

HESS WARMING AND VENTILATING CO.

THE HESS
PNEUMATIC SYSTEM
OF DRYING

SALES DEPARTMENT
ROOM 906 TACOMA BUILDING

THE LEADER
STEEL FURNACE
WORLD'S FAIR MEDAL

TELEPHONES { MAIN 1810
 { AUTO. 3222

FACTORY: 584 TO 592 S. WESTERN AVENUE

CABLE ADDRESS
"HESS" CHICAGO
WEST. UNION AND A. B. C.
4TH AND 5TH CODES

CHICAGO, Mar. 20/09.

Mr. L.H. Burns,

Dear Sir:-

At the suggestion of a friend, we send you, in this mail, our book of the LEADER FURNACE, and we call your special attention to the very low prices we are making, to extend the sale of our goods.

If you will kindly send us a sketch of your building to be heated, we will make a plan showing just how it may be successfully and economically heated with our furnace, and we will quote you our very best price for the full equipment, all made to measure, fitted and marked, and delivered at your station, freight prepaid. If our plan needs revision to suit your requirements, we will revise it till it suits you. THIS SERVICE IS FREE, absolutely no charge nor obligation on your part to buy. If we can't interest you we're willing to lose the time and postage. We have sent these equipments into nearly every State in the Union, and they have given splendid satisfaction, and a large proportion of them have brought us new orders.

Our plan of selling is successful beyond our expectations. It enables us to give the consumer a better price than he could obtain if he bought the same goods from a dealer, for we are selling DIRECT FROM OUR FACTORY with but one profit, and it insures the proper size and arrangement of pipes, registers, furnace, etc., for by planning all the equipments we sell, we know the work is right.

We guarantee our furnace to heat the rooms connected to it to a comfortable temperature in coldest weather, and we refund the money, or give a larger furnace free, if it fails to operate as guaranteed.

Our 60 day trial offer insures you against loss, allowing you to test the heater before we are paid.

Our workmanship and material are the very best in all respects. We do not do cheap work. Our prices are as low as the same quality of work can be sold anywhere.

We trust you will secure our estimate of cost, and we assure you it will be satisfactory to you.

Yours very truly,

HESS WARMING & VENTILATING CO.

Per. 

What Will It Cost

to equip your House, Church, School or Store with the HESS STEEL FURNACE?

Send us a sketch of the building, with the information following, and we will tell you what our charge will be for a complete equipment, fully guaranteed.

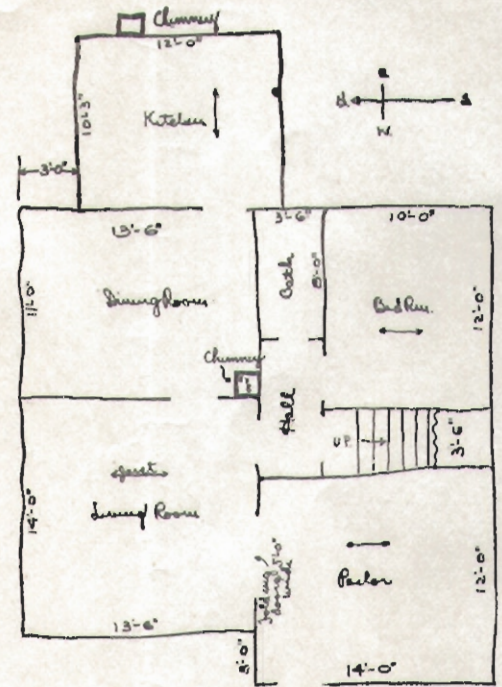
Your sketch need not be to a scale; but should clearly indicate the position and sizes of the rooms, measuring inside, from wall to wall.

Show the partitions by single lines, the doors by spaces in the lines, the chimney by a square, stairs by parallel lines; mark folding or sliding doors, if any.

Make a separate sketch for each floor, and mark the size of each room in figures.

Our sketch on this sheet shows about what is wanted, though, of course, your sketch should be larger.

In the cellar plan indicate the piers, posts and beams; the location of chimneys, fuel supply, and the cellar stairs or entrance. Show the direction of the joists by an arrow, thus: \longleftrightarrow



First floor

ON THE PLAN OR ON THIS SHEET PLEASE INDICATE

- In what stage of construction is the building?
- Is the upper story a full or a half story?
- How much below the first story joists do the beams project, if any?
- Height of cellar? first story? second story?
- If cellar is not 7 ft. where furnace will stand, can you make it 7 ft.?
- Width of stairways—mark on plan. Width of joists, first story? second story?
- Thickness of floors, first story? second story? width of studs in partitions?
- Width of studs next to sliding doors? what kind of fuel will be used?
- Is cellar ceiling plastered?
- Width of doorway through which furnace must pass?
- If church, school or store, show position and width of aisles?
- Are any registers now in the house? If so, show sizes and positions
- Are any partition pipes or register boxes now in the house? If so show position of each and exact size of the open ends to which the furnace pipes must be connected.
- Will you want a water coil to heat tank?
- Are you the owner of the building to be heated?
- If any rooms are not to be heated mark them "No Heat."
- What is your coldest winter temperature?

YOUR NAME AND ADDRESS

Name Postoffice

County State Your nearest R. R. Station

Give us This and we will make a plan to a scale, showing just how we would heat your house with our furnace, what size to use, where to place it, what sizes of pipes and registers to use and where to put them, how to provide air supply; and we will send you our estimate of cost, which will include everything, freight prepaid by us, and success guaranteed.

We Charge Nothing for plan, estimate, and information, even if you buy from others.

We are glad to have your consideration if you contemplate the purchase of a furnace, and by this careful showing of our methods we feel sure we can make your consideration favorable to us.

HESS WARMING & VENTILATING CO.,
906 Tacoma Building, Chicago, Ill.

Modern
Furnace
Heating



Modern Furnace Heating

For Dwellings, Churches,
Stores, Etc.



With a Description of the
Leader Steel Furnaces and
Circulating Room Heaters
Together with Illustrations
and Prices of Registers, Pipes
and Other Fittings



The Hess Warming and Ventilating Co.
906 Tacoma Building
Chicago

Modern Furnace Heating

If you want to heat a house, a church, store, school, or any other kind of building, there are many reasons why a *good* furnace is the most suitable apparatus for the purpose.

As compared with stoves, the furnace method offers the advantage of being more economical in fuel, less troublesome in the care of fuel, ashes, etc. It saves the space occupied by stoves and the lugging of coal and ashes back and forth, to say nothing of the dirt and dust occasioned by the use of stoves.

A good furnace is more economical in the use of fuel than steam or hot water, costs less to install and less to keep in repair. Better ventilation and circulation of heat is also afforded by the furnace method. It is readily adapted to all classes of buildings, and may be set up, altered or repaired, when necessary, by ordinary mechanics. It does not require an engineer nor water supply, but can be successfully operated by anyone who can run a common stove.

The matter of warming with a hot air furnace is not at all a complicated matter, provided a few simple principles are borne in mind.

In the first place, a furnace must be regarded as a huge *stove*, with fire-box, smoke-pipe and ash-box arrangements like other stoves, and in which the fire is built and regulated just as in other stoves. But there is this radical difference: a stove radiates and circulates heat in the room in which it stands, while the furnace must produce heat at a point away from the rooms to be heated, and this heat must be gathered and conducted to the place desired.

To accumulate and confine the heat generated, an inclosure or heat chamber about the furnace is necessary. This inclosure is represented by the galvanized casing of the furnace. The conducting of the heat is accom-

The furnace method best

Economical in fuel and labor

Better than steam or hot water

Adapted to all buildings

Simple

Furnaces are like stoves

With a difference

Cased to confine heat

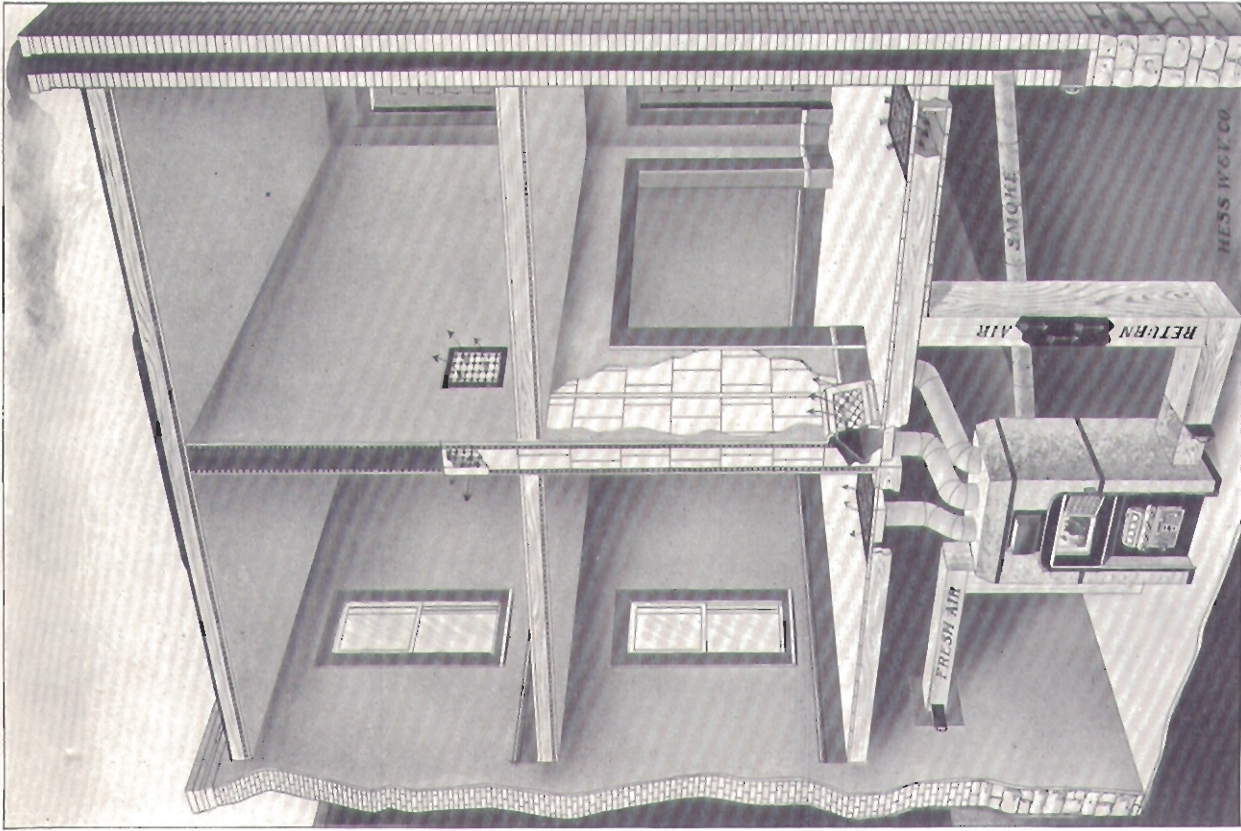


PLATE I.

SECTION OF DWELLING—Showing position of furnace with fresh air and return air supply; floor and special sidewall registers below; partition stack, and water register above.

*Pipes
to deliver it*

plished by the use of pipes, usually of bright tin, opening from the heat chamber or casing and extending to the rooms to be heated.

*Air supply
to convey it*

But this is not all. The heat will not move without a medium to carry it, and this medium is simply common air. It is known to all that warm air is light and will rise above colder air. Applying this knowledge, we let a supply of air into the heat chamber, at the bottom of the furnace. As it gathers heat it rises till it reaches the conducting pipes at the top of the heat chamber, then flowing through these pipes, it enters the rooms where heat is desired. A constant flow is at once established, which absorbs and carries away the heat from the furnace as fast as it is generated.

*Exhaust
to make
room for
warm air*

It is apparent that if we attempt to pour warm air into a room for an indefinite time, we shall fail, just as we would fail to pour more water into a bottle already full, unless we arrange to let as much air out of this space as we bring in. This, then, calls for an *exhaust* from the space heated, to leave room for the warm incoming body of air.

*Warm
and cold air
do not mingle
freely*

We have already called attention to the fact that warm air rises above cool air. This occurs in the heating-chamber of the furnace, the hotter air rising to the top to enter the conducting-pipes. It also occurs when this warm air enters the rooms. It goes straight to the ceiling and spreads horizontally at the ceiling. It will not mingle freely with the cooler air below it, but lies in a stratum in the upper part of the room. A part of our problem, then, is to get rid of this cool air at the floor, thus causing the warm air to descend and fill the lower portions of the room.

