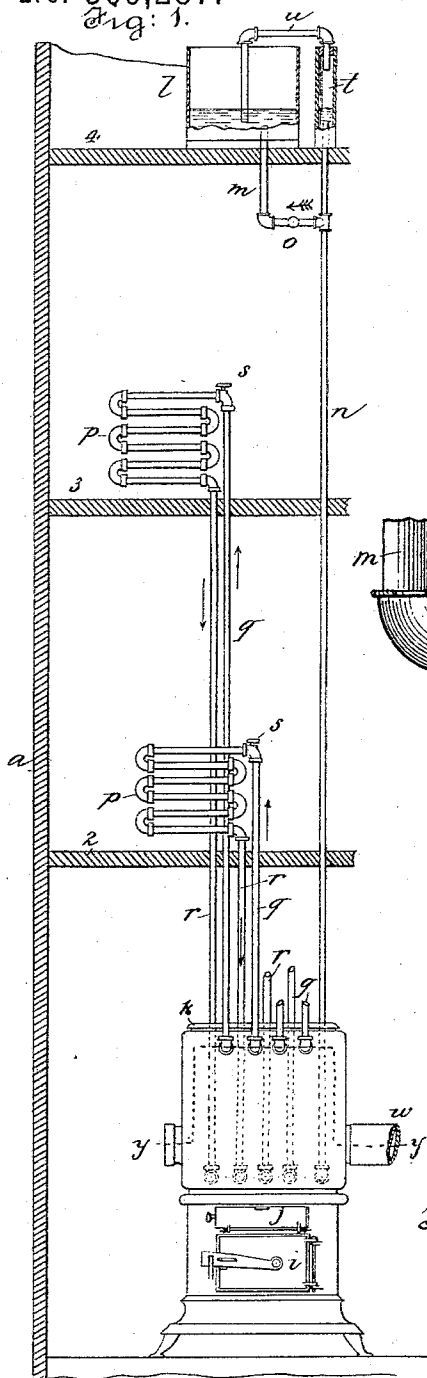
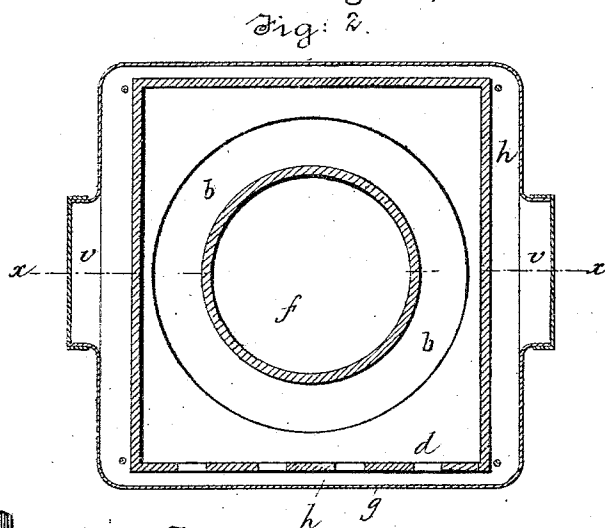
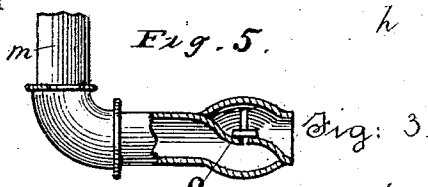
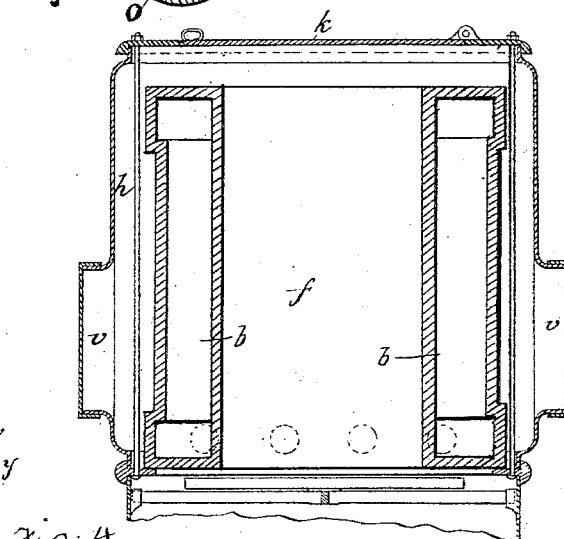


(No Model.)

