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VOL. 32

March, 1922

No. 6

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Windows Run Smoothly in Andersen Frames

SATISFACTORY performance over a long period of time is the one test of a good window frame. Every step in the manufacture of the Andersen Standard Window Frame builds into it satisfactory long-lived performance.

The use of genuine White Pine in Andersen Frames is one method of securing snug fitting, easy running windows. Because of its ability to withstand warping, shrinking, swelling and rotting, White Pine is recognized by builders as the best wood for all out-of-door uses.

Each part of an Andersen Standard Frame is the product of a special machine, set so that the finished piece will fit accurately the

part for which it is intended. That's why Andersen Frames fit perfectly when assembled. The White Pine stock used keeps them accurate for all time.

From a stock of only 11 standard sizes the dealer can deliver immediately 121 different sizes of Andersen Window Frames, simply by inter-changing heights and widths. Each frame, complete with pockets and pulleys in place, is packed in two compact bundles containing seven units. These seven units can be nailed up in 10 minutes, or less.

Write for This Book—We have prepared an interesting book on the qualities and economies of Andersen Frames. Upon request, we will gladly send you a copy—no charge.

Andersen Lumber Company
Department A-3 - South Stillwater, Minn.



Andersen FRAMES

Short Talks by the Editor

Notable Service for Home Building

ELSEWHERE in this issue is a news notice that should be of much interest and satisfaction to everyone in the building industry.

It tells in brief way how the Metropolitan Life Insurance Company has already loaned \$58,000,000 at reasonable rates to build homes and apartments. The unusual part of the plan is the small average of each loan, showing that the money is going into the construction of small homes; in short, the money is going into the hands of those families who really need it.

Furthermore, the insurance company has to go to the same trouble to make a small loan of \$4,000 to some deserving family as it would to make a single loan of \$60,000,000. It could very easily sidestep this proposition, but it is doing this work to stimulate homebuilding. The company is entitled to full measure of credit for this laudable work.

Settling Jurisdictional Disputes

ONE of the thorns in the side of the building industry has been the matter of jurisdictional disputes between various trades. A long step towards the solution of this problem was taken at a recent meeting of the building interests of the country, represented by the general contractors, architects, engineering council, and building trades department of the American Federation of Labor.

A resolution was passed providing for the suspension of any local union by their local council if they refuse to abide by decisions of the National Board. Contractors will refuse to employ members of a union that refuses to comply with these decisions.

It is hoped that this resolution will result in more effective co-operation between workman, employers and professional men interested in construction work.

Sounds an Important Note

STARTING in this issue of The AMERICAN BUILDER is an article by David G. White, forest examiner, on the urgent need for standardization of lumber. As he points out very clearly, this subject is of more importance to the building industry than to any other single branch of business because of the vast amount of lumber the building industry uses each year in a hundred and one ways.

Every architect, builder and lumber dealer will appreciate the points brought out in this article and perhaps will be induced to lend their support and influence to this movement which is most worthy and practical. We do not believe it is necessary to repeat the importance of a conservation program—it is inevitable—but we believe much information of a prac-

tical nature can be gleaned from this enlightening article, and we advise all of our readers to read the message Mr. White has to impart.

Spring is Here

BEFORE another number of the AMERICAN BUILDER goes to press, spring will have arrived. If you have spent your winter days and nights in profitable study and preparation, you will welcome this spring with more than unusual enthusiasm. It is a different spring than several that have preceded, and we only hope that the building field will be ready to recognize this fact and take proper advantage of it.

Building reports for January show an approximate increase of 125 per cent over that month a year ago. Since September, this same amazing increase has been showing in the monthly building records. If a month like January, in the dead of winter, shows an increase of over 100 per cent, what should we expect from April when the season opens in full swing?

Thousands of families have decided that they have held off long enough, and, now that conditions are vastly more favorable than they have been for three years, these families are ready to give the word to go ahead. These people are determined that they will not sign up another lease on May 1 calling for a good increase in rent. They have reached the point where they are ready to build their own home and pay the money they would pay in rent on that home.

As we said last month, it looks like a "builder's year." Of course business will not seek any one out—it must be found, but it is there to be found. If you will look thru the advertising pages of this magazine you will note an unusually optimistic tone among the advertisers. They are willing to spend good money to show their products because they believe they will have to supply a big demand this year. They want as many builders as they can reach to know what it is all about.

Foolish optimism is just as unjustifiable as rank pessimism, but the optimism reflected everywhere in the building industry has no earmarks of being excess enthusiasm. It is based upon hard cold facts and investigations which have been made during the winter. There will be considerable rural building as well as city. The farmers have been going thru a trying period due to the radical drop in prices of farm products, but during the last few weeks, the market has shown very encouraging signs of strength. Because the farmer is and always has been a good gambler, he will go ahead with his work with customary vim. To do this he will need some new buildings and remodeling of those already built.

The Need for Lumber Standardization

IMPORTANCE TO BUILDING INDUSTRY OF DEFINITE PROGRAM—WORK OF FOREST PRODUCTS LABORATORY EXPLAINED

By David G. White

EDITOR'S NOTE: This is the opening installment of a very inclusive article of interest to every architect, builder and lumber dealer. The concluding installment will appear in the next issue.

BEFORE entering into a detailed discussion of the need for lumber standardization, I wish briefly to outline the position of the building trades industry within the lumber industry and the relationship of the Forest Products Laboratory to the field of lumber production, distribution, and consumption.

In normal years probably 28 billion feet is used in the general building and construction trades, out of an average annual cut of 40 billion. More lumber is used for this purpose than for any other. The lumber industry itself is third among the industries of the country in point of value of its annual product. It is second in number of wage earners, and second in amount of capital invested. It is the second largest user of railroad transportation facilities. It is an important industrial factor in 32 states. It embraces some 50 component and diversified industries all engaged in the construction of raw wood into manufactured products. In a broad way that outlines the position of the building trades industry within the lumber industry.

Due to the abnormal conditions which have existed in the United States within the last several years, the annual production and consumption of lumber has decreased from 20 to 25 per cent. This is of very much importance to the building trades when we

consider that at the present time the country is badly in need of from one to three million dwellings, mostly of the five to seven-room type, suitable for the average American citizen. In 1890, an average of 100½ families occupied 100 homes, while in the early part of 1920, 121 families occupied 100 homes. Thus any conditions affecting building trades are intimately interwoven with the entire fabric of the home life, prosperity and progress of our country and its citizens.

A number of factors have been responsible for the decrease in the amount of wood in addition to those brought about by the World War, such as the increased use of substitute roofing materials, concrete, steel and other substitutes for wood. Lack of advertising and lack of standardization of grading rules, which in so many cases have been unsatisfactory from the standpoint of the consuming trade, have in some cases resulted in substitutes being used which were not so well adapted to the purpose as was wood. Savings in cost of materials and service rendered by the manufacturer have been a great factor in the substitution of other materials for wood, irrespective of the merits of the substitute.

The Forest Products Laboratory

During the last 11 years a great fund of scientific information pertaining to wood has been obtained by the Forest Products Laboratory. The Laboratory is an institution of industrial research maintained by the Forest Service, a branch of the United States Department of Agriculture. The purpose of the Laboratory as a governmental activity is to conduct research in forest products for the benefit of the people of the United States. It disseminates the results of its researches and experiments thru co-operative reports, commercial demonstration, correspondence, government bulletins, mimeographed circulars, technical notes, articles for the trade press and individual instruction.

Preservative Treatment of Wood

Wood preservation is concerned primarily with the causes for the decay and destruction of wood and methods for preventing it. Tests are made to determine the best preservatives to use and methods for impregnating the various woods to obtain the best results. This work is fundamental to standard methods of determining the efficiency of vari-



Lumber operations in the Appalachians. The vastness of this industry makes its standardization all the more imperative in order to cut down large waste of material and labor.

ous wood preservatives and standard specifications for treated paving blocks, poles, posts, ties, piling, timbers, sills and joists for buildings, etc. The contractor should know which woods are the most durable when subjected to conditions favorable to decay and if it is necessary to treat them. If treatment is necessary, he is interested in obtaining material which has been treated according to standard methods so that he may obtain the best results at the least expense. This is especially important in those parts of wooden structures placed in contact with the soil or other moisture-drawing materials. School houses, dwellings, factory buildings, barns, corn cribs, poultry houses, hog pens, implement and storage sheds, garages, silos, tanks, etc., fall within the category of wooden structures requiring more or less preservative treatment.

The section of Preservation also conducts studies on various glues to determine their strength and water-resistance, and their application to industrial uses such as in plywood and other laminated and fabricated articles. The progress which has been attained in improving the water-resistance of glues and information on their proper use is very important to the contractor, especially with reference to the use of veneer and plywood in building construction.

Another field of work consists of investigations to determine the retardation of moisture changes in wood by the application of varnishes, paints, enamels, stains, and other coatings. A large percentage of the troubles in wood working is due to warping, swelling, shrinkage, and other defects which result from moisture changes in the wood. This is especially important in high-class work and where the most economical use of wood is concerned, such as for furniture, panels, veneer, inside finish, doors, sash, and additional uses where wood is used under conditions subject to moisture changes.

The Laboratory has also done a very limited amount of work on the problem of fireproofing wood and on studies of slow-burning building construction.

Physical Properties of Wood

Utilizing information on the physical properties of wood is of prime importance to the building trades in that it is the application of scientific information of



Felling a large Douglas Fir, in the heart of the Western timber belt, Sedro-Wooley, Washington. This section of the country is now furnishing enormous amounts of lumber to the building of homes.

this kind to such practical uses as the identification of woods and the proper seasoning or conditioning of the material.

Studies of the wood structure of wood are important to identification; penetrability of the various wood with preservatives, fire-resistant solutions, coatings and glues; in explaining shrinkage, density, checking, casehardening, honeycombing, warping, and collapse; in the detection and relation of decay and other factors such as brashness to strength reduction, etc. It would be a waste of time, for example, to standardize the names of certain woods if there was no accurate method of identifying them.

The seasoning of lumber is divided into two large fields, air seasoning and artificial seasoning such as is practiced in kiln drying. Studies are under way to determine the best methods of piling lumber in air seasoning to obtain the maximum rate of drying and to reduce degrade to a minimum and hence the reduction of the cost of the material to the consumer. Air seasoning may in many cases be equal to or superior



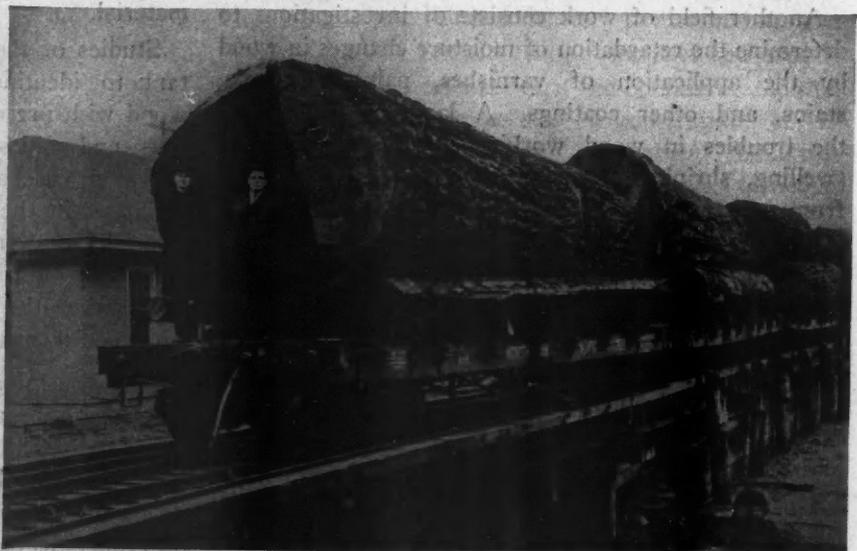
Hauling lumber by trucks has largely superseded some of the old methods which have been in operation for many years. Much of the timber is now hauled direct from the woods to the mills instead of being floated down some stream.

to kiln drying, but there are few data in the relative merits of the two methods. The most important results which have been obtained to date, however, deal with the kiln-drying processes since a number of studies have been completed along these lines. Under many conditions, it has been demonstrated that the economy resulting from standardized and controlled seasoning by kiln drying is seen in the improved quality of the stock, small investments tied up in lumber, reduced storage space, reduction in labor, handling, and freight charges, reduction of degrade due to unfavorable winter conditions, and in the conditioning of the lumber to the moisture content required by the consumer as best adapted for a specific use.

The proper conditioning of wood is very essential to the standardization of lumber in that the percentage of moisture, if it is uniformly distributed in the wood, is an index to the amount of shrinkage which has and may take place. Percentage of moisture and moisture distribution in wood are guides to the treatment the material should receive before it is used. If a manufacturer sells material which may be termed "seasoned" or "shipping dry," it may not mean much to the consumer because such terms, especially the latter, are liable to mean any moisture content below the saturated green condition. "Shipping dry" is often considered as approximately 25 to 35 per cent moisture. This is the moisture content, however, which is known as the fibre-saturation point for most woods, or the point wherein the free water has been evaporated from the cells composing the wood while the cell

walls are still saturated. Shrinkage in practically all woods does not begin until the fibre saturation point has been reached, and as the moisture content decreases below this point the shrinkage is more or less directly in proportion to the decrease in moisture content. Wood used for interior construction in a dwelling, due to the exceptionally dry conditions caused by modern heating appliances, may be reduced to a moisture content of 6 to 10 per cent. Under normal conditions, however, wood exposed to average atmospheric conditions in the Lake States, will remain at approximately 12 to 15 per cent moisture, which condition is in equilibrium with the humidity of the surrounding air at normal temperatures. It will be seen, therefore, that for most uses in ordinary building construction, it is advisable that the wood be seasoned to approximately the moisture content it will come to during use.

(To be concluded in April AMERICAN BUILDER)



Some pictorial evidence of the size of Douglas Fir trees which grow in some of the fine stands of timber. The butt cut on the first car came from a tree which, the report says, was 300 feet high and whose lowest limb was some 200 feet above the ground.

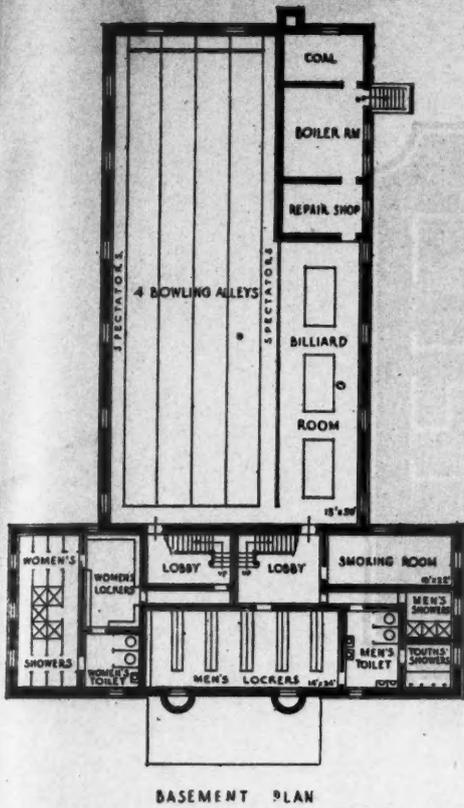
Building the Community Into Closer Friendship

SOME PRACTICAL SUGGESTIONS FOR THE CONTRACTOR WHO PLANS TO CONTRACT FOR A COMMUNITY BUILDING. BY BERTRAM BROWN.

“YOO-HOO, Skinny! C'mon over to the swimmin' tank.” While Huck Finn and his barefooted cheek of tan prototypes could hie themselves to a neighboring swimming hole to splash around to their hearts' delight, or until the constable ran them out, the little city urchin has been out of luck. His nearest approach to a swimming hole in the past has been the stream of water from some city hydrant operated by a kindly policeman, or the floods left after a heavy summer rain.

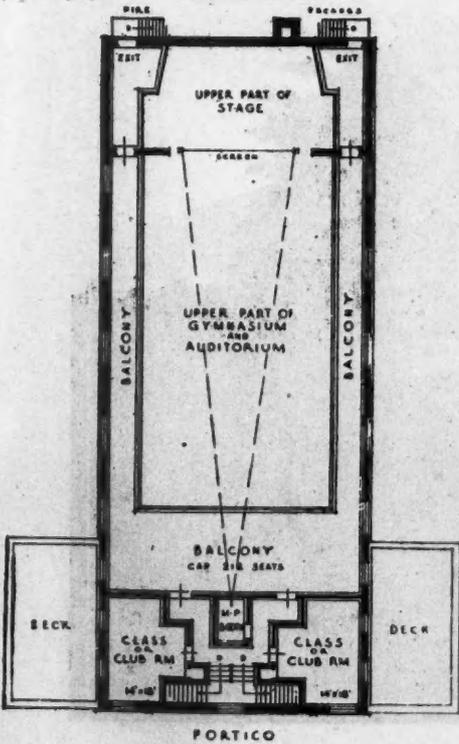
Sporadic effects have been made to provide this child of the cities and towns with some of the natural comforts of the boy of the country thru community building, but not until the war did this movement gain real impetus and assume a definite course. The great war afforded

(Continued to page 94.)



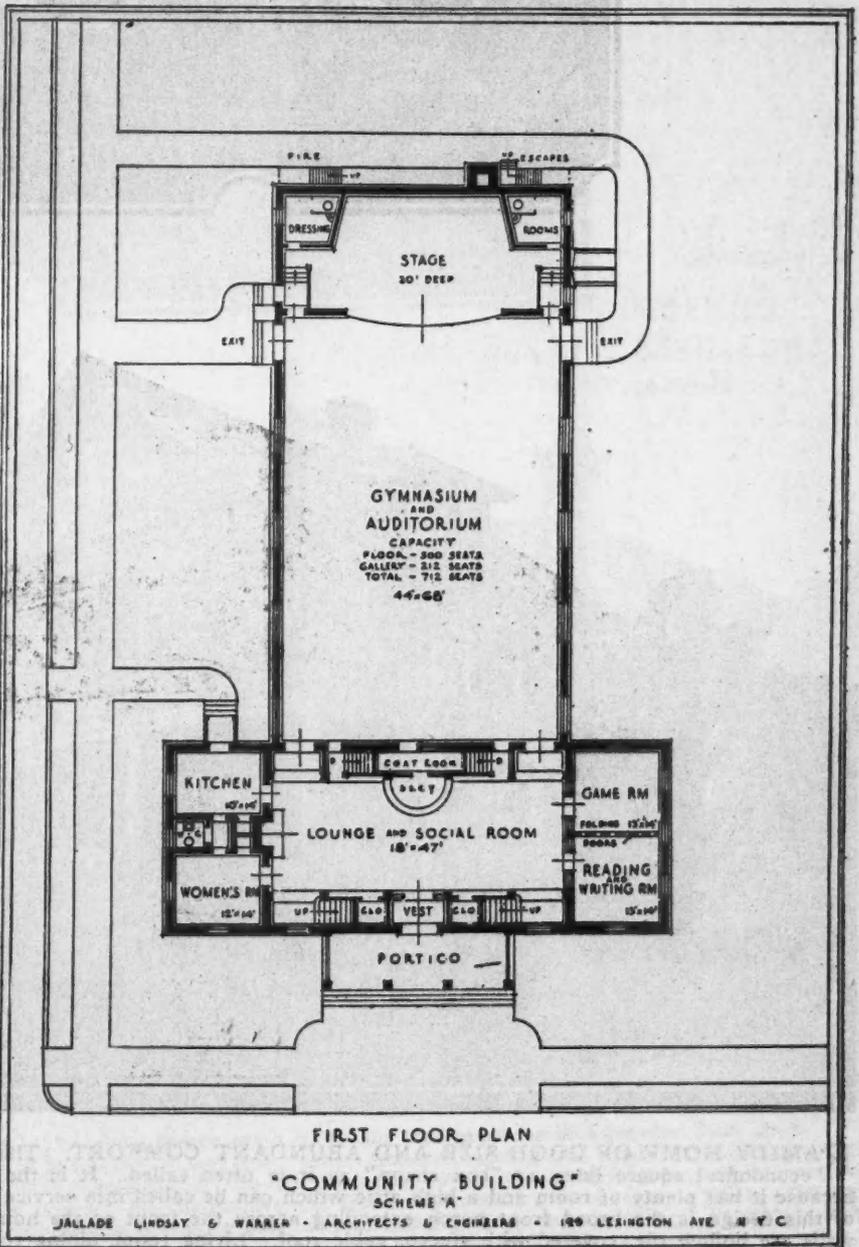
BASEMENT PLAN

"COMMUNITY BUILDING" SCHEME "A"



SECOND FLOOR PLAN

"COMMUNITY BUILDING" SCHEME "A"



FIRST FLOOR PLAN

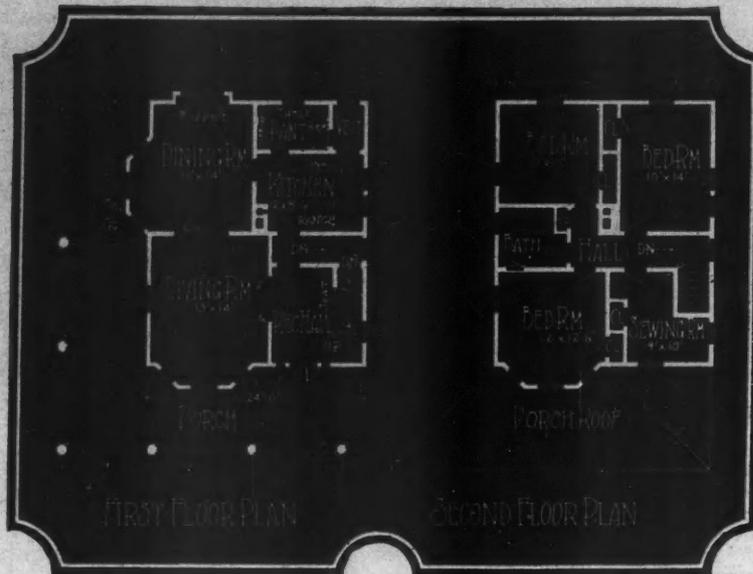
"COMMUNITY BUILDING" SCHEME "A"

JALLADE LINDSAY & WARRER - ARCHITECTS & ENGINEERS - 120 LEXINGTON AVE. N. Y. C.

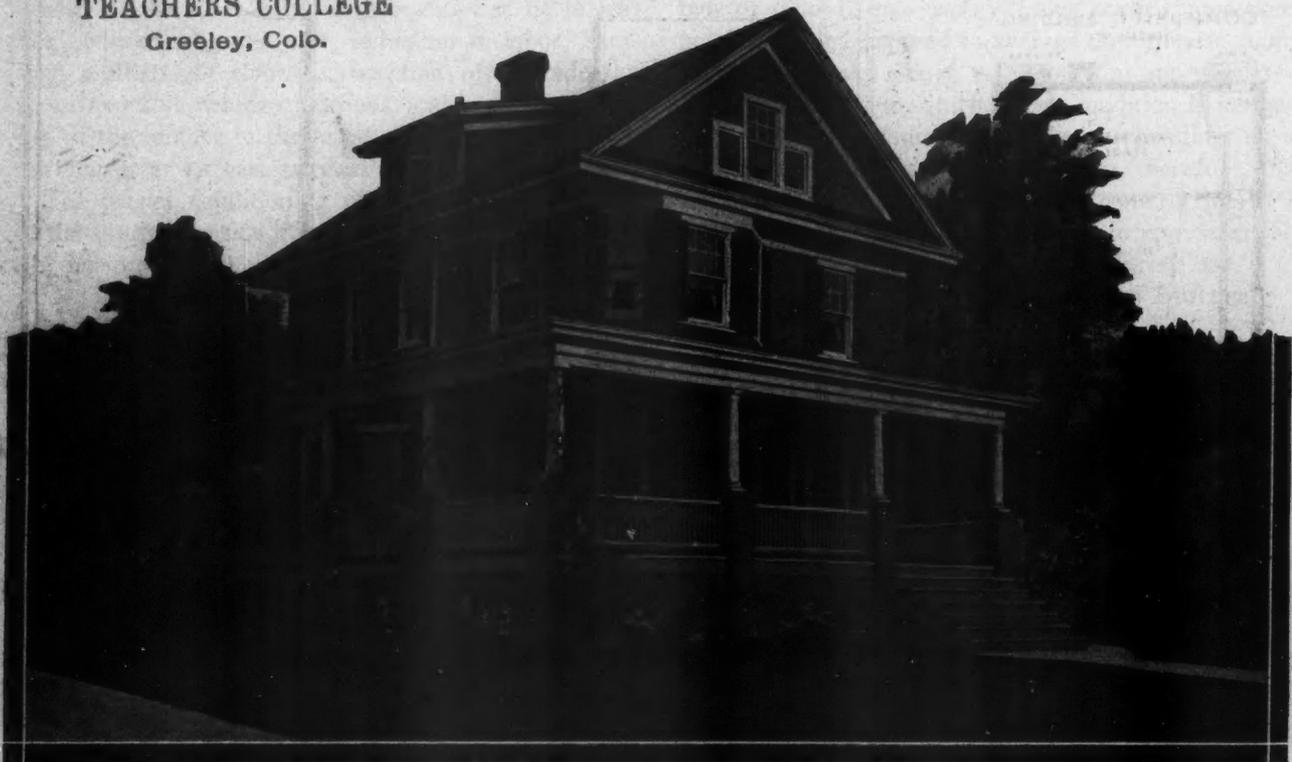
Suggestion No. 1. Floor plans of community building suited to needs of small community. It requires a lot 80 by 120 feet. Based on 1921 costs, it can be built for from \$45,000 to \$50,000.

BLUE RIBBON HOMES

PRACTICAL
&
ARTISTIC



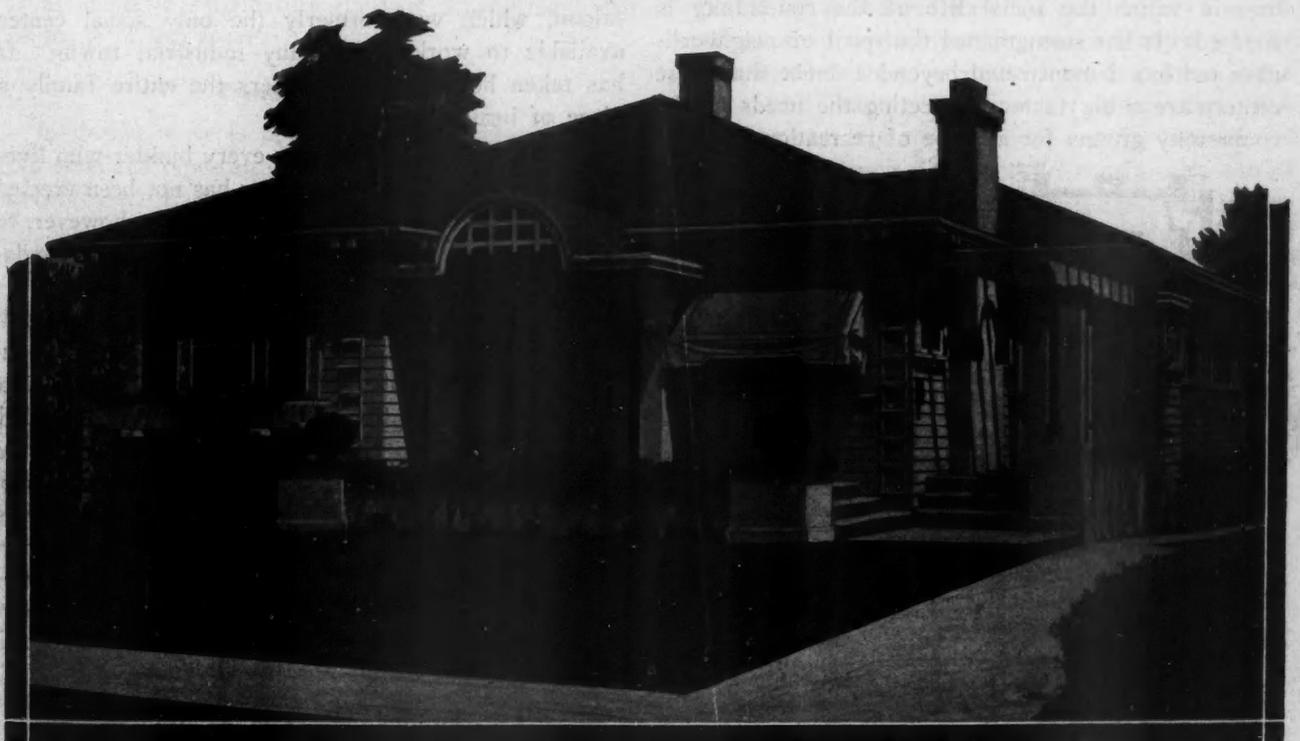
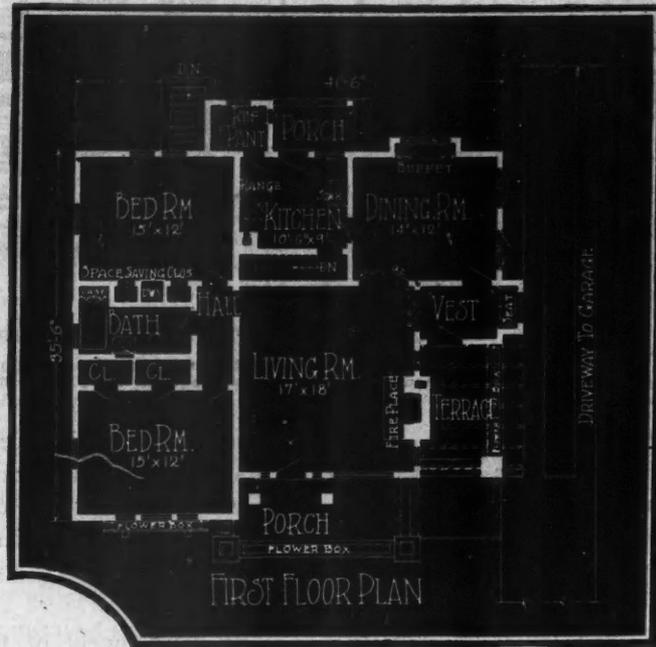
COLORADO STATE
TEACHERS COLLEGE
Greeley, Colo.



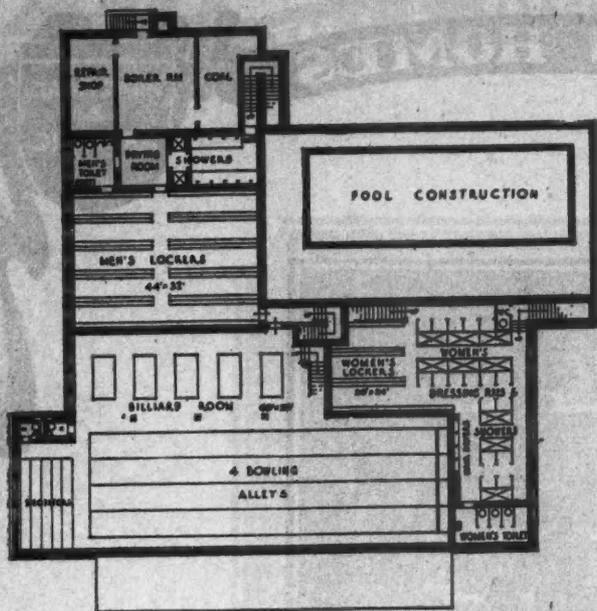
FAMILY HOME OF GOOD SIZE AND ABUNDANT COMFORT. This house is built along well-established, economical square lines, or "box shape," as it is often called. It is the type of house that large families need because it has plenty of room and a high attic which can be called into service if needed. One of the pleasing features of this design is the broad front porch extending across the front of the house and part way around the side. The walls are hollow tile, covered with stucco, gable roof. Living room, dining room and kitchen are located on the first floor, both living and dining rooms having the advantage of extra window space from bays. Three bedrooms are called for in the second floor plan and a sewing room, 9 by 10 feet, is also included. At least two more bedrooms can be accommodated on the third floor. Size of house, 24 feet 6 inches by 21 feet 6 inches.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



NEW CLASSIC STYLE BUNGALOW. Five rooms seem to be the size most families require these days. If it is not a five-room bungalow, it is a five-room or less apartment. Contractors will find it pays to have some designs of this limitation in their portfolio. This bungalow fills the bill as far as room arrangement goes, and in many other particulars. The design is decidedly original and distinctive, yet free from excessive decoration or frills. The terrace and pergola side entrance are enhancing touches that go a long way in making the home appealing. In certain sections of the country a heating plant is not needed in a home of this type and generally a gas log is placed in the fireplace in the living room. The arrangement of the rooms here is quite efficient, the sleeping rooms and bath being grouped together, and living rooms likewise. The house is 35 feet 6 inches by 41 feet 6 inches.

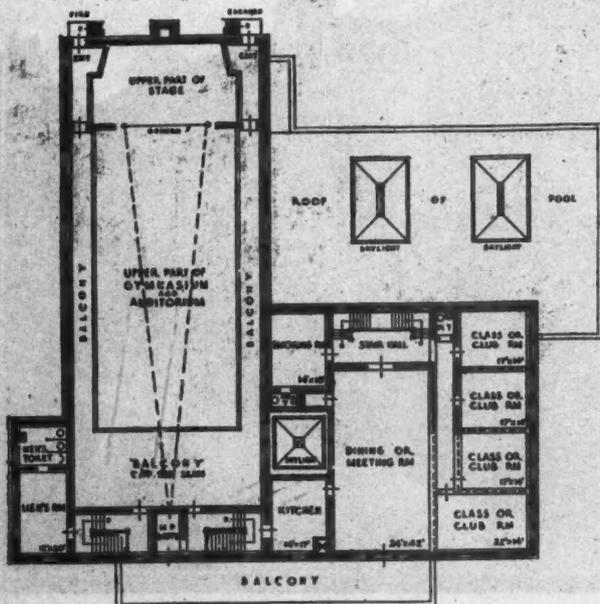


Suggestion No. 2. Basement plan showing swimming pool, bowling alleys, men's lockers, etc.

(Continued from page 91.)

a stimulus. In planning memorials for the men who died in service many communities have decided that a building in which the people can gather for social, intellectual and physical pleasure would be the most fitting and practical.

The result has been amazing. In towns and cities everywhere are springing up these community buildings in which the social life of the community is focused. It has strengthened the spirit of neighborliness and has demonstrated beyond a doubt that these centers are a big factor in meeting the needs of the community groups for all type of recreation.



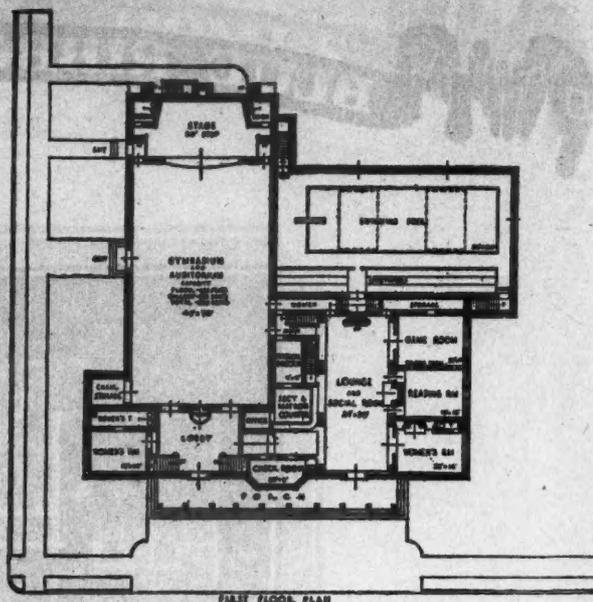
SECOND FLOOR PLAN

'COMMUNITY BUILDING'

SCHEME 'B'

JALLIER, LINDELL & WALKER ARCHITECTS & ENGINEERS 125 LEHMAN ST. N.Y.C.

Second floor plan. Contains men's smoking room, club rooms, kitchen, dining or assembly room. Depending upon materials used, cost ranges from \$125,000 to \$155,000.



FIRST FLOOR PLAN

First floor plan. Auditorium and gymnasium combined. This building requires lot 136 by 136 feet. There is a large lounging room.

The growth of this idea has been most satisfactory in its results for the architect and building contractor. It has opened a new field of building while the other main branches have been quiescent and has afforded the builder a chance for profitable study and employment.

The development of the community building idea has been further intensified by the passing of the saloon, which was formerly the only social center available to workers in many industrial towns. It has taken hold because it offers the entire family a place of healthful recreation.

There is an opportunity for every builder who lives in a community where a building has not been erected to get this business. To talk intelligently, however, to the committee, he should know some of the fundamental principles of community house construction.

In the first place, whatever the nature of the building, whether it be a new building costing many thousands of dollars with the most modern and up-to-date equipment, or an old building inexpensively remodeled, these principles are vital if it is to function effectively.

It must be planned with reference to the needs of boys, girls, young men, young women and adults. Provision must be made for out-door activities. There must be a definite plan of management in operation which will see that everyone may enjoy and share in the activities. And last it must truly serve the community.

Financing the Construction

As a member of the community and as one who is vitally interested in the success of the venture, both from a civic as well as personal standpoint, the contractor will no doubt be called upon for concrete suggestions on the financing of the building.

If it is built by an industrial concern for the use

of the employes who make up the town, the firm sometimes donates the amount in toto. Or they may donate part and the employes part, or it may be made possible thru a general subscription thru the entire community, or by ordinance or law of the governing body (in case of a memorial).

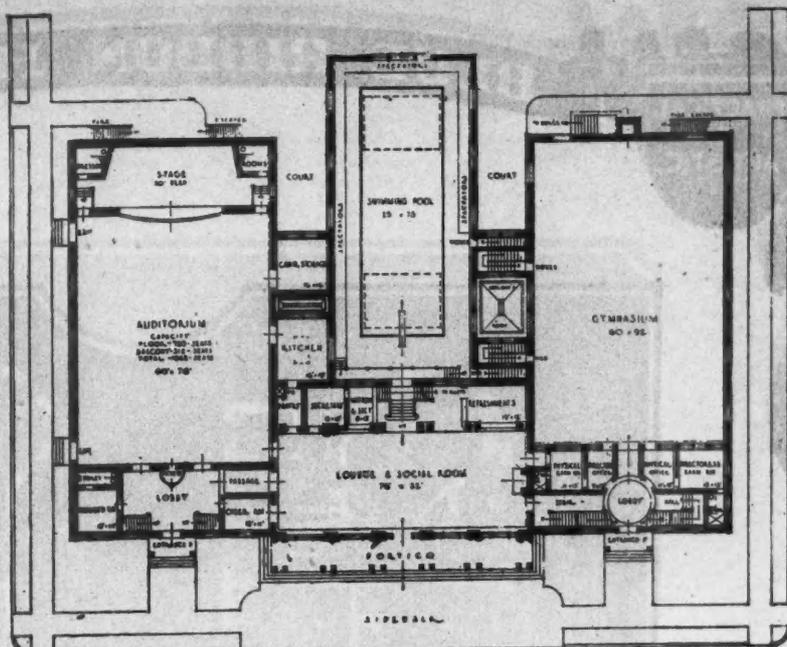
Choosing the Location

In picking the location for a community building the first consideration is accessibility to all who live in the community. Unless people can reach it easily it will lose its opportunity for service and its attraction. It should be placed with respect to the center of population and with respect to car lines, if there are any. Extreme care must be taken to avoid placing the building in such a manner that it will appear to belong to a certain section alone. This may alienate other sections.

The site chosen should be large enough to supply ample light and air space on all sides. A completely equipped athletic field can be installed in approximately seven acres, but of course where more limited space is available, a satisfactory outdoor arrangement can be made in less space.

Types of Buildings

In design there is opportunity for great variation. No standard type can be described and prescribed for every case. Each town has its own ideas and these



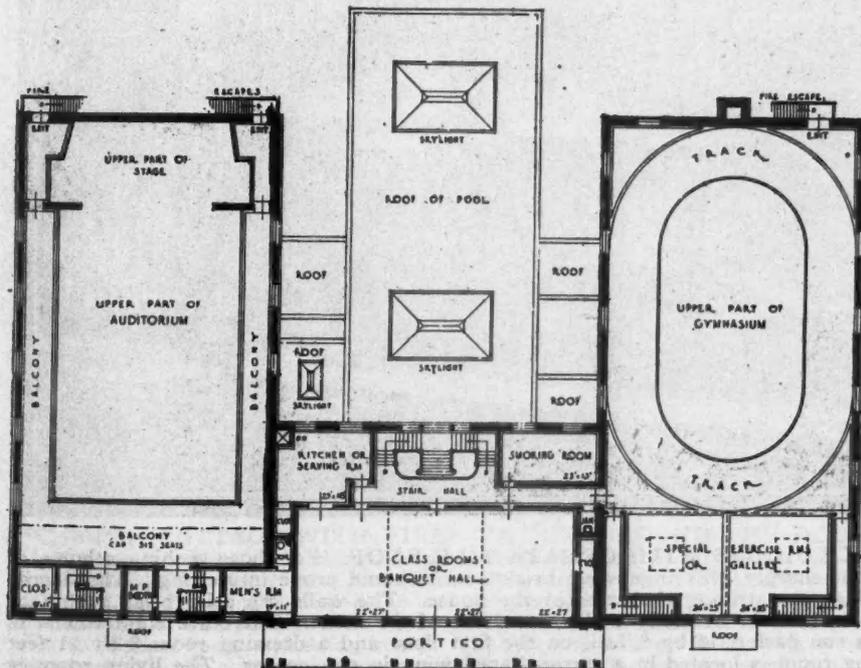
Suggestion No. 3. For town of 18,000-30,000 people. Requires plot 204 by 160 feet. Two stories and basement. It has a separate auditorium and gymnasium. Cost \$235,000 to \$270,000.

naturally are expressed in the buildings they erect.

But there are some general features which are essential to all community buildings, such as auditorium or large assembly hall with stage and dressing room, a gymnasium (which in case funds are limited can be provided for in the auditorium), small rooms for club meetings, reading and lounging and a kitchen. Many people like the idea of a central lounge or foyer in the front of the building thru which visitors enter. The atmosphere of this room can be greatly enhanced if equipped with open fireplace and comfortable chairs and tables conveniently placed. Adjoining the lounge may be a rest room for women and a smoking room for men.

Other desirable features, if funds permit, are swimming pool, library and cafeteria.

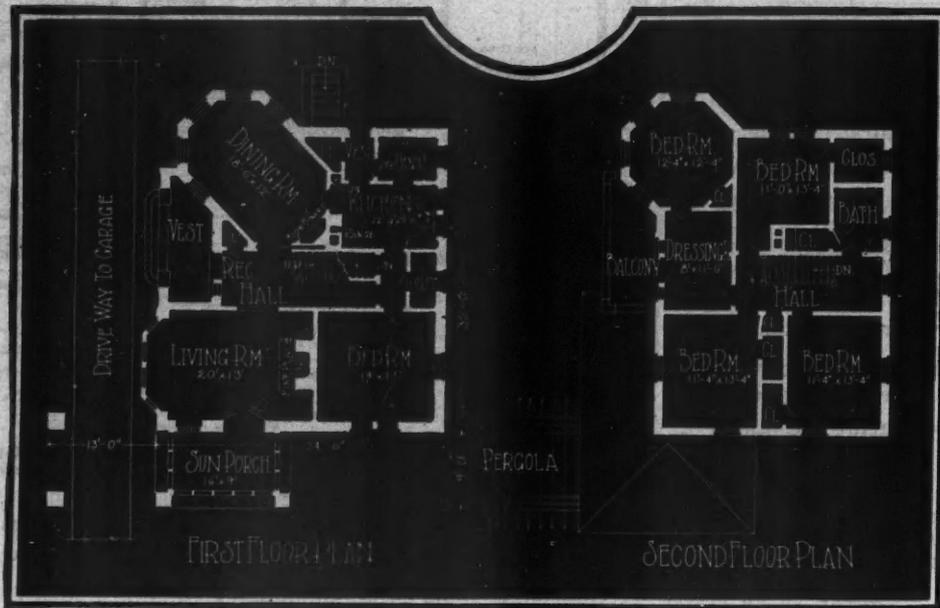
The Community Service, New York City, has worked out plans for three types of community buildings for the small, medium and large industrial communities, incorporating as many as possible of the essential features which have been mentioned. These plans are shown here. While these plans vary in layout, size and cost, they may be readily adapted to meet specific needs. Many communities will desire a simpler and less expensive type of building in which case it will be possible to select the essential features and work out a suitable plan.



Second floor plan. This floor has balconies for auditorium and gymnasium and contains a banquet hall 66 by 24 feet which can be divided by folding doors.

BLUE RIBBON HOMES

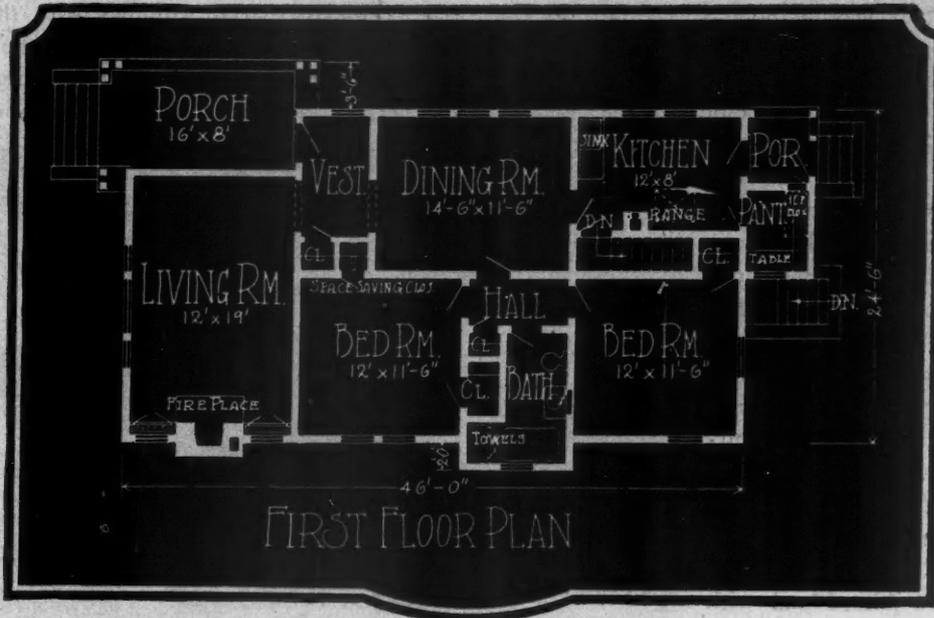
PRACTICAL & ARTISTIC



DISTINCTIVELY DESIGNED BRICK HOUSE WITH ORNATE TILE ROOF. For those wishing a home of character and design that stands out sharply, this impressive brick house should prove interesting. The details of the roof, covered with tile, add much to the striking character of the house. The walls are solid brick with face brick finish and the garage in the rear is built in harmony with the scheme of the home. There are eight rooms in the floor plan, four on each floor, also a sun parlor, 16 by 9 feet, on the first floor and a dressing room 8 by 11 feet 6 inches on the second floor. The dining room is located in a turret-shaped wing in one corner. The living room is 20 by 13 feet with a fireplace, which can be fitted with gas log or electric heater if the natural fire is not used. There are five bedrooms. Size of house, 34 feet 6 inches by 36 feet.

BLUE RIBBON HOMES

PRACTICAL
&
ARTISTIC



"SIMPLE COTTAGE WITH VINES TWINING 'ROUND THE DOOR." To many people this home will be just as satisfying as Buckingham palace is to the king of England. It is substantially built of frame on a concrete, stucco-coated foundation, with five cozy well arranged rooms with plenty of light. The economy of its construction, of course, is the important item to the prospective builder, but none of the comforts of a true home life have been lost because of this saving. The front porch is located to one side, opening into a small vestibule in direct connection with the dining room and living room. The latter is a large room with windows on two sides, a fireplace and wall bookcases. There are two bedrooms, 12 by 11 feet 6 inches, equipped with space-saving closets, and conveniently grouped in one section of the house. The kitchen has many built-in features that aid the housewife. The house is 24 feet 6 inches wide and 46 feet long.

