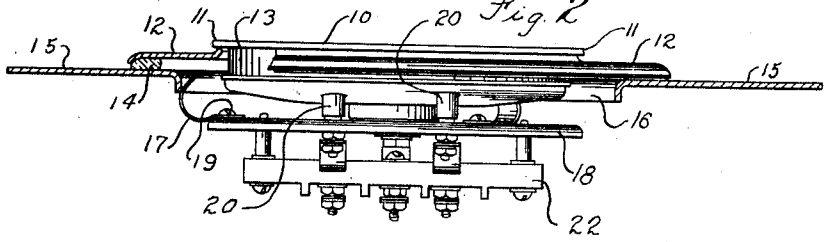
Oct. 28, 1941. C. J. WEINHARDT ET AL 2,260,961

HEATING ELEMENT MOUNTING

Filed April 22, 1940

Fig. 2



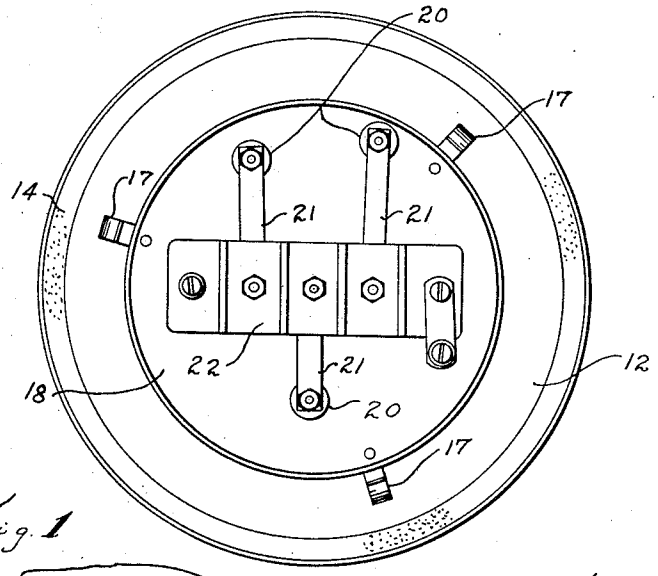


Fig. 4

Fig. 1

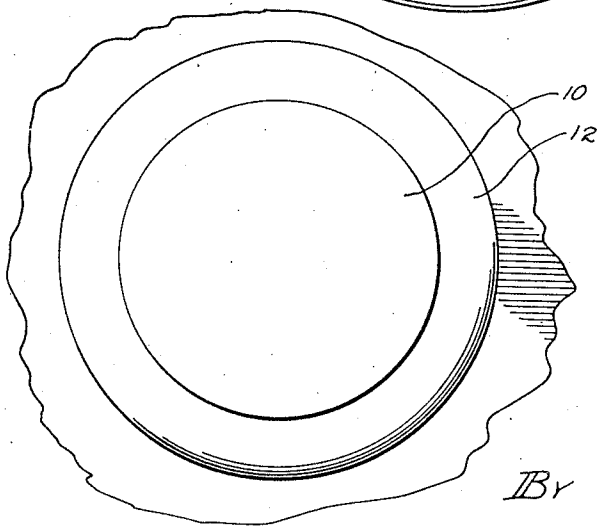
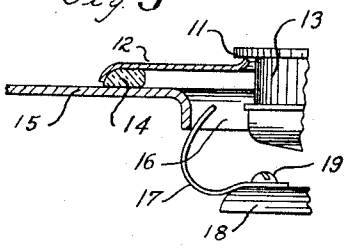


Fig. 3



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HEATING ELEMENT MOUNTING

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10 Claims. (Cl. 219—37)

This invention relates to means for mounting electric heating units and particularly to such units as are employed for cooking purposes where the units are mounted on plates or stove tops. It is a primary object of the invention to provide a mounting structure which will not only limit radial travel of heat from the heating unit but also provide a water or liquid seal about the heating element so as to prevent flow of such fluids down past the heating element into the interior of the stove or the like which carries the element.

It is often the experience that liquids will boil over and flow down onto or around the element, and in the heretofore employed mounting means, this fluid would flow down into inaccessible parts of the stove.

These and other objects of the invention, including the advantage of an extremely neat finish and also of very low cost of production, will become apparent to those versed in the art in the following description of the invention as illustrated in one particular form in the accompanying drawing, in which

Fig. 1 is a top plan view of a structure embodying the invention;

Fig. 2, a side elevation in partial section;

Fig. 3, a detail on an enlarged scale; and

Fig. 4, a bottom plan view of the heating unit and supporting ring.

Like characters of reference indicate like parts throughout the several views in the drawing.

