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*View of one of the Ryerson Structural Bays  
with High Speed Friction Saw in foreground.*

## Immediate Steel

Five Ryerson Steel-Service Plants maintain large and comprehensive stocks of the products of all the mills from the heaviest structural to the lightest bar, sheet or rivet.

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# Short Talks by the Editor



## The Importance of the Building Industry and Its Members

**F**REQUENTLY the AMERICAN BUILDER is asked to supply statistics showing the total amount of building done in the United States in given periods. It would be interesting if such figures were available. However, they are not, and the best anyone can do is to guess, basing the guess on the statistics that have been gathered.

During 1919 in that portion of the country east of the Missouri River and north of the Ohio, reports from cities that have building regulations and issue building permits show that the total building amounted to approximately two and one-half billions of dollars. That is the only basis on which an estimate can be made.

A consideration of the different building fields of the country demonstrates that the amount given does not cover one-half of the construction work done in the United States last year. The immense amount that is expended for farm buildings is not included; neither is the huge total of the buildings erected in the villages, towns and smaller cities.

If we were to make a rough guess of the total amount of money turned over annually in the building industry, we would say that five billions of dollars would be a conservative estimate.

Combined, the many divisions of the building industry comprise one of the country's foremost businesses. Every member of the industry is either a skilled and highly paid workman or is a man in business for himself. Such men form the stable foundation upon which the prosperity of this country is based.



## Winter the Time for Selecting Home Building Plans

**I**N ITS campaign to further home building and incidentally the use of lumber, the Southern Pine Association found that a large percentage of the inquiries from its managazine advertising, offering home designs, came in the winter time. From this fact the Association deduces that it is in the winter that prospective builders are most interested in home building designs and plans.

There is an excellent basis for this assumption. Home building is a serious step with the average family. It often requires considerable sacrifice. It is a step that usually is taken only after mature deliberation. Spring is the time when most builders plan to begin on the house. As a consequence, the long winter evenings are devoted to planning the home.

Every month the AMERICAN BUILDER contains numerous home building plans. They are shown by large photographs and clearly printed floor plans, the layout of the rooms and their dimensions being so indicated that they can be readily visualized by the person unaccustomed to reading plans. The purpose of these home building designs is to provide contractors and material dealers with good pictures to show prospective builders. During the year the AMERICAN BUILDER contains more than a hundred such designs, all of them of the sort that will appeal to the greatest number of home builders.

Back numbers, together with the current number of the AMERICAN BUILDER, provide contractors and material dealers with a complete set of home building designs. The magazines should be kept on the office table, where prospects can see them and where the contractor and the yard salesman can use them to the best advantage.



**G**OVERNOR COOLIDGE of Massachusetts says: "The home owner is generally a good citizen of any community. One would rarely hear of a man shouldering a gun in defense of a boarding house, but any man would shoulder a gun in defense of his own home."



**I**N wooden partitions it is often specified for a course of brick to be built in at the bottom of the story, and also at half-height, resting on the bridging; this is to prevent the passage of vermin and also act as a fire-stop.

The brick-mason should see that the brick used in such cases are not wider than the studs, so the lathing can be nailed on straight; where the joist rests on a partition, it is well to build "nogging" from the top of this partition to the top of the joist.

## Farm Building Runs Into Huge Sum Annually

FARMERS DEMAND BETTER BUILDINGS EQUIPPED TO SAVE LABOR AND INCREASE PRODUCTION

**F**ARM building during the war was the mainstay of the building industry. When it became necessary for the government to restrict building in other fields, the importance of modern structures to the producers of food was recognized and to them the drastic building restrictions did not apply.

Modern farm buildings are even more important to the economical production of foodstuffs now than during the war. Good buildings, well equipped, mean to the farmer a reduction of labor costs and an increase in production. He cannot afford, if he is to be as successful as it is possible for him to be, to see his profits disappear because his buildings are not of the type that save labor, house his grain so that there will be the minimum in loss from weather and rodents, and provide shelter for his stock that will keep them healthy and highly productive.

The demand for farm buildings this year will top that of any other year in the history of American farming and American building. Farmers know that their best interests lie in having good buildings. They also know that good buildings do not give the service of which they are capable unless they are equipped with the modern labor-saving and comfort giving devices.

Builders and lumber dealers who serve the farm building field are alive to these facts and as they are consulted about new farm buildings do not hesitate to recommend that the barn, the hog house, and the corn crib and granary be fully and modernly equipped.

Just as the farm buildings are planned so that the work can be done easily and well, so is the farm home. Conservation of the energies of the farmer's family is just as important to him as is the conservation of the labor of his hired men. The health of himself and the members of his household is as necessary as the health of his livestock. This has always been so, but in striving for financial success the human comfort often was overlooked.

New, modern homes will be erected on thousands of

farms this year. Those homes will have, or at least a majority of them will, the comforts and conveniences of the city home. There will be an efficient heating plant and the well-equipped laundry in the basement; there will be a pressure water system to carry hot and cold water to the kitchen, bathroom and laundry; there will be an electric light system that will illuminate the house and provide the power to drive such labor-saving conveniences as the vacuum cleaner and the washing machine—in fact, the factors that make the younger generation of farm folks long for the city will be installed in these new homes. Then will the city dweller be more and more envious of the healthful, sane and delightful life that can only be found in the country.

In providing the farms with modern buildings and in equipping them with the labor-saving features, members of the building industry will play an important part. The contractor who erects the building, whether it be a home, a barn, a corn crib, or any other of the numerous buildings that are needed on the farm, and the lumber dealer who supplies the materials are the men whom the prospective owner will consult. They are, or should be, familiar with the various kinds of equipment for the farm home and the farm buildings, and can advise with their customers regarding the sort of equipment best suited for his needs. In so doing the contractor and lumber dealer will be giving their clients the service to which they are entitled.

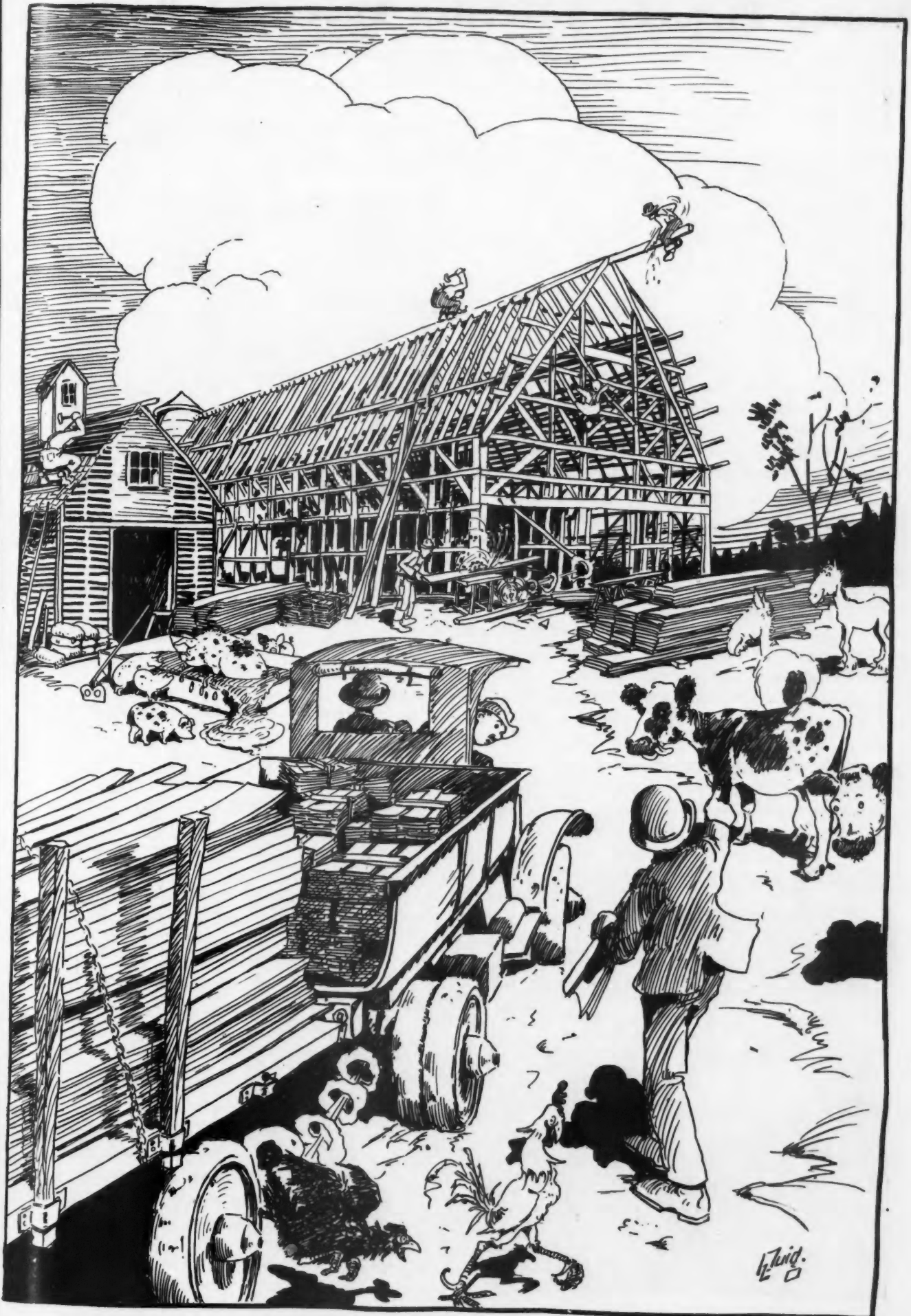
It really is most interesting to study the equipment that is available for the different farm buildings. Aside from the value of a knowledge of water systems and electric light plants, and barn and corncrib equipment, there is a great deal of pleasure to be derived from a study of the various types of equipment that manufacturers have designed and are producing. Such knowledge places the builders and material dealers in the class of up-to-date citizens—men who are able to give real service to their customers.



A Street of Good Homes. Home Owners Invariably Keep Their Yards Up and Beautify Them with Shrubs.

# Speeding Up The Farm Building Job

97



CARTOON BY ED. QUIGLEY



# Motion Pictures Advertise Limestone Business

CAMERA RECORDS ACTIVITIES IN INDIANA QUARRIES AND MILLS.

By Harry W. Mason

**T**HE all-seeing eye of the motion picture camera has been viewing the interesting methods by which Indiana limestone is quarried and the various factory operations employed in securing the finished product that is placed in buildings. These pictures are incorporated in a three-reel film that soon will be shown before architectural societies, colleges, conventions of men engaged in the building industry, and, eventually, in the motion picture theaters of the country.

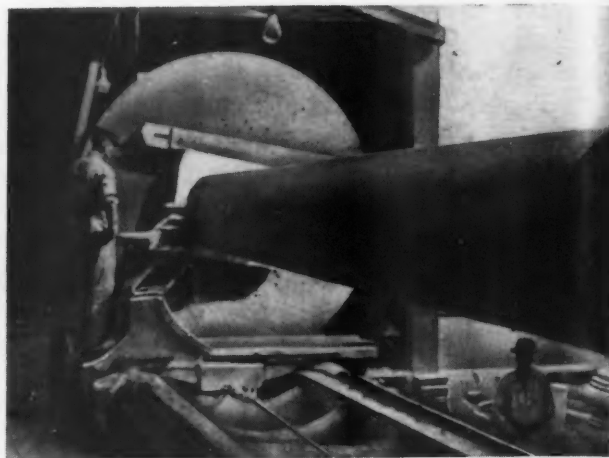
While, at first thought, there would seem to be no human interest in producing such cold material as building stone, this film is pronounced one that will hold the attention of everyone engaged in the building industry and the general public as well. The first pictures show the outcroppings of limestone in their original state. Then follows the removal of the overburden of earth by hydraulic stream and steam shovel, which lays bare the building stone ledges.

Steam and electrically-driven channelers are shown traveling back and forth, cutting vertical channels two inches wide and ten to fourteen feet deep into the solid mass of stone. These stones are loosened from the bottom by wedges driven between them by workmen. Great hooks attached to steel cables, which are wound around the hoist drums, turn the rectangular blocks weighing as much as 250 tons each. Lest the big fellow crack in his fall, a nice soft bed of chunks was prepared for him.

Many scenes taken in the interior of the mills follow. How the stone is sawed, cut, planed, carved and cut ready for the building is shown. Huge cranes manipulate heavy pieces of stone easily; carved ornamentation, mouldings, balusters and huge columns are

pictured as they are being shaped to the proper sizes.

The picture was produced for the Indiana Limestone Quarrymen's Association, Bedford, Ind., by the Rothacker Film Manufacturing Co. Prominent men



"Latheing" a 30-Ton Limestone Column.

connected with the limestone industry recently viewed the first showing of the film and declared that, tho they had spent their lives among the quarries, the camera brought out many things they had never before noticed.



## Four Essentials for Masons

**I**N stone masonry there are four points which should be observed and kept in mind by the mason when at work to produce a strong, durable wall:

See that all stones laid in the wall have a flat and parallel "bed" and "build."

Lay all stones on their natural bed.

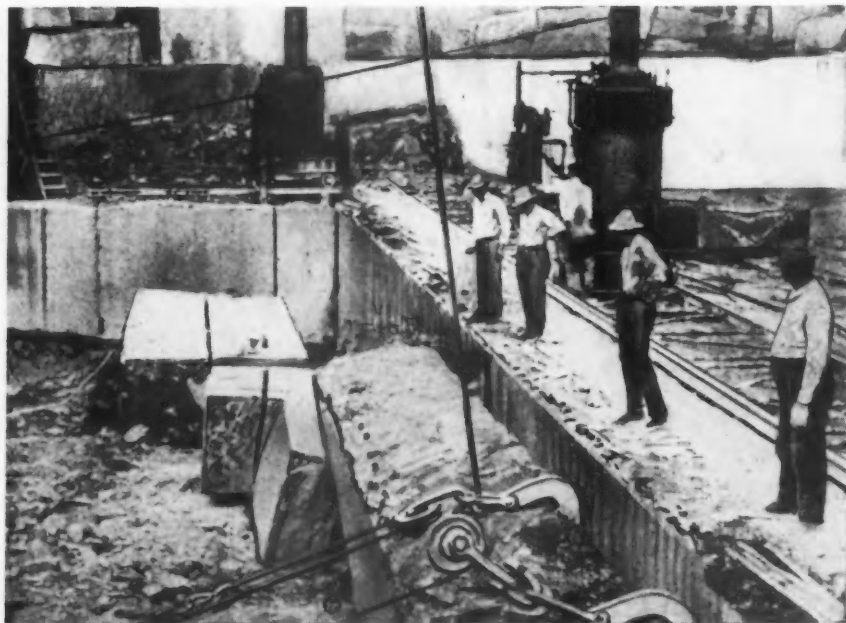
Make one-sixth of the face of the wall headers or throughstones.

Fill all cavities with small stone and mortar.

To build a perfect piece of masonry, the above four rules must be followed by the mason. All the stone should be given good beds and face before being set in the wall.

**I**N running walls, piers, etc., thru from story to story, always check them at each floor level to see if the mason has built them plumb.

**N**OW is a good time to write advertisers for their new catalogs and prices.



Removing a 150-Ton Block of Limestone Which Steam Channeler Has Cut.



## Health, Happiness and Prosperity Abound on the Farm with Good Buildings

MODERN FARMERS DEMAND MODERN BUILDINGS, EQUIPPED WITH COMFORT-GIVING AND LABOR-SAVING DEVICES, AND CONTRACTORS MUST BE PREPARED TO SUPPLY THEIR WANTS

**D**URING the last few years there has been a revolution in the ideas of what constitute good farm buildings. There is no need to tell contractors and builders who specialize in the farm building field what sort of buildings were in demand a few years ago. With this change in the ideas of farmers, it is most important that contractors come to a full realization that good buildings — well-equipped buildings — are the buildings that will be erected on American farms this year. And the better the building and the more completely it is equipped, the greater the profit both in money and in the satisfaction of the client which the contractor gains.

For more than 15 years the AMERICAN BUILDER has been urging better buildings on the farm. It has consistently and persistently preached the gospel that better buildings mean happier farmers and more prosperous farmers. It has carried this message to many thousands of contractors and builders in the farm building field and thru these contractors to the farmers. And, we believe, our efforts have

met with a very considerable success.

In this issue of the AMERICAN BUILDER, the annual Farm Building Number, a special effort has been made to present the sort of buildings many farmers have built, and many more will build during 1920. Despite the greatly increased cost of production, the AMERICAN BUILDER is showing these building designs in an attractive manner and in a way that will be most useful to its contractor and lumber dealer friends.

On the pages following are shown four good farm building designs, together with illustrated articles telling how contractors can equip these buildings to give their farmer customers labor-saving, profit-producing and comfort-bringing houses for themselves and their livestock, and efficient buildings for the storage of their crops.

A modern dairy barn, 36 by 60 feet, is shown on page 103. Besides the perspective of the barn, the floor plan of the cow stable is shown in blue print, while in the foreground is a photograph of the sort of animal that desires and requires such a



Good Farm Buildings, Modernly Equipped. Truly Make the Country Home the Place "Where Life Is Worth Living."

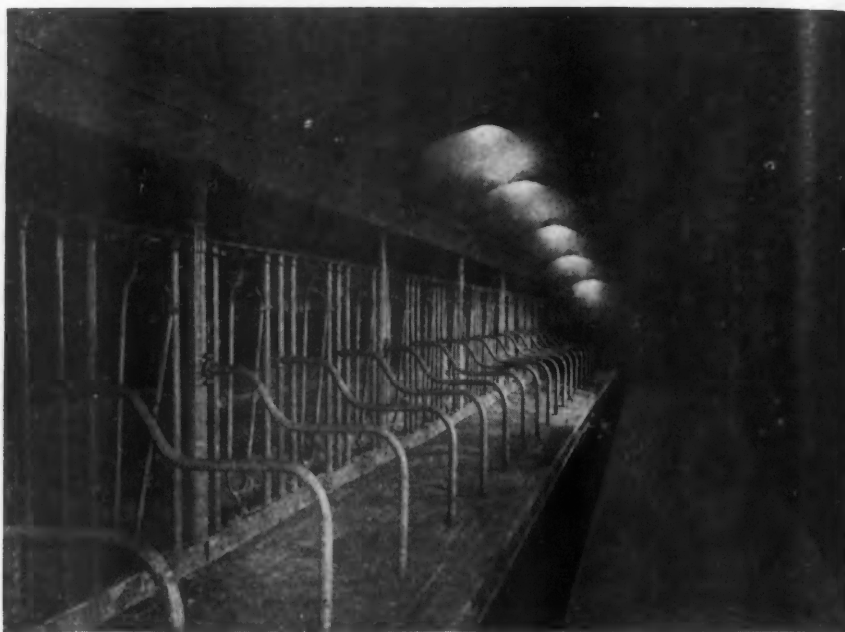
## Farm Buildings We Recommend

winter home. A full page blue print of architectural details of the barn is shown on page 102.

Page 107 contains a perspective and blue printed floor plan of a modern saw-tooth roof hog house, 24 by 56 feet, designed to house 16 sows and their litters. On page 106 blue printed construction details of the hog house are shown.

A modern corn crib and granary appears on page 111, while facing are blue printed details of construction that will interest every contractor and builder.

The kind of a farm home—a seven-room, gambrel roof house with shingled sides—that is an ideal house for the farmer with a family of good size is shown on page 114, while a cross-section drawing of



**A Night Scene in the Modern Dairy Stable. Electric Lights Make It a Simple Manner to Do the Milking and to Keep the Stable Clean When It Has Modern Equipment.**



**The Litter Carrier Is a Great Saver of Labor in the Modern Dairy Barn. This Is One Piece of Equipment That the Present-Day Farmer Needs Most of All.**

the house appears on page 113.

Here are four of the most important buildings on the farm. The designs shown are modern—the kind every farmer wants and that every contractor likes to build.

The dairy barn is designed to accommodate 24 cows and their winter supply of feed. The stable proper, as is shown by the blue printed plan, is arranged so that it may be equipped with the many labor-saving and profit-producing devices that go in the modern barn. The width, 36 feet, is just right for two facing rows of stalls, a litter alley on either side, and a feeding alley thru the center. It is equipped with an overhead carrier, the track running to the silo placed at one corner. The foundation of the barn is of concrete blocks and the stable has a concrete floor. Fifteen steel stalls are on one side of the stable and nine on the other. Besides, there are two large pens, one for a bull and the other for calves.

Undoubtedly one of the most profitable investments a farmer may make in his dairy barn is an overhead carrier track. The work of cleaning the dairy stable is uninviting, to say the least; it also requires a great deal of time and



effort. By the use of the litter carrier, much of this work is eliminated; the stable is more carefully cleaned, and is kept in a condition that promotes the health of the cows. It has been estimated that during the years the litter carrier lasts, it will save its owner between \$200 and \$300 in labor costs alone. The carrier track also is a means by which the ensilage, hay and other feed can be quickly and easily transported to the mangers at the stall heads.

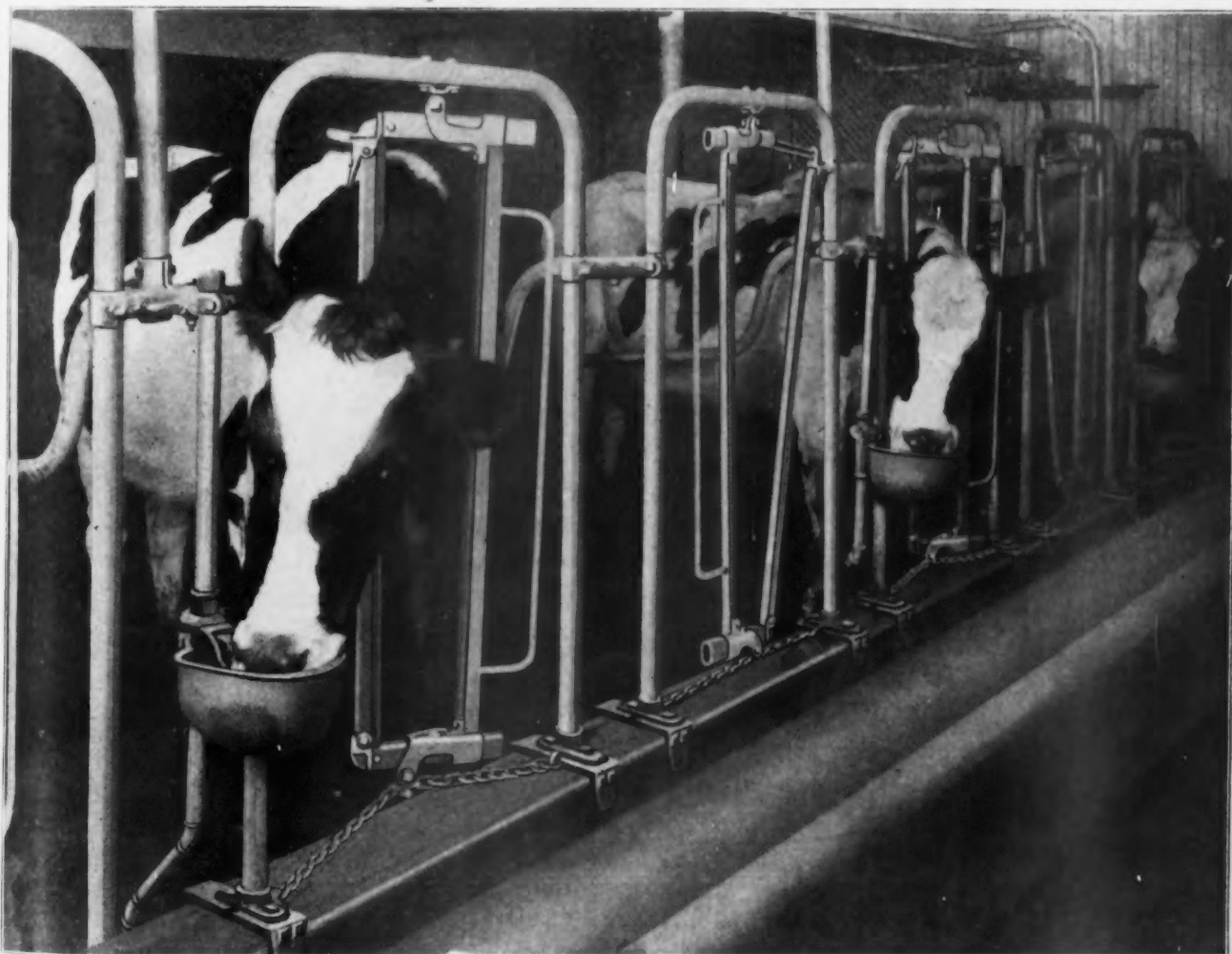
Movable stanchions, usually of steel, are the equipment that is deemed the most humane and best to hold the cows in their stalls. They permit the greatest freedom of movement, do not fret the animals and at the same time firmly secure them. Steel pipe partitions between the stalls also are used, as they are sanitary and are practically unbreakable.

In the construction of the modern barn, provision also is made for ventilation and for a supply of fresh water at each stall head.

Three things keep cows healthy, contented and productive when they run in the pasture in the summer. They are plenty of fresh air and water and good, wholesome feed. In the modern barn these three necessities are supplied during the cold weather. Fresh air in the barn is as important as either water or food, if the animals are to be kept healthy. In the barn shown, provision for good ventilation is made. On the top of the barn are three ventilators of the suction type. These ventilators are connected with foul air flues, set into the walls of the barn and following



A Movable Stanchion Keeps the Cow Securely in Her Stall, but at the Same Time Allows the Greatest Freedom of Movement.



A Remarkable Photograph Showing How the Milk Producers on the Modern Farm Always Have Fresh, Running Water at Their Stall Heads. Drinking Bowls Not Only Lighten the Work in the Dairy Barn, but the Ability of the Cow to Get Water at All Times Greatly Increases the Flow of Milk. Ten Per Cent Gain Is Not Unusual.

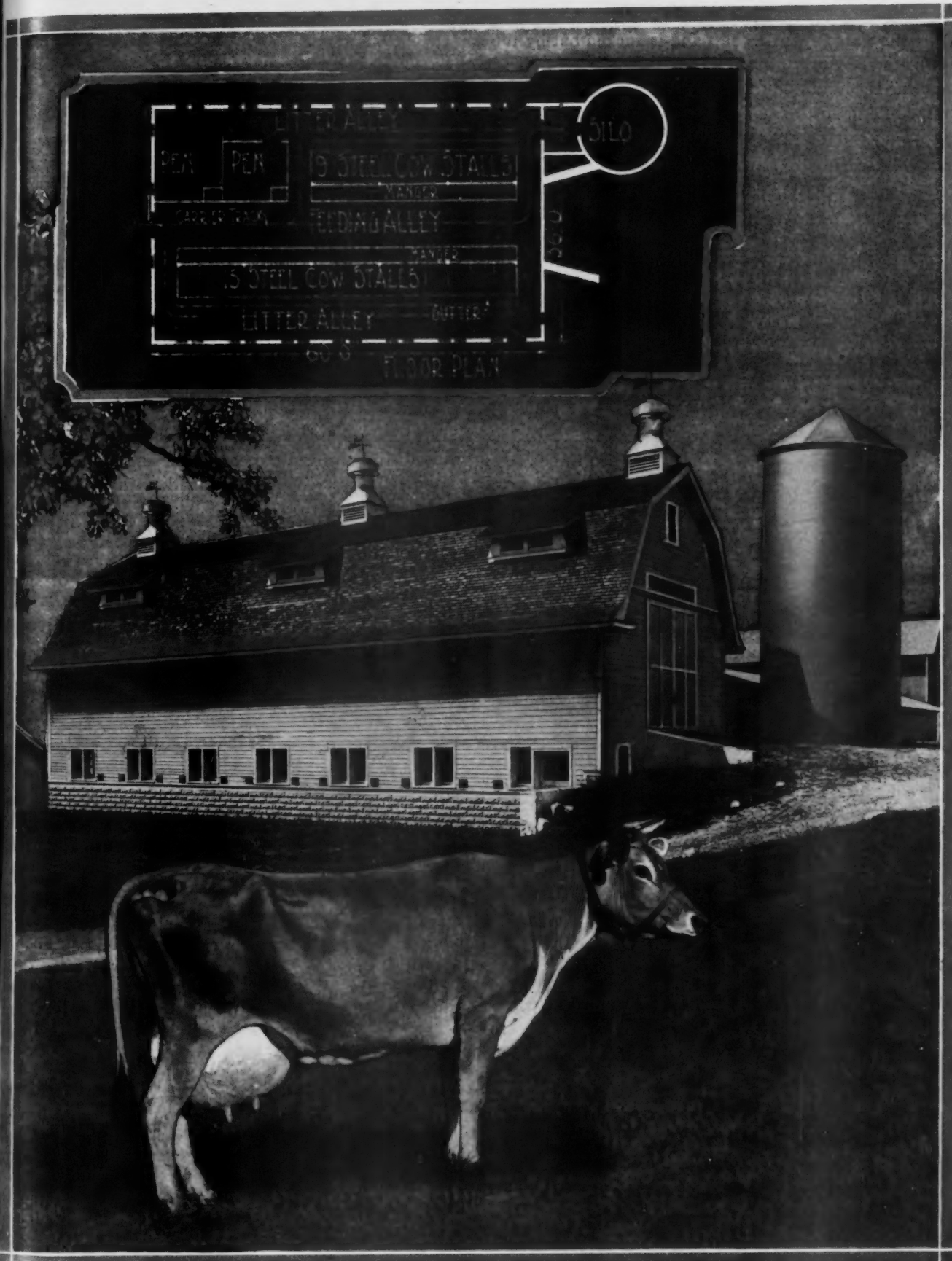


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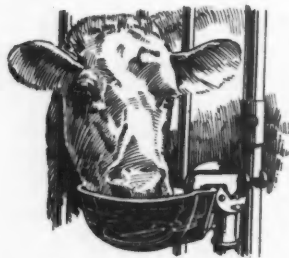
**A** MEDIUM-SIZED MODERN DAIRY BARN AND SILO. This gambrel roof, plank frame barn is 36 by 60 feet and will accommodate 24 cows, a bull and the young stock. The stable is equipped with steel stall partitions and stanchions and has an overhead carrier to take out the litter and to deliver the ensilage to the mangers. The concrete floor means a clean barn; water cups at every other stall head mean less labor and greater milk production; the ventilation system means fresh, pure air and more healthy animals. There is plenty of mow space for the forage, while the silo provides a supply of fresh feed all winter. This barn is of the type that progressive, prosperous dairy farmers are demanding, because they are the most economical.

In the foreground is pictured "Eminent's Bess," world's record Jersey cow, 18,782.9 pounds of milk in one year.

the wall and roof lines. The warm, foul air rises from the stable thru the flues and is sucked out by the ventilators. Fresh air is admitted thru similar flues, entering thru the side walls and piped along the ceiling to the middle of the stable.

### Modern Barns Need Modern Equipment

**T**HE modern system of giving each cow her own individual drinking bowl is not based upon theory but upon proven facts that every man who is milking even a few cows should know. And as milk is composed of 90 per cent or more of water,

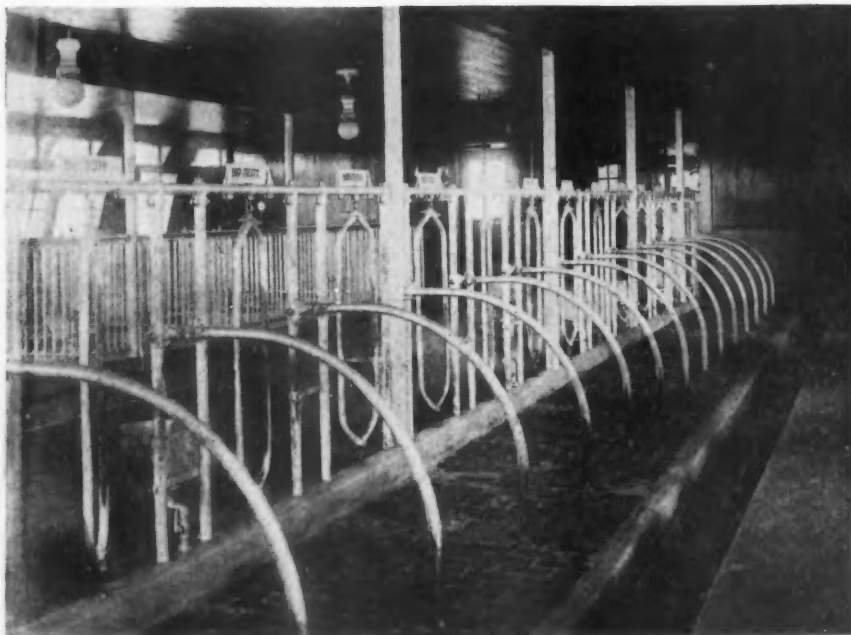


"Phantom" View of Drinking Cup, Showing How the Cow Turns on the Water by Pressing the Disk in the Bowl. When She Stops Drinking the Water Is Automatically Shut Off.

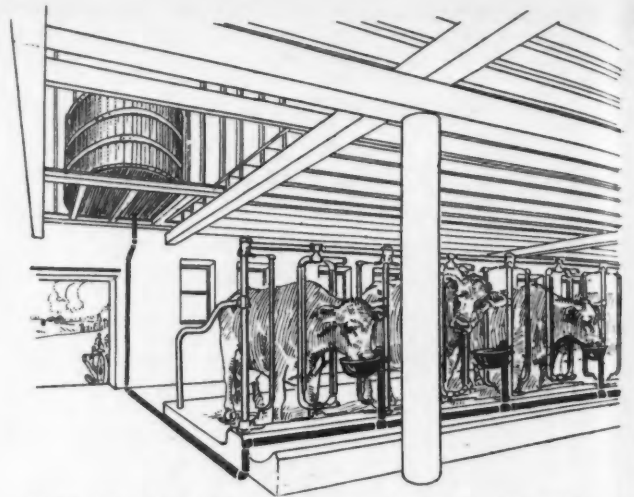
you do not have to figure much to see how closely dairying profits are related to the amount of water consumed by milch cows. It can be easily shown that a drinking bowl system will pay for itself in a few months. When these facts are brought forcefully to the attention of a dairy farmer, it can and does often lead to remodeling or the bulding of an entirely new barn.

It is vitally important to give the animals perfect comfort. A cow is a sensitive creature and anything which adversely affects her nervous system immediately retards her milk production.

It is not a difficult matter to make any prosperous farmer see the advantage of equipping his dairy barn with modern steel stanchions and stalls, calf pens, bull pens, etc., because this saves him much labor and provides his cattle with the most comfortable and sanitary quarters. He will, of course, include an overhead track or carrier system for handling both litter and feed.



Another View of a Row of Stalls, Fitted with Movable Stanchions and Steel Partitions. Note That the Stall Floor Is of Block That Is Easy on the Feet of the Cows.



Sketch Showing Piping Necessary to Supply the Water to Individual Drinking Cups. The Overhead Tank or a Pneumatic Pressure Tank May Be Used.

Any manufacturer of this modern equipment is ready to fully inform the contractor and builder on all of these fixtures so that he can discuss them intelligently with the farmer.

### Individual Drinking Bowls Important Barn Equipment

But the individual drinking bowl system is of such tremendous importance that it can well be used as the first thing under discussion which will develop the farmer's desire for all of the other labor-saving fixtures, the installing of which invariably results in a good-sized, profitable order for barn construction for the builder and lumber dealer.

Is there anyone on a farm who enjoys the task of chopping out the ice in water troughs when the thermometer is hovering around zero? It is hard work and when the water is finally at hand, the cattle drink gingerly because they stand shivering in the cold blast. The effect of ice-cold water upon a cow is just the reverse from that desired by her owner. The animal drinks less than she really desires and requires, because the cold water chills and repels her. Furthermore, the job of chopping out the ice in the trough is so disagreeable that she is probably watered not more than once or twice a day.

### Continuous Water Supply Increases Milk Flow

If given the opportunity to drink water of moderate temperature, easily, whenever desired, it has been conclusively demonstrated that the average cow will produce from 10 to 15 per cent more milk during the winter than when watered at the trough.

Did you ever realize that a cow will actually drink all night long? This has been proved many times in barns equipped with the latest type of individual drinking bowls.



Men have stationed themselves in such barns, and these watchers have reported that the valves of the drinking bowls were clicking all thru the night, thus showing that the desire for water brought the animals to their feet at frequent intervals that they might take a few swallows.

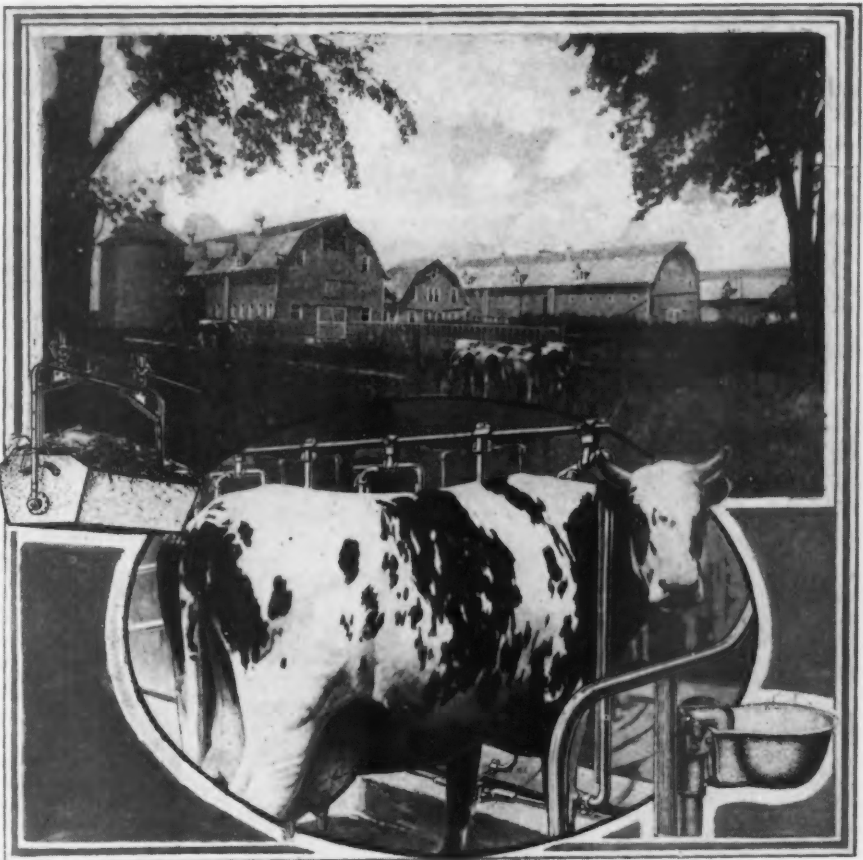
Water taken in small quantities stimulates digestion, thus bringing about greater assimilation of the food. In other words, the cow that has her own water bowl not only produces a greater quantity of milk but extracts more of the elements from her food that make her milk rich.

The method of installing a system of individual drinking bowls is a simple matter. One pipe takes care of an entire row of bowls connected in series. The water enters the pipe line from the tank and goes out at each individual cup.

The cow puts her mouth down into the water bowl to drink and as she does this, she unconsciously presses upon a little disc which opens the water valve. As long as the disc is pressed down, water runs slowly into the bowl, but when she lifts her head the valve closes. This operation is very simple. The disc forms one end of a lever, the opposite end of which presses against the valve head and forces it open. As the cow's head is raised, the pressure is released from the disc and the coil spring over the valves force the valve back into its seat, thus stopping the flow of water.

#### Drinking System Can Be Installed in Any Barn

This drinking system can be installed in a barn equipped either with wooden fixtures or modern steel stanchions. But, when a dairy farmer arrives at the point where he is ready to put in a modern drinking



Partial View of Dairy Barns on the Blaine Farm, Lake Mills, Wis. The High-Priced Holsteins on This Farm Are Given the Benefit of Everything in Modern Dairy Barn Equipment. The Calf Barn Has a Complete Steam Heating Plant. Bess Burke Ormsby, the Famous Cow in This Picture, Is a Recent Addition to the Blaine Herd. Value, \$25,000.00. Sire, Sir Pietertje Ormsby Mercedes; Dam, Spring Brook Bess Burke. Yearly Record, 26,044.7 Pounds of Milk; 1,164.14 Pounds of Butter.

system, he is planning for the future as well as the present. He then realizes the profits which he can make out of his herd and plans for a definite yearly increase in its size. He is ready to consider the use of anything in his dairy barn which will save expense, lighten his labor, and especially that will make his cream checks larger in size and show a greater net profit.

Manufacturers of barn equipment make unusual efforts to co-operate with carpenters, contractors, builders and lumbermen. Of course, their primary object is to sell equipment but they fully realize that

(Continued to page 108.)

## Design for a Modern Saw-Tooth Roof Hog House

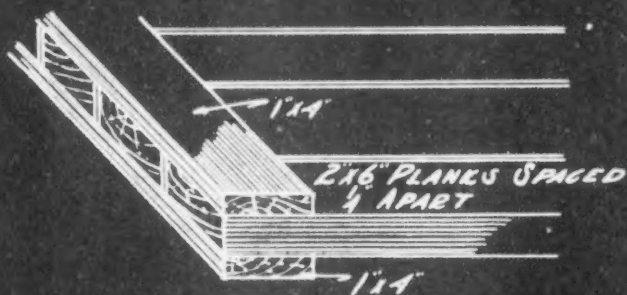
BUILDING PLANNED FOR SIXTEEN SOWS AND THEIR PIGS WILL KEEP ANIMALS AND THEIR YOUNG HEALTHY

UPON the proper design and construction of the winter home of the sows depends the health and growth of the pigs and the success or failure of the hog raiser. That is a pretty broad statement, but it is recognized as the truth among successful pork producers, and contractors need have no bashfulness about recommending a modern hog house to their farmer customers.

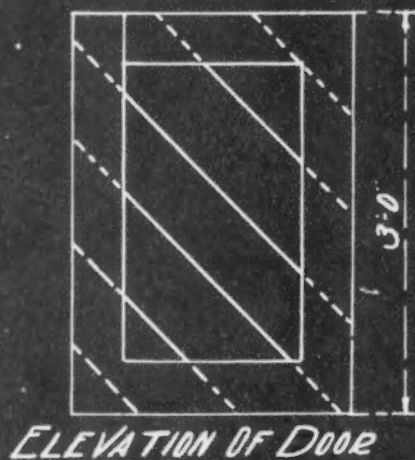
The hog house shown on page 107 is a modern, saw-tooth roof house, 24 by 56 feet in size, contain-

ing sixteen pens. This building is of frame construction, set on a concrete foundation, with a concrete floor. The saw-tooth roof, which permits of a double row of windows, is designed to permit the entrance of plenty of sunlight to the pens on both sides of the building.

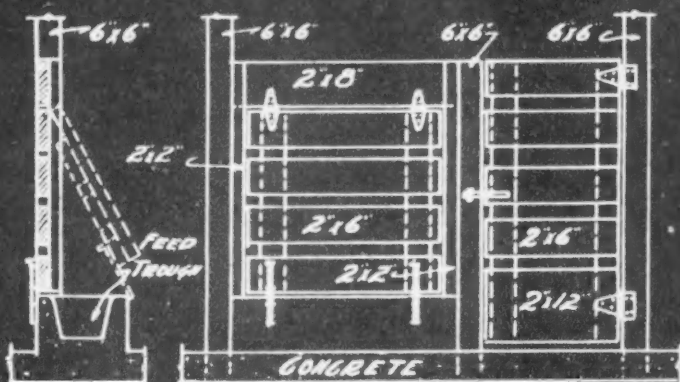
Hog houses always are run east and west and face the south. The southern exposure admits all the sun that nature provides at the time in the year when the sows and the pigs need it. Early farrowing means



SECTION OF PLANK FLOOR



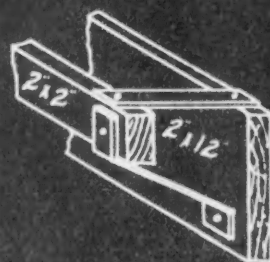
ELEVATION OF DOOR



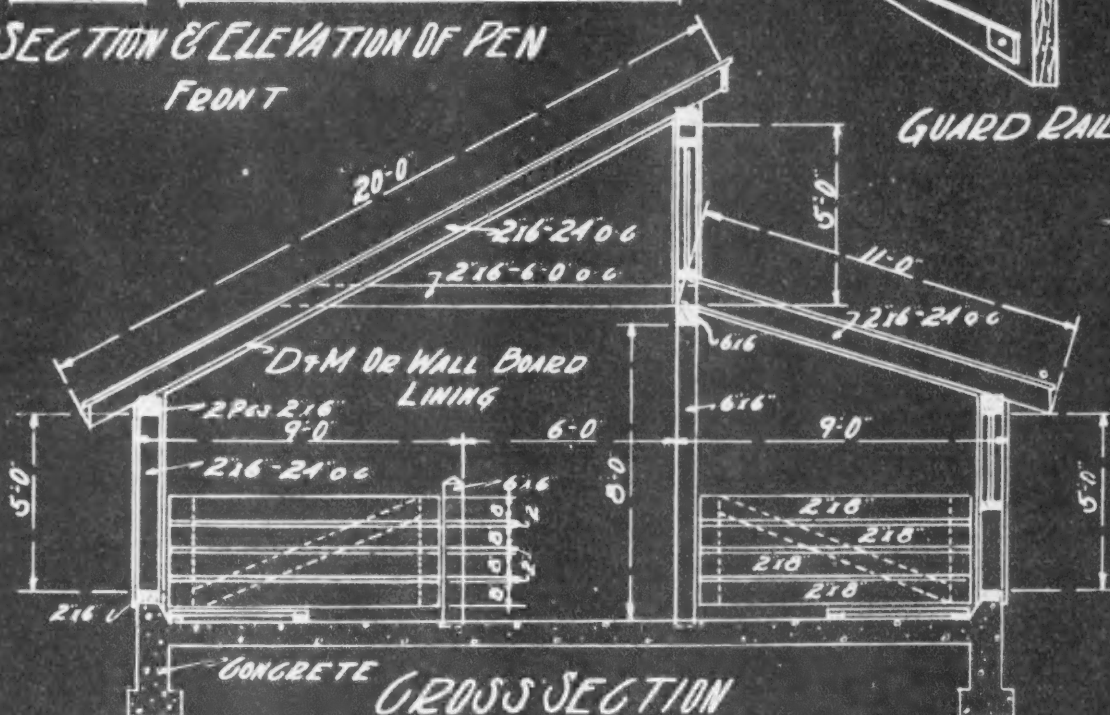
SECTION & ELEVATION OF PEN FRONT



DETAIL OF SMALL DOOR FRAMES



GUARD RAIL



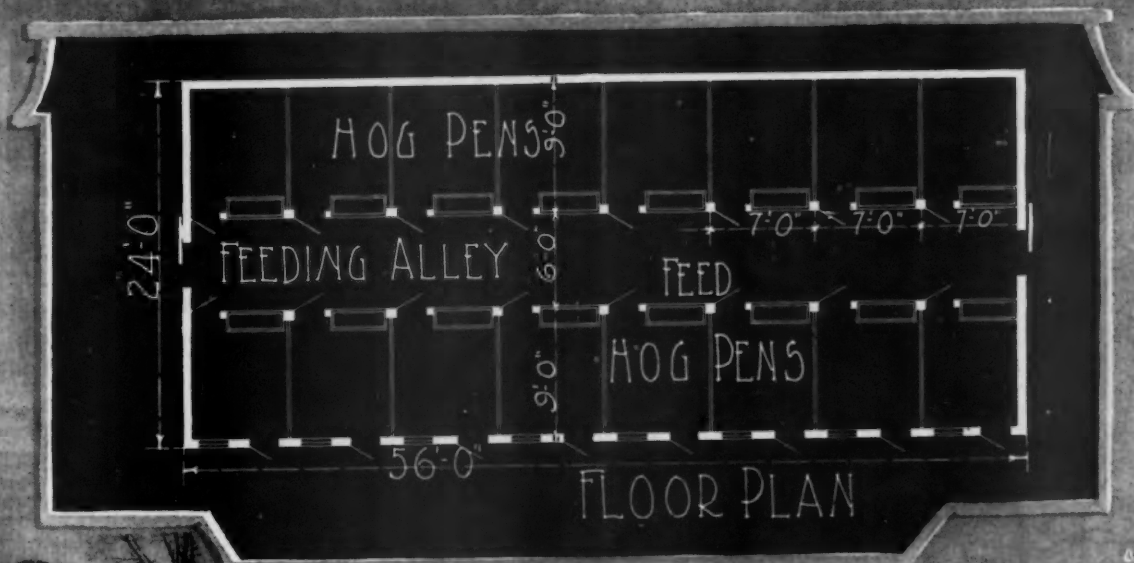
CROSS SECTION

# SECTION & DETAILS OF HOG HOUSE



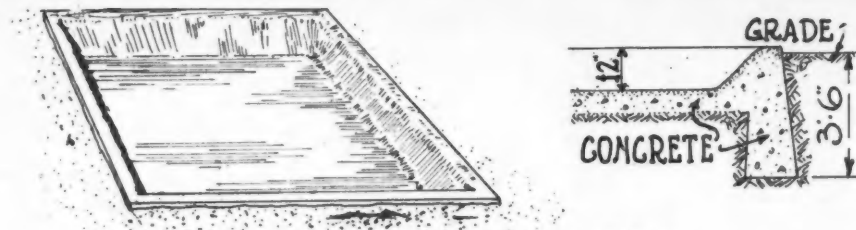






**SAW-TOOTH ROOF HOG HOUSE.** Here is the sort of house that means healthy hogs and profitable hogs. It is of standard frame construction, set on concrete foundation. Size 24 by 56 feet. Inside it is equipped with 16 pens, set on a concrete floor, with half of the pen floors of plank. Two rows of windows, one set in the upper wall, admit plenty of sunshine and heat for the little pigs that are farrowed in the late winter or early spring. Hog raisers who house their sows in weather-tight homes like this can secure two litters a year.

## Farm Buildings We Recommend



Plan and Cross-Section of Concrete Hog Wallow.

heavier pigs when they are marketed. To bring in the litters early in the spring, or even at the close of February, it is necessary that the sows have a warm, sunshiny home. Then when the little pigs arrive they will be protected from the cold that is death to them.

But the greatest advantage that a good hog house brings to the hog raiser is that it permits the sows to have two litters a year—the second one in the late summer or early fall. It means double production and more than double profits.

Framing a saw-tooth roof hog house is a simple matter—when you know how. As this type of building became popular several years ago, it presents no problem to the average contractor and his carpenters. However, on page 106 are shown details of some of the construction features that will aid many builders in erecting buildings of this type.

The cross-section shows some interesting details of the roof construction, and the other drawings show a section of the plank floor, elevation of the floor, detail of the door frame and of the guard rail, and a section and elevation thru the pen.

Roof windows may be added if more sunshine is wanted.

Steel or wooden pens may be used in this hog house. While the floor is of concrete, a portion, usually half,

fact, usually overlooked, that neither the sows nor the pigs will dirty it.

Modern equipment is just as necessary in the hog house as in the dairy stable. While it is not shown on the plan, a carrier track is installed in many hog houses of this size. This is a labor-saver in removing the manure and also is an incentive for the men to keep the pen floors more cleanly.

Ventilation, too, is important in the hog house. While the sows themselves by the heat of their bodies keep the little pigs warm, there is a certain amount of moisture thrown off that the ventilating system removes. The multiplicity of windows, which are hung so that they may be opened much or little as weather conditions require, take care of the ventilation in the smaller houses; larger ones usually are equipped with roof ventilators and foul air chutes.

Contractors cannot impress too strongly on their farmer customers the advantages for profits in a modern, well-lighted and ventilated and cleanly hog house. Properly designed and constructed hog houses increase pork production and decrease labor costs.



### Modern Barns Need Modern Equipment

(Continued from page 105.)

they must work in conjunction with the man who is going to do the construction work for the farmer. The result is that up-to-date manufacturers in these lines maintain barn planning departments which are placed at the disposal of the contractor, builder or lumberman who may desire this service.

It is frequently found that there is great advantage in working from suggestions supplied by a manufacturer of barn equipment. However, the matter of installing this equipment is now a very simple, easy proposition.

It is especially noteworthy that some manufacturers have worked out a plan whereby the entire barn can be built, including the concrete floor, before the fixtures are shipped. This is accomplished by laying out the barn floor plans and determining the number of stalls.



Concrete Hog Wallows Have Replaced the Mudhole on the Modern Farm. These Wallows Provide the Bathing Facilities Hogs Must Have to Be Healthy and at the Same Time Can Be Kept Clean. Most of the Diseases That Devastate Herds of Hogs Are Communicated by Filthy Wallows and Unclean Houses.



With this information at hand the manufacturer of equipment immediately ships the required number of individual steel plates which are to be imbedded in the concrete floor. He gives the contractor specific instructions for placing the anchors and the floor is laid with these anchor plates ready for one or a hundred stalls as the farmer desires.

#### Equipment an Aid to Building Contractors

No man who is on the lookout for contracts for remodeling or building new barns can ignore the fact that orders for steel barn equipment invariably produce good-sized profitable orders for his own line of business.

Every farmer who places an order for modern farm equipment, however small, will eventually spend a considerable amount of money on his barn and this money goes into the pockets of the local contractor, builder and supply dealer.

Especial emphasis must be given to the fact that

orders for individual drinking bowl systems are the forerunners of hundreds of nice barn construction contracts. The reason for this is very simple. In the first place the cost of a complete outfit for supplying water to cows thru individual drinking bowls is very moderate.

The installation is very simple. A considerable amount of labor in caring for the cattle is eliminated and in a short time the owner finds that his profits are materially increased because of the greater amount of water consumed by his animals which results in more milk.

It is only natural for a man who finds that one piece of modern equipment has made money for him and paid for itself, to eventually decide to use all available equipment for obtaining still greater profits from his dairy herd.

Keep your eye on the dairy farmer who buys drinking bowls.

## Design for High Corn Crib and Granary

WEATHER AND RODENT PROOF BUILDING, PROPERLY EQUIPPED, SAVES EAR CORN AND SMALL GRAIN CROPS FROM LOSS

**“W**HAT profiteth a farmer to grow large crops of small grains, if they be lost unto him?” might be a text for the modern farmer.

After the crops have withstood the attacks of adverse weather and have been harvested, there are many enemies that seek to cut down the quantities that have been produced. These enemies are the weather and the rodents that are found on every farm. Thus does the question of storage become important to every farmer, whether he be in the corn belt or in the wheat belt or in those sections of the country where farming is more diversified.

Storage means building. And building means work for the members of the building industry. But greater than either, good, well-equipped storage buildings mean profit for the builder and satisfaction and prosperity for the owner of the building.

One type of grain storage building is a combination high corn crib and granary. A good design for this sort of building is shown on page 111. This is a gambrel roof building of frame construction set on a concrete foundation. Its size is 28 by 40 feet, and it is designed to be proof against rats and other animals, and against the weather.

By a comparison of the perspective of the building and the blue-printed floor plan, the interior ar-

rangement of the building can be thoroly understood. Thru the center of the first floor is a driveway, permitting the wagon loaded with grain to be driven into the building. On either side, running to the ridge are the corn cribs, while in the gables between the cribs from the second floor to the roof are the grain bins.

The side walls of the cribs are of open, bevel siding, or special crib siding, the boards being pitched down and out. The openings admit air, which is required to keep out mildew, while the slant of the siding boards turns them into a water shed.

An important construction feature of a corn crib and granary is the concrete floor. The cross-section shown on page 110 gives details of the foundation and



The Modern Farmer Harvests His Corn by Machinery and Wants a Modern Crib to Store It In. This Photo Shows a Corn Picker in Action.

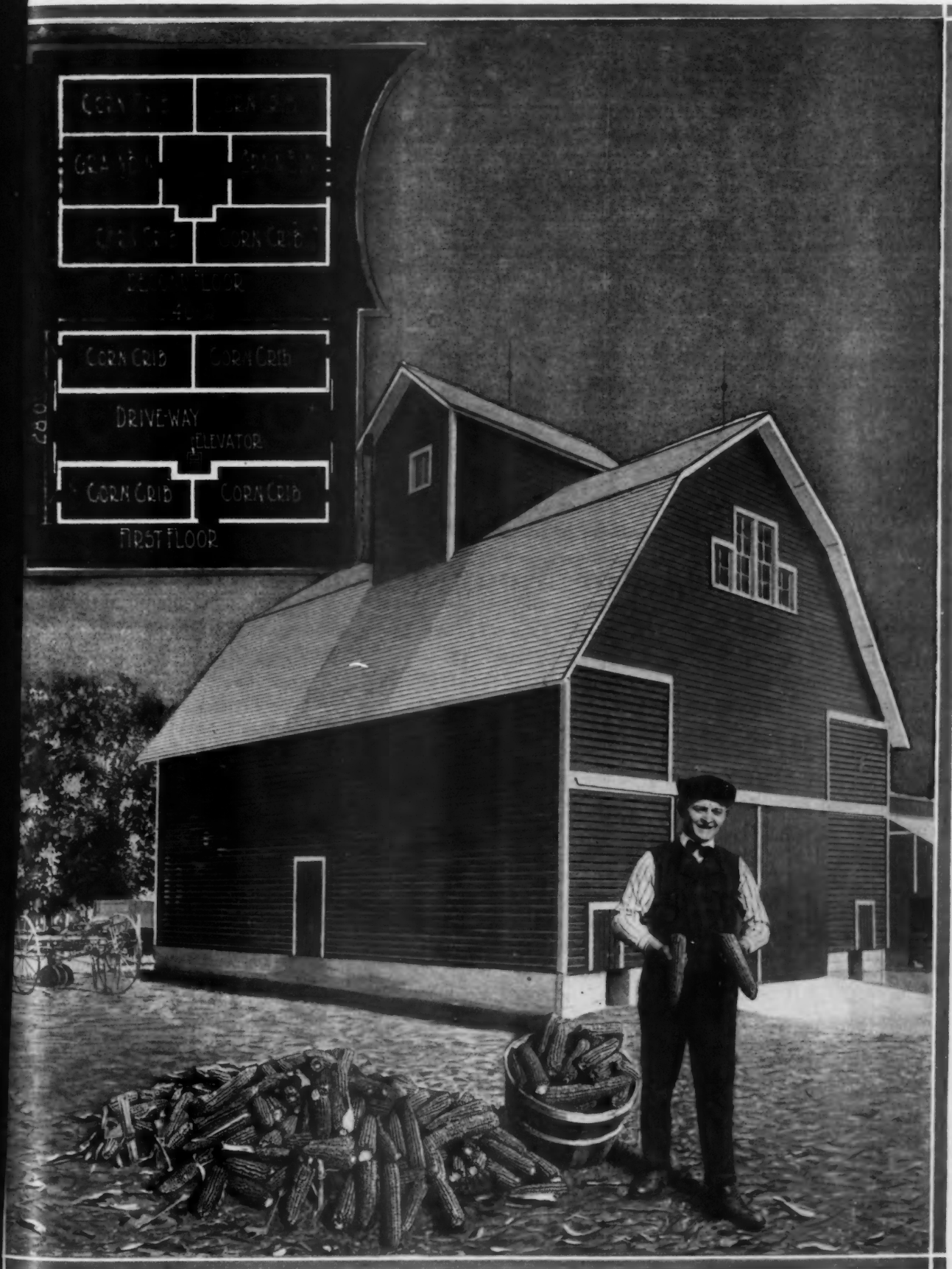












**HIGH CORN CRIB AND GRANARY.** Proper storage houses for the corn and grain after harvest make farming more profitable, as they prevent loss from rain, snow and rodents. This combination corn crib and granary is 28 by 40 feet. It has four cribs, two on each side, that run to the roofs. On the second floor are large bins for small grains. The cupola permits the installation of a power elevator, which quickly and economically carries the corn to the cribs. Set into the concrete floor are sheller drag wells, for removing the ears at corn shelling time.

## Farm Buildings We Recommend

floor construction. The floors of the crib are raised 1 foot 8 inches above the floor of the drive. Underneath are sheller drags, thru which is run an endless belt carrier, which drags the ear corn out of the doors, which are shown on the perspective and indicated on the floor plans, and to the corn sheller.

### Modern Crib Has Power Elevators

The sheller drag is one important piece of equipment for the corn crib. Another is the built-in cup elevator shown on the plan. The elevator is placed at one side of the driveway. It is equipped with an endless belt on which buckets are mounted. The belt well extends across the drive. When the wagon load of corn is driven in, the wagon box is lifted at one end, the corn is emptied by gravity onto the bucket belt, which carries it to the top of the elevator, located in the cupola. A movable spout is connected with the elevator at the top. The spout is long enough to reach all parts of the cribs, distributing the corn into the different divisions.

This elevator also is used to convey the small grains,

such as wheat, oats, barley, etc., to the grain bins. It is operated either by horse power sweep, or by a gasoline engine or electric motor. How much time, labor and saving an elevator gains the farmer may be easily estimated.

Besides the cross-section, which shows floor heights, material dimensions and roof pitch, there are shown on page 110 some interesting construction details. How the studs, plates and joists over the driveway are framed, the framing for the elevator and a section of the driveway, showing the plate and studs, are contained in this page.

A modern, efficient corn crib and granary is a farm building that will pay for itself in a few years thru its saving from destruction of the grain that is housed in it, while with the equipment described, the farmer can store his crops quickly and at the least expense. Such a building allows him to store his crops until the time he can get the best prices and insures that the corn and other grain will be kept in first-class condition.

## Design for Modern Farm Home

TWO-STORY, GAMBREL-ROOF, SHINGLED HOUSE CONTAINS SEVEN GOOD ROOMS

WHILE great emphasis is laid on the value of other farm buildings—and properly so, for it is from them that the owner gets his prosperity—a modern, comfortable and convenient home is needed to round out the farm building group. For, after all is said, it is the home life that is more worth while, whether it be on the farm or in the city.

The modern farm home can be made just as convenient and comfortable as the city home. Architecturally, a better



A Graceful Trellis Arch That Would Beautify and Make Interesting Any Modest Garden. Such Trellises Come Ready Made at Very Reasonable Prices, or Any Carpenter or the Home Owner Himself (if Handy with Tools, Can Easily Make One.

home can be erected in the country than in the city for the same money; its surroundings are far better than those about the city home, and thru the aid of the gasoline engine, which furnishes power, may be had electric light and all the household equipment that is electrically driven and a water pressure system. Thus in this day the

farmer may have all the advantages of city life, with the health, beauty and comfort that abound in rural communities.

One type of an economical but beautiful and comfortable farm home is shown in the design that appears on page 114. This is a gambrel roof, shingled house, containing seven good rooms and arranged so that the duties of the farm housekeeper may be accomplished in an easy manner. The house is 30 by 36 feet in dimensions and has three rooms on the first floor and four bedrooms and bath on the second.

From an exterior standpoint, this house is exceptionally good looking. The graceful slant of the roof, the double dormer windows on the second floor, the porch set into the corner, and the bay window in the living room combine to give this home a fine exterior appearance.

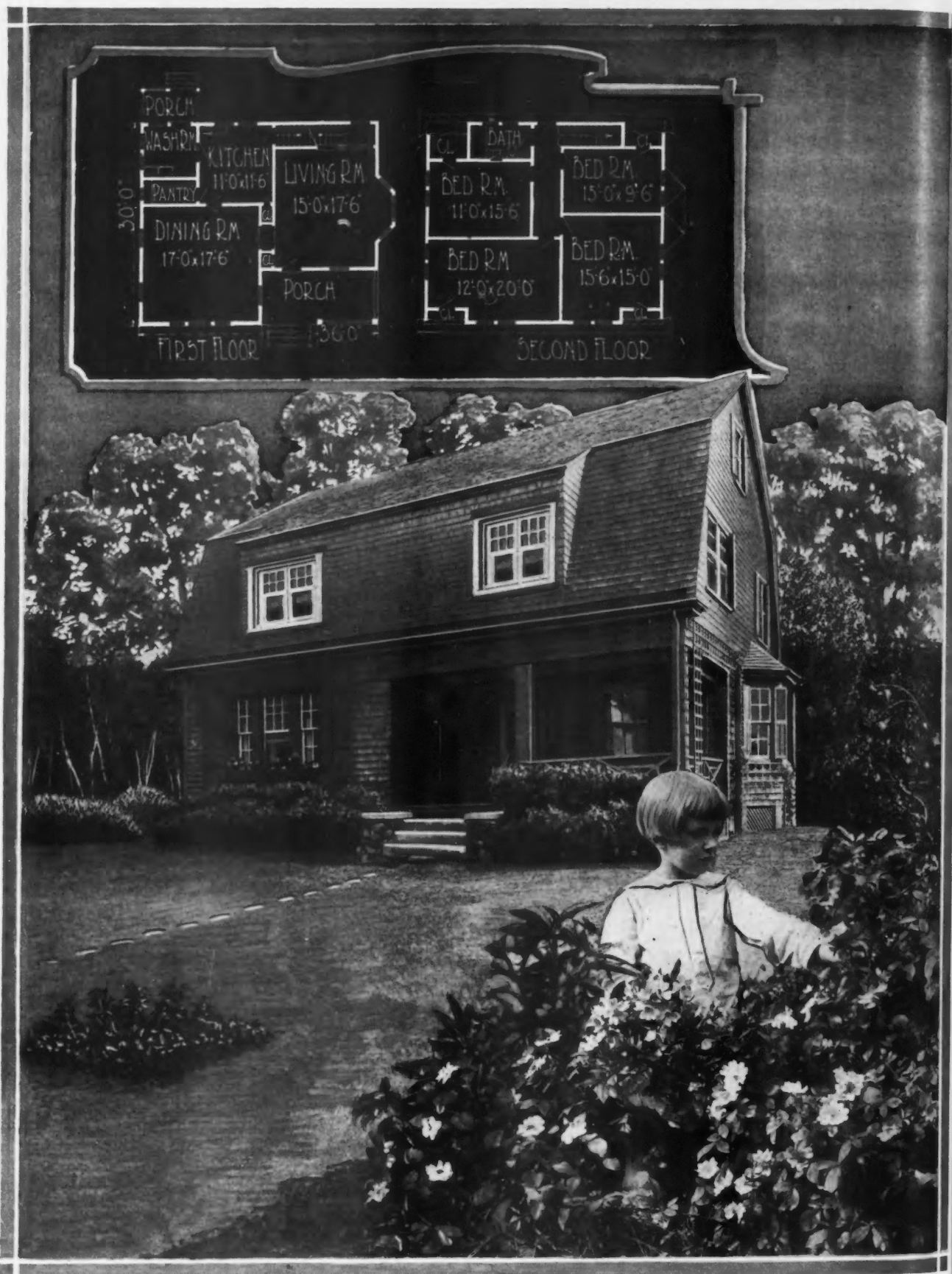
The entrance from the porch leads directly into the large living room, 15 by 17 feet, 6 inches. To the left at the front and connected with the living room by a cased opening is the dining room, also large, being 17 by 17 feet, 6 inches in size. Back of the dining room, with a pantry between, is the kitchen, 11 by 11 feet, 6 inches. Off the kitchen is a wash room.

An open stairway at the rear of the living room leads to the second floor. On this floor are four good bedrooms, all corner rooms, light and well-ventilated. At the head of the stairs is the bathroom. Each room has a good-sized closet.

The basement extends under the whole of the house proper and, of course, has a concrete floor. Here is







**SEVEN-ROOM COLONIAL FARM HOUSE.** This is a home that fits exceptionally well into the pleasant surroundings most farm homes are provided with by nature. It is a Colonial house, 36 by 30 feet and contains seven rooms, three on the first floor and four sleeping rooms and bath on the second. It is of standard frame construction with shingled sides. The floor plans show how well the rooms have been arranged and their sizes. It has a basement with concrete floor designed to accommodate a modern, hot air heating plant and laundry equipment.

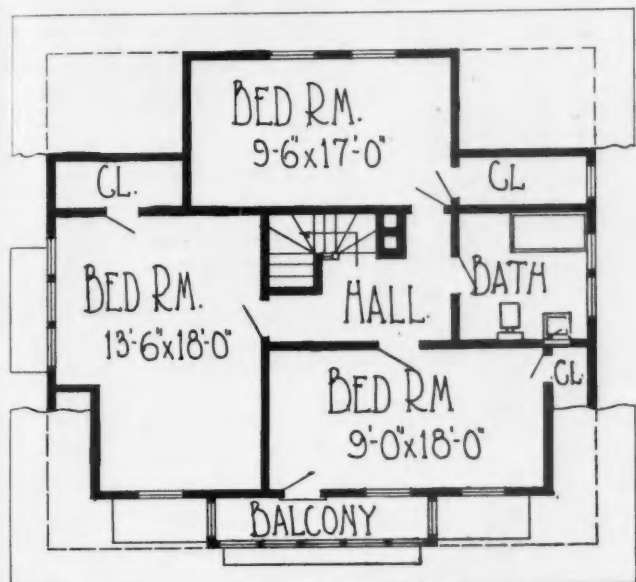
# Comforts and Conveniences for the Farm Home

CONTRACTORS OWE IT TO THOSE THEY BUILD FOR TO SEE THAT THE HOUSES ARE THOROLY HEATED, WELL-LIGHTED AND HAVE THE SAME LABOR-SAVING HOUSEHOLD EQUIPMENT THAT IS INSTALLED IN CITY HOMES

EVERY effort, every convenience and every piece of labor-saving and satisfaction-giving household equipment that makes home life in the cities attractive now can be had in farm homes. In fact, the modern farm home as constructed and equipped by up-to-date contractors and builders compares most favorably with the city homes.

It long has been the expressed and emphasized belief of the AMERICAN BUILDER that contractors in the farm building field owe it to their farmer customers to

there are two or three things that should be carefully considered before the furnace is installed. The location of the furnace and its one large register in the home is of prime importance. The register, of course, is placed in a room directly over the furnace. This register should be centrally located so that as the warm air rises it will strike the ceiling and be deflected toward all parts of the house. The location that has been found to be most efficient is in the cased open-



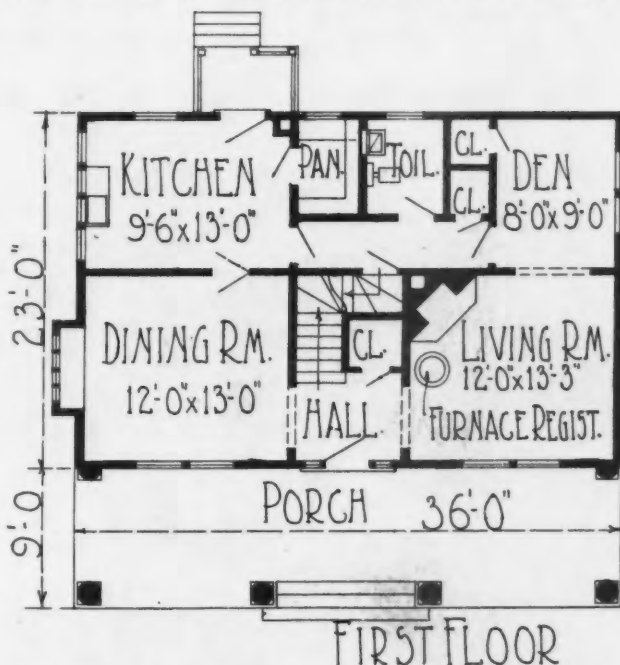
SECOND FLOOR

Second Floor Plan of Farm Home Shown on Page 117.

advise as strongly as possible the installation of such comfort-giving features as pipeless furnaces, electric light and water plants, modern laundry equipment and other labor-saving devices, such as vacuum cleaners, electric cooking utensils and power-driven sewing machines that electric light plants make possible.

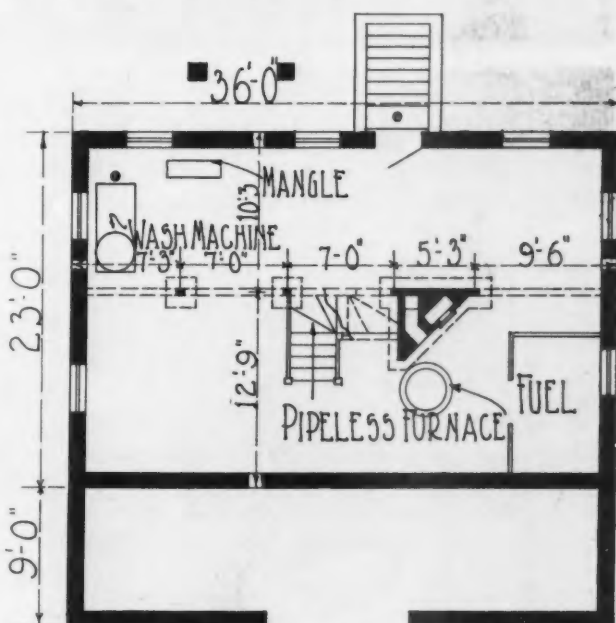
One of the first and extremely popular installations that rural builders have been placing in the farm homes they have built has been and now is the heating plant installed in the basement, and the newest of the basement heating plants is the pipeless furnace. While the pipeless furnace has been on the market only a few years, comparatively, it at once appealed to farm home owners. The ease with which it may be installed in houses already built and its ability to heat homes of medium size are two of the reasons why so many of them have been put to work heating rural homes. But its greatest advantage is that it saves labor; not only the labor of carrying coal and ashes, but the labor of maintaining the home in the cleanly condition every good housekeeper desires.

To secure the best results from a pipeless furnace



FIRST FLOOR

First Floor Plan of Farm Home Shown on Page 117. The Register for the Pipeless Furnace Is Located in the Living Room at a Point Where the Warm Air Will Circulate Thruout the House.



BASEMENT PLAN

Basement Plan of Farm Home Shown on Page 117. Indicated on the Plan Are Best Locations for Pipeless Furnace and the Laundry Equipment.



ing between the two main rooms on the first floor and near to the open stairway. In rising and being forced along by the other warm air that follows in a continuous flow the heat is carried to all open spaces in the building, and as it cools, is carried back to the register face, thru which it is drawn back to the furnace and reheated, ready for another trip thru the house.

Where there is a room or rooms that are likely to be shut off, such as the bath room, or a room occupied by an invalid, it is always well to place registers in the walls connected with a hall or open rooms, or at the top and bottom of the door. Also where the ceiling is more than 18 inches or two feet higher than the door casing a register should be placed above it.

Pipeless furnaces are now made so that they will

efficiently heat almost any sort of a home, ranging in size up to ten, or even more, rooms, depending, of course, on the size of the rooms and how they are laid out. The home owner also has a wide choice in the type of register to be used. It may be a register that is round or square and is flush with the floor, it may be a double-faced register that sits into the wall between two rooms, or it may be a register that stands up from the floor and can be used as a settee or a table.

A most popular feature, especially with the women, that is getting more and more attention from the contractors who plan modern homes, is the laundry. Laundry equipment has been taken to the farm homes along with the water system and electric light plant. These two essential conveniences make possible the operation of the electrically-driven washing machine and the electric flatiron.

One of the latest and most convenient methods of getting the washing done by power is the washing machine and tubs mounted on a platform, as shown in the accompanying illustration. The platform usually is set in one corner of the basement, and at the proper distance a floor drain is installed. Nearby are the hot and cold water faucets. The clothes are placed in the washer, which is operated either by a small electric motor or by a belt from the small gas engine. Then they pass by successive stages thru the rinsing water in the second tub thru the wringer, also operated by power, to the tub containing the bluing water,

and back thru the wringer again, when the clothes are ready to hang out. The advantage of this arrangement is that the platform can be moved whenever desired; there is no lifting of water-filled tubs—in fact, the whole operation of getting out the washing is performed by power. The importance of this proposition from the builder's point of view is that it saves the expense of installing laundry trays or set tubs.

Another labor-saving piece of laundry equipment is the mangle, shown in another illustration. This machine is designed especially to iron the heavy pieces, such as sheets, table cloths, etc. The clothes are merely folded and are passed between the rolls, and come out ironed. For the more delicate garments, an electric iron and the regulation ironing board are used.

Equip the farm home with the laundry equipment here described and neither Monday nor any other day of the week will have a terror for the housekeeper. These are the things that make life in the country more than doubly worth the living. And, when the health



Composite Photograph, Showing the Pipeless Furnace in the Basement and the Double-Faced Register Above It. Note the Location of the Register in the Opening Between Living and Dining Rooms. The Single Register Supplies Heat to Both Lower and Upper Floors of a Medium-Sized Home, but It Does Not Heat the Cellar.



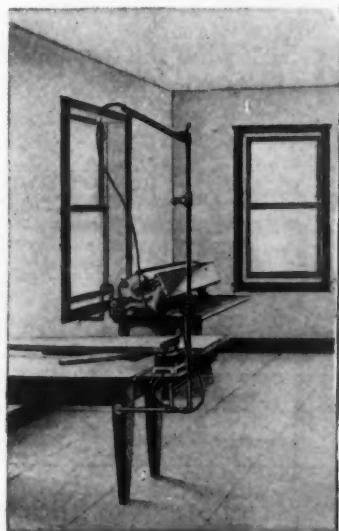
**MODERN SEVEN-ROOM FARM HOME.** Here is an exceptionally good farm home building design. The house is 23 by 36 feet and contains seven rooms. The living and dining rooms, den and kitchen are on the first floor, and three bedrooms and bath on the second. The arrangement of the rooms is shown by the plans on page 115. The basement plan shows the location of the pipeless furnace and the modern laundry equipment, which go far toward making life on the farm more worth the living.

of the farm housewife, or the cost of labor, if the work is done by hired help, is considered, they pay for themselves quickly and the contractor who advises their installation earns his customer's gratitude.

