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L. P. HYNES

1,760,065

ELECTRIC HEATER

Filed March 24, 1924

Fig. 2

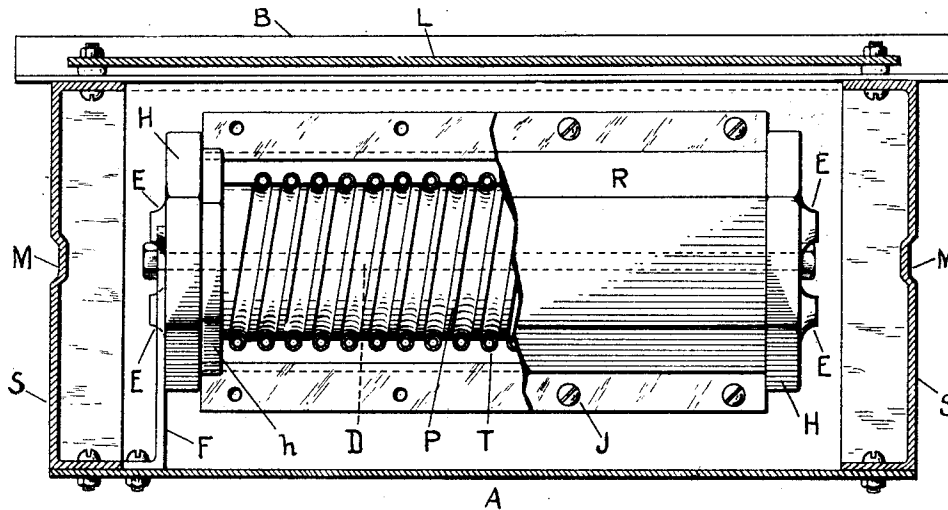
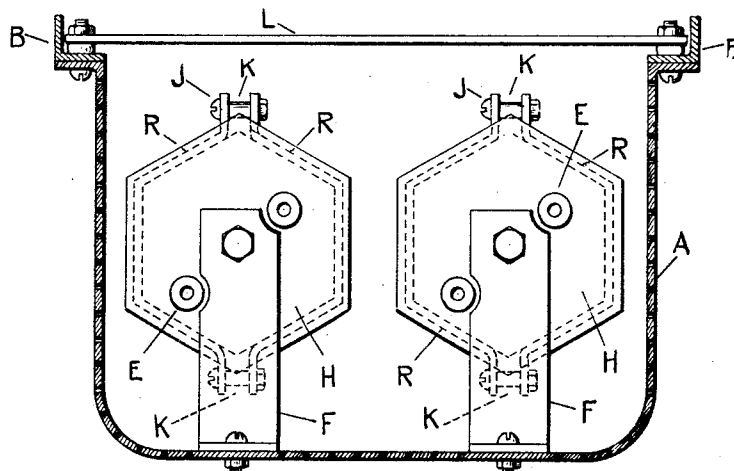


Fig. 1



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UNITED STATES PATENT OFFICE

LEE P. HYNES, OF ALBANY, NEW YORK, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CONSOLIDATED CAR-HEATING COMPANY, INC., OF ALBANY, NEW YORK, A CORPORATION OF NEW YORK

ELECTRIC HEATER

Application filed March 24, 1924. Serial No. 701,387.

For a detailed description of the present form of my invention, reference may be had to the following specification and to the accompanying drawings, wherein

Fig. 1 is an end view of my heater with the casing-head removed and

Fig. 2 a section through the casing and partly through one of the heater elements.

My invention relates to heaters of the well known McElroy type wherein a coil of resisting wire is wound helically in a helical groove around a porcelain core. These are known as open or exposed-coil heaters in distinction from those having embedded coils. In such heaters trouble is sometimes caused by a break in the heater-coil caused by accidental or undue concentration of heat at one point which fuses the wire at that point. In that event the coil unwinds from its core and comes in contact with the metal casing which, by the Underwriters' rules, has to be grounded. That produces a short circuit which may cause serious damage. To avoid that trouble, I provide a sheet-metal plating mounted on the porcelain core and insulated thereby which encloses the exposed coil but is also open at top and bottom. This plating is inside of the regular casing and outside the coils, so that a break in the coil as above described will keep it from coming in contact with the grounded casing. Since the plating is insulated no external damage can occur. Other features of my device will be described hereinafter.

