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April 14, 1925. 1,533,227

O. A. COLBY

STREET CAR HEATER

Filed Oct. 6, 1922

Fig. 1.

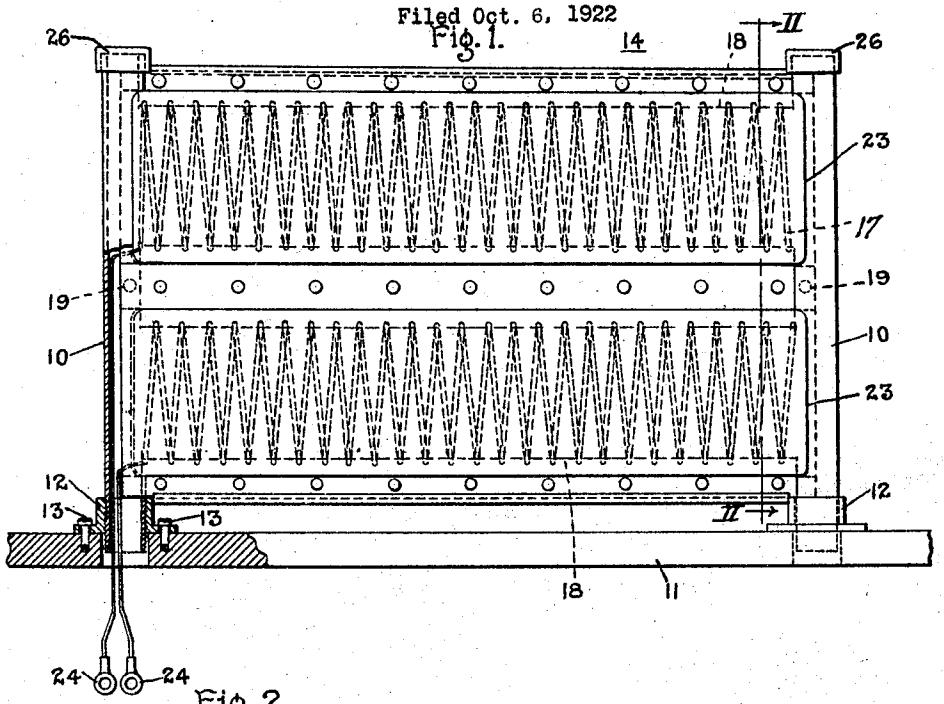


Fig. 2.

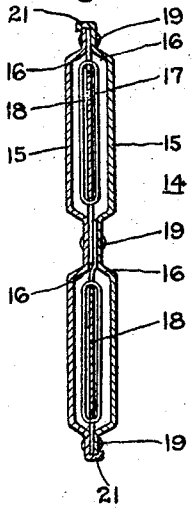


Fig. 3.

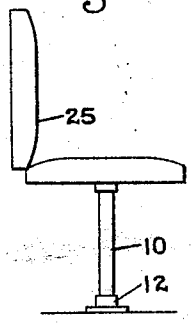
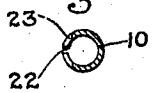


Fig. 4.



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UNITED STATES PATENT OFFICE.

ORA A. COLBY, OF IRWIN, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

STREET-CAR HEATER.

Application filed October 6, 1922. Serial No. 592,745.

To all whom it may concern:

Be it known that I, ORA A. COLBY, a citizen of the United States, and a resident of Irwin, in the county of Westmoreland and State of Pennsylvania, have invented a new and useful Improvement in Street-Car Heaters, of which the following is a specification.

My invention relates to electric heating devices and, particularly, to electric air heaters.

The object of my device is to provide a relatively simple, compact and rugged electric air heater for use in electric street cars.

In practicing my invention, I provide a pair of tubular supporting members located in spaced relation on the floor of a street car under a car seat. Opposing portions of the walls of the tubular supports are cut away and slots are provided extending longitudinally of the tubular members to permit of mounting therein a relatively thin heating element having a relatively large surface area. Terminal members for the resistor of the heating element are provided to extend through one or both of the tubular members to beneath the car floor. Cap members are provided at the top end of each of the tubular supports to hold the heating elements securely therein.

In the single sheet of drawings,

Figure 1 is a view, in front elevation, of a heater embodying my invention, certain portions thereof being cut away;

Fig. 2 is a view in vertical section thereof, taken on the line II—II of Fig. 1;

Fig. 3 is a schematic view of a car seat, together with a heater, to illustrate the location of the heater relatively to a car seat; and

Fig. 4 is a view, in cross-section, of a tubular supporting member.

A plurality of tubular supporting members 10, which may comprise pieces of ordinary wrought iron or steel pipe, are located in spaced relation on a car floor 11. Mounted members or ferrules 12 are provided, into which the lower ends of the tubular members 10 extend, a screw-threaded connection being provided between the tubular member and the ferrule in order to hold the tubular members 10 securely. The members 12 may be secured against the floor by means of screws 13.