The heating element is generally designated by the numeral 10 and is preferably of the solid or fully enclosed type wherein the heating element is not exposed but is entirely covered over so that there are no openings through which liquids may flow. In the present form, the heating element 10 is shown as having a perfectly smooth top surface from which extends an angular flange 11 having a relatively small thickness, this thickness being held to a minimum consistent with sufficient structural strength for supporting the element and vessels that may be rested thereupon.

A ring 12 is formed to encircle the heating element 10 with a slight clearance about the lower depending portion 13 of the element 10. The inner edge of the ring 12 is curved or sloped upwardly to present a sharp V-shaped corner entirely therearound against which the under side of the flange 11 bears. In other words there is a line contact between the flange 11 and the ring 12. This corner is simply formed by reason of the fact that when the ring 12 is initially produced, the inner edge is parallel to the axis of the ring and then when the upturned inner flange is produced on the ring 12, the curving upwardly of the flange brings that initially vertical edge portion around to an angle to the axis, as best indicated in Fig. 3, so that the sharp corner of the junction between that edge and the top surface of the ring 12 forms the flange bearing line.

The outer edge of the ring 12 is preferably turned downwardly to form a finish flange. Immediately against this flange on the under side of the ring 12 is positioned a gasket 14 preferably made out of a heat insulating material, such as asbestos rope, although the material is not necessarily limited to asbestos. This insulating gasket 14 bears directly against the top surface of the plate 15 which constitutes the top of the stove or article to which the element 10 is applied. The thickness of the gasket 14 is made to be such that under normal usage, the outer edge of the ring 12 will preferably be spaced a slight distance above that surface 15. Thus there is a break in the metal path from the heating element 10 to the surface 15 in order to prevent direct conduction of heat from the element 10 to the surface 15 which is usually a porcelain or enameled finished metal plate.

While various means may be employed to center the element 10 in relation to the hole 16 normally provided through the plate 15, one particular means is herein shown as comprising a plurality of springs 17, three in number in the present showing, so mounted on an under plate of the element 10 as to engage elastically against or under the margin of the hole 16. Preferably these springs 17 are so located and proportioned as to exert a downward pull on the element 10 so as to tend to compress the gasket 14 snugly between the mounting ring 12 and the plate 15. In this manner, not only is there provided heat insulation means but also a liquid seal.

Fluid on the top of the element 10 will overflow therefrom down about the outer edge of the flange 11 and since this flange 11 bears on the sharp edge of the upturned flange of the ring 12, a seal is there provided since this sharp edge will normally bite into the metal of the flange 11, although the actual line contact will in itself prevent flow of liquid around under the flange 11 past the ring 12. Therefore the liquid will flow on out radially over the ring 12 and down onto the surface plate 15. The presence of the gasket 14 will effectively prevent flow of the liquid back under the ring 12 so that the liquid is, therefore,

confined to the top surface 15 where it may be readily removed without any difficulty.

In reference to the mounting of the spring 17, it is to be noted that these springs are carried on the plate 18 and are substantially C-shaped to have one end in each instance attached to the plate 18 by any suitable means, herein shown as constituting screws 19. The other end of each spring 17 is curved around to terminate on a circumference of a circle well within that of the hole 16 although the body of the spring bows outwardly therepast normally. The plate 18 is mounted in spaced relation from the under side of the heating element 10 and terminal posts 20, herein shown as three in number, extend through openings in the plate 18 and have conductors 21 extending across to the terminal block 22 which in turn is carried by the plate 18 but spaced therebelow. In other words the heating element 10 and its usual terminal block may be mounted without disturbing such structure when the invention above described is employed.

While the invention has herein been shown in the one precise form, it is obvious that structural deviations may be employed without departing from the spirit of the invention and it is, therefore, desired that the invention not be limited to that precise form beyond the limitations as may be imposed by the following claims.

We claim:

1. Means for mounting a heating unit on a table or stove top over a hole therethrough, comprising a flange extending around and laterally from the unit, an encircling ring having an upturned inner edge on which said flange rests, and a heat insulating gasket around and under said ring at its outer edge, said outer edge being formed to retain said gasket against lateral displacement, whereby said gasket bears against said top between it and said ring around said top hole.

2. Means for mounting a heating unit on a table or stove top over a hole therethrough, comprising a flange extending around and laterally from the unit, an encircling ring having an upturned inner edge on which said flange rests, and a heat insulating gasket around and under said ring at its outer edge, said outer edge being formed to retain said gasket against lateral displacement, whereby said gasket bears against said top between it and said ring around said top hole, said inner edge terminating in a line contact with said flange to limit conduction of heat from the unit to said ring.

