Dec. 1, 1925. 1,563,453

E. E. SUTHERLAND

ELECTRIC HEATER

Filed Nov. 28, 1923

Fig. 1.

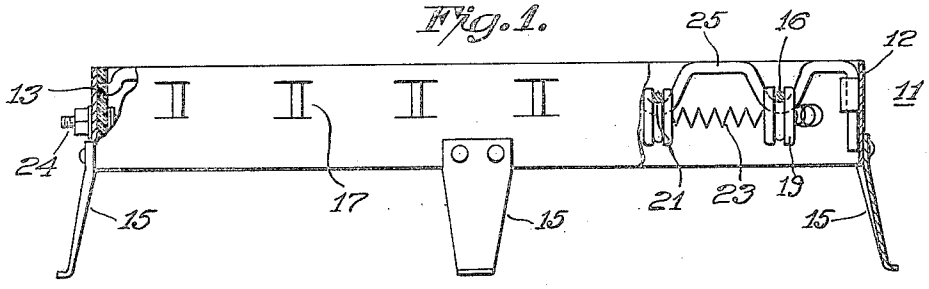


Fig. 2.

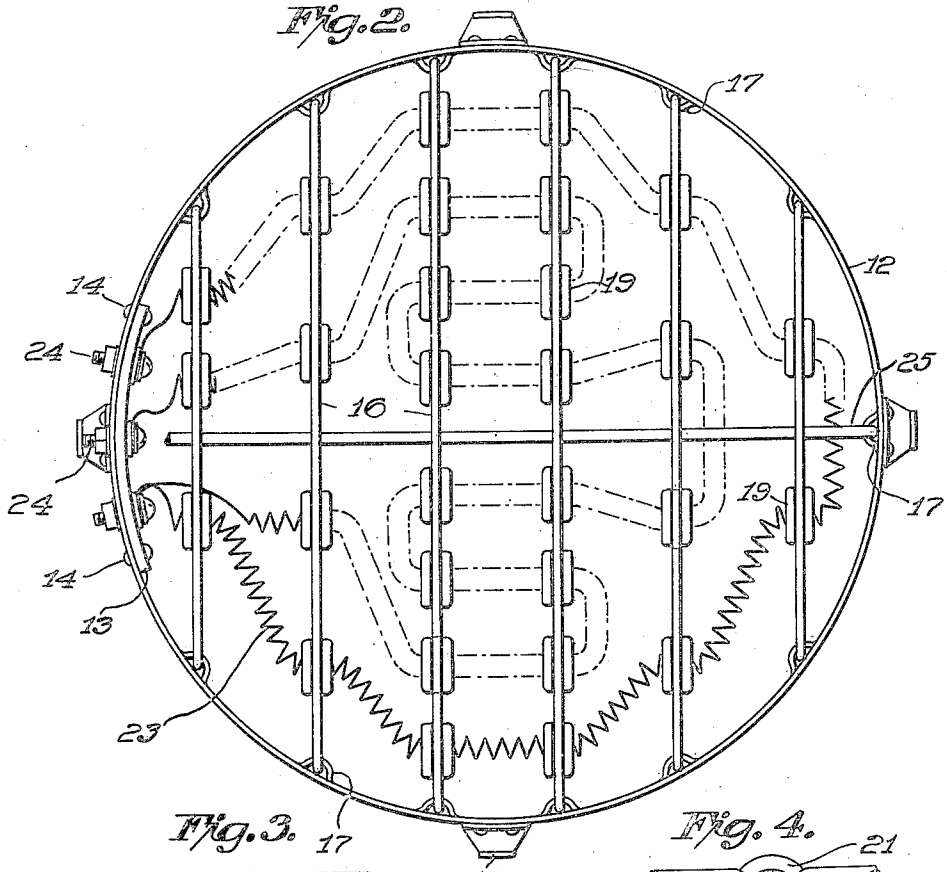
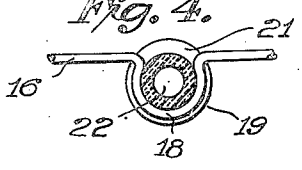


Fig. 3.



Fig. 4.



WITNESSES:

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UNITED STATES PATENT OFFICE.

ERNEST E. SUTHERLAND, OF MANSFIELD, OHIO, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC HEATER.

Application filed November 28, 1923. Serial No. 677,559.

To all whom it may concern:

Be it known that I, ERNEST E. SUTHERLAND, a citizen of the United States, and a resident of Mansfield, in the county of Richland and State of Ohio, have invented a new and useful Improvement in Electric Heaters, of which the following is a specification.

My invention relates to electrically heated appliances and particularly to resistor-supporting means therefor.

One object of my invention is to provide a relatively simple means for supporting a resistor member in an electrically heated device.

Another object of my invention is to provide a relatively simple construction for an open heating element of an electrically heated appliance.

In practicing my invention, I provide a plurality of resilient wire members, each having a plurality of upwardly open loops therein, and a perforated, refractory resistor-supporting member located in each of said loops. A resistor member extends through and between the resistor supporting members. A utensil-supporting member extends across and supports said resilient wire member intermediate their ends.

In the single sheet of drawings,

Figure 1 is a view, in side elevation, of an electrically heated cooking appliance comprising the device embodying my invention, portions thereof being cut away.

