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2,380,180

ELECTRIC HEATER

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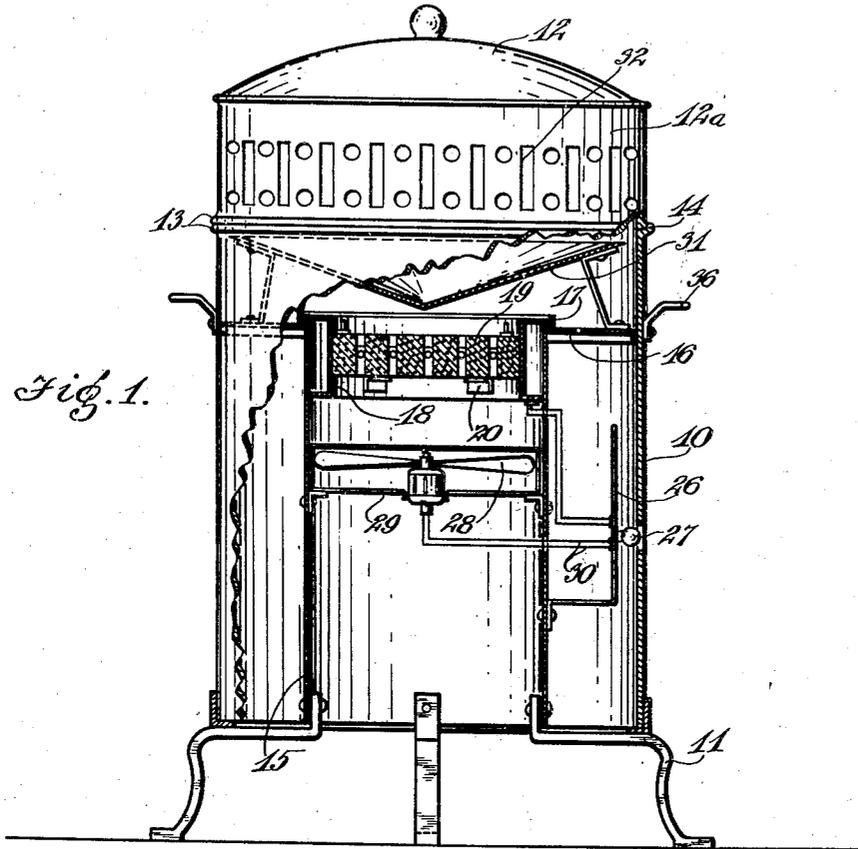


Fig. 1.

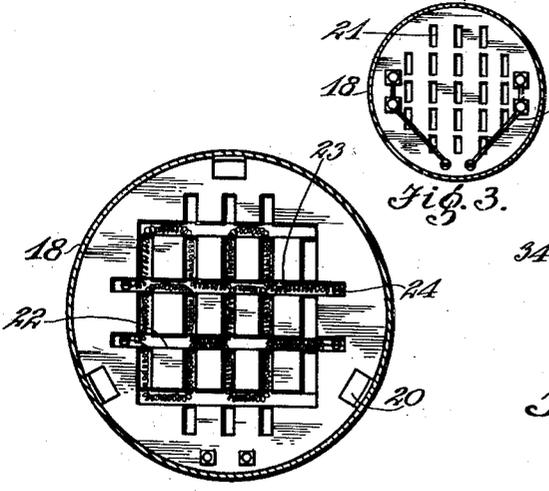


Fig. 2.

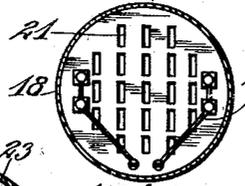


Fig. 3.

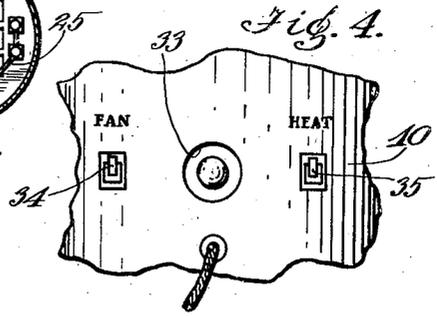


Fig. 4.

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UNITED STATES PATENT OFFICE

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ELECTRIC HEATER

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4 Claims. (Cl. 219—39)

My invention relates to electric heaters, and more particularly to the portable type which is usable in offices, homes, and like premises, and one object of the invention is to provide a heater which has facilities to store a considerable amount of heat, whereby to give the same off while economizing on electric current.

A further object of the invention is to provide a heater of the above character in which a circulation of air may be induced to warm the premises in which the heater is located.

Another object of the invention is to construct the novel heater along compact and efficient lines.

With the above objects in view and any others which may suggest themselves from the description to follow, a better understanding of the invention may be had by reference to the accompanying drawing, in which

Fig. 1 is an elevation of the heater, partly in section;

Fig. 2 is an enlarged bottom view of a heating unit in the central portion of Fig. 1;

Fig. 3 is a top view on a reduced scale of the said heating unit; and

Fig. 4 is a fragmental side view of the lower portion of the heater.