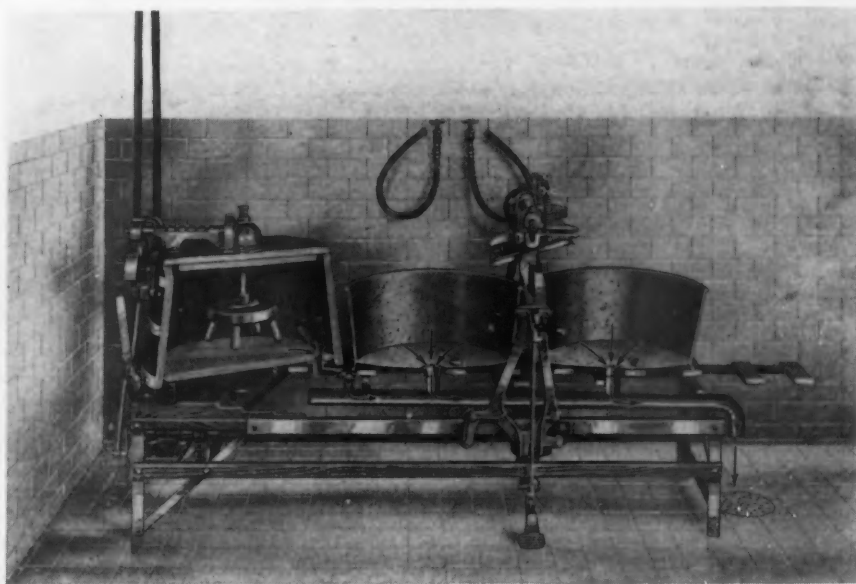
So much has been written about the farm light plant and pressure water system that every contractor now considers the installation of these two plants whenever he is called on to help plan a farm home. Electric light also brings power into the house and other farm buildings. It provides light for the house, the barn, the dairy stable and the garage. It also provides power for the various labor-saving pieces of household equipment, and for the water system as well. It gives

the farmer an individual power plant for the churn, the milk separator, and the corn sheller; in fact, for every one of the lighter pieces of machinery he has found necessary for the economical and efficient operation of the farm.

But what is far more important is the fact that the so-called "city comforts," when given to the farm house, make it a real home—a place where comfort and good health abound—the drudgery all absorbed by machinery. All those concerned with planning and building for farmers should keep these things in mind, and recommend them.



**Mangle and Ironing Board, with Electric Iron, Two Important Pieces of Equipment for the Modern Farm Home Laundry.**



**Power-Driven Washing Machine and Tubs Mounted on a Portable Platform. There Is No Need for Set Tubs or Expensive Laundry Trays to Be Built in if This Type of Washing Machine Is to Be Used.**

## Design for Concrete Block Milk House and Power Plant

AN ECONOMICAL PLANT BUILT CLOSE TO ITS SOURCE OF SUPPLY

**T**HE concrete block lends itself to many varied uses in the construction field and, with the added stimulus brought about by the nation-wide movement to encourage its use in the building field, contractors will be kept busy satisfying the demands of their patrons. Naturally a large field for construction work is on the farm, and concrete block will be used in this work. One of the typical examples of how it is used is shown in the accompanying illustration.

This milk house, which is a popular type of building on dairy farms because of its general handiness, is constructed out of rough-faced block. The foundation is concrete. Notice its position in relation to the barn. The closer it is, the easier the handling of the milk and the less liability of loss.

It is the square type with a hip roof covered with shingle. The cupola adds a touch of the artistic while it provides the ventilation of the house. Utility and attractive design can be combined successfully and help to dissipate much of the dullness that is so often found in farm buildings. The entire structure, including the frame addition, measures 14 by 19 feet, not a large building by any means.

In the milk room the apparatus for cooling, separating, testing, etc., is arranged in the most logical manner to facilitate handling and drainage, which is an important feature in any milk establishment. The concrete floor is pitched so as to drain the liquids thru a trap in the center which empties into a drain below constructed of tile.

The farm power plant is located in the frame building adjoining the milk room. This building is set on a substantial foundation of concrete to support the electric generator, batteries, engine and boiler. It is also drained by a trap in the center of the floor. Just outside is the can rack protected by a sloping roof of shingles. At the other side of the building is the loading and receiving platform built of concrete, which extends into the milk room and is equipped with a carrier track.

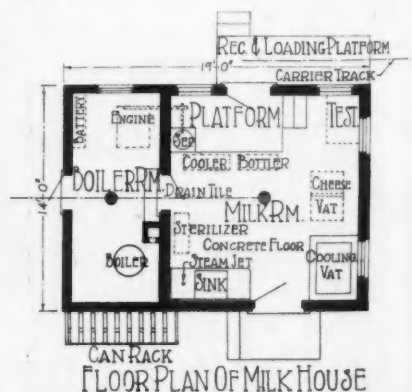
With a plant such as this the farmer can bottle his milk for delivery to trade in a nearby city or town, cool it while waiting to bring it to some large factory, or make his own by-products. He has room for a cheese vat if he wants to turn out that product.



**I**N putting up rafters it often happens that the rafters are cut a little long, or by using a thick ridge-board the rafters must have a little cut-off at the top end. To find the exact length of the rafter after the ridgeboard is in place, take a pole and take the length from the corner of the plate to the corner of the ridge; transfer this length to the rafter, which gives the correct length.



**M**ECHANICAL cooling is the latest thing for dairies. Look into it.



Floor Plan of Milk House, Showing Milk Room Arrangement Boiler Room and Loading Platform.



A Concrete-Block Milk House with Frame Addition for Boiler Room and Can Rack. This House Is Built Near the Dairy Barn. The Size, Including Addition, Is 19 by 14 Feet.





A Modern and Continuous Poultry House and Runs, Designed to Keep the Flock in a Healthy and Productive Condition.

## Design for a Modern Continuous Poultry House

BUILDING GIVES FLOCK PLENTY OF ROOM, BUT IS ECONOMICAL

A POULTRY house large enough for a good flock, not too deep, so that they will have plenty of yard room, well-lighted and ventilated—that is what you have in the modern continuous poultry house shown above. Healthy and productive birds need plenty of scratching room in the daytime, but a warm and well-ventilated house at night.

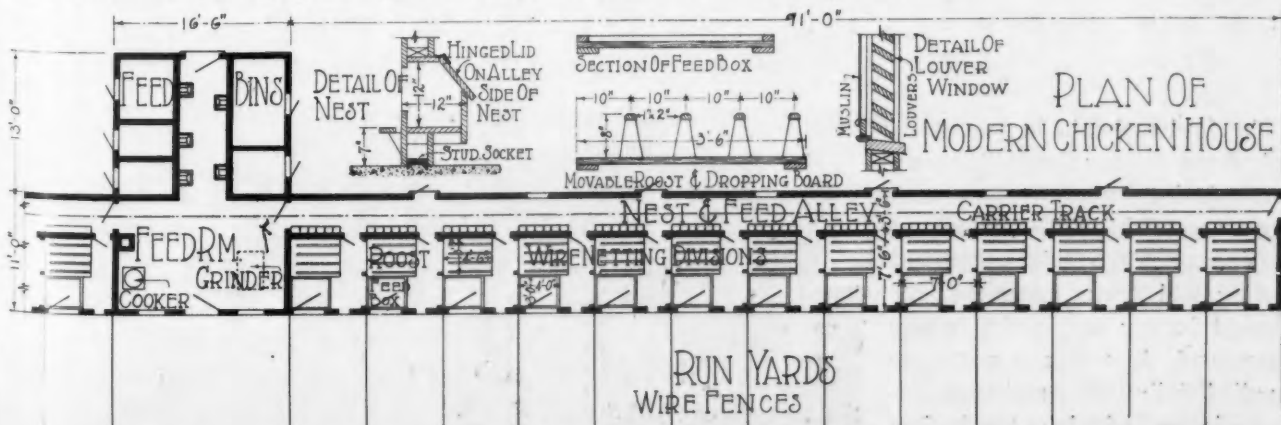
This building altho 91 feet long is only 11 feet deep, gives plenty of room for yard runs. Adjoining it are the feeding rooms and bins, equipped with the grinder and cooker. The nests, 12 by 12 inches by 4 feet 6 inches, are built in a row and can accommodate thirteen hens at one time. Along the rear of the building is the nest and feeding alley. Just above this are the roosts and dropping boards, both movable. The poultry raiser can clean them thoroly and thus prevent the spread of lice and vermin. Sanitation is very important to a successful flock.

Each feed box adjoining the nests opens out into the yard runs by means of the louver window, a device made of muslin opening by a hinge at the top. When

closed it shuts out light and also provides excellent ventilation while excluding the extreme cold.

The constant demand for increased food production started during the recent war, with emphasis on the poultry branch, together with high prices of eggs and poultry, has stimulated poultry farming extensively. New raisers are getting into the business every day, and inevitably the demand for houses has greatly increased. The builder will be called on to furnish ideas. Unless he is ready with real live suggestions this big source of business will pass him by. It is a branch of the building industry that cannot be neglected.

Record-breaking prices that have been secured for eggs and poultry during the last year have been a great incentive for those who have the ground to go into the poultry business more extensively. And to produce eggs in winter when prices are highest, a warm poultry house is necessary. For these reasons it is certain that the demand for modern poultry houses will be greater than ever this year. Get your farmer customers interested in a real poultry house—a house that will keep the hens laying all winter.



Floor Plan, Showing Placing of Nests and Details of Construction of Continuous Poultry House and Runs.

## The Self-Feeder Saves Labor and Feed Bills

THE PRINCIPLES OF THE SELF-FEEDER AND HOW TO BUILD ONE

By Earle W. Gage

**F**EEDING more animals usually means more labor, but the self-feeder system allows for increased production with decreased effort. The self-feeder does not remove all work from stock feeding, but it does reduce it to the minimum.

Altho self-feeders are valuable with all kinds of live stock, the greatest benefits have been reaped where used with sheep and swine. To be successful, the feeder must be strong, cheap, capacious, portable, easy

The self-feeder is especially valuable at weaning age. For two or three weeks before weaning, place a small feeder in a corner of the pen. Arrange a creep which admits the little ones only. Feed oatmeal, ground oats, middlings, and so on, in the feeder, and if possible try to procure a little skim-milk when the sow or ewe is finally removed.

The feeder, while designed especially for outdoor or pasture feeding, may be adapted to pen or yard feeding in winter, provided it is placed where snow and ice will not interfere with the troughs.

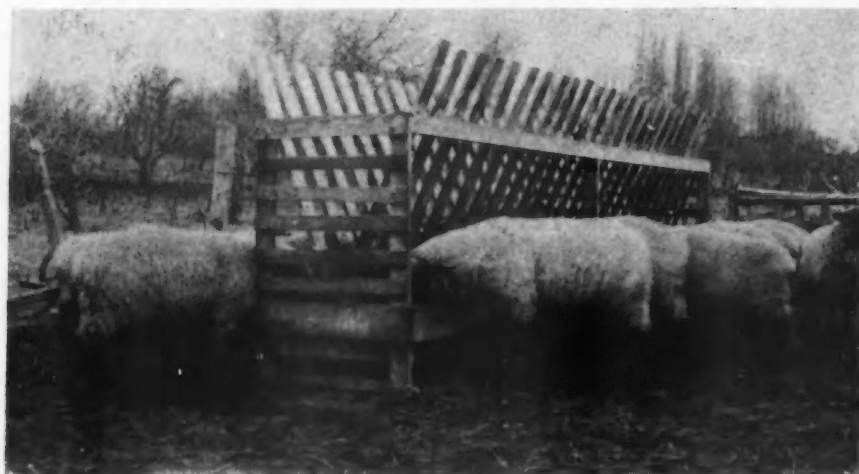
With all classes of finishing hogs, the advocated use of the feeders needs no qualification. For young breeding sows during their first fall and winter, the self-feeder is recommended. Use bone-and-muscle-building meals and discontinue the feeder at the first sign of over-fatness. In general, avoid self-feeding with mature breeding stock unless bulky foods, such as ground alfalfa and so on, are available.

Frequently young animals on pasture neglect the green food for the more palatable and easily obtained

meal. Prevent this by arranging two hinged covers which may be dropped over the troughs. By occasional use of these for short periods, the pigs or sheep are forced to forage.

The following describes briefly the construction of a home-made self-feeder. Provided the requirements enumerated above are met, changes in the details may be suggested by the ingenuity of the builder. The line-drawing shown illustrates a feeder with one-half of the roof hinged and used as a filling door, the possibility of leakage being prevented by continuing the opposite side several inches past the peak, thus protecting the joint. The filling door is hinged at one side, thus doing away with a joint in the roof.

The structure rests on three pieces of 2x4 on edge. The walls consist of three 2x3 studs on each side, cov-



**Economical Self-Feeder for Sheep.** The Animals Have Full Access to the Forage at All Times and Can Eat Frequently in Small Quantities. This Prevents Them from Overloading Two or Three Times a Day.

to construct, weather-tight, and easy of regulation for various texture meals. It must be so designed that the contents will feed into the troughs with minimum stoppage caused by the blocking of the meal in the hopper.

Some of the advantages of the self-feeder system of feeding are a saving of over 60 per cent of the labor, the reduction of waste of feed to the minimum, prevents digestive troubles due to over-feeding. The swine and sheep have full access to the meal or forage at all times, and therefore they eat frequently, in small quantities, rather than suddenly overloading the stomach two or three times a day. A large number of animals may be fed from a small trough space, as they do not all feed at the same time. All animals have an equal chance—the weak pig or lamb benefits accordingly.

The feeder should be placed on a platform or floor that will remain clear during wet weather and prove accessible to the animals at all times. Altho this system of feeding will prove relatively economical in dry lot feeding where green food, skim-milk or water are supplied daily, the maximum efficiency is reached where the feeders are placed in a good clover, alfalfa, rape or grass pasture.



**A Self-Feeder Which Is Valuable for Young Calves Who Have Just Been Weaned.** A Large Number of Animals May Be Fed from This Small Feeder, as They Do Not All

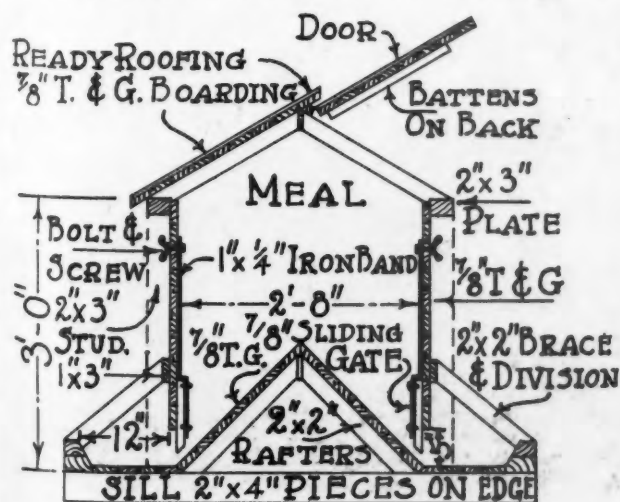


A Cheap, Easy to Construct Hog Self-Feeder. Especially Recommended for All Classes of Finishing Hogs and Young Breeding Sows During Their First Fall and Winter.

ered inside with  $\frac{7}{8}$ -inch tongued and grooved boarding. On top of the studs is a 2x3 plate. The boarding should start at 5 inches above the floor of the troughs, and a gate, or feed-control board,  $\frac{7}{8}$  inch by 10 inches in width, the full length of the feeder, slides behind the boarding. This gate may be fastened at any desired height by thumb screws, sliding in a vertical slot on the outside face of the boarding. Connection between control board and thumb screw is made by two iron straps, 1 inch by  $\frac{1}{4}$  inch, as shown.

The floor of the bin consists of  $\frac{7}{8}$ -inch tongued and grooved boarding laid on 2x2 rafters at 45 degrees. The floor of the feed troughs is  $\frac{7}{8}$ -inch boarding laid across the 2x4 bases. The front of the feed trough consists of one piece 4x4 (or two 2-inch by 4 inch) beveled from the center down to the flooring. From this front are placed 2x2-inch braces 12 inches apart, running up to a 1x3-inch piece laid along the sides, as shown.

The roof consists of 2x2-inch rafters resting on the



Cross-Section of Hog Self-Feeder.

2x3-inch plate and covered with 1-inch tongued and grooved boarding. The door, which is made of  $\frac{7}{8}$ -inch tongued and grooved with 1x3-inch battens at back, should be equipped with hinges and handle for lifting, and in the case of the roof door should have a prop to keep it open.

The structure is 5 feet  $1\frac{3}{4}$  inches by 6 feet  $5\frac{3}{4}$  inches outside dimensions. Where all material is purchased, the cost of this self-feeder, including labor, should not exceed \$8. By utilizing spare time and odd ends of lumber this cost may be materially reduced.



## Specialties That Require "Jags of Lumber"

SO many contractors and builders serving the farm field have found that it is most profitable to employ spare time in the construction of self-feeders and other farm specialties that require more or less skilled carpenter labor that many of them devote a great deal of time to this sort of building. There always is a demand for feeders; wagon beds and boxes are good specialties. These require only small "jags of lumber," but they comprise a good part of the business of rural lumber dealers and give the builder and his men continuous employment.

While feeders and wagon beds and the other farm equipment that builders can make do not sell for any considerable amounts, there is a good profit in them.



WHEN building walls with recesses or chases for pipes, etc., the mason should use special care to keep these chases straight and plumb and of the same dimensions from bottom to top.



# Concrete Construction



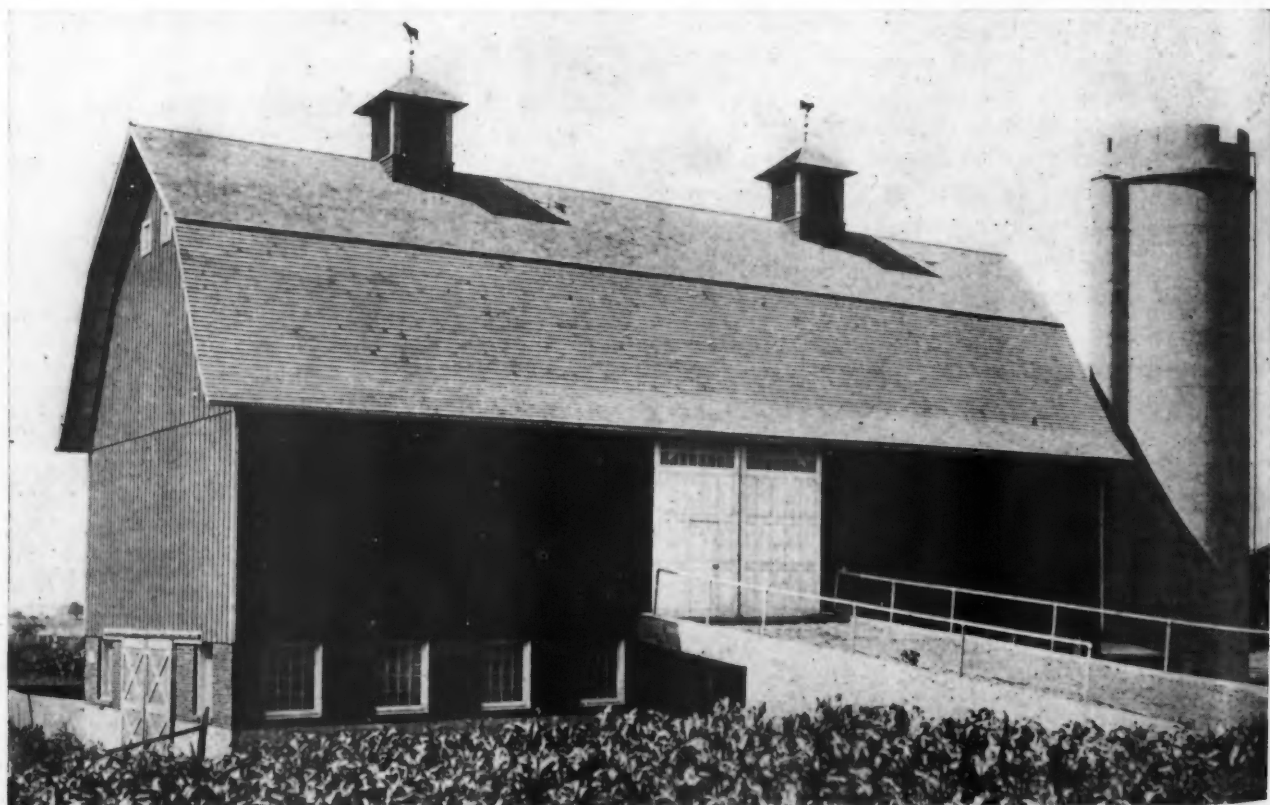
## Design for Reinforced Concrete Driveway

CONTRACTORS DESIGN AND BUILD DRIVES ON THE JOB.

By Our Concrete Expert

**A**S LONG AS farmers insist on having concrete driveways to their barns contractors will be called upon to design and build them. A structure of this type must have sufficient strength to safely carry the load imposed upon it. Economy makes it desirable to use as little steel and concrete as possible consistent with safety. Accompanying drawings are for a driveway 14 feet wide and having a clear span of

12 feet. It is designed for carrying a 3-ton load, assuming that 1500 pounds will be carried by each of four wheels. If a heavier load is to be carried the amount of reinforcing and the thickness of the concrete must be increased. The span may be shortened without changing the design because decreasing this dimension increases the strength of the structure. However, the span must not be increased beyond 12



Barn Approach of Reinforced Concrete, Properly Protected with Rail. The Grade Should Not be Greater Than Ten or Twelve Per Cent.

## Design for Concrete Driveway

123

feet without changing the design. A span of 12 feet will be found ample under most circumstances.

It is to be noted that the supporting wall adjacent to the grade is made 16 inches thick to enable it to withstand earth pressure without displacement. Quite frequently the space beneath the driveway is utilized as a milk cooling room. With practically no additional cost this place can be made into a very satisfactory room for this purpose. It is handy to the barn and is more or less sheltered by the earth embankment, making it cool in summer and warm in winter.

The walls on which the driveway rests should be made of concrete mixed in the proportion of 1 sack of cement to  $2\frac{1}{2}$  cubic feet of sand to 4 cubic feet of pebbles. The driveway slab should be constructed of 1:2:3 concrete.

It is advisable to build wing walls on each side of the fill to keep it in place. A railing on each side of the driveway is recommended, as it may be the means of preventing some person or animal from stepping off the driveway and sustaining broken bones. It also adds to the finished appearance of the structure.

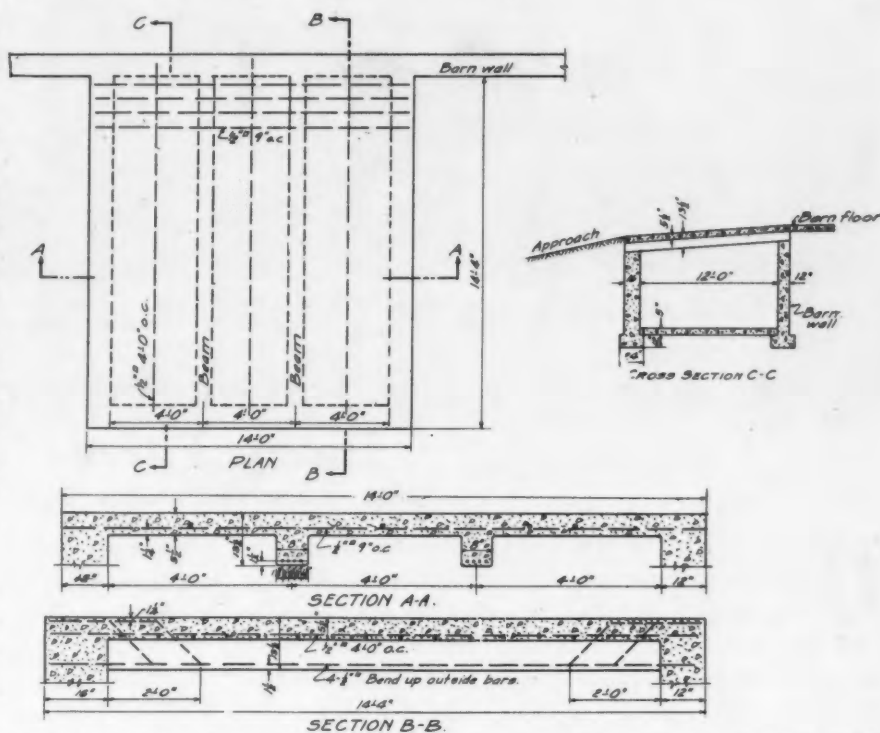


### The Year's Building Record

IN the entire country the 1919 building projects will reach \$2,600,000,000, says a New York authority, based on F. W. Dodge Company reports. This includes engineering operations and construction of all forms. It is nearly a billion dollars above the 1918 total, which held the high record. Current projects are one-third residential, one-third industrial, 15 per cent for general business and 10 per cent for public works and utilities.

Builders in New York City district are rounding out a \$550,000,000 year, more than one-third of the building being residential. While Manhattan's main activity has been in business projects, Brooklyn and Queens are bustling with home building, and suburban operators have put up small houses by the hundreds and vastly improved transportation facilities.

Capital for building seems to be most available in the central west, where operations are running far past all previous volumes. Reports from Illinois, Indiana, Iowa, Wisconsin, Michigan, Missouri and

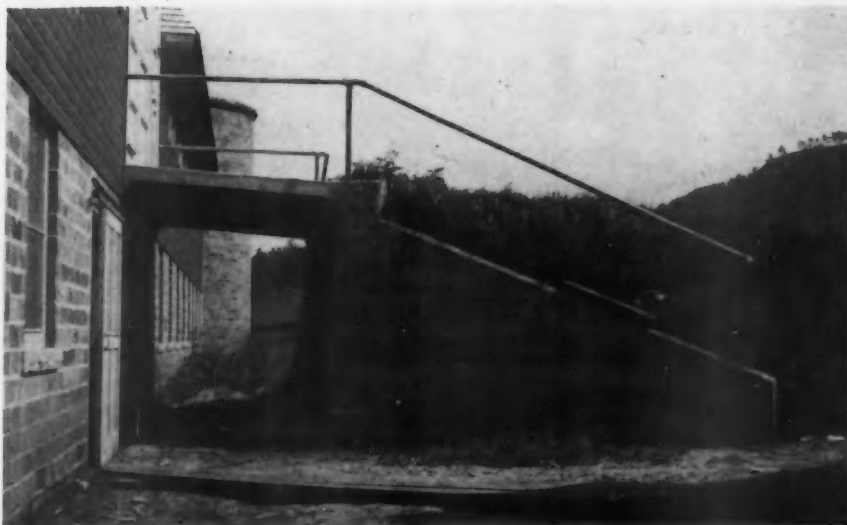


Plan for Reinforced Concrete Slab for Barn Approach, Indicating Size and Spacing of Reinforcing Bars for Loading of Three Tons.

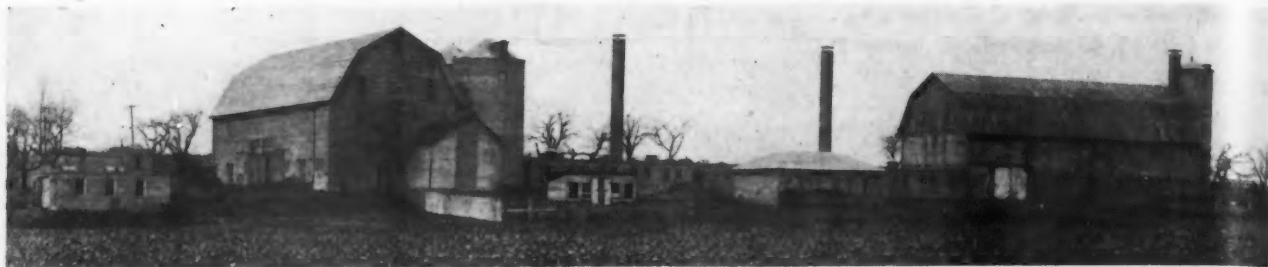
Kansas show outlays of \$820,506,000 for eleven months of the year. All parts of the country score good gains over their old high records. New England, in its rush to get abreast of the demand for homes, has called for outlays of \$207,288,000 during the year, and the middle eastern section has a record of nearly double the best volume of any preceding year.



DURING the coming year, which promises to be the greatest in the history of the building industry, manufacturers and dealers in building materials and builders' equipment expect that they will have difficulty in supplying the demand for their products. There is one sure way of securing the materials and equipment needed. That is to anticipate your wants. Take stock of what is going to be required and then arrange for deliveries.



Barn Approach Made with Wing Walls, Reinforced Slab and Earth Fill.



General View of the Concrete Buildings on Beech Farm Dairy. From Left to Right: Dairy House, General Purpose and Horse Barn, Silos, Dairy Barn, Manure Pit, Two-Story Dairy Barn, Silo.

## Concrete Used Extensively on Michigan Dairy Farm

FINE HERD HOUSED IN MODERN BUILDINGS

**B**EECH FARM DAIRY, Coldwater, Michigan, possesses an unusually fine set of modern farm buildings. With the exception of the ice house and the former farm house, now converted into living quarters for the hired help, every structure is of monolithic concrete construction. To produce an abundance of high quality milk economically was the owner's purpose in erecting this full set of permanent structures.

Every dairy expert and successful dairy farmer will tell you that a dairy cow is like a machine in that she converts the raw materials, silage, hay, grain and other feeds into the finished products, milk and butter fat. Part of the feed consumed by a cow is used by her for physical maintenance and for the generation of body heat. Since no profits accrue to the dairyman from feed required for the cow's upkeep it behooves him to keep this item as low as possible. This is accomplished by proper housing. Feed eaten in excess of the amount needed for the cow's maintenance goes to produce milk. Other factors being the same, the more feed she can be made to consume, the greater will be the milk flow. Producing milk

taxes the cow's energy, and her health and vitality must be safeguarded if she is to continue to work efficiently. A well lighted, well ventilated, sanitary, comfortable barn is practically indispensable to the dairyman desiring a profit from his herd.

Accompanying illustrations give some idea of the general appearance and layout of the various buildings comprising the dairy group. Seen from a distance this group has the appearance of a factory, owing to the two large chimney-like ventilation flues which tower above the one-story dairy barn. These flues carry off moisture, carbon dioxide and other impurities given off by the animals in breathing.

On each end of the one-story dairy barn is a large barn two stories high; the one on the right serves as a dairy barn exclusively, while the one on the left is used for housing horses, calves and dry cows. Both barns are provided with reinforced concrete hay loft floors, which safeguard the animals in case fire originates in the hay stored above. Floors of this type are becoming increasingly popular among owners of pure bred dairy herds. The insurance which it affords

against fire loss offsets the extra cost. Ground floors, mangers, gutters and other interior appointments are all of concrete. Corrugated metal roofing covers the roofs.

About equal distance from the three barns is a large concrete manure pit in which all stable cleanings are deposited until hauled out to the fields. Manure stored in a concrete pit loses none of its fertilizing ingredients thru leaching or fire fanging.

Three large monolithic silos furnish succulent feed for the herd during the winter months or when pastures are short in summer. The reader will note the peculiar type of chute on one of the silos. It



An Unusually Attractive Farm Residence and Office, of Monolithic Concrete, Built of Beam, Column and Curtain Wall Construction, Same System as Is Used in Construction of Modern Fireproof Industrial Buildings.



extends several feet above the silo and is covered with a rain hood. This chute has a dual purpose; it serves as a place for throwing down silage and also acts as a ventilator, carrying away silage odors, so that they will not enter the barn. Another feature of this silo is the extra filling door located about midway between the roof and foundation.

The milk house, also built of concrete, is located about 100 feet distant from the barns. This location provides the highest degree of sanitation, as there is little likelihood of stable odors contaminating the milk. For convenience this structure is on a direct line from the house to the barns.

All buildings are arranged so as to save steps in doing chores. The labor item is a big factor when it comes to producing milk today. The labor situation promises to become worse instead of improving in the future. Beech Farm Dairy buildings are designed and arranged to economize on time and labor. The owner had no apprehension about locating the buildings near one another because of their fire resisting construction.

In order to give his family at least as good protection as his livestock the owner built his residence of concrete too. One does not have to be a prophet to



Interior of Concrete Dairy Barn, Beech Farm Dairy.

predict that Beech Farm Dairy buildings will be there for years to come. The engineer and general contractor on this work was R. C. Angevine, president of the Coldwater Concrete Products Company.



IN building long walls without any piers or intersecting walls to tie to, they should be well braced temporarily if carried to any height. It requires very little force to cause a "green" wall to sway out of plumb.



CAREFUL and thoro mixing of concrete is one of the prime essentials in concrete construction.



Close-Up View of Monolithic Barn and Silo on the Beech Farm Near Coldwater, Mich.



## Fred Beard says:

**"This is the Time in the Year When Everyone in the Building Business Should Prepare for the Biggest Activity in History"**

It was a typical winter day; snow had stopped falling and had been piled high along the business street by the merchants, who had shoveled it off the walks into the gutter. Fred Beard stood at the front of his hardware store contemplating the activity of one of his clerks, who was clearing the snow from the curb to make a path for those who came in vehicles. Business was rather quiet. Nevertheless, the farmers, with whom Beard did a great deal of business, came into his store and visited with the proprietor and with their neighbors. The hardware store in winter was a sort of a club, Beard always making it a point to extend a welcome to his customers, who also were his friends, and the hospitality of the comfortable chairs at the rear of the store.

However, this day Fred did not expect many callers. The snow had drifted considerably during the storm, making traffic rather difficult for both motor-driven and horse-drawn vehicles. Consequently, he was rather surprised when a small run-about drew up in front of his store and Walter Lapham stepped out.

Lapham was a prosperous farmer. During the last three or four years his farm had about doubled in value, and Fred Beard had expected that the farmer would sell out, as many had done, and move to town. But so far, Lapham had refused the offers made for his farm and, as far as Beard knew, intended to continue to run it.

"Rather a stormy day for automobiling, isn't it, Walt?" asked Beard in greeting the farmer as he came into the hardware store and the two men moved toward the

chairs in the rear of the salesroom.

"Well, it isn't ideal, by any means, but the roads are in pretty good shape. That little car of mine came thru without any trouble. Great things, those cars. Ten years ago a storm like this would have bottled me up at home for a week. But now I can come into town just as easily, in fact, a great deal more so, than I could in summer with a horse. Life has been made pretty comfortable for the farmers during recent years."

This last remark caught Beard's attention. "That," he thought, "is why Walt doesn't want to sell his farm." But he did not put the thought into words. Instead he remarked:

"Yes, you farmers are pretty lucky nowadays. You have all the comforts and conveniences of the city, coupled with the chance for clean living and health

that only life in the rural communities gives. And, besides, farming is a great deal more profitable now than ever before, isn't it?"

"It would be only for one thing. Labor is scarce, and, like everything else, is mighty expensive. Just now my dairy herd is in the stable eating its head off, and I have to pay higher wages than ever before to keep the men to care for the livestock. That is what eats up the profits we farmers should be making, when you consider the prices we are getting for our products."

"In other words," interposed Beard, "if you could cut what manufacturers call their 'labor cost,' you would find it profitable to do so?"

"I sure would," said the farmer.

"Well, manufacturers usu-



One of Fred Beard's Clerks Was Cleaning the Snow from the Curb.

ally cut their labor costs by installing labor-saving machinery," said Beard, musingly, as tho he were thinking out loud.

"Machinery!" exclaimed Lapham. "I've got all the modern farm machinery—a tractor, binder, mower, drag plow, and all the rest. They save labor in the fields, but they don't help me much about the barn."

"Sure they don't. But manufacturers usually put labor-saving machinery in their plants. Your manufacturing plant is your barn, when it comes to dairy products. As I remember your dairy barn, it is a fine one; built about 10 years ago—at that time one of the finest in this section. But, altho it is a good, weather-tight barn, it was built before farmers really knew the value of having their barns equipped with labor-saving devices."

"You mean litter carriers, don't you?" inquired the farmer.

"Yes, a litter carrier is one piece of modern barn equipment. But there are many others."

"Well, the only reason I haven't put in litter carriers is that the barn is built and I can't afford to tear it down."

"You don't have to tear it down. Sam Williams built it for you, didn't he? Why not get Sam to put in the equipment that he is installing in the new barns he is building? I could give you a long lecture on the value of this modern equipment, not only as a means of saving labor about the barn, but in increasing the milk production. For instance, did you ever really investigate the value of a water system and individual drinking cups at each stall? Did you ever find out how much more healthy the cows are when the barn is equipped with ventilators that draw the foul air out and feed the lungs of the livestock with pure, fresh air?"

"You can easily figure out how many hours a day it takes to water your herd of dairy animals; how many miles the men walk carrying feed to the mangers, and taking away the litter—how much more cleanly the barn floor can be kept when it has a con-

crete floor with gutters at the rear of the stall floors, so that the hose can be turned on them.

"But, aside from the saving of labor, did you know that keeping a supply of running water always in reach of the cows increases the flow of milk considerably—oftentimes as much as 10 per cent? There you have a piece of equipment that means that no more water will have to be carried, nor will the cattle have to be driven to an outdoor tank, while at the same time production will be considerably increased.

"It requires considerable foresight, or rather the ability to look to the future for a manufacturer to put in a machine costing perhaps many thousands of dollars so that he can accomplish the same results with one, or two, or three less men. Still, in the long run it pays. You may think, Walt, that modern barn equipment costs too much to be economical, but if you will figure up the cost of the hours such equipment will save your men and allow you to operate your milk factory with less labor, you will see that you will be money ahead. Besides, hired men eat costly food; equipment does not."

"I have heard all those arguments before, Fred," replied Lapham. "They have made an impression on me, but you know how it is—if I was building a new barn, I would have Sam put them in. But it had not occurred to me that a little remodeling would make the barn I already have a modern, up-to-date place for my dairy herd. Does Sam know how to install this equipment and where to get it?"

"Certainly he does. Every contractor who builds farm buildings nowadays—that is, if he is alive to his job—knows the advantages of good barn equipment, how it should be installed, and where to get it. I carry a great deal of that equipment in stock, too, so that when you are ready to have Sam install it, you won't have any trouble."

"I'll think that over, too, Fred. At the present price of labor and with the prices for dairy products where they are, no farmer who is a real business man can afford to overlook an opportunity to decrease his labor costs or to increase production."



"Besides, Hired Men Eat Costly Food; Labor-Saving Equipment Does Not," Fred Beard Explained.



## Design for a Concrete Block Home

STORY-AND-A-HALF HOUSE CONTAINS SEVEN GOOD ROOMS

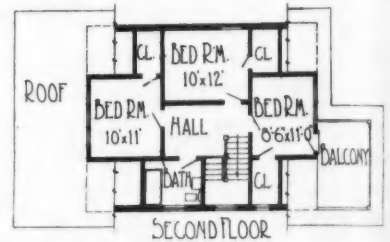
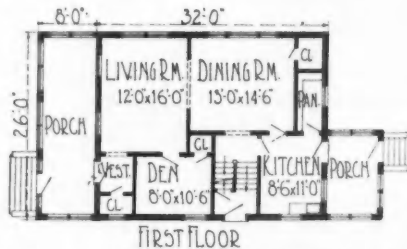
**B**UILDERS thruout the country will be called on during the next few years to construct many concrete block houses. A nation-wide movement to encourage and stimulate the building of this type of dwelling is under way and plans will be pushed vigorously. As an excellent suggestion of what can be done with the block, the builders' attention is called to the design shown on this page.

This comfortable and attractive story and half house, 32 by 26 feet, is built of smooth-faced block set on a rough-faced block foundation. The stairs leading up to the large front porch are concrete with rough-faced block balustrades. The large, well-screened and well-shaded porch, 8 by 26 feet, is a boon to the family in the hot and sultry days and an excellent playroom for the children. On the first floor are the living and dining rooms, 13 by 14 feet 6 inches, a den, two closets, pantry and kitchen. The back porch is small and of the familiar type used in this style of house.

The second floor contains three bedrooms, each equipped with clothes closets, and the bathroom. The rear bedroom opens out on a balcony on the roof of the back porch. This home will meet the requirements of a medium-sized family and provide all modern conveniences. Comfort in building is the order of the day.

The especially appealing feature about the story-and-a-half house and probably one of the main reasons for its increasing popularity is its roominess and com-

fort for families. Parents want plenty of play room for their children. A house of this type is generally set in a wide lot or half acre with ample room about it for breathing space, which the youngsters need. Furthermore, the large sun porch is very popular and practical as well. In the warm, sultry days of the summer months it is the summer home of the family, a place where they can eat, and an efficient sleeping quarters. The screens effectively shut out pests and



Floor Plans of Seven-Room Concrete Block House.

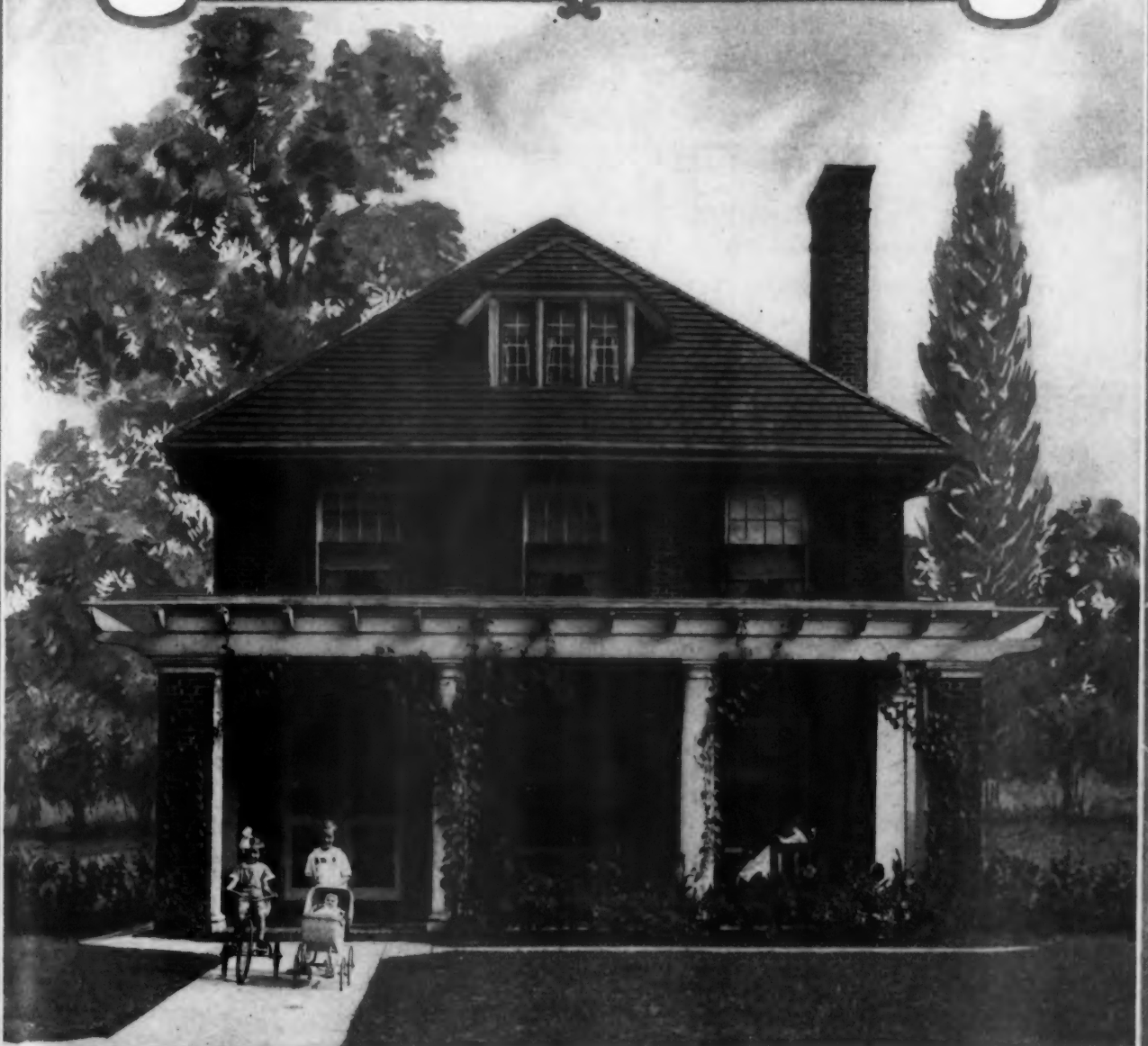
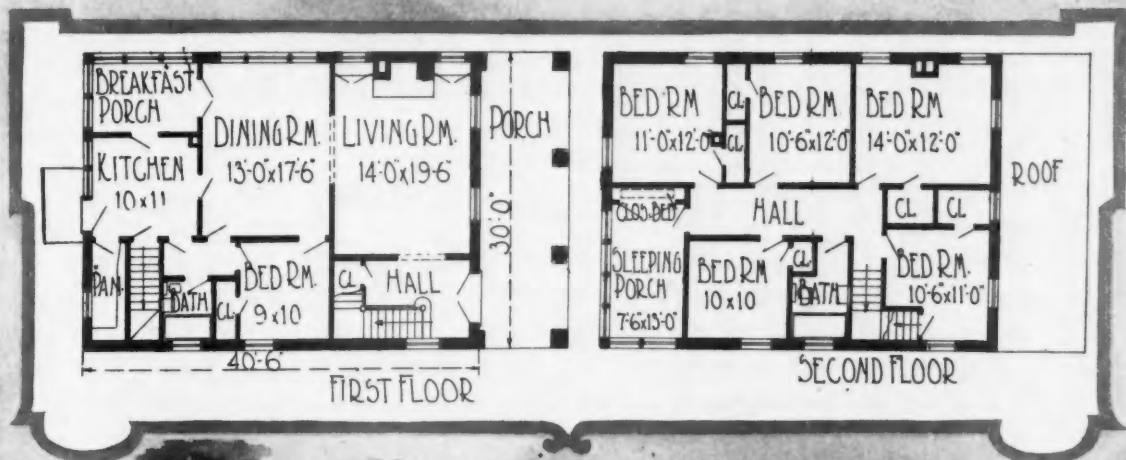
vermin that are so prevalent at that season of the year. Builders are constantly asked questions about this type of building by men of family who want to get out just beyond the crowded sections of cities and towns.

It requires good concrete blocks to erect a good concrete block house and builders who are going to use this material should see to it that the blocks are of first grade. There has been great progress made in block-making during the last few years, and high-class blocks are available in almost every locality. More plants are being established and it is expected that the output of blocks will be greatly increased within a year.



A COZY SEVEN-ROOM HOUSE OF CONCRETE BLOCK CONSTRUCTION. This building with its large comfortable screened porch is 26 by 32 feet.

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**NINE-ROOM SQUARE BRICK HOUSE, WITH PERGOLA PORCH.** This house, 30 feet by 40 feet, 6 inches, shows how a square structure, the most economical of buildings, can be made especially attractive by the addition of a pergola porch. It softens the effect of hard, straight lines. The first floor consists of a large living room 14 by 19 feet, 6 inches, adjoining the hall, the dining room, 13 by 17 feet, 6 inches, one bedroom, 9 by 10 feet, very convenient for the cook, a kitchen and breakfast porch. The upper floor is given over to bedrooms, five in all, and a sleeping porch, 7 feet, 6 inches by 13 feet. The large, open fireplace in the living room adds to the substantial comfort of the house. The dimensions of the house are 30 by 40 feet, 6 inches.

## Story and a Half Farm Bungalow

ATTRACTIVE AND COMFORTABLE HOME CONTAINING EIGHT ROOMS AND BATH

**T**HE farmer who owns the story-and-a-half eight-room bungalow like the one illustrated on this page has a real home. It is not as large as it looks, being 24 feet wide and 40 feet long, but it is built on comfortable lines, with a large front porch.

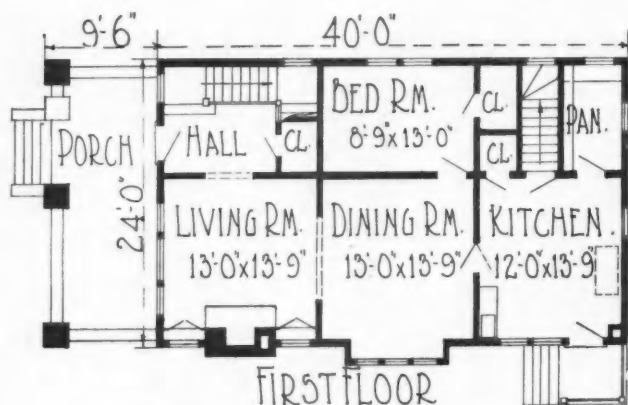
A large family will find this home very appropriate because it has five bedrooms, four on the upper floor and one downstairs. The other rooms on the first floor are a large living room, 13 by 13 feet 9 inches, a dining room of the same size, and a kitchen. A large fireplace in the living room adds to the general cheeriness and comfort of the room.

The bungalow is of frame construction and is set on a brick foundation. The balustrades and pillars of the porch are also brick. Each room has at least two windows and in many cases three. Running along the

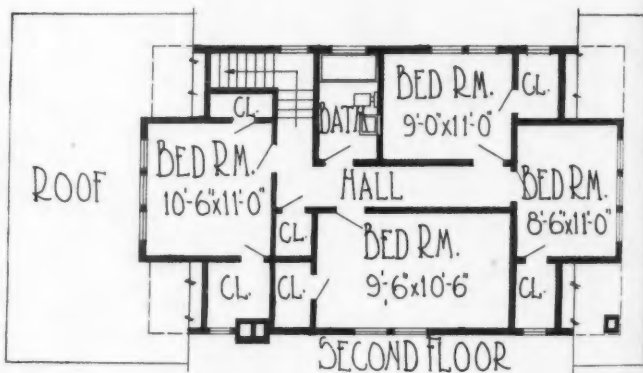
house is a paved roadbed which leads to an attractive garage in the rear of the house. It is large enough for two cars. Like the bungalow, it is built of frame with a gable roof.

This is an excellent design for a farm home that is required to house a fairly large family. It is attractive in exterior appearance and economical to build. The rooms are arranged with a view to economy in the labor of the housekeeper and to provide space for the various activities that are peculiar to a farm home.

This comfortable bungalow shows how much of the labor around a farm home can be eliminated even tho the family is large. It introduces many of the comforts which heretofore have been enjoyed by the city people, and also illustrates the changing idea in rural construction.



First Floor Plan of Farm Bungalow.

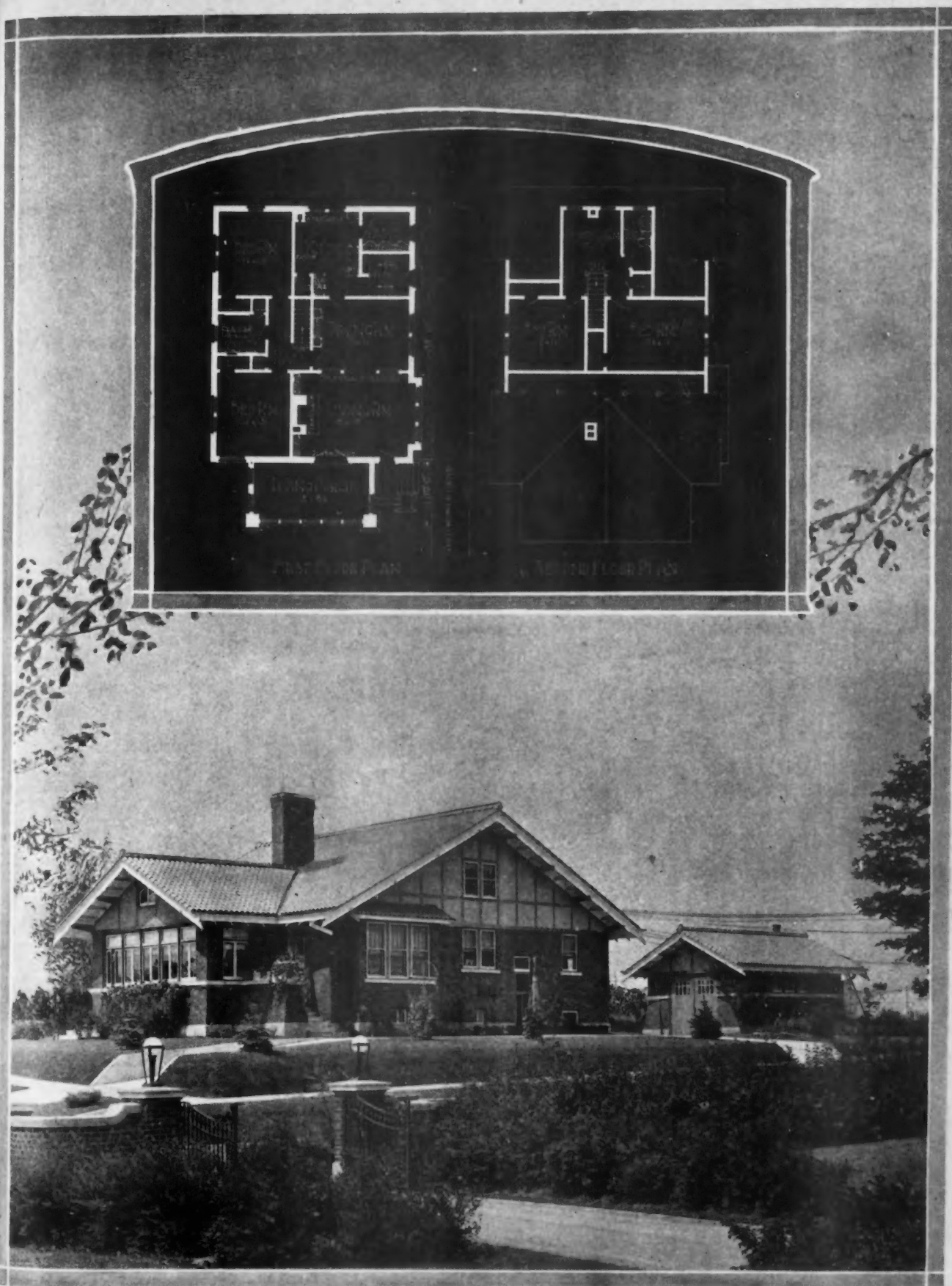


Second Floor Plan of Farm Bungalow

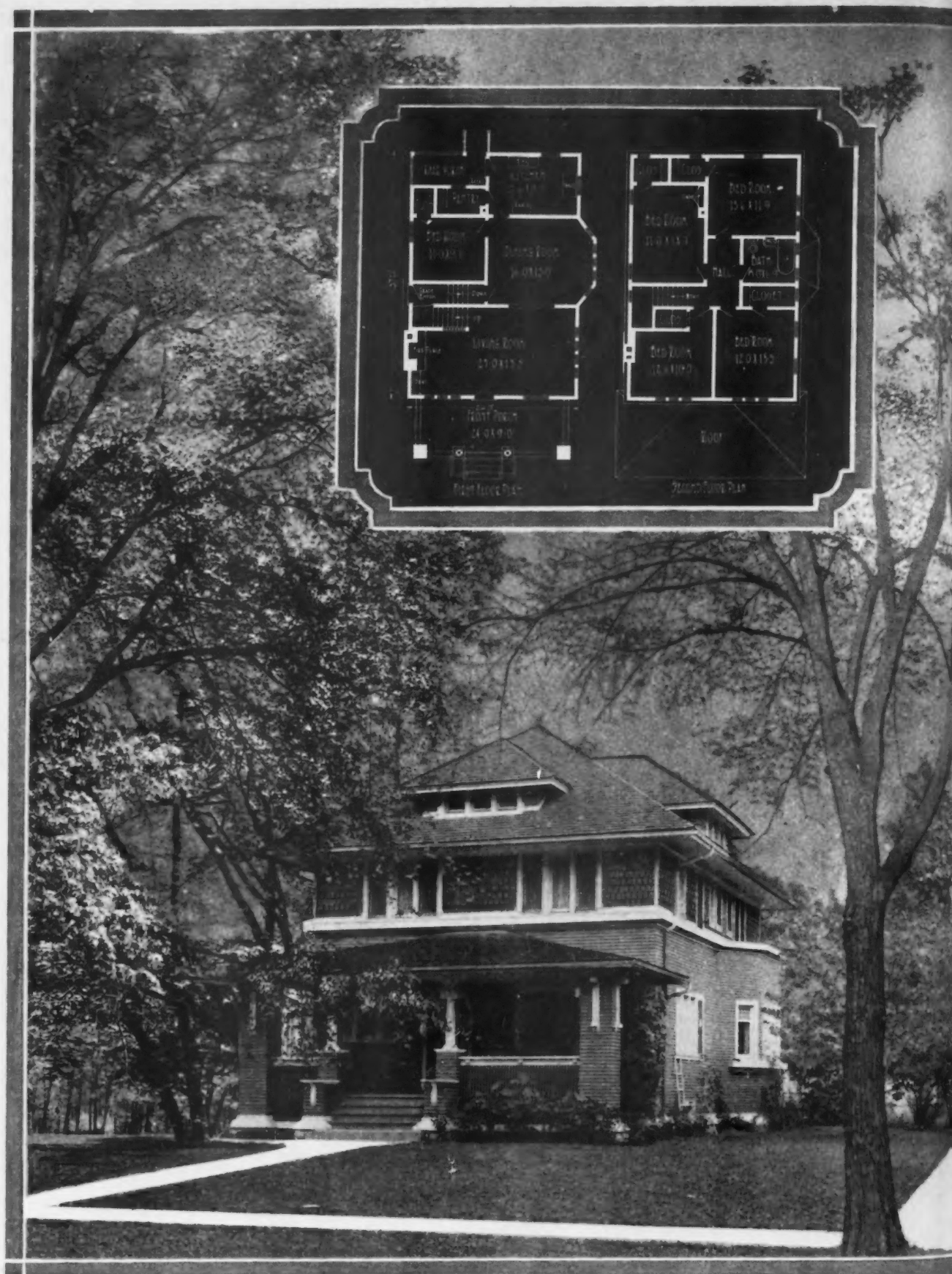


This Pretty Home Contains Eight Rooms and Bath, Altho Its Dimensions Are 40 by 24 Feet. The Large Porch, with Brick Pillars, Is a Good Feature.

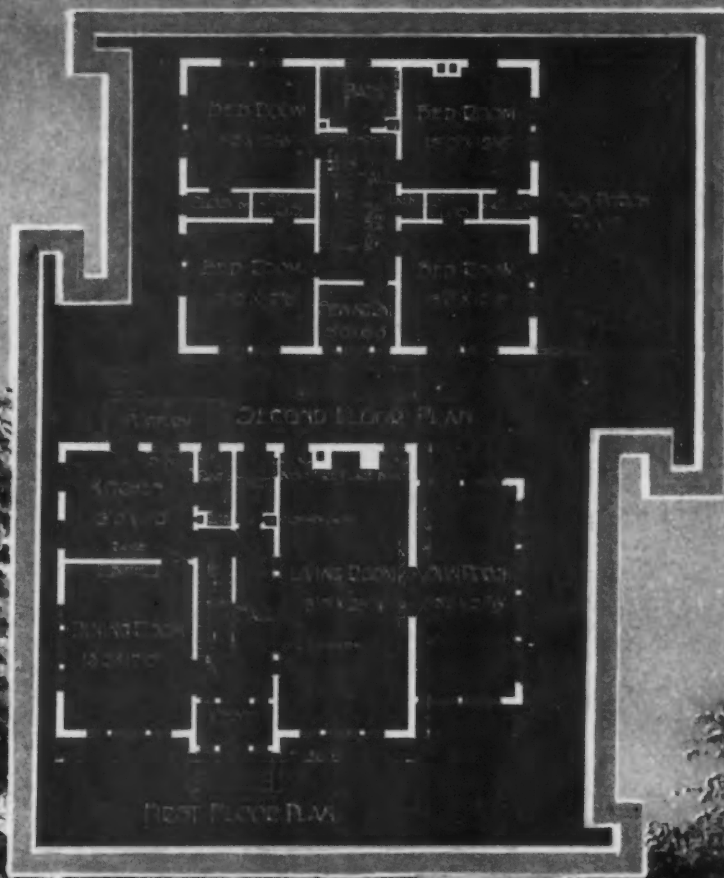




**E**IGHT-ROOM BRICK STORY AND A HALF BUNGALOW. No one could find a design of a brick house that will give more satisfaction than this. The large living porch is a feature that is wanted in the strictly modern home. The floor plans show the excellent room arrangement. The dimensions of the house are 31 feet, 10 inches, by 39 feet, 10 inches.

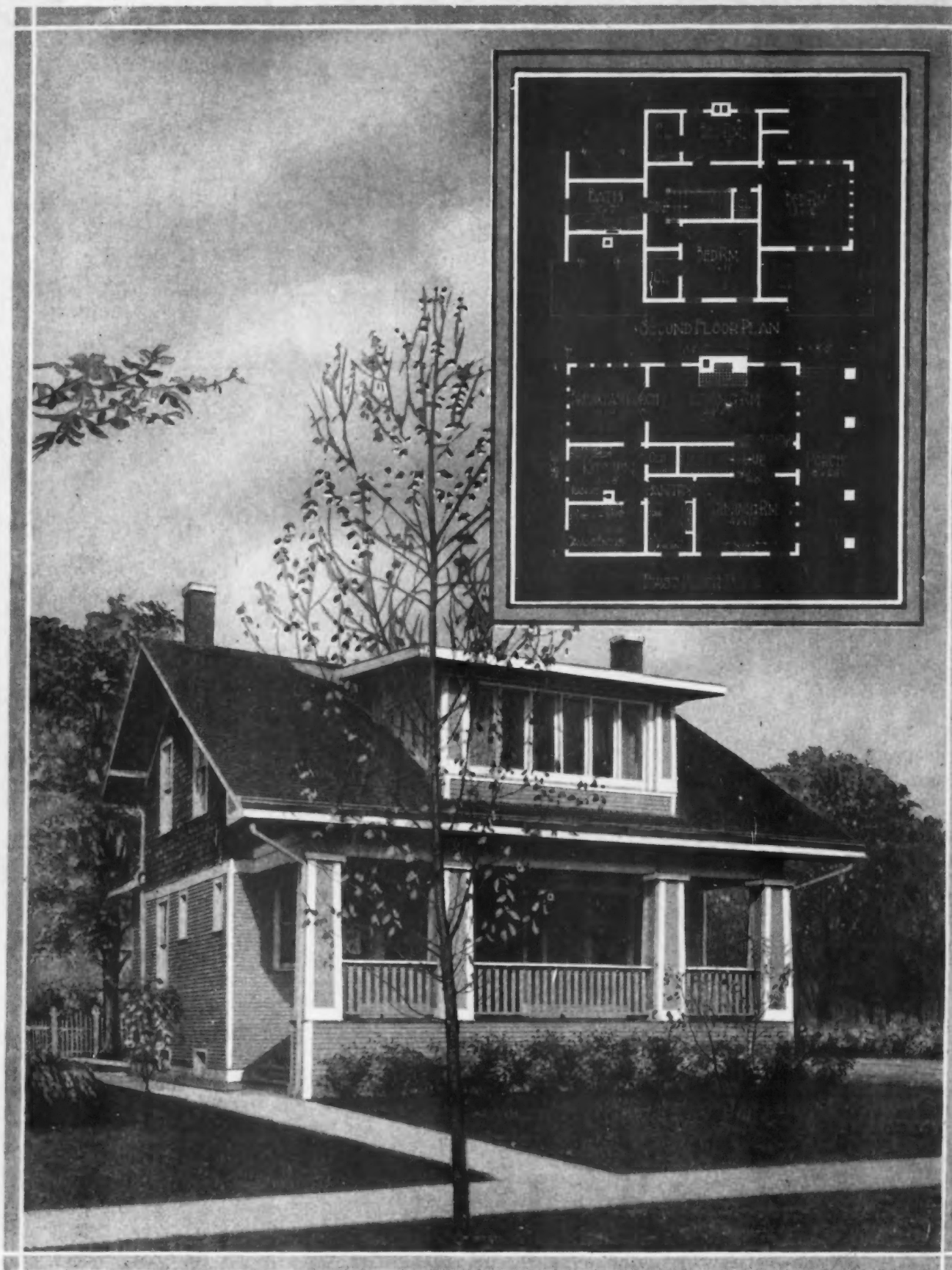


**O**RNAMENTED HIP ROOF RESIDENCE. This is the square type house with hip roof, having wide box cornice. The exterior is finished in a combination of shingles and beveled siding. The building is 26 feet by 37 feet in plan, exclusive of the porch. Notice the living and dining room combination which allows the use of these rooms as a unit without destroying the privacy of the dining room. The first floor bedroom may be used as a den, if desired.



**R**ECTANGULAR STUCCO HOUSE WITH HIP ROOF. The design of this house is an example of the excellence of the square-type house especially in regard to the convenient arrangement of rooms. The exterior is very neat in appearance and is well "set off" by the wide box cornice and hip roof of tile. In the interior, the living room and adjoining sun porch form the center of attraction. Every requirement of careful design is met in the second floor arrangement. The house is 36 feet 6 inches by 30 feet.





**Y**OUR IDEAL DORMERED BUNGALOW. Here it is—the design you have been dreaming of and waiting for. It has that big living room and attached sun room. It has a dining room, pantry, kitchen group to gladden the housewife's heart. Upstairs are three bedrooms and bath. The exterior is very attractively finished in beveled siding and shingles. The white trim contrasts strikingly. Size of house is 28 by 42 feet.

# DESIGN of SAFE CONSTRUCTION

By Charles W. Leigh

Associate Professor of Mechanics, Armour Institute of Technology

## Safe Stresses Used in Certain Designs

ARTICLE 2 OF AN INSTRUCTIVE SERIES ON STRENGTH OF MATERIALS AND ENGINEERING DESIGN

THE article on the "Three Simple Stresses" was a discussion of the methods for determining how many pounds per square inch of distributed force are produced in the fibers of a beam or strut, when carrying a given load. The next logical step is to determine the size of a bar in order that it may safely withstand a given fiber stress.

For years engineers and builders have carried on experiments to determine the loads at which the various building materials will break when used as beams, columns, compression or tension members. On account of the different grades of steel, wrought iron, wood, etc., widely varying results were obtained. But from these results values have been agreed upon, that under certain conditions of loading are considered safe. A table of these values follows:

Average allowable unit stresses

Material	Pounds Per Square Inch		
	Tension	Compression	Shear
Structural Steel	16,000	16,000	9,000
Cast Iron.....	3,000	15,000	.....
Wrought Iron..	12,000	12,000	.....
White Oak....	.....	1,000 with grain	200 with grain
White Oak....	.....	400 across grain	1,000 across grain
Long Leaf Southern Pine	.....	1,200 with grain	125 with grain
Long Leaf Southern Pine	.....	250 across grain	1,250 across grain

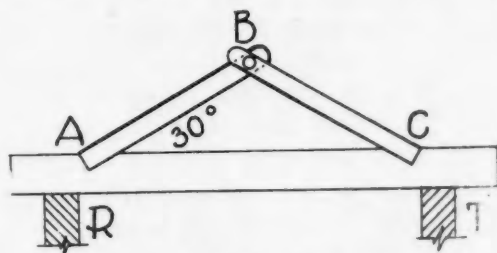


Fig. 1. Side View of a Truss.

Suppose the problem is to design a truss as shown in Fig. 1, with a load of 10,000 lbs. at B. The compression members AB and AC are made of yellow pine. In each of these struts there is a force of 10,000 lbs., tending to crush them. Now this force is resisted by a uniformly distributed fiber stress, across every cross section. To find the necessary area to safely carry this load, use the formula

$$A = \frac{P}{S}$$

where  $P = 10000$  and  $S = 1200$  from the table of safe values.

$$A = \frac{10000}{1200} = 8\frac{1}{3} \text{ sq. inches}$$

The cross section of a timber is a rectangle. Its area is gotten by multiplying the thickness by the height. A 3"x3" timber gives  $A = 9$  sq. in.; a 2"x4" gives  $A = 8$  sq. in.; a 2"x6" gives  $A = 12$  sq. in., etc. On account of the actual size being less than the nominal size, a 3"x3" altho apparently greater than  $8\frac{1}{3}$  sq. in., would probably be too small to use with safety. Therefore use a 2"x6" which would be on the side of safety.

The member AC resists the tendency of AB and BC to spread, with a force of 8,670 lbs. (In future articles the methods for calculating the stresses in such members as AB and BC will be given). The strut AB pushes against the block KMLI-EFGH. This block is being held in place by the shearing force along the face EFGH. This rectangle must be large enough to withstand a force of 8,670 lbs. From the table a safe value for shear along with grain of white oak is 200 lbs. per sq. in. Then

$$A = \frac{8670}{200} = 43.4$$

If the timbers AB and AC are of the same width, namely 2", the side EF of the rectangle must be  $43.4 \div 2 = 21.7$  inches. That is, the mortise must be set in 21.7 inches from the end of the beam.

If AC were 4" wide, EF would be  $43.4 \div 4 = 11$  inches roughly. With this design a 4"x4" rafter could be used, as it contains 16 sq. in. area, when only  $8\frac{1}{3}$  sq. in. were needed.

Since the load 10,000 lbs. is in the middle of the truss, the posts R and T on which the truss rests must each bear a load of 5,000 lbs. Now just at the inside

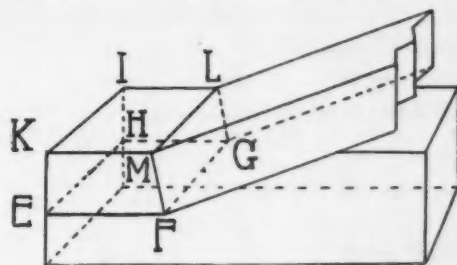


Fig. 2. View of a Mortised Joint.

edge of each support there is a force of 5,000 lbs. tending to shear off the beam AC along a verticle section thru FG. From the table the safe shearing stress across grain of white oak is 1,000 lbs. Then

$$A = \frac{5000}{1000} = 5 \text{ sq. in.}$$

If the beam AC is 2" wide the line FG must be  $5 \div 2 = 2\frac{1}{2}$  inches above the bottom of AC. If AC is 4" wide, then  $5 \div 4 = 1\frac{1}{4}$  inches is the distance above the bottom for FG. While the mortise may not

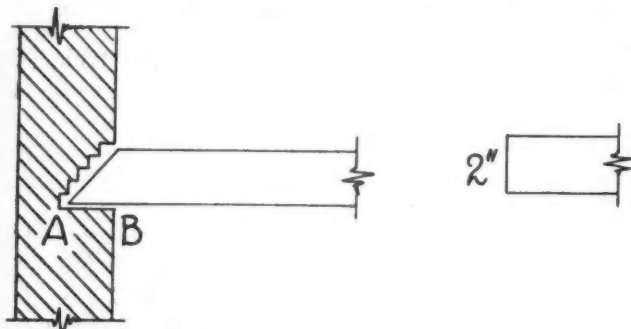


Fig. 3. Side View. Supporting of Beam on Wall.

Top View.

be at the support, in which case the shearing force would be less than 5,000 lbs., yet for safety the line FG should not be any nearer the bottom of the beam. When the joist AB is 6" deep and mortised flush into position, the cut would not exceed 5.5" in depth. Then a beam 8" deep would give the required material below FG.

The supports R and T are each in compression under a load of 5,000 lbs. The safe value for compression along the grain for white oak is 1,000 lbs. per sq. in.

For the necessary area

$$A = \frac{5000}{1000} = 5 \text{ sq. in.}$$

Then any timber not smaller than a 3"x3" would have sufficient bearing area.

Floor girders or beams are often fastened to the columns or wall as in Fig. 3. Suppose that this floor beam, 16 feet long, is one of a large number spaced 16" from center to center. The load carried is 100 lbs. per sq. foot of floor area. Each beam must carry a load of  $16 \times \frac{16}{12} \times 100 = 2,134$  lbs. The reaction or

force necessary to hold up the end of the beam is  $2134 \div 2 = 1067$  lbs.

For safe bearing area, there must be as many square inches as  $1067 \div 400 = 2.67$  sq. in. AB would then be  $2.67 \div 2$  or 1.34 inches. This would give sufficient bearing area, but the building plans often require that AB must be at least 5 inches.

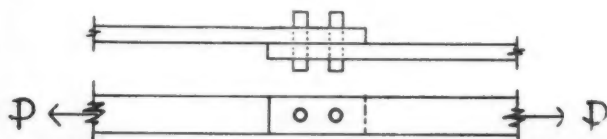


Fig. 4. Top View of a Single Shear Joint.

In building operations it is often necessary to splice members together, either for obtaining a longer beam, or for joining at corners. In Fig. 4 is shown a type of joint called a lap joint. When the plates are in tension they try to slip by each other but the motion is prevented by the pins, bolts and rivets which unite them. The pin is in shear along its cross section face between the plates. The rivet is said to be in single shear. For this reason the joint was called a single shear joint.

Suppose that P the pull on the joint is 5,000 lbs. Since there are two pins uniting the plates, each must carry 2,500 lbs. When made of steel, the safe shearing stress is 9,000 lbs. per sq. in. The necessary area is

$$A = \frac{2500}{9000} = .279 \text{ sq. in.}$$

To find the diameter of the pin, divide .277 by .7854 and extract the square root of the result.

$$\frac{.277}{.7854} = .353$$

The square root of .353 = .6 in. approximately.

The nearest commercial sized rivet or bolt is  $\frac{3}{4}$  of an inch, which would hold the joint safely.

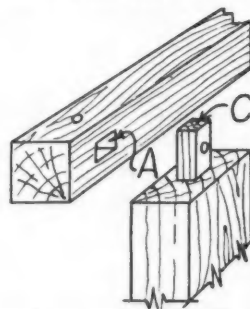


Fig. 5. Square Mortise and Tenon Joint.

When one beam meets another at right angles and its ends are to be supported by the second member a mortise and tenon joint as shown in Fig. 5 is often used. When the tenon C is fitted into the mortise A, a pin of hard wood or steel is driven thru the hole from the top of the beam, thru the tenon C and far enough into the beam below C to insure a safe bearing surface. This joint is especially useful when the beam with the tenon C is in tension. It is evident that when there is a pull on the floor beam, this force tends to separate the two beams. There is a tendency to shear off the pin between the upper face of C and the top face of the mortise A, also between the lower face of C and the lower face of A. This pin is said to be in double shear, see Fig. 6. This means that a pin in double shear is twice as strong as if in single shear.

If a round hardwood pin  $\frac{7}{8}$  inches in diameter is used its shearing strength is found as follows:

The area of the pin is  $.7854 \times \frac{7}{8} \times \frac{7}{8} = 6$  sq. in. The safe shearing stress across grain is 1,000 lbs. per sq. in. Shearing strength of one face— $6 \times 1000 = 600$  lbs. For double shearing  $S = 2 \times 600 = 1200$  lbs. Then as long as the end pull is not greater than 1,200 lbs. the pin will hold safely.

Another way that this joint might fail could be by crushing the pin. A rule for the crushing strength of a round pin is to multiply the diameter of the pin by the thickness of the material thru which it passes, and this result by the safe compressive stress of the mate-



rial. As the thickness of the tenon C of Fig. 5 is not known call it t. Then  $\frac{7}{8} \times t \times 400 = 350 t$ . We saw that the pin could hold 1,200 lbs. in shear. The joint should be just as strong in bearing. Then the two results must be equal or

$$350 t = 1200$$

$$t = 3.5 \text{ lb.}$$

That is the tenon should be at least 3.5 in. thick for safety.

The material above and below the mortise should be 3.5 in. thick, for safety if the pull of 1,200 lbs. is exerted.

The pin should be far enough in from the end of the tenon so that the material will not tear out or shear. The block of material which would shear out is shown in Fig. 7. The face ABCD would be sheared past the other contact face. There are two such faces. Then each must hold half the pull of 1,200 or 600 lbs. If t is the length of BC and CD = 3.5 the area of ABCD =  $3.5 \times t$ . A safe shearing value along the grain for white oak is 200 lbs.

$$3.5 t \times 200 = 600$$

$$700 t = 600$$

$$t = 6/7"$$

That is, the pin must be set in a distance of at least the diameter of the pin. It is customary to place the center of the pin at a distance of  $1\frac{1}{2}$  diameters from the end of the block. The joint is then of equal strength against all ways of failure.

**I**N good work the panels of doors, wainscot, etc., should be filled and given at least one coat of varnish before the work is put together; if this is done the completed work will not be marred by the panels shrinking and showing a stream of unfinished wood around the rails.

**T**HE pointing of stonework is usually done as soon as the exterior part of the building is up, unless this part of the work is reached in cold weather, as no pointing should be allowed during weather when the mortar will freeze, either during the day or night. In extremely hot weather, if pointing is done, it should be protected by hanging canvas or muslin over it to keep off the hot rays of the sun, as the heat will dry it too fast and the cement will lose its strength.

**R**OOFING slate should always be piled in tiers or rows, as nearly perpendicular as possible, and not more than two or three tiers high. Lath or strips should be laid between each tier.

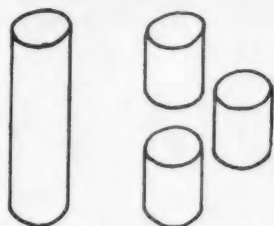


Fig. 6. Before Shear. After Double Shear.

