July 1, 1924. 1,499,502

J. H. CARMEAN

ELECTRIC GRATE

Filed Nov. 30 . 1923

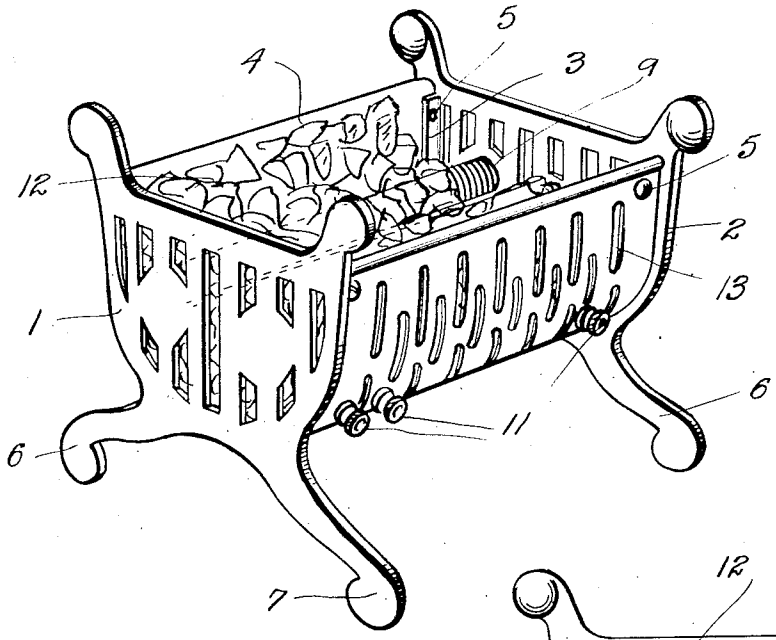


Fig. 1.

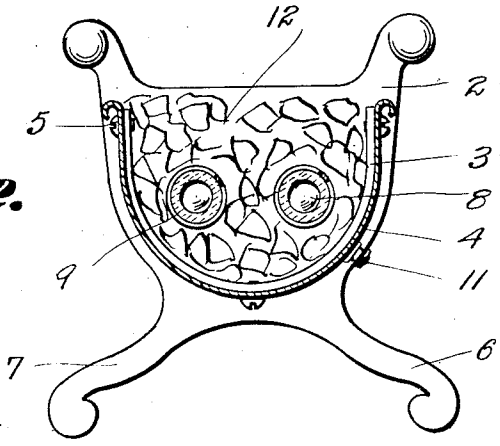


Fig. 2.

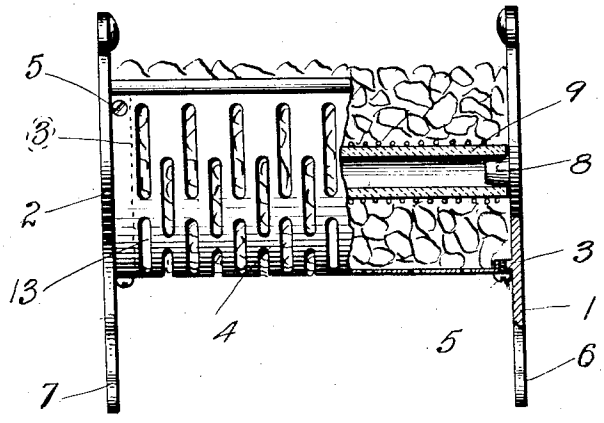


Fig. 3.

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UNITED STATES PATENT OFFICE.

JAMES H. CARMEAN, OF KANSAS CITY, MISSOURI.

ELECTRIC GRATE.

Application filed November 30, 1923. Serial No. 677,691.

To all whom it may concern:

Be it known that I, JAMES H. CARMEAN, a citizen of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Electric Grates; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to electric heaters and particularly to an electric grate for heating purposes. The primary object of the invention is to provide a novel form of electric heating element which may be constructed to simulate a coal grate, the construction being such that the heating elements may be novelly supported in the grate with loose material surrounding the elements and coarse enough to provide interstices through which the air may pass, the coarse loose material having considerable heat conductivity and the heat being carried away by the air passing through the interstices.

I am aware that prior to my invention, heaters have been provided by embedding electric heating elements in certain appropriate embedding material, but in such heaters the heating elements were insulated from the air and the conductivity of the air was limited to the exterior of the embedding material.

According to my invention however the heating element is exposed to atmosphere and the air passing through the interstices of the bed will provide great heat conductivity so that the coarse material will be heated in an efficient manner and give up heat to the air passing around in proximity thereto. I have provided a novel form of heater casing or grate which may be inexpensively manufactured, expeditiously assembled and conveniently transported from place to place as occasion may demand.

In the drawings,

Fig. 1 is a perspective view of a grate constructed in accordance with my invention.

Fig. 2 is a cross sectional view, and

Fig. 3 is a side elevational view, parts being broken away to illustrate the method of supporting the heating elements.

The grate casing consists of two end members 1 and 2, each of which is a duplicate of the other, the two end members being formed alike so that a single casting may do for either end. Each end member is provided with arcuate inwardly projecting flanges 3, so that the half round sheet metal grate member 4 may be fastened to the two flanges 3—3 on the respective end members 1 and 2, the fastening being accomplished preferably through the medium of screws 5. The end members are provided with legs 6 and 7 to support the main body of the grate above the floor.

The end members are provided with inwardly projecting lugs 8 to be received by the tubular element porcelains or cores 9 so that the porcelains or cores will be properly supported. The heating elements are provided with resistance wire preferably nichrome wire which I wind in the usual way about the cores 9 and the wires may be connected to binding posts 11 as will be well understood. Current may be turned off and on by suitable switches, not shown.

I prefer to arrange two heating elements in each grate body and so wire up the windings that either one or both heating elements may be on at one time. In the grate I place suitable divided loose refractory material 12, coarse enough to provide spaces or interstices between them so that air may pass up pass up through the divided material and contact with the surfaces of the various elements of the divided material and over the resistance wire. The refractory material will have heat conducted to it by the hot air and by conduction from the heat elements so that it will heat to a cherry red giving a very attractive and efficient bed for the grate.

It will be observed that the receptacle is perforated or provided with slits 13 for the passage of air into the bed so that the air may pass into the interstices formed by the coarse material.

It will be apparent that the supporting structure consisting of the ends 1 and 2 and the half round grate member 4 may be assembled in an expeditious and convenient manner and that the heating elements will be held in place without any special fastening devices since the lugs or projections 8 will engage in the ends of the heat element

cores 9. Consequently the cost of assemblage may be reduced to a minimum.

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

A heater comprising a receptacle having two duplicate ends, each having an inwardly projecting lug, a heater element comprising a tube receiving the ends of said lugs, means for fastening the two ends together to cause the lugs to engage the heater element and coarse loose material surrounding the heating element.

In testimony whereof I affix my signature.

JAMES H. CARMEAN.