

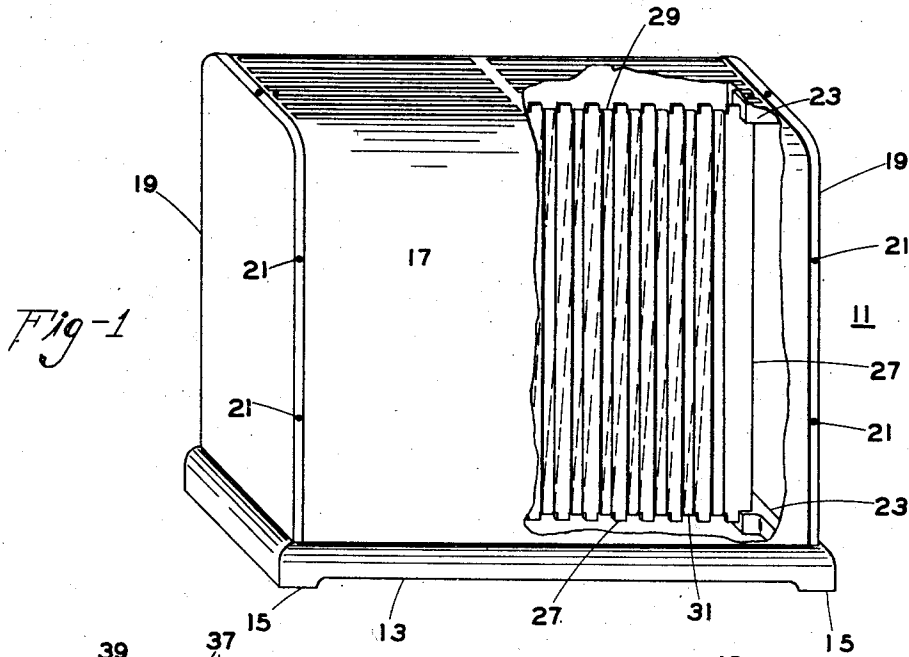
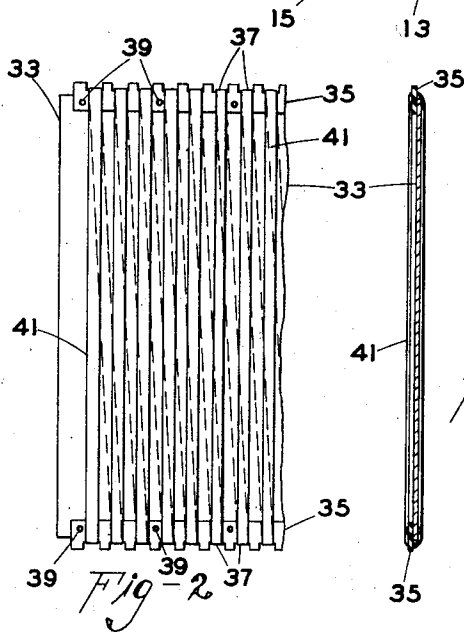
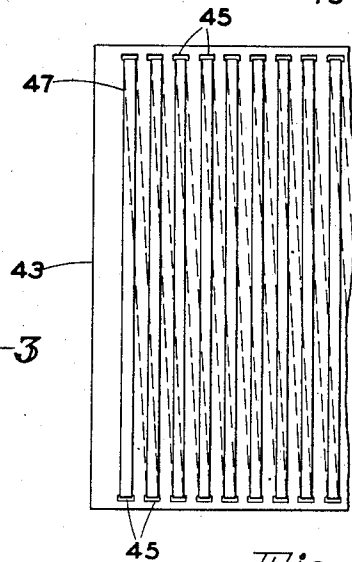
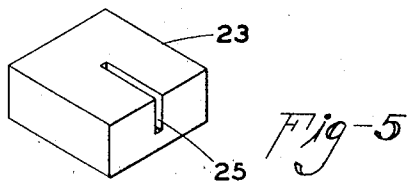
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2,457,598

ELECTRIC AIR HEATER

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2,457,598

ELECTRIC AIR HEATER

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1 Claim. (Cl. 219—38)

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My invention relates to electric heaters and particularly to electric air heaters.

An object of my invention is to provide a relatively simple form and construction of electric air heater.

Another object of my invention is to provide an electric air heater that shall use a novel form of electric insulation.

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

In the drawings,

Figure 1 is a perspective view with a part cut away of an electric air heater embodying my invention,

Fig. 2 is a fragmentary front elevational view of a modified form of support for the resistor of my improved air heater,

Fig. 3 is a view in end elevation of the parts shown in Fig. 2,

Fig. 4 is a fragmentary front elevational view of a still further modification of the support of my improved air heater, and,

Fig. 5 is a view in perspective of a supporting member for my heating unit.