*Warm air
displaces cold*

This we do by making an opening at the floor, through which the cool air may escape, and as we need a constant supply of air to remove the heat from the furnace, we make use of this air from the rooms as an air supply for the furnace, by conducting it back to the heater. Thus

*Cold air
returns to
heater*

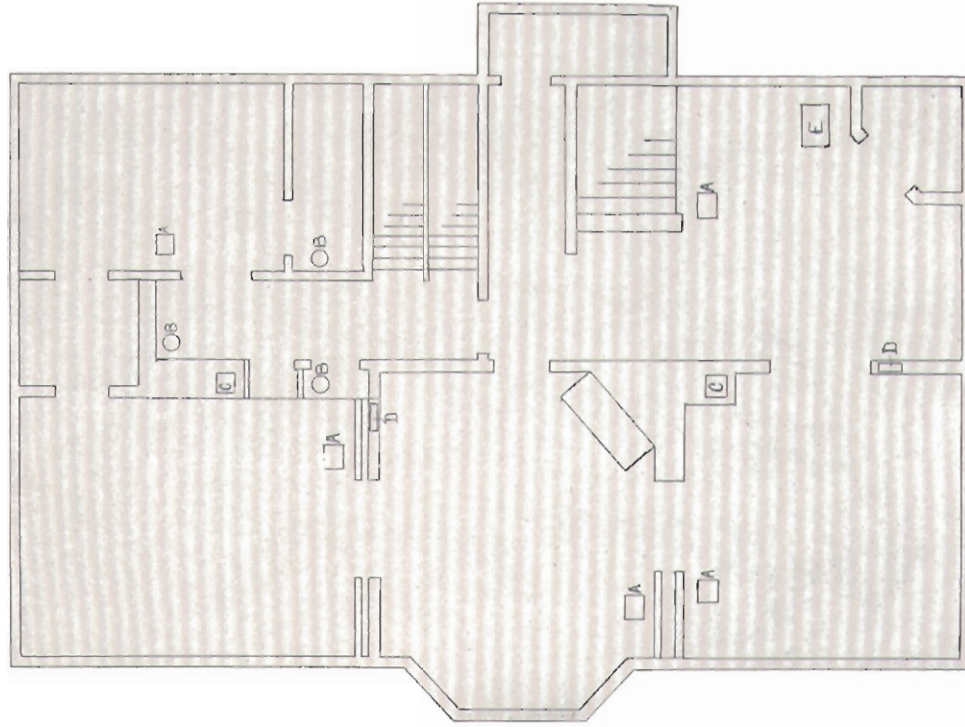


PLATE II.

MAIN FLOOR OF DWELLING—A. Heat registers. B. Round heat pipes to second floor.
C. Brick flues, for heat to second story. D. Partition heat pipes to second story. E. Return air supply register.

we make of the plant a complete circulating system, by which the cool air at the floor of the rooms is drawn off to the furnace, heated and then returned to the rooms.

The process is continuous, automatic and entirely successful. It is not necessary, in an ordinary dwelling, that separate outlets for air be provided for each room. One large opening, in the lower hall or living room, is generally sufficient.

All conducting-pipes for heat should be of metal, preferably of bright tin plate, and where these are inclosed in wooden walls they should be double, with air spaces between, to insure safety from fire. Wooden ducts for cold air may be economically made of matched flooring, and the spaces between joists may sometimes be utilized for this purpose.

It is sometimes desired that fresh air from out of doors be used. In this case the air supply is drawn from a window opening to the outer air, and outlets for the air of the rooms are provided by way of fireplaces or other ventilating flues. Good ventilation is obtained in this way, and it is especially desirable for schools, churches or other buildings where many people assemble. The fresh air supply, to give best results, must open on the side toward the prevailing winds. In the vicinity of Chicago this would be toward the west.

While the use of a fresh air supply is desirable it is quite unreliable in the case of adverse winds, and we therefore advise that a return-air or inside air supply be used also, with such an arrangement of slides or valves in each supply duct that when the outer supply is used the inner supply may be shut off, and vice-versa. Both will not operate well at the same time.

Ventilation

An economical and efficient method of securing ventilating outlet flues in houses not provided with fireplaces or ventilating chimneys, is to use the spaces between

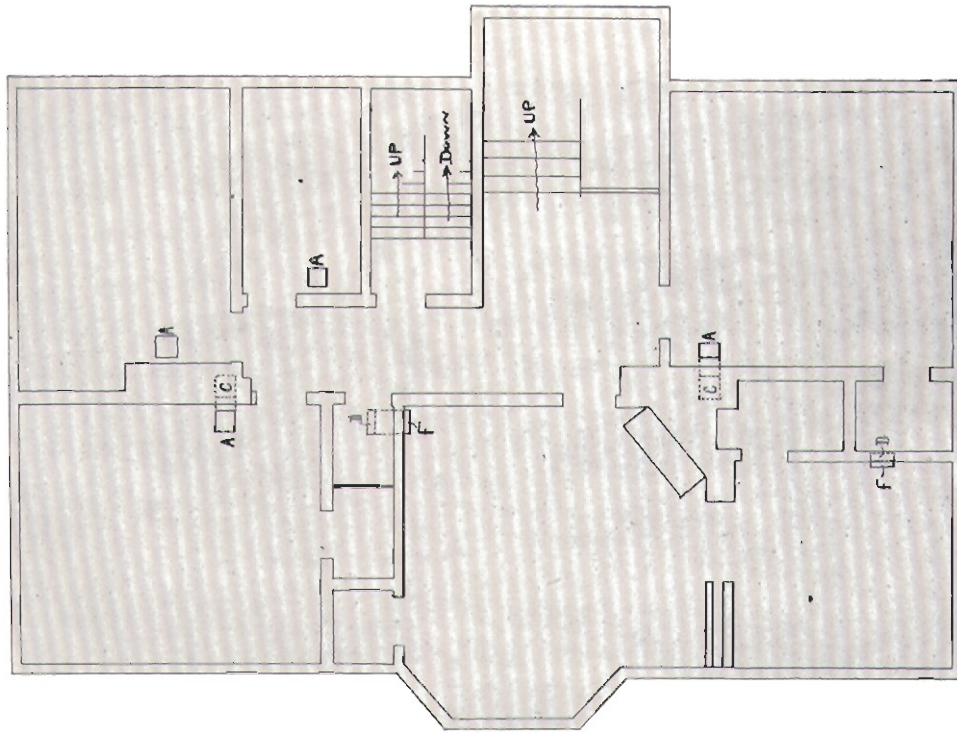


PLATE III.
A. Floor Registers. C. Brick heat flues. D. Tin partition heat pipes.
F. Side wall registers.

Complete circulation

One outlet enough

Material for pipes and ducts

Fresh Air

Ventilation

studs, in *inside* partitions only, opening through plates above, so there may be continuous ducts from the rooms to be ventilated, to the attic space or cockloft above. Outside walls must not be used for this purpose, their low temperature preventing the proper flow of air and often reversing it. If the attic is tight, a galvanized ventilator-cap, obtainable from us or from all hardware dealers, may be placed in the roof to let the air out of the attic. As attics are usually more or less open, the roof ventilator, in many cases, is unnecessary. The air from below will travel through the partitions to the attic, and will find its way out through the ventilator cap, or through the crevices in the roof.

Partition ventilators

Attic outlets

In large audience rooms to be ventilated, where the space between studdings is insufficient, triangular ducts may be built in corners, by throwing a lath and plaster partition across each corner, making in each space a vertical duct, this to open into the attic above, as already outlined. But even in buildings provided with fresh air supply we recommend that the circulating system be also provided, for, with adverse winds, trouble sometimes arises where the fresh air supply only is available. By arranging the air supply ducts with cut-off slides, so that the fresh air or the circulating method can be used at will, successful heating will be accomplished in any weather.

Special ventilation ducts

Return air desirable in addition

Interchangeable

Humidity

With any method of heating, it is highly desirable and important that the proper humidity or moisture of the atmosphere indoors be maintained. This, in the case of buildings warmed with stoves, or with steam or hot water, can be accomplished only by an open evaporating pan in each room, for, contrary to a popular belief, steam and hot water heating do not add moisture to the atmosphere. Steam and hot water are moist, to be sure, but this

Humidity essential

Steam and hot water deficient in this

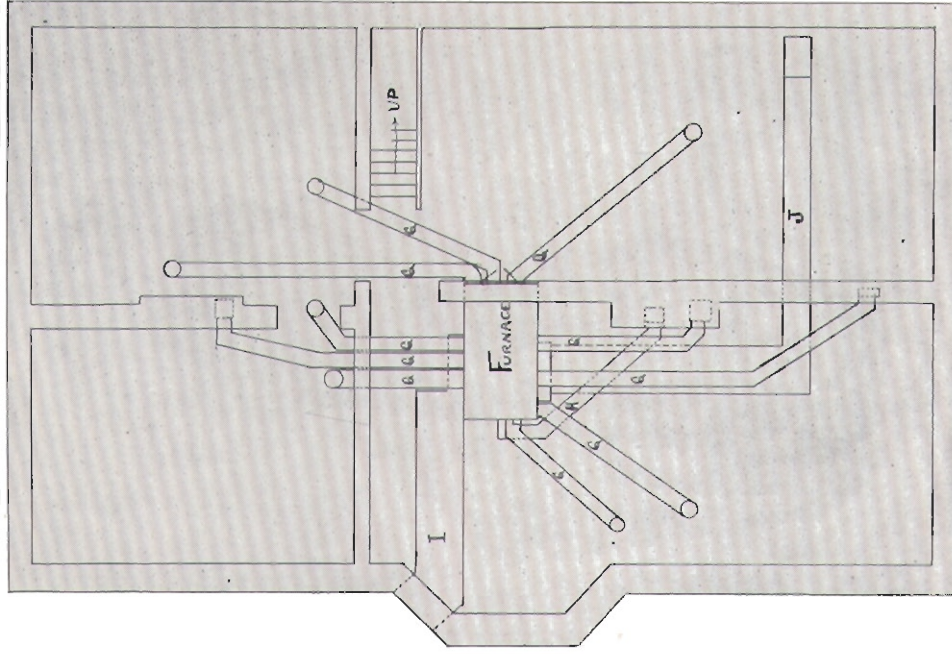


PLATE IV.

BASEMENT PLAN OF HOUSE—Showing suggestive position of furnace.
 G. Cellar heat pipes. H. Smoke pipe. I. Fresh air supply.
 J. Return air supply.

moisture is confined in radiators, and cannot evaporate through solid iron.

With a furnace, the moisture is conveniently and evenly supplied from an open water-pan placed within the air chamber of the furnace, the evaporated moisture mingling with the warm air as it passes to the rooms.

Few realize the importance or the purpose of the addition of moisture to the air.

Air at 15 degrees, when *saturated*, containing all the moisture it will carry, can hold but one-sixth as much as it will carry if warmed to 70 degrees. If, therefore, we warm it without adding moisture, the air becomes exceedingly dry and "thirsty." It will draw the moisture from any object exposed to it. Plants will languish, woodwork will shrink.

The effect on the human system is unpleasant, noticed frequently in dry and parched skin. The mucous membranes and eyes are especially affected by the excessive dryness, and headaches from this cause are not uncommon.

Not only is the atmosphere rendered more pleasant and healthful by the addition of moisture, but a decided economy in fuel results, for it is well known that to be comfortable in a dry atmosphere, several degrees of temperature higher are required than if the atmosphere is humid. This is accounted for by the fact that the rapid evaporation of the moisture of the body, in very dry air, has a cooling effect, not experienced in an atmosphere more moist, and in which such evaporation is therefore less rapid.

Air Conductors

It should be borne in mind, in planning for furnace heating, that air moves most freely in straight lines, and that all crooks and turns retard its flow. And it must be remembered that warm air moves *vertically*, and its velocity is diminished by an attempt to carry it horizon-

Furnace air moist

Why air seems dry

Dry air unpleasant

Economy in added moisture

Air moves in straight lines

tally. Therefore, we make it a rule to plan our work so that all conducting pipes shall be as short and as straight as possible. Our purpose is to get the heat away from the furnace *quickly*, for in this lies economy and efficiency. It is a mistake to carry a hot air pipe across a room, so the register may be under a window. The heat will go straight to the ceiling, no matter where the register may be, and the room will not be warm till it is *full* of warm air. Therefore, fill it with warm air the quickest way, and that way is with the short pipe. And the furnace should be placed in a central position with reference to the rooms to be heated, so the pipes may *all* be short, and so they may extend uniformly from different sides of the furnace, which is a distinct advantage.

The height of the cellar where the furnace is to stand has much to do with success in heating. We have already noted that the tendency of heated air is to travel vertically. To this must be added, that the longer the vertical path of the heated air, the greater will be its velocity, and the consequent higher efficiency of the heater.