OUR FRONT COVER HOME

THIS year we have with us the "flapperette" with her "galoshes"; next year it will be something different. In most things there is that unstable element of fleeting popularity,—fad we call it. But there is one idea that sticks, is just as firmly entrenched in our favor this year as last, or a hundred years back. That is the Colonial home.

It may be coincidence or something else, but it happens that the day we are writing about the beautiful Colonial home on the front cover is the anniversary of George Washington's birthday. The name conjures thoughts of those gallant and colorful Colonial days when men wore wigs and silk knee breeches, yet fought with the courage of Spartans. They, too, lived in Colonial houses, perhaps quite similar to the design shown on the front cover.

But they have passed and with them the wigs and the knee breeches. They were mere fads of the day. But has the Colonial house become a memory also? Not much. It is just as popular, just as much in demand, and just as delightful a home today as it was when Washington was an honest youth chopping the cherry tree in his father's orchard.

First, it is a home, and as such will always live, secondly, as a home, it has some delightful attributes which prohibit any possibility of it losing in favor. Simplicity lives where gaudiness rapidly passes into oblivion. And the Colonial house is the soul of simplicity.

"What a delightful, quaint house," we hear that word "quaint" so often, and the people who speak it seem to like the sound. It brings to mind many

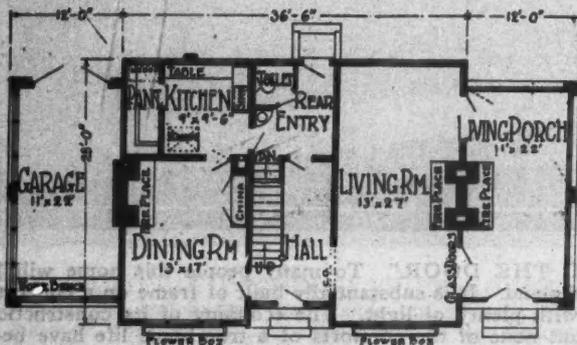
things that they like. It brings to mind a frame house, more often painted white, with wide board siding, set low on the ground giving an impression of firm standing—regularly spaced windows with the upper pane divided, an inviting entrance set in the center of the wide frontage with protecting and reassuring hood and perhaps a step or two of brick and two wooden



A True Colonial House Would Not Be Complete Without an Old-Fashioned Fireplace That "Burns." This Fireplace Is Located in the Large Living Room, in This Case Flanked by French Doors Opening Out Onto a Large Living Porch. The Fireplace Is the Focal Center of the Home.

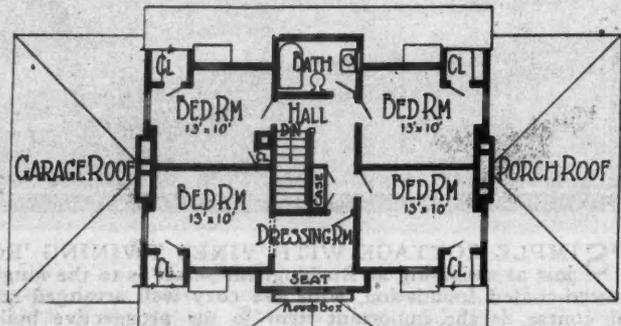
benches where the weary may rest. This in brief, is the picture they see in the mind's eye, this is the picture they see in reality on this month's front cover.

We should not forget the broad brick flue at the end of the house marking the place where the fireplace overlooks the large living room, an essential part of this type of house. In this home it is 13 by 27 feet, with a large living porch, 11 by 22 feet, in connection. The porch is reached from the living room only, thru two sets of French doors.



FIRST FLOOR PLAN

First Floor of Front Cover Home, Showing Large Living Room, Porch and Garage Built as Part of the House. Size 28 by 36 Feet 6 Inches.



SECOND FLOOR PLAN

Second Floor Plan of Front Cover Home. There Are Four Bedrooms on This Floor, Seven Rooms in the House. A Dressing Room with Window Seat Is Also Included.

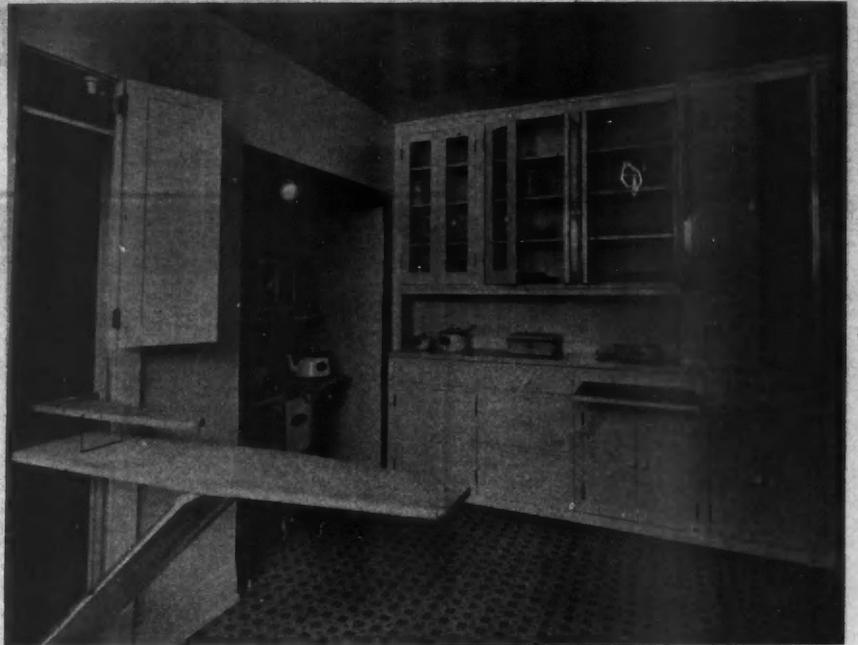
Two other rooms are located on the first floor, the dining room, 13 by 17 feet, with small fireplace and built-in china closet. A triple window provides light for this room. Dining room and living room are on either side of a small vestibule which leads to the staircase to the second floor and then thru the house to the rear entry where an extra toilet has been installed. The kitchen is reached from this hall and in back of the dining room. It is quite small in dimensions, 9 by 9 feet 6 inches, but by no means lacking in completeness and equipment. It has a pantry in connection with an outdoor icing refrigerator.

The feature of the first floor arrangement, however, is the garage which is adjacent to the dining room and kitchen, altho not connected by inside doors. It is only a step from the rear door to the garage and being part of the house, it can be heated from the same plant which is an important advantage in winter time. The garage is 11 by 22 feet.

There is nothing unusual about the second floor arrangement, containing as it does, four bedrooms, 13 by 10 feet, well lighted by windows on two sides. There is a small dressing room adjoining one of the bedrooms.

The simplicity of the Colonial design in itself means economy in cost. Where there are no special trimmings to be accounted for there is no extra expense. The standardization and quantity production of many of the items that go into the Colonial house enable the builder to submit a figure that is reasonable. The porch materials, frames, doors, etc. are easily secured and consequently, the expense of special workmanship is eliminated. The waste in building due to grills, sunbursts, and other fancy contraptions is enormous.

Economy in building comes thru good planning—in this front cover house we have seven comfortable rooms in a space 28 by 36 feet, far from large. Convenient and direct access between rooms is an important factor, not only in cost but in comfort. Too many nooks and isolated corners will add to the expense and that is why the sim-



The Modern Kitchen Is Small Because the Furniture Is Built in the Walls—in This Case Even the Stove. In the Front Cover Home It Is Only 9 Feet by 9 Feet 6 Inches, but Ample for This Delightful Home.

licity of the Colonial design appeals so strongly to the prospective homebuilder.

Simple straight lines contain the maximum space within the minimum wall footage.



Computing Snow Loads

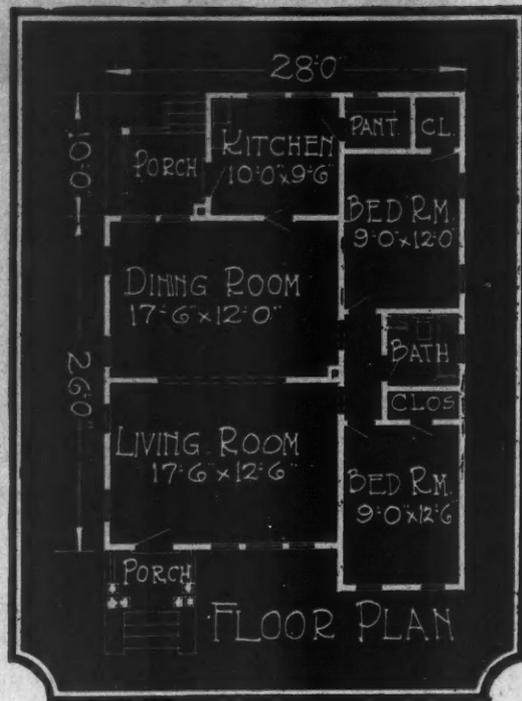
FOR a latitude of 40 degrees the snow load in pounds per square foot of horizontal projection should be: For roofs with one-sixth pitch, 25 pounds; for roofs of one-fifth pitch, 20 pounds; for one-fourth pitch, 15 pounds; one-third pitch and over, 10 pounds.



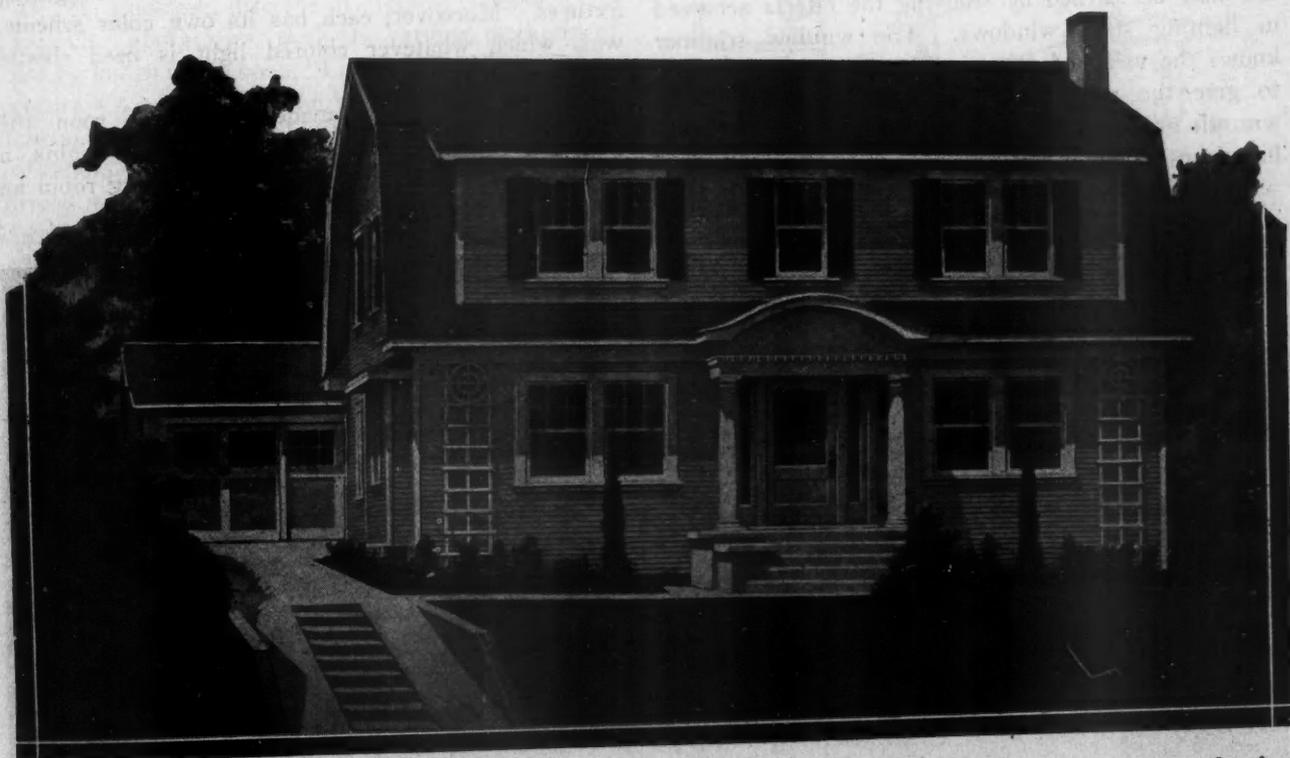
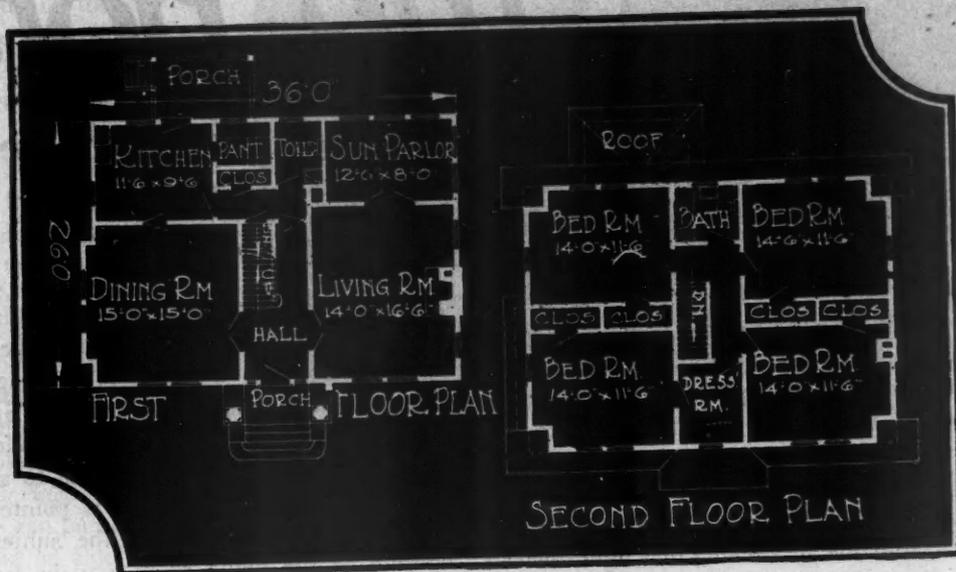
The Beauty of a Colonial Staircase Is Hard to Exceed. While This Is Not the Staircase in Our Front Cover Home, It Gives an Excellent Idea of How This Detail Can Be Handled.

BLUE RIBBON HOMES

PRACTICAL
&
ARTISTIC



SIMPLICITY LENDS ITS CHARM TO THIS SMALL, MODEST HOME. Again we find the influence of the sunny West and South. Some of the appealing features of the old-fashioned Colonial home have been incorporated into this bungalow with telling effect, especially insofar as it adds to the general "hominess" of the exterior. A small brick stairway and porch lead the way to the quaint Colonial entrance. This opens directly into the living room eliminating the customary vestibule and adding that space to the living room which is 17 feet 6 inches by 12 feet 6 inches. Dining room and living room really form one large room. The kitchen is quite tiny, tucked away in the rear of the house, but convenient to the dining room. The other side contains two small but comfortable bedrooms and bath. These five rooms have been placed in an area 26 by 28 feet.



SMALL DUTCH COLONIAL HOUSE WITH GARAGE. Perhaps some of your clients are worrying today just how they are going to get seven rooms into a small house without being skimped for space. Here is your answer. A delightful, small Dutch Colonial house with all the inherent charm of that type of building, containing seven excellent rooms, both in size and arrangement, and the building is only 36 by 26 feet. In exterior it is simple, dignified and inviting, frame construction, painted white, with dark window shutters on the second floor. On the first floor are the three main rooms and a sun parlor. This living room is in keeping with the traditions of Colonial style, while the kitchen takes more modern shape. On the second floor are four bedrooms, 14 by 11 feet 6 inches each, with abundant light. A garage is built in rear.



Woman and the Home

Effective Lighting in the Home

SOME INTERESTING HINTS ON COLORED LIGHTS AND ARRANGEMENT OF UNITS IN HOUSE.

By C. H. Huntley

TODAY the woman of the house chooses the draperies and curtains for her home with great care. She makes sure that the color scheme of each room is, so far as is possible, harmonious—that the colors of walls, hangings and rugs do not clash.

But how many stop to consider that the lighting may be made to harmonize with the other factors that make up the appearance of the apartment; that light, instead of being merely an illuminant, may also be made ornamental and an added item of beauty?

Excellent effects may be obtained by the use of colored lights. Some very practical lessons along this line may be learned by studying the effects achieved in lighting store windows. The window trimmer knows the value of color in illumination and uses it to give the atmosphere he desires, whether it be warmth or coolness, restfulness, or whatever quality he wishes to emphasize.

Stage lighting offers some good hints to those inter-

ested in using colored lights in the home. One color may be used to illuminate the stage, and another, harmonizing with the general lighting, may be employed to illuminate the back drop. Splashes of high intensity colored lights may be introduced at two or three points for emphasis, but not to affect the entire stage. In the same way, as is pointed out by Miss Helen Smith in writing on the subject, the general lighting of the living room may be yellow combined with a tint of red, with perhaps spots of brilliant green or purple inside a vase or thrown on a statuette.

Obviously, each room has its individual illumination needs, and this applies to colors as well as to lighting fixtures. Moreover, each has its own color scheme, with which whatever colored light is used should harmonize.

The lighting may be made to give the room the character desired. For autumn or winter nights, a yellow or a red tinted light gives the living room an air of coziness and comfort.



Dining room with special fixtures emitting downward as well as upward light. Also wall-boxes for color effects and the large window contains an artificially lighted scene so that sunlight, sunset or moonlight is simulated.

A thing to be kept in mind is that the use of colored light accentuates the color of each object in the room which is of the same color as the lamp, and affects the other colors. If a red tented lamp is used, all the reds in the curtains, rugs, pictures, etc., will be intensified, while the blues will be darkened and the greens will take on a yellowish tinge. If a green light is used, the greens become more vivid, the reds take on a yellowish appearance and the blues turn to blue-greens. With the use of a blue light, the blues in the room are emphasized, the reds darken and the greens become blue-greens.

Those who wish to experiment with colored lights and are unable to obtain the colors they wish may do their own coloring. Collodion and various lacquers for the purpose can be bought and colored as desired, or the lamps can be colored at electrical stores for a few cents each. In coloring, the lamps are dipped in the lacquer, removed, and then lighted, the heat baking on the lacquer. Successive coatings, of course, deepen the color.

Dr. M. Luckiesh, director of Applied Science, Nela Research Laboratories, suggests various methods of coloring lamps in his book, "Lighting the Home" (The Century Co.). One that he mentions is scraping the emulsion from photographic films and then dissolving the celluloid film in "banana oil." The lacquer thus formed may be colored with dyes to suit the ideas and wishes of the experimenter.

This field of experimentation will prove very interesting to those who appreciate the added beauty colored lights may be made to give a home, and little expense is involved. For example, one householder merely took the lamps in the shower and side brackets in



Torchieres for Color Effects. Light Effects Are Played Upon the Statuary in the Niche.

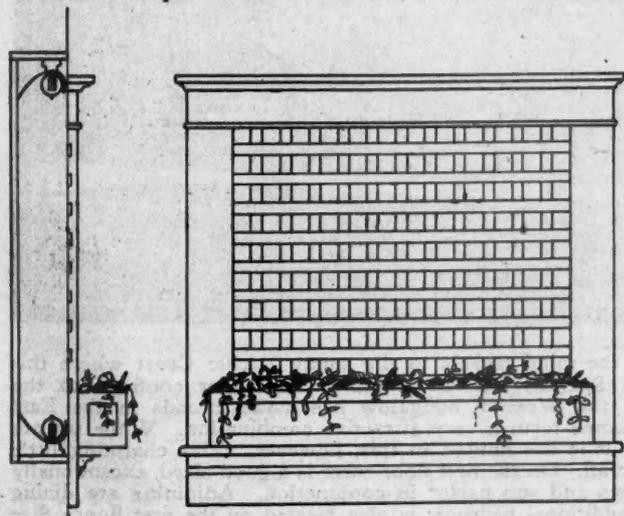
his living room to an electrical store and had them given two dips of yellow—one dip not proving sufficient to give them the depth of color desired—at a cost of a few cents per lamp. The result is that the room



Places for Concealed Lamps. ("Lighting the Home," by M. Luckiesh.)

presents an appearance of comfort and "homeyness" that inevitably attracts favorable notice. Standing out in contrast with the white light radiating from the adjoining residences, it also gives the house a distinctive appearance. It should be said, however, that these lamps are used only for the general illumination of

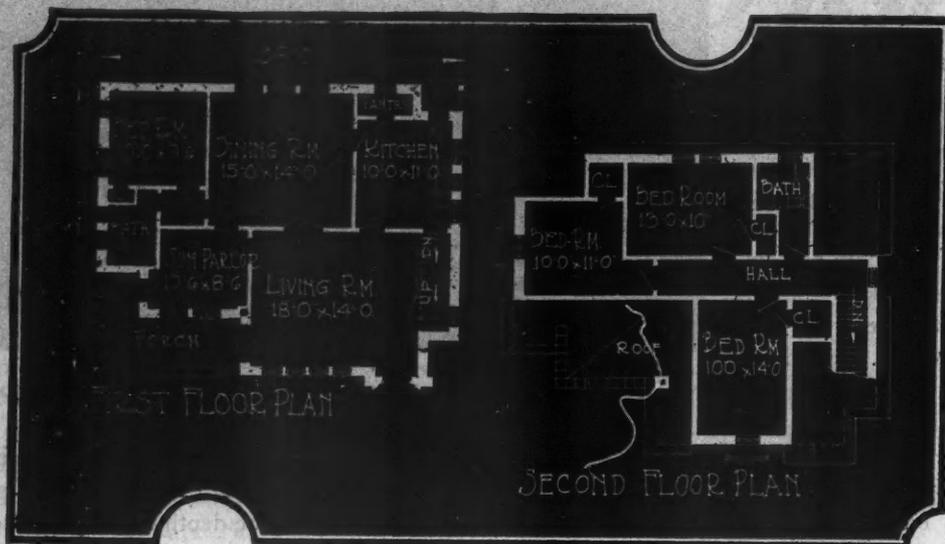
(Continued to page 138.)



Artificial Moonlight. (From "Lighting the Home," Century Co., by M. Luckiesh.)

BLUE RIBBON HOMES

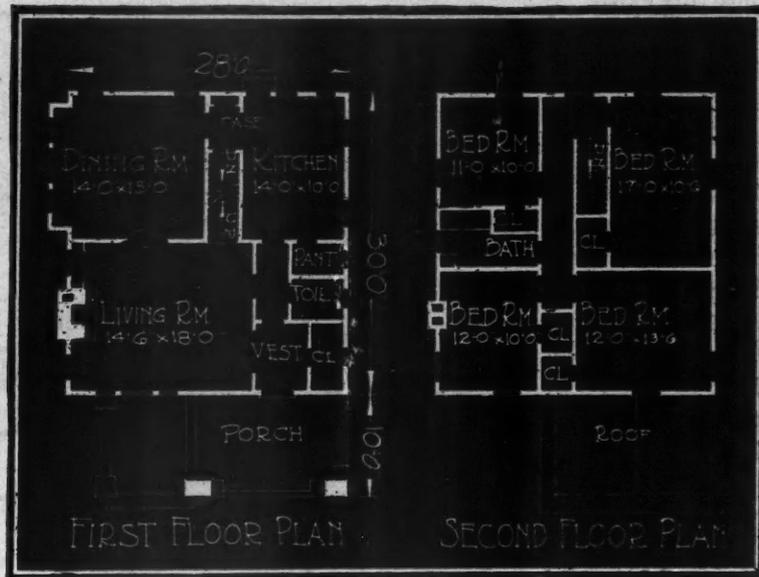
PRACTICAL
&
ARTISTIC



SPANISH MISSION BUNGALOW DESIGN. Instantly the mind travels to the sunny Pacific Coast where this style of architecture originated some centuries ago, but Spanish mission stucco is no longer confined to the Western coast. With the increase in popularity of stucco, the Western bungalow has made inroads in the East and South. The simplicity and hospitable atmosphere of this home form a very attractive combination. While we are accustomed to think of a bungalow as having only one floor, it is not limited to this, however. This charming little home has three bedrooms on the second floor, seven rooms in all. On the first floor there is a good-sized, exceptionally well-lighted living room, 18 by 14 feet, with casement windows and sun parlor in conjunction. Adjoining are dining room and kitchen, both connected with the living room. An additional bedroom is also located on the first floor. Size of house, 31 by 38 feet.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



CONSERVATIVE, COMFORTABLE FAMILY HOME. There is a definite demand for homes of this size and style throught the country. It can serve satisfactorily as farm or city home and has the room for a good-sized family. In construction it is quite plain, but attractive, with one story finished in stucco, the other in frame and a foundation of concrete. A half porch is built in front with stair approach from the side. The size allows ample room for seven large rooms, well placed, well lighted and ventilated. There are three on the first floor, living room, 14 feet 6 inches by 18 feet, dining room, 14 by 15 feet, and kitchen. Four bedrooms are provided in the second floor plan. A high attic provides space for one or two more bedrooms or recreation room for the children. The builder will find this a practical and popular design.

Modern School Building Houses Happy Children

NEW WOODROW WILSON, SCHOOL, CICERO, ILL., IS THREE STORIES, WITH PROVISION FOR ADDITION TO TAKE CARE OF FUTURE EXPANSION

WHY is it we don't hear so much about "playing hookey" any more?

provision for another wing in the rear as indicated by the dotted lines in the floor plans.

Perhaps because we are growing older and have long since left that age when such pranks are the dominating impulse of existence. But statistics tell us that "hookey" as a science has actually lost its prestige.

The boiler house is located outside of the main building in the court between the two rear wings (only one

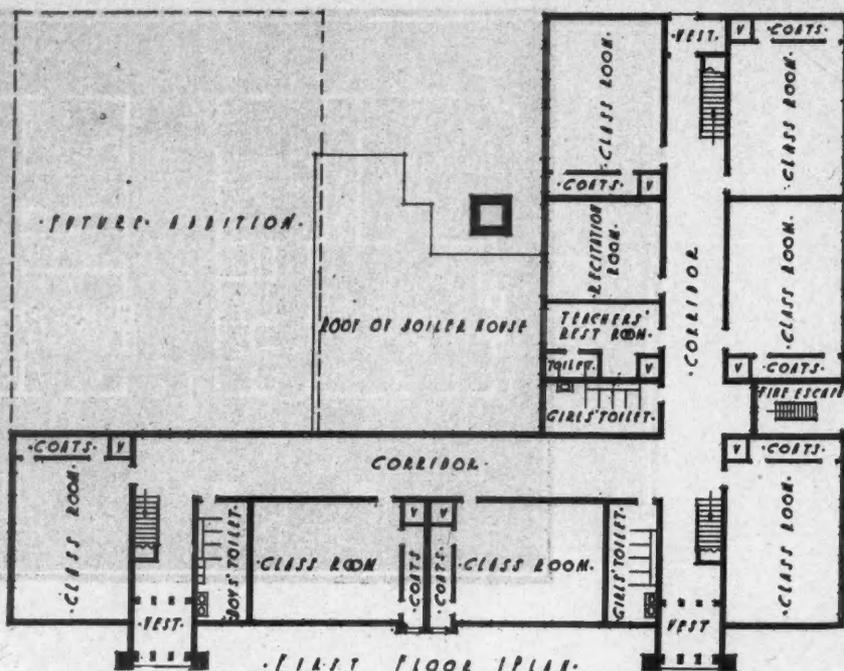
They are building schools so well nowadays that children actually like to attend. One of the examples of this development in school architecture is illustrated here with floor plans showing the efficient arrangement of a modern school. This building, known as the Woodrow Wilson school, was built in Cicero, Ill., and designed by the well-known school architect, G. W. Ashby, Chicago.

It is three stories in height, built of brick, concrete foundation and with an attractive and artistic stone trim adding a brightening touch to the exterior facade. The two main entrances are exceptionally well handled. The building is fireproof and fitted with fire escapes located in a recess in the side wall.

As the building stands, it is built L-shaped with

built at the present time).

The interior room arrangement is one well worth studying. There are seven class rooms and one recita-



First floor plan of new Woodrow Wilson School, Cicero, Ill.



Woodrow Wilson School, Cicero, Ill. Modern elementary school built of brick with stone trim. Note splendid lighting facilities, fire escape arrangement, and provision for future addition. It is 170 by 124 feet.

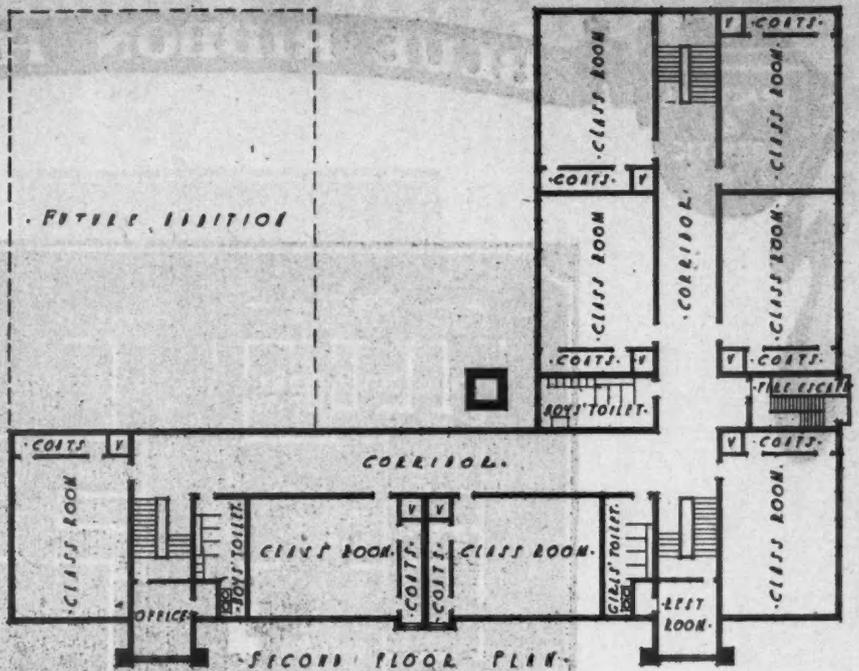
tion room on the first floor and eight class rooms on each floor above. These class rooms are large, exceptionally well-lighted by high windows placed closely together in order to get a maximum of natural daylight. The lighting feature of the modern school is one of the most important problems of the architect and builder. It has been proved so conclusively by the medical authorities that artificial daylight causes a strain on the young children's eyes that every effort is being made by the actual builder to allow for as much natural light as possible.

Each class room has individual cloak rooms and each room is supplied with a constant stream of fresh air from a ventilating system. The heating is indirect direct.

Recitation rooms have been located on the third floor, above the entrances, while on the second floor this space is used for principal's office and rest room. There are two toilets on each floor and teacher's rest room on the first floor. All blackboards are natural slate. The rooms have been built on the outside, of course, to get the light, and open into a corridor which follows the main line of the building. Two rooms in the L face the inside court.

The building is 170 by 124 feet. The provision for future expansion is a point the school boards in many communities overlook when planning a new school building. At the time they give orders to an architect, they are so impressed by the size of the new building that they cannot understand how it will ever have to be larger, yet that is just what happens in a great many cases. Then they have to go to a lot of needless expense to add or to build a new building. In the floor plan arrangement in the Woodrow Wilson school shown here, provision for future growth is made; and without much trouble or unnecessary expense, four class rooms on each floor, or twelve in all, can be added.

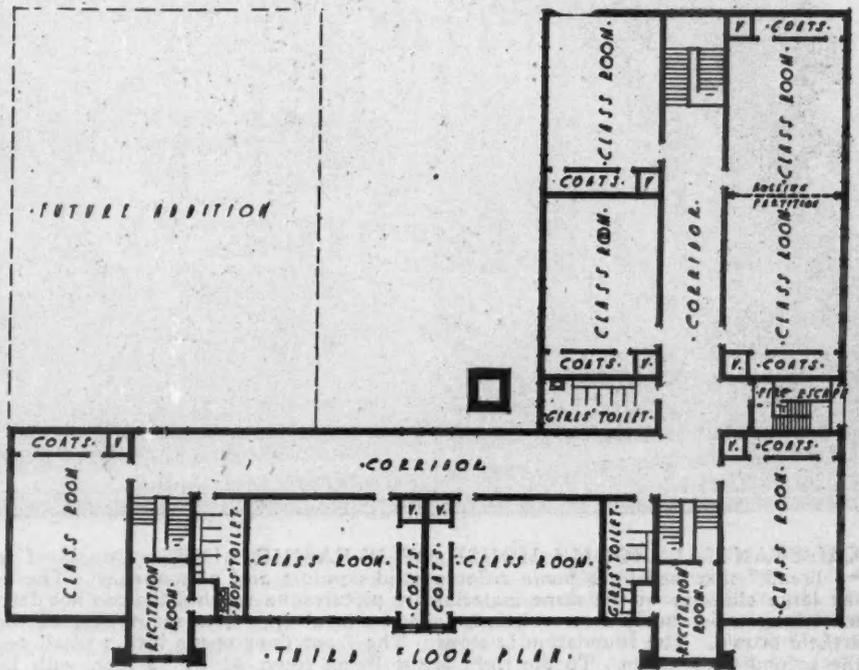
In an industrial town like Cicero, which is not large by any means, there is always a possibility of increased enrollment. The school board in this town has taken note



Second floor plan showing principal's office and class rooms. There are three large exits from this floor, enabling the teachers to get the children out of the building quickly.

of this possibility and is going to be prepared for it. This is only one of a half dozen new schools that have been built in Cicero within the last ten years, and each of them is strictly modern in every respect. "Good school houses make good citizens," is the way the school board in this progressive community size up the situation.

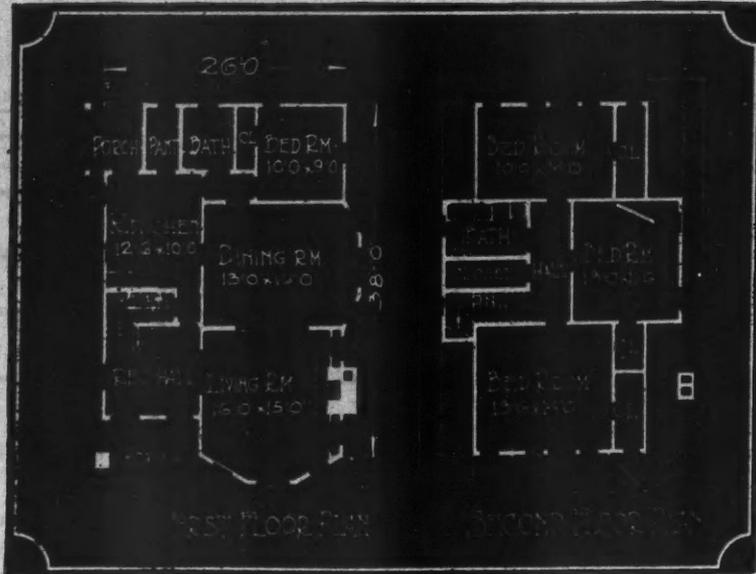
THERE is no time so appropriate as today to take stock of one's ability to save money and to devise plans for stimulating one's savings instinct—the only sure door to comfort, independence, and fortune.



Eight class rooms on each of the upper floors in this school building. Two recitation rooms are located above the main entrances.

BLUE RIBBON HOMES

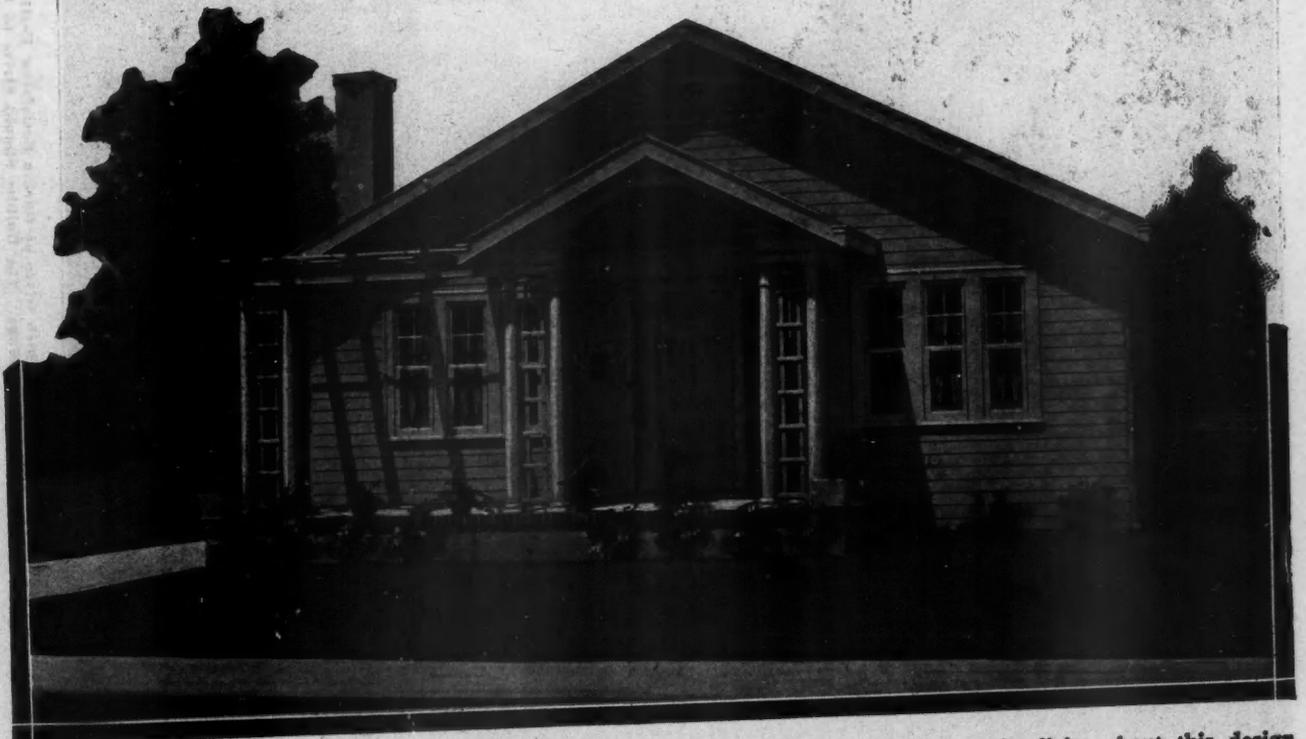
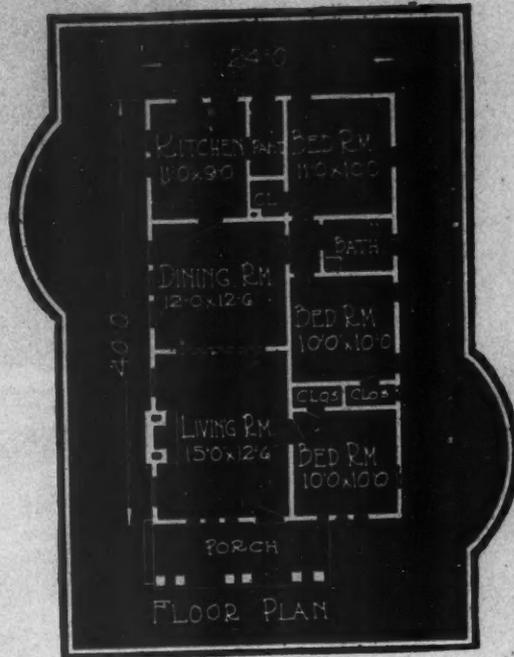
PRACTICAL
&
ARTISTIC



SUBSTANTIAL, ROOMY HOUSE OF PLEASING LINES. Devoid of any unnecessary and expensive "gingerbread," this well-built home reflects solid comfort and permanency. The cobblestone porch rails and column and the large chimney of the same material are picturesque touches that do not detract from the charm of the picture. This material can be obtained very cheaply in many localities. The main part of the house is frame siding stained to an artistic brown. The foundation is stone. The front door opens into a small reception hall from which the stairway to the second floor starts. To the right is the living room, 16 by 15 feet, with bay window in front, and two windows on the side flanking the fireplace. The dining room is connected to this room by a wide casing. Adjoining the dining room is a small kitchen and a bedroom is located in the far rear. Three more bedrooms are provided for in the upper floor plan.

BLUE RIBBON HOMES

PRACTICAL & ARTISTIC



COZY BUNGALOW OF SIMPLE, ECONOMICAL DESIGN. There is a pleasing simplicity about this design that makes it quite appealing. It has an appearance of coziness that very often size banishes away, and is so built as to preclude any excessive expense in the way of materials. It is frame with a front terrace of concrete and brick set on edge, adding a quaintness that is quite an improvement. Part of the terrace is covered by pergola, part by a small roof porch. There are six rooms in this house, which is long and not very wide, 40 by 24 feet. The main rooms living room, dining room and kitchen, are laid out on one side in succession, while the three bedrooms are located on the other side with bath between the two rear bedrooms. The dining room and living room practically form one large room 27 feet long because they are connected by a wide opening.



What is so rare as a beautiful yet simple living room which gives at once a satisfying feeling of comfort, warmth and coziness? Such a room is this, of quiet lines, delicate tones, and well chosen furnishings. The builder should strive to make this room the best because it is the most important.

Simple Lines Distinguishing Colonial House

ELIMINATION OF HALL SAVES SPACE FOR LIVING ROOM—PORCH ENCLOSED BY SASH AND SCREENS.

By R. C. Hunter

THIS house is of the simple New England Colonial type. It provides seven rooms and a bath within a comparatively small area, the plans being compact and well arranged. It is frame construction with walls finished with siding and the roof shingled.

The windows are large and divided into small panes with heavy muntins, they also have blinds and shutters that give the house its Colonial character.

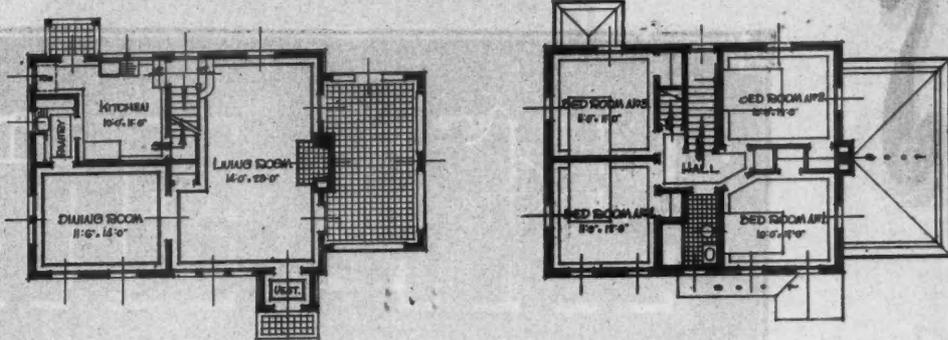
The living porch has complete enclosures of sash and screens so that this can be used as a comfortable living room the year around.

One enters the house thru a small vestibule directly into the large living room, the usual hall space is thus given over to the living room which is a good arrangement for the small house since the hall is often of doubtful value, whereas space in the living room can always be used to advantage.

The stairs lead up from the living room to a small center hall at the second story; steps are also provided from the platform to the kitchen, so that one may have access to the second floor rooms without passing thru the living room. The dining room, kitchen

and pantry occupy the end of the house opposite the living room.

On the second floor are four good bed rooms with



FIRST FLOOR PLAN

SECOND FLOOR PLAN

First and second floor plan of Colonial house showing arrangement of seven rooms. Size of house 25 by 30 feet.

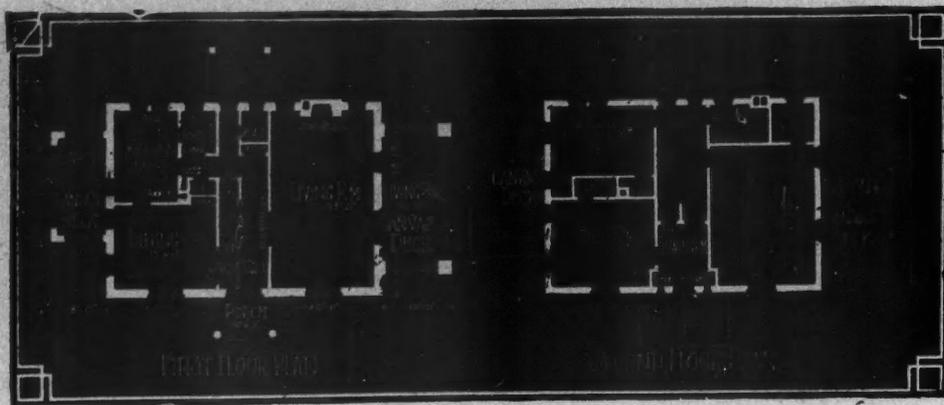
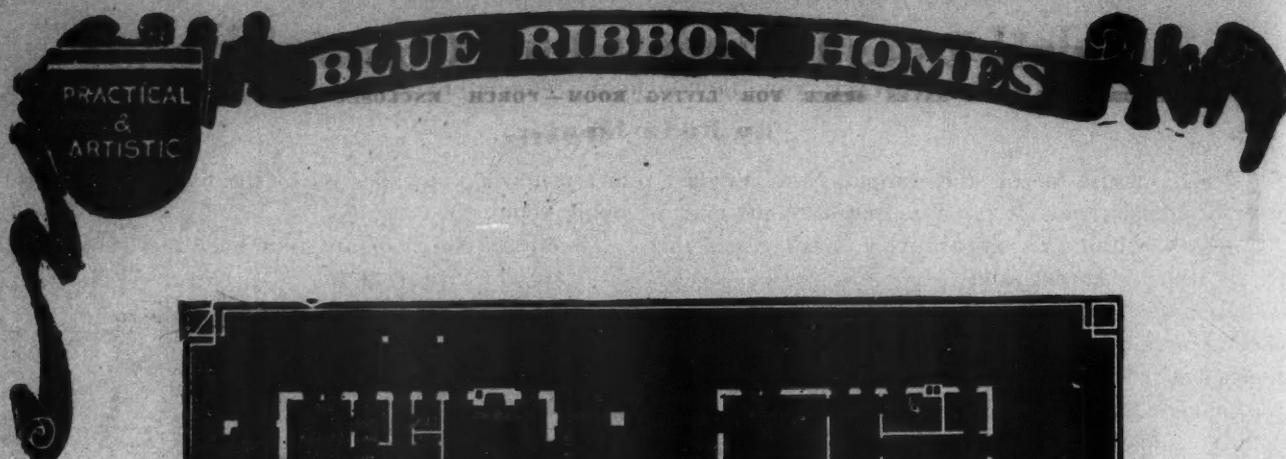
ample light and cross ventilation. The rooms are so laid out that furniture can be arranged to advantage, the beds are placed against inside walls and the dressers between the windows where they receive the best light.

A tiled bath room with built-in tub and modern fixtures is provided. There is plenty of closet space on the second floor. A bed room and a bath are also provided on the third floor, no plan of which is shown.

This house is located at Tenafly, N. J., and was designed by R. C. Hunter & Bro., New York architects.



