The north side is worse than either of the others. In my house the siding is white pine, and the cornice is yellow pine. It is nine years since this place was painted, and before that the previous coat scaled off the same way.

I want to repaint it, and it is going to cost more to remove

the old paint than to replace it with new. How would you proceed in this case?

H. C. HURST.

Needs Assistance on Rafter Problems

To the Editor: Greenwood, Miss.
I am writing concerning my rafter table. I want you to explain how to get the foot run, such as $16.97\frac{1}{2}$ pitch. I want you to explain how this run is made, also how the run of 11 or 22 inches equal 186.67. I can get the feet and inches but I don't understand dividing the fraction which is $15.68/12$. I can't find it out of 67. Can you give me an explanation of this foot run and dividing fraction on the square, also stringer, difference, heights?

OTTO PENINGTON.

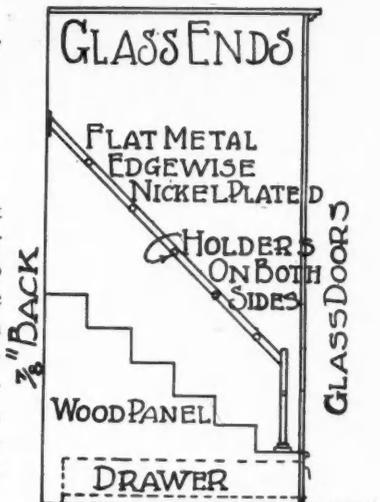
In Market for Umbrella Case Fixtures

Sterling, Ill.

To the Editor:

I am in the market for some fixtures for an umbrella case and so far have not been able to get in touch with anybody who manufactures them. The fixtures are for a case already built. I am enclosing a rough sketch of fixtures.

H. H. RAMSAY.



Sketch Illustrating Umbrella Fixtures Which H. H. Ramsay Would Like To Secure.

Needs Some Advice on Cuts

TO THE EDITOR:

Spotswood, N. J.

I have never seen the following explained and would appreciate answer in the correspondence columns. The side cut of the hip is the same as the side cut of the jacks where bevel is applied on backed hip. How is the bevel obtained for unbacked hip? When the seat cut of the hip is 90 degrees, the backing angle is 90 degrees. As the seat cut angle decreases from 90 degrees to zero, the backing angle increases from 90 to 180 degrees. Is this variation regular? If so, the backing angle should be easily obtained from the hip seat cut angle. I cannot see the geometric relation in the time-worn method of obtaining this and therefore can never remember the figures on the square.

ARTHUR LETTAU.

"Econo-Slide Steel Sash" is the title of a new pamphlet recently issued by the Truscon Steel Co., Detroit, Mich. It shows by detail drawings and specifications how the new steel window sash for school buildings is installed, and gives a list of schools in which Truscon installations are featured.

Chapter 7 of the interesting series on structural slate being prepared by the Structural Service Bureau is now available. It deals with the subject of shower stalls and gives complete specifications and detail construction drawings of shower installations.

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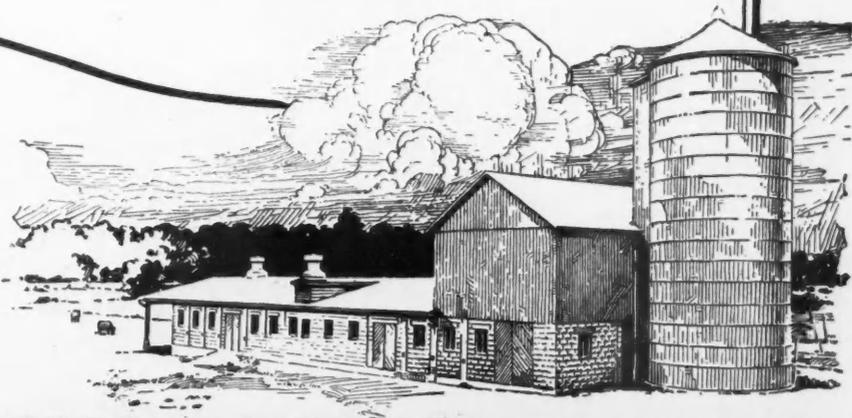
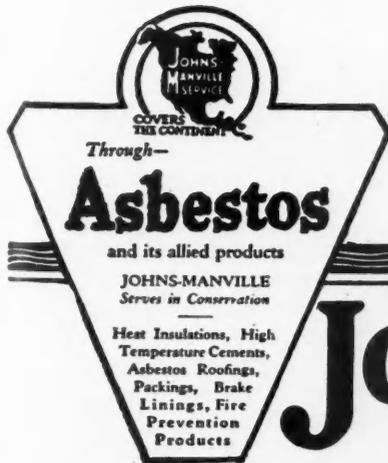
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Brick House of Beauty

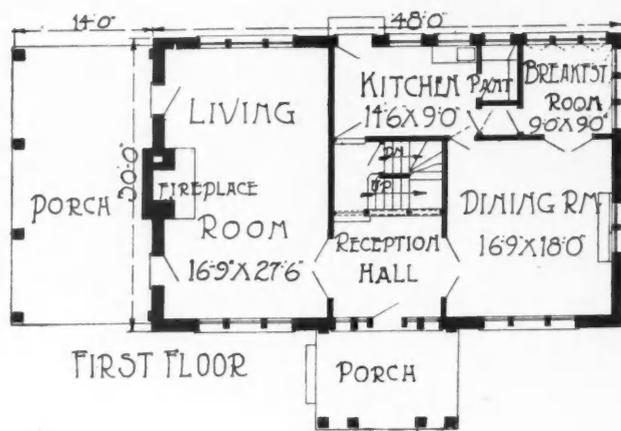
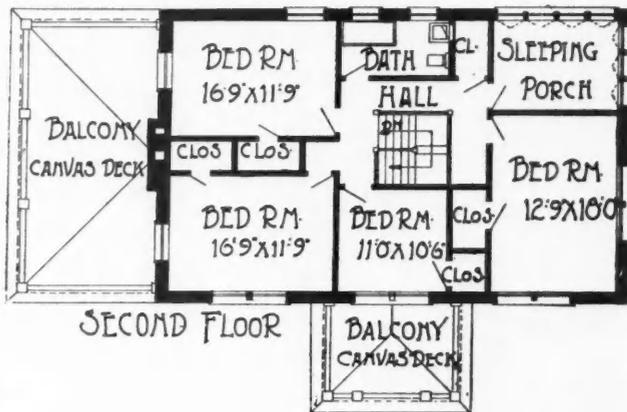
SUBSTANTIAL TYPE OF HOME THAT IS ENDURING AND COMFORTABLE—SEVEN ROOMS AND SLEEPING PORCH

WHILE Colonial houses are often built of frame they can be constructed of brick with very satisfactory results as the illustration here so eloquently shows. This beautiful Dutch Colonial house is built of solid brick. Solidity and permanency are emphasized thruout. It has the picturesque Colonial entrances, porch pillars, balconies as well as the small-paned windows, regularly spaced, and the old-fashioned shutters. Along the roof are the small, artistic roof dormers providing light for the rooms above.

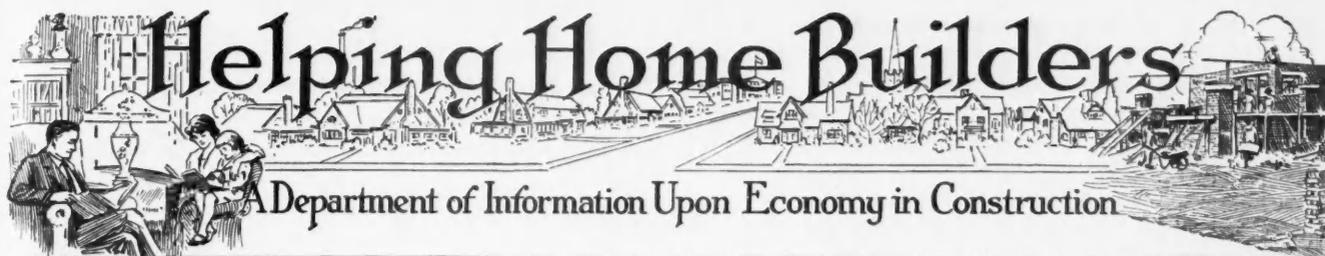
The modern innovations in this substantial home are the breakfast room on the first floor adjoining the kitchen, and the sleeping porch on the second floor.

There is the customary large-sized living room with its open brick fireplace in the center of the front wall facing the side porch. This room is 16 feet 9 inches and 27 feet 6 inches. On the opposite side of the small reception hall is the dining room and in back of this room the kitchen, a small room of modern design. The small breakfast room which adjoins the kitchen is quite convenient for the housewife in serving light meals and eliminates the work of serving the meals in the dining room.

On the second floor are four cheerful bedrooms with good closet space. A large balcony covered with special canvas flooring is located over the side porch.



Very Attractive and Substantial Solid Brick House Containing Eight Rooms. It is Dutch Colonial in Style and 30x48 Feet. The First and Second Floor Plans Are Shown Above.



1st Year

September, 1921

Ralph P. Stoddard, Editor

This Cozy Brick Bungalow Cost Less Than Frame

Valuable Book Now In Third Edition



The demand for the practical brick manual by Architect Wm. Carver, entitled "Brick, How to Build and Estimate," has exhausted the second edition. The third edition is just off the press.

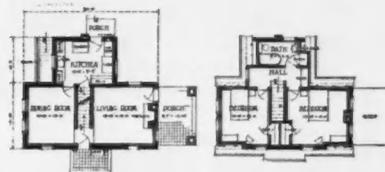
This is a larger book, of 72 pages, giving much more information than former editions, including data regarding the strength and fire resistiveness of brick walls, never before published. It describes the Ideal Wall in detail.

This booklet will be sent post-paid for 25c by The Common Brick Industry of America, 1306 Schofield Building, Cleveland, Ohio.

A splendid example of the Ideal Wall. Brick bungalow of a type rapidly growing in favor throughout the country. This residence was built for H. A. Grosse by the Nance Construction Company of Los Angeles. Note the distinctiveness of the Flemish bond—a natural result of the All-Rolok Wall.

Building a Small Brick House?

There are 35 small house designs such as the below in "BRICK for the Average Man's Home," for all of which complete working drawings can be had at small cost. Bungalows, 1½ stories, 2 families, cottages, 2 stories, garages. Five competent architects designed these houses. The book is mailed post-paid for \$1.



This Masonry Wall Needs No Furring

Without losing any of the advantages of solid masonry, such as permanence, stability, fire-proofness, resistance to heat and cold, the Ideal Wall has also one important advantage in addition to economy: It is the only masonry wall ever conceived that may safely be plastered directly on the brick without the need of furring or lath.

The Ideal Wall differs from all other hollow walls in that it is not made up of special shapes or large

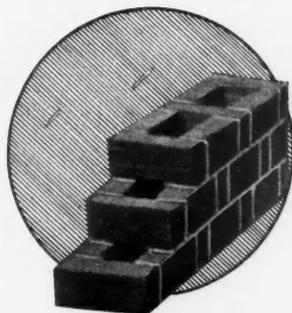
units, but uses the old reliable brick of standard size. It is subject to none of the disadvantages of other types of hollow wall and is by far the strongest and most fire resistive hollow wall ever devised.

Tests have proven that its strength is practically the same as a solid brick wall of equal dimensions. It is approved by building experts, architects and engineers. Already scores of cities have adopted it for residence construction, codes having been amended to permit it.

As compared with solid brick construction, the Ideal Wall saves one-third the brick, one-half the mortar, and one-fourth the labor.

The leading brick manufacturers of the country are supplied with an 8-page folder giving full description of working drawings of the Ideal Wall. Those interested may get a copy free from their nearest manufacturer or by writing to the Common Brick Industry of America, 1306 Schofield Building, Cleveland, Ohio.

A section of an 8-inch Ideal Rolok Wall.



Maybe You're Right

To the Editor:

Pensacola, Fla.

Being a regular subscriber to your good book, I read the correspondence department with great pleasure and interest, but sometime I think the carpenter who sends a sketch of how to frame a roof, tries very hard to puzzle his brother carpenters instead of making it plain and simple.

Once I knew a foreman who when it came to cutting the roof of just an ordinary house, got under a shady tree, made a drafting board and proceeded to lay off the roof. In the meantime I got a piece of 2 by 6, put it on a pair of trestles, laid off the rafter, cut a pattern, and when the foreman came to himself the roof was well under way.

Say the house you are building is 24 feet wide and you want a quarter pitch, which would be 6 and 12, so to cut a common rafter take 6 and 12 on your square, place it on the rafter and run it off 12 times, which is just half the width, no matter what the width of house is, always run just half as many times; 12 will be the bottom cut and 6 the top cut of the rafter; 12 is always one run and the difference in pitch is always made by the other figure, such as 2 and 12.4 and 12.6 and 12, etc.

Now in cutting a hip rafter, 17 is always one cut and the difference in pitch is always made by the other figure, such as 2 and 12, 4 and 17, 6 and 17, etc., so to cut a hip rafter for a quarter pitch roof use 6 and 17. Run just as many times as half the width of house and as the above house is 24 feet wide, one-half would be just 12 runs of 6 and 17, and these cuts fit every time.

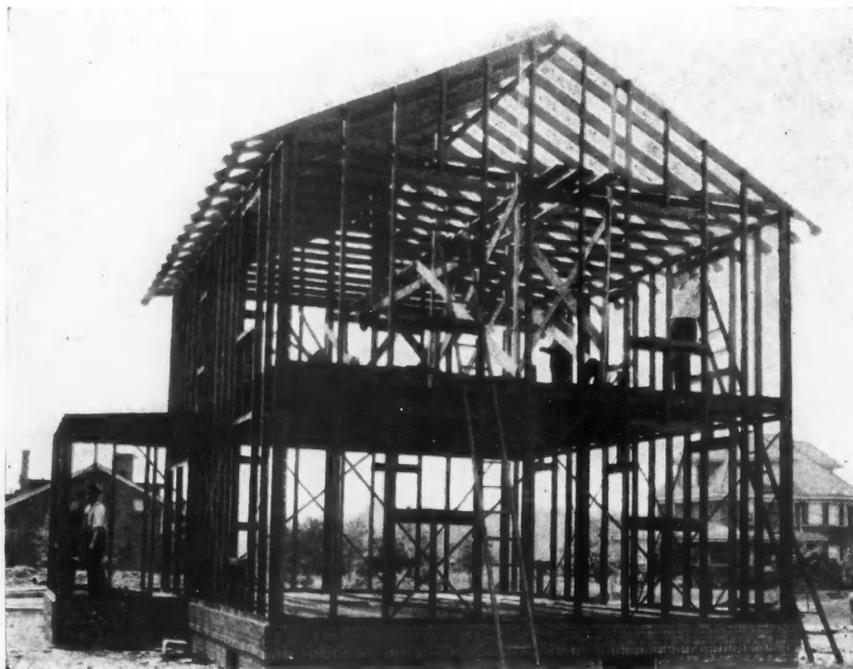
Will some good kind carpenter tell us exactly what figures to use on the square to get the plumb and side cuts of jack rafters for say, a one-quarter and a one-third pitch?

F. M. WILLIAMS,

Secretary Pensacola Builders' Exchange.



THE location and drainage of a barn are important. The location should be at least two hundred feet from the house and handy to a well, sheds and granaries.



The Entire Framing of This Residence at Canton, Ohio, Is Metal Lumber. It Is the First of Its Kind in America. Stucco Was Used as an Exterior Finish Over Metal Lath.

House of Steel

THAT metal lumber provides a most practicable home building material is demonstrated in an exhibit completed in Canton, Ohio. The proof is a two-story metal house—the first of its kind in America—which was constructed to show that metal lumber construction has reached a perfected stage.

From this house, which in time is expected to gain a place in building history, plans and drawings for homes of varying types, dimensions and costs will be evolved to meet the taste and purse of every home builder. For each standard house every metal joist, stud and channel will be supplied of an exact size, so that all parts fit quickly and easily. Spikes and nails are replaced by bolts ($\frac{3}{8}$ and $\frac{7}{16}$ in.) in the assembly of metal lumber.

The general plan of construction in the house erected will be followed in all. The framing of the outer walls is of four-inch channel shapes, on the inner and outer flanges of which are prongs, punched for the attachment of metal lath. Partitions are erected of 2 or 4-inch studs on both sides of which metal lath is affixed. Plaster is then applied as in homes of wood construction.

The floors are constructed by using metal joists, spaced by 2 feet. Strips are nailed to these joists and wood or composition floors may be installed as in any conventional construction building.

Metal lath goes quickly into place on the bottoms of these joists to provide ceilings. Metal lumber rafters support the roof to which nailing strips are attached. Any form of roofing desired may be applied. Wood grounds are applied for the installation of windows, door frames, baseboards, picture moulding, etc. In the finished house no metal can be seen, inside or out.

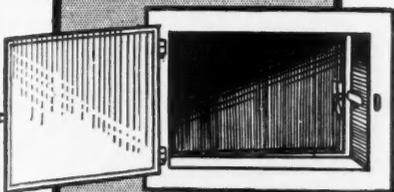
In this house an exterior finish of stucco is used. It is pointed out that in a building of such firm frame work this stucco will be permanently free from cracks, sometimes caused by settling or "weaving." Plaster and interior finishes will also be preserved.

The steel structure is imbedded in the foundations at all points and is thus anchored securely. The foundations may be of any standard type.

In this building, fire risk is reduced to a minimum. Fire cannot get in from the outside and is confined to any room in which the blaze originates within.

Many contractors and building material dealers have visited Canton to see and inspect the building.

DONLEY DEVICES
Modernize the Home



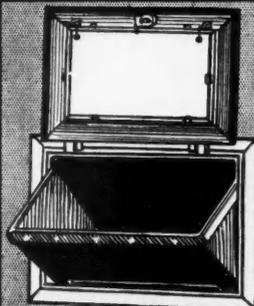
Package Receiver



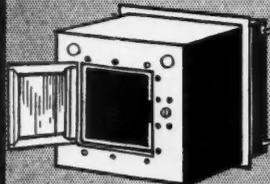
Fireplace Damper



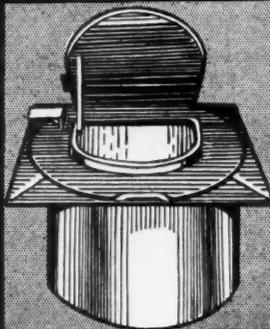
Ash Dumps



Coal Chute



Meter Box



Garbage Receiver



When Old King Coal Pelts the House

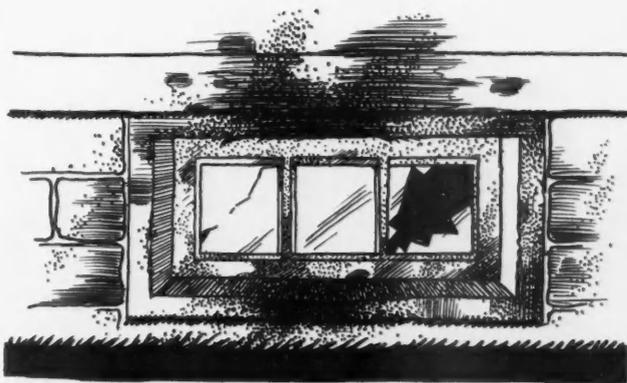
THE effect of the siege is much like the picture below, with broken coal window, marred and blackened frame, dirty, cracked siding and a general air of shiftlessness. That is why modern home builders have nothing to do with the coal window. They install the

Donley Coal Chute

With its iron frame, and its securely locking door that lifts against the building and protects it from flying chunks while the coal is being put in. It is furnished with or without hopper and with solid iron or mesh glass door. The latter has steel shield that covers glass when open.

Donley Coal Chutes are only one of the Donley Devices, every one of which should be in every modern home. Think of what they mean!—a receiver that is always at home to the delivery man, a damper that insures a cheerful, clean, economical fireplace, ash dumps in the hearth, a coal chute, a meter box that keeps the meter reader outside and a garbage receiver that ends garbage can nuisances—all in the new home for a scant \$50. How can any builder deliver so much satisfaction to his client for such a small outlay?

Nothing like this in the Donleyized Home. The old, disreputable, dirty, broken, coal window belongs to a past age.



The **DONLEY BROTHERS Co.**
BUILDING SPECIALTIES  **7400 AETNARD CLEVELAND**



EDITOR'S NOTE: The American Builder does not accept payment in any form for what appears in our reading pages. In order to avoid any appearance of doing so, we omit the name of the maker or seller of any article we describe. This information is, however, kept on file and will be mailed to anyone interested; address American Builder Information Exchange, 1827 Prairie Ave., Chicago.

New Development in Paint Making

IN this advanced age we have with us powdered buttermilk, powdered pumpkin flour, and many other preparations in dry form which can be quickly mixed with water to serve their purpose. This dry form of preparation makes possible a handy package and an economy in cost.

Now comes the paint in powdered form. Five pounds of the paint powder will make one gallon of paint, twenty-five pounds five gallons, and so on. Five pounds of the powder is placed in a receptacle, then two quarts of clean water from which the chill has been taken are poured slowly into the receptacle, stirring the powder while the water is being poured. The stirring is continued until a plastic mass is formed. After twenty minutes another quart of clean water is added and stirred as before. Then the mixture is allowed to stand ten minutes. The paint will then be ready to be applied. Where the paint is to be used as a printing coat on wood, it should be thinned down with water to approximately one and one-quarter gallons of paint.

This paint can be applied by the brush or paint spraying machinery. All glue sizings and calcimines must be washed off before this process paint is applied.

It is used for concrete, brick, stucco, hollow tile, wood and plaster surfaces. One gallon will cover approximately 300 square feet of surface.

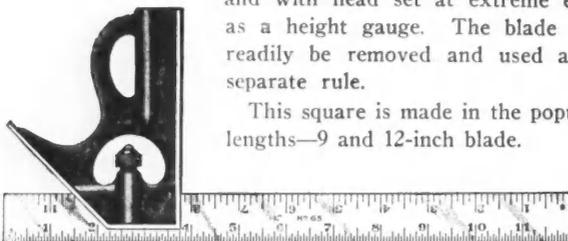


New Try and Mitre Square

AN improved try and mitre square, designed especially for carpenter's use, has just been put on the market. It consists of a substantial steel blade marked both sides 8ths and 16ths, with figures and lines clear and distinct, fitted with a movable head which can be securely clamped at any point.

Tho selling at a popular price, it is a tool of the higher grade in every respect, is accurate, durable and well designed. Primarily a try and mitre square with blade adjustable in length, it serves well also because of this adjustable feature as a marking gauge, depth gauge, for measuring mortises, etc., and with head set at extreme end, as a height gauge. The blade can readily be removed and used as a separate rule.

This square is made in the popular lengths—9 and 12-inch blade.



New Try and Mitre Square with Adjustable Feature That Can Be Used as Marking Gauge, Etc.

Concrete Floor Hardener

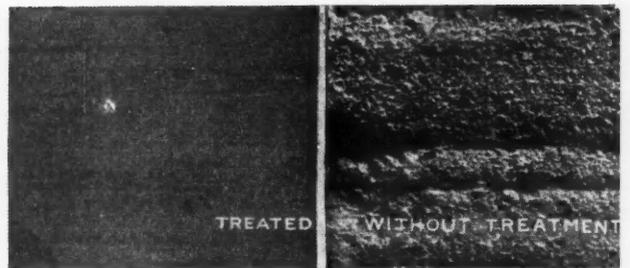
WHAT contractor has not at some time or other been confronted with the problem of a concrete floor dusting? Unless laid according to rigid specifications this fault will often cause him considerable worry and may be responsible for a new job.

Certain preparations have been found quite helpful in giving the floor a hard finish. These are chemically known as fluosilicates and can be of zinc, magnesium, or aluminum.

There is nothing mysterious about hardeners. The chemical reaction is one that can be very easily understood. When fluosilicates are applied to concrete surfaces an insoluble fluoride is formed similar to fluospar itself. This material tends to bind the particles of the aggregate more firmly together and thus make the surface more wear resisting.

In preparing concrete for floors, the top mortar should be mixed in the proportion of one sack of cement to not more than two parts of clean sand of uniform grade from one-quarter inch down to that passing thru a 100 mesh screen. These materials should be mixed to a workable consistency. The wearing surface of the concrete floor should have a minimum thickness of one inch. After being rodded off to grade mortar is finished with a wooden float and steel trowel.

After the surface is hardened it is treated to two applications of the chemical, the first application consisting of one-



Concrete as It Appeared Before and After Treatment by Special Hardener. This Is a Chemical Preparation That Is Applied After the Surface of the Concrete Is Set.

half pound dissolved in one gallon of water, the second application consisting of two pounds dissolved in one gallon and not applied before thirty minutes.

The concrete wearing surface should be at least forty-eight hours old and broom cleaned before the first application. All surfaces should be kept wet with solution for at least three minutes. After second application the floor is covered with building paper until all plastering is completed.



Mastic Floors for Barns and Hog Pens

TO farmers and raisers of live stock the question of floors for barns, hog pens and other buildings in which animals are quartered, is of paramount importance.

In the search for floors which will keep animals in first class condition, and be durable and easily cleaned, many farmers are turning to asphalt mastic. As a result of the success which attended the first few installations, more and more men, interested in maintaining the sanitary conditions of their barns and the productivity of their stock, are using this material.

Earth, with its natural springiness, is the ideal surface for live stock, since hoofs of cows, pigs and other animals are designed for a yielding, resilient material. But earth floors early were abandoned, as were cinders and ashes. The impossibility of keeping such floors clean, and of eliminating odors, prohibits their use in any but the crudest out buildings.

Floors lacking resilience are not the most satisfactory procurable, for several reasons. Cows and other stock manifest discontent when compelled to stand for hours on a cold hard surface. Many animals also suffer physically, particularly



General Motors Trucks

Reduced \$500

Model K-16 chassis, formerly \$1995, now \$1495

This cut of \$500—more than 25 per cent—establishes a new standard of value in motor trucks.

This chassis at \$1495, equipped with electric lights, starter and cord tires, is a real truck, built of real truck units—no passenger car parts used.

It has the new GMC engine with its Removable Cylinder Walls, Removable Valve Lifter Assembly, and other exclusively GMC features.

For all kinds of hauling—city delivery, school bus service, farm use, police patrol—in fact it is well adapted for every kind of one-ton work.

Model K-16 is a refined and improved successor to the famous Model 16 which was adopted as the government standard in its class during the war, particularly in ambulance service.

See the nearest GMC dealer for complete description of this model, also, the 2, 3½ and 5 ton models, all of which have been reduced in price.

GENERAL MOTORS TRUCK COMPANY

A Unit of General Motors Corporation
PONTIAC, MICHIGAN

about the knees. When transferred to a more resilient floor, the same animals have showed marked increase in productivity.

The difficulty of keeping the ordinary board floor clean and sanitary is the main obstacle to the use of wood, since this material from the standpoint of warmth and resilience closely approaches the requirements for barn floors.

Asphalt, while resilient, does not wear out under traffic, nor does it absorb liquids which may be spilled upon it, or retain odors. It is water and acid proof, and manure can be removed easily, and the floor flushed absolutely clean with a stream from a hose. Incidentally, the stamping of horses or other stock cannot raise dust.

It is a mixture of Trinidad asphalt and sand and dust. The asphalt is heated and the sand and dust stirred in. Then, while hot, the mixture is spread upon the floor and smoothed with a float, as is concrete.

A mastic floor really is an adaptation of a sheet asphalt pavement. The great wear resisting qualities are due to Trinidad asphalt, while the use of a greater percentage of this binding material assures resilience sufficient to make the surface approach the natural springiness of earth.

