Nov. 4, 1924. 1,514,228

H. PRICE

ELECTRIC HEATER

Filed Feb. 5 1923

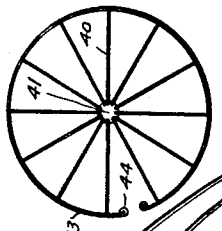


Fig. 8.

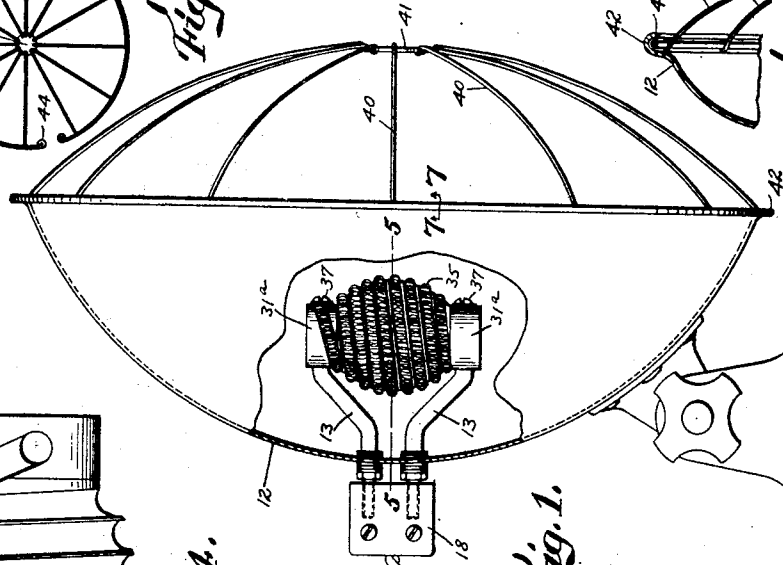


Fig. 7.



Fig. 1.

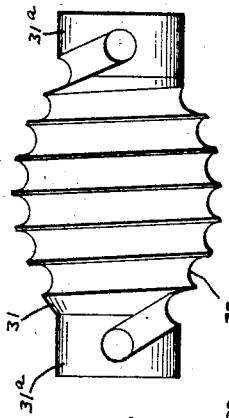


Fig. 4.

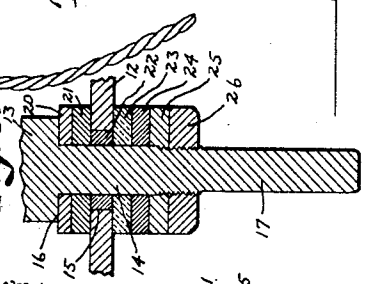


Fig. 6.

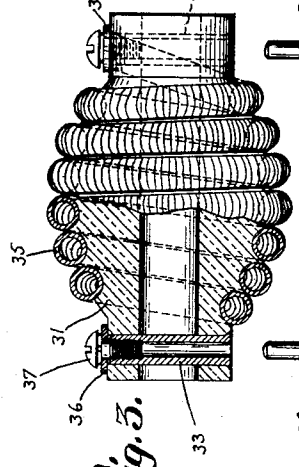


Fig. 3.

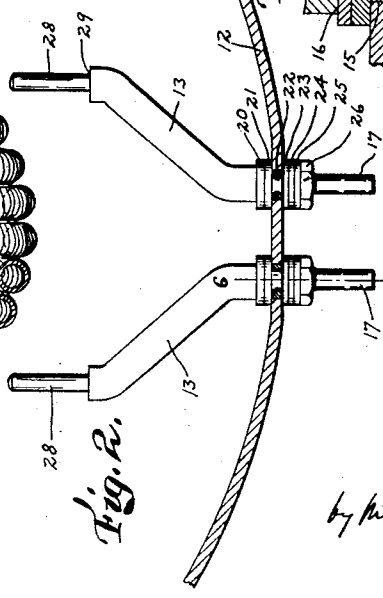


Fig. 2.

