Oct. 5, 1926. 1,602,225

J. J. GOUGH

ELECTRIC HEATER

Filed Nov. 12, 1925

Fig. 3

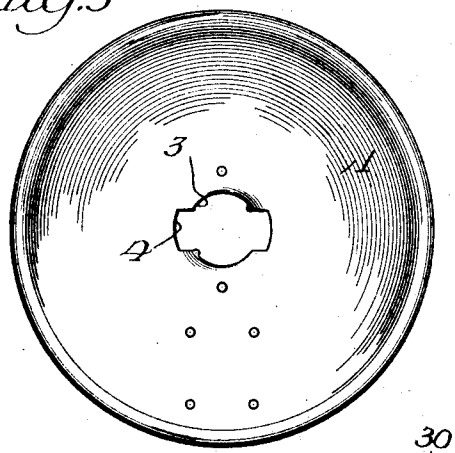


Fig. 1

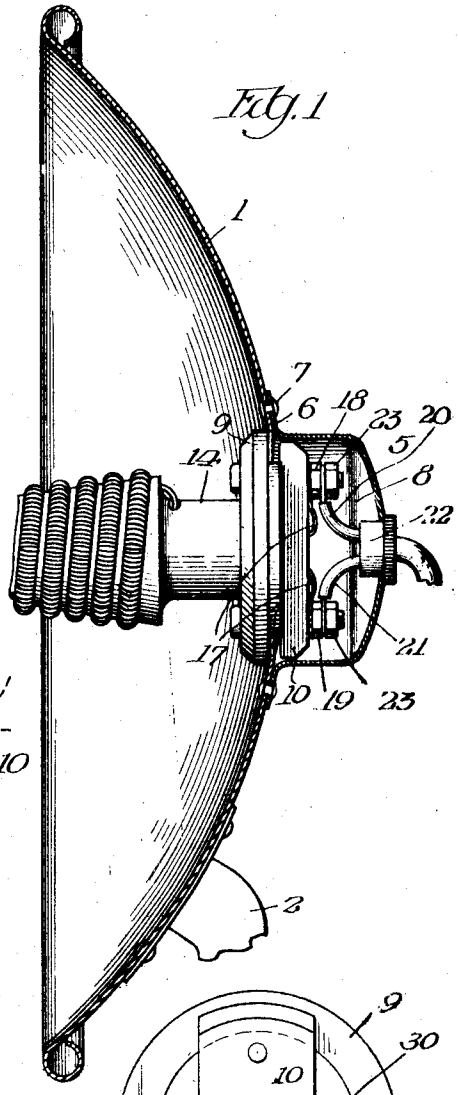


Fig. 2

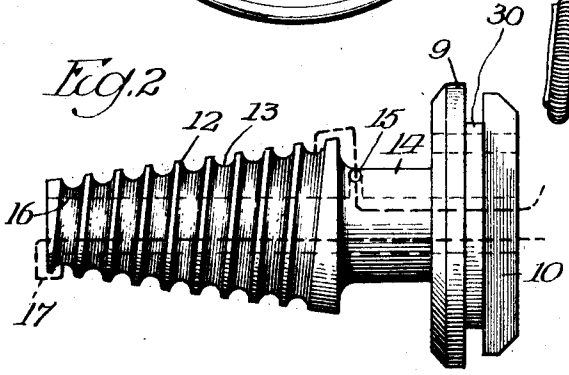


Fig. 5

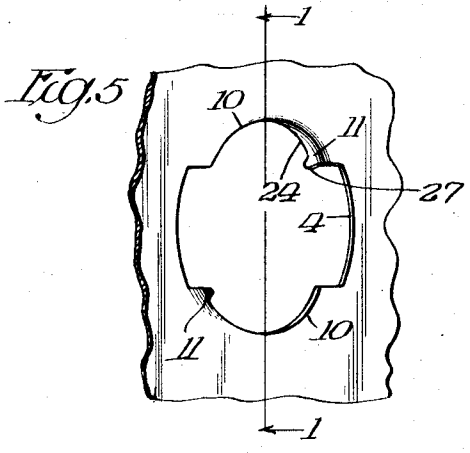
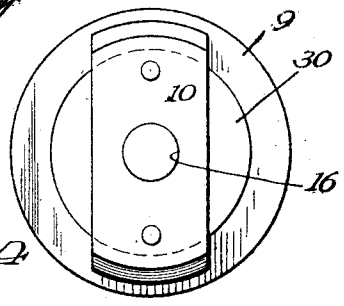


Fig. 4



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UNITED STATES PATENT OFFICE.

