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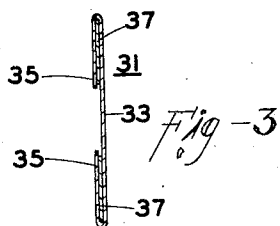
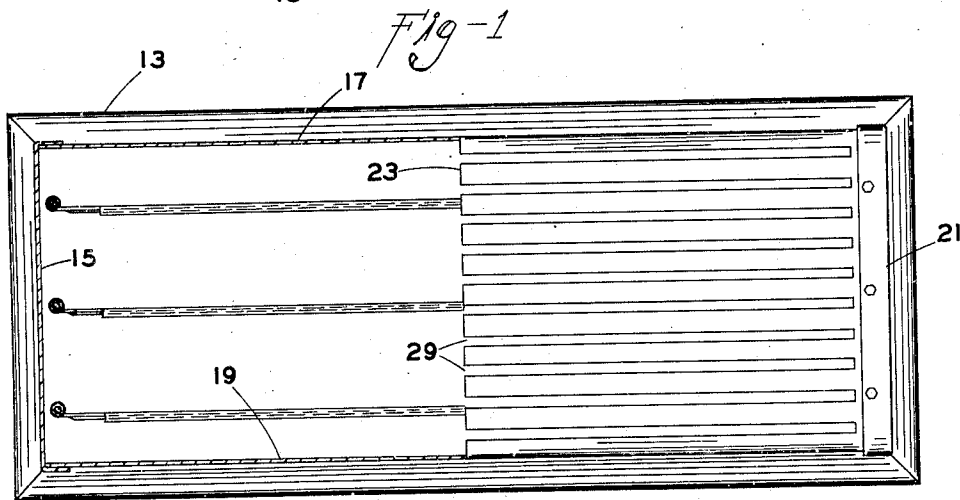
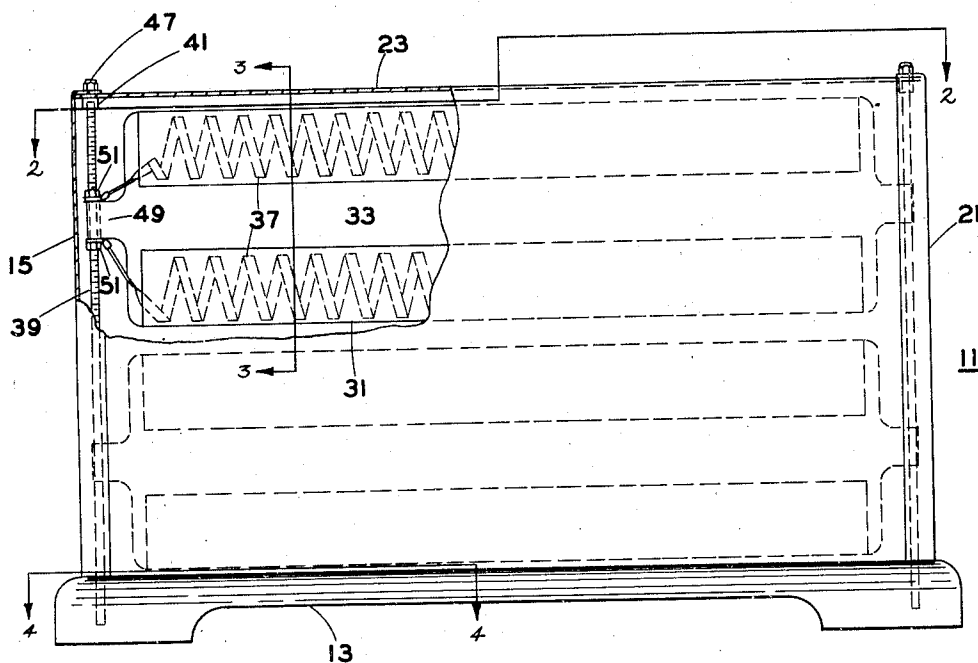
C. M. OSTERHELD