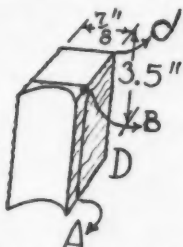


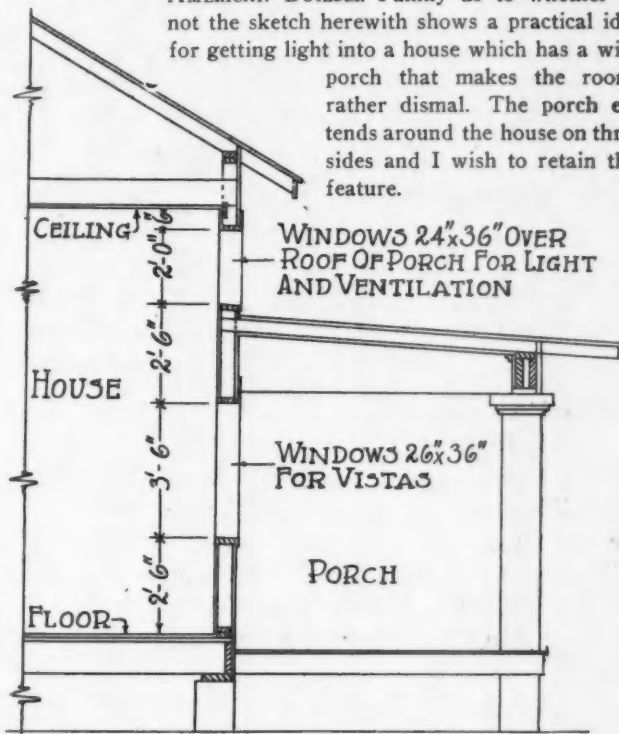
Fig. 7. Material Torn Out in Front of Pin.

## Are Windows Over a Porch Good Practice?

To the Editor:

Fort Monroe, Va.

I wish to ask the valued opinion of members of the AMERICAN BUILDER Family as to whether or not the sketch herewith shows a practical idea for getting light into a house which has a wide porch that makes the rooms rather dismal. The porch extends around the house on three sides and I wish to retain this feature.



Cross-Section, Showing Heights and Location of Windows Over Porch.

Thanking you for any information thru your Correspondence department.

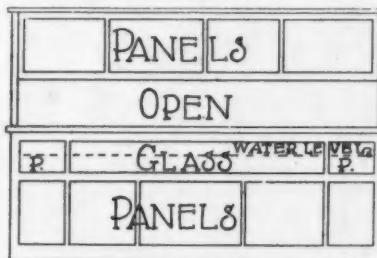
HENRY KINZMANN.

## Wants Help on Making Baptistry Water-Tight

To the Editor:

I have been a reader of the AMERICAN BUILDER for several years and would not be without it. It is one of the best papers I have ever taken. There are more plans in it than in any other paper. I would like a little help. I am sending a drawing of the front of a baptistry, for which I supplied the millwork. I would like to know the best way to set the glass, so that the tank will hold water.

W. J. TAYLOR.



Plan of Baptistry.

## What Is Breaking Strength of Oregon Pine?

To the Editor:

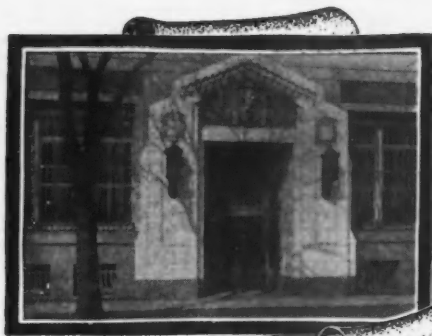
Azusa, Calif.

Please advise me what figures to use per square inch in calculating the breaking strength of Oregon pine lumber. Oregon pine, so-called, is in reality Douglas fir, but it is much stronger than the ordinary blue fir.

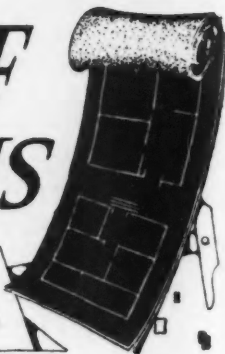
CHAS. H. EDWARDS.

**Answer**—The safe or working compression strength of Oregon pine beams across the grain is 500 pounds per square inch.

THE EDITOR.



# ALL SORTS OF BUILDING PLANS



## Design for Undertaker's Building

SALESROOM, CHAPEL AND LARGE GARAGE ON FIRST FLOOR, AND LIVING ROOMS ABOVE.

By Herbert C. Crocker

THE accompanying illustration and plans give an idea for a cleverly arranged business house with an apartment for one family above. In this case the building is used by an undertaker and he lives in the apartment.

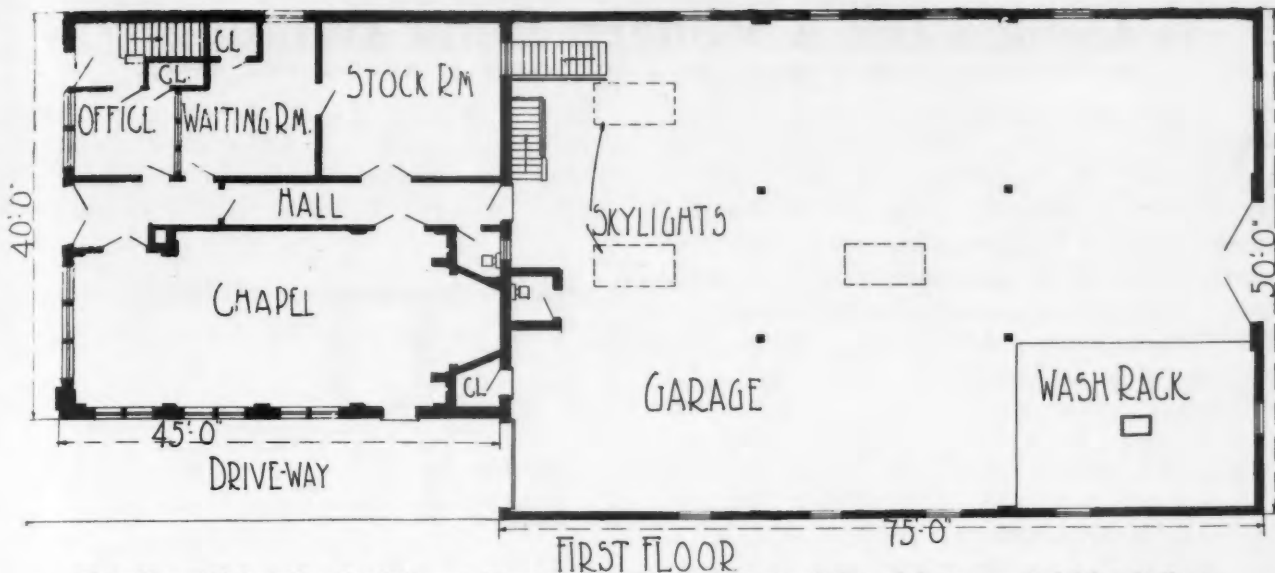
The building proper cost \$12,361 with \$1,075 additional for plumbing and \$2,345 for heating, making the total cost \$16,781. This was a few years ago.

The outside dimensions of the building are 50 by 125. The front portion of the structure, that used in carrying on the business is 40 by 54, the large space at the rear being used as a garage. The garage is large enough to accommodate the undertaker's hearse, casket wagon, automobile cabs and some of the surplus stock.

A basement, in this case, was constructed only under the front portion of the building but in other instances



Two-Story Modern Business Building with Basement. Size 50 by 125 Feet, Brick and Terra Cotta Construction. Building Contains Complete Undertaking Establishment on First Floor, Consisting of Salesroom, Chapel and Garage, and Has One Apartment on the Floor Above. The Morgue and Embalming Room Are in the Basement. The Garage Is Large, for the Automobiles and Undertaker's Needs.



Floor Plan of Undertaking Establishment, Showing Large Garage in Rear and General Arrangement of Other Sections.

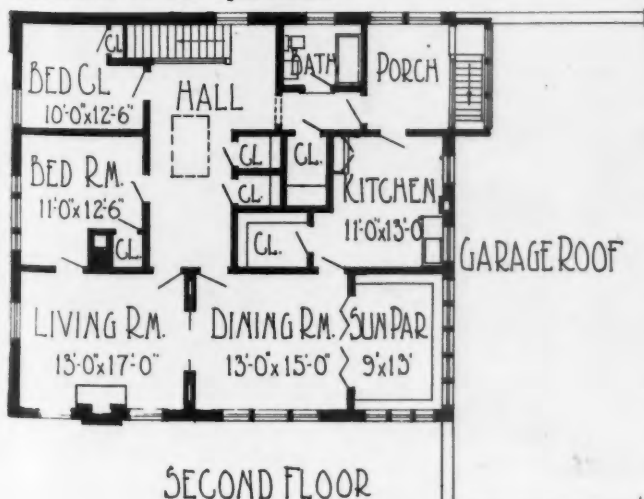
it might be advisable to utilize all of the space. Half of the basement is used as a morgue and for embalming, while the remainder of the space is used as a laundry, boiler and coal room.

The main entrance leads into a hall, the office located on the left hand side and the chapel on the right. The chapel is amply large to accomodate the relatives and friends at the average funeral. It is furnished with comfortable chairs and has an organ as well as a rostrum in one end of the room.

A waiting room is conveniently arranged off the hall and the display of caskets is in a room adjoining. The stock room also has an elevator, fitting flush with the floor when not in use. Toilets and other necessary facilities are located on the first floor.

The living rooms are reached thru a stairway from a front entrance or the office. The landing is in a hall, well-lighted from above thru a skylight.

The front portion of the building is given over to a living room and two bedrooms. There is a conservatory in connection with the dining room. The kitchen and pantry are well located in connection with the remainder of the apartment.



Floor Plan of Five-Room Apartment Above Undertaking Rooms.

The porch shown in the plans is virtually an open air room. It has plastered walls.

While this is rather an unusual building, it is of the type that is suitable for one or more businesses in every town and city. Undertakers, because of the character of their work, need buildings designed especially for them. The design illustrated here is a good one, and one that will appeal to those in the undertaking business.

Plans for the building were prepared by Charles Pauly & Son, architects, at Granite City, Ill.



### Necessity for Careful Chimney Construction

THE charred remains of one year's res in the United States would line both sides of a highway 1,000 miles long, and yet 80 per cent of this is preventable, says a recent issue of the Bulletin of the State Fire Marshal of Minnesota.

A summary of the fire causes in various states shows that fires attributable to chimneys amount annually to from 10 to 20 per cent of the total number and in winter, the percentage has reached as high as 50. Especially in rural districts where there are no organized fire-fighting agencies, builders should give unusual attention to the construction of chimneys that they may be made as nearly fire-proof as possible.

Chimneys should not be built on brackets, they should extend a sufficient distance above the roof, their walls should be at least eight inches thick, flues should not be less than 64 square inches, and flueholes should never be filled with inflammable material and good flue linings of fire clay or terra cotta should be provided. The cost of such lining in an ordinary two-story residence would be nominal.

With the present tremendous demand for new buildings and the consequent speeding up of work, especial care should be taken to prevent carelessness in chimney construction.

Along the same lines the National Fire Protective Association is pushing a vigorous campaign, emphasizing the present need of dwellings and the extreme necessity of protecting from the fire the homes we already have. It advocates care about matches, smoking, lighting and heating apparatus and gasoline, and urges a clearing out of rubbish, inspection of flues and cleaning of chimneys that sparks may not fall on combustible roofs.



## Design for a Modern Bank Building

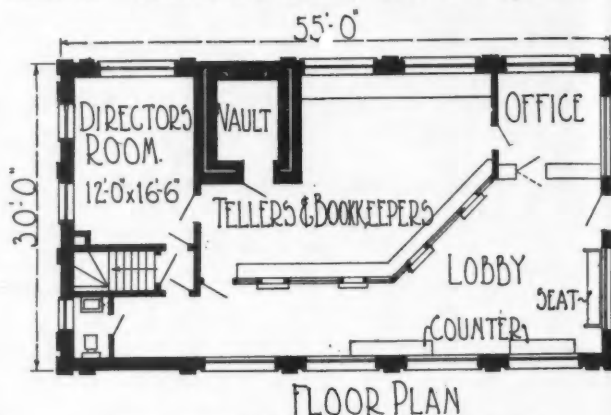
BRICK STRUCTURE WITH TERRA COTTA TRIM MAKES ATTRACTIVE BANK HOME

**A**N up-to-date, substantial and attractive bank building invariably reflects the prosperity, initiative, and wide-awake spirit of a town or community. The successful builder fully realizes this important fact and works with this goal in mind. The first impression of the visitor seeing a bank such as illustrated below cannot be anything but favorable.

This building is not large, 30 by 55 feet, yet is so arranged that the business of the bank can be handled easily and in a minimum of space. The large full glass main door opens into a concrete lobby fitted with seats and a counter, which occupies about one-half the width of the building. The other half contains an office for conferences between customers and bank officials. In back of this office are the tellers' cages and general bookkeeping office, also the vault. The rear of the building is again divided, one side being used as an office adapted for directors' meetings or special conferences. The lavatory at the end of the lobby completes the plan.

The building is of standard brick construction with terra cotta trim, set on a concrete foundation. The four large windows on each side with two in front and two in the rear afford plenty of light and make for pleasant work. Besides being very practical in design, this structure is ornate and attractive. Two large front windows with their low sills and iron grating and the large full glass door with its terra cotta frame give the bank a distinctive and dignified appearance fitting an institution of this nature.

Banks have never been so prosperous as they are at the present time and, no doubt, many of them are planning new structures to handle their increasing business. Contractors will be wise to keep in touch



Floor Plan of Modern Small Bank Building.

with this line of work and be ready to submit favorable suggestions when the occasion arises. The successful man is the one who keeps himself well informed with the changing conditions, especially those that concern his business.

✦  
**T**ERRA COTTA is the most used of materials for the trim of bank buildings. Its pure color and general appearance of what is generally termed "class" have won it great favor among architects who design buildings to house banking activities. Some buildings of this character are veneered with terra cotta.



A Good Small Town Bank Design. It Is 55 Feet Long and 20 Feet Wide and of Brick and Terra Cotta Construction. An Impressive Building That Will Reflect Credit on Its Surroundings.

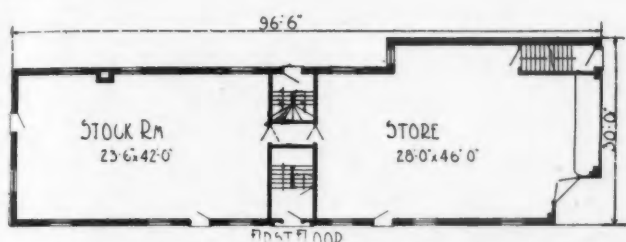
## Design for Corner Store and Apartment Building

BRICK AND TERRA COTTA STRUCTURE HAS MANY ATTRACTIVE FEATURES

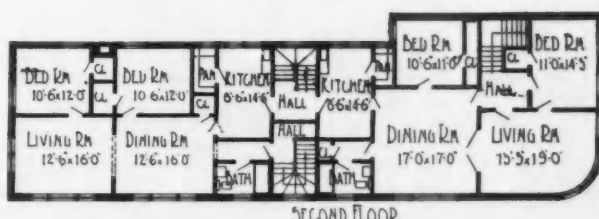
**T**HE corner store is the important cog in the life of a neighborhood. The more attractive it is, the more likely it is to prove a magnet for trade, for people like to carry on business in pleasant surroundings as well as with pleasant people. When a contractor is called upon to build a structure of this kind he should bear in mind the importance of exterior decoration, general artistic appearance, and last, but not least, efficient arrangement of space. As a rule, the corner store is built the full length of the lot.

two bedrooms, and a kitchen. The entrance to the rear apartment is on the side of the building.

The store has a large corner entrance of double doors, and a full-front single window, which affords excellent advantages for display purposes. It is large enough to permit the successful transaction of a neighborhood business, being 46 feet long and 28 feet wide. The stock room is 42 by 23 feet 6 inches. By drawing in the inside wall, plenty of window space is gained for the rear apartment upstairs.



Floor Plan of Store and Stock Room in Rear.



Floor Plan of Two Five-Room Apartments Above Store.

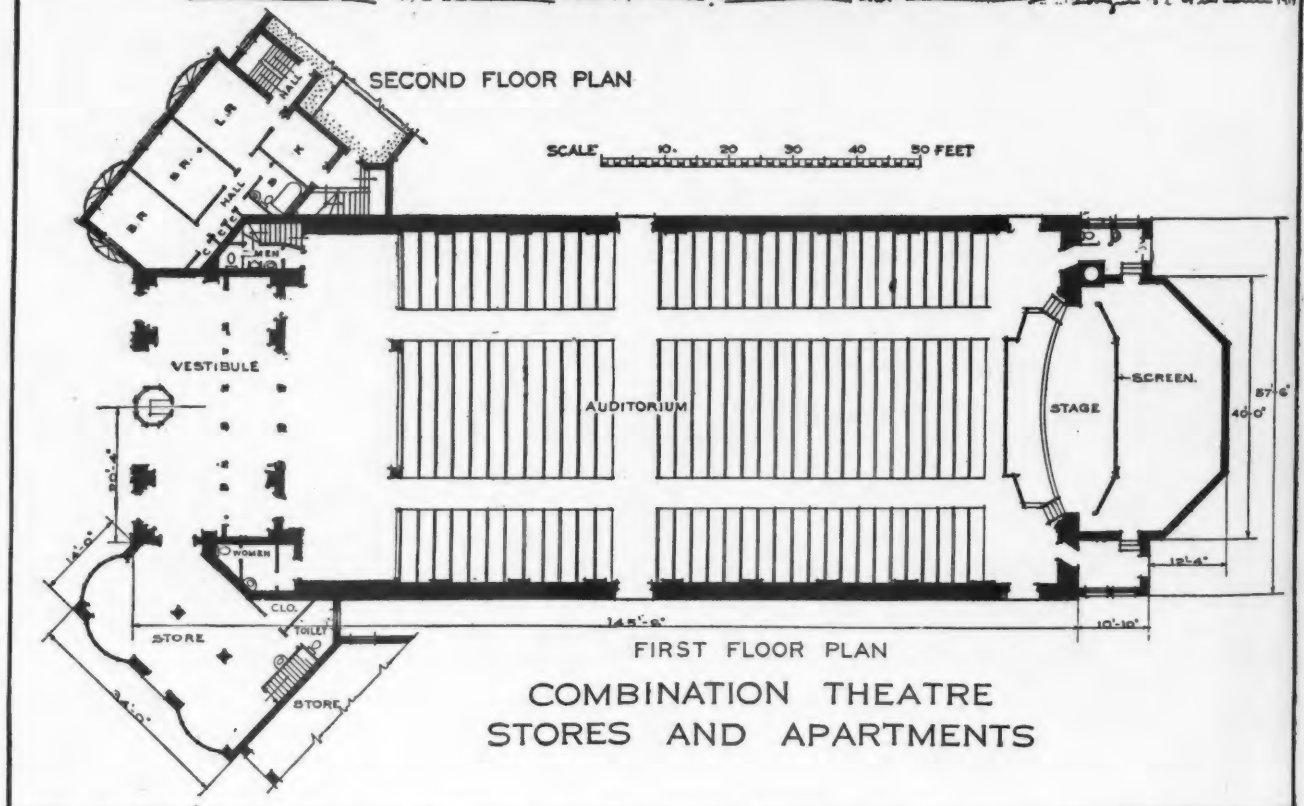


Corner Store and Apartment Building of Brick and Terra Cotta Construction. An Ideal Building for a Corner Lot, Size 96 Feet 6 Inches by 30 Feet. The First Floor Consists of a Store, 28 by 46 Feet, and Stock Room, While the Upper Floor Is Divided Into Two Five-Room Apartments.

A store building such as the one shown in the accompanying illustration is a good financial proposition. The first floor consists of the store and a stock room at the rear, which can be easily converted into another store because it has an entrance. The building, 96 feet 6 inches by 30 feet, is long enough to allow two apartments on the second floor, a very important item because of the extra revenue. Each apartment has five rooms; living and dining rooms,

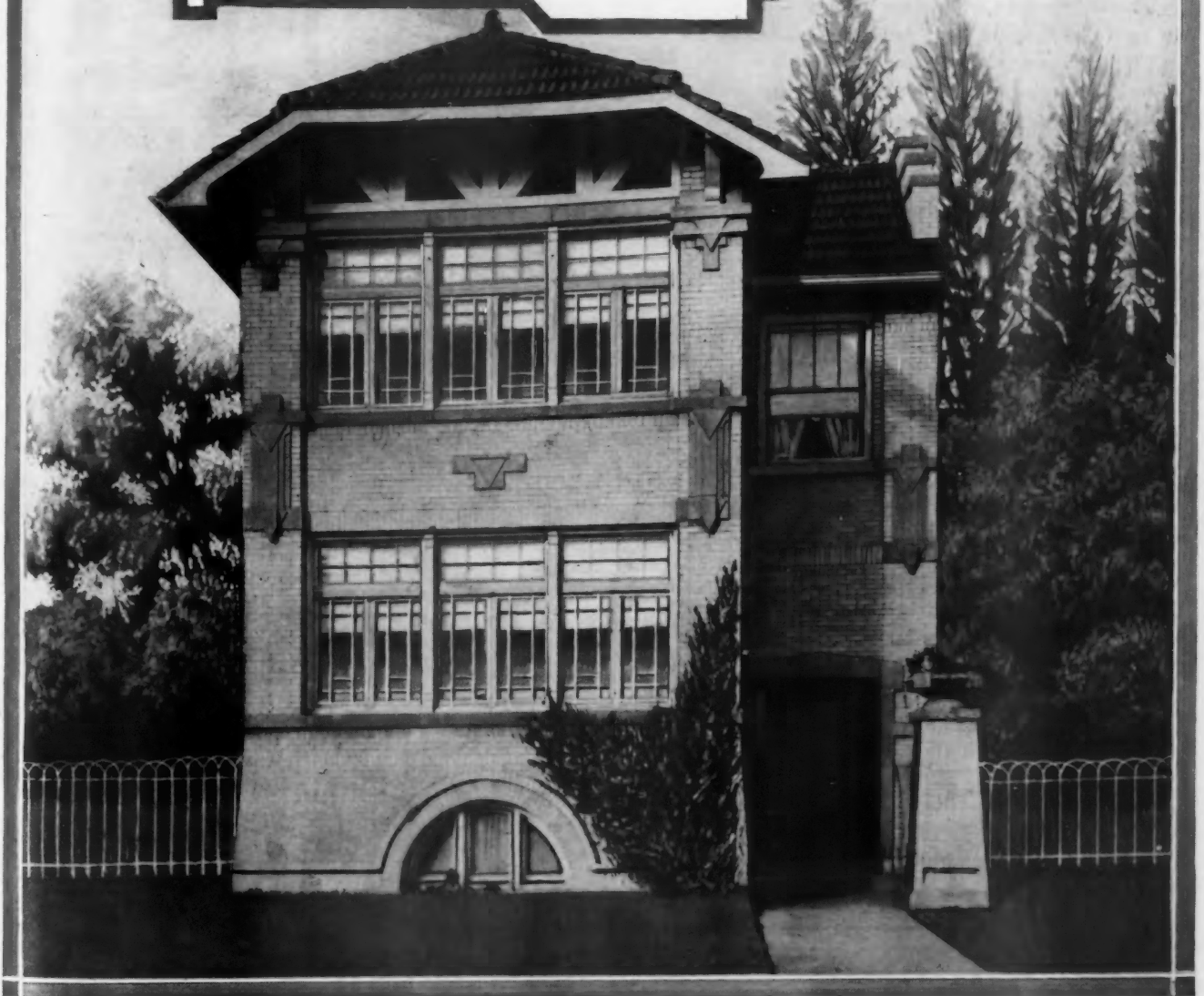
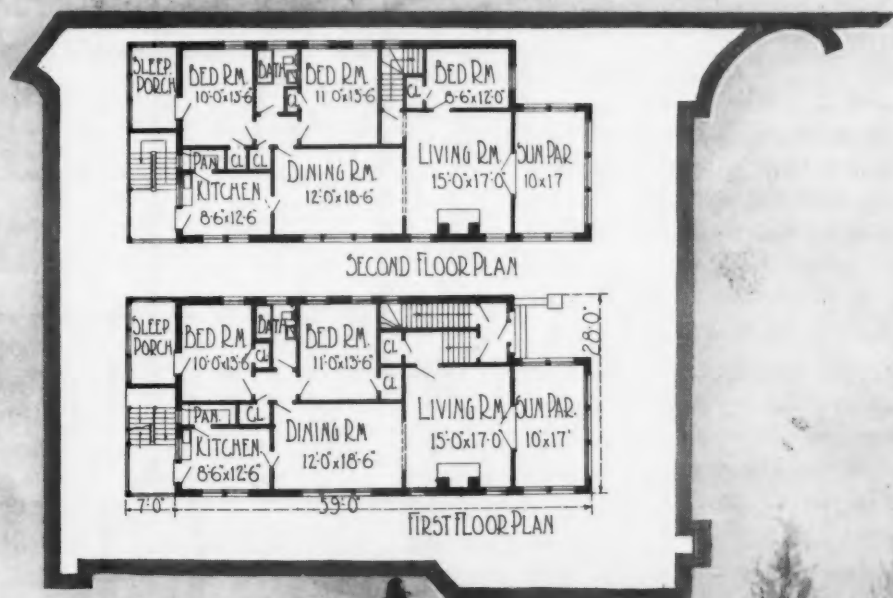
Aside from the financial appeal of a building like this, its artistic appearance should not be overlooked. The exterior has a charm that makes it fit in harmoniously with the other purely residential buildings in the block, and removes the objection which is so often raised against business buildings on a residence street. Combining the artistic and harmonious features with the financial side, as it does, this building will be an asset to the neighborhood in which it is located.

## Design for Combination Motion Picture Theater, Stores and Apartments



**UNIQUE DESIGN FOR THEATER, STORES AND APARTMENTS.** This combination theater, store and apartment building was built at Bethlehem, Pa., by the U. S. Housing Corporation. It is of the Dutch school of architecture and was constructed of brick, with slate roof. The theater is 57 feet 6 inches by 145 feet 6 inches and will seat more than 500 persons. Beside the theater entrance on either side are two stores, while above are four-room apartments, as shown by the plans. Zantzier, Borie & Medary were the architects.





**ARTISTIC TWO-APARTMENT BUILDING OF BUFF BRICK.** This type of building is very popular in the cities. It not only provides the owner with an attractive home, but furnishes him with an income. It is 28 feet wide and 52 feet long, exclusive of the back sleeping porch. The first apartment consists of the living room, 15 by 17 feet, with a sun parlor opening off it, 10 by 17 feet; the dining room 12 by 18 feet, 6 inches; the kitchen, two bedrooms, 11 by 13 feet, 6 inches and 10 by 13 feet, 6 inches; and a sleeping porch in the rear. The upper apartment is practically identical, with the exception of an extra bedroom 8 feet, 6 inches by 12 feet, which takes the place of the vestibule below. The roof is of heavy green tile.

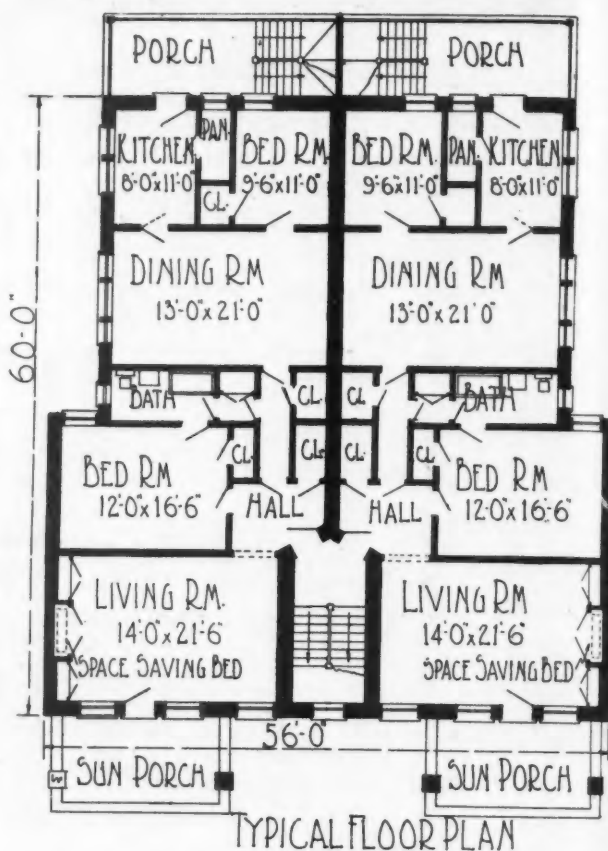
### Design for Three-Story Brick Apartment Building

ARTISTIC USE OF FACE BRICK MAKES THIS AN ATTRACTIVE STRUCTURE

APARTMENT buildings offer splendid fields for variety in styles of architecture. While designed for the same purpose—economy of space—they lend themselves to many forms of expression of this idea. Admirers of the open porch idea will find the six-apartment building shown here an excellent example of this particular style. When contractors are asked about this form of porch, they should keep in mind its main feature—adaptability to weather changes.

In the warm weather these porches can be left open or screened in; in winter they can be enclosed in glass, making ideal sun parlors and sleeping porches. The porch has become one of the important features of an apartment, because of its all around and varied utility.

This three-story building represents the square type, its two dimensions being nearly equal—56 feet wide and 60 feet long. The material used is standard brick with stone trimming. The artistic arrangement and construction of the front entrance is brought out clearly in the close-up picture shown on this page. One step above the walk, it opens into a vestibule and staircase which leads to the various apartments. A variety in style which always attracts is shown in the



Floor Plan of Three-Story Six-Apartment Building.



Three-Story Six-Apartment Building of Brick and Stone Construction. This Building, 56 by 60 Feet, Is Built on Substantial Lines and Emphasizes Comfort in Its All-Season Porch and Five Large Rooms. The Living Room Contains a Space-Saving Bed.

two windows, which furnish the light for the hall—the small one just above the entrance and the large one modeled after the entrance. The window frames thruout the front of the building are made of soldiered brick, here and there embellished by sections or blocks of stone trimming. The sills are of stone, with attractive brick supports. The massive appearance of the porches is produced by the solid brick pillars and balustrades. By extending the floor of the porches out beyond the supports, a broken line effect, which lends itself to many attractive decorations, is obtained.

The floor plan of the apartments indicates individuality of idea. The large living room, 14 feet by 21 feet, 6 inches, extending the full width of the apartment and equipped with a space-saving bed set in the outside wall, is a feature that will be attractive to many people. It eliminates the front bedroom, adding that extra space to the living room, which is the center of activity of a home, while it provides the extra bed for a guest should the emergency arise. The ample lighting provided by the French door and two small windows opening on the porch and the larger window next to the vestibule helps considerably in adding cheer and brightness to the apartment.

Directly in back of the living room is a large bedroom 12 feet by 16 feet, 6 inches, opening off a hall which communicates with all the rooms in the front of the house and which connects the living and dining rooms. The side walls are drawn in at this point to provide window space for this bedroom, the dining room and kitchen.

The dining room is of good size and is convenient to the kitchen. It is well lighted by a triple window. The remainder of the apartment is divided into a kitchen 8 by 11 feet, a bedroom slightly smaller than the other, a closet and pantry.

In designing this building the architect had comfort mainly in mind. He planned a home that will satisfy people who want fewer but larger rooms. For the tenant who is seeking comfort in an apartment but does not want to feel cramped or stinted, the style illustrated in this building will be especially attractive.



**T**O make brickwork look new and bright, apply a wash as follows: Take one-half pound of glue, soak it in water overnight and then dissolve

it in about eight gallons of water, then add one ounce of bichromate of potash in solution and ten pounds of dark Venetian red and enough yellow ochre to give the desired shade. Apply the wash as thin as possible with a large white-wash brush.



**T**O remove stains from stones, take fuller's earth and make a paste, to which add a little lye; spread this on the stain and let dry, then wash clean. It may require two or three applications to take out the stain.



**T**O clean brickwork, mix together one pint of liquid ammonia, one gallon soft soap, two pounds powdered pumice. This will make a soft paste which can be applied with a brush. Dust off the brickwork and apply a coat of the mixture and after letting it stand about twenty minutes scrub it off, using a scrubbing-brush and clean water. Then rinse off with a hose.



Close-Up View of Front Entrance of Modern Apartment Building, Showing Attractive Design and Variety of Window Construction.



## Economical Construction for Light Occupancy Buildings

PRESSED STEEL LUMBER COMING INTO PROMINENCE AS A MODERN BUILDING MATERIAL.

By W. S. Watson, C. E.

**C**ONTRACTORS and builders can now look back on the year 1919 and remember it as one of their busiest years; in fact last year saw new building records in a good many centers. Some localities were slower in starting than others, but eventually the building boom spread over the whole country. Labor was scarce and material was obtained with some difficulty. Prices were very unsteady and continually on the up-grade.

But as we look ahead on the coming year, it seems probable that serious troubles are over with and we may expect a very busy year, the final record of which will outclass the building record of 1919. There will probably be a fairly constant level of material and labor prices, trending upward to unguessed heights.

This means that without a doubt building costs are to remain for some time to come at the present high level, and this condition calls for the architect, the contractor and builder to study every possible means of holding down construction costs without sacrificing the quality of the finished structure. Care must be exercised in choosing that construction which will in-



Metal Joists Set Into Concrete, Fireproof Floor Construction Used in Office Buildings, Factories and Other Similar Structures.

volve the least amount of labor, for it must be remembered that labor is scarce and will continue to be so for some time to come.

These conditions will no doubt apply more closely to buildings of fireproof construction, because of the great number of designs which may be used in any one type of building, as far as strength and permanence is concerned. While standard methods will be employed,

each class or type of building is a separate problem of its own and calls for careful study in choosing a design which is not only correct from an engineering standpoint, but also the most economical. A design which would be proper and economical for one type of building would as surely be bunglesome and extravagant for another.

The type of structure which will probably claim the major portion of the contractor's attention during the coming year is the light occupancy building, the construction of which was entirely stopped during the war and which got only a fair start last year. There will be an enormous demand this year for this type of building. By light occupancy buildings is meant hotels, apartment houses, office buildings,



Metal Lumber and Metal Lath Floor Construction, Ready for the Suspended Ceiling.

school houses, etc., where the live loads will vary from fifty to one hundred pounds. For buildings of this nature, where the live loads are never excessive and the spans relatively short, pressed steel and concrete construction is admirably adapted.

Simply stated, pressed steel and concrete construction consists of steel beams spaced from sixteen to twenty-four inches on centers and supported by steel or reinforced concrete beams and girders. The flanges of the steel joists have prongs punched out for fastening metal lath. Heavy gauge metal lath is fastened to the top side of the joists for supporting and reinforcing the two inch concrete slab. This slab may have a cement finish or nailing strips may be fastened to the steel joists over the lath and imbedded in the concrete, if a finished wood floor is desired. On the under side of the joists lighter gauge metal lath for plastering is fastened by bending over the prongs in the flanges. The ceiling may be suspended, if necessary, in the usual manner.

The weight of pressed steel and concrete forms is only about one-half as much as any other type of fire-proof construction. This means that the supporting beams, girders and columns need not be as large to carry the loads, thereby saving in cost and space as well as appearance and utility in a great many cases.

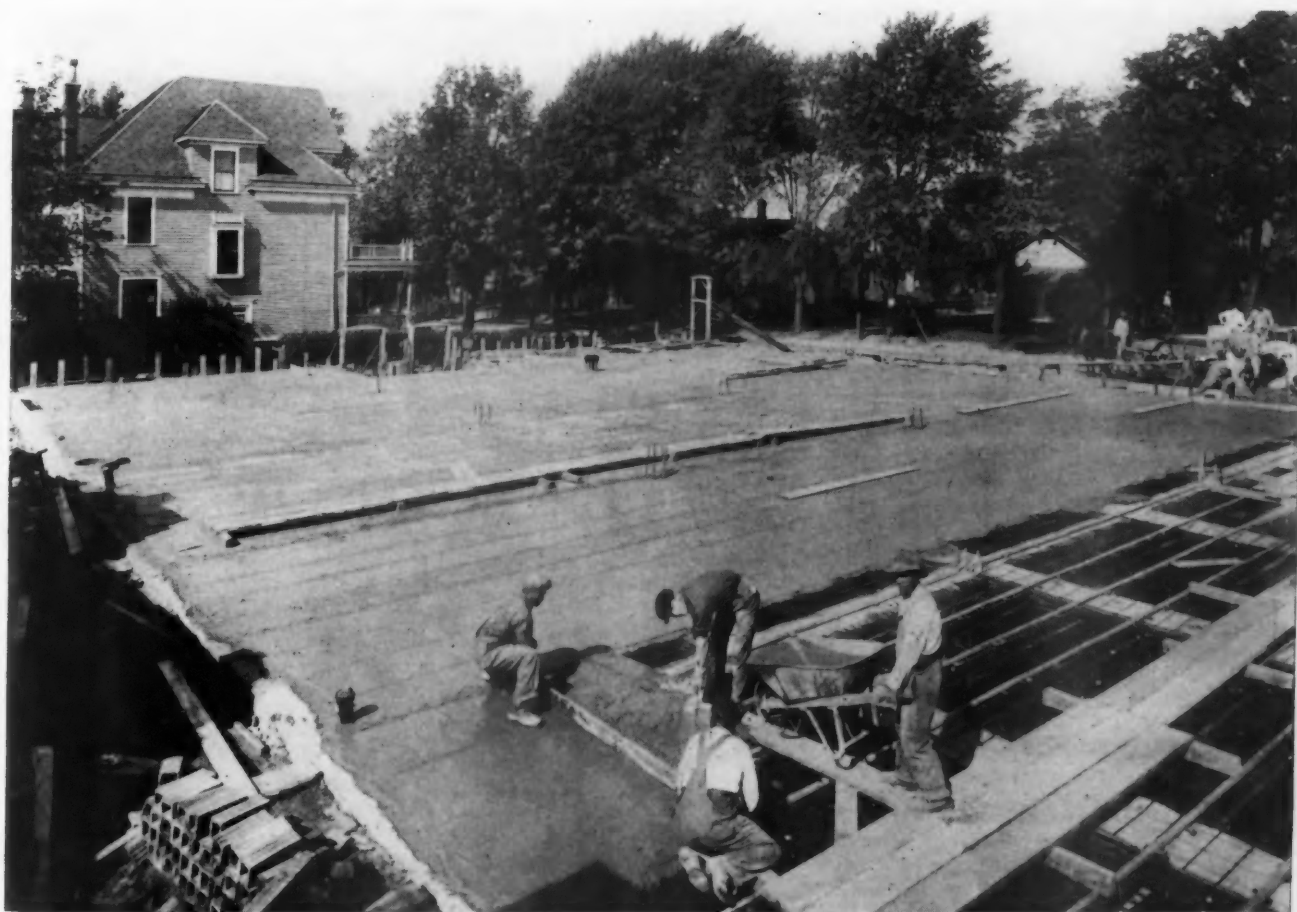
Simplicity is another advantageous feature of

pressed steel construction, as it involves a minimum amount of skilled labor, in fact the only form work necessary with pressed steel construction is for beams and columns. The steel joists for the floors proper are designed to carry the total floor load and also serve as forms for placing the 2 inch slab above them. A very small amount of concrete is therefore necessary for this construction, and where wood forms are used the nailing strips can be imbedded in the two-inch concrete slab, thereby saving two inches in the thickness of the floor as well as the cinder fill for holding the nailing strips in place.

Another feature which will appeal to contractors is the saving of labor which this construction effects. It is no more trouble to place steel joists than it is ordinary wood joists, and it can be done with the cheapest labor available.

Pressed steel and concrete construction, on account of the features mentioned will therefore save considerable time in the construction of the building and the structure can be turned over to the owner in a very much shorter time with a corresponding saving of lost interest on money invested.

All those interested in light occupancy buildings and all persons interested in any class of building where this construction might be used should investigate the construction which has of late become so popular.



Concrete and Metal Lumber Floor Construction, Showing the Metal Lath Between the Joists. The Lath Provides the Bed and Reinforcement for the Concrete.

## How to Cut Cost of Stucco Walls

REINFORCED FELT FABRIC PROVIDES ECONOMICAL STUCCO BASE AND MAKES FIRE-RESISTIVE WALL

**T**HE year 1920 promises to be the biggest building year in the history of our country.

Irrespective of the scarcity of materials and the high prices, we must have housing accommodations, and the great problem confronting every architect, contractor and owner is not only to secure delivery of the various materials when needed, but to select the right kind of materials.

A plastering fabric, composed of a heavy water-proofed felt backing, reinforced with galvanized wire woven thru and across the face of the felt, has demonstrated successfully during its years of service that it will not only reduce the cost of plaster work but will give very excellent results.

As a backing for stucco this fabric can be attached direct to the studs, eliminating the sheathing, or if sheathing is used, it is applied over the usual furring strips. In either case it is possible to lath and paper a building in one operation, and its felt backing will afford a saving of from 40 to 60 per cent of the first cost of mortar, as it is usually applied.



Workmen Finishing the Stucco Walls of an Apartment Building. The Base Is Reinforced Fabric. The Picture Shows the Excellent Surface Secured.

This fabric, when plastered with either cement stucco or magnesite plaster, is an excellent protection against fire.

On the interior, this fabric can be attached direct to the studs or floor joists, either 12 or 16 inches center to center. This fabric will eliminate checking, cracking and staining of the plaster. The felt forms a par-



Reinforced Plastering Fabric on a Small School Building, Part of Which Has Been Covered by Stucco. The Backing Gives as the Stucco Is Forced Against It, the Plaster Sinking in and Keying on the Reinforcing Wires.



tial sound deadener in the walls and ceilings—prevents the plaster from coming in contact with any wood, thereby eliminating checking or cracking. The felt backing also is an absolute guarantee against staining or marking of the plaster slab.

However, the great thought today is to prepare the plaster slab so that it will be fire-resistive. Laboratory tests have conclusively proved that a backing of felt properly reinforced with galvanized wires, when plastered, provides one of the best fire-resistive materials.

Whether you are building a home of moderate price or a structure, the cost of which will run into six figures, there is need of every possible economy. A fabric of this kind is not only low in original cost, but will afford a saving in every operation.

How the fabric appears when applied to the studs ready for the stucco, and the various uses to which it may be put are shown in the accompanying illustrations.



### Headers in Stone Walls

**A**LL stone walls 24 inches or less in thickness should have at least one header extending thru the wall in every 3 feet in height from the bottom of the wall, and in every 3 feet in length, and if over 24 inches in thickness should have one header for every 6 superficial feet on both sides of the wall, laid on top of each other to bond together and running into the wall at least two feet.

All headers should be at least 12 inches in width and 8 inches in thickness and consist of good flat stones.

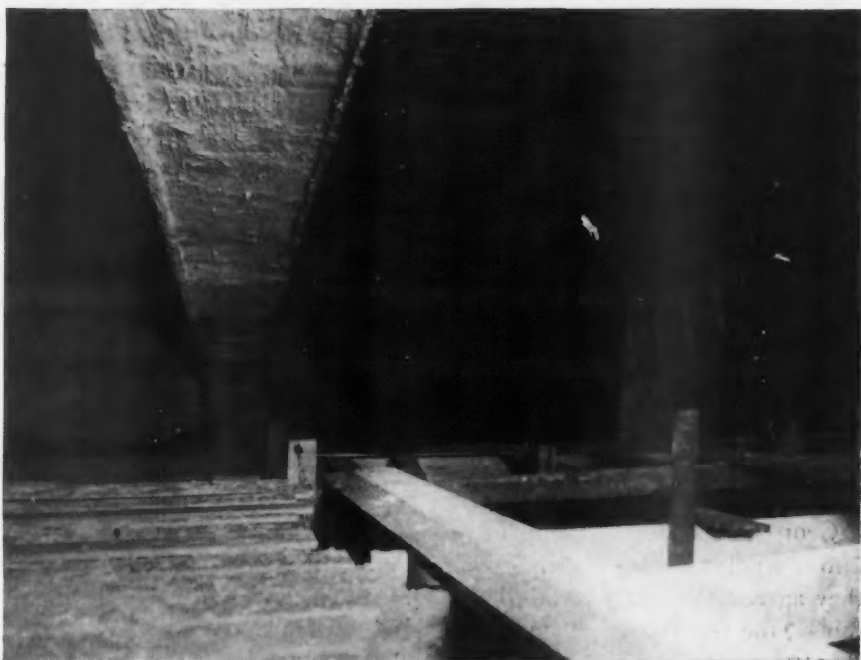
No stone should be laid in such walls in any other position than on its natural bed.

No stone should be used that does not bond or extend into the walls at least six inches.

Stones should be firmly bedded in cement mortar and all space joints thoroly filled.



**I**N building chimneys the mason should build the flues as straight and with as few bends as possible. If in any case it is necessary to make a short bend in a flue, an opening should be left in the chim-



Theater Ceiling on Which Felt and Wire Fabric Was Used as Plaster Base.

ney at this point to permit of the flue being cleaned out on completion of the chimney, for if the bend is very sharp the falling mortar and "bats" will lodge and obstruct the flue. By leaving an opening this can be cleaned out and the hole bricked up.



**T**HE old rule of 6-8-10 is used generally by all mechanics in squaring up their work. It is the quickest and most reliable method known, except the use of an engineer's instrument. Measure 6 feet from the corner on one side and 8 feet from the same corner on the other side, and the diagonal of these two points should be 10 feet.



Sun Parlor of Residence, Showing How Square Mesh Fabric Was Applied Over Furring Strips 16 Inches on Centers.

## Law for the Builder

CONTRACTOR'S LIABILITY UPON HIS BOND, TO PROTECT OWNER FROM DAMAGE ARISING FROM ACCIDENTS ON THE WORK WHEN THE INJURY IS CAUSED BY OWNER'S NEGLIGENCE.

By Leslie Childs

THE extent of the contractor's liability upon his bond, to protect the owner from damages caused by accidents during the course of the work, is of vital interest to every contractor. It has been the source of many law suits, between contractors and owners, with varying results, depending upon the terms of the contracts, and the circumstances surrounding the various disputes. An interesting case of this kind was that of *Perry vs. Payne & Co.*, 217 Pa. 252; the facts being substantially as follows:

George F. Payne & Company, contractors, entered into a written contract with Edward Perry, in which they agreed to erect a certain building. Among other things, the contract stipulated that Payne & Company should execute a bond in the sum of \$140,000 to Perry, indemnifying him, "from all loss, cost, or expense \* \* \* arising from accidents to mechanics or laborers employed in the construction of said work, or to persons passing where the work is being constructed."

This bond was executed and delivered by Payne & Company and they started on the work. The job was carried on for a considerable length of time, and as parts of the building were completed they were turned over to Perry. In this way, when the building was completed Perry had possession of it, and his men were operating the engine, machinery, and elevators, tho the building had not been formally accepted.

Before the work was accepted the architects objected to some plastering that had been done in one of the elevator shafts, and required Payne & Company to do the work over. After the plasterers had finished, Payne & Company sent two painters to repaint the elevator shaft where the plastering had been done.

Perry consented to let the painters use the elevator as a movable stage in painting the side of the shaft, and permitted a boy, who was in his employ, to operate the elevator while Payne & Company's men were painting. As the work progressed the boy operating the elevator would lower it, until when all was completed but some eight or ten feet of the shaft, the painters left the top of the elevator and the boy hoisted it. The painters then entered the shaft to complete the job.

While engaged in doing this the boy on the elevator suddenly lowered it and, striking one of the painters,

caused his death. His widow sued Perry for damages and recovered a judgment against him. Then Perry brought an action against Payne & Company, on their bond of indemnity, seeking to force them to bear the loss. The case finally reached the Supreme court, and in passing on the questions raised it was said:

"The principal and controlling question in the case depends upon the interpretation of the bond on which the action was brought. That part of the condition of the bond with which we are particularly concerned provides that the contractors 'shall protect and keep harmless the said Edward Perry \* \* \* from damages arising from accidents to persons employed in the construction of, or passing near, the said work.'

\* \* \* As Payne & Company were to erect the building, we think there can be no doubt that the damage there contemplated was such as would be done by Payne & Company or their employes, and not by Perry or his employes.

"\* \* \* It is contrary to experience and against reason that the contractors should agree to indemnify Perry against the negligence of himself or his employes. It would make them insurers, and impose a liability upon the contractors, the extent of which would be uncertain and indefinite, and entirely in the hands of Perry.

"\* \* \* We think it clear, on reason and authority, that a contract of indemnity against personal injuries should not be construed to indemnify against the negligence of the indemnitee, unless it is so expressed in unequivocal terms. The liability on such indemnity is so hazardous, and the character of the indemnity so unusual and extraordinary, that there can be no presumption that the indemnitor intended to assume the responsibility unless the contract puts it beyond doubt by express stipulation."

The Supreme court thereupon held that as the accident was caused by the negligence of the owner's employe (the elevator boy), Payne & Company, the contractors, were not liable on their bond, holding that in bonds of that kind, unless it was expressly stated, liability for accidents caused by the negligence of the owners or his employes, would not be covered at the expense of the contractor.



The Elevator Lowered Suddenly, Striking One of the Painters.

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# OUT ON THE JOB



## What Builders Are Finding Good

**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.

### Novel Method of Piping Gasoline at Garage

Intervening sidewalks have no terrors for the owner of the garage shown in the photograph when it comes to supplying his customers with gasoline. A long pipe leads from the buried tank in the rear of the building to the front, and the last section of pipe extends across the walk high above the heads of passing pedestrians. A rubber hose extends from the end of the pipe to the tank of the car. The last section of the pipe is hinged at the corner of the building, allowing it to be swung back alongside the building when there is no machine waiting for "service."

FRED TELFORD.



### A New and Improved Quarter Yard Mixer

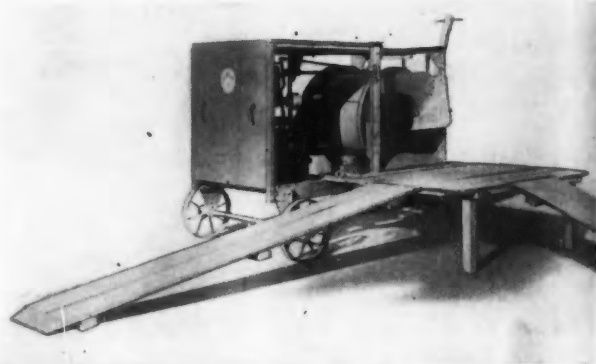
Among the new models of concrete mixers offered for 1920 is an improved type of a mixer that has already demonstrated its reliability and efficiency. The batch capacity and general characteristics of the mixer remain the same but a number of most important changes have been made in its construction. A surplus of strength has been one of the things aimed at

and to secure it, many of the original specifications have been changed, without, however, adding materially to the weight of the mixer.

On the new mixer both front and rear wheels have the same tread, both sets of wheels being hung outside the frame. This will materially aid in moving the mixer from place to place, as well as handling it in confined spaces.

The original wooden frame has been replaced by steel, adding greatly to its rigidity and increasing its strength.

One of the most important changes which has been made, is the increase of  $33\frac{1}{3}$  per cent in the bearing surface of the traction rings and rollers. This has been secured by an increase in the diameter of the roller from 7 to 10 inches and by making the face of both the traction rings and rollers 2 inches instead of  $1\frac{1}{2}$  inches, as formerly. The length of the



New Small Mixer for Quarter Yard Batches.

rollers has also been increased to 7 inches. The length of the hubs has been increased from 4 to 8 inches which, taken in connection with the increase in the surfaces of the roller and traction rings, reduces the wear on these parts  $47\frac{1}{2}$  per cent.

Another feature of the new mixer is the great increase in the ultimate strength of the driving chain. Where previously a No. 455 chain, whose breaking strength was 7,300 pounds, was used, the new machine is equipped with a No. 488 chain, whose breaking strength is 12,000 pounds, an increase of 64 per cent.

The addition of an overhead frame, making all charging mechanisms interchangeable, contributes tremendously to the increased value and convenience of the new mixer. This arrangement permits of the substitution of a pivot hopper for a batch hopper or a charging chute without any alteration being made in the frame each time the charging mechanism is changed.

Angle iron reinforcing under the top cover makes it more rigid and keeps it in line, and the use of a steel door hanger hub removes one of the few things that have occasionally been a minor source of trouble in the old machine. The power plant has been increased from three to four horsepower.



### Painting a Stucco House with an Airbrush

Painting contractors now are using the speedy airbrush method on stucco houses, which is well adapted to painting the rough surfaces. There is no brush to come in contact with the stucco, while the force with which the paint is driven



Unique Method of Piping Gasoline to Curb in Front of Garage. The Gasoline Pipe Is Hinged at the Corner of the Building and Swings to the Side of the Building When Not in Use. It Is of a Height That Permits Unobstructed Use of the Sidewalk.



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joints, studs, bridging, rafters, etc. Estimating all kinds of roofs, floors, siding, cornices, etc. Labor for rough and finished carpentry.

**Estimating mill work.** Labor and material for window and door frames, sash, blinds, base board, wainscoting and all kinds of closets, cupboards, etc. Lathing, plastering, sheet metal work, exterior and interior marble jointing and decorating, glazing, plumbing, heating, wiring, etc.

**Construction** Brickwork: Footings and foundation walls of brick, concrete and stone. Brick laying, joints in brick work, pointing, tuck pointing, etc. Brick and stone arches. Use of different kinds of stone.

**Carpentry:** Kinds and uses of wood's, cornices, interior details, framing, roof construction, bridging, miter joints, butt points, etc. How plans are made. Complete instructions illustrated by working blueprints of all kinds of buildings, private, public and business.

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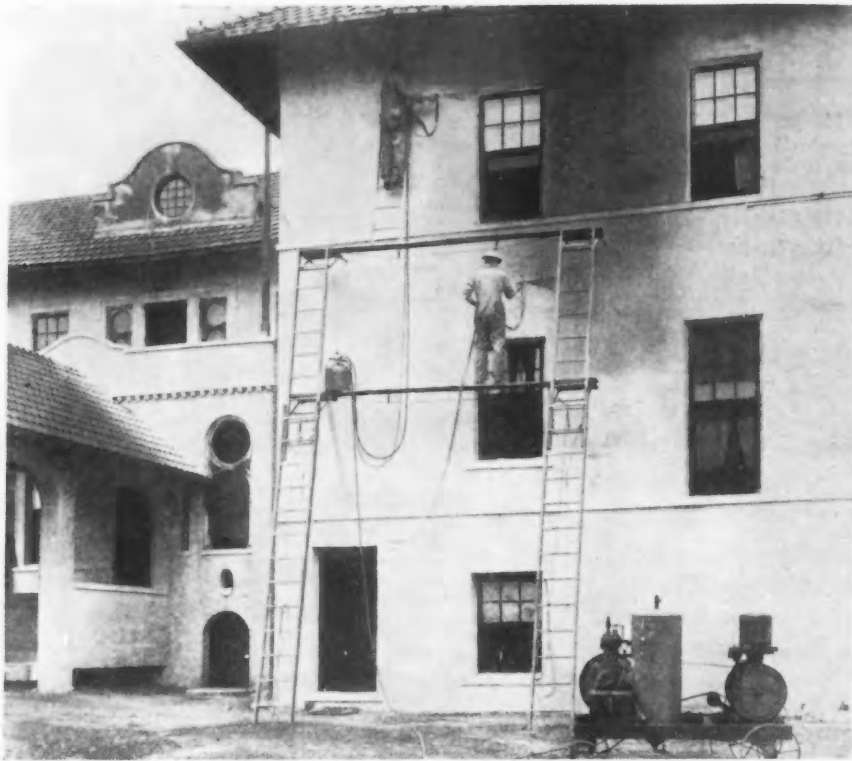
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**Painting a Stucco House by Means of a Portable Air Brush Painting Equipment. Hose Leading from the Air Compressor and Paint Tank on the Scaffold Enable Two Men to Work with One Machine. The Force with Which the Compressed Air Throws the Paint Completely and Quickly Covers and Fills the Rough Stucco Surface.**

against the walls insures that every portion of the uneven surface will be painted. The accompanying illustration shows two painters operating airbrushes attached to the same air compressor and paint tank.

This method of painting exteriors and interiors of all kinds is growing in favor with painters. Oil paints, mill whites, enamels, asphaltums, flat wall paints and other like paints are

sprayed to equal advantage on stationary work of every description. One coat applied by this method is sufficient in some cases and will always cover rough surfaces completely and uniformly. Cleanliness is another advantage of this method, there being no dripping of the liquid and practically no waste.

This painting equipment is portable, being mounted on a hand truck or automobile trailer. It comprises an air compressor, gas engine or electric motor and air receiver with safety valve and pressure gauge. The portable paint tank, shown on the lower scaffold of the picture, has complete regulating devices.

The average painter becomes proficient in operating this equipment in a short time, and, it is claimed, can accomplish five times as much work in a given time as when painting in the old way.



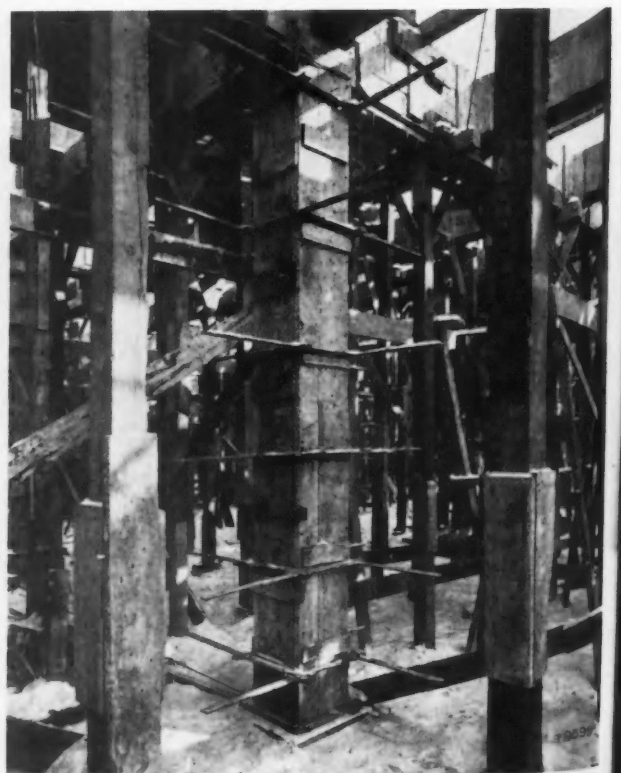
### **Adjustable Jack for Building Purposes**

Building operations are greatly facilitated and cheapened by means of a new adjustable jack used for leveling purposes. The jack consists essentially of two telescoping pipes  $1\frac{1}{2}$  and 2 inches in diameter. By means of a gripping and releasing device, each jack may be extended to 12 feet 6 inches. In operation

the inner pipe is raised by hand to the form, and then the lever brought into play. The device automatically locks, and the load only makes the gripping dogs grip all the tighter. A large number of special parts for the upper end are provided for timbers, shoring, stringers, and other equipment and material of various kinds. The adjustable jacks take up much less space than frame work and are cheaper.



**Floors Held Up by Joint Panel Jacks That Take a 4-Inch Timber. The Jacks Make the Job of Shoring an Easy One and Save Much Time and Labor.**



**Forms for the Concrete Columns Are Held in Place by an Adjustable Clamp, Which Can Be Assembled, Tightened and Set in a Minute. These Clamps Hold the Forms Together Rigidly and Can Be Removed Easily and Quickly After the Concrete Has Set.**





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## Getting away from Competition

**EVER** since the introduction of the so-called "rubber-type" roofings, competition in roofing sales has been growing keener.

This has probably been because there is really little choice between most "rubber" roofings. Preference has been and still is regulated almost entirely by price. Somehow the impression has been created that one "rubber" roofing is as good as another.

But progressive dealers are making a different appeal to their customers—they are offering a roofing that competition can't touch for durability and weatherproof quality.

Through Johns-Manville Asbestos Roofing, these dealers are taking their roofing business right out of the competitive class. And by so doing they interest, in addition to those customers who buy on price, an entirely new kind of prospect—those to whom first cost is secondary—those to whom the questions of fire resistance and durability are of greater interest.

Your experience with Johns-Manville Asbestos Roofing will quickly convince you of the greater profits that result from carrying roofing that is inherently better because it is made from Asbestos.

Ask the nearest Johns-Manville Branch for information about this opportunity.

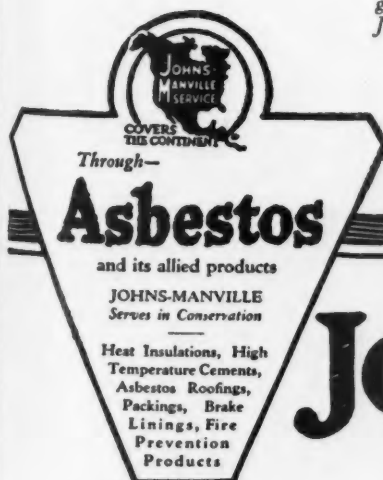
Johns-Manville Asbestos Roofings are approved by the Underwriters' Laboratories, Inc.

*List of roofings—Asbestone, Johns-Manville Standard and Colorblende Asbestos Shingles, Johns-Manville Asbestos Ready Roofing, Johns-Manville Built-Up Asbestos Roofing, Johns-Manville Corrugated Asbestos Roofings.*

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# JOHNS-MANVILLE

## ASBESTOS ROOFING

## Moving a House by Motor Truck

Novel Method Used by a Missouri Contractor  
By Allen P. Child

Recently a man living in Shawano, Wis., wanted to move to another part of the town. As there was no house ready to move into on the lot he wanted, he just called on the owner of a motor truck to move the house he had been living in many years to the new site.

In moving this 190-ton house the truck was anchored to a stump in one position and to the street curbing in another. During the moving operations a  $\frac{5}{8}$ -inch cable was broken twice.

The truck was equipped with a winch driven from a power take-off in the main transmission. A block and tackle were placed next to the house and the house was pulled by the direct action of the motor-operated winch. The total weight



Moving a House by Truck. The Truck Is Anchored to a Stump.



Moving a House by Motor Truck, Showing the Building in the Street and How the Cables Were Attached.

of the truck chassis and body was about 7,400 pounds and it was not weighted down in order to pull the structure. The engine in the truck pulled, from the two separate anchored positions, this house two city blocks. The winch drum carried 200 feet of  $\frac{5}{8}$ -inch cable and an additional piece of cable about 300 feet long was also used.

Part of the winch mechanism may be seen in the rear of the truck in one of the accompanying illustrations.



## Convertibility Is an Important Feature of This Year's Paver

A very important improvement has been made in its paving mixer by one of the manufacturers which makes it possible for the contractor to change his paving mixer from a boom-and-bucket type to a chute delivery type or vice versa.

In some districts paving contracts call for a paving mixer equipped with the particular type of discharge favored in the eyes of the engineers in charge. This situation has not infrequently made it necessary for the successful contractor to either sell or allow his

paver to stand idle and purchase a new machine equipped to meet the specifications. In the paver shown in the accompanying illustration the contractor finds relief from this condition. The frame of this paver is so constructed that it can be equipped with either boom-and-bucket or chute and the arrangement is so simple that the change can be made anywhere—right on the job if necessary. This gives the paver a wide range of usefulness.

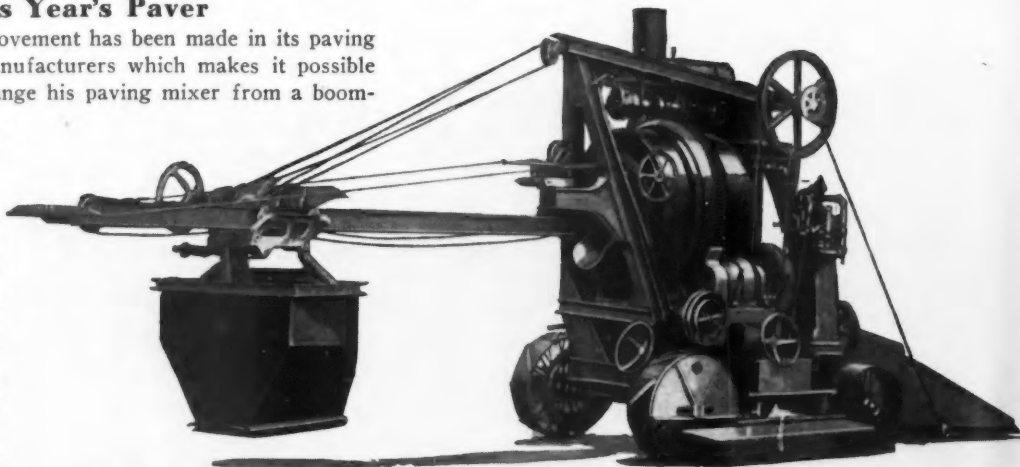
This mixer is a high drum paver. The advantages of this feature are manifold. If it is equipped with chute discharge it gives the chute a pitch of from 20 to 30 degrees which makes possible a steady flow of concrete by gravity alone. Stiff or thin mixtures can be poured down a chute having a pitch with equal facility and without losing any of their strength. If the paver is boom-and-bucket equipped the high drum makes possible a high boom and a long deep bucket. The boom is seven feet high allowing ample space for workmen to pass below it.

To further increase its usefulness the paver can be equipped with either wheel or caterpillar traction. This, like the delivery, is interchangeable. The caterpillar is of the oscillating type, 18 inches wide and extending over the rear half of the paver. The caterpillar is protected with steel treads thru-out and is of an advanced troubleproof design.

Some of the other interesting features in connection with the mixer are: Actual one-man-operation, strongly reinforced frame, fewer working parts, speedy skip, quick discharge, efficient power plant, automobile steering gear and many other.



**T**HE right sort of equipment is required on every building job. With efficient equipment, contractors can do more work and better work.



New Paving Mixer That May Be Converted from Boom-and-Bucket Type to Spout Delivery.

# DEPENDABILITY

**ATLAS-WHITE**  
is a true Portland Cement; pure white in color and therefore ideal for the finish coat of all-white stucco. Its higher accentuation of the values of color aggregates in the production of various color tones is still another reason for using Atlas-White—On The Job.

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Upon request we will promptly send to architects one or all of three books: "Color Tones in Stucco," "Non-Staining Mortar for Pointing, Setting and Backing," "Cast Stone."

# ATLAS WHITE





**Practical Hand-Propelled Concrete Mixer.** This Machine Plows the Mixture Instead of Churning It in Revolving Drum.

### Mixer Turns Out Batch Every 30 Seconds

Rural contractors are constantly being called upon to do some construction work that involves the mixing of concrete. As a result the popularity of the mixing machines has increased very rapidly. One type is a hand-propelled machine operated on the principle of plowing the material with blades instead of churning it in a revolving drum.

This mixer which is comparatively small can be operated by one or two men. The internal machinery which mixes the concrete consists of eighteen blades bolted to four bars which are attached to the crank propeller by means of shaft spiders. When the crank revolves these mixing bars also turn, causing the blades to plow thru the mixture stirring and hoeing it. Four turns of the crank are needed for one complete revolution of the mixing apparatus. The entire machine is set on a wooden form and stands about five feet high. The average time for each revolution is four seconds, which means the eighteen blades and four mixing bars mix the batch in about thirty seconds.

The accompanying illustration shows this small but efficient mixer on the job. Two men are operating it, and are dumping the concrete directly from the mixer into the forms.



**C**EMENT and stucco coating should be applied just as it comes from the can, and two coats should be used, particularly on new work. When used on old work, previously painted, it should be reduced at the rate of one quart of reducer to each gallon of paint. For reducer, use four parts of linseed oil and one part turpentine. This forms a foundation coat over which the coating may safely be applied.



### A Practical Blue-Print Protector

Blue prints are always getting dirty, wet, greasy or torn while being handled by workmen using them. An inventive genius has designed a very practical blue-print protector of simple construction and low cost.

A sheet of transparent sheeting—the same material used for lights in auto curtains—is cut to desired size. A piece of light-weight leather substitute is then cut about a half inch larger all around than the piece of sheeting. This extra half inch allows for a lap-over on all but the top side of the protector. A sewing machine stitches the lap down to the sheeting forming a large flat pocket, open at the top for the insertion of the blue prints.

Both the transparent front and the coated fabric back are

water-proof and grease-proof. Dirt or grease may easily be wiped or washed off either without injury to the material. Both materials are flexible and the holder may be rolled up if desired in the same way an unprotected blue print is usually handled by a workman.

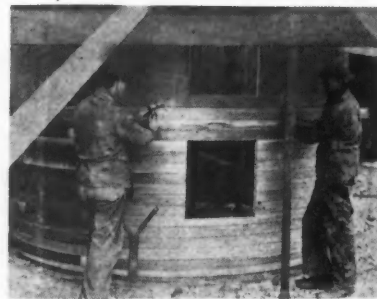


### Wood Band Silo Popular

The silo has become one of the most important buildings in the farm plan. The farmer gives it plenty of attention and study, for a large part of his success depends on it. As a result, many plans for the construction of silos have been presented and thousands have been erected. One of them is of a three-wall type.

This silo, which is considered frost-proof, consists of an inside wall, constructed of vertical staves, closely fitted, square butted at the ends, making a smooth, continuous wall, which permits the silage to settle evenly at all times. Above this stave wall is a layer of insulating material used to keep out air and prevent freezing.

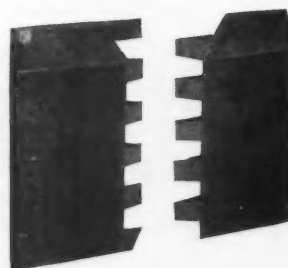
The outside layer is the feature of the silo. It is a continuous horizontal hooping, securely fastened to the inside stave wall by coppered rust-proof nails. The hooping is half-inch cypress, four to six inches wide, and winds spirally from bottom to top. The continuous effect is produced by a patent method of locking, which is a heavy metal joint plate securely fastened over the ends of the interlocking hooping. These plates make the sections a continuous unit, frequently more than a mile in length.



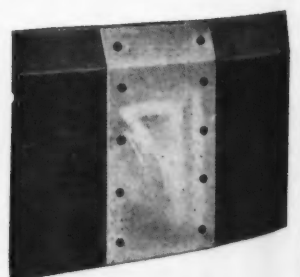
**Putting on the Tube Wall and Adjusting the Locking Plates.**



**W**HEN hanging mantels never drive wooden plugs in the chimney to fasten the mantel to. Use wrought iron awning or sign hooks, which can be obtained at any hardware store. Drive four of these hooks into the joints of the brick-work, one at each corner of the mantel; then fasten four heavy screw-eyes, or staples, on the back of the mantel at the required positions and hang the mantel on the hooks driven in the chimney.



**Locking Ends of Hooping Which Forms Outer Wall of Silo.**



**Metal Joint Plate in Position Over Ends of Hooping.**



# E-Cod Fabric



—is the most economical, as well as the most practical and durable plastering base on the market. It affords the very best protection against fire that you can put on your farm buildings.

E-COD FABRIC is composed of a heavy, waterproofed felt backing reinforced with No. 14 gauge galvanized wires, woven together so as to secure the maximum efficiency of these two materials. E-COD FABRIC is weather-proof, water-proof, fire-resistive, and is applicable for all styles and classes of construction from the smallest bungalow to the most palatial building.

It is low in first cost, and saves in every operation of plastering. Eliminates checking, cracking, staining of the plaster slab. Is an absolute guarantee against disintegration because the galvanized reinforcement becomes completely embedded in the plaster.

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You Are Requested and Urged to Make Free Use of These Columns for the Discussion of All Questions of Interest to the Building Industry

### How to Lay a Hollow Tile and Concrete Floor

To the Editor:

Mason City, Iowa.

I am writing you regarding an article on page 186 of the December, 1919, *AMERICAN BUILDER*, which is a letter addressed to the editor from Akron, Ohio, signed by Chas. S. King.

We hardly feel safe in letting this go by without comment, for fear that some unsuspecting person might endeavor to build a floor as outlined therein, and then both hollow tile and concrete would be blamed for the accident that would happen and the deaths or injuries that might be caused by the collapse thereof. And we believe that in a case where suggestions are made which are so radically wrong that there is great danger from the use of the construction suggested, it should be corrected.

In the first place our friend, Mr. King, has specifically stated that an 8x12x12 tile should be used, laid 16 inch on centers and that 1-inch rods should be laid between the tile in both directions. We wish to ask how Mr. King expects to keep the concrete of the cross joists from entering the ends of the tile? In the second place, for Mr. King's or others information, we wish to state that the illustration in plan apparently illustrates what is known as the two-way reinforced hollow tile and concrete joists construction. This is accomplished by the use of not an 8x12x12 tile, but by the use of a tile which is 12 inches wide and 10¾ inches long, and an "L" shaped tile is then placed at each end of these tile, closing the opening and forming a tile slab underneath the joists. The thickness of the tile would vary according to the span and according to whether it was a free support at four sides, or continuous on one, two or more sides, or whether all sides were continuous with another slab.

The size of the steel rods would vary under the same conditions, and it is almost universal practice to use two rods instead of one. One rod runs straight at the bottom, and set up from the bottom of the joist the diameter of the rod. The other one is bent up at the quarter point. The distance, center to center of the joist, would vary from 16 inches to 17 inches, to 24 inches to 25 inches, and 36 inches to 37 inches, according to the design and the load the floor should carry.

The other form of reinforcing hollow tile and concrete floor is what is known as the one-way system. This distance, center to center of joist, would vary from 16 inches to 18 inches, according to the load the floor would be required to carry. While the tile is 12 by 12 inches, the thickness would vary according also to the load the floor was to carry, using from 3 inch to 12 inch thickness of tile.

It would not be safe for any contractor, or anyone other than an engineer to attempt to construct a hollow tile and

concrete joist floor of either type, except same were specifically designed for the case under consideration by an engineer with complete data as to the span, kind of supports and the live load at hand.

We are not writing this letter in the way of complaint, or to disqualify anyone's statements, but we are anxious that hollow tile and concrete be used in its proper form and we are prepared to state that it is the cheapest and best form of floor and roof construction on the market at the present time. We are very anxious to see it more widely used, as it can be constructed at the same price, or a slight advance over that of mill construction.

Hoping that you will accept this letter in the spirit in which it is sent, that of endeavoring to promote the correct methods and use of tile construction, we beg to remain.

W. E. W., C. E.



### No Sheathing Required for Stucco Over Metal Lath

To the Editor:

Chicago, Ill.

We note on page 128 in the Correspondence Department of your January issue an inquiry from J. M. Staigle in reference to using sheathing for stucco over metal lath.

The best construction recommended by the Associated Metal Lath Manufacturers and the American Concrete Institute is that in which no sheathing is used. The metal lath is applied directly to the studding by nailing or stapling over 3/16-in. furring strips. The stucco is applied in the usual manner on the exterior and a fourth coat of back-plaster is applied on the inside of the metal lath before erecting the lath on the inside of the wall.

Our investigations show that an experienced contractor can erect a house, using this type of stucco construction, at the same cost of a house in which sheathing and drop siding are used. The construction, of course, is somewhat cheaper than that in which sheathing, building paper, metal lath and stucco are used on the exterior.

ASSOCIATED METAL LATH MANUFACTURERS, Inc.,

By C. O. POWELL, Assistant Commissioner.



### Would Reverse Plan Advocated to Get "Heat Out of Smoke"

To the Editor:

Mineola, N. Y.

I was interested in the article on page 83 in the November issue of your paper entitled "Getting Heat Out of Smoke." It is my opinion that Mr. Fetherston has the plan wrong side up because it is very difficult to make warm air travel down-



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

ward, but I think if a generous outlet were provided in a second or third floor room, with a cold air inlet in the basement and the flue ended at the top of the upper outlet, considerable heat could be delivered to the upper room.

I would also suggest that the upper outlet and another near the lower end of the flue be made large enough so that the smoke pipes could be replaced when they rust out.

Wishing you and all your readers a happy and prosperous New Year, I remain very truly yours, GEO. B. McCORD.

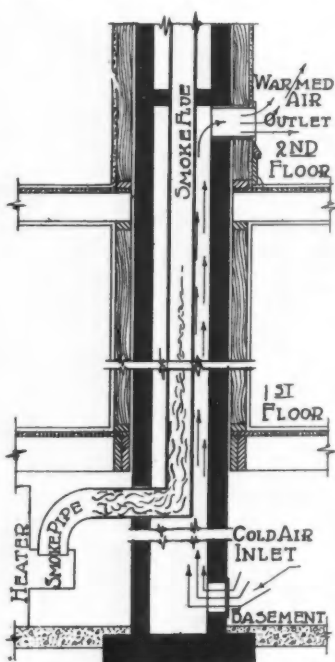


### Doubts Practicability of Mr. Fetherston's Chimney Construction

To the Editor:

Marshall, Minn.

Re—"Getting Heat Out of Smoke," by Paul L. Fetherston.



Another Plan for Getting the Heat Out of Smoke.

Twice in your valuable magazine for November you emphasize the necessity of constructing outside fireplace chimneys, where exposed, of greater thickness, in order to prevent the rising hot air in chimney from being cooled.

The rising hot air constitutes your draft; chilling it acts as a retarder.

With a damper to control "air outlet" at base of chimney, there are times when the theory would work to a slight advantage in fuel saving, but to make the smoke flue and pipes of even heavy galvanized iron, only invites trouble, as every furnace user knows from experience, for we replace such smoke pipes every two or three years.

The chimney built with openings at the top as indicated, will require repair, even sooner than the usual chimney, where cement cap is not used.

An opinion from one inside the heating fraternity may have little recognition, however we have ventured ours, and might add that the above letterhead hasn't answered for us all our life.

F. C. SHARDLOW.



### Possibilities of Small Woodworking Shop

To the Editor:

Newark, N. Y.