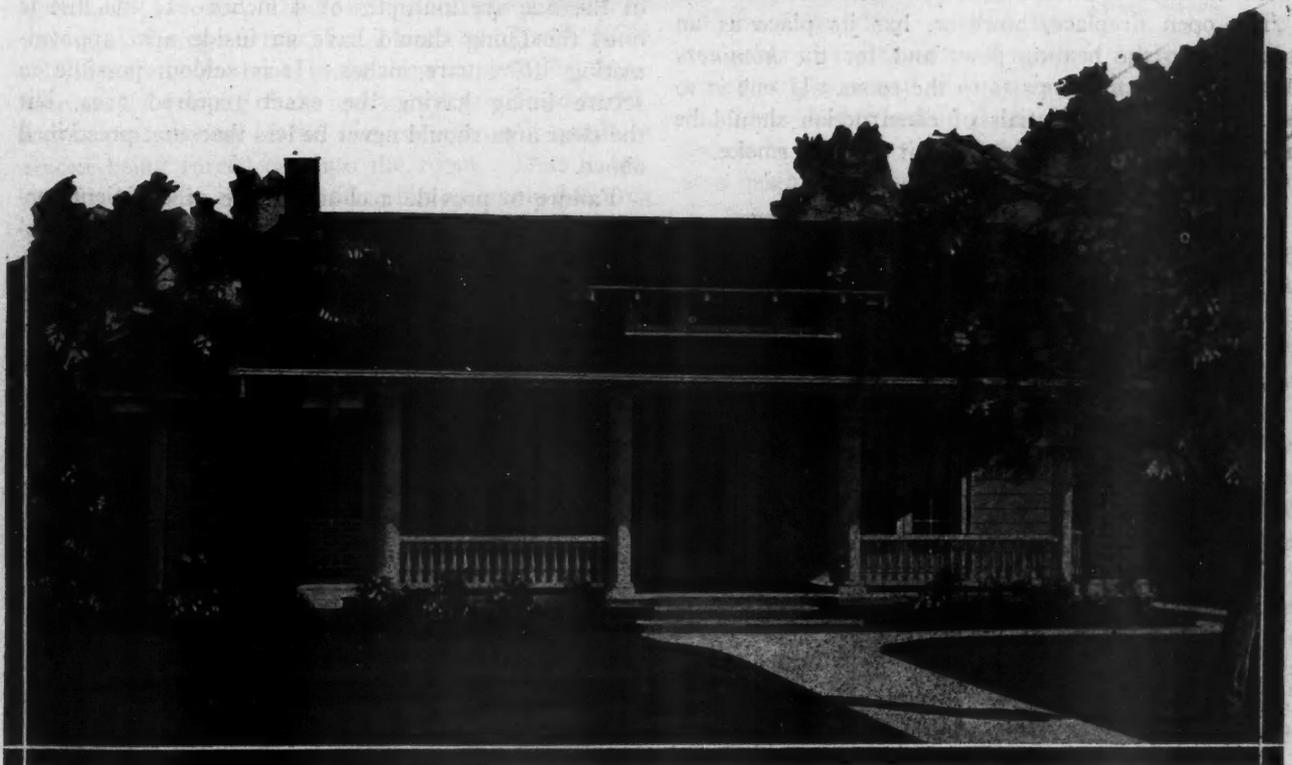
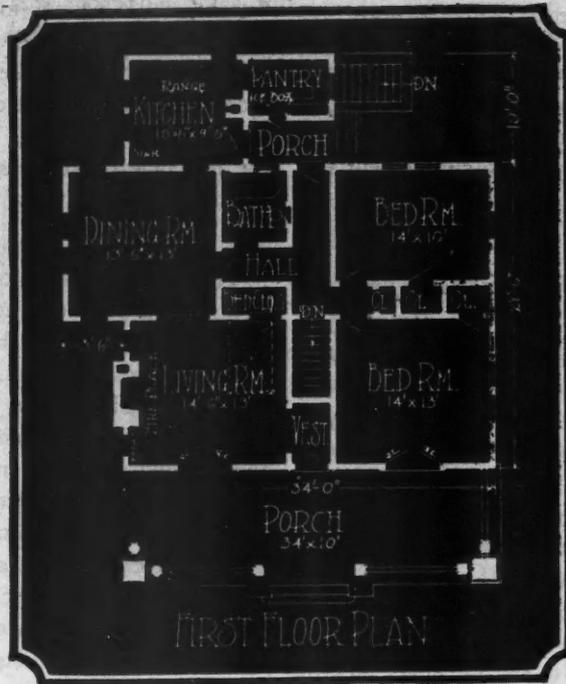
Typical New England Colonial house design showing simplicity of treatment. This house is owned by Guy C. Foster, Tenafly, N. J. Designed by R. C. Hunter & Co., New York.



ATTRACTIVE, SUBSTANTIALLY-BUILT RESIDENCE. The first impression this house gives is one of strength and permanency. It is built to last. The walls are solid brick with face brick finish. Extending across one end is an open porch with attractive wooden railing and two stout brick pillars supporting a balcony above. This balcony has been covered with special canvas flooring. The entrance to the house is in the center, protected by a projecting hood which is supported by two Colonial pillars. On the first floor are three large rooms, the living room, 15 by 25 feet 6 inches, dining room, and small kitchen, 9 by 13 feet. A sun porch at this end of the house is also covered with canvas roofing. On the second floor are three good-sized, comfortable bedrooms opening out on balconies on either end of the house. There is a high attic. Size of house, 28 by 40 feet.

BLUE RIBBON HOMES

PRACTICAL
&
ARTISTIC



CHARMING SMALL HOME WITH HOSPITABLE PORCH. Set low upon the ground, with rakish lines, this cozy, small dwelling radiates a charm that should prove irresistible to many families who are "on the fence" in the matter of building their own home. Show them this design and see if they do not weaken! It is not expensive to build, as there is little excavation to be done, just enough perhaps for a heating plant or storage cellar. The siding is frame with brick porch columns. French doors open out from living room and front bedroom on to a broad front porch. In the living room, which is 14 feet 6 inches by 13 feet, there is a fireplace for burning old-fashioned logs, gas log or electric heater. There are five rooms in all, of which two are bedrooms, grouped with bath on one side of the house. The house is 34 feet wide and 27 feet 6 inches long.

“A Roaring Hearth”

HOW TO BUILD FIREPLACES THAT ADD TO THE HEALTH, COMFORT AND HAPPINESS OF THE FAMILY.

By A. M. Daniels

Bureau of Public Roads

“THE fire burns brightest on one’s own hearth.”

As old as civilization is the fireplace, and, yet, today it is actually enjoying a revival in popularity. The advent of the large living room replacing the double parlor has brought back the fireplace. Its real purpose in the modern home is to supplement the regular heating system and to provide a cheerful informal lounging place for a family and friends on cold evenings.

The use of the fireplace is a very old method of house heating. As ordinarily constructed fireplaces are not efficient and economical. The only warming effect is produced by the heat given off by radiation from the back, sides, and hearth of the fireplace. Practically no heating effect is produced by convection; that is, by air currents. The air passes thru the fire, is heated, and passes up the chimney, carrying with it the heat required to raise its temperature from that at which it entered the room and at the same time drawing into the room outside air of a lower temperature. The effect of the cold air thus brought into the room is particularly noticeable in parts of the room farthest from the fire.

The open fireplace, however, has its place as an auxiliary to the heating plant and for the *hominess* that a burning fire imparts to the room. If one is to be provided, the essentials of construction should be understood and followed so that it will not smoke.

Essentials of Fireplace Construction

In order that satisfactory results may be obtained

from an open fireplace, it is essential: First, that the flue have the proper area; second, that the throat be correctly proportioned and located; third, that a properly-constructed smoke shelf and chamber be provided; fourth, that the chimney be carried high enough to avoid interference; and, fifth, that the shape of the fireplace be such as to direct a maximum amount of radiated heat into the room.

Area of the Flue

The sectional area of the flue bears a direct relation to the area of the fireplace opening. The area of lined flues should be a tenth or more of that of the fireplace opening. If the flues are unlined the proportion should be increased slightly because of greater friction. Thirteen square inches of area for the chimney flue to every square foot of fireplace opening is a good rule to follow. For the fireplace shown in Fig. 1, the opening of which has an area of 8.25 square feet, there is required a flue having an area of 107 square inches. If this flue were built of brick and unlined it would probably be made 8 inches by 16 inches, or 128 square inches, because brickwork can be laid to better advantage when the dimensions of the flue are multiples of 4 inches. If the flue is lined the lining should have an inside area approximating 107 square inches. It is seldom possible to secure lining having the exact required area, but the clear area should never be less than that prescribed above.

Failure to provide a chimney flue of sufficient sectional area is in many instances the cause of an unsatisfactory fireplace. The cross-section should be the same thruout the entire length of the chimney. Do not contract the flue at the chimney top, for that would nullify the larger opening below; if it is necessary to change the direction of a flue the full area should be preserved thru all turns and bends, and the change should be made as gradual as possible.

The Throat

In Fig. 2 is shown the throat, the narrow opening between the fireplace and the smoke chamber. Correct throat construction contributes more to efficiency than any other feature except proper flue design. A flue twice as large as is necessary brought straight down to the fireplace without constriction at the throat would result in a poor draft,

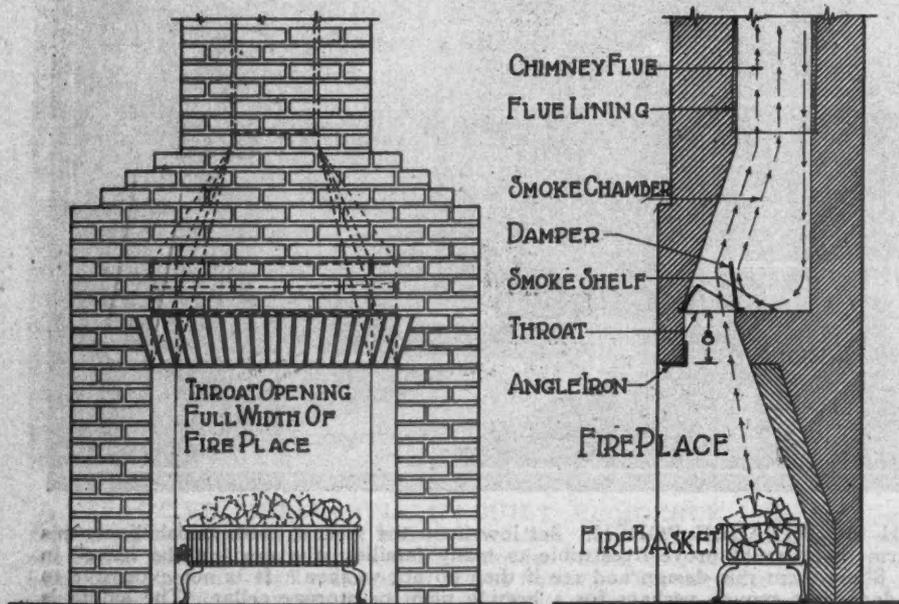


Fig. 1. Dotted lines show how fireplaces should not be built. Side walls should not be drawn in below the top horizontal dotted line. This assures full area.

Fig. 2. Correct fireplace construction showing all details and action of drafts.



The Top of the Chimney Should Be at Least 2 Feet above the Top of Roof Ridge so That Wind Currents Will Not Be Deflected Down Chimney.

for the draft does not depend upon the largeness of the flue but upon its proper proportioning to the fireplace and throat. The arrows indicate the upward flowing currents of warm air which are thrown forward at the throat and pass thru the smoke chamber into the flue on the inner side. The rapid upward passage of air causes a down current on the opposite side, as indicated by the descending arrows. The down current is not nearly as strong as the up current, but it may be of such force that if there be no throat to the fireplace (see Fig. 3) to increase the velocity of the upward current by constricting it, the meeting of the two currents will result in smoke being forced out into the room. Thus it frequently happens that a fireplace has an ample flue area and yet smokes badly. The influence of the throat upon the upward and downward air currents is shown in Fig. 2.

The area of the throat should not be less than that of the flue. Its length should always be equal to the width of the fireplace opening. (See Fig. 1.) The sides of the fireplace should be vertical until the throat is passed. Fig. 1.) Above the throat the sides should be drawn until the desired flue area is attained. The throat should be set 8 inches above the location of the lintel, as shown in Figs. 1 and 2. The wrong way to place the throat damper is shown in Fig. 4. The throat should not be more than 4 or 5 inches wide. The lesser width is a safe standard. If a damper is installed the width of the brick opening at the throat will depend upon the width of the frame of the damper, the width of the throat proper being regulated by the hinged cover of the damper. If the throat damper is omitted the opening should be 4 inches, as shown in Fig. 5. The smoke shelf should not be bricked up but should conform to the dotted lines. The depth of the smoke shelf should be the same for a 2-foot as for a 10-foot fireplace opening.

Proper throat construction is so necessary to a successful fireplace that the work should be carefully watched to see that the width is not made more than 4 inches and that the side walls are carried up perpendicularly until the throat is passed, so that the full length of opening is provided. All masons do not appreciate these fine but necessary points. Many prefer their own and sometimes will ignore the proper methods. It is therefore advisable to inspect the work several times a day as it progresses and thus avoid poor results. When trouble is experienced in an existing fireplace that has ample flue area, it is usually found that the formation of the throat is the cause.

[Smoke Shelf and Chamber

A smoke shelf and chamber are absolutely essential. The shelf is formed by setting the brickwork back at the top of the throat to the line of the flue wall. The shelf should be the full length of the throat. The depth of the shelf should be not less than 4 inches. It may vary from this to 12 or more, depending upon the depth of the fireplace.

The purpose of the smoke shelf is to change the direction of the down draft so that the hot gases at the throat will strike it approximately at a right angle instead of head on. Therefore the shelf should not be bricked up as shown in Figs. 4 and 5, but should be made as wide as the construction will permit at a height of 8 inches above the top of the fireplace opening.



Fig. 3. Fireplaces Constructed Like This Without Throat will Very Likely Smoke.



Fig. 4. Wrong Location for Throat Damper. The Throat is so Low That the Accumulation of Gases at the Point Constricted Weakens the Draft with Greater Likelihood of a Smoky Fireplace. The Smoke Shelf is Bricked Up, Which is Wrong.

The smoke chamber is the place extending from the top of the throat up to the bottom of the flue proper and between the side walls, which may be drawn in after the top of the throat is passed. The area at the bottom of the chamber is quite large, since its width includes that of the throat added to the depth of the smoke shelf. This space is capable of holding accumulated smoke temporarily in case a gust of wind across the top of the chimney momentarily cuts off the draft. Smoke might be forced into the room if there were no reservoir to hold it. The smoke chamber also lessens the force of the down draft by increasing the area thru which it passes. If the walls are drawn

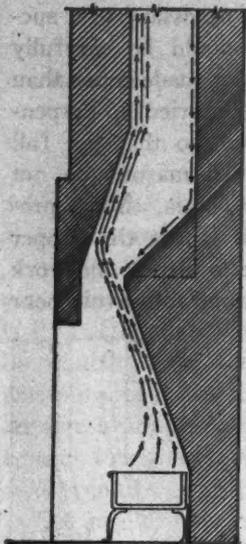


Fig. 5. This Construction Without a Throat Damper Directs the Down Draft so That It Meets the Up Draft Almost at the Throat; Result, a Smoky Fireplace.

inward 1 foot for each 18 inches of rise, friction is reduced and interference with the draft lessened. The walls should be smooth inside, for roughness seriously impedes the upward movement of the air currents.

Shape of the Fireplace

The shape of the fireplace proper should be as indicated in Fig. 7. The back should pitch forward from a point a little less than half away from the hearth to the top of the opening, and the sides should be beveled as indicated. Straight back and sides do not radiate as much heat into the room.

The Throat Damper

A properly designed throat damper affords a means of regulating the fire. The damper con-

sists of a cast-iron frame with a lid hinged preferably at the back so that the width of the throat opening may be varied from nothing to 6 inches. There are a number of patterns on the markets, some of which are designed to support the masonry over the fireplace opening.

A roaring pine fire requires a full throat opening, but slow-burning hardwood logs require but 1 or 2 inches of opening. Regulating the opening according to the kind of fire prevents waste of heat up the chimney. Closing the opening completely in summer keeps flies, mosquitoes, and other insects from entering the house by way of the chimney.

In houses heated by furnaces or other modern systems fireplaces without throat dampers interfere with even heating, particularly in very cold weather. An open fire must be supplied with air and the larger the fire the greater the quantity required; a fireplace with a width of 5 feet or more may pull air from distant parts of the house. This air that is heated at the expenditure of fuel in the furnace is carried up the chimney and wasted, but with a throat damper open only 1 or 2 inches a slow fire of hardwood can be kept going without smoking the room, thus reducing materially the waste of hot air.

Placing the Throat Damper

The throat damper should be as wide as the fireplace, so the side walls should not be drawn in until after

the throat is passed. Smoke dampers with lid hinged at the back will help the smoke shelf to turn the down draft; if the lid is hinged in the center the downward and upward currents are apt to conflict. The placing of the damper varies with the type, but generally the bottom of the frame is built into the brickwork at the level of the top of the fireplace opening, forming the throat and supporting the masonry above it.

Depth of Fireplace Opening

Pleasing proportions in the fireplace opening are desirable. The width should generally be greater than the height, but as 30 inches is about the minimum height consistent with convenience in tending the fire, a narrow opening may be made square. Three feet and a half is a good maximum for height of opening unless the fireplace is over 6 feet wide. The higher the opening the greater the chance of a smoky fireplace.

A fireplace should be in harmony with the rest of the room in proportions and details. This consideration and the kind of fuel to be used largely determine the size of opening.

Generally speaking, the day of large farmhouse fireplaces capable of receiving cordwood is past. The tending of fires usually falls to the housewife, and cordwood is a heavier weight than she should handle and cannot be stored near at hand. Cordwood cut in two is easily handled; so that a 30-inch width is about the minimum for farmhouses where wood is used for fuel. If coal is burned the opening may be made narrower.

Depth of Fireplace Opening

Unless a fireplace with a 6-foot opening is made fully 28 inches deep, in order that large logs will lie well inside, the advantage of the wide opening is lost, for the logs will have to be split. A shallow opening throws out more heat than a deep one of the same width, but can take only sticks of smaller diameter; thus it becomes a question of preference between the greater

(Continued to page 119.)



Fig. 6. Smoke Dampers with Lids Hinged in the Center do Not Turn the Up Draft as Well as Do Those Hinged at the Rear Side.

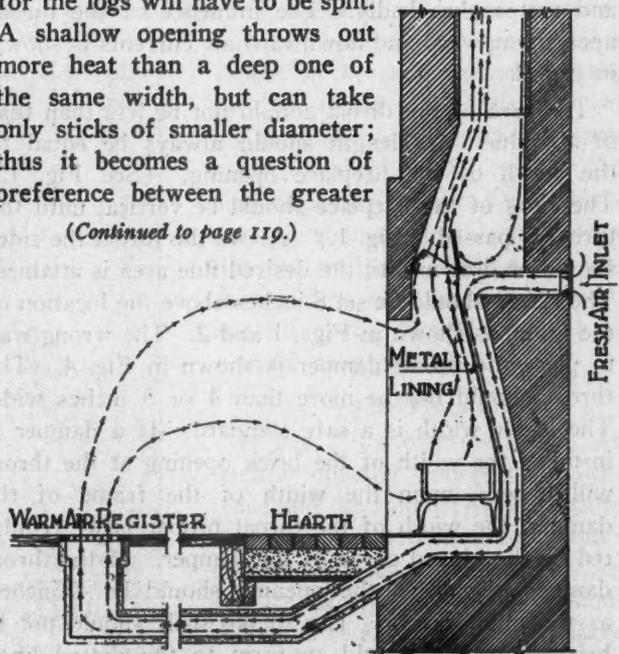


Fig. 7. Improved Form of Warm Air Flue with Floor Register. This Method Increases the Efficiency of Fireplaces Many Times by Delivering the Air That Must Be Supplied to the Fire into the Room at a Temperature of 180 Degrees or More and Delivering It to the Coldest Part of the Room.

"Electrical Homes" and the Builder

ELECTRIC LIGHTS NO LONGER THE ONLY PROBLEM OF THE CONTRACTOR—PROVISION MUST BE MADE FOR NUMEROUS APPLIANCES

By Kathryn Maddock

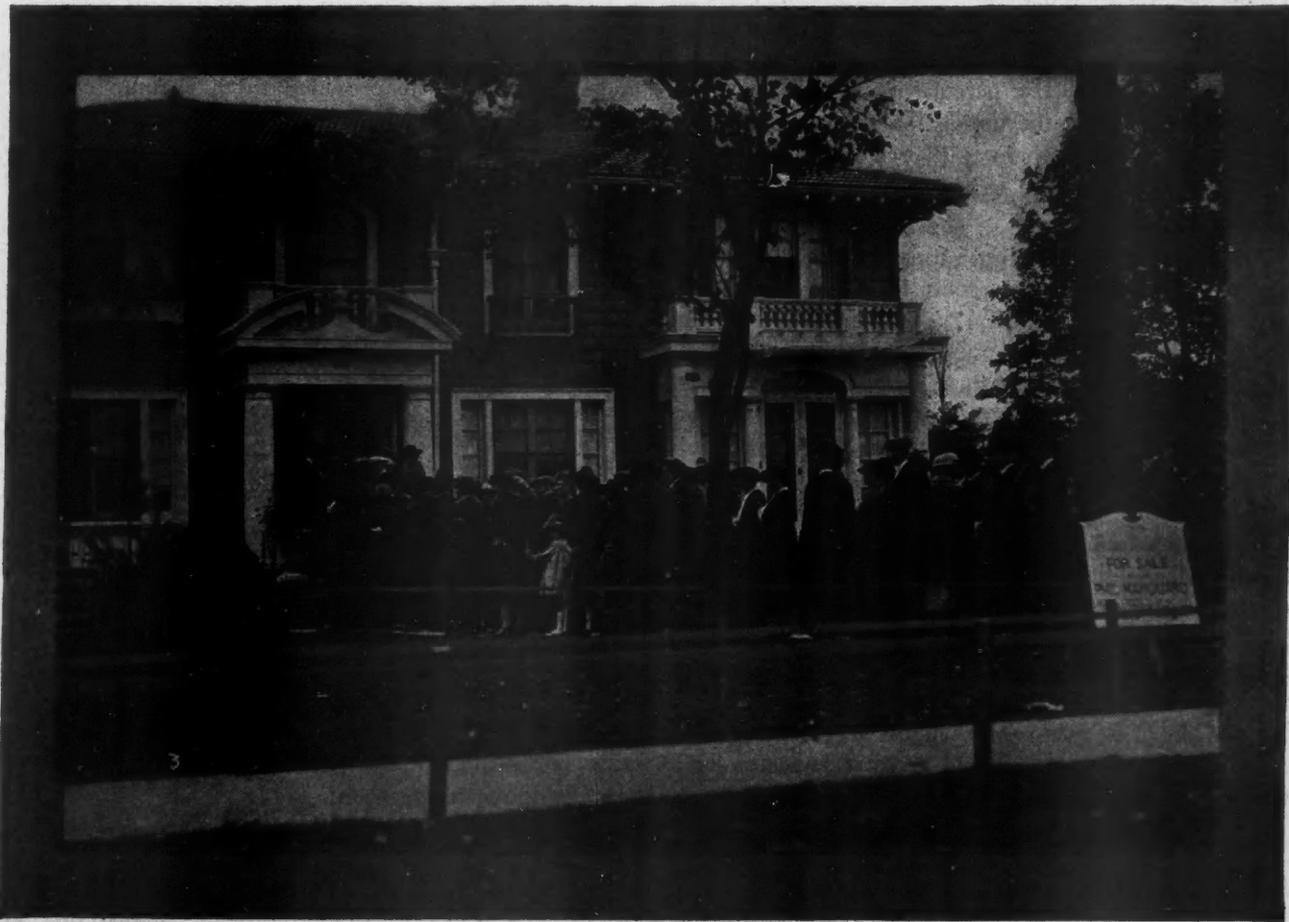
INTEREST in "electrical homes," placed on exhibition to the public, has become a wave sweeping over the country. Most of the larger cities have had one or more of these specially equipped dwellings on display, and people have flocked to see them in great numbers. One Los Angeles electrical home attracted 75,000 visitors, and three such houses placed on display in Cleveland were each inspected by between 30,000 and 40,000.

What does it all amount to, so far as the builder is concerned?

The success of these homes furnishes concrete evidence that the electrical plan and electrical equipment of the house are receiving more attention than ever before from the householder. It is an indication that the widespread co-operative endeavors on the part of the electrical industry for the purpose of educating the public are having their effect. People are scrutinizing the electrical equipment of ready-built homes as never before; they are preparing to give some thought to the electrical plan in building their own homes. The number of outlets in a house, and their location, are no longer to be matters taken for granted. Wiring

for the electric range, space and connections for the electric dishwasher, a space beside the stationary tubs for the electric clothes washer, and a place for the electric ironer where the clothes will not trail on a rough cement floor—these are considerations in home-planning which nowadays deserve a thought or two.

It must be granted that frequently the "electrical homes," giving publicity to these ideas, have been overdone. Too often, in the scramble of dealers to have their merchandise exhibited, incongruities have been allowed to slip in to mar the general effect. What actual home would be equipped with an installed vacuum cleaning system and in addition three different makes of portable electric cleaners? One of the exhibition houses was supplied with all these weapons for warfare against dust. And in the basement of the same home were two electric clothes dryers, of different types. A very small kitchen in one case was supplied with a huge electric ventilating fan set in the window, obviously superfluous. And more than once the mistake was made of bestrewing the living room mantel with unsightly cords in order to connect electric candlesticks with a single outlet in the center.



Stream of visitors visiting Cleveland electrical homes. These people, who stood in line to see the results of the electrical man's efforts, will be more critical of the electrical equipment of houses which they buy or build in the future.

But merely because mistakes have been made in these homes is no reason for discounting them entirely. They have been good enough to awaken wide public interest and good enough also to furnish the builder with a great many very valuable suggestions.

The necessity of providing a sufficient number of electric outlets, wisely placed, is perhaps the most important of these. Many of us are still thinking of electric wiring in terms of electric lights, without considering the fact that there are now manufactured each year in this country something like a million electric irons, hundreds of thousands of electric vacuum cleaners, and clothes washers, and other appliances in proportionate numbers, numbers which are continually and rapidly increasing. People are getting tired of unscrewing electric lights and shades in order to attach their cleaners. They are getting out of patience with wiring which will not permit them to use an electric iron or an electric heater and have as many lamps on as they may wish in the same room at the same time. The electric percolator and toaster are a great convenience at the dining table, but what pleasure is there in using them if they must be connected by cords dangling from the chandelier?

Hence the importance of the baseboard outlet, the wall outlet, and the wired dining table. The first Cleveland electrical home, containing ten rooms, was supplied with 125 outlets. In Denver a seven-room house had more than one hundred. Additional outlets mean additional wiring cost, to be sure, but that cost is an investment which gives returns in untold comfort and convenience. Dwellings must be wired today for complete electric service, not merely for electric lights.

And it's worth while giving some attention to the placing of the outlets. A receptacle located in the baseboard behind a door which will stand open most of the time is not very useful. Neither is one placed in the center of the only wall space in the living room available for the davenport. A receptacle close to a sputtering radiator may soon be short circuited. Details like these may seem insignificant, but they make all the difference in the world when it comes to living in the house.

Baseboard outlets are good, but in some cases the so-called "convenience" wall outlets placed somewhat higher are even better, particularly for the use of the vacuum cleaner, for which one must change connections rather frequently. Mr. Frank Denzel, a Cleveland



Vacuum cleaner attachment for cleaning heating pipes and other "hard-to-get-at" places in the collar. The placing of outlets makes electrical convenience possible.

electrical man, recently built a home of his own which he decided to make a real, practical, livable "electrical home," and in it he provided three vacuum cleaner outlets. In the dining room on the first floor is one, waist high, from which, with a long cord, Mrs. Denzel may clean the chief rooms of the first floor, the dining room, kitchen, hall and living room. On the landing of the stairs is another, placed knee high, and in the second floor hall a third, from which all four bedrooms may be reached. This means a considerable saving in energy for Mrs. Denzel—for it isn't any fun to stoop over to the floor frequently to change the connection.

Three baseboard outlets are provided in the Denzel living room for portable and floor lamps. The mantel is wired for electric candlesticks, and there are several wall bracket lights. A floor outlet under the center of the dining table provides for its wiring; another is placed in the baseboard besides the buffet for a lamp there. In each bedroom, instead of placing wall brackets at each side of a space arbitrarily designated for the dresser, Mr. Denzel has used lights attached to the furniture itself and then provided several wall outlets, thus permitting greater flexibility in the arrangement of furniture in the room.

In a front bedroom he has installed a master switch, controlling all the lights in the house, as a measure of protection against prowlers, and at the same outlet is a switch which embodies a clever original idea of Mr. Denzel's. When the alarm clock calls him from



"A Little Child Shall Do It." So Easy Are Some of the Household Tasks Once the House Is Equipped with Proper Electrical Outlets and Appliances.

his slumbers in the morning, he rolls over, reaches out and flips this button, and immediately, down on the kitchen table, the wires in the electric percolator begin to glow. When the shaving process has been completed and this electrical dealer descends for his breakfast, his Java and Mocha is piping hot and ready for him! He may breakfast in a jiffy without disturbing Mrs. Denzel at all—a convenience idea there which should please any householder!

Similar thoughtfulness about outlets and switches is responsible in this house for placing a switch outside the front door to control the porch light, so that when the family comes home late at night there will be no fumbling for the keyhole, and there are three-way switches at all stairs, and a switch beside the kitchen window to control the garage lights.

There was no difficulty in this home when it came to placing the electric clothes washer beside the stationary tubs, for there was space provided for it, with good light. The table-topped electric dishwasher was given a location next the sink, and provided with complete plumbing connections. An electric heater was built into the bathroom wall. And a final touch showing forethought was the electrically lighted house number placed over the entrance.

These are features of house planning which are coming to be more and more important. They are features which make an especial appeal to the housewife, and are likely to have considerable influence with her when the purchase of a house is under consideration. The popularity of the "electrical homes" is just one more indication that the day is not distant when we shall all enjoy the pleasures of "living the electrical life."

Building the Fireplace

(Continued from page 116.)

depth which permits of large logs but burn longer and require less frequent replenishing and the shallower which takes lighter sticks and throws more heat.

In small fireplaces a depth of 12 inches will permit good draft if the throat is constricted as explained above, but a minimum depth of 18 inches is advised, to lessen the danger of brands falling out on the floor. Wire guards should be placed in front of all fireplaces. In general, the wider the opening the greater should be the depth.

The Hearth

The hearth should be flush with the floor, for sweepings may then be brushed into the fireplace. An ash dump located in the hearth near the back of the fireplace is convenient for clearing ashes and other refuse from the hearth provided there is space below for an ash pit. The dump consists of cast-iron metal frame, with pivoted cover, thru which the refuse can be brushed into the ash pit below. The ash pit should be of perfectly tight masonry and provided with a tightly fitting clean-out door. If a warm-air flue, as illustrated in Fig. 7, is provided, the ash dump will have to be located near one side of the hearth instead of in the center.

The jambs of the fireplace should be of sufficient width to give stability to the structure both actually and in appearance. For a fireplace opening 3 feet wide or less, 16 inches is generally sufficient; for wider openings similar proportions should be kept. Greater width may be required to harmonize with the proportions of the rooms, and the above should be taken as a minimum.

The back and sides of the fireplace should be constructed of firebrick only. The bricks should be laid flat with the long ends exposed, for if placed with the face exposed there is danger of their falling out.

In small fireplaces sagging of the arch over the opening seldom occurs, but in fireplaces over 4 feet wide it is not uncommon. It is due to insufficient support of the masonry. Except in massive construction there generally is not sufficient masonry at the sides of the opening to resist the thrust of arch construction; hence it is usual to support the masonry with iron, which, if too light, will sag. Too small an iron will become so hot that its tensile strength is lowered until it bends. A heavy flat bar at least one-half inch thick is sometimes used or a T-bar which has greater strength, but less metal; the wider the opening the heavier the bar required.

DESIGN OF SAFE CONSTRUCTION

By Charles W Leigh

Associate Professor of Mechanics, Armour Institute of Technology

Stresses in a Roof Truss Resting on Columns

ARTICLE 27 OF AN EXTENSIVE SERIES ON STRENGTH OF MATERIALS

Professor Charles W. Leigh,
Associate Prof. of Mechanics,
Armour Institute of Technology,
Chicago, Ill.

Dear Sir: After reading the series of your roof trusses in the AMERICAN BUILDER, on strength, etc., of roof trusses, I would like to have you advise me as to the practical value of the truss shown in sketch. The building to be 80 by 300 ft., spacing of trusses 12 ft. on center, ¼ pitch, shingled roof, wind velocity of not more than 40 miles per hour, snow seldom more than 18 inches, without ceiling support.

Also advise me as to strength of posts, braces on the walls as to whether they would sufficiently carry the sway of the building.

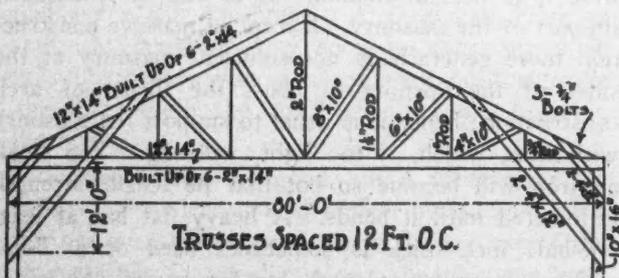
PETER BOUSQUET,
Island City, Ore.

WHEN a roof truss rests on columns as shown in figures, there would be a tendency to sway or turn about the foot of the column at each end when the wind is blowing. To prevent this, braces 1-1 and 2-2 are put on the columns and chords of the truss. The object of these braces is to prevent the swaying or buckling effect of the column about its foot. So far as the dead and snow loads are concerned, the effect is a straight compression stress on the column, the same as if the truss rested on a wall. These loads have no effect on brace 2-2. The stresses in the truss are figured as in any ordinary truss, the column reactions being one-half the vertical load.

Ricker gives the following formula for the weights of wooden trusses:

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

Where W = total weight of one truss.
A = the distance between trusses in feet.
L = the span of the truss in feet.
Here A = 12 and L = 80 feet.



Sketch of truss submitted by P. Bousquet for analysis. The building is to be 80 by 300 feet, trusses 12 feet o. c.

Then $W = \frac{1}{2} \times 12 \times 80 \left(1 + \frac{1}{10} \times 80 \right) = 4,320$ sq. ft.

For a roof with wooden shingles, purlins and jack rafters, the weight per foot of roof surface will be about 10 pounds.

Now, one-half the upper chord is

$$\sqrt{40^2 \times 20^2} = 44.7 \text{ feet}$$

The entire upper chord is 89.4, say 90 feet.

Then the weight of roof is

$$90 \times 12 \times 10 = 10,800 \text{ pounds}$$

The total truss weight is $10,800 \times 4,320 = 15,120$ pounds.

Since there are eight spans, the full joint loads are

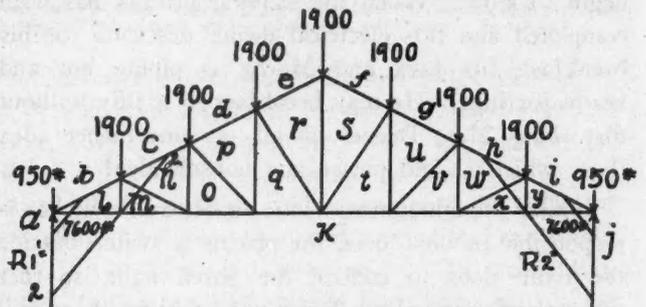


Fig. 1. Truss showing dead load, reactions and letterings adopted in this series of articles.

$15,120 \div 8 = 1,890$, say 1,900 pounds.

Each section is $15,200 \div 2 = 7,600$ pounds.

Fig. 1 shows the two joint loads, and reactions, and letterings adopted in this series of articles.

Now draw the force diagram A-J. Since the reactions are equal, K is the center of A-J, $R_2 = JK$ and $R_1 = KA$. For the stress diagram, start with the extreme left joint. In Fig. 2, go from K to A, A to B; then thru B draw a line parallel to b l to meet a line thru K, parallel to l k. The intersection is the point L. Next take the second joint on the lower chord. Inspection shows zero stress in l m. Then, in Fig. 2, M coincides with L, and stress m k = stress k l.

For the second joint in the upper chord begin with the joint M. Go from L to B, B to C; thru C draw a parallel to c n to meet a line thru M, parallel to m n. This locates point N. For the third joint of the lower chord begin with K. Go from K to M, M to N; thru N draw a parallel to n o, to meet a parallel to o k thru the point K. This locates point O.

At the third joint in the upper chord begin with O.

Common-Sense Truss for Barn Roofs

NEW DESIGN HAS JOINTS STRONG ENOUGH TO RESIST STRESSES AND MADE OF MATERIAL READILY AVAILABLE

By A.W. Clyde

Extension Professor of Agricultural Engineering Iowa State College

THE writer was interested in "Analysis of a Barn Truss" by Prof. C. W. Leigh in the January issue because he has been working along this same line for several months. A number of practical features not mentioned in this article must be considered, however, if the results are to be trustworthy. There is sometimes a tendency for the reader to try to make figures prove what we would like to believe, even to the extent of overlooking important facts. It is the purpose of this article to point out some misleading conclusions which are likely to be drawn from such work, and to suggest how a few practical difficulties can be overcome.

Shawver Frame Not a Truss

A truss is a beam built of several pieces so arranged that under a certain loading some pieces are chiefly in compression while others are chiefly in tension. The method of analysis shown by Professor Leigh is correct for a real truss, but in actual practice the Shawver frame is not a real truss. Therefore, his analysis may lead a person far astray from the true condition. There are two reasons why the Shawver frame is not a real truss.

First: The lower rafters cannot be depended upon to carry tensile stresses. They are simply toe-nailed to the plate and the purlin, which surely is an unreliable connection for tension. In Professor Leigh's stress diagram the lower rafters have 5,500 pounds tension for the vertical loads. If we take the actual dead load, however, and add the stress caused by

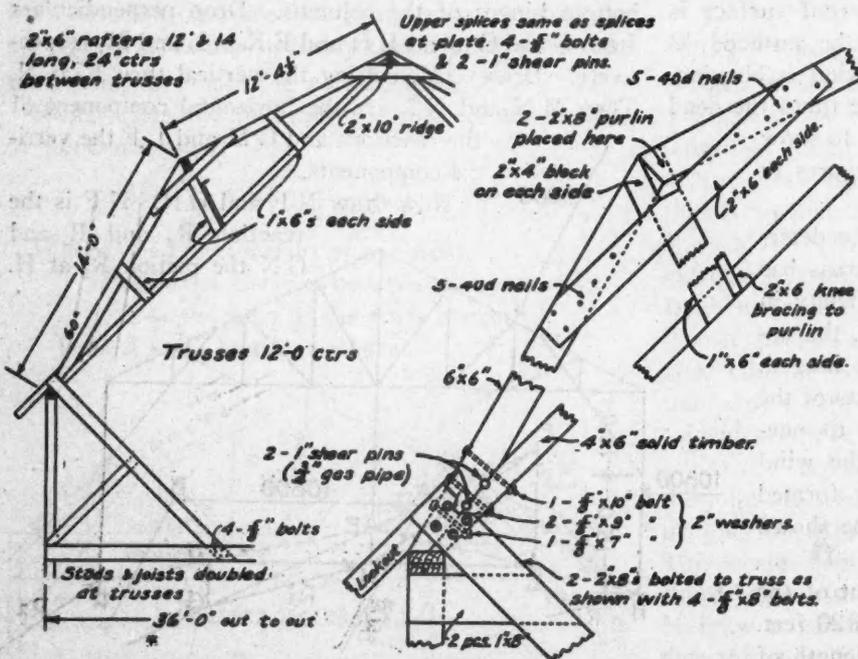
a wind of 65 miles per hour, then the total tension in these rafters on the leeward side will be about 8,000 pounds. Certainly no one would expect a few toe-nailed joints to resist such a stress.

Second: The ability of the rafters to act as compression members of the truss is very doubtful. Under the wind load mentioned above the lower rafters on the windward side would have about 14,000 pounds compression. The purlin is not fastened to the other members well enough to transmit this force to them. Consequently the designer can only hope that the force will be passed on to the upper rafters and will finally get where it belongs in some vague or unknown way. As one man puts it, "The stress is expected to slide off the roof on the other side."

The writer has discussed these points with several structural engineers and they agree that this construction cannot be expected to act as a real truss. They see no accurate means to determine its strength except by test since its strength must depend largely on the resistance to bending offered by the built-up structure. It has some strength, of course, but no one seems to know how much, as tests have not been made. Probably there is some way to improve it so that it will act as a truss, but this is easier said than done. The chief difficulty is to provide joints which will be strong enough without requiring special steel shapes, forgings, etc.

Design of Joints Is Important

The design of a wooden truss is governed largely by the connections of the tension members. Yet this fact is often overlooked in designing barn roofs. For example, a few years ago an analysis of a Shawver frame was made which attempted to prove the roof safe for a 100-mile wind. By considering it as a true truss the stress in one of the purlin posts was found to be 36,000 pounds. Tests made by the writer show that a 40d. nail in double shear with bearing across the grain in the outer pieces has a safe working strength of about 300 pounds in shortleaf yellow pine. Therefore, 120 40d. nails would be needed at the foot of the purlin post where there would be room for about twenty. This shows that little is accomplished by computing stresses unless the joints are made strong enough to resist them. Information



Design of suggested truss to eliminate guesswork in building Shawver frame. It requires about the same lumber and same labor.

on the strength of nailed and bolted joints may be secured from the following references:

"Holding Power of Nails in Shingle Shear," Iowa Engineering Experiment Station, Vol. IV, No. 2.

"Structural Details, Designs of Heavy Framing," Jacoby.

"Practical Structural Design," McCullough.

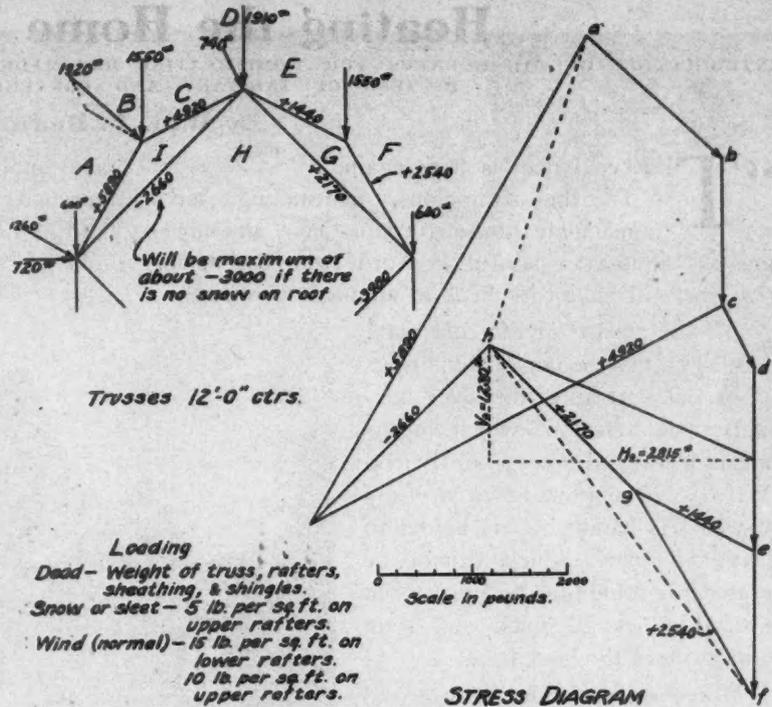
"Engineering News," Vol. 76, page 115 (Report of extensive tests with bolts and lag screws).

The statement is sometimes made that this style of construction might be all right because most of the barns are still standing. This is more of an excuse than an argument and proves little or nothing. Many roofs never chance to be loaded as heavily as others. At least such reasoning does not justify using construction about whose strength there is no definite information when simple trusses of known strength can be devised.

Suggested New Truss

As a step in this direction the writer presents the accompanying design. It is so simple that there can be little doubt as to the actual stresses. The joints shown are amply strong to resist the stresses and can be made with material available anywhere. The joints at the plate and at the ridge are made in the same way. The 6 by 6 and the 4 by 6 are first bolted together as shown. Two 1-inch holes are then bored so that half of the holes are in each piece and shear pins of 3/4-inch gas pipe 5 1/2 inches long are driven into the holes. The shear pins should be at least 4 or 5 inches apart. At the purlin the 6 by 6 chords are butted against each other and the purlins are set between the trusses, being carried by 2 by 6 pieces spiked on each side of the 6 by 6s. The rafters are put in flush with the purlins and the 6 by 6s. The 6 by 6 upper chords might possibly be replaced by three 2 by 6s. The lower chords, however, should be solid 4 by 6s, since they must act as slender columns in compression as well as carry tension. The upper chords are heavier than the lower because they serve both as truss members and as rafters. The 2 by 8 diagonal braces at the plate should project to the roof boards in order to give sufficient distance beyond the bolt holes where they are bolted to the truss.

In the stress diagram the plus sign indicates compression and the minus sign indicates tension. There may be some difference of opinion as to the assumed loading, but it is believed that with a proper factor of safety thruout the loading specified is large enough for any but the more expensive barns. It represents a wind of about 65 miles per hour. There might be



Stress diagram of suggested truss. Plus sign indicates compression, minus sign tension.

some wet snow or sleet on the roof at the same time for which a small allowance has been included. Probably none of the common types of self-supporting barn roofs will stand this loading without serious overloading if not complete failure.

This truss requires about the same amount of lumber as the Shawver frame, and the labor would be about the same. It has the advantage, however, that it may be designated intelligently, whereas the Shawver has so far been only guesswork.



\$58,000,000 in Housing Construction

FIFTY-EIGHT million dollars has been loaned by the Metropolitan Life Insurance Company thruout the United States to build homes and apartments.

The Chicago Trust Company, handling the loans for the Metropolitan Company in Illinois, Wisconsin and Northern Indiana, announce that in that territory \$3,400,000 of the fund has been spread sufficiently to build 1,040 homes and apartments, while new buildings are now going up at the rate of thirty a month. These houses have been erected in sixty-six cities.

The unusual part of the plan, according to the banking officials, is the small average of each loan, which is said to indicate that the construction is done for small home builders. The Illinois loans average about \$4,000 each, which is approximately half the value of building and lot in each case. The builders are given three to fifteen years in which to repay the loans.

The banking officials state that the Metropolitan Company does about as much clerical work in making one of these small loans as it would in putting out the entire \$60,000,000 in a few big loans, and that the large loan policy is the one usually favored by American companies with vast sums to invest. This is another reason why this large insurance company deserves great credit for placing such large sums into home building loans.

Heating the Home With Oil

INTRODUCTION OF OIL BURNERS FOR HOME-HEATING HAS MADE PROFOUND IMPRESSION UPON HOUSEWIFE BECAUSE OF SANITARY AND CONVENIENT FEATURES

By Wm. T. Dean

"THE coal man is here again." To the scrupulous, painstaking, and immaculate housewife this terse announcement is almost as painful as word from the doctor that she will have to submit to another operation.

For the arrival of the coal man, nice as he may be personally, brings in its wake a trail of dirt over sidewalk and basement which means much work and worry for Friend Wife. No matter how carefully the coal is handled, it is bound to leave its mark which cannot be erased for some time and just when everything is all spick and span along comes the next load.

Moreover, probably because coal is black and leaves ashes when consumed, the matter of taking care of the heating plant is always a source of annoyance.

It is no small wonder then that the housewife is taking more than an ordinary interest in the development of the fuel oil burner designed to be installed in the regular heating plant and to eliminate all dirt and mussiness attached to the heating of the home. And because Friend Wife is taking such an important part in the counsels of the home, it is good policy for the builder to get acquainted with this new heating device.

In the first place fuel oil has certain decided advan-

tages in home heating which appeal strongly to the housewife. They are:

- (1) Convenience—Simple and safe as electric light.
- (2) Comfort—Uniform heat automatically sup-



Residence of C. S. Peterson, Lake Shore Drive, Chicago, Heated by Installation of Fuel Oil Burner in Regular Heating Plant. The Burner Is Fed from a Large Oil Tank. All the Janitor Work Required Is to Turn On the Oil Supply at the Beginning of the Cold Weather.

plied regardless of outdoor conditions.

(3) Health—Uniform temperature with absence of smoke and dirt practically eliminate the usual winter colds.

(4) Cleanliness—No dirt, no smoke, no ashes.

(5) Space saving—Basements reclaimed for useful purposes.

(6) Economy—Cost of burning fuel oil is almost always less than coal.

(7) Time Saving—Members of household or others no longer need spend several hours each day shoveling coal, shaking grates, removing ashes and cleaning up the furnace room.

Fuel oil burning equipment is now available for heating all sorts of buildings from the smallest cottage to the largest office building. Automatic controlling and safety devices have been developed, tested by service and are so simplified that the heat supply is as certain as the supply of gas or electricity and the fire hazard is less than when burning coal.



Twin Installation of Fuel Oil Burner at Peterson Residence. This Burner Removes All Possibility of Dirt from Coal and Work of Removing Ashes.



Another Type of Oil Burner Installed in Residence. This Method of Heating the Home Is Gaining Rapidly in Favor Because of the Ease and Cleanliness with Which It Operates. No Ashes, No Coal. Fuel Oil or Kerosene Are Used.

