

July 28, 1936.

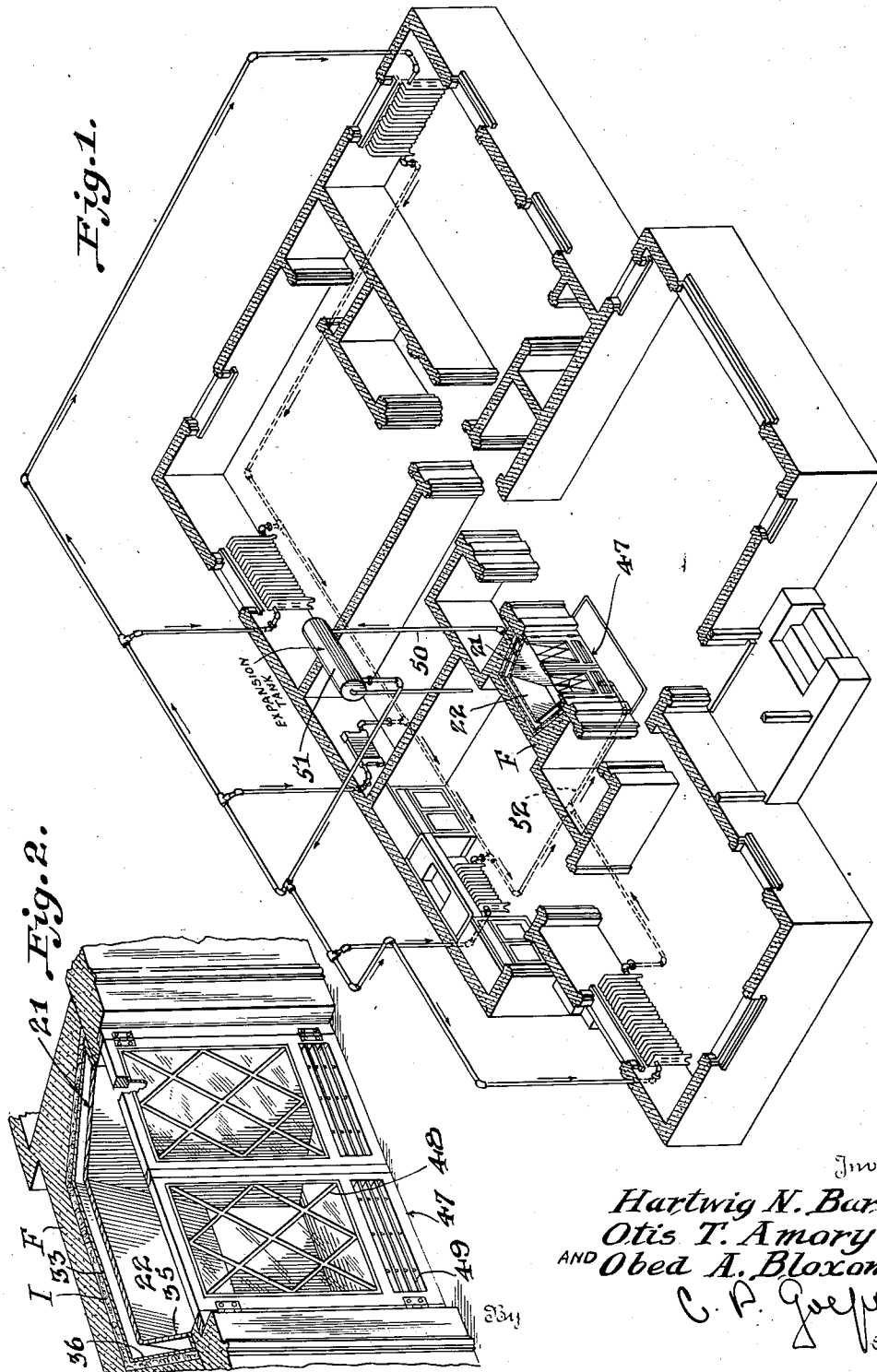
H. N. BARUCH ET AL

2,048,675

HEATING UNIT

Filed June 4, 1934

3 Sheets-Sheet 1



July 28, 1936.