A high cellar, therefore, causes greater velocity in the movement of the heated air than a low one, hence better delivery of heat. Seven feet is a good height for a cellar. Eight feet is better, though not often provided. When a cellar is less than seven feet we recommend that a depression be made in the floor where the furnace is to stand, to gain the desired height.

A necessary adjunct to the furnace is a good chimney flue. This should be straight and not smaller than 8x8 inches *inside*, though 8x12 inches is better. It should be, preferably, in an inner partition, rather than in an outside wall, as the protected position preserves its warmth, insuring steady and strong draught. It should extend well above the highest roof level, and if any openings are made in it beside that for the furnace, they should be tightly stoppered.

Heat pipes should be short

Furnace centrally located

High cellar desirable

Points on chimney building

*Dampers
in smoke pipes*

The smoke-pipe of any stove or grate opening into it should be provided with a tight damper, to be closed when such grate or stove is not in use.

*Partition pipes
double*

Pipes for heat, leading to upper rooms, should be as large as can be admitted in the partition spaces, and, for safety, should be double, one inside the other, with air spaces between. On such pipes the use of asbestos paper or other protection is unnecessary.

*Asbestos
paper
poor economy*

And here let us sound a warning against the use of single partition pipes to be wrapped in asbestos paper, frequently supplied by dealers to save a few cents in cost. Asbestos paper is thin and tender. It is often torn when put in, and is frequently nibbled and destroyed by mice, being of soft fibrous character. It is, therefore, not to be relied on as a permanent protection against fire, and where pipes are to be incased in wood, or are in wooden partitions, they should always be double, with air spaces for safety.

Pipes for first-floor rooms are usually round and of larger area than those for second-floor rooms, the vertical length of the latter making them more effective when of equal size. We consider it good practice to cover all exposed cellar pipes, which are invariably single, with asbestos paper, to prevent loss of heat.

Registers

*Floor
registers
better*

Side wall or floor registers may be used, and many styles and sizes are on the market. For first-floor rooms we advise the use of floor registers (or special side wall registers), for the reason that the pipes leading to them can usually be of larger diameter than can be used for ordinary side wall registers, and, as a rule, can be run with fewer bends.

For second-story rooms either style may be used, depending on the situation of the wall-pipe, that style being preferred which will afford the most direct outlet from the pipe.

*Separate
pipes
preferred*

We recommend usually that each register be supplied with a separate pipe from the furnace, excepting in the case of very small rooms, or that extra large pipes be used if two registers are connected to one pipe.

We frequently recommend the use of a wall pipe for a first-story room, with register, and extending to a second-story room directly above, thus economizing in the use of piping and in the cost of equipment. While this will not always warm both rooms at once in cold weather, it will answer perfectly when heat is not required in both rooms at once, as in the case of a living room with bedroom above it. By adjusting the register valve in the first floor room the heat may be directed into either room at will.

*Ceiling
registers*

In many cases, where but slight warmth in upper rooms is desired, the use of pipes leading to such rooms may be dispensed with and their cost avoided, by placing register openings in the ceilings of the warm lower rooms, through which heat will escape to the upper rooms, making them comfortable for sleeping purposes.

To Heat a Dwelling

In the selection of a furnace care should be taken to secure one amply large. "Just large enough" is too small. Get one big enough to warm your rooms without crowding in the coldest weather and you will have a maximum of comfort at a minimum of expense and labor. A forced fire wastes fuel, and a large furnace is more economical of fuel than a small one and entails less expense for repairs.

The main points to be observed, therefore, in planning the heating of your house, are:

1. Buy a furnace amply large.
2. Connect it to a good chimney.
3. Place it in a central location.
4. Have the pipes short, straight and of ample size.
5. Let your air supply be efficient.

*Selecting a
furnace*

Our house plans show an arrangement of details which will be a safe guide to those planning to heat with furnaces, and a similar arrangement may invariably be carried out in the planning of any house. It may be applied generally to houses already erected, though it is sometimes necessary to modify the arrangements for upper rooms by carrying pipes through closets or in corners, when it is not practicable to place them in partitions.

Our house plans

Plate I. While the particular arrangement shown is not arbitrarily to be followed in all cases, yet it shows an effective equipment. One air supply would be sufficient in ordinary dwellings, and this should usually be placed in the lower hall or living-room.

Plate II. Shows a first-story arrangement of registers, conveniently placed; return air face in hall, two brick flues in chimney, utilized for carrying heat upstairs, two flat tin partition pipes, and three round pipes for the same purpose. Round pipes for such use are preferable to square, and in this plan are situated in closets and corners out of the way. In a completed house, such pipes may be placed without disturbing plaster and at little expense.

Plate III. Second-story plan, showing registers in each room, some in side wall. Note that all connections are short and direct.

Plate IV. Basement plan, showing furnace centrally located, with fresh air duct from out of doors, and return air from hall above. The heat-pipes radiate from all sides of the heater and are direct and free from crooks as possible.

Churches, Stores or other Large Rooms

The heating of churches, stores and assembly rooms is readily accomplished with furnaces, and in such cases, for each large room there should be but one register face, without valves, directly above the furnace, with one or more return air faces at other points to let the cold air at the floor back to the furnace. (See Plate V.) *Do not use*

With furnace

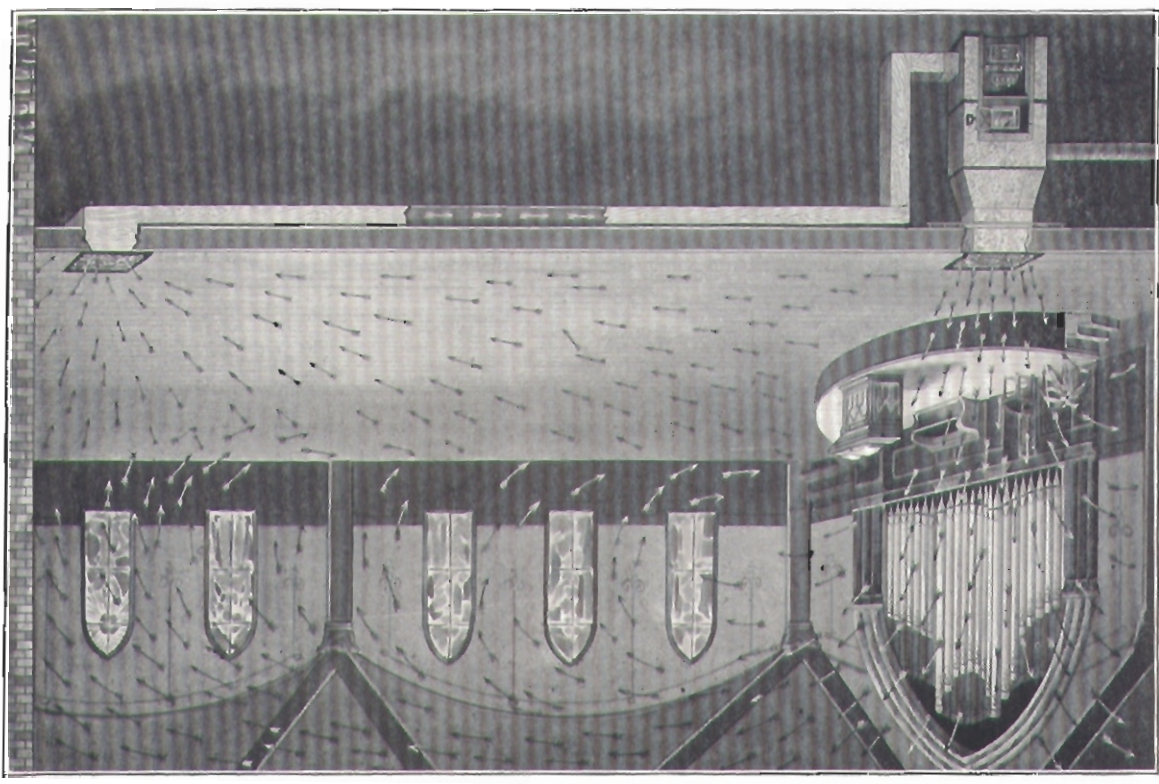


PLATE V. SUGGESTED PLAN FOR CHURCH HEATING—Large heat outlet directly above furnace; return duct drawing cold air from floor back to furnace.

Avoid horizontal pipes in such rooms if it can be avoided. The single register plan gives better results, and when one register only is used, no damper or valves should be used to shut off the heat. If it is necessary to reduce the heat, cool down the furnace, for if the heat is shut back on a hot furnace damage may result.

Do not assume that there will be too much heat near the register and not enough elsewhere. The heat goes to the ceiling, straight, and your room will only be warm when it is entirely filled with warm air. This you can accomplish with the single register plan better than any other. The rapid delivery of warm air into the room brings about its thorough heating in the least possible time. The distribution of heat is aided by the withdrawal of the cold air from the floor level, making room for the warm air to descend and circulate.

Because of the fact that churches are often without heat during the week days, the walls and furniture will absorb much heat before the rooms become comfortably warm, and, therefore, it is desirable to use extra large furnaces, which will permit the rapid heating of rooms for Sunday use.

Care must be exercised in making the ceilings of church rooms tight. If crevices, ventilators or manhole openings exist, the heat will be rapidly lost, and the heating apparatus, of any kind, will be ineffective. It is essential, too, that the space above the ceiling be tight and warm. If otherwise, much heat is absorbed by the ceiling, which thus presents an obstacle to economical heating.

Ceilings must be tight

Attic Warm

Circulating Room Heaters

It is frequently preferred, when a large room is to be heated, that some form of room heater be used, which shall stand within the room itself. If an economical and effectual heater is supplied, it may be placed anywhere in the room, even in an extreme corner, and yet will circulate and warm every part of the room alike. (See

16

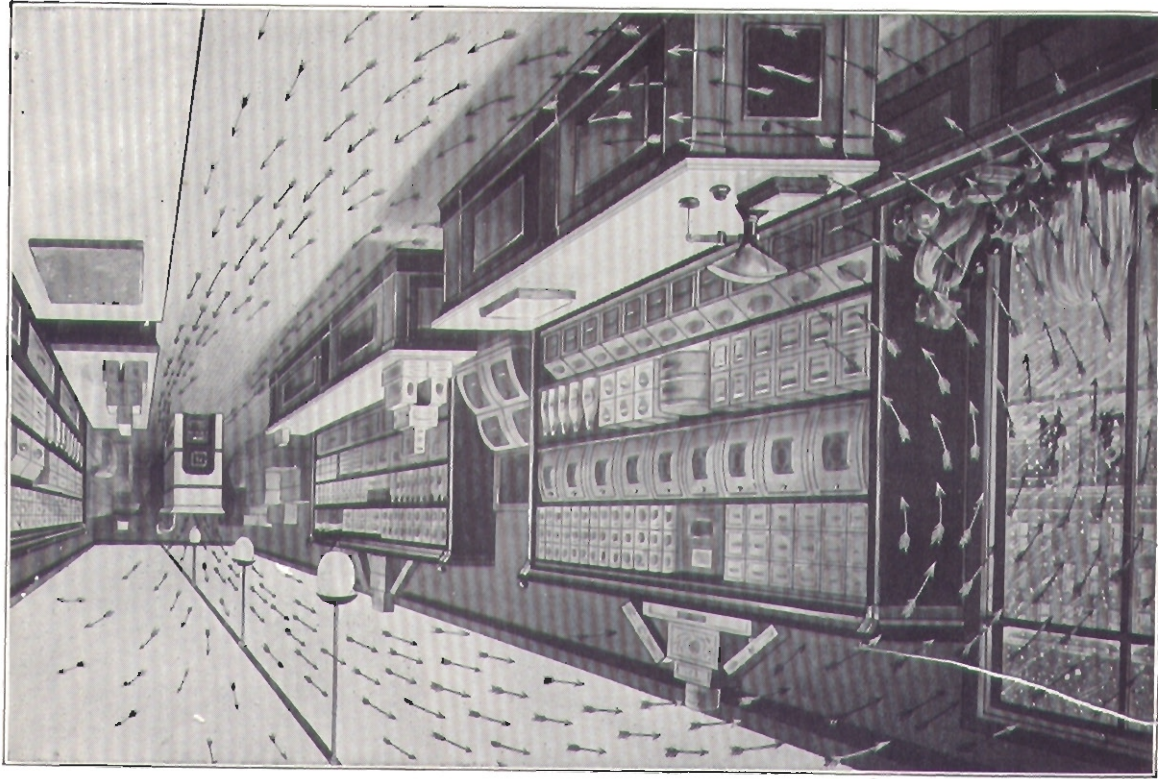


PLATE VI. ROOM HEATED BY CIRCULATING ROOM HEATER—The cold air at the floor constantly flows through the heater and is discharged hot, from the top, circulating to all parts of the room. An excellent plan for stores, churches, shops, etc.

