

Dec. 24, 1957

R. A. F. JACKSON
ELECTRIC HEATERS

2,817,740

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2 Sheets-Sheet 1

Fig. 1.

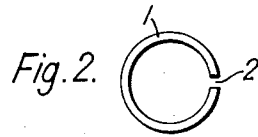
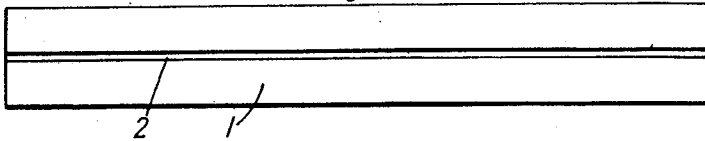
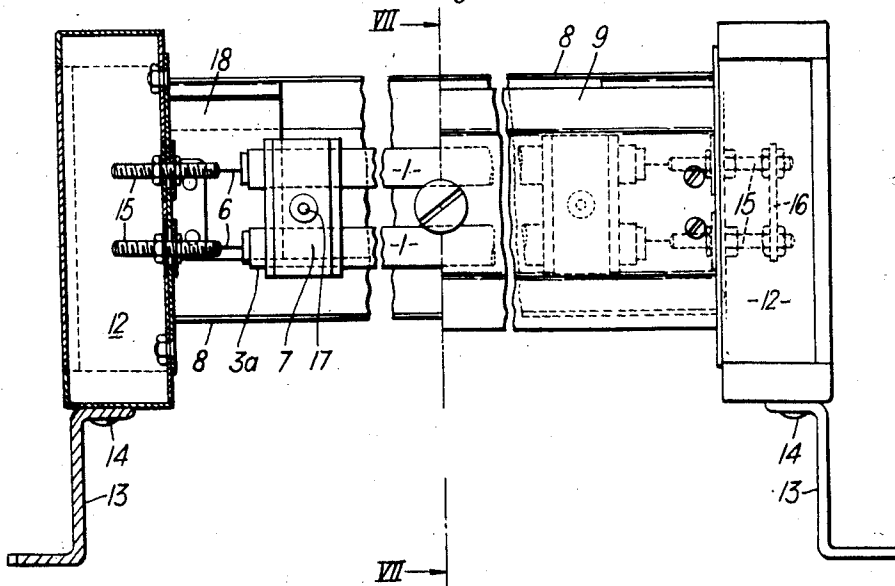


Fig. 3.



Fig. 4.



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Fig.5.

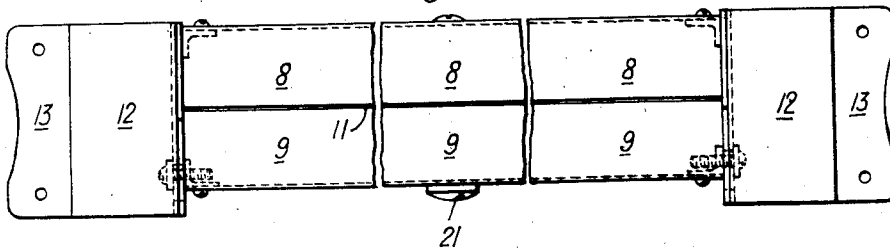


Fig. 6.

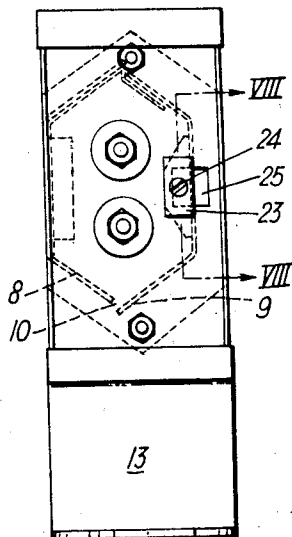


Fig. 7

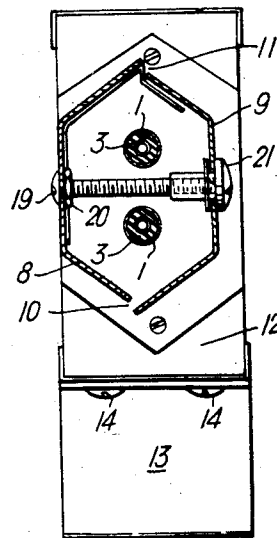
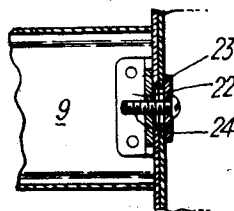


Fig. 8.



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ELECTRIC HEATERS

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3 Claims. (Cl. 219—19)

This invention relates to electric space heaters.

An object of the invention is to provide an improved electric space heater in which the electric resistance wire is housed in an elongated casing affording oppositely situated air gaps capable of simple adjustment in order to vary at will the ratio of the radiant heat and the convected heat given off by the heater.

An electric space heater in accordance with the invention comprises an elongated casing of complementary channel members and means holding said members in assembly to form two oppositely disposed adjustable air gaps therebetween; at least one carrier tube supported in said casing spatially from the walls thereof; an electric resistance wire threaded through said carrier tube; means insulating said electric resistance wire from said carrier tube; terminal boxes at the ends of said casing; and terminals in said boxes connected to said electric resistance wire.

Preferably the carrier tube is of metal longitudinally slit from end to end and with beads of ceramic or other insulating material slidably inserted therein and with slightly oversize end beads, also of insulating material, force-fitted into the ends of the tube and held there due to the resiliency of the tube material.

An insulated structure obtained in this way is ready to take a plain or a helically wound resistance wire and can then be filled with any suitable filler compound to prevent ingress of air and consequent oxidation of the resistance wire.