Fig. 2 is a top plan view thereof,

Fig. 3 is a view, in side elevation, of a portion of a device embodying my invention, and

Fig. 4 is a view of a portion of a device embodying my invention, partially in side elevation and partially in section.

A portable electrically heated cooking appliance 11 is here illustrated as a grill or table stove. An annular casing member 12, of relatively thin sheet metal, is bent to any suitable or desired contour and may be either circular, square or rectangular in outline and may be made of a strip of metal, the ends of which are connected by a short, relatively heavy metal strip 13, the two members being suitably secured together, as by rivets 14. A plurality of supporting members 15 are provided and may be secured to the member 12 in any suitable or desired manner.

A plurality of resilient wire members 16 are located in parallel-spaced relation relatively to each other within the annular casing 12. The end portions of each of the members 16 are bent at substantially right angles to the main portion thereof and may fit into integral punched-in portions 17 of the annular member 12. The amount of metal that is punched inwardly from the otherwise normal surface of the member 12 is just sufficient to provide an opening between the loop portions 17 and the main portion of the annular member 12 to receive and hold the laterally bent portions of the wire members 16.

A plurality of integral open-top loop portions 18 are provided in spaced relation in each of the wire members 16. The open-top loop portions may be of such arcuate extent as to be somewhat larger than a semi-circle, substantially as shown in Figs. 3 and 4 of the drawing. A refractory member 19, having an intermediate annular groove 21 therearound and an opening 22 extending axially therethrough, is located in each of the open loops 18, substantially as illustrated in Fig. 4 of the drawing.

As the annular grooves 21 are substantially circular, the members 19 may be easily and quickly mounted in the open-top loops 18 by slightly bending the wire member 16 to enlarge the loop openings sufficiently to permit insertion of such members. Upon release of the member 16, after insertion of the members 19, the resilience of the material will serve to clamp the latter securely in the loops.

A resistor member 23 comprises a helically wound wire of a suitable resistor material that extends through the openings 22 in the respective members 19 and also extends therebetween in such form or outline as is illustrated in Fig. 2, of the drawing. I have there illustrated two resistor members 23 (an inner and an outer one) in order that I may utilize, by suitable switch means (not shown), the two resistor parts in series, one of them alone, or the two in parallel-circuit relation in order to obtain low, intermediate and high heats, in a manner well known in the art.

A plurality of terminal members 24 are mounted on the casing and may extend through, and be supported by, the strip 13 that is of relatively heavy or thick metal for

this purpose. The terminal members 24 are, of course, suitably insulated from the metal support and may be of any suitable or desired construction, either comprising screws and co-operating nuts, as shown in Fig. 2 of the drawing, or the usual terminal pins to be operatively engaged by a connecting plug. The connections of the resistor members 23 to the terminal members 24 are such as to permit of the above described selective connections to the supply circuit.

A means for supporting a cooking utensil placed upon the appliance 11 and for supporting the wire members 16 intermediate their ends comprises a wire member 25 that is of substantially the same form as the resilient wire member 16. The member 25 is provided with a plurality of spaced offset portions that extend downwardly and are located under the wire members 16, the member 25 extending at substantially right angles to the members 16, as is shown more particularly in Figs. 1 and 2 of the drawing.

One end of the wire member 25 may extend radially through a suitable opening in the strip 13 and the other end may be bent at right angles to the main portion and extend through a loop portion 17, as is illustrated at the right hand side of Fig. 2 of the drawing.

The device embodying my invention thus provides a relatively light supporting means for an open and extended resistor member, comprising a resilient wire member having a plurality of open-top loops therein within which a refractory member is located to receive and support the helically-wound resistor member.

The individual resilient wire supporting-members may be easily and quickly mounted in, and removed from, their proper operative positions in the casing of an electrically heated appliance, and the refractory members may also be easily and quickly mounted in, and removed from, their proper operative positions in the open loops.

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

I claim as my invention:

1. In an electrically heated appliance, a heating element comprising a resilient member supported at its ends only and having a plurality of open loops therein, perforated supporting members, of electric-insulating material, in said loops, and a resistor member extending through said perforated supporting members.

2. In an electrically heated appliance, a heating element comprising a resilient wire member supported at its ends only and having a plurality of spaced, open top loops therein, a perforated supporting member of electric-insulating material in each of said loops, and a resistor member extending through said perforations and supported thereby.

3. In an electrically heated appliance, in combination, an annular casing, a plurality of resilient wire members having their ends releasably engaging said annular casing and each embodying a plurality of spaced open top loops, perforated and circumferentially grooved supporting members of electric-insulating material located in the respective open-top loops, and a resistor member extending through said perforations and between said supporting members.

4. In an electrically heated appliance, in combination, an annular casing, a plurality of substantially parallel-extending resilient wire members having their ends releasably secured to, and supported by, said casing, each resilient wire member being formed to embody a plurality of spaced open-top loops, a perforated member of refractory electric-insulating material located in each of said loops, a resistor member extending through and between said refractory members, and a utensil-supporting member having its ends mounted in said annular casing and having its intermediate portion supporting said resilient-wire members.

In testimony whereof, I have hereunto subscribed my name this 16th day of November, 1923.

ERNEST E. SUTHERLAND.