17

Plate VI.) Such a heater should be so incased that little heat will radiate from the sides, the purpose being to draw the cold air from the floor and discharge it, properly warmed, from the top of the heater.

*Little
side radiation*

No registers, pipes, nor air-ducts are required in this plan of heating, and the heater should be ample in capacity to warm the room in which it stands, as well as all rooms having open connection with it, for it heats uniformly, and if all the space connected is not heated no part will be. The temperature throughout will be alike. Many churches are warmed in this manner, the heater being placed in one corner and concealed by curtain or screen.

*Heater
must be amply
large*

*Good
for churches*

The Leader Circulating Room-heater is expressly built for such work. (See Plate XIV.)

In General

The rules and suggestions laid down in the preceding pages may be successfully carried out with any good furnace. It is necessary, however, in order to accomplish the best results with the least expense and labor, to combine in the furnace to be selected, a few essentials of construction, as follows:

Capacious and convenient fire-box.

Permanent joints which can never open and leak.

Efficient radiating surfaces; meaning not only of large area, but of thin metal, which radiates rapidly, rather than heavy, thick bodies of metal, which transmit their heat slowly.

*Some
essentials in a
furnace*

Sheet steel is the ideal material for a radiating medium.

Simplicity of construction, which means absence of complicated parts, flues to clog and leak, and lack of machinery to get out of order.

Freedom from repairs. The simple furnace is the cheapest to maintain from year to year, and if built right can be repaired by any handy man without the aid of high-priced mechanics.

18

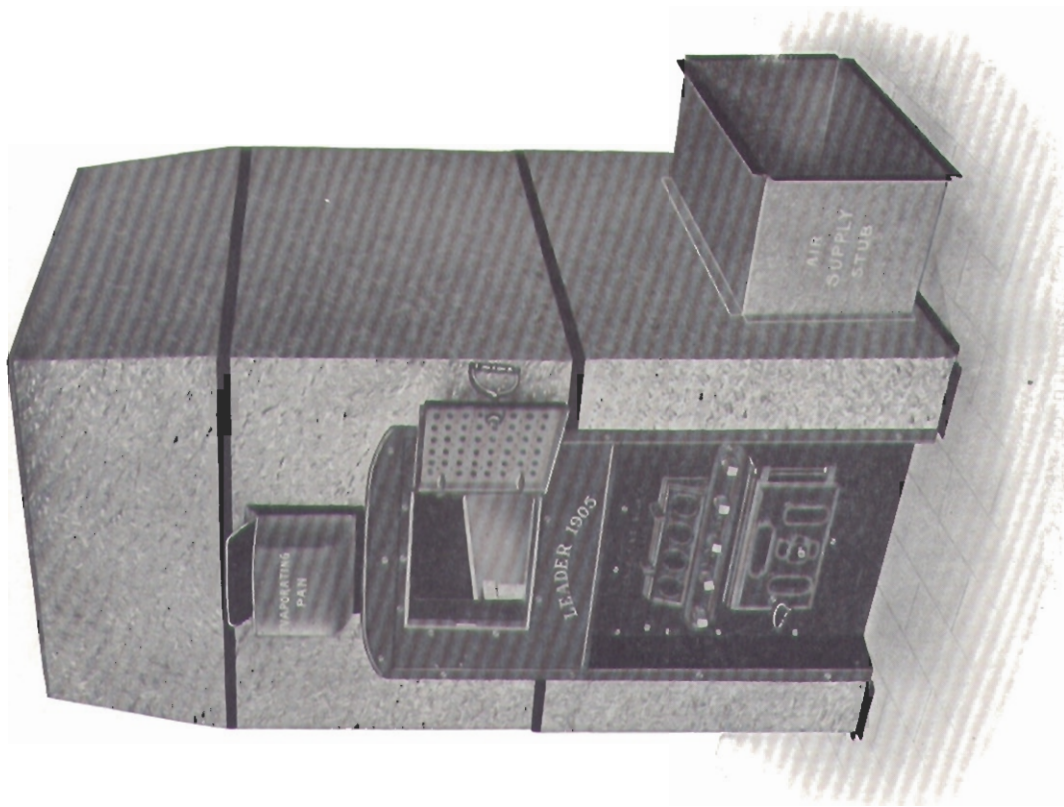


PLATE VII.
THE LEADER STEEL FURNACE.

Such a furnace is

The Leader Steel Furnace

We have made furnaces, good ones, for thirty-five years. In 1897 we designed the *Leader Steel Furnace* (see Plates VII and VIII), and we now devote all our facilities to making this one style.

In the construction of this furnace we aimed to secure the greatest efficiency and economy in the simplest possible form and at the smallest possible cost and we succeeded far better than our first expectations.

The entire inner body or radiator of the Leader Steel Furnace (see Plate IX) is made up of soft annealed steel sheets, *closely riveted together*. There are no cement joints to leak, no joining of steel to cast iron, which, owing to the unequal expansion of the two metals, cannot be made permanently secure against leakage. Opening of the riveted steel joints is impossible, and the Leader Steel Furnace, for this reason, is always free from leakage of gas and dust, and from the occasional cracking of parts, inevitable when cast iron forms a part of the radiating surfaces.

The sheet steel used in the sides of our radiators is No. 16 gauge, about one-sixteenth of an inch in thickness. The top is of No. 12, which is about one-ninth of an inch.

Our reason for using metal comparatively thin is that *thin metal radiates faster* than thick metal, and it is, therefore, more economical in the use of fuel. The heat is instantly transmitted and can be regulated quickly, which is not true of furnaces of heavy metal. A newspaper, when burned in a Leader Steel Furnace, will create a very perceptible warmth, which could not be discerned in an ordinary furnace. The saving in fuel, by reason of the use of light metal, is much more than would be possible if heavy castings or plates were used.

At first thought this weight of material may seem too

*At it
thirty-five
years*

*Efficiency
and
simplicity
our aim*

*The
radiator*

*Thickness
of steel*

*Why
it is best*

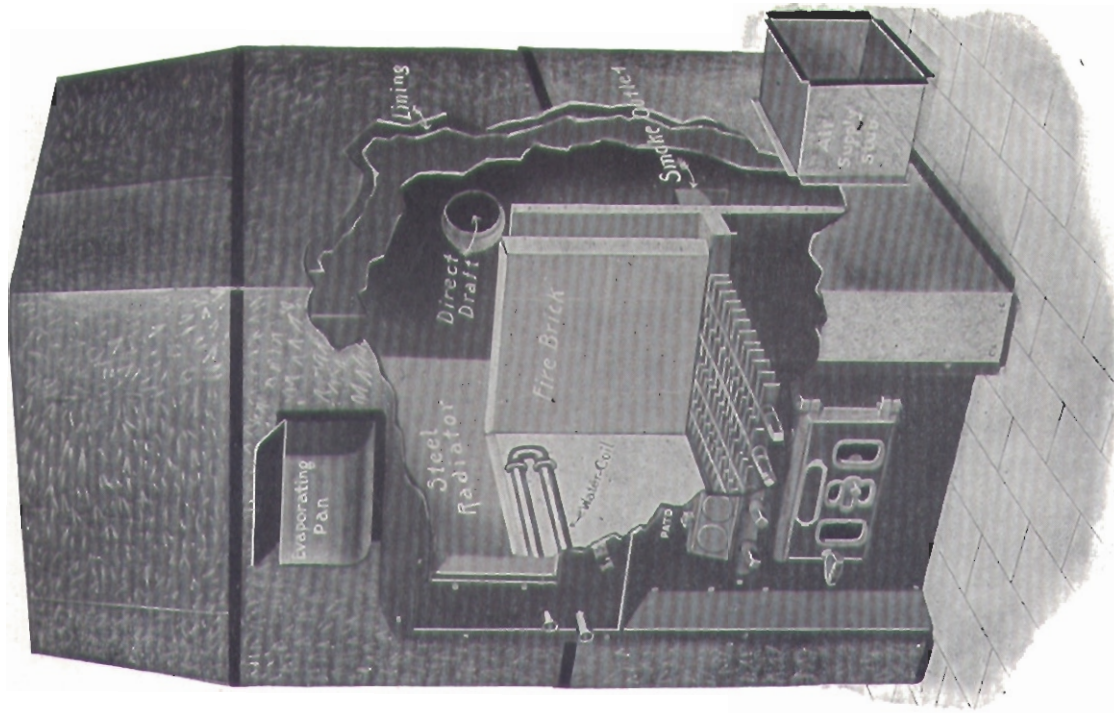


PLATE VIII.

Showing interior arrangement of fire brick, grates, etc. The water pipe is for connection with tank and is sold as an extra, not included in the price of furnace.

thin for durability. Such has not proved to be the case. The steel is thoroughly protected against burning out. It will rust through in the course of time; just how long a time is not yet determined. Last season we examined a number of our earliest furnaces and found their condition to be practically as good as new so far as damage from rust and burning out is concerned.

Steel formed into tubes or round radiators will rust faster than if left flat, as in the Leader radiators, for the following reason:

When steel is rolled and annealed in the process of making sheets, there is formed upon the surface a scale or oxide, black, hard, brittle, and not attacked by acid or rust.

If the sheets are then formed into tubes or round radiators this oxide cracks and scales off, leaving the clean steel exposed, and this rusts readily.

As the Leader plates remain flat the scale is left intact, and this protects the metal and greatly adds to its durability. We believe our Leader Radiator will last many years, and we agree, if a radiator rusts or burns through, within fifteen years, to supply an entire new radiator, of any size, up to and including No. 55, for \$15.00, f. o. b. Chicago, \$20.00 for No. 58, or \$25.00 for No. 60. This limits and guarantees the possible expense of maintenance, which compares most favorably from year to year with the cost of maintaining cast iron furnaces.

The square form of our furnace is more economical in the use of material, cost of labor, etc., in its construction, and, at the same time, the radiating surfaces are greater in area than in a round furnace of the same diameter.

The fire-box of our furnace is made up of fire-brick slabs, resting upon steel brackets, no bolts or other fastenings being necessary to secure them. These slabs are passed through the fire-door and dropped into place without the use of tools, cement or fire-clay. In repairing they can be replaced in a few moments without disturbing

Why steel in the square furnace is more durable than in the round

We protect against damage

Square form an advantage

Fire-brick lining

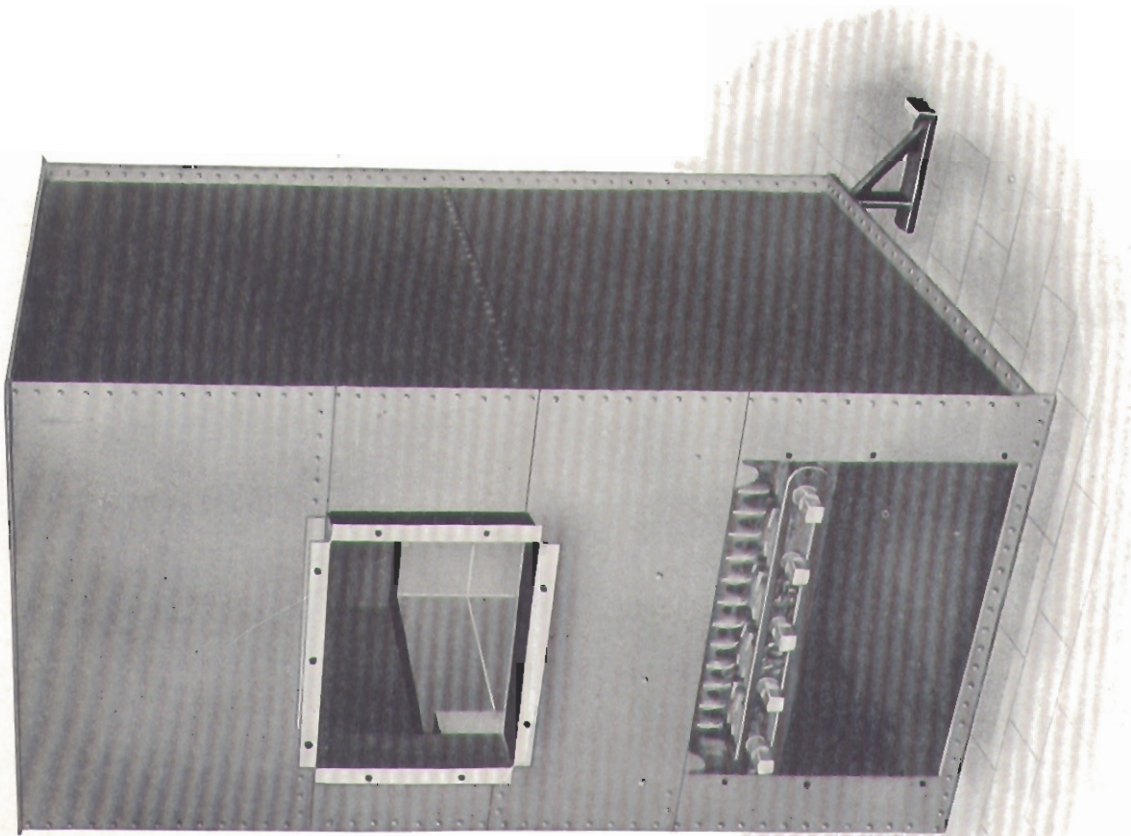


PLATE IX.
THE STEEL RADIATOR—Every joint riveted; no chance for leakage of gas and dust.

any part of the furnace. Any of our furnaces may be lined with ordinary square fire-brick, obtainable anywhere, if it seems desirable.