Referring to the drawing, the usual porcelain core, (which may, however, be of any suitable insulating material), is shown at P with the customary helical groove formed in its outer surface in which the coil is laid. This core is ordinarily made in sections bolted together by a central rod D. In this case I make the end sections of hexagonal instead of circular outline and form thereon a projecting flange H and a seating base or shoulder h for the guard plating to be hereinafter explained. The said end sections are provided with outside bosses E, E for the circuit terminals of the coil, both of those terminals being usually at the same end of the core. The coil itself is shown at T. The aforesaid

guard-plating is formed in two parts R, R, each bent into semi-hexagonal form so as to seat on the hexagonal shoulder h formed on the end sections of the insulating core. The two halves of the plating are spaced apart at top and bottom to form top and bottom slots K and are secured together by screw-bolts J. The guard-plating is spaced an adequate distance from the heater coils—say half an inch more or less—and the slots K are somewhat wider. The flanges H keep the plating from moving endwise and the hexagonal seat keeps it from rotating on the porcelain. The heater herein shown for illustration is of the cross-seat form, being supported from the angle-rails B, B of the seat frame by a casing A which is perforated except along the two bottom strips beneath the two respective heater coils, to which strips the porcelain cores are secured by end brackets F, F. The ends S, S of the casing are spaced away from the coil end to form a junction-chamber for convenient connection of the wires which enter the casing in conduits through the knock-out panels M, M. Over the heater and outside of the plating is extended a polished reflector-plate L, of aluminum or other suitable material. This plate protects the seat from undue heating by deflecting the heat downward and also diverts the convection currents outward through the perforations in the casing. By removing this deflector plate, which may be made in two parts if desired, convenient access to the junction chambers is had while the whole heater may be passed upward or downward between the seat rails B, B without disturbing the casing A. By the foregoing construction this breakage of a coil will cause no damage; it will merely unwind far enough to strike the guard-plating R, R, which is insulated by its mounting on the porcelain from the grounded casing A. Moreover, the plating effectively prevents contact with the coil, by a metal umbrella-rod or other foreign object which might be inserted through the perforations in the casing. The top and bottom slots of the guard-plating permit air currents to pass through in direct contact with the coils, while it itself takes the radiant component of the heat and is ex-

posed on the outside to air currents within the casing.

What I claim as new and desire to secure by Letters Patent is:

- 5 1. An electric heater comprising a casing provided with an internal insulating support, an exposed coil heater mounted on said support and located within said casing, and an insulated two-part metallic guard plate
10 spaced from said heater and the two parts of said guard plating spaced from each other so as to provide openings for air currents to pass through in direct contact with the coil heater.
- 15 2. An exposed-coil heater having a coil mounted on an insulating support, an insulated two-part metallic guard-plating spaced from said coils and the two parts spaced from each other and an external casing spaced
20 from and insulated from said plating.
3. An exposed-coil heater having its coils mounted on an insulating support with protruding ends, a two-part metallic guard-plating embracing and insulated by said ends
25 with its two parts spaced from each other and from the coil to provide air circulation and an external casing spaced from and insulated from the said guard-plating by said insulating support, a plurality of the walls of said
30 casing lying adjacent to said insulating support and approximately parallel therewith.
4. An exposed-coil heater having a coil mounted on an insulating support, a guard-plating insulated from and spaced from said
35 coil, an external casing spaced from and insulated from the plating and a heat deflector outside of the plating.

Signed at Albany, county of Albany and State of New York, this 20th day of March,
40 1924.

LEE P. HYNES.

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