No. 682,949. Patented Sept. 17, 1901.

J. F. McELROY.

ELECTRIC HEATER.

(Application filed Nov. 28, 1898.)

(No Model.)

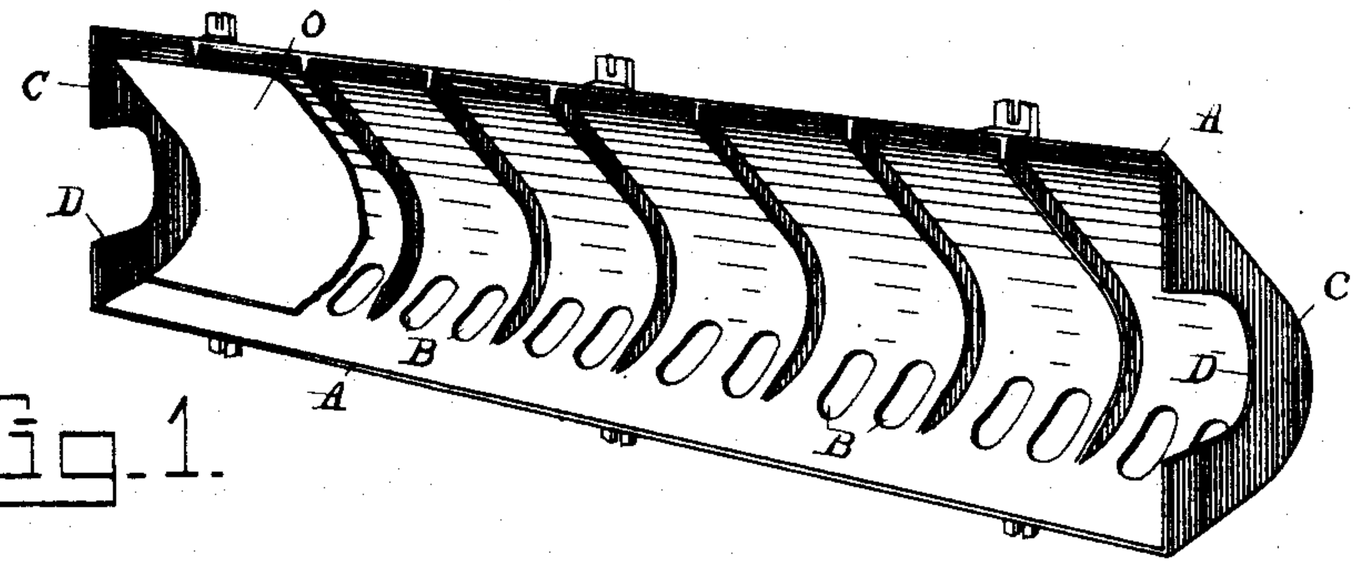

Fig. 1.

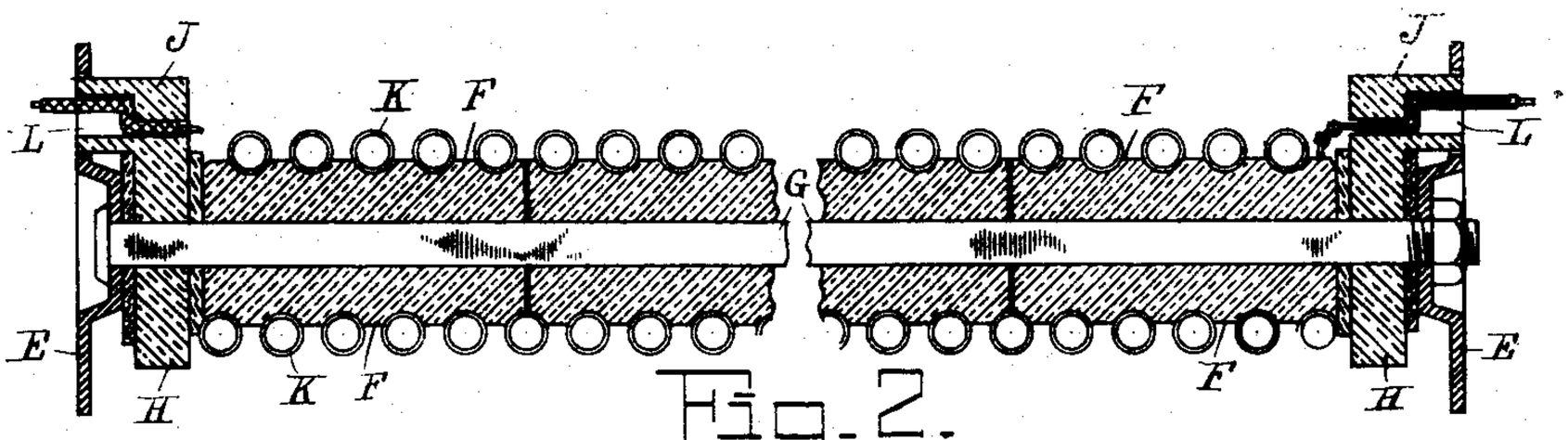

Fig. 2.