Since asphalt is waterproof, mastic floors are easily cleaned. The material does not transmit heat or cold, and therefore never is the cause of discomfort to animals.

Not only in cow barns, but in hog pens, mastic is valuable as a flooring. It reduces the labor of keeping pens clean and sanitary, since refuse is easily removed, and promotes the health of the pigs, because it is not cold. Since it resists acids, the liquids which may be spilled from the troughs will not soak into it and impair the surface.

Mastic may be laid over an old floor which has outlived its usefulness or in new buildings. It is laid in a monolithic sheet, and therefore there are no joints to hold dust or dirt. The usual thickness of the floor is one inch or one and one-half inches. When it is one inch, only a single layer is used. If more than an inch thick, it is laid in two layers. The floor is ready for use as soon as cool—usually a matter of three or four hours.

The use of mastic in farm building is a natural development from the use of the material in driveways, for flooring in industrial plants, for sidewalks and elsewhere.

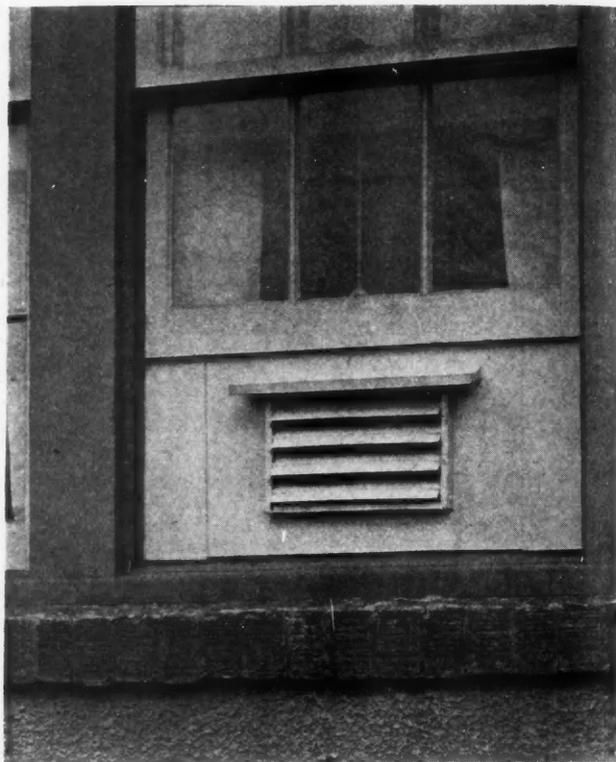


New Window Refrigerator

BUILT-IN conveniences have made the modern home a modest paradise in which to live. They have saved count-



View of Window Ice Box from Inside Showing How Foodstuffs Are Placed in the Receptacle.

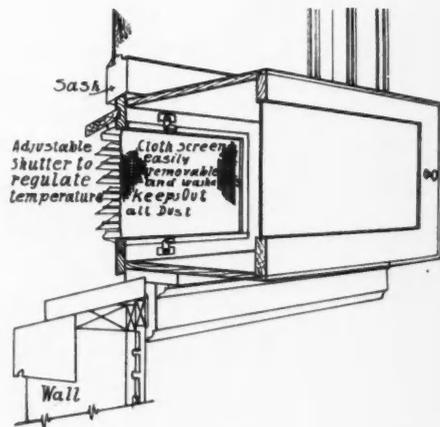


View of the Window Cooling Device from Outside Showing Shutter Arrangement and Adjustable Panel in Which It Is Set. This Presents a Neat Outside Appearance in Keeping With the Finest Home or Apartment—No Projecting Box as With the Ordinary Window Cooler.

less steps for the housewife and have lifted from her shoulders many of the tasks that formerly made her work drudgery.

To the already available and imposing list a new device has been added which is a source of economy and comfort. This is a new window refrigerator or cooling apparatus. Because of its construction and installation in the home, it should interest every architect and builder.

It is quite simple in make-up, the important feature being the ventilating apparatus which permits the entrance of cooling air. This is made of a cloth screen which is easily removed and



Cross Section Drawing Showing Receptacle Screen Covering and Outside Shutters Which Regulate Temperature.

cleaned and a series of shutters which can be adjusted to regulate the temperature. In back of this ventilating device is a box which is placed under a partly opened window sash as shown in the illustration. The food is placed in this box and during the cool and cold months when ice is not used affords a money saving arrangement to keep foodstuffs in good condition.

The ventilator can also be built in the wall proper to form the cooling door for a compartment in a kitchen cabinet, ice box, or larger receptacle than is used in the window arrangement.

The shutter device is installed in an adjustable section which can be made to fit various window widths.

THERMO PIPELESS FURNACE

Don't Wait 'Till Snow Flies

to land those furnace sales. Right now as the homes are finished is the time for the carpenter to get in his work before some one else gets there.

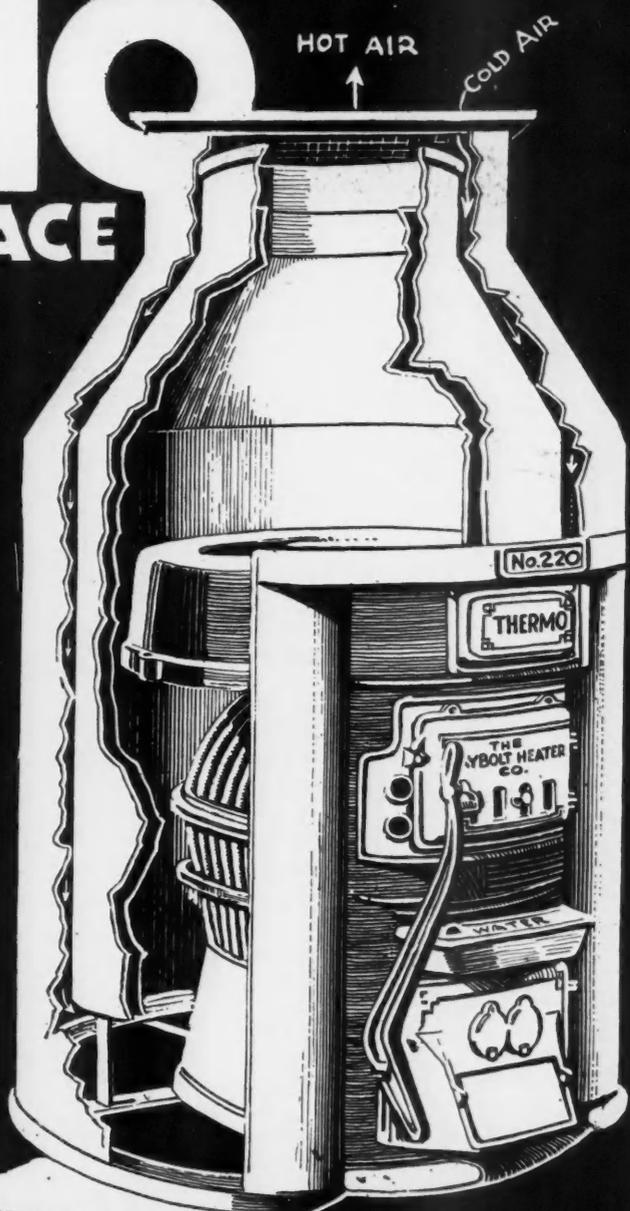
THERMO furnaces, both pipe and pipeless, are easy to sell because they have many points of interest to the property owner.

In the first place, THERMO construction is correct in principle and the heavy insulation produces a strong hot air pressure that sends heat to every part of the house. There is no wasted heat thru radiation. THERMO COAL BILLS ARE THE MINIMUM.

The large water pan keeps the proper humidity with very little attention and last but not least is the big shaker handle that makes shaking down the ashes a clean and easy job.

We have an especially good proposition for a contractor or carpenter in your community. If you are interested in this profitable side line just

Tear off the Coupon and Mail It Today



THE RYBOLT HEATER COMPANY ASHLAND, OHIO

Gentlemen: Please send me your SPECIAL OFFER TO BUILDERS on Pipe and Pipeless Furnaces.

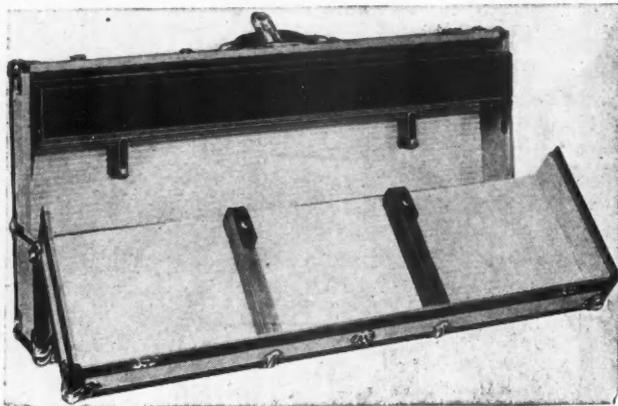
Name _____

Address _____

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Standard Carpenter's Tool Chest

ONE of the handiest items in a carpenter's equipment is a tool chest. His work necessarily calls for the carrying of tools to and from work and unless these tools can be properly



Zinc-Covered Tool Chest With Hinged Front for Holding Saws. There Is an Inside Tray.

packed they will prove bulky and difficult to handle.

For that reason carpenters will be interested in a compact standard tool chest that is on the market. It is a zinc covered chest with lock cornered joints and a multiple key hasp lock. The front is hinged as shown in the illustration and will hold three saws. Level brackets are placed at the back of the chest under the tray. This tray pulls out without danger of dropping down. The framing square stands up in front of the tray.

Outside measurements are $31\frac{1}{4}$ by $6\frac{1}{8}$ by $15\frac{1}{2}$ inches. Another chest of similar design is made with an added shelf for small planes, gauges, oil stones, etc., under the tray.



New Fiber Wall Plug

FASTENING fixtures to walls by ordinary wood screws has been made possible by the invention of a new wall plug. This unique plug is a tube of stiffened longitudinal jute fibre strands cemented in position so that they will not crumble. This plug expands as the screw is inserted, becoming an integral part of the plaster, brick or other material in which it is placed. The screw automatically threads the fiber, permitting removal and reinserting as often as desired.

These plugs can be used in plaster, tile, marble, slate, metals, glass, concrete, wood, cement and stone. They are

applied by making a small neat hole with a special tool that comes with the plugs or any drilling tool and inserting the fibre plug in this hole.

They are used extensively by electricians for metal moulding, outlet boxes, etc., and in bathrooms for fastening fixtures.

When material to be fastened is thinner than unthreaded portion of screw, it is advisable to make the hole deeper than the length of the plug so that only threaded part of screw enters the plug.

Tests carried out under working conditions show the following force in pounds needed to withdraw fixed plugs from various materials:

Material	Length Inches	Size					
		3	6	8	10	12	14
Metal	$\frac{3}{8}$	110	300	400	600		
Slate	$\frac{3}{4}$	200	400	450	550	650	700
Hard brick.....	$\frac{3}{4}$	150	250	350	450	500	550
Hard plaster.....	$\frac{3}{4}$	60	100	120	140		
Soft plaster.....	$\frac{3}{4}$	40	45	50	55		
Stock brick.....	2				600	1050	1250

Accompanying illustrations show how the plug is placed in the wall and the screw inserted.



Tapered Asphalt Shingles

THE scientific shape of wood shingles—tapered, was first adopted for manufactured roofing fifteen years ago by the manufacturers of tapered asphalt shingles. These shingles have all the desirable qualities of ordinary asphalt shingles, such as fire resistance, flexibility and permanency, plus the advantages of the taper.

The exposed portion of the tapered asphalt shingle is almost three times as heavy as the standard 9-ounce asphalt shingle. The butt weighs 8 ounces and the exposed portion of the standard shingle weighs 3 ounces.

They can be laid over an old shingled roof which saves the cost of tearing off the old shingles preventing damage to shrubs and lawns and the old wood gives excellent added insulation.

The heavy butt holds the shingle down to the roof from the moment it is laid. The processed underside quickly seals the shingle there, creating practically a paved surface.

Tapered asphalt shingles are easy to lay and the full effectiveness of the "shadow line" is shown at its best if they are laid in the following manner:

Lay 5-inch exposed to the weather spaced $\frac{1}{2}$ inch, lay the sheathing close having boards of uniform thickness and not more than 8 inches in width. Use 1-inch nails and not



First Step—Drilling a Small Hole in the Brick Wall with Special Tool.



Second Step—Inserting Fibre Wall Plug in Hole. This Plug Is Made of Longitudinal Fibres Cemented Together.



Final—Inserting Wood Screw Into Plug to Hold Fixture. The Plug Expands as the Screw Is Inserted, Gripping the Wall.

The Most Satisfactory Elevator

for Small Buildings

KIMBALL LIGHT ELECTRIC

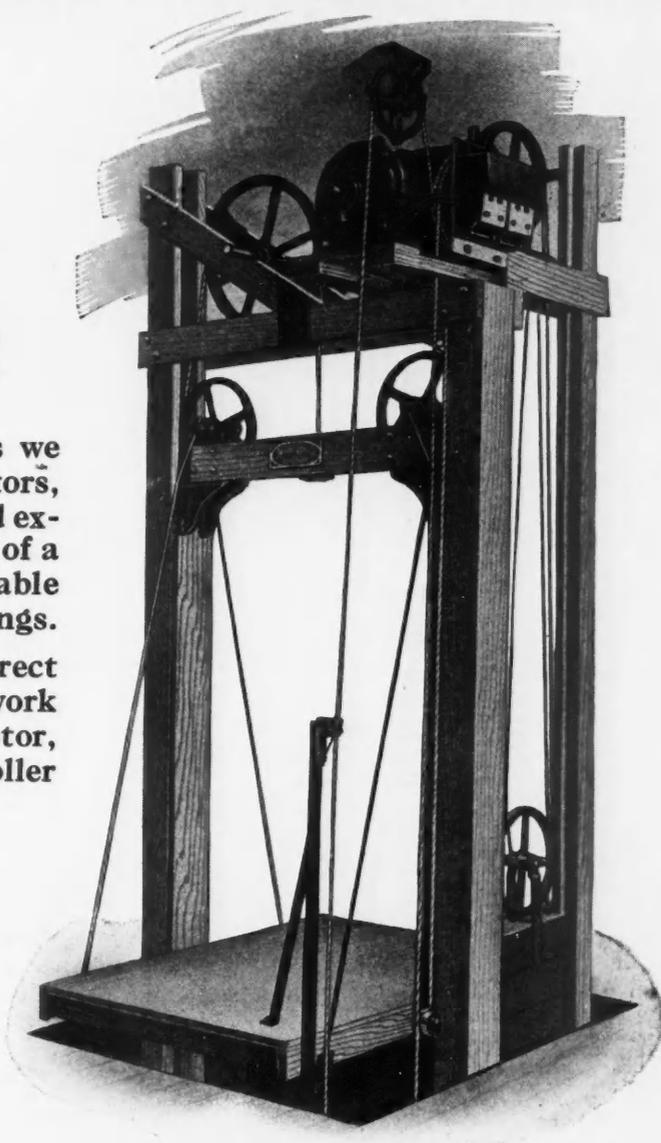
FOR the thirty-seven years we have been building elevators, we have been studying and experimenting on the perfecting of a light, *inexpensive* elevator suitable for small as well as large buildings.

Our No. 4 is the result. A Direct Connected Machine, it is a work gear *self contained* with motor, hoisting machine and controller all assembled in a single unit.

There is no chance for the motor to get out of alignment. Platform of wood, guide posts of heavy timber bolted ready to install. Safety catches under the platform controlled by a governor which trips and throws catches into timber posts, safeguarding load if cables break. Capacity 1500 pounds; speed, 30 feet the minute. Three horse power standard elevator motor will supply ample power. No. 3, 1000 pound capacity, speed 50 feet; No. 5, 2000 pounds, 25 feet.

Whether you are building or remodelling, before you order any elevators, you should become familiar with the features of Kimball construction and superiority.

Catalogue and prices on request.



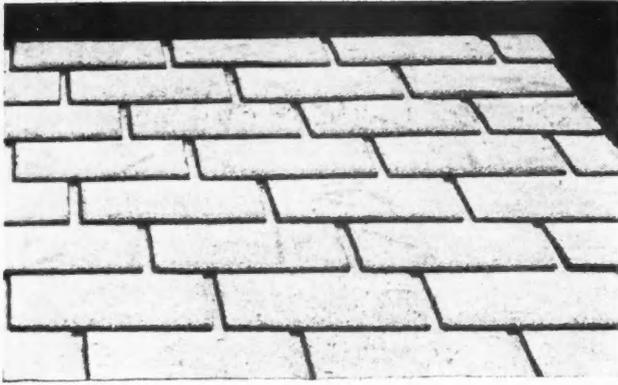
KIMBALL ELECTRIC NO. 4

Kimball Light Electric Elevators are particularly serviceable in Hospitals, Groceries, Hardware Stores, Warehouses, Furniture Stores, Creameries, Bakeries, Undertaking Establishments, or wherever there is much floor to floor traffic.

KIMBALL BROTHERS COMPANY

Manufacturers of Passenger and Freight Elevators

COUNCIL BLUFFS, IOWA

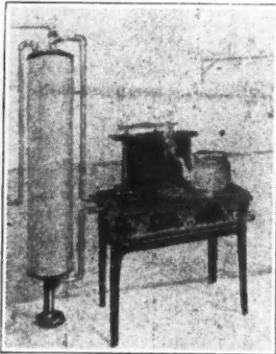


Closeup View of Tapered Asphalt Shingle Roof. These Shingles Can Be Laid Over Old Roofs Without Removing the Old Shingles.

less than 1½-inch nails when laying over the old roof. Fasten each shingle with two nails. Drive nails 1 inch from the edge and 5½ inches from the butt.

Start the first course with full shingle and lay full shingle across the roof. Start the second course with ⅔ shingle and lay full shingle across the roof. Start the third course with ½ shingle and lay full shingle across the roof. By following this method the most pleasing effect can be obtained.

For thatched or other out of the ordinary effects, tapered asphalt shingles readily adapt themselves to the requirements of the plan.

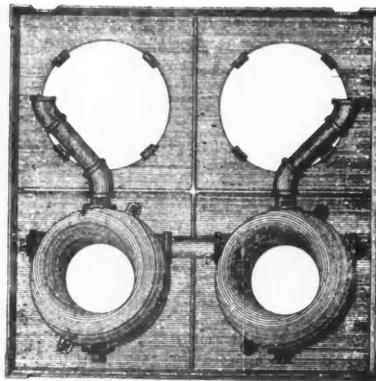


Boiler Connected with New Stove Top Water Heater. This Device Heats the Water in the Boiler While the Meals Are Being Cooked and Without Much Extra Fuel Consumption.

passes from the boiler into these pipes.

When the housewife lights the gas to cook her meals the water in the surrounding coil is heated and starts to circulate, returning back to the top of the water boiler. The cold water is forced down thru the pipes into the water rings and in turn he: As a result within a few minutes the entire boiler of water becomes heated and without much extra expense in the way of fuel. The fuel that is used to cook the meals also heats the water.

When this flat top is put in place it gives the



View of Under Side of Water Heater. Showing How Coils Surround Lid Opening. The Water Passes Thru These Coils and Becomes Heated from the Flame Below.

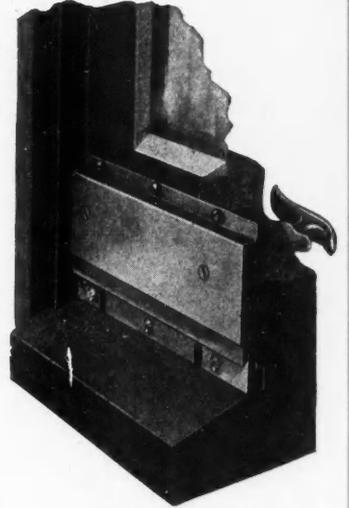
gas stove a regular top. When a direct flame is desired the lids are removed, while at other times the top collects the heat usually radiated into the atmosphere and transmits it to the utensils in which food is being cooked.

In a test using two gas burners, the contents of a 30-gallon boiler was heated at an average temperature of 127 degrees in 2½ hours with a gas consumption of 90 cubic feet. The device is simple in construction.



Weatherstrip for Inward Opening Casements

ONE of the unsolved problems of buildings has always been to make an inward opening casement water tight along the bottom. In spite of elaborate grooves and channels and overhanging drip mouldings, the wind would blow the water under. A new device has recently been perfected that completely overcomes this old-time trouble. A strong brass plate along the bottom rail of the sash is operated by a neat brass handle inside. When the casement is closed, this brass strip is locked down over a corresponding brass sill strip. This makes the bottom joint storm tight, and also serves to lock the casement fast.



Casement Weather Strip Lifts by Turn of the Handle.

When the casement is to be opened, a turn of the handle raises the strip to clear the sill. The accompanying illustration shows how well finished and substantial this arrangement is. It sells at a very reasonable price, and wide-awake weatherstrip men and builders are taking this up with alacrity as they know the popularity of the casement window in spite of the difficulty they have had in the past of making it water tight.



New Ohio Stadium Under Way

CONSTRUCTION is under way on the new Ohio Stadium, to dominate a 92-acre plot of land along the eastern bank of the Olentangy River on the Ohio State University campus. The contract has been awarded to the E. H. Latham Company, of Columbus, at a figure of \$1,341,017. The steel contract has been let by the Latham Company to the Mt. Vernon Bridge Company.

Pouring of concrete for foundations of the Stadium proper and boxes will be completed this fall. Steel construction will follow during the winter months. With the arrival of spring, work will be speeded up with a view to completing the "horseshoe" by October 1, 1922.

The U-shaped Stadium will have two seating levels, with a combined capacity of 63,000 people. The lower tier will embrace 42,000 seats, the upper tier 21,000. Boxes will accommodate 1,700 persons. Approximately 40,000 cubic yards of concrete and 4,300 tons of steel will be consumed in construction.

The Stadium proper will tower 107 feet. It will have an outside circumference of one-third of a mile.



Right weight Roofing of supreme quality, for every purpose

CAREY roll roofings are made with smooth and rough finished styles, fire resisting mineral surfaces. Most styles are made in light weight for short term buildings, and in medium, heavy, and extra heavy weights for more permanent building.

Dollar and pound for pound their quality and value cannot be surpassed. They are manufactured on the basis of quantity production in one of the largest roofing plants in the country.

Costs are further reduced because all the felt is manufactured right in the Carey mills and the asphalt is refined for perfect adaptation to the right felt at the Carey factory.

By selecting the special type and right weight Carey roofing for your particular kind of building, you are certain to get the protection you require at the lowest cost per year of service. *Write for samples and prices.*

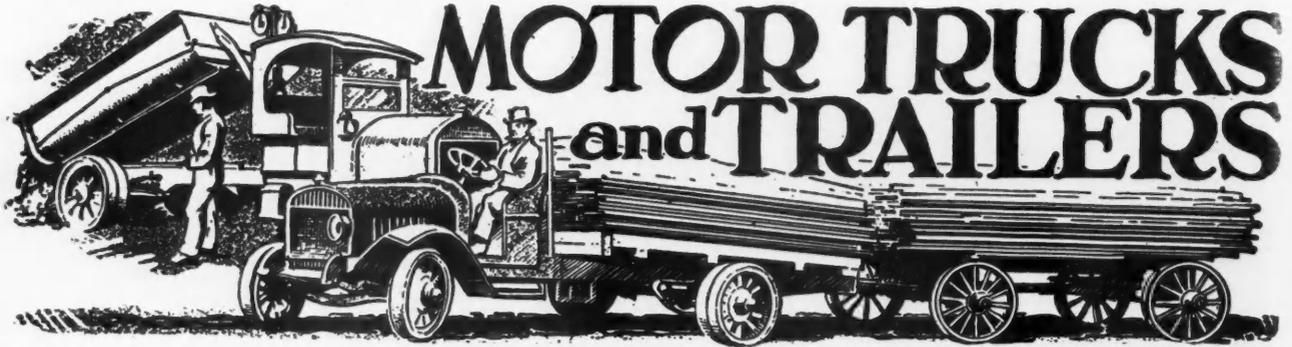
THE PHILIP CAREY COMPANY

510-530 Wayne Avenue Lockland

Cincinnati, Ohio

Carey **ROOFINGS**

A Roof for Every Building



MOTOR TRUCKS and TRAILERS

Trucks Aid in Speedy Operation

HOW WRECKING CONTRACTORS COMPLETED DIFFICULT JOB ON TIME WITH MOTOR TRUCKS

By P. S. Sniffin

WHAT is said to be one of the most quickly performed transformations of one building into another of an entirely different design, was recently accomplished by Bosley Brothers of Chicago with the aid of two heavy-duty motor trucks.

The construction as it was executed is especially interesting inasmuch as it shows what can be expected of the intelligent and systematic use of trucks.

Bosley Brothers, in addition to their building business, are dealers in building material. They have an every-day working radius extending 20 miles beyond Chicago and will deliver some 20 odd tons of lumber to the extreme edge of the circle. Such mass delivery is only made possible thru the comprehensive use of their trucking fleet. Their method, briefly, is this: As soon as they decide that they are working a field to its capacity, they purchase another truck and thus broaden the scope of their operations.

The particular contract referred to above had to do with the erection of a new power house for the City of Chicago. The City Engineers specified that Joliet limestone should be used in the building and nothing else. Yet, when railroad delivery dates were furnished on this material, the officials emphatically declared that it would be far too long to wait. The power house had to be built in a particular rush.

It happened that the old Trinity Church in Chicago, which, incidentally, was made of Joliet limestone, had recently been condemned. At the suggestion of Bosley Brothers, it was agreed to use the material in the church for the construction of the power house and Bosley Brothers were given 45 days in which to complete the entire wrecking of the condemned church and transportation of material.

Soon the old church began to disintegrate and in exactly 30 days it had transversed a distance of

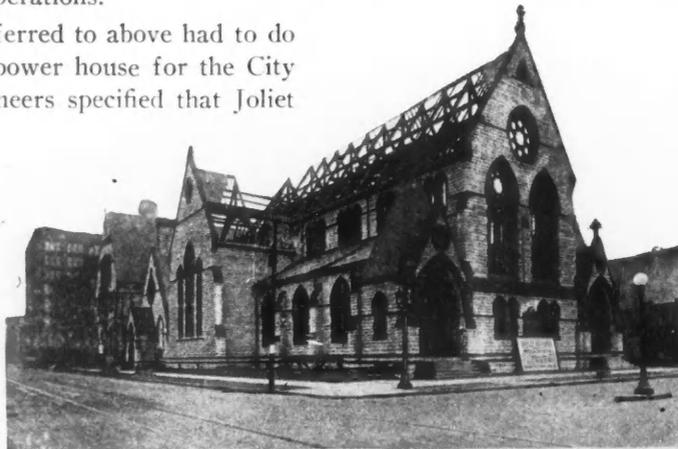
six miles and had already started to take form as a power house.

Two trucks, one a seven and a half tonner with a dump body and the other a five and a half tonner with a lumber body, together with one trailer were put on the job. The following things transpired in the 30 days:

3,200 tons of Joliet limestone were transported 6 miles, 99 per cent perfect.

3,200 tons of brick-bats and assorted rubbish were hauled 3 miles to the shores of Lake Michigan and dumped. The two trucks and one trailer covered 6,800 miles. Most of the haulage was done thru Chicago's most congested district—the Loop.

It was at first thought that the blocks of Joliet limestone would have to be transported in straw cushions. This was soon found to be unnecessary.