The heating element proper, designated generally by the numeral 14, comprises a pair of relatively thin metal cover plates 15, which may be of punched or pressed sheet metal or other metal and be provided with a plurality of depressions 16 extending substantially the entire width of the sheets. The two cover plates or sheets 15 are located in face-to-face relation, with their edges and the intermediate portion thereof abutting.

Means for supporting a resistor member 17 may comprise two elongated and relatively narrow sheets 18 of mica or other suitable material, upon which the resistor 17 may be wound in any desired or suitable manner. The sheets 18 are provided, at each corner, with extensions in order that the upper and lower sheets may overlap at the edges and provide space for supporting rivet members 19 extending not only through the sheets of mica but also through the central portion of the opposing cover plates. Similar rivet members 19 are provided at the upper and at the lower edges of the cover plates, the end rivets in each case providing means for securing the sheets of mica at the upper and at the lower edges, respectively, in their proper operative positions relatively to the cover plates.

One of the edges of each of the cover plates 15 may be provided with an integral flanged portion 21 which may be bent over the adjacent edge of the other and opposing cover plate in order to strengthen the heating element.

Each of the tubular supporting members 10 is provided with a longitudinally extending slot 22 in order that the heating element 14 may have its lateral edge portions located therein. Each of the tubular members 10 is further provided with cutout portions 23 in order that the opposing depressed portions 16 of the cover plates 15 may suitably abut against the tubular members 10 and substantially register therewith.

The ends of the resistor member 17 may be brought out at these cutout portions 23 and extend downwardly through either one or both of the resistor members 10 to a point below the car floor 11, where terminal members 24 may be secured thereto, to which the ends of suitable supply-circuit conductors (not shown) may be connected.

Fig. 3 illustrates schematically the location of such a heating element and illus-

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trates a car seat 25 extending crosswise of the car and a heating element, as hereinbefore described, located therebeneath. Any suitable or desired method of control and of connection of the resistor member to the control circuits may be employed in a manner well known in the art.

Screw cap members 26 may be located at the top of each of the tubular members 10, with their lower edges abutting against the upper edge of the heating element 14 in order to hold it in its proper operative position relatively to the tubular supporting members.

The device embodying my invention thus provides a heating element comprising relatively few parts which may be easily manufactured and assembled and which have a relatively large surface area for the dissipation of the heat generated therein. A relatively large number of heaters of this type may be installed in an electric street car whereby a more even distribution of heat within the car is obtained without any one of the heating elements being operated at relatively high internal temperatures which might cause discomfort to the passengers.

Various modifications in the system and arrangement and location of parts may be made within the spirit and scope of my invention, and I desire, therefore, to be limited only by the scope of the appended claims.

I claim as my invention:—

1. In an electrical air heater, in combination, a plurality of thin, flat electric-insulating supporting members, a resistor wound on said supporting members, a pair of relatively thin metal cover plates each having a plurality of depressions therein and located in abutting face-to-face relation, means for holding said supporting members between said metal plates and for holding said metal plates in said abutting face-to-face relation, and embodying means on each of said plates for interlocking the same.

2. In an electrical air heater, in combination, a plurality of thin, flat, electric-insulating, supporting plates, a resistor wound around said plates, a pair of relatively thin metal cover plates each having a plurality of integral lugs extending therefrom and a plurality of depressions therein, said cover plates being located in abutting face-to-face relation, means for holding said cover plates in said face-to-face relation and for holding the supporting plates therebetween, and a pair of spaced, tubular, supporting standards operatively engaging said lugs to support said supporting plates, resistor and cover plates.

3. In an electrical street-car heater, in combination, a thin, flat, electric-insulating, supporting plate, a resistor wound thereon, a plurality of relatively thin metal cover plates, each having a plurality of integral lugs extending therefrom and a depression therein, said cover plates being located in abutting, face-to-face relation, and a pair of spaced, hollow, supporting standards secured to a car floor, for operatively engaging said lugs to support said supporting plate, resistor, and cover plates, and for receiving the terminal leads of said resistor.

4. In an electrical air heater, in combination, a plurality of thin, flat, electric-insulating supporting members, a resistor wound on said supporting members, a pair of relatively thin metal cover plates each having a plurality of depressions therein and located in abutting face-to-face relation, means for holding said supporting members between said metal plates and for holding said metal plates in said abutting face-to-face relation, and a pair of spaced, hollow supporting standards for supporting said assembled supporting members, resistor, and cover plates, said assembled members being movable longitudinal of said hollow standards to engage the same and to be removed therefrom.

5. In an electrical air heater, in combination, a plurality of thin, flat, electric-insulating, supporting plates, a resistor wound around said plates, a pair of relatively thin metal cover plates, each having a plurality of integral lugs extending therefrom and a plurality of depressions therein, said cover plates being located in abutting face-to-face relation, means for holding said cover plates in said face-to-face relation and for holding the supporting plates therebetween, and a pair of spaced, tubular, supporting standards operatively engaging said lugs to support said supporting plates, resistor and cover plates, said assembled members being movable longitudinally of said standards to engage the same and to be disengaged therefrom.

In testimony whereof, I have hereunto subscribed my name this 16th day of September, 1922.

ORA A. COLBY.