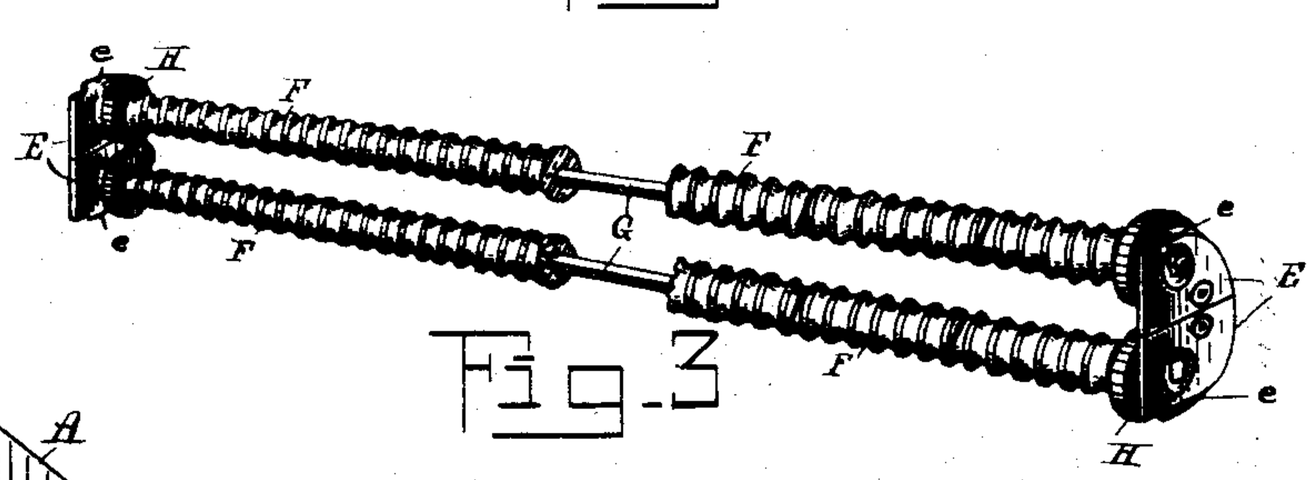

Fig. 3

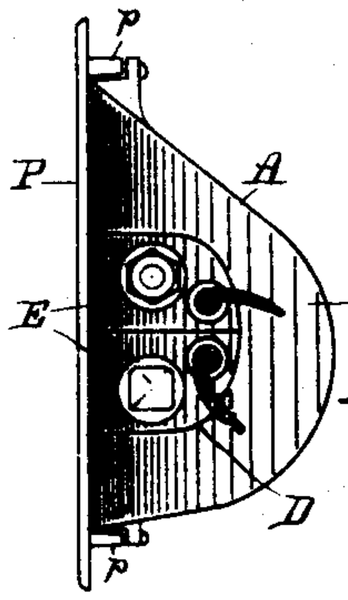

Fig. 4.

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UNITED STATES PATENT OFFICE.

JAMES F. McELROY, OF ALBANY, NEW YORK, ASSIGNOR TO CONSOLIDATED CAR-HEATING COMPANY, OF SAME PLACE.

ELECTRIC HEATER.

SPECIFICATION forming part of Letters Patent No. 682,949, dated September 17, 1901.

Application filed November 28, 1898. Serial No. 697,577. (No model.)

To all whom it may concern:

Be it known that I, JAMES F. McELROY, a citizen of the United States of America, and a resident of Albany, in the county of Albany and State of New York, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

This invention relates to improvements in electric heaters; and the object of the invention is to provide an electric heater particularly adapted for use in street-cars constructed with the least possible weight of metal, the end supports of the heater being used as the ends of the heater-casing, the heating element being made up of a wire wound upon a core before being placed in the casing, the ends of the resistance being secured in plates at the end of the core. I attain this object by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a perspective view of the interior of the case. Fig. 2 is a section of the resistance-carrying core and the end pieces. Fig. 3 is a perspective view of the resistance-carrying cores in position to be placed within the case. Fig. 4 is an end elevation of the heater.

Similar letters refer to similar parts throughout the several views.