Before and—
after—→



The Church Above Was Converted Into the Power House Below in About 30 Days. All of the Stone Was Hauled by Motor Truck a Distance of Six Miles.



≠ A GOOD PRESCRIPTION for OLD BUILDINGS

Rx

Add a new line of profit to your business by over-coating old, age-worn buildings---renew their youth---give them beauty, grace and modern design by applying an outer coat of

KELLASTONE
IMPERISHABLE STUCCO

KELLASTONE goes on over any surface. It isn't necessary to alter the brick or remove the weather boarding. No disturbance to occupants. Can be applied in summer or winter. Forms a solid, seamless wall of synthetic stone that combines the beauty of marble with the endurance of granite.

KELLASTONE is the strongest plastic stucco material in the world—it is the original all mineral magnesite stucco, scientifically balanced—does not contain any lime, gypsum or portland cement—adheres with a giant grip to any surface.

KELLASTONE is the one dependable prescription for reviving the value of run-down buildings—cash in on its money-making possibilities and the wide fields our National Advertising campaign has opened for you. Ask for booklet—“The Story of Kellastone”.

National Kellastone Company

Manufacturers

Room 515

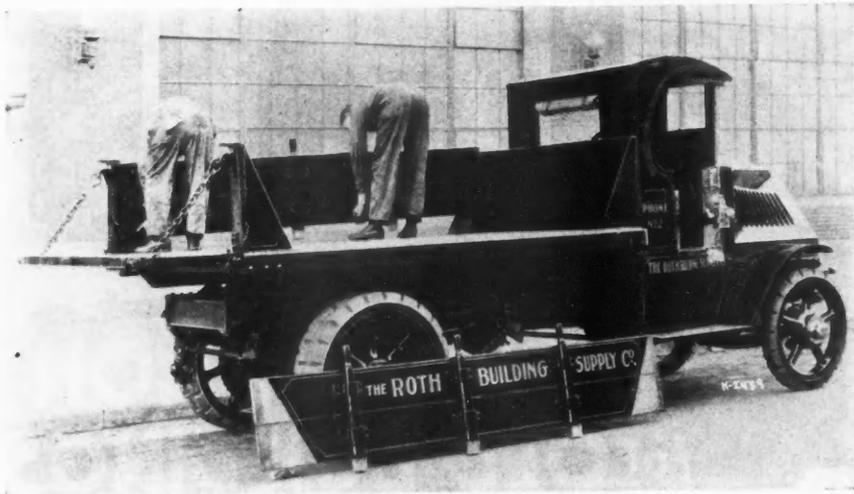
155 E. Superior Street,

Chicago, Illinois



KELLASTONE

IMPERISHABLE STUCCO



All Purpose Truck Body Built by the Roth Building Supply Co. This Body Will Haul All Kinds of Material. The Dump Arrangement Permits Speedy Unloading. The Sides Can Be Removed To Load Brick and Then Placed Back When the Truck Is Filled.

A Body Type Suggestion

MANY a builder's or building supply dealer's experience with motor truck haulage has proved unsatisfactory because the type of body selected with the truck was not suited for the work it was to do.

The great variation in the classes of material which require transportation in connection with building operations presents a problem that is different from that in practically every other field. Very often, the scope of the building supply dealer's business includes coal,

feed, grain, ice and other commodities, most of which are of a seasonable nature. Aside from this possibility, the truck is always called upon to handle sand, gravel, brick, lumber, etc., all having different bulk proportions and all requiring different means for rapid loading and unloading.

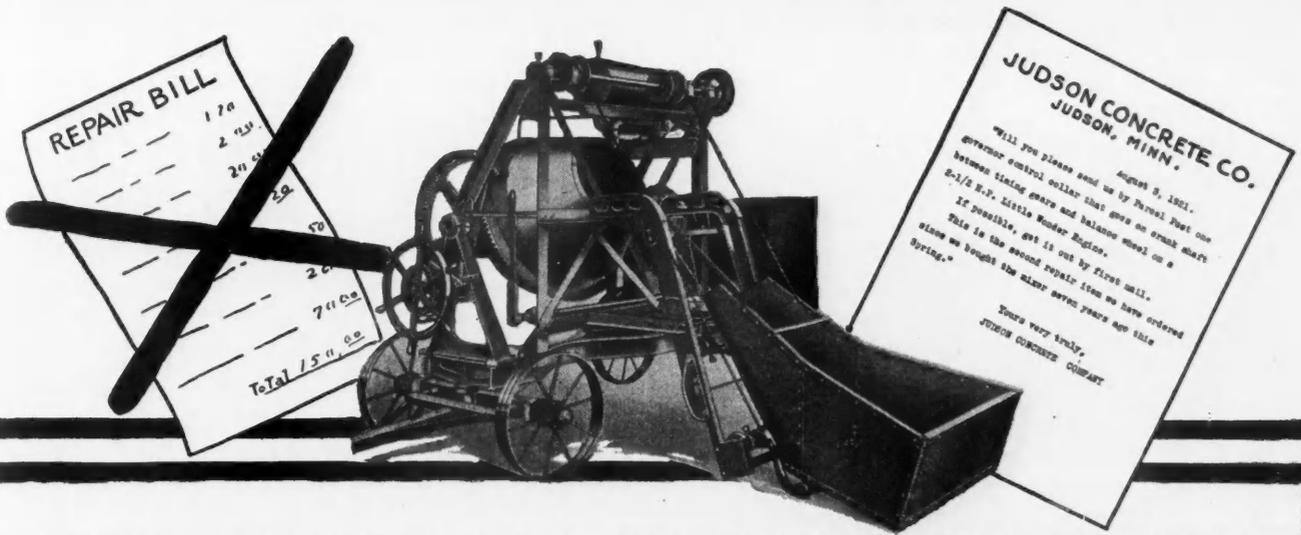
Briefly, the builder or building supply dealer requires an all-purpose truck. The accompanying illustration offers a practical and up-to-the-minute suggestion in this respect. It shows a "Four in One" body on a three and one-half ton chassis equipped with a Hydro Dump Hoist.

The sides are wooden and are readily removable as shown in the illustration. The stake pockets are set in approximately three inches from the outer edge which gives a large loading platform and acts as a protection for both the truck and the tailgate. The body may thus serve as a dump, stake, platform, or express-type.

Sand, gravel, coal and similar bulk materials are handled in the most practical manner by the use of this body.



At Work in the Lumber Yard. This 5-Ton "White" Is Being Loaded To Capacity Without Waste Effort. It Is Only One of a Fleet Owned and Operated by the General Timber and Lumber Co., Cleveland, Ohio. About 10,000 Trucks Are Now Owned by Lumber Dealers Throught the Country.



DEPENDABILITY ATTAINED THROUGH SIMPLICITY OF DESIGN

The efficient simplicity of WONDER Mixers is equaled by no other. *Twelve parts constitute its complete mixing drum, its bearing and supports.* It's the last word in *dependability*, made possible through the absence of complicated mechanism in its design.

The experiences of thousands upon thousands of users of WONDER Mixers for eight, nine and ten years, who have enjoyed continuous operation and the necessity for only a minimum of repair, should be convincing.

Discriminating contractors, who because of the changed conditions this year, can choose what they shall buy, are selecting the WONDER to such an extent that the Construction Machinery Company can point to 1921 as a year of steady factory production—a year of sales success uninfluenced apparently by the existing general depression.

You are taking a step forward these days when you ask for our catalog No. M 36.

There is a local distributor in your territory. Ask us.

Construction Machinery Co.

Formerly Waterloo Cement Machinery Corp.

103 Vinton Street

Waterloo, Iowa

April 4, 1921
Says Geo. H. Marshall, Apalachicola, Florida—

"I have a WONDER mixer I have been using for six years and she starts with one or two turns of the crank in the morning and runs steady until we stop for dinner and the same thing all the afternoon. I will not write a long letter for if I was to talk all day I could not tell half of the satisfaction it is to me to know I have a machine on the job that is always ready to go and goes until I cut off the gas or spark."

April 6, 1921
Says J. D. Palmer, Superior, Wisconsin—

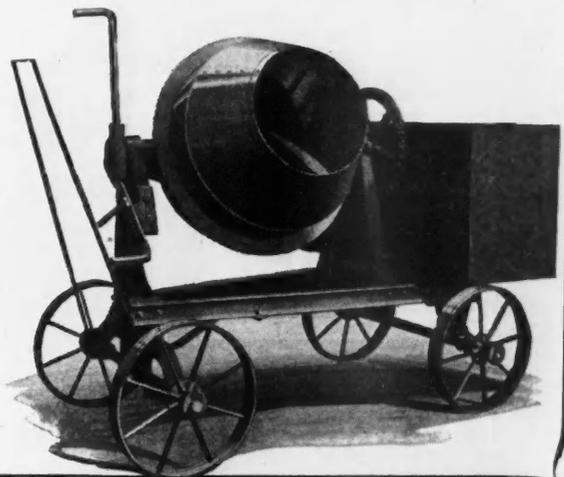
"I have been using a WONDER '5' since 1911 and it is doing 'wonders' yet."

May 13, 1921
Says H. W. Long, Franklin, Pennsylvania—

"I want to tell you that my WONDER '5' mixer has given me entire satisfaction. I could have sold it last summer for only \$25 less than I paid for it six years ago. It has paid for itself 23 times and has mixed over 6,000 yards on my own work and is in good workable condition yet."

April 16, 1921
Says J. F. Baugher, Hutchinson, Kansas—

"I had used my WONDER three years and when I sold it had never spent a nickle on it except for a new cable and would not have had to have gotten that but my cable caught in a pulley and that engine the Waterloo company puts out just walked through that cable. Of all the gas engines I have used I have never had one that will compare with yours."



Unusual Effects in Roofing

(Continued from page 79.)

with a slab full length. For ensuing course use slabs of full depth.

In all cases of laying prepared roofing there is one point that should not be overlooked. By covering the roof boards with a layer of slater's felt before applying the shingles, the carpenter is protecting himself against complaints and installing a roof that is waterproof in every respect. This layer of felt is installed at a very small cost in comparison to the cost of the job and adds so much to the efficiency of the roof that no builder should fail to put it on. Moreover it will add to the satisfaction of the customer.

In shingle work of this kind lumber for the roof deck should not be unseasoned, irregularly thick or excessively knotty. The boards should be laid in close contact and fastened securely to rafters. Composition shingles may be laid directly over old wooden shingles after cutting away any warped butts. To facilitate laying the rows straight the boards are chalk marked every 24 inches as guides for the upper edges for every 6th course of shingles and shingle slabs.

In using shingles for siding, expose them 3 inches to the weather, nailing $3\frac{1}{2}$ inches from the shingle butts, one nail being driven in the center of the shingle and one nail driven 1 inch from either edge. This applies to both individual and slab shingles. A space of $\frac{1}{8}$ inch should be left between the shingles and casings.

How to Use the Steel Square

(Continued from page 118.)

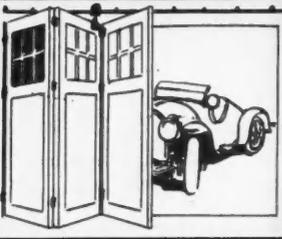
give the seat and plumb cuts of the common and valley rafters respectively. The length of the diagonal lines on the squares are $19\frac{1}{4}$ and 15 inches and these figures taken on the blade of the respective squares will give the side cuts for the valley and jack rafters.

In this illustration we have used two scales, i. e., the full scale on the steel square for a 1-foot run to obtain the cuts, and the 1-12 scale or 1 inch to the foot run for the diagram of the roof, from which to obtain the length of the rafters. The fact that there are two scales employed may render the subject harder to grasp by some, but we trust after a little study of this illustration, the subject will be clear. The reader will observe that in all of our work we have adhered to 12 on the tongue as the starting point. We do this because it represents unity or the beginning, and therefore answers for any run or pitch given the roof. However, as a comparison it might be well to illustrate this problem per the 1-inch scale to the foot.

Bear in mind that while we illustrate these problems with two squares, only one is necessary, as the angles may be laid out with the different positions of the square and the required proportions taken on same. As the run of the small gable is 8 feet, place the blade of square No. 2 at 8 on both the tongue and blade, with the heel opposite 14 of square No. 1 (because 14 represents the run of the main roof).








NEY NO.40

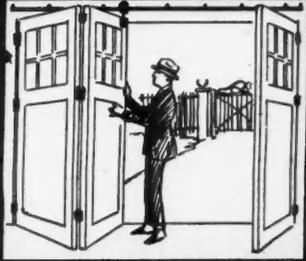
Hangs Any Type of Door

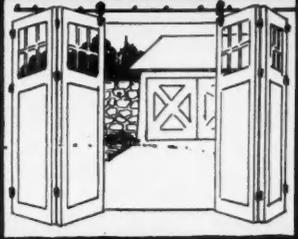
Ask your dealer to show you the NEY Adjustable Hanger No. 40. It is adjustable to all conditions. It is strong and simple in construction, reasonable in price and can be installed in a jiffy.

Insist on the NEY. It will save time and money for you.

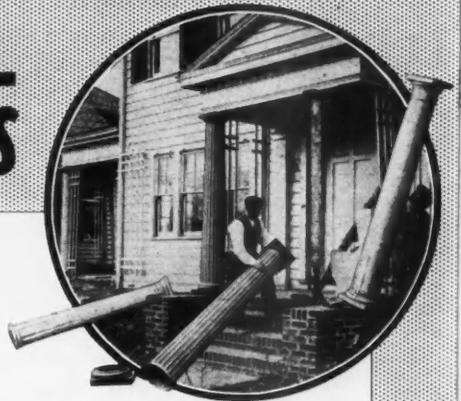
If your dealer does not handle the NEY, write us for catalog and name nearest dealer.

THE NEY MFG. CO.
Dept. A. B.,
CANTON, OHIO






UNION METAL COLUMNS



Actual photograph taken in Cleveland, showing rotted and split wood columns, in service only three years, being replaced by Union Metal Pressed Steel Columns. This is a typical experience of thousands of home owners throughout the country.



They last a lifetime

BEAUTIFUL columns on a building are the first feature to catch the eye, and the one that is longest remembered. How important, then, that they should be of enduring material that will not split, rot, and open up at the joints, and thus mar the entire structure.

The beauty of Union Metal Columns is more than "skin deep". Under the paint is a permanent metal shaft that will be just as sound and beautiful in ten, twenty, yes thirty years as it was the day the columns were put in place.

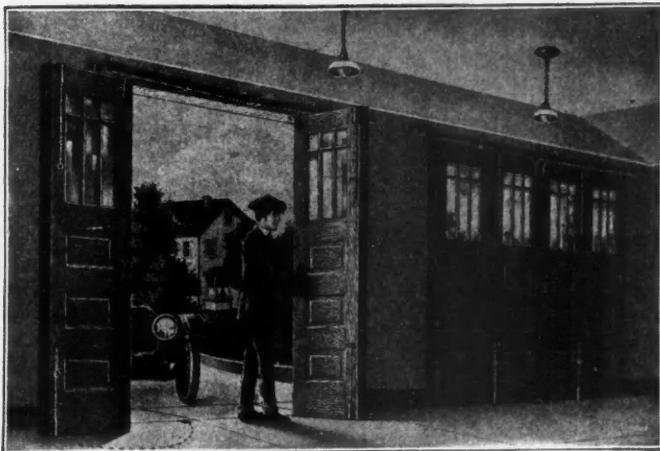
Union Metal Columns are correct in design, permanent in construction and reasonable in cost.

Design No. 240
Plain Doric

THE UNION METAL MANUFACTURING CO.
CANTON, OHIO

Slidetite

GARAGE DOOR HARDWARE



There Is Only One SLIDETITE

When *Slidetite* hardware hangs the doors of the garage you build, you know the owner is sure of satisfaction. And the beauty of it is, you get the credit for a perfect job. Naturally your business grows as your popularity and prestige as a builder grows. Let our *Slidetite* hardware do its share in helping you. Remember, *Slidetite* makes any garage door easier to operate. No joints to obstruct hangers.

Richards-Wilcox Mfg. Co.

A Hanger for any Door that Slides.

CHICAGO ST. LOUIS LOS ANGELES PHILADELPHIA
AURORA, ILLINOIS, U.S.A.
BOSTON NEW YORK MINNEAPOLIS SAN FRANCISCO

Write Today For Our Catalog Q A 22

Building in Medieval Times

DURING the twelfth and first half of the thirteenth century the houses of the great mass of people were little better than hovels, the walls consisting for the most part of timber framings filled in with mud and straw. The houses were low, being only one story in height and covered with a thatched roof. Closely packed together as were these houses and without chimneys, splendid material was provided for a fire. The first attempt at forming building regulations was due to a conflagration.

These advocated the building of party walls 3 feet thick and 16 feet high. Compliance was voluntary, owing possibly to the fact that these recommendations were drawn up at an Assize of the Citizens of London, who did not feel enthusiastic about a matter that would have put them to expense. One clause was to the effect that if a man wishes to build such a wall, and his neighbor would or could not assist in the building, the dissentient had to supply the whole of the land, but had the right to support his timbers upon the said wall. Very little voluntary action accrued, however, so that after another large fire in 1212 the citizens again assembled and passed stringent compulsory regulations for the safety and convenience of the inhabitants. Many clauses were framed dealing with party walls and recesses therein.

The draining of the roof received a good share of attention. Provision had to be made for the effective removal of rain-water in such a manner that a neighbor's property was not rendered liable to suffer injury. Tiled roofs were advocated, but were not compulsory. Rush and reed coverings in an exposed state were condemned, and all such coverings were to be plastered within eight days. The penalty for non-compliance was the demolition of the house.

A rather amusing clause, and one that throws a good deal of light upon the functions of the aldermen at that period was that aldermen were to carry a cord with a hook attached, and

were invested with the power to pull down by its aid any house attacked by, or liable to attack during a conflagration. This also helps one to form an estimate as to the character of the houses, and one can only conclude that they must have been of a rather crude form of construction.

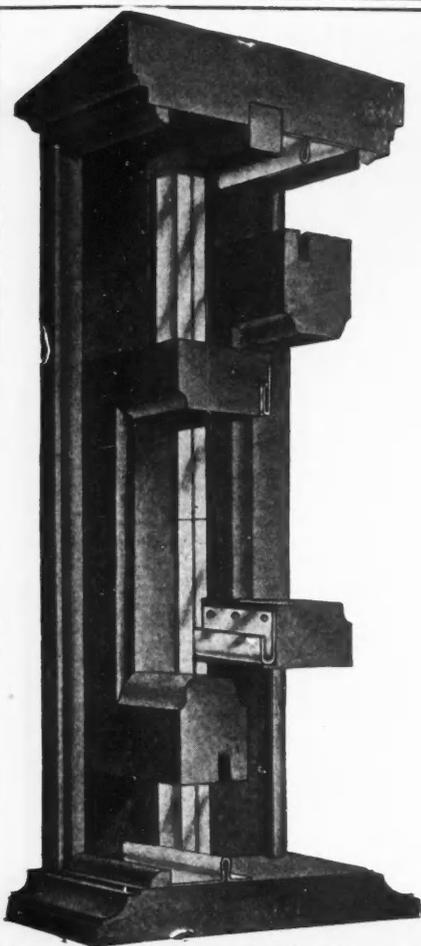
At this Assize the rate of pay for the ensuing year for carpenters, masons and tilers was also fixed. The amount was the same for each trade. It was 3d. per day with keep or 4¼d. per day without keep.

Great advances had been made in the various building trades by this time. Specialization had become a force dividing up industry in all directions. Masons were divided into two classes at least, namely, cutters and sculptors of freestone and layers and setters. Bricklayers, or men called such, were not known; but as there was in use at this period a small kind of brick, imported probably from Flanders, and as records of buildings including bricks in their structure contain reference to tilers, there is no doubt that bricklaying was executed by these men.

Plasterers are mentioned; also mudstickers, who filled in the framework of houses. In the less skillful division are such distinctions as barrowmen, laborers and excavators.

The joiner is not mentioned, perhaps he had not put in his appearance. When he did, there arose several occasions when the members of each craft indulged in a resort to physical force to settle points of etiquette concerning their crafts.

It was about the year 1230 that joinery work came into vogue in England, and, of course, the King's establishments were the first to be improved. The royal bailiffs and master carpenters in the King's service must have had a very trying time, judging by the records still existent. Scattered about the country were about thirty royal residences, each of which had to be brought up to date. Besides these, the King seems to have exercised in a thoro manner his royal privileges by ordering alterations and improvements wherever he was likely to stay or stayed during a journey.



Why this needless waste!

Most of the home and building owners in your town are wondering how they can cut their coal costs.

If these people realized how much heat they could save by cutting off the drafts and warm air leaks thru doors and windows they would all have Sager weatherstripping, but it takes someone to show them. You, the builder, are the logical man to do this.



AGENTS WANTED

We want a reliable builder in every town to sell and install Sager weatherstripping. You make a double profit. One on the sale and one on the installation. Any carpenter can quickly and easily make the installation.

Write for Details of Our Offer

SAGER

LOCK COMPANY

NORTH CHICAGO ILLINOIS

"That Is a Real Job—

When we want repairing done permanently and right we will call on you again"

THE customer is willing to pay you a good profit when Robert's Ideal Board completes the job. Whether used in living room or kitchen, on old walls or in new homes—the result can be the same—"beautiful interiors of permanence".

The Quality of Ideal Board is rigidly maintained regardless of LOWER COST. It is heat and cold resisting, fire retarding, will not check, crack nor crumble.

Robert's Ideal Wall Board can be secured quickly. Get in touch with the Ideal Board Dealer or write us direct.

We can ship same day order is received

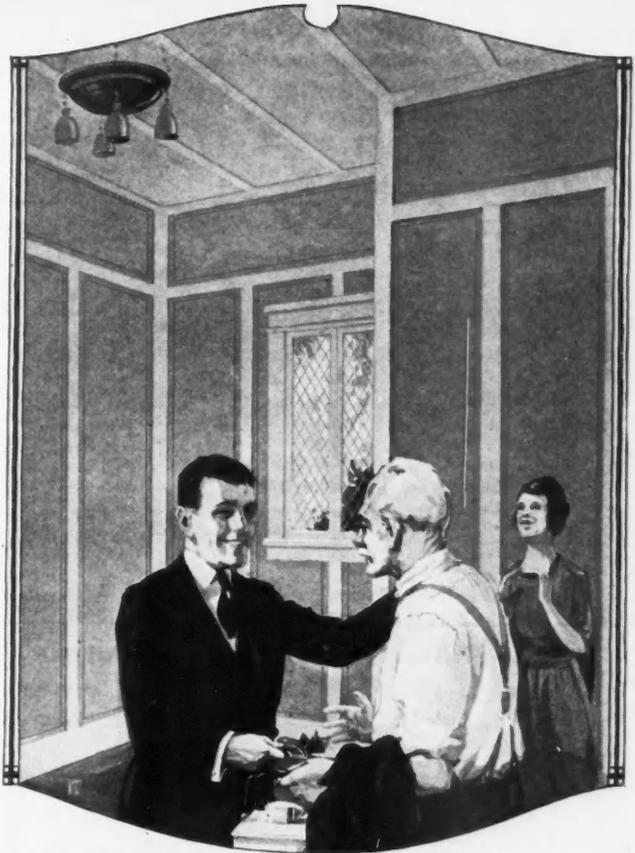
ROBERDS MANUFACTURING CO.

100 Spencer Avenue, MARION, INDIANA

Exclusive Makers of

Rob erds IDEAL WALL BOARD

STRONG DURABLE BEAUTIFUL



The genuine Robert's Ideal Wall Board is supplied in rich Tan and Golden Oak finishes. Standard sizes 32 and 48 inches wide, lengths 5 to 16 feet, enable easy quick application with practically no waste of material. The Ideal Way, means better Pay.

Get our prices



Help Save Your Client's Money

Show him how he can save money on the installation of the Kewanee Combination Light and Water Plant that furnishes every modern comfort for little more than the cost of the ordinary water or light plant alone.

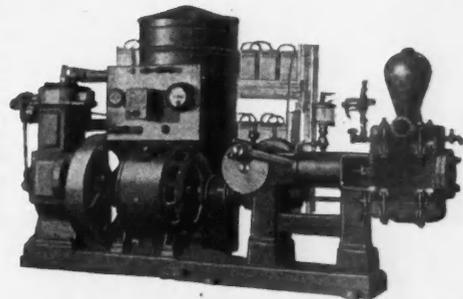


has been the standard in water supply, electric light and sewage disposal systems for nearly a quarter of a century. There are more than 150 sizes and models of REAL PRIVATE UTILITY PLANTS built by Kewanee. There is a plant to exactly FIT YOUR CLIENT'S NEEDS.

Kewanee Systems are built separately—or you may have a combination water and light system in many different sizes. Be able to advise your clients about this important phase of building and remodeling. Send for the Kewanee Bulletins, describing more than 150 systems.

FREE to Architects, Contractors and Builders.

Write today



One of the many Kewanee Combination Electric Light and Water Supply Systems.

Kewanee Private Utilities Company
424 S. Franklin Street
Kewanee, Illinois

Brick Costs

SOME interesting statistics on the manufacture and cost of common brick on August 1 are shown in the table produced below. These figures show a substantial reduction in price over those of June 1. Orders on books are increasing.

Light greenish yellow	54
Light buff	52
Light green	42
Light terra cotta	41
Medium terra cotta.....	39
Light greenish blue.....	36

COST OF COMMON BRICK, AUGUST 1, 1921

Dist. No.	Including States of	No. of Firms Reporting	Plants Closed	Burned Brick on Hand	Orders on Books	Price per Thousand at Brickyard	Price per Thousand at Brickyard June 1, 1921
1.	N. Y., New England.....	7	3	5,085,000	1,361,000	\$14.50 to \$25.00	\$15.00 to \$26.00
2.	Pa., N. J., Md., D. C., Del.....	9	3	23,403,000	21,940,000	15.00 to 18.00	16.00 to 20.00
3.	Va., N. C., S. C., Ga., Fla.....	8	2	7,036,000	3,505,000	9.00 to 18.00	10.00 to 18.00
4.	Mich., Ohio, W. Va.....	8	3	8,608,000	3,777,000	12.50 to 18.00	12.50 to 18.00
5.	Ill., Ind., Wis.....	14	6	124,314,000	27,290,000	12.00 to 18.00	12.00 to 18.00
6.	Ky., Tenn., Miss., Ala., Ark., La.....	6	1	4,973,000	2,730,000	12.00 to 19.00	12.00 to 19.00
7.	N. and S. Dak., Minn., Neb., Ia., Kan., Mo.....	12	3	4,373,000	2,936,000	12.00 to 18.00	12.00 to 18.00
8.	Okla., Tex., N. M.....	16	9	11,848,000	3,033,000	9.00 to 17.00	10.00 to 18.00
9.	Wash., Ore., Mont., Wyo., Ida., Utah, Colo.....	10	5	4,564,000	890,000	13.00 to 19.00	15.50 to 19.00
10.	Calif., Ariz., Nev.....	2	0	3,965,000	6,100,000	15.00 to 16.00	15.00 to 17.00
Total		92	35	198,169,000	73,562,000		

Light Reflection of Colored Paints

PAINTS made on a mixed white pigment base, tinted with chrome yellow, chrome green, Prussian blue, Para red, ochre, sienna, carbon black, and so forth.