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Fig. 7.

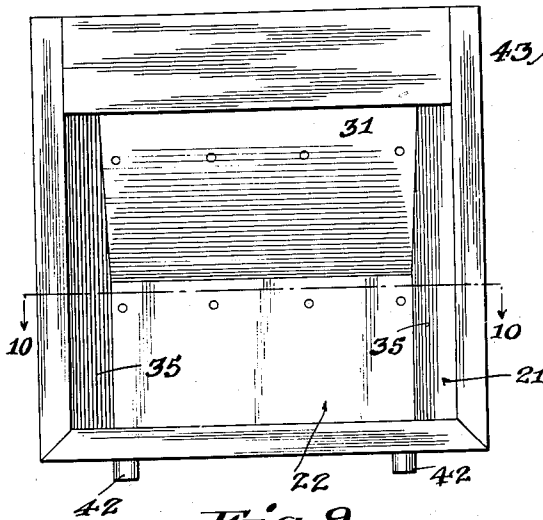


Fig. 8.

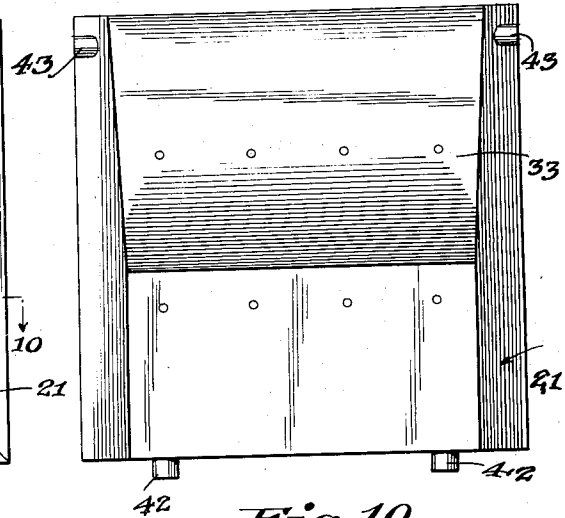


Fig. 9.

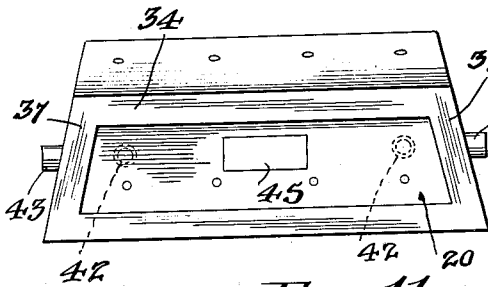


Fig. 10.

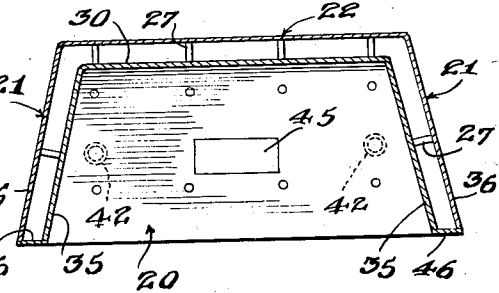


Fig. 11.

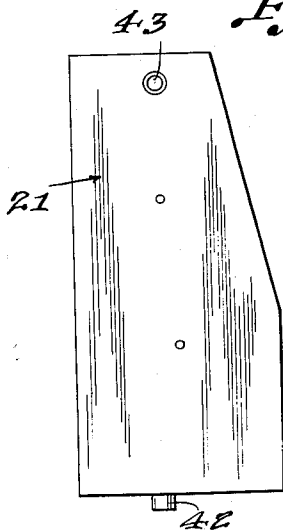
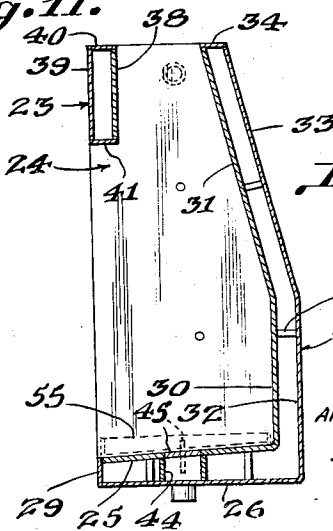


Fig. 12.