Fuel oil is the residue from the distillation of crude petroleum or "crude oil" and is a black more or less viscous nearly odorless liquid. It is high in fuel value but not easily ignited and can only be burned completely by dividing it into a very fine spray or by vaporizing it with heat. It is therefore not classed as a dangerous liquid as its flash point is very high.

The known reserves of fuel oil thruout the world are said to be greater than the known coal reserves, hence we may assume that fuel oil will be plentiful for some generations ahead.

Owing to its liquid form, fuel oil is readily handled without labor and may be stored indefinitely without danger of evaporation loss or spontaneous combustion.

It is easily transported by tank steamers or cars and delivered by tank trucks, hence is not sensitive to the changes in labor conditions which so seriously threaten our coal supply periodically.

A cubic foot of oil storage holds twice as many heat units as can be stored in the same space in the form of coal but has the added advantage that the storage may be underground or under buildings without any loss of lawn, driveway or basement space.

Fuel oil in the urban or suburban home reaches its maximum value as a commodity, for with it all the nuisance of coal handling storage, firing, and ash removal is eliminated and the greatest obstacle in the path of the home builder and home owner is removed.

Who would build a home nowadays without electric lights and gas stoves? Fuel oil heating saves a hundred times more onerous household duties than do modern lighting and cooking devices. I venture the assertion that another decade will witness a complete transformation, that every dwelling will use liquid fuel which will be supplied by underground pipes just as water is now delivered.

Even today in every large community fuel oil is obtainable delivered in tank trucks, thru flexible hose direct to underground storage without the loss of a drop, without opening the basement, without ruined curtains, walks and shrubbery from coal dust and without the nerve-racking noise of coal rattling down a chute.

Fuel oil for home heating may be stored in steel, concrete or wooden tanks which for safety against overflow and frost should be buried below ground or if under buildings below the basement floor. The use of automatic check valves render the storage of fuel oil in tanks upon the basement floor as safe as coal storage but the regulations of the underwriters' associations and of most cities have not yet taken cognizance of this. The use of concrete and wood storage tanks has not been general, tho the life of such tanks should be greater than steel, on account of the difficulties in making such tanks tight and the failure of underwriters to recognize the utility of these materials. The best available storage at this time is steel



Under the old fashioned system. Frequent visits of the coal wagon with its dirt and nuisance. Then cinders must be removed every day.

and the tanks are usually buried some three feet below ground out doors or below the basement floor. Many new buildings now provide for oil burning by installing suitable size tanks during the construction of foundations as little additional expense is involved if tanks are buried at this time.

Once fuel tanks are installed the greater part of the basement space may be utilized profitably.

The burning of fuel oil may be made entirely automatic so that furnace space only is required—the remaining basement space being finished for useful purposes, such as billiard rooms, playrooms, libraries, studies, etc. In new residences special attention should be paid to basement windows to give as much daylight as possible in order that this newly acquired space may be made pleasant and livable.

Boilers for oil firing should be chosen having as



View of basement showing oil burner installed in heating plant. Note the cleanliness of the section around the boiler in contrast to the average basement.

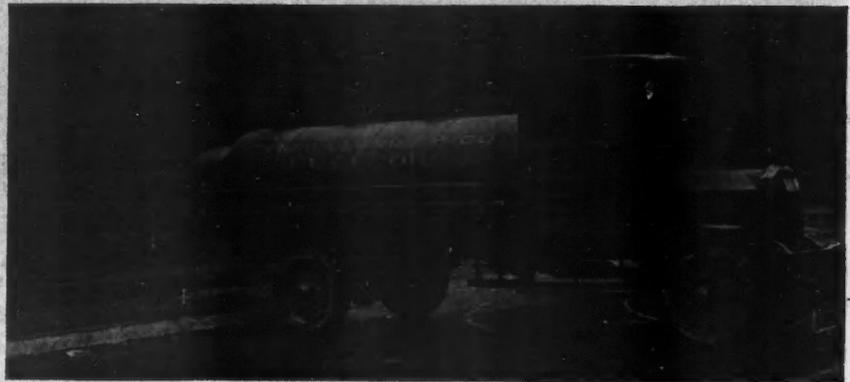
great heating surface as possible so as to get the most value from the fuel. Stacks need be only 60 per cent of the area required for coal.

Oil fuel can be successfully applied to practically every variety of boiler or furnace and to nearly every type of heating load, including homes, apartments, hotels, office buildings, public buildings, greenhouses, garages, laundries, theaters, movie houses, ice cream factories and every variety of industrial plant.



December Prices Lower

DROP in hollow tile, steel and terne plate prices brought the building material index down 6.3 for December, 1921. 1913 Average Index taken at 100.



The new method with fuel oil burner installed in heating plant. The oil truck drives up noiselessly, the driver turns on faucet, fills the oil tank and drives away without any disagreeable noise or dirt.

| Materials | Dec. 1921 Index | Nov. 1921 Index |
|---|-----------------|-----------------|
| Building Materials Index..... | 163.2 | 169.5 |
| Brick, common, Chicago..... | 180.8 | 174.8 |
| Brick, average, F. O. B. yard..... | 203.8 | 205.8 |
| Cement, Buffington, Indiana..... | 148.4 | 148.4 |
| Cement, average, F. O. B. plant..... | 168.4 | 170.1 |
| Lime, average, F. O. B. plant..... | 211.3 | 212.3 |
| Sand, average, F. O. B. plant..... | 163.3 | 169.7 |
| Gravel, average, F. O. B. plant..... | 262.5 | 262.5 |
| Crushed Stone, New York..... | 205.6 | 205.6 |
| Hollow Tile, Chicago..... | 108.0 | 128.3 |
| Slate, roofing, New York..... | 220.5 | 220.5 |
| Terne Plate, Pittsburgh..... | 138.4 | 142.0 |
| Pipe, Cast Iron, New York..... | 202.4 | 202.4 |
| Steel, Structural, Pittsburgh..... | 99.3 | 109.2 |
| Nails, wire, Pittsburgh..... | 153.3 | 161.6 |
| Bars, Reinforcing, Pittsburgh..... | 109.0 | 119.9 |
| Window Glass, New York..... | 231.0 | 231.0 |
| Plate Glass, New York..... | 169.0 | 169.0 |
| Linseed Oil, New York..... | 145.9 | 145.0 |
| Putty, New York..... | 179.2 | 179.2 |
| Turpentine, New York..... | 190.2 | 189.3 |
| White Lead, New York..... | 181.2 | 181.2 |
| Zinc, oxide of, New York..... | 134.8 | 134.8 |
| Rosin, New York..... | 110.6 | 117.9 |
| Lath, F. O. B. mill..... | 121.6 | 139.7 |
| Lath, spruce, New York..... | 207.2 | 207.2 |
| Douglas Fir, No. 1, mill..... | 124.9 | 124.9 |
| Douglas Fir, No. 2, mill..... | 178.8 | 178.8 |
| Hemlock, Chicago..... | 134.7 | 132.9 |
| Maple, Chicago..... | 191.0 | 184.9 |
| Oak, Cincinnati..... | 157.9 | 156.7 |
| Pine, white, Buffalo..... | 204.0 | 204.0 |
| Pine, southern yellow, flooring, Hattiesburg..... | 189.1 | 205.8 |
| Poplar, Cincinnati..... | 164.7 | 164.7 |
| Spruce, Boston..... | 131.0 | 131.0 |
| Shingles, cypress, mill..... | 162.4 | 162.4 |
| Shingles, Red Cedar, mill..... | 148.5 | 145.9 |

METAL CONSTRUCTION

EDITOR'S NOTE: *The American Builder Prides itself that it keeps apace with the latest developments in building methods and materials. Recently some striking changes have been wrought by the introduction of metal materials in varied form. To acquaint our readers with these developments we are inaugurating this new department in which each month will appear an article by some authority on some phase of metal construction. We invite contributions from those who are in a position to give our readers definite and reliable information. Firms and individuals are invited to co-operate.*

Steel Lumber Floor In Brick Residence

STEEL LUMBER JOISTS SET IN FOUNDATION WALLS—WOOD FLOORING NAILED DIRECT

By Gilbert Canterbury

STEEL lumber joists are set into foundation walls for a first floor in practically the same way wood joists would be put in place. Steel I-beams are used as girders, where girders are required and that is about the only difference. Some contractors nail sub-flooring direct to the steel joists, driving the nails into the joist web or seam, but in building a firesafe first floor the construction varies a little.

Instead of nailing wood sub-flooring directly to the steel joists, metal lath is nailed to the tops of the steel joists. Two by two wood nailing screeds are then nailed over the lath, parallel with the joists and about two inches of concrete, either stone or cinder, is filled in between the screeds. This construction gives a floor that is supported on non-burnable steel joists and two inches of concrete reinforced and centered with metal lath is spread between the basement and the wood floor surface. In other words, you still have a wood floor surface but the floor viewed from the basement side is absolutely non-combustible.

The value of this construction lies chiefly in its ability to cut off basement fire hazards from the livable

sections of a home. Fire insurance companies report that an average of 889 dwellings catch fire in United States every day. Most of these dwelling fires start in the basement. Heating furnaces, for instance, cause a tremendous number of dwelling fires. Ordinarily the floor joists are only about twelve or eighteen inches above the top of the furnace. During the several cold spells we have had this winter, newspapers have been filled with stories of fires caused "from overheated furnaces."

The facts behind those stories is that the furnace was crowded for heat and the wood joists over the furnace were ignited. As soon as the first floor joists burned, the floor collapsed and the fire was, of course, communicated to the rest of the house.

But aside from the fire safety to be derived from a firesafe first floor constructed with steel lumber joists, metal lath and a little concrete, this type of floor is also warp-proof, sagless, and it cannot be penetrated by dust or vermin.

In accompanying pictures are shown a view of the foundation of a dwelling built recently at Decatur,



Brick residence, Decatur, Ill., built with steel lumber joist flooring. This house was designed by Aschauer & Waggoner, architects, and built by Frank Weber, contractor. The first floor area of this house is 1,470 sq. ft.



Close-Up View of Floor Section of Brick Residence, Showing Steel Floor Joists in Place. This Picture Gives an Excellent View of This Type of Fire-Safe Flooring Material in Position. It Is Being Used More Extensively in Buildings of This Size and Type.

Ill., also a close-up view of the floor section and a view of the completed house. This dwelling was designed by Architects Aschauer & Waggoner and built by Contractor Frank Weber. The pictures give a splendid representation of firesafe first floor construction with steel lumber joint. The first floor area of this house was 1,470 feet, so that the building is really larger than would ordinarily be guessed after looking at the pictures. The extra cost for making the first floor firesafe was only a very small sum.

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Relation of Freight to Construction Costs

REPORT adopted by the President's Conference on Unemployment of October 12, 1921, p. 115, Committee on Construction Industries, says:

"Readjustments of and reductions in freight rates on construction materials are essential to a sustained revival of building activity. Increases in rates on construction materials imposed during the war left the construction industry under a relatively heavier handicap of increased transportation costs than had been imposed on most other commodities.

"To this wartime increase in freight rates has since been added an increase of 25 to 40 per cent, thus magnifying the effect of the wartime policy of restricting general construction activity.

"The construction industry cannot function effectively under a freight rate fabric artificially distorted by the continuation of restrictive war measures. A great economic waste would be incurred if, because of failure to reduce and readjust freight rates, existing plants for the production of construction materials had to be abandoned and a new alignment of producing facilities established in accordance with the present rates, a fabric originally designed to discourage the very thing which the government now desires to encourage."



Steel Lumber Joists Covered with Metal Lath. Nailing Screeds Have Been Nailed Over the Lath Parallel with the Joists and About Two Inches of Concrete Filled in Between the Screeds.

The Invisible Element

INFLUENCE OF PROPER HEATING SYSTEMS ON SUPPLY OF PURE AIR IN THE HOME

By R. B. Montfort

WITHOUT doubt the laudable ambition of most men, particularly the more progressive individual, is to some time own a very fine home. This hope often is not realized until middle life and the project receives the interest and attention of the entire family; the location of the house, the size, the conveniences to be incorporated, the architect's plans are all topics entering into many animated discussions.

The motive of this man is not selfish, but to provide extra comfort and give better opportunities to those most dear to him. Altho he may realize that the most precious possession of every individual in his home is perfect health, being a man of affairs he frequently does not make a careful investigation of the so-called modern equipment entering into the construction of his residence, allowing disinterested or uninformed parties to control many things that are of vital importance to the occupants of the building.

The Reason

Such diseases as tuberculosis, influenza, colds, acute nervous disorders and their accompanying breakdowns which are so prevalent during the winter and spring months are classified under one head—"bad air diseases." Due reflection and careful investigation will show that the style of heating plant used, combined with lack of adequate ventilation, is responsible for their presence. One of the most vital things affecting the occupants of the home has been almost ignored, viz., the quality and the quantity of the atmosphere which the members of the family must breathe.

The importance of pure air to a healthful existence cannot be questioned by those who have made a deep study of the subject. As an illustration of this point, let it be remembered that we can live three weeks without food, three days without water, but not over three minutes without air, which emphasizes the importance of the latter to our very existence.

The escape of carbon monoxide gas, one of the products of combustion, from the fire-box into the warm air circulation is a serious menace; its presence in the atmosphere destroying the "haemoglobin" or the half mature cells in the process of formation, consequently is responsible for many serious nervous disorders and their accompanying breakdowns.

Constantly varying temperatures not only cause unnecessary discomfort but prove a source of danger by lessening our vitality and preventing the proper functioning of the natural thermostatic action of our bodies. Air devitalized by over-heating has the same depressing effect as stagnant and vitiated air, it greatly lessening our resistance to diseases, due to the absence of the life-giving properties.

When you realize the harmfulness of stagnant air and that the average secretion of H_2O from the eye, nose and mouth from the average adult in one hour is eight ounces or one common glass full; that the exhalation from the lungs and evaporation from the body greatly add to the pollution of the atmosphere, you will appreciate the necessity of the removal of this contamination from the home, or, in other words, the importance of an adequate ventilating system.



A good heating plant means immeasurable comfort during the cold weather.

Such a system insures a more positive circulation to all rooms; overcomes great differences in temperature between floor and ceiling and noticeable drafts upon the floor, all of which are factors entering into the scientific installation of proper heating equipment.

Co-operation

The first and one of the most important things is to have the co-operation of the architect and the home builder, because by planning the heating plant in connection with the house many unnecessary obstacles to a scientific installation can be avoided and important results positively insured.

The location of the heating plant should have right of way over plumbing and electrical wiring. Due to the sizes of lines to be run the two latter can much more easily avoid obstructions without lessening their efficiency.

The location and construction of the flue to which the heater is attached are of vital importance, for many unsatisfactory heating jobs are not due to the heating contractor or equipment but to an improperly constructed chimney.

Quite a lengthy article could be written about proper flue construction and we believe that there is no other one thing about the home that is responsible for as much dissatisfaction as the slipshod methods of placing flue liners in position and total disregard for satisfactory results. This probably is due to ignorance as to what is essential rather than to an effort to evade responsibility. Naturally there should be a separate flue for the furnace with no other openings.

If drainage will permit, the depth of the basement should be eight feet in the clear for this guarantees a more positive distribution of heat and prevents the utilization of any important head room, which also means a saving in fuel consumption. Again we wish to emphasize that perfect harmony between the architect, the building contractor and the heating contractor is essential for ideal results.

The Remedy

If you positively insist upon air-tight construction of the fire-box, actually preventing the fire poisons from entering the circulation, you have solved the problem of contamination of the air by the heater, as these gases could not then enter the warm air pipes. It naturally follows that perfect sanitation is insured for if the gases, of which carbon monoxide is the most insidious, cannot escape, soot, ashes, etc., cannot escape into the circulation.

The design of the fire-box should be such as to eliminate all irregularities and permit an uninterrupted supply of air to pass rapidly over the radiating surface. This in turn requires a uniform and ample air passage between casing and fire-box so that



Pure air in the home depends upon the heating plant. Unless the ventilation is good the poisons in the air will not be removed and the occupants of the home will be liable to many so-called bad air diseases.

the air will not be retarded and burned at any point.

To insure the degree of economy rightfully expected, the fuel chamber and grate area should be of sufficient capacity to make the slow combustion principle an actuality.

If you will insist upon an automatic control you have solved the problem of uniform temperature for hours without personal attention. In addition such an apparatus will save fuel, it will save labor and is a positive protection from disastrous overheats that devitalize the air and endanger the home.

To further safeguard the mild temperature of the atmosphere delivered to the rooms to be breathed, it is important to purchase a heater of sufficient capacity to maintain the proper temperature in zero weather without making the fire-box red-hot. This means that the air at point of contact with the furnace should never be raised above 150 degrees Fahrenheit.

If you demand a ventilating system whereby the air is completely changed in each room every ten or fifteen minutes, and insist upon the supplying of 2,500 cubic feet of outside air per hour for each person in the home, you have reached your goal of an adequate ventilating system. To insure a rapid circulation that is essential, it is important to pipe back as much air to the heater by return ducts as is piped off thru warm air pipes and in addition have an outside air duct to supply the volume of outside air mentioned

(Continued to page 158.)

CORRESPONDENCE

Questions answered—ideas exchanged

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

Explanation Ends Long Search

To the Editor: Mt. Pleasant, Mich.
I am much interested in the Correspondence Department of the AMERICAN BUILDER, and wish to thank Jos. Kreitinger for his explanation on roof cuts, in the December issue, which is just what I have been looking for the last twenty years. It is so simple anyone ought to know how to get jack rafters cut that way.

I note "Quick Way to Find Cuts," by C. W. Harner, in the January number, and must say that I think he has slipped off when he says to use the length of common rafter on one side of square in getting cuts for jack rafters, for the length of rafter might be any length.

I also note with interest "Short Cut to Roof Cuts," by L. Fieg, in the January number, which is the method I figured out by myself twenty years ago when I framed my first roof, and have used it ever since.

To Chas. T. Pascoe, I would say, that if he is using German siding on a building that he wishes to have warm he should fit the siding to casings and corner boards.



J. H. FERRIS.



Fig. 1. Tile Country School House Built by Brother Martin, Glen Ullin, N. D. Modern in Every Respect, 36 by 40 Feet.

Sends Some "Snaps" of Work

To the Editor: Glen Ullin, N. D.
The AMERICAN BUILDER is interesting from cover to cover. Of special interest to me is the correspondence department, which has helped me a good deal in an educational way. Inclosed find a few snapshots of some of my work which might be of interest to some brother mechanics.
Fig. 1 shows a tile country schoolhouse. I and another carpenter put on the roof and inside finish two years ago. The basement has a boiler room, coal room, laundry, kitchen and dining room. The first floor has two class rooms with a big central hall. The second floor has girls' dormitory, living and bedrooms for teachers. The attic has a boys' dormitory. The building is 36 by 40 feet.

Fig. 2 shows a barn I built last July. Note the driveway

door and first floor windows are not in place. The scaffold is up for painting. This barn is 30 by 40 feet, rather short for the height and width, but this type is coming into more general use on account of its strength, good appearance and large hay mow floor without any braces obstructing the space.

Fig. 3 shows yours truly with some cabinet work I made.



Fig. 2. Barn Built by Same Man. This Barn Is 30 by 40 Feet, a Popular Size and Style in the Dakotas Because of its Strength and Large Hay Mow.

The unfinished one is a piano roll cabinet of fir with 3-ply fir panels, finished in natural color. The other is a phonograph record cabinet of basswood. The phonograph is set in top. I find this very interesting work during the long winter months.

I have been following the building trade ever since I left school, which is six years old. I only went thru grammar school, but took a correspondence course in contracting and building, which has helped me very much. I am only 20 years old now.

There is a better outlook for 1922.

SEVERN J. MARTIN.



Fig. 3. Severn J. Martin, "Himself," and Some Cabinet Work He Made During the Winter Months. He Has Been Following the Building Trade Since He Left Grammar School.

Letter from New England

To the Editor: Washington, N. H.
I don't often see any "correspondence" from this part of the country, and tho we do not have any big jobs, there is plenty to do.

I am interested in winter work, as I have done quite a bit of screen work, boat building, etc. I made the screen for a 60 foot porch and 50 foot porches in my shop during the cold weather.

I find there is always work for the man who looks for it. I have just finished a steel ceiling installation and there is shingling and roofing promised in the spring. I have a shop, 18x30 feet with extension 12x33 feet containing an engine, saw and jointer.

I like the idea of "Tom Higgins." If your job doesn't come to you, go after it.

EDWIN M. CRANE.



Has Trouble With Glue

To the Editor: Coin, Ia.
I would like to have some information about glue. I have tried LaPage's on hardwood. It seems to stick all right, but after I put on the finish it runs out of the joints. I would like to hear from some brother who has had better luck.

OWEN SNEDEKER.



Wants Suggestions on Time Cards

To the Editor: Milwaukee, Wis.
As a reader of your valuable and active magazine, I would like to know if some reader knows of a better time card than the one I have, which I am sending along. I find it too complicated for the men. I would be glad to hear from some other contractor on time cards.

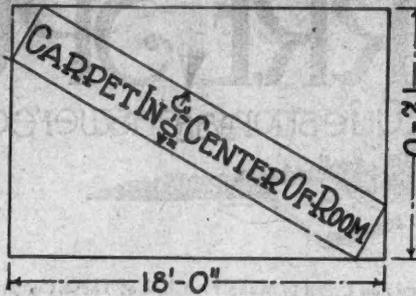
C. W. HAEGER.

P. S.—In your January AMERICAN BUILDER I read, on page 110, "Short Cuts to Roof Cuts," and liked the method described. I think it is the best one explained so far.

C. W. H.

A Problem in Angles

To the Editor: I am sending a problem that I would like to have some reader solve in the regular way. The drawing shows the plan of a room 12 by 18 feet. The customer wants to run a 3-foot carpet across the room from corner to corner. I want to get the length. I got the result by scaling it off, but I would like to see it worked out on paper. Some say it cannot be worked.



Here is a Problem in Angles. What is the Length of the Rug Figured According to Rule?

it worked out on paper. Some say it cannot be worked.



E. H. SMITH.

Building Cistern Roof

To the Editor: Hutchinson, Kans.
In your December number of the AMERICAN BUILDER T. Kampf & Sons submit a cistern problem. In building the roof of the cistern, considerably more material than necessary was used. The reinforcement for strength should have been run the short way of the slab, and there should have been only three or four bars run lengthwise—more would have been a waste of metal.

A slab 3½ inches thick, with ¾ inches round rods, spaced in 5½ inches on centers, and with the reinforcing at the bottom of the slab, over a span of seven feet, will carry a safe load of 72 lbs. per sq. ft. in addition to the weight of the slab. Such a slab should have plenty of strength for a cistern roof.

Most of the large reinforcing steel manufacturing companies publish tables showing the necessary amounts for slabs and beams. These tables usually are for free distribution. I trust that this information may be of some value to the builder readers.

EARL P. FRIEDLINE

P. S.—I am a charter member and have saved the complete sets of the AMERICAN CARPENTER & BUILDER from the beginning.

Some library, we'd say.—The Editor.



Sweating Walls Cause Worry

To the Editor: Columbus, Ohio.
Can any one of your readers supply me with information as to the best means of curing sweating walls? This condition of affairs in the brick walls of my house is also having a sweating effect on me.

JOHN G. BLACK.



Have You Had This Trouble?

To the Editor: Point Marion, Pa.
Will you please tell me what causes my 5-room story and a half frame building to be damp inside?

The weatherboard is tongue and groove set straight up and down. There is no cellar underneath with the exception of a small enclosure. The house is heated by natural gas stoves without any piping from the stoves to the flues.

FRED MICHAUX.

41822

EMPLOYEE'S NAME _____

WHERE WORKING _____

MARK HOUR UNDER DATE OPPOSITE KIND OF WORK DONE

| | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | TOTAL | DRAW LINE THROUGH ITEM ON SIDE NOT NEEDED | |
|------------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-------|---|--|
| | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | | |
| Posts () | | | | | | | | | | | | | | | | | Hang Door or Window | |
| Girders () | | | | | | | | | | | | | | | | | Jamb () | |
| Joist () | | | | | | | | | | | | | | | | | Casing () | |
| Lining () | | | | | | | | | | | | | | | | | Stairs () | |
| Outside Studs | | | | | | | | | | | | | | | | | Wainscoting () | |
| Partitions () | | | | | | | | | | | | | | | | | Base | |
| Shoathing () | | | | | | | | | | | | | | | | | Bookcases | |
| Enders | | | | | | | | | | | | | | | | | Mantels | |
| Shingling | | | | | | | | | | | | | | | | | Cabinet () | |
| Sliding | | | | | | | | | | | | | | | | | Pantry Finish | |
| Floor () | | | | | | | | | | | | | | | | | Char Rail | |
| Concrete Slabing | | | | | | | | | | | | | | | | | Coal Bin | |
| Frames | | | | | | | | | | | | | | | | | Store Front | |
| Cornice () | | | | | | | | | | | | | | | | | Porch Work | |
| Fence | | | | | | | | | | | | | | | | | Screen or Storm Sash | |
| Scalloping | | | | | | | | | | | | | | | | | Garage Doors | |
| Steps | | | | | | | | | | | | | | | | | Shelving | |
| Furring | | | | | | | | | | | | | | | | | Skylights | |
| Stoppers | | | | | | | | | | | | | | | | | Picture Mldg. | |
| Repairing () | | | | | | | | | | | | | | | | | Hardware Trim | |

SEE THAT FOREMAN PUNCHES TOTAL TIME HERE BEFORE LEAVING JOB

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | Jan | Feb | Mar | Apr | May | June | |
|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|-----|------|-----|-----|-----|------|-----|
| 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | July | Aug | Sep | Oct | Nov | Dec |
| | | | | | | | | | | | | | | | | | | | | | |

EMPLOYEE'S NAME _____

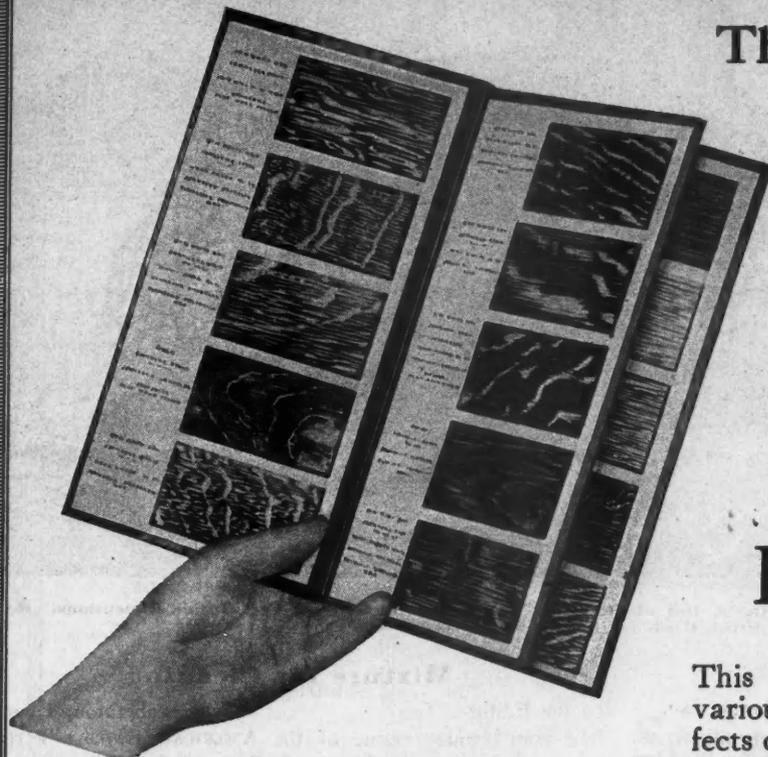
WHERE WORKING _____

MEMORANDUM _____

41822

CARPENTER'S TIME CARD

Specimen Time Card Used by O. W. Haeger. He Finds It Too Complicated and Wants Suggestions.



This Beautiful \$2.00
PORTFOLIO
 of
Wood Panels
FREE
 to
BUILDERS

This beautiful portfolio shows on various woods the many beautiful effects obtainable with Johnson's Perfectone Undercoat and Enamel, Johnson's Wood Dye, Johnson's Paste Wood Filler, Johnson's Prepared Wax, Johnson's Floor Varnish, Sani-Spar, Varnish Stain, etc.

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

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

JOHNSON'S WOOD DYE

With Johnson's Wood Dye soft woods can be finished so that they are as beautiful as hard wood. Johnson's Wood Dye is very easy to apply—goes on easily and quickly without a lap or streak—penetrates deeply—brings out the beauty of the grain without raising it—dries in four hours—and does not rub off or smudge.

Three Johnson factories are operated under ideal working conditions—full force—full time—no reduction in wages—an eight hour day—ten days' vacation on full pay—full pay during sickness—liberal pension and bonus systems. This policy can be continued only if artisans will co-operate by insisting upon the JOHNSON brand.

S. C. JOHNSON & SON

"The Wood Finishing Authorities"

Dept. AB3

Racine, Wis.

Canadian Factory—Brantford

S. C. Johnson & Son.,
 Dept. AB3, Racine, Wis.

I have checked the Johnson Wood Finishes I specify in my work. Please send me your \$2.00 portfolio of wood panels free and postpaid.

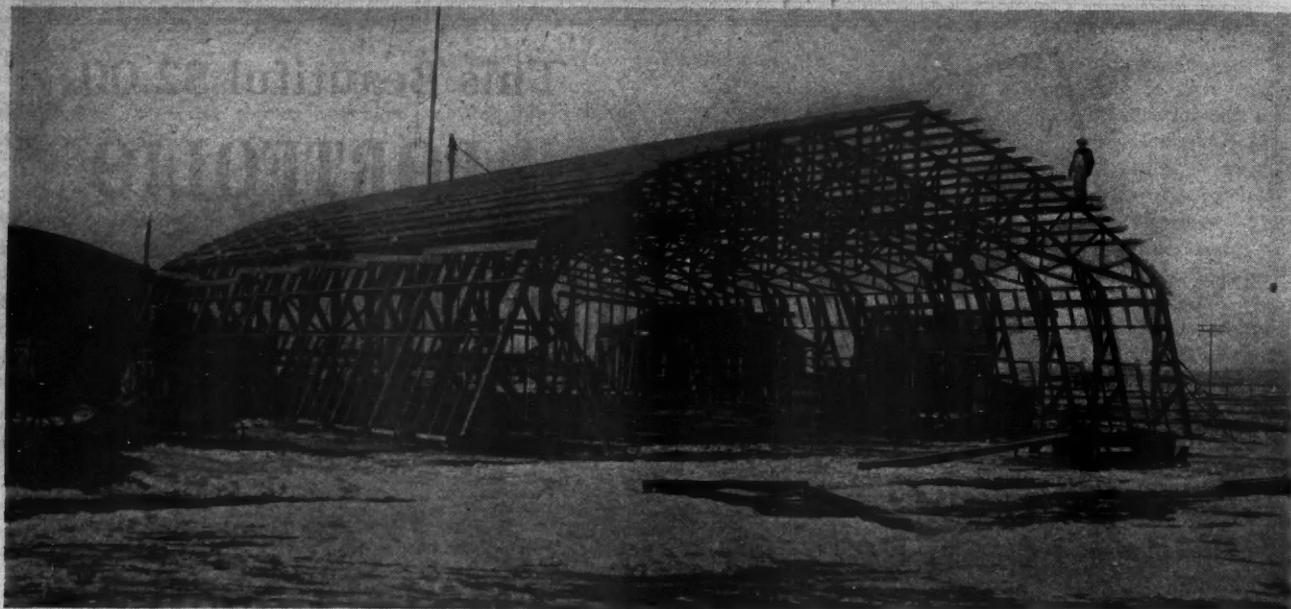
- Wood Dye
- Perfectone Enamel
- Perfectone Undercoat
- Prepared Wax
- Paste Wood Filler
- Floor Varnish

Name.....

Address.....

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

I buy from.....
 (Enclose your business card or letter head)



Airplane Hangar Built by Percy Taylor, Alberta, Canada. One of Our Busy Readers. It Is 65 by 80 Feet, Inside Dimensions. He Is Doing Some Great Work for the Canadian Government.

[Builds Airplane Hangar

To the Editor: High River, Alberta, Can.
 I am following your suggestions and inclosing photo of my most interesting job of the year. It is an airplane hangar, 65 by 80 feet, inside. The government has located an air station and wireless outfit here and I have done quite a lot of their building.
 PERCY TAYLOR.



Problem in Balcony Construction

To the Editor: Union City, Ind.
 I am very much interested in the discussion of rafter cuts and segments, which has been appearing in the Correspondence Department. I have a problem that I would like to submit to Brother Chips.

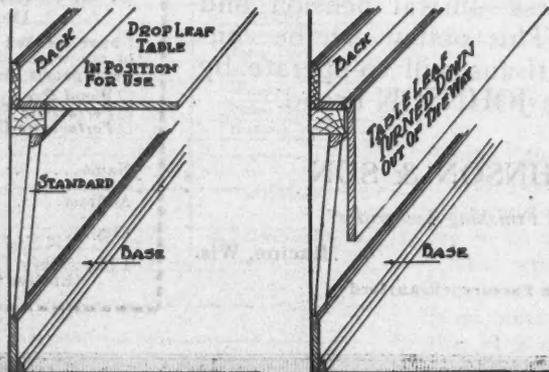
In building school houses and theaters with circle balconies there is often given 160 feet radius or more in a room 66 by 70 feet. What I want to know is, how can I extend a 40-foot radius so that I can make the cuts of the right size to fill out the 160-foot radius? In other words, by extending the 40-foot radius, can I make a circle of this size in the room?
 D. J. FOUTS.



Why Steam Pipes Knock

To the Editor: Irvington, N. J.
 I am writing to you for a little information in regards to knocking steam pipes. Some years ago there was a diagram of boiler and piping to prevent knocking, but I have laid it away so carefully I cannot find it, now that I would like to get some help.
 F. HOPPER.

Answer—There are many causes for this. The most common is faulty drainage of the piping system. If the pipes are pitched so that water cannot drain from them directly, it may stand in pools thru which steam may be driven with explosive force. Care must be taken that the system is pitched correctly, at least 1/4 inch in every 10 feet. This prevents water pockets from forming in the pipes.



Another Suggestion for Winter Work for Our Centerville, Md., Friends Who Asked for Suggestions Some Time Ago. This Is a Built-In Wall Table.

Mixture for Cleaning

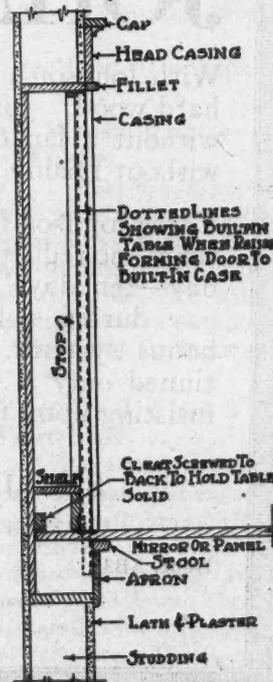
To the Editor: Elizabethton, Tenn.
 In your January issue of the AMERICAN BUILDER I read the letter of John E. Mohr asking for information on how to clean brick.
 I have a simple preparation which has proven satisfactory to me on my jobs. Altho I do not recommend it for brick that has been used around an acid plant, I have never tried it for that work, but on all other kind of brick work I do recommend it.

Take equal parts of gasoline and linseed oil and mix together. A stiff brush something like a curry comb brush will do the best work. Any common laborer can do this. This is a simple mixture, is cheap and will certainly do the work. It leaves the brick bright in color. I have worked on brick that had been cleaned with acid. There was some difference when I got thru.
 J. C. CRUMLEY.



Suggestion For Profitable Winter Works

Kendallville, Ind.
 To the Editor:
 As a suggestion for winter work for N. O. Wallin, of Centerville, Md., I am enclosing some sketches of wall tables. They save space and are out of the way in small kitchens.
 D. R. MOYER.



Another Suggestion for Winter Work for Our Centerville, Md., Friends Who Asked for Suggestions Some Time Ago. This Is a Built-In Wall Table.

Lay Asbestos Shingles right over the old shingles

1. Saves money.
2. Saves time.
3. Saves labor.
4. No muss or dirt.
5. Old shingles are valuable as additional insulation and protection.
6. Asbestos Shingles are fire-proof.
7. They make a roof of artistic beauty.
8. They last as long as the house.

This booklet will bring in re-roofing business for you. Send it to your prospects.

Re-roofing for
the last time



JOHNS
MANVILLE
SERVICE

Through—

Asbestos

and its allied products

JOHNS-MANVILLE
Serves in Conservation

Heat Insulations, High
Temperature Cements,
Asbestos Roofings,
Packings, Brake
Linings, Fire
Prevention
Products



Spring brings re-roofing prospects

THERE is a clean, profitable Spring business in laying Johns-Manville Asbestos Shingles right over old roofs.

Johns-Manville Asbestos Shingles appeal to the owner because they are beautiful, permanent and fire-safe. He likes the idea of laying them over the old roof because it's cleaner and cheaper than tearing off the old shingles.

It's an easier job for you, too. No ripping off warped shingles and rusty nails that fall on the lawn and make the

owner kick. Just a straight nail-on job that brings you to the ridge in record time.

And when you're done, the job is a credit to you. There isn't a better looking or more permanent roof than Johns-Manville Asbestos Shingles. It pleases the owner and lays the groundwork for future business.

Ask your nearest Johns-Manville Branch to show you more about the sales possibilities of Asbestos Shingles for "re-roofing."

JOHNS-MANVILLE Inc., Madison Ave., at 41st St., New York City
Branches in 60 Large Cities

For Canada: CANADIAN JOHNS-MANVILLE CO., Ltd., Toronto

JOHNS-MANVILLE Asbestos Shingles

Brick Industry to Finance Homes

PLANS LAID AT CONVENTION TO CARRY SECOND MORTGAGES ON NEW BRICK HOMES—A NEW MORTAR TROWEL INVENTED

By Ralph P. Stoddard

QUITE a number of influences are working toward a greatly increased use of brick for residence construction in America. The advertising campaigns conducted by the American Face Brick Association and the Common Brick Manufacturers' Association for the past two years find reaction in the effort of machinery manufacturers to produce more economical methods for manufacturing brick, and by the manufacturers of brick in stimulating interest thru greater plant efficiency, improved service and more intensive merchandising.

Now there is a scheme on foot to help finance the small brick house thru a central corporation which will buy second mortgages on new brick construction in all parts of the country.

The advent of the Ideal wall, which is a hollow wall built with ordinary brick, and the influence of a new trowel, which it is claimed may be used by any mechanic with bricklaying experience and producing a wall at lower labor cost, are other factors to encourage the use of the permanent material.

At the annual convention of the Common Brick Manufacturers' Association in St. Louis, the first week in February, the Secretary-Manager proposed to the membership the incorporation of a national finance company. The stock of the company would be sold to members of the organization, and the funds of the company will be used to purchase second mortgages upon new brick homes, operating thru existing building and loan companies and mortgage companies.

While it is claimed that the Ideal wall not only produces an enclosure better suited for residence purposes than the solid brick wall, it also reduces the cost of the structure and brings it below any other type of masonry construction. While more than 100 cities have already adopted this construction, it is not antici-

pated that the Ideal wall will entirely displace solid brick construction.

It is found by a thoro national investigation that the first cost of a solid brick house, using face brick for the exterior backed with common brick, costs about 6 per cent more than ordinary frame. It is believed that many people who would like to build brick houses are influenced by this small first cost difference to the use of some other material. The new financing company would remove the obstacle in these cases because it would loan an added amount to meet the difference in first cost between brick and frame. The few hundred dollars which the builder would borrow upon the second mortgage to build a brick house actually never would be paid back by the borrower, because the economies of the brick house would save the owner in the course of a few years more than the amount of the second mortgage.

As an example, suppose that a man who owns a lot worth \$1,000 plans to build a house which will cost \$5,000. A building and loan company or a mortgage company would loan him about 60 per cent of the value of the improvement or \$3,600. The second mortgage company would give him an additional \$400 or \$500. Not counting the economy in fuel, the slow depreciation or the saving in insurance, the owner of the brick home would save every two or three years a painting item of \$200. Thus in six or eight years he could pay off the second mortgage with his saving in painting alone, and the money would actually not come out of his pocket. The financing company purposes to purchase these second mortgages at a rate that would be advantageous to the existing financing companies; so advantageous in fact that the existing companies would be willing to guarantee the second mortgages. As the capital of the proposed company is converted into these guaranteed second mortgages the mortgages could be placed as collateral and bonds sold upon them, thus bringing the funds back into the treasury for reloading.

The proposition was favorably received by brick manufacturers at St. Louis, and the matter referred to the executive committee of the association which will meet soon to give it further consideration and appoint a committee to work out the details. Whether the financing scheme is carried out on exactly the lines proposed by the Secretary or not, it is certain that something of this kind will be done by the brick industry.

It is well known that the ma-



"Bungalowette" built of common brick laid the ideal way. Note the peculiar but attractive bond this type of wall produces.



THIS is one of the many Ideal wall homes built in Alton, Ill. The Alton Brick Company increased the amount of brick used in home building by 1000%.



This Trade-Mark stands for—

Quality—

An honest product, honestly advertised.

Responsibility—

A reputation for honorable, prompt and efficient business dealings.

Service—

A material of proven integrity with a record of ages of service.

The Common Brick Industry of America
 1306 SCHOFIELD BUILDING
 Cleveland, Ohio

The Ideal Brick Hollow Wall

400,000 Brick Used Where Only 40,000 Would Have Been Used

Here is just one example from many hundreds we can show you. What has happened in Alton is happening all over the country.

“Common Brick Mfrs. Assn.
 Cleveland, Ohio

Gentlemen:

We are enclosing herewith photographs of some of the buildings that we now have under way using the Ideal wall. We have been able to get this construction in almost every type of building.

The best part about this is that all of these buildings would have been frame had we not gotten after the job. You will note all but two have brick foundations. We think in the future we will be able to get the foundation under all the houses. We find the 12½-inch brick wall can be extended to a 14-inch wall, without using any more brick, labor or mortar. This gives two larger air spaces and makes a most excellent foundation wall.

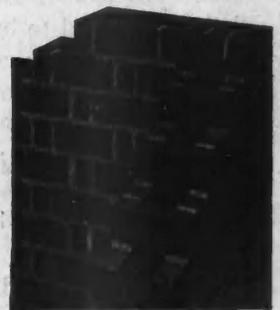
Very truly yours,

ALTON BRICK COMPANY
 (Signed) Eben Rodgers, President”

The kind of buildings that Mr. Rodgers had been putting up range from a small private garage to bungalows, fine two-story houses, and store buildings. Not only are the walls built of eight-inch Ideal All-Rolok walls, but all of the buildings except two rest upon fourteen-inch Ideal foundation walls. These are the first jobs done in Alton in years in which brick has been used in the foundation.

This Book Thoroughly Describes Ideal Wall Construction

The Ideal Brick Hollow Wall is thoroughly described in “Brick, How to Build and Estimate.” The new, third edition, 72 pages, is not only a complete manual of bricklaying, containing estimating tables, detail drawings and hundreds of valuable suggestions, but it includes a complete section on Ideal wall and architectural drawings of every detail necessary to carry out this construction. This is a hand book worth many times its cost for every builder. Special price 25 cents.



Eight-inch All-Rolok Ideal wall section

majority of lumber dealers have for years given aid to the man who would build a wooden house. The lumber dealer either takes a second mortgage for a part of the material bill, or he introduces the prospect to a building and loan or mortgage company in which he is interested and helps him in securing a loan.

The brick business has been seriously handicapped by their failure to meet this inducement of the lumber people. The brick men at St. Louis were as a unit in recognizing the need for some institution of this kind.

It is only a short year since Ideal construction was first introduced and in that short period it has gained tremendous headway. There was exhibited at the St. Louis convention of the brick men scores of photographs of Ideal wall structures ranging from one story cottages to good sized schools and commercial buildings. It is the unanimous testimony of the architects and builders who have tried Ideal construction that it is the most economical form of masonry building that has been devised. Many builders of homes are using this construction exclusively and they state that they can complete a house with Ideal wall at a cost no greater than frame.



Trowel invented by Oscar Mann, Indianapolis, Ind. Especially valuable in rural section where ordinary mechanic can lay brick with the use of this tool.

Another new development to bring brick into greater popularity is the trowel invented by Oscar Mann, of Indianapolis. This trowel may be described as a "scoop." A novice may spread the mortar upon a course of brick in form to receive the next course of brick in a fraction of the time that is required to place the mortar in the old-fashioned way. It is the inventor's claim that anyone can use this trowel. While there are the unions to be considered in introducing this invention and there probably are limitations as to the character of work that could be done with it, it is still believed by those who have seen it to have great possibilities. Especially in the rural sections where there are no bricklayers an ordinary mechanic might do a satisfactory job of bricklaying with the use of this tool.

All of these things are attracting added attention to brick construction, and the brick interests feel that all that is needed to bring brick into greatly increased use is a little better consideration on the part of the builders of this old and reliable material.



Effective Lighting in the Home

(Continued from page 103.)

the room. Ordinary lamps are used in the portables for reading.

Light of some kind is a necessity in civilized life. The quality of light used is of prime importance to

both comfort and health. Electricity is without a rival among illuminants, and it may be of interest to the householder to know that it is the cheapest of modern necessities. Unit for unit of light, it costs him today only about one-fiftieth as much as his ancestors of a century ago paid, according to a recent estimate. Far more than the average person realizes has been accomplished in refining and perfecting methods of using electricity for lighting in the less than fifty years since Edison devised the first practicable incandescent lamp; and yet electric light is today one of the very least expensive of the commodities which enter into the budget of living expenses. Colored lighting for the home is an extension and refinement of this great advancement in the field of illumination.

There is another phase of house illumination which is distinct from colored lighting but may be linked with it in such a way as to produce effects of great beauty—the special arrangements of lighting units. In up-to-date house planning the pattern of the lighting fixtures is no longer the principal consideration. They are coming to be regarded—as they should be—as means of affording illumination. This does not mean that they cannot be or should not be of artistic design, but it does mean that their value and practicability for holding lamps comes first. No matter how beautiful or costly lighting fixtures may be, they are a failure so far as efficiently serving the purpose for which they are intended if they leave in shadow portions of a room that should be lighted.

So indirect and semi-indirect lighting to supplement the direct lighting supplied by shaded portables, by domes, showers, etc., have come into vogue. Various modifications of both direct and indirect lighting have been devised to provide novel and beautiful effects.

Among these are lamps in the cornices of rooms, concealed from sight; wall ornaments treated in the same way; window boxes placed above the level of the eye, trimmed with artificial foliage, and hiding lamps that throw light on the ceiling and upper part of the room; lamps so placed as to throw light, from concealed places, on a picture or some other object which it is desired to give special lighting; artificial skylights for illuminating dark halls and corridors, vestibules and sun rooms. Charming effects may be obtained by the use of the last-named device, a blue-green lamp supplying an excellent simulation of moonlight. Surprisingly beautiful results may be attained by the use of colored lights with any of these devices—the more so because such arrangements permit the use of combinations of different colors. In fact, the effects obtainable are limited only by the imagination and cleverness of the architect. Dr. Luckiesh devotes a very interesting chapter of the book mentioned to this subject.

No attempt has been made in this article to do more than suggest the possibilities of colored lighting in the home.



*Barrett
Everlastic
Roofings*

The Sales Value of Colorful Roofings—

Color attracts always. In a roof, it lends distinction to the building and increases the owner's appreciation of your work. In fact, it's an advertisement for you that helps to get more business from the same source, besides attracting new customers.

All this is accomplished if you recommend and use only the best grade roofings. There's one certain way to do this: Choose roofing made by a company known to be absolutely reliable.

The Barrett Company has been in the roofing business for 60 years. During all that time it has kept faith with its customers. When you lay any of the Barrett Everlastic Roofings you give your customer his full money's worth. And you are insuring his complete and lasting satisfaction with the job.

Barrett Everlastic Roofings are made for any type of steep-roofed building—homes, schools, churches, farm buildings, etc. And you will find them carried by enterprising dealers everywhere.