	COEFFICIENT OF REFLECTION
Light cream	66
Light pink	60
Light yellow	58
Light blue	55

Medium blue.....	32
Warm green.....	19
Medium green.....	14
Red	12
Blue, dark.....	12
Green	11

The illumination of factories, railroad terminals, department stores, hospitals and office buildings can very easily be increased by the application of white paints or light-tinted paints. In fact, it has been shown in practical demonstrations that the rays from powerful lights falling upon dark

YOUR TOWN

is full of homes and public buildings that are badly in need of Allmetal Weatherstrip. The only reason they are not weather-stripped is because their coal-saving and living comfort features have never been brought to their attention. IT'S UP TO YOU.

You are the best man to do this. We are prepared to give you an agency offer that will allow you to make a worth while profit on each house.

Allmetal Weatherstrip is so simple that any builder can easily install it. Now is the time to get this work.

WRITE FOR OUR OFFER

ALLMETAL WEATHERSTRIP COMPANY
 124 W. KINZIE STREET CHICAGO, ILLINOIS

ALLMETAL WEATHERSTRIP
The easiest strip to install



The Highest Stamp of Approval

Hundreds of architects specify Bay State Brick and Cement Coating. There is no finer recommendation for this product. And really, the new home or building of stucco or cement is not complete until Bay State is applied.

For Bay State turns the original dull gray color to a pure, rich white or one of many beautiful tints. Because it dries flat, it does not destroy the distinctiveness of the cement or stucco, but adds to it.

Bay State Coating protects. It sinks into the surface and literally becomes a part of the wall it covers. It waterproofs all buildings of brick, cement or stucco.

Broiling sun or heavy snows have no effect on Bay State whatsoever. Dampness will not seep in. Driving rains cannot beat through it.

We should like to send you samples of Bay State Brick and Cement Coating in white and a large range of colors. Booklet No. 20 shows many homes and buildings on which Bay State has been used. Your request on a postal will bring you both. Write today.

WADSWORTH, HOWLAND & CO., Inc.
Paint and Varnish Makers

Boston, Massachusetts

New York Office
Architects Bldg.

Philadelphia Office
1524 Chestnut St.



BAY STATE

Brick and Cement Coating



BEFORE BRASCO

THINK TWICE

—when you see a store front like this. Many a carpenter or contractor has seen the opportunity in remodeling store fronts with

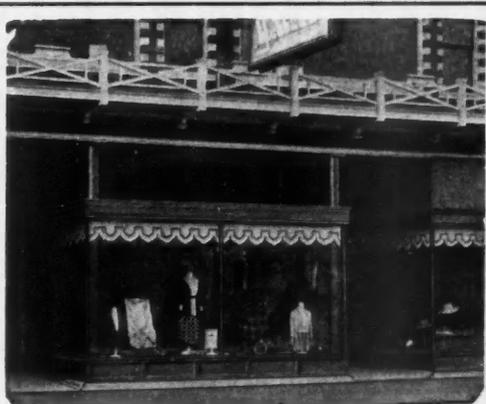
Brasco

COPPER STORE FRONTS

Right now and thruout the fall is the time to get this business. In handling Brasco fronts you have a good proposition to offer the prospect — an everlasting and clean-cut front at a moderate cost. We help you put the job across and make it worth your while. We would like to show you how you can make the remodeling of old store fronts pay in your own community. Fill out the coupon and get the details of our proposition.

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walls give less light to a room than the rays from weak illuminants falling upon walls that have been painted in light colors with dust-resisting, washable paints. From the standpoint of economy, the cost of illumination can be greatly reduced by proper wall treatment.

Care Should be Used in Color Selection

In schoolrooms and hospitals, and even in the home, very careful selection should be made of the colors that are used for the walls and ceilings, otherwise lessened efficiency and physical fatigue may result. Dark colors, such as brilliant reds, dark browns, dull grays and similar dark colors, may be the active cause of lessened efficiency, nervousness, and so forth, whereas light tints of blue, green and yellow stimulate to activity and are conducive to happiness and amiability.

Large radiators in rooms of the home do not present a very attractive appearance unless they are properly decorated. For this purpose a paint should be used which will harmonize with the wall colorings, and one of the best paints obtainable for this purpose is the ordinary sanitary, flat wall paint that is used upon walls. It has been found that these paints dry with a flat surface having a high heat-transmission factor. For heating efficiency as well as for decoration, these paints are therefore to be recommended.



Wood Preserving Service Bureau Opens

A SERVICE Bureau of the American Wood Preservers' Association has just been established with headquarters at 1146 Otis Building, Chicago. It is the aim to make the Service Bureau a direct benefit to all users of wood, lumbermen, engineers, architects, farmers, the wood preservation industry, and everyone interested in the conservation of our forest resources.

Concrete Men Elect New Officers

At the annual meeting of the Concrete Block Machinery Association held in Chicago this month, Jack Franklin of the Ideal Concrete Machinery Co. with offices at 231 Insurance Exchange, Chicago, was elected secretary-treasurer succeeding Eugene F. Olsen.



Sharp Company Moves Offices

The offices of the Sharp Rotary Ash Receiver Corporation have been moved from Binghamton, N. Y., to Springfield, Mass.



"Virgin Growth" and "Second Growth"

SPECIFICATIONS often call for "virgin growth" or "second growth" timber, yet the terms are without fixed significance, and the material when delivered cannot be positively identified as belonging to one class or the other.

"Virgin growth," also called "first growth" or "old growth," means timber which grew up in a standing forest under conditions of active competition for sunlight and moisture.

"Second growth," when applied to a forest stand, usually means timber whose growing period occurred under conditions of lessened competition, after all or a portion of the original stand had been removed by cutting, fire, wind, or other means. In connection with individual trees, the term is used to mean any whose growing conditions approximated those which would produce a "second growth" stand. To the wood user, "second growth" means material cut from either of these sources. In general, the term is associated with the idea of a second crop of timber, tho specific applications may vary.

Virgin growth is generally thought of as slow growing timber, while second growth, due to more favorable condi-

CONTRACTORS AND BUILDERS — INSTALL A HARDIN-LAVIN PIPELESS FURNACE IN YOUR NEXT BUILDING

Our Pipeless Furnaces are Superior Because —

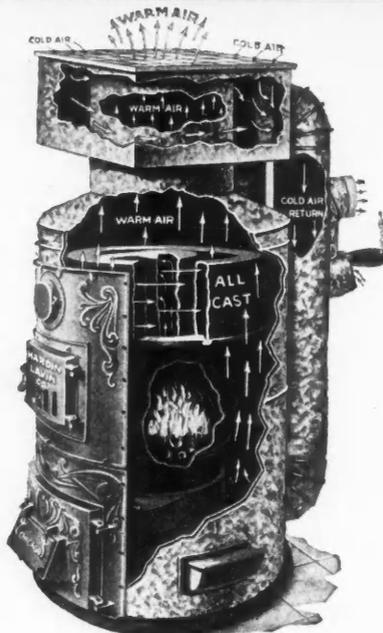
The interior and large front are all heavy cast.

Long circular fire travel saves fuel.

Improved air cleaning humidifier eliminates dust.

Reinforced dumping grates, burns hard coal, soft coal or wood economically.

Has adjustable throat to fit any basement.



Our Improved Pipeless Furnaces "Beat Them All"

Other furnaces take the cold air down inside an outer casing. Notice we take the cold air down through two large separate cold air ducts outside of casing at rear of furnace. This distinctly better method of cold air circulation prevents back draft, warped casings, dust in your home, etc.

SPECIAL ATTRACTIVE PRICES TO BUILDERS

Send today for our pipe and Pipeless Furnace Catalog

\$500,000 PLANTS BEHIND OUR GUARANTEE

SEE OUR FULL PAGE ADV. ON PAGE 198

HARDIN-LAVIN CO. 50 Years at 4522-34 F Cottage Grove Ave., CHICAGO

No.28 Improved HOLLOW MORTISING CHISEL

REGULAR STANDARD HOLLOW CHISELS
AND BITS CARRIED IN STOCK.
WITH ORDER SPECIFY NAME
OF MACHINE USED.



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your copy**

of the new catalog and you will find our entire line illustrated with photographs, complete specifications and prices on bits and chisels for any make of boring or mortising machine.

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THE NEW
FOREST CITY CATALOG

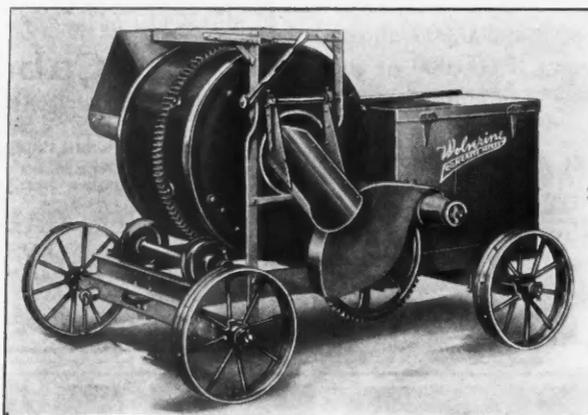
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LINE OF HOLLOW MORTISING
AND WOODBORING TOOLS

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OUR NEW
WOODWORKER
CATALOG—
SHOWS OUR
PORTABLE
SAW RIGS
AND
COMBINATION
SWING CUT
OFF AND
RIPPING
MACHINES

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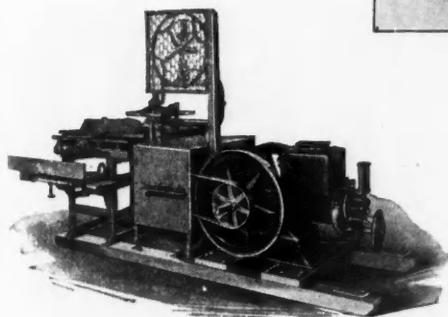
F.O.B. Factory
For Our
Wolverine
Half Bag Size
Mixer



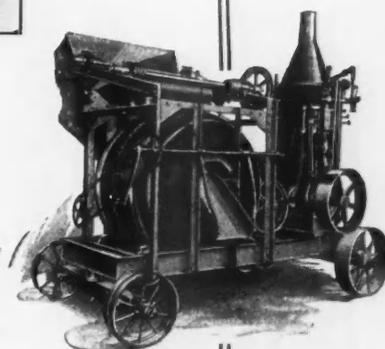
\$595.00

F.O.B. Factory
For Our
Wolverine
One Bag Size
Mixer

OUR MIXER
CATALOG
SHOWS OUR
CONCRETE
MIXERS—
SIZES 4-7-14
AND 21 CU. FT.
WITH POWER
LOADERS
BATCH
HOPPERS—
LOW
CHARGERS—
ANY KIND
OF POWER.



Knickerbocker products are distributed from warehouses in most all principal cities. Write for name and address of nearest distributor.



The Knickerbocker Co.

525 Liberty St., Jackson, Mich.

QUALITY COUNTS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

tions, is relatively rapid. A faster rate of growth is evidenced by wider annual rings. These are popularly supposed to indicate stronger and tougher wood in the hardwoods, such as ash, hickory, elm, and oak; and weaker and brashy wood in the conifers, such as pine and fir. Hence, for uses in which strength and toughness are essential, second growth is sought among the hardwoods, whereas in conifers virgin growth is desired.

As a second growth forest attains maturity, the rate of growth slows up, and the annual rings may be no wider than in virgin growth timber of the same size. On the other hand, when a slow-growing suppressed forest tree is freed by removing the neighboring trees, it may grow rapidly for a long period. Therefore it is possible to have some wood with the characteristics of virgin growth and some with those of second growth in the same tree. Furthermore, individual trees in a virgin growth forest may have the characteristics of second growth throughout and vice versa.

Instead of broadly specifying "second growth" or "virgin growth" or depending upon requirements on the width of annual rings to secure good material, the Forest Products Laboratory considers it advisable to disregard rate of growth and rely upon density as a guide to quality.



Twenty Million Candlepower Jewel

PROJECTORS which illuminate the Wrigley Building shown in the front section have five hundred watt lamps and produce over 20,000,000 candlepower. Eighty-six of these projectors are mounted on buildings across the street and light the front of the building and two sides of the tower, while a battery of 43 units on the roof of the building light the other two sides of the tower.

It is planned to illuminate the other side of the building by placing a battery of projectors on the opposite side of the Chicago River about 300 feet away. The total candlepower then will amount to about 25,000,000 and 103,000 watts will be consumed.



Growth of Auto Industry

IN ROUND numbers there were 8,500,000 automobiles registered during the year, 7,600,000 of these being passenger cars, and the remaining 900,000 motor trucks.

Each day an average of 154,725 cars and trucks enter and leave New York City.

Special taxes paid annually by the industry to the Federal Government amount to \$257,000,000, while the regular registration fees paid by car users amount to \$81,000,000.

It is estimated that 4% of the country's steel supply is used by the automobile industry.

During 1920 2,241,000 cars and trucks were manufactured, 1,906,000 of these being passenger cars, while 32,400,000 automobile tires were produced.

There are 170 manufacturers of motor trucks in the country and 90 manufacturers of passenger cars, located in 32 states of the Union and employing 300,000 people.

The increase in gasoline production over 1919 was estimated at 19%.

The value of passenger cars exported was \$155,000,000, while that of motor trucks amounted to \$145,000,000.



Chapman & Frazer, Architects, Boston

Cabot's Creosote Stains

Preserve Your Shingles—Rich, Velvety, Lasting Colors

You are sure of beautiful coloring, durable wearing qualities and thorough preservation of the woodwork if you insist upon Cabot's Stains. Their colors are the strongest and finest natural pigments, ground in pure linseed oil and mixed in specially refined creosote, "the best wood preservative known." They will not wash off or blacken, and are the only stains that are not dangerously inflammable.

Cabot's Quilt

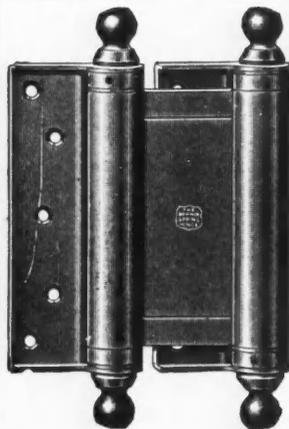
A scientific heat insulator and sound-deadener that makes houses warmer in winter and cooler in summer and deadens sound in floors and partitions. Not a mere felt or paper, but a non-conducting mat that is about thirty times warmer than common papers.

You can get Cabot's Stains and Quilt all over the country. Send for samples and names of nearest agents.

SAMUEL CABOT, Inc., Mfg. Chemists
BOSTON, MASS.

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Cabot's Conservo Wood Preservative, Stucco Stains, Brick Stains, Damp-Proofing.



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Standard for over 45 years, and steadily improved, retaining superiority over all others. In universal demand. Easiest to apply.

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The World Never Saw Its Equal

All experienced builders can conscientiously recommend Campbell Heating Plants after grasping the full significance of the following details which stamp it without a rival:

WINTER CAMPBELL'S CHASER

- 1—Built to fit the house—a part of the structure.
- 2—Equipped with giant water battery, capacity 15 gal. to 2 barrels.
- 3—So durable that there are in service today more Campbell Heating Systems installed over 35 years ago than all other kinds of hot air furnaces combined.
- 4—Guaranteed to heat any home to 70 degrees on the coldest and windiest day of any winter.
- 5—Sold under a ten-year guarantee.

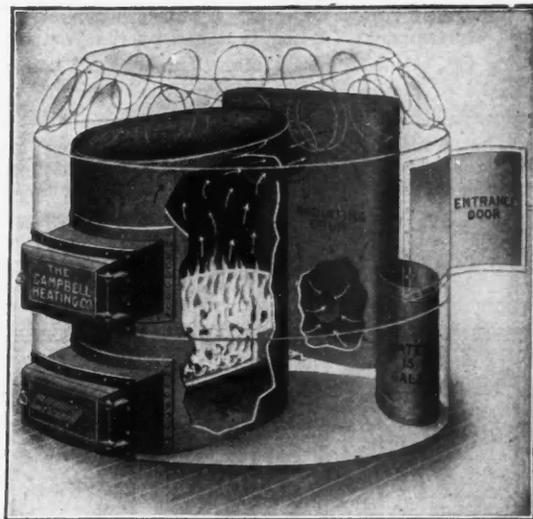
We can supply you with hundreds of testimonials from some of the leading citizens of Iowa who have used their Campbell Furnaces upwards of 25 years and are delighted beyond measure with the clean, warm balmy air provided in their homes every winter.

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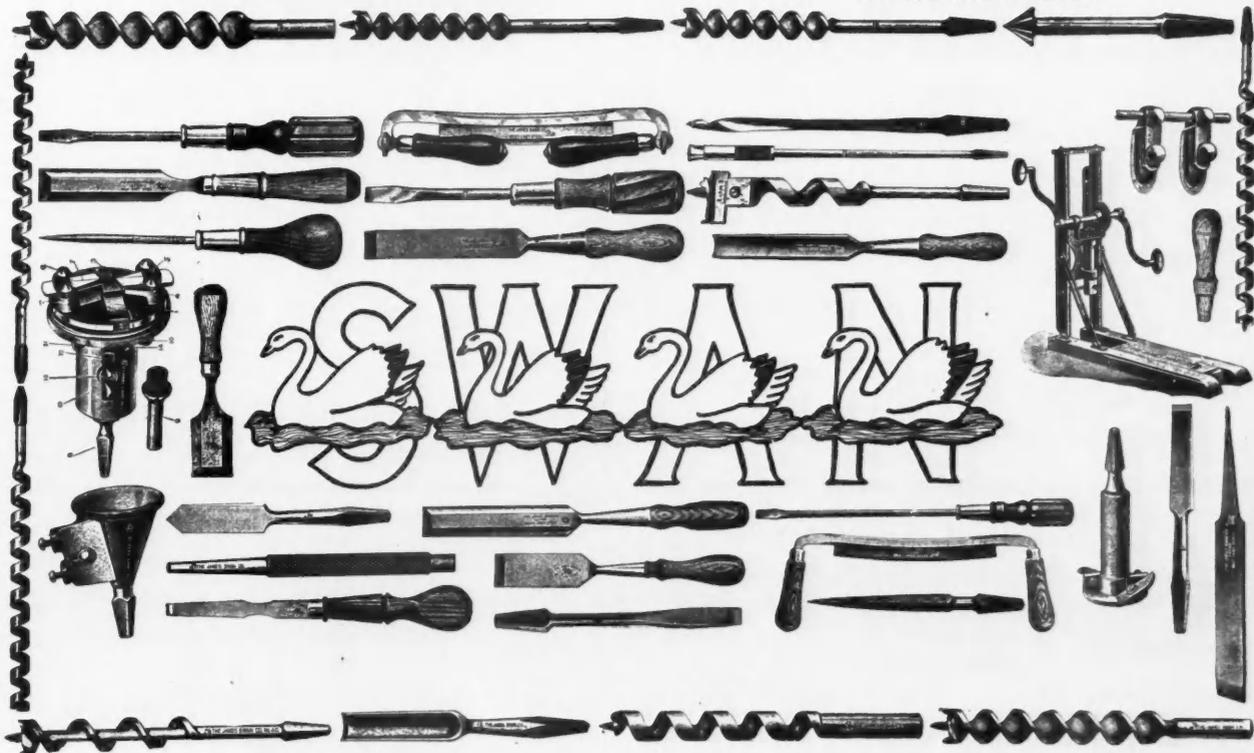
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Awarded Medal of Honor on Mechanics' Tools at Panama-Pacific Exposition

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Catalogs, Bulletins and Books Received

"European Influences on the Business Outlook" is the leading article in Under Cover, monthly publication of the H. H. Robertson Co., Pittsburgh, Pa. It was written by H. H. Robertson, president of the company, who has recently returned from an extensive trip thru Europe, and who describes conditions as he saw them.

Concrete specialties are described and illustrated in the current number of Alpha Aids, published by the Alpha Portland Cement Co., Easton, Pa. Working plans for vases, boxes, benches, and pottery are shown. Short articles on concrete work around the farm are also included in this number.

The Waterbury Seamless Pipeless Furnace is described and illustrated in Catalog C issued by the Waterman-Waterbury Co., Minneapolis, Minn. This booklet contains photographs of homes that have been fitted with this furnace and testimonial letters from owners.

The Advance Supplement of the Loudon Hog House Book is now available and will be followed shortly by the completed book. It contains some excellent views of modern hog-houses, interior and exterior, in which Loudon equipment has been installed, also renderings of various types of hog-houses with special lighting facilities and pen equipment.

"Designs for a three teacher rural school with teachers' cottage" are shown in the latest number of the White Pine Series of Architectural Monographs published by the White Pine Bureau, St. Paul, Minn. The designs of the winners and those who received honorable mention are shown, also the detail sheets of each design.

"Safety Engineering Applied to Scaffolds" is the title of a very interesting and complete book on that subject published by the Travelers Insurance Co., Hartford, Conn. It describes in detail the various types of scaffolds used in construction work and points out the safeguards that should be used. The book is well illustrated and covers the whole scaffold problem in a very complete manner. The price is \$3.00.

Catalog No. 921 of the Novo Engine Co., Lansing, Mich., has just come from the press. This catalog has been revised and brought up to date and features, in addition to the regular line shown in other catalogs, new designs of pumps and hoists of larger capacities, the Novo-Beach saw rig and a compressor outfit.

"Slate as a Permanent Roofing Material" is the subject of a report prepared by the Bureau of Mines, Department of Interior. It is edited by Oliver Bowles, and discusses

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E-COD FABRIC is low in first cost—high in service. It saves money at every step of exterior or interior plastering. Combines maximum strength and durability with dollars and cents economy.

E-COD FABRIC not only affords a great saving but provides for Architect, Contractor and owner results that cannot be equalled.

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Samples and prices on request. Write or wire.

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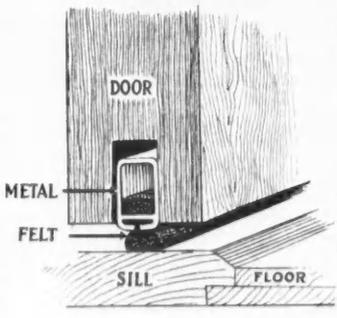
111 West Washington Street Chicago, Ill.



The Eveleth Door Bottom Weather Strip

Years of good service in thousands of doors have proved this Strip to be satisfactory and one that will please you. It can be adjusted to fit tight on uneven or worn down sills and is efficient and reliable.

The output last season far exceeded that of any previous year and was sold mostly to Weather Strip men who have used this Strip for years and who know that they could get no other as good. If not already using this Strip, give it a trial and know for yourself.



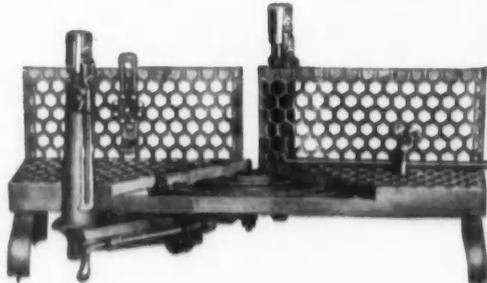
(Sectional View)

The Eveleth Weather Strip for the Bottom of Inswinging Case-ment Windows.

Ask for literature regarding this and the Door Bottom Strip.

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Two miles west of Chicago city limits.

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where dealer does not handle our tools. We supply 95% of the clamps used in 35 furniture factories in this city. Get a No Set Saw for your box.

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\$5⁰⁰
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DO YOUR OWN LEVELING WITH YOUR OWN LEVEL

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It tells you how to increase your income, how to get the profitable jobs and become a bigger man in your community. Don't doubt or delay—write for this book at once.

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Order the Aloe—try it for 10 days—put it to the most rigid tests. If you are not pleased, return it at our expense and your \$5.00 will be refunded.



A modern garage featuring a gasoline filling station under the corner of the building. Floor plan of this garage sent upon request



Sectional view showing steel roof construction

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MODERN STORE FRONTS**

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Steel Windows, Steel Ceilings, Skylights, Ventilators, Cornices, Elevators, Millwork and Glass

Write for "Garage Illustrations" showing at least 50 modern buildings designed by us

INTERNATIONAL STEEL & IRON CO., Inc. ADDRESS DEPT. 18 **Evansville, Ind.**

the use of slate as roofing material with suggestions as to improvements on the present methods.

The third edition of "Brick, How to Build and Estimate" has just been issued by the Common Brick Manufacturers Association, Cleveland, Ohio. The new Ideal wall is described in this book. It is a very complete manual on brickwork and of interest to architects, builders and contractors. It is being distributed for 25 cents a copy.

"Blawforms for General Concrete Construction" are described and illustrated in a new catalog just issued by Blaw-Knox Co., Pittsburgh, Pa. These forms are used in sewer construction, tunnels, subways, heavy walls, piers and bridges. Appropriate illustrations are shown in each case.

"Modern Oak Floors, Good for a Hundred Years," is the titled of a color pictorial booklet issued by the Oak Flooring Manufacturers' Association, Chicago, Ill. This booklet contains some attractive views of interiors in which oak

floors are the features, also pictures of prominent buildings with oak floors.

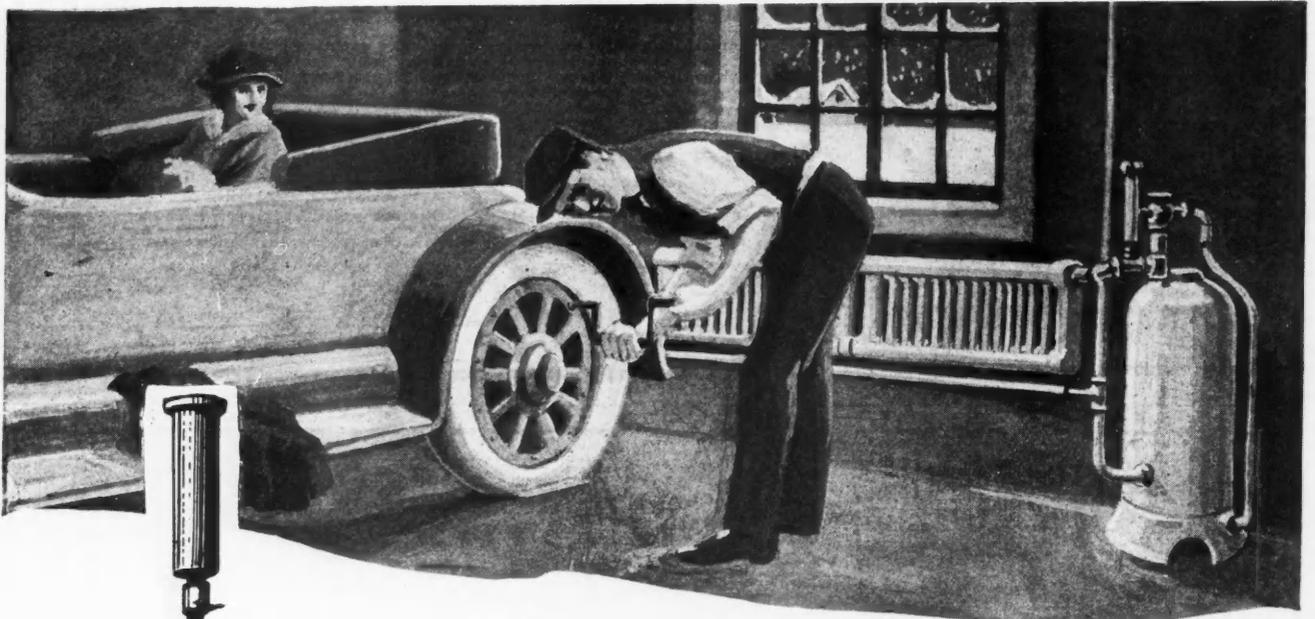
"Business Floors" is the title of a new color handbook being distributed by the Armstrong Cork Co., linoleum department, Lancaster, Pa. It is designed to show the suitability of Armstrong's linoleum for floors of public and business buildings. It contains color plates of different patterns, also specifications for laying.