I am writing you to see if you can give me a little advice. I am a millworker and a cabinetmaker. Have made quite a lot of furniture in the past. What I want advice on is this: Do you think if I equipped a small shop with light machinery such as is advertised in the AMERICAN BUILDER and did light work such as screens, etc., and made individual pieces of furniture, and what extra time I have devote to making wooden toys, that I could make a success of it?

Could I find a sale for toys, such as doll furniture and other things that I would think of as I went along? About what would it cost to install the machinery for that kind of work? The reason I am writing to you is that I read the AMERICAN BUILDER for years and thought you would be in a position to advise me.

MANLEY KNOX.

Answer—There are a great many members of the building industry who are doing exceptionally well with a woodwork-

ing or cabinetmakers' shop such as you are contemplating starting. As far as the equipment for such a shop goes, you will find a great many concerns who manufacture it represented in the advertising pages of the AMERICAN BUILDER. We would suggest that you write to all of the manufacturers of woodworking machinery that have advertisements in the AMERICAN BUILDER and secure their catalogs. From these you will learn what the equipment will cost and get an idea of the different sizes. There are several concerns who manufacture small power bench machines, such as planers and saws, that are used a great deal in the smaller woodworking shops.

As for the market for hand-made furniture and toys, that, of course, depends upon the enterprise of the man who runs the shop. During the last couple of years there has been a strong demand at high prices for American-made toys. Whether this demand will continue now that the war is over and the Europeans are again at work, we do not presume to predict.

If you still have a copy of the AMERICAN BUILDER for last May you will find in it an article on small portable electrically driven machines for woodworking shops.—THE EDITOR.



### Header in Chimney to Throw Heat Into Second Floor Rooms

To the Editor:

Salem, N. J.

Referring to your article on page 83, November number, it would seem that it would be hard for the heater to draw the air down.

We very often reverse the use of the chimney, putting air opening in bottom of chimney and a register on second floor, a heater in chimney above register smoke pipe passing thru header. This is in successful operation in many homes in Salem, N. J.

SUBSCRIBER.



### How to Build Hollow Tile and Concrete Hog House Floor

To the Editor:

Dushore, Pa.

I think it was in the June number of the AMERICAN BUILDER that your structural tile engineer spoke about hollow tile being better than concrete for hog house floors.

Now, I would like to get all details about these tiles for hog house floors, such as where I can get these tiles, best sizes to use and give details as to best method of putting them in. In short, I would like to get all details as to best method of putting in a good foundation and floor for a hog house.

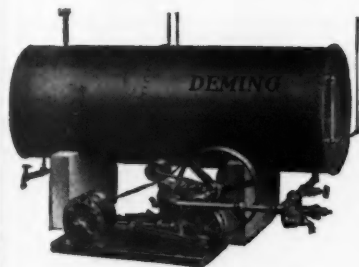
JOHN W. BRISLIN.

Answer—Your question is so broad and general that I can do little more than state the broad, general, basic principles which must be observed in laying one of these floors. The minor details of applying, or working out, these basic principles to fit any particular or individual hog house will of necessity vary somewhat, according to the local conditions to be confronted. These basic principles are stated subject to the supposition that all engineering problems involved in the general construction of buildings have been met in the hog house in which this floor is to be placed.

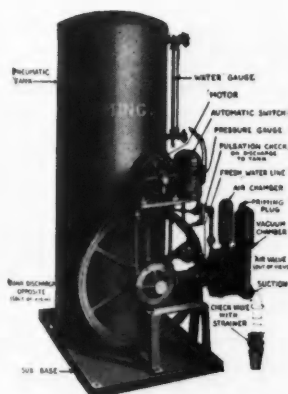
1. The ground contained by the walls of the house must be finished so that it presents either a naturally firm or a tamped, smooth surface, which conforms to the slopes planned for the surface of the finished floor. This earth surface should be about nine inches below where the surface of the finished floor is to be.

2. On top of this earth surface place a layer of cushioning material; this is preferably sand or cinders. This cushioning

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layer should be of a uniform thickness of about four inches. Its surface should be smoothed with a straightedge run over guides so placed that its surface will also conform accurately to the slopes planned for the surface of the finished floor. The workmen should not step on this cushioning layer while placing the tile; they should step only on planks laid over it.

3. A layer of tile is placed over this sand cushion. These

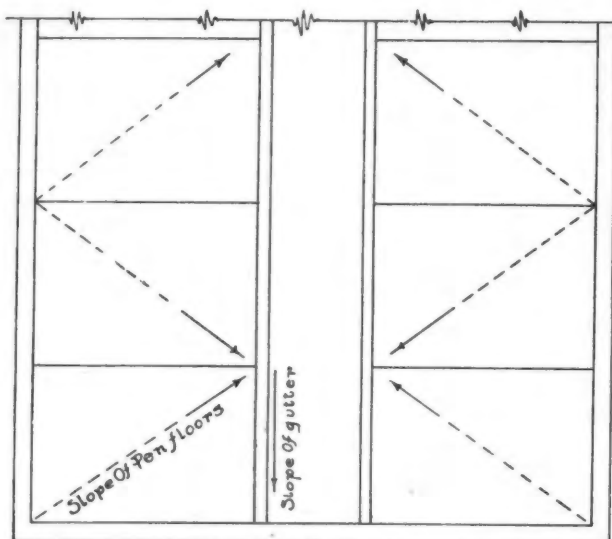


Fig. 1. Showing Direction of Slope of Pen Floors and Alley Gutters.

tile should be laid by first sprinkling a thin bed of fine sand over the cushioning layer, and then shoving the individual tiles into their places. It is a good plan to use a straightedge in placing these tile. Set the guides for the straightedge so the floor will have the desired slope, and allow for one inch of concrete. Gauge the entire face of each tile with this straightedge so no part of it is too high or too low. Be sure each tile is bedded firmly so it will not "teeter."

4. Just before pouring the concrete surfacing layer, wet the tile down thoroly. Pour on water until the tile remain wet. Do this wetting down as the pouring of the concrete progresses, so the concrete is always poured onto thoroly wetted tile.

5. Make your concrete from some standard brand of portland cement and good, clean, sharp sand of coarse grain. This sand must be free from clay, loam, and stones which are too large to pass thru a screen of one-quarter inch mesh; it is preferable that the sand be washed before using. If the concrete is to be hand mixed, use one part of cement to two and a half parts of sand, by measure. If the sand is fine, use two parts of sand to one of cement. If the concrete is to be machine mixed you may use proportions of one to three if the sand is coarse, and one to two and a half if it is fine. Mix thoroly, using enough water so the concrete will pour readily.

6. Do not let the workmen step on the tile while pouring the concrete and working over the floor. They should walk only on plank supported on other plank which are six feet long or more. This is so that no individual tile will be pressed down into the layer of cushioning material, and so out of line.

Pour the concrete to approximately the desired thickness and levels, and then float to the exact levels and thicknesses desired with a straight edge run over guides. This concrete surface should be about one inch thick.

7. In very warm weather the floor may be used within ten days after pouring the concrete. Under other conditions it should not be used within less than fifteen days after pouring the concrete. In warm weather the concrete should be kept thoroly wetted for at least seven days; it will be all the better

if kept so wet that the water stands on top in little pools. In cold weather care should be exercised that the concrete is not allowed to freeze; as soon as hard enough, it should be covered with about an inch of sand or dirt and about four inches of straw—or six inches of straw alone may be used; this should be left on for ten days at least.

8. Here is a scheme for toughening the surface against wear; it is not generally known, but has been tried out thoroly. Dissolve one tablespoonful of Paris Green to each two quarts of water, and sprinkle the floor well with it. This should be done within twenty-four hours after the concrete is poured, but it should not be done in freezing weather. This will toughen the surface of the concrete so it will resist wear much more than it would if this were not done. There are also several commercial cement hardeners on the market which give good results.

How a hog house floor should be sloped is largely a matter of the wishes or taste of the owner. A very simple, easy way—which gives good drainage—is to have it slope from the outside walls toward the alleyway. In this way the liquids from the pens drain into the alley. Here there should be a gutter on each side of the alley. The slope of the floor should not be less than one-eighth inch to the foot, nor more than one-fourth inch. This is also sufficient for the gutter.

The accompanying sketch number one shows a method of sloping pen floors which is preferred by some people. The objection made to it by others is that it is more difficult to construct than is the more simple method described above. This more complicated floor design is preferred by some for those houses which are permanently divided into individual pens. A concrete curbing divides the individual pens from each other, and from the alleyway. The pen floors are sloped diagonally in pairs, so that one hole will drain two pens thru the curb into the gutter. A vertical section of such a floor, thru the alleyway, is shown in sketch number three.

Whatever method of floor drainage is adopted, it is well to remember this fact; much better and more satisfactory results will be obtained by maintaining the same slopes in finishing the surfaces of the earth fill, the sand cushion, the layer of tile, and the concrete surfacing.

The proper relative positions for placing the individual tiles is shown in sketch number two. From this sketch it will be observed that they are so placed with references to each other that the open cell ends of each tile butt up against the closed side wall of the adjacent tiles. In this way there will be no

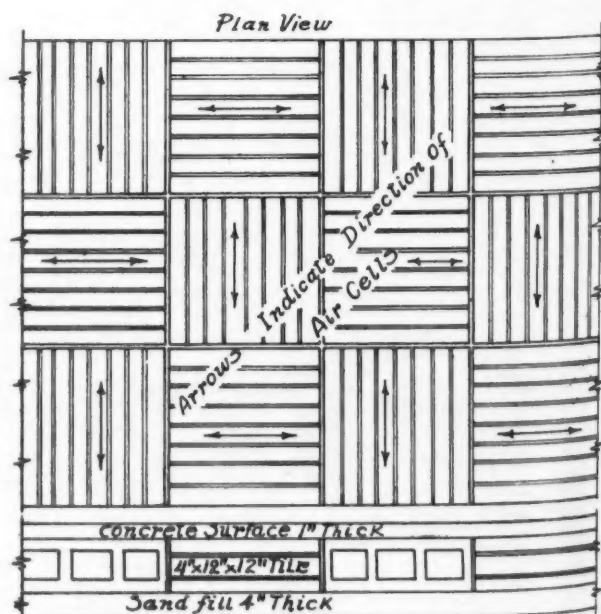
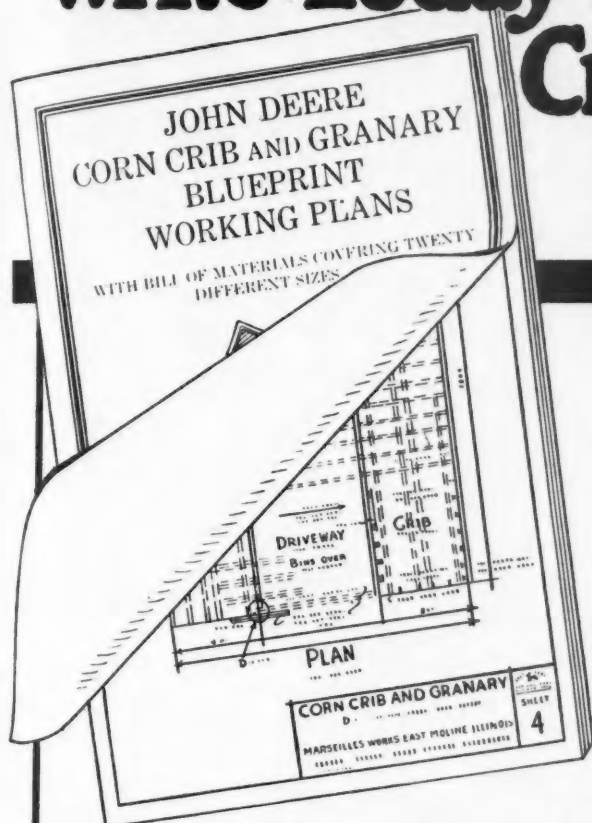


Fig. 2. Vertical Section and Plan View, Showing Details of Construction of Hog House Floor.

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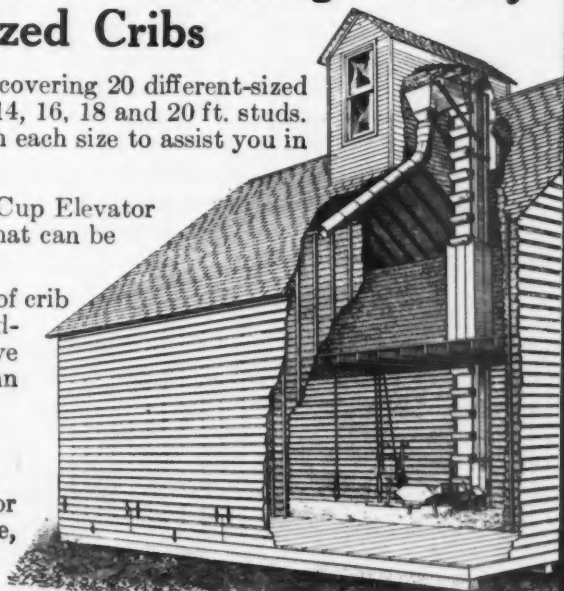
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# JOHN DEERE

THE TRADE MARK OF QUALITY MADE FAMOUS BY GOOD IMPLEMENTS

circulation of air thru the tiles of the floor. It must be remembered that it is "dead" air, not moving air, which makes a floor or a wall warm. The main object in using these tile in the floor is to make it warm, and also to make it dry. The air

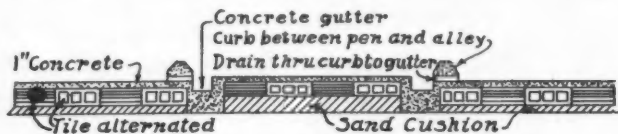


Fig. 3. Section Thru Gutters and Floor of Alley, and Part of Adjacent Pens.

in the cells absolutely must be dead air to make the floor warm. The combination of the cushioning layer of porous material under the tile, and the air spaces of the tile—whether the air is dead or moving—prevents the moisture contained in the soil from working its way up thru the floor to its surface; any dampness found on the surface of such a floor will come from above, none from below.

JAMES A. KING.



### Left Building Industry, But Not the American Builder Family

To the Editor:

Gaylesville, Ala.

A long time ago I had a chance to become one of your charter members and I want to tell you that I have my certificate yet. Your journal paid me well while I was doing carpenter work, but you may note that I am not engaged in that line of work now. However, I was glad of the opportunity of having a chance at your recent proposition and have already received one copy of the AMERICAN BUILDER, also the book, "Homes for Everyone." I have not yet looked into the latter but as I am anticipating building a home am glad to get it. You know I believe every mechanic or machinist that calls himself "progressive" should be getting and reading everything he can that treats along his line of work, and dig down into it for it pays. He even gets good pay from the ads as they keep him up-to-date if he wants the best, for I feel that you who publish journals do not place anything in your advertising columns that is worthless, and the good mechanic is worthy of the "best."

Thanking you for help I have in the past derived from the AMERICAN BUILDER, I am still one of the "Great" family.

G. T. TUCKER.



### Would Renew Old Oilstones

To the Editor:

Shamokin, Pa.

Can you give me any information as to how to take the oil out of a whetstone or oilstone? I have three of them. They were good ones when I first used them, but they became very hard. If there is any way that you know of to remove the oil, or soften the stones, I would appreciate knowing and will gladly try it out.

Thank you very kindly. I am one of the AMERICAN BUILDER family.

GEO. D. STAHL.



### Questions About Multiple Fire-Place Construction

To the Editor:

Phoenix, Ariz.

Given a chimney 30 inches by 60 inches, the long way north and south, to serve four fireplaces; one each on first and second floors, middle west face; one each (diagonal) on first and second floors at southeast corner. Foundation solid up to first floor.

First floor could be served thru middle part of chimney,

building ends solid to second floor or above, carrying the smoke thru clay tile flues imbedded in the solidly built end from the diagonal fireplace, and second floor thru flues in the ends. Is there a better or cheaper way to get perfect service? What should be the inside diameter of the tile flue?

J. K. D.



### Wants Stair Construction Details

To the Editor:

New York, N. Y.

I beg to ask thru your valuable columns if some "brother chip" could give me some information regarding the wreath for handrails, how to get the twist, thickness of planks, etc. I have a rail to make for a level landing, 6¾-in. rise, 11-in. run.

I would also like to know how to get the twist for stair with three winders in half the well, with the landing in the center of well.

Any information will greatly help a worried one.

G. G. SMITH.



### Plans for an Inside Fireplace Chimney

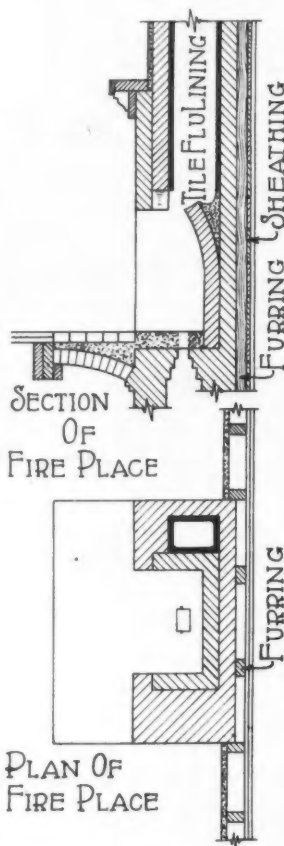
Tuscarora, Nev.

To the Editor:

As a reader of the AMERICAN BUILDER since January, 1907, I wish to ask my first question in the Correspondence Department and that is, will some fireplace designer give me a sketch on how to place the fireplace so that there will be none of it exposed on the outside and thereby radiating heat at a loss. Most fireplaces are built in the wall, half inside and half outside. Now what I want is a neat trim affair, one that would not be too bulky or out of proportion on the inside of a living room so that there will be no heating all outdoors, too.

T. J. MANSFIELD.

Answer—Our Architectural Department has drawn plans for a fireplace chimney constructed inside of the outer wall. The plans are shown on this page.—THE EDITOR.



Plan and Section of Fireplace Built Inside of the House.

### Wants Rule for Cutting Skewback

Editor American Builder:

Watson town, Pa.

In building the crown of round brick kilns we do not use a center, so must cut the skewback by guess. Will you tell me thru the columns of your paper how to get the skewback for different heights of crowns?

FRANK MCCORMICK.



### How to Build a Roll Top Typewriter Desk

To the Editor:

Pikeville, Ky.

Noting the inquiry of Mr. Gayton in December number, I thought that maybe the pencil drawing of a typewriter desk that I made a couple of years ago might be of interest.





# Vulcanite

**"FAMOUS for QUALITY"**

## RED AND GREEN ROOFING

### Be sure of what you buy.

There is never enough Vulcanite Red and Green Roll Roofing to go 'round. This season the demand is doubled, but the House will not rush its work or lower its high standard of quality.

To meet the situation many new machines will soon be installed. Production will be doubled—by more machines—not by lowering the quality.

You will appreciate the above when you come to buy prepared roofings. Extraordinary conditions bring strange goods on the market—a time to be sure of what you buy.

Vulcanite roofings are not excelled in quality. They are made right and priced right. They must uphold an old and established reputation.

#### LUMBERMEN

We co-operate with with you. Let our "Dealer Helps" and other advertising service help swell your roofing sales. Write for samples, literature and prices.

## The Vulcanite Roofing Co.

FAMOUS for QUALITY

ROOFING DIVISION OF THE BEAVER BOARD COMPANIES

Chicago Kansas City San Francisco New York Cincinnati Birmingham  
Minneapolis Albany Anderson, Ind. Franklin, O. Buffalo

I had a limited space for such a desk and not being able to find one small enough to fit the nook I built this.

The curtain is made of  $\frac{3}{4}$  by  $\frac{5}{16}$ -inch strips with the ends shaped as shown. After the strips were oiled and finished on top sides and edges I put it together by tacking two straight edges to the floor, being careful to have them parallel and exact distance apart, then carefully squaring the first strip tacked it to the floor, then placed the others alongside till I had all the strips laid and tacked the last one in place, putting tacks in the end so as not to be covered by the lining. The strips were laid with the inside uppermost. I then covered the inside of strips with glue made up of three-quarters ordinary glue and one-quarter printers' roller composition. On this I stretched the inside lining of heavy bed ticking, tacking it to each strip with four curtain staples (tacks will do if the staples and a follower to drive them are not at hand). After this had dried I raised a few strips to bring them level with the lock bar and tacked and glued that to the lining, tacking about 6 inches apart and  $\frac{1}{2}$  inch from the out edge and then trimming the lining  $\frac{1}{4}$  inch from edge of lock-bar. The lining should extend about 2 inches over the back strip to provide doubling where it is tacked to under side of table. The lock is placed in the hinged end so that the bolt will throw into between the lugs of the lock-bar, the middle portion of ends of which is cut out to allow it to make the turn at the corners.

One end is cut as shown and the larger or front piece is hinged to the table. When up it is held in place by a button on the inside, and when down is supported by two brass rods made of  $\frac{1}{4}$ -inch gas pipe, running through end of frame close under the table, and having a wooden plug in end cut to shape shown. When the desk is closed the rods are turned with flat side up and pushed under the edge of table.

The copyholder folds down against the end so that it does not interfere with the typewriter when desk is closed. The bands are made of sheet aluminum (brass or copper would do as well). The spring clasps at top are made of clock spring.

The back portion of cut end and solid end are nailed from under side of table into inside  $\frac{1}{2}$ -inch piece.

W. T. GRIFFITH, C. E.



### Regarding Termites, or White Ants

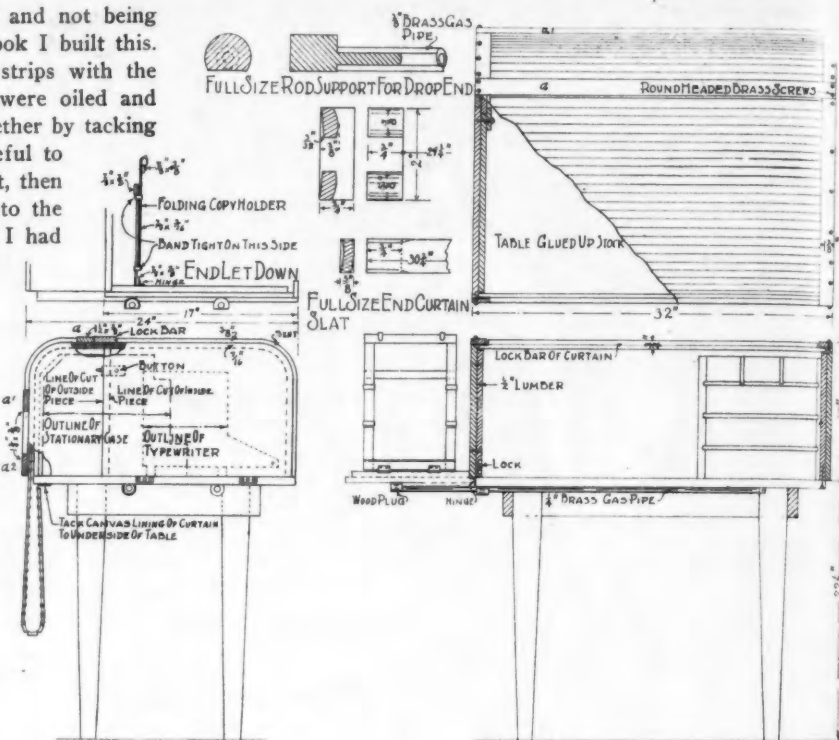
To the Editor:

Salisbury.

I have read with interest your resume of the Bureau of Entomology bulletin on termites. I have had ten years of experience in what they are and do. We have nests from 5 to 20 feet high, and often as high as 30 feet, so you will understand the pest they are here.

If you suspect there are "ants" in a building, look for the nests before you commence operations, and on finding any at a distance not less than 15 feet from the proposed foundation, dig until you get the queen. She is easily recognized by her size, sometimes reaching a length of 7 inches and  $\frac{3}{4}$  inch thick, white like a piece of bacon fat with a small brown scale at one end which is her head. In digging beware of the soldiers, long brownish red with nippers. They are sometimes poisonous.

Now for prevention. The only remedy is to put in a damp course of sheet zinc and all joints must be soldered inside. The damp course must project beyond the footing or foundations 3 inches and be slightly turned down. The reason for



Plans and Construction Details of a Roll-Top Typewriter Desk.

this is they cannot climb on their backs like fleas and when they get to the zinc obstruction they are done. Under all floors after all wood chips and other debris has been cleared out, put a sprinkling of air slaked quick lime one inch thick and they will not come thru that. It also has a tendency to drive moisture down.

Timbers should all be treated with carbolinum or creosote. This has a superior and more lasting effect than paraffin oil.

The suggestion of air brick for ventilation under the floors is good and essential. I think that is all that is necessary to say about them if these instructions are followed. Your correspondent will have no trouble in the future.

If the house is already built, I would suggest that zinc angles be carefully nailed to the bottom plates and be allowed to project.

In eliminating the pest, search and break down where found all clay runs or spores, for sunlight is their greatest enemy and they will soon clear out.

In this country they will often build a cone in the center of a room and eventually reach the floor on which they commence work if the under side of floor boards and all joints have not been carbolinued and if the ground has not been limed as described above.

Have you among your publications a book on sharpening saws and hammering circular saws, if so please let me have particulars and price.

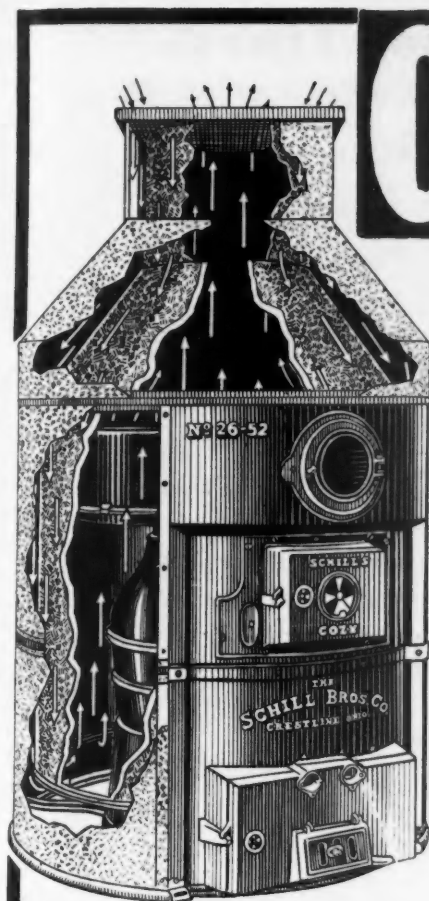
GEO. WRENCH.

Answer—The manufacturers of saws supply handbooks on the proper methods of filing and setting saws. Will Mr. Wrench kindly send a better address, there being no state named on his stationery? ✱

THE EDITOR.

THE number of squares in roof can be readily ascertained in the following manner: For example, suppose the length of the roof is 35 feet and the length of the rafter 15 feet, this multiplied is equal to 525. The opposite side being equal would measure the same, making the whole surface 1050 square feet, and pointing off two decimals gives 10 squares and 50 feet of slate to cover the surface. As a rule, the squares in a roof are always equal to the squares of slate required to cover it.





# COZY The Perfect PIPELESS FURNACE

**T**HE most remarkable growth of the furnace business in 1919 was scored by this furnace.

It wasn't done by extravagant advertising or hard pushing sales methods, either. It sold on its merits exclusively.

That's the reason dealers and contractors should look into its merits. Sold under an absolute guarantee of satisfaction, it must please your customers.

## Big Field Open

The big field open to the pipeless furnace this year has two elements—one, installation in old houses being improved, where it is ideal and furnishes a perfect heating plant at less cost; and the other in the immense number of new buildings to be erected, where, on account of the high price of labor, pipeless heating will have the preference.

Dealers and contractors may thus add very profitably to their lines—provided always they find a furnace that causes no trouble afterward.

## No Comebacks Here

Cozy engineering service and Cozy perfection of design prevent any come-back. They mean the enthusiastic recommendation of every user.

This certainty of results and satisfaction of users is the greatest asset you can have.

Our advertising campaign is bringing big results. You may share in them if you will write us about territory and terms.

### Extra Profits for Contractors and Lumber Dealers

Simplicity of installation makes it possible for the general contractor to install the Cozy Perfect Pipeless Furnace.

The successful heating of most houses by the pipeless furnace depends on its location. Get that right, and your men can install without difficulty.

Our engineering service will locate the furnace,—and then we guarantee results.

Contractors and lumber dealers everywhere are handling this furnace. It's an extra profit that calls for little investment, little sales effort, and no trouble.

Add it to your line. Sell all the equipment instead of part. It's an extra profit.

*Writes for our Plans and Territory*

## The Schill Bros. Company

620 Mansfield St.

Crestline, Ohio



## How to Build a Bridge Roof Truss

MEMBERS OF THE AMERICAN BUILDER FAMILY SUBMIT DIFFERENT DESIGNS IN ANSWER TO A BROTHER'S INQUIRY.

By C. H. Mayer, N. Wesselmann, J. H. Ferris, O. H. Halverson,  
J. C. Hume and The Editor

ON PAGE 184, the first page of the Correspondence department of the December issue of the AMERICAN BUILDER, William Miller, Crosswell, Mich., submitted a cross section of a garage, 52 feet wide, showing the construction of a roof truss he had designed. Mr. Miller asked the members of the AMERICAN BUILDER Family if this is good roof truss construction.

Mr. Miller's question aroused a great deal of interest among the brothers and several sent in roof truss designs for a 52-foot span. All agreed that Mr. Miller's method of constructing the truss is wrong, and submitted drawings showing how they believe the truss should be built. As there was considerable difference of opinion on this subject, the architectural department of the AMERICAN BUILDER was called on to design a truss for the garage building. This truss and those submitted by the members of the AMERICAN BUILDER Family, together with their letters, are here given.

### Says Mr. Miller's Truss Is Weak

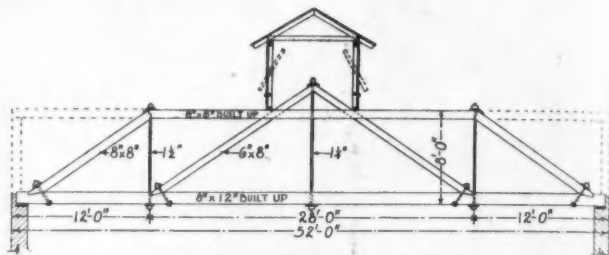
By C. H. Mayer

To the Editor:

Ballantine, Mont.

I have seen Mr. Miller's plan for a truss for a garage 52 feet wide. I would say that I consider that truss absolutely useless. I do not think it would stand up till he gets the roof on. I would not work on it. It would break down at the points where his braces stand up.

Those braces and rods only add that much extra weight for beam to carry. Most garages here have flat roofs, sloping from street to alley. They require very little fall. A row of skylights thru the center provide light and ventilation. If so built, extend the



Truss Designed by C. H. Mayer.

upper cord as per dotted lines, and rest roof joists on same, running lengthwise of the building. Tighten the rods so truss is somewhat crowning.

I am enclosing rough sketch.

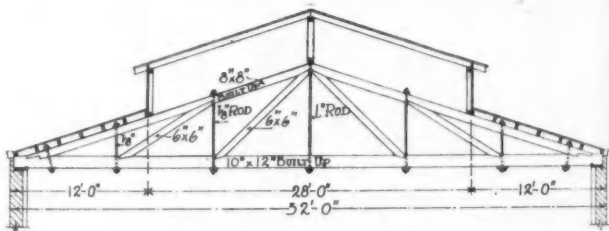
### Truss Must Carry Weight to Outside Walls

By J. H. Ferris

To the Editor:

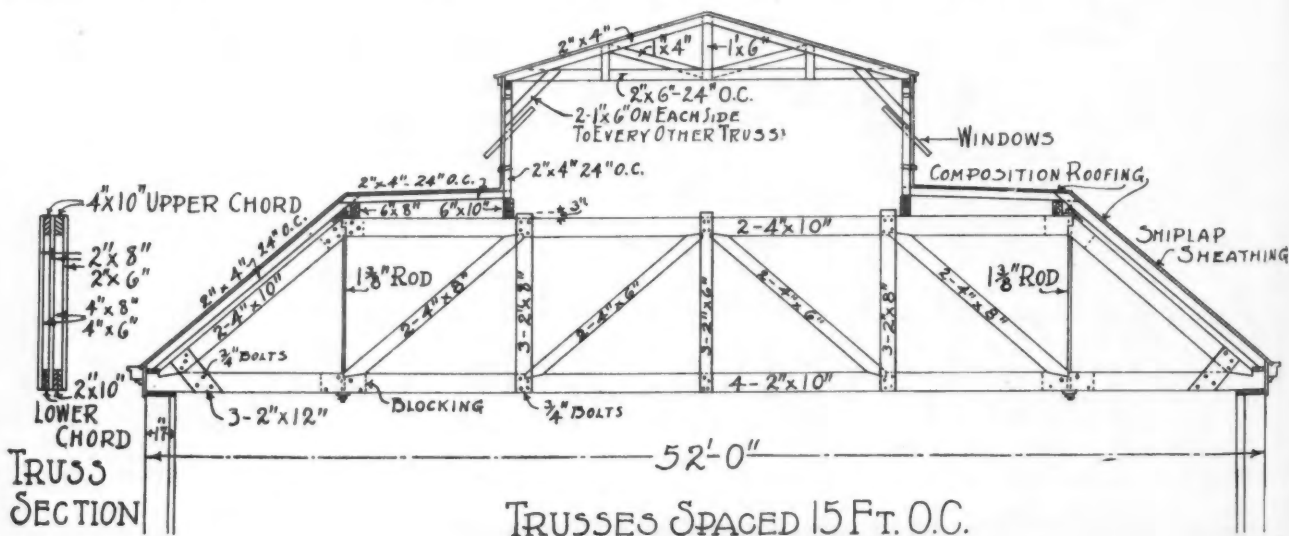
Mt. Pleasant, Mich.

I wish to say that I consider the truss for garage roof, in the December AMERICAN BUILDER by William Miller, of Crosswell, Mich., entirely wrong, and would

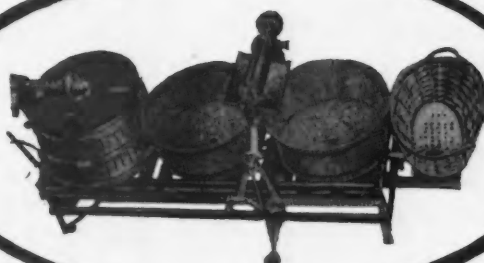
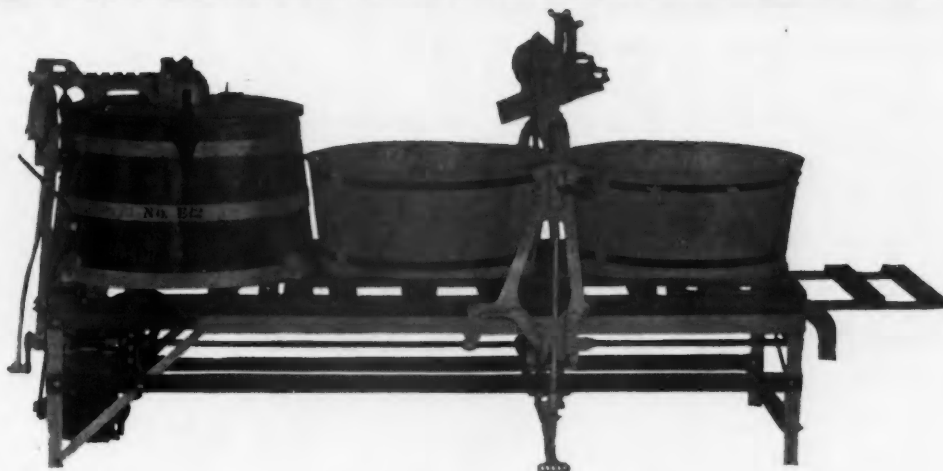


Truss Designed by J. H. Ferris.

advise him to make the roof a little steeper and continue the truss across the whole width of building, thus bringing the weight upon the lower member of truss over the outside walls in the place of 12 feet in from the wall, which is no truss at all.



Roof Truss Designed by the Architectural Department of the American Builder.



A Complete Washing Unit

## Voss Triple Tub Washer

*Not Merely a Washing Machine But a  
Complete Laundry in Itself*

**H**OME BUILDERS frequently neglect provisions for washing convenience in the laundry of their dwellings—and then regret it later. The Voss Triple Tub Washer was built with but one idea in mind—to make the work of washing easier and more efficient. The machine is equipped with two extra tubs for rinsing and blueing. All these tubs are connected to a common drain pipe which runs underneath the machine. This of course does away with all lifting of water or tilting of tubs as any tub can be drained instantly by simply pulling out the stopper.

### A Big Saving

This equipment takes the place of the usual stationary laundry tubs and doesn't cost any more. A Voss Triple Tub Washer gives you both a washing machine and stationary laundry tubs in one complete unit.

*For Further Details on the Voss Triple Tub Washer  
Write to*

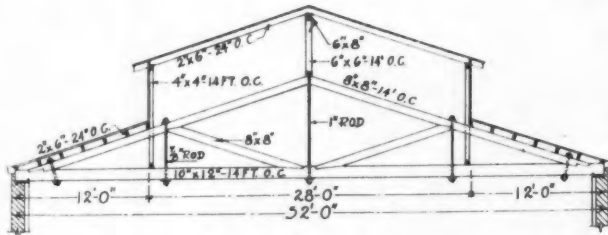
**Voss Bros. Mfg. Co. Davenport, Ia.**



### Suggests Stronger and More Practical Truss

By O. H. Halverson

To the Editor: Gunnison, Utah.  
In answer to the question of Wm. Miller, of Crosswell, Mich., "Is This Good Roof Truss Construction?"



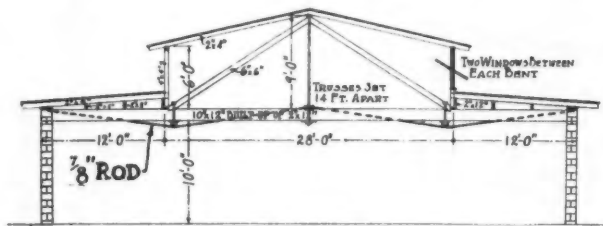
Truss Designed by O. H. Halverson.

in December number of the AMERICAN BUILDER, I would say that it hardly appeals to me as the best, as his built-up beam is very apt to sag considerably at the foot of truss. The weight of whole roof being there and no support for that particular place. I would suggest the accompanying sketch as stronger and more practical.

### How Mr. Miller's Truss Could be Strengthened

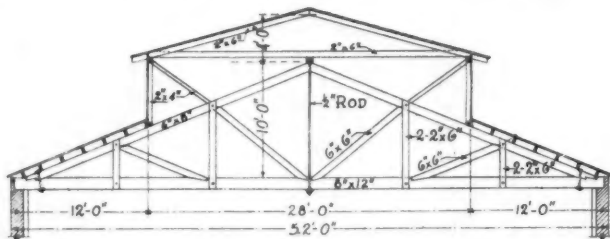
By J. C. Hume

To the Editor: Burnt Prairie, Ill.  
I am submitting two drawings in answer to William Miller's question about roof truss construction, which



Showing Wm. Miller's Truss, with Steel Rod as Advocated by J. C. Hume.

appeared in the Correspondence department of the December issue of the AMERICAN BUILDER. In one I have shown how the truss he submitted could be



Truss Designed by J. C. Hume.

strengthened by a 7/8-inch rod. However, I would recommend the one shown in the other drawing.



### Slight Crown Needed in Trusses

By N. Wesselmann

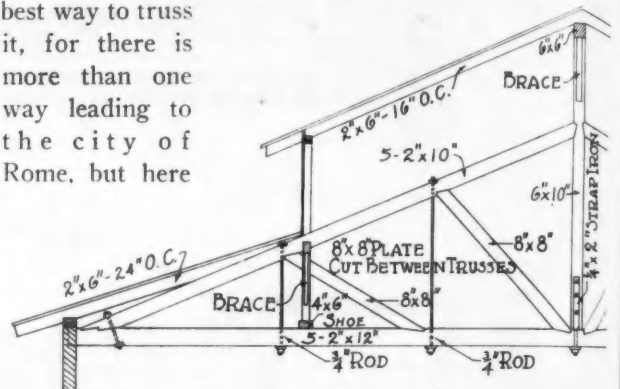
To the Editor: Dolgeville, N. Y.  
In regard to Mr. Miller's roof truss questions I would like to send in the following answers and sketch.

Question 1. Is this a good truss construction?

Answer. No, it is absolutely wrong for this purpose for the reason that the center braces, which are to hold up the center of the 10 by 12 tie beam, are carrying their weight to the weakest point of tie beam. It loads the point that needs to be supported most and is therefore entirely wrong. If this construction would be put up, it would settle down in the middle before the building would be half done.

Question 2. Which is the best way to truss it?

Answer. It is too much for me to say which is the best way to truss it, for there is more than one way leading to the city of Rome, but here



Section of Truss Designed by N. Wesselmann.

is one way explained in my pencil sketch. I would like to state that in putting up such a construction, anyone wants to keep the center of the trusses about 1/300 of the span crowning up (in this case about 2 inches) so as to allow it to settle down to level position after temporary supports are taken out.

Mr. Miller stated that he was going to cover the roof with felt shingles. I don't know this kind of shingles at all unless Mr. Miller means the asphalt shingles. If it is this kind of shingle, Mr. Miller is going to use, he wants to make his roof much steeper, at least one-fifth pitch, as otherwise his roof is surely going to leak. By using this pitch, he could use the construction shown in my sketch.



### Wants to Know How to Refill Door Checks

To the Editor:

Oneida, N. Y.

Can you tell me the formula for refilling door checks such as Yale, Ruswin, etc., when the spring or check has gone out of them? Would be pleased to hear from you or some Brother Chips regarding this.

T. J. E. MILLARD.



### Wants to Build Log House

To the Editor:

Pawling, N. Y.

As I am a member of the AMERICAN BUILDER family, I am about to ask the following favor:

I am about to build a log house suitable for a "patient and an attendant" that would be about 12 feet by 15 feet inside with fire-place at one end. Will you kindly get for me a pencil sketch and a few instructions about preparing the logs, how to fasten, and plans for door, windows, etc.?

HENRY L. MULKINS.



# "Demand Wausau!"

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8 1/2"x10 1/4" Sheet

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City \_\_\_\_\_ State \_\_\_\_\_ A. B. 2-20

## Some Pointers in Laying Oak Flooring

By Richard Newbecker

**W**ITH the constantly rising price of oak flooring as well as all other products entering into the line of building construction, it pays the contractor and builder well to make sure the oak flooring he puts down is properly laid. Many a builder in the past has found to his regret and loss of profits that the mere laying of the floor without using good judgment in its application will not give satisfactory results in every case. In fact, many a contractor has often lost the chance on coming in for some future work of his customers where thru misapplication of the principles of laying good flooring, or bad work.

In laying an oak floor it is of great importance that it should be thoroly examined to ascertain if it has become moisture laden while in stock in the lumber yard, in transit, or at the job. Oak flooring is very receptive to moisture, causing it to absorb considerable moisture, chiefly at the ends, often resulting in the swelling of the same as much as  $\frac{3}{32}$  of an inch. Flooring in such condition if laid will surely result in unsightly crevices over the whole surface. Care should also be taken that the sub-flooring as well as walls are free of moisture before attempting the laying of oak or any other surface flooring. In fact oak flooring should never be attempted to be laid where the temperature before occupation of the building is below 65 degrees. The trouble experienced in laying flooring of this kind is often due to the contractor treating the stock with no more respect than rough lumber, when in fact it should be treated with as much care as a piece of furniture.

I have observed some carpenters attempting to lay oak flooring without as much as sweeping off the sub-flooring or the laying of damp proof paper between. Under no circumstances should the sub-flooring be made of stock more than four or six inches.

In starting the laying of flooring many carpenters make the great mistake of laying the first strip up tight to the baseboard. This should be avoided if it is desired to make a first-class job. A space of at least  $\frac{3}{8}$  of an inch for expansion of the flooring should be left between the first strip put down and the baseboard outer line, or plaster line, and likewise on the other end of the room, because expansion or contraction of more or less extent is always present in all kinds of kiln-dried flooring.

The flooring should always be laid at an angle to the sub floor. All tongued and grooved flooring should be blind nailed. The best figured oak flooring can be spoiled just as easily by the use of improper nailing as improper handling of the stock for  $\frac{3}{8}$ -inch flooring. The 3-penny wire finishing nails give the best results if nailed every 10 inches or closer.

Many contractors have often spared no expense in getting the best figured wood obtainable to give their clients a satisfactory floor only to find out later that

the floor layer used little if any discretion in regard to matching or blending the color of the flooring as he laid it.

A few badly discolored pieces of flooring laid in conspicuous places have often given the floor the appearance of an amateur attempt of laying a checker-board, and greatly marred the appearance of the entire interior. Often it is possible to use the pieces in out of way places where they are not conspicuous enough to attract attention.

If a lot of flooring is received where there is a wide variation in color, it is a good policy to sort the pieces, and shade them before beginning the laying of the floor. This results in a better run of color over the surface, giving it a more dignified appearance than if the off-shade pieces are scattered broadcast throughout all the floors of the rooms.

The man who has oak flooring put in his house, usually figures the same to last a lifetime, and it is this very reason that the men laying oak flooring should consider the work carefully. Careful workmanship in laying flooring of this kind spells success for the contractor. A good job of floor laying is a lasting advertisement while a bad job is a lasting cause for kicks on the part of the owner which brings the contractor no rewards.

As soon as the floor has been laid and scraped a coat of filler should be applied without delay. This fills up the pores in the wood and prevents it from shrinking, which often gives a newly laid floor a regular washboard appearance.



### Bearing of Wood Joist on Walls

**T**HE bearing of a wooden joist, or the distance it should extend into the wall, should never be less than four inches, and where the floor is to carry much weight it may require a longer bearing.

The weight the joist is to carry at the bearing or end of the joist should first be computed and then by dividing this load by the safe crushing strength of the joist across the grain will give the number of square inches of bearing surface the joist should have in the wall. The safe or working compression strength of wooden beams across the grain is as follows:

Oak, 600 pounds per square inch.

Southern pine, 500 pounds per square inch.

Oregon pine, 500 pounds per square inch.

Spruce, 400 pounds per square inch.

Hemlock, 300 pounds per square inch.

White pine, 300 pounds per square inch.



**F**OR roofing large halls or rooms a segmental timber arch, with an iron or steel tie for taking up the horizontal thrust, makes about the cheapest truss that can be built, especially where there is no ceiling to be supported.



# GOOD STUCCO JOBS

Uniform, **successful** results depend upon the kind of material you use.

If the material is of the **right kind**—

If it has proved successful on hundreds of other jobs—

If the results invariably have been

- beautiful
- free of blemishes
- permanent
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then you are taking **no chances**.

You practically **insure** the success of your own jobs.

Such a material is Kragstone Stucco.

It is a highly refined **magnesite** stucco.

It is **easier** to apply than cement stucco.

And covers a **wider** surface.

And is **three times** as strong.

**Tensile strength** and **elasticity** are important in any building material.

Kragstone Stucco has **these** qualities developed to a great degree.

It is a **dependable** stucco—

—sets hard and dense

—will never break loose or fall off

—can be applied to all kinds of lath, brick, hollow tile or concrete

—does not pull away around window frames and door casings.

Even where there is **slight settling**, Kragstone Stucco will hold up with less tendency to crack.

## NEW STUCCO BOOK IN COLORS

Designed for contractors and builders. Tells how to get **more** work and higher class jobs. How to keep busy in winter by remodeling with Kragstone Stucco. You will receive New Book, Specifications, Prices and a chance to see **Colored** Samples if you write us **today**.

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Stucco  
Beautiful



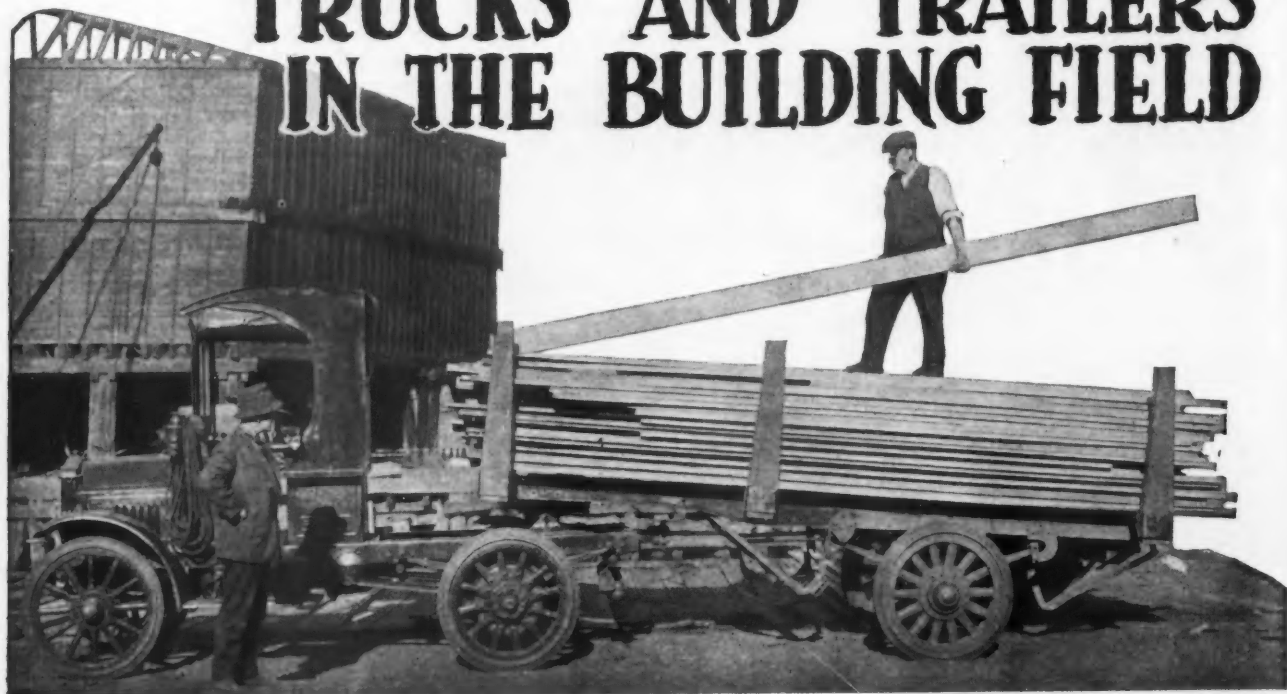
Kragstone can be applied in zero weather—it does not freeze



This house was made attractive and comfortable with Kragstone Stucco—at small expense



# TRUCKS AND TRAILERS IN THE BUILDING FIELD



## Rapid Increase in Use of Trucks and Trailers

BUILDING INDUSTRY FINDS TRAILERS OF ALL TYPES HELP CUT HAULING COSTS.

**N**OT many states require the registration of trailers, but in two states that do, the number in use last year increased 150 per cent and 70 per cent, respectively, over the number registered the year before. This indicates a movement that is general the country over, and that affects not only the cities, but the farming country.

Traffic engineers who follow such matters closely have often predicted that the trailer, and more especially the semi-trailer, where hauling in the cities is

concerned, was bound to be a much larger factor in the hauling of the future than even the motor trade thought possible a year or two ago.

The experience of the world war has had a great deal to do with speeding up the movement toward hauling, for every army engaged made large use of trailers to haul supplies, men and all kinds of materials.

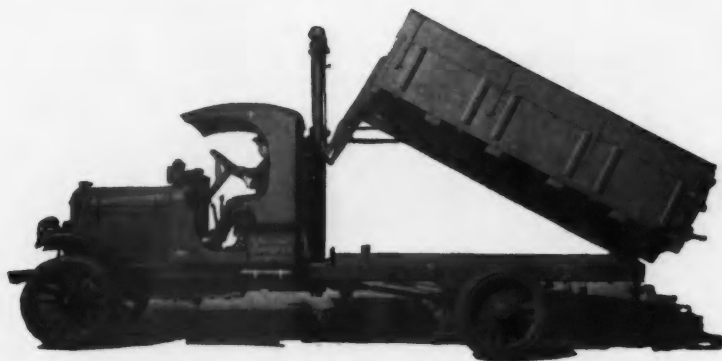
Some of the largest firms in the building industry with a very large volume of hauling to do, have standardized on the semi-trailer method for their city haul-



The M. A. Reeb Corp., Dealer in Builders' Supplies, Buffalo, N. Y., Uses Two 2-Ton "Stewart" Trucks to Serve Its Customers in the City of Buffalo and the Nearby Cities. Here the Trucks Are Shown Delivering Cement to the Niagara Falls Builders' Supply Co., Niagara Falls, N. Y.

# Stewart

## MOTOR TRUCKS



***It's a Builder—***

**who tells you that Stewart trucks cut  
hauling and delivery costs**

With so many truck makers' claiming big results at low cost, you may wonder who's making good. Don't worry about Stewart Trucks. People in your own line of business who are using Stewarts tell you what Stewarts do.

And Stewarts are making daily low-cost records in more than 200 different industries—in over 600 American cities,

on hundreds of farms, and in 27 foreign countries.

Stewarts cost \$200 to \$300 less to buy, for an exclusive engineering principle enables the Stewart to eliminate several hundred parts that add no strength or durability, producing a stronger truck, simpler to operate, and more economical in gasoline, tire wear and repair costs.

We have been operating our model ten 3½-ton Stewart truck over six months hauling building material and doing the same work as five ton trucks of other makes which cost much more money to buy. In checking up with other owners we find our cost of operation about forty per cent less. Our cost of repairs during this period of six months has been less than one per cent of the gross earnings of our Stewart truck.

It is our intention to purchase another 3½-ton Stewart as soon as our business warrants it.

(Signed)

H. J. FENTON & COMPANY

By H. J. Fenton, Mgr.  
Springfield, Mass.

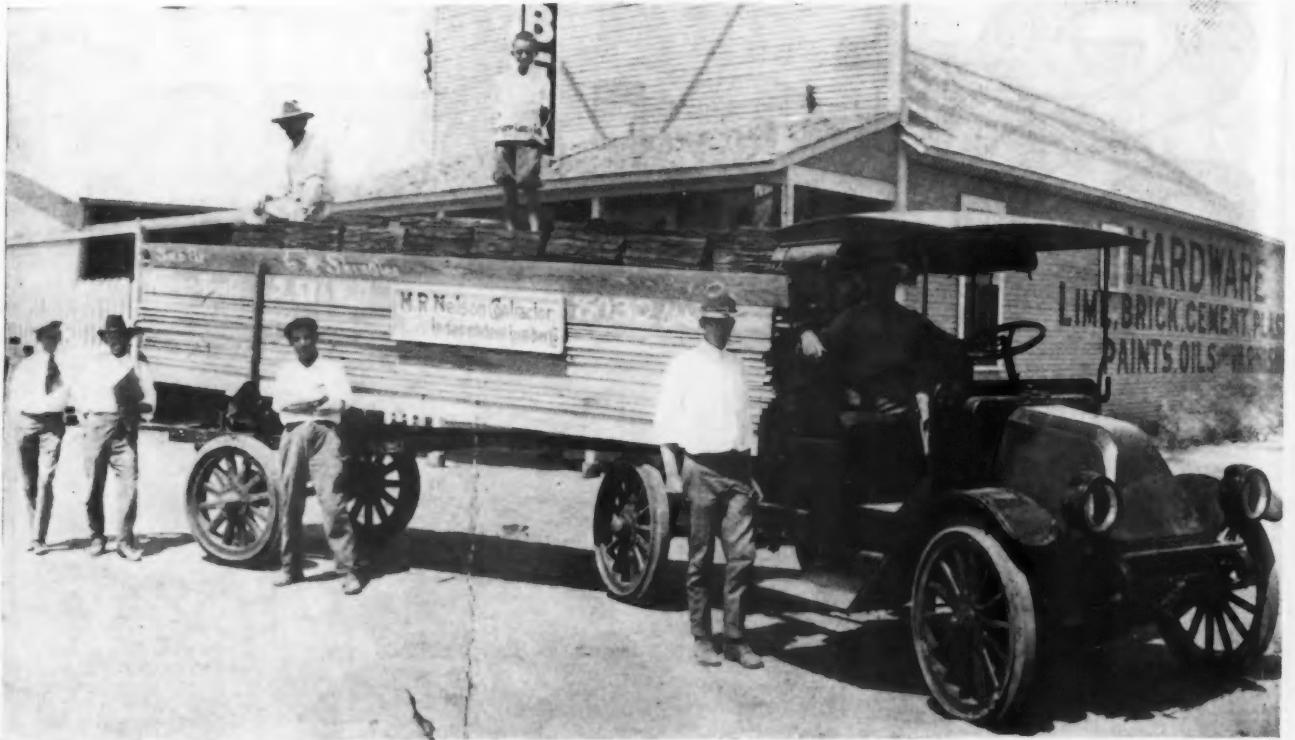
### **A sturdy, quality truck for every use**

¾-ton Chassis.....	\$1275
1-ton Chassis.....	\$1695
1½-ton Chassis.....	\$2095
2-ton Chassis.....	\$2695
3½-ton Chassis.....	\$3650

f. o. b. Buffalo

## **Stewart Motor Corporation, Buffalo**

*Quality Trucks Since 1912*



Two-Ton "Miami" Semi-Trailer Loaded with More Than Four Tons of Lumber for M. R. Nelson, Contractor, McAllen, Texas. The Lumber Was Furnished by the Independent Lumber Co.

ing and fleets of from 100 to 150 units are beginning to make their appearance in the large cities.

The advantages of trailer and semi-trailer hauling, as they appear to the astute businessman, are numerous. Take the semi-trailer for instance:

It enables the truck used as motive power to carry double or more than double its rated capacity, and increases fuel and operating costs only approximately 12½ per cent.

It affords all the advantages of a detachable truck

body since it can be detached from the power unit and left for loading or unloading. Power plant and driver can be kept constantly employed.

It gives the driver a lighter, more easily steered and controlled unit to handle. The equipment turns in a shorter radius than any other that will carry the load.

The sum of these items taken together represents the most substantial economy.

The four-wheeled trailer for use behind a standard truck duplicates many of these economies but it is more adapted to hauling between cities, or from factory to factory.

The four-wheeled trailer doubles or more than doubles the capacity of the truck at an increase in operating expense of about 12½ per cent.

It spreads the cost of the driver's time over a larger volume of work accomplished.

It makes hauling capacity flexible, since the truck can be used alone for smaller or average loads, and the trailer can be employed during only the busy season, or only at those times when more than a truck load is to be delivered at a certain place.

For hauling between fixed points, as many as three four-wheeled trailers can be used—one always loading, one unloading, and one in transit, thus reducing the standing idle time of the truck in proportion



"Diamond T" Motor Trucks Now Penetrate the Dense Forests on the Pacific Coast, Where They Are Used to Haul Logs to the Mills. The Trucks in the Illustration Are Owned by the James D. Esary Co., of Itsalady, Wash. When the Ground Is Too Soft to Hold Up Heavily Loaded Trucks, Tracks Are Formed on Boards Over Which the Trucks Run Smoothly and Speedily. Trucks Have Proven to be a Rapid and Economical Means of Log Hauling.



*Another*

# FEDERAL

## When Does a Motor Truck Pay?

*"All the time—if the service it gives is A-No. 1."*

That is the answer given by the traffic manager of the Builder's Material Co., of Cedar Rapids, Iowa.

"Of course, any truck will need attention now and again, just like other mechanisms—but for an economical buy, give me the truck that doesn't have to be coddled into giving A-No. 1 service," this traffic man declares.

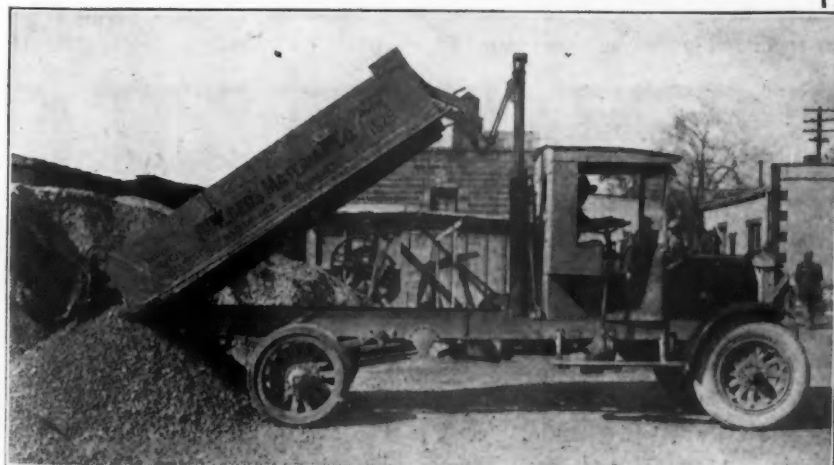
"That's why I like the Federal. It stands up and does a full day's work and repeats its good performance day after day without a murmur from motor or transmission or any other part. A truck that doesn't simply get by, but which delivers service."

The Federal is emphatically popular in the construction and engineering field. Did you ever pause to ask the reason why? The answer may mean much to you in low cost, satisfactory truck service. The next time you are thinking of buying trucks, get acquainted with Federal.

*"Traffic News"—the Magazine of Haulage, sent free on request*

**FEDERAL MOTOR TRUCK COMPANY**  
79 FEDERAL AVE. DETROIT, MICH.

*"Shorten the Miles  
to Market—Use  
Motor Trucks"*



*This three and one-half ton Federal truck is owned by the Builder's Material Company, of Cedar Rapids, Iowa. Read about it.*



Here is the  $3\frac{1}{2}$ -Ton "Acme" Truck and the "Trailmobile" of Equal Capacity Used by the Amos Lumber Co., Edinburg, Ind. The Truck and Trailer Are Loaded with 19,000 Pounds of Logs and Haul Them Over the Country Roads Near Edinburg.

to the load hauled.

A few instances of the actual experiences of owners of trailers will show how these economies work out in practice. The Amos Lumber Company, of Edinburg, Indiana, hauls a  $3\frac{1}{2}$  ton four-wheeled trailer with a  $3\frac{1}{2}$  ton truck, to haul logs from the woods to a mill 31 miles away.

The average load on truck and trailer consists of about 2,500 feet of logs, and trip from the woods to the mill and return is made in about 9 hours.

To haul logs in the usual way to the railroad, load them on cars and unload them at the mill, would cost approximately \$2.00 per hundred feet, and would require several men. So the truck and trailer do work which by older methods would cost \$50 a day.

By the use of a special loading device driven by the power of the truck, the driver alone can load both the truck and the trailer. The company manages to get the equivalent of a carload of logs to the mill every two days, and under present conditions of labor scarcity, it would be impossible to haul so much by any other method.

Another case is that of the Southside Lumber Company, of Columbus, Ohio, which uses a light four-wheeled trailer pulled by a one-ton truck. The trailer

is loaded with as much as 3,000 feet of finished lumber. The trailer is equipped with a special dumping mechanism for lumber, which permits the discharge of the entire load in a few seconds. The company finds the method most convenient and satisfactory for delivering lumber all over the city and the surrounding country.

In both the manufacturing and distributing ends of the lumber business the trailer is becoming a big factor in hauling. It doesn't matter whether the load to be carried is heavy logs going from the

woods to the mill, or long and weighty pieces of structural iron for a bridge or a skyscraper, or a few shingles for a repair job, there is a trailer available for the work.

In cities all over the country hundreds of contractors and builders use trailers of various types for all kinds of work. Heavy four-wheeled trailers used with trucks double truck capacities and enable builders to move very large quantities of material rapidly and cheaply.

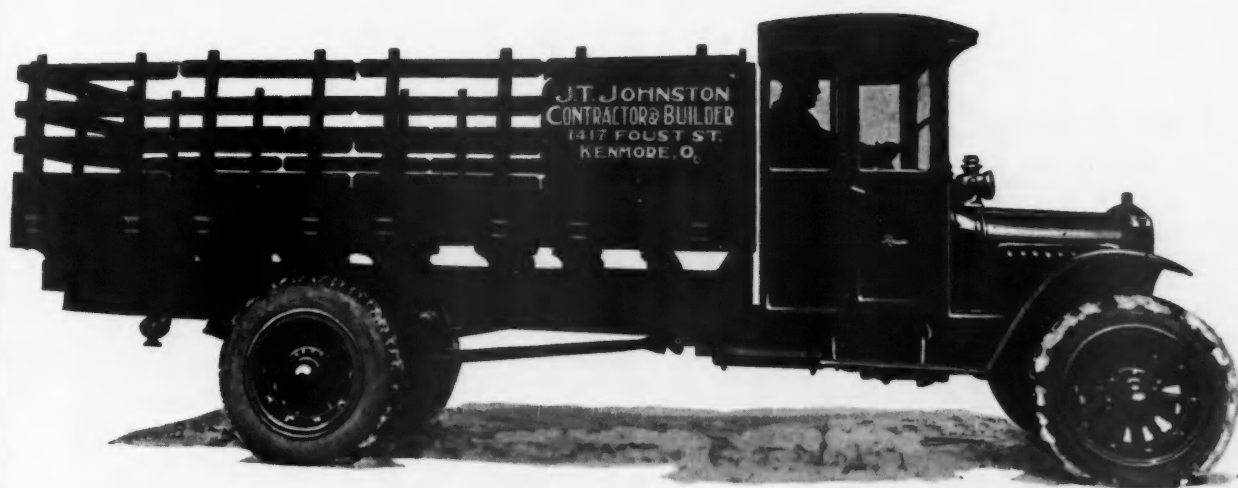
Light trailers used with light trucks or passenger cars enable many a builder working on light jobs to have all the advantages of a light truck by hitching his trailer to a passenger car. And when the car is not in use for that purpose it can be used by the contractor as a passenger car in his regular business.

In the lumber yard two trailers are provided for each tractor. The ease with which the trailers are attached and detached allows one to remain in the yard to be loaded while the other is being hauled to its destination. This method means saving in hauling costs, as the driver and the tractor, whether it be a truck or passenger car, are never idle. All the equipment is working all the time, which means the greatest service for the money expended.



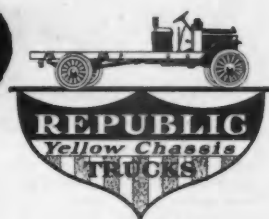
Four-Wheel Trailers More Than Double the Capacity of Light Motor Truck of Charles H. Finch & Co., Brooklyn, N. Y., with a "Trailmobile" Attached, the Truck Loaded with Shingles and the Trailer Carrying a Good-Sized Load of Lumber.

It does not just happen that the Republic is the largest-selling truck in the world to-day. It goes back to such basic things as the Republic's performance, its wonderfully rugged strength, and real economy. More than 60,000 shrewd business men have now bought Yellow Chassis Trucks because the Republic convinced them that it actually does better hauling at less cost.



# REPUBLIC TRUCKS

Republic Motor Truck Co., Inc., 953 Michigan Avenue, Alma, Michigan



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER





Four of the Six "Pierce-Arrow" Trucks of E. C. Humphrey, Contractor, Hackensack, N. J. Using Six Trucks, Mr. Humphrey Hauled More Than 500 Tons of Material a Day for 200 Days, Making a Record for Speed on Road Construction Work.

### Six Motor Trucks Haul 102,550 Tons of Material in 200 Days

**M**ILEAGE and tonnage perhaps without a parallel have been rendered to E. C. Humphrey, contractor, of Hackensack, N. J., by his six five-ton trucks.

These six trucks working 200 days on an immense road-building job each hauled 77 tons daily on an average for distances that ranged all the way from 1,000 feet to 15 miles.

Mr. Humphrey has rapidly been building a reputation for the speed with which he turns out his work. He is the man for the rush job. The time limit set

in a contract is not enough to satisfy this hustling and successful contractor. The very quickest time in which the job can be accomplished without any sacrifice of the highest quality of work is the standard he sets, and everything in his organization must bend to that result. Nothing is spared, men or machinery.

Naturally, motor trucks must be the basis of operations where speed is so imperative.

Mr. Humphrey is too progressive to waste time with any other medium. Nor does he spare the trucks. They must do the work. His strenuous demands would speedily break down an ordinary truck. If he has to overload them, he does so. If parts break, all right.

Mr. Humphrey is willing to bear the expense of replacing them so that he can continue to exact the impossible from a vehicle, asking only quick service, so that the machine is never long removed from a job.

The contract on which the six trucks made their greatest record was the building of New Jersey roads.

In order to have his working paraphernalia convenient, Mr. Humphrey brought to Hackensack by scow his immense asphalt-making plant, which had been in use elsewhere. His Hackensack dock was also the receiving point for all his supplies, and everything was arranged on a motor truck basis, so as to facilitate quick action.

Two hundred days were consumed in the performance of the job. In that time there came to



Three-Ton "Packard" Truck, Equipped with a Dump Body, Designed Especially for Hauling Building Materials. This Truck Is Owned by the Schenectady Construction Co., Schenectady, N. Y., and Is Shown Delivering a Load of Sand to the Building Job. This Body Enables the Truck to Be Unloaded with Great Speed, Saving Time and Money in Hauling.

# DUPLEX TRUCKS

## BUILT FOR BUSINESS



**W. C. BESS**

DEALER IN YELLOW PINE AND HARDWOOD LUMBER

Altavista, Va.

December 30, 1918

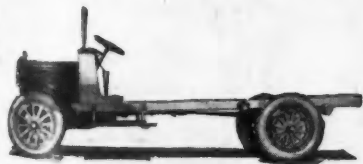
Dear Sirs:

In answer to your inquiry of some days back asking about the satisfaction with which I have operated a Duplex Truck, I take pleasure in saying that after operating this truck since November, 1917, I feel that I venture nothing in the statement that it is the truck for heavy hauling. I have been hauling a distance of 10.6 miles and a part of the road is unusually bad for dirt roads—very heavy grade and poor roadbed, but we have been handling 4,500 feet of green oak lumber, approximately 25,000 pounds per day, at a cost of \$3.50 per thousand feet. The same lumber, if hauled by a team, would cost \$8.00 per thousand feet.

I regret that I have no photographs of this Duplex in action and at present I cannot get them made.

Very truly yours,  
(Signed) W. C. Bess

**Duplex Limited**  
**Medium Capacity—Two**  
**Wheel Drive—High Speed**  
**\$2575 F. O. B. Lansing**



**DUPLEX**  
**BUILT**  
**FOR BUSINESS**

**D**UPLEX 4-Wheel Drive Trucks are typical examples of American progress. They occupy a prominent place in every line of the building business and their prestige is permanently fixed in the minds of business men.

Yet it is little wonder that increasing numbers of contractors are learning about Duplex performance and applying it to their own business. Merit soon establishes a standard and the buying public are quick to sense a leader.

Duplex truck success is due to a number of things but mainly to their performance—their dependability. Profitable truck operation can come only from constant service.

Get all the facts about Duplex Trucks. You will find them interesting and perhaps profitable.

**Duplex 4-Wheel Drive**  
**3½ Ton Capacity. Price \$4250, f. o. b. Lansing**

**Duplex Truck Company**  
**Lansing • Michigan**

*One of the Oldest and Most Successful Truck Companies in America*

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



A "Federal" Truck Receiving Dirt from a Steam Shovel Excavating for a Big Building. Trucks Take Heavy Loads and Carry Them Up the Grade from the Excavation Easily.

the yards the following immense quantities of material to be used on the roads:

100 scows of sand and stone, averaging 900 tons each.

4 loads of lime dust, averaging 900 tons each.

9 boatloads of asphalt, averaging 400 tons each.

6 boatloads of asphalt, averaging 400 tons each.  
each.

3 boatloads of coal, averaging 350 tons each.

2 boatloads of paving block, averaging 450 tons each.

When the work was started in April, Mr. Humphrey had three trucks. He at once ordered three more.

Under pressure the work was carried along at a terrific clip. Frequently in a twenty-four-hour day the trucks made 200 miles. One truck in ten hours covered 135 miles.

The yard was so arranged as to facilitate this work.

In the hauling of stone, for example, there elapsed from the time the truck entered the yard, stopped under the hopper, received its load, and was on the road again, only one and one-half minutes. Taking on asphalt involved a longer wait, for the asphalt had to be made ready. Twelve minutes was the average time lost in this way.

The trucks never stopped except when careless driving resulted in an accident.

Altogether the total volume of material moved was 102,550 tons. Counting that six trucks did the work in 200 days and making a deduction for the other two trucks that for a time helped out, the books of the company show that the average to the credit of each truck was about 77 tons per day.

In a smaller job, amazing time was made. It took forty days to construct a six-mile macadam road. The road was built with a stone base, as much as six inches deep in some places, and a two-inch asphalt top. This was all motor truck work. Material was delivered by rail or boat at both ends of the operation, and the trucks then rushed it to the place where it was used.

Another notable piece of work was the building of a road at Cambridge, Md. Three trucks were used on this job. They worked on hauls from seven miles, the length of the job, down to three-quarters of a mile, the distance that separated the plant from the start of the road.

Hauling stone and slag, they had to go over bad roads filled with pot holes and clay holes, but they did a job in about half the time that horses would have required.



Hauling Cement to the Rural Building Job. Here Are Two "GMC" Trucks Carrying Large Loads of Heavy Cement Over Country Roads.





## Team Mate of the Steam Shovel

A fitting team-mate of the steam shovel, this GMC Truck admirably justifies its operation in connection with excavation for building.

Day after day, week after week, every GMC Truck delivers hauling service for its owner in proportion to the quality built into it at the GMC factory.

No motor truck can deliver quality unless the builder conscientiously strives toward that end.

In the GMC factory, plain, honest quality is the first consideration.

Year after year the prestige and popularity of GMC Trucks has been growing. Today GMC on a truck is like U. S. A. on a bond.

GMC Trucks are made by the truck making unit of the General Motors Corporation and backed by that largest of all automobile organizations.

Branches, distributors, dealers and service stations are available to every community where motor trucks are operated.

Let your next truck be a GMC.

**GENERAL MOTORS TRUCK COMPANY**  
Pontiac, Mich.

*One of the Units of the General Motors Corporation*

(601)

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



It Was Not Until the Fall of 1919 That Haynes Bros., Cadillac, Mich., Purchased This Two-Ton "Acme" Truck, They Having Considered That the "Motor Truck Is for the Other Fellow." After a Few Months, the Firm Say That the Truck Has Not Only Speeded Up Their Deliveries, But Has Opened Up New Territory to Them, a Fact That They Are Making the Most of. The Office and Shed Shown in the Picture Are Indicative of the Live-Wire Character of the Members of the Firm.

The success of Mr. Humphrey in the contracting business which is now carrying his enterprises all over the country is built up largely in connection with the use of motor trucks.



### Trucks Economical for Rural Lumber Dealers and Contractors

MANY lumber dealers and contractors whose businesses are, comparatively, not large have an idea that the motor truck is not for them—that it is economical only for those who do a large amount of business. They continue to do their hauling with horses and wagons, but when they are induced to discard the old-fashioned method are sur-

prised to find that a motor truck not only cuts their hauling costs but enables them to expand their business into territory so remote that they were unable to make deliveries profitably with horse-drawn vehicles.

Haynes Bros., contractors and retail lumber dealers, of Cadillac, Mich., had that belief until they purchased a motor truck in the fall of 1919. After the truck had been in service a few months they were so enthusiastic over the service the truck gives that they announced they intend to buy a second one this spring.

One of the officials of the Haynes firm recently stated that their truck had increased their sales area 50 per cent and that they were able to speed up their deliveries considerably. The accompanying illustration shows the Haynes truck leaving the "Big Red



Three "Diamond T" Trucks Operated by the Bolcom-Canal Lumber Co., Loaded Ready to Leave the Yard. Lumber Dealers Use Motor Trucks Extensively Nowadays, as They Not Only Cut Delivery Costs, But Extend Their Sales Area Far Into the Surrounding Country.



*In the sand pit. Which is surest to deliver the goods—the average assembled truck or the Packard with its 84 per cent of power at the rear wheels in low gear, and its ability to climb a 28 per cent grade?*

## Which Contractor Is Surest of a Fair Profit?

**W**HAT keeps the contractor guessing these days is the uncertainty of men and materials.

He can figure to an hour when a job ought to be finished, but he can't foresee the defects in a truck that may at any time tie up deliveries and delay the work.

The contractor who appreciates the vital importance of getting the right truck is going beyond mere claims or demonstration runs.

He is looking for a truck of uniform quality throughout—not an assembly of uncertain parts from unknown sources—but a transportation unit built from the ground up by one responsible organization.

When he buys a Packard Truck he knows that it is constantly dependable—that it assures the delivery of materials on time—every time.

Packard owns and operates the most ex-

tensive heat-treating plant in the world—producing a steel that is stronger than the average by 35,000 to 62,000 pounds to the square inch.

The Packard business is a business of building trucks for the man who wants *transportation* every working hour of every working day. The contractor who realizes the vital importance of that kind of transportation is surest of a fair profit.

*"Ask the Man Who Owns One"*

**PACKARD MOTOR CAR COMPANY, *Detroit***





The "Republic" Truck of James E. Tague & Co., Lumber Dealers, Loaded, Ready to Start for the Building Job. This Truck Carries More Than Three Times the Capacity of a Wagon and Has a Speed of 15 Miles an Hour When Loaded. It Is Easy to See Why Motor Trucks Are an Essential Part of the Equipment of Successful Lumber Dealers.

Shed," as they term their yard building, with a load of lumber for delivery in the country near Cadillac.

The experience of Haynes Bros. has been duplicated many times among the retail lumbermen and contractors and builders during the last few years. The initial investment in a motor truck is considerable, and many members of the building industry have considered it too large to be profitable. But they have found that the saving the truck makes in the cost of maintenance, the number of teams a truck of even moderate capacity will replace, and the general satisfaction it gives in being able to deliver large loads quickly in all kinds of weather and over rough or muddy roads, makes it a valuable asset to the business.

