

June 15, 1943.

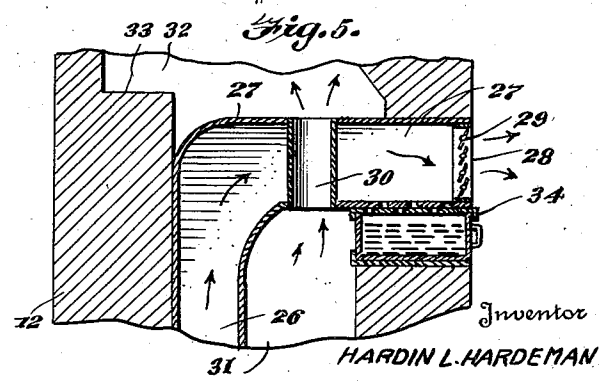
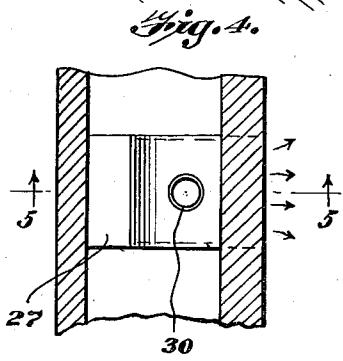
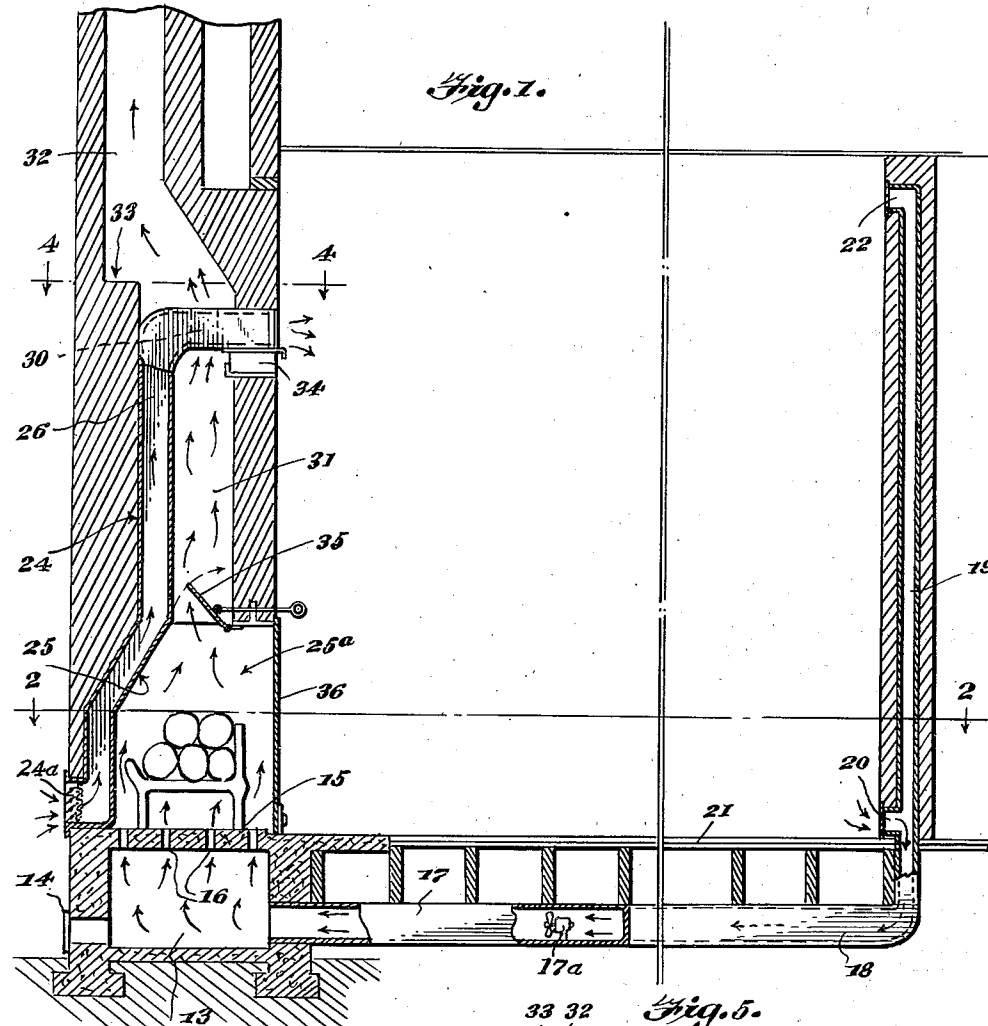
H. L. HARDEMAN