BOCA Steel Sash

Mechanical Operators and Tubular Steel Doors. For garages, schools, factories and all types of buildings. Quick shipment from stock. All standard sizes. Special Terms to Dealers.

Write for literature and prices.

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A NICE WARM GARAGE

Is essential to dependable transportation during the winter months.

The Lattner Automatic Garage Heater assures continuous and satisfactory service during the entire year and the fuel cost is surprisingly low. It eliminates the wear and tear in starting a cold motor and lessens the inroad of Jack Frost on the finish of the car. You will do many of those little odd jobs yourself and save the resultant expense if your garage is comfortably heated. No ashes to carry or fires to build or go out and cause an expensive freeze-up. Turn it on in the fall and off in the spring.

Write for Bulletin No. 103

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AUTOMATIC GARAGE HEATER

Be a Hero

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You will not only make money, you will make friends, when you sell them efficient, economical, healthful---

PIPELESS HERO FURNACES

Every Hero Furnace installed is giving perfect satisfaction and the makers have been building room heaters and furnaces (many of them sold to the Board of Education in Chicago) for a number of years.

There are several special Hero features which make them healthful, efficient and economical. One is the special Hero air washer—humidifier. All return air must pass over water and be washed, moistened and renewed. Thus all dust and germs remain as sediment and only pure, moist air passes up into the house. The entire base of the heating chamber (where the return air drops to be re-heated) is water covered. This, in connection with its marvelous heating capacity, makes the Hero Pipeless a satisfaction-giver which will make you both money and friends.



Close co-operation and dealer helps given you by Sales Department. Advertising matter and

cuts furnished; signs, literature and full instructions given. If necessary a factory representative will call and help you close sales. All inquiries from your territory referred to you.

A building boom is on the way. It will pay you to get the Hero Agency.

Write us today.

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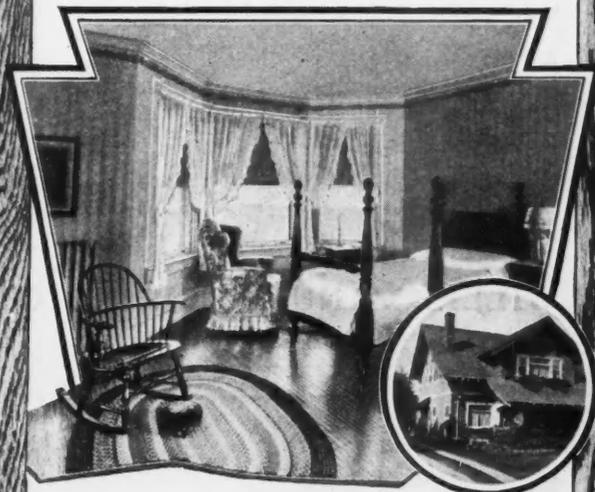
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OAK FLOORS

(For Everlasting Economy)



Need More Money?

Here's the way to make it

IN your work as Builder, Contractor or Carpenter, you meet many who would put in Oak Floors if they only knew more about their advantages and economy. And it would take none of your time to interest them in Oak Floors. You can do it while you are on the job.

This applies to all classes of buildings, and includes our special 3/8 thickness for laying over worn-out floors at small cost.

Lose no time in talking this over with some Oak Flooring dealer.

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The sign of Quality, Uniformity and Responsibility stamped on every stick.

Write for Three Free Booklets, containing sales helps and necessary information.



For specifications see page 389, Sweet's Architectural Catalogue, 15th Edition.

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Have You Got a Ventilator Job?

If you are about to install a ventilator it will be worth your while to look over the Willis line of ventilators.

We make high class ventilators for every purpose and they are so simply designed that every carpenter can install them quickly and easily with a hammer and nails.

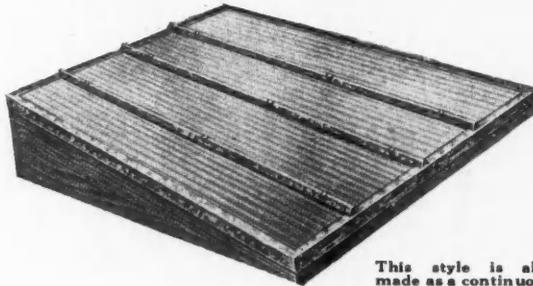
Let us mail you the Willis catalog of sheet metal.

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These side sashes are operated singly or in batteries. The sashes are pivoted and very easily operated.



This style is also made as a continuous skylight for factory buildings.



We construct skylights of this style such as is used for lighting hotel lobbies, etc.

WILLIS

Special Notice

Do not cut hole in the wall or make arrangement for outside icing refrigerator until you get Herrick complete plans and instructions. You can save your client money and yourself prestige, time and trouble by knowing exactly how and where to place the opening. Herrick plans sent free to Architects and Builders.

Home Builders. If your architect or contractor can not furnish this information write to us giving their name and address.



The "HERRICK" Waterloo Iowa - Outside Icing

HERRICK

The Refrigerator of Interest to all Builders

The Herrick refrigerator is of especial interest to the Builders—because, by reason of its built-in construction, he is the logical man for the job.

Every modern house must sooner or later have a refrigerator and the Builder is in position to make it a Herrick at a substantial profit both in the sale and the installation.

EASY TO SET IN PLACE

The Herrick has individual features that make it desirable in all cases.

Outside Icing. This appeals to the housewife. Keeps the muddy footed ice man out on the porch.

Herrick System of Dry Air Circulation. Maintains the atmosphere in the ice box that is just as dry and pure as in a room. And requires no ice in cold weather.

Herrick Service Helps You. Answers your refrigerating problems and provides FREE PLANS and selling helps.

Don't put off writing our catalog and details of our selling services.

Herrick Refrigerator Co.
Waterloo, Iowa

Read Dimensions Direct from Builders' Plans



STARRETT Builder's Tape No. 540

enables Builders, Contractor's and Architects to read any dimension direct from plans without bothersome calculations.

Graduated with $\frac{1}{8}$ inch scale from 1 to 500 on one side, and with $\frac{1}{4}$ inch scale from 1 to 250 on the other side. Each full tape thus represents either $\frac{1}{4}$ or $\frac{1}{2}$ of a thousand feet, according to the scale of the plans.

Get details of this and other Starrett Tapes in the Starrett Catalog No. 22. "6"

The L. S. Starrett Co.

The World's Greatest Toolmakers
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Starrett Tapes

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SARGENT Framing Squares Save Time

There is no figuring required on the part of the carpenter when using a Sargent Framing Square. The lengths and cuts of hip, valley, jack and common rafters are all worked out on the square. Simply measure and read.

Sargent Framing Squares are made of the finest tool steel and are carefully tested for accuracy. There are nine finishes to choose from.

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The Sargent Auto-Set Bench Plane



The cutter can be removed, whetted and replaced in exactly the same position without re-adjustment.

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"ANTI-HYDRO" Keeps Springs of Water [Out]of This Building"

"ANTI-HYDRO" waterproofed concrete foundations keep the water of two underground springs from seeping into the basement of this building. Fountains and basement are *always* dry.

While this condition is extreme, it was overcome with the same ease that characterizes all "ANTI-HYDRO" installations.

When you use "ANTI-HYDRO" you *know* that you are not experimenting. For seventeen years "ANTI-HYDRO" has proved its *permanent* concrete waterproofing and hardening qualities.

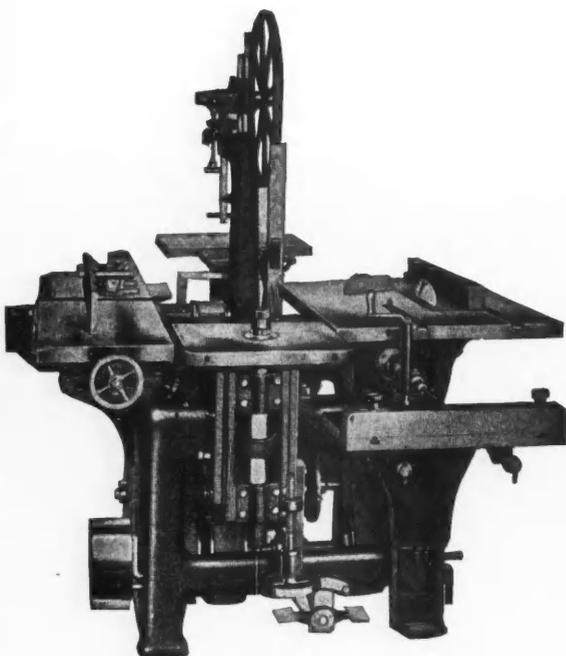
Don't be in doubt when you can use "ANTI-HYDRO" and be *sure!*

ANTI-HYDRO WATERPROOFING Co. NEWARK NEW JERSEY



GRISWOLD WORSTED COMPANY PLANT, DARBY, PA., THE AUSTIN CO., BUILDERS

Get Our Special Bargain Price for this Month



MANY contractors are not getting ahead now-a-days simply because they are trying to do everything by hand.

Now in your case, just figure out how much you could save each day if **one** man could do as much as **four**.

The Famous Universal Woodworker No. 31, shown here, will do more straight sawing than four hand-saws, and on top of this will do dozens of other operations out on the job.

The Famous 31 is designed for your particular needs, both as regards price and performance.

Write for Catalog of Woodworking Machinery

Chicago Machinery Exchange

INCORPORATED

Woodworking Machinery

1223 Washington Blvd.

Chicago, Ill.



"They're the Best rules made
-I've carried mine for many a year"

STANLEY

"ZIG ZAG"
RULES

A **R**ULE must be strong, accurate and legible as you well know. It is subjected to the hardest kind of usage and must "stand up" under the most rigorous wear and tear.

Stanley Zig Zag Rules will not wear away and loosen at the joints. The Concealed joint type has patented Strike Plates at each section. The Rivet Joint Types have a specially made rivet that acts as a Strike Plate. Made in several different styles of markings.

They are made with an especially fine and durable finish.

Among other invaluable and special features are the patented direction arrows enabling the user to tell at a glance which end of the rule to begin using. The Patented Tips, Joints and Strike Plates are brass plated.

Have you a copy of our Tool Catalog?
If so, you will find Stanley Rules on
Pages 4 to 18. If you haven't a copy of
this book, we will be pleased to send you
one. Ask for Catalog No. A9

THE STANLEY RULE & LEVEL PLANT.
THE STANLEY WORKS
NEW BRITAIN, CONN. U.S.A.

Branch offices: New York Chicago San Francisco
Los Angeles Seattle Atlanta



Builders Save Money With RAWLPLUGS

Here is a device which enables a builder to turn a screw into every known kind of material so that it will hold permanently. The Rawlplug is a hollow tube of stiffened, longitudinal strands of jute fibre, so cemented that once in place it is unaffected by moisture or temperature changes.

The Rawlplug is inserted in a previously drilled hole, smaller than the head of the screw and as the screw is turned home in the plug, it causes the fibre strands to expand and enter every pore or the material, obtaining an unusually strong grip on the sides of the hole.

Rawlplugs Make Screws Hold Permanently In ANY Material

This product enables you to fasten any equipment or fixture to any kind of material by means of an ordinary screw. It can be used in plaster, tile, brick, cement, marble, slate, wallboard, stucco, hollow tile, glass, metals, etc. It is invaluable for fastening bathroom fixtures to tile or plaster walls, partitions to concrete floors in office buildings, theatre chairs and school desks or street numerals to stucco, etc., etc.

Rawlplugs will develop the full strength of the screw in many materials. The screw will pull in two before the Rawlplug will come out. They will develop the full strength of the material in every case. **RAWLPLUGS HOLD.**

Rawlplugs cost less than lead anchors, shields or expansion devices and they can be installed faster because they require small holes, quickly drilled.

They will save a builder money. They will enable a builder to cut costs on a job. Let us prove it. Write us today for complete information including samples. No obligation. We'll gladly send this if you'll tell us how to address this material so that it will be sure to reach you.

The Rawlplug Company

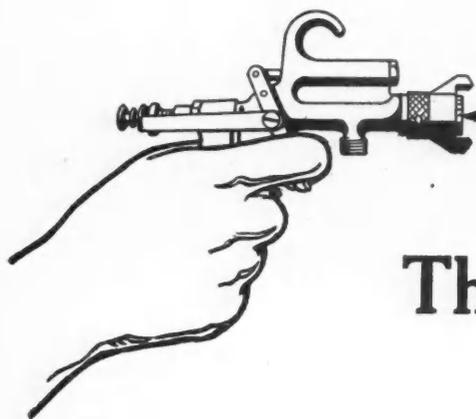
471 8th Avenue, New York

Our No. 10 Mechanic Outfit containing 100 Rawlplugs, Tool holder, 2 drills and supply of screws, will be sent postage paid, on receipt of \$2.75 in stamps, money order or check.



RAWLPLUGS

A Device Which Enables an Ordinary Screw To Hold in Any Material



"Save the surface and you save all" —

Paint & Varnish

The Spray Supplies the Way

DeVilbiss **Spray-painting System**

(Portable)

Next in importance to saving the surface is the proper application of the paint. . . . Service and satisfaction to the customer depend entirely on the quality of the painting done. . . . Uniformly better painting, together with a notable economy of time and cost, is the assured result of the DeVilbiss spray system of painting. This improved, modern process of painting offers the greatest good to the greatest number in the shortest possible time.

Operation and equipment facts of the DeVilbiss Spray-painting System will be cheerfully mailed on your request.

The DeVilbiss Mfg. Co.

3676 Detroit Ave.

Toledo, Ohio

Let the barns you build advertise you

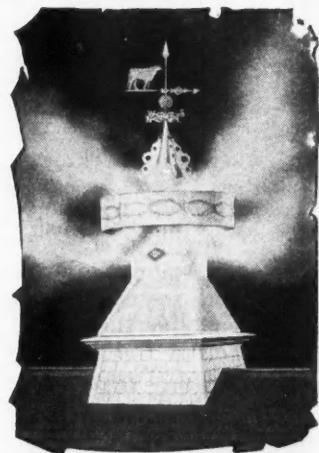
EVERY barn you put up should advertise you as a good barn builder. Whether it is good or poor advertising depends upon how well the owner is satisfied. Installing a King System will keep his stock healthier and preserve the building and contents by carrying off excessive moisture. Your client will profit, you will profit through his good will, and the condition of the building will advertise you favorably.

Let us make estimates on King Systems for the barns you are now planning. Send for our Book on Barn Ventilation. It is filled with photographs of many styles of barns with X-Ray views of King Systems installed.

KING VENTILATING COMPANY, 1202 Cedar Street, Owatonna, Minnesota
Ventilating Engineers for Creameries and All Farm Buildings

KING SYSTEM OF VENTILATION

"Makes Good Barns Better"



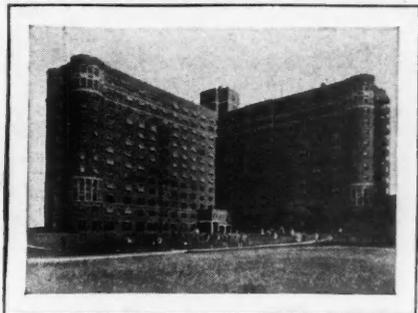
The King Aerator drawing moisture out of a barn. The steam can easily be seen in cold weather.



This diamond King trade-mark on a ventilating system is a guarantee that the building will be properly ventilated.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



The Chicago Beach Hotel Annex: Geo. C. Nimmons & Co., Architects; Wolff Mfg. Co., Jobbers; G. Albin Nilson & Co., Plumbers

KOHLER

And CHICAGO BEACH HOTEL

Famous since the days of the Chicago World's Fair, over a quarter of a century ago, the Chicago Beach Hotel has recently been enlarged by a handsome 13-story addition. And here in this spacious new building typical of present-day standards of comfort and luxury are found 401 Kohler "Viceroy" Built-in Baths, another example of the fact that the word "Kohler" has become a symbol of beauty, durability and refinement in enameled plumbing ware.

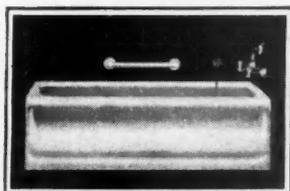
* * *

Our handbook, "KOHLER of KOHLER," illustrating and describing Kohler Enameled Plumbing Ware, contains much information of interest to architects and builders. We shall be very glad to send a copy on request.

KOHLER of KOHLER

Kohler Co., Founded 1873, Kohler, Wis.
Shipping Point, Sheboygan, Wis.

BRANCHES IN PRINCIPAL CITIES



Kohler "Viceroy" Built-in Bath
Recess Pattern

MANUFACTURERS OF ENAMELED PLUMBING WARE AND
KOHLER AUTOMATIC POWER AND LIGHT 110 VOLT D. C.

The Letter That Saved Bob Johnson's Job

—and paved the way
for a better one!

IT was written to his employer by the International Correspondence Schools. It told how "Robert Johnson had enrolled for a course of home-study and had received a mark of 94 for his first lesson."

Bob answered the summons to the Chief's office with just a little fear and trembling, for a lot of men were being dropped—a lot more were having their pay reduced.

But as Bob came in, his employer did a surprising thing. He got up quickly from his desk and grasped Bob warmly by the hand.

"I want to congratulate you, young man, on the marks you are getting with the I. C. S. I am glad to see that you are training yourself not only for your present job but for the job ahead.

"We're cutting the pay-roll. Until I received this letter, I had you in mind as one of the men to be dropped. But not now. Keep on studying—keep your eyes open—and pretty soon there'll be a better job for you around here. We're always looking for trained men."

Won't you let the I. C. S. help you, too? Won't you trade a few hours of your spare time for a good job, a good salary and the comforts that go with it? Then mark the work you like best on the coupon below and mail it to Scranton today. That doesn't obligate you in the least, but it will be your first big step towards success. *Do it now!*

INTERNATIONAL CORRESPONDENCE SCHOOLS

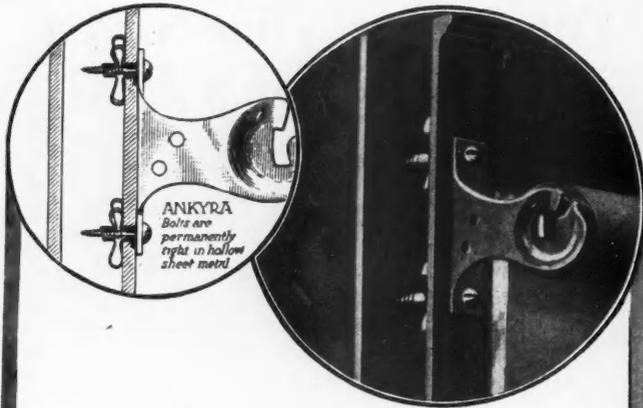
Box 8144-B SCRANTON, PA.

Explain, without obligating me, how I can qualify for the position, or in the subject, before which I mark X.

- | | |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> <input type="checkbox"/> ARCHITECT <input type="checkbox"/> Architectural Draftsman <input type="checkbox"/> Contractor and Builder <input type="checkbox"/> Building Foreman <input type="checkbox"/> Concrete Builder <input type="checkbox"/> Structural Engineer <input type="checkbox"/> Structural Draftsman <input type="checkbox"/> Ship Draftsman <input type="checkbox"/> Plumber and Steam Fitter <input type="checkbox"/> Heating and Ventilation <input type="checkbox"/> Plumbing Inspector <input type="checkbox"/> Foreman Plumber <input type="checkbox"/> Sheet Metal Worker <input type="checkbox"/> CIVIL ENGINEER <input type="checkbox"/> Surveying and Mapping <input type="checkbox"/> ELECTRICAL ENGINEER <input type="checkbox"/> Electric Lighting and Rys. <input type="checkbox"/> Electric Wiring <input type="checkbox"/> Telegraph Engineer <input type="checkbox"/> Telephone Work <input type="checkbox"/> MECHANICAL ENGINEER <input type="checkbox"/> Mechanical Draftsman <input type="checkbox"/> Machine Shop Practice <input type="checkbox"/> STATIONARY ENGINEER <input type="checkbox"/> CHEMIST <input type="checkbox"/> Pharmacy | <ul style="list-style-type: none"> <input type="checkbox"/> Navigation <input type="checkbox"/> SALESMANSHIP <input type="checkbox"/> ADVERTISING <input type="checkbox"/> Window Trimmer <input type="checkbox"/> Show Card, Sign Painting <input type="checkbox"/> BUSINESS MANAGEMENT <input type="checkbox"/> Private Secretary <input type="checkbox"/> Business Correspondent <input type="checkbox"/> BOOKKEEPER <input type="checkbox"/> Stenographer and Typist <input type="checkbox"/> Higher Accounting <input type="checkbox"/> COMMERCIAL LAW <input type="checkbox"/> Common School Subjects <input type="checkbox"/> Mathematics <input type="checkbox"/> GOOD ENGLISH <input type="checkbox"/> ILLUSTRATING <input type="checkbox"/> Railway Mail Clerk <input type="checkbox"/> CIVIL SERVICE <input type="checkbox"/> MINE FOREMAN OR ENG'R <input type="checkbox"/> Metallurgist or Prospector <input type="checkbox"/> Gas Engine Operating <input type="checkbox"/> Textile Overseer or Supt. <input type="checkbox"/> TRAFFIC MANAGER <input type="checkbox"/> AUTOMOBILES <input type="checkbox"/> AGRICULTURE <input type="checkbox"/> Poultry Raising |
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Name _____
 Present Occupation _____ Business Address _____
 Street _____
 and No. _____
 City _____ State _____

Canadians may send this coupon to International Correspondence Schools Canadian, Limited, Montreal, Canada.



QUESTION NO. 3

What is the best, simplest and most economical way to fasten fixtures or trim to sheet metal walls or ceilings?



ANCHOR BOLTS

Sheet metal is not always nailed to wooden studding, and when it is, you may want to put up fixtures where there is no studding.

Put them anywhere you want—with ANKYRAS—quickly, easily, economically. They will *stay put*, too, regardless of whether it is a hollow or solid wall, or whether it is metal, wood, stone, plaster or tile.

ANKYRAS *hold* in *any* wall and can be had in sizes to fit your need.

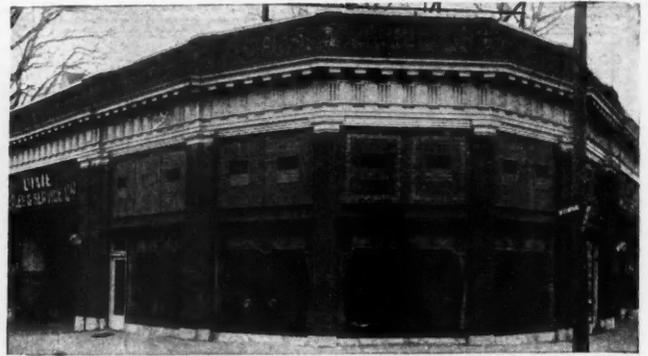
Write for information and samples, or if you want to save time, just tear this out and write your name and address on it.

Ankyra Manufacturing Company
151 Berkley Street Wayne Junction
PHILADELPHIA

Self-riveting



Self-adjusting



Sell Daylight

THE store that is illuminated entirely by daylight does a better business — pays a better rental. When you build or remodel a store front, show the owner how it will pay him to have you fit the transom lights with panels of

3 WAY-LUXFER PRISMS

They are the only known scientific method of projecting daylight into dark interiors. Eliminate need of artificial light in daytime. Can be set as easily as a pane of glass.

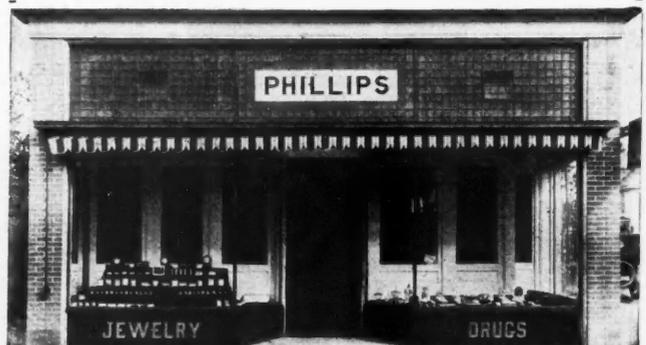
Made up with colored glass signs where desired. Fitted with self-locking ventilators.

Write for Details and Prices

**AMERICAN
3 WAY-LUXFER PRISM
COMPANY**

1307 S. 55th Court
139 Spring Street

CICERO, ILLINOIS
NEW YORK CITY



Lower Prices on Smith Mixers

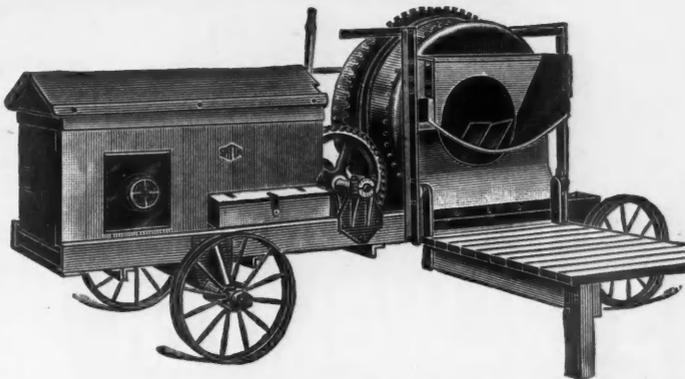
The Most Durable and Profitable Mixers You Can Buy

THE Smith policy has always been to build equipment capable of producing permanent concrete speedily and to stand up under continuous hard service year in and year out. Smith Mixers are built up to the job, not down to a price.

Substantial price reductions have been made possible, however, this year. You can now secure these high-grade Smith Mixers—sizes 4-S to 108-S (cu. ft. mixed batch capacities)—at prices that make them exceptionally good values. Immediate Deliveries!

Write for complete information on Smith 7-S Non-Tilting Mixers—big enough for large jobs, small enough for ordinary jobs.

Are you receiving "Smith Snapshots," the Magazine that Features High Speed Construction Machinery on the Job? Ask for it.



SMITH TILTING MIXERS
SMITH NON-TILTING MIXERS
SMITH PAVING MIXERS
SMITH EXCAVATOR & LOADER



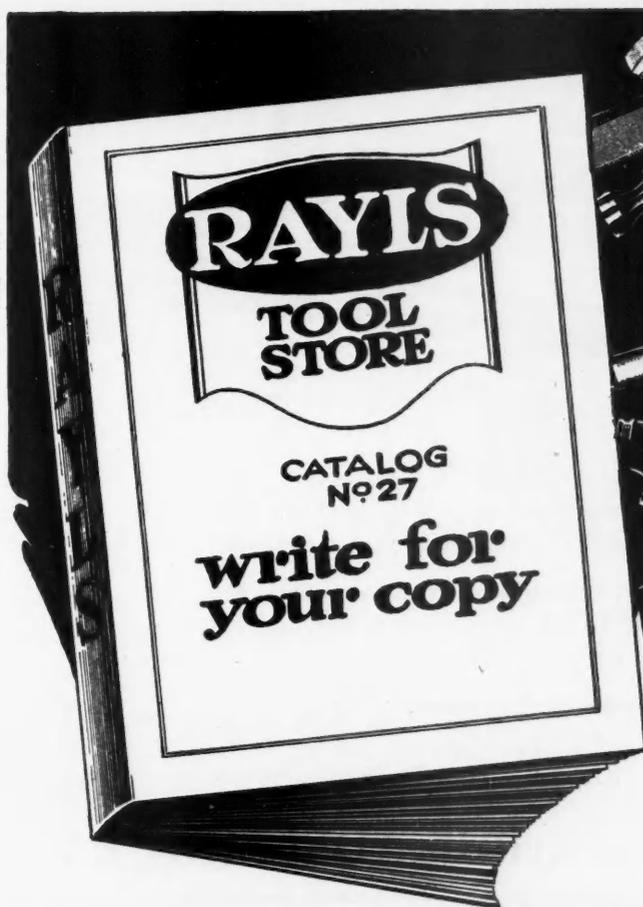
SMITH PUMPING OUTFITS
SMITH GLASS BATCH MIXERS
SMITH ENGINES & BOILERS
CONSTRUCTION EQUIPMENT

THE T. L. SMITH COMPANY

General Sales Offices and Factories: 1188 32d STREET, MILWAUKEE, WIS.