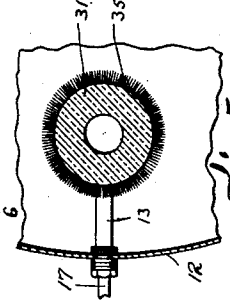


Fig. 5.

Inventor
Harry Price
by Wright Brown Quinby & May
Attys.

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# UNITED STATES PATENT OFFICE.

HARRY PRICE, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO ACME ELECTRIC HEATING COMPANY, OF BOSTON, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

## ELECTRIC HEATER.

Application filed February 5, 1923. Serial No. 616,921.

*To all whom it may concern:*

Be it known that I, HARRY PRICE, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented new and useful Improvements in Electric Heaters, of which the following is a specification.

This invention relates to an electric heater comprising a concave reflector and an electric heating unit, composed of resistance wire disposed adjacent to the central portion of the reflector, to project heat rays against the reflector, so that reflected rays are projected outward from the reflector.

One object of the invention is to provide an improved arrangement of the heating unit, whereby direct rays are projected therefrom into the space in front of the reflector, in addition to the reflected rays, and a maximum area of the reflector is utilized for the projection of reflected rays.

Another object is to provide improved means for removably installing the heating unit in operative relation to the reflector.

I attain the above-mentioned and other related objects by the improved construction and arrangement hereinafter described and claimed.

Of the accompanying drawings forming a part of this specification,—

Figure 1 is a side elevation of an electric heater embodying the invention, a portion of the reflector being broken away.

Figure 2 is a fragmentary view, showing a portion of the reflector in section, and showing in elevation the connecting arms which support the heating unit and its core.

Figure 3 shows partly in side elevation and partly in section, the heating unit and its core removed from the connecting arms.

Figure 4 is a side view of the core, without the heating unit.

Figure 5 is a fragmentary section on line 5—5 of Figure 1.

Figure 6 is a fragmentary enlarged section on line 6—6 of Figure 2.

Figure 7 is a fragmentary section on line 7—7 of Figure 1.

Figure 8 is a side view on a much reduced scale, showing the guard detached from the reflector.

The same reference characters indicate the same parts in all the figures.

In the drawings, 12 represents a concave reflector of any suitable material or materials, preferably formed as a shallow concavo-convex bowl, the concave side being suitably treated to provide a concave reflecting surface.

Fixed to and insulated from the central portion of the reflector are two supporting arms 13, of conducting material, each arm being preferably of the angular form shown by Figures 1 and 2. The arms are alike, so that a description of one will suffice for both. The arm is provided with a reduced extension 14, passing through an opening 15 in the central portion of the reflector, a shoulder 16 being formed at the junction of the arm and the extension 14.

The inner extremity of the extension 14 is formed as a terminal 17, adapted to be inserted as a plug in a socket in a suitable connector 18, said connector having two sockets for the two plug terminals 17. The arm 13 and its extension 14 are secured to and insulated from the reflector, preferably by the means next described.

The shoulder 16 bears on a metal washer 20, which bears on a mica washer 21, the latter bearing on the reflector 12. An insulating sleeve 22 surrounds the extension 14, within the opening 15. An insulating washer 23, preferably of lava, surrounds the extension 14, and bears on the back side of the reflector. Another insulating washer 24, preferably of mica, surrounds the extension 14, and bears on the washer 23. A metal washer 25 surrounds the extension 14, and bears on the washer 24. A nut 26 engaged with a threaded portion of the extension 14, bears on the washer 25. When said nut is tightened, the entire assemblage shown by Figure 6, is securely confined, the terminal 17, which I call the inner terminal, projecting from the back of the reflector, to enter the connector 18.

The outer end of the arm 13 is provided with an outer terminal 28, and with a shoulder 29 at the base of said terminal. Owing to the angular form of the arms 13, the inner terminals or plugs 17 are relatively near each other so they can simultaneously enter the two sockets in the connector 18, and the outer terminals 28 are spaced farther apart to accommodate a heating unit of sufficient size between them.

