

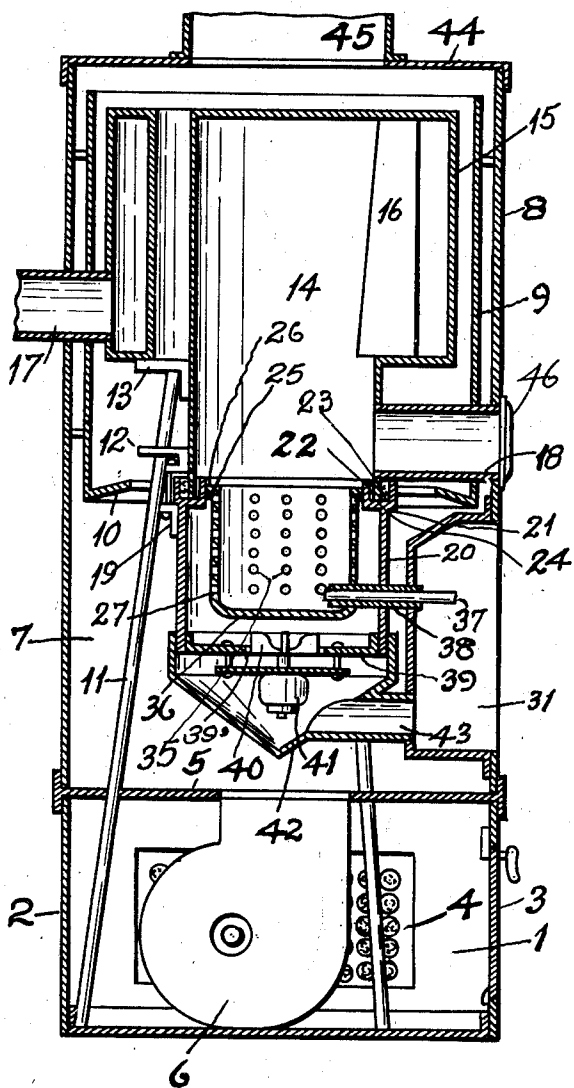
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HEATING FURNACE

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HEATING FURNACE

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1 Claim. (Cl. 126—110)

My invention relates to improvements in heating furnaces, and particularly to furnaces employed for heating buildings such as dwellings, stores and the like; and its objects are, first to provide a heating furnace that will be more efficient than furnaces heretofore employed for like service; second, to provide a heating furnace that will be simple and readily understood; third, to provide a heating furnace of which the interior parts are readily accessible.

Other objects and advantages of the invention will appear from the following description taken in connection with the drawing in which the figure is a sectional view taken at a vertical plane extending from front to back of the furnace about mid-way between the side walls of the casing which has mounted therein a fire pot and burner adapted for burning fuel oil.

Numeral 1 refers to the base portion of the furnace as a whole, of which 2 is the sheet metal casing having at its front an opening closed by a removable door 3 and at one of its sides a second opening having a screen 4 extending over it through which air can be drawn and delivered through a diaphragm 5 by a blower 6 into the interior of the portion 7 of the furnace. This portion 7 has an outer casing 8 of sheet metal, and an inner casing or heat deflector frame 9 provided at its lower end with an inwardly and upwardly inclined diaphragm flange 10. Rods 11 extend from the bottom of the furnace upwardly through the opening formed by the flange 10, and through slotted brackets 12 which guide the upper ends of said rods into engagement with brackets 13 secured to the outer wall surface of the combustion chamber 14 so that the rods assist in supporting the radiator 15. Numeral 16 denotes a heat conducting passage or flue extending from the combustion chamber 14 to the radiator 15; and said radiator has near its bottom at one of its sides a products-of-combustion flue 17 for connecting the furnace with a chimney or stack (not shown). Extending from the combustion chamber 14 to the front of the furnace is a tube 18 through which the condition of combustion may be observed; this tube also assists the brackets 19 in supporting the burner housing 20 to which they are secured.