A represents a portion of an electric-heater case which is provided with perforations B near one edge thereof. The end pieces C C of the case A are cut away at D D to allow for the insertion of the plates E E, attached to the end of the resistance-carrying core F. The resistance-carrying core F is preferably made up of a series of porcelain tubes, preferably carried by a squared rod G and at each end provided with an insulating-block, preferably porcelain, (marked H,) upon which is formed a projecting perforated portion J, through which the ends of the insulated wire K pass, and within the enlarged part of said perforation L the insulated wire K is secured by knotting the same therein, as shown in Fig. 4. This is done by bending the wire within the opening L in such a manner as to form a loop large enough to prevent the wire from passing through the smaller portion of the opening in the block H. This holds the wire securely and positively in connection with the insulating-block H. By this arrangement of the insulating-block H, carrying the projection J, adapted to project through an opening in the plate E, I do away with the necessity of threading a porcelain bushing to mesh with threads in the end of the heater-plate, as is the usual practice in heaters now in use. I also by this means provide an expeditious and positive method of securing the wire K within the porcelain projection J, which is also very inexpensively arranged for. The plate E is of such form as to fit within the opening D in the end of the case A, where it is held in position by a web or lip *e*, which engages with the inner side of the end of the case. The plate E is also secured to the end of the resistance-carrying core by means of a nut or head on a rod passing through the porcelain tubes and the porcelain block H, as shown in Fig. 2.

In the drawings two of the porcelain carrying-cores are shown, adapted to be placed within the case A parallel to each other, the plates E E at each end of each of the resistance-carrying cores together fitting the opening D in the end of the case A. However, one resistance-carrying core may be used instead of two, or more than two may be placed in connection within the case A. I therefore do not limit myself to the number as shown in the drawings.

When the resistance-carrying core is placed in position, the plates E form one end of the heater, and the front plate P is put in position and secured by suitable fasteners *p p*, as shown in Fig. 4, or in any suitable manner. Within this heater-casing A, I preferably arrange asbestos or other insulating material O, spaced slightly from the heater-case, allowing a circulation of air between the insulating material O and the casing A, which prevents the case from becoming overheated. When two or more cores are placed in the same case, instead of making separate plates E for the ends of each core I may construct one plate at each end of the two or more cores, with which plate the ends of the cores may unite, thus making one plate to fit within each end of the casing.

The construction shown and described here-

in permits the heater to be built with the least weight of metal, as the end support of the heater is used as the end of the heater-casing. The duplication of metal parts is thus saved. It also permits the heating element to be made up and the wire to be wound upon the core, and this heating element can be handled by means of the end castings, which can rest on the floor or the bench without danger of disarranging the wire coil or breaking the porcelain parts. The heating element is held securely in position at both ends and can be placed in the casing or lifted out of it without disturbing any of the bolts or screws which hold the parts of the heating element together. By this construction, also, the wire terminals of the heating resistance are passed through the insulating-knobs when the wire is wound on the coil, thus saving the difficulty of passing the wire through insulating-knobs attached separately to the heater-case when the heater is put in position in the case. It will be noticed that the heater as thus constructed is extremely simple in the manner of connecting up. The resistance is readily wound about the porcelain tubes from end to end, the ends of the wire looped within the porcelain plates J, the cores placed within the case, the ends fitted to the openings in the ends of the heater, and the front plate of the heater-case secured in position.

What I claim as my invention, and desire to secure by Letters Patent of the United States, is—

1. In an electric heater, a heating-conductor, an insulating-support therefor, a porcelain block provided with an insulating-bushing formed integral therewith at each end of said insulating-support, within which bushings are secured the ends of the heating-conductor substantially as described.

2. An electric heater, consisting of a casing, an insulating-support, a resistance placed thereon, a porcelain block at each end of said support carrying an insulating-bushing, a metallic plate on each end of said insulating-support through which said insulating-bushing passes, so arranged and connected up that the resistance on said insulating-support may be secured at each end within said bushing and the metallic plates when placed within the heater-casing will form the ends thereof, substantially as described.

3. An electric heater, consisting of a casing, one or more resistance-carrying supports, a porcelain block placed at the end of each support, insulating-bushings formed integral with said porcelain blocks, within which bushings are secured the terminals of the resistance-wire, so arranged that the resistance-wire may be placed upon the support, its ends secured in the bushing at each end of the support and the supports placed in the casing, a metallic plate at each end of the supports fitting within an opening in the casing, a face-plate for the casing and means for securing the face-plate in position after the supports are placed in the casing, substantially as described.

Signed by me at Albany, New York, this 26th day of November, 1898.

JAMES F. McELROY.

Witnesses:
J. M. ESTERLY,
CHAS. B. MITCHELL.