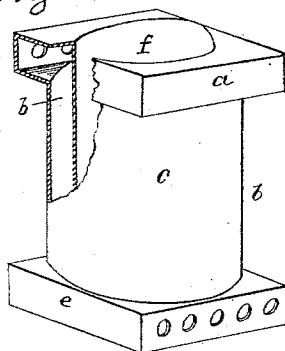
L. HUNTOON.
HOT WATER HEATING APPARATUS.

No. 369,287.

Patented Aug. 30, 1887.



Witnesses:
John A. Hennie.
H. Brown.



L. Huntton
Inventor
Rev. Wright
Brown &
Corrady,
his Attys.

UNITED STATES PATENT OFFICE.

LAFAYETTE HUNTOON, OF NATICK, MASSACHUSETTS, ASSIGNOR TO ELWIN C. HUNTOON, OF SAME PLACE.

HOT-WATER HEATING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 369,287, dated August 30, 1887.

Application filed June 1, 1886. Serial No. 203,832. (No model.)

To all whom it may concern:

Be it known that I, LAFAYETTE HUNTOON, of Natick, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Hot-Water Heating Apparatus, of which the following is a specification.

My invention relates to hot-water heating apparatus, and has for its object to provide improvements in contrivances of that character whereby perfect circulation of the heated water is secured, safety from overflow is provided, each radiator made independent of each and every other radiator by being directly connected by a supply and return main with the boiler, and other advantages attained, all as will be hereinafter described, and subsequently set forth in the claims.

Of the drawings hereto annexed and forming a part of this specification, Figure 1 represents what may be presumed to be a sectional elevation of a portion of a house of several stories, showing the manner of applying and using my improved heating apparatus. Fig. 2 represents a horizontal section taken on the line *yy* of Fig. 1. Fig. 3 represents a vertical section taken on the line *xx* of Fig. 2. Fig. 4 represents a perspective view of the water chamber or reservoir, part being broken away to better show the construction. Fig. 5 is a detail sectional view on an enlarged scale.

Similar letters of reference indicate similar parts in all the figures.

In Fig. 1 of the drawings, let *a* represent the side of a building, and 1, 2, 3, and 4 the floors or stories thereof.

In carrying out my invention and applying it to a building of the character mentioned, I provide a boiler or water-chamber, *b*, of the form shown in Fig. 4—that is to say, having a cylindrical body, *c*, and a square top, *d*, and square bottom *e*, the sides of the square top and bottom being at the center of their length flush with the side of the cylinder. The center of the boiler or water-chamber is made hollow, as represented at *f*, which hollow *f* forms or constitutes the fire pot or chamber. Surrounding the outer walls of the boiler is a shell or jacket, *g*, constituting a smoke or heat chamber, *h*, said jacket *g* being arranged at some distance from the outer walls of the

boiler, so that the fire-pot will comprise the hollow chamber formed by the interior wall of the boiler, the latter being constructed of an outer and interior wall or jacket with a space therebetween, while the smoke or heat chamber will comprise the space between the outer wall of the boiler and the outer jacket, *g*.

A grate of suitable construction and so arranged as to enable it to be readily manipulated is arranged at the bottom of the fire-pot, and below this is the usual ash-receptacle properly inclosed, the whole being supported on legs such as are usually provided to support a stove, as shown in Fig. 1, or in any other suitable or convenient manner.

A door, *i*, is hinged to the base to provide means of access to the ash-pit, and a small door, *j*, is also hinged to the base to permit of “shaking” or otherwise manipulating the grate. Another door, *k*, is hinged to the top of the casing *g* over the fire-pot *f*, by means of which fuel may be supplied to the fire in the fire-pot.

Upon the upper floor, 4, I construct a water-supply tank, *l*, having a branch pipe, *m*, extending from the bottom of the tank and connecting with the supply-main *n*, which in turn communicates with the square-bottom portion *e* of the boiler. The connecting branch *m* is provided at any suitable point—say at *o*—with a check-valve of ordinary construction, and adapted to be seated when operated in the direction indicated by the arrow marked on Fig. 1.