3. Means for mounting a heating unit on a table or stove top over a hole therethrough, comprising a flange extending around and laterally from the unit, an encircling ring having an upturned inner edge on which said flange rests, and a heat insulating gasket around and under said ring at its outer edge, said outer edge being formed to retain said gasket against lateral displacement, whereby said gasket bears against said top between it and said ring around said top hole, said inner edge terminating in a line contact with said flange to limit conduction of heat from the unit to said ring, and means for centering said unit with said hole.

4. For a table or stove top having a hole therethrough, the combination of a heating unit having a peripheral wall, a closed top radiating surface terminating peripherally in a flange over and extending laterally beyond said wall, said wall having a diameter less than that of said top hole, a ring of larger diameter than that of said hole surrounding said unit and having an inner upturned edge presented around and under said flange, a heat insulating and liquid flow stopping gasket under said ring surrounding said hole, and spring means between the unit and a marginal wall forming said hole centering and retaining the unit in position to be supported by said ring.

5. For a table or stove top having a hole therethrough, the combination of a heating unit having a peripheral wall, a closed top radiating surface terminating peripherally in a flange over and extending laterally beyond said wall, said wall having a diameter less than that of said top hole, a ring of larger diameter than that of said hole surrounding said unit and having an inner upturned edge presented around and under said flange, a heat insulating and liquid flow stopping gasket under said ring surrounding said hole, and spring means between the unit and a marginal wall forming said hole centering and retaining the unit in position to be supported by said ring, the face of said upturned edge being angularly positioned in relation to the axis of the unit whereby a line contact is formed between the ring and the unit.

6. For a table or stove top having a hole therethrough, the combination of a heating unit having a peripheral wall, a closed top radiating surface terminating peripherally in a flange over and extending laterally beyond said wall, said wall having a diameter less than that of said top hole, a ring of larger diameter than that of said hole surrounding said unit and having an inner upturned edge presented around and under said flange, a heat insulating and liquid flow stopping gasket under said ring surrounding said hole, and spring means between the unit and a marginal wall forming said hole centering and retaining the unit in position to be supported by said ring, the face of said upturned edge being angularly positioned in relation to the axis of the unit whereby a line contact is formed between the ring and the unit, the outer edge of said ring being downturned over said gasket and terminating a slight distance thereabove.

7. For a table or stove top having a hole therethrough, the combination of a heating unit having a peripheral wall, a closed top radiating surface terminating peripherally in a flange over and extending laterally beyond said wall, said wall having a diameter less than that of said top hole, a ring of larger diameter than that of said hole surrounding said unit and having an inner upturned edge presented around and under said flange, a heat insulating and liquid flow stopping gasket under said ring surrounding said hole, and spring means between the unit and a marginal wall forming said hole centering and retaining the unit in position to be supported by said ring, the face of said upturned edge being angularly positioned in relation to the axis of the unit whereby a line contact is formed between the ring and the unit, the outer edge of said ring being downturned over said gasket and terminating a slight distance thereabove, and a reflector plate carried by and spaced below said unit, said spring means being mounted on said reflector plate.

8. For a table or stove top having a hole therethrough, the combination of a heating unit having a peripheral wall, a closed top radiating surface terminating peripherally in a flange over and extending laterally beyond said wall, said wall having a diameter less than that of said top hole, a ring of larger diameter than that of said hole

surrounding said unit and having an inner upturned edge presented around and under said flange, a heat insulating and liquid flow stopping gasket under said ring surrounding said hole, and spring means between the unit and a marginal wall forming said hole centering and retaining the unit in position to be supported by said ring, the face of said upturned edge being angularly positioned in relation to the axis of the unit whereby a line contact is formed between the ring and the unit, the outer edge of said ring being downturned over said gasket and terminating a slight distance thereabove, and a reflector plate carried by and spaced below said unit, said spring means being mounted on said reflector plate, and consisting of a plurality of substantially C-shaped springs bowing outwardly from said plate.

9. Means for mounting a heating unit on a table or stove top over a hole therethrough, comprising an encircling ring the inner portion of which engages under said unit and the outer part of which ring bears on said top, and means for centering the unit and said ring with said hole comprising a plate secured to and spaced under said unit and extending under a major part of it, and upturned spring members each attached by one end to the plate to extend therebeyond and bear by outer portions outwardly and upwardly against the marginal edge about said hole to center the plate with the hole.

10. Means for mounting a heating unit on a table or stove top over a hole therethrough comprising an encircling ring having an inner upturned edge against which the unit bears and an outer edge portion bearing on said top, a plate under the stove top connected with the heating unit and C-shaped springs centering the unit with said hole.

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