Referring first of all to Fig. 1 of the drawings, I have there shown an assembled electric air heater 11 embodying a base 13 which is shown as a substantially rectangular plastic block having downwardly projecting supporting members 15. I provide an outer casing comprising a sheet-metal wall 17, which sheet metal is of such extent in area as to provide two side walls as well as a perforated top wall. I provide also a pair of end walls 19 which may be secured to the side and top walls as by a plurality of screws 21.

Within the casing comprising the bottom support 13 and the walls 17 and 19 are positioned a plurality of supporting blocks 23 which are preferably of a refractory electric-insulating material such as porcelain and which are provided with a recess 25 extending into one of the side edges of block 23. Any suitable or desirable means for holding the blocks 23 against the upper and the lower edges of end walls 19 may be provided, but are not shown.

The electric heating unit embodying my invention comprises a relatively thin sheet of metal 27, the corners of which are adapted to fit into the slots 25, to thereby hold the sheet in upright position. The upper and lower edges of

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sheet 27 are provided with a plurality of uniformly spaced relatively small recesses 29. While I may make the sheet 27 of any standard metal I prefer to use aluminum and to make the thickness of sheet 27 on the order of .035". While I have given a preferred dimension I do not desire to be limited thereto since I may use sheet metal having a thickness of from .03" to .04" thick. I provide a resistance conductor 31 in the form of a strip of resistance metal, preferably aluminum, and wind the same helically around the sheet 27 and in the respective recesses 29. While I have not shown any terminals for the resistance conductor 31 it is to be understood that a pair of terminals are secured to one end-member 19 so that a connecting plug on a twin conductor cord may be used to cause energization of the heater 11.

The entire surface of resistance conductor 31 as well as of the sheet 27 may be covered with an integral, inorganic, heat-conducting, high-temperature-resisting and electric-insulating coating having a thickness on the order of .001". While I have given a specific thickness of the coating, I do not desire to be limited thereto since the thickness of this coating may vary between the limits of .0005" and .0015". The method disclosed in U. S. Patent #1,526,127 may be used to provide this coating although any other means now known may be provided.

Referring now to Fig. 2 of the drawings, I have there shown a modified form of heating unit embodying a sheet 33 which is preferably made of relatively thin aluminum, the aluminum having a thickness on the order of .035" with allowable variations of from .03" to .04". On each of two opposite sides of sheet 33 I provide a relatively thick strip 35 of mica, each strip having a plurality of recesses 37 in its outer edge, each mica strip being secured in its proper operative position at the edge of one side of sheet 33 by a plurality of rivets 39 or other suitable securing means. I provide a resistance strip 41 which may be wound around the strip 33 and in the recesses 37, the strip being wound in a substantially helical form along the entire width of the sheet 33. While no terminals are shown it is to be understood that such are provided.

Referring now to Fig. 4 of the drawings, I have there illustrated a still further modification comprising a sheet 43 having a plurality of relatively small openings or slots 45 provided therein within each edge. A resistance strip 47 is adapted to be wound through the slots 45 from one side of strip 43 to the other, the resistance

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conductor 47 extending across in a helical shape substantially the entire width of sheet 43.

I desire it to be understood that sheets 27, 33 and 43, as well as the resistance strips 31, 37 and 47, may be coated with the hereinbefore described anodic coating. While I may coat the entire outer surface of sheets 27, 33 and 43, as well as of resistance strips 31, 37 and 47, I may coat a selected one of such elements particularly in the design shown in Fig. 2 of the drawings.

The amount of energy translated into heat in resistance strips 31, 37 and 47 may be made any desirable or predetermined value as by using a predetermined thickness of strip as well as a predetermined width of strip, as well as a predetermined number of turns around the supporting sheet.

The device embodying my invention thus provides a novel form of electric-insulation, which insulation is integral with either the resistance conductor or with the supporting sheet, or both, and in case a relatively small amount of energy is to be translated into heat, providing large gaps between adjacent turns of the resistance strip, my improved heater will be available to heat substantially all of the surface of sheet 27, 33, or 43.

Various modifications may be made in the device embodying my invention without departing from the spirit and scope thereof and I desire

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that all such modifications coming clearly within the scope of the appended claim shall be considered a part of my invention.

I claim as my invention:

5 An electric air heater comprising a casing, a relatively thin sheet of metal supported in a substantially vertical position in and by said casing, a plurality of horizontally aligned openings adjacent the upper and the lower edges of said sheet of metal and a metallic resistance conductor 10 wound helically through said openings, said sheet of metal and said resistance conductor having on their entire outer surface an integral, inorganic, heat-conducting, high-temperature-resisting and 15 electric-insulating coating.

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