2,322,016

FIRE-PLACE FURNACE

Filed Sept. 19, 1941

2 Sheets-Sheet 1



By *Wm. R. McArthur*
Attorney

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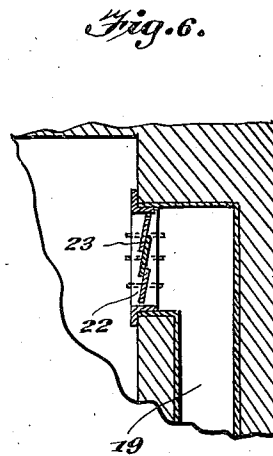
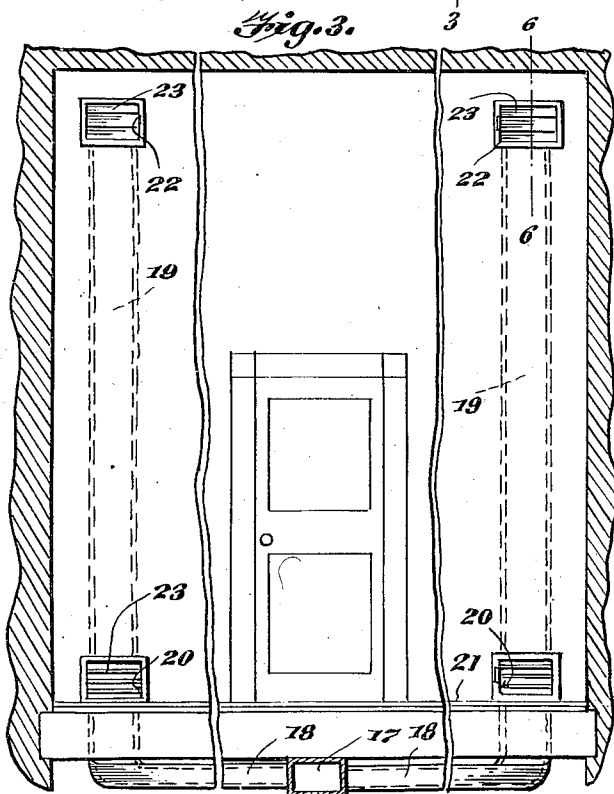
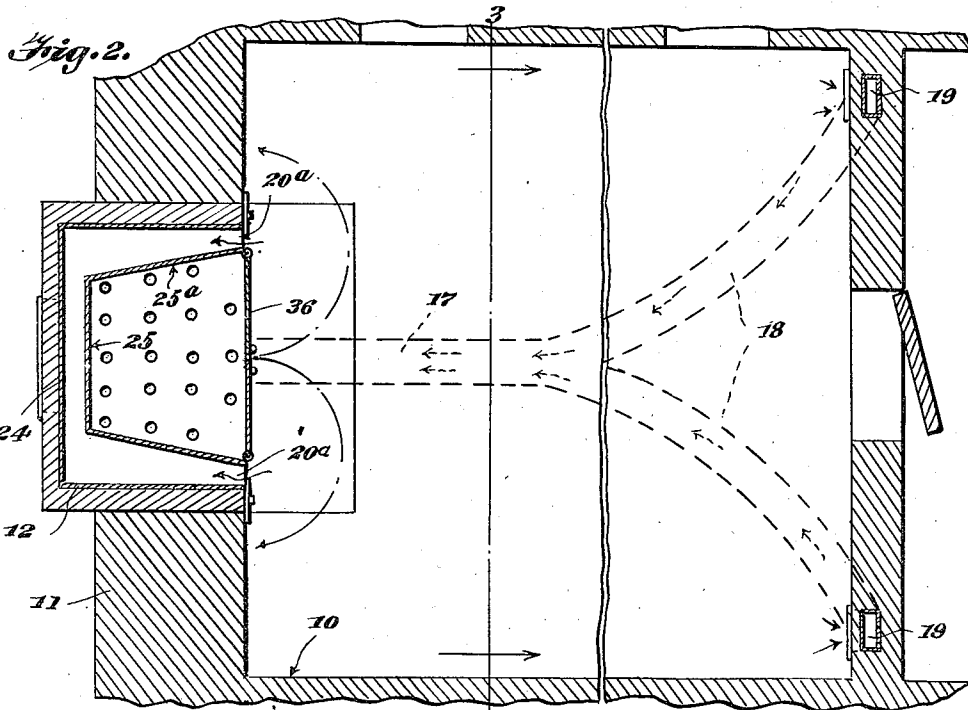
H. L. HARDEMAN