The burner housing 20 has at its upper rim 21 a channel 22 containing a heat-resisting plastic packing 23, on which rests the lower edge 24 of the wall of the combustion chamber 14. The inner wall of the channel 22 has a ledge portion 25, as shown in the drawing, for engaging the flange 26 of the fire pot 27, in which fuel oil

is burned. The fire pot 27 is provided with perforations 35 in its side walls and the liquid fuel is delivered into the bottom wall 36 of the fire pot through a tube 37 in a protective casing 38.

Below the fire pot 27 there is secured to the housing 20 a diaphragm 39 having a central opening 39' and supporting an air feed fan 40 together with its electric motor 41 within the cone-shaped bottom shell 42 of the housing 20. The said fan 40 and its motor are removable when it is desired to operate the furnace without forced draft; and the cone-shaped bottom is provided with an air inlet tube 43 through which access may be had to the fan and its motor for adjustment or control thereof.

The top of the furnace casing 8 is closed by a cover which may be flat as shown, or which may be either depressed or of upwardly extending conical form if desired, and which is fitted with an upwardly extending heat conductor flue 45 by which heated air is conducted from the furnace to a room or space to be heated. The observation tube 18 is closed by an ornamental hinged door 46, except when observation of the fire is being made.

In the operation of my improved heating furnace, liquid fuel, such as oil, is admitted to the fire pot 27 where it spreads over the bottom wall 36 and is ignited and burned with the assistance of air forced into the fire pot through the holes 35 by the fan 40 driven by its motor 41, this air being supplied from outside the furnace through the air inlet tube 43 and delivered through the opening 39' in the diaphragm 39 to the interior of the burner housing 20 surrounding the fire pot, and thence through said holes 35 in the fire pot wall. The fuel spread over the bottom of the fire pot, when ignited, creates a flame which rises into the combustion chamber 14 and extends through the passage 16 into the radiator carrying with it the heat of combustion. A small percentage of this heat and with it all the products of combustion are conducted through the pipe 17 to a chimney or stack. When the fuel has been ignited and is burning well, the fan blower 6 is put in operation and draws air into the lower housing portion 1 of the furnace through the screen 4 located at one side of said lower housing portion. The purpose of the screen 4 is to prevent dust and dirt being drawn into the furnace and conducted through the heat conductor pipes to the rooms being heated. As the air leaves the blower it is deflected by the conical bottom 42 of the burner housing, a portion of said air passing through the opening in the dia-

phragm flange 10 as it flows upward into the space within the frame 9 and surrounding the combustion chamber 14. As shown in the drawing, there is also a flue space leading upwardly between the combustion chamber 14 and the radiator 15 providing a passage for a portion of the air which passes through the opening in the flange 10. In addition, a part of the air deflected by the cone-shaped bottom 42 of the burner housing flows upward between the outer casing 8 and the frame 9. These three streams of air are reunited in the upper portion of the furnace and pass therefrom in highly heated condition through the outlet flue 45 leading to the rooms to be heated.

The electrical and thermostatic instruments for controlling the operation of the air blower 6 and draft fan 40, the delivery of fuel to the burner, and the temperature of the heated air flowing from the furnace are not shown in the drawing, or described, as they may be of any make or type of such instruments as can be purchased in the open market and form no part of the present invention. The recess 31 provides a convenient space in which the several control

instruments are mounted, preferably by attachment to the back vertical wall of the depression.

I claim as my invention:

5 In a heating furnace, the combination with a housing having a plurality of sections in vertical assembled relation with one of the sections having a screen at one of its sides, and a diaphragm extending over its top and a blower having its discharge portion extending to an opening in the diaphragm: A fire pot having a plurality of holes 10 extending through its side wall for permitting air to flow into the fire pot, and a housing surrounding the fire pot, an inverted cone-shaped housing portion secured to the housing surrounding the fire pot with a hollow tube extending to 15 the said housing from exterior of the furnace for permitting air to enter the inverted cone housing and a fan for drawing air from the inverted cone housing and forcing the air through the holes extending through the wall of the fire pot 20 and upward into a combustion chamber and heat radiator having open connection with the combustion chamber, substantially as described.

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