ELECTRIC HEATING UNIT

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2 Claims. (Cl. 219—37)

The present invention relates to electric heating units or "burners" for electric stoves, ranges and the like and specifically to the features of construction of a unit involving a heating coil such as is described in U. S. Letters Patent No. 2,163,036, issued June 20, 1939, to Arthur H. Happe, for "Electric heaters."

Among the objects of the invention are to provide a more efficient and economical construction than those heretofore used and one which admits of easy low-cost repair when necessary.

Other objects will readily occur to those skilled in the art upon reference to the following description and drawings, in which

Figure 1 is a central vertical section of a unit involving the invention.

Figure 2 is a top plan view.

Figure 3 is a side elevation with the enclosing housing in section.

Figure 4 is an enlarged perspective view of a detail of construction.

Figure 5 is an underside view of the grill.

Figures 6 and 7 are respectively vertical and horizontal sections of a coil support, Figure 6 being taken on line 6—6, of Figure 3.

Figure 8 is a sectional view of the grill fastening means.

Figure 9 is a section on line 9—9 of Figure 3, and

Figure 10 is a wiring diagram for the unit.

As illustrated, the unit comprises an outer housing 20 and an inner housing 21 spaced therefrom and held in place in the outer housing by studs 22. The cover ring 23 forms part of the inner assembly and serves to support the latter upon the upper edge of the housing 20 and also to support the unit upon a suitable marginal ring 24.

The inner assembly consists of the housing, indicated as a whole at 21, and the active electrical elements and insulation.

The housing 21 comprises, first, the lower cup shaped portion 26 having at a plurality of points about its upper edge, upstanding tongues 26a and inturned tongues 26b. Second, the housing comprises a ring 27 having a plurality of rectangular openings therein for a purpose to be described. Third, it also comprises the cover ring 23, which has depending tongues 23a, in the same number and relative location as tongues 26a, and has also its inner periphery depressed to form a shoulder 23b upon which may be seated the grill and, as indicated in Figures 1 and 9, portions of the shoulder are further depressed to form tongues 23c to act as inner locking means for ring 27. The ring 21, as shown in Figure 9, rests upon tongues 25b and between tongues 23a and 23c.

The rings 23 and 27 and cup 28 are held together by perforated clips 30, suitable tongues 30a being punched out of tongues 26a and 23a and passed through the perforations in the clips and bent over.

In the bottom of the inner housing 21, is placed a hearth plate 35 of a suitable material having high heat and electric insulation properties and this may be placed upon a second layer 36 of insulating material if desired or a single layer of the desired thickness may be used. The preferred material for the hearth plate is such a material as vermiculite which, in addition to being an insulator, also has pronounced heat reflective properties.

The electrical elements are mounted in the ring 27, and comprise, preferably, four resistance heating coils 40 of the type disclosed and claimed in the prior application mentioned. They consist of open helices of suitable wire loosely hung upon small diameter porcelain or other suitable insulating rods or tubes 41. Each of the coils 40 has fixed to each end an L-shaped clip 42 perforated to receive a screw 43 and also to receive one end of the rod 41.

By means of the screw 43, each clip 42 is fixed to a Z-shaped bracket 45, one arm of which passes through a rectangular porcelain block 46 (shown best in Figures 4, 6, and 7) extending a short distance beyond the outer surface thereof and preferably slotted to receive a conducting wire or bar.

The block 46 is rectangular in section and is provided with a head or flanged portion 46a and also with grooves 46b in two of its opposite sides, the grooves being spaced from the flanges 46a by about the thickness of the metal of the ring 27.

These blocks 46 may readily be secured in the openings in ring 21 by slipping into the grooves 46b the spring wire clips 47.

After the blocks 45 have been secured in place in the ring 27 the outer ends of brackets 45 are connected in proper arrangement by conductors 50, the ends of the latter being placed in the slots in the bracket ends and welded in place. The head wires 51 are secured in the same manner and extend to a suitable terminal block 52 having binding posts 53 extending to the outside of housing 20.

In order to protect the coils and provide a support for vessels to be heated, a grill 60 is...
mounted upon the shoulder 22b of ring 23 and secured in place as indicated in Figures 5 and 8.
In Figure 5, which shows the under side of ring 22, the grill 60 is shown as carrying a round
washer 61 fixed to the lower end of a rivet 62 (Figure 2), which washer underlies the shoulder
22b. At the opposite edge of the grill is a second rivet 63 carrying a washer 64 of which one edge
is flat as shown at 64a. This washer 64 is fixed
to the rivet and the head of the latter slotted
as shown, to permit rotating the rivet so as to
bring the round side under the shoulder 22b and
thereby retain the grill 60 in place.
The grill 60 is for the most part preferably
of cast metal—for example, cast iron—having
the web omitted at the center but provided with
radial inwardly projecting parts 60a with T-
shaped heads, and upon these is fixed a sheet
metal disc 60b, this having small tongues 60c
adapted to be bent over the T-shaped heads to
hold the disc in place but permit unequal ex-
pansion and contraction.
It will be noted that the grill 60 consists of an
outer peripheral ring 65 and an inner ring 66
separated by gaps 67 into sections. By provid-
ng the gaps 67 free expansion is permitted and
likewise room for metal growth.
Further, it has been found advantageous
to score or groove the plate 35 of insulating
material to prevent setting up stresses. Such
grooves are indicated at 35a and 35b.
Now having described the preferred form of
embodiment of the invention, it is to be under-
stood that the invention is not to be limited
thereto but only by the scope of the claims which
follow.
What we claim is:
1. An electric heater of the class described
comprising a substantially cylindrical vertically
positioned sheet metal support open at the top,
a hearth plate closing the bottom of such sheet
metal support, bracket elements extending
through said support and insulated therefrom
and spaced above the hearth plate, a heating
element support extending across and spaced
above the hearth plate and carrying a heating
element and in turn carried by said bracket ele-
ments, a housing for said first mentioned support
and spaced therefrom about its periphery and at
the bottom, and conducting elements connected
to said brackets and located in the space beneath
the hearth plate.
2. An electric burner of the character de-
scribed, comprising a substantially cylindrical
sheet metal member, insulating heating element
supports spaced from each other and supported
in said frame member, heating elements also
supported by said supports and suspended in free
space, means for preventing escape of heat lat-
erally and downwardly from the space enclosed
by said cylindrical frame member, said insulating
supports fitting into openings in said sheet metal
frame member, means for preventing sagging of
said heating elements, and conducting bracket
members extending through said insulating sup-
ports and connected to said heating elements,
said brackets serving as the means by which
both the heating elements and sag preventing
means are mounted upon said insulating sup-
ports.

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