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UNITED STATES PATENT OFFICE

2,048,675

HEATING UNIT

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Application June 4, 1934, Serial No. 728,998

2 Claims. (Cl. 126—132)

The present invention relates to heating units and more particularly to heating units of the hot water type.

An object of this invention is to provide a heating unit of this type whereby the heat energy which is generally wasted may be utilized not only for the heating of the rooms or room associated with the unit, but also adjoining rooms.

Another object of this invention is to provide a heating unit for the heating of hot water which is so constructed that it may be readily mounted in present constructions of fireplaces and thereby absorb the heat energy usually wasted in such fireplaces for heating of not only the room in which the fireplace is mounted, but also additional or all of the rooms in the house.

A further object of this invention is to correct faults which have heretofore been present in constructions whereby the circulation of water throughout the system was hampered by reason of air pockets, the location of which was not readily detected.

A still further object of this invention is to provide a heating unit wherein relatively flat and substantially parallel plates may be used in the formation of the water jacket without impeding the circulation of water through the heater.

This invention is a continuation in part of the heating unit construction embodied in my co-pending application filed July 21, 1933, Serial No. 681,628, and is an improvement over the structure embodied in that application.

With the foregoing and other objects in view, the invention will be more fully described hereinafter, and will be more particularly pointed out in the claims appended hereto.

In the drawings, wherein like symbols refer to like or corresponding parts throughout the several views,

Figure 1 is a perspective view in horizontal section of a heating unit constructed according to an embodiment of this invention, the heating unit being connected to radiators in rooms adjoining the fireplace.

Figure 2 is an enlarged perspective view partly in horizontal section of the heating unit.

Figure 3 is a vertical section taken substantially through the center of the heating unit.

Figure 4 is a section view taken on the line 4—4 of Fig. 3.

Figure 5 is a perspective view of the heating unit mounted in a fireplace, the unit being used without the doors shown in Figures 1 and 2.

Figure 6 is a fragmentary enlarged sectional

view through the bottom and an adjacent end wall of the device.

Figure 7 is a front elevation of the unit removed from the fireplace.

Figure 8 is a rear elevation of the device.

Figure 9 is a top plan view of the device.

Figure 10 is a horizontal section taken on the line 10—10 of Fig. 7.

Figure 11 is an end elevation of the device.

Figure 12 is a vertical section taken substantially through the center of the device.

Referring now to the drawings, and first to Figures 7 to 12 inclusive, the numeral 20 designates the hollow bottom of a water jacket structure, 21 designates the hollow sides, 22 designates generally the rear hollow wall, and 23 designates the hollow front wall above the opening 24 in the front of the unit.

The bottom 20 comprises an inner plate or wall 25, and an outer or lower plate 26 which is held in spaced relation to the inner plate 25 by means of studs or spacing members 27. These studs or spacing members 27 may be secured to the walls 25 and 26 as by welding 28 or the like so that water may freely circulate between these two members. The front edges of the bottom wall members are connected together as by a front plate 29.

