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INCLOSED HEATING ELEMENT FOR ELECTRIC STOVES

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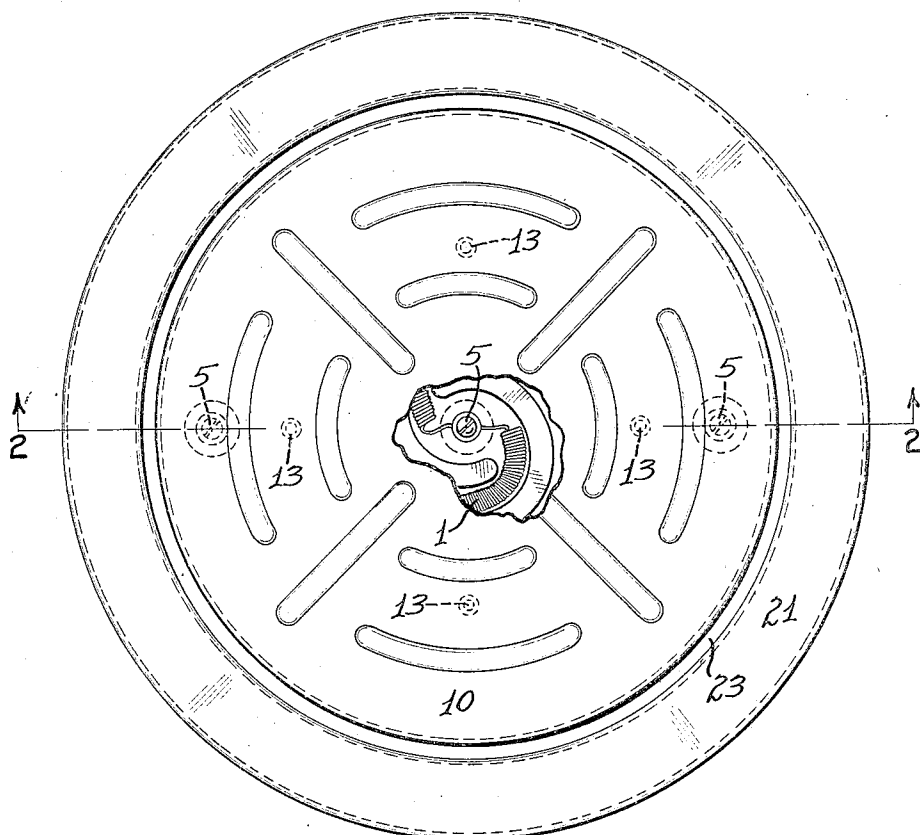


FIG. 1.

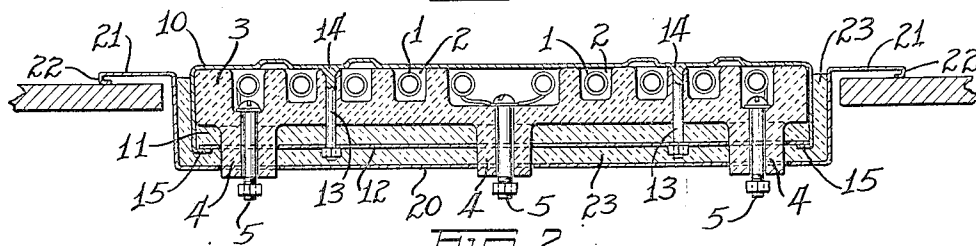


FIG. 2.

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INCLOSED HEATING ELEMENT FOR
ELECTRIC STOVES

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2 Claims. (Cl. 219—37)

This invention relates to electric heating elements, and more particularly to inclosed type elements for domestic electric stoves.

In the use of heating elements for electric stoves, it has been found that the inclosed element is more satisfactory to the user than one in which the heating resistors are exposed, since the hazard of damaging the element by spilling foods thereon is eliminated, and the oxidation of the resistors materially reduced. Difficulty has been encountered in the use of the inclosed element due to the fact that the cover plate impedes the radiation of the heat and tends to divert it toward the bottom of the element which, as a result, becomes very hot and may damage the stove and wiring disposed adjacent these points. Further, the cover plates have a tendency to warp in use, so that it is necessary to use a metal having relatively a low coefficient of thermal expansion, such as cast iron. It has been found that these difficulties may be overcome by suitably positioning the cover plate in relation to the refractory body and making other changes in structure.