Especially have these advantages been apparent to the dealers and contractors in the smaller cities and

towns. The motor truck has the speed that makes it capable of serving territory a considerable distance away from the yard. It opens up a new field for the contractor and lumber dealer. A truck not only is an economical method of hauling, but is a business builder.



### Labor-Saving Equipment in the Material Yard

Labor-saving equipment is taking a prominent place in the material dealers' yards, for the very simple reason that labor is not only high in price, but is scarce. One piece of this equipment is the power wagon loader, one type of which is shown in the accompanying illustration. This loader puts on the

truck a yard of materials a minute, and finishes the load quickly. The added advantage of the loader is that it keeps the hauling equipment moving.

As will be seen by the illustration, the loader is mounted on a steel truck, and is easy to move from one portion of the yard to another. On the frame a gas engine is mounted, which supplies the power to the endless belt on which the buckets are attached. The delivery spout is of a length that permits the material to be distributed to all parts of the truck or wagon it is loading.

Such a loader as this costs little to operate and effects a substantial saving in the labor cost in the material yard, or anywhere else that materials are loaded into hauling equipment.



### Uneven Coatings of Wood Cause Warping

Coatings of equal moisture resistance should be applied to all surfaces of a wood product which would give dissatisfaction if it were to warp in service. Tests at the U. S. Forest Products Laboratory, Madison, Wis., have shown that even when wood is properly kiln dried no coating entirely prevents it from picking up or giving off some moisture and, consequently, from swelling and shrinking under the influence of varying atmospheric conditions. Varnish, shellac and other moisture-resistant finishes merely decrease the rate at which the moisture changes in wood occur. The higher the grade and the more coats applied, the slower will be the moisture changes.

Unequal coatings on opposite surfaces of a wooden article cause unequal rates of change in moisture content and hence unequal shrinkage on the two sides of the piece. The result is that the wood tends to cup or twist out of shape.

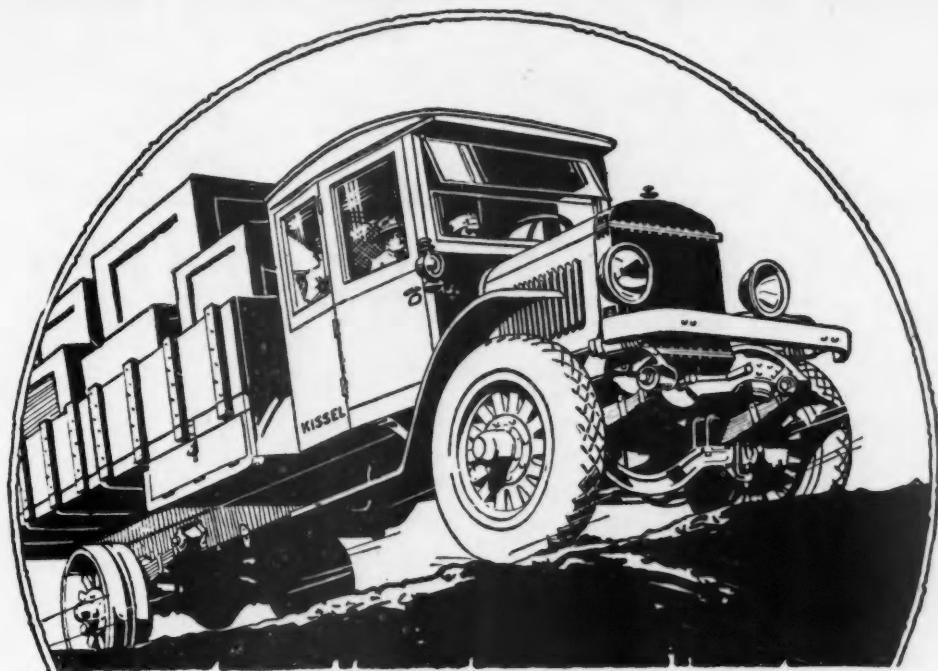


IN setting out and putting up horses for stairs the tread should be made to pitch about one-eighth inch in its width, as this makes a much easier stair than if the treads were perfectly level.



Portable Power Bucket Wagon Loader, Which Puts Materials on the Truck Speedily and Economically. The Endless Belt Carrying the Buckets and the Gas Engine That Provides the Power Are Mounted on a Four-Wheel Truck, Which Can Be Moved to Any Part of the Yard.

# KISSEL TRUCKS



**For efficient, economical and dependable haulage and delivery in the building business!**

**Q**UICK shipping service calls for fast loading and unloading of maximum loads—scientific routing, short stops and long hauls.

The dominating thought in every step of Kissel truck construction, from the selection of materials to the finished chassis, has been to ***"build it to endure and survive the grillof exceptional demands and conditions."***

For fourteen years Kissel Trucks have maintained this reputation among leading truck users in all lines of business.

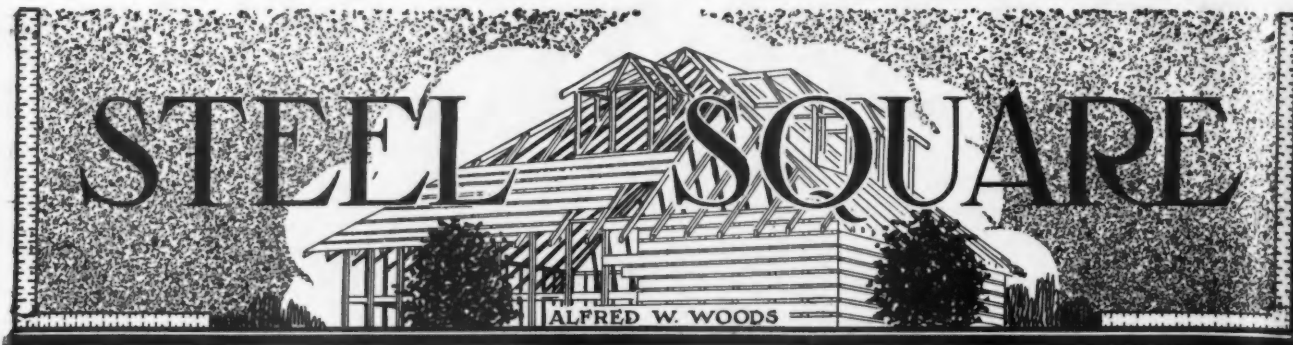
Shipping schedules to meet ***in time***—promised deliveries to make ***on time***—twelve, fourteen, sixteen, even eighteen hours a day, ***call for trucks of honest build.***

Kissel truck design and construction reach their highest point of efficiency in the present models:—

All fixed or moving units are perfectly balanced—power balances weight and both harmonize in gear ratio; while axles and bearings do their part without adding needless weight.

If you would choose your motor truck equipment by its reputation for efficiency, economy and dependability—see your nearest Kissel distributor today.

## Kissel Motor Car Co., Hartford, Wisconsin



## Possibilities of the Steel Square

REMINISCENCES IN CARPENTRY WORK PERTAINING TO THE USE OF THE STEEL SQUARE TOGETHER WITH SOME ODD USES TO WHICH IT MAY BE APPLIED.

By A. W. Woods

**T**HE Steel Square is a tool of mystery, for who has not wondered at the marvelous results in a mathematical way that may be obtained with it when in the hands of one who knows how to manipulate it? It is one of the oldest tools, its use "run-neth back to the time the memory of man knoweth not." Next to the saw and hammer it is probably the most used of any to be found in the carpenter's tool chest, yet commonly speaking, it is the tool of which least is known, as to what may be accomplished with it. It is used by the lowest saw and hatchet workman to the highest skilled in the art of carpentry, and yet comparatively few, up to recent years, could get along very far with it, without running up against a problem too deep to get across.

Before going further, we want to say that we have reference to the plain steel square stripped of everything but the standard measurement in inches and their fractional divisions. This alone in connection with a knowledge of degrees when applied with it can be made to cover the whole field in the art of framing. We have no doubt, some will say that we are discriminating against the many patented squares now on the market, dozen of others which the general mechanical public have never seen or even heard of and we might further add, the majority of the patentees of these square wish themselves that they had never heard of them. Of course some of them contain merit in the way of short methods in arriving at some of the more common cuts but at best their scope is limited and we repeat that none of them produce anything but what may be obtained with the common steel square as before mentioned.

Yet strange as it may seem, it has been only in the memory of the old time carpenters now living that its (the square's), rigid arms with its figures and divisions have become more generally understood, due to the teaching of publications pertaining to carpentry and building. You say then, how did the old time framers get along without the use of the square?

They got along with it indirectly, that is, they used it in connection with the compass in laying out dia-

grams from which they obtained the required angles; and from these they transferred by means of the bevel square which they adjusted to the angles in the diagram; and then by applying the bevel square to the timbers, scribing with a scratch awl. It was then ready for the man who just sawed wood and trusted to the one who did the scribing act for the accuracy of the joints when set up in place.

As a rule the man who did the scribing was not one given to enlighten others as to how he arrived at his conclusions. He considered it as his stock in trade, and he was generally looked upon as one who was considerably above ordinary mortals. His services were in demand far and near and often there was a wait of days that sometimes lengthened into weeks and even months for this wise man to show up on the job to lay out the work.

His word was considered law and he usually got there, as the carpentry and joinery work of the pioneer days, still to be found scattered thruout the older sections of the country, testify.

But today things are changed. Technical schools that teach us all of the arts pertaining to building are to be found in practically all of the states in the union, besides there are dozens of publications designed for home study that are in the reach of all who really care to better their condition; and in this the AMERICAN BUILDER, now completing the fifteenth year of its existence, has tried to do its bit.

The more we look into the wonderful possibilities of the steel square the more we want to say but space forbids more at this time and we turn now to illustrate a simple home made device to be used in connection with the steel square. It is not new, in fact, we trust to most of the readers it is rather aged, but we trust to some it will be new. To these we address the following remarks:

The article is generally known as a fence and can be had in any up to date hardware store made of finely polished metal, but the fence we are going to illustrate is made of wood and anyone can make it. It consists of a straight edge piece of wood with a





Copyright 1920, by The Goodyear Tire & Rubber Co.

# Pneumatics Increase Deliveries and Reduce Trucking Costs

*"Our truck was completely equipped with Goodyear Cord Tires last May. It has been in constant use since, hauling coal, fuel and building materials all over the city, over all kinds of roads. Pneumatics have increased the truck's radius 15%, and prolonged its life by reducing vibration to a minimum. Their traction has enabled the truck to go many places where solid tires could not go. They have reduced gasoline and oil consumption."*—G. O. Barlow, C. S. Barlow & Sons, Incorporated, Tacoma, Wash.

THE advantages of hauling heavy, cumbersome loads on this perfected pneumatic truck tire is becoming increasingly apparent to firms such as the one quoted above.

Users find that the old handicaps under which their trucks labored while on solid tires have been eliminated by the tractive cushioning Goodyear Cords.

They find that the cushioning power of the pneumatics protects from ruinous jars and jolts both the truck and its load.

They find that the tractive power of the broad All-

Weather Tread is such that their trucks easily negotiate sandy stretches, snow and thawing ground.

And as a final clinching virtue, they find that their Goodyear Cords have a toughness that enables them to roll up mileages frequently exceeding solid-tire mileages.

Authentic information, describing how contracting firms and building supply dealers employ pneumatic-tired trucks and what savings result, can be obtained by writing to The Goodyear Tire & Rubber Company, at Akron, Ohio.

**GOODYEAR**  
  
**CORD TIRES**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

slot at either end to slip over the arms of the square. It should have a few set screws in same so as to clamp it at any desired position as shown in Fig. 1 and it is ready for use.

The fence is a very useful device where there are a number of like cuts to be made, such as in stair strings as shown in Fig. 2. The fence is useful in determining the length of rafters by setting it at the figures that represent the rise given the roof per foot run of the common rafter, as 12 and 8, for the one-third pitch, and for the corresponding hip, 17 and 8; and should be placed or run the same number of times as for the common rafter.

In case there is a fraction in the run, this will be taken care of by measuring off the amount of the fraction, square out from the last plumb line either way as the case may be; this will give the proper point for the plumb line to pass thru; but for the corresponding amount for the hip it should be the diagonal amount of the fraction in the run of the common rafter, that is, 17 is used for the corresponding common rafter because it represents the diagonal of one foot square. So the same proportion must exist in the fractions of a foot, that is, if the fraction in the run of the common rafter is one inch for the corresponding hip it would be seventeen twelfths inches, or  $1 \frac{5}{12}$  inches, and as the reckoning line of the hip is at the center of its back, the cuts (seat and plumb) should be made so as to catch the measuring point on that line accordingly.

If there is a ridge piece for the rafters to rest against, deductions for one-half of its thickness should be made as described above. There are other things that should be taken into consideration such as the effect of the backing of the hip has on the seat cut but we will not stop to take that up now but pass on to the illustration as shown in Fig. 3.

#### To Measure Inaccessible Places

This shows the use of the fence in measuring inaccessible places such as the height of a tree or the distance across a body of water. In saying this we are well

aware that this method of measurement would not appeal to the surveyor or engineer but the principle involved is correct. The result depends wholly on the accuracy of placing the fence and from sighting from one point to another. The cartridge from the best gun ever made will go amiss if the man behind is off in finding the range.

The illustration in Fig. 3 needs but little explanation as it will be seen that A-B-C forms a right angle triangle which is the same as that formed by the fence in connection with the square as shown in Fig. 1. The larger or imaginary triangle is obtained by sighting along the fence on the square, stationed at A, to line up with that at C; then by sighting along the tongue at A and along the blade at C while a party sets the stake at the intersecting point at B. Thus A-B and B-C must be equal and as the former is on dry land it is an easy matter to get the correct measure without the necessity of measuring across the body of water.

If it is desired to find the distance from A to C this may be found by multiplying the distance from A to B by the decimal 16.9705.



#### Durability of Green Timber

That there is practically no difference in the relative durability of green timber and seasoned timber when untreated and exposed to the weather and in contact with the ground, has been established by recent experiments conducted by the United States Forest Products Laboratory, Madison, Wis., in connection with the manufacture of poles, posts or ties. In the case of ties laid by the laboratory in co-operation with the Northern Pacific Railway, the average life of seasoned ties was only one-tenth of a year longer than that of green ties and measurements on poles made by the laboratory in co-operation with the American Telephone & Telegraph Company, show that the rate of decay in green poles is a trifle less than in seasoned poles. The fact that green and seasoned timber have the same durability when used in exposed places is due to the fact that both soon reach the same moisture content and this is the principal factor in determining the rate of decay of a stick of timber.

Wood for interior construction, however, should be thoroughly seasoned; otherwise it is likely not only to shrink to a serious extent but to decay before it seasons.

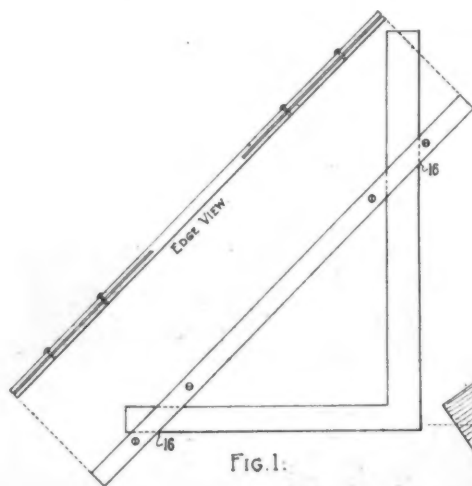


FIG. 1.

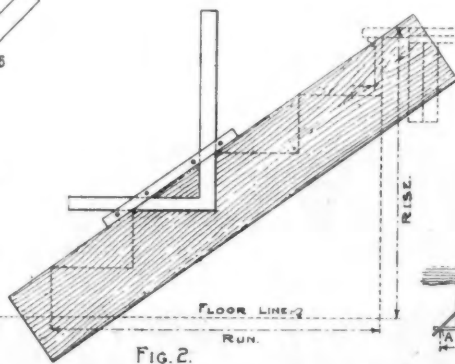


FIG. 2.

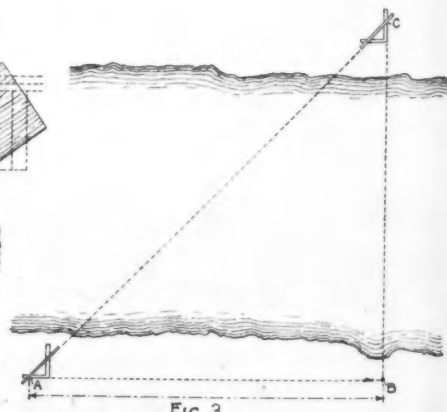
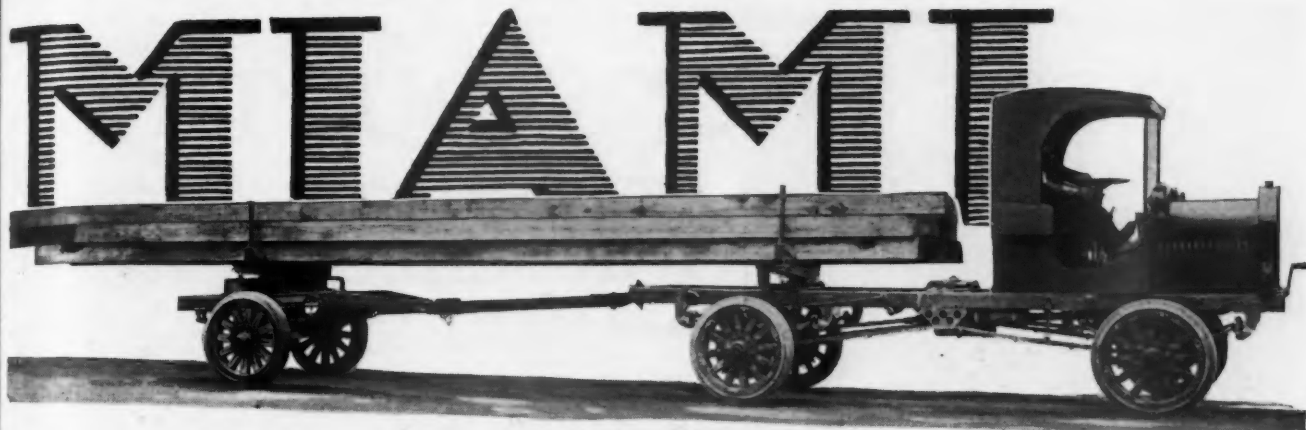


FIG. 3.

How to Use a "Fence" in Connection with the Steel Square.



**O**UR NAME, our business reputation, and our years of experience, are back of every trailer we put out. Our aim is to make a truly satisfactory type of trailer to fit every need of modern building projects. You, as a contractor, have long known that the load cannot always be made to fit the trailer—the trailer must fit the load. That is what we have done for you—each of our twenty-five models is perfectly fitted to carry the load it is designed for, be it long beams or pipes, tile, shingles, express, or workmen; capacities varying from 800 pounds to 6 tons. Tell us what you have, how, and in what size load, and we will tell you how best to cut your hauling expenses.

**THE MIAMI TRAILER COMPANY, Troy, Ohio**

# Trailmobile

Trade-Mark Reg. U. S. Patent Office

**The Motorless  
Motor Truck  
Thousands in Use**

**DIVISION No. 1**  
Light, one-way four-  
wheeled Trailmo-  
biles for use with  
passenger cars or  
light trucks: 1,250  
lbs., ½ ton and 1 ton.

**DIVISION No. 2**  
Heavy-duty four-  
wheeled Trailmo-  
biles for use with  
trucks: 1½ tons, one-  
way; 2 tons; 3½ tons,  
and 5 tons reversible  
and one-way.

**DIVISION No. 3**  
Semi-Trailmobiles:  
2½ tons, 4 tons, 6 tons  
and 10 tons.

## Cutting Delivery and Service Cost

**“W**E HAVE found the Trailmobiles work beautifully in our business. We have two. While the truck takes one out loaded we load the other thus keeping the motive power on the road”, says the Geary County Lumber Company of Junction City, Kansas.

That tells briefly the situation that has led lumber dealers in all parts of the country to adopt the Trailmobile system of lumber delivery. It means faster deliveries at lower costs, better service to customers.

Any satisfactory system of lumber delivery must make it possible to put on the load while the motive power is away, for delay while lumber is loaded eats up motor vehicle profits. The Trailmobile affords a simple and effective method of meeting that requirement.

Write for booklet, “Economy in Hauling”.

**The Trailmobile Company**  
583 E. Fifth Street  
Cincinnati, Ohio

*Good roads are preserved by  
reducing the load carried on  
each wheel*







# BRICK CONSTRUCTION

## for Modern Carpenters and Builders



### Quality Mortar Required for First-Class Brick Walls

SLAKING OF LIME, SELECTION OF SAND AND MIXING ALL MUST BE DONE WELL IF BEST RESULTS ARE OBTAINED

**W**HILE the average man, in considering brick or any other masonry construction, devotes little thought to the mortar that holds the brick or stone together, masons who pride themselves on the quality of their work give this material the greatest attention. They are critical of the quality of the lime and sand that go into the mortar, and of the process used in making it.

Brickwork endures only according to the proportional strength and quality of the brick of which it is composed, of the mortar that binds them and the manner of bonding. It often has been demonstrated that failure in brick wall construction is rarely due to the weakness of the brick, but to that of the mortar.

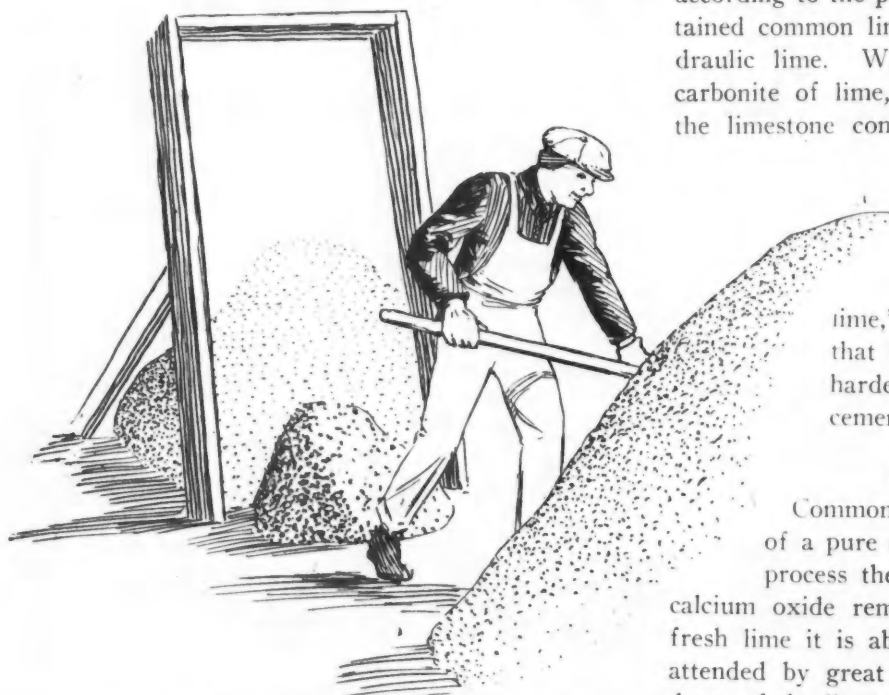
A knowledge of the essential qualities of good lime mortars will be of great assistance to the builder of brick structures. The main function of mortar in brickwork is to unite the brick into one substantial mass; and in so doing all the crevices between the brick necessarily will be filled up.

The mortar also acts as a cushion to take up all the inequalities of the brick surface. The strength of the mortar, therefore, is the prime consideration; the filling of the crevices to keep out air and water is a matter of good workmanship; the thickness of the joint determines the effectiveness of the cushioning and pressure distribution.

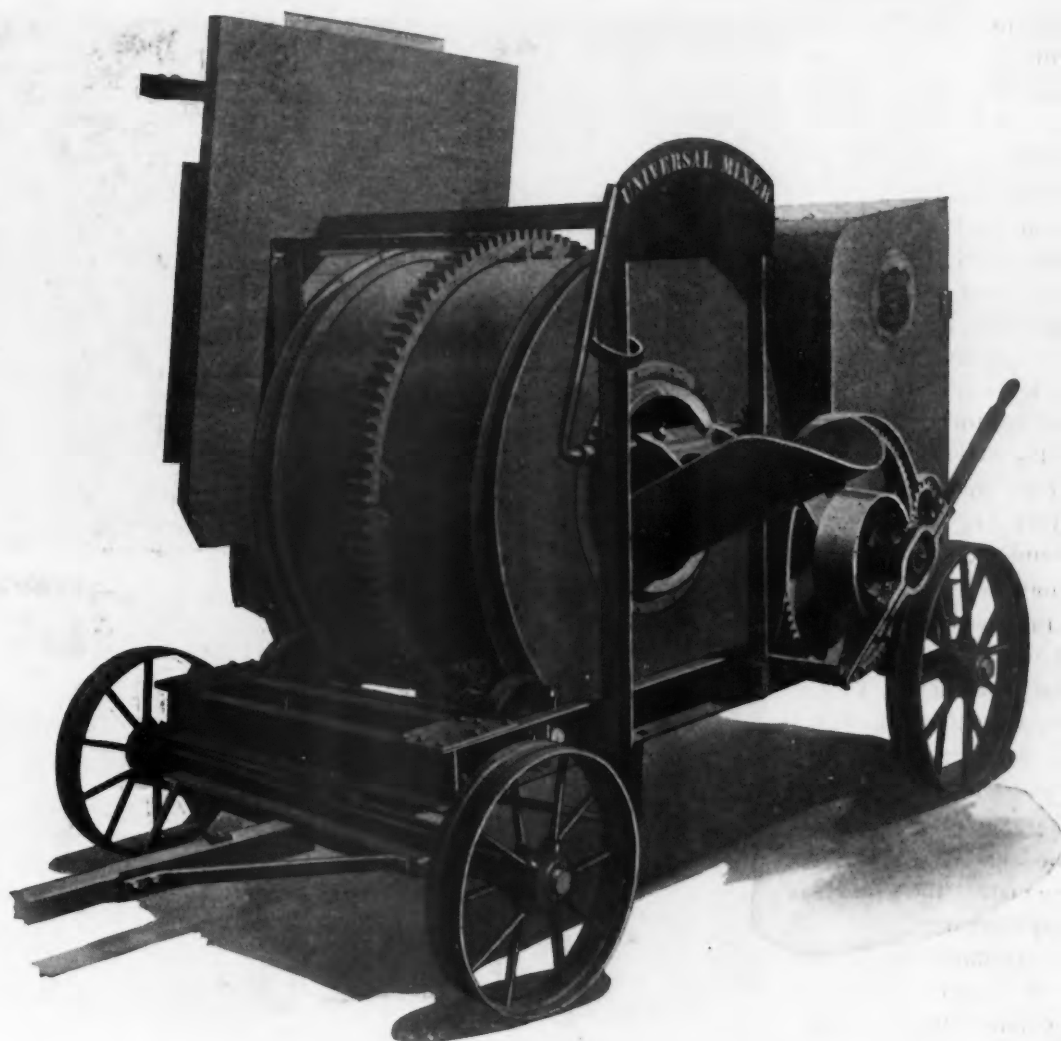
All the limes come, of course, from limestone; but, according to the purity of the limestone there are obtained common lime, hydraulic lime and natural hydraulic lime. When the limestone is nearly pure carbonate of lime, common lime is the product. If the limestone contains from 10 to 20 per cent of clay, hydraulic lime results from calcining. With from 20 to 25 per cent of clay, the limestone yields a natural hydraulic cement. Common lime, or "air-lime," requires air exposure in order that it may set or harden. It will not harden under water. Hydraulic lime and cement both will harden under water.

#### Slaking Common Lime

Common lime is the result of the burning of a pure or nearly pure limestone, in which process the carbon dioxide is driven off and calcium oxide remains. When water is applied to fresh lime it is absorbed avidly. The absorption is attended by great heat, steaming and the breaking down of the lime mass. If the slaking—as the work of absorption is called—is carried on perfectly, all the



Clean Sand Makes Good Mortar. All the Sand Should Be Well Screened Before the Mortar Is Mixed.



## The Lakewood Universal

### *The "Ford" of the Mixer Field*

Contractors who use Lakewood Universal 1-Bag Mixers say they are the most useful machines on the job. No job is too big or too small for a Universal to earn maximum profits for its user.

You should own a Universal Mixer—it will lower your labor costs just as it has for so many other builders.

Bulletin 21-B gives details and specifications.

Send for a copy.



THE LAKEWOOD ENGINEERING COMPANY  
CLEVELAND, U. S. A.

Offices at New York City, Boston, Philadelphia, Washington, Richmond, Atlanta, Pittsburgh, Cleveland, Buffalo, Detroit, Milwaukee, Minneapolis, Chicago, Kansas City, Houston, Dallas, San Francisco, Portland, Los Angeles and Seattle.



# Lakewood Construction Plant

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

lime is reduced to a fine powder, the volume of which is two or three times the original bulk, the increase being proportional to the limestone's purity.

The lime, being slaked, is ready to be made into mortar. A lime paste is formed; and to this sand is added. The sand prevents the shrinkage of the lime in drying out, just as it does in preventing the shrinkage of clay brick. The sand particles assist by their coarseness the action of the carbon dioxide in the air on the calcium oxide in the mortar. A very important advantage of the sand mixture is that it reduces the mortar cost.

Very pure limestones produce fat limes, almost white, and slaking to an impalpable powder. Where silica, alumina and other impurities are present, lean limes result. The latter are yellowish or grayish in color and slake slowly.

If the limestone is nearly pure calcium carbonate, the lime is known as high-calcium lime. If the limestone contains more than 10 per cent of magnesia, the lime is known as magnesian or dolomitic lime. The high-calcium limes are called hot or quick limes; and the magnesian limes are known as cool or slow. These terms refer to their action in contact with water. In slaking the hot limes it is better that all the water should be added at once; with the cool limes the water should be added only gradually. In the latter case too rapid addition of water would cool the lime mass and stop the slaking, as much less heat is involved in the breaking down of the magnesian limes. They set more slowly, but finally gain more strength than the high-calcium limes.

#### Knowledge and Care Necessary

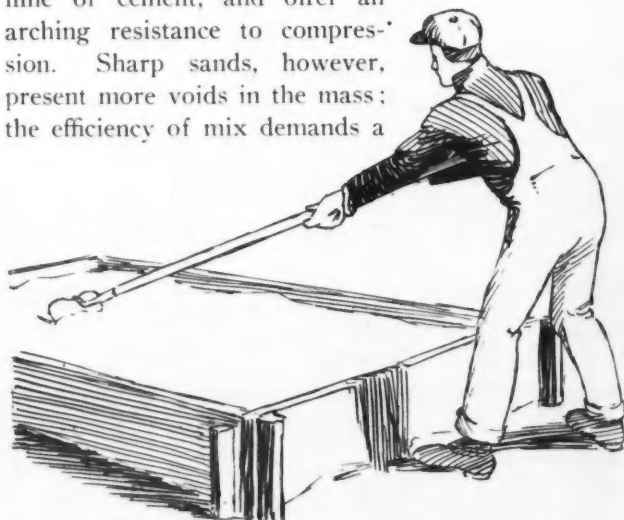
The proper slaking of limes requires knowledge and close attention. Many mortars are low in bonding efficiency owing to want of care in their making. Builders are regarding with increased favor the hydrated limes that are available. These are slaked to a dry powder in the factory, are perfectly slaked to maximum volume and are ready for immediate use.

A good lime must be free from impurities, such as cinders, etc., and should slake readily in water to a smooth paste without redissuim. The quality of sand used in mortar making has a marked effect on the strength of the product. In the specifications, the essentials demanded are expressed in the sentence:



No Small Part of the Beauty of This Brickwork Was Derived from the Mortar. The Mortar Is of the Best Quality and the Joints Carefully Painted.

"The sand shall be sharp, clean and coarse." Ocean and lake sands are to be preferred to glacial sands as a rule, the latter containing frequently large quantities of soft and easily decomposed constituents. Sharpness is considered desirable, because the angular grains of sand invite more readily adhesion to the lime or cement, and offer an arching resistance to compression. Sharp sands, however, present more voids in the mass; the efficiency of mix demands a



Slaking Lime and Mixing Mortar Require Skill and Care. A Clean, Water-Tight Mixing Box Is One of the Essentials for Making Mortar That Will Make a First-Class Brick Wall.



# ATKINS

## SILVER STEEL SAWS

A—the first letter in the alphabet stands for ATKINS. ATKINS—stands for the highest quality and efficiency in SAWS, SAW TOOLS and SAW SPECIALTIES. Atkins products are known the world over as

*“The Finest on Earth”*

Learn more about Atkins Products. Write for our free books, *“Saw Sense”* and *“How to fit Cross-Cut and Hand Saws.”* Send 30 cents, coin or stamps for Atkins Nail Apron.

**E. C. ATKINS & COMPANY, Inc.**

Established 1857

*“The Silver Steel Saw People”*

Home Office and Factory, Indianapolis, Indiana

Canadian Factory, Hamilton, Ontario

Machine Knife Factory, Lancaster, N. Y.

Branches carrying complete stocks in all large distributing centers as follows:

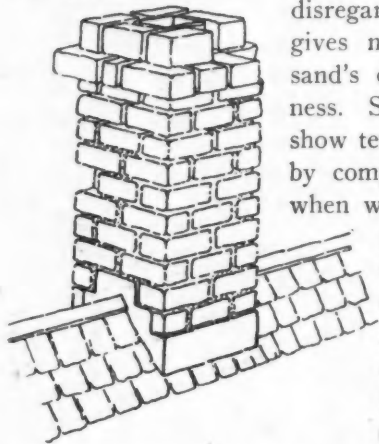
Atlanta  
Chicago  
Memphis

Minneapolis  
New Orleans  
New York City

San Francisco  
Seattle  
Portland, Oregon

Paris, France  
Sydney, N. S. W.  
Vancouver, B. C.

greater proportion of lime or cement. As few sands have grains of marked sharpness, and the minimum degree of sharpness is not specified, the fulfillment of the specification in this regard is for the most part disregarded. The purchaser gives most attention to the sand's cleanness and coarseness. Sand, if clean, will not show tendency to form lumps by compression in the hand when wet. If the sand does



Showing the Effects of the Weather on Poor Mortar Used in a Chimney. The Mortar Is Washed Out of the Joints and Here and There a Brick Is Missing.

not dirty the hands to any marked degree during its handling, it may be considered clean. Foreign matter, such as wood chips, leaves, etc., cannot be permitted in mortar sands. The presence of clay particles in the sand may

be said to be injurious to rich mortars and cements and beneficial to lean mortars when in proper proportion, of course, to the degree of leanness.

Coarseness of sand insures easy mixing and the use of the least quantity of cementing material. As a general statement, the coarser sands produce the strongest mortars. The quality of the mortar, the thoroughness of the mix and the percentage of voids would all have to be taken into account in a special consideration of mortar strengths.

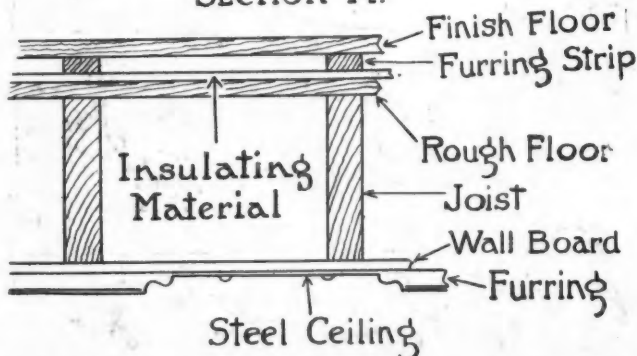
### Deadening Floors, the Construction Methods

By I. P. HICKS

IT is often the case that the carpenter is called upon to construct a sound-proof floor. There are many buildings put up where to omit deadening the floors is a very serious mistake. This is particularly true of store buildings, halls, etc.

Steel ceilings are now very popular for store buildings and these make it all the more necessary to deaden the floor above. Sound will go thru a steel ceiling much more readily than it will thru a plastered wall. A building so constructed that every little noise is carried to every quarter of the building is very annoying,

#### SECTION A.

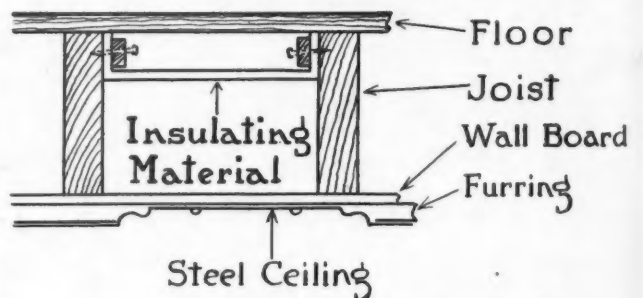


Section Showing Rough Floor Covered with Insulating Material.

especially if occupied by more than one tenant.

Almost everybody knows that there is very little about a steel ceiling to keep out either cold or sound. Steel ceilings are popular because of their artistic appearance, often being preferred to either wood or plaster. It is possible to put them up with quite an improvement over the ordinary methods. Steel ceilings are fastened to furring strips nailed to the joists. Now, why not add to the warmth of the building and at the same time do a good turn toward deadening the sound? First cover the ceiling with a wall board that can be had in large sheets. Nail 2 by 2-inch strips in between the joists where the joints come so that the wall board can be nailed up in good shape at every place where a joint comes. Use large size sheets to avoid as many joints as possible. After the wall board is on then strip the ceiling with 1 by 2-inch furring strips to fasten

#### SECTION B.



Section Showing Method of Deadening Single Floor.

the steel ceiling to. This method is particularly desirable on ceilings next to a roof, as it keeps out an immense amount of cold. On store buildings, where there are rooms above, it keeps out cold and sound both.

For a very effective floor deadener cover the rough floor with insulating material about  $\frac{1}{2}$  inch in thickness. Some of this material comes in sheets about 3 by 8 feet in size, also in sections made just right to fit in between joists and studs regularly spaced for lathing.

In our sketch we show two methods of floor deadening. Section A shows a rough floor covered with insulating material. It is then stripped over the joists with 1 by 2-inch furring strips and then the finish floor is laid. This makes a very effective method of deadening. Section B shows a method of deadening where there is only a single floor. In this case the insulation is put in between the joists with the edges turned up and strips nailed on thru into the joists as shown. This method is not as good as the former, altho it is far better than no deadener at all.

On the underside of the joists the furring strips run at right angles to the joists and is spaced 2 feet apart on centers. To make a real good serviceable job for keeping out cold and sound, first cover the joists with wall board as shown in the sketch. Next put on the furring strips, then the steel ceiling and you will have a job that you will be satisfied with.

# KELLASTONE

## IMPERISHABLE STUCCO



**AFTER**

**BEFORE**

### Builds Business Like Magic

FOR remodelling, and rebuilding no surfacing material compares with KELLASTONE in serviceability and ease of application. KELLASTONE construction is a matter of a few days, not weeks, providing a quick turn over and certain profits.

## KELLASTONE

IMPERISHABLE STUCCO

The original all mineral magnesite stucco, mixed with a non-freezing chemical solution. Easily applied even in zero weather over old brick, stone, concrete or weather boards, without disturbing occupants.

KELLASTONE is equally suitable for cottage or mansion, apartment or public building. Through its use you can create business and hold it.

*Send for details of how to modernize an old building.*

**National Kellastone Co.**  
155 E. Superior St.  
Room 513 Chicago, Ill.





## NEWS OF THE FIELD

### Ideal Engine Company Open New Chicago Office

The Ideal Engine Company, manufacturers of gasoline engines, hoists, pumps and contractors' equipment, and the Ideal Power Lawn Mower Company, manufacturers of power lawn mowers, announce the opening on Jan. 1 of their branch office and salesrooms at 533 South Dearborn street, Chicago, Ill. The Chicago office will be under the management of E. H. Peters.



### H. W. Johns-Manville Co. Des Moines Office Moved

H. W. Johns-Manville Co. announces the removal of its Des Moines office to more modern quarters at 213 Ninth street on Jan. 2. W. B. Roberts, Des Moines manager, says that the new location will give him better facilities than ever for serving Iowa with asbestos and magnesia, electrical, automotive equipment and allied Johns-Manville products.



### John J. Nicholson New President of Murphy Varnish Co.

The Murphy Varnish Co., Newark, N. J., began the New Year with a new president, John J. Nicholson, and with a new vice-president and member of the board of directors, Charles J. Roh. Franklin Murphy, Jr., retires from the presidency and becomes the chairman of the executive committee. Governor Murphy remains chairman of the board of directors.



### A New Factory for Sheet Metal Products

The Milwaukee Corrugating Co., Milwaukee, Wis., has let the contract for a new factory building which is to be located at Kansas City, Mo. It is to be of reinforced concrete, fire-proof construction, 385 feet long, 160 feet wide, two stories high, and will cost \$250,000. The Bliss Construction Co. is the successful bidder. The time set for the completion of this new factory building is June 1, 1920. The firm now have their warehouse and salesrooms at 911-925 West Eighth street, which are under the management of H. H. Seifert, formerly of the Milwaukee office. The new factory will greatly increase the firm's facilities, and building products which are more advantageously shipped from Kansas City are to be manufactured there and the territory north, west and south of Kansas City will get the benefit of the improved service and reduced freight rates.



### Brick Manufacturers to Hold Convention

The Common Brick Manufacturers' Association of America and the National Brick Manufacturers' Association meet in a joint annual convention at Columbus, Ohio, Feb. 16 to 21. The Hotel Deshler has been designated as the meeting place.

By reason of the remarkable progress made by the newer organization, the Common Brick Manufacturers' Association of America, during the past year, there is reason to believe

that the Columbus meeting will be the largest gathering of manufacturers of common brick that has ever been held in the country. The new association has already gathered to itself manufacturers producing about one-half of the national output of common brick. These manufacturers have subscribed a fund of \$300,000 to be used for publicity, and their deep interest in the forthcoming activities of this association will prompt all to attend the meeting at Columbus and learn in detail of the program to be followed.

In addition to an interesting three-day program, there will be a big display of the house plans and specifications and advertising copy to be used in the Common Brick Association's national advertising campaign. There will also be some sample panels of common brick, showing the effects obtained by various bonds and mortar joints. A novel competition will consist in a display of samples of association trademarked brick, and to the manufacturer presenting the best specimen will be presented a \$50 silk hat.

There is also to be a prize to the member of the association bringing to the association the greatest number of non-member manufacturers and securing their application for membership.

The first session of the convention will open at 2 p. m. Monday, Feb. 16. There will be reports from the delegates from every state in the union, covering all the vital points of the industry in each of these localities.

Some of the other features of the various sessions will be: "Common Brick for Facing Purposes," by Warren Griffiss, Baltimore; "Air Space in the Common Brick Wall," by Walter Simons, Los Angeles; "Building 10,000 Houses with Common Brick Walls," by James T. Basiger, Chicago Housing Association; illustrated talk upon "Brick Homes, Old and New," by W. N. Cary, Albany; "What the Architect Should Know About Common Brick," by D. Knickerbacker Boyd, F. A. I. A., Philadelphia; "Standardizing Common Brick," by William Carver, Association Architect, Chicago; "Putting Your House in Order," by Ernest E. Bell, Hydraulic Steel Company, Cleveland; "The Cost of Manufacturing Brick," by E. H. Scull, Chicago.

There will be one session devoted to the subject of advertising with addresses by advertising men of national prominence. A joint banquet of the two associations will be held on Wednesday evening.

The present officers of the Common Brick Manufacturers' Association are: William Schlake, president, Chicago; C. H. Bryan, vice-president, Detroit; Ernest S. Barkwill, treasurer, Cleveland; Ralph P. Stoddard, secretary-manager, Chicago; and the following directors: Tom W. Green, Sioux City, Iowa; Warren Griffiss, Baltimore; Fritz Salmen, Slidell, La.; John P. Cahoon, Salt Lake City; Charles Francis, Muskogee, Okla.; W. N. Cary, Albany; Max D. Almond, Corsicana, Tex.; George A. Parry, Boston; J. F. Reynolds, North Haven, Conn.; B. W. Ballou, Kansas City, Mo.

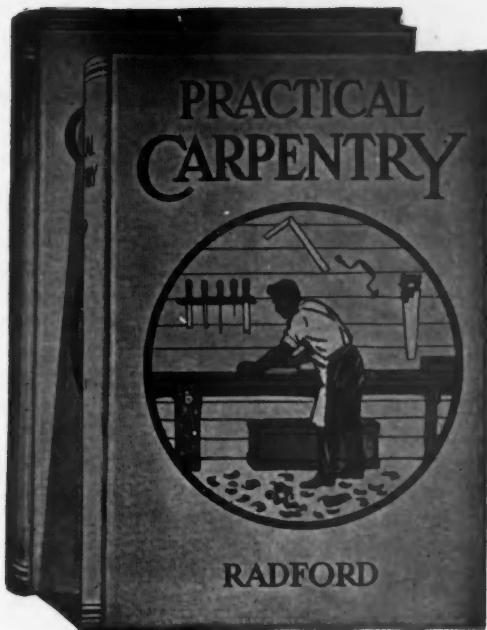


### New St. Louis Representative for American Steam Conveyor Corporation

The American Steam Conveyor Corporation, Chicago, announces that the Atlas Machinery and Supply Company are now handling the sale of the American Steam Ash Conveyor in their St. Louis territory. This company has offices at 1416 Syndicate Trust building, St. Louis, Mo., and is a new sales organization in that vicinity.

It is headed by Wm. H. Patton, who recently returned to the United States after two years' service in the army, during which time he was in nine branches of the service, gaining experience of great practical value.

Associated with Mr. Patton is his brother, W. R. Patton,



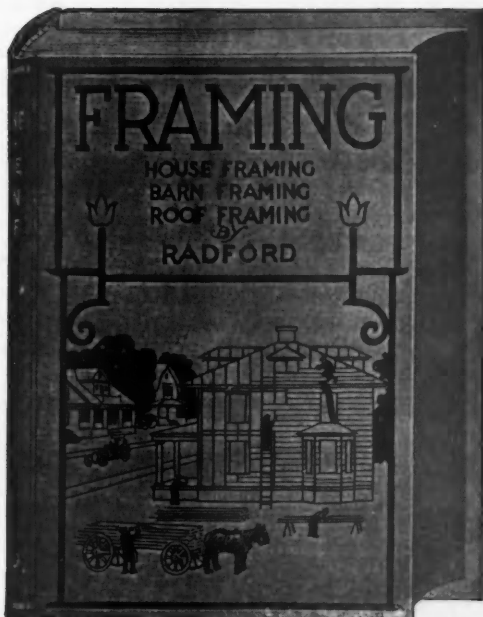
Two volumes of reliable textbooks to which to refer in work that is new and unusual. **PRACTICAL CARPENTRY** is the most complete, most accurate, most practical and most up-to-date work of its kind. It describes the best and quickest methods for laying roofs, rafters, stairs, flooring, mitering, coping, splayed work, circular work, and, in fact, for forming all kinds of joinery and carpentry work.

Bound in cloth, over 600 pages of useful and necessary information. Complete information from foundation to roof.

Price \$3.00 Postpaid

**American Builder**  
1827 Prairie Ave., Chicago

### A Safe Guide for All Kinds of House, Barn and Roof Framing



356 pages, 6 x 9, bound in cloth. Over 100 illustrations, reproducing architects' original drawings and details. A wonderful help in the construction of houses, barns, roofs, giving clear and complete instructions for carpenters, builders, contractors, architects and draftsmen. It covers every problem with thorough and easily understood diagrams.

Price \$1.50 Postpaid

**American Builder**  
1827 Prairie Ave., Chicago

## You Need Fewer Men With Archer Mixers

**Fewer Men**—The Archer will do away with three or four men to every gang. It is the original end-discharge mixer. No wheelers needed.

**Speed**—Works faster—mixes better. One man can move it and it does not need a team to take it from place to place. Made in one bag and half bag sizes.



*Why worry about men. Get an Archer Mixer  
and get along with smaller crew*

### Send Coupon for Book

Let us tell you how much more profitable it is for you to have one or two small Archers do your work than one big expensive machine. Send the coupon.

### END DUMP BODIES

With Hand Hoist

We make the Archer Dump Body and Hand Hoist. They are ideal for contractor's bulk hauling—sand, gravel, excavations, paving, coal, etc. The body is built with great strength and a pull of only 20 pounds on the hoist will dump a 5 ton load in 2½ minutes; One ton in 30 seconds. No upkeep cost. Ask us for particulars and prices.

### Archer Iron Works

2438 West 34th Street - CHICAGO, ILL.

*Tear Out and Mail This Coupon*

**ARCHER IRON WORKS,**  
2438 W. 34th Place, Chicago, Ill

Please send me your free booklet on

☐ Archer Mixers

☐ Data on Dump Bodies

Name \_\_\_\_\_

Address \_\_\_\_\_

who for the past twenty years has traveled the central west, engaged in the sale of power plant equipment. During the past four years he has represented several of the large manufacturers as district manager.

N. B. Stewart, who has been identified with the power plant machinery business at St. Louis for twenty-five years, has also associated himself with this company. His acquaintance and experience will assist the organization to give real service to the trade.



### **M. F. Stapleton Detroit Manager of Marlin-Rockwell Corporation**

The Radiator Division of the Marlin-Rockwell Corporation announces that M. F. Stapleton has been appointed western sales manager, with headquarters in the Kresge Building, Detroit, Mich.

Mr. Stapleton is well known in the automobile industry because of his long experience as a radiator engineer, having been with the Mayo Radiator Company since it was first organized, and subsequently with the Marlin-Rockwell Corporation after this corporation absorbed the Mayo Radiator Company.



### **U. S. Motor Truck Co. Increases Capitalization**

At the stockholders' meeting of the United States Motor Truck Company of Cincinnati, Ohio, held on January 14, the stock was increased from \$1,000,000 to \$2,500,000 and over-subscribed by the present stockholders. This company was taken over by its present managers in 1914 and capitalized for \$300,000. In 1917, on account of the rapid growth, it was found necessary to increase the capital to \$1,000,000, and on account of the continuous growth it was decided at the meeting on the 14th to increase it to \$2,500,000.



### **Phelps Light & Power Co. Force Holds Meeting**

Officials and salesmen, and office and factory forces of the Phelps Light & Power Co., manufacturers of farm light plants, Peoria, Ill., gathered at the home office and plant in January for the annual meeting of all those connected with the concern. They were guests of R. W. Phelps, president of the company, and while all were at the factory posed for a group photograph, which is shown in the accompanying illustration. The Phelps company is contemplating a wide distribution of its product this year, using the leading farm

publications as well as the AMERICAN BUILDER to push the sale of its farm electric light and power plants.



### **Oil-Cushion Tappets for Overhead Valves**

OVERHEAD valves unquestionably are the most efficient form of motor valves, but there has always been one objection to them, and that is the incessant noise emanating from the valve-in-head mechanism when in operation. In the overhead valve system a certain amount of play has to be left in the working parts to allow for expansion, and this looseness of action produces a racket of clicks and taps. One owner of a valve-in-head motor says that whenever he is driving at a speed of twenty-five miles per hour, he is under the impression that there is a threshing machine doing business directly ahead.

But this disadvantage of the valve-in-head motor need be no more, thanks to the ingeniousness of a leading automotive engineer. In the illustration shown on page 59 is illustrated what is known as an oil-cushion tappet, which, when applied on the stem of each overhead valve, eliminates the racket of operation. The tappet consists of a solid base which fits snugly on the top of the valve stem. On this base rest two dished springs of fine steel. When these springs are placed face to face they form a full elliptical spring or cushion. The springs are held in place by a steel cap, with an oil wick enclosed in the rim of the cap.

After the tappets are installed on the motor, the cap is filled with oil, and when the motor is put in operation the oil is drawn in between the two steel springs on the upstroke of the valve, and when the rocker arm strikes its blow falls on a cushion of oil.

In other words, the tappet provides a desired resiliency, yet eliminates the noise of the clicks and taps. The tappets are easily installed on all cars of the valve-in-head type. They have been thoroly tested by the makers and are sold on a liberal trial term.



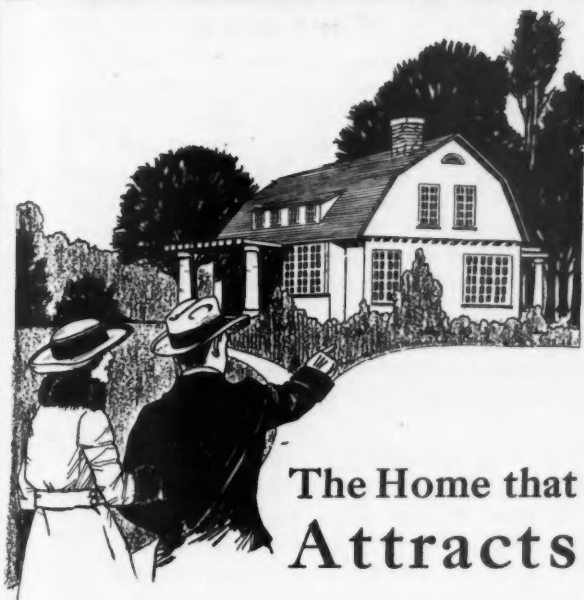
### **Framing Wood Joists**

IN framing wood joists for a building they should be given a "camber" or crown of not less than one-half inch in 20 feet, and if it is a brick or stone wall the ends should be given a bevel of about four inches, so that in case of fire the joist can drop out of the wall and do no damage. In leveling up the joist on a brick or stone wall the joist should be blocked up where necessary with slate or flat pieces of iron. In framing joist none should be framed closer than 8 inches from the inside of any flue. To stiffen joist nail strips on the sides in the form of a truss.



Officials and Salesmen, Office and Factory Forces of the Phelps Light & Power Co., of Peoria, Ill. This Photograph Was Taken at a Recent Annual Shop Meeting.





## The Home that Attracts

IT must be easy to live in as well as pleasant to look at. That is why contractors, investment builders, and owners agree in proclaiming that

## DONLEY DEVICES

*Modernize the Home*

**Donley Devices** mean the doctrine of efficiency applied to the home.

No need to wait at home for deliveries, to unlock doors and admit strange men. The **Donley Package Receiver** admits the package, not the man, and holds it safe.

Make the fireplace a source of genuine comfort and satisfaction with a **Donley Throat and Damper** (in one), the Damper being controlled by a common poker.

Keep the meter man outside with the **Donley Meter Box**. Dispose of rubbish in the **Donley Rubbish Burner**. End garbage nuisances with the **Donley Garbage Receiver**. Have a **Donley Coal Chute** to save defacement of the building by coal.

Save space in the basement by using **Donley Metal Stanchions** instead of piers. Dry clothes with the aid of **Donley Metal Clothes Posts**. Drain refrigerator outflow through a **Donley Refrigerator Trap**.

Indeed there is scarcely a feature of home life, scarcely a single act of the housekeeper's routine that cannot be made simpler and easier by **Donley Devices**.

Send for catalog.



**The Donley Brothers Co.**  
East 74th St., and Aetna Rd.  
Cleveland



## HOMER

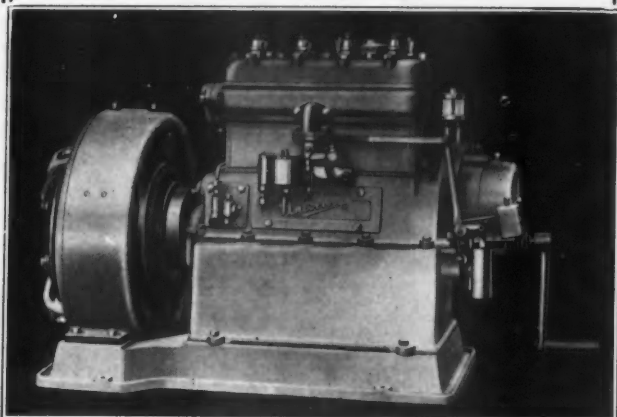
ORIGINAL PATENTED  
PIPELESS FURNACE

*—and SOME furnace,  
too, when it comes to  
heating the average  
eight to ten room house*

We are always looking for real live contractors or building material dealers to represent us.

The Homer is well advertised and sells easily. If you are interested, write us and we can show you where it will be dead easy for you to dispose of several carloads a season.

**Homer Furnace Company**  
Homer, Michigan  
141 Strong Ave.



## *Universal* 4 K W ELECTRIC GENERATING SET

The Universal 4 K W set is being specified for all new buildings requiring isolated electric service, because of its smoothness of operation, reliability and economy.

It has sufficient power to carry the overloads now imposed on small lighting plants. It can be used to supply current direct on the line 110 volts, or operate through storage battery as desired. Its capacity of 4000 watts gives ample power to carry lights, motors, and utensils, with 200-20 watt lamps if desired.

### CINEMA

The Universal is known among the moving picture trade as the ideal plant for operating picture machine and house lights of a small theatre.

### ARMY AND NAVY

Used over 1500 Universal 4 K W sets during the recent war.

### AT HOME

Many large farms, homes, and churches use one or more Universal sets to supply their current.

It will interest you to read how this best known of plants is constructed in our big especially equipped factory.

Send for Bulletin No. 30

**UNIVERSAL MOTOR CO.**  
OSHKOSH, WISCONSIN

## Thoughts on Home Building for Contractors

IT is conceded by practically everybody that a man owning his own home is a better citizen and a better employe than a renter. Rent is a breeder of discontent; always has been, always will be. A home owner is more loyal to the federal government, his state, his municipality, his employer, his friends and even his own family. He is out of the "floater" class. He isn't eternally trying to convince himself that our political, social and industrial conditions are all wrong because of a suspicion that the landlord is a rent profiteer.

Contractors and builders, master painters, master plumbers and mason contractors all know that the strongest talking point in favor of owning a home is the scarcity of dwellings and the high rents; also the irritating tendency frequently to increase rents.

Lots of people could be induced to build if they were approached right. Of course, most of them will at first scornfully reject the idea on the ground that a \$4,000 house now costs \$8,000. But that's easily answered.

Ask the man who puts forth that objection if his wages, in dollars, aren't at least twice what they were when the house could be built for \$4,000. If he is a mechanic or a laborer, it's pretty certain he will have to admit that they are.

If so, then why should he object to paying \$8,000 for a \$4,000 house? The reason he has to is because the men engaged in building houses, like himself, are getting \$8 wages instead of \$4.

It's all because we try to fool ourselves when we talk about the dollar. When the dollar buys a hundred cent's worth, a carpenter, for instance, receives wages of about \$4 a day; when it buys fifty cents worth, he receives about \$8 a day. Really he is getting the same thing either way, but the blacksmith or the quarryman, who wants a home of his own, and is getting wages on the same comparative basis, refuses to see it that way. He thinks he ought to have the \$8 a day, but, the carpenter, the plumber, the painter, the lumberman and the mason ought to still be satisfied with the old \$4, in order that he, the blacksmith or the quarryman, might still buy the kind of house he wants for 4,000 of the fifty-cent dollars he could pay for it.

It isn't difficult to make an intelligent, reasonable man see all this; in fact, most of them understand it now. Therefore, the time is ripe and all conditions favor a great home building and home owning campaign. Everybody connected with the building trades should get behind the movement and push. The newspapers can be depended on to help and employers of labor are keen for it.

Let's have a stabilized nation of home owners, and while nearly everybody is employed at good wages is the time to bring it about.



### Bridging Joists

ALL joists should be bridged as the specifications may call for. The bridging should be heavy enough so that two tenpenny nails can be used in each end without splitting the bridging. It should be cut and put in place by nailing the top end only, leaving the bottom end to be nailed after the floor is laid. In this way the flooring draws the joist into line, and when the bridging is nailed it braces and holds them in place. The nails should be started in the lower end before the bridging is put in place; then all that remains to be done is to drive them home after the floor is laid.

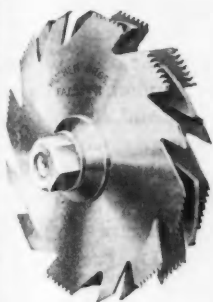


THE top of the handrail of stairs should be about 2 feet 6 inches from the center of the tread, measuring plumb.

## Another Reason Why Huther Brothers Dado Heads Are Better



Our fifty years experience in the making of higher grade saws has shown us how to construct a Dado Head that will operate with comparatively little attention year in and year out.



The saw consists of two outside cutters and enough inside cutters to perform the required cut, and is designed to facilitate the most intricate grooving.

The simple no-screw adjustment makes it easy to operate.

Send for one on approval, stating size required. You can return it at our expense if unsatisfactory. Write us for illustrated catalog.

**HUTHER BROS. SAW MFG. CO.**  
ROCHESTER, NEW YORK

## Concrete Mixer

The Low Down Automatic Concrete Mixer is a substantial, well-built mixer for every job that the average contractor may have. It is adapted to all classes of concrete work.

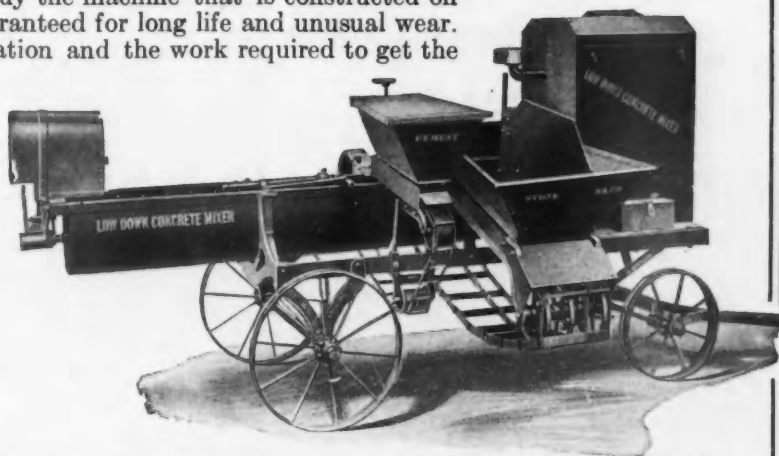
### You Need a Concrete Mixer

Every contractor does and you also need to make the best buy possible in order to make your money give the best investment. Buy the machine that is constructed on scientific principles and that is guaranteed for long life and unusual wear. Take into consideration ease of operation and the work required to get the material into feeding hoppers.

### The Low Down Concrete Mixer

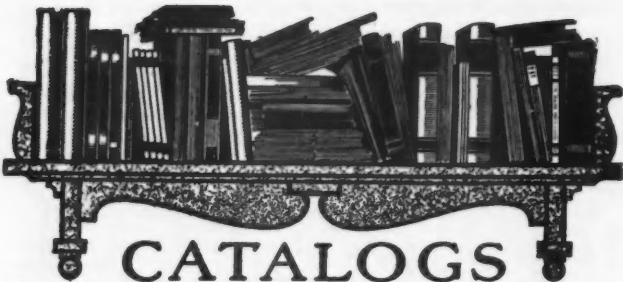
has several points of merit that we know could not fail to appeal to you. The Low Down CONTINUOUS Mixer supreme of all others in the mixer line.

Write us and learn of this profit-making, labor-saving little machine. Its simple and durable construction is bound to appeal to you. We sincerely urge you to write at once for catalog.



**ELITE MANUFACTURING COMPANY**  
ASHLAND, OHIO





## CATALOGS BULLETINS & BOOKS RECEIVED

The following literature, dealing with subjects of interest to builders is now being distributed.

"Nemco Presteel Lumber," a comparatively new product of the Northwestern Expanded Metal Co., Chicago, is described in the November issue of "Expanded Metal Construction," the company's monthly house organ. Nemco Presteel Lumber consists of channel and I-beam joists and studs.

"Triangle Mesh Reinforcement in Stucco Houses" is the title of a handbook on stucco construction, issued by the American Steel & Wire Co., Chicago. "Triangle Mesh Reinforcement for Buildings" is the title of another booklet issued by the company. Both books are instructive and well illustrated.

"Useful Data" is a handbook on reinforced concrete construction, prepared by the Corrugated Bar Co., Buffalo, N. Y. "Architects, engineers and contractors with this handbook can quickly arrive at the quantities of material and reinforcement required for a given building for the

purpose of estimating the cost," says the company's announcement. The book is bound in limp leather, and contains 216 pages and many illustrations. Price \$2.50.

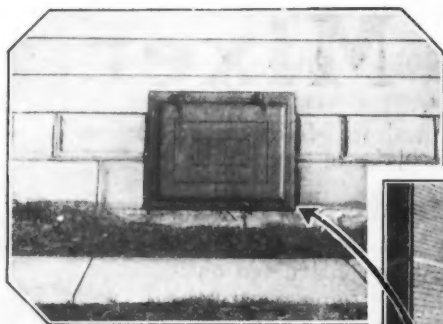
Saws, knives, files and saw fitting tools are listed in Catalog No. 19, issued by the Simonds Manufacturing Co., Fitchburg, Mass. The catalog contains 196 pages and cover and is extensively illustrated with half-tone pictures of the company's products. "How to File a Hand Saw" is the title of an instructive handbook on saw filing and setting, issued by the Simonds Company.

High speed concrete block and brick making machines are described by text and illustration in Catalog No. 6, issued by the Kramer Automatic Tamper Co., Peoria Heights, Ill. Not only are the machines the company makes described, but the catalog contains much good information on concrete block manufacturing.

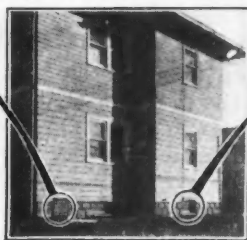
Saws—hand saws, band saws, circular saws for both cross cutting and ripping—are shown in the 1919 Catalog No. 18, issued by E. C. Atkins & Co., Indianapolis, Ind. The catalog is a large book, cloth bound, and contains 264 pages, well illustrated. With it the company is sending smaller folders, each devoted to some of the extensive list of the company's products.

"Effect of Vibration, Jigging and Pressure on Fresh Concrete" is the title of Bulletin No. 3, issued by the Structural Materials Research Laboratory, Lewis Institute, Chicago. The bulletin was compiled by Duff A. Abrams, professor in charge of the laboratory and shows the results of many tests of fresh concrete.

"Round Oak Pipeless Pointers" is a booklet containing hints and suggestions about installing pipeless furnaces, issued by the Beckwith Company, Dowagiac, Mich. It has sixteen pages, well illustrated, showing the parts of



With a Majestic—



—and Without it!

### Both in the Same House

Here, in one house, is a powerful illustration of the protective value of the Majestic Coal Chutes. The owner of this house has two coal bins. For one he uses a No. 101 Majestic Coal Chute; for the other, an ordinary frame and sash. Both have been in use the same length of time. The unretouched photographs tell the whole story.

A Majestic Coal Chute for the other coal-bin would easily have saved its cost in the repairs which will

have to be made. And at a conservative estimate it would have prevented \$100 in depreciation.

Every coal window should be Majestic-equipped. Write for latest catalog and specifications. Working drawings gladly furnished.

**The Majestic Company**  
402 Erie Street      Huntington, Ind.

# Majestic COAL CHUTE

# STEWART MIXERS

**BUILT ON THE  
SQUARE  
SOLD ON THE  
SQUARE**



## When You Buy a STEWART CONCRETE MIXER—You—

- + **ADD** to your present profits, prestige and business.
- × **MULTIPLY** your efficiency and ability for doing work.
- ÷ **DIVIDE** your profits from your losses.
- **SUBTRACT** delays, poor mixing and repairs.

### AND THE RESULT—

= **EQUALS** bigger profits and more work.

**STEWART MFG. CO.**  
153 RATH ST., WATERLOO, IOWA

Write for catalogue showing full line of Wood Working Machinery for Carpenters and Builders. Also Bargains in second hand Machinery.



## CHICAGO MACHINERY EXCHANGE

1215-1223 WASHINGTON BOULEVARD

CHICAGO, ILLINOIS

the furnace, together with a number of buildings equipped with it.

**"U-Turn-It Housing System"** is a sixteen-page booklet describing a unique revolving housing device, manufactured by the U-Turn-It Housing Corp., Buffalo, N. Y. The many illustrations show how the device which converts a living room into a bedroom or kitchen is installed and operated.

Practical information for the washing machine buyer is contained in compact form in a bulletin issued by the Voss Bros. Manufacturing Co., Davenport, Iowa. The advantages of the washing machine, as well as its exact application, are shown by illustrations in this 26-page booklet.

**"Pozzo"** is the title of a sixteen-page booklet issued by the American Pozzolana Co., Indianapolis, Ind. The booklet is made up of reading matter entirely, describing the product, an Italian process stucco, and contains some testimonials.

**"Pneumatic Systems,"** issued by the B. F. Sturtevant Co., of Boston, Mass., is an interesting eight-page pamphlet showing the advantages of the use of stationary pneumatic systems for the removal, conveying and collection of dust and other materials in manufacturing concerns.

**"The Evans Vanishing Door"** is the subject of an eight-page folder issued by W. L. Evans, Washington, Ind. Four pages are devoted to detail plans showing the construction of this device.

**"Smith Non-tilting Mixer"** is described and illustrated in detail in an exceptionally attractive booklet, issued by the T. L. Smith Co., Milwaukee, Wis. This 56-page booklet is printed on heavy paper, is well illustrated and contains an artistic cover page. Another booklet describes the Smith pumping machine, while a third describes the Smith Tilting Mixer.

**"The Concrete Builder"** is a booklet describing the various uses of concrete, published by the Portland Cement Association, 111 W. Washington St., Chicago. It contains 24 pages, well illustrated.

**"The Progress of Warm-Air Furnace Research"** is set forth in a bulletin by A. C. Willard, professor of ventilation and heating at the Engineering Experiment Station of the University of Illinois. The bulletin describes in detail the work carried on at the station along this line.

All kinds of barn equipment are described and illustrated in a catalog issued by F. E. Myers & Bros., Ashland, Ohio. The book has an attractive cover.

**"The Cypress Pocket Library"** is a unique collection of handbooks on various types of construction in which cypress is used. It is issued by the Southern Cypress Manufacturers' Association. Each book contains illustrations and a large drawing. A pamphlet on the "Manufacture and Uses of Cypress" by Dr. Herman von Schrenk is also published.

**"Storm-Proof Door Hangers and Rails"** is the title of a folder issued by the National Manufacturing Co., Sterling, Ill. This folder contains large illustrations of the hanger the company makes with descriptive text.

**"How to Get Distinctiveness"** is the title of a folder issued by the American Magnesia Products Co., Chicago. It deals with the various uses of Kragstone stucco and contains several illustrations showing its application in building.

✦  
WHEN the sheathing of the roof is being put on a good joint should be made along the line of the hips and valleys, so the lining of the valley will lie solid, and so that there will be solid wood at the angle of the hip, to hold the nails of the shingles or slate.



## TWO BIG MONEY- MAKERS

How many homes in your own community are still struggling along with the old-fashioned outdoor toilet, risking pneumonia by winter and typhoid by summer, with discomfort all the year round,—all because of the mistaken belief that an elaborate sewage system and considerable money are required for indoor toilets?

The Purity Waterless Closets will convince your prospects of the contrary. They come in two designs, equally sanitary and convenient, at prices which enables you to make a good margin of profit and yet give your customer a bargain. The Purity Junior—(square cut) has a vent to chimney, no other installation work required, the sewage being immediately decomposed and sterilized by chemicals in the container which is emptied only when full; perfectly odorless and sanitary. The Purity Senior is equipped with large purification tank, also vent from bowl, the chemical destroys odor, changing waste to water; easily installed, operated, and emptied without inconvenience; as attractive in appearance as the most expensive water closet.

*Write without delay for our agency proposition—it will interest you.*

**THE NIGHT COMMANDER LIGHTING COMPANY, JACKSON, MICHIGAN, U. S. A.**



## The Insurance that Prevents Loss

Your customer will doubtless have his new barn insured against loss by fire, but a ventilating system will protect him against far more serious

losses. By supplying the stock with plenty of fresh air, losses from tuberculosis, pneumonia and other diseases are prevented. By carrying off excessive moisture and keeping the barn drier, depreciation of the building and equipment is decreased. These losses, though gradual, are just as real and are not reimbursed by insurance.

A King System pays dividends instead of running into expense for premiums. Its first cost is the only cost.

When planning a barn for a client, point out these things. He will readily see the importance of having the King System put in as the building goes up. By doing so he will get 100 per cent service from his barn.

Let us explain our plan. Ask for our Book on Barn Ventilation—it should be in your files for reference.

### KING VENTILATING COMPANY

1202 Cedar Street

(On the Jefferson Highway)

Owatonna, Minn.

Ventilating Engineers for Farm Buildings and Creameries



Be sure this diamond King trade-mark is on the ventilating system you buy.

# KING SYSTEM OF VENTILATION

"Makes Good Barns Better"



The King Aerator drawing moisture out of a building. The steam can easily be seen in cold weather. King Aerators can be installed alone and the entire System added later as the farmer may decide.

## "MILCOR" VENTILATORS

For Barns and Creameries

Are unquestionably right in every detail. They have beauty, capacity, and utility. They are the easiest to install; their aluminumized finish will last longest; their design best adapts itself to the farmers needs. When the foul air flues of a complete ventilating system are connected up with it, plenty of room is left for hay track. Contractors will find their customers entirely satisfied with "Milcor" Vents.

### MILCOR Complete Ventilating Systems

Ask for Particulars about our Ventilators and Ventilating Systems

are planned for each individual barn or creamery, to conform to the various kinds of construction and shape of building. Complete blue prints are furnished and whenever the ventilating system is installed in strict accordance with our plans the system is unreservedly guaranteed. Ask your friend the lumber dealer or hardware dealer if our guarantee is O. K.



## Milwaukee Corrugating Co.

MILWAUKEE, WISCONSIN

Branch at Kansas City, Mo.

Minneapolis Sales Office, Lumber Exchange



### The Calendar Crop

The beginning of each new year brings to the office of the AMERICAN BUILDER a new crop of calendars. They are sure of a glad welcome because of their many artistic and novel features. Listed below are some that have been received, with a short description of each:

**Radford Publications**—Twelve sheet, four-color offset, "farm building activity" calendar showing various types of farm building work, including homes, barns and garages. This calendar is distributed thru the best lumber dealer in each community, and he is also supplied with twenty sheets of blue prints showing in detail the construction of the buildings illustrated.

**John Boyle & Co., Inc., New York City**—A large full-page map of Europe in colors, showing the new and old boundaries as changed by the great world war. A small corner map shows the limits of the new nation of the Czecho-Slovaks. The calendar is designed to show exporters the new fields for cotton duck and other Boyle materials.

**Universal Portland Cement Co., Chicago**—A twelve-page big-figure calendar, each page showing the current month and a week or more of the preceding and succeeding months.

**The Youngstown Sheet and Tube Co., Youngstown, Ohio**—Six-sheet, two-color poster calendar printed on both sides, each sheet containing current month in big figures and large illustrations of some phase of the industry, as well as forms of employees' recreation. The sequence of months is maintained by reversing the calendar at the end of six months.

**Lehigh Portland Cement Co., Allentown, Pa.**—Single sheet with big-feature calendar pad, in alternating colors. Main design shows Oriental "Lee-Hi" pointing out trade

mark of concern. Each sheet of calendar pad contains small calendars of month preceding and succeeding, also outline map of United States showing location of mills.

**General Electric Co., Schenectady, N. Y.**—Twelve sheet, big-figure calendar in colors, with photographs of electrical appliances. Each picture has drawings around border depicting some scene in which electricity plays an important role. The month preceding and succeeding are shown in smaller figures.

**Bergstrom Stove Co., Neenah, Wis.**—Single sheet with calendar pad. Neat design indicating the two specialties, stoves and furnaces.

**Truscon Steel Co., Detroit, Mich.**—Twelve sheet, two-color calendar. Each sheet contains picture of building or project in which Truscon products were used, also calendar of current, preceding and succeeding months.

**The Sandusky Cement Co., Cleveland, Ohio**—Single sheet with calendar pad. Set in frame design showing ornamental cement construction, is a picture of residence in which "Medusa" brand cement was used.

**F. E. Myers & Bro., Ashland, Ohio**—A long wall hanger similar to the style of former years, illustrating the full Myers' line of pumps, hay unloading tools, etc. This type of calendar has been used by the firm for thirty years and is distributed every year to thousands of dealers and friends. The calendar bears the familiar slogan, "Take off your hat to the Myers."



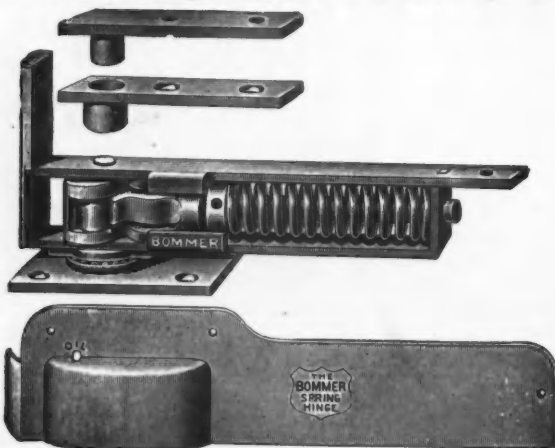
### How to Lay Shingles

IN laying shingles the essential points are that the shingles be not too wide, that each shingle receive two nails, that they be not laid too much to the weather, that the joints be well broken, that the shingles have a good lap and be fitted

# BOMMER

## Floor Surface Spring Hinge

Double or Shingle Action, Holdback, Ball Bearing. Every moving part of this hinge can be oiled from a single hole on outside of side-plate.



The most durable hinge of its type; holds the door open when swung to 90 degrees at either side

Your Hardware Merchant Can Supply Them

Bommer Spring Hinge Company, Brooklyn, N.Y.



Stained with Cabot's Creosote Stain  
C. M. Hart, Architect, Bay Shore, N. Y.