As will be particularly noted from Fig. 12 the inner bottom plate 25 is disposed on an inclination to the horizontal and is inclined relative to the horizontal bottom plate 26, the inclination being in an upward direction from the front plate 29 toward the rear wall structure 22. In other words the space between the inner plate 25 and the lower plate 26 is greater at the rear than at the front. This inner bottom plate 25 in actual use is subjected to considerable heat, and this heat has a tendency to cause buckling or warping of the plate so that where this plate 25 is parallel with the bottom plate 26 a trap is formed in the bottom of the heating unit which will not only impede but prevent the circulation of water. By the plate becoming warped, towards the other plate, the plates are nearer to each other at this point of warping than elsewhere. Thereby, the circulation is impeded. In fact, part of the water is trapped. This trapping or stagnation of water, even where the inner bottom wall becomes distorted, is prevented in the present construction by mounting the inner plate 25 on a rearward and upward inclination, which inclination is in the direction of the flow of the water from the front to the rear of the hollow bottom.

The rear wall structure 22 comprises an inner or forward wall or plate 30 having its lower edge secured to or integral with the adjacent edge of the inner bottom plate 25. The inner or forward wall 30 has the lower portion thereof substantially vertical, and the upper portion is bent forwardly as at 31. A rear or outer wall member 32 is disposed in spaced parallel relation to the inner rear wall member 30. The upper portion of the rear or outer wall 32 is bent forwardly as at 33. This rear wall 32 has its lower edge secured to or integral with the adjacent rear edge of the bottom plate 26, so that water may flow freely from the bottom through the rear wall structure. The wall members 30-31 and 32-33 are maintained in spaced parallel relation by studs 27, which studs are used wherever needed in the present construction to hold confronting plates apart. A top plate 34 is secured to the upper edges of the plates 31 and 33.

An inner end wall plate 35 is secured at its lower edge to the inner bottom plate 25, and is secured at its rear edge to the forward or inner rear wall 30. There are two of these plates 35, one at each end of the bottom, and the plates 35 are mounted in rearwardly convergent relation. An outer end wall plate 36 is disposed in spaced parallel relation to the inner end wall member 35, and has its lower edge secured to the bottom plate 26, and its rear edge secured to the back plates 32-33. As shown in Figure 6, the upper ends of the plates 35 and 36 are connected by a top wall 37.

The front jacket or wall 23 comprises an inner wall or plate 38 and an outer or front wall or plate 39 secured at their ends to the end wall plates 35 and 36 respectively. A top plate 40 is secured to the upper edges of the plates 38 and 39 and a bottom plate 41 is secured to the lower edges of these plates 38 and 39.

An intake nipple 42 is secured to the bottom plate 26, and if desired two of these nipples 42 may be secured to the bottom plate 26 so that connection may be made with the bottom of the unit adjacent either end thereof. An outlet nipple 43 is secured to the outer end wall member 37 adjacent the upper end thereof, and if desired each end wall may have an outlet nipple, so that water may be exhausted from the unit from either or both ends, and the water may be received into the unit from either or both ends.

An ash discharging chamber 44 is provided through the bottom 20, and a trap door 45 normally closes this chamber or passage 44. The front edges of the end wall members 35 and 36 are connected by a front plate 46.

Referring now to Figures 1 and 2, the heating unit hereinbefore described is adapted to be mounted in a fireplace structure designated F, and the rear and ends of the unit are preferably insulated from the fireplace F by means of insulation I of suitable character. The front opening 24 of the unit may be closed by a closure or closures generally designated as 47, which may be either hinged to the front of the unit or to the opposite sides of the fireplace structure, or may be mounted in any other desired manner for movement into open or closed position. The closure 47 preferably comprises a transparent body section 48, and a lower damper section 49.

The outlet nipple 43 at one end of the unit is connected as by a pipe 50 to an expansion tank 51, and the hot water is then distributed by suitable pipe connections to radiators remote from

the fireplace F. The water is returned to the intake nipple 42 as by a return pipe 52.