Referring specifically to the drawing, 10 denotes the housing of the heater, the same being of sheet metal and cylindrical form. The housing is supported at the bottom by a cluster of feet 11; and it receives a domed hood 12 at the top. The hood 12 and housing 10 have reinforced meeting flanges 13, and the hood is hinged to the housing as indicated at 14.

While the housing 10 is of a necessarily large diameter to provide an ample internal air space, the actual functional zone of the heater is defined by an internal cylinder 15. Both the housing 10 and the cylinder 15 are open at the bottom, but the annular space between these parts is closed at the top by a plate 16 flanged at 17 to form an internal opening into which the upper end of the cylinder 15 is extended.

The cylinder 15 is reinforced internally by a ring-shaped box 18 within which the heating unit is disposed. The latter is a block 19 of stone-like or refractory material, which has both heat retaining and electricity insulating qualities. The block 19 is fitted within the box 18 and supported by brackets 20 carried thereby.

As indicated in Fig. 3, the block 19 is formed with an array of vertical slots 21 throughout the greater portion of its area. These slots communicate with a series of passages or channels 22

in the under side of the block, as shown in Fig. 2. The channels serve as receptacles for a series of electrical heating elements 23 which are terminally connected to binding posts 24. Leads 25 extend from these to an instrument board 26 which carries a pilot light 27 as an indicator when the heating elements 23 are in action.

Below the heating unit 19 is an electric fan 28, supported on a suitable frame 29, and having current leads 30 to the instrument board 26. It is the function of the fan 28 to project the air currents from the bottom of the heater upwardly through the slots of the heating unit 19, to be warmed by contact with the heating elements 23 and dispersed into the upper portion of the housing. Here a conical deflector 31 trains the warm air currents outwardly and upwardly, so that they rise into the hood 12. The side wall 12a of the latter is made with a series of perforations 32 by way of which the warm air currents emerge into the surrounding atmosphere.

The housing 10 is made with an opening 33 opposite the pilot light 27; and the housing also carries suitably installed switches 34 and 35 for the control of the heating unit and the fan. At a higher point, the housing receives a pair of handles 36 by means of which the heater may be carried from place to place.

It will be evident from the above description that I have provided a heater which combines several meritorious features. First, the heating unit 19 is not merely a receptacle to dispose and protect or insulate the heating elements 23, as is the case in other thermal appliances employing electricity, but the heat retaining property of the unit enables it to receive and store a considerable amount of heat after the initial operation of the heating elements 23, so that the unit may serve to give off heat when the operation of the heating elements 23 has been reduced or even entirely cut off. Thus, when the fan 28 is in motion, the passage of the air currents through the heating unit does not depend only on the heating elements 23 for absorbing or accumulating heat, but to receive the stored-up heat in the internal walls of the heating unit 19, producing warmer outgoing currents. The heater is therefore economical in the sense that it may receive a working current only during its initial operation, saving electricity when this current is reduced or discontinued, on the theory explained above, for the continued operation of the heater. Second, the fan 28 is placed in a highly advantageous position by taking the cold air currents in the bottom of the heater and accelerating their upward

movement through the heating unit. Third, while the heat producing zone is within the compact cylinder 15, the housing of the heater is of a considerably larger diameter in order to provide an air space around the heat producing zone in the manner of an insulation. Further, the deflector 31 is a simple control to move the rising air currents upwardly where they may continue into the hood at points convenient for and conducive to dispersion to the outer atmosphere. However, the deflector 31 is also usable as a receptacle for a disinfectant, deodorant or scent diffusing substance whose evaporation or dispersion is aided by heat, although some substances in this class may become diffused without heat and therefore by the operation of the fan 28 alone. Finally, it will be apparent that the novel heater is an assembly of parts which are simple and capable of being made both light and strong, so that the heater may be easily portable irrespective of its size.

While I have described the invention along specific lines, various minor changes or refinements may be made therein without departing from its principle, and I desire to consider such changes and refinements as coming within the scope and spirit of the appended claims.

I claim:

1. An electric heater comprising an enclosure open at the top and bottom, a filler in the enclosure and having perforations, and a series of electrical heating elements carried by the filler in the zone of said perforations, said filler being horizontal and with channels in its bottom com-

municating with said perforations, and said elements seating with some parts in said channels and bridging said perforations with other parts.

2. An electric heater comprising an enclosure open at the top and bottom, a filler in the enclosure and having perforations, and a series of electrical heating elements carried by the filler in the zone of said perforations, said filler being horizontal and the perforations vertical, and said elements bridging the lower ends of the perforations.

3. An electric heater comprising an enclosure open at the top and bottom, a filler in the enclosure and having perforations, and a series of electrical heating elements carried by the filler in the zone of said perforations, said filler being horizontal and the perforations vertical and horizontally elongated, and some of said elements extending longitudinally over the lower ends of the perforations.

4. An electric heater comprising an enclosure open at the top and bottom, a filler in the enclosure and having perforations, and a series of electrical heating elements carried by the filler in the zone of said perforations, a larger enclosure spacedly surrounding the first-mentioned one and rising above the same, the upper portion of the larger enclosure being with a closed and hinged top and having a series of side openings, and a deflector over the inner enclosure effective to divert heat currents rising from said elements outwardly and upwardly for escape by way of said openings.

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