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ELECTRIC HEATER.

Application filed November 12, 1925. Serial No. 68,520.

My invention relates to electric heaters of the type commonly known as "glow heaters", in which heat from a resistance element is reflected in one general direction by a suitable reflector.

Generally speaking, my invention provides a heating appliance of this type in which the wire terminals are normally housed in a terminal chamber behind the reflector, so as to prevent both tampering with the wire fastenings and a possible short-circuiting of these wires or terminals. It also provides a construction in which the heater-carrying member (which includes the resistance element, the carrier for this element and the wire terminals) can readily be attached to, or detached from, the reflector without the use of tools, in which this member is firmly held in position when attached. Moreover, my invention provides a construction for this purpose in which the wire connections can readily be made before the heater-carrying member is attached to the reflector, and one in which no part of the said terminal chamber needs to be detached to permit of attaching the wires to the terminals.

Still further and more detailed objects will appear from the following specification and from the accompanying drawings, in which—

Fig. 1 is a central, vertical and longitudinal section through the main portions of an electric glow heater embodying my invention.

Fig. 2 is an enlarged side elevation of the insulating body of the heater-carrying member.

Fig. 3 is a reduced front elevation of the reflector alone, showing this as it appears before the cup-shaped member and the supporting standard are attached to it.

Fig. 4 is a rear elevation of the insulating body of the heater-carrying member.

Fig. 5 is an enlarged perspective view of the central portion of the reflector, taken from the front.

In the embodiment of the drawings, the glow-heater of my invention includes a forwardly concave and approximately spherically curved reflector 1 formed of a resilient metal, such as copper, and supported by a standard 2 of which only the upper end is illustrated. The reflector has at its center an axial perforation 3 provided with diametrically opposite enlargements 4. Secured to the back of the reflector behind its central portion is a cup-shaped member having a perforation in its back 5 and having its lateral wall flared outwardly at its forward end to provide a flange 6 which is secured to the reflector by rivets 7, so that this cup-shaped member cooperates with the adjacent central portion of the reflector in providing a terminal chamber 8 behind the reflector.

Extending into this chamber through the said central perforation in the reflector is a tubular heater-carrying member, desirably made of porcelain or similar heat resisting insulating material. This heater-carrying member includes a base 9 of larger diameter than the said perforation in the reflector, which base bears against the front of the reflector, a rear end cross-bar 10 of a width closely approaching that of each of the perforation enlargements 4 of the reflector and of a length closely approaching the distance between the ends of these enlargements, and a shank 30 connecting the said base and cross-bar. This shank 30 is slightly smaller in diameter than the main portion 3 of the central perforation in the reflector and is of a length somewhat greater than the thickness of the reflector. Each of the two arcuate parts of this main portion 3 has one end thereof bent to tilt the same rearwardly of the general configuration of the reflector, thereby providing a cam part 11 so disposed (as shown in Fig. 5) that the rear end of this cam part 11 will be spaced from the front of the reflector by a greater distance (when the heater-carrying member is detached from the reflector) than the length of the said shank 30.

The heater-carrying member also has a forward portion 12 provided with a spiral groove 13 and connected to the base 9 by a stem 14 through which stem a transverse bore 15 leads to the bore 16 of this member. Wound on the spiral groove is a heating element 17 which desirably consists of a coiled high resistance wire having uncoiled end portions respectively into the bore 16 through the forward end of the heater-carrying member and through the transverse bore 15, the ends of the wire extending into the chamber 8 and being secured respectively to terminal bolts 18 and 19 which are secured to the rearward part of the said mem-

ber as shown in Fig. 1. The rear wall 5 of the terminal chamber is perforated and carries an insulating bushing through which the circuit wires 20 and 21 extend.

In assembling the glow-heater, the standard 2 and the cup-shaped back member are permanently fastened to the reflector and the bushing 22 is slipped into the perforation in the rear chamber wall 5. The heater member is assembled separately by attaching the bolts 18 to its rear portion, winding the heater wire on the grooved stem 12, and securing the ends of this wire to the said bolts. Then the circuit wires are slid through the bore of the bushing 22 and the central perforation in the reflector and are attached respectively to the bolts 18 and 19 while the entire heater member is disposed at some distance in front of the reflector so as to permit convenient access to the wire clamping nuts 23 on these bolts.