If you desire literature on any of the four roofings listed below, write to our nearest branch and they will gladly send you booklets.

Your Choice of Four Styles

Everlastic Multi-Shingles. *Four shingles in one.* Tough, elastic, durable. Made of high-grade waterproofing materials with a red or green mineral surface with crushed slate, red or green. When laid they look exactly like individual shingles. Fire-resisting. Need no painting.

Everlastic Single Shingles. Same material and art-nish (red or green) as the Multi-Shingles, but made in single shingles: size 8x12 1/2 inches. A finished roof of Everlastic Single Shingles is far more beautiful than an ordinary shingle roof and costs less per year of service.

Everlastic Mineral-Surfaced Roofing. The most beautiful and enduring roll-roofing made. Surfaced with mineral in art-shades of red or green. Requires no painting. Nails and cement in each roll.

Everlastic "Rubber" Roofing. Thousands upon thousands of buildings all over the country are protected from wind and weather by Everlastic "Rubber" Roofing. It is tough, pliable, elastic, durable and very low in price. It is easy to lay: no skilled labor required. Nails and cement included in each roll.

The *Barrett* Company 

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WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

WHAT'S NEW?



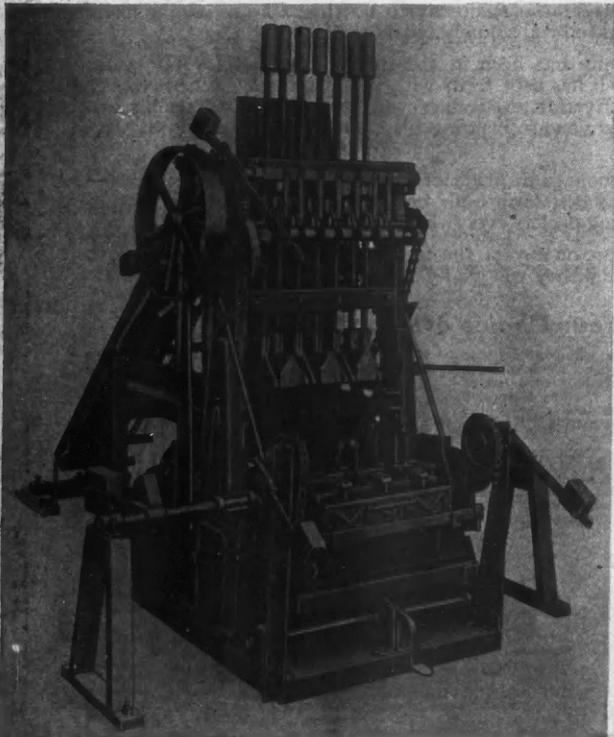
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Automatic Concrete Tile Machine Makes Tile of Different Sizes

ONE of the unique features of a new automatic concrete tile machine that has just been introduced is the design which permits tile of many dimensions to be made without the necessity of purchasing additional pallets. It is only necessary to make the changes in the mold box and tamp feet. The regular standard size, 5 by 12 by 12, and the sizes which are frequently used, such as 5 by 4 by 12 and 5 by 12 by 12, can be made.

It is operated in the following manner. The conveyor which is located at the back of the machine and which is included in the equipment, receives the material direct from the mixer and conveys it into a material hopper. The feeding box slides below the material hopper and carries the concrete over the mold box where it is packed in place by the tampers. The feed box is then withdrawn, scraping off the excess material, and carrying this back under the material hopper, ready for the next charge.

After the withdrawal of the feed box, the mold box swings into delivery position, bringing the bottom of the tile



New Automatic Concrete Tile Machine Which Will Make Several Sizes Without Additional Pallets.

into contact with a wood pallet which is placed on a balanced table. The machine then strips the three tile onto the pallet and at the same time pushes the pallet table down so that the tile are clear of the mold box, after which the mold box immediately swings back into place, the feed box comes forward and the machine starts on the next cycle.

The full pallet is removed and an empty one substituted while machine is tamping the next set of tile. At no time is it necessary to stop the machine, nor is there any pause in the operation while the tile is being removed.

Tapehook Device Aids Window Balance Installation

AN improvement on the unit sash balance, Fig. 1, which takes the place of weights and cords, has been perfected. It is a new tape hook device shown in Fig. 2. Its use does not call for any change in procedure at the mill or on the job in handling the sash—simply the preparation of a special short groove in the side of the sash to install this tape hook. This groove can be made quickly by means of a $3\frac{1}{2}$ -inch cutter in much less time than it would take for cords.

There are two ways in which the tension is taken off the balance spring while attaching the tapes to the sash. The old method is to pull the tape out as far as possible and then insert an ordinary wire nail into the slot in the drum. The new way is by inserting a special wedge manufactured for that purpose.

As each balance is installed the builder should be sure that the weight of the sash comes within the range of the weight



Fig. 1. Balance as It Appears with Tape Wound About Spring.

stamped on the outside frame of the balance. The tape should be kept free from paint, otherwise it will adhere to the inside drum and when dry seriously interfere with free action of the moving parts.

To install this balance, withdraw sufficient tape from balance, Fig. 1, insert wedge, then insert tape with loop on end into the groove in the edge of the sash. When it strikes the angle piece push slightly so that the small end of the loop will be depressed and large end raised. Then slowly pull the tape tight, holding in place while wedge is removed.

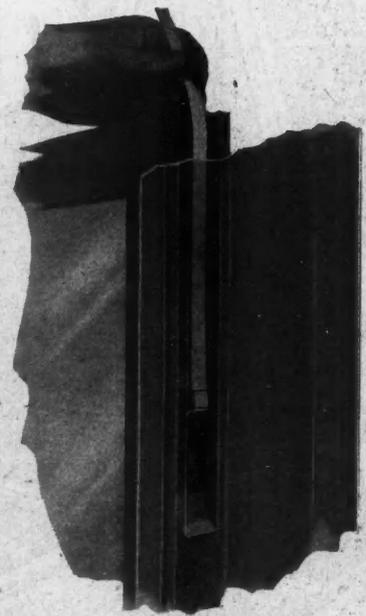


Fig. 2. Installing Tape on Sash Without Removing Any Part of Window. Note Tape Hook in Small Groove.



This Wallboard Lies Flat and *Stays* Flat Because It is "Triple-Sized"

MADE of pure wood fiber and "Triple-Sized" in the process, Cornell Panels provide triple the ordinary protection against moisture, expansion, contraction, sound and variation in temperature. Comparison of walls of long standing prove no other wallboard is like it.

Cornell is the only wallboard with fashionable "Oatmeal" finish. It makes walls, ceilings and partitions rivaling the beauty of costly wallpaper; cleaner than lath and plaster, quicker and less expensive to apply.

Cornell Panels come all primed for painting, stenciling or calcimining — "Mill-Primed". This saves the work and cost of a priming coat in every room. Left in its natural "Oatmeal" finish, or decorated, Cornell-Wood-Board makes charming interiors in homes, stores and offices. For factories, farms, outbuildings, displays and repairs, there is nothing more handy and practical.

Prices are now far below a year ago. Why specify ordinary wallboard when you can obtain this extra grade at no extra cost? Good dealers everywhere.

Cornell

Takes the Place of Lath and Plaster for Walls, Ceilings and Partitions

Wood Board

Eight lengths, 6 to 16 ft.—two widths—"Cornell 32", "Cornell 48"

Free Send us rough sketch showing room dimensions and openings and our Dept of Design will make special drawings of most artistic Cornell paneling arrangements and forward to you with sample board, and estimate of quantity and cost of Cornell Board needed. No obligation whatever—Address Dept. AB-1.

CORNELL WOOD PRODUCTS CO., Dept. AB-1

General Offices: 190 N. State Street, Chicago, Illinois

Water Power, Mills and Timberlands in Wisconsin

Complete Success

J. H. PATTERSON COMPANY
 67 N. WABAN, CHICAGO
 FREEPORT, ILLINOIS
 Dec. 21, 1921.

U. S. Materials Company,
 Chicago, Ills.,

Gentlemen:

After the contractors had applied several jobs of the new process Elastica, we had some difficulty in disposing of the balance of our stock of old process Elastica, because, as one contractor explained, he was through manufacturing his stucco on the job. He no longer wished to fuss with barrels, drums, mixing tanks and hydrometers. Another contractor said "Let the manufacturer do the manufacturing and I'll do the applying." This is the consensus of opinion among our contractors.

We now wouldn't consider handling anything in the Magnesite stucco line, except "Complete in a sack Elastica."

Yours very truly,
J. H. Patterson Company
B. T. Hogan
 Manager

OTM

SPAHN & ROSE LUMBER CO.
 OFFICE AND RETAIL
 101 PARK AVENUE
 NEW YORK, N. Y.

Bernard L. McDonald Co.
 A COMPANY FOR THRIFTY PEOPLE
 ANTHRACITE COAL BITUMINOUS
 BUILDING SUPPLIES
 308 ESSEX STREET
 LAWRENCE, MASSACHUSETTS

American Materials Co.,
 101 Park Avenue,
 New York, N. Y.

December 22, 1921.

Gentlemen:

Please enter our order for one car of Elastica, "complete in a sack" and ship at once.

We must not let this occasion pass without congratulating you upon your new materials which is meeting with so much favor by contractors and builders in this vicinity.

The new features means money in the pocket, and increased profits for the contractors, at the same time insuring the interior more uniform and more beautiful appearance of the finished building.

At the present time we have a great quantity about ready for application, and therefore urge prompt shipment.

Very truly yours,
BERNARD L. McDONALD CO.
B. L. McDonald
 Treasurer.

ELASTICA

THE IDEAL EXTERIOR WALL COVERING

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

here is the proof



HAWKEYE LUMBER COMPANY
BUILDING MATERIALS
 OFFICE AND YARDS ONE BLOCK EAST OF POST OFFICE
 PHONE 43
 IOWA CITY IOWA.

U. S. Materials Company,
 Wood Street & Sheffield Ave.,
 Chicago, Ill.

Jan. 12, 1921.

Gentlemen:

Our Exterior Stucco Mechanic tells us he has been working with magnesite stucco for three and a half years, and that he thinks Elastica is the best stucco on the market today. He states that he has applied it in forty-seven towns in Iowa, and is always glad to be called to a town where he can get Elastica. This mechanic has applied three carloads of the new process "Complete in a Sack" Elastica for us the past six months. He has not returned a sack as unsatisfactory and states that he is making more money at the same price per yard since using Elastica exclusively than he ever did before.

Yours very truly,
 HAWKEYE LUMBER CO.
[Signature]



SEND A HOME COPY AND BUY IT UP

THE NATIONAL BUILDING SUPPLY CO.
 "HOUSE OF SPECIALTIES"
 GARRISON LANE NEAR WEST BALTIMORE ST.
 BALTIMORE, MD. December 30, 1921.

Attention Mr. F.W. Langtry, Sec'y.

Dear Sirs:--

Replying to yours of the 19th inst. would say that Elastica "complete in a sack" is very much more desirable in every way as compared with the old method of adding the liquid chloride.

It makes a decidedly easier proposition to handle from the dealer's standpoint, and the contractors and consumers seem equally delighted with the change. We feel sure it will prove quite a help in marketing this material.

Yours very truly,
 THE NATIONAL BUILDING SUPPLY CO.
[Signature]

COMPLETE IN A SACK
 REG. U.S. PAT. OFF.

ELASTICA

THE IDEAL EXTERIOR WALL COVERING

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Value of Extra Lights in Basement

HOUSEWIVES APPRECIATE SASH THAT ADMIT PLENTY OF LIGHT INTO LAUNDRY

ASK Friend Wife what it means to her to have plenty of light in the basement. Chances are she'll tell you, right off the bat, a few things that never occurred to your mere masculine mind.

She'll tell you that even with a window right over the laundry tubs it isn't always easy to tell whether the cuffs on hubby's shirt are clean along the edges; she'll tell you that this cold weather she has to hang the clothes in the basement because it's too cold to go out doors with damp hands and arms. And how much faster the clothes would dry if the basement were flooded with sunshine instead of having only that half-light that comes thru a small wooden window.

Women as well as men are interested in the new steel basement windows which are now being manufactured for residences and apartments. When they discover that at practically the same price, perhaps even less, then can have 50 per cent more light in their laundries, they are



This housewife is not afraid of stumbling down dark basement stairs because of the excellent light admitted thru steel sash windows. There are no dark corners where dirt and refuse can accumulate unnoticed. On wash days she has plenty of natural daylight to help her in her work.

going to insist that steel basement windows be used. It isn't just the women's vote either. Father is just as keen for a bright sunshiny basement as mother is.



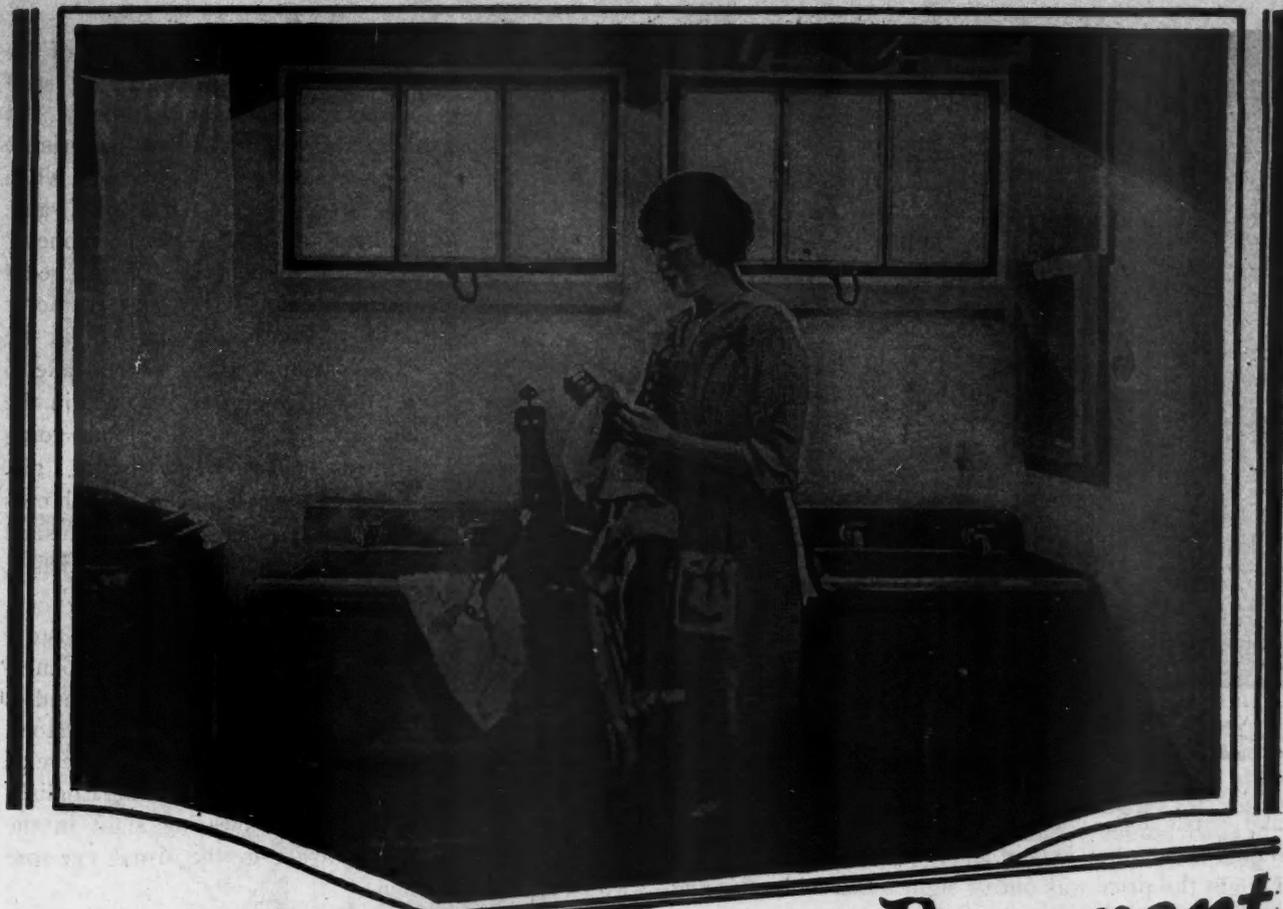
Small garage under construction fitted with steel sash. Stucco will be applied to this skeleton work of metal lath, making a fireproof structure. The sash are pivoted.

He wants a place where he doesn't need electricity in daytime, where he doesn't grope for the coal shovel nor fall over the ash can, where he can actually see the hatchet on the woodpile and read the pressure gauge on the heater without lighting a match.

These are little things in themselves but figure strongly in the lives of the Mr. Average Home Owner because they recur day after day. The builder who takes these little conveniences into consideration wins the confidence of his customer because the latter knows his interests are being looked after to the very smallest detail.

Steel basement windows are the latest improvement in residential construction. They are easier to erect than wooden windows, require less time and less labor and as they come already assembled and painted, fitting and planing are obviated. Steel basement windows are now being sold thru lumber dealers all over the United States. If the concern from whom you usually buy materials does not have them, the AMERICAN BUILDER will be glad to supply the names of the manufacturers.

The growing popularity of steel sash is by no means confined to basements, however, as some of the accompanying illustrations will show. Many builders are now using this type of window in small buildings of all types, including garages, stores, warehouses, and the like. It is attracting special attention in the school construction field. Only recently several Chicago school contractors took definite action regarding the use of this type of sash in the school buildings in that city.



More Daylight in your Basement

They appeal to Contractors because:

They are very easy to install.

Extra frames unnecessary.

No planing nor fitting of sash.

Ventilator removable.

The hardware is attached.

Save time in setting. Already painted.

They appeal to Owners and Architects because:

Cost no more than wood windows.

Admit 50 Per Cent more light.

A protection from Burglars.

Never Warp Nor Stick.

Keep out Mice and Rats.

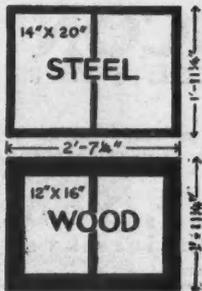
Easy to Screen. Last Longer.

Fire Proof.

Fenestra Steel Basement Windows for Residences and Apartments

THE PEOPLE you build for want a bright sunshiny basement—
 A place where they don't need electricity in day time—
 Where Friend Wife can be sure the washing machine did its duty and didn't leave a streak around the edge of Hubby's cuffs—
 Where the clothes dry quickly in a bright sunshiny atmosphere.
 You will appeal to every woman by suggesting *Fenestra* Steel Basement Windows. They provide 40% to 60% more daylight at no greater cost.
 And they are easier to install than Wood.
 Ask your dealer about—

Our Free Book giving full details of installation sent on request



Fenestra

STEEL WINDOW WALLS

Detroit Steel Products Company
 2223 East Grand Boulevard, DETROIT



View of same garage from inside showing steel sash as they appear glazed and completed. The builder who installed them was surprised at the ease with which he could fit them and save on labor costs.

Contractors and builders have hesitated to undertake small jobs with steel sash because they were afraid of complications in installation, and because they thought the price was out of sight. But when the man

plate glass and the building designed on the Englishmanor type, which makes it a pleasing sight in the residential district in contrast to the usual eye-sore which is seen so often.

built the garage shown in one of the illustrations, he obtained the steel sash from a nearby warehouse. It was the builder's first experience with windows of this sort and when he looked them over he said: "These must cost real money." When the owner told him the retail price of the sash, the contractor said: "We fellows may think we are close buyers and wide awake to all the price-cutting schemes in the market, but after this I am going to use steel sash every chance I get. I can do the job quicker, which cuts labor costs, and when it is finished the customer is far better satisfied, which means future business."

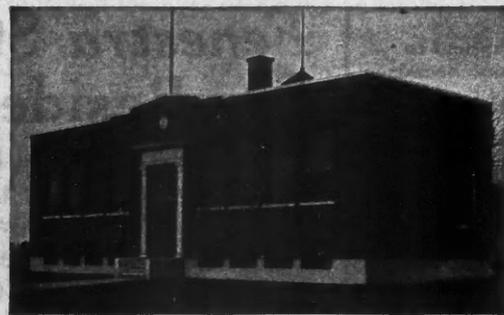
The interior of the drug store shown here was taken in the Genesee Drug Co., Flint, Mich., and is an unique type of community store. The sash are glazed with beveled

Steel Sash Costs Less Than Wood



Before you build this Spring compare the cost of wooden windows with Truscon Steel Sash, and be convinced. If it is windows for the basement of a house or windows for a school, garage, office building or shop, it makes no difference. There is a type for every purpose and you will find Truscon Steel Sash cost less than wood.

Truscon Steel Sash are complete units. They are weatherproof, fire-



proof, permanent—and they afford 50% to 60% more daylight than wooden windows. They are fully equipped—locks, hardware and all—there are no extras.

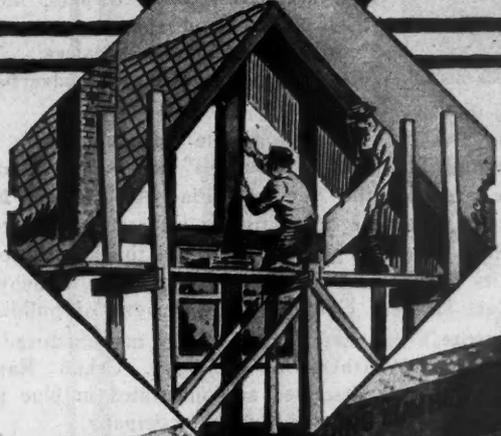
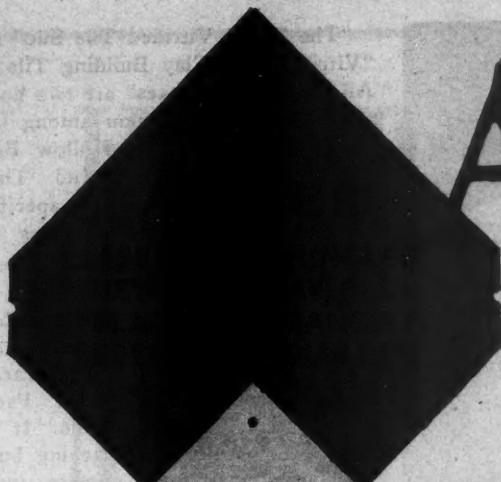
We have 45 Service and Sales offices in the principal cities to help you. Warehouses at principal distributing points and dealers throughout the country insure prompt deliveries.

TRUSCON
STEEL SASH

If your dealer can't give you prices, send us his name and ask us about Steel Sash at less cost than wood

Truscon Steel Company, Youngstown, Ohio
There are Truscon Dealers Everywhere

Ambler Asbestos Building Products



THEY give strength and permanence with attractiveness. They make tight, comfortable building that saves in painting and insurance.

You can't burn **AMBLER ASBESTOS BUILDING PRODUCTS** because they are composed of "unburnable" materials — long-fibre asbestos and Portland cement—rolled out with pressure of 3,000 lbs. to the square foot into convenient sizes and lengths for both interior and exterior work. Permanent colors made in the body of the material. No warping or cracking. Can be worked with ordinary tools.

Investigate Ambler Linabestos Wallboard for every interior lining use—partitions, wainscoting, hallways, libraries and game rooms, attics, bathrooms, kitchens, etc. Attractive buff color. Made 48 x 48, and 48 x 96, to fit standard joists.

For exterior use—half-timbering, paneling, fire-doors, trim—and for interior use where unusual strength is required, call for Ambler Asbestos Building Lumber.

For a snug-fitting, attractive, thoroughly fireproof roof, use Ambler Asbestos Shingles in the American, French, or Honeycomb style.

You may have full information and specimens without obligating yourself.

Asbestos Shingle, Slate & Sheathing Company

AMBLER PENNA.

Branch Offices: Atlanta, Baltimore, Boston, Buffalo, Chicago, Cincinnati, Cleveland, Minneapolis, New York, Philadelphia, Pittsburgh, Washington, Wilkes-Barre.

Distributors throughout the country

Asbestos Shingle, Slate & Sheathing Co.

Dept. A. Ambler, Penna.

I am interested in:

- Ambler Asbestos Building Lumber
- Ambler Linabestos Wallboard
- Ambler Asbestos Shingles
- Ambler Asbestos Corrugated Siding and Sheathing

Name.....

Position or Interest.....

Full Address.....

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



Interior of Genesee Drug Co. Store, Flint, Mich., showing extra light afforded thru use of steel sash.

At the present time the distribution system of steel sash has been developed to the point where there are about thirty standard types and sixty sizes of steel windows carried by warehouses thruout the country. There are at least 100 distributing points, controlled by manufacturers themselves which does not include dealers. One concern alone has over 100 dealers who carry a complete line of steel sash in stock. Many lumber dealers are adding this item to their list.

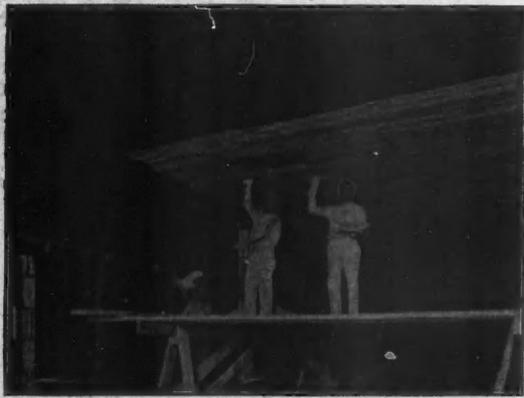
"The Brazil Vitrified Tile Silo" and "Vitrified Fire Clay Building Tile for All Building Purposes" are two books available for distribution among contractors by the Brazil Hollow Brick and Tile Company, Brazil, Ind. These booklets contain complete specifications for building silos, barns and homes of Brazil, tile.

The Advertising of Redwood as Planned by the Pacific Lumber Company, Chicago, Ill., during 1922 is completely outlined in a very attractive booklet just issued by the Pacific Lumber Company of Illinois. It will appear in publications reaching builders, architects, home owners, industrial users, wood specialty manufacturers, and lumber dealers. The magazines in which this advertising will appear are also shown.

"Helping the Homebuilder" and "Real Homes That Buy Themselves" are two new books from the press of the Southern Pine Association, New Orleans, La., that are of particular interest to architects and builders. They are part of the service this association is offering its friends and customers to stimulate homebuilding. "Real Homes" contains many designs of buildings.

"Windustite," the metal weatherstrip manufactured by the American Weatherstrip Company, Grand Rapids, Mich., is completely described and illustrated in blue print form in a new booklet issued by that company.

Insure Your Floors and Ceilings



Putting the scratch coat on ceiling lathed with Truscon $\frac{3}{8}$ " Hy-Rib



Cross sectional view of typical ceiling and floor built with Truscon Steel Joists and $\frac{3}{8}$ " Hy-Rib Metal Lath

In the school, apartment, office or public building, floors and ceilings should be fire-proof and soundproof.

Truscon Steel Joists and Hy-Rib Metal Lath make the logical combination to fill the most exacting conditions.

Truscon Steel Joists are designed for all types of construction not requiring excessive floor loads. The Joists are manufactured in sizes and weights that will support single spans up to 24 ft. in length.

Truscon Hy-Rib Metal Lath insures plastered walls and ceilings against cracks. Concrete reinforced with Hy-Rib makes a floor of exceptional rigidity and strength. For sidewalls, partitions, roofs and concrete stucco work of all kinds, Truscon Hy-Rib Metal Lath is unexcelled.

If your estimates are based on quality your customers will be glad that you specified Truscon.

Truscon Building Products means permanence without extra cost.

TRUSCON STEEL COMPANY
YOUNGSTOWN, OHIO

Sales and Engineering Offices in Principal Cities

More Than 300 Dealers Carry Truscon Building Products in Stock

HANGER HARDWARE

When It Bears the "Allith-Prouty" Name



the dealer is giving, and the buyer is getting, all there is to be had in Hanger Hardware. If you have never stocked "Allith-Prouty" you really don't know what a pleasure it is to sell Hanger Hardware that brings every customer and his friends back for other things you handle.

"1080" for Folding, Sliding Garage Doors

Sells quickly; goes up simply; works easily; and stays sold. Hangs three to six doors; makes possible using entire opening or only part of opening; needs but 12" headroom; trolley-swivel, type with vertical side rollers; swivel operates on balls, wheels on rollers; swivels, hangers and brackets unbreakable A-P Malleable. Used with No. 60X high carbon steel rounded wheel trough track. Doors hung with "1080" cannot sag or bind.

"RELIABLE" Hangers and Round Track

One piece, heavily reinforced malleable hangers; double wheel type (upper wheel has machined tread, hardened steel axle, roller bearings; lower wheel prevents all jamming and derailing).

No. 2 Round Track heavy high carbon steel; tube type, slotted for reinforced malleable brackets.

"Reliable" Round Track and No. 2 Hangers have been big business builders for over twenty years.

ALLITH-PROUTY COMPANY
DANVILLE, ILLINOIS

We want you to have our Garage Hanger Hardware Catalog No. 91. Write for it TODAY.



ALLITH-PROUTY
"Satisfaction in Hardware"



ONLY
\$10⁷⁵
FOR 50 PLAN BOOKS
 And a Year's Subscription or
 Renewal to the
American Builder

Have Your Own
WITH
FIFTY Beautiful

What You Get for Only \$10⁷⁵

Your Name On Each Book—Send No Money

These beautiful books of home building designs with blueprinted, dimensioned floor plans, contain 32 pages, each page lithographed in two colors. Each book is bound in a handsome lithographed cover in four colors. Besides 50 of these inspirational home building books, with your name imprinted in large type on the front cover, you will receive one year's subscription to the American Builder, the World's Greatest Building Magazine. Each issue of this magazine contains 12 or more **Blue Ribbon Home Building Designs**, printed in two colors, with blueprinted floor plans of each home. A year's subscription to the American Builder brings you 150 or more Good Home Building Designs, together with the greatest magazine published for everyone in the home building industry.

Plan Service Book Prices Smashed

Send No Money

Never before have you had an opportunity to get such beautiful home building plan service books at such a low price. By producing these books in large quantities we are enabled to make this bargain price to you. And remember that the price—only \$10.75—includes a year's subscription to the **American Builder Magazine, the World's Greatest Building Paper**. We practically give you at cost the use of our drawings, engravings, in fact, our whole establishment to create home building sentiment and activity. Send your order at once—now. If you do not desire the American Builder deduct one dollar from the price quoted.

Stimulate Home Building In Your Town

Your Name On Each Book—Send No Money

Get the people in your community thinking about homes of their own by placing in their hands this beautiful book of home designs. It presents in graphic form many ideas that will create a real desire to build homes. These designs are so attractive, and so practical, that they will make an instant hit with every person who sees them. Many people are groping in the dark looking for home building ideas. Here is your chance to furnish them some that will help your business.

Your name is on every book you distribute. This book will be the most eloquent, most convincing salesman you can employ. It will sell the home building idea to prospective home owners and it will bring business to you. More people in your town than you imagine are thinking of building homes. Let them know you can help them.



Mortar mixer on job speeding up the work on a new addition. This one man operating the machine can make enough mortar for twenty bricklayers, reducing labor.

Modern vs. Ancient Building Methods

PHAROAH called his Prime Minister before him. "Varlet! How proceeds the work on the Pyramid?" he demanded in great rage.

"Rushing, O lord," stammered the imperial adviser, trembling. "The slaves have added another stone to the

pile since the first of the year. At the rate they are going it will be completed in two centuries."

"Good!" spoke the imperial ruler of the Egyptian domain. "Put another 100,000 slaves on the job at once—we'll try to speed up the work."

And that is the way the ancients speeded up the job.

How to Undersell Your Competitor



IF you build houses to sell, you know what a large item of cost goes into excavation of basement, chimney, piping and boiler.

By using CLOW GASTEAM radiators—self-contained heating plants, generating real steam heat—you can eliminate this cost.

The radiators can be sold on easy terms, permitting the owner to enjoy their economy, having steam heat with freedom from dirt and ashes and the trouble of stoking a furnace, while paying for them.

CLOW GASTEAM radiation is successfully used as the sole means of heat in all kinds of buildings. They are easily installed and entirely free from trouble. In operation they are decidedly economical, because there is no waste of heat on mild days and in rooms where heat is not needed.

JAMES B. CLOW & SONS

General Offices: 534-546 S. Franklin St., Chicago
Sales offices in the principal cities

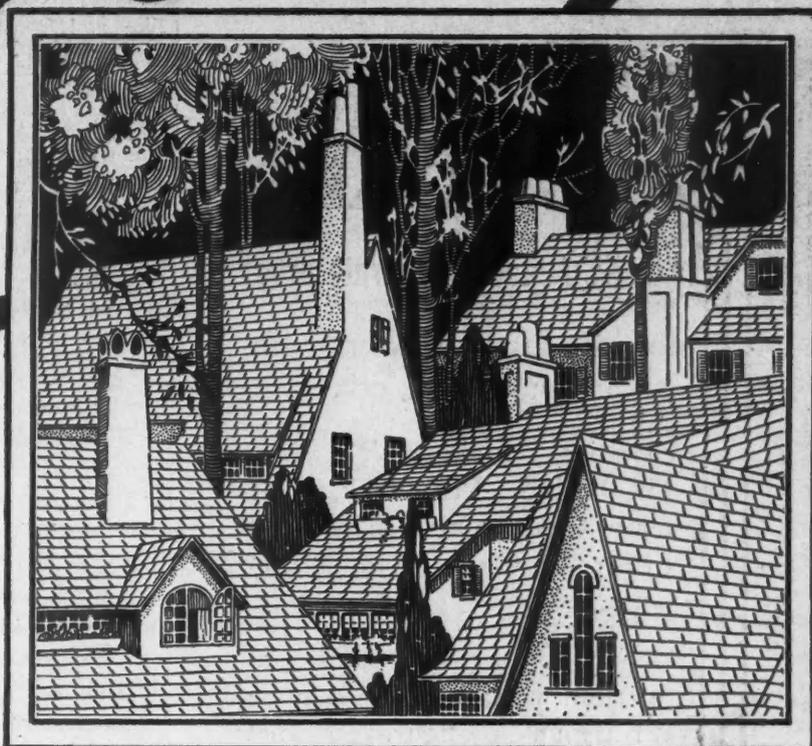
CLOW

James B. Clow & Sons,
534-546 S. Franklin Street, Chicago
Send me details of CLOW GASTEAM.

Name _____

Address _____

Carey



“The Shingle that *never* curls” is the Right Roofing for Modern Homes

Carey Asfaltslate Shingles, “the Shingle that *never* curls,” have an extra heavy base of asphalt saturated felt which prevents curling, and which gives them important waterproofing and insulating qualities. They are surfaced with Indian red or sage green crushed slate, which makes them an attractive roofing for the modern type of home.

Your customers will find that Carey Asfaltslate Shingles fulfill every requirement for satisfactory service. Their crushed slate surface makes them proof against falling sparks. They are economical. They require no painting or upkeep. Their period of service has been proved to be unusually long.

If you will roof one home with Carey Asfaltslate Shingles and will watch the way it wears, you will be convinced that it is the right roofing for modern homes. Write for samples and literature.

“A ROOF FOR EVERY BUILDING”

THE PHILIP CAREY COMPANY

510-530 Wayne Ave., Lockland, Cincinnati, Ohio

Other Carey Building Materials

Carey Built-Up Roofings are built on the job with alternate layers of sheet roofing and coatings of Manco Asphalt. Permanent roofing for any kind of surface.

Carey Board is a Wallboard that is waterproofed internally with asphalt and externally with paraffine. It takes the place of lath and plaster.

Carey Fibre Coating contains asphalt and asbestos fibre. It renews old roofs.

Real Wood

(plywood)

WALL BOARD

"CASCO-made" — Waterproof

for interior and exterior finish, cabinet work, etc.

In Birch, Mahogany, Oregon Fir, Walnut, Plain Oak, Quartered Oak, Quartered Walnut, Figured Gum, Unselected Gum, etc.

Owing to our enormous production, we are able to quote surprisingly low figures on panels for immediate shipment from our warehouse stocks.

Standard Sizes—One-quarter inch thick.

| | | |
|-----------|-----------|-----------|
| 24" x 60" | 30" x 60" | 36" x 60" |
| 24" x 66" | 30" x 66" | 36" x 66" |
| 24" x 72" | 30" x 72" | 36" x 72" |

We also carry panels in the following thicknesses: 3-32", 1-8", 5-32", 3-16", 3-8", 3-4".

These panels are manufactured with the wonderful "CASCO" Waterproof Glue, used by the United States Army and Navy, producing a panel which is impervious to heat or moisture.

Write for prices, stating approximate sizes and quantity required, remembering the smaller sizes cost less.

U. S. PLYWOOD CO.

3 West 14th Street, New York City

What a striking contrast to present day methods in the construction game!

"John," inquired the boss contractor, "how is work getting along on that new 272-apartment building? I want to get it out in a hurry."

"Well, can't complain," replied the foreman, "at the rate we are going it should be completed in sixty days."

"Too slow," snapped the boss. "I want to cut that time. Look over the machinery market and see if you can't get something that will save more time."

Compared with the modern contractor, Pharoah was like a 1896 model alongside a six-cylinder 60 h.p. special. His idea of speed coincided with that of a turtle.

The idea of the preent-day contractor is to get out the work as efficiently and as rapidly as possible. He has learned that to do this he must rely upon the aid of machinery. Many tasks have been taken over by mechanical devices such as concrete mixing, hoisting, and pumping, but a process that long defied mechanical intrusion was the tedious task of mixing lime or cement mortar. It is surprising, even in this progressive age, how many contractors are still using the antiquated method on large jobs.

This should not be the case in view of the remarkable improvements made in mortar mixing machinery in the last few years. It took many contractors a long time to shake off the idea of mixing concrete by hand, but they finally have got around to it and now machine mixing is practically universal. The saving from this method need hardly be touched on, it is so well known.

Tradition will gradually lose its hold in the matter of mixing mortar, and within a few years mortar mixing machines will no doubt be as popular as the concrete mixer.

One of the most satisfactory types is the continuous mix type, consisting of a long trough or drum with a revolving shaft carrying the mixing paddles running thru the center. The slaked lime and sand is shoveled into one end of the drum and the pitch of the paddles, acting as a screw conveyor, carries the mixture to the other end, thoroly mixing on the way. The proper tempering is done while the mortar is in the machine so that when it is discharged at the far end of the machine into a box or wheelbarrow it comes out in a smooth, putty-like mass in perfect condition for the bricklayer.

One man with a machine can mix enough mortar for twenty bricklayers, thereby reducing the labor to less than 25 per cent of that required for hand mixing. Because of the thoroness of the mix given by the machine, less lime or cement is used, still producing as strong a mortar. Also on account of the smooth consistency of the machine mixed mortar, the bricklayers can lay more brick in a given time.

During the real hot days of the summer it is almost impossible for a man to stand over a mortar trough mixing the hot materials and very often holding up the bricklayers because of no mortar. The machine is a mechanism and consequently unaffected by heat, func-



Smith 7-S Mixer, Osage County Court House, Sydon, Kansas,
Mont. J. Green General Contractor.

A Life Sentence

"A long life mixer" is what Mr. Brady of the Mont. J. Green Contracting firm calls the Smith.

To many contractors the citing of remarkable performances of Smith Mixers may be put in the same category as "carrying coals to Newcastle."

However, we would rather have a user recommend a Smith Mixer to you, and tell you about its speed, long life, and ability to stand up under severe strains.

We admit a Smith will give you a longer, satisfactory service,—that it has a quicker discharge, and low maintenance. We know that when we ship a Smith Mixer to you it is like a life sentence. You'll be using it and telling about its performance long after the women quit bobbing their hair.

If you are interested in knowing why, send for our mixer catalogs

THE T. L. SMITH COMPANY

1187 32nd St., Milwaukee, Wis.

New York Office and Warehouse: 50 Church Street
Chicago Office: Old Colony Building
Western Warehouse: San Francisco

Agents in Principal Cities

Kansas City, Mo.,
Jan. 6, 1922.

Bunting Hardware Co.,
Kansas City, Missouri.

Gentlemen:

We are using a 7-S Smith non-tilting mixer on the Osage County Court House at Lyndon, Kansas and are pleased to advise you of the splendid record this mixer made on this job. Recently we made a continuous run of 44-hours without a single stop.

This mixer showed a wonderful performance and we are very much pleased with it and thought you would be interested in knowing about this unusual record. We can recommend a Smith Mixer to anyone who wants a fast, long life mixer, that will stand up under the severest strains.

Yours very truly,

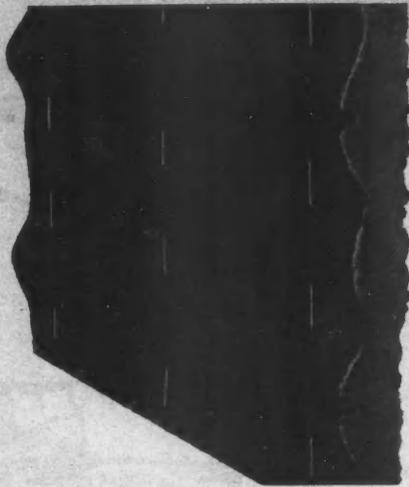
MONT J. GREEN, GENERAL CONTRACTOR
By *J. P. Brady*



For 22 years the mark of better concrete mixers

SMITH MIXERS

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER



**This Plaster Beam
in
E-Cod Fabric
Adds Great Strength**

The picture above is from actual photograph of slab of stucco applied to Wood Reinforced E-Cod Fabric. Note the heavy beam formed about the horizontal wood reinforcement. The plaster is also reinforced vertically by the heavy galvanized wires.

That's why E-Cod Fabric is selected by contractors as the best plastering base from standpoint of strength and durability. It is best, too, for these reasons:

- Low in first cost.
- Saves 40% to 60% of scratch coat.
- Fire retardant, sound-deadening.
- Water-proof, rust-proof, damp-proof.
- Holds heat in and cold out.
- Eliminates checking and cracking.
- Can be applied direct to studs.

E-Cod Fabric is the ideal plastering base for all exterior and interior work on new or old buildings. Send for complete information.

M. J. MacAdams Corporation

111 W. Washington St., Chicago
101 Park Avenue, New York



NOTE THIS LABEL—GET IT

tioning just the same in hot or cold weather. This naturally reduces waste of time on the job and cuts the overhead of the contractor. By requiring less time on each job he can take on more contracts and do a greater volume of business.

Many contractors will say, "Well, it won't pay to use a mixer on small jobs."

A job of 300,000 brick will warrant a contractor buying a mortar mixer if he does not already own one. Once he has the machine it will pay him to use it on jobs of 50,000 brick or less. There are many cases of contractors using the machine on two-flat buildings requiring only 20,000 to 30,000 brick.



Percentage of Building Cost Charged to Labor

THE following are preliminary figures prepared by the Department of Commerce showing the percentage which the amount paid to each labor group bears to the total labor cost of a six-room house:

| Trade | TOTAL LABOR COST, 100 PER CENT | |
|----------------------|--------------------------------|-------------|
| | Frame House | Brick House |
| Carpenter | 49.6 | 32.2 |
| Bricklayers | 6.2 | 21.5 |
| Hod carriers..... | 2.2 | 6.7 |
| Plasterers | 7.9 | 8.8 |
| Plumbers | 8.7 | 7.6 |
| Electricians | 2.6 | 2.5 |
| Painters | 10.0 | 6.3 |
| Common laborers..... | 6.3 | 9.9 |
| All others..... | 6.5 | 4.5 |
| Total | 100.0 | 100.0 |

These averages were constructed from reports covering a large number of six-room brick and frame houses thruout the country.

The relation of the amount paid to the various groups to the total labor cost varies according to the types of construction prevailing in the various localities; however, these averages give a fair view of the general distribution of labor costs.



Apprentice Problem

ACCORDING to labor leaders there are only 1,800 brick-laying apprentices in the 947 locals of 90,000 mechanics. Contractors and traders should co-operate with local boards of education to make it attractive for young men to take up the mason trades which are particularly short of apprentices. Because of shortage, plasterers are getting as high as \$18 a day in New York.

Mr. Philip P. Gott, of the Builders' Exchange, of Akron, reports that "Bricklayers, plasterers and marble setters are recognized by that association. While the apprentice problem is serious in the other trades, the contractors are not confronted with the same problem as those which recognize the unions. During last winter, classes in carpentry, sheet metal work, elementary and advanced electricity with special emphasis on electric wiring, electrical machinery and plan reading were given thru our vocational schools. The most successful course that is now being conducted is under the supervision of the Master Plumbers' Association."

The Philadelphia Builders' Association have a special committee co-operating with the Building Trades and Board of Education on this problem.

The Elevator Manufacturers have taken steps to make elevator construction more attractive and the working conditions better for the apprentices.

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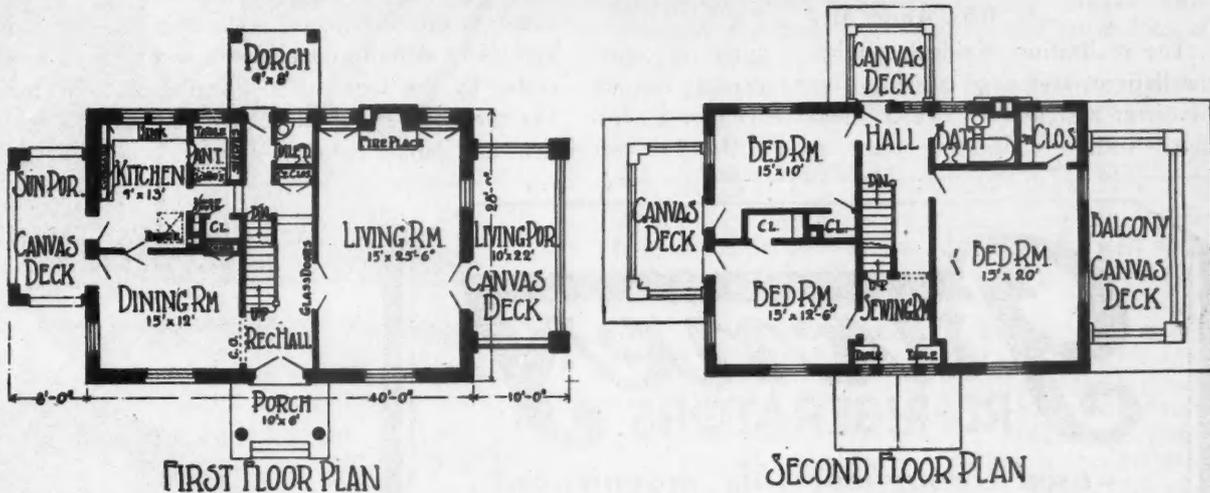
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CON-SER-TEX

FOR PORCH FLOORS AND ROOFS



IN this feature home (see page 112) Con-Ser-Tex is required both for greater durability and pleasing appearance. The porch floors and roof can be made more durable, attractive and serviceable by using Con-Ser-Tex.

Con-Ser-Tex is a specially prepared cotton fabric, scientifically treated in such a way that it will not crack, stretch, peel, leak or rot. Easy to lay and saves time and labor.

It is an ideal covering for porch floors and roofs, for valleys and hips and for gutter linings and durable flashings.

BUILDING MATERIAL DEALERS:

We have a very attractive proposition for you. Write for it today.

WILLIAM L. BARRELL CO. of N. Y.
50 Leonard Street NEW YORK CITY

CHICAGO DISTRIBUTORS:
Geo. B. Carpenter & Co.
430-40 N. Wells Street

CALIFORNIA DISTRIBUTORS:
Waterhouse-Wilcox Co.
San Francisco & Los Angeles



Windows in this sun parlor are equipped with unit balances and special tape hook devices

The Invisible Element

(Continued from page 130.)

above. By following such a method you will find that the atmospheric condition is such that at no time will there be more than six parts of CO₂ or breath to ten thousand parts of air and by the scientific distribution of your return pipes you have prevented any noticeable or dangerous drafts upon the floor.

Why Warm Air?

The realization of ideal conditions must rest upon the indirect system of heating, for to attempt the use of direct system (hot water, steam or vapor), combined with a ventilating plant, makes the cost far

beyond the means of 90 per cent of the home owners in addition to being inadequate. But if you will demand the construction as outlined above, you will have gone a long way towards the realization of your life's dream of a home that means much to the comfort and health of the occupants.