It is the primary object of the present invention to overcome the above-mentioned disadvantages and to provide an inclosed heating element having a high radiating efficiency and which is not subject to deformation due to repeated temperature changes over a wide range.

A further object of the invention is to provide a heating element of this type which is capable of production at relatively low cost and is easily installed and used.

Other objects and advantages of the invention will become apparent as the description proceeds, reference being had to the accompanying drawing, in which—

Figure 1 is a plan view, partly broken away, of a heating element constructed in accordance with the present invention, and Fig. 2 is a section on line 2—2 of Fig. 1.

Referring to the drawing, 1 designates a heating element or resistor which is carried in suitable channels 2 formed in a refractory body 3. The refractory body is provided with a plurality of depending tubular extensions 4 through which electrical connections are made to the heating element 1. These connections, in this instance, comprises heated bolts 5, the head portions making connection with the ends of the resistors in a manner well known in the art.

A metallic cover plate 10 closely overlies the top of the refractory body and extends downwardly about the side thereof in as close a fit as can well be made. The cover plate is preferably

made of sheet metal having a relatively low coefficient of thermal expansion, approximating that of the refractory body, such as a nickel-chromium steel. The material must also resist deformation from the repeated heating and cooling action to which it is subjected in use. Suitable ridges are preferably formed in the upper surface of the cover plate to strengthen the same.

The bottom of the refractory body 3 is entirely shielded with a mass of insulating material 11 which is cut out to surround the depending extensions 4. The insulation is held in place by a metallic bottom plate 12, which is also cut out to surround the extensions and which is held to the cover plate 10 by suitable fastening elements 13. These latter preferably comprise large headed bolts welded to the cover plate as at 14 extending down through holes formed in the refractory body 3 and the insulation 11, so as to furnish an additional resistance to deformation of the cover 10 when the element is heated. The entire assembly of refractory body, insulation and bottom plate is held in place and sealed by an inwardly extending flange portion 15 of the cover plate 10. This flange is rolled into compression against the edge of the bottom plate 12 and forms a tight joint therewith.

An element receiving bowl 20 is provided so that the heating element may be readily positioned in a stove, and comprises a cup-shaped body having an outwardly extending flange 21 which is preferably spaced from the stove top, not shown, by a depending flange 22. The bottom of the bowl is perforated to permit the extensions 4 to pass therethrough so that electrical connections may be made to the resistors, and also serves the additional important purpose of centering the assembly with relation to the pocket. The entire bowl is lined with an insulating mass 23 which spaces the metal covered heating element from the bowl so as to impede heat flow between the two parts. The thickness of that part of the insulating mass 23 which is at the bottom of the bowl is dictated by the consideration that the cover plate 10 preferably rises a fraction of an inch above the top of the flange 21 so that pans may be easily slid off of the heater without striking against the inner edge of the flange 21 which might cause them to spill their contents on the stove top.

It will thus be seen that I have provided an inclosed heating element in which the parts are compactly disposed, is productive of a maximum heating efficiency, and which is not readily deformed by warping. Obviously, numerous modi-

fications and changes may be made in the arrangement and form of the parts without departing from the scope of the appended claims.

5 Having thus described my invention, what I claim as new, and desire to secure by United States Letters Patent, is:

10 1. A heating assembly for electric stoves comprising a heating element including a refractory body having a plurality of depending tubular extensions, resistors carried by said body, electrical
15 connecting members for said resistors disposed in said tubular extensions, a layer of insulating material under said body, a metallic cover member surrounding said body adjacent the top and side
20 thereof, means cooperating with said cover member to position said layer of insulating material, and a cup-shaped bowl member for said heating element having a plurality of holes in the bottom thereof adapted to register with said depending tubular extensions whereby said element is maintained in centered relation to said bowl.

2. A heating assembly for electric stoves comprising a heating element including a refractory body having a plurality of depending tubular extensions, resistors carried by said body, electrical
5 connecting members for said resistors disposed in said tubular extensions, a layer of insulating material under said body, a metallic cover member surrounding said body adjacent the top and side
10 thereof, means cooperating with said cover member to position said layer of insulating material, a cup-shaped bowl member for said heating element having a plurality of holes in the bottom
15 thereof adapted to register with said depending tubular extensions whereby said element is maintained in centered relation to said bowl, and insulation between said element and said bowl, said
20 insulation being of a depth sufficient to raise the top of said element above the top of said bowl.

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