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FIRE-PLACE FURNACE

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2 Sheets-Sheet 2



Inventor
HARDIN L. HARDEMAN

By *Irving R. W. Catlin*
Attorney

UNITED STATES PATENT OFFICE

2,322,016

FIREPLACE FURNACE

Hardin L. Hardeman, Waco, Tex.

Application September 19, 1941, Serial No. 411,564

2 Claims. (Cl. 237-51)

This invention relates to a fire-place furnace which is especially constructed to provide a heating and ventilating system for houses, and other buildings.

One of the principal objects of this invention is the production of a simple and efficient fire-place furnace and associated features which will provide an efficient heating as well as an efficient ventilating system, whereby air may be drawn into the fire-place either from points near the ceiling or floor of a room to facilitate ventilation either in summer or winter.

A further object of this invention is the production of a simple and efficient means for obtaining a maximum amount of heat from the fire-place through the medium of air ducts, and the like.

Other objects and advantages of the present invention will appear throughout the following specification and claims.

In the drawings:

Figure 1 is a vertical sectional view showing the arrangement of the fire-place and ventilating ducts;

Figure 2 is a horizontal sectional view taken on line 2-2 of Figure 1;

Figure 3 is a sectional view taken on line 3-3 of Figure 2;

Figure 4 is a horizontal sectional view taken on line 4-4 of Figure 1;

Figure 5 is a vertical sectional view through the upper end of the heating unit;

Figure 6 is a vertical sectional view taken on line 6-6 of Figure 3.

By referring to the drawings, it will be seen that 10 designates the building in which the heating and ventilating system is located having a wall 11, in which wall 11 is built a fire-place 12. The fire-place is provided with an ash-pit 13 at the bottom thereof, and a clean-out opening 14 is provided in the rear of the ash-pit 13, as shown.

The floor 15 of the combustion chamber of the fire-place 12 is provided with vent openings 16, and a ventilating duct 17 communicates with the ash-pit 13, as shown in Figure 1. The duct 17 is provided with diverging portions 18 which communicate with vertical ducts 19 located in the wall of a room or adjoining room opposite the fire-place 12. The ducts 19 are provided with bottom inlets 20 near the floor 21 and top inlets 22 near the ceiling of the room. Louvers 23 are located in each of the inlets 20 and 22 and may be opened and shut when so desired, so that warm air may be drawn into the inlets 22 near the ceiling in summer, and discharged out through the fire-place and chimney, or, cold air may be drawn in from near the floor through the inlets 20 in the winter, and discharged out through the fire-place and chimney.

A heating unit 24 is placed in the fire-place 12, as shown, and comprises a hollow casing which fits against the inner back wall and side walls of the heating chamber of the fire-place 12. The heating unit 24 is provided with a screened air inlet 24^a at its bottom rear end which extends through the exterior wall for admitting air from the outside of the building into the heating unit 24. The unit 24 is provided with a cast iron front wall 25 and side walls 25^a which constitute the lining of the combustion chamber of the fire-place.