Can you really afford to subject your family to unnecessary discomforts and dangers if the adoption of a proper heating and ventilating system would eliminate 90 per cent of the so-called "bad air diseases" and lessen the mortality in the home 50 per cent during the winter months?

The Invisible Element

Pure air is your salvation. None of you can afford to be without it in your homes, otherwise, why did nature utilize more than one-half of your main trunk for an apparatus to handle clean air. If it means so much to your happiness and general health, is it not worth the effort to investigate the subject and make your home during the winter months a safe refuge for the ones most dear to you?

Mass-psychology and precedent to a very large extent govern our actions and rule the world, very often to our detriment. The thinker—the man who arrives at definite conclusions and evolves new principles by the logic of his own mind—the man who has the courage of his convictions and defies precedent and public opinion—is rare.

Gurney

REFRIGERATORS

—used throughout this magnificent apartment building

After careful consideration, the builder of the Briar Apartments—one of the finest buildings ever erected in Chicago—chose the Standard Gurney which insures to its tenants the best in efficiency, economy and appearance.

Whatever your refrigerator need the big Gurney factory can supply it, and at moderate cost. Let us figure with you on your next building.

Catalog sent on request

GURNEY REFRIGERATOR CO.

FOND DU LAC, WISCONSIN

Permanent Chicago Exhibit

308 N. Michigan Ave.

The BRIAR APARTMENTS

Broadway and Briar Place
Chicago, Ill.



Brasco! Chango!



You can do this trick

Thousands of your brother carpenters and contractors all over the United States and Canada are busy remodeling old store fronts and making good money at it.

The opportunity exists in every community. Right in your town are store fronts that will be remodeled.

JUST STOP AND THINK

There will come to your mind several store fronts that might be remodeled. We will help you get that contract if you just send us the name of the prospect.

We will give him interesting data and booklets on the value of Brasco copper store fronts as a trade getter and we will furnish you with every possible help in completing the job. You don't need experience if you are a capable carpenter. We will give you detailed instructions. At any rate fill out the coupon below and get the details of our proposition. It won't cost you anything to investigate this offer.

REMEMBER THE NAME

Brasco
COPPER STORE FRONTS

BRASCO MFG. CO.
5029 S. Wabash Avenue
CHICAGO, ILLINOIS

Gentlemen: Please send me your FREE booklet on Copper Store Fronts and complete details of your special offer.

Name

City

State

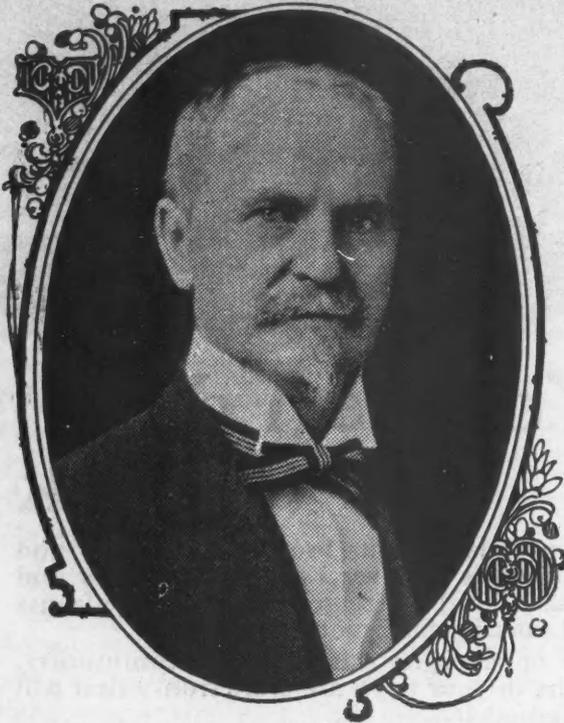


Will outlast them all

NEWS OF THE FIELD

Thos. P. Egan Dies

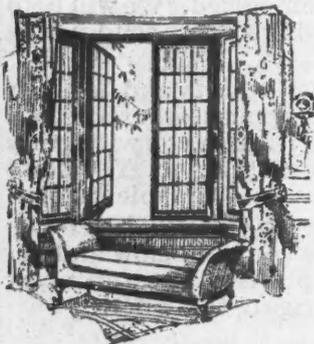
DEATH has claimed Thomas P. Egan, 74 years, president of J. A. Fay & Egan Co., Cincinnati, O. Thomas Patrick Egan was a resident of Cincinnati nearly all his business life. He was born Nov. 20, 1847, in Limerick, Ireland,



J. P. Egan, Well-Known Manufacturer, Who Died Recently.

and when an infant was brought by his parents to Hamilton, Ontario. As a boy, after leaving school, he was in the employ of dry goods houses in Hamilton and then in Detroit, but when 16 years old his mechanical bent led him to Cincinnati, where he secured a position in a machine shop. After a few months he changed to the firm of Steptoe, McFarlan & Co., which at that time was one of the heaviest manufacturers of woodworking machinery in the United States. He remained with them 12 years. Early in his employment with this firm he had the misfortune to lose an arm. Up to that time he had been engaged in the manual processes of the shop, but the accident sent him into the office, where he studied bookkeeping and the technique of the business, which started him on his career of inventor, manager and employer.

In 1874 he decided to begin business on his own account, and with two partners opened a little shop, where at first the partners constituted the entire force. Seven years afterward, however, in 1881, the Egan Co. was incorporated with a capital of \$150,000, with Thomas P. Egan as its president. This enterprise was successful from the first. It was located across the street from the establishment of J. A. Fay & Co., then the most important woodworking machinery establishment in the country, and of which it became a rival. The commercial battle was a warm one, and finally resulted in the consolidation of the two companies in 1893 under the style of the J. A. Fay & Egan Co., of which also Mr. Egan was president. While busily engaged with the multitudinous affairs of his own business, Mr. Egan showed the spirit of a good citizen and was always ready to do his share in any movement for the advancement of the city or of his industry or the country. He was organizer and first president of the National Association of Manufacturers, was active in the citizens' organizations of his own city. He was elected president of the Cincinnati Chamber of Commerce in 1908.



Wherever
there is
a casement,
pivoted or
transom
window there
is need for
the

MONARCH

Automatic CASEMENT STAY

Artistic—Sturdy—Simple

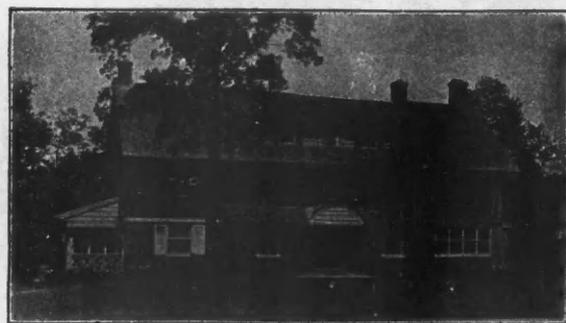
Made in two models—for inswinging and outswinging windows. Can be attached, concealed or exposed, at right or left, top or bottom. Simply open window to any desired position and it "stays put"—positive and noiseless. Designed to insure permanency and satisfaction in operation.

Write for Manual of Casement Hardware
Detail, approved by A. I. A.

MONARCH METAL PRODUCTS COMPANY

4980 Penrose Street

St. Louis, Mo., U. S. A.



Stained with Cabot's Creosote Stain.
B. V. White, Architect, New York

Save Half Your Painting Bill

You can actually save more than half the cost on both material and labor, and get better results in beauty of coloring, wearing qualities and wood preservation, by using

Cabot's Creosote Stains

Instead of paint, on shingles, siding and all similar outside wood-work. The colors are rich and handsome, not "painty." They wear as long as the best paint and wear better, and they are made of creosote, which penetrates the wood and thoroughly preserves it.

Cabot's Quilt

A genuine house-warmer. It's a cushion of dead-air spaces and is 30 times warmer than building paper. Quilt will pay for itself in a short time in saving coal, to say nothing of making the house comfortable for all time. Also a complete sound-dampener.

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

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

242 Madison Ave., New York 24 W. Kinzie St., Chicago
Cabot's Conserve Wood Preservative, Stucco Stains, Brick Stains, Damp-Proofing

IMPERISHABLE as ancient masonry — trust-worthy as the staunch pillars of the storied Parthanon of old Greece, **KELLASTONE** today is the symbol of modern architectural beauty, durability and strength.

KELLASTONE IMPERISHABLE STUCCO

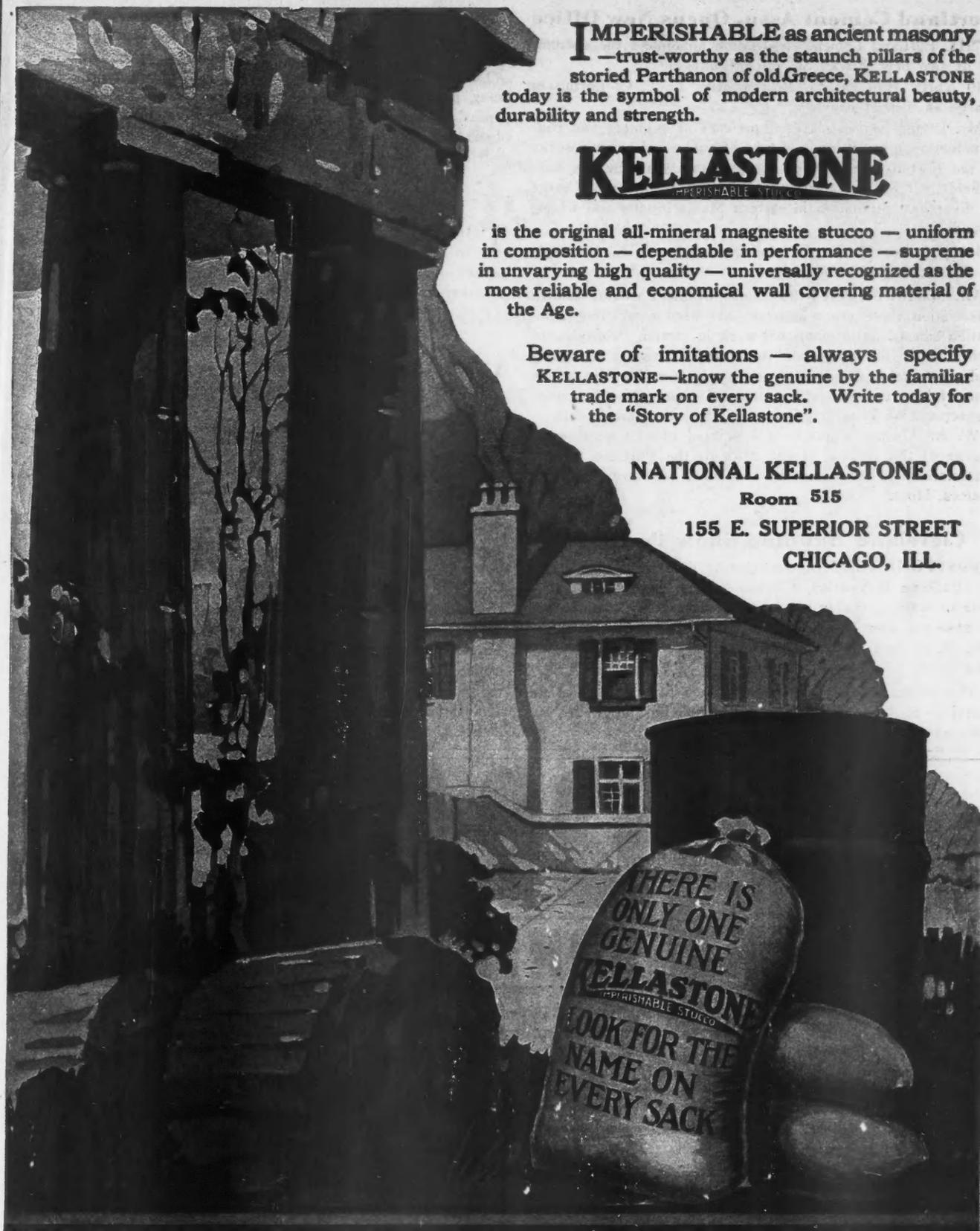
is the original all-mineral magnesite stucco — uniform in composition — dependable in performance — supreme in unvarying high quality — universally recognized as the most reliable and economical wall covering material of the Age.

Beware of imitations — always specify **KELLASTONE**—know the genuine by the familiar trade mark on every sack. Write today for the "Story of Kellastone".

NATIONAL KELLASTONE CO.

Room 515

155 E. SUPERIOR STREET
CHICAGO, ILL.



KELLASTONE IMPERISHABLE STUCCO

WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

Portland Cement Assn. Opens New Office

THE Portland Cement Association announces the opening of two new district offices, as follows:

10 North High Street, Boston, with L. T. C. Loring in charge as district engineer.

Mr. Loring has had large experience as engineer and construction superintendent in charge of public and private works in the Boston district. For the past two years he has been a field man for the Portland Cement Association in charge of diversified promotion in eastern Massachusetts and Rhode Island.

1001 Finance Building, Philadelphia, with D. S. MacBride as district engineer in charge.

Mr. MacBride entered the employ of the Portland Cement Association three years ago and has been conducting association educational-promotional work in eastern Pennsylvania. Previous to this connection he served as testing, designing and construction engineer on large private and public works. One of his connections was that of construction engineer, Department of Wharves, Docks and Ferries, Philadelphia.

W. A. Alexander has been appointed district engineer in charge of the Helena, Mont., office of the Portland Cement Association. The address of this office is Power Building, Helena, Mont.



Cleveland Building Show Postponed

POSTPONEMENT of the opening date of the American Building Exposition, Cleveland, from February 22 to a date in April, probably not later than the 18th, is announced because the new Cleveland city auditorium is not complete. The Exposition is to be the first public attraction in the new building.

This is the second postponement thru failure to have the building finished upon schedule time. Originally it was scheduled to open in January 4.

Both floors of the auditorium will be utilized, and from the variety of exhibits already booked the show promises to be one of the most complete and extensive of the year.

The Exposition, sponsored by the Builders Exchange, is being put on upon a cooperative, non-profit basis, the net profits to be rebated pro rata to the exhibitors, the sole object being to stimulate building interest in the Cleveland district.



Blystone Factory Burns

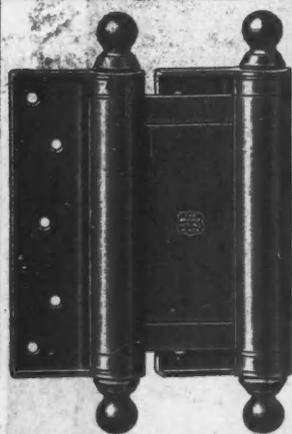
THE Blystone plant, Cambridge Springs, Pa., was burned to the ground on Feb. 12, with a loss of \$100,000. Temporary quarters have been arranged for and customers will be taken care of without much delay.



Chain Belt Official Dies

WILLIAM C. SARGENT, for twenty-two years secretary and also a director of Chain Belt Company, Milwaukee, died suddenly on February 5th of heart failure. He was 73 years old, and had been in ill health for several years.

Mr. Sargent, prominent in industrial circles of Milwaukee and St. Paul, had a wide national acquaintanceship. He was born at Troy, New York, Feb. 2, 1849. In 1871 he moved West, locating at St. Paul, where he organized the De Cou, Corliss and Sargent Company, manufacturers of sash and doors. He later became affiliated with the St. Paul Harvester Company, where he met C. W. Le Valley, who later founded the Chain Belt Company of Milwaukee. This meeting was the beginning of a long business association for in 1900 Mr. Sargent went to Milwaukee to become secretary and later a director of the Chain Belt Company. He was also a director of the Federal Malleable Company, West Allis, Wisconsin. His father was one of the founders of the Terre Haute, Alton & St. Louis Railroad.



BOMMER

SPRING HINGES

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

BOMMER SPRING HINGE COMPANY MANUFACTURERS, BROOKLYN, N. Y.

CLEAR FLOOR SPACE

Without trouble or risk is an easy problem if you use **McKEOWN TRUSSES**



Assembled and erected on job or shipped knocked down
For spans from 30' 0" to 130' 0"

McKEOWN BROS. COMPANY, 112 W. Adams Street, Chicago, Illinois
21 East 40th St., New York, N. Y.

The Hundred and One Jobs Rope is used for

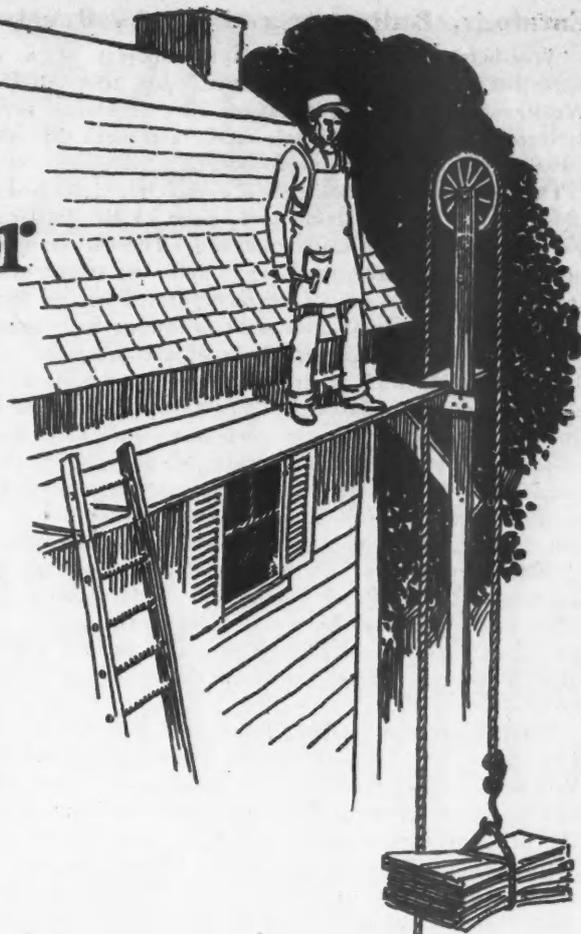
The hoisting of shingles, nails, lumber, etc., requires rope — not much rope, of course, but a considerable item during the year.

The buying of Plymouth Rope would cut down this item very materially, for Plymouth Rope lasts longer and is lighter than the general run of rope.

It is easier to handle, for it is made of just the right grades of pure Manila fiber, soft and flexible. And every piece of Plymouth Manila Rope is like every other piece of the same size and type for strength, wearing qualities and service.

*You can trust
Plymouth Rope*

Plymouth Cordage Company
NORTH PLYMOUTH, MASS.
WELLAND, CANADA



Since 1912 all Plymouth Rope $\frac{1}{16}$ " in diameter and larger has contained a spun paper marker guaranteeing its quality.



PLYMOUTH *The Rope You Can Trust*

Catalogs, Bulletins and Books Received

"Weatherstrip Installations" is the subject of a new attractive folder being distributed by the All-Metal Weatherstrip Company, Chicago, Ill. It shows several pictures of buildings, hotels and residences in which these installations have been made.

The "Kozy-Kitch" kitchenet is completely described and illustrated in a new catalog just issued by the La Grange Fixture Corporation, La Grange, Ind. The various models of this kitchenet are shown as well as some of the individual features which are incorporated in the fixture. Typical floor plans of apartments showing how space is saved thru the use of this kitchenet are presented.

"Modern Homes," distributed by the Southern Pine Association, New Orleans, La., is an attractive little booklet containing pictures and plans of fifty homes selected with a view to offering to the public utmost comfort at least cost. These homes are designed by architects, mainly for Southern climatic conditions, but can be adapted to other sections with minor alterations.

"The Miracle Door" is the title of a new catalog being distributed by the Paine Lumber Co., Ltd., Oshkosh, Wis. This book contains thirty-six pages with double cover and is printed in colors, showing the various types of Miracle doors. These doors are shown in their natural finish.

"Lighting of the Clothing Industry," "Lighting of Large Dry Goods and Department Stores," "Lighting of Metal Working Plants," "The Eye as Affected by Illumination" and "The Lighting of Sign and Billboards" are some of the titles of a new series of bulletins just issued by the Edison Lamp Works of the General Electric Co., Harrison, N. J. These bulletins contain some valuable information on the subject of efficient electric lighting.

Lakewood Concrete Placing Equipment is the subject of Bulletin 23-C issued by the Lakewood Engineering Co.,

Cleveland, Ohio, on concrete chuting equipment. The catalog is devoted to an explanation with pictures of the method of using various types of chuting plants. Detail specifications are given and dimension sketches shown in blueprint form.

Vendor Roofing Slate is the subject of a new book for architects and builders published by the Vendor Slate Co., Easton, Pa. This book contains a short outline of the Vendor company, specifications as to roof treatment, the uses of architectural slate, and information about slate in general. It has some excellent illustrations of buildings in which slate has been used for interior and exterior purposes.

"Mixers" is the title of a new catalog just issued by the Lansing Co., Lansing, Mich. This is catalog No. 17C and contains illustrations and descriptions of equipment for contractors, including mixers, hoists, water tanks, mortar mixers, etc.

THE APEX DAMPER

YOUR FIREPLACE WILL NOT SMOKE

THE HOUSEWIFE will like the safety device, damper cannot be shut accidentally when fire is burning.

THE ARCHITECT will be sure down draft check is correct and construction good without watching, he is sure his best designed room will not be ruined with smoke.

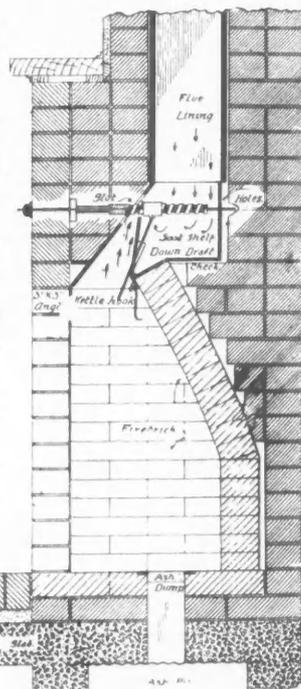
THE MASON will appreciate the moveable handle, and the plate to start inside brick on. No firebrick to cut and no annoying mechanism. Damper can be placed after removing refuse off soot shelf.

Movement positive and easy and regulation to 100th part of an inch. A kettle hanger.

APEX FIREPLACE CO.
URBANA, ILLINOIS

Sizes:
34", 38"
42", 30"

SEND FOR WORKING DETAILS



New Fireplace Throat Arrangement Designed to Cut Labor Time and Improve Draught

BE A WEATHERSTRIP CONTRACTOR

Make \$5,000 to \$10,000 or More Yearly

Prepare for the Spring Building Boom

SELLING and installing weatherstrip is a new and uncrowded business. The spring season is going to be alive with opportunities for the contractor-agent who is equipped to go after this business.

ALLMETAL Weatherstrip is favorably known and preferred by architects and general contractors.

Get Our Selling Proposition Now

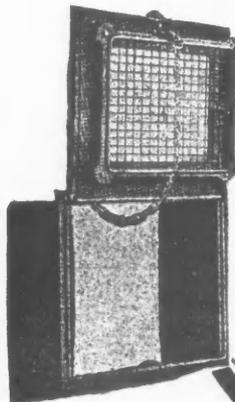
Between this and spring you can be equipping old buildings and landing contracts for new buildings to be put up later. Every building is a prospect. Hundreds of buildings right now in your vicinity need weatherstrip.

Get Into a Business of Your Own

Don't get caught out of work again—build up a business of your own and one that pays big. We furnish models and assist you to land contracts. Weatherstrip contractors make good money right from the start.

Write today for complete information

ALLMETAL WEATHERSTRIP CO.
124 West Kinzie Street CHICAGO



The "BEST" COAL CHUTE

LOOKS WELL WORKS WELL and PAYS WELL

A few other articles in the "BEST" line

Chimney Cap, Revolving Chimney Top, Stud Socket, Stock Fountain, Cleanout Doors, Cistern Covers, Cast Iron Thimbles, Cesspools, etc. Foundation Grates.

Write for information.

STERLING FOUNDRY COMPANY
8 AVENUE A
STERLING, ILL.

Pleased Customers Bigger Profits

THAT'S WHAT WHITNEY WINDOWS
MEAN TO YOU

They completely overcome all the faults, inconveniences and inartistic appearance of old style check-rail, drop sill or tipping windows.

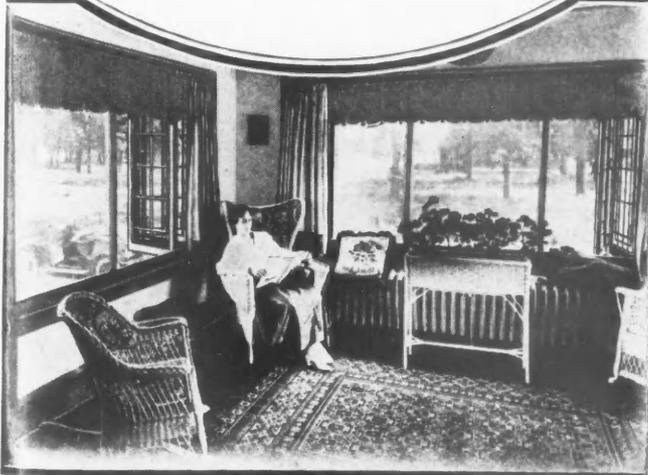
Whitney Windows

open outward out of the way—slide easily to any point in the opening, permitting wide, unobstructed view. Don't interfere with screens. Can't stick, rattle or slam. Storm-proof when closed.

In your "Biltwell" and "Universal" Millwork catalogs you will find full details. Look them up—then write us for full information—*It's Worth While.*

Whitney Window Corporation

134 East Lake Street Minneapolis, Minn.



WHEN WRITING ADVERTISERS PLEASE MENTION THE AMERICAN BUILDER

The 1922 STAR FREE OFFER

To Contractors

Here's one of the best metal pencils money can buy—always sharp and ready for use—with a handy clip to hold it in your pocket so it won't drop out and get lost when you stoop over.

**FREE to
Contractors**
*The Handiest
Pencil You've
Ever Owned.*

Extra leads in the cap—full size—not an "advertising" makeshift but a genuine Shur-Rite—bought by us for our contractor friends, and yours for nothing if you'll send us the names of the farmers in your locality who are thinking of building or remodeling their barns.



Actual Size

We Don't Sell Pencils

We buy them and give them to our contractor friends with our compliments to remind them of Star Barn Equipment.

Use the Coupon Below

Put down on the coupon below the names of the farmers in your vicinity who are thinking of building or remodeling barns—sign your name and address and mail it—(if the coupon isn't big enough, use a sheet of paper) and we'll send your Shur-Rite Pencil. And when you think of barn equipment, barn door and garage fixtures, remember your friends—

Hunt, Helm, Ferris & Co.

Everything for the Modern Barn

Harvard, Illinois Albany, New York
Los Angeles, San Francisco, Portland, Oregon

STAR 
Equipment

Hunt, Helm, Ferris & Co., Harvard, Illinois

Kindly send me free of all charge, one of your genuine Shur-Rite Pencils. I am giving you below names of a few people in my vicinity who are thinking of building or remodeling barns.

NAME _____ ADDRESS _____
These people are thinking of building or remodeling barns.

| NAME | TOWN | STATE |
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THE LANSING No. 7.-S

A Real One Bag MIXER

A speedy mix and discharge is accomplished by the reliable bucket and blade method of mixing. The drum has 6 extra large Discharge buckets and 9 mixing blades. All operating levers are within reach of one operator.

Lansing loading skips are very efficient because they elevate to an exceedingly steep pitch. The brake is positive in action and absolutely non-dragging. It is controlled by the same lever that controls the Clutch. The brake sets automatically when lever is released.

Let us send you our latest spring catalog to select your equipment from. It illustrates our complete line.

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Illustrating Our Complete Line of
GUARANTEED EQUIPMENT

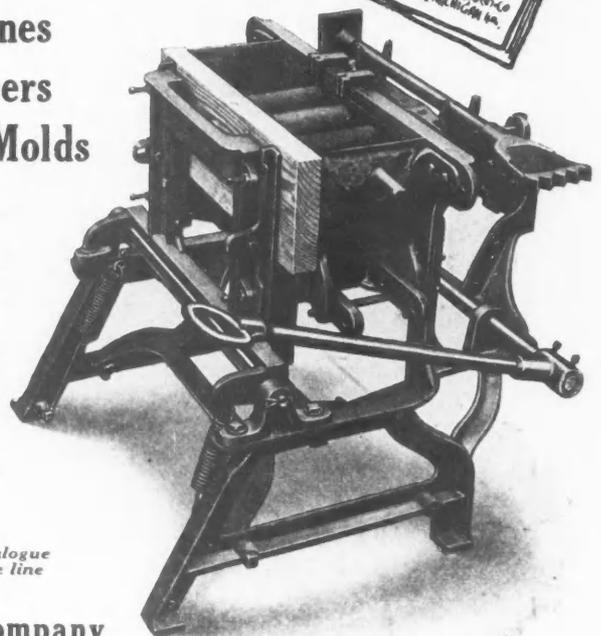
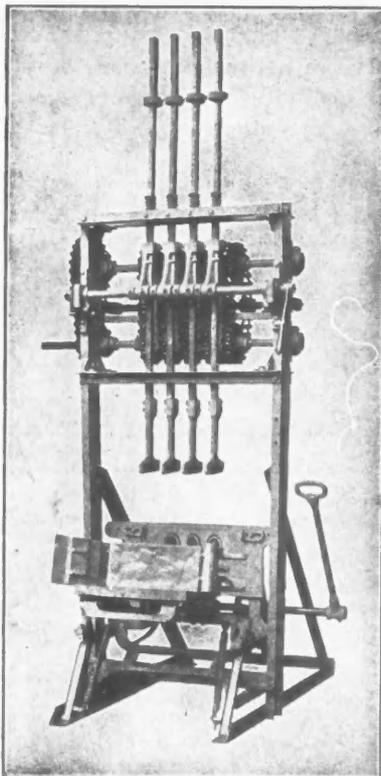
**Block Machines
Power Tampers
Mixers and Molds**

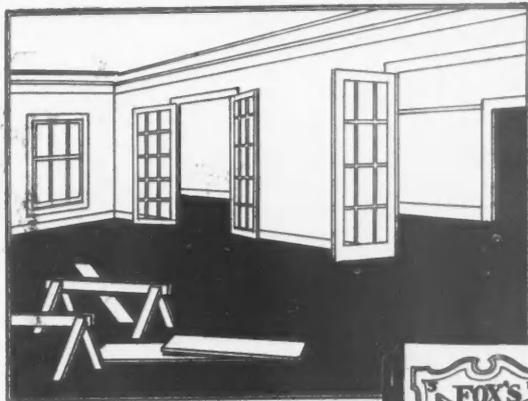
All of our equipment is strong and dependable, built for the most trying service and fully guaranteed.

Added to the high quality of Miles Equipment is our low prices for first cost and cost of operation. Don't fail to investigate the Miles line at once.

Write us for general catalogue describing our complete line

The Miles Mfg. Company
Dept. F JACKSON, MICHIGAN





NEW WALLS -decorate them With MURALITE

THE simplest and easiest and most inexpensive way to decorate is to give the walls and ceilings a coat of Muralite.

At a cost of *two dollars* you can finish an entire room with this soft, velvety, water color coating.

It is made in white and in fourteen beautiful colors—an endless variety of shades may be gotten by intermixing these standard colors.

It is very simple to mix Muralite and anyone can use it successfully—it may be recoated, or it is easily washed off and the wall done over.

The beauty and economy of the Muralite coating make it exceedingly satisfactory to the home owner or the tenant.

We would like to send you our sample color card and tell you all about Muralite.

M. EWING FOX COMPANY
New York Chicago

A PAIL · A BRUSH · HOT WATER · AND
MURALITE
MAKES A PERFECT WALL FINISH

Could You Plan and Figure Costs on a Home or Business Building?

Learn How to Handle Big Jobs

BUILDING is sure to "pick up" before long. People already need more homes, business will soon need more stores shops, factories and warehouses. Greater opportunities than ever before are coming for building experts—men who know how to plan, estimate and direct work.

If you are the workman on the job, this is your time to prepare to be the "boss." If you are now a foreman, get ready to hold a bigger job or to start as a contractor.

If you are doing contracting in a small way, more knowledge of building methods will enable you to take on more profitable jobs.

The man who can use his head to the best advantage is the one who will make the money in the building business

Complete Courses for Men in the Building Trades

Real blue print plans and specifications to study. Fully explained by our experts who have had years of experience in building construction. All this at little cost to you and on easy terms.

We Teach You

Plan Reading—How to read a building plan. How to read dimensions. How to read detail drawings. How to layout work from plans. How to stake out buildings. Practice in reading complete blue print plans from basement to roof, etc., etc.

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Superintending—Methods of work on all classes buildings. Uses and preparation of all kinds of material. Hiring and handling men.

Also Special Courses in Architectural Drafting for Carpenters and in Plumbing and Heating and Ventilating, all taught by practical men.

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This free lesson in **Plan Reading** shows how easily you can grasp the subject by the Chicago "Tech" method. Nothing to pay for this—sent to show how you can advance by taking a Chicago "Tech" home study course. Coupon brings it FREE.



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The Jobs That Count Are The Jobs That Pay

Too often contractors come out with a loss or too little profit on jobs. Lack of equipment or equipment that does not deliver results is usually the reason for the losses. Don't let this year end without a substantial increase in your bank balance.

Concrete work — of which there will be more than ever — can be done profitably by the use of this efficient little mixer. It is a result-getter and a money maker.

It Will Keep All Hands Busy

A half-bag machine that mixes as much concrete as many mixers of full-bag rating and requires but one-half minute for mixing and about one-quarter minute to discharge the batch will keep the gang going without waiting for concrete.

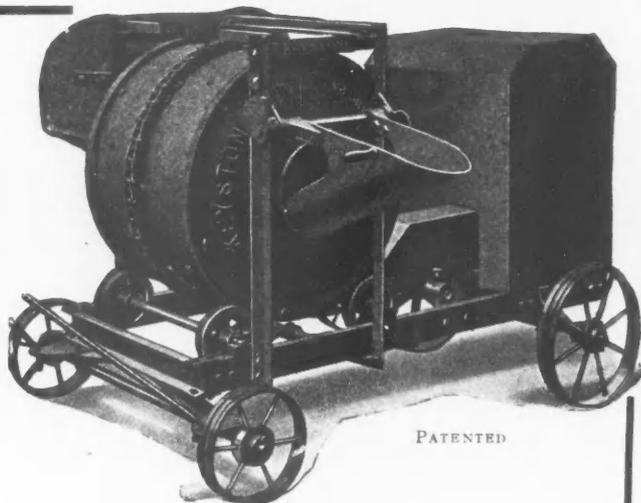
Let Us Tell You Why and How

An illustrated folder explains the principle and operation of the mixing drum, shows views of the machine and give complete specifications. Write today for a copy of this folder. Ask for Bulletin B.

GRAY IRON FOUNDRY CO.

Established 1903

READING, PENNSYLVANIA



KEYSTONE

MODEL SIX
HALF-BAG

ALL-STEEL MIXER

Excess Capacity
Excess Power
Excess Strength

SIMPLE

STRONG

EFFICIENT

FRANK MIXERS

are time and labor-savers—a batch a minute, no tilting or tipping—no slop over or spill—no waste.

A Contractor's Best Investment

The logical machine for a busy builder—requires the minimum of attention—can be used on all jobs—mixes mortar or concrete easiest to charge or discharge.



Low Cost and Upkeep

The extreme simplicity in the construction of Frank Mixers—the few working parts which are made of the best material—enables us to sell this machine at a price much lower than other complicated mixers. There is never anything out of order—their perfect simplicity and sound practicability demand the praise of contractors everywhere.

Let us send you particulars

Frank Manufacturing Co.

241 Century Building

DES MOINES, IOWA

Here's a real Serviceable Screw Holder "YANKEE"

No. 110
(5 SIZES)

Great for over-head work and in tight places.

Think a moment, how often you need quickly, a real serviceable screw holder for some overhead work, or some place out of reach with an ordinary driver.



This screw holder is carried on the back of the blade out of the way, when not in use, but right at your fingers' ends when you need it.

Slip it out over the bit and it is ready. Compressing the spring forward with the thumb opens the jaws. Insert the screw head, release the spring and you are ready to drive the screw.



The holder releases itself as the screw sinks into the wood. Can you think of anything easier and quicker? They are made in five lengths of blade—3 to 8 inches.

Your dealer can supply you and save you time. If not, write us for prices.

Send for the "YANKEE" Tool Book

NORTH BROS. MFG. CO.
Department A PHILADELPHIA, PA.

Be a Floor Surfacing Contractor Make \$5,000 to \$15,000 or More Yearly



This is a new, uncrowded field. Floor Surfacing Contractors are making big money resurfacing old floors in homes and office buildings and working with general contractors who prefer to sublet the floor surfacing contracts. It is a big business in itself. Business comes easily by American Universal Method. We furnish office forms, advertising cuts, business cards, mailing cards—in fact, everything to set a man up in business.

PREPARE FOR SPRING BUILDING

With American Universal Machine

Building cannot remain inactive. The housing problem is more serious now than at any time in history. The coming Spring will be alive with opportunities of those equipped to handle the work. The American Universal Machine is essential to hustlers. Get in on the ground floor—Get the Machine now. It will earn more than the original investment before spring by

RESURFACING OLD FLOORS

Don't Ever Get Caught Out of Work Again—No Dull Seasons in This Business

There are hundreds of homes and office buildings being remodeled—in every case, the floor is the first consideration. There are hundreds of floors right in your own neighborhood that really need resurfacing. Hundreds of people can well afford to have the work done and will be glad to have you do it when shown the American Universal Method.

This machine is electrically operated and surfaces more floors in a day than six men can do by hand. Works alike on new and old floors and on any size from cottage to largest auditorium. Surfaces clear to wall without hand work.

Contractors and architects prefer its work because it leaves no sander waves or chatter marks. Leaves job clean—vacuum fan leaves dust and dirt in bag. Machine will pay for itself the first month.

Floor Surfacing Contractors Make \$20.00 to \$50.00 a Day

"I am making floor surfacing a specialty with the 'American Universal' and find it a good paying proposition. My average earnings are \$28.00 per day." Geo. R. LaFinch, Mass.

"I make the 'American Universal' way of floor surfacing a specialty now and my average earnings are at least \$20.00 per day." J. A. Natzel, Ariz.

"When this little town of 6,000 people was building, we made from \$350.00 to \$700.00 per month with the 'American Universal' but our best earnings per day have been \$100.00, \$80.15, \$68.50, \$62.00 and \$80.00."

M. L. Derstine, Calif.

"I have earned as high as \$50.00 with my 'American Universal' machine and wish to thank you for the courteous treatment I have received from you." Edward McKernan, Nebr.



Don't Pass Up This Opportunity to Get into A Business of Your Own. Write Today for Complete Literature

The AMERICAN FLOOR SURFACING MACHINE COMPANY

Originators of Floor Surfacing Machines

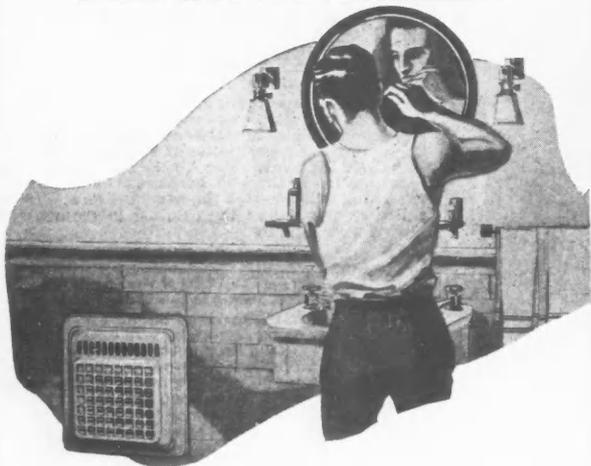
515 So. St. Clair Street TOLEDO, OHIO

The American Floor Surfacing Machine Company
515 So. St. Clair St., Toledo, Ohio

Gentlemen: Please send me without obligation to me, complete information and literature on your proposition. The following information will no doubt assist you in advising me.

- () I want to become a Floor Surfacing Contractor.
- () I am not now a contractor of any kind but was in following business:
- () I am a Building Contractor and want to use it on my own contracts.

Name.....
Street.....
City.....State.....



Build Comfort Into Your Houses

THE Reznor Bathroom Heater puts comfort into a home, where it is usually lacking.

The occasional heat required in the bathroom for shaving, bathing and dressing, must be instantly and generously available on demand.

The Reznor Bathroom Heater burns at 100% efficiency from the second the match is applied. No waiting for the heating of clay or metal.

The Reznor is easily installed in any standard stud partition and occupies no floor space. It is the only appliance of this kind on the accepted list of the underwriters' laboratory, established and maintained by the National Board of Fire Underwriters.

Finished in permanent white enamel to match bathroom fixtures, the Reznor Bathroom Heater adds to the appearance of any bathroom. Burns either natural or artificial gas.

Write for this free booklet and complete information regarding the Reznor Wall Heater and specifications for its installation.

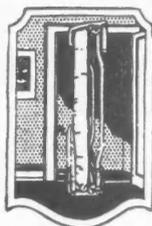


Reznor Manufacturing Company
52 Main Street MERCER, PA.

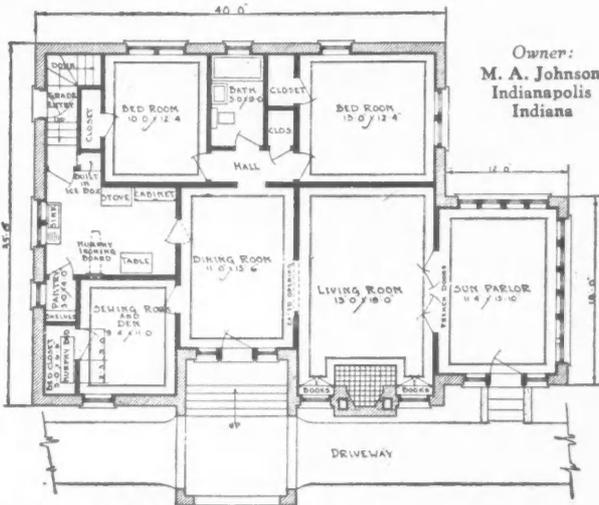


The MURPHY IN-A-DOR BED

ENHANCES THE VALUE OF ANY DWELLING—



and increases the salability and utility of any small house or apartment. Converts any room into a bed room at night—saves furnishing cost. Note the use of the Murphy bed in the home pictured above.



OUR TECHNICAL DEPARTMENT is always at your disposal. Architects and builders have found it most valuable on account of our fund of practical ideas based on years of experience—and the time-saving features. This service is gratis. Ask for full information.

Simon's Springs are used exclusively in THE MURPHY IN-A-DOR BED. "Built for Sleep."

THE MURPHY DOOR BED CO.

Offices in all Principal Cities

- 22 West Monroe Street, Chicago
- 469 Fifth Avenue, New York
- 1534 Blake Street, Denver
- 912 Kresge Bldg., Detroit, Mich.
- 205 O'Connor Street, Ottawa, Can.
- Crocker Bldg., San Francisco
- Chemical Bldg., St. Louis
- 709 Second Ave., Seattle, Wash.
- 1140 1142 Hanna Bldg., Cleveland
- 1221-23 Grand Avenue, Kansas City
- 220 N. St. Paul Street, Dallas, Texas
- 204 Peach Tree Arcade, Atlanta, Ga.

There is only one "In-A-Dor" Bed—THE MURPHY



Uniform in Quality

MADE by accurate, machine methods, inspected and graded according to fixed standards, American Window Glass Co. products can always be depended upon to be uniform in quality, in thickness and in strength. Open one box or fifty of the same grade and weight, and every light will match every other. A second shipment will match the first.

Highest Standards

First, second and third quality are comparative terms. The grading standards used in American Window Glass Co. factories surpass any others in use in the United States. Our "A" quality lights (seconds) are hardly distinguishable from "AA." Our "B" quality (thirds) are practically as clear as ordinary second grade. And for your protection the grade marking is branded on the end of every box—make sure that this marking has not been changed.

See Sweets Architectural Catalogue for details of our grading standards.

AMERICAN WINDOW GLASS CO.
 GENERAL OFFICES—PITTSBURGH, PA.
Branches in Principal Cities



Every Window and Every Door Needs Weatherstrips

Profits for you!

Building supply dealers, contractors and carpenters can build a handsome income selling and installing Ceco Metal Weatherstrips. Make it your business. Or add it to your line. A money-maker in either case.

Wide-awake men see the rapidly increasing opportunities in weather stripping. Every building large or small, old or new, needs them.



Building owners are fast recognizing the importance of weatherstripping all openings. Ceco Metal Weatherstrips with their many advantageous features demand ready sales.



METAL WEATHERSTRIPS

"The 100% Efficient Weatherstrip"

Simplest and most practical strip on the market. Easy to sell and easy to install—a separate profit on both the sale and installation.

Little or no capital required—no experience necessary. We furnish everything—models, advertising, movie slides, prices, estimating information and installation instructions.

We have a proposition that is bringing big profits to hundreds of men all over the country. It can do the same for **you**. We will gladly mail the proposition in full. Don't let this opportunity slide by. It costs you nothing to find out.

Mail in the coupon. Do it NOW!



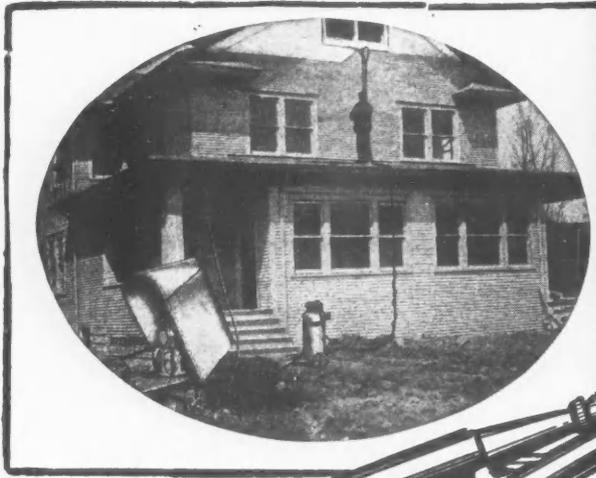
CONCRETE ENGINEERING CO.
 140 So. Dearborn Street
 Chicago, Ill.

I am interested in knowing more about your agency proposition—without any obligation on my part send me complete information.

Name

Address

Town and State.....



DO IT WITH AIR

The Old Way Costs Too Much

The waste of both time and paint where brush work is used is more than you would imagine.

With a Paasche Air Brush you can paint with ease and speed anything from an office chair to an automobile and get a better job.

The air DRIVES the paint into the pores of the wood or other surface to be painted. Air driven paint is on to stay.