In Figures 3, 4 and 5 there is disclosed a fireplace structure wherein the heating unit hereinbefore described is used without the door 47 shown in Figs. 1 and 2. In this construction a damper 53 is mounted in the throat of the fireplace, preferably just above the top of the heating unit, and the damper 53 is operated by a rod or operating member 54 extending forwardly through the front of the fireplace F'. As will be noted from Figs. 3 and 5 the inner bottom plate 25 of the heating unit is preferably flush with the hearth so that as viewed from the front the fireplace F' does not give the appearance of a hot water heater. Andirons or a grate may be used with the heating unit, and if desired an ash tray or pan 55, as shown in Figure 12, may be used to initially catch the ashes, which may be either removed through the front of the unit or dropped through the chamber 44.

It will be apparent from the foregoing that a heating unit has been disclosed wherein the plates comprising the inner and outer walls of the jacket can be made from sheet metal of suitable thickness, or if desired may be constructed from cast metal. Preferably, however, the unit is constructed from sheet metal suitably formed and welded or otherwise sealed.

A heating unit of this type, by reason of the simplicity of its construction can be manufactured and installed at low cost, and due to the simplicity of its construction it can be readily mounted in present fireplace constructions, or can be added at the time the building is under construction. This heating unit is not only designed as a means for solely heating a house, but it can be used as an adjunct or booster to present hot water heating systems where a fireplace is available. With a heater of this type it is not necessary to mount it in a relatively low point, as in the cellar, in order to obtain the desired circulation, so that this heating unit can be used in houses without cellars but having fireplaces, and at the same time the entire house is maintained at the desired temperature.

This heater as will be noted from the drawings, can be used on the same level with the radiators, and at the same time a circulation throughout the heating system is maintained so that all of the radiators will be heated, which has not heretofore been possible with a heating unit mounted as hereinbefore described.

It is obvious that various changes and modifications may be made in the details of construction and design of the above specifically described embodiment of this invention without departing from the spirit thereof, such changes and modifications being restricted only by the scope of the annexed claims.

Instead of wood, as shown, coal, oil, coke, gas, electricity or other heating material can be used.

What is claimed is:—

1. A heating unit adapted to be inserted in open fireplace constructions, comprising an outer jacket adapted to engage the walls of the fireplace, an inward jacket disposed in inwardly spaced relation to the outer jacket, the side and back walls of said jackets being substantially parallel with each other, said jackets comprising spaced bottom walls, with the upper of said bottom walls being inclined in respect to the other so as to diverge therefrom from the front to the rear of the unit, the lower portions of the side and

rear walls being vertical and forming the body portion of the unit, the upper portions of the rear wall being inclined forwardly from the rear body portion substantially at the median portion of the unit, said side walls converging towards each other, the upper of said bottom walls being adapted to receive a grate for holding the fuel to be consumed, the side walls and inclined upper part of the rear wall being adapted to receive the heat of the products of combustion, the upper portions of the side and rear walls forming a flue, said unit having an open front and an open top, means for supplying liquid to be heated to the space between the bottom walls, and means for discharging the liquid from the flue portion of the unit when the same has been heated.

2. A heating unit adapted to be inserted in open fireplace constructions, comprising an outer jacket adapted to engage the walls of the fireplace, an inward jacket disposed in inwardly spaced relation to the outer jacket, the side and back walls of said jackets being substantially parallel with each other, said jackets comprising spaced bottom walls, with the upper of said bottom walls being inclined in respect to the other

so as to diverge therefrom from the front to the rear of the unit, the lower portions of the side and rear walls being vertical and forming the body portion of the unit, the upper portions of the rear wall being inclined forwardly from the rear body portion substantially at the median portion of the unit, said side walls converging towards each other, the upper of said bottom walls being adapted to receive a grate for holding the fuel to be consumed, the side walls and inclined upper part of the rear wall being adapted to receive the heat of the products of combustion, the upper portions of the side and rear walls forming a flue, said unit having an open front and an open top, means for supplying liquid to be heated to the space between the bottom walls, means for discharging the liquid from the flue portion of the unit when the same has been heated, and a jacket member in communication with the upper portions of the side walls extending across the open front, and enclosing the flue.

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