Eastern Office and Warehouse: 50 CHURCH STREET, NEW YORK

Western Warehouse: SAN FRANCISCO



The Tool You Want is in the Book!

This catalog of 350 pages should be in your possession. Every type of building tool is listed and in many different makes.

If you are interested in a new tool just look it up in Rayl's Tool Store catalog.

We will be glad to mail you this book Free on request.

T. B. RAYL COMPANY

Grand River at Woodward

Detroit, Mich.



No.38
"THE STRONGEST
SCREWDRIVER
MADE"

"The strongest driver made" is a very popular heavy duty screw driver. It is fitted with an exceptionally strong blade of Disston-made Steel, which is especially hardened and tempered its entire length.

The plug, or upper part of the blade, is fitted with four ribs which, when driven into the handle, make it impossible for the handle to come loose or turn. The handle of black finished hardwood, reinforced by a long, heavy, nickel-plated ferrule, is long and has a comfortable grip—things seldom found, but always desired, in a heavy duty screw driver.

Send for the new "Disston Tool Book"—which tells about the selection, care, and use of saws, tools, and files.

Henry Disston & Sons, Inc.

Desk 2

Philadelphia, U. S. A.

"YANKEE"
PUSH BRACE



No. 75

Here's the tool for quick work in close quarters. It gets into places where you cannot reach with any other brace, and does it quicker.

Fine for wood boring, screw driving, running up nuts on bolts, etc. Bores a $\frac{3}{8}$ " hole in hard wood, $\frac{5}{8}$ " in white pine. Takes any bit that you can use in an ordinary swing brace.

If your dealer cannot supply you, write us for price.

Let us send you the "YANKEE" Tool Book

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



**Another Room
Without
the Cost of
Building It!**

THAT'S just what is being done in thousands of homes and apartments today. Here's an interesting example. See the above photograph—it shows part of a group of 68 two-family apartments being erected by Mills & Sons, Chicago. Each apartment on the second floor has been increased from five to six rooms. How? By installing the Murphy In-A-Dor Bed! But the cost of this additional room has been saved—and think of the tremendous saving in heating, furnishing, lighting, decorating, and household drudgery.

**The MURPHY
IN-A-DOR BED**

The Murphy In-A-Dor Bed is a sanitary—comfortable—all metal—a “regular” bed (full size or twin) pivoted to the jamb and threshold of a standard closet door. The simple mechanism enables it to swing through the doorway—and to be lowered into place with utmost ease. This bed is perfectly balanced—it cannot close up accidentally. The bed clothing is kept in place in any position.



We have a complete technical service department which is co-operating with architects and builders. We will help you with your floor plan scheme. No charge or obligation whatever. We will be glad to furnish you with specifications and detailed information. (Write for illustrated and descriptive folder on the Murphy Ironing Board and Cabinet.)

**There is only one “In-A-Dor” Bed—
“IT’S A MURPHY”**

THE MURPHY DOOR BED CO.

22 West Monroe Street, Chicago
469 Fifth Avenue, New York
1534 Blake Street, Denver
912 Kresge Bldg., Detroit, Mich.
205 O'Connor St., Ottawa, Can.
Crocker Bldg., San Francisco

Chemical Bldg., St. Louis
709 Second Ave., Seattle, Wash.
1140-1142 Hanna, Bldg., Cleveland
305 City Club, Kansas City
111 Murphy Street, Dallas, Texas
204 Peach Tree Arcade, Atlanta, Ga.



**DORIC and GOTHIC
STIPPLED BRICK**

*Judge brick work as you
would an oil painting*

THE colors of Stippled Brick are unusually pleasing. They are warm, rich and full, yet of sufficiently neutralized tones so that use in larger areas heightens their beauty.

The delicately stippled texture roughens the surface just enough to diffuse light rays and bring out the brick colors most advantageously. The minute shadows cast by these tiny incisions have a softening influence, so essential to effective brick work.

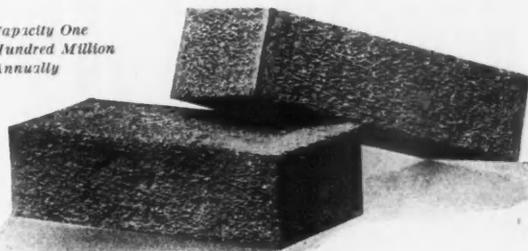
Tans—Buffs—Reds—Browns

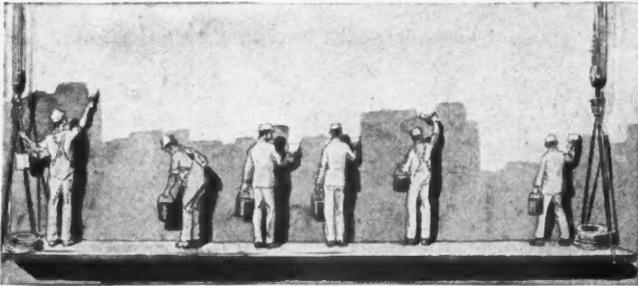
The tans and buffs in Doric Stippled Brick, and the reds and browns in Gothic Stippled Brick are exceptionally beautiful—particularly when built into the finished wall and blended with the mortar joint colors. The full range of these colors gives a wide selection, permitting shades to be chosen in keeping with the spirit of the architectural style.

*A booklet of Doric and Gothic Stippled Brick
will be sent on request. Address Department 59*

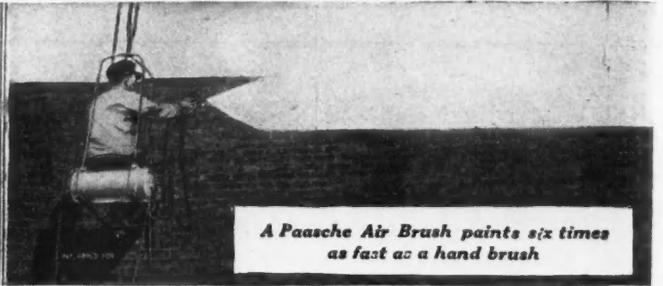
**WESTERN BRICK
COMPANY DANVILLE,
ILLINOIS**

*Capacity One
Hundred Million
Annually*





Six men painting with hair brushes



A Paasche Air Brush paints six times as fast as a hand brush

AIR PAINTS CHEAPER THAN HAIR

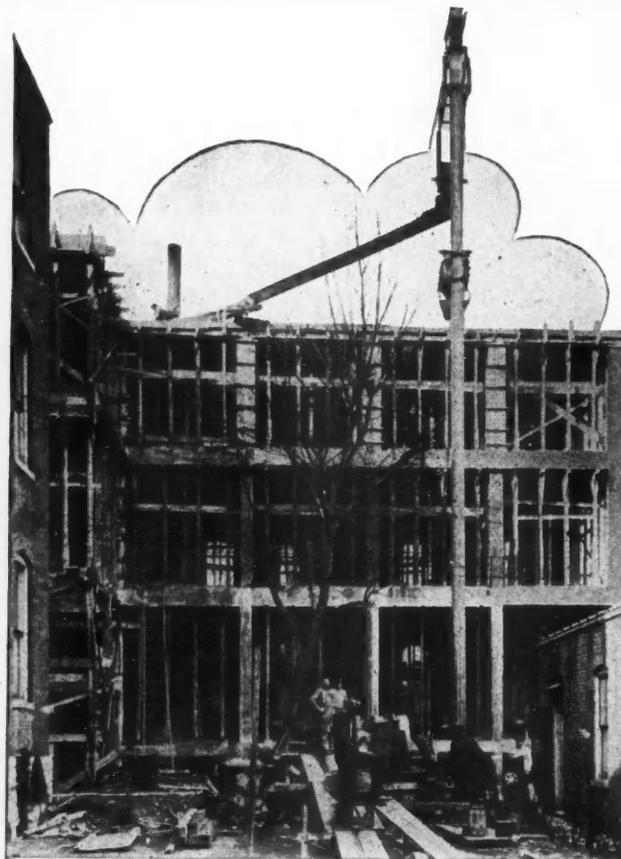
One man with a Paasche Air Brush will paint as much surface in a day as six men with hair brushes. Besides that, one coat put on with a Paasche Air Brush gives a surface as well painted as with two coats put on with hair brushes. Then, too, the finish given with the air brush will be a better, smoother, and more permanent finish.

Write us for some of the ways you can increase your profits and cut down your costs.

Paasche Air Brush Co.

1230 Washington Boulevard

CHICAGO, ILLINOIS



Lower your Concrete Placing Costs

THE INSLEY MAST HOIST BUCKET PLANT is a sturdy and efficient outfit for elevating and distributing Concrete on the small job. It is designed to handle the output of a one-half or one sack Mixer, and is easily erected and dismantled.

The use of this Equipment on small Buildings, Bridges of short span and other work of like nature, *will cut Concrete placing costs* to such an extent that the Contractor cannot afford to be without it. It is of low first cost, which brings it within reach of any Builder.

Write for illustrated circular.

INSLEY MANUFACTURING CO.
Engineers and Manufacturers
INDIANAPOLIS

234



**"Recommended Construction"
In this issue of the American Builder**



SHOWS

Blackboards

OF NATURAL SLATE

The proper installation of blackboards in various types of School Buildings is essential to good construction. The methods of installing Natural Slate as promulgated by the Natural Slate Blackboard Co. in the chapter entitled "Natural Slate for Blackboards" are published in this issue of the American Builder as recommended practice.

Properly placed in position, and adding to this the smooth, finished surface which is secured with "Pyramid Brand" blackboards of Natural Slate, the result is a perfect blackboard.

Write for the chapter "Natural Slate For Blackboards" and any other information to

NATURAL SLATE BLACKBOARD COMPANY

Headquarters, PEN ARGYL, PENNSYLVANIA
Mills, SLATINGTON, WINDGAP, PEN ARGYL and BANGOR

SHOWER STALLS



Chapter 7 of a series on

STRUCTURAL SLATE

The remarkable qualities of Structural Slate, its imperviousness to water, its toughness and non-expansion make it peculiarly adaptable for shower enclosures.

To all those interested in the most advantageous use of materials in building construction, the publication of this chapter on shower stalls should be of especial value.

**THE
STRUCTURAL SLATE CO.**
PEN ARGYL PENNSYLVANIA

Permanence and Low Cost

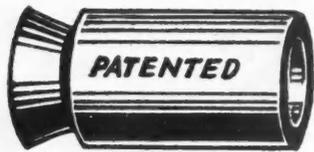
SLATE is universally recognized as the most durable and satisfactory roofing material. This reputation has been won by its wonderful record extending back for centuries and today remains unassailed.

Makers of substitute roofings often refer to the lower cost of their materials as an argument against the use of SLATE. Can you call a roof that has been on a house 50 years without paint or repairs expensive when the first cost is only slightly higher than temporary roofings?

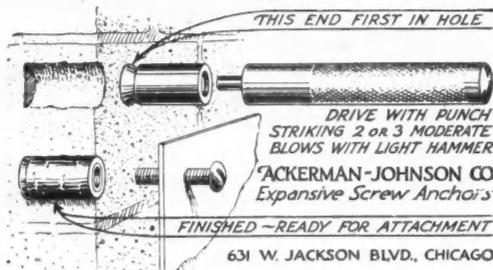
Vendor Slate Company

INCORPORATED
EASTON, PENNSYLVANIA

Ackerman-Johnson



EXPANSIVE SCREW ANCHORS



This diagram shows how the bolts are securely anchored in concrete or brick. It's a quick, easy and reliable job on slate, marble, concrete or glass.

The latest improvement for attaching any object to hard materials, as concrete, brick, stone, tile, marble, glass, etc. Their holding power exceeds the tensile strength of the best steel screw or bolt of corresponding size. They save 50% to 75% of drilling cost, requiring holes only a fraction of the depth needed for others. They are installed instantly—without the aid of the screw, and before the fixture is lifted into position, to be fastened.



STUD TYPE EXPANSION BOLT

So great is the holding power of this anchorage, that when set in strong stone or concrete with only its one primary sleeve expanded, the bolt shank can be pulled in two, without the anchorage yielding.

Write for Descriptive Literature; Samples for Test.

Ackerman-Johnson Co.

Manufacturers

625 W. Jackson Boulevard
CHICAGO U. S. A.

Make More Money out of Concrete Work!

Porch Molds
Brick Machines
Block Machines
Sewer Pipe Molds
Fence Post Molds

Vase Molds
Block Molds
Chimney Molds
Concrete Mixers
Cap, Sill & Step Molds



Good machinery will speed up the work—cut your costs—increase your profits. We have been concrete equipment headquarters for 16 years. Write for complete illustrated catalog and prices.

CONCRETE EQUIPMENT CO., 500 Ottawa St., Holland, Mich.

Buy Safely— By Signature

A manufacturer's advertised trade-mark name is to an article of merchandise what a signature is to a letter. It is his visible and definite assumption of responsibility for the product. It is a symbol with which he says—"I made this article and I'm proud of it." It is his pledge of satisfaction, put there for your guidance and protection.

An un-trade-marked article is like an anonymous letter it may be trustworthy, but who knows? If the manufacturer knows, his trade-mark isn't there to prove it. It is a pig in a poke—a doubtful quantity.

It is for all of us to spend our money as we see fit. It is for the wisest of us to get the utmost of quality and value for our money—and in this category come the consistent purchasers of standard trade-marked goods.

For safety and economy today—

Buy Trade-Marked Goods of Known Value



WALLS

—new or remodeled are lined with more profit to you and greater satisfaction to your customer when you use the wall board with the wood core. This patented feature of Compo-Board gives it the extra stiffness, strength and insulating qualities that make it the preferred building material.

Compo-Board means a neat, workman-like job. Does not require paneling. Can be papered, painted or kalsomined. As easy to nail or saw as lumber. Look for the wood core.

Write for sample and interesting booklet

The Compo-Board Company
5777 Lyndale Avenue North (at 44th)
MINNEAPOLIS, MINNESOTA



Use Better Furnaces!

You will sell more houses at a better profit if you equip them with pipeless furnaces which are absolutely gas-tight and dust-tight.

Everyone who has ever contended with coal-gas, smoke and dust from the furnace wants his home equipped with the kind that is guaranteed to eliminate these nuisances.

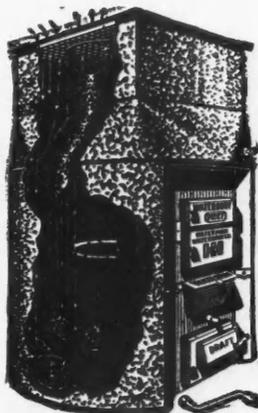
THE WATERBURY Seamless Pipeless FURNACE

is built with a one-piece welded steel body. No seams. No joints. No leaks. No cement. The house you build will bring you better profit and will sell more easily if equipped with the Waterbury.

Write for our business-getting, money-making proposition to contractors.

The Waterman-Waterbury Co.

1121-57 Northeast Jackson St.,
Minneapolis, Minn.



The RELIABLE SCAFFOLD BRACKET

Will Help Get Back to Normal

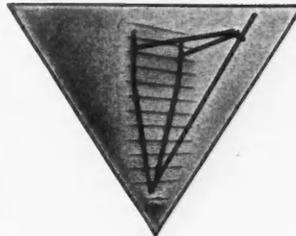
If we are to get back to normal, the quickest way to get started in that direction is to cut costs at every turn.

Building costs may be cut by dispensing with costly laborious and dangerous wood scaffolds. The use of Reliable Brackets actually saves you money.

Reliable Brackets are quickly attached; only four ten-penny nails are required to hold one in place. A few planks complete the platform. Isn't that worth while?

Let us send you information and prices. Write at once.

Elite Manufacturing Company
Ashland, Ohio



Reliable Scaffold Bracket in position. Only FOUR ten-penny nails required.

CHESELY DOORS FIRE PROOF STANDARDIZED SHIPPED FROM STOCK

Wherever either law or client demands fireproof doors beauty and safety may be gained most economically with Chesley Doors. Chesley Doors have no rivets, bolts, open joints, or separate moldings. Easily finished to harmonize with interior. Light weight but absolutely fire-safe. Cost only slightly more than wood: much less than hollow metal. Large stocks in all centers insure prompt delivery. See Sweet's and write.

A. C. CHESELY CO.
Incorporated
2704 E. 133rd St.
New York



Among the Precious Stones
GREENSTONE

Is the one lasting ornament for surfacing Stucco. The natural olive green color blends in harmony with nature's color scheme, and age only tends to deepen the shade. The pure white back-ground of stucco, dashed with our No. 48 product, gives you a finish of unequalled beauty and durability.

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Roanoke, Virginia

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**Bigger Profits
Per Job!**

THE dollars which you **DO NOT SPEND** on labor and materials—those are your **PROFIT** dollars! You change labor dollars and material dollars into profit dollars when you use **Metaform** Equipment. **Metaforms** replace wood forms—eliminate wood costs—greatly reduce labor costs—and speed up construction.

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The famous
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Pipe furnaces in four series and fourteen sizes.

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The
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RAVENNA OHIO.
 Dept. A.B.

Steel Barn Door Hanger

Our Catalog Tells the Whole Story



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LANE'S is the original U-shaped Barn Door Hanger. All others of similar shape are but imitations. Beware of alleged improvements and inferior goods.

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ACME FIRST for FLEET SERVICE

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Built in 1, 1½, 2-2½, Special 2½, 3½ and 5-ton models.

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On the radiator of every Acme is this seal of dependable performance



Trade Mark registered U. S. and other countries



Acme Trucks Owned by Udelson Contracting Company



Comparative Roof Values

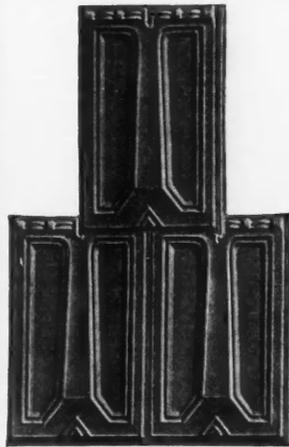
The cheapest roof is the one which gives the best satisfaction. On this basis Ellers' "Dux-Bac" Metal Shingles rank highest. In the many years they have been on the market they have proven their quality and popularity.

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"Quick Shippers—
Anything in Sheet Metal."



STYLE B 10 x 14

Lower Price—Bigger Profit

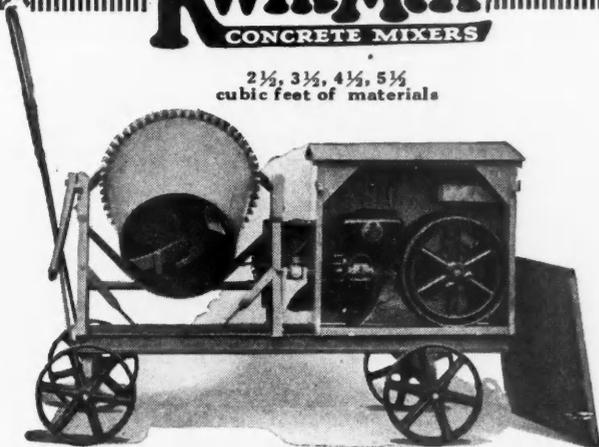
There's a bigger profit on every medium-sized concrete job for the man who uses a Kwik-Mix Concrete Mixer. Lower price, smaller fuel costs and fewer repairs make it a winner. Speedy, efficient and dependable as any big mixer. A batch a minute. Charges from one side—discharges to other.

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2½, 3½, 4½, 5½
cubic feet of materials



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The guide rollers turn as they come into contact with the side of the track, preventing friction and insuring ease of operation. This feature is protected by A-P patents. No other hangers have it.

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Send for illustrated catalog which describes this and other A-P improved hardware specialties for modern garages.

Allith-Prouty Co., Dept. 7826, Danville, Ill.

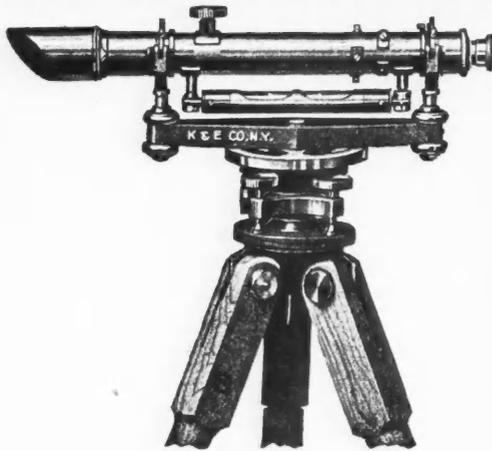
PRESSED STEEL SASH PULLEYS

Made entirely of pressed metal electrically welded together. Very durable. Wheels with combination grooves for either chain or cord and with plain, roller or ball bearings.

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Sold by
Hardware
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THE Builder who selects a K&E Level or Transit shows good judgment, since he is thus sure of getting a sturdy, reliable instrument, moderate in price and made by a house whose reputation is based on quality and fair dealing.

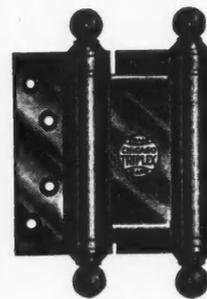
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 NEW YORK, 127 Fulton St. General Office and Factories, BROOKLYN, N. Y.
 CHICAGO, 120 E. Dearborn St. ST. LOUIS, 877 Locust St. SAN FRANCISCO, 317 1/2 Second St. MONTREAL, 1100 St. James St.
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Chicago "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 for goods that are unsatisfactory.

Send for Catalogue C-36. It illustrates and describes the most complete line of Spring Hinges manufactured.

Chicago Spring Butt Company

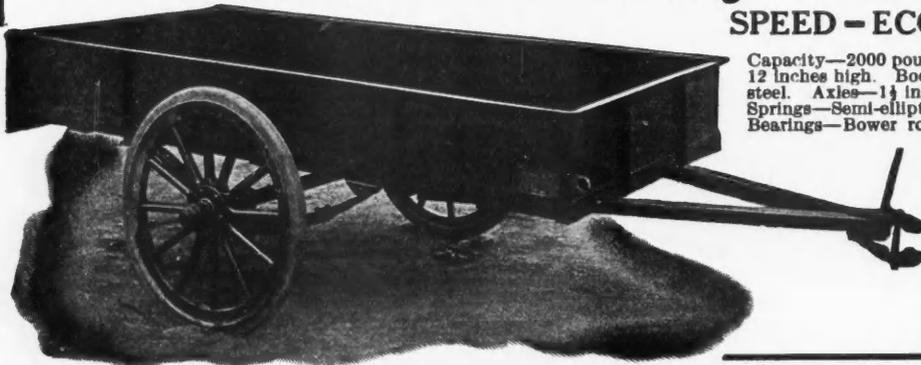
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Capacity—2000 pounds. Body—8 feet long, 46 inches wide, 12 inches high. Body and under frame built of open hearth steel. Axles—1 1/4 inch square bed, special high carbon steel. Springs—Semi-elliptic, oil tempered and double heat treated. Bearings—Bower roller. Wheels—1 1/4 inch spoke, artillery type, second growth hickory. Tires—32x2, solid rubber. Weight—534 lbs.

Other models with gates at front; also extension tongue which permits carrying lumber, poles, ladders, etc. 30 feet long.

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A row of houses can be made architecturally harmonious by the use of different color "CREO-DIPT" Stained Shingles on roofs and side walls.

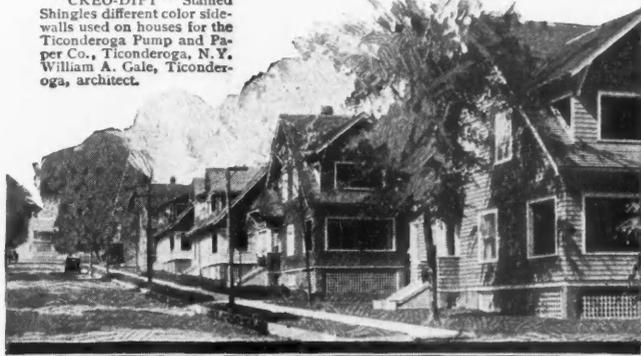
Great economy can be realized at the same time both for the owners and for the architect. The open market does not afford such quality shingles or stain; responsibility for both rests with one concern.

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Portfolio of Homes



"CREO-DIPT"
Stained Shingles

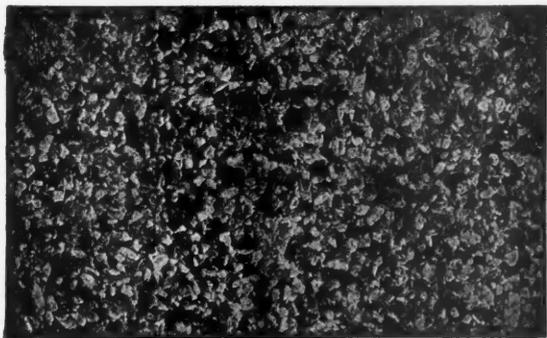


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BLOCKS, BRICKS, BUILDING TRIM, POSTS, ORNAMENTAL WORK, ETC.

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BEAUTIFUL, ARTISTIC and EVERLASTING

Made in six scientifically milled sizes, extremely hard, sharp and free from dust. Insures strength and beauty. Every dollar expended on Mica Spar brings five times its value. Booklet, "Micaspar and How to Use It," with free samples, mailed on request.

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Circular Head and T-Bolt

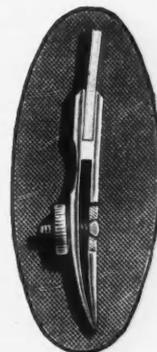
construction of EXCELLO Bows gives even tension at all adjustments, prevents threads from stripping, insures positive pressure of thumbnuts.

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Winning Your Client's Approval

The client's approval is not lasting unless the structure is both durable and attractive. Nothing should be overlooked. An ordinary cellar window used as a coal chute soon becomes a blotch on what may otherwise be a creditable building.

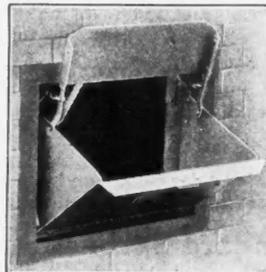
The Kewanee All-Steel Coal Chute increases the value of a building by eliminating one of its greatest possible eyesores. By recommending the Kewanee Coal Chute you insure your client's permanent satisfaction.

GUARANTEED

against breakage for five years—lasts a lifetime. Protects the building and maintains its good appearance. Simple and automatic in opening and closing. Positive locking device operated without entering coal bin. Kewanee Construction prevents chute working loose from foundation. Readily installed in old as well as new buildings. Appreciated alike by property-owner, housekeeper and coalman.

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THE IMPROVED SCHLUETER

Rapid—Automatic—Ball Bearing—Electric

Floor Surfacing Machines



Attention!