The grate consists of several parallel rocking grate bars, with square ends projecting through the front of the furnace, so that each grate bar may be agitated, or even turned completely over, independently of any other. This enables the user to clear any part of the fire without disturbing any other portion of it. The grates are readily removed or replaced by unbolting the retaining plate on the furnace front. As the fire-box and grates are close up to the front the work of caring for the fire is easily and conveniently performed. This arrangement is a great improvement over the usual situation of the fire-box in the center of the furnace, out of reach and difficult to clear.

The Leader Steel Furnace is adapted to any kind of fuel. The fire-box, while comparatively shallow, is of great area, with the grate surface under the whole fire. For this reason combustion is perfect and clinkers are rarely formed. The furnace is sold in all the different states of the Union, and all kinds of fuel are used with complete success and economy. Hard and soft coal and coke are burned on the regular coal grates. We supply special grates for lignite and for soft coal slack. When wood is to be used we supply the regular coal grates and also a steel plate, which may be passed through the fire-door. This is placed upon the grates and instantly adapts the furnace for wood, corncocks, etc. The convenience of this arrangement is especially appreciated when it is desired to change from one fuel to another, for no time nor labor is expended in making the change. Natural gas burner will be supplied instead of grates, if desired at slight additional expense.

The furnace is regulated as easily as the simplest stove, and responds readily. Chain attachments connect the front draft door and the rear smoke and check

*Rocking
grates*

*Fire-box
conveniently
close to
fire-door*

*Fuel—all kinds
adapted*

*Special grates
for
wood, slack,
and lignite*

*Chain
regulation*

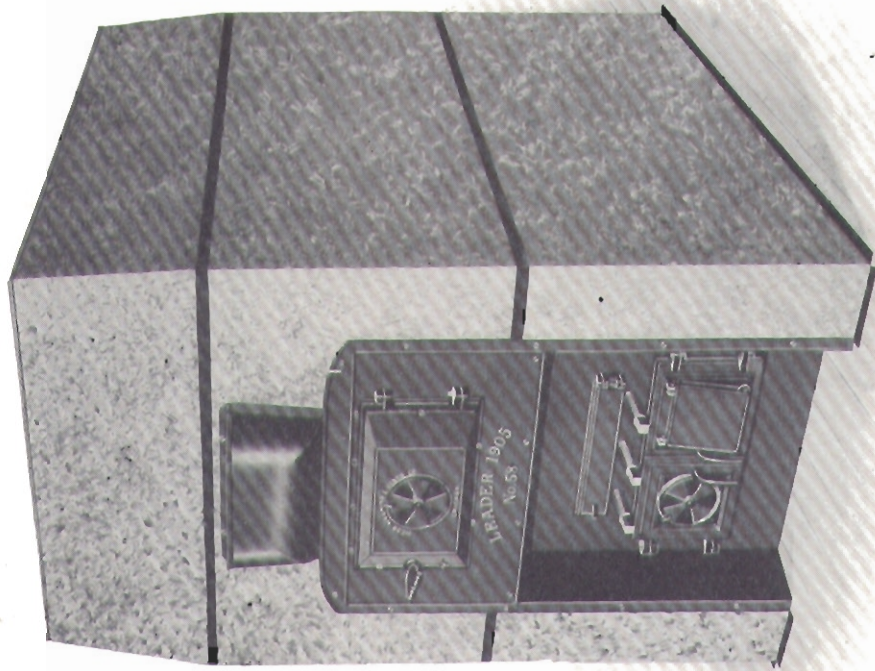


PLATE XIII.

NO. 58 AND 60 LEADER STEEL FURNACE.

dampers with the floor above, enabling the operator to regulate the fire from above.

The smoke outlets are simple and there are no smoke flues within the furnace. The position of the smoke outlet at the bottom of the large radiator permits the withdrawal of the smoke with the loss of but little heat—a fuel-saving arrangement. By raising the square plate at the base of the smoke-pipe, any accumulation of soot and ashes is easily removed.

To prevent the loss of heat in the cellar, the furnace is inclosed in a galvanized steel casing, No. 26 gauge, inside of which is placed a false casing or lining of black steel, so situated that a current of cool air passes between this and the galvanized case, cooling it and conveying the heat to the rooms above. This is a new device, owned by us, and is far superior to the old method of lining with tin and asbestos paper.

We think our lined casing preferable to a brick housing. It costs less and is easily removed, if necessary, for repairs.

A water-coil for heating a tank is supplied, if desired, and is a useful and economical accessory to the furnace. Price, \$2.50 each. (See Plate VIII.) A pan for evaporation of water is supplied free with all furnaces, and this pan is so located that it is effective. In most furnaces the water pan is near the bottom, where the low temperature prevents proper and sufficient vaporization.

In shipping the Leader Furnace the inner steel radiator is shipped complete. The other parts are sent "knocked down," and are easily handled. The whole heater, so simple in its construction, is fully fitted before shipping, and can be put together by any handy man, no tool but a screwdriver being necessary.

No. flues inside

Easily cleaned

A new case lining

Preferable to brick

Water coil \$2.50

Evaporating pan free

Shipped "knocked down"

The Leader Steel Furnace is made in six sizes, the general dimensions of which are as follows:

Number of furnace.....	40	45	50	55	58	60
Width of furnace, inches	34	38	44	44	44	42
Depth " " "	39	41	48	50	73	93
Height " " "	73	73	73	73	70	70
Width of steel radiator...	24	28	26	30	30	30
Depth " " "	32	34	41	43	66	86
Height " " "	53	53	53	53	53	53
Width of door necessary to admit radiator, inches	24	28	26	30	30	30
Width of fire-box, " "	17	21	19	22	20	20
Depth " " "	18	18	25	25	29	42*
Height " " "	18½	18½	18½	18½	21	21
Width of fire door " "	13¾	13¾	13¾	13¾	17¾	17¾
Height " " "	9¾	10	10	10	10	10
Size of smoke pipe, " "	8	8	8	8	10	10
Capacity, No. of rooms	5	6	7	9	10	12
in dwelling.....	7	8	10	12	14	18
Capacity, church or store	10,000	12,000	14,000	16,000	20,000	25,000
(cu. ft.)	14,000	16,000	18,000	22,000	28,000	35,000
Price for grate bars per set, for coal or coke.....	\$ 3.52	4.40	5.20	6.75	6.00	8.10
Price of grate bars per set, for slack or lignite	4.70	6.00	6.80	8.40	6.00	8.10
Price of firebrick lining per set.....	3.90	4.35	5.20	5.75	9.30	11.00

*Where ordered for wood, we can supply No. 60 firebox for 4-foot wood.

SPECIAL PRICES

Since adopting the plan of selling direct to consumers, we are able to greatly reduce our prices, and we now offer the **Leader Steel Furnaces** at the following Net Prices:

F. o. b. Chicago	No. 40	No. 45	No. 50	No. 55	No. 58	No. 60
To any station east of Omaha and north of the Ohio River.....	\$43.50	46.25	56.00	66.00	85.00	112.00
To Central Western and Southern points on basis of Denver, Dallas or Atlantic freight rates.....	\$46.00	49.00	59.00	69.00	90.00	118.00
To Pacific Coast points on basis of San Francisco or Seattle freight rates.....	\$52.00	55.00	65.00	75.00	100.00	130.00
Freight prepaid by us	\$59.00	62.00	73.00	84.00	114.00	148.00

These prices include Fire Brick, Lined Galvanized Casing and Chain Regulation, but no Air Stub, Pipes, Collars, Registers, Air Ducts, nor other accessories. We guarantee safe arrival of all freight-prepaid orders. If any parts arrive in damaged condition, we replace them at once, free, and make claim on transportation company for the damage.

The Leader Steel Circulating Room Heater

Just the thing for Churches, Stores, Halls and the like

The Circulating Heater is of exactly the same construction as the Leader Steel Furnace, except that instead of the lined galvanized casing, a dress of black steel is furnished, which may be kept presentable with ordinary stove blacking.

Heats by Circulation

This heater warms by drawing the cold air from the floor of the room in which it stands and discharging it rapidly upward when hot, thus moving and circulating all the air of the room.

May Stand Anywhere

So rapid and powerful is its action that it may stand at any convenient point in the room, out of the way, or even in a corner, and it will thoroughly and evenly warm all parts of the room, yet goods or persons near the heater are not overheated, as there is little warmth radiated from the sides of the heater, the heat being discharged in great volumes from the top.

Keeps Frost Off Windows

It is especially valuable for stores with show windows, as the circulated heat will keep such windows dry and free from frost, unless they are inclosed so as to prevent access of the warm air. Numbers, dimensions and prices are the same as shown in the table on page 27.

28

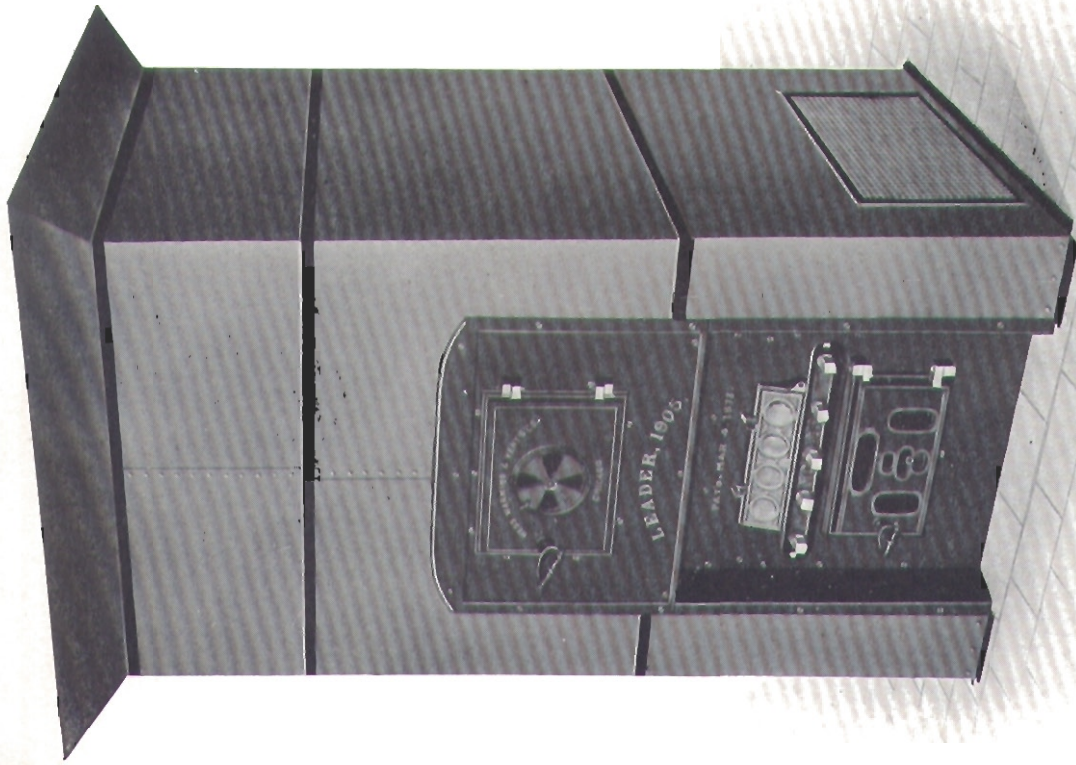


PLATE XIV.

THE LEADER CIRCULATING ROOM HEATER—Black steel casing. Inner construction similar to the Leader Furnace.

29

Registers

We carry a large stock of registers of the styles illustrated on page 31, the wafer register superseding that shown on page 33 of our former booklet. These are all of Tuttle & Bailey Mfg. Co. make, of the best quality obtainable, of neat design and highly finished. They are known in all sections as the standard of quality, and are invariably specified by architects for their best work. They are of many sizes, finished in bronze, nickel, white and black japanned. For durability we recommend and generally supply the black japanned finish. The plated registers look well when new, but are easily marred and are more expensive. The white finish is suitable for side walls or ceilings only.

