

Dec. 27, 1927.

1,654,292

A. D. KEENE ET AL

ELECTRIC HEATING UNIT

Filed Feb. 10, 1925

Fig. 1.

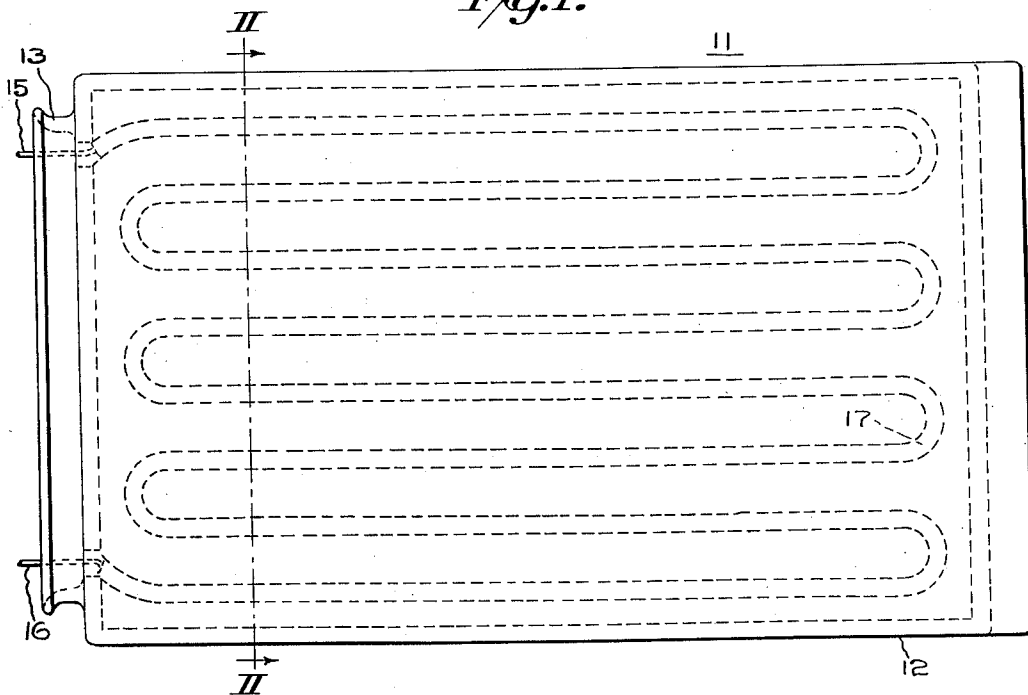


Fig. 2.

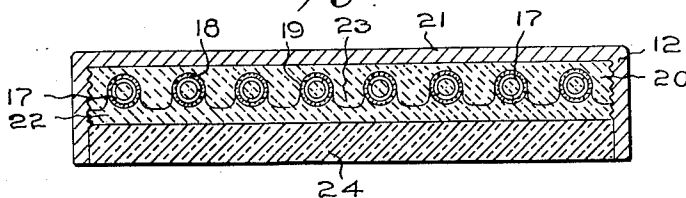


Fig. 3.

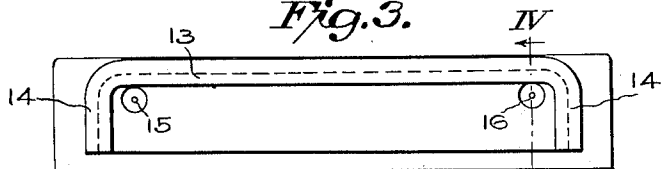
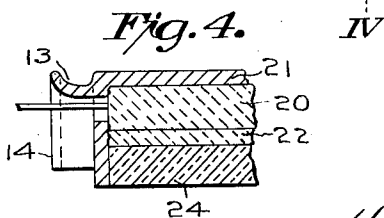


Fig. 4.



WITNESSES:

R. S. Harrison
H. M. Bichel

INVENTORS
Alvin D. Keene and
Karl Ehrqott

BY

Wesley F. Carr
ATTORNEY

UNITED STATES PATENT OFFICE.

ALVIN D. KEENE, OF PITTSBURGH, AND KARL EHRGOTT, OF EAST PITTSBURGH, PENNSYLVANIA, ASSIGNORS TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC HEATING UNIT.

Application filed February 10, 1925. Serial No. 8,194.

Our invention relates to electric heating units and particularly to electric heating units for use in electric ranges.

One object of our invention is to provide an electric heating unit that shall have an electric resistor located therein in such manner that a relatively large proportion of the heat emitted by the resistor is transmitted to the working surface of the heating unit.

Another object of our invention is to provide a protecting means for the conductors that connect the resistor to an electric circuit.

In practicing our invention, we provide a container member of substantially rectangular form composed of any suitable metal, that has an overhanging portion extending outwardly from one end thereof. The overhanging portion constitutes substantially a trough that serves to conduct away any liquids flowing from the working surface of the container. A resistor member of any suitable form is located within the container by insertion into the grooves of a carbonaceous layer or plate that closely interfits with the container and abuts the working surface thereof. Another carbonaceous disc or plate encloses the resistor member within the grooved member and a disc of heat-insulating material encloses the carbonaceous disc.

