Aug. 16, 1927. 1,638,829

O. A. COLBY

ELECTRIC HEATER UNIT

Filed May 7, 1924

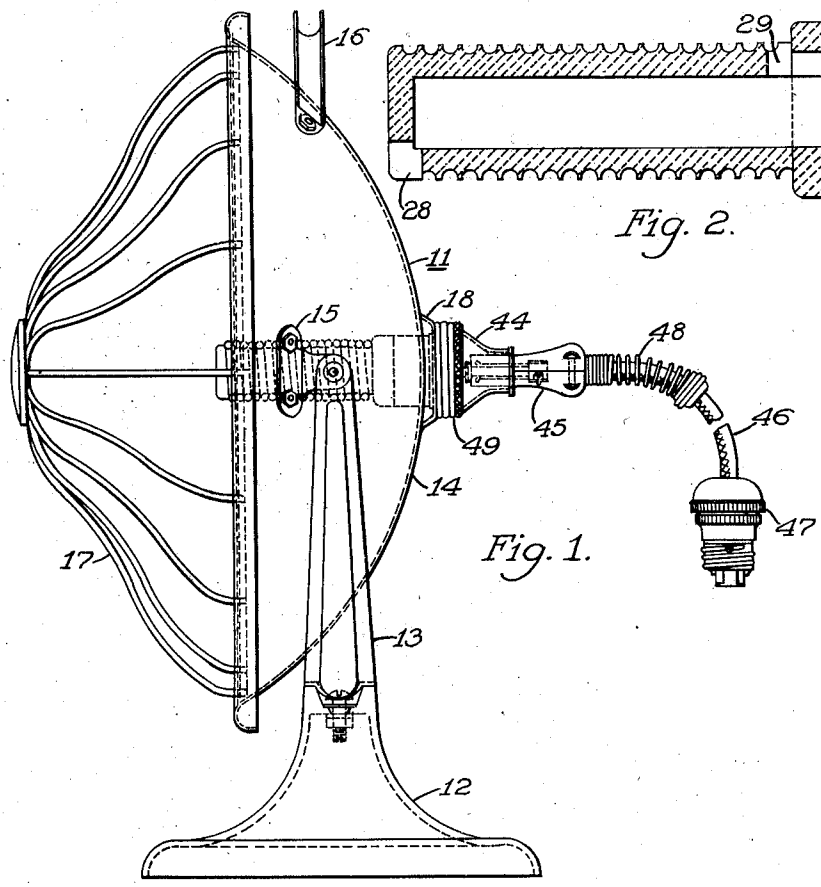

Fig. 1.

Fig. 2.

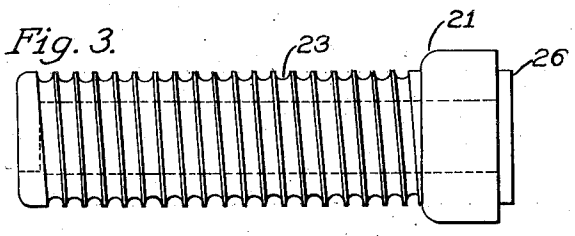

Fig. 3.

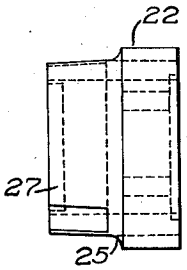

Fig. 4.

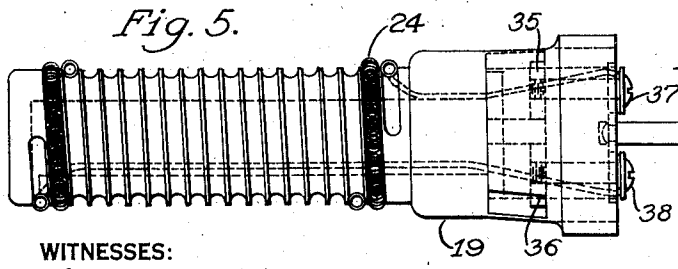

Fig. 5.

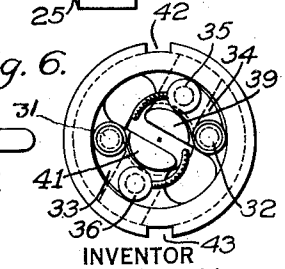

Fig. 6.

WITNESSES:

G. S. Neilson

Wm Biebel

INVENTOR

Ora A. Colby.

BY

Wesley Gbarr

ATTORNEY

Patented Aug. 16, 1927. 1,638,829

UNITED STATES PATENT OFFICE.

ORA A. COLBY, OF IRWIN, PENNSYLVANIA, ASSIGNOR TO WESTINGHOUSE ELECTRIC & MANUFACTURING COMPANY, A CORPORATION OF PENNSYLVANIA.

ELECTRIC-HEATER UNIT.

Application filed May 7, 1924. Serial No. 711,559.

My invention relates to electric heating devices and particularly to electric heating elements therefor.

The object of my invention is to provide a relatively simple, compact and easily manufactured heating-element-supporting member for a radiant heater.

In practicing my invention I provide a one-piece elongated refractory member for supporting a resistor and a plurality of terminal members, and for holding the assembled heating unit in its proper operative position in a reflector.

In the single sheet of drawings,

Figure 1 is a view, in side elevation, of a radiant heater embodying my invention,

Fig. 2 is a view, in longitudinal section, of a device embodying my invention,

Fig. 3 is a view, in side elevation, of a portion thereof,

Fig. 4 is a view, in side elevation, of a second portion thereof,

Fig. 5 is a view, in side elevation, of an assembled heating unit, and

Fig. 6 is a view, in rear elevation thereof.