### Stained Shingles

The Warmest, Most Artistic and Most Economical of all House Finishes

Wood shingles are two or three times warmer than the gummed paper substitutes, and they are cheaper, last longer and are incomparably more artistic and attractive. When stained with the soft, moss-greens, bungalow-browns, tile-reds and silver-grays of

### Cabot's Creosote Stains

they have a richness and beauty of tone that no other finish can equal and the creosote thoroughly preserves the wood. Use them also on siding, boards, sheds and fences. Anyone can apply them with best results at least expense.

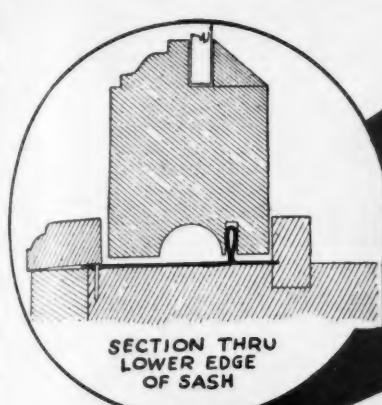
### Cabot's "Quilt"

makes floors and partitions sound-proof by breaking up the sound-waves and absorbing them. It makes walls and roof cold- and heat-proof by a cushion of minute dead air spaces that prevents the conduction of heat. From 28 to 50 times as efficient as cheap building paper.

You can get Cabot goods all over the country  
Write for samples and name of nearest agent.

### SAMUEL CABOT, Inc.

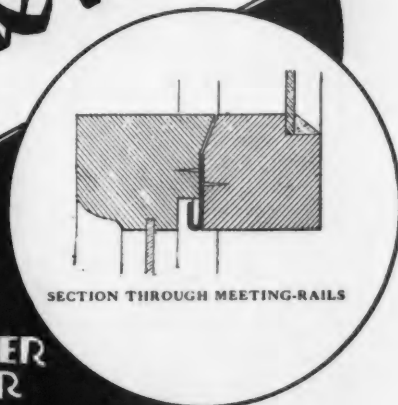
Manufacturing Chemists  
1133 Broadway, New York 24 W. Kinzie St., Chicago  
Cabot's Brick Stains, Stucco Stains, Conserve Wood Preservatives, Damp-proofing, etc.



"THE EASIEST STRIP  
ON THE MARKET  
TO INSTALL"

made entirely  
of metal

**Allmetal Weatherstrip**



WRITE FOR  
OUR SPECIAL OFFER  
TO THE CARPENTER

**ALLMETAL WEATHERSTRIP CO.**  
124 W. KINZIE ST. CHICAGO

# 3 men <sup>and</sup> a Hodges



*will do the work*

In the time it would ordinarily take double that number to finish it. Machines do better work. Time saved is money saved and labor conserved. You cannot afford to be without a Hodges Electric Stucco Machine. It will project stucco, plaster, concrete aggregate or waterproofing on any building surface neatly and effectively. It can be attached to any electric light socket; weighs only 30 lbs. and hangs from operator's shoulder.

Write for our folders with views of the machine and its work.

**Hodges Stucco Machine Works**

Union Central Tower

Dept. A. B.

Cincinnati, U. S. A.





close along any ridges, hips, etc. Shingles should not be over seven inches wide to make a good roof, and any over this width should be split in two. Each shingle should receive two nails, regardless of its width. Shingles should not be laid more than five inches to the weather, and 4½ inches make a better roof. In laying shingles the joints should be broken and the shingles lapped enough so that there is no danger of the water following under the shingle to the joint in the course below;

care should be taken to break joints with the last two courses laid so that, in case a shingle should split under a joint, the split will not come over a joint in the course below.

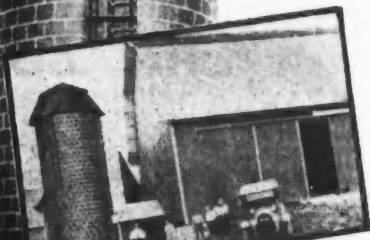
✦  
To shingle a valley straight place a studding, the width it is desired for the valley, in the angle forming the valley, tacking it in place. Shingle up tight to each side and when thru remove the stud and you have a nice straight valley.

# → BUILDERS

YOU CAN MAKE  
\$75 to \$100  
ON EVERY

**HINGE-DOOR  
LADDER  
SILO**

WRITE  
TO DAY  
FOR OUR  
OFFER



Hundreds of silos are going to be built this season. You are in a position to make a nice profit on this business in your vicinity.

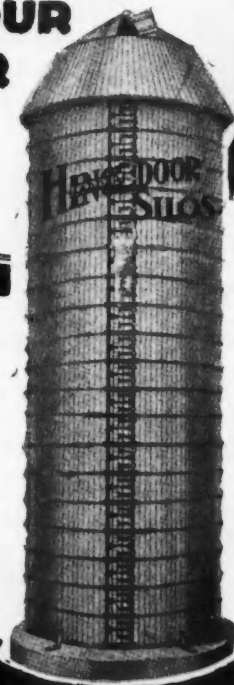
Hinge Door Silos are easy to sell because of their exclusive features that have an exceptional value.

Supplied in wood stave or glazed vitrified tile.

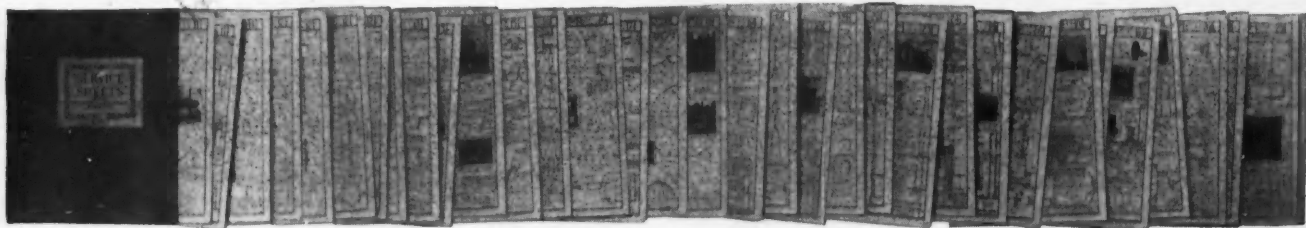
Write today for our special proposition to builders.

**LANSING SILO CO** Lansing, Mich.

Factories: Lansing, Mich. East St. Louis, Ill.



## DO YOU WANT UP-TO-DATE DETAILS OF CONSTRUCTION DATA AND SPECIFICATIONS?



Above illustration, 1-22 actual size, showing some of the seventy-eight "Service Sheets" published to date.

"SERVICE SHEETS" are detailed data sheets showing the correct and most efficient use of up-to-date building materials. They are prepared by expert draftsmen, under the supervision of Architects and Engineers who are specialists in their line. Each sheet covers a subject or phase of a subject by means of details carefully drawn to scale. Sample specifications and other useful data is presented on the backs of sheets. A complete cross index accompanies each Edition.

JUDGE FOR YOURSELF, let us send you names of users, typical of the thousands of Architects and Engineers in private practice, and in the employ of Railroads, Industrial Plants, Contractors, Builders, Municipalities and Governments located all over the world. Save time, trouble and expense—write today for full particulars and list of subjects covered.

ARCHITECTURAL SERVICE CORPORATION, 162 N. 6th STREET, PHILADELPHIA, U. S. A.

Murphy  
**Univernish**  
The Universal Varnish

Dark Oak  
Light Oak

Furnished clear and in

Bog Oak  
Mahogany

Walnut  
Green

**Murphy Varnish Company**

NEWARK

Franklin Murphy, Jr., President

CHICAGO

Dougall Varnish Co., Limited, Montreal, Canadian Associate

# "Paid For Itself On Four Jobs"

**H**ERE are three letters written in three different years by Mr. G. E. Dodge, one of the well-known contractors of New England. What he has to say about the Eveready Saw Rig should be convincing proof to any man.

This remarkable portable rig will do all of the woodworking on any job—and do it far better, quicker and cheaper than it could possibly be done by hand.

It Joints, Bores, Sands, Grinds, Rip-Saws, Cross-Cuts, Jig-Saws, Mitres, Bevels, Tenons and Rabbits.

Light enough so it can be moved anywhere rapidly, yet sturdy enough to stand years of the hardest usage.

Takes up only 5 sq. ft. of standing space. Powered by simple, dependable 5 H. P. gasoline engine.

Let us send you "Book of Evidence." Tells all about the Eveready. It's free. Write.

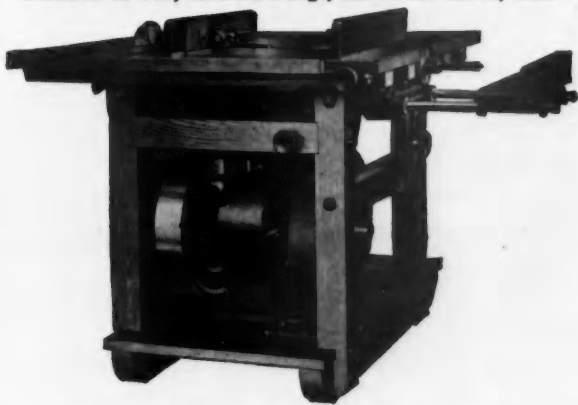
## Oshkosh Mfg. Co.

805 Amber Street

Oshkosh, Wisconsin

SOLD BY

New York Branch, 154 W. 38th St., New York City  
R. H. Hyland & Co., 323 N. Wells St., Chicago, Ill.  
Garfield & Co., Hearst Bldg., San Francisco, Cal.



# OSH KOSH Eveready Saw Rig

G. E. Dodge  
Carpenter & Builder  
Aug. 12, 1916

Oshkosh Mfg. Co.,  
Oshkosh, Wisconsin.

Gentlemen:—

The Eveready Saw Rig is the greatest convenience and labor-saving equipment any up-to-the-minute contractor can have on the job. It means perfect joints and speed. It does all you claim for it and does it quick and clean.

It has paid for itself on four jobs in saving of labor and material.

Respectfully yours,

G. E. Dodge.

P. S.—You may use my name for advertising if you wish.  
G. E. D.

G. E. Dodge  
Carpenter and Builder  
Sound Beach, Conn.  
March 14, 1917

Oshkosh Mfg. Co.,  
Oshkosh, Wis.

Gentlemen:—

Replying to your letter, I built the house in the photograph in 30 days by using the EVEREADY. I started excavating May 31st, 1916, and finished the job complete July 31. The tenant moved in there were 24 working days.

The EVEREADY enabled me to complete this house in one month. Because I had the EVEREADY, I could use up all scrap lumber. This saved me considerable.

I did not have enough waste lumber to pay to cart away at the end of the job. I used to have a lot of waste lumber from 2 to 6 feet long. Now I put these on the EVEREADY and saw them into all sizes necessary for blocking, bridging and more. The EVEREADY averages better than two extra men day in and day out right through my jobs.

I am very pleased with your machine and you may send anyone to me, and if I can't show them in 10 minutes where they can save money by the use of the EVEREADY, I'll pay their expenses to Stamford.

Very truly yours,  
G. E. Dodge.

General Contractor and Builder  
Stamford, Conn., May 20, 1919

Oshkosh Mfg. Co.,  
Oshkosh, Wisconsin.

Gentlemen:—

Please change my address from Sound Beach, Conn., to 288 Atlantic Street, Stamford, Conn., as that is where my office is located.

In regard to the EVEREADY SAW RIG I would be able to write quite a story should I tell of the different things which I have done on this machine.

This machine has been in use on the jobs ever since I purchased it from you in the spring of 1916. I would not know how to continue in business without my saw rig and concrete mixer.

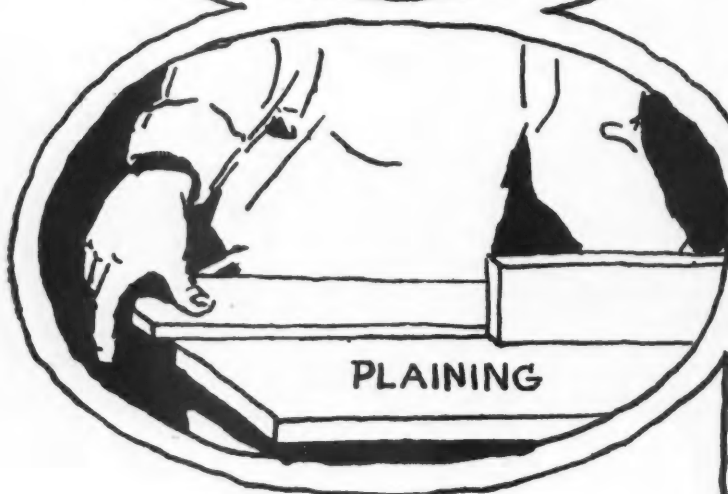
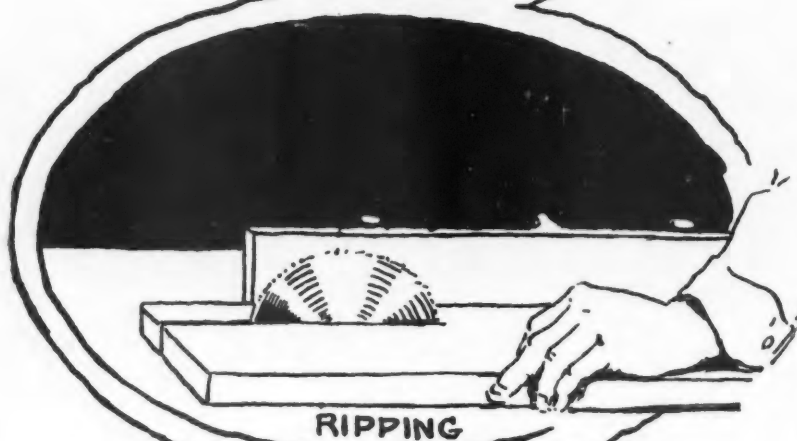
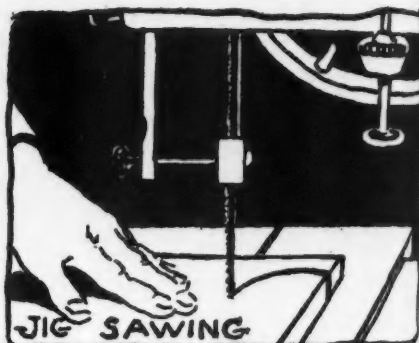
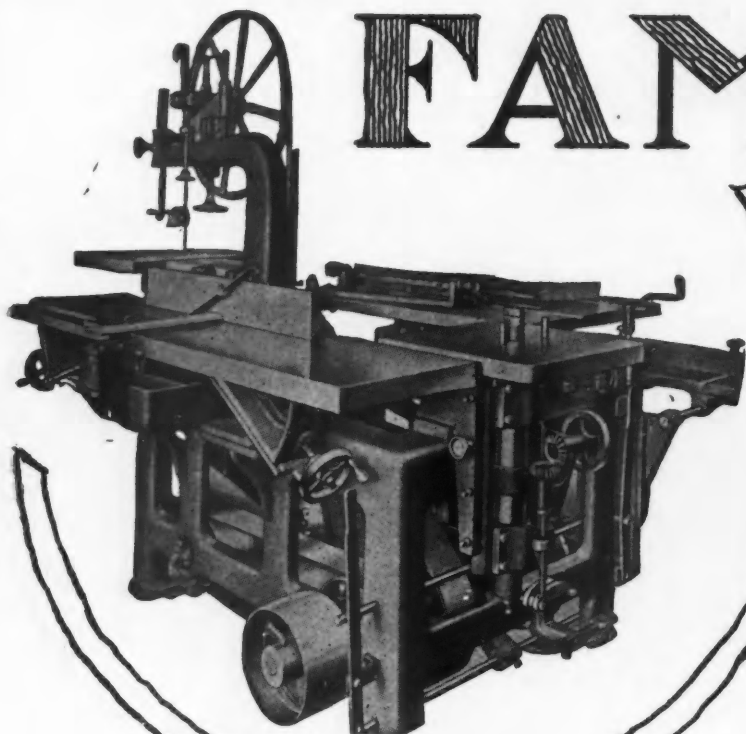
In my travels around the country in the building business I have not seen anything in the machinery line, considering capital invested, that can take the place of the Eveready Saw Rig and Oshkosh Low Loading Cement Mixer.

I poured 65 yards of concrete for a cellar foundation in one day last year with the Oshkosh Low Loader.

These two machines are my greatest asset in the building game.

Yours very truly,  
G. E. Dodge.

# FAMOUS

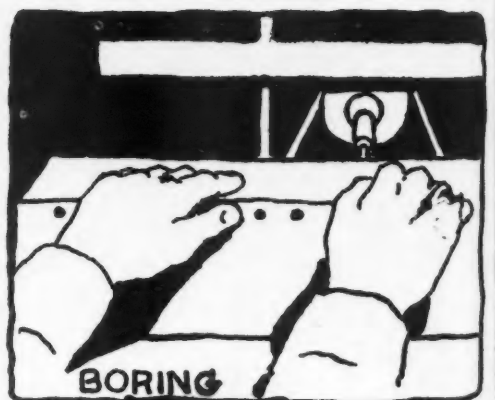


It is better to invest your money in a high grade machine that will efficiently do many kinds of work with the use of comparatively few men

Than—

to rely upon hand labor which is slower, more expensive and at this time, is *not dependable*.

Read what the 31 Famous Woodworker can do for you.





# WOODWORKERS

The regular Famous 31 Universal Woodworker equipment includes—

**BAND SAW**, one  $\frac{3}{8}$  in. saw blade, brazing tongs and clamp, anti-friction roller guide above and plain guide below table, one drive belt, and one wrench.

**JOINTER**, one 12 in. pair of straight knives with bolts, tilting gauge, two hold-down springs, guard, one drive belt and wrench.

**SAW TABLE**, one 12 in. cut off saw and wrench, one tilting rip gauge, two mitre cut off gauges, and drive belt.

**SHAPER**, one pair of 2 in. straight knives, collars, one wrench and drive belt.

**BORER**, one drive belt.

Each attachment is operated independently and without interference one with another. To operate any one attachment, it is not necessary to start up or stop another. Convenient levers are provided for starting and stopping each attachment independently.

We also furnish any or all of the following attachments: Hollow Chisel Mortiser, Tenoner, Panel Raiser, Power Feed Planer, Resaw, Special Make-Up Head, Coving Head, Dovetailer, Knife Grinder, Tool Grinder, Drum and Disc Sanders, Felloe Rounder, Tongue and Pole Rounder, Spoke Tenoner, Wheel Equalizer and Rim Borer.

---

The first cost is your only cost with a 31 Universal Woodworker. Within a short time you have paid yourself back the purchase price of the machine and—*from then on it's all profit.*

It is wonderful the amount of work this compact, well-built, reliable machine will turn out for you in a day. One man working on a Famous Woodworker can do up more work than four can do by hand labor. Four men working on a Famous Woodworker can do as much as ten or twelve men.

Take this sure way to dollar saving and dollar making by providing yourself with a Famous Woodworker to fit your needs. We have several types to select from; just let us know your requirements.

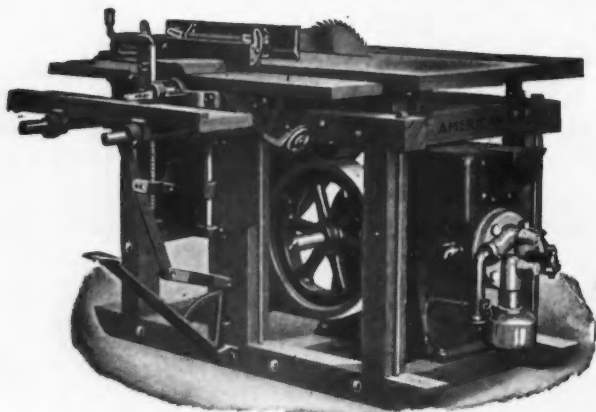
There are other good types of woodworkers on the market but you will find none that will give you any better service and make you any more money than the Famous Woodworker.

Send for our descriptive catalog.

---

## The Sidney Tool Machine Co.

Sidney, Ohio



"American" Variety Woodworker with Gasoline Engine  
Built In; Also Made with Self-Contained  
Electric Motor or for Belt Drive

# "AMERICAN"

## CONTRACTORS' MACHINERY

Today, the big question is "what will it do?"—not "what does it cost?" To be adequate to every emergency is the essential thing.

"American" Machines are built with the idea of doing more and better than others—not alone at the outset, but after months of service—not alone under average conditions but also under the spur of super-effort.

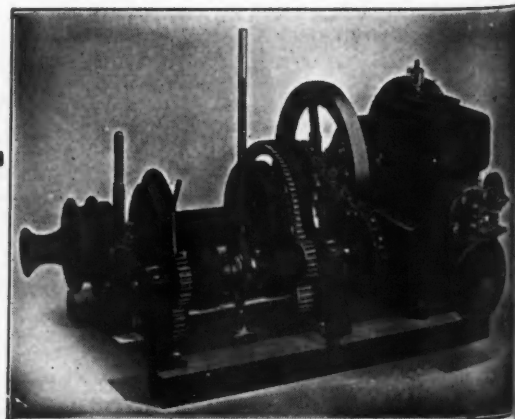
With machines built with such ideas in view, cost must be secondary to quality. To build a machine that can be depended upon under all conditions, costs more—but the results justify the higher cost, as hundreds of users of "American" Machines testify.

You are taking no chances with any "American" machine. They are built and sold on honor.

*Write for Bulletins 10 and 77.*

## American Saw Mill Machinery Company

HACKETTSTOWN, N. J., 60 Main Street  
NEW YORK, N. Y., 1360 Hudson Terminal



"American" No. 4 Hoist with Self-Contained Gasoline  
Engine. Also Made with Built-In Electric  
Motor, or for Belt Drive

ngine



Nationally Known  
Nationally Used

**Long-Bell**  
Products

Southern Pine Lumber  
and Timbers  
Oak, Oak Flooring, Gum  
California White Pine  
Lumber  
California White Pine  
Sash and Doors  
Screen Doors, 3-Ply Veneers  
Creosoted Lumber and  
Timbers  
Creosoted Posts, Poles  
Piling, Ties, Wood Blocks

## A Dependable Guide to Good Lumber

Southern pine lumber is a highly standardized product and there are no secrets about its manufacture. No lumber company has an exclusive right to trees, machinery or men that gives it a monopoly on excellence. Many makers of Southern pine lumber may turn out boards and timbers that are equal in quality.

Yet—there's a vast difference in lumber as every user knows.

The reason—

*Care in manufacture and grading.*

The Long-Bell Lumber Company, largest manufacturer of Southern pine in the United States, has been for nearly 30 years trying to improve its product. So successful were the efforts that this company lately determined that all users of lumber, large or small, should be able to identify its products as a guide to careful buying. Hence this trade marked name plainly branded upon all boards and timbers:

**Long-Bell**  
THE MARK ON QUALITY  
**Lumber**

This brand is an assurance of *uniform quality*, an announcement to all that this manufacturing concern has taken special pains to produce an article on which it is proud to brand its name.

*Ask your dealer for Long-Bell brand*

**The Long-Bell Lumber Company**  
R. A. LONG BUILDING KANSAS CITY, MO.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER





*Mica-The Wonderful Rock*

# MICA

makes ideal rock surface protection when used on-

# Carey

## ROOFINGS

THE PHILIP CAREY COMPANY  
CINCINNATI, OHIO  
STAND ROLL ON END

THERE are three things that make Carey Mica-Kote a superior Roofing.

The felt which forms the base is a Woolfelt of extra quality, made in the Carey mills especially for roofing purposes.

The Asphalt used to saturate the felt and build up the body of the roofing is the purest grade of Asphalt refined and tempered by special Carey Processes.

The crushed Mica which is used for surfacing is the rock well known as isinglass—the same material you have seen defy heat in stove doors.

Mica makes the roofing spark-proof. Mica stands three thousand degrees of heat. It is the best insulating material known.

Tough, durable, weather-resisting, fire-resisting, Mica-Kote Roofing will give you long service at astonishingly low cost. Made in four weights. Ask us about them.

*"A Roof for Every Building"*

## THE PHILIP CAREY COMPANY

510-530 Wayne Ave., Lockland

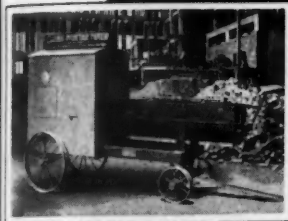
CINCINNATI, OHIO

BRANCHES IN LEADING CITIES

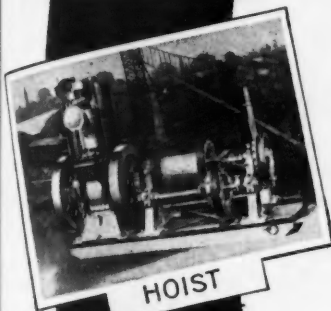


## Portable Saw Rigs

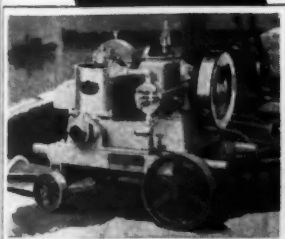
*Manufactured in eight sizes, with power  
"Built in and Under the Table."*



MORTAR MIXER



HOIST



BILGE PUMP

**Mortar Mixer** will mix enough mortar for forty bricklayers—driven by gasoline engine or electric motor power.

**Triplex Pump** for road pumping work either single or double pump units. Also Piston and Centrifugal Pumps.

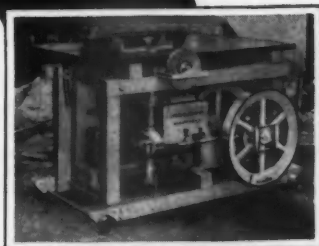
**Builders' Hoist** for operating Double Cage Material Elevator. Manufactured in three sizes, operated in connection with kerosene engine or electric motor drive.

**Bilge Pump** Capacity 3000 to 6000 gallons per hour. Three and four inch sizes.

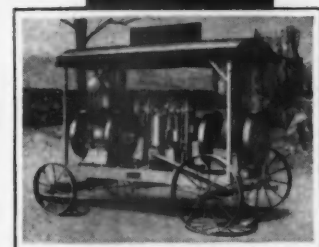
Write for our complete catalog.

**C. H. & E. Manufacturing Co.**

322 Mineral Street  
Milwaukee, Wis.

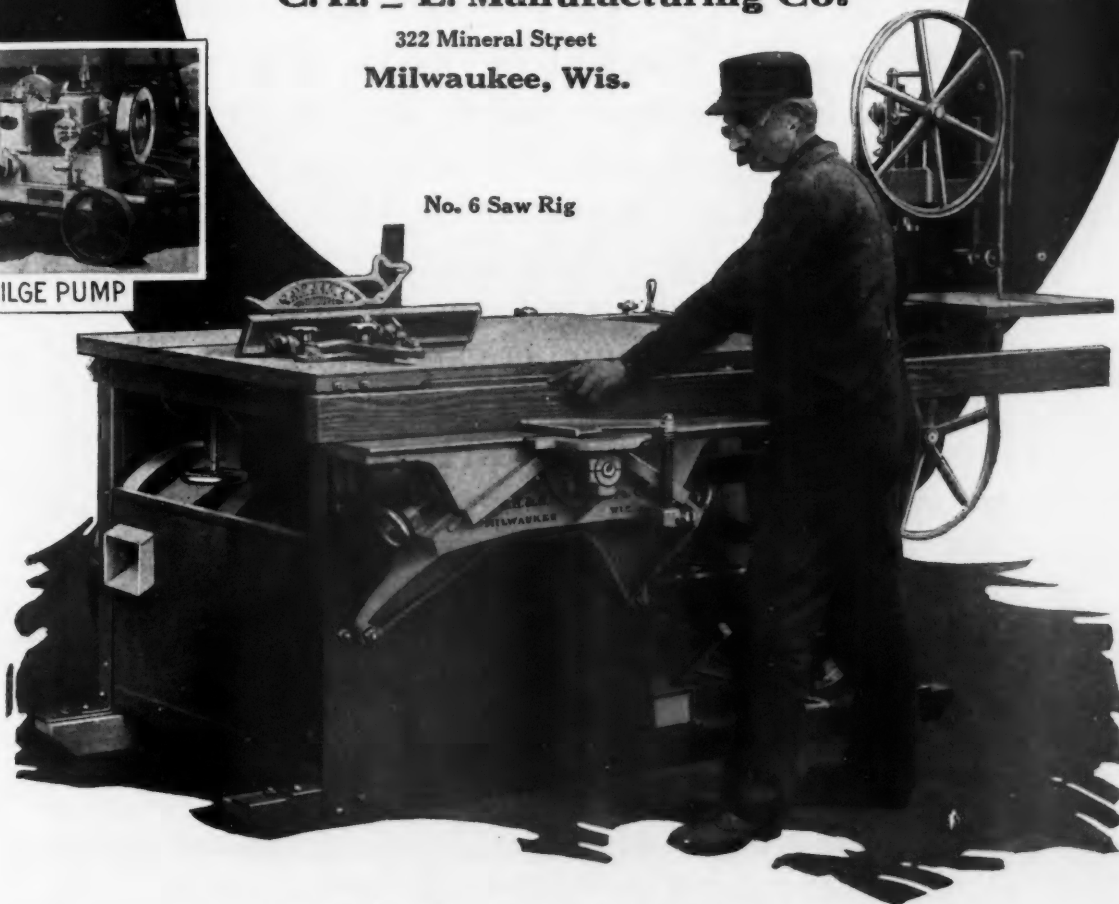


SAW RIG



TRIPLEX PUMP

No. 6 Saw Rig





## Severe service conditions demand *better material*

For great steel mills and industrial plants, the metal which goes into roofs, siding, monster stacks and other structures, must *resist rust* to the highest possible degree. In many industrial regions, the action of destructive acid fumes on metal is added to the corrosive influences of the weather. For lasting building construction, to save costly replacements and repairs, and for the long service in sheet metal that spells greatest economy, *Keystone Copper Steel* is demanded.

### American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

DISTRICT SALES OFFICES

Chicago Cincinnati Denver Detroit New Orleans New York Philadelphia Pittsburgh St. Louis  
 Export Representatives: UNITED STATES STEEL PRODUCTS COMPANY, New York City  
 Pacific Coast Representatives: UNITED STATES STEEL PRODUCTS COMPANY, San Francisco, Los Angeles, Portland, Seattle





THOSE who have seen the evidence of conclusive *service* tests, know that sheets of high grade steel alloyed with copper *do resist rust* and give long and substantial service from acid fumes and weather's wear and tear.



Every sheet of *Keystone Copper Steel* is designated by the above special mark. Look for it. We will gladly send any builder literature describing this remarkable product.

*Keystone* quality is supplied in Black and Galvanized Sheets, Corrugated Sheets, Formed Roofing and Siding Products, Tin Plates, Roofing Terne Plates, Fire Door Stock, etc.

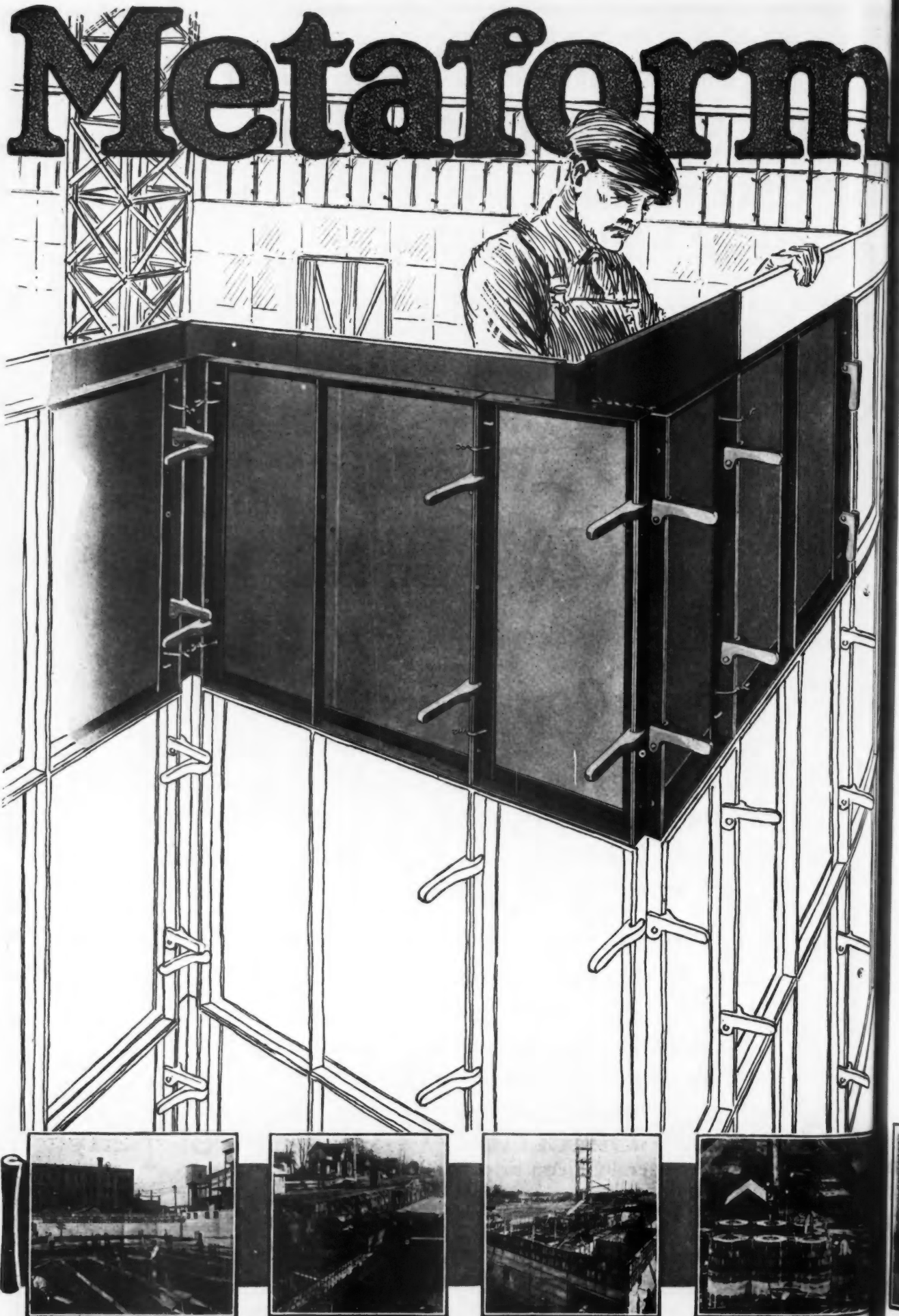
## American Sheet and Tin Plate Company

General Offices: Frick Building, Pittsburgh, Pa.

MANUFACTURERS OF

Sheet and Tin Mill Products of every description, including Black Sheets, Galvanized Sheets, Tin and Terne Plates, Electrical Sheets, Corrugated and Formed Roofing and Siding Materials, Special Sheets for Stamping.

Wellsville Polished Steel Sheets, Automobile Body Sheets, Deep Drawing Sheets, Stove and Range Sheets, Black Plate, etc.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# Methods

## —Increase Profits

**Bigger Profits!**—they are tied up in the handicaps you strive against on every job.

You want speed—more speed—faster construction—for time means money! Lower labor costs; less material wastage—there's where the extra profits are.

Study these facts about Metaform equipment:

**Metaforms Cut Labor Costs.** A few common laborers are substituted for several skilled form carpenters. Two men can erect the simple Metaform units into a complete set-up in a shorter period than it would take several times as many carpenters to build a wood form of the same area.

**Metaforms Eliminate Lumber Waste.** As against the twenty-five per cent wastage of expensive lumber which wood forms entail on every job, Metaforms are permanent equipment, practically everlasting and can be used again and again without affecting their utility.

A complete answer to every form problem on concrete structures of every size—circular walled as well as straight—is found in the Metaform patented system of standardized, interlocking, self-aligning metal forms.

The constantly increasing use of Metaforms in the hands of the most progressive contractors in every part of the country testifies to their superiority over wood forms—testifies to the fact that their savings are substantial and sure.

## Metal Forms Corporation

1430 Booth St.

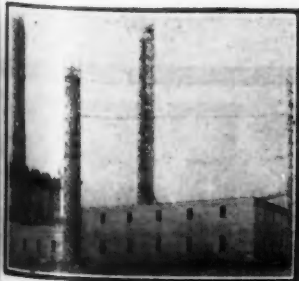
Milwaukee, Wis.

**Metaforms Speed Up Construction.** Metaforms may be set up in hours where it would take days to erect wood forms. They require no cluttering, work-obstructing maze of props and braces. They allow the contractor to start pouring sooner, and they are always on the job, ahead of the pouring.

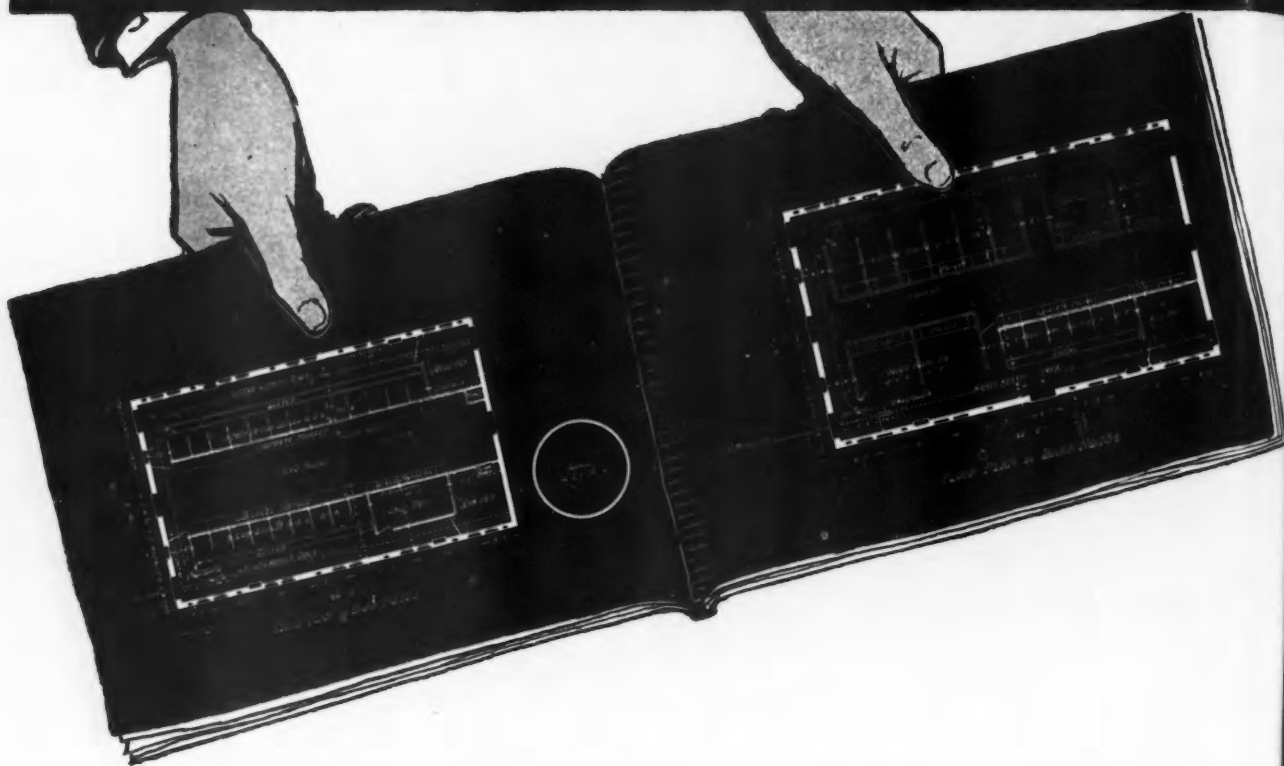
**Metaforms Do Better Work.** Metaforms are absolutely accurate. They turn out more exact work and better finished surfaces. With Metaforms, a wall can be carried upward in perfect plumb without a single wave or variation in thickness to any height desired.



Metaform methods on straight wall and on circular concrete construction are completely described in the two Metaform books. These books are worthy of a place in every contractor's files. Write for them to-day.







## This Book of Barn Plans Free

This book will be of much practical value to every builder who builds barns. It will familiarize him with modern methods and practices in barn construction, and enable him to anticipate the wants of farmers.

Complete detailed drawings of a modern, sanitary barn are shown, with floor plans of several barns of various sizes. While these will not meet the needs of all farmers, they enable the builder to determine the space required to house the stock most economically and practically.

# PORTER FREE

# Special Blue Prints Furnished

This book is issued in conjunction with our free planning service. We maintain a department which furnishes to builders detailed blue prints prepared to fit specific requirements.

*There is absolutely no expense or obligation involved*, and the long, varied and practical experience which our experts have had in designing barns for all localities insures the most modern and approved methods. The floor space will be utilized to the best advantage and your own ideas will be incorporated if desired.

For many years Porter Barn Equipment has been known to farmers for its simplicity of design, strength of construction and economy and convenience of operation. Barn plans drawn by us combine staunch construction and perfect sanitation with convenient arrangement and economy in the use of space.

If you would become known as the leader in barn building in your territory, write for this free book and become acquainted with Porter Free Planning Service.

**J. E. PORTER CO.**

786 Guion St.

Ottawa, Ill.



J. E. PORTER  
CO.,  
786 Guion Street  
Ottawa, Ill.

Gentlemen: Without any expense or obligation on my part, please send me your free book of Modern Barn Plans, including catalogs of Hay Tools, Door Hangers and Barn Equipment.

Name .....

Address .....

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

# PLANNING SERVICE



## Winter Has Taught This Lesson

That homes that were not Chamberlin Metal Weather stripped were hard to keep warm. For draughts were ever present—cold air currents sifted in around the doors and windows. Costly heat escaped increasing fuel consumption.

Chamberlin Equipment prevents all this. It pays a profit in fuel economy and what's more it assures comfort and even temperature—a vital factor in the health of the family. For it effectively seals up the cracks around the doors and windows—keeps the cold out and the heat in.

Because Chamberlin Metal Weather Strips keep out air currents they serve as a protection against soot and germ laden dirt so prevalent at this time of year. In fact they are an all year 'round necessity.

They are guaranteed for an unlimited period and installed by expert Chamberlin weather strip mechanics. Immediate service is assured thru Chamberlin branches located in the principal cities throughout the country.

Chamberlin Metal Weather Strips can be applied to casement windows, sliding windows, doors and French windows—wood or metal sash.

*Plan your weather stripping now. Our booklet "26 years of weather stripping" will help you. Write for it*

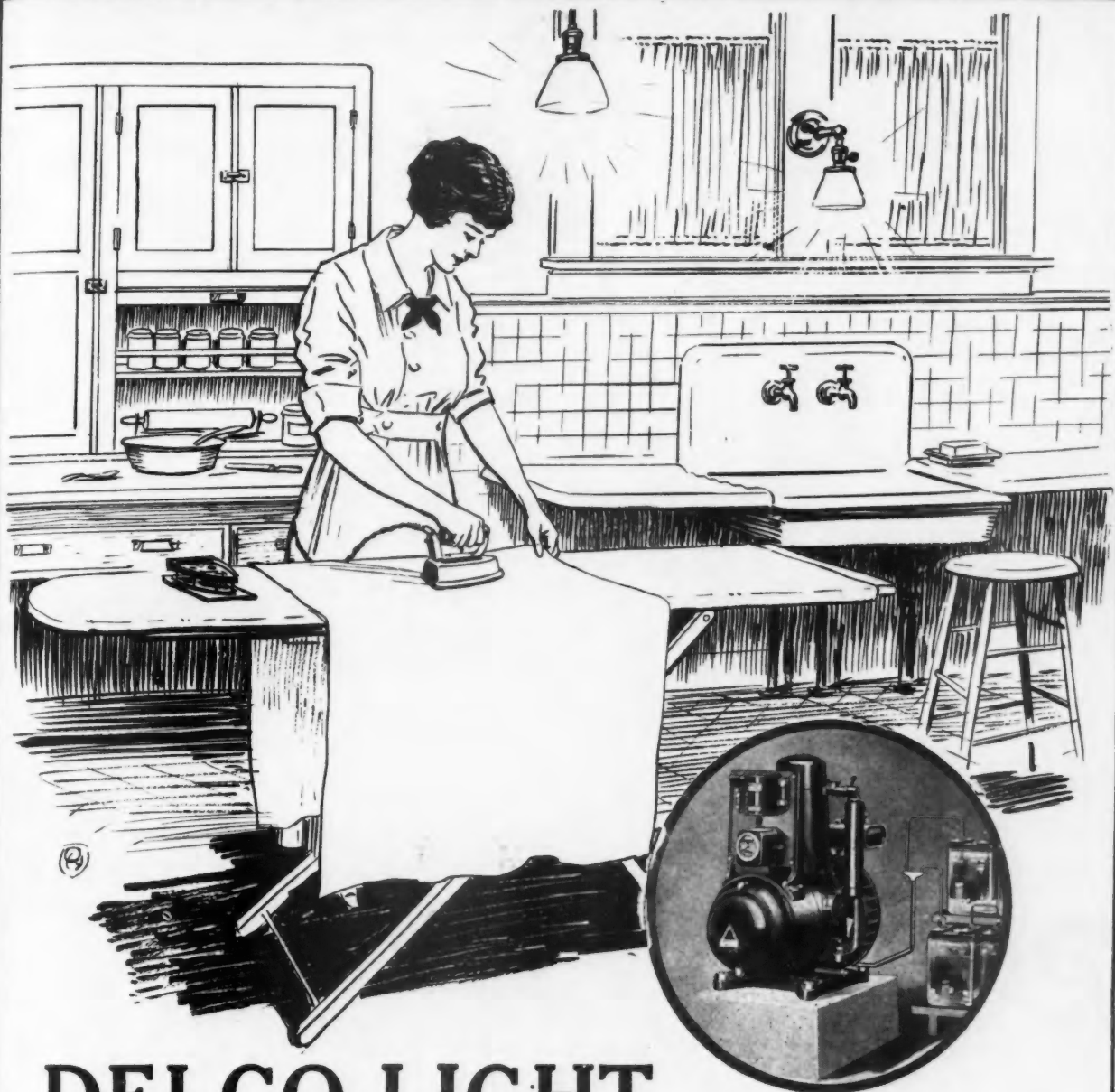
**Chamberlin Metal Weather Strip Company**  
113 Dinan Building, Detroit, Mich.



*Chamberlin Metal Weather Strips  
Protect Every Kind of Home*







# DELCO-LIGHT

## City Conveniences in Country Homes

You would not think of building a modern home in the city without electricity

It is no longer necessary to build homes in the country without electric light and power and its many advantages.

For Delco-Light—the complete electric light and power plant brings electricity to rural homes where it has never been possible to enjoy its benefits before.

Delco-Light furnishes electric light—plenty of it for house and out-buildings, at low cost. It helps lighten housekeeping burdens through the use of an electric iron, vacuum cleaner and other city conveniences. A Delco-Light Water System will supply fresh running water everywhere for bathroom and all other household uses. A Delco-Light Power Stand saves time and labor, for it will turn the washing machine, cream separator, churn or grindstone.

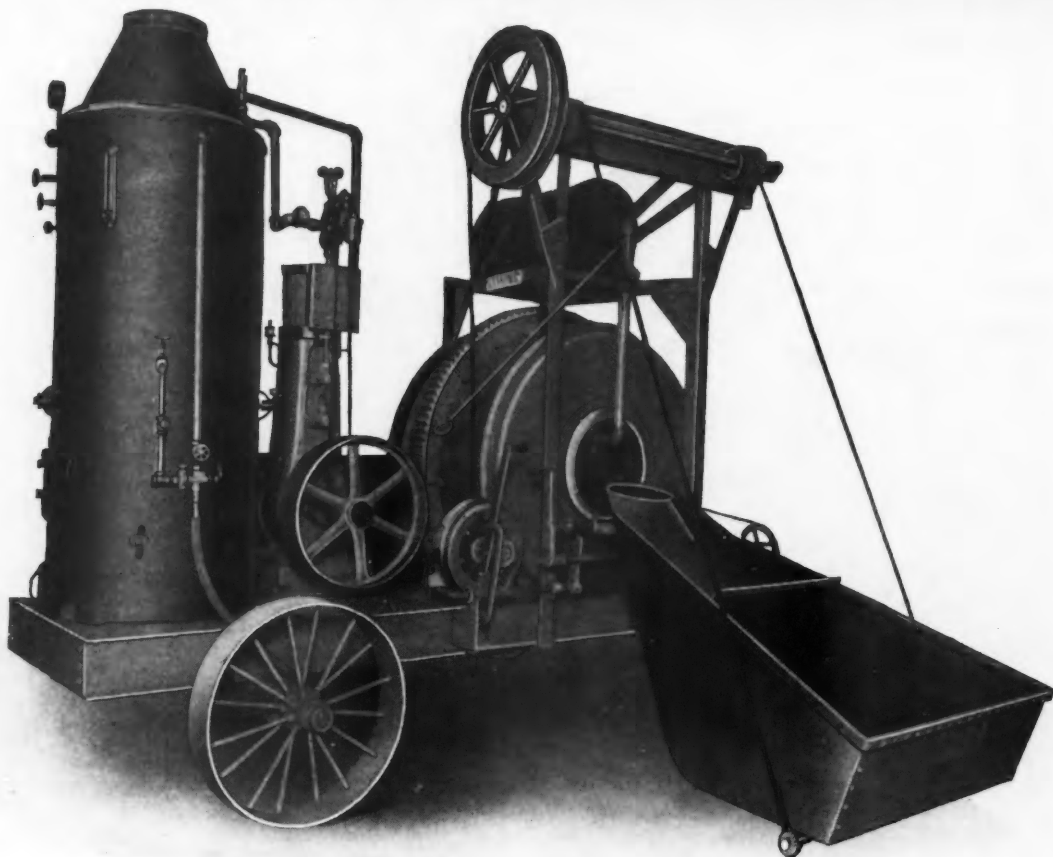
At the time of drawing up the plans and specifications for new homes in the country, we suggest that you get in touch with the Delco-Light Dealer in your county.

*Over 100,000 satisfied users endorse Delco-Light*

**DELCO-LIGHT COMPANY**  
DAYTON, OHIO

*A complete electric light and power plant for farm and country homes, self-cranking—air cooled—ball bearings—no belts—only one place to oil—thick plates—long-lived battery.*

**Valve-in-Head Motor  
Runs on Kerosene**



# *Ransome*

## Standard Building Mixer 1920

Trade comment is shown by these quotations from experienced mixer men in various sections of the country:

"Exactly what I would do if I were going to design a mixer."

"This is truly revolutionary."

"This is the first and only quality mixer that has ever been put on the market. It seems to me to be beyond criticism."



31-126

There is just one word to describe the Ransome Standard Building Mixer for 1920—best.

We began right at the ground and built the best mixer that seventy years of experience could suggest. There is no such thing as "good enough" in the 1920 model. Right at the start, and all the way through, from Batch Hopper or Power Loader to Discharge Mechanism, and from the Wheels to the Winding Spools, we have demanded "the very best to be had."

The Drum Roller Tracks, manufactured by the Standard Steel Works Company, who make tires for Baldwin Locomotives, are of tire steel of high carbon content.

Main Rollers are equipped with Hyatt Roller Bearings, and countershaft bearings are not only Hyatt's, but are mounted in ball and socket joints.

The new specifications calling for very dry mixes have slowed up the discharge of mixers. Our answer, based on years of experience in the dry mixer field, is a rearrangement and increase in the number of blades, solving the problem perfectly.

Drum Rollers have been greatly increased in diameter, width of face, and length of hub. They are made of genuine car wheel metal by one of the oldest manufacturers of car wheels in the country.

Main frames are made of extra deep channels with six cross-members, and the rear half of the frame, underneath the power plant, is covered by a steel squaring plate.

Before you buy another mixer, investigate.

### RANSOME CONCRETE MACHINERY CO.

Main Office and Works:

1764 Second Street, Dunellen, N. J.

Branch Offices:

Boston, New York, Chicago, San Francisco, Philadelphia, Pittsburgh, Detroit, Atlanta, Birmingham, Houston

Canadian Representatives:

F. H. Hopkins & Co., Montreal and Toronto

Agencies in All Principal Cities

Manufacturers of Mixers, Pavers, Pneumatic Mixers, Chuting Plants, Hoist Buckets, Bins, Cars, Carts, etc.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



**T**REAT walls as backgrounds, not as objects. Softer, more harmonious, more distinctive tints are available by use of this *oil* flat wall paint—*Patton's Velumina*. No laps or brush marks.

Small defacements do not compel redecorating—they are easily washed away. Inexpensive washing takes the place of redecorating.

In the long run Patton's Velumina, the oil flat wall paint, cuts down decorating costs at least one-third. Send today to Milwaukee office for portfolio of Color Plans as described on preceding page.

## PATTON'S VELUMINA



the  
Oil  
Flat  
Wall  
Paint

**PATTON PAINT CO.**

Milwaukee    Newark    Los Angeles  
San Francisco    Seattle

**PITTSBURGH PLATE  
GLASS CO.**

Distributing Stocks in 34 Leading Cities.  
Export Department  
Woolworth Building, New York





# You Are Known by Your Color Schemes

**D**OES the internal color scheme suit the architecture and the environs? Are your interiors up to date in wall decoration? Are they as well planned in color as the average, but no better and no different? This is your reference book, to consult when you want distinctive color schemes.

## Get this Library of Up-to-Date Color Plans for Exteriors and Interiors

We want this book in the hands of responsible upper-class painters and contractors who are doing the best work, and are courageously asking prices that their work is worth. Such a painter or contractor will not hesitate to send 25c

for this portfolio, which actually costs us over one dollar each. If, when you see this portfolio, you do not realize that 25c simply covers postage and packing—if you are dissatisfied in any way—just say so, and we will send back your 25c, and you can still keep the portfolio.

Continued on Next Page





# CYPRESS

## "The Wood Eternal"

is undoubtedly the best material from which to make stable or garage floors, or for planking in the cellar, or sills for the barn. This is because moisture has practically no effect on this remarkably enduring wood. Heart Cypress is almost "ROT-PROOF" and it is universally conceded that CYPRESS shrinks and swells ("comes and goes") as little as any wood that ever grew. Paint it or not—as you wish. It lasts and lasts and lasts—anyhow.

THE BEST WOOD FOR YOUR CUSTOMER TO USE  
IS THE BEST WOOD FOR YOU TO RECOMMEND

*Let our "BUILDERS' HELPS DEPARTMENT" help YOU. Our entire resources are at your service with Reliable Counsel. We invite correspondence with a serious purpose in it.*

## Southern Cypress Manufacturers' Association

1216 Hibernia Bank Bldg., New Orleans, La., or 1216 Heard National Bank Bldg., Jacksonville, Fla.

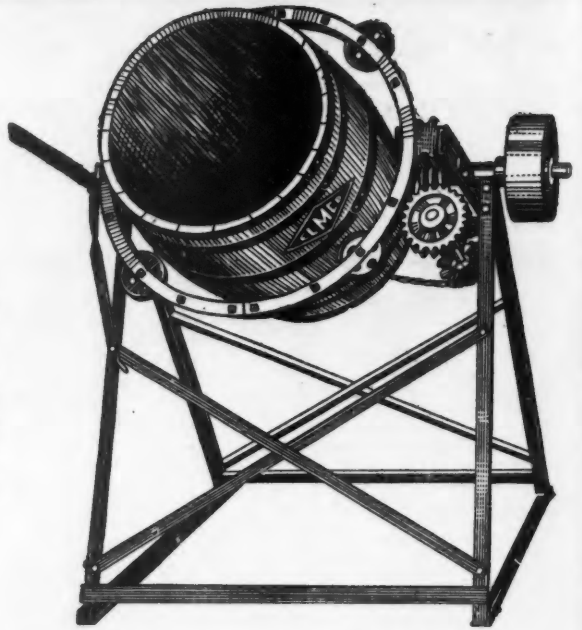
**SPECIFY AND INSIST ON "TIDEWATER" CYPRESS  
IDENTIFIED BY THE CYPRESS ASSN.'S. REGISTERED TRADE-MARK.  
IF IN ANY DOUBT, PLEASE WRITE US IMMEDIATELY.**

THIS REGISTERED TRADE-MARK IS INDELIBLY STAMPED IN THE END OF EVERY BOARD OF TRUE "TIDEWATER" CYPRESS. TAKE NO OTHER.



## Here is a Master Among Small Con- crete Mixers

Here is the Mixer that will suit the needs of any man who mixes concrete. Whether he is a farmer with only a few small jobs to do about his place, or a contractor who wants a small mixer that is easily moved, and will mix perfectly and rapidly, there is an "Elmco" to suit his needs.



## "ELMCO" Concrete Mixers

The "Elmco" Concrete Mixer is an exceptionally strong, well built mixer, combining all the good mixing qualities of the big power mixers with ease and simplicity of operation and low price. The "Elmco" is so designed that it will mix each batch 120 times per minute. The 4 paddles each mix the batch at every turn of the barrel which makes 30 revolutions per minute.

### Sturdy Construction

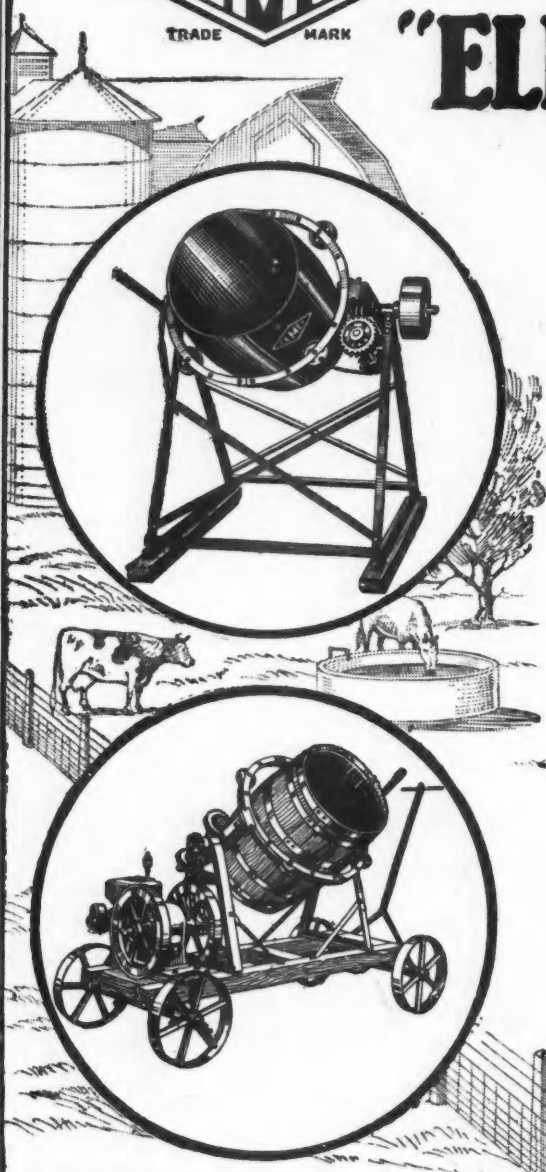
The "Elmco" is made with kiln-dried white oak barrel, or steel, as desired. All parts of the frame are unbreakable malleable iron. Continuous chain drive from gear shafting to barrel—worm gear on belt pulley. A  $1\frac{1}{2}$  H. P. engine operates all models with equal ease. Here is one special feature of the "Elmco"—it is filled from one side and dumped from the other—a great saving in time and labor. This is one of the "Elmco's" advantages over other small concrete mixers.

Dealers—here is a machine that is selling. Farmers are buying it. Contractors are buying it. Because it fills a long felt want for a small concrete mixer that will do as good work as the larger ones. The "Elmco" is made in 8 models, three of which are shown here. Write for our illustrated circular or descriptive catalog telling all about this handy machine. Our dealer or agency proposition will interest you. Write to-day to

**E. F. ELMBERG CO., Inc.**

55 Second St.

Parkersburg, Iowa







"We wanted white enamel in this room," said the host at dinner that night, "but feared that any wood on which we could use it would prove too expensive. Then our contractor recommended North Carolina Pine. We followed his recommendation and you can see for yourself how evenly and smoothly North Carolina Pine has taken the enamel—not a single discoloration or blemish."

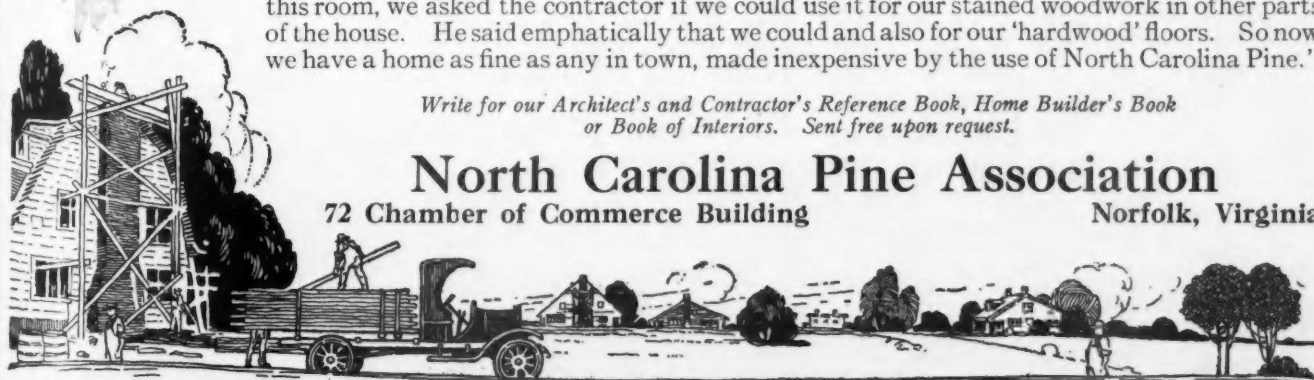
"Yes," his wife chimed in, "and after we had decided on North Carolina Pine for this room, we asked the contractor if we could use it for our stained woodwork in other parts of the house. He said emphatically that we could and also for our 'hardwood' floors. So now we have a home as fine as any in town, made inexpensive by the use of North Carolina Pine."

*Write for our Architect's and Contractor's Reference Book, Home Builder's Book or Book of Interiors. Sent free upon request.*

## North Carolina Pine Association

72 Chamber of Commerce Building

Norfolk, Virginia



# NORTH CAROLINA PINE

*Beautiful and Economical*

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

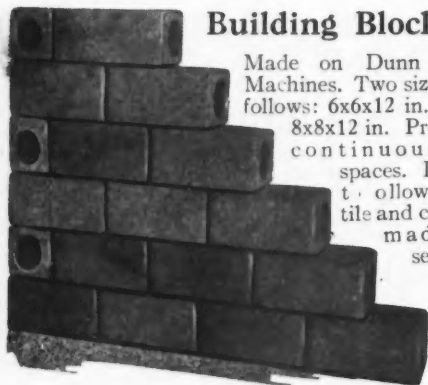
# A Man is Going to Make Drain Tile

in your town, sooner or later, and earn a profit of around \$500 per month. Shall that man be *you*?

Every farming community can support **at least** one local concrete tile plant. Some towns have more, while others—numbering several thousands—have none. But each month sees the number growing less. In a few years a farming community without a tile plant will be as rare as a town without an elevator.

Hundreds of men write us every week requesting information on the tile business, and a large number are starting plants. Men are realizing its possibilities more than ever, and a larger percentage are **acting** according to their realizations. There is shortage of tile plants, but the shortage won't continue.

The message which we present to you is also being read by your neighbor—your potential competitor for a profitable business. Whether you get a jump on your neighbor, or whether he beats you to the opportunity, is a matter of **who acts first**.



## Building Blocks

Made on Dunn Tile Machines. Two sizes, as follows: 6x6x12 in., and 8x8x12 in. Provide continuous air spaces. Equal to hollow clay tile and can be made to sell for less.

Fill cut and send the coupon below for facts on the concrete drain tile business. If you are also interested in other concrete machinery, such as Block Machines, Brick Machines, Concrete Mixers, Sewer Pipe and Culvert Molds, or Porch and Ornamental Molds, put a notation on the coupon.

Gentlemen:

Send descriptive literature on the tile business and Dunn equipment. Also send information

on .....

Name .....

Street .....

City .....

State .....

MAIL THIS COUPON

## A Dunn Plant is All Ready to Begin Making Tile

Dunn complete plants are arranged for 2, 3, or 5 man operation, having respective daily capacities of 1500, 3000 and 6000 concrete drain tile. These provide a size suitable to the community or other individual requirement.

A complete plant includes one or two tile machines, overhead "Shovel" mixer, cars, racks, pulleys, and other necessary equipment. We also plan a plant layout to allow a block machine, brick machine, pipe molds or other equipment to be used in connection.

Manufacturing is simplified and economized by Dunn plants, hand labor being minimized. Note in cut above how the mixer is arranged so that material is elevated, mixed dry and wet, and discharged as concrete directly into the tile machine—all without hand labor.

Dunn machines make all size of concrete drain tile, also hollow building blocks for walls of houses and other buildings which are to be stuccoed.

Inquire for information on tile making as a **business**. Without any cost or obligation on your part you may receive data on costs and profits, why tile is in big demand and how much investment is needed, and other information of a like nature.

Tell us what you are doing now—whether you have had any experience in manufacturing concrete products—whether you have a building—and whether there is a concrete tile plant in your vicinity. The time taken to write us a letter, and the stamp that carries it, is your total cost for the facts which we are willing to send. Do this—before your competitor does.

**W. E. DUNN MFG. CO.**  
415 24th STREET HOLLAND, MICH.



## The Easiest Shaking Furnace Grate in the world

THE Holland Furnace Grate cannot be clogged by clinkers. This cone-shaped, one-piece grate acts with an easy, swinging motion. Jerking and wrenching at the grate handle are no longer necessary. The center of the Holland Cone Grate rests on a pivot—the edges on rollers.

It is a pleasure to show these scientific features to contractors and builders. They are appreciative—ready to see the value in good home conditions. They know that the furnace in the homes they build can have much to do with the success of those homes—

much to do with the contractor's own success.

When you recommend the Holland, your customer's furnace job *complete* is guaranteed by the Holland Furnace Company.

It is not strange that people stamp their mental O. K. on an entire house when they learn that it is heated and ventilated by a Holland Furnace. It is not strange, either, that the builder is thought of as a master in his field—one who is truly interested in the welfare of his patrons.

### HOLLAND FURNACE COMPANY

*The World's Largest Installers of Furnaces*

Two Factories—Holland, Michigan, and Cedar Rapids, Iowa 150 Branches in Central States

## HOLLAND FURNACES Make Warm Friends

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER





## ASHBY'S

*Designs of Schools & Libraries*

display a composition of utility, durability and good, pure architecture without any "gingerbread." No buildings are too large or too small for our personal and prompt attention.

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

*Correspondence Invited*

**G. W. ASHBY, Architect**  
512 Medinah Building  
CHICAGO

# A Word to Buyers

OWING to present manufacturing conditions, we advise buyers of spring hinges to place their orders as far ahead as they can see.

All hardware manufacturers are getting behind in their orders, due to difficulties in the labor and material markets. Railroad shipments are still slow and uncertain.

We do not advise buying for speculation, but to make sure of your goods being delivered when you want them, we urge your ordering now to cover all your needs for the immediate future.

At present we are making reasonable deliveries on practically all lines. Your co-operation will enable us to continue to do so.

## Lawson Manufacturing Company

228-230 West Superior Street

Chicago, Illinois

*Eastern Representative:*

JOHN H. GRAHAM & COMPANY  
113 Chamber St.—95 Reade St., New York City

*Pacific Coast Representative:*

C. N. & F. W. JONAS  
Seattle, San Francisco and Los Angeles



This shows a modern closet equipped with the Knappe & Vogt Garment Care System

## More Living Space— More Convenience— For Less Money

EVERY foot of floor space must be carefully considered these days. Every time you can save a half dozen square feet you are demonstrating your ability as a good builder.

With the

### KNAPPE & VOGT Garment Care System

you can make a big saving in space for every clothes closet in the house. You can take the extra space and make the other rooms bigger without cost, or you can put the extra money right back into your client's pocket.

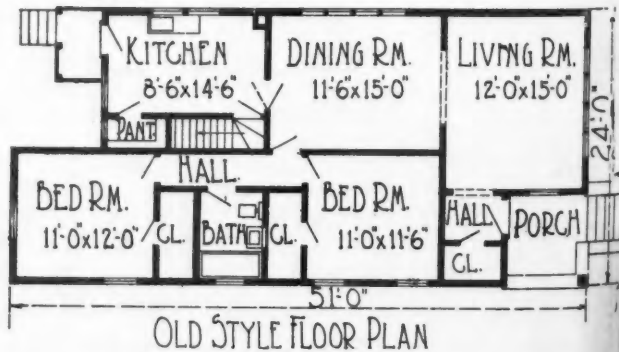
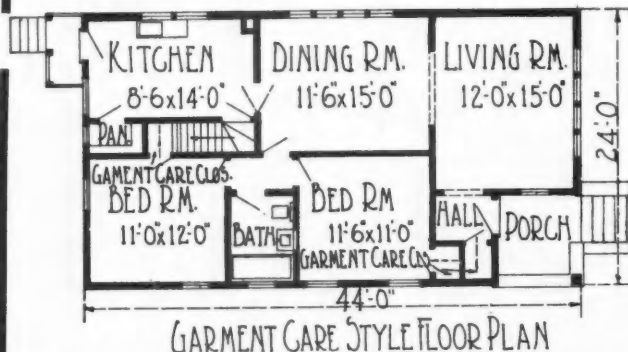
A Knappe & Vogt closet 24 inches wide by 18 inches deep will accommodate a dozen suits or other garments—more than can be gotten into an old-fashioned closet of three times the size.

The wardrobe is kept orderly, clean and fresh—just like garments in the display cases of an up-to-date store. Just a touch is required to

bring the carrier right out into the room where selection is easy.

We will be glad to co-operate in perfecting building plans to include our garment care system. Any of our branch offices are ready to give their services. Call, telephone or wire.

**Seven feet saved:** The first floor plan shows how the use of closets equipped with the Knappe & Vogt Garment Care System make it possible to build the house seven feet shorter than was originally planned. The sizes of the rooms remain the same while the smaller closets will accommodate more clothing than the old style space wasters.



## KNAPPE & VOGT MANUFACTURING COMPANY

Grand Rapids, Michigan

NEW YORK—168 Church Street  
BOSTON—86 High Street

CHICAGO—546 Washington Street  
MINNEAPOLIS—Soo Line Building

ST. LOUIS—Title Guarantee Building  
SAN FRANCISCO—Rialto Building



# Standardize on Lansing and Avoid Costly Delays

**B**ECAUSE Lansing concrete mixers, pavers, wheelbarrows, hoists, material elevators and other contractors' equipment are built oversize—constructed to withstand long, hard service—you can rest assured that your construction work will not be delayed by costly shutdowns if you standardize on Lansing.

Not only are Lansing products built to keep everlastingly on the job, but our branches in eight business centers—with dealers everywhere—give you prompt service on repair parts.

## Write for Catalog.

Complete information regarding the Lansing line—more than 500 products—is contained in our catalog which will be sent you upon request. Write for our 48-page concrete mixer catalog.

Our 40 years' experience in the manufacture of equipment for construction work enables us to co-operate with you intelligently.

## LANSING COMPANY

22 North Cedar Street Lansing, Michigan

### BRANCHES:

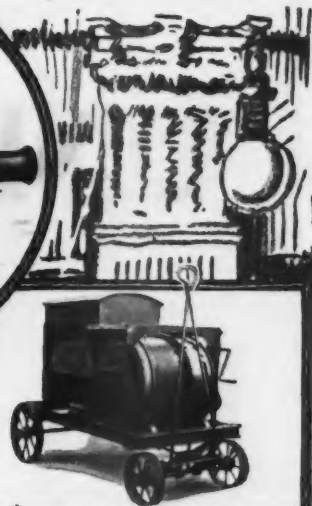
New York Boston Philadelphia Chicago  
Minneapolis Detroit San Francisco Kansas Cit

Build Now: "Homes, schools, churches, and roads make America a better place in which to live."

W. B. Wilson, Secretary,  
U. S. Department of Labor.



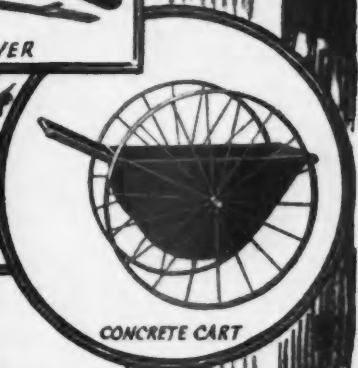
REVERSIBLE HOIST



"HALF SACK" MIXER WITH WHEELBARRROW HOPPER



HEAVY DUTY PAVER



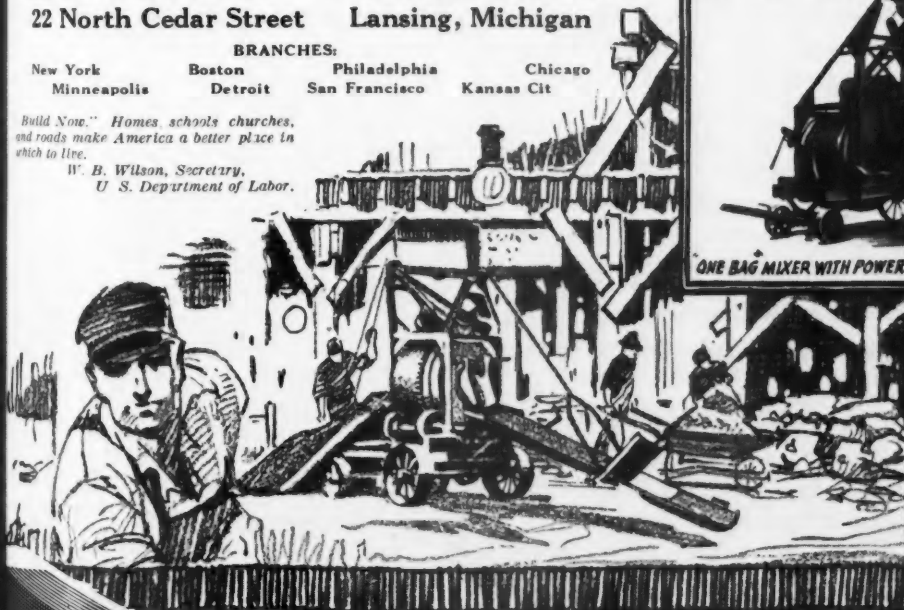
CONCRETE CART



ONE BAG MIXER WITH POWER LOADER AND WATER TANK



LANSING MORTAR MIXER

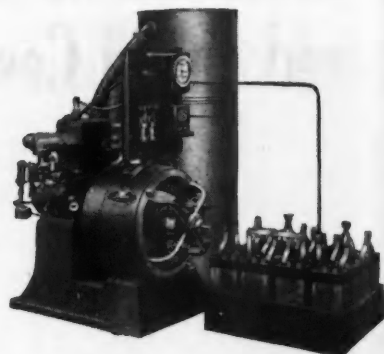


# LANSING

CONCRETE MIXERS - CONTRACTORS' EQUIPMENT

# UNIVERSAL

## A Historical Farm Light



A 75-Light "Universal" Unit

### *Success Founded upon the Test of Time is a Mighty Profit- able Thing to Tie Up To*

**I**T isn't any longer a question of whether the farmer will buy farm light and power plants. That's already settled. He is buying them by the thousands every year.

Nor is the big question one of which plant he wants. If given a chance to make comparisons he usually chooses the "Universal."

The Universal has been successfully on the market for many years. And this long standing record of making good during actual service in owner's hands is becoming more and more known.

The dealer who sells the Universal is in a position to cash in on this reputation. With a market that's all made and an article that's nine-tenths sold before he starts, the Universal dealer is in line for a profitable spring business.

Don't you see the possibilities of such a combination of definite factors? Are you prepared to capitalize on them?

If you're not, altho late, it will be to your advantage to immediately get in touch with us regarding your particular territory. Write for our dealer proposition.

This plant is not an assembled job but is completely built, with the exception of batteries, by one of the oldest makers of Unit Lighting Plants in the country.

The motor stops automatically when battery is charged. Light and power can be taken either direct from generator or storage batteries.

The 75-Light Unit is a practical size for general farm use. However other size Universal Plants are made to meet all requirements.



## UNIVERSAL PRODUCTS Co.

Sandusky, Ohio



## Ask this Builder

Ask Peters Brothers of Buffalo about this beautiful summer home. They will tell you how wonderfully Beaver Board has proved its ability to stand up under the most severe moisture conditions. How it has stood this test year after year and how they are making continuous use of this substantial wall and ceiling material.

The country home illustrated above was built five years ago for Mr. George E. Pierce of Buffalo. It is located on Grand Island in the Niagara River a short distance above Niagara Falls. It is built out over the water and sub-

jected to the most difficult of building conditions. Furthermore it is closed for one-half of the year.

The walls and ceilings of Beaver Board have withstood this severe test without a flaw. They will indeed last as long as the building. This demonstration is most convincing. It should prove that the good qualities of Beaver Board can be put to work for you.

Beside durability remember that you can speed up your jobs with Beaver Board. No waiting for plaster to dry. Write for interesting literature.

### THE BEAVER BOARD COMPANIES

*Administration Offices, Buffalo, N. Y.; Thorold, Ont., Canada; London, Eng.*

*Offices in principal cities of the United States and abroad*

*Distributors and dealers everywhere*

# BEAVER BOARD

You can't expect Beaver Board results unless this trademark is on the back of the board you buy.