The connector 18 is secured to a flexible cable 30, composed of two circuit wires, suitably insulated from each other, the end of

one wire being arranged to contact with one of the inner terminals, and the end of the other wire with the opposite inner terminal.

31 represents a core of refractory insulating material, such as lava, provided at opposite end portions with transverse sockets, separably connected with the outer terminals 28. Said core is preferably composed of a substantially spherical body portion, having a helical peripheral groove 32, and cylindrical end portions projecting in opposite directions from the body portion and containing the sockets, which are preferably tubular metal bushings 33, inserted in said end portions and firmly secured thereto, the outer terminals 28 having a sliding fit in said bushings.

The electric heating unit is preferably an elongated helical wire 35, helically coiled on the body portion of the core, its convolutions being held in place by the groove 32.

The opposite ends of the wire forming the heating unit are connected with the sockets 33 by connecting means, preferably embodied in copper washers 36, forming seats for said ends, and confining screws 37, engaged with threaded portions of the bores of the sockets 33, the heads of the said screws being adapted to clamp the ends of the wire against the washers 36. As hereinafter stated the terminals 28 of the diverging arms 13 have a sliding fit in the socket bushings 33 of the body or core of the heating unit, thereby enabling the latter as an entirety to be quickly removed or replaced for examination or repairs.

It will be seen, particularly by reference to Figure 5, that the heating unit 35 is arranged to radiate heat rays in all directions from the center of the core, so that both reflected and direct rays are projected from the reflector.

It will also be seen that the supporting arms 13 do not objectionably obstruct the heat rays directed inwardly, toward the reflector, so that a maximum area of the reflector is utilized.

The described construction enables the parts to be quickly and conveniently assembled and separated.

It is customary to provide the reflector in a heater of this character, with a guard to prevent accidental contact of clothing, the fingers of children, etc., with the heating unit, said guard including wire arms 40, attached to and radiating from a center 41, and connected with the margin of the reflector. To permit a quickly separable connection between the guard and the reflector, I provide the margin of the reflector with an annular grooved rim 42, and attach to the outer ends of the arms 41 a resilient cut ring 43, which is interrupted at 44, so that it may be compressed and allowed to spring into the rim 42. The guard may be removed by compressing the ring and withdrawing it from the groove.

I may employ an openwork guard of any other suitable construction, conforming to the groove 42, and adapted to be manually compressed, and to expand automatically into engagement with the groove.

I claim:

1. An electric heater comprising a concave reflector; spaced apart supporting arms of conducting material, fixed to and insulated from the central portion of the reflector, and provided with inner terminals projecting from the back, and with outer terminals projecting from the front of the reflector; a core of refractory insulating material having transverse sockets separably connected with the said outer terminals, and an electric heating unit mounted on said core, and connecting means carried by the core for separably connecting the opposite ends of said unit with the outer terminals, said unit being arranged to radiate heat rays in all directions, from the center of the core, so that both reflected and direct rays are projected from the reflector.

2. An electric heater substantially as specified by claim 1, said core being provided with tubular bushings of conducting material, constituting said sockets and carrying said connecting means.

3. An electric heater substantially as specified by claim 1, said core being composed of a substantially spherical body portion, and end portions projecting in opposite directions from the body portion, and containing said sockets.

4. An electric heater substantially as specified by claim 1, said core being composed of a substantially spherical body portion, having a helically grooved periphery on which said heating unit is helically wound, and end portions projecting in opposite directions from the body portion, and containing said sockets.

5. An electric heater comprising a concave reflector, a pair of arms of conducting material extending through the central portion of the reflector, the ends of the arms at the back of the reflector being close together and constituting terminals to enable a connector having two sockets to be coupled thereto, the portions of the arms projecting in front of the reflector diverging and presenting terminals, and a heating unit having parallel sockets to removably engage the last-mentioned terminals.

In testimony whereof I have affixed my signature.

HARRY PRICE.