The unit 24 is also provided with a vertical duct 26, and this duct 26 is provided with a forwardly extending radiator heat-discharge portion 27. A plurality of such heat-discharge portions 27 may be provided without departing from the spirit of the invention. The outer end of the portion 27 is provided with a heat-discharge opening 28, and suitable louvers 29 are mounted therein, which louvers may be opened or closed. The portion 27 is provided with a vertical smoke escape port 30 formed therethrough and in line with the throat 31 and flue 32 of the chimney of the fire-place. The usual smoke shelf 33 is also provided. A water pan 34 is preferably located below the opening 28 and a damper 35 is located near the top of the combustion chamber of the fire-place. Suitable hinged doors 36 are also placed across the front of the combustion chamber.

A cradle, grate, andirons, and the like, may be mounted upon the floor 15 within the combustion chamber of the fire-place. When it is desired to clean out the fire-place the fan 17^a mounted within the duct 17 may be turned off and ashes may be dropped through the apertures 16 into the ash-pit, and then removed through the clean-out opening. Suitable fans may be located in the duct 17, as well as in other locations within the ducts 19, if desired, to facilitate forcing air through these ducts.

The intake vents 20^a on the front face of the fire-place adjacent the hearth are to facilitate control of the circulation of air and to make this circulation as flexible as possible. To facilitate heating with extreme low temperature outdoors it might be desired to recirculate the air within the room by drawing the cool air from a point adjacent the floor through the intake vents 20^a rather than through the fresh air inlet 24^a, which air inlet 24^a may be closed at this time. During this operation the louvers 23 of the inlets 20 and 22 are closed to achieve the desired recirculation. Air then for combustion could be supplied through the clean-out opening 14 if desired. Suitable slide covers may be used for opening and closing the intake vents 20^a.

From the foregoing description it will be seen that the present fire-place furnace embodies a

combined heating and ventilating system wherein a fire-place is utilized as one element of the system in conjunction with certain ducts for supplying both air to a room or building, and also for selectively removing air, such as heated air from the upper portion of a room to reduce the temperature of the room in the summer, or removing cold air from a point adjacent the floor for raising the temperature in the winter. The heating unit is placed within the fire-place in a manner to radiate a maximum amount of heat by discharging the heat from the heating unit out through the heat discharge portion. Draft through the fire-place will also be facilitated through the medium of the ducts and 19, assisted by the fan 17^a which may be located in the duct 17, and suitable fans may if desired be mounted in other locations to facilitate ventilation, circulation and the like. The present device or system may be utilized to facilitate heating as well as cooling due to the mounting of the various ducts, and the association of parts which will facilitate the changing of air within a building or room.

It should be understood that certain changes may be made in the system if desired, so long as such changes fall within the scope of the appended claims.

Having described the invention, what I claim as new is:

1. A heating and ventilating system comprising a fire-place having an outlet flue, a heating unit mounted within the fire-place, the heating unit having a fresh air inlet and a hot air out-

let, the hot air outlet communicating with the interior of a building, the fire-place having a perforated floor, an ash-pit located below the perforated floor, an air duct communicating with the ash-pit, the perforated floor providing means for dumping ashes from the fire-place into the ash-pit and also providing a draft means upwardly through the fire-place, vertical ducts communicating with the first mentioned duct, the vertical ducts having upper and lower inlet ports facing the fire-place and located within an opposite wall relative to the fire-place, means mounted within the upper and lower inlet ports to selectively open and close the ports, and a fan mounted within one of the ducts.

2. A heating and ventilating system comprising a fire-place having an outlet flue, a heating unit mounted within the fire-place, the heating unit having a fresh air inlet and a hot air outlet communicating with the interior of the room within which the fire-place is located, means for opening and closing the inlet and outlet to control the recirculation of air within the room and through the heating unit, a vertical duct mounted in a wall opposite and facing the fire-place, the vertical duct having upper and lower inlets, means for selectively opening and closing the inlets of said vertical duct, said last mentioned inlets facing the fire-place, and means forming a communication between the vertical duct and the fire-place for facilitating the drawing of air through the last mentioned inlets and vertical duct and out through the fire-place.

HARDIN L. HARDEMAN.