Get in LINE with all the Regular Contractors, Carpenters and Builders. What you need is an Improved Schlueter Floor Surfer to scrape all your old and new Floors.

Why surface by hand and suffer—Loss of Time—Money, and also Contracts on account of unsatisfactory work, when you can purchase an IMPROVED SCHLUETER SURFACER—the machine with all troubles left out.

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have the TOOL. You advance to a higher grade and are a man of high class work, for that is just what the people of today want.

We want to send you a SCHLUETER on Trial and let you see for yourself the quantity and quality of work it accomplishes.

The Improved SCHLUETER Floor Surfer

will surface right up to the wall or baseboard without the use of Side Roller. Just the Machine you would want for surfacing all floors, whether old or new. Perfect results guaranteed. More than 20,000 of our Machines now in use. Guaranteed against defect in material and workmanship for five years.

Manufactured by M. L. SCHLUETER

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SEND FOR OUR PRICES, ALSO TRIAL PROPOSITION

THE Wayvell Chappell Automatic Ball Bearing Electric Floor Surfacing Machine is what you need to finish your new or old wood floors quickly and just the way you want them.

The machine is simple, easily handled, made correctly, built to last—the result of years of experience in building this specialty.

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Only surfacing machine having roller sanding even with baseboard from either side of machine, doing away with uneven work of edge roller attachment. Removes old varnish, paint, oil-soak, black, etc., rapidly, or cuts down warped edges quickly. Four sizes—for the largest areas or the smallest rooms.

The Little Automatic Electric Surfacing Machine (on desk) is a wonder for removing varnish from desk tops, counters, etc., or for new work, show windows, sills, doors, in corners, closets, or other confined spaces.

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Manufactured by

Wayvell Chappell & Co.

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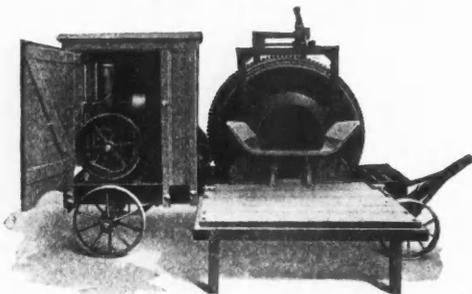
Dept. M, Waukegan, Ill.



Pat. 1916

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Low Charging Concrete Mixers



Increase Production—Cut Costs

Speed and thorough mixing are the most important points to be considered when you are in the market for a concrete mixer. The faster you can place thoroughly mixed concrete, the more money you can make on the job.

“The Standard” Concrete Mixer is adapted to every sort of a building project.

In addition to Concrete Mixers, “The Standard” line includes Hoists, Pumps, Air Compressors, Wheelbarrows, Engines, Block Machines—everything needed by the contractor.

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V & B Dependable Tools

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UNCLE SAM SUPERSTEEL HAMMER



(Made of Vanadium)
Strongest and toughest Hammer.

Note wax hold in end of handle.

Four numbers, 20 to 10 ounces..... \$2.50

No. 999. TRADESMAN'S HAMMER

(Patented Oct. 9, 1917)

Designed for Steam Fitters, Plumbers, Electricians, Millwrights and heavy Carpenter work \$2.50



Braces, Screw Drivers, Pincers, Pliers and a full line of carpenters' tools.

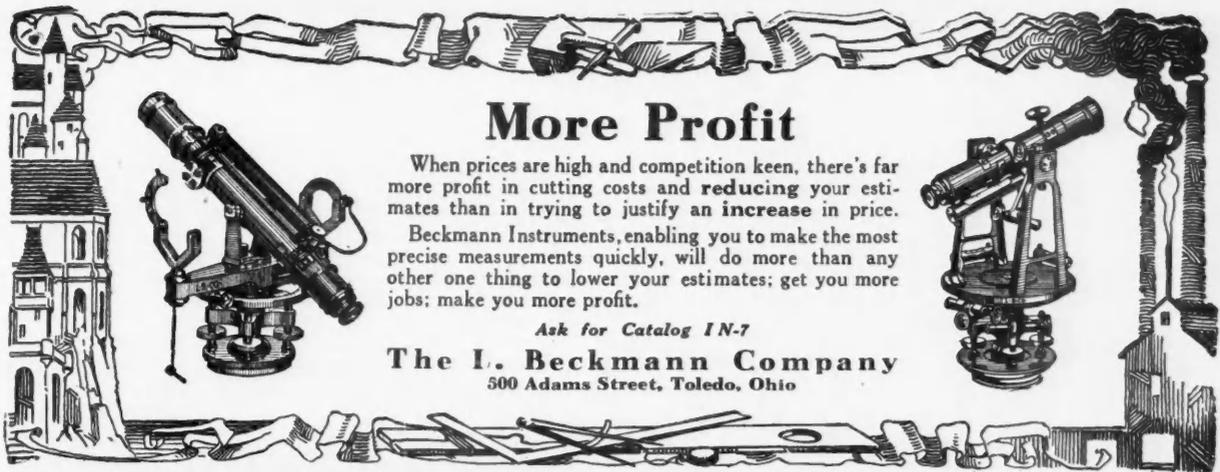
Vaughan & Bushnell Mfg. Co.

For over 50 years makers of Fine Tools

2114-2138 Carroll Avenue

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It Pays to Buy Good Tools



More Profit

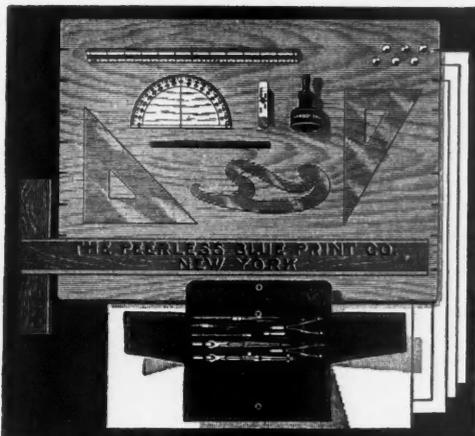
When prices are high and competition keen, there's far more profit in cutting costs and reducing your estimates than in trying to justify an increase in price.

Beckmann Instruments, enabling you to make the most precise measurements quickly, will do more than any other one thing to lower your estimates; get you more jobs; make you more profit.

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This outfit, designed for students of drawing, is complete in every respect and is composed of none but serviceable material, enabling the beginner to do excellent work without the investment of a large outlay for instruments. It is especially suitable for all classes of architectural work. It includes:

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For the Residence, Hospital, Apartment Building and Hotel—Insuring Health—Comfort—Convenience and Economy

A double hung window, with any degree of ventilation up to 100% of frame opening. Zero tight when closed due to copper weatherstripping. Copper Screens cover entire opening and can be safely stored within the window pocket in ten seconds. These Combined Advantages in Lunken Windows are unknown in every other type of window now in use. They save heat labor and screen damage, can be easily installed in any type of new building. There are no complicated parts, and their construction admits of any desired inside or outside trim or decoration, yet their appearance when installed is the same as a standard double hung window. Delivered from Factory Complete—glazed, fitted, screened, hung, weatherstripped, tested and guaranteed—ready to set in wall. Investigate the advantages of Lunken Windows before planning new buildings. Grant us the privilege of sending detailed information. Write today.

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Binds Any Load

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Just send us your name and address and we will send you one or more Stacy Load Binders, either size, postpaid. You can use them 30 days—if you are not convinced that they are the handiest labor saving tool you ever used, return them at our expense and get your money back. You take no risk—send no money—pay mailman when delivered.

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Here Is An Opportunity

for any contractor or carpenter who wishes to get into a regular business.

This Helm Brick machine will enable the right man to build up a real business at a moderate first cost.

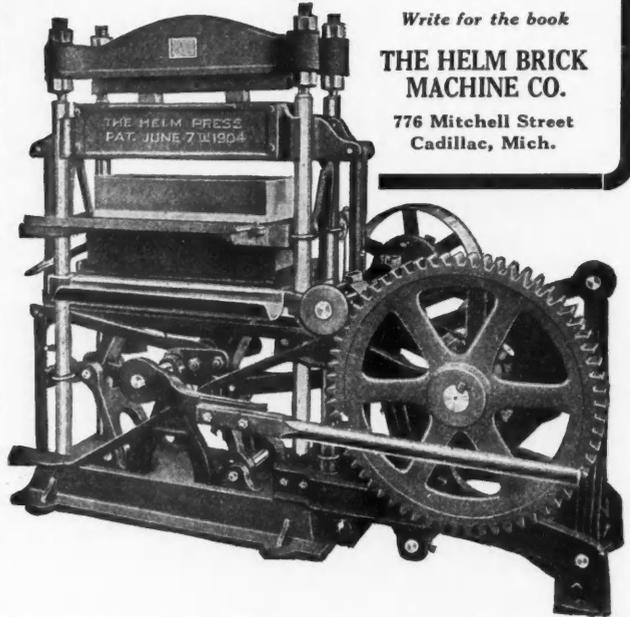
This machine will make any amount of brick at a speed that pays.

Capacity 15,000 cement brick or 1,500 blocks daily.

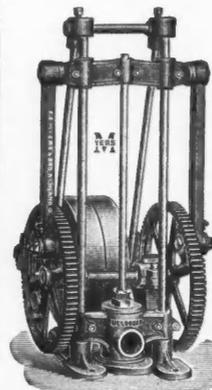
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THE HELM BRICK MACHINE CO.

776 Mitchell Street
Cadillac, Mich.



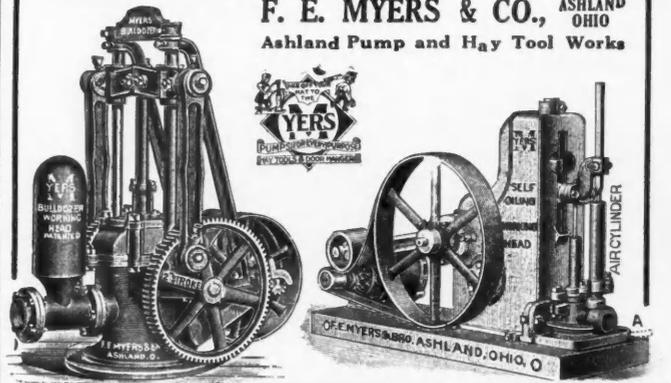
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Everlasbestos Flooring

The Composition of Highest Quality

The floor that pleases everyone, owner, architect and builder.

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Handsome, sanitary, jointless surface, choice of three good colors. Wears for years.

Mason Contractors can make good profit installing these floors. Easy to sell. Inexpensive to lay and *always satisfies.*

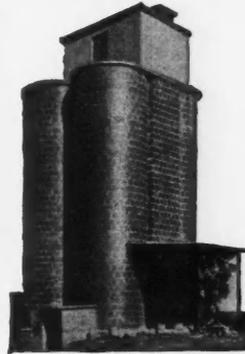
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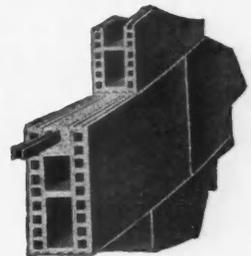
ROCHESTER, NEW YORK

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For twenty years NATCO Glazed Bin Tile has given the utmost satisfaction in the construction of practically every type of bin used for the storage of grain, coal or other material. Such bins have proven absolutely fire-safe. They never need painting or repairs. One unit is used throughout. The steel air spaces in each unit effectively prevent and keep cold and moisture from penetrating through the walls. Deep and wide channels provide ample room for the reinforcing steel within the walls of the bin in each.

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with **UNDERSLUNG RIP SAW**

A machine that makes every cut it takes to build a house. So small that two men can carry it. Goes thru 2' x 6" door. Overhead cross-cut works like a swing saw. Driven by special motor, this machine will rip 4" thickness without overload, dados, joints, planes, rabbets, mitres, and cuts mouldings of any shape. Rips and joints on the bevel, makes jack rafters in one cut, stair strings, etc.

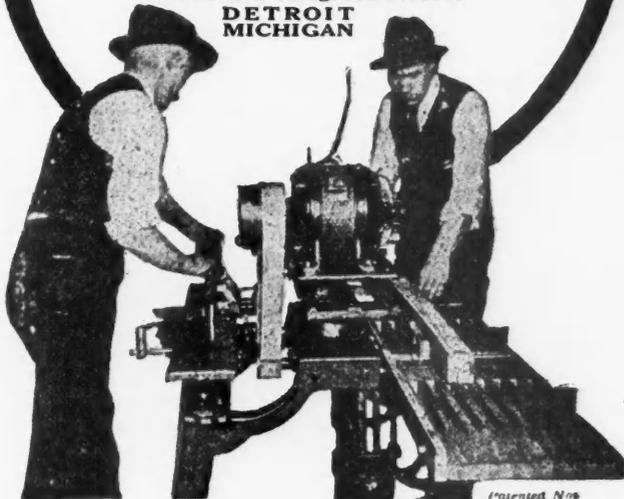
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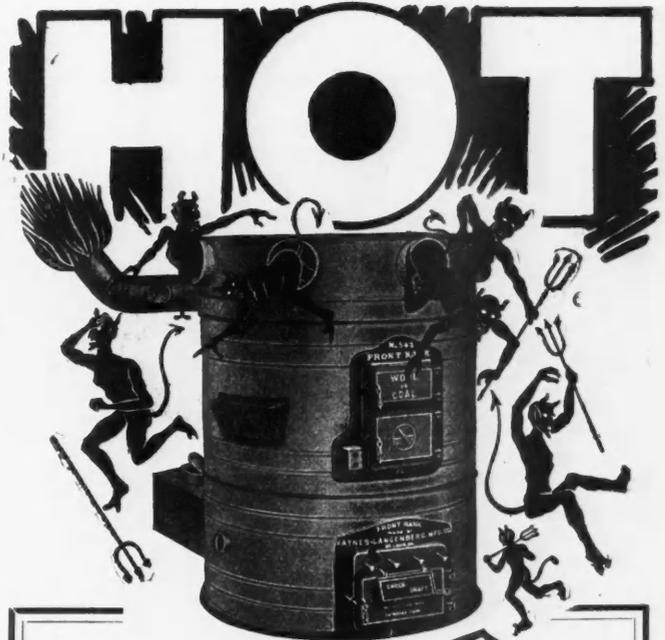
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Brush and Congress Streets

DETROIT MICHIGAN



Patented Nov 1916-1623



TRADE MARK REGISTERED.

AS HOT AS THEY LIKE IT!
YES, SPEAKING OF THE

FRONT RANK

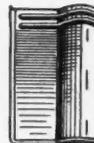
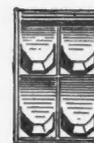
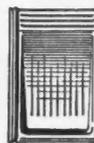
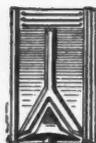
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your clients will sure like it because it gives them full value for all coal consumed
Now's the time, dealers, to be thinking about next winter's heating problems; write for catalog.

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The Shingles That Last

The Most Complete Line of Designs

The Best Quality Workmanship and Finish

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Crescent Universal Wood Worker

Only by the use of the most efficient wood working machinery can you hope to make the right amount of profit on each and every job.

For a great many years CRESCENT Wood Working Machinery has helped wide awake contractors and builders to keep costs to the very lowest level.

The dependable quality of the CRESCENT line is built in at the Factory and stays in the machine indefinitely.

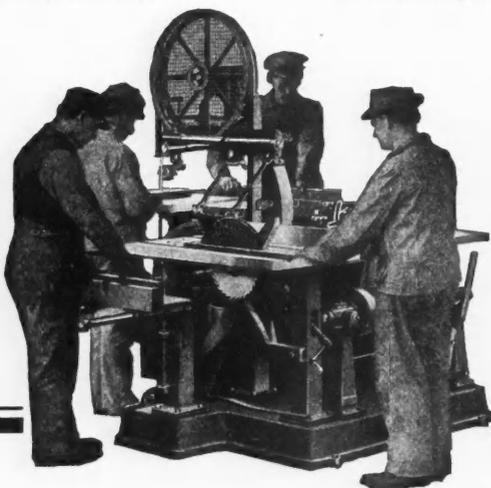
CRESCENT machines bought many years ago continue to give entire satisfaction.

Write today for new catalog of band saws, saw tables, shapers, jointers, variety wood worker, planers, planers and matchers, cut off table, swing cut off saws, disk grinder, borers, hollow chisel mor iser, universal wood worker.

The Crescent Machine Co.

224 Main Street

LEETONIA, OHIO



Have You Watched a Blystone in Operation?

They are unlike any other made. The Patent Reverse Spiral Arrangement of the mixing blades is found only on the Blystone.

With this arrangement the batch is carried from one end of the drum to the other twice with every revolution of the shaft and shoveled over forty-four times each minute. The Blystone mixes successfully concrete, mortar, hardwall or the old-fashioned hair plaster.

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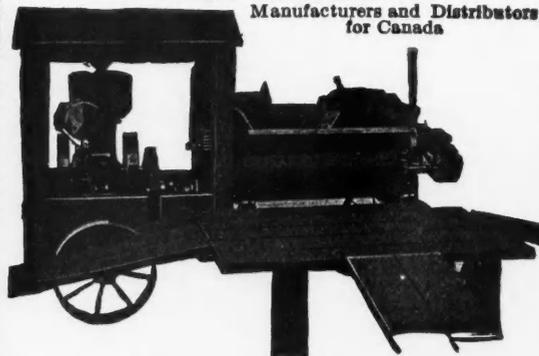
BLYSTONE MANUFACTURING CO.

920 Carpenter St. Cambridge Springs, Pa.

L. & P. MANUFACTURING COMPANY

Niagara Falls, Ontario

Manufacturers and Distributors for Canada



PROFITABLE SAWS

SILVER SAWS embody such principles and improvements as make it possible for them to produce!

They have proven their superiority by a most remarkable record of satisfying service.

Their praises rise from the lips of half a million enthusiastic contractors all over the United States.

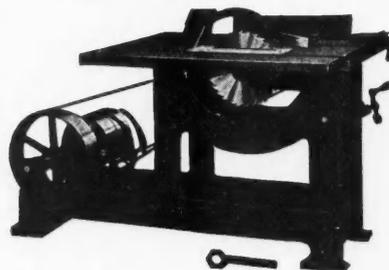
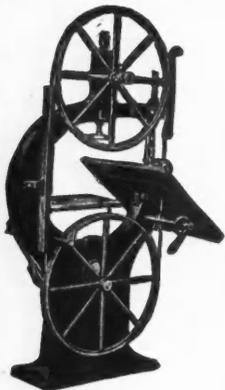
A TIP! Don't let your competitor take the lead. Equip your shop with Modern Silver machinery and be assured of the utmost wood working machinery efficiency.

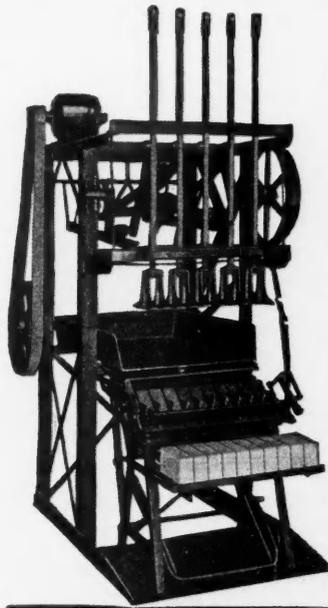
Write today for our illustrated catalog covering a complete line of Band Saws, Swing Saws, Saw Tables and Jointers in various sizes and styles.

The Silver Mfg. Co.

Box 345

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100% EFFICIENT

Gearless, Chainless and Noiseless
 Made Entirely of Steel
 Every Part Guaranteed Against
 Wear for 5 Years
 Perfect Machinery Offers
 Immediate Profits
 WRITE FOR PRICES

WERT MFG. CO.
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Earn \$100 Per Day With

PERFECT CONCRETE MACHINERY

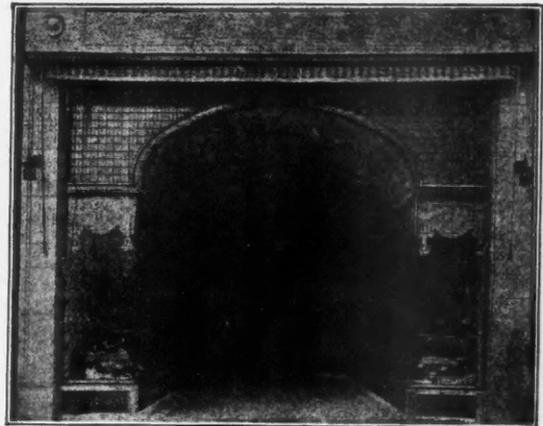
FIBERCOTE MAGNESITE STUCCO

GUARANTEED

FIREPROOF—DAMP-PROOF—WEATHER-PROOF—NON-CRACKING. LOW COST APPLICATION at any season of the year and in any climate, by any competent plasterer. Material is all one standard quality throughout—no inferior scratch coat is used. FIBERCOTE Stucco offers a variety of rarely beautiful finishes and is superior, in economy and durability, to any stucco on the market.

Immediate Deliveries Assured
 Samples and price list upon request.

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COULSON STORE FRONTS

combine beauty with strength, permanence and practicality. They will fit into any plan, whether in a new building or on a remodeling job.

The Coulson Front is constructed of creosoted wood, covered with 18-gauge copper and reinforced with steel tees. It is complete in every way and its ventilating and drainage provisions are the best known. It aids both architect and builder, and is a practical guarantee against breakage.

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TROUBLE SAVERS

are unquestionably the most efficient, time and labor-saving scaffolds on the market today.

No bolts, screws or nails. They hook to the studding and your scaffold is up in much less time than it takes to tell you about them.

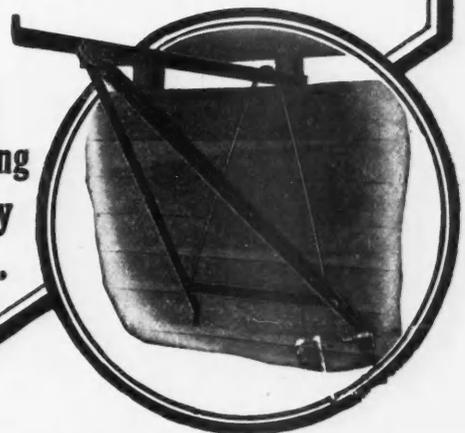
If you have been wasting many hours on each job building your own scaffolds, try "Trouble Savers" on your next job.

Use them for 30 days and if you are not extremely well pleased, we will refund your money.

Write today for our proposition.

Steel Scaffolding Company

Evansville, Indiana



TIME IS MONEY!

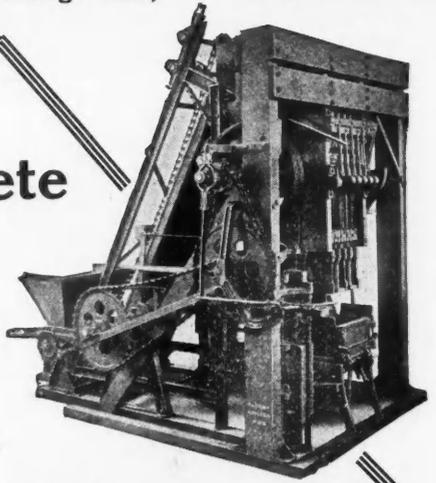
Save both by means of the

New *Ideal* Automatic Concrete Block Machinery (READY FOR DELIVERY)

Attractive blocks produced in 12 seconds. 23 motions reduced to ONE without sacrifice of your present units. Catalog 35 gives details — write TODAY.

New Models in Ornamental Molds Now Ready

THE IDEAL CONCRETE MACHINERY CO.
1308 Monmouth Street, Cincinnati, Ohio



Edwards' Embossed Metal Ceilings and Side Walls

Are sanitary, durable, fire-proof, germ-proof. Made from sheets of specially prepared steel and stamped into ornamental designs. Send us a rough sketch of rooms showing all offsets, etc., and we will prepare, without any charge, a drawing showing how the ceiling will look when erected, and forward same together with a lump price for material delivered f. o. b. your railroad station. Our large catalog showing our complete line of Ceilings and Walls sent free on request.

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The World's Largest Manufacturers of Metal Roofing, Metal Shingles, Metal Spanish Tile, Metal Ceilings, Metal Garage, Portable Buildings, Rolling Steel Doors, Partitions, etc.

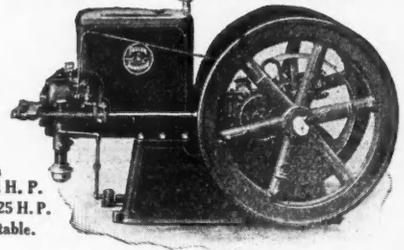
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USE FULLER & JOHNSON POWER
RELIABLE

THE CONTRACTOR DEMANDS an engine that will stand up under hard, continuous work. For this reason our Model "N" Gasoline Engine was designed with extralong bearings; long piston with leak proof rings carefully fitted to a semi-steel cylinder, insuring good compression even after the engine has been in use for many years; perfect balance that results in smooth, quiet running; a liberal margin over rated power. Many other features contribute toward making the Model "N" just the right engine for the contractor. Catalog 21A will give you full information.

- Easy to start*
- Automatic fuel regulator*
- Constant speed under all loads*
- Two sources of ignition*
- Perfect balance*
- Surplus power above rating*

Write for it today.

FULLER & JOHNSON MFG. CO.
Established 1840
90 Alma Street, Madison, Wis.



Built in sizes 1 1/2, 3, 5, 7, 9, 12 H. P. Other models up to 25 H. P. Stationary or Portable.

This engine fills the contractors' requirements.

EASY TO START

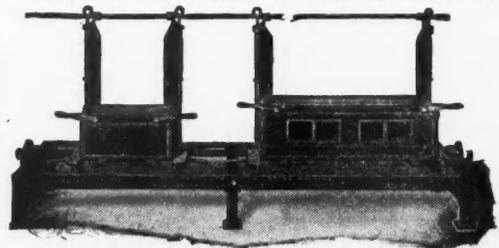
The variety of sizes and designs of blocks, and trimming stone that can be made on the

HERCULES furnish material for a complete, balanced and artistic building.

The machine was designed to turn out a true rectangular high grade block, without sacrificing production. It is particularly adapted for using any kind of mineral facing.

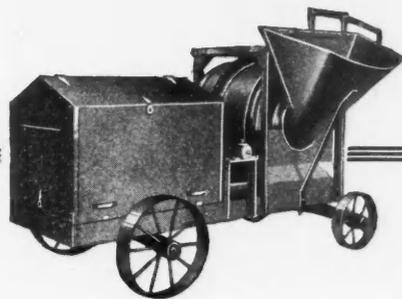
An equipment may be extended to meet additional demands, to get away from the sameness, and to suit distinctive tastes. Send for catalogue.

Why buy cement and ship it back to the mill? You can save 1¢ by using our Bag Cleaner. Send for folder on what can be accomplished.



THE WILLSEA WORKS, Successor to Century Cement Machine Co. 58 Brown's Race Rochester, N. Y.





Twenty Seconds Per Mix

On a highway construction job in Illinois, a Giant Mixer turned out better, stronger concrete after a twenty second run than a mixer of another make did after a mix of over a minute.

TWO THIRDS OF THE MIXING TIME SAVED! Think what that means in a year. Giant Mixers are real profit makers.

Giant mixing and discharging speed is the result of the patented Giant drum construction. On dry mix, wet mix or mortar, Giant Mixers do faster, better work.