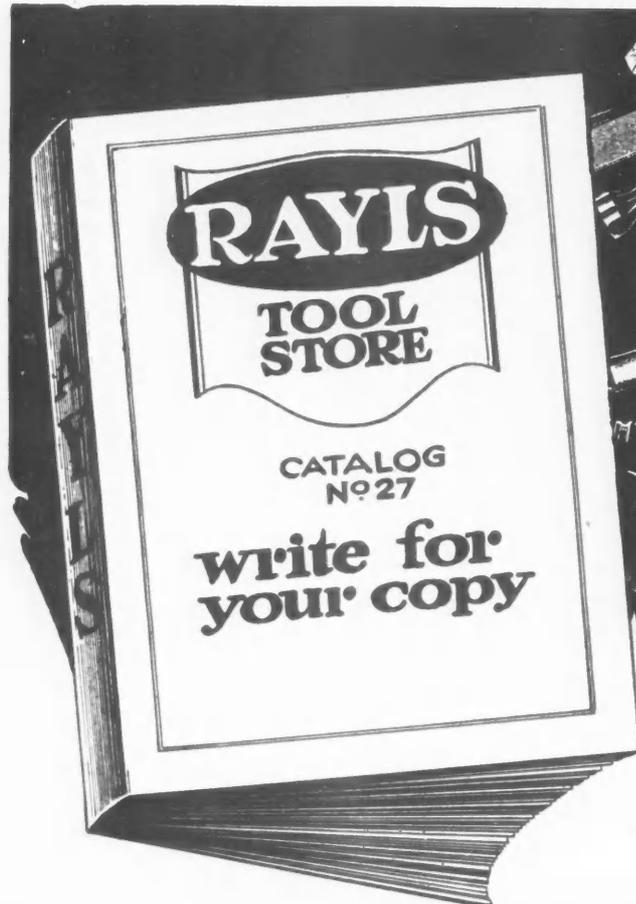
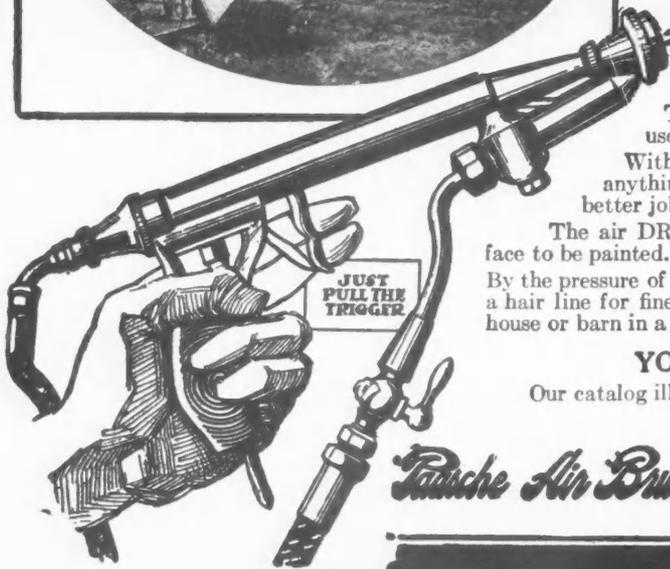
By the pressure of the finger on the trigger you can regulate the spray from a hair line for fine work to a big wide spray that will cover the side of a house or barn in a hurry.

YOU SHOULD SEE THIS BRUSH

Our catalog illustrates every detail of the Air Brush and its work.

WRITE FOR IT

Paasche Air Brush Co. 1230 W. Washington Blvd.
Chicago, Illinois



The Tool You Want is in the Book!

This catalog of 350 pages should be in your possession. Every type of building tool is listed and in many different makes.

If you are interested in a new tool just look it up in Rayl's Tool Store catalog.

We will be glad to mail you this book Free on request.

T. B. RAYL COMPANY
Grand River at Woodward Detroit, Mich.

You Draw The Plans and You'll Get The Job

\$5⁰⁰

Brings You

The Outfit Complete
A YEAR TO PAY

Thousands Have Won Success This Way

Here's a proven plan to increase your business, profits and reputation. Furnish the plans and you get the job, and at a fair price. Others do it, why not you? You know plans. With the right instructions and material you can draw them as well as any man. You get everything at once—no long drawn out correspondence course. And the price is astonishingly low. Let this advertisement mean a new start and a greater prosperity for you.

A Practical Outfit

Our proposition is so fair, straightforward and easy that you cannot refuse to investigate it in justice to yourself. Everything you need is in this outfit. Don't confuse this fine, practical drawing outfit with the small and cheap students' outfits often advertised. It is the most useful, simple, practical outfit for contractors and builders ever offered.

Begin Work At Once

The two special instruction books, "How to Draw Plans" by Dale and the Kidder-Nolan "Builders' and Architects' Handbook", included free, tell you how, simply and plainly, step by step. Enables you to begin at once to make plans and drawings and thereby to increase your business, reputation and income.

Sent On Free Trial

Let us send you this complete outfit at our risk. Try it for ten days. Note the completeness of the outfit, the quality and finish of every article. If you are not more than pleased with the outfit after ten days trial, return it and your \$5.00 initial payment will be refunded. If you decide to keep the outfit, pay it on Aloe's Easy Rental Purchase Plan.

Write For Literature

Mail the coupon to-day—it will bring you full particulars of this extraordinary offer—tell you about the outfit in detail—explain our easy payment plan—and show you how you can easily increase your business and profits. Be wide-awake. Act—Investigate—Write today.

MAIL COUPON TODAY

Name.....
Address

A. S. Aloe Co.
616 Olive St.,
St. Louis, Mo.

Without obligation, send me full particulars about your High-grade Draftman's Outfit.



FREE TRIAL

Outfit consists of

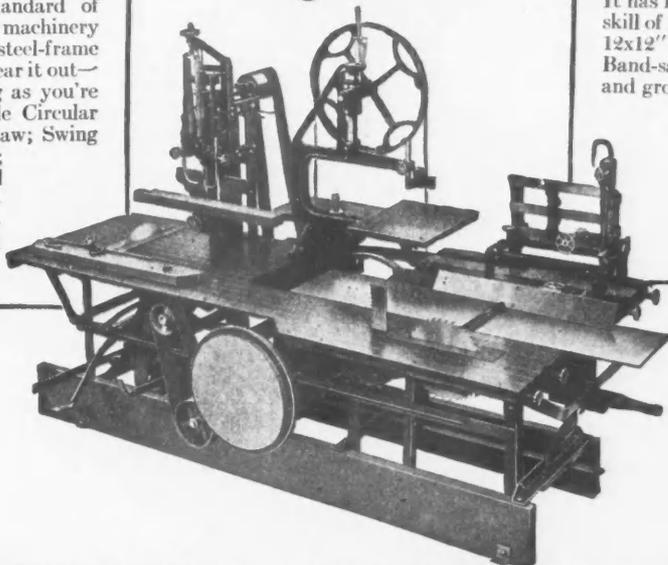
- 1 Complete Set of Drawing Instruments.
- 1 Portable Steel Table with Drawing Board.
- 1 Book: "How to Draw Plans".
- 1 Kidder-Nolan "Builders' and Architects' Handbook".
- 1 Ebony T-Square.
- 1 30x50 Celluloid 8 inch Triangle.
- 1 450 6-inch Triangle.
- 1 Celluloid Curve.
- 1 12-inch Triangular Scale.
- 1 Roll 36-in. Tracing Paper.
- 1 Roll 36-in. Detail Paper.
- 1 Four-foot Folding Rule.
- 1 Brass Protractor.
- 1 Doz. Gillott Special Pens.
- 1 Doz. Drawing Pencils.
- 1 Doz. Thumb Tacks.
- 1 Pencil Eraser.
- 1 Ink Eraser.
- 1 Pencil Pointer.
- 1 Bottle Red Ink.
- 1 Bottle Black Ink.
- 1 Gillott Pen Holder.
- 1 Piece Artgum.
- 1 Dixon's White Pencil.

A. S. ALOE CO. 616 Olive St. St. Louis, Mo.

What it is -

Eight necessary woodworking machines in one. The standard of high-grade woodworking machinery value. Stout, strong angle-steel-frame construction. You can't wear it out—it will work for you as long as you're in business. Double Table Circular Saw; Rip and Cross-cut Saw; Swing Cut-off Saw; Band Saw; Upright Hollow Chisel Mortiser and Borer; Tenoner; 12-in Jointer; Reversible Spindle Shaper; and Sander—all in one.

PARKS Planing Mill Special



What it does -

Does everything in woodworking. It has no limit, except the mechanical skill of the man who runs it. Surfaces 12x12" timber. Rips 5" material. Band-saws 7" stock. Makes tongue and groove mill-flooring. Works any timber a man can handle and saves time, money, labor-hire, and hard work. That means a bigger business and more income!

Get a Parks!

The Parks Ball Bearing Machine Co.
Fergus Street and C. H. & D. R. R.
CINCINNATI, OHIO

Canadian Factory:
200 Notre Dame East,
Montreal, Canada

Price complete

\$525.00

Guaranteed 10 years

10 days' trial

Send for catalog of all Parks machines

35

WOODWORKING PARKS MACHINES

\$49⁵⁰
down



Contractors: Use This Mixer—Pay from the Profits

Get this mixer to use in concreting this spring. Don't waste your good time doing the work by hand. No matter if you haven't all the cash to pay down, we will ship your mixer anyway. Pay for it out of the extra profits it will make for you.

On this offer, you can't afford to do your concreting by the old back-breaking methods.



FILLS ON ONE SIDE

ELMCO
HANDY CONCRETE MIXER



DUMPS ON THE OTHER

Here is the ideal mixer for the contractor. The famous ELMCO two-way dump, steel barrel—balanced right, in a stout frame—2 horse power gas engine, all mounted on a truck. Just the equipment to hook on behind your car when you rush around from one job to another. Mixes about three cubic feet per batch.

Put the ELMCO Mixer on the job early this spring—let it increase the profits from each of your contracts—let it pay for itself from the savings it will make for you. Mail the coupon today, filled out—and get ELMBERG'S offer to let you pay for it from your season's profits.

E. F. Elmberg Company
6863 Main Street
PARKERSBURG - - IOWA

WONDERFUL OFFER ASK FOR IT

E. F. ELMBERG CO.,
6863 Main Street, Parkersburg, Iowa.

Yes! I'm interested. I am interested in a mixer like you advertise, and want full particulars about your payment offer that will enable me to pay for it from this season's profits. This inquiry, however, does not place me under any obligations to buy.

Contractor.....

Town..... State.....



WHAT IS THE KIN-WI-CO SYSTEM?

Learn How It Gets More Contracts

PEOPLE come to you expecting ideas for homes. Can you show them a real **contract-winning** service?

The Kin-Wi-Co Homes System is an **independent** plan service—meant to make **your** business grow.

Kin-Wi-Co home designs are modern—perfectly planned—sure to attract and satisfy the better class of small home builders. The Kin-Wi-Co service shows the prospect what to build and permits you to tell him **exactly** what it will cost. The System includes methods for bringing prospects to you—and **clinches the sale** after they arrive.

More!—Under the Kin-Wi-Co System you become an exclusive representative—the **only one** in your town who can render the exceptional Kin-Wi-Co service.

Now—when the building rush is beginning—before some competitor gets the jump on you—find out why Kin-Wi-Co is the ideal plan service—send the coupon for full information—**TODAY!**

KIN-WI-CO HOMES SYSTEM
MIDDLETOWN, NEW YORK

KIN-WI-CO HOMES SYSTEM, Dept. A.,
Middletown, New York

Send at once full information about the Kin-Wi-Co System.

Name.....

Address.....

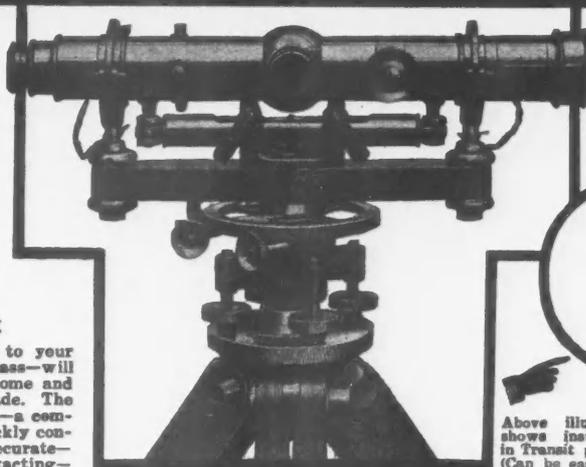
Level and Plumb With Your Own Instrument

\$5⁰⁰

BRINGS IT TO YOU

Better, Quicker Work

This instrument will add immeasurably to your efficiency and put you in the big builder class—will do more to increase your business, income and prestige than any investment you ever made. The Aloe Convertible Level is the world's best—a combination of both level and transit and quickly converted to the use of either. Absolutely accurate—satisfies the requirements of the most exacting—yet so simple that anyone can use it.



Free Trial

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



Above illustration shows instrument in Transit position. (Can be easily and quickly converted.)

FREE Write for this Book



Aloe Convertible Level and Transit Combined

You Learn to Use It In An Hour

No technical knowledge necessary. No previous experience needed. With our simple and complete instruction book, included free with every level, you can immediately put the instrument to work. It is a level and transit combined—takes sights either above or below the horizontal. You can use it for leveling foundations, walls, piers, streets, walks or curbs—run straight lines for ditches or drains—boundary lines for fences or trees—surveying lots and fields—plumbing walls, shafts, trestles, posts and pillars.

Easy Monthly Payments

Just \$5.00 brings it to you—for a free trial. If perfectly satisfied, pay the balance in small monthly payments. The instrument will be sent at once and from the first day it will be working for you—paying for itself by saving you the cost of borrowing an instrument or the fees you have been paying other men for this work.

Write for Free Book

Our free book—"Be A Bigger Builder"—tells you how to increase your income—how to get the profitable jobs and become a bigger man in your community. Write for this book today.

A. S. ALOE CO., 621 Olive St., St. Louis, Mo.

MAIL COUPON TODAY

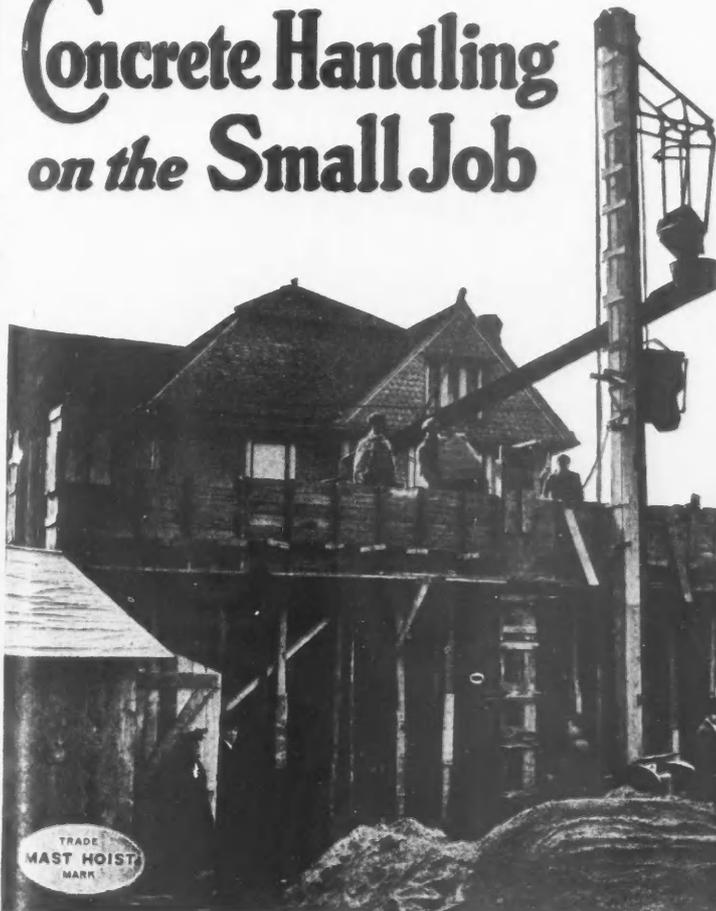
A. S. ALOE CO., 621 Olive St., St. Louis, Mo.

Without obligation, send me your FREE book, "Be A Bigger Builder". Also full particulars about the Aloe Convertible Level and details of your easy payment plan.

Name.....

Address.....

Concrete Handling on the Small Job



THE Insley Mast Hoist Bucket Plant places within the reach of the Contractor who is engaged in the construction of medium sized concrete structures, a set of elevating and placing equipment which fills a long felt want.

It consists of an automatic dumping bucket which runs on a built-up timber mast that is constructed by the user on the job. Being of reasonable first cost and low operating expense it is a set of equipment that you cannot afford to be without.

Write for illustrated circular.

INSLEY MANUFACTURING CO.

Engineers and Manufacturers

INDIANAPOLIS



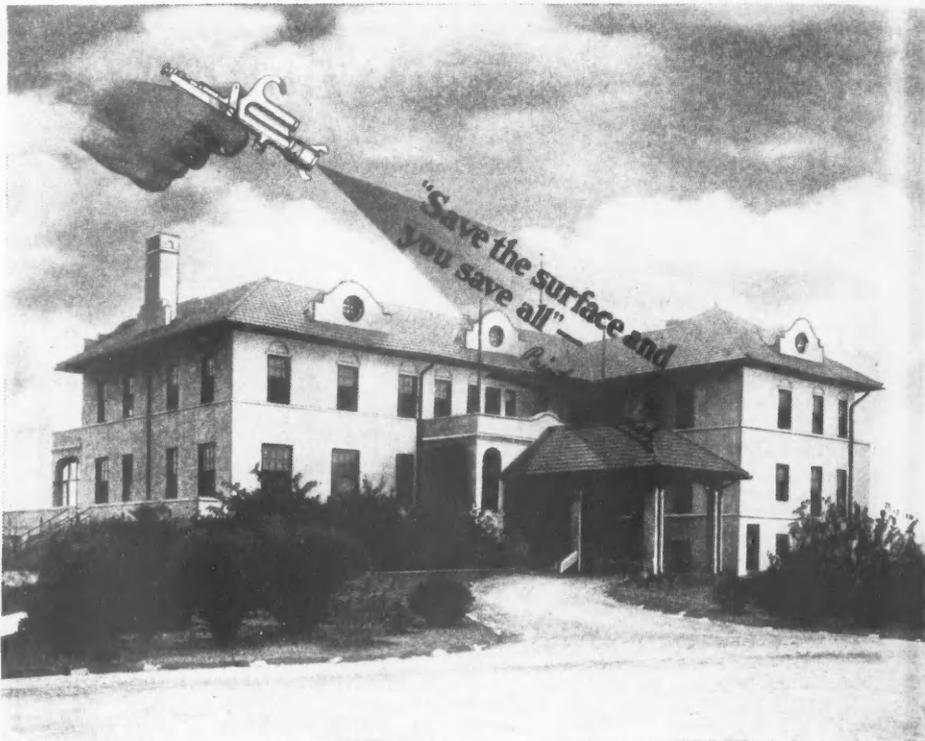
A Hand of Greater Accomplishment

is the hand operating the modern spray system of painting. Time requirements of other methods are reduced—costs are cut—results are improved.

You can apply practically any kind of paint on any kind of surface from two to five times faster with the DeVilbiss spray gun than with a hand brush. The finished job is cleaner, more thorough and uniform.

Cutting costs on painting of highest quality is your best bid for more work. The DeVilbiss system of painting makes possible taking care of an increased volume of work without increasing the labor charge.

Make 1922 your most profitable painting year—let us mail you full particulars.



DeVilbiss
(Large and Small Equipment) *Spray-painting System*
for every requirement

The DeVilbiss Mfg. Co., 3676 Detroit Ave., Toledo, Ohio

Have You Got a Skylight or Ventilator Job?

If you are about to install skylights or ventilators it will pay you to look over our line.

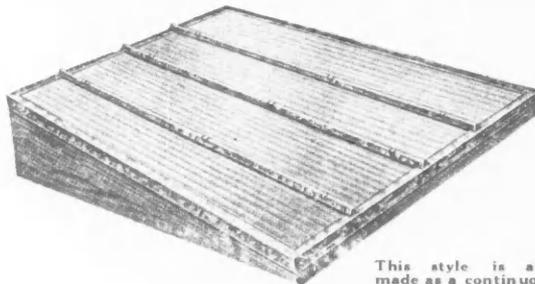
Write for Catalog Number Eight

This book with its discount sheet will prove of the greatest service to you in estimating your work. A copy will be sent you immediately upon your request.

WILLIS MANUFACTURING CO.
GALESBURG, ILLINOIS



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



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



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

WILLIS



BEFORE The old house on its way to its new location.

\$2000 Profit Moving This House

Only a sample of what can be done by any practical housemoving contractor—with ordinary business ability.

Write for the complete story of how this old shack was bought for a song—moved on a cheap lot—repaired, painted and transformed into a valuable residence property. Many other deals equally profitable. Ask about them. They prove that

House Moving Pays

Houses are not wrecked these days. House scarcity—high cost of building and material forbid it—and make business and profit for the House Moving Contractor.

Why not investigate a safe business like this which will positively net you extra profits of \$4000 to \$5000 a year and up? It's easy with



LaPlant-Choate

HOUSE MOVING TRUCKS

and LaPlant-Choate capstans—the standard house-moving equipment. Made of steel—built for hardest kind of service. Never fails—no breakdowns—no repairs—no upkeep. Move any home a mile a day.

Hundreds of users will tell you that LaPlant-Choate Equipment is 100% efficient—100% dependable. Description sent on request.

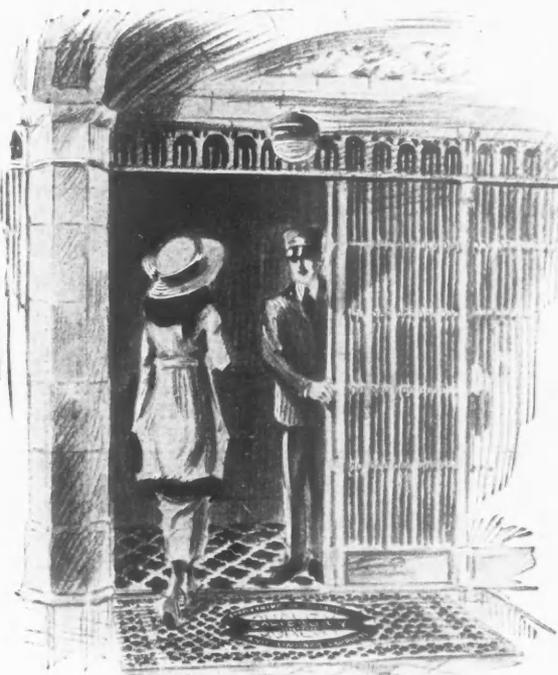
We Show You How

To break into this clean, profitable business. We have started hundreds on the way to big money—we will start you. Ask for our free drawings and blue prints on how the work is done—also valuable suggestions of Mr. E. W. LaPlant—President of this company and a practical House-Mover of 30 years' experience. Our service Department solves all your problems, free. A wonderful opportunity for you.

Write today for Book "B" LaPlant Choate Mfg. Co. 3120 First Ave., East, Cedar Rapids, Iowa



AFTER The same house transformed into a handsome residence property—paying good income. This deal netted the mover over \$2000 profit.



Installed in the Wrigley Building and in hundreds of others of note

WRITE FOR BOOKLET "A" on Rubber Necessities for Modern Buildings

SALISBURY

VELVET

INTERLOCKING RUBBER TILE

The perfect floor covering for wherever the wear is severe

- SUN PARLORS
- KITCHENS
- BATH ROOMS
- HALL WAYS
- BARBER SHOPS
- CHURCH AISLES
- RESTAURANTS, ETC.
- STORE ENTRANCES



W. H. SALISBURY & CO.

308-10 WEST MADISON STREET CHICAGO



**NOW—A STARRETT
Combination Square
For \$1.50**

Ask your dealer to show you one of the new No. 94 STARRETT Combination Squares for \$1.50. Look it over. Notice the level set in the head. No other make of combination square sold at anywhere near this price has this feature.

Real STARRETT quality in every detail of material and workmanship. Graduated in 8ths and 16ths on both sides of the blade. Every line and figure is cut sharp and distinct.

Remember that in this square you get eight tools in one—a marking gage, rule, square, miter, depth gage, height gage, level and plumb—for \$1.50.

This and other new Starrett Tools are fully described and illustrated in a new Supplement to Starrett Catalog No. 22 "6". Both free on request.

The L. S. Starrett Company
The World's Greatest Toolmakers
Manufacturers of Hack Saws Unexcelled
Athol, Mass.



42-289



The
**Sargent Auto-Set
Bench Plane**

EVERY carpenter should have a Sargent Auto-Set Bench Plane in his kit. It is a true, clean and fast cutting tool that will not chatter on the most difficult job.

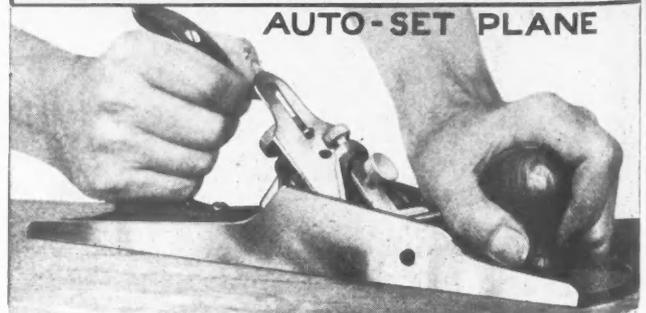
The Auto-Set feature means a big saving of time. You can remove the blade for sharpening and replace it in exactly the same position without re-adjustment. The clamp and cap are in one part. There is ample handle room. Made in six sizes. Smooth or corrugated bottom.

If you are interested in fine tools, you should have the Sargent Book of Planes which fully describes the Auto-Set and other Sargent Planes. A copy will be sent you free on request.

SARGENT & COMPANY
HARDWARE MANUFACTURERS
51 Water Street New Haven, Conn.

SARGENT

AUTO-SET PLANE



UNION METAL COLUMNS

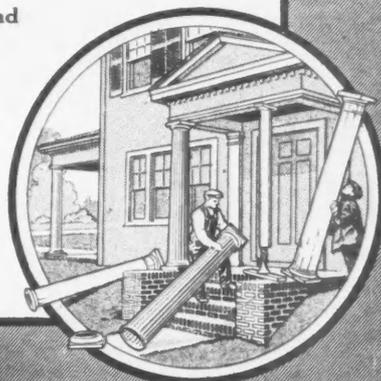
for Porches

Entrances to thousands of homes and public buildings are made permanently beautiful by the use of these classical, fluted columns. No splitting, no rotting, reasonable cost, sizes 5 feet to 32 feet high.

for Remodeling

Union Metal Columns are widely used for rebuilding porches and replacing split and rotted wood columns. Home owners always welcome them as a relief from wood column troubles.

Send for catalog and attractive agency proposition



Design No. 249
Plain Doric

The UNION METAL MANUFACTURING Co
Canton Ohio

CONTRACTORS!!

Are You Alert to Your Needs for the Coming Building Boom???

We have "SPECIAL OFFERS" on the following machines:

Band Saws Universal Woodworkers
Saw Benches Jointers Swing Saws

There are only a few of these machines in stock at this "Special Price" so we advise your immediate action and invite your early inquiries.

Write or Come in and See Us

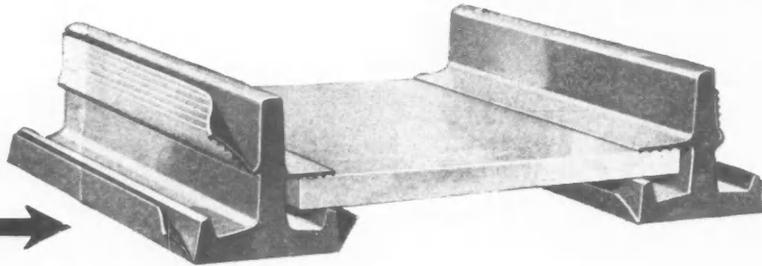
CHICAGO MACHINERY EXCHANGE
1223 Washington Boulevard CHICAGO, ILLINOIS

Have You Investigated

STEELEAD

TRADE MARK REGISTERED

The Perfect Skylight Bar?



If you don't know STEELEAD write for our Bulletin S2. It is worth your while to be posted.

Everlasting—
Never rusts or rots.

Easy Installation—
Any Sheetmetal Man can set STEELEAD Skylights.

Weather Tight—
Lead joints defy wind, sun, rain, frost, snow.

No Upkeep Cost—
Never needs paint or putty. Reduces glass breakage.

Complete, Ready-to-Set
Stocked in New York—Chicago—Seattle.

AMERICAN 3 WAY-LUXFER PRISM COMPANY

1307 S. 55th Ct., CICERO, ILL.

139 S. Spring St., NEW YORK

FREE INFORMATION FOR BUYERS

THE AMERICAN BUILDER has an Information Service for the benefit of its readers. It places those in need of building materials, contractors' equipment and machinery, mechanics' tools, heating and lighting systems, and all other building necessities in communication with those best fitted to supply their needs.

If anything is needed that is not advertised in the American Builder or if you want more information about something that is advertised or described do not hesitate to write to us. We will be pleased to help you in any and every way.

HELP FOR THE BENEFIT OF OUR READERS

If you want to get practical advice on any problem of building, paving or engineering and be advised about work that is new or unusual or that you do not understand, state such particulars as will help us to make the most intelligent answer to your question.

FREE INFORMATION SERVICE

AMERICAN BUILDER, 1827 Prairie Avenue, Chicago, Ill.

GENTLEMEN:—We are in the market for the following items specified below. Please put us in touch with manufacturers whom you know to be reliable and can furnish goods promptly.

ITEMS:

Name _____

St. and No. _____

P.O. _____ State _____

TILES & MOSAICS

We can give you rock bottom prices on all kinds of tiles and mosaics for every purpose.

RICH RED QUARRY TILE

The large Red Tile, so popular for Sun Porches, Terraces, Pergolas, Fire Places, etc. Made from shale and burned to vitrification, they are dense and impervious, and do not absorb stains or dirt. Our quarry tile are guaranteed to be free from defect. They are made in rich, natural reds; also in ivory and grey.

WHITE GLAZED WALL TILE

The ideal covering for bathroom walls. Once set it never needs repair or upkeep.

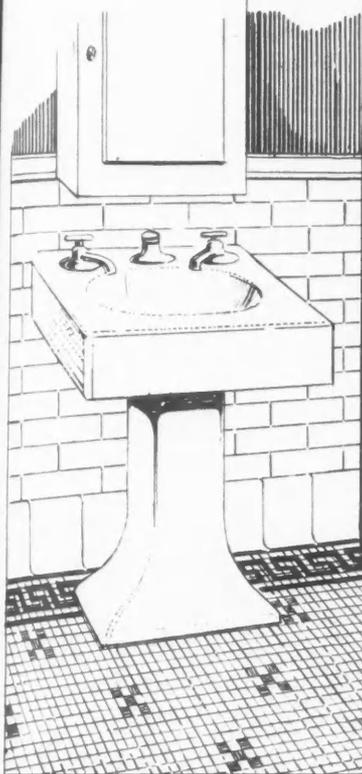
Mosaics for floors can be had in a great variety of designs. Some of these designs are shown in our pamphlet which we will send on request.

We can supply any kind of tile.

Write for prices.



Write for
FREE BOOKLET
"How to Set Tile"



Install Fuel Oil Burners in the Homes You Build—they are now recognized as being as necessary in a modern home as electric lights and modern plumbing

THE COMBUSTION FUEL OIL BURNER

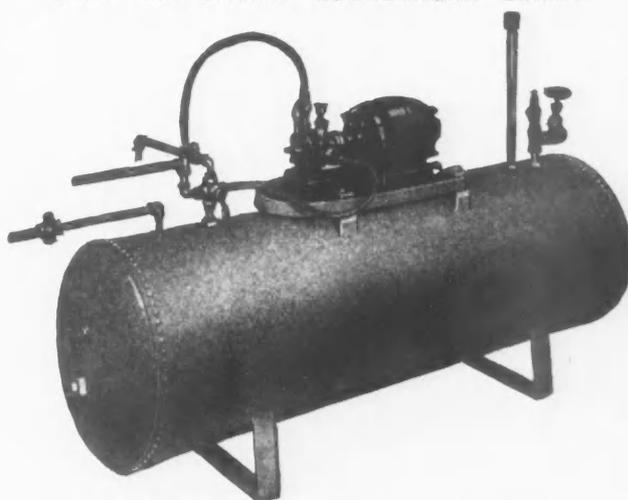
SAFE—CONVENIENT—ECONOMICAL—CLEAN

can be applied to any kind or make of heating plant, either new or old, with equally satisfactory results. Practically no change is made in the furnace as the entire equipment is outside of it.

It is designed so that the motor and tank can be placed as far from the furnace as desired, leaving the space in front of it clean and unobstructed.

Contractors and Builders who are desirous of expanding their business will find The Combustion Fuel Oil Burner a very profitable addition.

We are closing contracts for territorial representation in all parts of the United States. Perhaps your territory is still open. Write or wire us for full particulars and our exclusive selling rights proposition.



Combustion No. 1 Ready for Installation

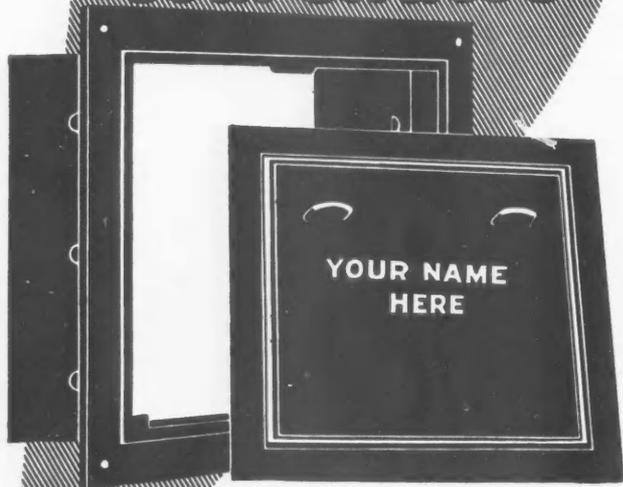
THE COMBUSTION COMPANY

174 N. Michigan Ave.

MANUFACTURERS

Chicago, Illinois

LEAVITT Coal Chutes



Pay Less— Get Your Name Cast on Them

L EAVITT Coal Chutes bearing your name become a permanent advertisement. Coal men like them because they have about one-third greater area for shoveling in coal. The doors may be lifted off and set aside—no glass to break. Building owners recommend them because they protect woodwork, are unbreakable and burglar-proof, being securely fastened from the inside.

Leavitt SAFETY Cistern Tops

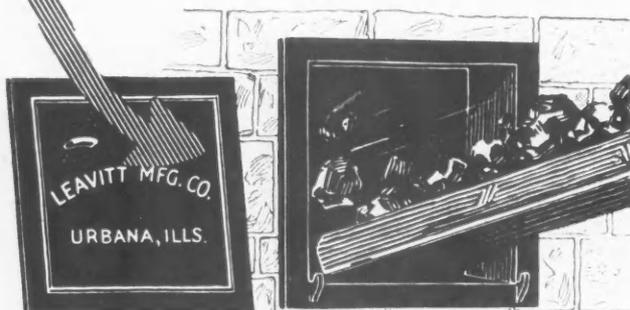
—another fast selling Leavitt specialty. While they can be removed easily, Leavitt Cistern Tops are fastened securely to protect the children. Malleable bolts and brass nuts prevent rust.

Ash Pit Doors—Dump Doors

Sell or specify Leavitt Ash Pit Doors for ash pits or clean-outs—no hinges, nothing to break or rust. Leavitt Dump Doors permit ashes to fall from fireplace to ash pit below. All are business getters for builders and building supply houses. Prices down to earth—write.

*Your name on Leavitt Specialties,
Ordered in reasonable quantity*

Leavitt Manufacturing Company
366 Griggs Street, Urbana, Illinois



Builders buy
what they can see
Sell your prod-
uct by showing
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BUILDING MATERIAL EXHIBIT

(A NATIONAL INSTITUTION)

Patronized by Architects,
Contractors, Concrete Prod-
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the general buying public.

*Desirable
space now
being
allotted*

Henry A. Guthrie, Manager
Fifteen East Van Buren Street
Chicago

Are You Getting the Cream of the Business?

If you are, you are building and remodeling for men who want private utility plants installed in their homes. Are you prepared to advise your clients? Do you know what company makes the best water, light and sewage disposal systems for the home removed from public utilities?



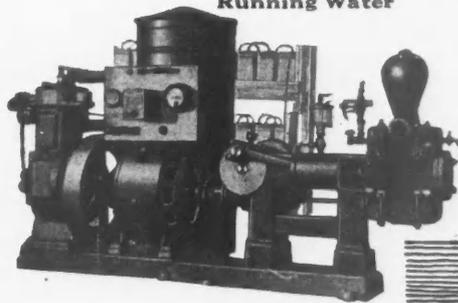
KEWANEE



Running Water

Electric Light

Sewage Disposal



There are more than 150 different sizes and models of water supply, electric light and sewage disposal systems—**REAL PRIVATE UTILITIES** that have been the standard for nearly a quarter of a century.



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



There are also the famous Kewanee Combination Plants that furnish both light and water for little more than the cost of the ordinary water or light plant alone. High grade Kewanee Systems are good for a lifetime of carefree service. Send for the bulletins *today*. They are **FREE** to Architects, Builders and Contractors.

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SAGER METAL WEATHER STRIPS

Give your dollar a chance to make good. Get the best that money will buy. The market for the best products that are made consists of the people who **HAVE TRIED THE OTHER KIND** and who know that it pays to pay the right price first, at the time of purchase, instead of paying much more during the period of use.

You will make a big hit with your

customers if you will **PROTECT** the value of their dollars by sticking to the value of **QUALITY**. Dollars and quality help the world to make good. Dollars invested in something cheap are **beaten** before they've had their chance. The greatest bargain that the world ever offered to humanity is **QUALITY**.

SAGER WEATHER STRIP is the **QUALITY** strip.

Some good territory open for live agents

SAGER LOCK COMPANY

NORTH CHICAGO

(Established 1880)

ILLINOIS



Consider the Package Receiver

JUST one of several Donley ideas about home efficiency —but supposing it stood alone, what does it mean:

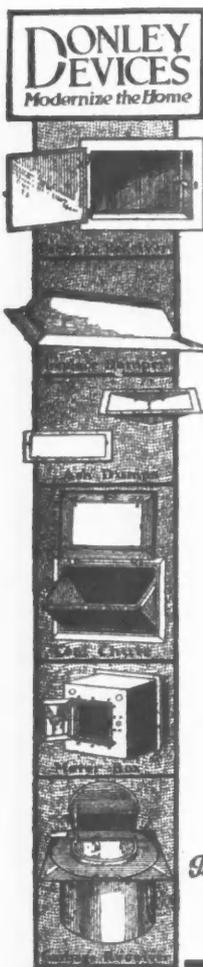
To know that dogs and cats will not molest your meat, milk and groceries after they are delivered?

To keep delivery men with muddy feet out of the kitchen?

To be free from worry about deliveries stolen from the doorstep?

To leave home when necessity calls and be sure that the packages delivered in your absence will be securely locked in the Receiver when you get home?

To know that thieves have no pretext for entering your home in the guise of delivery men?



Will any home owner who comprehends these facts be willing to do without one? Then send for the Donley Catalog and learn more about the following Devices:

Donley Package Receiver—To take the meat, milk and groceries from the delivery man and hold them safe until removed from within.

Donley Fireplace Damper—To insure warm, clean, economical, open fires, with freedom from soot and smoke.

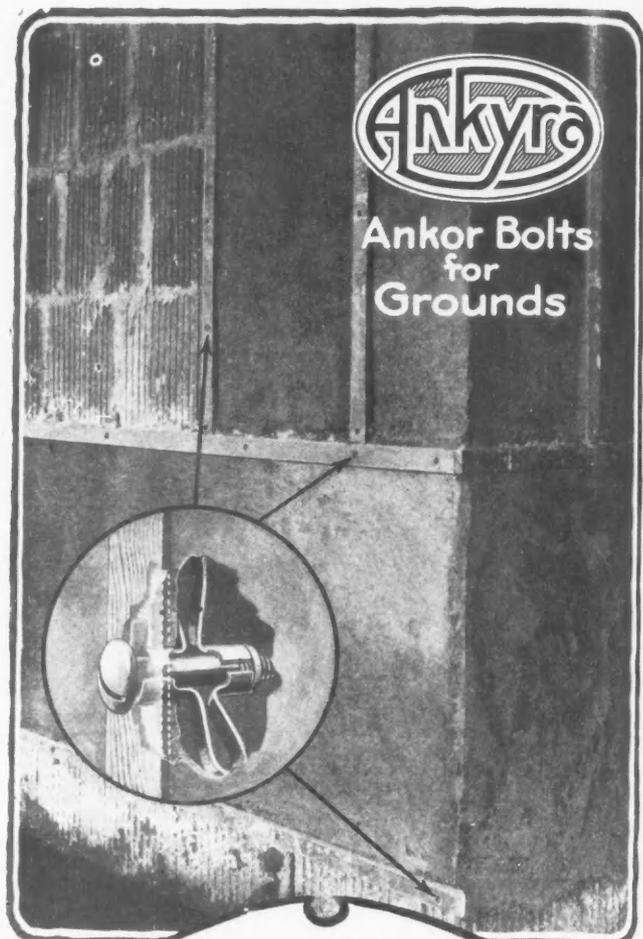
Donley Ash Dumps—To keep the dust and odor of the ash-pit out of the living rooms.

Donley Coal Chutes—To protect the building from flying chunks of coal. Thief proof. Easily operated.

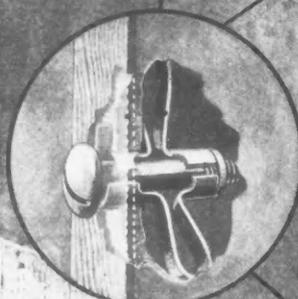
Donley Meter Box—In the basement wall to keep the meter reader outside.

Donley Garbage Receiver—To end garbage can nuisances.

The DONLEY BROTHERS Co.
BUILDING SPECIALTIES 7400 AETNA RD CLEVELAND



Ankyra Bolts for Grounds



Question No. 8

What is the Best Way to Fasten Grounds to Hollow Tile Walls?



Ankyra Bolts

This letter from a prominent firm of Architects answers the question.

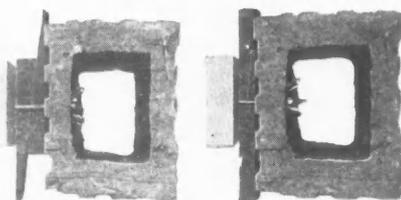
"We are pleased to be able to advise you that the 'ANKYRA' Anchor Bolts which we ordered of you some time since, have been used in securing grounds to hollow tile walls, and that we have found them to be most satisfactory in every way."

With ANKYRAS, grounds can be set quickly, securely and in perfect alignment.

Send for your copy of an interesting booklet, "The Screw Hold with a Thousand Uses."

Ankyra Manufacturing Co.

151 Berkley Street Wayne Junction PHILADELPHIA





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The recognition of ASBESTONE EVERLASTING STUCCO as the world's standard for *Magnesite Stucco* has been achieved through appreciation of the fact that ASBESTONE quality and service are beyond question.

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ESTABLISHED 1906

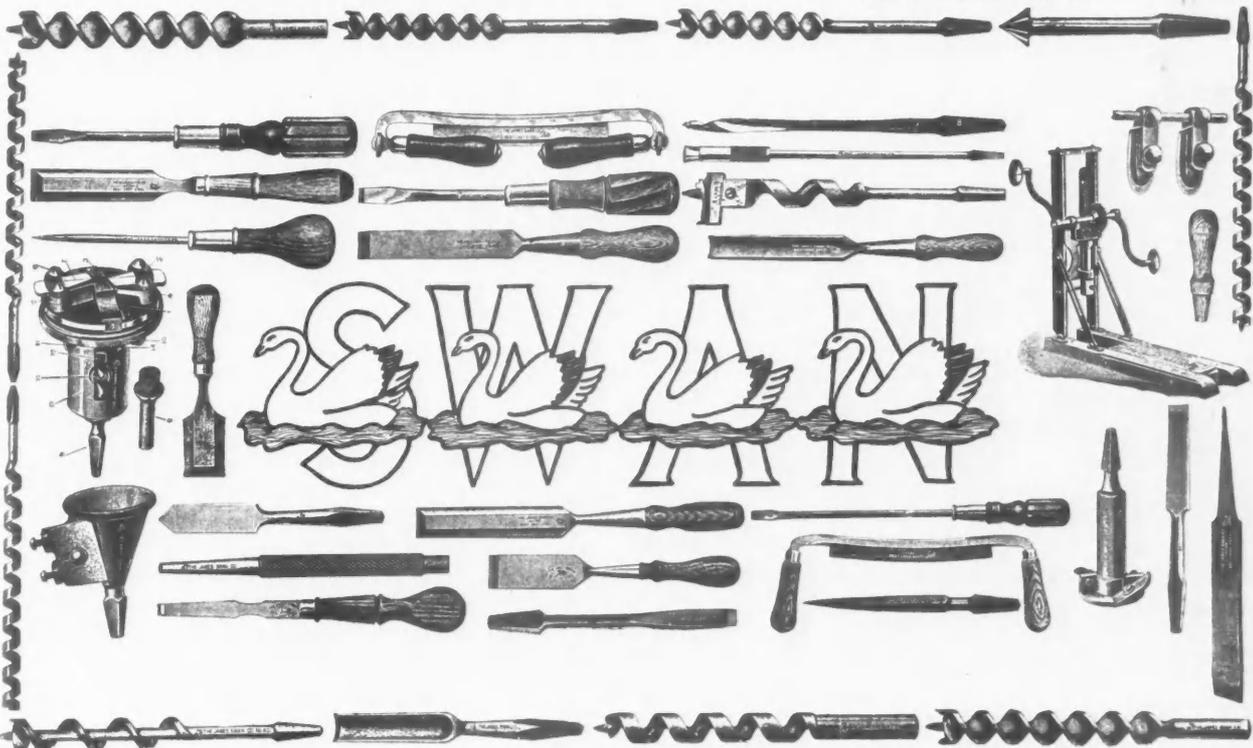
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THE JAMES SWAN COMPANY SEYMOUR, CONN.

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Seventeen years of continuous use have made “ANTI-HYDRO” the accepted standard. A very large percentage of our contracts are “repeat” orders. Results absolutely guaranteed—bond furnished if desired.

Order from your dealer. If he does not carry “ANTI-HYDRO,” write us direct.

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New Building for Hill Brothers Company
Brooklyn, N. Y.

Architects: Timmis & Chapman
Contractors: Turner Construction Co.

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Carpenters and Builders! Get ready for a revival in barn building in your neighborhood this year. Let us show you how you can keep your bids down—how you can actually save several hundred dollars on your lumber estimates by making every piece work into the building to the very best advantage. Place yourself in a position to get these barn jobs by availing yourself of this practical help offered, without cost to you in the

Louden Barn Plan Book

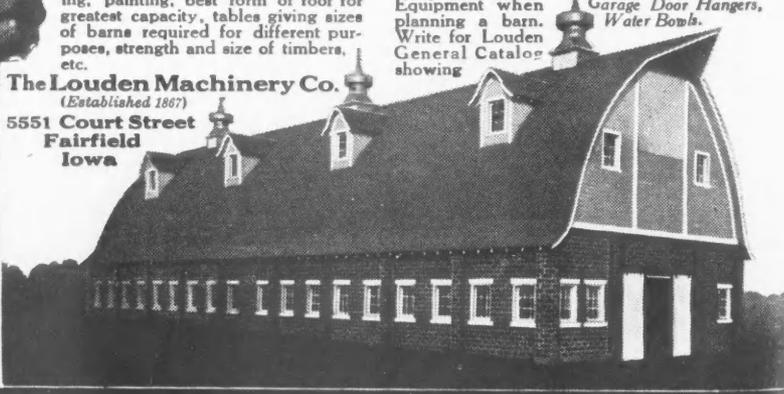
A well illustrated complete barn building guide, 112 pages, 400 illustrations, details of truss and roof construction, framing, foundation walls, doors, windows—every detail necessary for building up-to-date barns. Shows over 50 complete barns and other farm buildings with floor plans and full descriptions. Chapters on concrete work, locating floor levels for proper drainage, ventilating, silo building, painting, best form of roof for greatest capacity, tables giving sizes of barns required for different purposes, strength and size of timbers, etc.

With Louden expert architectural help you can show your customer advantages in building which he will readily appreciate—how to get the best arrangement for housing his stock, storing hay, and doing chores. We will send you suggestions and preliminary blueprints especially drawn to meet your needs on any building proposition you may have on hand.

Remember Louden Labor-Saving Barn Equipment when planning a barn. Write for Louden General Catalog showing

Stalls, Stanchions, Litter, Feed Carriers, Barn and Garage Door Hangers, Water Bowls.

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(Established 1867)
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Get These Two valuable books and service which you can have for the asking.

Sent postpaid, no charge, for one or more names of prospective barn builders in your community.