While our stock consists only of the styles shown, we will supply any other make or style of registers that may be desired, at lowest factory prices.

The sizes under which registers are listed indicates the sizes of the open work in the register faces. The rim of the registers and the registers and the register frames extend beyond the dimensions given.

Hard-Wood Air Supply Faces

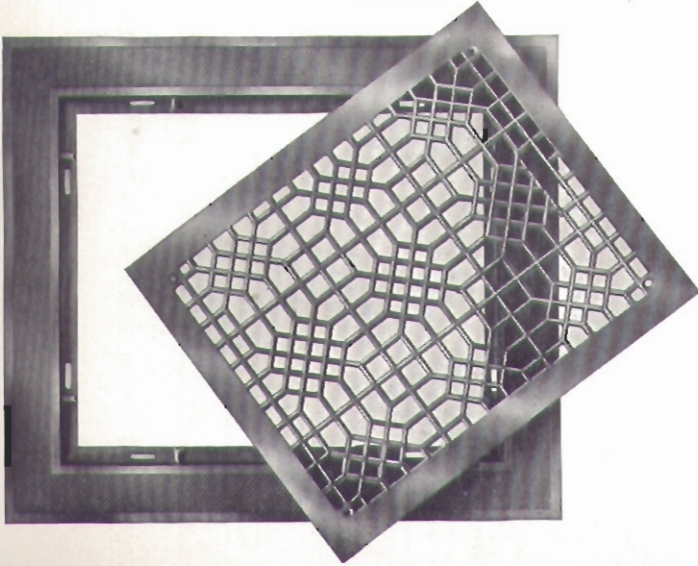
These are made of hard-wood of all kinds. The bearing strips of floor faces are $\frac{3}{8}$ x $1\frac{3}{8}$ inches, with cross strips of $\frac{3}{8}$ x $\frac{3}{8}$ inches. For side wall or seat-fronts lighter strips are used.

They will be sent with or without shellac finish, as desired. When no particular wood is specified, we will supply oak.

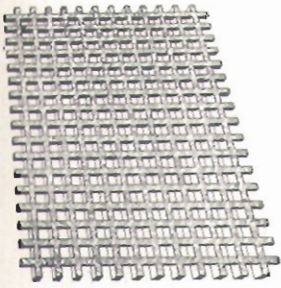
No valves are used with these faces as they are intended for cold air supply and ventilators only. They range in sizes from 20x24 upward.

Prices same as for iron faces. See list, page 33.

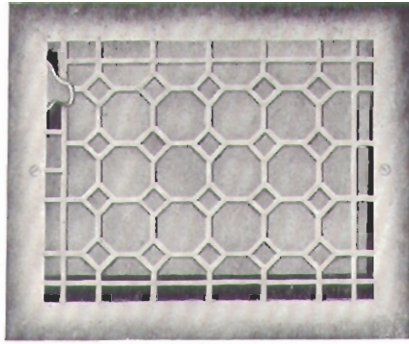
30



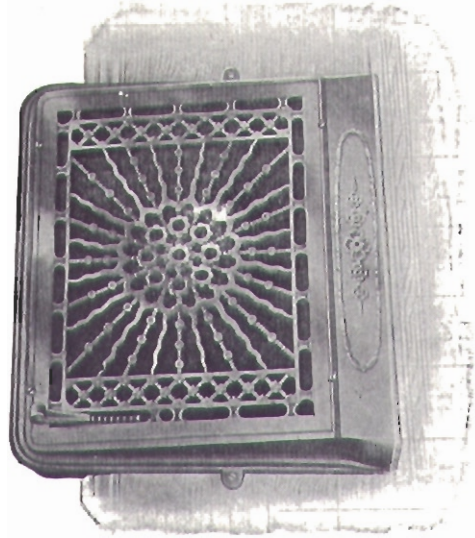
Indian Lattice Design
Floor Register and Border



Hardwood Air Supply Face



Moorish Design Wafer
Sidewall Register



Flamboyant Pattern, Special Side Wall Register and Frame

31

Price List

Prices are F. O. B. Chicago. An extra charge for packing and cartage is made on orders for less than \$10.00.
Double Partition Pipes or Stacks

Stack	Actual Measurement	PRICE PER LENGTH IN DIFFERENT LENGTHS						
		2'	4'	6'	9'	12 1/2'	18 3/4'	8 ft.
4x11	Inside, 3" x10" Outside, 3 1/2" x10 1/2"	.12	.13	.18	.22	.27	.36	.45
3x12	Inside, 2 3/4" x12" Outside, 3" x12 1/2"	.16	.18	.22	.27	.31	.43	.54
4x13	Inside, 3" x12" Outside, 3 1/2" x12 1/2"	.16	.18	.22	.27	.31	.43	.54
5x13	Inside, 4" x12" Outside, 4 1/2" x12 1/2"	.27	.30	.34	.39	.45	.61	.76
6x14	Inside, 5" x13" Outside, 5 1/2" x13 1/2"	.31	.36	.45	.50	.55	.70	.90

Double Fittings

SIZE	BOOTS		STACK-HEADS		OFFSET		STACK ANGLE		STACK ANGLE No. 24
	Nos. 7, 8, 9, 31, 32	Box Nos. 108, 12, 13,	No. 14	No. 10, 15,	No. 53	No. 18, 16, 21, Stack Tee	No. 18	No. 16, 21	
4x11	.54	.57	.65	.54	.22	.40	.21	.21	.27
3x12	.57	.57	.67	.57	.25	.45	.22	.22	.29
4x13	.57	.67	.67	.57	.25	.45	.22	.22	.29
5x13	.67	.78	.84	.67	.40	.63	.29	.29	.38
6x14	.85	.85	1.00	.85	.45	.85	.45	.45	.53

Stack Heads for Special Side Wall Registers

For Register Size	DOUBLE		SINGLE		Air Supply Stubs--Galvanized			
	Nos. 1 and 3	No. 3	Nos. 1 and 3	No. 2	Furnace No.	Stub No. 1	Stub No. 2	Stub No. 1, 2
7x10	.63	.69	.31	.38	40	.50	.50	.58
7x12	.67	.75	.37	.44	50	.50	.50	.75
8x13	.79	.87	.44	.50	50	1.50	1.50	1.00
10x12	.67	.75	.37	.44	45	1.25	1.50	1.50
10x13	.79	.87	.44	.50	Asbestos paper, for covering pipes, 1 yard wide, per yard.....			
12x14	.90	.98	.54	.61	.06			

Single Stacks and Fittings

Size	Pipe Per ft.	Boots		STACK HEADS			Angle No. 21	Angle No. 24	Elbow No. 18
		Nos. 7, 8, 9, 31, 32,	Box Nos. 108	No. 10	No. 12	No. 14			
3 1/2" x 9 1/2"	.09	.26	.42	.30	.38	.34	.12	.15	.23
3 1/2" x 10"	.09 1/4	.30	.45	.34	.42	.38	.12	.15	.23
3 1/2" x 11 1/2"	.10 1/4	.30	.45	.34	.42	.38	.12	.15	.23
3 1/2" x 12"	.11 1/4	.34	.48	.38	.49	.42	.15	.19	.27
3 1/2" x 13"	.12	.38	.53	.42	.53	.45	.15	.22	.30
5 1/2" x 13 1/2"	.18 1/4	.64	.98	.68	.83	.75	.42	.44	.64

Pipes, Elbows, Etc.

DIAMETER	8 in.					9 in.					10 in.					12 in.					14 in.					16 in.					20 in.				
	Round Pipe, I. C. Tin, per ft.	I. C. Tin Elbows, 4 pce 90°	I. C. Tin Elbows, 3 pce 77°	I. C. Tin Elbows, 2 pce 22° and 45°	Galv. Pipe, No. 26 Gauge	Galv. Elbows, 4 pce	Galv. Angles, 45°	Hot Air Dampers	Hot Air Collars	Floor Boarder	Face	Register	Electro Plated Face	Border	White Face	Ceiling Box	First Floor Boxes																		
	.10	.15	.14	.08	.15	.23	.17	.10	.10	.42	.55	.90	1.28	.42	.30	.42	.22																		
	.11	.17	.15	.09	.17	.26	.20	.10	.10	.55	.70	1.20	1.70	.55	.40	.55	.24																		
	.12	.19	.17	.10	.18	.34	.26	.11	.12	.60	.83	1.30	1.83	.60	.60	.60	.27																		
	.14	.24	.24	.12	.24	.30	.30	.12	.12	.79	.97	1.87	2.83	.79	.79	.79	.36																		
	.16	.27	.27	.14	.27	.34	.34	.14	.14	1.22	1.50	3.24	4.05	1.03	1.03	1.03	.68																		
	.23	.34	.34	.15	.34	.45	.45	.15	.15	1.65	2.03	4.32	5.67	1.71	1.71	1.71	.94																		
	.26	.34	.34	.16	.34	.45	.45	.16	.16	2.20	2.70	4.86	5.67	2.76	2.76	2.76	1.50																		
	.30	.45	.45	.18	.45	.60	.60	.18	.18	2.97	3.67	6.75	7.20	4.63	4.63	4.63	1.50																		
	.32	.45	.45	.18	.45	.60	.60	.18	.18	3.67	4.50	8.50	9.00	5.67	5.67	5.67	2.50																		
	.32	.45	.45	.18	.45	.60	.60	.18	.18	4.65	5.75	11.20	10.67	6.75	6.75	6.75	3.00																		
	.32	.45	.45	.18	.45	.60	.60	.18	.18	5.75	7.35	13.50	12.17	8.20	8.20	8.20	3.00																		
	.32	.45	.45	.18	.45	.60	.60	.18	.18	7.70	9.50	18.90	16.00	9.45	9.45	9.45	3.25																		

Registers, Borders and Boxes

SIZE OF OPENING	BLACK JAPANNED		ELECTRO PLATED		White Face	Ceiling Box	First Floor Boxes
	Register	Face	Register	Face			
8x10	.55	.30	.42	.90	.40	.16	.22
9x12	.70	.40	.55	1.20	.51	.18	.24
10x12	.80	.46	.60	1.30	.60	.20	.27
12x15	1.50	.79	.97	2.83	1.03	.26	.36
14x18	3.00	1.22	1.50	6.17	1.71	.68	.88
16x20	4.12	1.65	2.03	8.20	2.76	.94	1.20
12x30	6.65	2.20	2.70	9.67	4.63	1.50	1.80
16x30	9.30	2.97	3.67	12.50	6.75	2.50	2.80
20x24	7.35	2.35	2.85	13.00	7.23	1.50	1.80
24x30	12.65	4.65	5.75	20.67	11.20	2.50	3.00
24x36	16.65	5.95	7.35	24.65	13.50	3.00	3.50
30x36	22.50	7.70	9.50	34.50	18.90	3.25	3.75

Special Side Wall Register Flamboyant Design

Sizes	Black Japan		Electro-Plated		Black Japan	White Japan	Electro-Plated
	Black Japan	White Japan	Electro-Plated	White Japan			
7x10	.85	1.00	1.50	1.50	.55	.66	1.05
7x12	1.14	1.30	1.83	1.83	.63	.76	1.23
8x13	1.42	1.62	2.20	2.20	.70	.85	1.33
10x12	1.70	1.95	2.53	2.53	.80	.96	1.46
10x13	1.83	2.12	2.66	2.66			
12x14	2.38	2.72	4.00	4.00			

Wafer Side Wall Registers Moorish Design

Sizes	Black Japan		Electro-Plated		Black Japan	White Japan	Electro-Plated
	Black Japan	White Japan	Electro-Plated	White Japan			
8x10	.55	.66	.85	.85	.55	.66	1.05
8x12	.63	.76	.96	.96	.63	.76	1.23
9x12	.70	.85	1.05	1.05	.70	.85	1.33
10x12	.80	.96	1.23	1.23	.80	.96	1.46

Pipes and Fittings

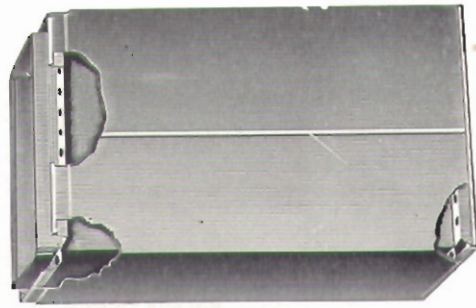
We illustrate and list a few only of the large line of pipes and fittings made and carried by us in stock, those listed being such as are generally used, and which are adapted to the usual requirements of builders. We will supply anything that may be required in this line at close, factory prices, whether shown in our illustrations or not.