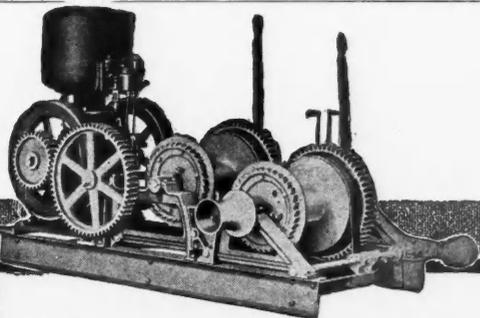
Send today for the Giant catalog and book of facts. It will help you in selecting the mixer to fit your needs.

Judy Manufacturing Co.
BOX 6866 CENTERVILLE, IOWA

Distributors:

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GIANT MIXERS



Ideal General Purpose Hoisting Outfits

The Ideal double drum hoist is a sturdy, rugged and dependable outfit for handling concrete, bricks, mortar and material of all kinds used in construction work, sewer work, mine work, etc.

Our line includes both light and heavy duty, one way and reversible hoists, also pumping outfits of the various type used in construction work.

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IDEAL ENGINE COMPANY
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LORENZEN TILES AND MOSAICS

White Glazed Wall Tile

Tiled bathroom and kitchen walls are higher in initial cost than ordinary plastered walls, but are cheaper in the long run as they never need re-finishing or repairing. They are absolutely sanitary.

Rich Red Quarry Tile

For sun porches, terraces, pergolas, fire-places — either inside or outside work — QUARRY TILE has no equal. They come in such natural reds, assorted into light, medium and dark shades.

Catalogs and Price List, Also **FREE BOOK** How to lay Tile. Sent on request.

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Make up your order from our 4 page color insert in August issue American Builder

QUICK ACTING *The Taylor* SELF LOCKING

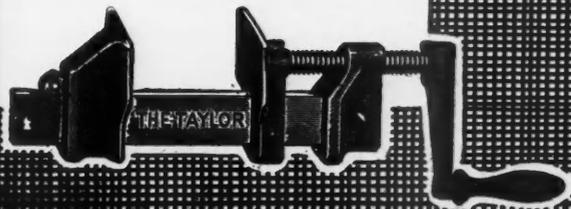
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An Investment
Not an Expense

The quickest and strongest clamps made. That's why they're the standard in U. S. Government Works and in such concerns as General Electric Co., Singer Sewing Machine Co., Victor Talking Machine Co., etc.

We can PROVE it in your own shop. Write today.

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Poughkeepsie, N. Y.



"It's More Attractive With The Tile Floor"



AND IT'S MORE ECONOMICAL, TOO

Tile floors and walls for baths, halls and porches, add a touch of distinction to the home. They have a substantial, solid "look." And as for beauty, nothing can compare with them.

Once you put in tile—you are forever through with the painting nuisance that you have with wooden floors. And you no longer need to bother with prepared floorings, with their moldy sub-surfaces.

Send for our attractive catalog showing styles. It's a mighty handy book to have for future reference. Address

Hornet Mantel Co.
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World's Largest Mantel House

A Pair of Hands and a Screw Driver will do the Work



Easy to Install **Costs less than Cords and Weights**

The Pullman Sash Balance

PULLMAN Sash Balances are constructed on the Unit System. There are three units K, L and M, adaptable to any style of sash in any kind of a building. Anyone can install the Pullman Unit Sash Balances with ease and rapidity.

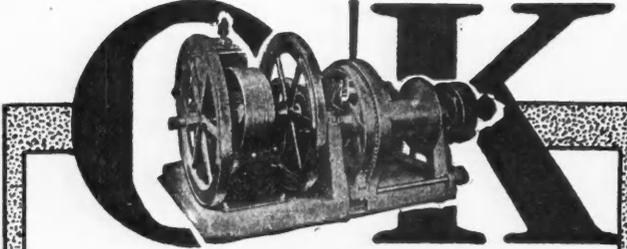
Economy—Using Pullman Sash Balances saves money on every window over the old-fashioned cords and weights—besides making a better construction.

Efficiency—All the parts are carefully fitted and, being of pressed steel, are absolutely accurate so there is nothing to rattle or squeak. The sash is so perfectly balanced that a child can operate it.

Durability—The Pullman Unit Sash Balances are practically indestructible. All moving parts are encased. The Pullman Unit Sash Balance carries a ten-year guarantee. Write for illustrated catalog explaining the many money-saving features of this Balance.

PULLMAN MFG. CO.
232 South Avenue Rochester, N. Y.

Pullmanize Your Windows



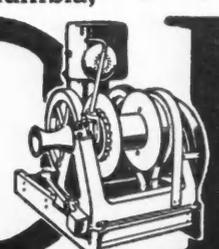
POWER

AT A MAXIMUM
O. K. POWER HOISTS

May be had in single, double or reversible styles, each equally practical and efficient. They will give you many years of service without developing weak points or causing trouble from complicated parts. The O. K. Hoist for busy contractors.

Our latest catalog shows our complete line of hoists. Write for it today.

O. K. Clutch & Mach. Co.
Florence St.
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STOVER
FIREPLACE DAMPERS

For Greatest Heating Efficiency

Contractors and Builders who want to give their customers the very best in fireplace construction install Stover Dampers in the chimneys of the fireplaces they build. Stover Dampers support the brick work, form a smooth throat, regulate the draft perfectly, increase the efficiency, save fuel and reduce the labor cost of erecting fireplaces. The price is low enough so a Stover Damper of suitable size can be used in every fireplace.

Mail Coupon for Book
Send this coupon today and have us send you a free book on Stover Fireplace Dampers and Fixtures including Andirons, Baskets, Sets, etc.

Stover Manufacturing & Engine Company
734 Lake St., Freeport, Ill.
Please send me your Fireplace, Damper and Fixture Book.

Name.....
Business.....
Address.....
City.....

Dealers and agents write for territory and discounts.

Stover Manufacturing & Engine Company
734 Lake St., Freeport, Ill.



Shipping Sheldon's Slates from the Quarry in Mid-winter

The fact that

SHELDON'S
RED GREEN, PURPLE, BLACK
SLATES

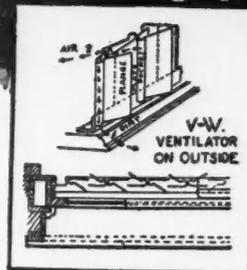
are piled up outdoors, without any protection from the elements, is one of the strongest possible evidences of their durability for roofing purposes.

Contractors, Roofers, Property Owners: Let us show you why Sheldon's Slates make the most economical as well as the longest lived roof.

F. C. SHELDON SLATE CO.
GRANVILLE, N. Y.



for
school rooms



V-W Ventilators are very successful in providing fresh air for school rooms without danger to the children. Plenty of fresh air without a sign of draft

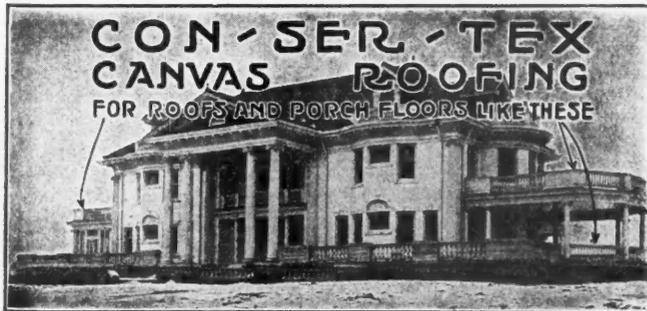
Easy to install and moderate in cost. They are practical in every case where you wish ventilation without draft. Theaters, locker rooms, smoking rooms, homes and all public buildings.

Contractors — Ask your dealer to show you a V-W or write direct to us.

Write for our local agency proposition

THE V-W VENTILATOR COMPANY
101 N. High St.,
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Western Pennsylvania Agency (The Fort Pitt Steel & Iron Works
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CON-SER-TEX
CANVAS ROOFING
FOR ROOFS AND PORCH FLOORS LIKE THESE

—an attractive, water-proof, rot-proof, mildew-proof covering that will not crack, stretch, shrink, curl or peel. Cool in summer, and easy to keep clean.

Carpenters and builders should push "Con-ser-tex" Canvas Roofing, because it enables them to secure many contracts for work on which more expensive material would be out of consideration. If you show your clients how to save money on roofing, they will let you show them what service you can render them in other directions, too. Con-ser-tex is easy to lay, and brings a good margin of profit.

Write for illustrated booklet, "Roofing Facts and Figures," and for samples.

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WHY WORRY

ABOUT A LEAKY ROOF WHEN IT CAN SO EASILY BE CURED BY



REG. U. S. PAT. OFF.

BAYONNE

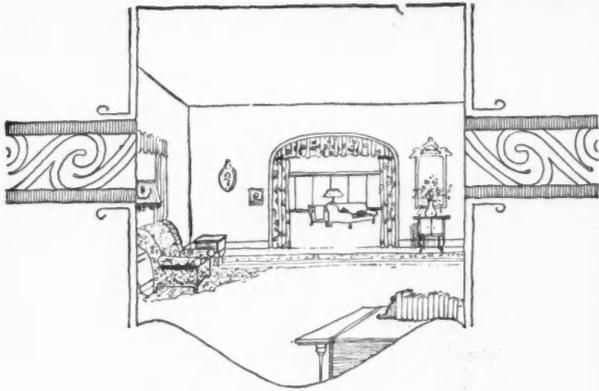
IS GUARANTEED ABSOLUTELY
WATERPROOF

It has been used as a roof and floor covering on thousands of Piazzas, Sleeping Porches, etc., and is recognized by Architects and Builders the country over as the standard of Roofing Canvas.

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ESTABLISHED 1860

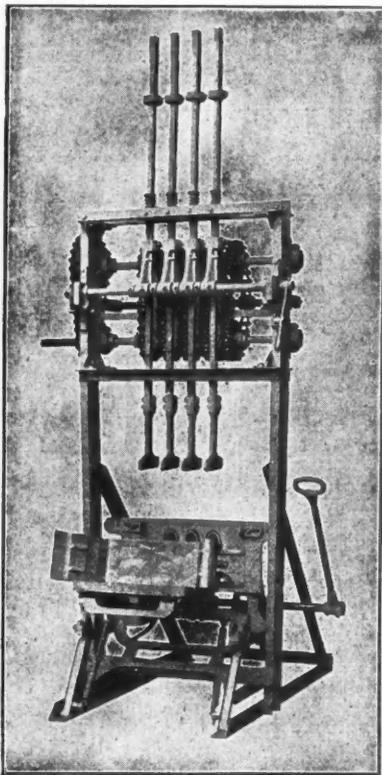
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KEEP the cost down! People are just as anxious to decorate and redecorate as ever. But oil paints are costly. Muralite is not. At a cost of only a dollar or two a room, anyone can secure beautiful, lasting, sanitary walls and ceilings. Muralite is the hot water calcimine—the standard interior finish for all sorts of buildings everywhere. Let us send color card and full details about Muralite—NOW.

M. EWING FOX COMPANY
NEW YORK CHICAGO



BLOCK MACHINES

=
POWER TAMPERS

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MIXERS
BOTH CONTINUOUS
and BATCH

=
MILES' CONCRETE EQUIPMENT is beyond the experimental stage. We being pioneers in the industry. All of our equipment is built for service and fully guaranteed.

Write for our general catalog descriptive of our complete line of equipment

The Miles Manufacturing Company
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Note the Lock-Joint

We are the originators of the **INTERLOCKING JOINT WOOD STAVE COLUMNS**

They are the products of experience and an organization which has studied the most exacting requirements. Their specification gives assurance that the striking feature of color and texture will insure permanent satisfaction.

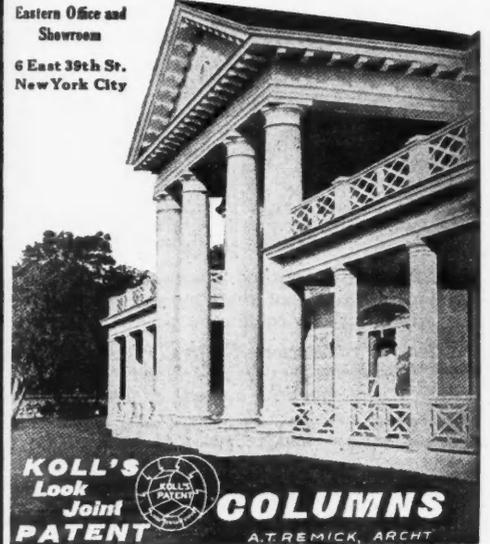
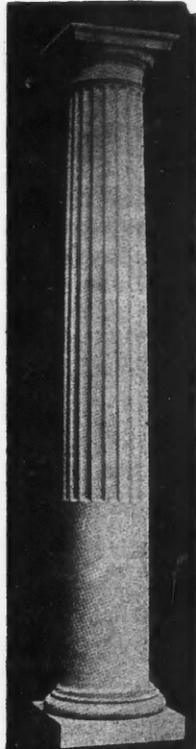
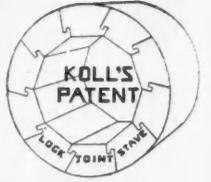
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HARTMANN-SANDERS CO.

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Eastern Office and Showroom

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New York City



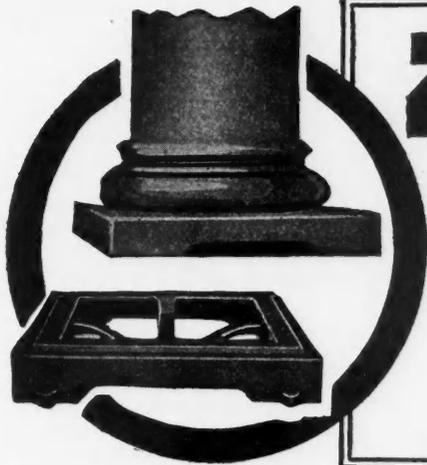
KOLL'S
Look
Joint
PATENT **COLUMNS**
A.T. REMICK, ARCHT



Fiberlic WALL BOARD

The material from which it is made, the fact that the pulp is chemically cleansed and that the fibre lengths give the finished product that natural reinforcement that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic for strong, permanent and sanitary construction.

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200 Fifth Avenue, New York City
Factory: Camden, N. J.



ZIMMERMAN PATENT IRON BASES

100% PROOF AGAINST ROT

Holds the column from 2 to 4 inches off the floor allowing water to pass under but keeping the base of the column always dry.

The Zimmerman base is easily and firmly attached to either cement or wood floors.

Write a card for catalog and prices.

S. CHENEY & SON, Manlius, N. Y.



Save Time in Estimating and Building

WHITNEY Windows are furnished in complete Ready-Fitted Sash Units, ready to set into the openings. They make pleased customers, more and better business and bigger profits.

Whitney Windows

have none of the faults of ordinary windows. They open outward out of the way—slide easily to any point in the opening, permitting wide unobstructed view. Don't interfere with screens. Can't stick, rattle or slam. Storm-proof when closed.

Our large stock of materials insures prompt delivery. Write on your letterhead for our proposition to contractors and booklet "Progress in Windows."

Whitney Window Corporation
134 East Lake Street
Minneapolis, Minn.

Real Protection

REAL protection from lightning is easy to sell. Every electrical storm creates a fresh demand. Every new building is a prospect. All agricultural schools and farm papers advocate the use of correct lightning rods.

Sell (BURKETT RODS) THE "BURKETT SYSTEM"

And you have a real lightning protection, approved by the National Board of Fire Underwriters and endorsed by the largest Fire Insurance Companies in the United States.

To insure protection, experts say lightning conductors must either be tape, tube or cable. Burkett Rods have all three. A spiral copper tape that carries moisture into the ground. Around this is a tube of woven cable of pure soft copper. **THREE-FOLD PROTECTION.**

WRITE TODAY FOR OUR AGENCY OFFER AND GET STARTED IN PAYING BUSINESS

The Burkett Lightning Rod Co.
Fremont Main Office and Factory Ohio

FLEXO-CRETE

is a poured concrete building unit of beauty and distinction. At a small cost you can equip yourself to manufacture this building material.

Write for booklet and prices.

FLEXO-CONCRETE MOLD CO.
44 16th Ave., West
CEDAR RAPIDS, IOWA

For 50% Build The Hollow Wall Way 50% For

Like a thermos bottle—Warmest in winter, Coolest in summer. Fire-proof. Everlasting. Cheapest, best and most Perfect way known to the Building World.

The reason the most wall can be built for the least money with our forms is—because they are **STRONGEST—LIGHTEST—SIMPLEST** and most **PERFECT**

and the price of a complete set can be saved on one small job.

Send For Literature!

THE UNIVERSAL CEMENT MOLD COMPANY
NORTH MILWAUKEE WISCONSIN

MARQUISE
— BUILT COMPLETE —

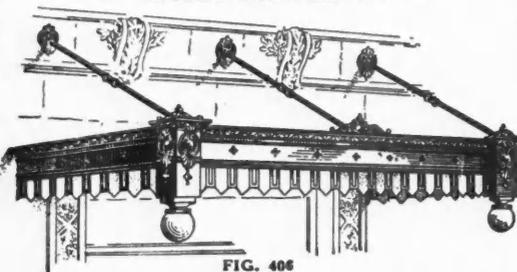
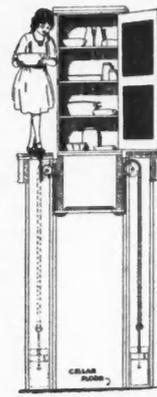


FIG. 406

DESIGNS—STANDARD OR SPECIAL
THE MOESCHL-EDWARDS
CORRUGATING CO.
CINCINNATI, OHIO.

ALSO
ROLLING
STEEL
DOORS
Hollow
Metal
Windows
Kalamein
Doors

Write for
Designs
Send sizes
for price



BEST DUMBWAITER OFFER EVER
MADE! \$34.50 net For the
"HIGHWOOD SPECIAL"
60-lb. capacity, complete, ready for
erection, total height, 20 feet.

"THE SYLVAN" 75-lb. capacity - - - \$40.00
Equipped with Automatic Brake

"THE HERCULANEAN" 150 to 200 lbs. - \$90.00
Equipped with Gears and Automatic Brake

The GLEN Improved Vanishing
Dumbwaiter (Illustrated)
\$65.00 net—Quickly and easily operated by
woman or child, conserves food,
space and energy. When cupboard is down top is ex-
actly level with floor. Prices include all necessary
material. All material guaranteed. Money back if
not satisfactory.

Write for further particulars and new Catalog No. 5
Highwood Dumbwaiter Co.
Grand Avenue Leonia, N. J.

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Send for Stillwell Building Books with Economy Plans
of new California Styles suitable for any
climate. Famous for comfort and beauty

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51 plans — 6 to 10 rooms — \$1.
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Send get book of 80 Special Plans, also Garage folder

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IMPROVED

MORRILL
SPECIAL
SAWSET



"SPECIAL"
SAWSET

The anvil has
been redesigned
so that it will perfectly set
any Hand Saw. Any One Can Use It.

CHAS. MORRILL **84 LAFAYETTE ST. NEW YORK**

Running Water
and Electric Light

installed to your profit

More and more is convenience and comfort for the housewife being
considered by builders. Scores of prospects await you. And the
product we offer for your demonstration is an easy seller. The
Milwaukee Air Power System draws water FRESH from well or
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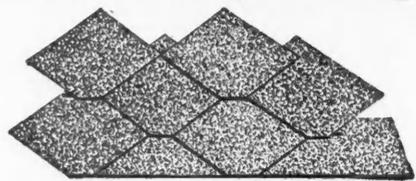
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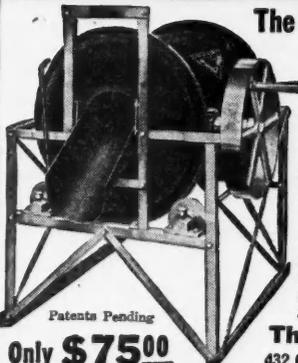
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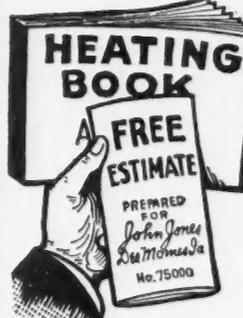
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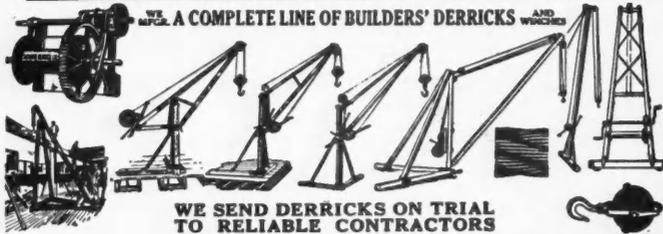
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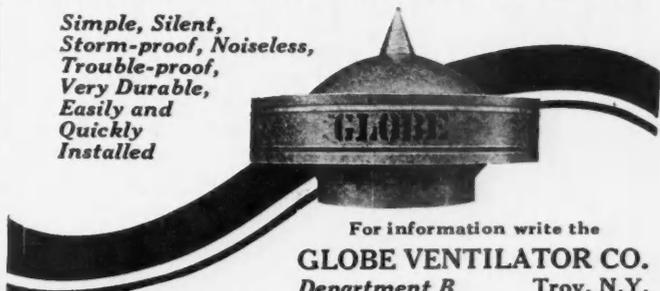


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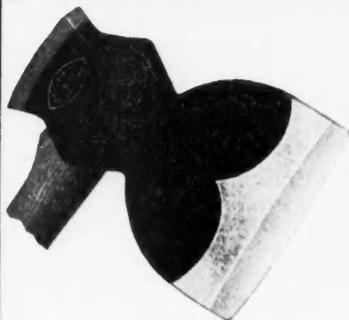


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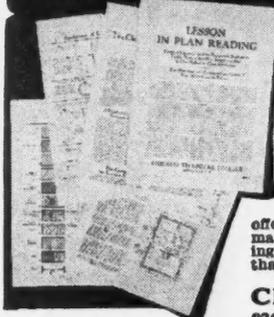
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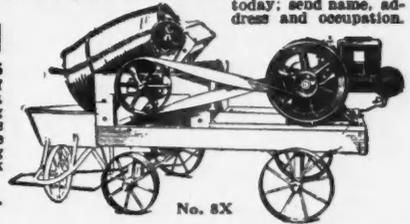
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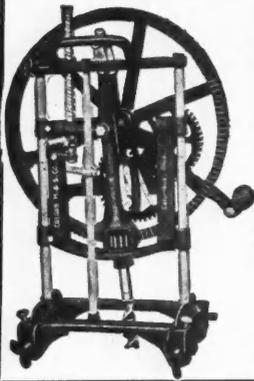


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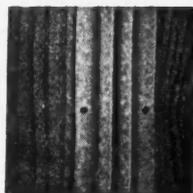
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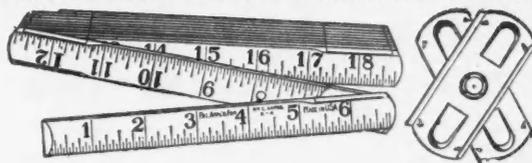
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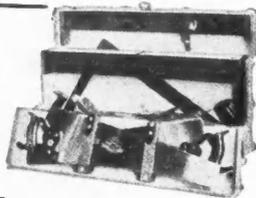
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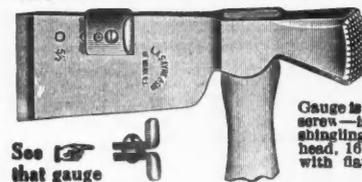
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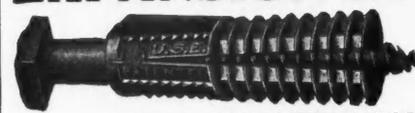
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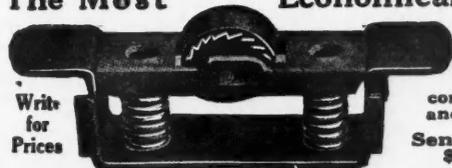
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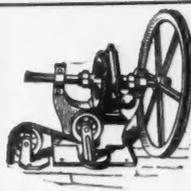
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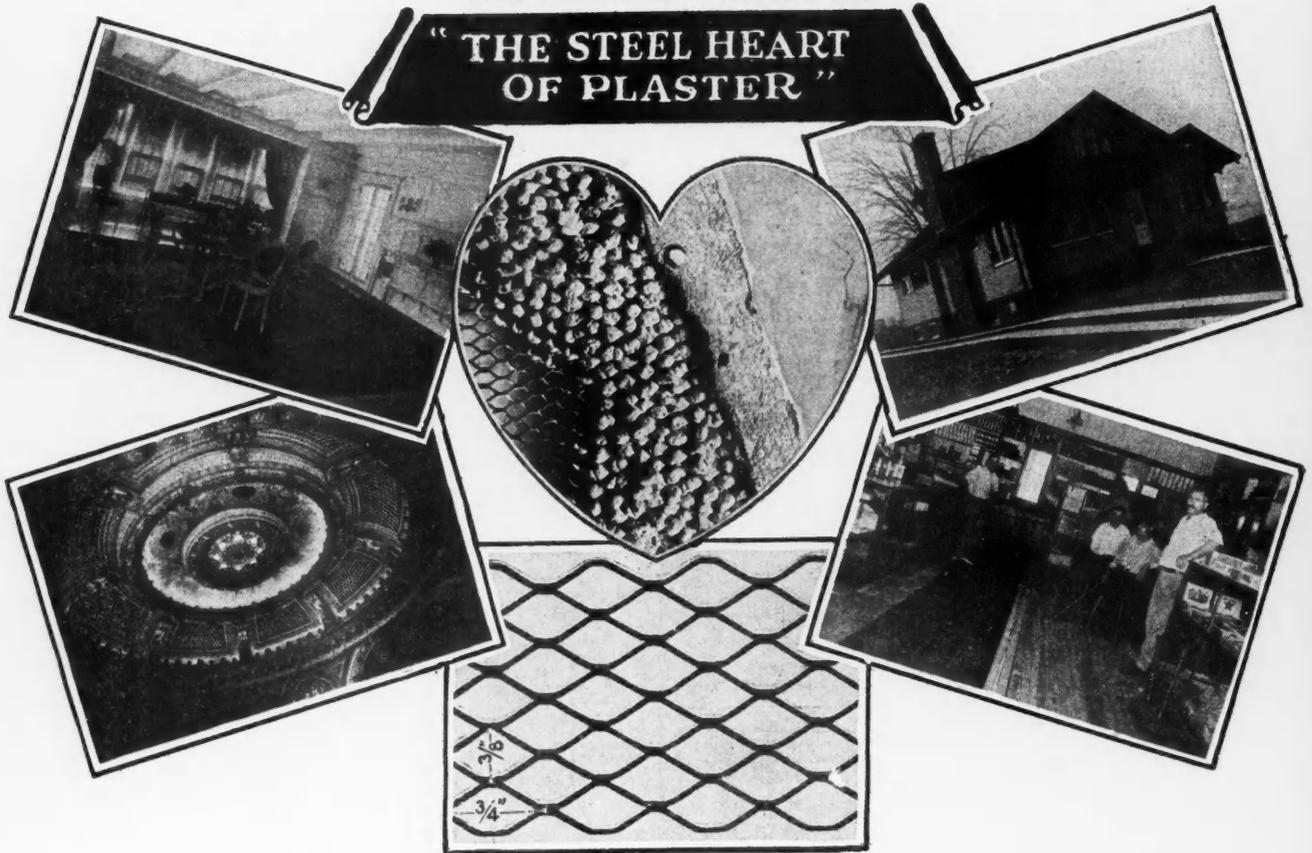
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