In the single sheet of drawings,

Figure 1 is a top plan view of an electric heating unit embodying my invention;

Fig. 2 is a vertical sectional view taken along the line II—II of Fig. 1;

Fig. 3 is a side elevational view of a heating unit embodied in Fig. 1; and

Fig. 4 is a fragmentary sectional view taken along the line IV—IV of Fig. 3.

An electric heater indicated generally by the numeral 11, comprises a container member 12 having an outwardly extending overhanging portion 13 that substantially constitutes a trough. The overhanging portion 13 is located adjacent to the working surface of the heater 11 and serves to collect and conduct away any liquids that may flow from the surface of the heater. The overhanging member has downwardly extending portions 14 that are so located that the liquids collected by the overhanging member 13 are conducted below the heater unit and away therefrom in order to protect the leads 15 and 16 connected to a resistor member 17.

The resistor member 17 is completely covered by an initially moistened, comminuted, refractory, electric-insulating material 18, such as alundum, and is located in grooves 19 in a plate or layer of carbonaceous or any other material of high heat conductivity, such as carborundum, that is located in heat exchanging relation with the working or upper surface 21 of the container 12 and closely interfits therewith. Another layer 22, also of carbonaceous or other material of high heat-conductivity, is located in abutting relation to the projections 23 of the layer 20 that are located between the grooves 19 therein. The plate or layer 22 serves to secure the resistor member 17 in proper operative position and also to provide a conducting path for the heat emitted from the resistor 17 from the lower portion thereof. As the layer 22 is in abutting relation with the layer 20, that portion of the heat emitted from the resistor 17 that is usually wasted is efficiently conducted to the working surface 21 of the container 12.

The conducting leads 15 and 16 serve to connect the resistor member to an electric circuit, (not shown), and are so located that the overhanging member 13 fully protects them from any fluids flowing from the container 12. A refractory heat-insulating plate 24, which may be made of asbestos, interfits with the container 12 in abutting relation with the plate or layer 22 and serves to prevent any waste of the heat emitted downwardly by the resistor 17.

A heating unit constructed as hereinbefore described provides a highly efficient means for conducting the heat from a resistor to a working surface that is used for heating articles supported thereby. In heating units of ordinary construction, no means is provided for utilizing the heat emitted downwardly or in a direction away from the working surface and the structure hereinbefore described provides in a practical way a heat conducting path therefor. A heater is often used to heat articles that contain liquids or to cook articles requiring grease, that heretofore have occasioned trouble by fouling the conducting leads connecting the resistor member to the electric circuit and the structure hereinbefore described provides a simple and practical method of overcoming this difficulty.

This case is closely related to a companion application Serial No. 5047, filed Jan. 27, 1925, and assigned to the Westinghouse Electric and Manufacturing Company.

5 Various modifications and changes may be made without departing from the spirit and scope of the invention and we desire, therefore, that only such limitations shall be placed thereon as are imposed by the
10 prior art or are set forth in the appended claims.

We claim as our invention:

1. An electric heater comprising a metal container, a resistor-positioning member
15 having a plurality of grooves located in said container, a resistor member, having a coating of electric-insulating material, located in said grooves, a member of heat-conducting material adapted to secure said resistor
20 member therein, and a heat-insulating member located adjacent to said securing member.

2. An electric heater comprising a metal container, a resistor-positioning member
25 having a plurality of grooves located in said container, a resistor member, having a coating of comminuted, initially moistened, electric-insulating material, located in said grooves, a layer of heat-conducting material
30 adapted to secure said resistor member therein, and a heat-insulating member located adjacent to said securing member.

3. An electric heater comprising a metal container, a resistor-positioning member of
35 carbonaceous material, having a plurality of grooves, located in said container, a resistor member having a coating of electric-insulating material located in said grooves, a member of carbonaceous material adapted to se-
40 cure said resistor member therein, and a heat-insulating member located adjacent to said securing member.

4. An electric heater comprising a container and an electric resistor member lo-
45 cated therein having a plurality of leads extending laterally outwardly from said container beyond one edge thereof for connect-
ing said resistor member to an electric cir-

cuit, said container having an overhanging grooved portion located above said leads. — 50

5. An electric heater comprising a container and an electric resistor member lo-
cated therein having a plurality of leads ex-
tending outwardly from said container be-
yond a lateral edge thereof for connecting
55 said resistor member to an electric circuit, said container having an overhanging grooved portion located only above said leads and adapted to collect and conduct
60 away liquids flowing from the surface of said container.

6. An electric heater comprising a container adapted on one surface thereof to support articles to be heated, an electric resistor located therein, said resistor being
65 substantially enclosed by refractory material of relatively high heat conductivity and having a plurality of conducting leads extending outwardly from said container be-
yond a lateral edge thereof for connecting
70 said resistor to an electric circuit, and an overhanging member integral with said container and located only above said conduct-
ing leads.

7. An electric heater comprising a container adapted on one surface thereof to support articles to be heated, an electric resistor located therein being substantially en-
closed by refractory material of relatively high heat conductivity located in heat-ex-
80 changing relation with said surface, said resistor having a plurality of conducting leads extending laterally outwardly from said container beyond one edge thereof for
connecting said resistor to an electric circuit,
85 and an overhanging member integral with said container located above said conduct-
ing leads, and adapted to collect and con-
duct away liquids flowing from the surface
90 of said container.

In testimony whereof, we have hereunto subscribed our names this 9th day of February, 1925.

ALVIN D. KEENE.
KARL EHROTT.