A radiant reflector heater 11 comprises a base 12 that has mounted thereon at the top thereof, a pair of supporting arms 13, of substantially U-shape, that are adapted to pivotally support a concave reflector member 14. The upper ends of the member 13 are pivotally secured to mounting lugs 15 which are, in turn, secured to the outside surface of the reflector 14. A handle member 16 is provided at the top of the reflector 14 and secured to the rear surface thereof to permit of carrying the heater unit. A wire guard 17 is operatively associated with the reflector 14 and is mounted at the front thereof in any suitable or desired manner.

The reflector 14 has a central and rearwardly-dished portion 18 that is provided with an axial opening therethrough within which a heating unit 19, illustrated in assembled condition in Fig. 5 of the drawing, is located.

The heating unit 19 comprises a one-piece member of refractory electric-insulating material that comprises a forward portion 21 and a rear portion 22. The forward portion is substantially tubular, and is provided over substantially its entire length with a helical groove 23 that is substantially semicircular in section and is adapted to receive a resistor member 24 that comprises a helically wound resistor wire. The rear end of the member 21 is of enlarged diameter relatively to the forward and helically grooved portion, the outer diameter of the rear portion being such that it is greater than the overall diameter of the resistor member 24 when wound upon the front portion of the member 21 and in the groove 23.

The forward portion of the member 22 is of substantially the same diameter as the rear portion of the part 21, while the rear portion thereof is of enlarged diameter to provide a shoulder 25 for a purpose to be hereinafter set forth in detail. While the refractory member comprising the parts 21 and 22 can be molded as a single piece, I have found it desirable to mold it in two pieces, as illustrated in Figs. 3 and 4, in order to obtain an easier molding device and permit the use of an easier molding method. The two parts are assembled in proper operative positions relatively to each other before firing, the part 21 being provided with a projecting portion 26, and the part 22 being provided with a recess 27 that co-operate with each other, providing surfaces that will effect a union of the two parts and maintain them after firing as a substantially one-piece refractory member.

The front end of the part 21 is provided with a lateral opening 28 therethrough, substantially as illustrated in Fig. 2 of the drawings, and a similar opening 29 is provided immediately in front of the enlarged rear portion thereof through which the respective ends of the helically wound resistor member 24 may extend and be lead to the rear end of the refractory member.

A plurality of terminal pins 31 and 32 are secured against the recessed rear surface of the part 22, small contact plates 33 and 34 being provided for holding the inner end of the pins 31 and 32. The part 22 is provided with a pair of diametrically spaced lateral openings 35 and 36 that extend into the corded portion thereof. Machine screws 37 and 38 are adapted to secure the plates 33 and 34 against the rear surface of the part 22, the co-operating nuts therefor being located in the radial openings 35 and 36 respectively.

An axial opening in the rear portion 22 is provided with a pair of integral barrier portions 39 and 41 which act simultaneously

to separate the ends of the resistor member 24 from each other and as a means for receiving the plates 33 and 34.

The enlarged rear part of the portion 22 beyond the shoulder 25 is provided with a pair of spaced peripheral notches 42 and 43 that co-operate with a tubular metal terminal pin protecting member 44 to prevent relative turning movement of the two members. The rear part of the protecting member 44 is made substantially oval in order to co-operate with and receive a removable connecting socket 45 that is of substantially oval shape in lateral section.

The connecting socket 45 has a twin conductor 46 connected thereto, to the other end of which there is secured the usual separable connecting plug 47. A helical spring 48 is associated with the socket 45 to prevent undue bending of the conductor 46 where it leaves the socket.

The time of the axial opening in the dished portion 18 is such that the front part of the portion 22 will snugly fit therein, the shoulder portion 25 fitting against the rear edge of the dished portion 18, the assembled heating unit being rearwardly removable from the axial opening.

The screw-threaded cap or clamping member 49 is mounted on the rear and screw threaded portion of the member 18 in order to securely hold the removable heating unit 19 in its proper operative position relatively to the reflector.

The device embodying my invention thus provides a one-piece refractory member that is adapted to support a resistor member at its forward portion and a plurality of terminal pins at its rear surface while being adapted to hold the entire heating unit in its proper operative position within a refractory portion from which it is rearwardly removable as a unit.

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.

I claim as my invention:

1. An electric heating unit for a reflector having an axial opening therein, said heating unit being adapted to be located in said opening and rearwardly removable therefrom and comprising a single tubular refractory member having a front portion of reduced diameter for receiving and supporting a resistor member, an intermediate portion having a diameter larger than said front portion, and a rear portion having a diameter larger than that of said intermediate portion and having terminal pins operatively secured against the rear face thereof.

2. An electric heating unit comprising a single-piece refractory member having an axial opening therein, and having a front portion of reduced diameter, a rear portion of larger diameter, and integral barriers in said axial opening at the rear portion thereof, a resistor member wound on said front portion and having its end portions located in said axial opening and extending to the rear surface of the refractory member past said barriers, and terminal pins projecting from the rear surface of said refractory member and electrically connected to said resistor terminals.

3. A radiant electric heating unit for a reflector having an axial opening therein, comprising a single refractory member for supporting a resistor member at its forward portion and a plurality of terminal pins at its rear portion, and a tubular terminal pin protecting member interfitting with the rear portion of said refractory member to prevent relative turning movements thereof.

In testimony whereof, I have hereunto subscribed my name this 24th day of April, 1924.

ORA A. COLBY.