2,483,664

ROOM HEATER

Filed Sept. 26, 1946

2 Sheets-Sheet 1



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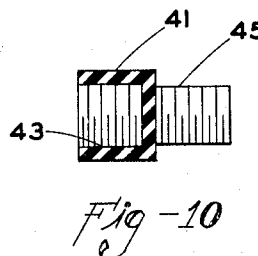
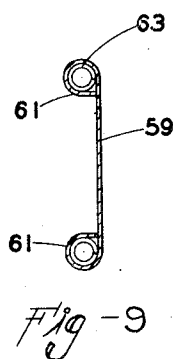
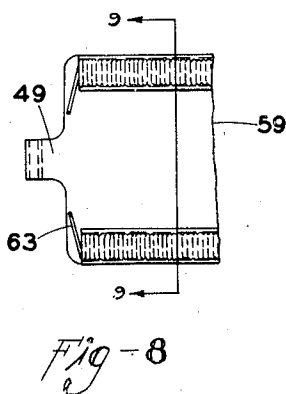
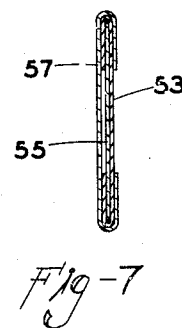
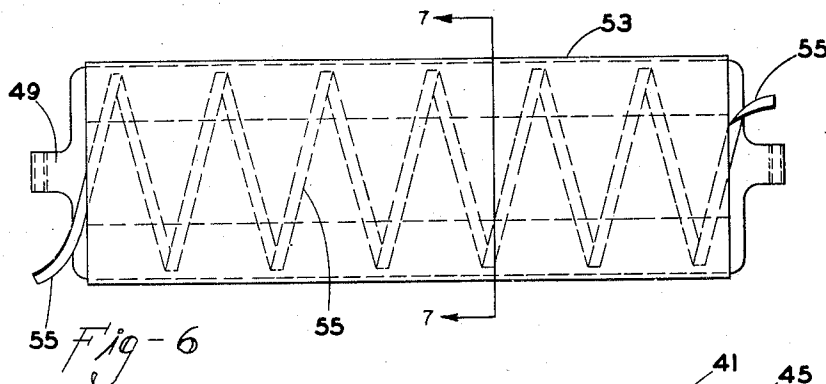
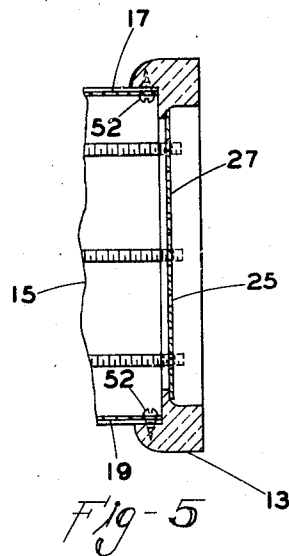
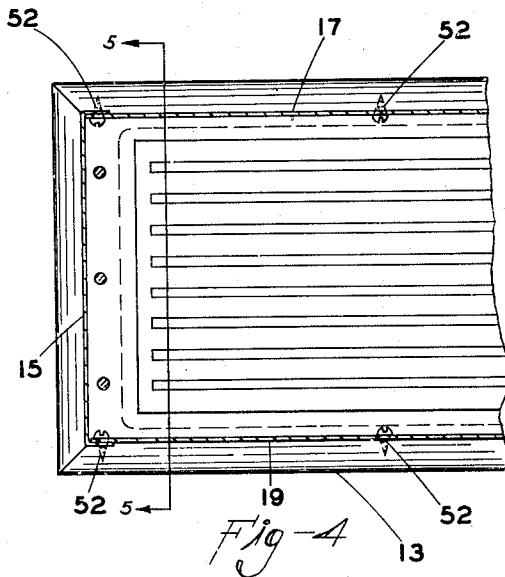
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2,483,664

ROOM HEATER

Filed Sept. 26, 1946

2 Sheets-Sheet 2



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2,483,664

ROOM HEATER

Clark M. Osterheld, Stoughton, Wis., assignor to
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Application September 26, 1946, Serial No. 699,370

1 Claim. (Cl. 219—38)

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My invention relates to portable electric air heaters and has for its object to provide a relatively simple electric air heater.

An object of my invention is to provide a novel form of resistor and of mounting thereof for an electric air heater.

Other objects of my invention will either be apparent from a description of several forms of device embodying my invention or will be pointed out in the course of such description and set forth particularly in the appended claim.

In the drawings,

Figure 1 is a view, in front elevation, of a portable electric air heater embodying my invention, with parts cut away,

Fig. 2 is a horizontal, sectional view thereof taken on the line 2—2 of Fig. 1,

Fig. 3 is a vertical, sectional view thereof taken on the line 3—3 of Fig. 1,

Fig. 4 is a fragmentary horizontal sectional view thereof taken on the line 4—4 of Fig. 1,

Fig. 5 is a fragmentary vertical sectional view taken on the line 5—5 of Fig. 4,

Fig. 6 is a view in front elevation of a modified form of heating unit embodying my invention,

Fig. 7 is a view in vertical section taken on the line 7—7 of Fig. 6,

Fig. 8 is a fragmentary view in front elevation of another modification of heating unit embodying my invention,

Fig. 9 is a view in vertical section therethrough taken on the line 9—9 of Fig. 8, and,

Fig. 10 is a view in longitudinal section through a holding means.