## FOR BETTER WALLS & CEILINGS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER





Home at Port Chester, N. Y., roofed with Sta-so surfaced shingles. Builder Stephan Stephansen, Port Chester, N. Y.; Architect, D. Ponti.

Photographic reproduction of Sta-so Crushed Slate Roof Surface. Sta-so's granular texture lends itself to every style of architectural treatment.

## Mr. Stephansen, Builder, Says:

*"Sta-So Protects Me Against Complaints."*

STEPHAN STEPHANSEN, Port Chester, N. Y., has been a builder for 15 years. Mr. Stephansen recently completed several houses at Port Chester, two of which are shown above. These houses are protected by roofs surfaced with Sta-so Laminated Slate. Mr. Stephansen volunteered to tell why Sta-so-surfaced roofing had been selected.

"One of the most annoying things in the builders' business," writes Mr. Stephansen, "is customers' complaints. For example, you lay an ordinary roofing today. In a year or so, back comes the customer, complaining.

"Right here Sta-so'd roofing performs a real service for contractors or builders like myself. Sta-so protects me; it protects my customers.

"Sta-so protects me against complaints that the roofing has faded to a dirty brown or turned black—I know that Sta-so's beau-

tiful tones of red and green cannot fade or change.

"Sta-so protects my customers, not only because it never fades, but also because it increases the durability of the roofing, and is fire resisting, thus taking a low rate of insurance.

"Another thing about Sta-so is its economy. It is economical to buy; and easy to lay, fitting snugly even into odd-shaped corners.

"These are the reasons why I prefer Sta-so'd roofing and recommend it regularly to my customers."

Are you protecting yourself and your customers by recommending Sta-so-surfaced roofing? You can recognize Sta-so'd roofing by the Sta-so label. Insist that your stock bears this Sta-so label. The following manufacturers made enough Sta-so-surfaced roofing last year to cover a city of 42 square miles.

Amalgamated Roofing Co. . . . . Chicago, Ill.  
Barber Asphalt Paving Co. . . . . Philadelphia, Pa.  
Barrett Co. . . . . New York, N. Y.  
Beckman-Dawson Rfg. Co. . . . . Chicago, Ill.  
B. F. Belson Mfg. Co. . . . . Minneapolis, Minn.  
Bird & Son, Ltd. . . . . Hamilton, Ont. Can.  
Bird & Son, Inc. . . . . East Walpole, Mass.  
Phillip Carey Mfg. Co. . . . . Cincinnati, Ohio  
Clintkote Co. . . . . Boston, Mass.  
Ford Mfg. Co. . . . . St. Louis, Mo.  
The Heppes Rfg. Division, The Richardson Paper Co. . . . . Chicago, Ill.  
Keystone Roofing Mfg. Co. . . . . York, Pa.  
McHenry Millhouse Mfg. Co. . . . . South Bend, Ind.  
National Asbestos Mfg. Co. . . . . Jersey City, N. J.  
National Rfg. Co. . . . . Tonawanda, N. Y.  
Pioneer Paper Co. . . . . Los Angeles, Cal.  
Reynolds Shingle Co. . . . . Grand Rapids, Mich.  
H. H. Robertson Co. . . . . Pittsburgh, Pa.  
Richardson Paper Co. . . . . Cincinnati, Ohio  
Safeback Paper Mills . . . . . Boston, Mass.  
St. Fo Products Co. . . . . St. Paul, Minn.  
Standard Paint Co. . . . . New York, N. Y.  
Usoma Mfg. Co. . . . . Aurora, Ill.  
H. F. Watson Co. . . . . Erie, Pa.  
A. H. White Roofing Co. . . . . New Orleans, La.  
Wilberite Roofing Co. . . . . Cleveland, Ohio





Berloy Metal Lumber I-Joist



Residence of Prof. Geo. B. Pegram; built in 1913. Berloy Metal Lumber was used in floors and bearing partitions. William B. Claflin, the architect, member American Society of Civil Engineers, after an inspection, reports:

(B)

**BERLOY**

**Metal**

**PRODUCTS**

ing Cases  
eckers  
as and Shelving  
etal Lumber  
or Cores  
panded Metal Lath  
ree Eighth inch Ribplex  
ee Quarter Inch Ribplex  
Reinforcing Plates  
ilings and Sidewalls  
es Trough and Conductor  
Pipe  
ing and Siding  
erts and other products  
of metal.

## No Plaster Cracks and No Settlement in Partitions and Floors With Metal Lumber

Here is Mr. Claflin's report in full:

"I inspected the building recently and was very well pleased with the condition of the plaster. The large blank wall areas of the stair-well, which is open from first floor to attic, were free from cracks. There was but one crack in the entire building and this was near some pipe leaders and could not have been caused by the Metal Lumber. This absence of cracks indicates that there was no settlement in the partitions and floors.

"As my work as architect also included supervision of the construction of the building I had a good opportunity to observe the work of erecting the Metal Lumber. Although none of the workmen I had had previous experience with the material,

the work progressed rapidly. All of the members were shipped to the work cut to the proper lengths, with an identifying number painted on each to agree with the number shown on the shop and framing drawings prepared by the manufacturers. The members as received had two coats of graphite paint and no further painting work on the job was required.

"During construction workmen piled sand to an average depth to about 30 inches over the center third of one of the floors. This accidental loading of approximately 225 pounds per square foot, concentrated in the center of the span, was carried satisfactorily although I designed the floor for a residence live load of only 40 pounds.

"My recent inspection satisfied me as to the stiffness and sound-proofness of this method of building floors and partitions, and I do not hesitate to recommend this fireproof construction to others."

Ask nearest Berger branch for Bulletin L-3

# The Berger Mfg. Co., Canton, O.

Branches: Boston New York Philadelphia Chicago St. Louis Kansas City Minneapolis San Francisco  
Export Dept.: Berger Bldg., New York, U. S. A.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# Profitable In Two Ways

## The Hess Welded Steel Furnace (pipe or pipeless)

A good income for the contractor. Complete satisfaction for his client. This is a direct from factory proposition with a liberal resale discount to the Contractor.

All over the United States, Contractors are selling and installing *Hess Furnaces* with benefit to their reputations and their bank accounts. No investment required. Once started in a community the sales come along with no urging.

## Cash in Your Dull Times

By installing *Hess Welded Steel Furnaces* in stove heated houses, churches, stores, etc. Little effort is needed—you give us the “dope” on the building. We will make the plans, the estimate, and the guarantee. No guess work about it and it's all clear sailing for you.

Learn more of *Hess Welded Steel Furnaces*, and of our *Free Planning Service* for Contractors, and *You'll Be Glad*.

## Clean Heat from Dirty Coal

is yours, with a *Hess Furnace*.

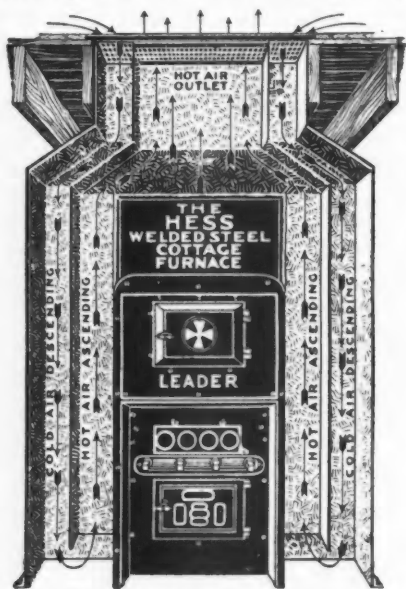
### See That Welded Seam? →

That's the reason. Every seam in the whole radiator is closed just like that, as tight and smooth as a glass bottle. *Everlastingly tight*. Gas and dust never leak through even with the cheapest fuel. There is always clean heat and perfect combustion—perfect because the large grate surfaces let in plenty of air and the heavy brick plates superheat and burn the gases and smoke.

Installing is easy and our positive guarantee assures success. Write us today and get our free booklet on furnace heating, and send us your next plan for estimate.



Detail of the  
Welded Seam



The Hess Pipeless Furnace

## Hess Warming and Ventilating Co.

1220C Tacoma Bldg.  
Chicago, Ill.





**BOTH FREE**

**Ask for  
BIG BOOK  
on  
HEATING  
and  
AGENCY  
PROPOSITION**

We do the work of designing, and submit free estimates, free catalogs and anything you want to complete the deal. All you have to do is to furnish us the plans or rough diagrams of the building to be heated.

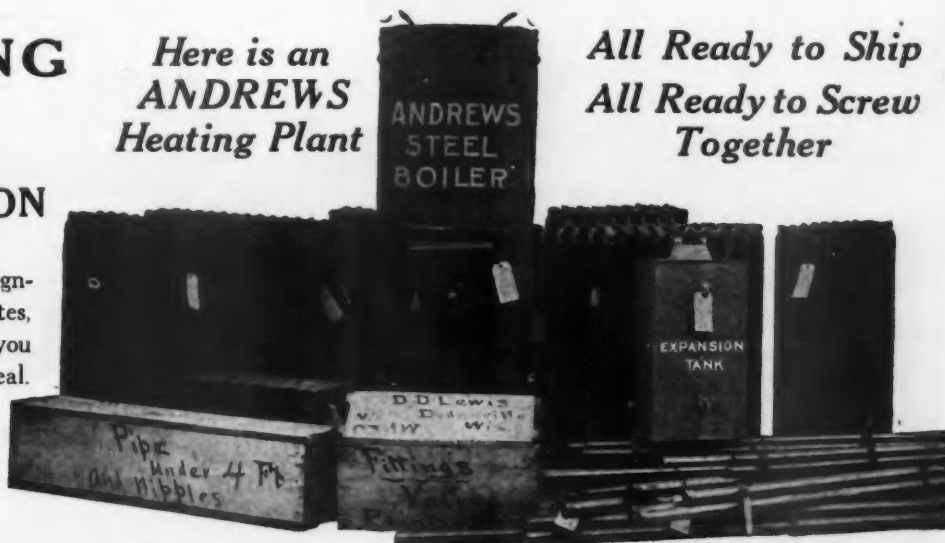
## MR. CONTRACTOR! **Andrews Systems**

*Will Make Money for You*

This is a proposition which should appeal to every contractor. We offer the most unique hot water heating proposition on the market and the cleanest for the contractor to work, and a plant that will heat the house and save fuel for the customer. Designed for the particular job and sent cut to fit, ready to screw together, under the protection of our 360 Day Free Trial Guaranty Bond.

*Here is an  
ANDREWS  
Heating Plant*

*All Ready to Ship  
All Ready to Screw  
Together*



**EACH PLANT COMPLETE WITH AN ANDREWS STEEL BOILER**



## **Sewage Disposal Without Sewer**

*City Comfort*

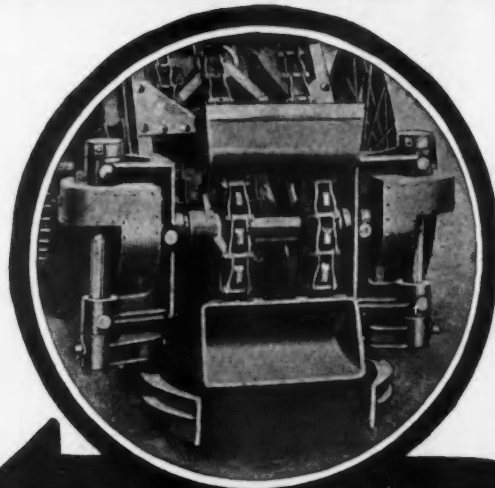
A complete plumbing system can be installed in the house and its entire waste disposed of by the septic tank without any of the difficulties and offensiveness of the cesspool.

*No Odors—No Attention*

There is no odor from the septic tank. It can be placed in the basement if desired. It requires no attention but the removal of a pailful or two of sludge once a year.

**Andrews Heating Co.** 1538 Heating Bldg.  
Minneapolis, Minn.

# AUSTIN WAGON LOADER



THE ARM THAT DIGS

## SELF-FEEDING

**N**OT a so-called self-feeding loader, but a real labor saver for rapid and efficient handling of material in concrete road and building construction, excavation work, quarry, storage and reclaiming plants and coal and material yards.

Wherever quantities of loose materials are to be loaded into wagons, trucks or storage bins, the Austin Self-Feeding Loader can be used as a profitable investment.

The machine is arranged to handle anthracite and bituminous coal, sand, stone and gravel and loose materials of like nature, and refuse, coke, etc., equally well.

**CONTRACTORS** Let us handle your material loading propositions. Our catalog WL7 giving data as to speed in loading and cost of operation will be mailed promptly upon request.

**F. C. AUSTIN MACHINERY COMPANY**

Railway Exchange Building, Chicago, ILL.  
NEW YORK OFFICE: 30 CHURCH STREET

# GREGERTSEN BROTHERS

## CYPRESS SPECIALISTS

MCCORMICK BLDG. **CHICAGO** PHONE HARRISON 8610-8611

### DO YOU REALIZE—

**THAT** there is an absolute shortage of lumber and that the cause of high prices is merely a question of supply and demand? During the next few months it will not be a question of price, but it will be a question of buying your lumber from parties who have the stock and who can deliver it.

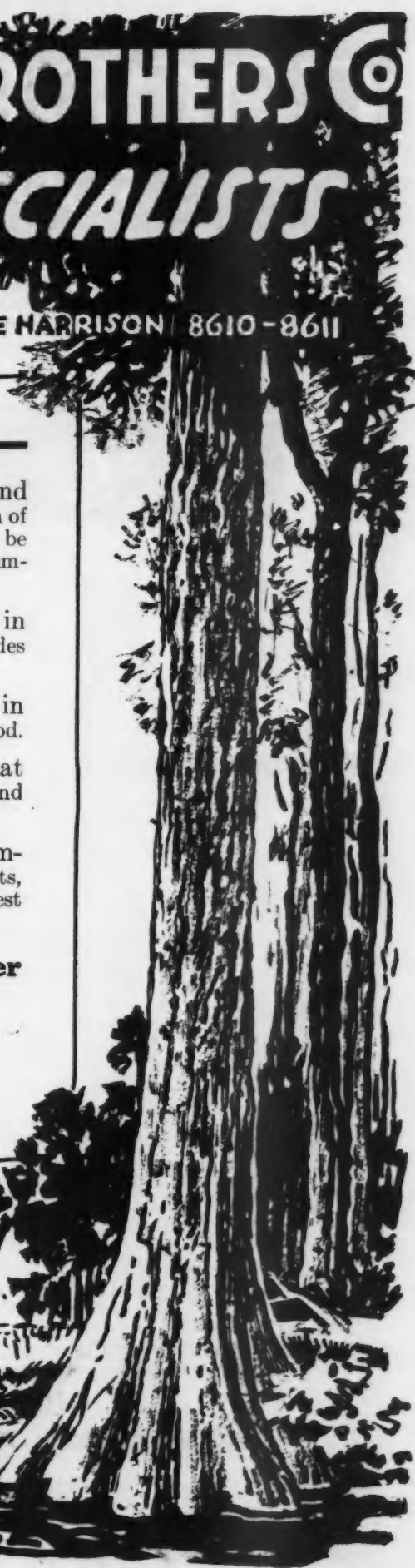
We have the goods—both in our Cairo Yard and in the south, and have in transit at all times carloads of all grades which we can offer you in Cypress Lumber.

Cypress today is the best value for your money and in comparison is cheaper than any hardwood or competitive softwood.

Write us for prices and do not fool yourselves that you will get lower prices shortly, but buy what you want and buy it now—we can serve you.

Our Cypress is especially adaptable for pattern lumber, casket lumber, all kinds of high grade finish for tanks, vats, greenhouse construction, and will take the place of the best White Pine or Poplar at a less price.

**When you think of CYPRESS remember  
GREGERTSENS**



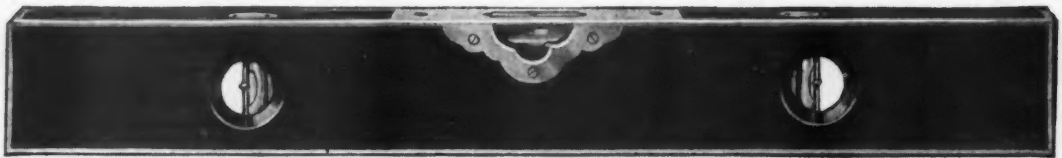
**2 MILLION  
FEET OF  
CYPRESS  
1" TO 4" THICK  
OF ALL GRADES  
READY FOR  
SHIPMENT  
FROM OUR CAIRO  
ILLINOIS YARDS**



# GOODELL-PRATT

## 1500 GOOD TOOLS

### Levels



Stratton Rosewood Level No. 4024

THE Goodell-Pratt line of levels is varied enough to allow anyone to find the kind he is looking for. The types range from sectional, brass-bound levels of fine woods to the smallest nickel-plated pocket levels.

In the Goodell-Pratt line there are 146 sizes and styles of wooden levels—levels whose accuracy is unquestioned and whose superiority is generally acknowledged.

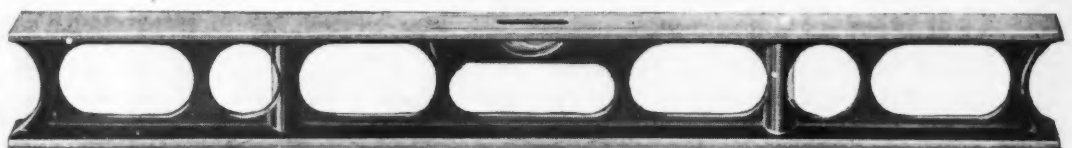
In addition to the Wooden Levels, the Goodell-Pratt line includes the widest assortment of Iron Levels ever offered by any manufacturer.

The Adjustable Bench Levels with ground and graduated vials are most satisfactory for accurate bench work.

The aluminum levels are made of 92% pure aluminum and just enough alloy to give strength and rigidity. Their light weight makes them handy instruments for large tool kits.

All these levels uphold the Goodell-Pratt reputation for high quality tools.

Your dealer can show you these levels, or a complete pocket catalog will be sent on request.



Iron Level No. 509

**GOODELL-PRATT COMPANY**
**Greenfield, Mass., U.S.A.**

# CON-SER-TEX

## CANVAS COVERING *for* PORCH FLOORS *and* ROOFS

**L**ONG and satisfactory service is what your customer wants in roofing, what you want to give your customer. It is for such service that an increasing number of contractors are every day recommending Con-Ser-Tex. For porch floors and roofs, balconies, gutter linings, flashings, or anywhere that a smooth and highly durable surface is required, Con-ser-tex is unexcelled. There is no substitute.

Con-ser-tex is a heavy cotton fabric, scientifically prepared after our own formula so that it will never crack, stretch, shrink, peel, rot, or leak. It is easy to handle and admirably neat in appearance. Both you and your customer will be delighted with the results.

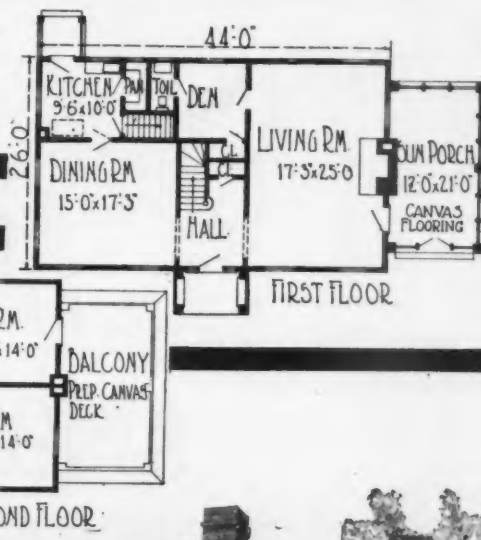
We have for you a copy of our new booklet, "Roofing Facts and Figures," explaining the uses and economy of Con-ser-tex.

*Write for it today.*

### WILLIAM L. BARRELL COMPANY

8 Thomas Street, NEW YORK CITY

Chicago { Geo. B. Carpenter & Co. California { Waterhouse-Wileox Co.  
Distributors 430-40 N. Wells St. Distributors San Francisco and Los Angeles



For editorial description of this beautiful colonial house, using Con-Ser-Tex for porch, roofs and floors see page 109, this issue.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



## Why Not Use Nature's Own Weapons?

THE best way to protect your home against Nature's destructive forces is to employ the materials which Nature herself has provided. These materials—**asbestos** and **cement**—are fire-resisting and of remarkable durability. They are the basis of all—

### AMBLER ASBESTOS BUILDING PRODUCTS

**Ambler Asbestos Shingles.** Made in 3 styles, 4 permanent colors: Newport grey, natural slate, red and green. Lies snug to the roof, forming water-tight and fire-tight covering.

Also  $\frac{1}{4}$ " mixed color shingles in 7 shades of reds, browns and greys.

**Ambler Asbestos Building Lumber.** For siding, partitions, fire doors and wherever fire resistance is essential.

**Ambler Asbestos Corrugated Roofing and Siding.** For industrial, railroad and farm buildings.

**Ambler Linabestos Wallboard.** Wherever a superior flame-proof, fire-resisting wallboard is wanted.

*Send for samples and literature showing reproductions of installations.*

## Asbestos Shingle, Slate & Sheathing Co.

Ambler, Penna.

Factors

**KEASBEY & MATTISON CO.**

Ambler, Penna.

*Manufacturers of: Ambler Linabestos Wallboard, Ambler Asbestos Building Lumber, Ambler Asbestos (Century Brand) Shingles, Ambler Asbestos Corrugated Roofing and Siding, 85% Magnesia and Asbestos Pipe and Boiler Covering Asbestos Textiles.*

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# Builders-Contractors-Carpenters DO YOUR OWN PLUMBING AND HEATING New Hardin Cut-To-Fit Ways HARDIN-LAVIN CO. CHICAGO

## Bid On The Finished Contract

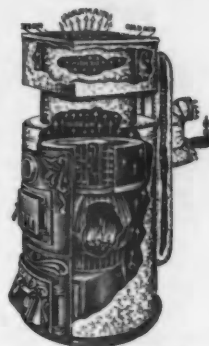


Plumbing Supplies

With our New Plan the Plumbing and Heating are made mere details of the Construction. All supplies come to you Cut-to-Fit, ready to install with the simplest tools. All the planning, cutting and fitting are done in our Factories, a method that saves you half on time and labor and all unused materials. Our economical, easy way makes it easy for you to meet competition in the building field. It permits *you* to "finish the job."

### Our Engineers Draw Your Plans

All you have to do is to send us a rough sketch of your plans. Our Staff of Engineers draw your plans and see that the proper materials are sent to you at once, Cut-to-Fit your needs. They furnish you with any help that may be necessary even to lending you the tools. This Service is absolutely FREE to our Customers.



Improved All Cast  
Pipeless Furnace



Automatic Electric  
Water Supply Systems

## Send for the Free Handy Man Book

This Book contains invaluable information for the Contractor, Carpenter or Builder. It contains plans, illustrations and diagrams for the installation of all kinds of plumbing and heating equipment. It pictures and describes more than 10,000 different fixtures. With it we send our Special Wholesale Discount Sheet for Builders and Contractors. This big, valuable Book is Free—just mail us the coupon in the corner.

### A Pipeless Furnace Cuts Your Coal Bills

The Pipeless Furnace is more and more in demand. It combines the economy of price and operation of the stove with the cleanliness, convenience and heating capacity of a furnace. It takes but a day to install one. They are described in our Handy Man Book, at Wholesale prices. *Send for it.*



Hardin-Lavin  
Steam and  
Hot Water Boiler

### We Guarantee Our Service To You

All our products are the most modern in design and the best in quality. To insure your satisfaction we send them to you with an Absolute Money-back Guarantee. We have been making good this statement for **Forty Years.**

## HARDIN-LAVIN CO.

4522-34DX Cottage Grove Ave.

CHICAGO

**Free Handy Man Book Coupon**  
Hardin-Lavin Co., 4522-34DX Cottage Grove Ave. CHICAGO, ILL.  
Please send me your Free Handy Man Book, containing  
information valuable to Contractors and Builders and  
Special Contractors & Builders Wholesale Price List.  
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# Build Quality and You Build Reputation

Builders and contractors with reputations to sustain install Kewanee "Armor Plate" Coal Chutes because they reflect Quality and live up to it.



## KEWANEE

ALL STEEL — GUARANTEED

## COAL CHUTE

Fool-proof—simple and convenient for the coalman to operate.

Burglar-proof—positive automatic lock which can be released from any room in the house.

Wide hopper—no littering the yard.

For new buildings or old.

Won't work loose from foundation—Kewanee construction prevents it.

Improves appearance of house and keeps its value up.

Building supply dealers—there's worth-while profit in Kewanee Coal Chutes. Write for proposition.

### GUARANTEED

for five years against breakage—will last a lifetime. No cast iron, no glass. Thousands in use—not one complaint.

**KEWANEE MANUFACTURING CO.**

410 N. Tremont Street :: Kewanee, Illinois



Kewanee Chute Open—seen from the street

### Manufacturer's Agents Wanted

in the following cities:

New York,	Philadelphia,	Cleveland,
Columbus,	Detroit,	Grand Rapids,
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Write AT ONCE For Special Proposition

# JAEGER MIXERS



3E.



4 A.



4 L.

## Start Now

**T**O assemble your concrete equipment for the Spring building. Don't lose time by experimenting with a new make of mixer. Get the old dependable **QUALITY MIXER**

## Jaeger

The Jaeger batch mixer is of the most approved revolving drum type of medium size and designed for service, quality and economy. Every part is constructed of the best materials, by the best mechanics. All wearing parts are made extra heavy and hardened to insure long service. The Jaeger mixes concrete, mortar, plaster and the engine can be used to run other machines. This is just the mixer you need.

*Catalogs gladly sent upon request.*

**Jaeger Machine Company**

521 Dublin Ave., COLUMBUS, OHIO





## You'll Feel The Difference The Moment You Touch The Board

"Harder, stiffer, stronger, heavier, more board-like than you expected"—that's what *you* will say when you get your hands on this board.

# NIAGARA WALL BOARD

places in your hands the kind of board a builder likes to use—the kind a dealer likes to sell, and *does sell* most readily.

Why it is different, why it is built right and priced right, will be explained to you when you receive the sample.

You will be interested in Niagara Wall Board because it is sold on an exclusive basis at an interesting price—and all the cooperation goes with it that can be extended by a wall board maker to wall board dealers and wall board users. Mail the coupon at once.



*Builders, Carpenters, Contractors and Architects*—you will want to know about Niagara Wall Board—write for a sample today.

NIAGARA WALL BOARD COMPANY,  
BUFFALO, N. Y.

GENTLEMEN:—Without obligating me in any way, kindly forward complete details about Niagara Wall Board with prices and explain your exclusive plan, forwarding a piece of the actual board.

Name.....

Address.....

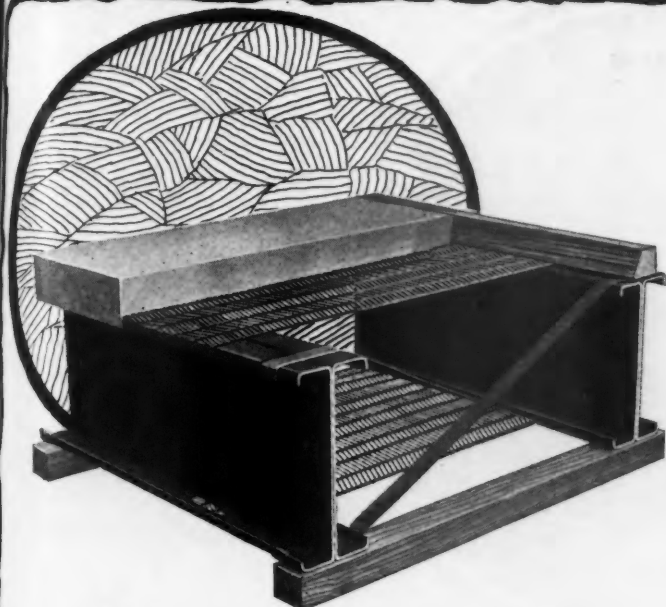
Town..... State.....

(1)

# NIAGARA WALL BOARD COMPANY

GENERAL OFFICES - BUFFALO, N. Y.

FIBRE MILL AND FINISHING PLANT  
PENN YAN, N. Y.



"S/L"

## *-for convenience*

When we specify GF Steel Lumber in our home office notes, we designate it by the little, cryptic symbol S/L. S/L is the convenient way of writing—

# GF Steel Lumber

The actual product is more convenient for your use, when compared with other building materials of its scope.

It conserves lumber, time, money and patience. It is the *available*, "at hand" material for immediate use during the big rush in building activities of all types.

The strong features of GF Steel Lumber are listed below:—

- Easy to erect.
- Reduces dead load weight.
- Fireproof.
- Sound-proof.
- Long-lived.
- Adaptable to any type of construction.
- Simply and practically designed.
- Electrically spot-welded. No rivets.
- Low in cost.
- Uniform thickness.
- Symmetrical—no internal stress.
- Cold rolled from open hearth steel.
- No splicing needed. Can be furnished up to 100 ft. lengths.
- Stronger—because of better quality and uniform quantity of steel in each section.



(Our Steel Lumber Handbook should be of value to all architects and engineers. There is a copy for you, if you will write for it.)

## The General Fireproofing Co.

YOUNGSTOWN, OHIO

### BRANCHES

BUFFALO CHICAGO BOSTON MILWAUKEE KANSAS CITY  
MINNEAPOLIS SAN FRANCISCO PHILADELPHIA OMAHA



## A Concrete Mixer "Built to Last" *The Lakewood Universal*

"Little things"—the small details of design and construction—decide the length of service your mixer will give.

The perfection of these small details is the reason that leading contractors and builders prefer the Lakewood Universal 1-Bag Mixer. The Lakewood Universal is especially useful for finishing up big jobs and for jobs where the volume of concrete handled is small and a light and portable, yet sturdy, mixer is required.

From carefully selected raw materials right down to the final test, Lakewood engineers and workmen make sure that every part is "Built to Last" and to earn maximum profit to the user.

Bulletin 21-B gives details. Ask for a copy *today*.



THE LAKEWOOD ENGINEERING COMPANY  
CLEVELAND, U. S. A.

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Boston  
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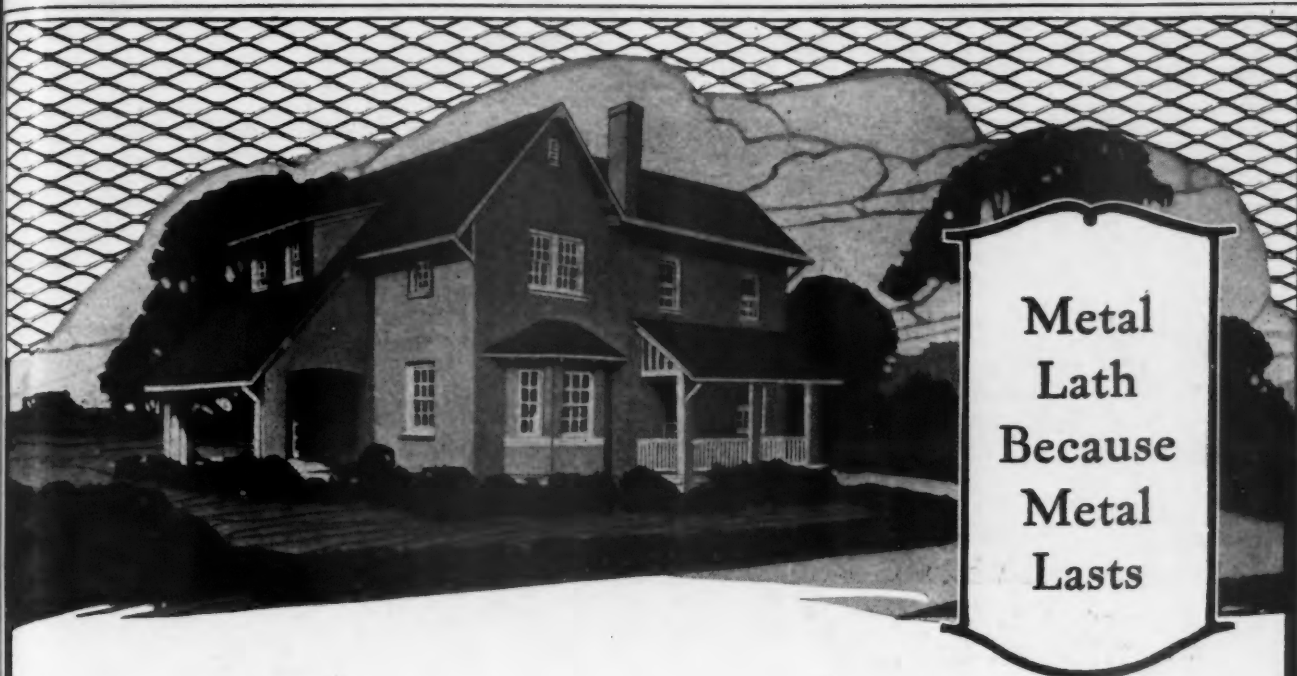
Des Moines  
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ALMACOA EXPORT DEPARTMENT  
ALLIED MACHINERY COMPANY OF AMERICA  
31 Chambers St., New York, U. S. A. CARLOS ALMACOA New York

# Lakewood Construction Plant





## Walls Built with Sykes Lath Stay Built

Sykes Metal Lath likes responsibility. The greater the test to which you subject it the greater is its response.

## SYKES <sup>EXPANDED CUP</sup> METAL LATH

is self-furring. This means that it not only saves from five to ten cents a square yard in application, but its special construction makes it a part of the wall itself, embedded a full quarter inch in the plaster or stucco.

Shocks and strains that crack and ruin ordinary walls leave Sykes Lath walls unaffected.

The wider Sykes Lath strand makes it heavier, and stronger, than other lath of equal gauge.

Sykes Lath cannot be applied wrong. It is adapted to interior or exterior work, on new or repair jobs.

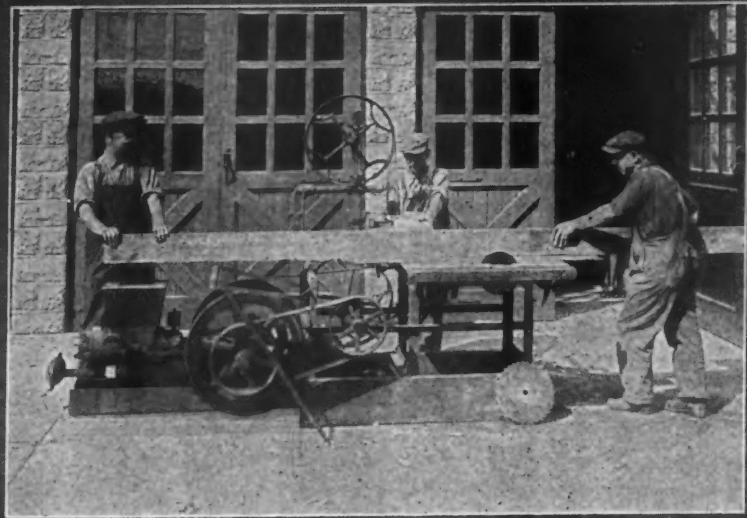
We should like to send you samples and our booklet "Metal Lath Specifications." A card brings them.

## Sykes Metal Lath and Roofing Co.

504 Walnut Street, Niles, Ohio



## Expanded Cup Metal Lath



This garage was put up by the aid of a Parks Four-in-One rip, crosscut, band saw and jointer. Even the construction for the eight doors was turned out on it. A Parks machine makes it possible to dimension lumber right at the job.

IT'S NOT going to be a question of keeping busy when the building rush hits you. There is at present a great shortage in buildings—over 500,000 in homes alone. With removal of restrictions on building, active campaigns to promote construction are being pushed everywhere. The most prosperous year in the history of the business is assured. There will be full time work for all and then some.

The question will be how much of that "then some" business are you going to handle. Labor is scarce; you cannot always increase your force to meet increased requirements. You can however multiply its productivity by using Parks Woodworking Machine—saving time of 2—4 carpenters.

A Parks is easily carried from job to job. It will enable you to take on work you couldn't otherwise tackle. It does the hard work—better than by hand—for nearly nothing and does it right at the job, reducing haulage and shop bills. Always dependable; lowers expense, reduces delays, increases profits, volume of business and clients' satisfaction.

Read what one man has to say of the

## Parks Four-in-One

Combined circular rip and crosscut saw, band saw, and jointer and boring machine. Made of heavy 2" angle steel—almost vibrationless—quickly adjusted—easily hauled.

Each Parks Machine is guaranteed for 10 years against defects in material or workmanship.

*Write for our catalog and get full information on just how the Parks Machines will solve your labor problem and increase your business. 10 days free trial.*

**The Parks Ball Bearing Machine Co.**

Fergus St. and C. H. & D. R. R.

Cincinnati, Ohio

*Full capacity  
or just full time  
~which?  
~There's a  
difference!*

The Parks Ball Bearing Machine Co.  
Cincinnati, Ohio

Gentlemen:—

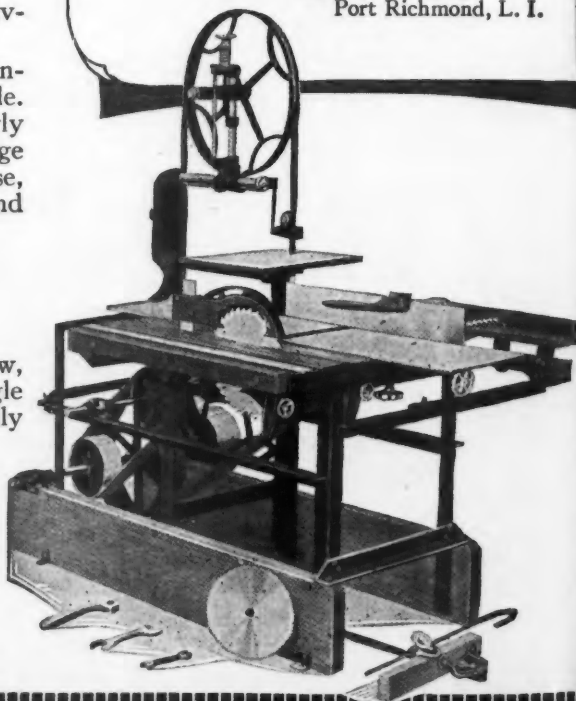
The machine I have (the Parks Four-in-One) saves about three men's labor a week. I can do more work with machine in one hour than a man can all day working by hand.

What I like most about the machine is the price; considering all the work it turns out it is very reasonable. It has never up to the present time fallen down on the job. Since I have installed the machine I can turn out much more and better work with less men.

At present I have the machine set between the garage and the house that I am building. The eight doors of the garage have been turned out by the machine.

I am, very truly,

LEO W. PAUL,  
Port Richmond, L. I.



WOODWORKING

**PARKS**

MACHINES



## Always a Come-back Yet Never a Kick

**T**HERE'S a strong favorable reaction wherever Black Rock is the wallboard used. It always reflects credit to the judgment of the builder who specified and used it.

It pays to become known as a builder who prefers Black Rock. Property owners, once they investigate wallboard—and they all finally do it—get to respect the “only board with the black center.” And backed up, as this good appearance is, by real *quality*, it's no wonder that the passing years find more and more builders banking on Black Rock.

Black Rock Wallboard is distinguished by its moisture-repellent black center. Besides, it is surface-sealed and sized front and back, making unnecessary a priming coat of paint and preventing warping during radical changes of temperature or climate.

There's a free plan and decoration service back of Black Rock Wallboard. Let us tell you about it, and give you the name of the nearest dealer.

**The Black Rock Wallboard Company**  
78 Ontario Street, Buffalo, N. Y.



# BLACK ROCK WALLBOARD

BLACK CENTER



## In the house that George built—

**T**HE name is fictitious. The instance real—and typical.

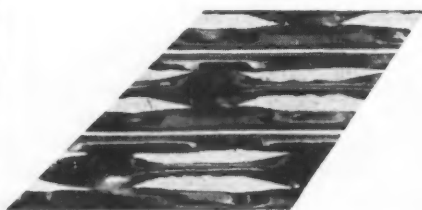
"George Brown" was building six houses to sell. The choice of plaster backing depended solely on his own decision.

An "old timer" in the building game—the habit of using wood lath was strong in him—but high prices and scarcity led him to investigate Bostwick Truss-Loop.

After a little urging, he decided—the difference in price being practically negligible—to use it in "just the first house."

Once the Truss-Loop was up and plastered, Brown found—a typical discovery—that Bostwick Truss-Loop gave him an entirely new selling argument to use on the home buyer. The extra facts that Truss-Loop was more rigid and gave faster erection, was self-furring and permitted faster trowelling, was all velvet—free profit to him.

*Result?* Brown "took off the limit" and expanded his original order to include Truss-Loop for all six houses.



A pocket sample of Truss-Loop (gladly mailed you on request) will reveal to YOU the whys and wherefores of its profit-making advantages. Complete data and specifications will accompany the sample.

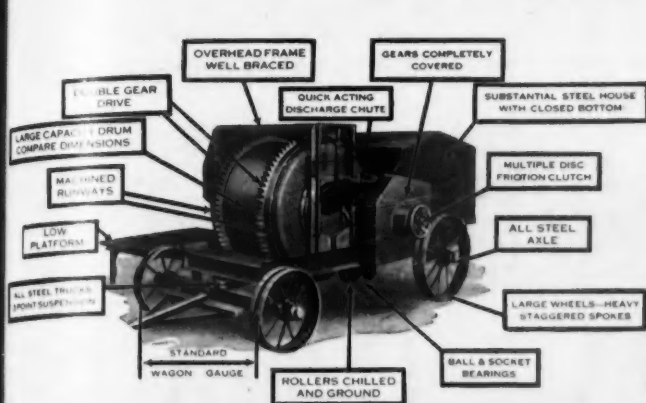
**The Bostwick Steel Lath Co.**  
NILES, OHIO

# Bostwick

## TRUSS LOOP

*"Makes plastering permanent"*

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



# DANDIE

## The Big Value Light Mixer

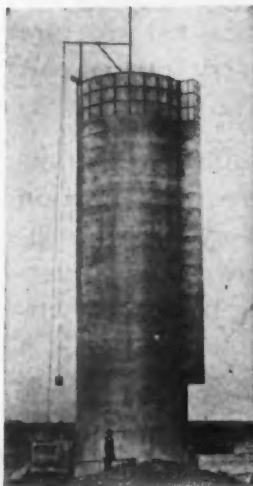
Send back the coupon at the bottom of this page—and get the full facts about the remarkable value of the light mixer field—the light mixer built first for **reliability** and then built in volume to keep the price down.

No, sir, the Dandie is not the cheapest mixer—it is the first light mixer built as strong as a light mixer can be built. It stands up to all the work you can give it—is dependable to stick on the job without costly delays.

But the price is within the range of light mixer prices—that is why it is the remarkable value—you are surprised that you could get such construction for the price. It is only made possible by scientific design, big production and standardization

of every part. This is how we get the price down, not by skimping.

Get the Dandie Catalog—get the full details of how volume production has put new reliability into the lighter mixer field—see for yourself why the Dandie is the remarkable value of the industry.



4 cu. ft. and 7 cu. ft. capacities Wet Batch Rating. No. 104-S, gasoline, No. 107-S, steam or gasoline. May be equipped with low charging platform, power charging skip, automatic water-measuring tank and light duty hoist.

The Big Yardage Mixer for Footings, Sidewalks, Silos, Culverts, Etc.

SEND BACK THIS COUPON

KOEHRING MACHINE CO., Milwaukee, Wis.

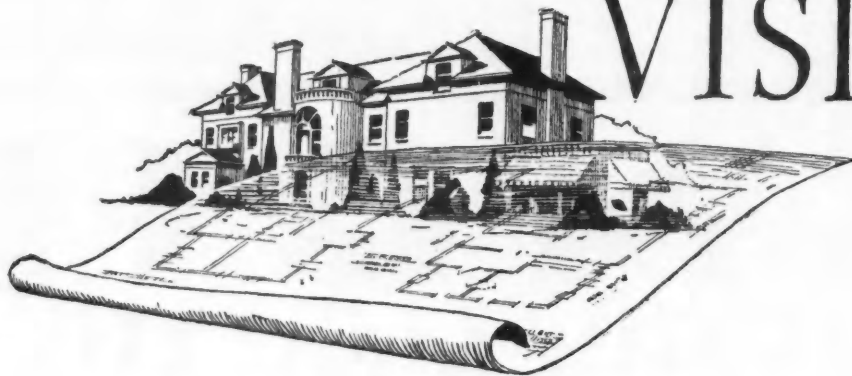
Please send, without obligation, your Dandie Big Value Catalog K-5.

Also send me information on items marked X in ☒ Bar Benders ☐ Bar Cutters

Name \_\_\_\_\_

Address \_\_\_\_\_

# Architectural VISION



**T**HE ability to see beyond the plan and to select those materials which will add both beauty and durability to the finished edifice—that is Architectural Vision.

To have this vision is to know beforehand that the finished structure will last and that every integral part will be worthy of the whole.

Architects and Builders with a vision know the important relation Hinges bear to worth-while construction. They know a careful selection at first will later be rewarded by years of uninterrupted service. A squeaking, sagging door to them

destroys the otherwise successful building.

For fifty years McKinney Hinges and Butts have set a standard for Architects and Builders who take pride in the buildings they create. To them the name McKinney in a specification solves the hinge question—permanently.

There is a McKinney Hinge or Butt to fit any architectural design. If you do not have the McKinney catalog in your files we will gladly forward you our latest edition. You will find it valuable in matching artistic designs and in meeting unusual hinge needs.

McKINNEY MANUFACTURING CO., Pittsburgh  
Western Office, State-Lake Bldg., Chicago

Export Representation

## McKINNEY

### *Hinges and Butts*

*Also manufacturers of McKinney garage and farm building door hardware, furniture hardware and McKinney One-Man Trucks*





# some speed

TELEPHONE 2218 MURRAY HILL  
50 Church Street,  
New York City.

FREDERICK ROEBER  
807 FIFTH AVENUE  
NEW YORK

January 10, 1920.

Att: Mr. Wilson

F. H. Conklin & W. G. Harrington, Inc.  
50 Church Street,  
New York City.

Gentlemen:-

I am very glad to reply to your enquiry regarding the "Little Wonder Concrete Mixer" which I bought and put to a severe test in the laying of the Floor Concrete at the Eighth Coast Artillery Armory in this City, which, by the way, has the distinction of being the largest Drill Floor in the world.

The Mixer is worthy of its title and this explains why: The Contract for laying the six-inch (6") Cinder Concrete Foundation was awarded to me last June, 1919, but owing to delays, the work was not ordered on until November 15th and at the same time, I was informed that the National Auto Truck Show expected to have the use of the Floor on and after January 1, 1920.

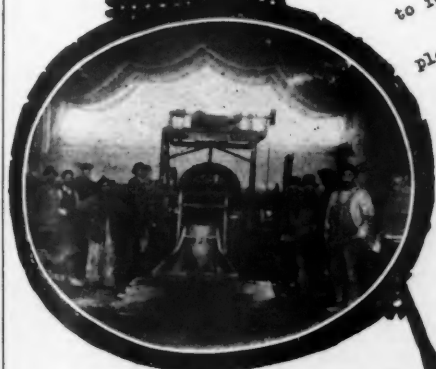
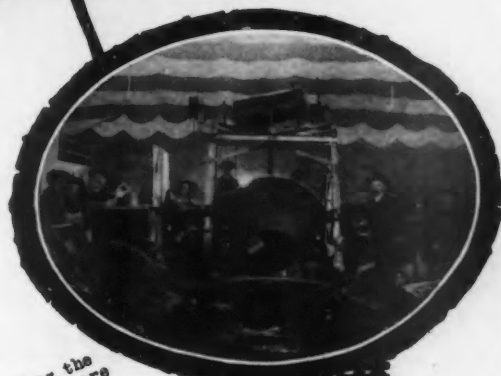
I actually started laying concrete on November 24, 1919 and expected to put in a second Mixer should the occasion demand it but found that not only did the "Little Wonder" do what I estimated it could, but I actually doubled up, and several days finished Ten thousand and two hundred square feet 10.200' in ten hours, or over One hundred and eighty-five cubic yards. The last Concrete was put in on December 24, 1919 giving us ample time to clean up, etc. for the Exhibition.

The only trouble I had, was in getting enough supplies to feed the Mixer.

If you care at any time to refer to me, I shall be very pleased to tell of my experiences.

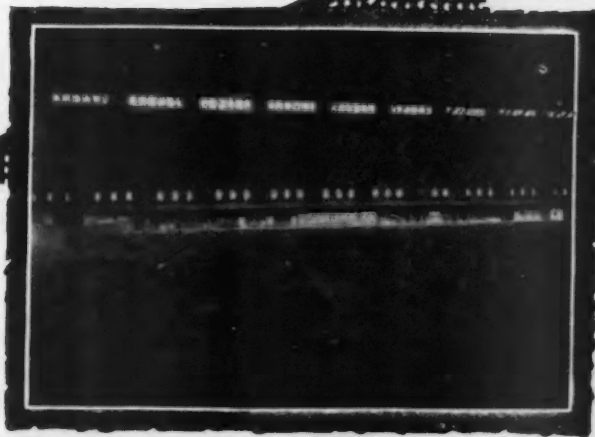
Yours very truly,  
*Fredrick Roeb*  
*by J. H. Brown*

FR:MM



FOR PRICES AND ILLUSTRATED INFORMATION  
WRITE FOR OUR CATALOG OF CONTRACTORS'  
EQUIPMENT AND BUILDING MACHINERY.

**WATERLOO Construction Machinery Co.**  
WATERLOO, IOWA





## Add a Sargent Auto Set Plane to Your Kit

The Sargent Auto Set Bench Plane is the most dependable plane we know of for finishing work. It's a true, clean and fast-cutting tool.

The feature about it that most carpenters like is the Automatic Set. When once set, the clamp, when replaced after removal, will always return to its original position, and give the same depth cut. No readjustment necessary. Made in six sizes. Write for the Sargent Book of Planes.

## SARGENT STEEL SQUARES

The Sargent Self-Calculating Square is the only square made which will get the lengths and cuts of Hip, Valley, Jack and Common Rafters, without figuring on the part of the carpenter. It calculates as you measure and does it quickly and correctly. It is made of the finest tool steel, with plain and accurate markings. They come in nine dependable finishes. Let us send you the Sargent Framing Square Booklet.

## Sargent & Company 51 Water St., New Haven, Conn.

The choice of hardware is often left to the builder. Advertisements like the one shown at left are carrying the Sargent Hardware message to home builders all over the country. This national advertising has done much to popularize Sargent Hardware. Equip that home you are building with Sargent Hardware and your action will meet with hearty approval.

**Build Now—  
put your own key in your own front door**

There will be pleasure in building your own home. Build promptly. Enjoy the comfort of a place planned to meet your own ideas.

Build well. Sound judgment uses the use of good materials—especially in hardware. Sargent Hardware gives you the advantages of protection, convenience and solid, substantial quality combined with attractiveness.

Sargent designers have created many tasteful patterns in harmony with latest architectural and decorative standards. These are well illustrated in the Sargent Book of Designs. Write for a copy and discuss it with your architect.

**SARGENT & COMPANY, Hardware Manufacturers**  
Water Street, New Haven, Conn.

**Sargent Door Closers**  
In every home there are doors that should be kept closed—the back door, the door to the bedroom, the door to the bathroom. Sargent door closers add to the quiet and dignity of the home—no more open doors, no sleeping and being up. Our light duplex door closer is indispensable in the bedroom.

**SARGENT**  
LOCKS AND HARDWARE

# SARGENT

## LOCKS AND HARDWARE

# JOHNSON'S PERFECTONE UNDERCOAT AND ENAMEL

You can turn out perfect work — satisfy your trade and complete more jobs if you will use Johnson's Perfectone Undercoat and Enamel for finishing interior trim. The stock shades are White—Ivory—and French Gray, but we are in a position to furnish any other shade for large jobs upon receipt of sample.

**Johnson's Perfectone Undercoat** works easily under the brush and can be flowed on and brushed out free from brush marks. Dries hard with a smooth, velvety sheen—requires very little sanding.

**Johnson's Perfectone Enamel** is exactly right for the expert finisher and will always give perfect results for the unskilled workman. It works freely under the brush and is quick drying. It will not fade, chip, check, crack or peel.

**Johnson's Perfectone Enamel** is made in Satine and High Gloss. We recommend the use of the Satine everywhere except in kitchens and bath rooms where a High Gloss may be desired. Johnson's Perfectone Enamel Satine has just enough gloss and not a bit too much. It gives a beautiful, artistic, hand-rubbed effect without the expense of rubbing, but it may be rubbed if desired. Johnson's Perfectone Enamel is elastic and durable. It stands repeated washing with soap and water.

We are glad to furnish painters and contractors with beautifully finished wood panels. Do not hesitate to bring your wood finishing problems to us.

**S. C. JOHNSON & SON, RACINE, WIS.**

*"The Wood Finishing Authorities"*

*Established 38 Years*

**S. C. JOHNSON & SON, Dept. AD3 Racine, Wis.**

I am interested in Johnson's Perfectone Undercoat and Enamel. Please send me the items checked.

- .... Finished Wood Panels.
- .... Sample Perfectone Undercoat.
- .... Sample Perfectone Enamel.

NAME

ADDRESS

I buy from

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

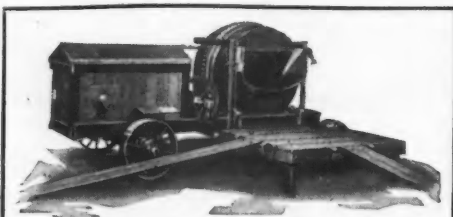


# Smith 7-S Performance Counts

Here is a report on a Smith Mixer shipped in 1908, twelve years ago, to one of the best known General Contractors and Consulting Engineers in the Middle West (name on request)—report dated Feb. 12, 1920:

"This machine has probably mixed 100,000 yards and is still in first class condition. Will probably do as much more work as already reported. This machine has been of very little expense in upkeep."

That is what Smith Performance means. You get *Value That Endures* whenever you invest in any Smith Equipment. ¶ With the Smith 7-S, the time of Discharge is only 8 seconds. That is *Speed*. It gains 32 extra batches in an eight-hour day. Your fixed charges are the same. That extra yardage is extra profit. Think that over.



The low charging attachment which can be fitted on the Smith 7-S makes an extremely convenient loading arrangement. Platform is only 16 inches high—just like wheeling into the mixer right from the ground level.

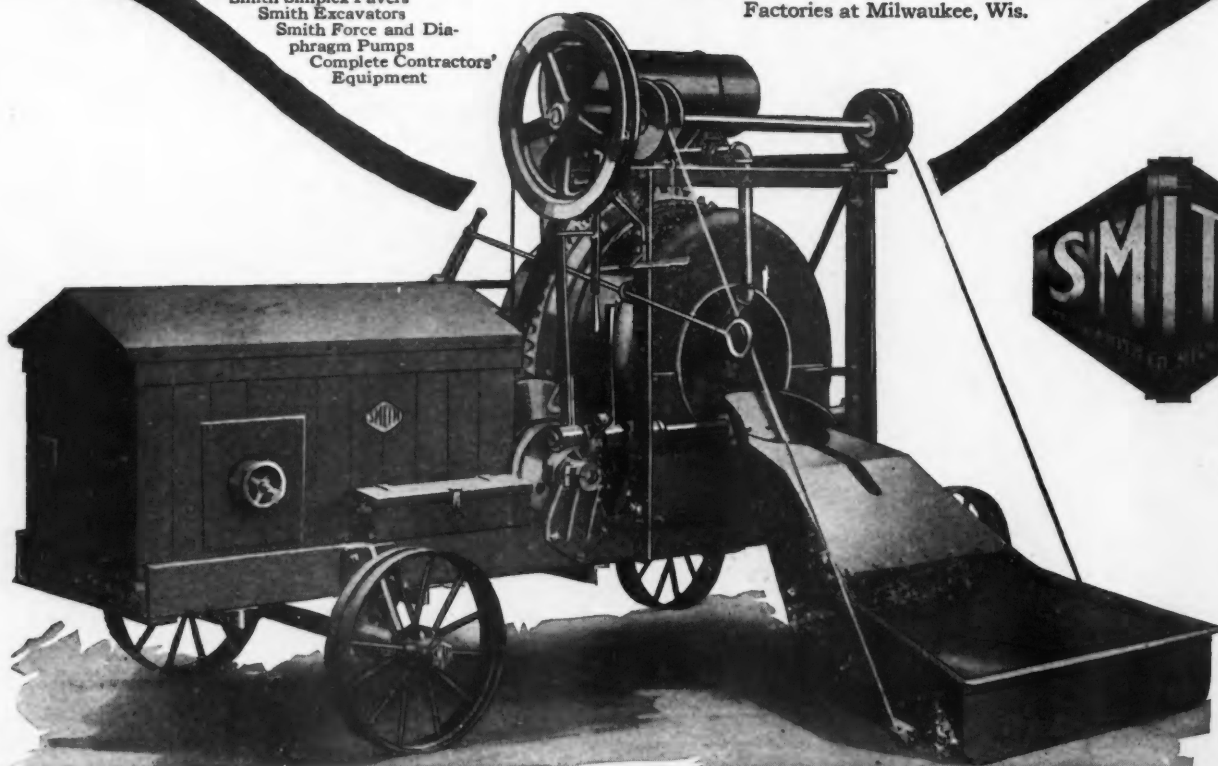
Smith Tilting Mixers  
Smith Non-Tilting Mixers  
Smith Simplex Pavers  
Smith Excavators  
Smith Force and Diaphragm Pumps  
Complete Contractors' Equipment

## The Underslung Chain

On the Smith 7-S the chain that drives the drum is slung *below the drum*, not around it. Thus the weight of the drum exerting a constant pressure on the chain, acts as an automatic tightener. No trouble of slipping or time-killing adjustments.

**THE T. L. SMITH COMPANY**  
338 OLD COLONY BLDG.  
**CHICAGO ILLINOIS**

Factories at Milwaukee, Wis.



# SMITH MIXER

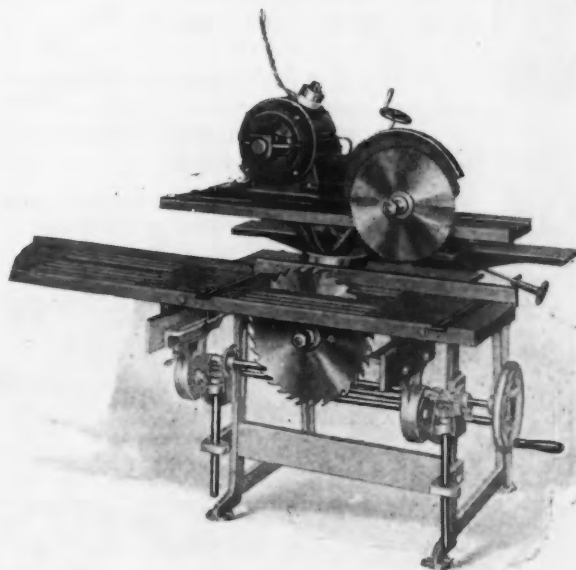
Have your building ready for finish while your competitor is getting his frame up. Do it with a quick first-class carpenter, a Master Woodworker, and a bunch of nail drivers. Finish your job while he is waiting for mill work. This is the big building year. If you do not make your stake now, you never will. With the Master you can do twice as much work as you have planned to do. You do it so fast you need no more capital. Make a reputation as the best and fastest builder around. The Master costs \$520.00 now, and you may get delivery if you order at once. We make no promises of price or delivery a month from now. The Master will save its cost on the first job. Catalogue on request.

### THE WOODWORKER MANUFACTURING CO.

Corner Brush and Congress Sts.

Detroit, Michigan

Rips and joints straight or on bevel, cross cuts like a swing saw, mitres, fire cuts, houses stair strings, dados, rabbets, forms moulding. Makes every cut needed on building, rough or fine, quickly and accurately. Built to carry around, and to last a lifetime.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



FOUR FAMILY APARTMENT—LOS ANGELES, CAL.—MEDUSA WHITE CEMENT STUCCO

## MORE BEAUTIFUL HOMES

Your customers are seeking more attractive, more permanent homes than ever before. What's more, they are going to the man who can satisfy their demands.

You can satisfy the demands of your customers by using

**MEDUSA**  
WHITE CEMENT  
STAINLESS

for all exposed and ornamental concrete work. This cement is a waterproofed white cement that gives greater beauty to any concrete structure you may erect, whether block, stucco or monolithic.

The white of Medusa white is permanent—stainless. The waterproofing prevents efflorescence and discoloration, while not in any way affecting the strength, setting or hardening qualities of concrete. It makes the concrete absolutely impervious to water.

For facing concrete blocks, for pure white or tinted stucco, for steps, casings, columns, doorways, panels, reliefs, and other interior or exterior decoration, use Medusa Waterproofed White Cement. The result will be a satisfied—Contractor, Builder, and Owner.

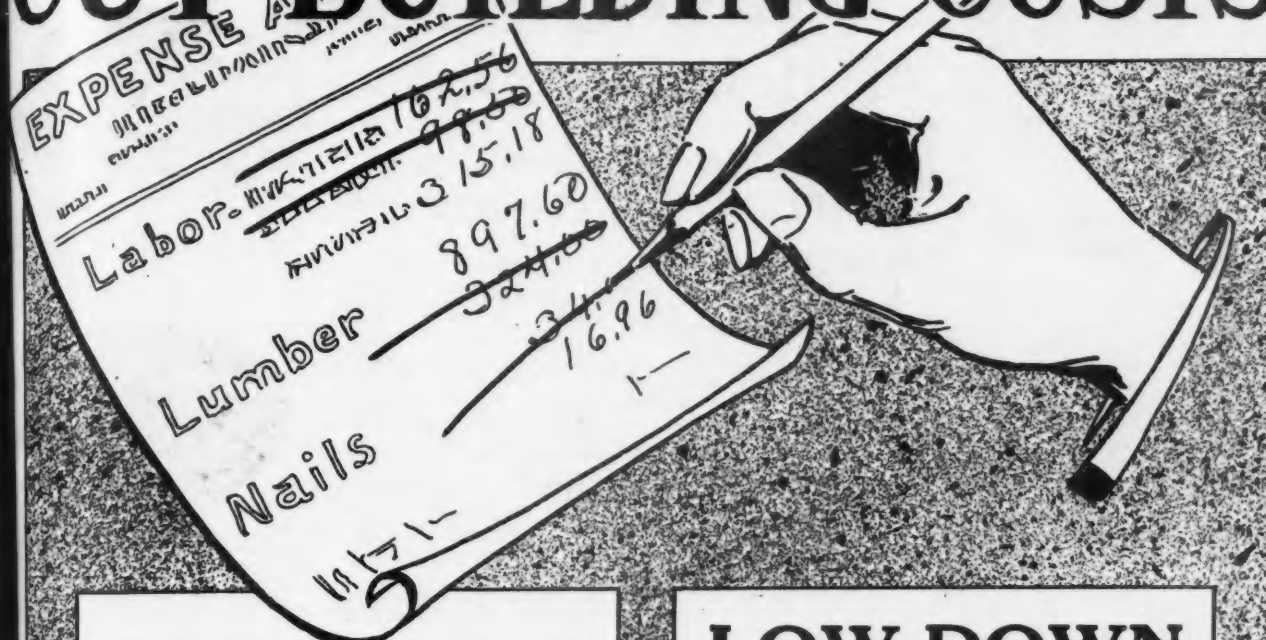
*We have an attractive booklet for contractors, builders, and product makers describing the many uses of white cement. A copy will be sent at your request. Address Department C.*

**THE SANDUSKY CEMENT COMPANY**  
CLEVELAND OHIO

*Manufacturers of Medusa White and Medusa Grey Cement—plain or waterproofed and Medusa Waterproofing—paste or powder*



# CUT BUILDING COSTS



## RELIABLE SCAFFOLD BRACKETS

Are you making every detail count for a profit? Little leaks mean big losses. Estimate the labor cost, waste lumber, and nails involved in erecting wooden scaffolds. Then look at Reliable Scaffold Brackets — quickest to erect using no lumber and few nails, and yet so safe and strong that you can trust them with a far heavier load than you would venture to put on wooden scaffolds. This is a case when a cheaper way is the better way. Write today for our catalogs.



**ELITE  
MFG.CO.  
ASHLAND, O.**

## LOW-DOWN CONCRETE MIXERS

Your labor bills are increasing day by day, eating into your profits. What are you going to do about it? The solution is this — use speedier machinery; get your full value from the houses you pay for. In concrete work you will find that your one best speed-producer is the "Low-Down" Continuous Concrete Mixer. It makes speed without sacrificing the quality of your work — there will be no weak spots in the job. It comes mounted on trucks and equipped with 4 h. p. Novo gasoline engine; or on skids, with tight and loose pulleys for attaching to line shafting in concrete block plants. Write for our catalog and list of pleased owners in your vicinity.



# Knickerbocker

## A COMPLETE LINE

### Of Portable Woodworkers

#### A Machine for Shop Work That is Also Portable

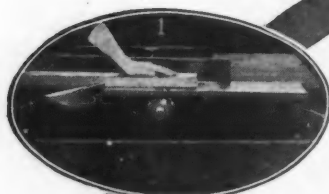
THAT is the need right now and this Knickerbocker No. 3 fills it completely at a very reasonable price.

A 16 in. rip saw for ripping—a 20 in. saw for cross cutting—A 6 in. safety jointer with bearing on each side—A boring attachment with full set of bits—A sander—A 9 in. adjustable dado and rabbetter—An 8 in. emery—22 in. band saw—Gauges for cutting miters—Sawing and jointing bevels—Ripping and cross cutting—An attachment for making moldings—A powerful engine with magneto that uses either kerosene or gasoline—An electric motor if desired—All of these on the No. 3.

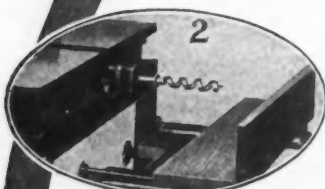
You can use it in the shop or out on the job. Our catalog No. 20-W shows a complete line of portable woodworkers—Combination swing cut off and ripping machines—etc.

### The Knickerbocker Co.

525 Liberty Street  
Jackson, Michigan, U. S. A.



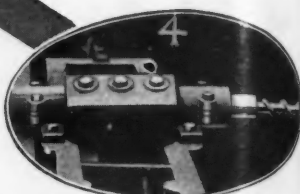
No. 1. Jointer—Both front and back of jointer table are adjustable.



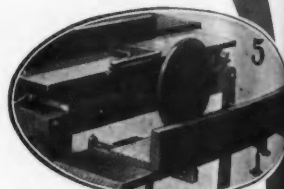
No. 2. Boring attachment—With adjustable sliding table and assortment of boring bits.



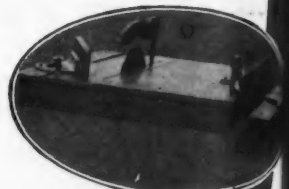
No. 3. Groover and Rabbetter—Adjustable to cut different widths and depths.



No. 4. 6 in. safety jointer head with bearing on each side—no chattering.



No. 5. Sander with adjustable sliding table.

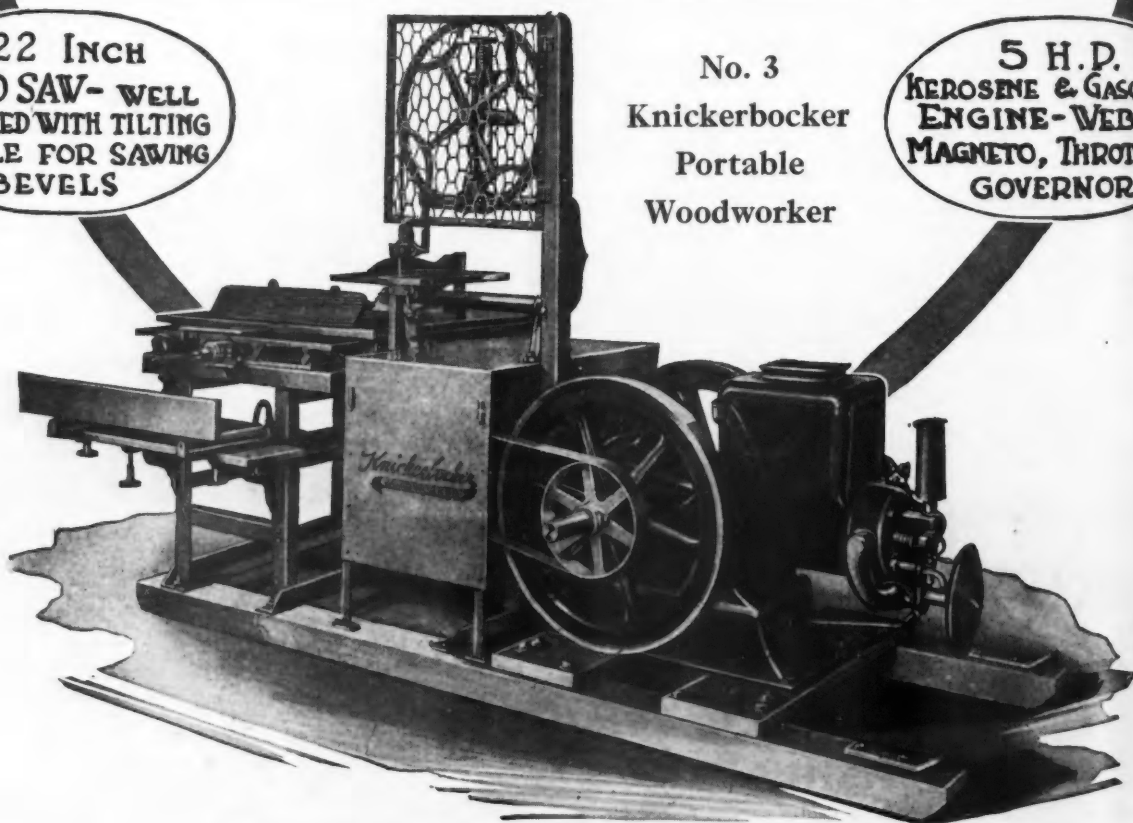


No. 6. Large saws—Adjustable gauges for ripping—mitering—cross cutting and bevelling.

**22 INCH  
BAND SAW—WELL  
GUARDED WITH TILTING  
TABLE FOR SAWING  
BEVELS**

**No. 3  
Knickerbocker  
Portable  
Woodworker**

**5 H.P.  
KEROSENE & GASOLINE  
ENGINE—WEBSTER  
MAGNETO, THROTTLING  
GOVERNOR**



# One Simple Plant Brings Every Comfort

One simple, compact Kewanee Plant brings all the comforts of water and electricity to any home you build. This complete plant, including water tank and batteries, covers only 8x10 feet. It is as economical in cost and operation as a light plant alone, and requires but little more space.

Anyone can install it; it requires no special base. With the installation of the pipe and wire, the Kewanee is ready to give a lifetime of modern comforts to its owner.

Let us send you free bulletins picturing and describing Kewanee systems. Every Builder and Contractor needs the information they contain.

## Modernize the Homes You Build

If you recommend and plan the installation of Kewanee Systems; if you have a reputation for building modern homes, it will mean better business. The most desirable contracts are those demanding private utilities. Prepare to bid on these, or furnish information to clients. Send for the Kewanee Bulletins.

### Kewanee Water and Light Plants

Are made in sizes and styles for any building. Public Institutions, Country Clubs, Country Homes and small cities are using Kewanee Plants. They are not just gas engines connected to a dynamo or pump, but high-grade, quality plants, the result of over 20 years' engineering experience.

Kewanee plants are made to give trouble-free service without expert attention. Anyone can operate them. Free Kewanee bulletins will convince you of their quality. Send for them, today.

**Send for free Kewanee Bulletin**



### Kewanee Sewage Systems

We furnish plans for adequate, sanitary, easily-constructed sewage systems to care for all wastes. Materials may be bought anywhere and anyone can construct one. Requires no special care and gives perfect service.

### Our Engineers Help You

Our Engineering Department is always at the service of any Contractor, Builder or Owner who is installing or operating a Kewanee System. Write to us concerning any question that arises in providing private utilities for any home or building. We shall be glad to co-operate.



Running Water

# KEWANEE

Electric Light



Sewage Disposal

## Kewanee Private Utilities Company

424 So. Franklin St.

Kewanee, Illinois





## More Convenience Receptacles Needed

**C**ONVENIENCE receptacles for attaching vacuum cleaners and other household helps are frequently overlooked on the average wiring job.

Enough receptacles, preferably double ones, properly placed, means not only a degree of convenience and satisfaction far above the added cost but the possibility of higher rentals or easier sale.

Every room should have several of these outlets and they should be placed for maximum convenience with respect to probable use. Consideration of the likely position of furniture avoids awkward locations.

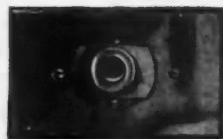
### G-E RELIABLE WIRING DEVICES

*can be furnished by any reputable  
electrical contractor*

**General Electric Company**

General Office  
Schenectady, N. Y.

Sales Offices in  
all large cities



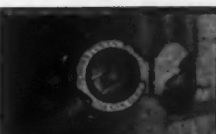
This receptacle requires a special plug restricting the use of devices to outlets similarly equipped. The ordinary push button switch plate is used to cover the outlet.



"Standard" flush receptacle for single plug.



"Standard" flush receptacle for two plugs.



Single door receptacle for non-separable screw base plugs. Door may be closed when plug is removed.



Flush type receptacle for special plug. Has 25 ampere capacity.



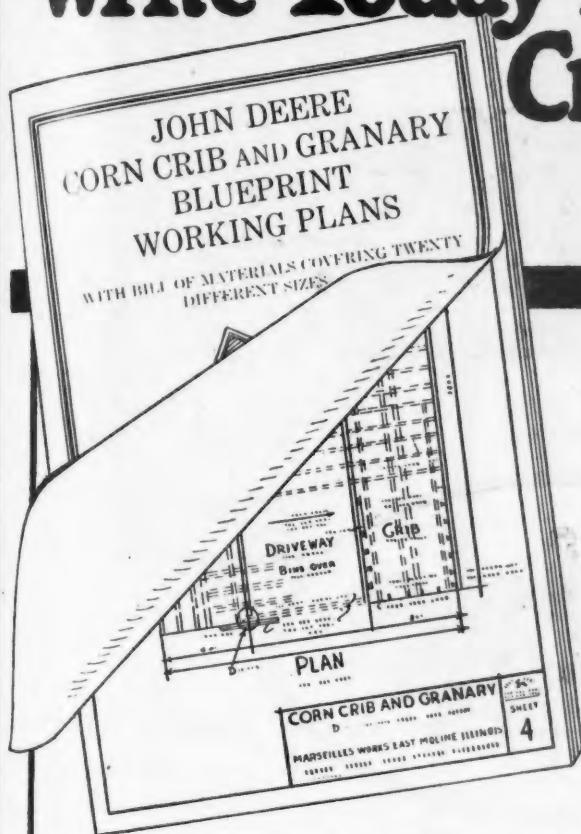
Disappearing door flush receptacle requires special plug. Contacts are always protected; when plug is removed the doors seal the openings.



Double door flush receptacle for special plug. When plug is inserted two doors in the plate close, leaving nothing exposed but a thin porcelain flange.

The name General Electric Company on an electrical device is a guarantee of quality backed by over a quarter-century's experience in the generation, transmission, distribution and application of electricity.

# Write Today for These Free Crib Plans-Worth Dollars to You



Every contractor, carpenter, or lumberman devoting attention to farm trade will find these blue print crib plans of big value.

Plans cover completely the practical and economical construction of the modern combination corn crib and granary—the type of crib the farmer wants.

Blue prints show the side elevation, end elevation, transverse section and floor plan with all necessary detail drawings—plans are flexible enough to meet all requirements.

## Plans Include Bills of Material Covering Twenty Different-Sized Crib

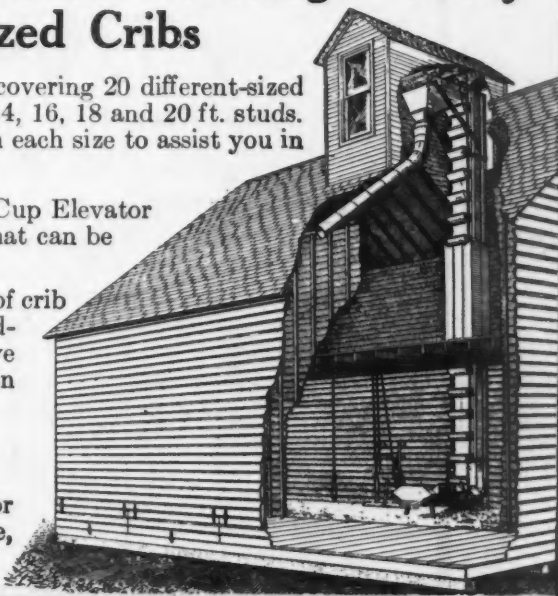
With the blue prints you get Bills of Material covering 20 different-sized cribs ranging from a 24 ft. to a 48 ft. crib with 14, 16, 18 and 20 ft. studs. Ear corn and small grain capacities are given with each size to assist you in determining the size of crib your customers need.

Plans show how to install the John Deere Inside Cup Elevator and illustrate the variety of elevator equipment that can be furnished.

Recommend the construction of this modern type of crib to your customers. Building it, instead of the old-style, low-down crib of same capacity, they can save enough in materials and labor to pay for a John Deere Inside Cup Elevator.