Our double partition pipes and fittings are machine made, accurately fitted and all provided with safety ventilators, by means of which a circulation of cool air is present between the inner and outer sections of the pipe. All tin work made by us is of *full weight* American tin plate, made up in the best possible manner by skilled mechanics. If any particular shape or fitting, not shown in our list, is wanted, we can supply it. Let us know your wants.

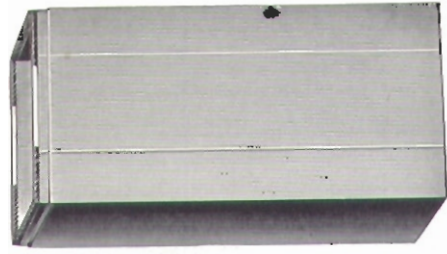
Send us a sketch of your house and we will make a plan showing every detail of fittings needed, with estimate of cost for the whole outfit, delivered at your station, freight prepaid.



Round Tin Pipe



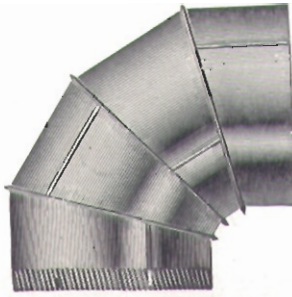
Double Partition Pipe



Single Partition Pipe



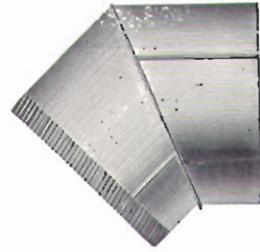
Furnace Collar



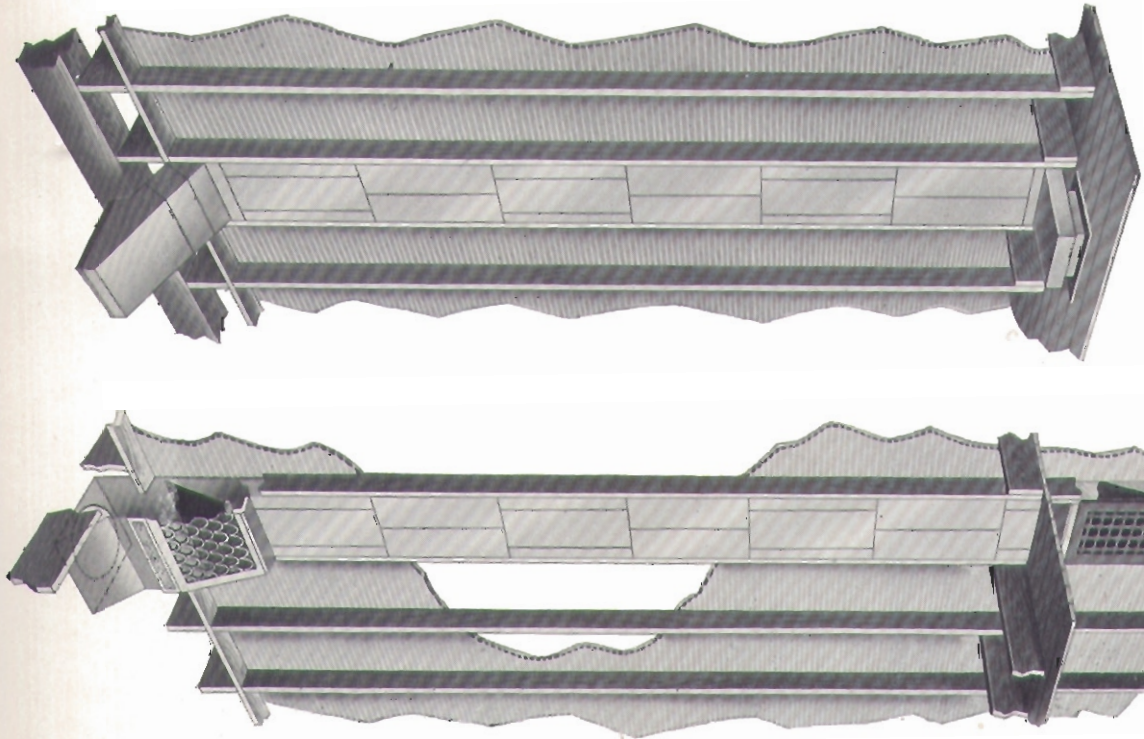
Four Piece 90° Elbow



22½° Angles



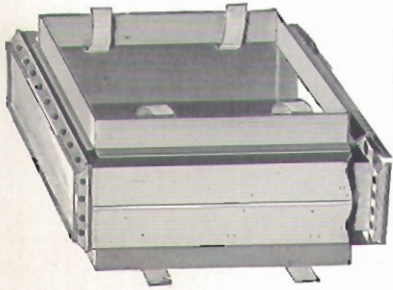
45° Angles



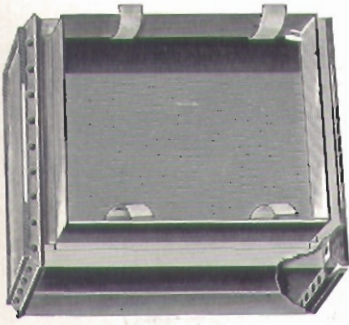
Partition Stack with Floor Register, No. 14 Stack-Head, No. 52 Boot, No. 53 Offset.

Partition Stack with Wafer Register, No. 10 Stack-Head above, Special Sidewall Register and No. 3 Stack-Head below and Extra Wide Boot.

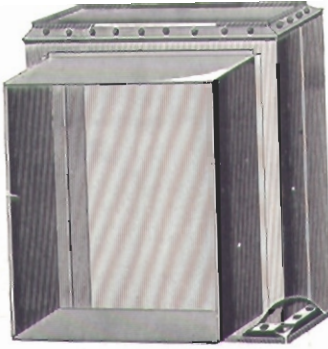
Printers' { THESE CUTS ARE WRONG
 END UP, AND THE TITLES
 ERROR } SHOULD BE TRANSPOSED



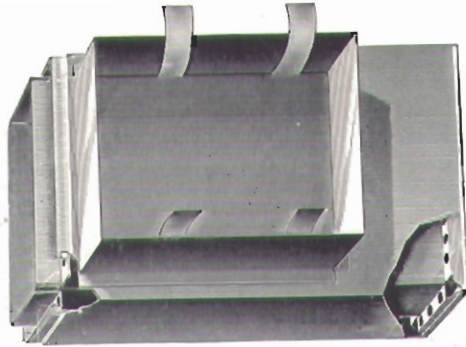
No. 12. Stack Head



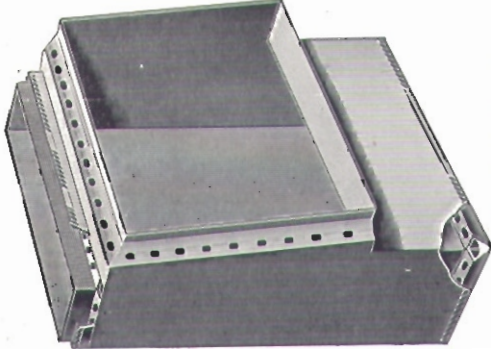
No. 10. Stack Head



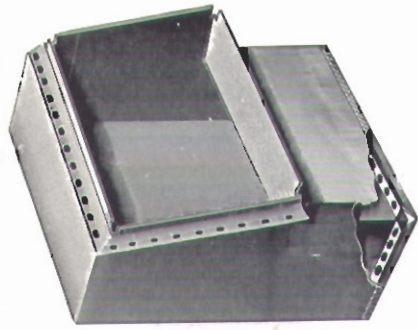
No. 14. Stack Head



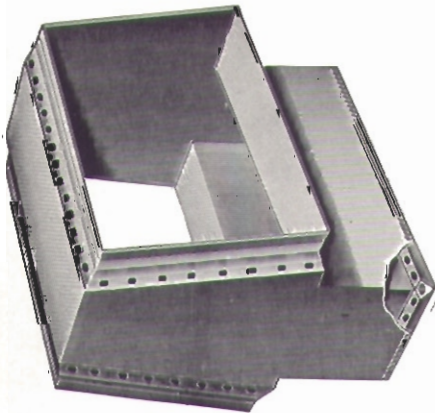
No. 15. Through Stack Head



No. 3. Collar for Extension to Second Floor



No. 1. Stack Head for 1st Floor



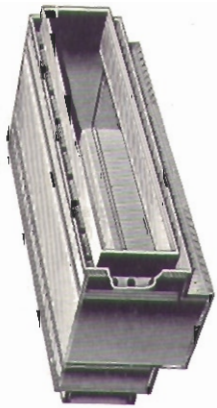
No. 2. Stack Head for 1st Floor



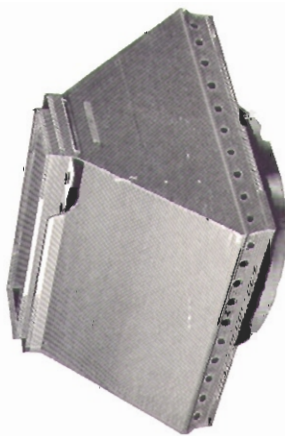
No. 21. Stack Angle 45°



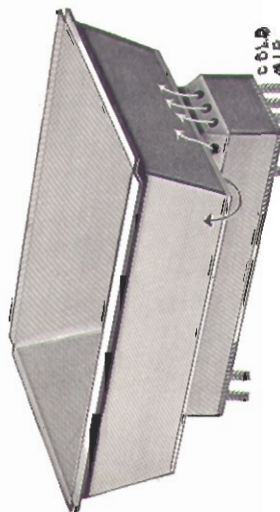
No. 15. Stack Elbow



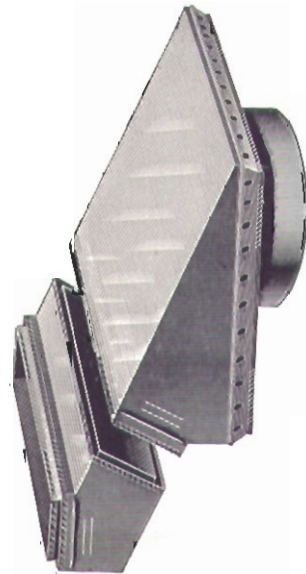
No. 16. Tee



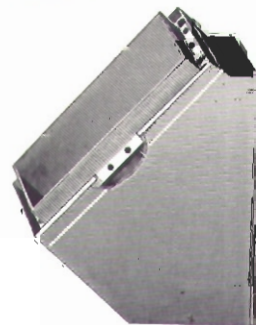
No. 51. Boot or Foot Piece



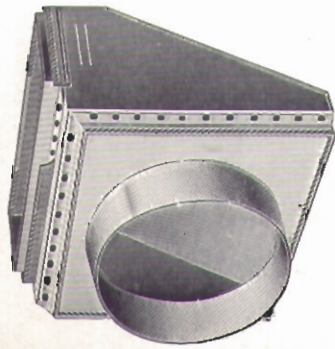
No. 105. Floor Box



No. 52. Boot with No. 58 Offset, 22 1/2°



No. 24. Stack Angle 45°



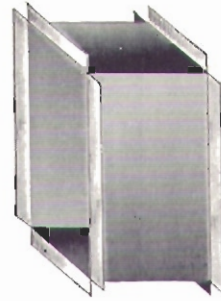
No. 7. Stack Boot



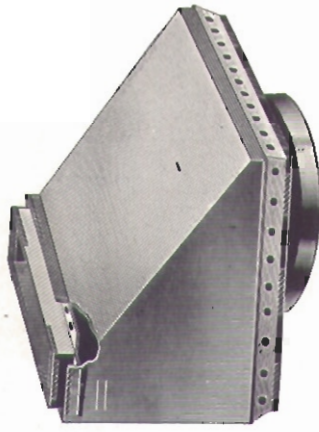
No. 1. Air Supply Stub No. 1, for Wood Duct



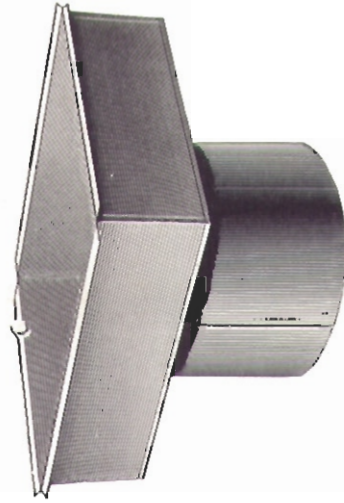
No. 2. Air Supply Stub No. 2, for Metal Pipe



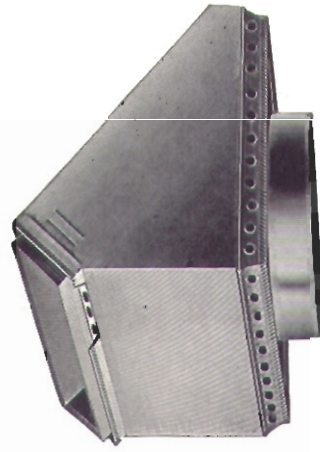
Box for Ceiling Register



No. 8. Boot or Foot Piece



1st Floor Register Box



No. 9. Boot or Foot Piece 37 1/2° Pitch

Our Plan of Selling

With ample capital and facilities unequalled, buying all supplies in large lots for spot cash, and not a member of any trust or combination, we are in a position to offer our customers the very best service at a minimum price.