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The Rex went into action at five o'clock one morning and at three o'clock in the afternoon the job was finished. After experience with

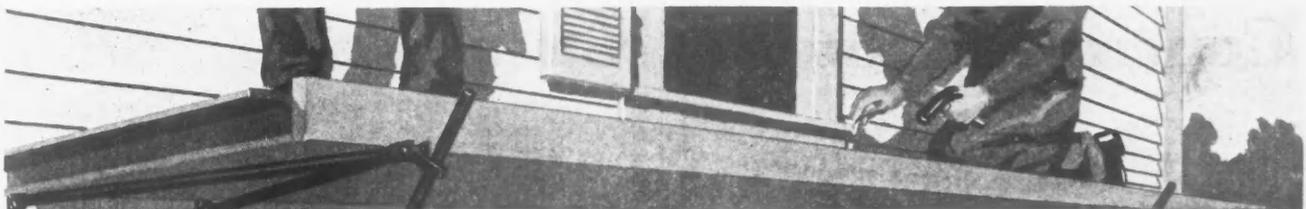
five different makes of building mixers, Mr. Pawson says, "The Rex is by far the best machine I have ever used."

Let the fast, continuous working, big yardages, and low upkeep cost of Rex Mixers help you get a bigger profit on every concrete job you do. Send today for our descriptive catalog.

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Branch Offices and Representatives in principal Cities in the United States and abroad



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That is what a contractor told us after he had used **Reliable** scaffold brackets on a single job. He was able to underbid every competitor and secure the contract because he actually cut the building cost \$75 by using **Reliable** scaffold brackets.

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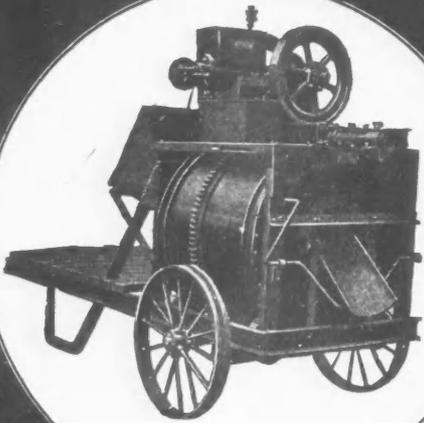
Write for catalog and figure out for yourself how much you can save on your next job by using **Reliable** scaffold brackets.

ELITE MANUFACTURING CO.

Department A-2

Ashland, Ohio

Reliable Scaffold Brackets



THE RIGHT IDEA IN MIXERS

The Archer Ends Discharging mixer delivers the wet mix directly into the forms. No wheelers needed. It is low down and easy to charge and can be moved anywhere by two men. Mixes fast and thoroly and built to last a lifetime. Furnished in three sizes, 3 ft., 5 ft. and 7 ft. wet mix capacity.

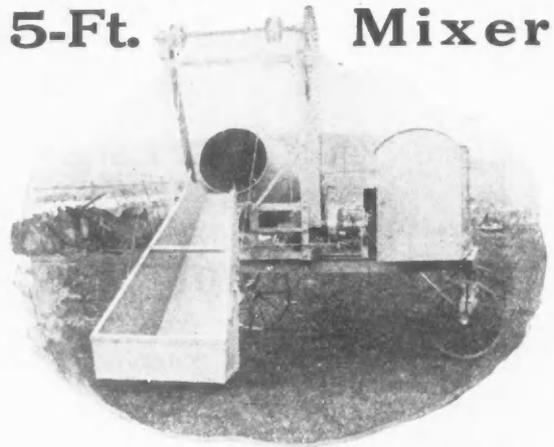
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ARCHER

END DISCHARGE

GILSON 5-Ft. Mixer



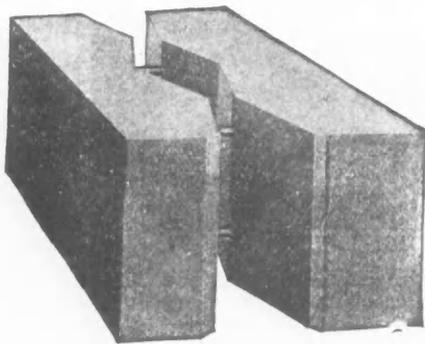
Write for the Price

We manufacture a complete line of barrel mixers from the type illustrated here—complete with loader—to the smallest hand power machine.

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Anchor Continuous Air Space Block Machine

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Anchor Automatic Tampers to fit any Block, Brick or Stave Machine

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Let us tell you more about this reliable line

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ATLAS MIXERS

are easy to operate and adjust. There are no unnecessary parts to get out of order and delay your work. They run smoothly and turn out a thoroughly mixed batch in a hurry.

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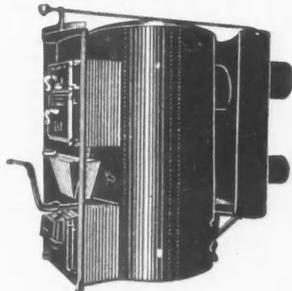
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Its seamless, heavy rolled, welded steel body is permanently **gas-tight, smoke-tight and dust-tight.** No castings. No bolts or rivets. Brick lined firepot. Large casings. Saves fuel by the ton.



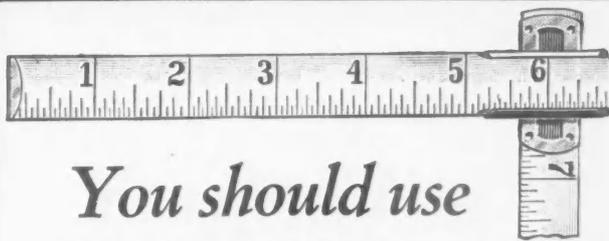
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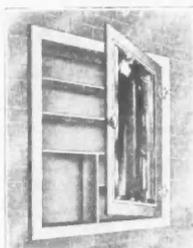
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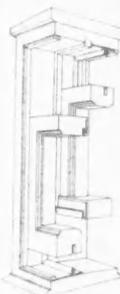


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They have proven their superiority by a most remarkable record of satisfying service.

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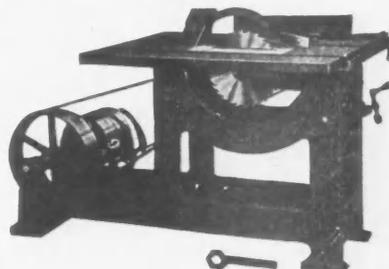
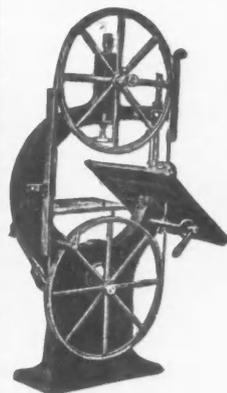
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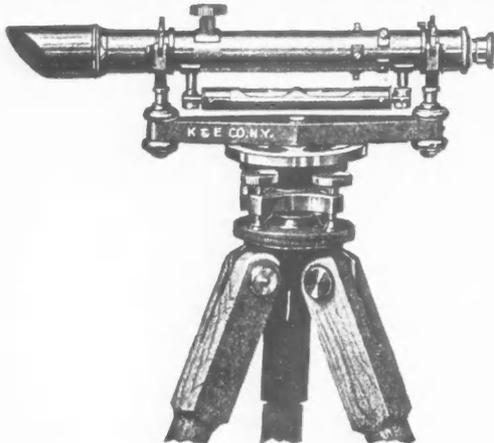
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Mention Booklet CB-6.

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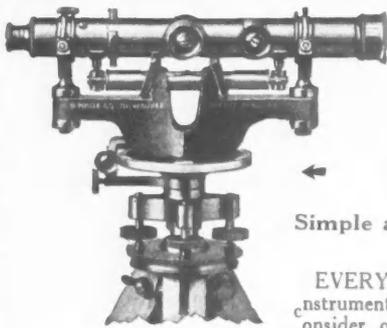
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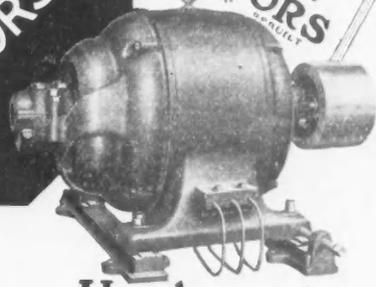
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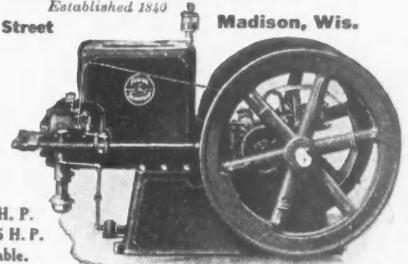
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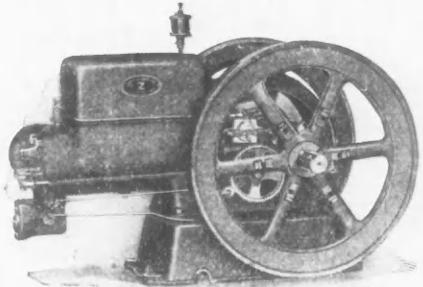


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Lunken Windows Centuries New



OUTSIDE VIEW



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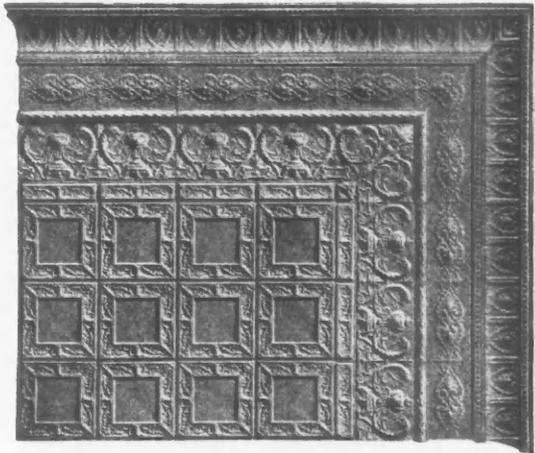


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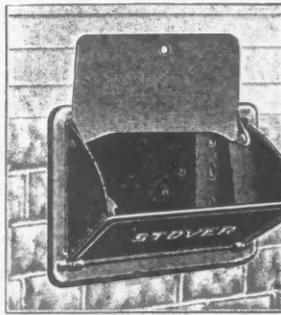
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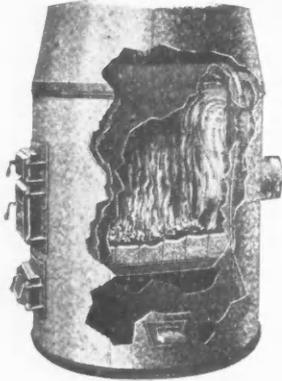
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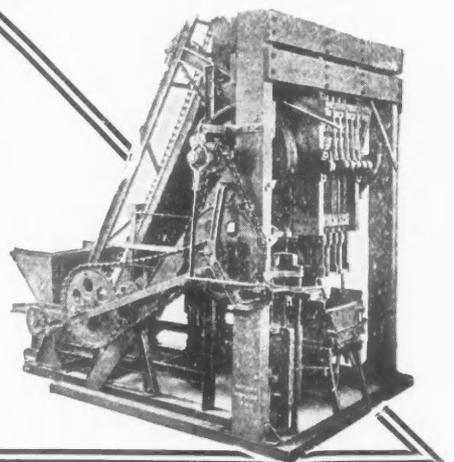
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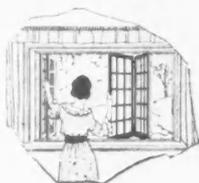
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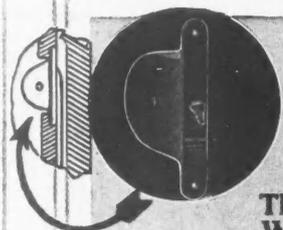
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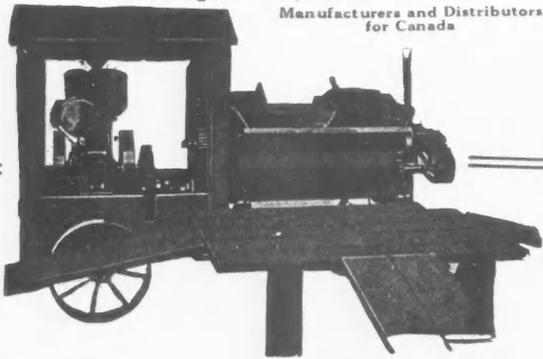
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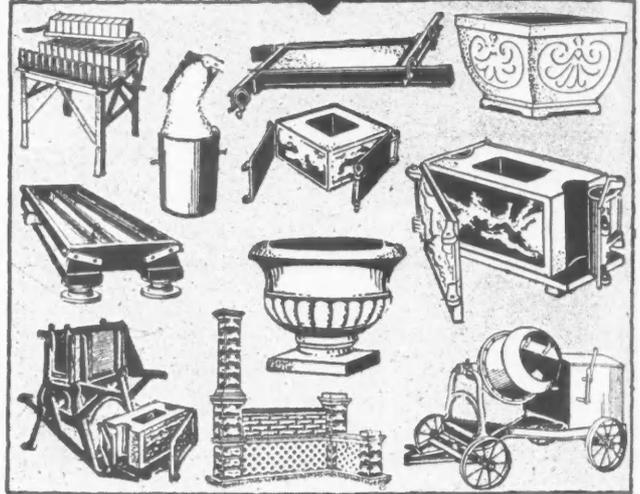
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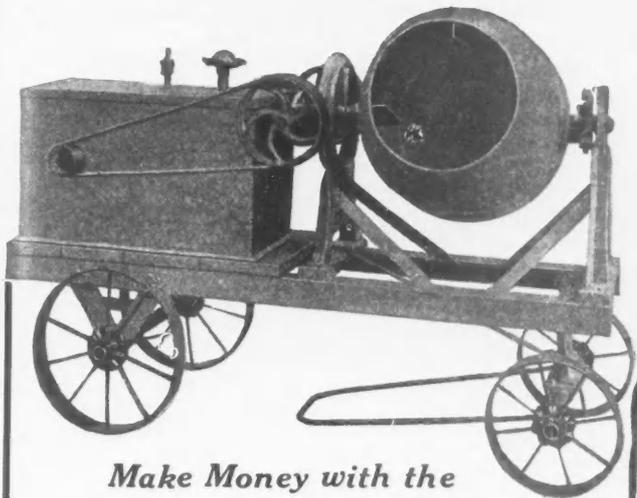
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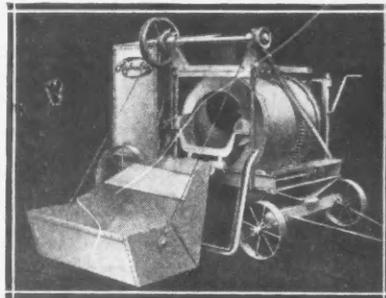
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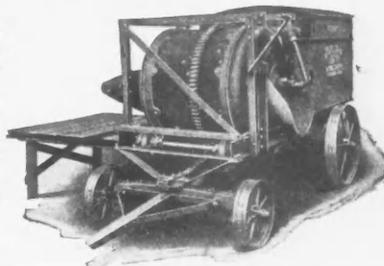
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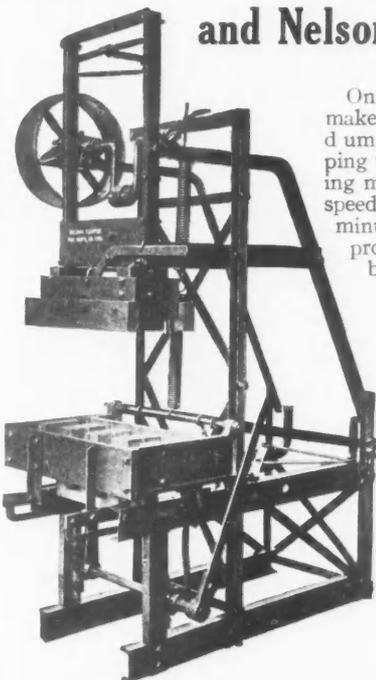
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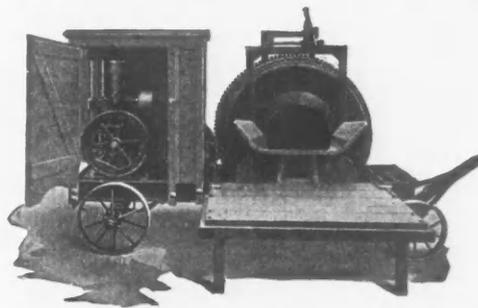
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The variety of sizes and designs of blocks, and trimming stone that can be made on the



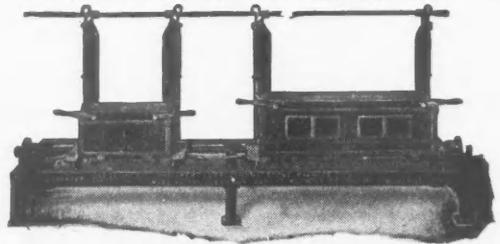
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20,000 in stock ready for immediate shipment

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No bolts, screws or nails. They hook to the studding and your scaffold is up in much less time than it takes to tell you about them.

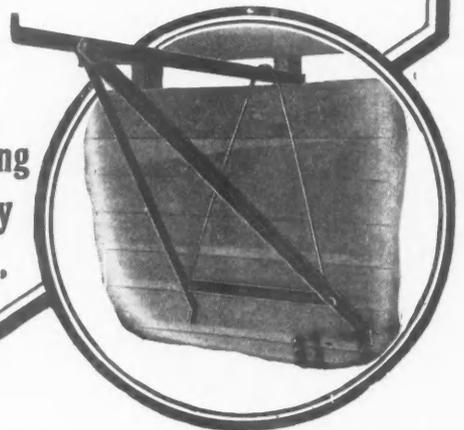
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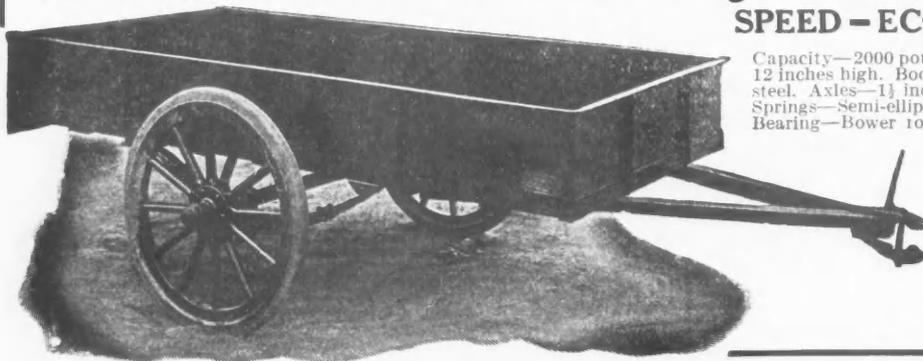
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Capacity—2000 pounds. Body—8 feet long, 46 inches wide, 12 inches high. Body and under frame built of open hearth steel. Axles—1 1/2 inch square bed, special high carbon steel. Springs—Semi-elliptic, oil tempered and double heat treated. Bearing—Bower roller. Wheels—1 1/2 inch spoke, artillery type, second growth hickory. Tires—32x2, solid rubber. Weight—534 lbs. Other models with gates at front; also extension tongue which permits carrying lumber, poles, ladders, etc., 30 feet long.

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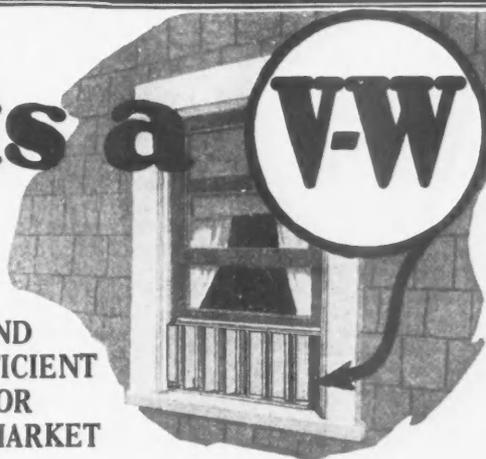
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Uncle Sam Hammers are inspected by the UNDERWRITERS' LABORATORIES and carry the Underwriters' Label on the Handle as an inspected and approved tool. Write for Booklet No. 10 telling how this Hammer was tested and approved. It is the only tool line carrying the Underwriters' Label. If your Dealer cannot supply you, send us your order with Dealer's name. All sizes and patterns.

UNCLE SAM TOOLS Price **\$2.00** Each

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Fiberlic WALL BOARD

The material from which it is made, the fact that the pulp is chemically cleansed and that the fibre lengths give the finished product that natural reinforcement that is lacking in ground wood boards, is in itself a guarantee of the superiority of Fiberlic for strong, permanent and sanitary construction

MacAndrews & Forbes Company
200 Fifth Avenue, New York City
Factory: Camden, N. J.

QUICK ACTING **The Taylor** SELF LOCKING

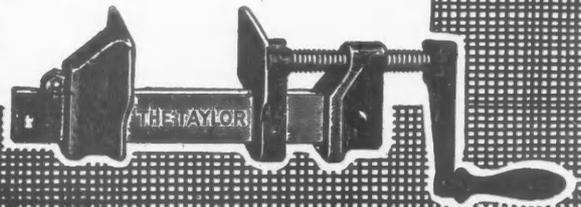
Clamps

An Investment Not an Expense

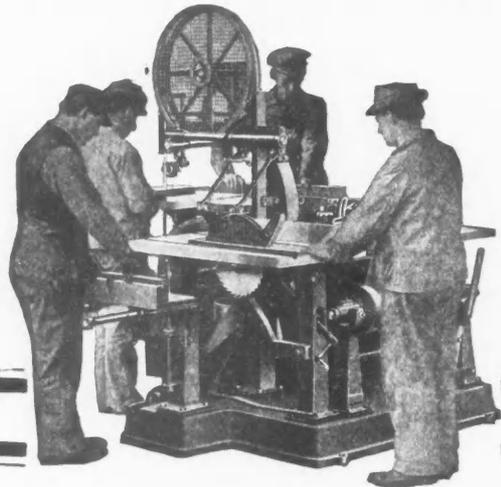
The quickest and strongest clamps made. That's why they're the standard in U. S. Government Works and in such concerns as General Electric Co., Singer Sewing Machine Co., Victor Talking Machine Co., etc.

We can PROVE it in your own shop. Write today.

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Poughkeepsie, N. Y.



Crescent Universal Wood Workers



Dependable—Durable—Reasonable in Price

The CRESCENT Universal wood worker is steadily increasing in popularity because it pays for itself so quickly in any job shop. Install a CRESCENT now and see how much more money you will make on your building operations.

Write for catalog giving complete description and telling about our line of band saws, jointers, saw tables, planers, disc grinders, swing cut off saws, shapers, variety wood workers, borers, hollow chisel mortisers, planers and matchers.

Write for the Crescent Catalog showing the complete line of wood working machinery

THE CRESCENT MACHINE COMPANY
224 MAIN STREET, LEETONIA, OHIO

THE IMPROVED SCHLUETER

Rapid—Automatic—Ball Bearing—Electric

Floor Surfacing Machines



Attention!

Get in LINE with all the Regular Contractors, Carpenters and Builders. What you need is an improved Schlueter Floor Surfer to scrape all your old and new Floors

Why surface by hand and suffer— Loss of Time—Money, and also Contracts on account of unsatisfactory work, when you can purchase an IMPROVED SCHLUETER SURFACER—the machine with all troubles left out.

“The SCHLUETER Surfacers are worth their weight in GOLD” as one of our Customers express them, and he is right.

A few Jobs and the machine has paid for itself. In a short time the people will know who and what you are; you get the work because you

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We want to send you a SCHLUETER on Trial and let you see for yourself the quantity and quality of work it accomplishes.

The Improved SCHLUETER Floor Surfer

will surface right up to the wall or baseboard without the use of Side Roller. Just the Machine you would want for surfacing all floors whether old or new. Perfect results guaranteed. More than 20,000 of our Machines now in use. Guaranteed against defect in material and workmanship for five years.

Manufactured by M. L. SCHLUETER

222 West Illinois St., Chicago, Ill.

SEND FOR OUR PRICES, ALSO TRIAL PROPOSITION

THE Wayvell Chappell Automatic Ball Bearing Electric Floor Surfacing Machine is what you need to finish your new or old wood floors quickly and just the way you want them.

The machine is simple, easily handled, made correctly, built to last—the result of years of experience in building this specialty.

As QUALITY of work is the first essential in finishing floors, particularly new work in residences, flats, apartments, etc., all roller vibration must be done away with. It is remarkable how smoothly and steadily this ball bearing machine operates.

Only surfacing machines having roller sanding even with baseboard from either side of machine, doing away with uneven work of edge roller attachment. Removes old varnish, paint, oil-soak, black, etc., rapidly, or cuts down warped edges quickly. Four sizes—for the largest areas or the smallest rooms.

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Write for folders. Accept our free trial offer.

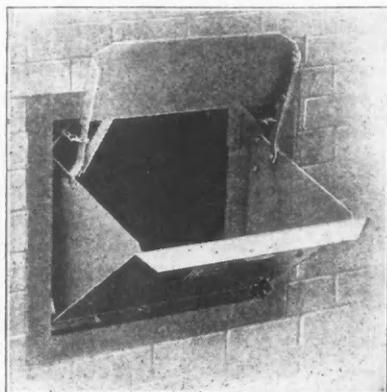
Manufactured by

Wayvell Chappell & Co.

137-139 North Jackson Street
Dept. M, Waukegan, Illinois



Pat 1916



Attractiveness

The clean-cut lines of the Kewanee add to the appearance of any building.

The Homes You Build Deserve the All-Steel Coal Chute

Modern construction calls for beauty and permanence in every detail. To complete your buildings, install the Kewanee “Armor Plate” Coal Chute. Made of all-steel, it is proof against injury itself, and so constructed that it protects the surrounding wall from damage and defacement.

As Permanent As the Foundation

A special metal—“Copper-Steel”—unbreakable and rust-resisting—gives the Kewanee its strength and durability. Our absolute guarantee against breakage cannot be placed upon cast-iron or other inferior material. Install a Kewanee—it costs no more. No building, new or old, is complete without one. Write for full details.

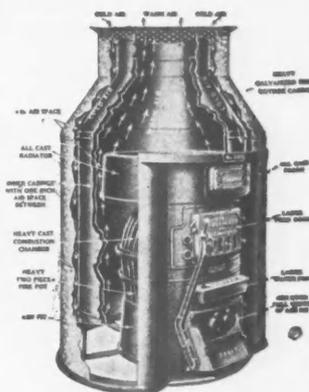
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Canadian Manufacturer: Cast Stone Block & Machine Co., Ltd., Windsor, Ontario



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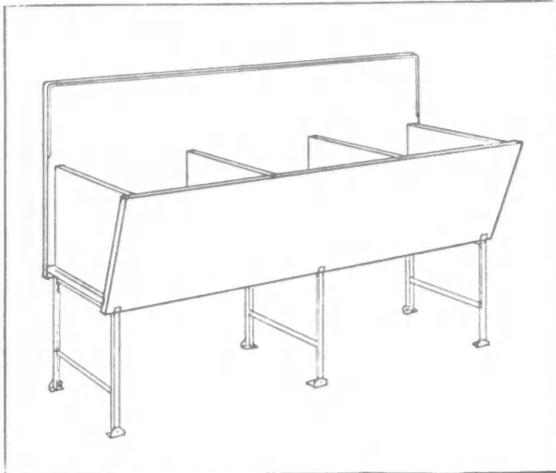
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Street.....

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describes and illustrates the "STANDARD" sizes for Laundry Tubs which have been adopted after careful analysis of the dimensions called for in the orders received by the Structural Slate Co.

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For Service
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For Dependability

OF the many uses for which natural slate is suited, there is none more striking and none so admirably adapted to its intent than *Vendor Slate Roofing*. The readiness with which the rock splits, the uniform thickness, its strength and everlasting qualities show conclusively that Nature was generous in her provisions for mankind.

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INCORPORATED
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RED GREEN, PURPLE, BLACK
SLATES

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of valuable roofing facts

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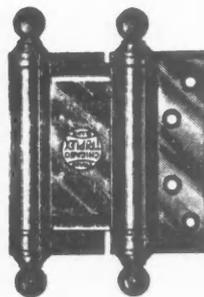
The Most Enduring
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Roof at the Most
Reasonable Cost

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Accept no Cypress without this mark



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They are Portable—Electric Drive—Save Hand Work and Wasted Steps

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Have an engine or outfit you can depend on—pay only the factory price plus my one small profit.

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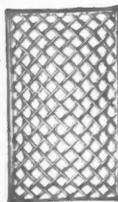
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THE ORIGINATORS OF PRESSED STEEL EXPANSION SHIELDS

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Contractors—Builders!

Make \$50 to \$75 extra each week. Sell the Barnett System, guaranteed lightning protection.

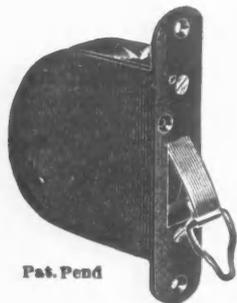
You are the logical man to install this protection on every building you erect and on other buildings not yet protected.

Our rods are in big demand. Made of pure copper endless cable, no rust (no joints), with attractive fixtures. Easy to put on buildings. A couple hours' work rods a building and puts big extra profits in your pocket. Money back guarantee with each job. Hundreds of our carpenter-agents started in a small way, now doing a big rod business. Secure the agency now. Act quick. Write today for free catalog, cable samples, wholesale prices and special proposition to carpenters and builders.

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For use in all classes of new work. Box frames unnecessary. Mortises cut at Mill reduces cost of installing. Counterbalances sashes perfectly. Unaffected by atmospheric conditions. Cheapest method for modernizing old windows, as alterations in sashes and frames are not necessary. Have stood the test of service upwards of thirty years.

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PERFECTION SANITARY CHEMICAL CLOSET

A simple and sanitary way to bring health and comfort to farm homes, schools and any unsewered community.

AGENTS WANTED

We can make you a price on this closet that will allow you a nice profit on the outfit and a profit on the installation. The field for this work is large.

Write for our offer.

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SEE A MODEL BEFORE YOU BUILD YOUR HOME

We furnish cardboard models in color, working drawings, specifications and bills of material for fifty small homes shown in our plan book "SMALL HOMES OF CHARACTER" which we will mail postpaid for \$1.00.

Send for the plan book today.

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It's Now Known as the GRIFFITH Master Builder



But the design, quality and workmanship which for years made it noted, under the name of "Germantown Master Builder" remain the same.

Octagon shaped handle of second-growth hickory. Ideal hardness, and a claw that will grip all size nails with a grip that holds. Three sizes: 11 oz., 16 oz., and 20 oz. Expert workmen the country 'round know this hammer as "the best that money can buy."



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 Branch: 62 E. Lake St., Chicago

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"THE BUILDING LABOR CALCULATOR"—By Gordon M. Tamblin

Gives LABOR HOURS on: Excavations, Sheet Piling, Concrete, Reinforcing Steel, Concrete Forms, Cement Work, Common Brick, Press Brick, Tile and Plaster Block Partitions, Stone Work, Terra Cotta, Rough Carpentry, Finish Carpentry, Lathing and Furring, Plain Plastering, Ornamental Plastering, Interior Marble, Sheet Metal Work, Slate Roofs, Tile Roofs, Composition Roofs, etc., Painting and Decorating, etc.

A Bungalow or a Skyscraper—Fireproof or non-Fireproof. Simple—Accurate—Rapid. Send for descriptive literature.
WESTERN SCHOOL OF ESTIMATING AND PLAN READING
 210 West 13th Avenue, Denver, Colo.



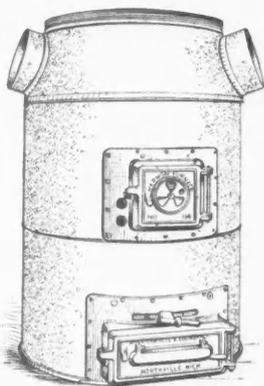
Something New In the Building Field

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THERE IS NO SECOND CHOICE

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Every piece is absolutely uniform in quality as it comes from the same big quarry.

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Chief Metal Building Corners

Warp-Proof—Rust-Proof—Fit Anywhere



THEY make a corner with the smoothness and neat appearance of a "mitred corner" and save the time and labor of beveling down the siding. Made of heavy galvanized steel. Fit any corner—inside or outside and make a smooth corner that does not hold dust or moisture. Cannot warp or split, and prevents warping of the siding.

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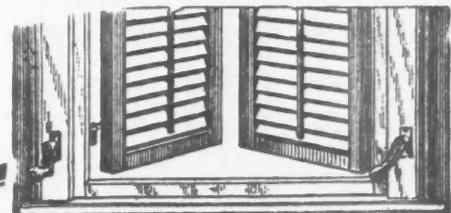
THE FINEST Tool Manufactured
for important wood work.

Specially adapted for Hardwood operations; indispensable to the High Class Carpenter and for Cabinet and Pattern Work.

Manufactured by
THE PROGRESSIVE MFG. CO.
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Special Offer

A sample bit up to 1 inch in diameter will be mailed postage prepaid, upon receipt of 75c to any woodworker or carpenter.



JUST TURN THE HANDLE

The MALLORY SHUTTER WORKER

Operates from inside by a simple turn of the handle
WRITE US FOR INFORMATION

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Use your attic

Pulls down so easily that a child can operate it.



The Bessler Movable Stairway will make the attic accessible without taking up space in the room below. For prices and complete information write to the

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MOVABLE STAIRWAY CO.
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Folds up neatly out of sight.

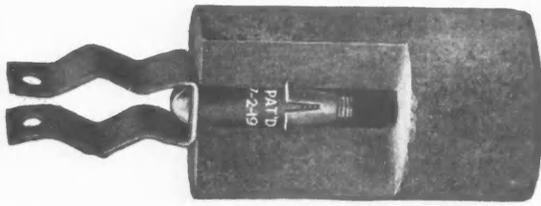
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Moderate in Cost—Easily Applied

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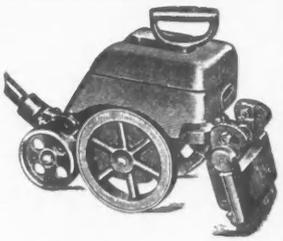
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An absolutely perfect expansion shell for use in concrete or any solid material.

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A special low price will be made on the TRIPLE "A" SPRING DRIVEN FLOOR-SMOOTHER if your order this month.

It's easy running and does the work of six men.

The Triple "A" is a Scraper, [Sander and Blade Sharpening Machine all in one. Guaranteed to do first-class work.

Write for special price and full information.

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4601 Ravenswood Ave., CHICAGO

PUT ONE IN YOUR KIT

and have the satisfaction of having a nail set that holds its point.

AT YOUR DEALERS OR SENT POSTPAID

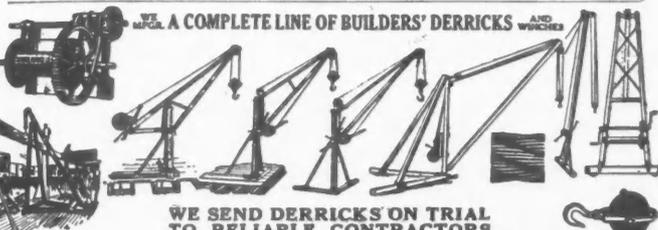
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ROUND 18¢ **NOROL 20¢**

The NOROL has Flat Sides and can't roll away.

WE HAVE A COMPLETE LINE OF BUILDERS' DERRICKS AND CRANES



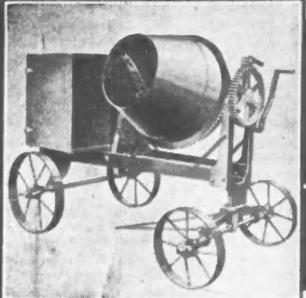
WE SEND DERRICKS ON TRIAL TO RELIABLE CONTRACTORS

Our Motto is SATISFACTION or DERRICK RETURNED

Write for circular No. 3 with illustrations, descriptions and best prices on our complete line. The Sagen Builders' Derricks are built of best Crucible Steel and Malleable Iron Fittings, which makes them light, strong, safe and durable. The derricks will please you and probably more than pay for themselves on the first job. Get one on trial.

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NEW YORK OFFICE—GRAND CENTRAL TERMINAL

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One of our five sizes will just fit your job. Tell us frankly just what you are up against and we'll tell you on the square which size we recommend.

Write for complete specifications and descriptive circulars

STEWART MFG. COMPANY
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Complete stock in most principal cities

**BUILT ON THE SQUARE
SOLD ON THE SQUARE**

CHIEF ALL-STEEL CUPOLA



New-improved, scientifically designed ventilating cupola for all buildings. Up-to-date in design material and construction. Used and approved on hundreds of farms. Made of heavily galvanized steel with base strongly braced. Can't rust, rot or blow off. Absolutely storm-proof and bird's-nest proof.

Easy to Install—Sure to Please Your Customers

Chief Cupola saves time and labor installing—base bolts directly to roof and cupola bolts to the base. Only six bolts needed. Meets all requirements—insures adequate ventilation—satisfies all users. Write for full description, prices, etc.

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— BUILT COMPLETE —

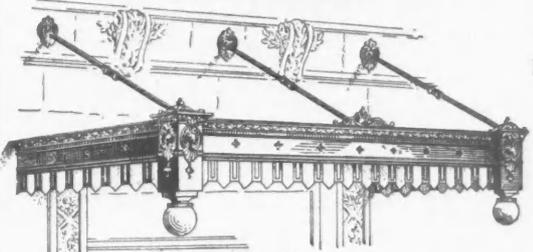


FIG. 406

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THE MOESCHL-EDWARDS
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STEEL CEILINGS
ROLLING STEEL DOORS
Hollow Metal Windows
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Write for Designs
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FOR HAND SAWS
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FLOOR SCRAPER

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Hundreds of carpenters have sent us enthusiastic testimonials on our scraper.

Let us show you a real money maker.

Made in four sizes. This size takes 9" blade.

Running Water and Electric Light
installed to your profit

More and more is convenience and comfort for the housewife being considered by builders. Scores of prospects await you. And the product we offer for your demonstration is an easy seller. The Milwaukee Air Power System draws water FREE! from well or lake, and storage tanks; gives complete light and power for houses or farm buildings; both may be operated by the same engine.

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White Adze
"Old Fashioned" Quality



See one at you dealers. If he hasn't them, write for our catalogue.

If you want the best, get a White Adze.

They Have Real Quality.

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Colored Roof Slates
combined in one roof-haphazard throughout—Red, Purple, Green and Yellow. The most beautiful roof imaginable. Write for samples and full information.

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A FREE ESTIMATE



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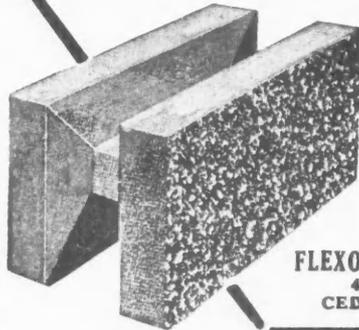
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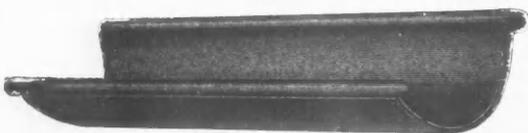
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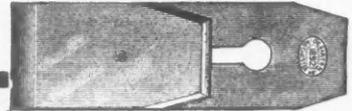
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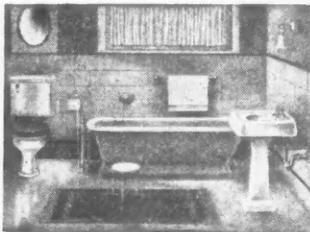
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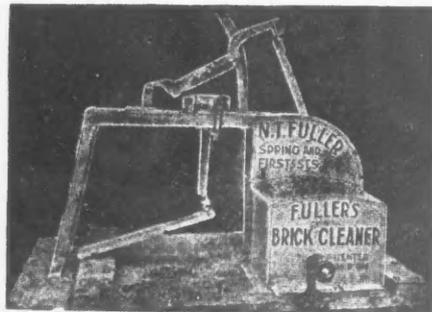
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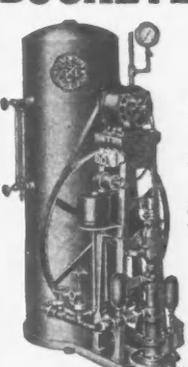
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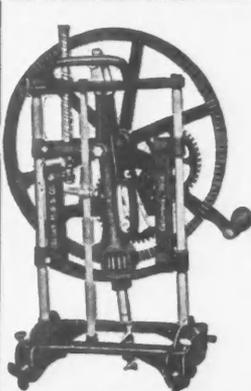
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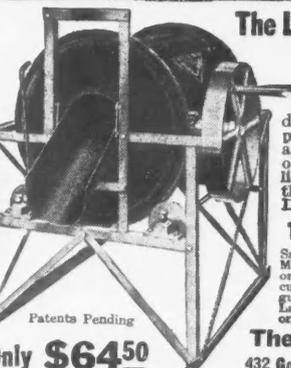
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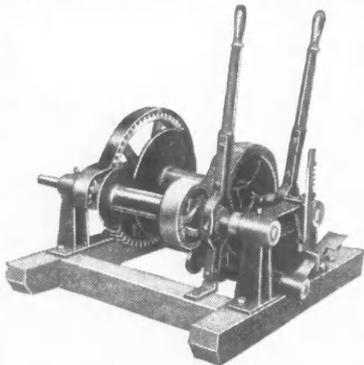
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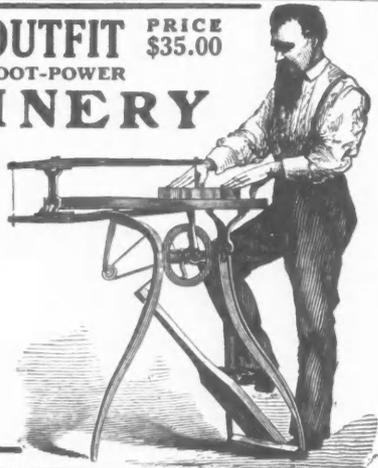
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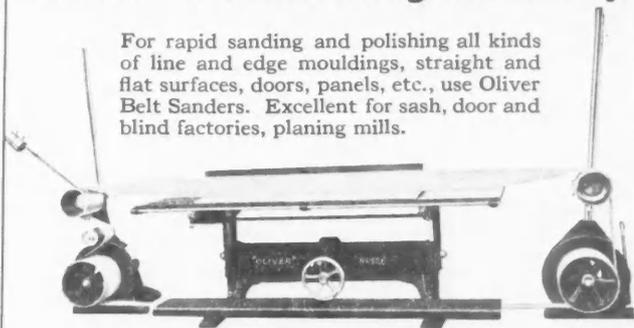
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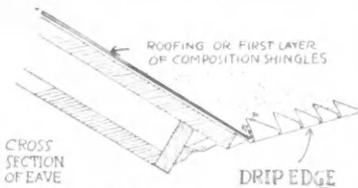
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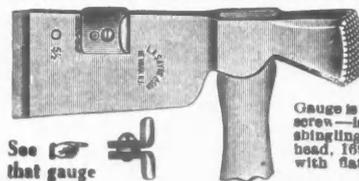
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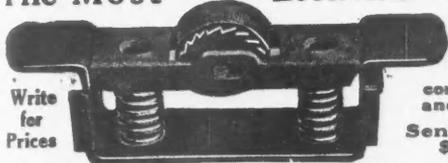
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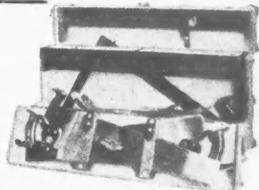
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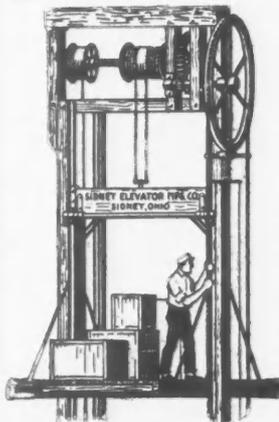
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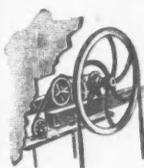
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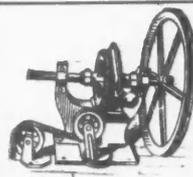
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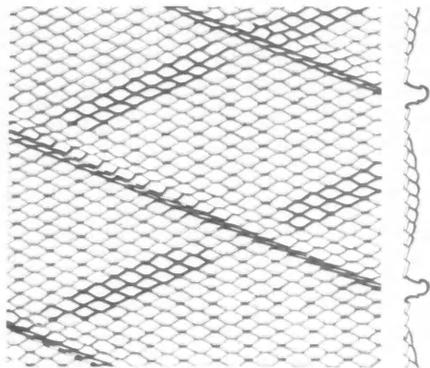
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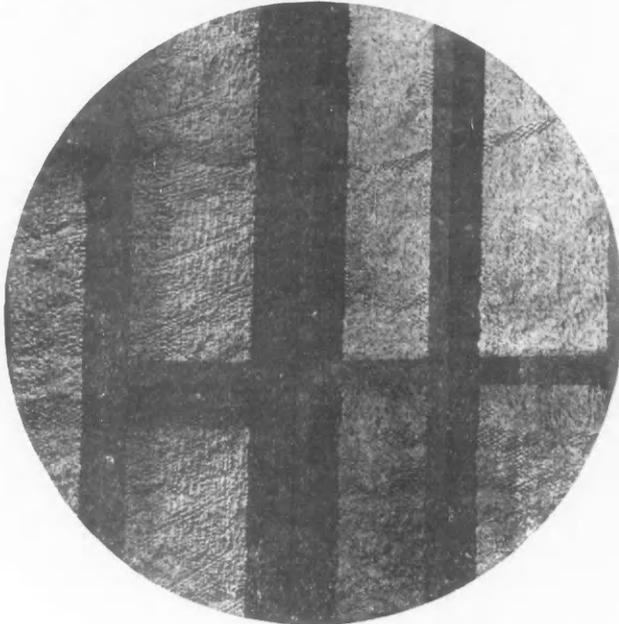
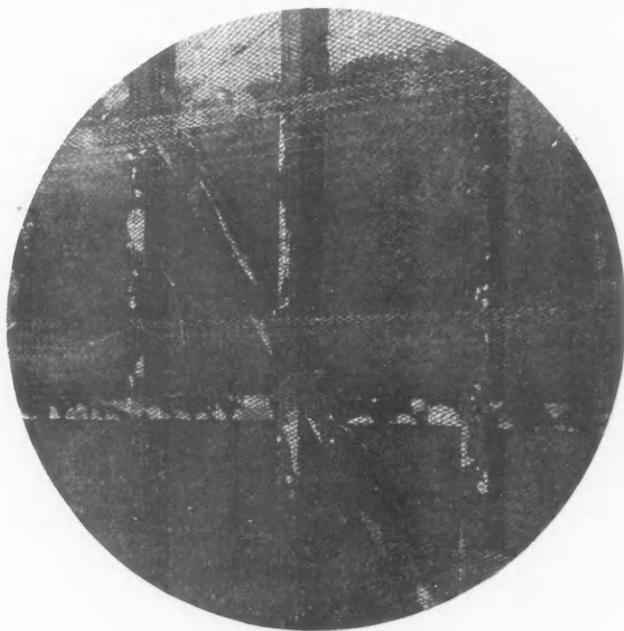
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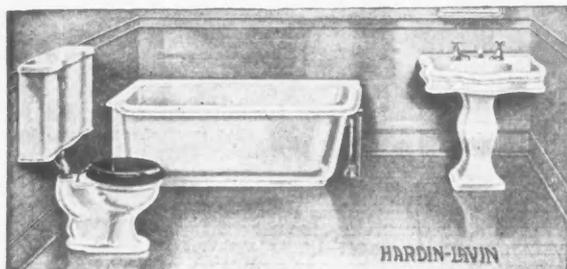
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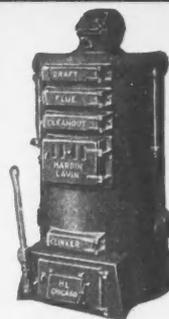
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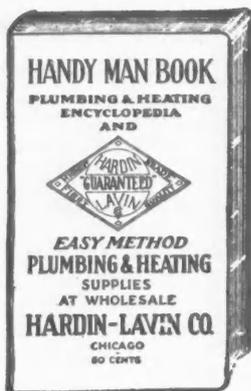
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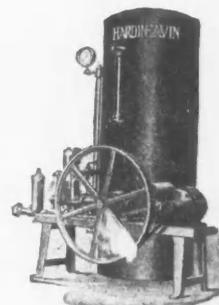
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