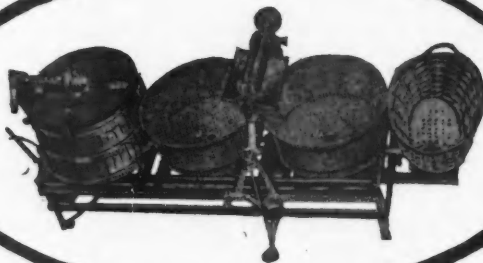
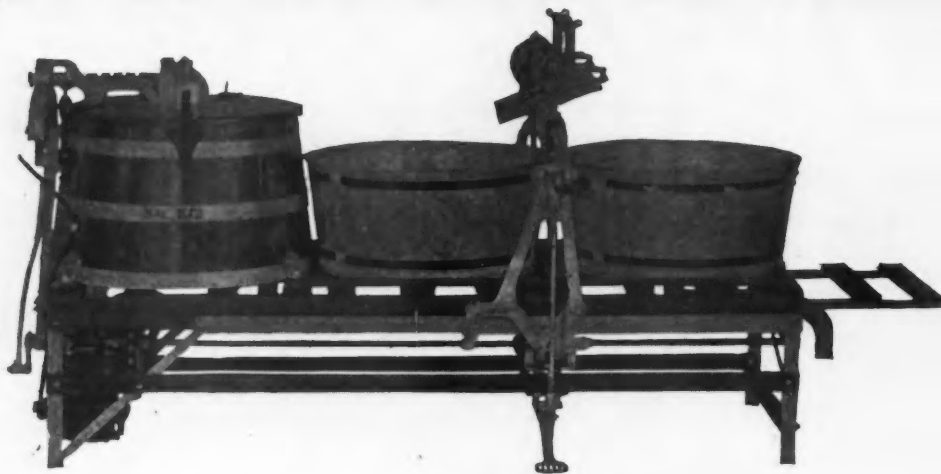
### Write for These Free Plans Today

Be sure to have these valuable plans available for your use. Drop a card today to John Deere, Moline, Ill., and ask for Free Plans FP-455.



# JOHN DEERE

THE TRADE MARK OF QUALITY MADE FAMOUS BY GOOD IMPLEMENTS



A Complete Washing Unit

## Voss Triple Tub Washer

*Not Merely a Washing Machine But a  
Complete Laundry in Itself*

HOME BUILDERS frequently neglect provisions for washing convenience in the laundry of their dwellings—and then regret it later. The Voss Triple Tub Washer was built with but one idea in mind—to make the work of washing easier and more efficient. The machine is equipped with two extra tubs for rinsing and blueing. All these tubs are connected to a common drain pipe which runs underneath the machine. This of course does away with all lifting of water or tilting of tubs as any tub can be drained instantly by simply pulling out the stopper.

### A Big Saving

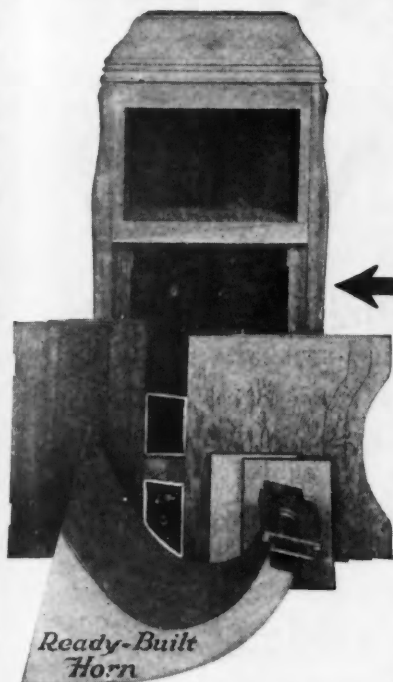
This equipment takes the place of the usual stationary laundry tubs and doesn't cost any more. A Voss Triple Tub Washer gives you both a washing machine and stationary laundry tubs in one complete unit.

For Further Details on the Voss Triple Tub Washer  
Write to

**Voss Bros. Mfg. Co. Davenport, Ia.**







Above cut shows Cabinet pieces, as you receive them, all ready for assembly and finishing, according to plan 3. Also furnished, "knocked down," plan 2, and for cabinet makers, plan 1, to be worked out from simplified plans and blue prints, which we supply.

The Cabinet Pieces consist of legs, shelves, doors, scroll, dome strips, panels, ready-built tone chamber, and all other pieces ready to assemble and glue together. No cutting, no fitting, no special tools required. The Cabinet in the White, as styled by our information literature, are the cabinet pieces all assembled and glued together. There remains only for you to install the motor and tone arm, attach the cabinet hardware and do the finishing. This is our Plan 3, and is very popular, as it calls for the least amount of mechanical work, and is more quickly done.

## This Shows How Easy We Make It For You To Build Your Own PHONOGRAPH

LOOK at the cut at the left, and you will quickly see how easy we have made it for you to build your own Phonograph, in your own home, kitchen, basement, or, out in the garage, after you receive the cabinet pieces, all cut, fitted, and ready to go together according to our plan.

**You Don't Need to Be a Cabinetmaker** to do the job. All the hard part has been done. No chance for mistakes. After it is all set up and the Tone Arm and Motor are in place, it will be another simple matter to finish it in the color you wish. You will enjoy the work immensely.

### Read What This Ohio Man Says:

"I have found it no trick at all to build your Model 5. . . . Would not trade it for any selling around \$200.00 in the stores. . . . I am going into the business of building Phonographs to sell to my friends." You can do what he did, and have a beautiful machine at a



This is the finished product, model 5, that one of our patrons built himself, from our Cabinet Pieces, and mechanical parts, etc., at about one-fourth retail price asked for a machine of like quality.

## Great Saving in Cost

If you will do as we say—send for the cabinet pieces and do a little pleasant work in spare time, at home. The family will enjoy the phonograph as much as you and all will be prouder of it because you made it—*Built It Yourself*.

You do not have to confine yourself to any one model. There are

### SIX MODELS TO CHOOSE FROM

All handsome, offering you a wide range in price. The mechanical parts are the same in quality for all models and consist of motor, sound-box, tone-arm, turn-table, winding crank, speed regulator, brake, etc. No machine at any price has any finer mechanical equipment than these. They play all records.

### Agents Are Making Big Money

How? *Making and selling Phonographs on our plan!* Naturally they can sell much cheaper than the retailer, and the demand is always greater than the supply. Soon a man has to devote all his time to HIS OWN BUSINESS. He has entered the manufacturers class, and become engaged in one of the best businesses on earth—manufacturing musical instruments and by starting small, he can grow and furnish his own capital. We help him with his manufacturing and merchandising plans, at every stage. There is not sufficient room here to give the particulars of the whole interesting plan, but we will do so if you will

### SEND COUPON TODAY FOR FULL PARTICULARS

and read them carefully. They will open up a new business to you, as well as show you how you can build a phonograph for yourself, at a tremendous saving in cost—fully one-fourth. Send that coupon right away, while the subject is fresh in your mind.

**MODERN PHONOGRAPH SUPPLY CO.**  
224 Springer Bldg., 313 S. Clinton St., Chicago, Ill.

Fill Out This Coupon and Mail Today

**MODERN PHONOGRAPH SUPPLY CO.**  
224 Springer Bldg., 313 S. Clinton St., Chicago, Ill.

Gentlemen:—Please send me full particulars of your "Build Your Own Phonograph" proposition, without obligation to me.

Name.....

Street Address.....

City or Town.....State.....

## Are You Reading **FARM MECHANICS?**

—Are you getting the benefit  
of the building promotional  
work being done by Farm  
Mechanics each month?

This monthly illustrated  
magazine, going direct to  
the best farmers, is full  
to overflowing of better  
building ideas and plans.

Every rural builder and  
every lumber dealer  
should be getting Farm  
Mechanics regularly.

The cost is only \$1.00 for twelve  
big issues—use the coupon on  
opposite page and get a valu-  
able farm building book FREE.

### **FARM MECHANICS COMPANY**

WILLIAM A. RADFORD, President

1827 Prairie Ave.

Chicago, Ill.

# Farm Building Book FREE

Send in your subscription to "Farm Mechanics" today—our Big New Farm Magazine, twin brother to the American Builder—and receive this big 160-page book absolutely FREE, all charges prepaid.

*Farm and Building Guide* is a store house of information that every builder will treasure—70 Practical Farm Buildings illustrated in the most realistic way—good building ideas and suggestions on every page.

It contains 160 pages and more than 200 illustrations.

The illustrations show Farm Buildings—ideas on remodeling—and suggest to the farmer new buildings.

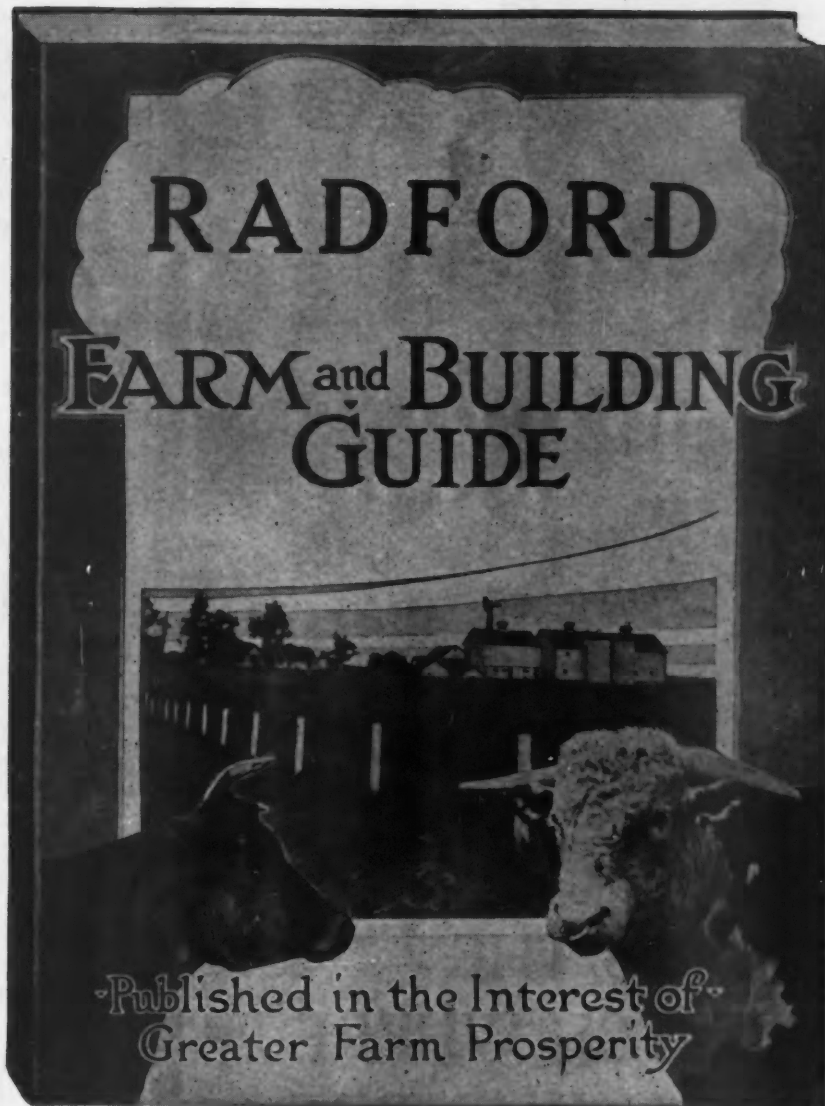
In this book Mr. Radford, the editor, has taken up every subject from turning over the soil to the completed farm buildings. It talks better farming, better farm methods, better farm improvements, better farm houses; in fact, as near as possible, it endeavors to place on the farm all the comforts and conveniences that are enjoyed in the city.

We believe this book, as well as our New Magazine, "Farm Mechanics," will have a tendency to keep the boys on the farm and prevent the farmers from retiring.

More comfort, better buildings, and better equipment will all tend to make the farmer happier and increase the builder's and the lumber dealer's business.

## FARM MECHANICS

is Mr. Radford's New Monthly Magazine—112 pages or more each issue—size 8½ x 11½ inches. Hundreds of fine illustrations. When Mr. Radford started the "American Builder" 14 years ago more than 22,000 enrolled as Charter Member Subscribers in a single month without waiting to see the new paper—and not one was disappointed. They got what proved to be the world's greatest building paper. Here is another Charter Member Subscription opportunity. Don't let it pass. Order today. Be one of the first.



### Radford Farm and Building Guide

contains 160 pages, size 8½ x 11½ showing

51 practical and up-to-date Farm Buildings and Garages, 12 Modern Homes, 2 Churches and over 100 other illustrations. Regular Price Fifty Cents.

This picture is a reproduction of Front Cover—¼ Actual Size.

## Use This Coupon and Get Valuable Book Free

FARM MECHANICS CO., Wm. A. Radford, Pres.

(AB3)

1827 Prairie Ave., Chicago

Date.....

I enclose herewith \$1.00 for which kindly enroll me as a Subscriber to "FARM MECHANICS" for the period of one year, and also send me Free by return mail copy of your 160-page book, "Radford's Farm and Building Guide."

(Personal check, P. O. Order or currency can be sent at publisher's risk)

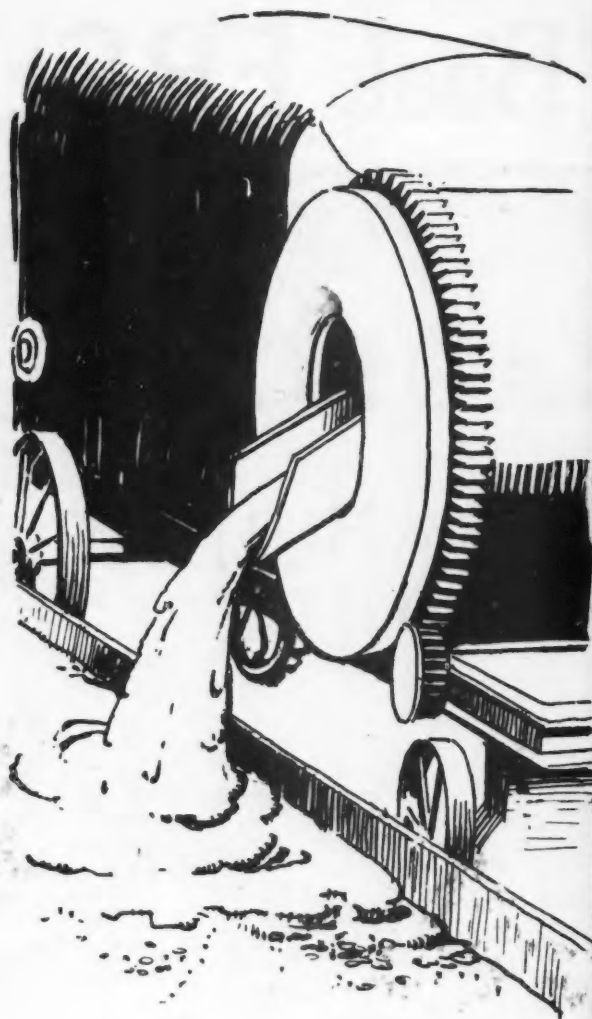
My address is

Name..... Business or Occupation.....

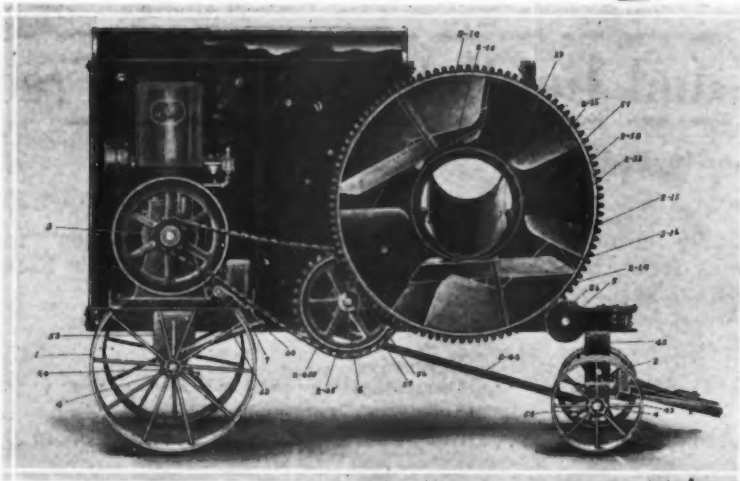
Town..... State.....

Box or Street No.....





**PUTS THE  
BATCH WHERE  
YOU WANT IT**



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

## *Before You Decide—*

On that new mixer this spring just drop us a line and let us send you the illustrated specifications and prices on the

# **NEW WAY MIXERS**

They have the combination that wins, on every job, large or small.

## **Speed Power and Simplicity**

Quick charging and a side discharge that puts the batch just where you want it. That's what speeds up the job.

So simple that any unskilled laborer can operate it.

Novo Engines installed in New Way Mixers make a power plant that has stood the test of time.

**THREE SIZES**—The New Way is made in half bag size of 5 cubic feet. One bag, 7½ cubic feet and one and one half, 10 cubic feet.

Order now and be assured of

## **PROMPT SHIPMENT**

We are well supplied with raw materials.

Write or wire today and a catalog and prices will be mailed you without delay.

**NEW WAY MFG. CO.**

**Box 311**

**EAU CLAIRE**

**WISCONSIN**



**Ro-San  
Complete**

## Bathroom Outfit \$87<sup>50</sup>

Also Outfit No. 2 at \$93.50 and Outfit No. 3 at \$149.50

Have that long wished for bathroom. You have electric lights—furnace—musical instruments—fine furniture—automobiles—everything for comfort and convenience. Now have the bathroom.

### Bath Tub

**\$48<sup>50</sup>**

Closes up—Moveable

### Washstand

**\$30<sup>00</sup>**

Holds 4½ Gallons Water  
Alcohol Heater

### TOILET

**No. 1 \$12<sup>50</sup>**

Toilet in picture goes with  
No. 3 Outfit

### Ro-San Bathroom Fixtures Require NO PLUMBING

Have the comfort of a water system at less than half the cost. Tub is metal, full size, beautifully finished. Tank holds 12 gallons. Gas, gasoline or kerosene heater. Water drains through permanent pipe outlet or hose. Washstand is beautiful white; fine plate mirror. Tank back of mirror holds 4½ gallons. Waste drains into pedestal. Alcohol heater. The Chemical Toilet is absolutely odorless. Empty like ashes once a month. Choice of three sizes of toilets.

### Ro-San Fixtures Approved by Sanitary Experts

Health authorities endorse Ro-San Fixtures. Fixtures guaranteed. May be purchased separately. Free architectural service. We help you plan when you remodel or build. Install fixtures in any room. Write today for catalog and full particulars.

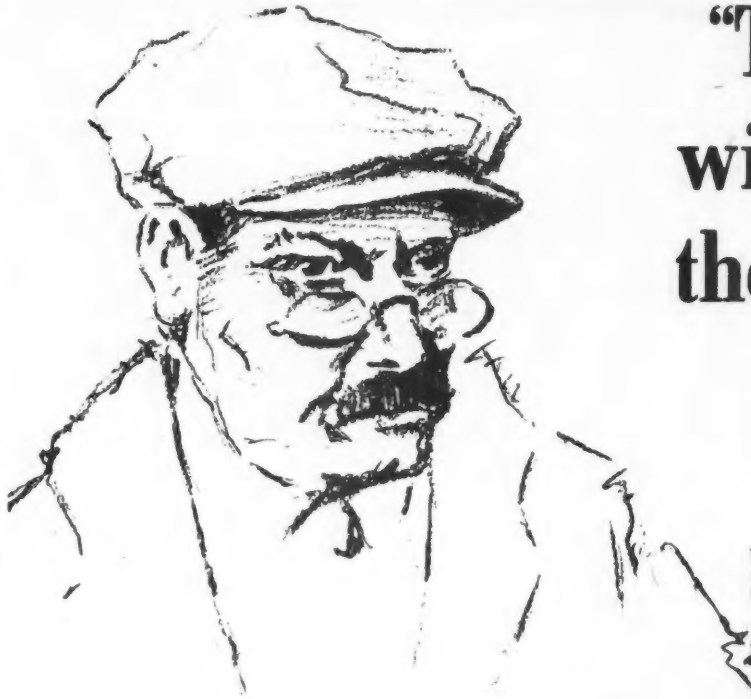
**THE ROWE SANITARY MFG. CO.**

**310 6th Street, DETROIT, MICH.**

World's Largest Manufacturers of Sanitary Bathroom Fixtures Without Plumbing

### A Splendid Opportunity for Contractors and Builders

Spring is coming. When you build or do remodeling, plan one of these bathrooms for your customers. Write today for agency proposition



**"The 'Standard'  
will take on all  
the work you can  
give it" . . .**

**S**UCH is the universal opinion of all builders who have come in contact with the

## **"STANDARD" Low Charging Mixer**

It is not only "a hog for work" but it is also highly efficient in its performance. Its unequaled mixing drum and power have put it in the front rank where fast high grade work is to be performed.

The low charging feature eliminates a lot of bond work and speeds up the job in great shape.

For information on "Standards"—both big and small—write for Catalog 44.

### **THE STANDARD SCALE AND SUPPLY COMPANY**

**NEW YORK**  
146 Chambers St.

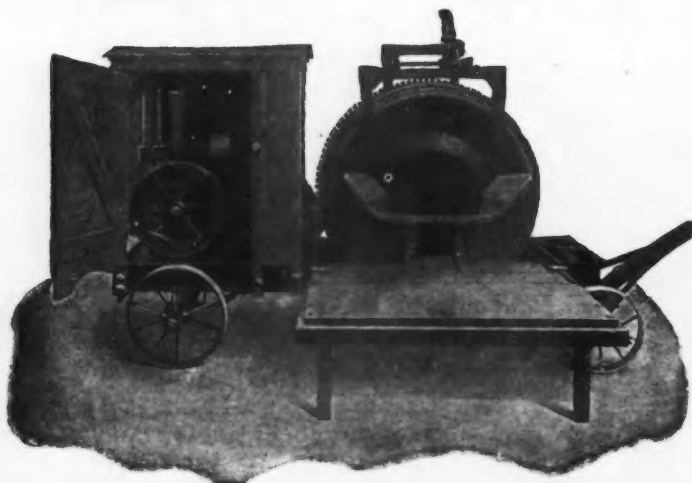
**PHILADELPHIA**  
523 Arch St.

**BALTIMORE**  
409 N. Gay St.

**CHICAGO**  
163 N. May St.

**CLEVELAND**  
1547 Columbus Rd.

**PITTSBURG**  
1631 Liberty Ave.





*Sterling*

STERLING ON A WHEELBARROW MEANS MORE THAN STERLING ON SILVER

## Tell 'em at a Glance

- 1—by those red handles
- 2—by the ten-spoke wheel
- 3—by the clamped-on handles
- 4—by the lack of squeaks—the self lubricating bearings
- 5—by the riveted leg construction
- 6—by the flat leg bearing reinforced with the extra steel shoe
- 7—by the cotter-pin lock for the axle. No nuts or bolts to work loose

And by the all around service they never fail to give—"Ask the man who pushes one"



*Sterling  
Wheelbarrows*

**Sterling Wheelbarrow Company**

NEW YORK  
BOSTON  
CLEVELAND

**MILWAUKEE, WIS.**

CANADIAN AGENTS-MUSSENS LIMITED, MONTREAL, TORONTO, WINNIPEG, VANCOUVER

DETROIT  
CHICAGO  
ST. LOUIS

EXPORT DEPARTMENT  
ALMACOA ALLIED MACHINERY COMPANY OF AMERICA ALMACOA  
31 Chambers St. New York U.S.A. Cable: Almacoa New York

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# U. S. G. Sheetrock

## The Contractor's Choice



**F**OR years you have been looking for this standard wall in unit form. You have wanted a unit material rigid, uniform and fire-resistive.

Here it is—Sheetrock.

A sheet of pure gypsum rock, Sheetrock won't warp, shrink or buckle. Sheetrock will not burn.

On all framework and in all moderate-priced construction, Sheetrock makes a job you can be proud of. It pleases the owner.

You can go over the work with him—point out how evenly the units of Sheetrock join in a flat surface—remind him it will not crack or warp or buckle or shrink—remind him it will resist fire—because it is a sheet of gypsum rock—Sheetrock.

And the longer he lives with it, the more that customer is going to value Sheetrock and respect your good judgment in using durable, good-looking, economical Sheetrock. Whenever he has any other building to do, he will naturally think of you first.

Look for chances to use Sheetrock on alteration and repair work. Sheetrock comes in broad, flat compact sections, 32 and 48 inch widths—ceiling high. It cuts, saws and nails like soft pine.

The U. S. G. Patented Reinforcement protects the edges, gives extra nailing strength, and makes a tight joint. Your dealer in lumber or in builder's supplies can furnish you with Sheetrock.

**UNITED STATES GYPSUM CO.**  
General Offices, Chicago

# WILLIS

## SHEET METAL PRODUCTS

### FARM BUILDING EQUIPMENT

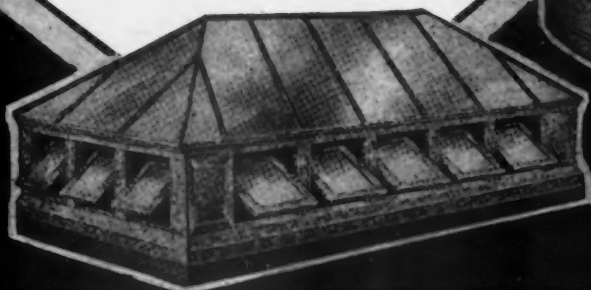
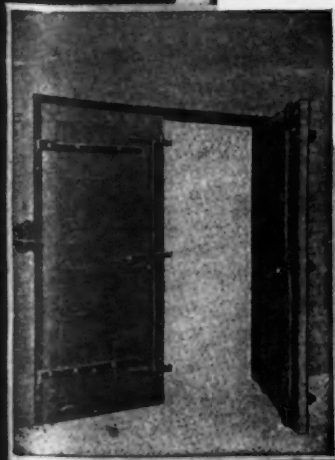
*Cupolas  
Roofing  
Weathervanes  
Metal Sash  
Skylights*

*Ventilators  
Ridging  
Cornices  
Fireproof Doors  
Windows Etc.*

All Willis Products are backed by our years of experience in manufacturing sheet metal articles. We know what the builder wants, and have made it our business to produce it. The result is a line of building equipment of the highest standards at a reasonable price. Every article is strongly built, of the best materials, and carefully finished; planned with judicious forethought as to its most efficient use; yet perfectly simple and easy to install. Both you and your customer will profit by the use of Willis Products—satisfaction all round is the result.

We are holding your copy of our complete illustrated catalog. Write for it without delay—catalog No. 7.

**Willis Mfg. Co.**  
**Galesburg, Illinois**







## What Is a Door to You?

It is not just a shutter to close a hole in the wall.

To the builder who takes pride in his work and who realizes the important part he plays in building homes for his fellow-men, a door is his opportunity to show his good taste in the selection of architectural details; and the way he hangs it is evidence that he is a workman proud of his work.

There are doors that merely close gaps. There are others that people notice and talk about because of their striking individuality.

The above is one of the latter kind. It is a Western design. There are many other Curtis doors quite as beautifully proportioned and with just as interesting lines. Some are of Colonial type; others are English; and still

others are of Western or Southern expression. These doors, like all Curtis Woodwork, have been designed by Trowbridge & Ackerman, architects, of New York.

Their "know-how" has been added to our "know-how." The result is Curtis Woodwork—distinctive, beautiful—a complete line of exterior and interior architectural woodwork, ranging from doors, stairways, permanent furniture and trim, to cornice molding and porch work.

It is the kind of woodwork that makes people who see it ask, "Who built this house?"

Go to your lumber dealer and see some of the new designs in the Curtis Catalog No. 400. Send us your name and we will keep you informed of developments in this very important department of your work.

## CURTIS SERVICE BUREAU

3095-4095 So. Second Street

Clinton, Iowa

MANUFACTURING AND DISTRIBUTING PLANTS AT

Oklahoma City, Okla.

Detroit

Lincoln, Neb.

Sioux City, Iowa

Wausau, Wis.

Topeka, Kan.

Minneapolis

Clinton, Iowa

Dayton, Ohio

Chicago

Eastern Offices at Pittsburgh, Baltimore and Akron

*The makers of Curtis Woodwork guarantee complete satisfaction to its users*

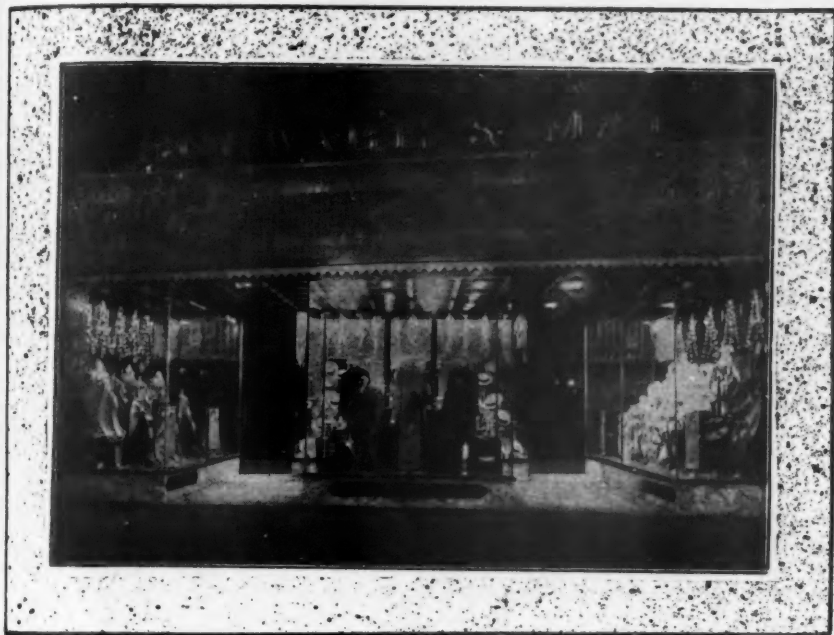
*"We're not satisfied unless you are"*

1866  
**CURTIS**  
**WOODWORK**

*"The Permanent Furniture for Your Home"*

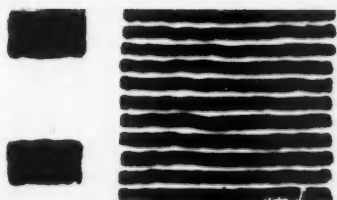
# CONTRACTORS!

## HAVE YOU CONSIDERED



*how many merchants there are in your town who are badly in need of remodeled store fronts?*

*They have already considered remodeling. You can get their business by showing them how to increase their sales 25% by installing*



## Kawneer

SOLID COPPER  
STORE FRONTS

*They are designed to display each merchant's particular line to the best advantage.*

*Send us measurements and data on your prospective store fronts and let us help you land these profitable orders.*

### CASH IN NOW

*Get started in this big profit line of work this spring. Do not delay but—Mail Coupon Today.*

THE  
**Kawneer**  
COMPANY

NILES MICHIGAN

PIN THIS COUPON TO YOUR LETTERHEAD

THE KAWNEER COMPANY  
1226 Front Street  
NILES, MICHIGAN

*Send me new book of Store Front Designs.*



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



## Cut Down the High Labor Cost

**W**HEN you check over the costs of decorating a home you will find that the chief item will be for labor. The cost of varnish and enamel is comparatively insignificant—rarely more than 10%.

Now one of two things can happen. A cheap varnish or enamel may be used, saving a few dollars, with the result that the whole job will have to be done over in a year or so at additional labor and overhead costs of several hundred dollars; or "Murphy's" can be specified with the assurance of many years of protection.

You can force a painter to use poor materials by insisting on too low an estimate. He would rather use Murphy materials. Painters have respected the quality of Murphy Varnishes and Enamels for over half a century—for architectural work, pianos and furniture, yachts, automobiles and railway cars and engines—for all new and old work.

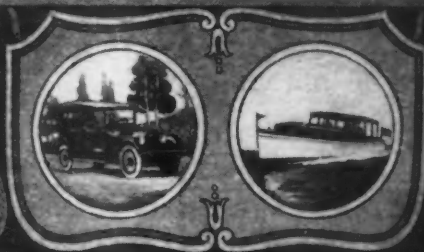
*May we suggest Murphy White Enamel for Colonial halls?*

## Murphy Varnish Company

NEWARK

CHICAGO

The Dougall Varnish Company, Limited, Montreal, *Canadian Associate*





# demand "Wausau!"



## SANDPAPER



9"x11" Sheet



8 1/2"x10 1/2" Sheet

"Wausau" QUALITY means a sandpaper with a sharp even grain; fixed onto a strong, pliable, kraft paper, with a superior quality of glue that makes the sand stick tight.

Tell your Dealer you want WAUSAU or nothing.

**Wausau Abrasives Co.**

118 S. Clinton Street - CHICAGO

**Mail this  
Coupon for  
sample book**

### COUPON FOR FREE SAMPLE BOOK

Wausau Abrasives Co., Chicago

Please mail me today FREE SAMPLE BOOK showing different grits. My dealer's name is below.

Name \_\_\_\_\_ City \_\_\_\_\_ State \_\_\_\_\_

Dealer's Name \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

A. B. 3-20

*"Built Just Before the War"*

***This Well Planned Six Room Home  
of Beautiful Brick  
Cost Less Than Three Thousand Dollars***

This attractive six room home of Brick won first Prize in a country wide small residence competition, conducted by the "American Builder," just before the war. The competition requirements called for photographs and floor plans of houses which had actually been built, costing \$3,000.00 or less was open to ALL CLASSES of building materials.

Award was made on architectural appearance, interior arrangement and economy of construction.

Hundreds of photographs and floor plans were submitted from all parts of the country, but brick scored the signal victory. It won First Prize.

***Send for Free Folder of Floor Plans***

We would like to send you, without cost or obligation, an illustrated descriptive folder of this prize-winning home.

This folder contains floor plans, interior views and an itemized account of the pre-war cost. It is so complete that any contractor can figure the present cost of this home locally.

**The Permanent Buildings Society  
Chamber of Commerce, Chicago, Ill.**



**THIS COUPON GETS FREE FOLDER OF FLOOR PLAN**

**THE PERMANENT BUILDINGS SOCIETY  
Chamber of Commerce, Chicago, Ill.**

(PLEASE PRINT YOUR NAME AND  
ADDRESS TO INSURE DELIVERY)

Gentlemen:—Please send me Free Folder of Floor Plans of Gates' Prize Brick Bungalow offered in March issue of American Builder. I am also planning to build.....

Give name of lumber and building material dealer.....

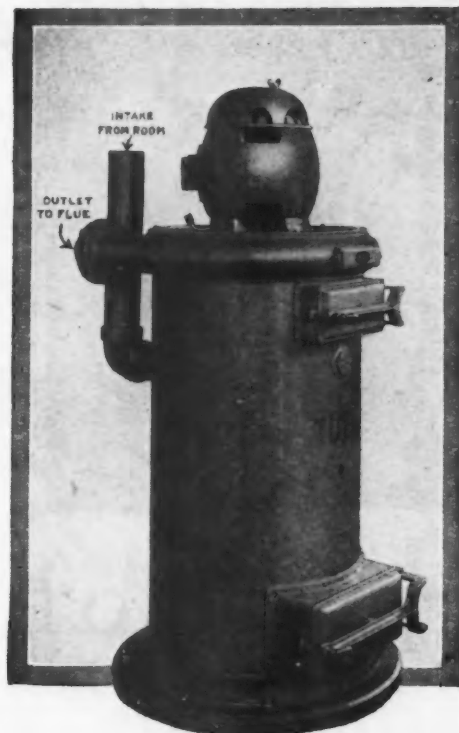
(YOUR NAME)

(YOUR BUSINESS)

(YOUR TOWN)

(YOUR STATE)

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



## More Essential than Plumbing in any Modern Dwelling or Apartment Building is a Tuec Stationary Air Cleaner

"EVERY dust particle in the air is an airplane piloted by a germ." So said Dr. E. Vernon Hall in a recent address before the Chicago chapter of the Heating and Ventilating Engineers Society in that city.

Modern plumbing is most highly valued for the protection it affords against germs and infection. No less efficient is the protection against the same dangers provided by the Tuec Suction Cleaner, while the latter also prevents the injury and damage of interior finish and furnishings by dust and dirt.

The carpenter-contractor who neglects first to investigate and then to recommend to his client a reliable air cleaning plant fails in his duty to his client and misses an opportunity to increase his own profits.

Write for catalog and interesting proposition.

**The United Electric Company - Canton, Ohio**  
New York      Chicago      Cleveland      Toronto, Ont.





Merchandise  
of any kind is  
"half sold" when  
properly displayed



*No one knows it  
better than the  
merchants right  
in your own city*

## A better place to live--

*Help Make Your Own Home Town a Much  
Better Community--to Your Own Profit*

A village, town, or city is only as progressive as the merchants who make up its business life. The modern show window is a sign of progress. The more you see of them in a neighborhood, the higher you can place that community in the scale of progress. You, as a builder, can *boost* your city by *boosting*

### ZOURI SAFETY METAL STORE FRONTS

The greatest stores in America have installed Zouri Store Fronts. They appreciate the unusually strong display value of a Zouri window, and what's more, they realize that Zouri Construction, with its exclusive patented safety features, is the greatest of all plate glass conservers—an important item in these days of high prices for plate glass.

#### No delayed deliveries when Zouri is used

We have forty-five distributors in the United States and Canada. There is one near you with a complete stock of **Zouri Safety** and **International Construction** — assurances against delay in shipments.

All distributors maintain store front depart-

ments in charge of especially trained men. They will be pleased to place at your disposal, without obligation, their broad experience in building show windows that command maximum sales. Write us for name of your nearest distributor.

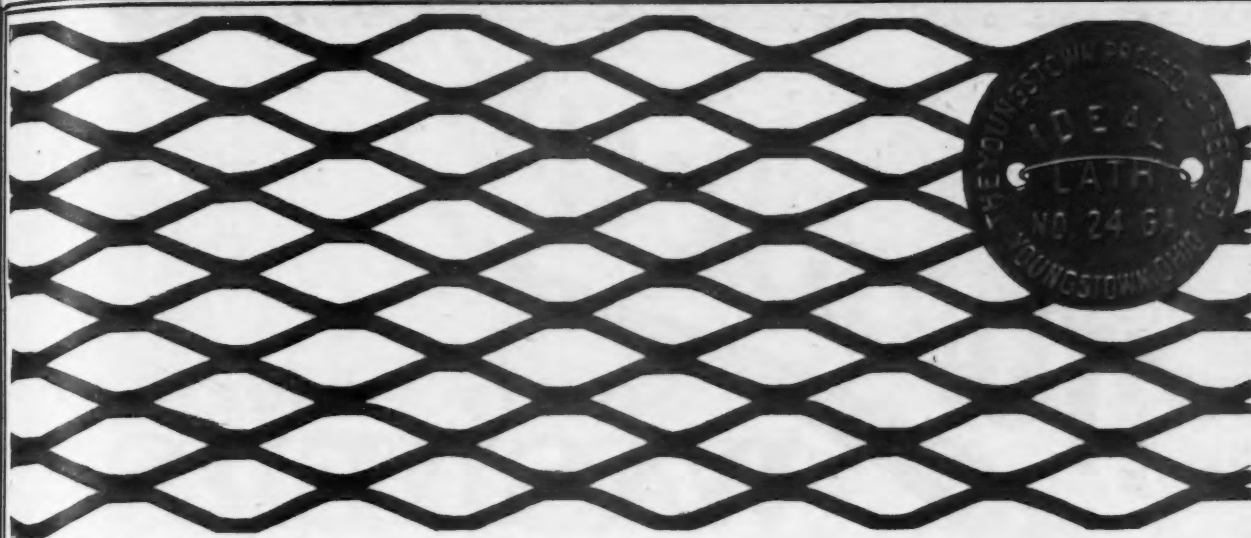
## Zouri Drawn Metals Company

Factories and General Offices

CHICAGO HEIGHTS

ILLINOIS

*Makers Also of the Famous International Store Front Construction*



# IDEAL METAL LATH

## THE LATH THAT LAYS FLAT

*Yes—it lays flat.*

That's one of the *Ideal Metal Lath Big advantages*. That's one of the *Reasons why* it holds an exclusive and envied position with architects and builders. It's one of the advantages that insure the dealer maximum volume of sales and customer satisfaction.

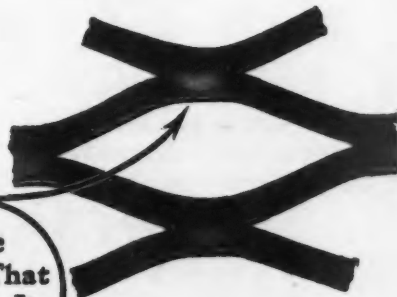
Ideal Metal Lath does away with bulging and its attendant irritations. It permits a thinner coat of plaster to be used where desirable and insures a smoother, better job.

The weight of Ideal Metal Lath, made possible by its greater rigidity and tensile strength, saves 12% on supporting members. Ideal Metal Lath provides a firm key—prevents shearing—does not absorb moisture, shrink or expand. Eliminates plaster stains and cracks. Will not harbor vermin. Is a fire retardant.

Ideal Metal Lath meets the specifications purposed by the U. S. Government Supervising Architect.

It is made of Open Hearth Steel and by a superior process that does not stretch or weaken the metal, and which gives the strand a *unique twist* that insures greater rigidity.

Youngstown Pressed Steel prestige and trade building advantages becomes a part of your business getting equipment, when you become a Youngstown Pressed Steel dealer. It's your chance to stock the line that insures you the choice and profitable business in your field. *Write us now.*



**The  
Twist That  
Makes It  
Stiff**

*The twist is a feature that adds 50% to the tensile strength of Ideal Metal Lath. This feature is found in no other lath and is the result of our superior method of manufacture*

**For Shafts, Column Stair Cases,  
Ceilings, Partitions, Walls, Etc.**

## THE YOUNGSTOWN PRESSED STEEL CO.

YOUNGSTOWN, OHIO

*Manufacturers of*

Ideal Metal Lath, Mahoning Metal Lath, Parker Corner Bead, American Corner Bead, Youngstown Corner Bead, Crimped Furring, Youngstown Expanded Metal, Sharon Cold Formed Channels, Sharon Perforated Cold Formed Channels.

# Meadows

TRADE MARK REGISTERED

## Safety Power WASHERS

Makes 9  
Wash Day  
a Pleasure  
Day

### Ideal for Home Laundries

The modern home is not fully equipped with time, labor and money saving appliances until it has a complete laundry.

The Meadows Safety Power Washing Machine is the ideal machine for the complete home laundry.

### MEADOWS HAS ALL THE MODERN FEATURES

The Meadows has a Swinging Reversible Wringer with Foot Pedal Control. The Wooden Dolly principle cleans clothes better, quicker and with less wear and tear. All working parts enclosed. Equipped either with Electric Motor or for Belt Power. Made in three styles:

**Safety Stave Leg**

**Safety Platform**

**and Double Washer**

### Increase Your Profits by Selling the Meadows

Dealers who handle Meadows Safety Power Washers know that there is practically an unlimited demand for Meadows Power Washers. Most moderate priced washing machine on the market and most efficient. Write for catalogue, terms and quantity discounts.

**Meadows Manufacturing Co.**

40 Main Street, Pontiac, Ill.







# Start Now—get into a good, solid money-making business

## THE OPPORTUNITY WAS NEVER GREATER

The high cost of other materials has placed concrete block and brick in the front ranks of the building materials. The demand for all kinds of houses, factories, schools, stores, theatres, barns and silos is greater than ever before.

Why not put yourself in shape to supply your community with concrete block and brick at a good profit?

The Helm System of dry wall construction consists of concrete brick and block laid in various double wall combinations.

When you are in shape to supply Helm block and

brick, architects and contractors will see at once that these products insure a DRY, FROST-PROOF, FIRE-PROOF structure and the low cost will appeal to the owner.

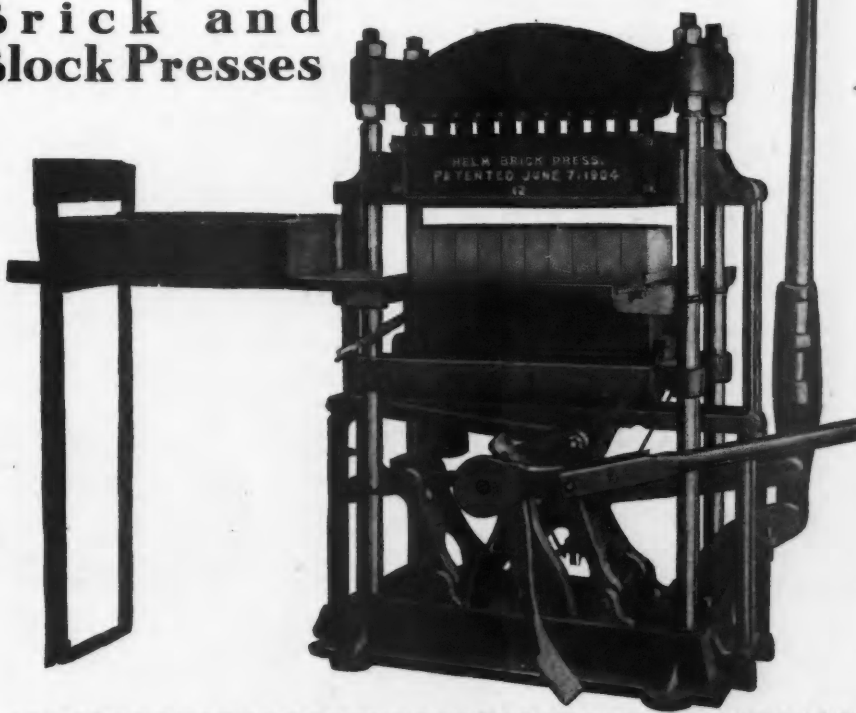
Helm block and brick are made on powerful presses, operated by hand or by power. The machinery is made in various types. Simple attachments enable you to make block, brick and silo block.

## HELM Brick and Block Presses



### Send for this FREE BOOK

This book tells about concrete block and brick construction of the Helm DRY WALL System. It tells you how you can get into a profitable business on a comparatively small investment. It doesn't discuss any get-rich-quick scheme. It does point a real opportunity to men who can handle a comparatively small business and make it grow. It is full of information that every concrete man and every contractor should have. It will be sent free to you if you use the coupon.



### The Helm Brick Machine Co.

671 Mitchell St.  
CADILLAC, MICH.

The Helm Brick Machine Co., Cadillac, Mich.:

Please send me your free book on Helm DRY WALL System, and Helm Presses.

Name.....  
Street.....  
City..... State.....

**USE THIS COUPON**

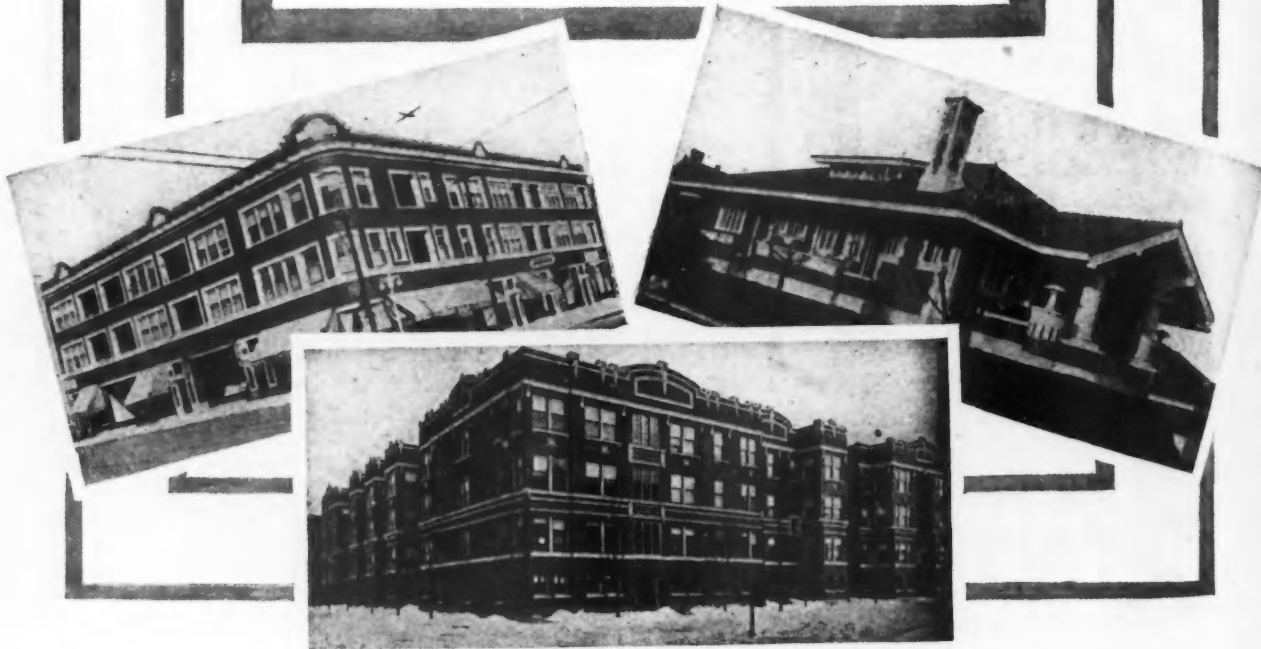


# MIDLAND TERRA COTTA

Buildings of distinction and individuality mark the use of Midland Terra Cotta trim. It adds that final touch of general attractiveness so much sought after. Your orders receive prompt attention, whether for stock material or your own special designs.

State your needs to us, and we will quote you our prices, with suggestions and estimate of time required to fill your order.

MIDLAND TERRA COTTA COMPANY  
Lumber Exchange Building  
Chicago, Illinois



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

# WATERPROOFING PRODUCTS FOR BUILDING CONSTRUCTION

Construction work must be protected against water penetration. It's easy when done correctly.

Ceresit Waterproofing Compound is a plastic paste, a few pounds of which in each batch of concrete makes the mass absolutely proof against water penetration. It takes only a small quantity to protect cement stucco and cement plaster work.

For ten years Ceresit advertisements have appeared in this publication. Thousands of contractors have answered them. Perhaps you are among the number. Contractors everywhere use Ceresit products in their work and have done so for years.

There are eighteen Ceresit Protective Products, including waterproofing, damp-proofing, concrete floor hardeners protective paints, a few of which are listed below.

Ceresit literature is easy to get. Just send your business card or write on your letterhead.

If you use metal lath, let us know. We can put you in touch with a good source of supply for this material.

**Ceresit Waterproofing Co.**

910 Westminster Building

CHICAGO

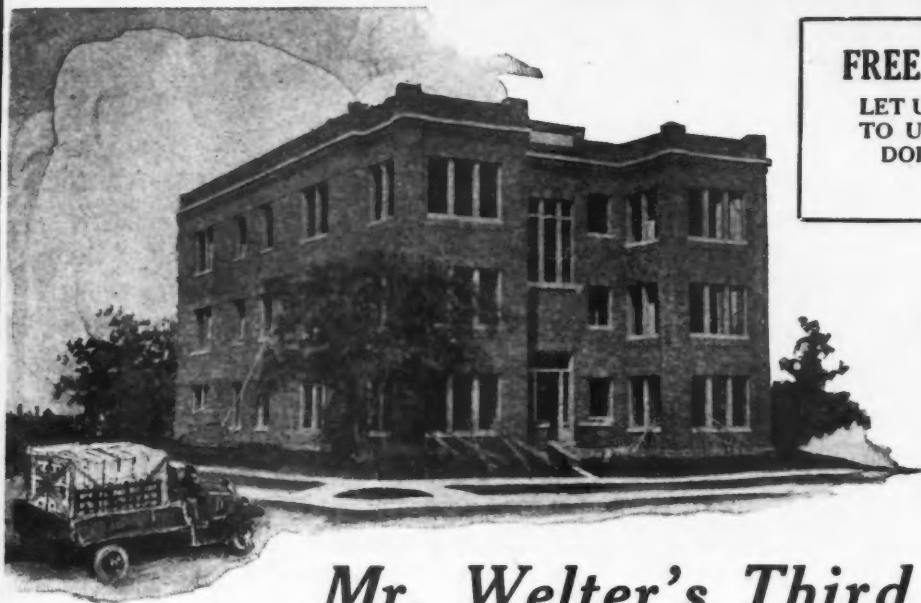
## Ceresit Protective Products

Ceresit Waterproofing Compound  
Ceresitol Liquid Waterproofing  
Indurite Liquid Hardener  
Luxstar Mill White Enamel  
C. W. Co. Metallic Hardener  
C. W. Co. Foundation Coating  
C. W. Co. Damp-proof Plaster Bond  
Acidproofing  
Protective Paints  
Mortar Colors

Write us about your waterproofing problems. Perhaps we can make some suggestions of value to you.



# MURPHY IN-A-DOR BEDS



## FREE SUGGESTIONS!

LET US SHOW YOU HOW  
TO USE MURPHY IN-A-  
DOR BEDS SUCCESS-  
FULLY!

## Murphy In-a-Dor Beds

For Residences  
Apartments  
Hotels  
Hospitals

## Mr. Welter's Third Building

All three buildings are without bed rooms. Everyone equipped with In-a-Dor Beds and identical in unit arrangement.

"HERE'S WHY" Murphy In-a-Dor Beds are used continuously.

Perfect concealment possible by use of standard size door.

No special construction required for installation.

Installation is so simple that any one can install a Murphy Bed. You can assemble and install one in an hour's time.

Murphy In-a-Dor Beds are exposed to the air at all times and are really more sanitary than beds of ordinary type.

Standard size 4'-6" wide, 6'-4" long to accommodate any standard mattress.

*Write for Catalog and Free Suggestions*

## MURPHY DOOR BED COMPANY

22 West Monroe Street, Chicago

Chemical Building, St. Louis

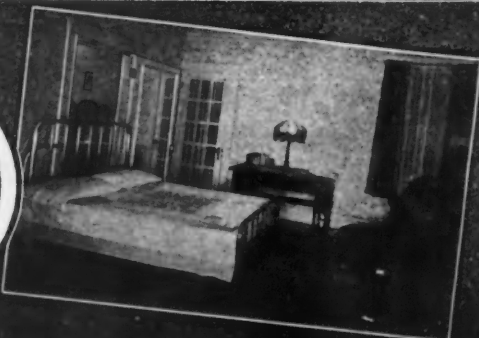
469 Fifth Ave., New York 1103 First Ave., Seattle, Wash. 1435 Blake St., Denver

659 Leader News Bldg., Cleveland 912 Kresge Bldg., Detroit, Mich.

205 O'Connor St., Ottawa, Canada 305 City Club, Kansas City

111 Murphy St., Dallas, Tex. Crocker Bldg., San Francisco

204 Peach Tree Arcade, Atlanta, Ga.



# DIAMOND

## METAL WEATHERSTRIP

Practical in Use  
Scientifically Correct  
Efficient in Service!

Keeps out the cold drafts of winter and the  
 beating rains of summer.

Every home owner wants weather stripping,  
 and any carpenter can make a quick and easy  
 profit by selling and installing



**Carpenters**  
**Lumber Dealers**  
**Contractors—**

### WRITE FOR AGENCY

We furnish Samples, Advertising, Contracts, Instruction,  
 Blue Prints and Everything Needed to Start

**YOURS FOR THE ASKING**

**THE DIAMOND METAL WEATHERSTRIP CO.**  
 626 Kerr Street Columbus, Ohio

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER





**Herrick Refrigerator Co.**  
WATERLOO, IOWA

**Your Biggest Wishes Answered!**

## HERRICK FOR EVERY HOME

"IT saves a lot of room and keeps the ice man out on the porch. And in cool weather it saves a lot of ice. We just leave the Herrick Outside Icing Door open a little and get the best kind of refrigeration."

That's the way women talk about the Herrick Outside Icing System.

## FOR SATISFACTORY JOBS SPECIFY HERRICK


Women like the Herrick because of its convenience, beauty, efficiency, and economy. We want to tell you more about this system.

### Free Plans

We will be glad to mail you free on request a set of plans showing the various ways in which the refrigerating problems can be solved in all manner of homes by the Herrick Outside Icing refrigerator.

*Write for plans and catalog. Prompt reply.*

*The*  
**UNSEEN  
SERVANT**




Behind  
the  
Perfect Meal

The "HERRICK" Waterloo, Iowa

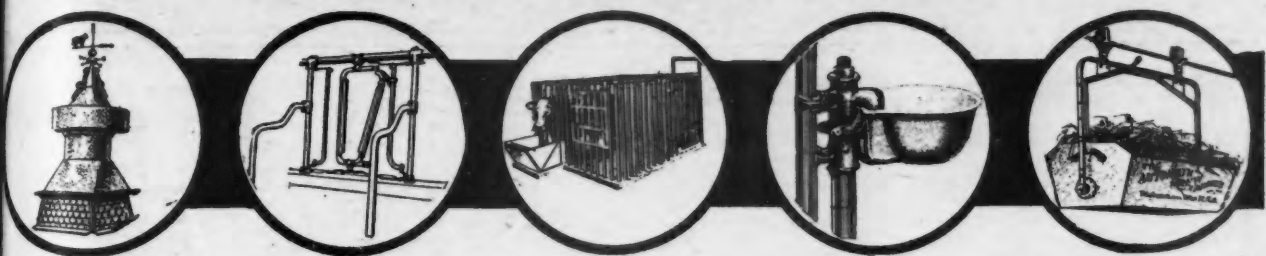
**HERRICK  
REFRIGERATOR  
COMPANY**

Waterloo,  
Iowa



*The "HERRICK" Waterloo Iowa - Outside Icing*





# DREW FREE BARN PLANS



# A DREW EXPERT

Will Help Any Contractor Close the Order for  
**BARN FIXTURES**

Drew Experts work with you. They know that the best profits come from co-operation. As soon as we learn that a farmer is planning to install fixtures, remodel or build, we immediately endeavor to get in touch with a responsible, capable contractor in that locality.

Drew Experts go right to the spot—get on the job—advise—help plan—furnish blue prints. Services are Free—Plans are Free. Let Drew Service work for You.

This is only one of the many advantages that go with the famous Drew Line of Barn Fixtures.

**THE DREW LINE**

STALLS	WATER BOWLS	CALF PENS	BULL STAFFS	HAY TOOLS
STANCHIONS	BULL PENS	HOG PENS	VENTILATORS	
LITTER CARRIERS	COW PENS	FEED CARRIERS	FEED TRUCKS	DOOR HANGERS

ASPINWALL-DREW COMPANY, Successors to

**DREW CARRIER CO., Dept. A**

**Waterloo, Wisconsin**

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



## The Value of Screens of Pearl

**P**ROTECT the homes of your customers and the health and comfort of their treasures against deadly germ carrying insects day and night by talking PORCH SCREENING.

PEARL WIRE CLOTH is a health as well as a comfort necessity. Its special process coating insures cleanliness, beauty and long-life so it is therefore most economical in the long run.

Protect your workmanship by insisting upon seeing our red tag on **every** roll and the two copper wires in the selvage—a permanent identification of the genuine.

*Call on our local dealer or write direct for samples and literature if you're interested in screen material  
Address Dept. "A"*

**The Gilbert & Bennett Mfg. Co.**

New York

Georgetown, Conn

Chicago

Kansas City, Mo.

*G & B PEARL is made in two weights—regular and extra heavy*

*The best Hardware Dealer in your city sells "PEARL"*

*Ask for  
our  
Porch Plan  
It's free.*



# Why Not Handle Furnaces?

Builders, contractors and lumber dealers everywhere are handling furnaces successfully. Why not do so yourself?

With but small investment and practically no sales effort on your part, you can add both prestige and profit to your business by securing the exclusive sale in your territory of the

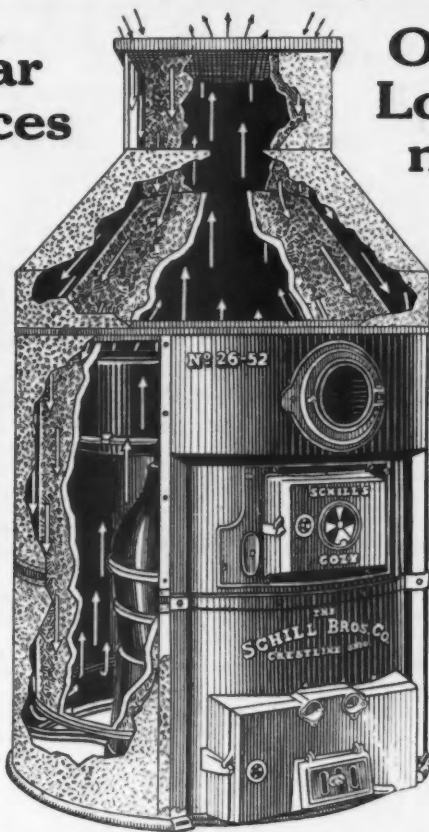
## COZY The Perfect PIPELESS FURNACE

### Most Popular of All Furnaces

The pipeless type of furnace is rapidly growing in popularity, not only because its original cost and its operating expense is less, but also because of the ease with which it can be installed in old as well as new houses.

As to the perfect service it renders in heating, the enthusiastic praise and endorsements of all users leave no room for doubt.

To insure perfect satisfaction, the Cozy has only to be properly located in the house. This done, our iron clad guarantee protects the users absolutely.



### Our Engineers Locate the Furnace for You

We maintain a special engineering service department for the purpose of co-operating with our selling agents.

This department "places" each Cozy furnace from plans you furnish, and when installed in the location we select, the Cozy is unconditionally guaranteed to give perfect service and satisfaction.

Directions for placing the furnace are furnished in detail and from them your workmen can make any installation without the slightest difficulty.

### Write Now for Particulars and Territory

We've a proposition that will interest you. It means added profits, added prestige for your business and a staunch friend gained for every Cozy Furnace you install. It costs nothing to investigate—Write Now!

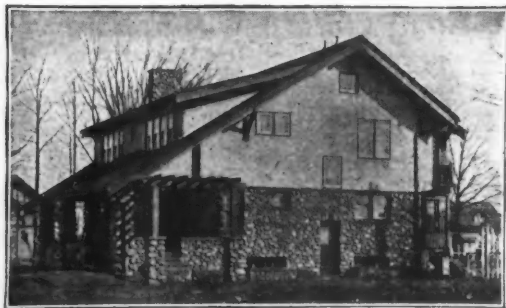
**The Schill Bros. Company**  
 621 Mansfield Street Crestline, Ohio





## Beauty!

—that's what Kragstone Stucco is *Noted* for. Clean, Uniform Appearance on *every* job. Distinctive and charming Results! Unrivalled Stucco Exteriors with Kragstone—by using any of the *Natural Color Dashes*. You have your choice of Buff, White, Brown, Gray or Green colorings—affording Artistic and Striking effects! (Be sure to see our Samples.)



Residences, apartment buildings, garages. Kragstone Stucco is adapted to *all* classes of houses. (Send for our New Book, and see the attractive jobs *other* Contractors have been able to do.)

New  
Stucco  
Book  
and  
Samples  
on  
Request

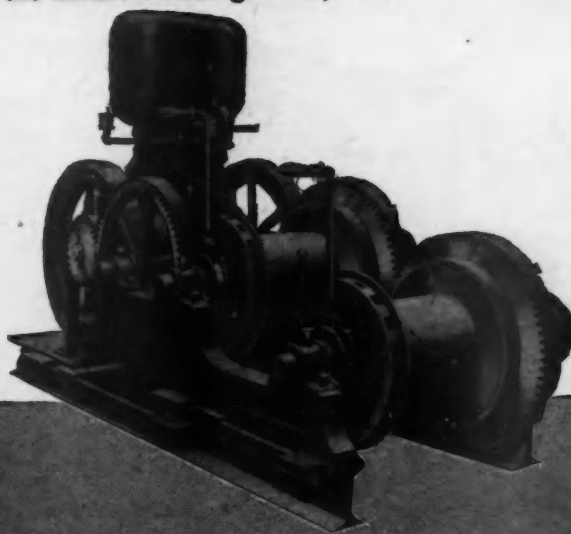
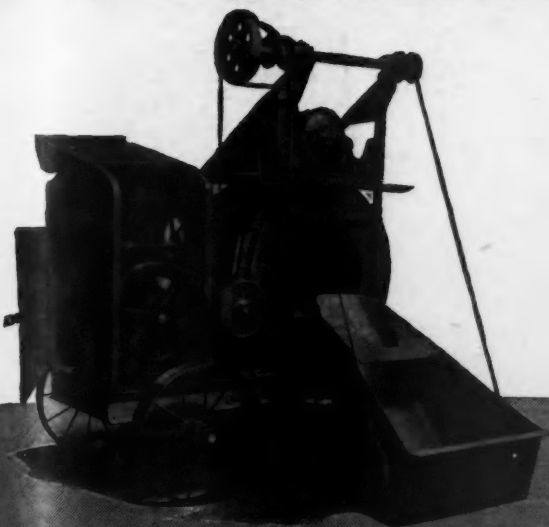
American Magnesia Products Co.

104 N. La Salle Street, Chicago

**Features!** Kragstone Stucco has *scores* of them. Many Qualities that no other Stuccos have. Great Tensile Strength! Wonderful Elasticity! Many times *Stronger* than Portland Cement Stucco. Kragstone Stucco does not check or crack on *any* job where the walls are of stable construction and the foundation remains true! Many Laboratory Tests have *proven* that Kragstone can be *bent Ten inches in Ten feet* without cracking! *Flexibility*—that's one of Kragstone's cardinal features. Strains that would cause ordinary Stucco to crack, would not develop a hair-line check in Kragstone Stucco! Kragstone is easy to work with. *Spreads over a Wide Surface. Fills every crevice. Bonds Perfectly. Joins snugly. Can be applied to almost any Surface or Lath.* Kragstone!—the Favorite Stucco of all Contractors!

**KRAGSTONE**  
AMERICAN MAGNESIA PRODUCTS CO. CHICAGO  
**STUCCO**

THE STUCCO BEAUTIFUL



## Faster Discharging CONCRETE MIXERS

FOUR BIG 1920 FEATURES  
THAT OVERCOME  
"HIGH WAGE" PROBLEM

### FASTER CHARGING—

Large drum openings—non choking hoppers that are steep enough to dump self without pounding.

### FASTER DISCHARGING—

7 to 15 second discharge thru patented action—every bucket discharges—easy to clean.

### BROKEN GEARS AND LOOSE CHAINS

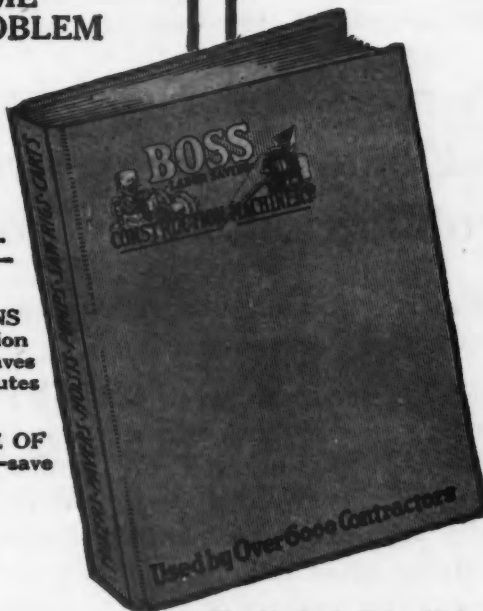
ELIMINATED—Steel roller pinion drive runs smoother—quieter and saves power—tooth replaced in 4 minutes without taking pinion off shaft.

BEARINGS GUARANTEED FOR LIFE OF MIXER—Hyatt Roller Bearings—save 17% power—70% of oil.

Built in sizes to fit all jobs  
 $\frac{1}{2}$ , 1, 2, 3, 4 Bag capacities  
Gasoline, Steam, Electric

**\$245.00 BUYS OUR  $\frac{1}{2}$   
BAG LOW CHARGER  
with Novo engine**

One of the many real bargains in our  
big catalog



The Nation's Price Maker  
on Construction Machinery  
WRITE FOR YOUR COPY TO-DAY  
AND NEW 1920 PRICES AND TERMS

The American Cement Machine Co. Inc.

Keokuk Iowa  
THE 300,000 HP. ELECTRIC CITY

BRANCH OFFICES—WAREHOUSES  
IN ALL PRINCIPAL CITIES

## Contractors Hoists WITH HYATT ROLLER BEARINGS

**BOSS**  
GASOLINE  
ELECTRIC  
HOISTS

COMMANDS LARGEST  
SALES OF  
ANY GASOLINE HOIST

Over 20 Car Loads Sold in One  
Order Shipped to France

Widely Used For  
MATERIAL ELEVATORS  
PILE DRIVING  
EXCAVATING  
DRAG LINES  
CONCRETE TOWERS  
GENERAL  
CONSTRUCTION WORK

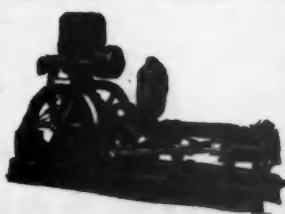
Built in 7 Sizes  
SINGLE OR DOUBLE  
DRUM—REVERSING  
OR TWO SPEED IF  
WANTED.

### 1920 FEATURES

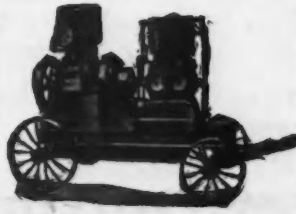
S. K. F. BALL BEARING THRUSTS  
HYATT ROLLER BEARING  
MACHINE CUT STEEL ENGINE  
PINIONS  
STEEL FRAMES



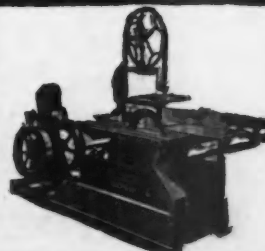
One and Two-Bag Pavers—High  
Drum.



Force—Trench or Diaphragm  
Pumps—Gas, Steam or Electric.



Portable Air Compressors.



Portable Saw Rigs. All Attachments.

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



## Hollow Tile Advertising Now Appearing in Over Six Million Copies of the Above and Similar Publications Each Month

Are you prepared to take full advantage of our country-wide advertising in these well-known magazines?

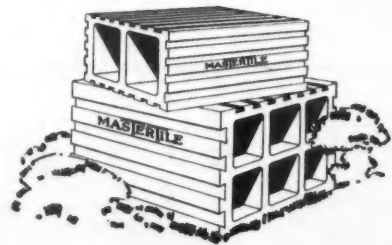
Prospective builders in your locality will insist on Hollow Tile construction. Our advertising in these national magazines is showing them its many decided advantages, economies and comforts; that Hollow Tile construction costs practically the same as well-built frame; that it is the last cost because the walls are permanent and never require repairs and paint; that it is much cooler in summer, more economically heated in winter, and always dry because of the two or more air spaces in each unit of the wall; that it offers a fire protection seriously needed in every locality.

### Hollow Tile

The Most Economical Form of Permanent Construction

Are you going to lose out, or learn to figure and build of Hollow Tile *now*?

Be sure that your local lumber or building-material dealer furnishes **MASTERTILE**. It is made in accordance with Association standards for your protection.



## THE HOLLOW BUILDING TILE ASSOCIATION

Representing America's Leading Manufacturers

BY THIS TRADE MARK **MASTERTILE** YOU SHALL KNOW IT

CONWAY BUILDING · CHICAGO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER





Grosvenor Atterbury, Architect, New York

## *Be Something More Than A Mere Builder of Frame*

IN building, the contractor or architect who plans his structures with beauty, utility, and permanence as his goal wins the greatest degree of success.

Brick withstands the ravages of the elements. It affords comfort through all seasons. It protects against fire. It possesses a rare degree of beauty through its range of colors and textures. It grows more soft and beautiful with age. And its first cost is very little more than for less substantial materials, as we prove to you in our Story of Brick.

Be something more than a carpenter-contractor. Be a builder of permanent, fire-resistive buildings. Build for the future—for the beauty of your community—for the complete satisfaction of the people who seek your skill. Build with Brick.



### AMERICAN FACE BRICK ASSOCIATION

110 South Dearborn Street, Chicago, Illinois



#### "The Story of Brick"

An artistic booklet with attractive illustrations and useful information for all who intend to build. The Romance of Brick, Extravagance of Cheapness, Comparative Costs, How to Finance the Building of a Home—are a few of the subjects treated. Your copy is awaiting your request. Send today.

Address Dept. A-3

# ATKINS

## SILVER STEEL SAWS

**A**—the first letter in the alphabet stands for ATKINS. ATKINS—stands for the highest quality and efficiency in SAWS, SAW TOOLS and SAW SPECIALTIES. Atkins products are known the world over as

*"The Finest on Earth"*

Learn more about Atkins Products. Write for our free books, "Saw Sense" and "How to fit Cross-Cut and Hand Saws." Send 30 cents, coin or stamps for Atkins Nail Apron.

**E. C. ATKINS & COMPANY, Inc.**

Established 1857

"The Silver Steel Saw People"

Home Office and Factory, Indianapolis, Indiana

Canadian Factory, Hamilton, Ontario

Machine Knife Factory, Lancaster, N. Y.

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New York City

San Francisco  
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Paris, France  
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Vancouver, B. C.

Branches carrying complete stocks of all large distributing centers as follows:



# Flex-a-Tile

## House Tops FOR ALL ROOFS

Flex-a-Tiles are different—they increase both the value and the attractiveness of any building.

### ENDURING QUALITIES

Flex-a-Tile Roll Shingle Roofing combines beauty, low cost and durability. The man who buys this roofing gets an economical roof and yet one that gives his house the appearance of one with an artistic shingled roof. The dealer who sells Flex-a-Tile and the contractor who puts it on are both realizing a two-way profit in customer satisfaction and quick returns.

### NOT COMMON ROOFING—UNCOMMON FLEX-A-TILE

The 5" x 10" Shingle Butts are actually raised by a patented process until they can be felt, giving that pleasing real shingled effect that puts this Roll Shingle Roofing in a class by itself.

### ROLL IT ON AND NAIL IT DOWN

There could be no simpler way of roofing than the Flex-a-Tile Roll Shingle way. Rolls over old shingles or new sheathing boards with perfect ease. Saving on labor alone is very great—no waste—no upkeep. Fire-resisting—waterproof. In Class "C" as approved by the Fire Underwriters' Laboratories. Send for Bulletins A23 and 1511.

### HEPPES ROOFING DIVISION

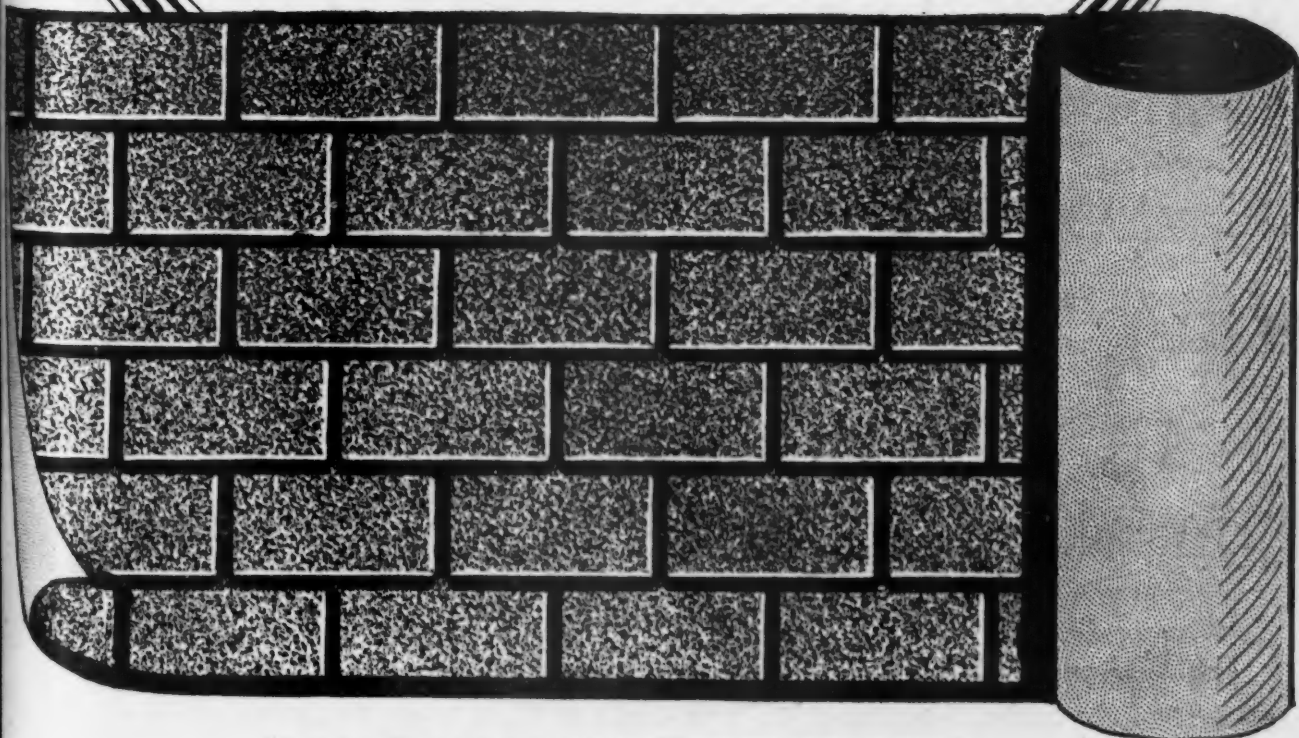
THE RICHARDSON COMPANY, 4500 Fillmore St., CHICAGO, ILL.

Mills at Chicago

Lockland (Cincinnati) Ohio

Rutherford, N. J.

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*Built upon*

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**STUCCO and PLASTER BOARD**

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