We sell our goods direct from factory to consumer, with but one small profit added to our low cost. We employ no traveling men and have no large expenses to meet. We sell our furnaces at surprisingly low prices, in large numbers, and still have a satisfactory margin.

We make a specialty of supplying complete heating equipments for buildings of all kinds, with registers and pipes all made to measure and fitted, ready to put up, and these equipments go from our factory straight to consumers all over the United States. We plan the arrangement of every job and submit our plan for the owner's approval before the work is made. We prepare every detail and we pay the freight to destination. Distance is no bar. We ship everywhere. We have customers in Maine and in Alaska, in Florida and in California and in Japan.

We fully instruct the buyer, so he can set up the apparatus, and any man who can set up a stove and connect the smoke pipe, can set up our furnace and connect it, by following our simple directions. And when the heater is set up we guarantee its success.

At first thought the setting up of a furnace equipment may seem difficult. It is not. We have shipped hundreds of these outfits to every state in the past six years, and our customers repeatedly tell us of the ease with which the work is fitted up. It is not necessary to tear up the house to get our system installed. It is usually put in without breaking plaster.

The best proof of the advantage to the buyer in this plan, is the fact that orders are often duplicated, our customers recommending our plan and our goods to their friends. Our books show that 40 per cent. of our new business originates in the recommendations of our customers. Our sales in 1906 greatly exceeded those of any year since we began business, while our 1907 sales showed a good increase over those of 1906.

Our plan saves money for the buyer, and it insures success in heating; our experience in planning the arrangement of the apparatus, and our guarantee, completely protect the purchaser from errors and inconveniences.

What Will It Cost

to equip your house, church, school or store with the Hess Steel Furnace?



Just show

Send us a sketch of the building, with the information following, and we will tell you what our charge will be for a complete equipment, fully guaranteed.

Not in a trust

We sell direct

Our specialty

Complete outfits

We pay freight anywhere

Our instructions simple

We guarantee success

Setting not difficult; you can do it

No tearing up necessary

Our customers recommend us and increase our sales

Your sketch need not be to a scale, but should clearly indicate the position and sizes of the rooms, measuring inside, from wall to wall.

Show the partitions by single lines; the doors by spaces in the lines; the chimney by a square; stairs by parallel lines; mark folding or sliding doors, if any.

Make a separate sketch for each floor, and mark the size of each room in figures.

Our sketch on page 35 shows about what is wanted, though, of course, your sketch should be larger.

In the cellar plan indicate the piers, post and beams; the location of chimneys, fuel supply, and the cellar stairs or entrance. Show the direction of the joists by an arrow, thus +-----+

On the plan please indicate:

1. The points of compass.....
2. In what stage of construction is the building?.....
3. Is the upper story a full story or a half story?.....
4. How much below the first story joists do the beams project, if any?.....
5. Height of cellar?..... first story?..... second story?.....
6. If cellar is not 7 feet where furnace will stand, can you make it 7 feet?.....
7. Width of stairway mark—on plan.....
8. Width of joists, first story?..... second story?.....
9. Thickness of floors, first story?..... second story?.....
10. Width of studs in partitions?.....
11. Width of studs next to sliding doors?.....
12. What kind of fuel will you use?.....
13. Is cellar ceiling plastered?.....
14. Width of doorway through which furnace must pass?.....

15. If church, school or store, show position and width of aisles?.....

16. Are any pipes or registers now in the house; if so, show sizes and positions?.....

17. What is your lowest winter temperature?.....

Name.....

Post Office.....

Give us this and we will make a plan to a scale, showing just how we would heat your house with our furnace, what size to use, where to place it, what size of pipes and registers to use and where to put them, how to provide air supply, and we will send you our estimate of cost, which will include everything, freight prepaid by us, and success guaranteed.

We charge nothing for plan, estimate and information, even if you buy from others.

We are glad to have your consideration if you contemplate the purchase of a furnace, and by this careful showing of our method we feel sure we can make your consideration favorable to us.

OUR USUAL TERMS

are cash with the order or on receipt of goods. We prepare the shipment, with all details fitted and marked. We prepay freight, and to the bill of lading we attach sight draft for the agreed price, through your local bank or express agent.

Cash
with order

Or
on receipt of
goods

Broken
parts replaced
free

This is payable upon arrival of the goods, and the privilege of examination before payment is allowed. If any parts arrive in damaged condition, we immediately forward new parts to replace them, free, and then we file claim with the railroad for the damage, so you are not delayed nor put to expense by reason of such damage.

OUR INSTALLMENT PLAN

To buyers in good standing who may desire to buy on time, we allow such reasonable terms as may be desired, and we frequently sell our equipments on monthly

Installment
plan

installments, receiving a portion with the order, the balance in monthly payments in such amounts as can be conveniently paid by the purchaser. In all cases where the terms provide for time longer than thirty days, we require notes signed by the owner of the building for which the apparatus is bought, and these notes bear interest at six per cent. per annum till paid. Two satisfactory references are required, and a legal description of the premises where the furnace is to go, with the name of the real owner.

*Notes
required*

By this plan, a customer with small income may secure our Leader Furnace on very easy terms.

We Sell on Trial

Where furnaces are sold on trial we make sight draft, payable on arrival of the goods, which is collected by the local bank or express agent. The money is held by the bank making the collection for a reasonable time, during which period the furnace is to be set up and tested. If it proves as represented by us, the money is remitted. If not, the money is held until we have made our representations good; or, failing in this, the goods may be returned at our expense and the price refunded to the purchaser.

*Sales
on trial*

TOOLS

Special tools are not necessary in putting up our heater, a screwdriver and hammer being all that is required for erecting the furnace, and a brace and bit, saw and chisel, for cutting floors. A pair of snips for cutting sheet metal is also necessary, to trim the ends of pipes, as we always send full lengths, to avoid a shortage.

We will supply any of these tools at cost, or will loan them, when shipping equipments, to be returned to us by express, prepaid, after the apparatus is erected.

*Tools
required*

*Loaned
or sold at
cost*

In Conclusion

If you need a furnace you cannot afford to set this booklet aside without an investigation. Our proposition

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is no experiment and has been thoroughly tested by hundreds of satisfied customers all over the United States.

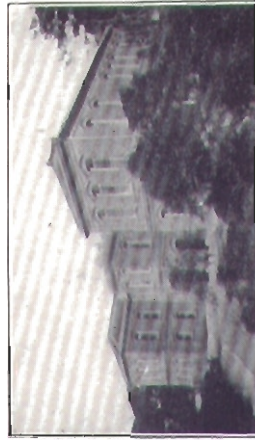
It makes money for the buyer.

We mean every word we say, and we carry out our promises. Our guarantee is good and your money will be refunded if we fail to meet the requirements. Our terms are liberal and safe for you.

Write to us on any points on which you wish light, and we will reply by return mail. We want your business—and will give you a "square deal".

We are responsible, and refer you to the Corn Exchange National Bank, Chicago, to any commercial agency or to any wholesale house in Chicago. We refer you, also, to a long list of customers we have served, in every state, as to the character of our goods and as to our fair treatment.

This list is in print and is supplied on request, if not already accompanying this booklet.



Chinzei Seminary—Nagasaki, Japan
Heated with the Leader Steel Furnaces

A Notable Contract

The illustration on page 42 is a photographic view of a block of twelve three-story houses, in the model industrial town of Pullman, Illinois.

In November, 1899, the Pullman Palace Car Company instructed us to remove the steam heating apparatus from these houses, and from thirty-one similar houses (making forty-three in all), and substitute

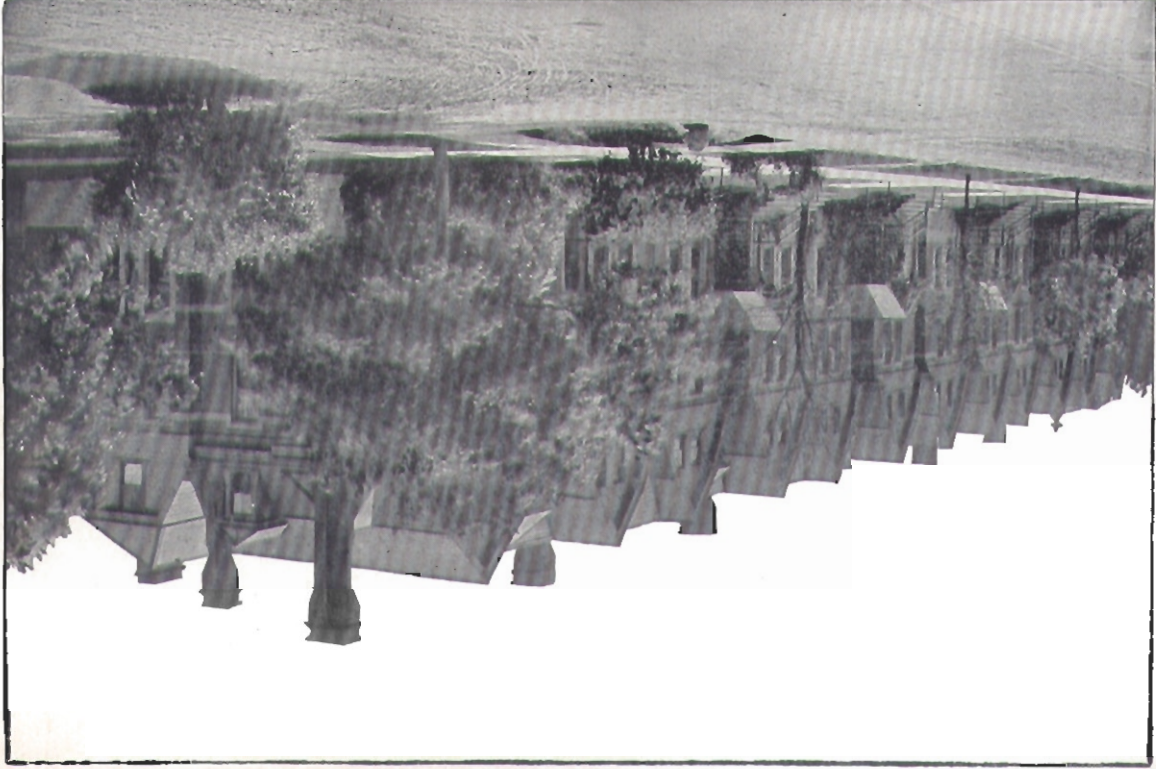
LEADER Steel Furnaces

The work included all piping, registers, air-supply ducts, etc., to make the work complete. It necessitated the tearing up of floors in the upper stories and cutting of partitions in some cases, the building of a brick smoke-flue in each house, and the necessary trimming of woodwork, restoring of plaster, painting and repapering—all of which work we executed with our own men.

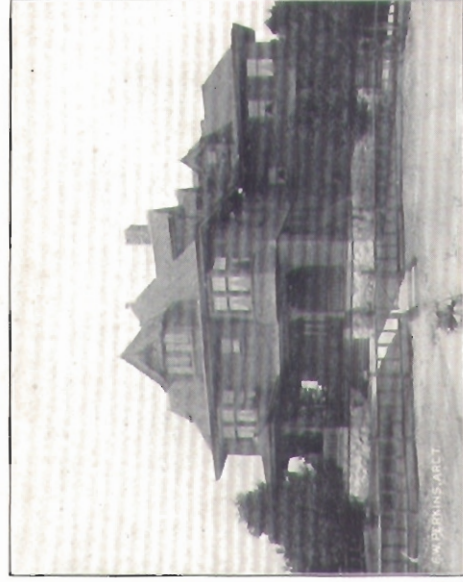
Although this work was carried on in midwinter, no family was deprived of heat for an hour, and when the apparatus was completed and tested during the coldest weather of the year, in February, 1900, not only were there no complaints but all expressed themselves as well pleased and comfortably heated.

This was probably the largest and most difficult contract of furnace heating ever let in Chicago, and the full control and direction of every detail was placed in our hands, with the results stated.

During the years following more heating contracts have been intrusted to us by the Pullman Company, making nearly sixty furnaces now used by them.



Twelve of forty-three houses at Pullman (Chicago) warmed by the LEADER STEEL FURNACE. See page 41.



Two beautiful country homes heated
with the Leader Steel Furnace.