Referring first of all to Figs. 1 to 5 of the drawings I have there illustrated a portable electric air heater 11 embodying a base 13 which may be made of any suitable or desired molded plastic material which will withstand the temperature rise to which it will be subjected. On base 13 which may be of any suitable or desired form in molded plastic, I provide a casing comprising end members 15, a rear end closure 17 and a front end closure 19 together with a second opposite end closure member 21. An upper cover 23 is provided with a plurality of horizontally-extending slots therein so that a convection stream of heated air may enter apertures 25 in the lower closure member 27, flow upwardly past the sides of heating elements to be hereinafter described in detail, and out through apertures 29 in the upper cover 23.

My improved heating units 31 include substantially rectangular shaped relatively thin metal plates which may either be of iron or steel or

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preferably of aluminum 33. The thickness of the plates may be .015" or .020". The side edge portions 35 are return-bent over a part of the width of the plate 33 and a resistor strip 37 is positioned between the folded-over side edges 35 and the main part of the body of sheet 33 and extending in a zigzag fashion from one end of the sheet 33. The bent-over portions are pressed against the main portion of plate 33 so that the resistor strips 37 will be held in their proper operative positions.

I provide a plurality of metallic rods 39 extending substantially vertically in the casing being held at their lower ends by openings in the base 13, while their upper ends are fitted into holding members 41 which are made of electric-insulating material and have a screw-threaded opening 43 therein. The other reduced end portion 45 (see Fig. 10) of holding member 41 is adapted to receive a capped nut 47 which is effective not only to hold the casing in proper operative assembled position but also to hold the rods 39 in their proper operative positions. The end of terminal portions of resistor 37 are adapted to be clamped against the reduced center or mid-end portion 49 of each of the sheets 33 as by nuts 51 screwed on rod 39.

The casing plates may have their lower edges secured to the base 13 as by short screws 52.

The outer surface of resistor strip 37 may have thereon an integral, inorganic, high-temperature-resisting, heat-conducting and electric-insulating coating and I may use the method, for instance, set forth in U. S. Patent No. 1,526,127. I may also cover the inner surface of plate 33 with such an anodic coating or I may provide such a coating on either the outside surface of the resistor or on the inside surface of the plate.

Referring now to Fig. 6 of the drawings, I have there illustrated a slightly modified form of heating unit embodying a sheet 53 which has its side edge portions bent around over a resistor strip 55 which extends in a zigzag fashion from one end of sheet 53 to the other end and which is covered as by a second sheet 57 having return-bent side edges as shown in Fig. 7 of the drawings.

The assembly of one or more of heating units as shown in Figs. 6 and 7 is substantially the same as has already been set forth in combination with Figs. 1 to 5 inclusive.

Referring now to Figs. 8 and 9 of the drawings, I have there illustrated a sheet 59 having round side edges 61 which are adapted to be return-bent to substantially circular shape and to enclose a helically-wound resistor conductor 63 po-

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sitioned in the bent around edges. The assembly of one or more of such heating units may be done in substantially the same manner as was hereinbefore set forth in connection with Figs. 1 to 5 inclusive.

While I have already stated that I may use either sheet steel or preferably aluminum the characteristic of the sheets 33, 53 and 59 is that the entire outer surface of these sheets may be covered by an integral, inorganic, heat-conducting, high-temperature-resisting and electric-insulating coating having a thickness on the order of .001".

I may also cover the entire outer surface of resistor 37, of resistor 55, or of resistor 63 with substantially the same coating. The method used in providing this coating may be substantially that shown in U. S. Patent No. 1,526,127.

While I may provide such an anodic electric-insulating coating having a relatively very slight thickness on the order of .001" on either the casing or upon the resistor, I may provide a coating on both the resistor and on the casing whereby a much thicker electric-insulating material is obtained.

Referring now to Fig. 8 of the drawings, I have there shown that the adjacent helical turns of the helically-wound round conductor 63 are in contacting engagement with each other, this being possible because of the fact that the entire outer surface of the resistance conductor 63 is covered with an electric-insulating coating. This construction in which the adjacent turns of a helically-wound resistor member are in contacting engagement with each other makes it possible to increase the amount of energy translated into heat in a given area.

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Various modifications may be made in the device embodying my invention without departing from the spirit and scope thereof and all such modifications clearly coming within the scope of the appended claim shall be considered a part of my invention.

I claim as my invention:

An electric air heater comprising a substantially rectangular casing, a plurality of spaced rods supported by said casing therein, a thin rectangular metal sheet having integral, return-bent edges along its longer edges, coiled metallic resistance conductors within the return bends of said edges and held thereby in heat-conducting engagement with said sheet, and a thin layer of inorganic, heat-conducting, high-temperature-resisting, electric-insulating material lying between said sheet and coils and being integral with one of them, said metal sheet having integral return-bent portions also at its ends for encircling said rods for supporting said sheet thereon.

CLARK M. OSTERHELD.

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