The heater member is then attached to the reflector by alining the cross-bar 10 with the slot enlargements 4 so as to slide the cross-bar rearwardly through the central perforation in the reflector until the base 9 engages the front of the reflector and then rotating the heater member approximately a quarter turn. During this rotation, the rear face of the cross-bar 10 engages the rearwardly sloping edges 24 of the cam portions 11, thereby flexing these portions slightly forward and causing them to exert a rearwardly directed spring pressure on the cross-bar so as to clamp the base 9 against the reflector. To avoid having the heater member rotated too far when thus attaching it, I provide each of the said cam portions adjacent to its end with a rearwardly projecting finger 27 which will engage a longitudinal edge of the cross-bar 10 to limit such rotational movement.

In addition to facilitating the assembly of the glow heater at the factory, my construction also expedites the rewiring of the heater in case the circuit-carrying wires are damaged. So also, it makes it easy to substitute a new heater member when the resistance or heater element burns out, as this can easily be done even by an inexperienced user.

However, I do not wish to be limited to the details of the construction and arrangement above described, as changes might obviously be made without departing either from the spirit of my invention or from the appended claims.

I claim as my invention:

1. In an electric heater, a reflector provided with an elongated slot; and a heating element carrier including a base normally engaging the front face of the reflector, a cross-bar normally engaging the rear of the reflector, and a stem portion connecting the base with the cross-bar; the cross-bar being shaped so that it can pass through the slot when in one position with respect to the reflector, the reflector having a portion adjacent to the slot bent out of its general surface so as to wedge a part of the reflector between the said base and cross-bar when the carrier is partially rotated after the cross-bar has been inserted through the slot.

2. In an electric heater, a reflector provided with an elongated slot; and a heating element carrier including a base normally engaging the front face of the reflector, a cross-bar normally engaging the rear of the reflector, and a stem portion connecting the base with the cross-bar; the cross-bar being shaped so that it can pass through the slot when in one position with respect to the reflector, the reflector having a pair of portions spaced circumferentially of the axis of the carrier and each tilted rearwardly with respect to the general configuration of the reflector so as to be forcibly engaged by the cross-bar when the carrier is partially rotated after the cross-bar has been inserted through the slot.

3. In an electric heater, a heating element carrier having a stem portion connecting a base portion with a more rearward cross-bar, a supporting member having a perforation through which the said stem portion normally extends, the perforation having an enlargement permitting an end of the cross-bar to pass through it when the carrier is in one position, the supporting member having a portion adjacent to the perforation bent to cause spaced parts of the said portion respectively to engage the back of the base portion and the front of the cross-bar when the carrier has been partially rotated after the cross-bar has thus been passed through the perforation.

4. In an electric heater, a heating element carrier having a stem portion connecting a base portion with a more rearward cross-bar, a supporting member having a perforation through which the said stem portion normally extends, the perforation having an enlargement permitting an end of the cross-bar to pass through it when the carrier is in one position, the supporting member having a portion adjacent to the perforation bent to cause spaced parts of the said portion respectively to engage the back of the base portion and the front of the cross-bar when the carrier has been partially rotated after the cross-bar has thus been passed through the perforation, the supporting member also having a portion disposed for engaging a part of the carrier to limit the extent of such rotational movement.

5. An electric heater as per claim 4, in which the supporting member has a stop element disposed for engaging an edge of the cross-bar to limit the extent of the said partial rotating.

6. In an electric heater, a forwardly concaved reflector having an axial perforation provided with a pair of diametrically opposite enlargements; and a heating element carrier having a stem portion substantially fitting the main portion of the perforation, a cross-bar disposed behind the reflector and transversely of the said enlargements, and a base portion disposed in front of the reflector; the reflector having a pair of diametrically opposite portions adjacent to the perforation tilted rearwardly with respect to the general configuration of the reflector so that the part of each of these portions adjacent to one of the said enlargements is disposed rearward of the part of the said portion adjacent to the other enlargement, the said portions being resilient; the tilting of the said reflector portions being such that when the carrier is detached, the said parts of each portion are spaced axially of the reflector by a greater distance than the distance between the said base portion and the cross-bar.

Signed at Chicago, Illinois, November 7th, 1925.

JAMES J. GOUGH.