Each radiator or heating coil *p* is provided with an independent main, *q*, extending between the upper square-top portion, *d*, of the boiler and the uppermost pipe of the radiator or coil, and an independent return-main, *r*, connecting the lowermost pipe of the coil with the square-bottom portion *e* of the boiler. Each radiator is also provided with a stop cock or valve, *s*, at a point, in this instance, where the main *q* connects with the coil *p*.

At the upper end of the supply-main *n* there is a small tank or receptacle, *t*, capable of containing water, which receptacle *t* is connected with the tank *l* by means of a short siphon-like pipe, *u*, one end of which extends into the otherwise closed top of the receptacle and the other into the bottom of the tank.

The smoke-chamber *h* is provided with exits *v v*, to one or both of which a smoke-pipe, *w*, connecting with a chimney, may be attached. When but one smoke-exit is made use of, the other may be closed in any suitable way.

The manner of using my improved heating apparatus may now be described as follows: The tank and boiler being supplied with water and fire kindled in the fire-pot *f*, the heat, circulating around all sides of the water-chamber *b* and over the top of the same, soon causes the water to boil, the agitation consequent upon which causes the heated water to flow up through the mains *q* at the top of the water-chamber, through the radiator-coils *p*, and back through the return-mains *r* to the bottom of the water-chamber. Should the water become heated to a degree which would prevent a full and free circulation through the radiator, or so as that it would cause an undue pressure on the boiler or pipes, it will rise through the supply-main *n*, and, by being shut off by check-valve *o* from branch pipe *m*, flow into receptacle *t* and out through siphon-pipe *u* back into tank *l*, from whence, after being cooled, it is returned to the boiler or water-chamber *b*, as before. If it is desired to "shut off" the heat from any particular radiator or coil *p*, all that is necessary is to close the stop valve or cock *s* of that particular coil, which will leave the heater free to operate on the remaining radiators or coils entirely unaffected by having been shut off from one.

As has been indicated, an important feature of my invention resides in the fact that each radiator or heating coil is supplied with an individual supply and return main connected directly with the boiler, and as it is desirable to have said mains lead from the boiler in the same line and plane, by constructing said boiler with a square top and bottom, as described, I am enabled to easily and effectually secure this result, since, as is well known, holes can easily be drilled in the plain flat sides of the square top and bottom and the mains securely attached thereto and led therefrom in the manner described, when this would be difficult, and with the same number of mains shown in the drawings impossible, on a cylindrical surface. Furthermore, as it is desirable to form, the shell or jacket of the heater

in square form the square form of the top and bottom of the boiler serves to insure its maintenance in proper position in the case. Again, I am enabled by this construction to present a large amount of boiler-surface to the heat and secure a perfect circulation to the latter, fully utilizing it to the end of securing economy in the use of fuel and easily and quickly heating the water in the boiler.

Though I have here shown my heating apparatus as applied to a four-story house, it is obvious that it can be applied to a building having a greater or less number of stories, and that any number of radiators within the capacity of the heater may be connected therewith, each being in all cases supplied with an independent supply and return main connected directly with the hot-water chamber or boiler.

What I claim is—

1. The combination, with a series of radiators, of a hot-water heating apparatus, a series of individual supply and return pipes between said apparatus and radiators and a supply-tank, a pipe, *n*, a branch pipe, *m*, connecting said pipe *n* and tank, and having a check-valve, as described, a supplemental tank or receptacle, and siphon-like pipe *u*, affording a connection for the pipe *n* with the main tank, substantially as set forth.

2. In a hot-water heating apparatus, the combination of the central cylindrical water-chamber, the rectangular upper and lower supply and discharge chambers, the jacket or wall surrounding said water-chamber forming a smoke chamber, the series of supply-pipes connected to one side of the upper rectangular supply-chamber, the radiators to which said supply-pipes are connected, the individual return-pipes of said radiators connected to the said lower rectangular water-chamber, the main supply-pipe, and the tank to which the same is connected, substantially as shown and described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 26th day of May, 1886.

LAFAYETTE HUNTOON.

Witnesses:

C. F. BROWN,
JOHN A. RENNIE.