If desired, the oversize end beads may each have one or more peripheral grooves or recesses and may be locked in position in the carrier tube by indenting the slitted ends of this tube into the grooves or recesses.

The invention will be clearly understood from the following description aided by the accompanying drawings now to be referred to in detail.

Figs. 1 and 2 show in side elevation and end elevation respectively the carrier tube of the insulated structure for an electric resistance heating element.

Fig. 3 is a medial longitudinal section through the insulated structure complete with the heating element.

Figs. 4 to 8 show one form of space heater in accordance with the invention, Fig. 4 being a side elevation partly in section, Fig. 5 a plan, Fig. 6 a view from the left end of Fig. 4 with the corresponding end cover plate removed, Fig. 7 a cross section on line VII—VII of Fig. 4, and Fig. 8 a cross section on line VIII—VIII of Fig. 6.

The metal carrier tube 1 (Figs. 1 and 2) has a longitudinal slit or gap 2 extending from end-to-end. Into this tube beads 3 (Fig. 3) of ceramic insulating material are slid, these beads being a free sliding fit in the tube. Into each end of the split tube 1 a slightly oversize ceramic bead 3a is forced-fitted and there held due to the resiliency of the material of the tube. Each oversize end bead 3a is shown with a peripheral groove 4 and is locked in position by indenting the tube 1 at 5 into this groove.

Clearly, the beads 3 are held in assembly in the split

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carrier tube 1 by the oversize end beads 3a, 3a to form in a very simple fashion an insulated structure for an electric resistance heating element, which may be a plain resistance wire or a helically-wound resistance wire, such as the wire 6 in Fig. 3. The interior of the insulated structure may be filled with any suitable filler compound (not shown) to prevent ingress of air to the resistance wire and its consequent oxidation.

Protected heating elements composed of insulated structures equipped with electric resistance heating wires in the manner above described and as illustrated by Figs. 1 to 3 are suitable for various kinds of electric heating equipment including various kinds of space heaters.

The space heater shown by Figs. 4 to 8 incorporates two such protected heating elements clipped together, side-by-side, by means of clips 7. The heater comprises two complementary, elongated profiled casing members 8 and 9 housing said protected heating elements and presenting openings 10 and 11 (see especially Fig. 7) for the passage of ambient air through the casing about said heating elements. A terminal box 12 is provided at each end of the casing members 8 and 9. Feet 13 are attached to the terminal boxes by means of screws 14.

The illustrated heater has two protecting heating elements as already mentioned, and each of the four ends of the wires are attached to terminals 15—two at each end in the terminal boxes 12—the circuit being completed by a bus bar 16 (Fig. 4) connecting the wires 6 at the end opposite from the incoming feeders which although at the left in Fig. 4 may be at the right or the left end terminal box as found most convenient for the circuit wiring.

The clips 7 holding the two protected heating elements together is fixed by means of screws 17 (Fig. 4) to the rear casing member 8 of the heater in such a manner that these elements are located spatially from the walls of the casing. Moreover the terminal boxes 12 are secured to the same casing member 8 by means of brackets 18. This enables the front casing member 9 to be connected to the rear casing member 8 in a manner which permits the former to be adjusted to vary the extent of the openings 10 and 11 and thereby the ratio of the radiant heat and the convected heat given off by the heater.

Stud bolts 19 (Fig. 7) are secured by nuts 20 to the rear casing member 8 and project forwards between the protected heating elements. The front casing member 9 carries shouldered nuts 21 which engage the threads of the bolts 19 (Fig. 7). By slackening back the nuts 21 the casing member 9 will be moved away from the rear casing member 8 to increase the extent of the openings 10 and 11, and vice versa.

During such displacement the ends of the casing member 9 are guided with respect to the terminal boxes 12 by small L-brackets 22 (Fig. 8) attached to the movable casing member 9, and by bridge members 23 (see also Fig. 6) connected to said brackets by screws 24 passing through slots 25 in the terminal boxes. There may, of course, be any suitable number of screws 19 and adjusting nuts 21 depending on the length of the heater.

Single or multiple tier heaters may be formed in the manner herein described.

I claim:

1. An electric space heater comprising an elongated casing of complementary channel members and means holding said members in assembly to form two oppositely disposed adjustable air gaps therebetween; at least one carrier tube supported in said casing spatially from the walls thereof; an electric resistance wire threaded through said carrier tube; means insulating said electric resistance wire from said carrier tube; terminal boxes at the ends

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of said casing; and terminals in said boxes connected to said electric resistance wire.

2. An electric space heater comprising an elongated casing of complementary channel members and means holding said members in assembly to form two oppositely disposed adjustable air gaps therebetween; at least one carrier tube supported in said casing spatially from the walls thereof, said tube being longitudinally slitted; beads of insulating material inserted slidably into said carrier tube; oversize end beads also of insulating material force-fitted into the ends of said carrier tube; a resistance wire threaded through said beads; terminal boxes at the ends of said casing; and terminals in said boxes connected to said resistance wire.

3. An electric space heater comprising an elongated casing of complementary channel members and means holding said members in assembly to form two oppositely disposed adjustable air gaps therebetween; at least one carrier tube supported in said casing spatially from the walls thereof, said tube being longitudinally slitted; beads

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of insulating material inserted slidably into said carrier tube; oversize end beads also of insulating material force-fitted into the ends of said carrier tube; a resistance wire threaded through said beads; terminal boxes at the ends of said casing; and terminals in said boxes connected to said resistance wire, said end beads having peripheral grooves engaged by indented portions of said carrier tube.

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