

Dec. 2, 1930.

C. B. BACKER

1,783,554

ELECTRIC HEATING DEVICE

Filed July 17, 1926

Fig. 1.

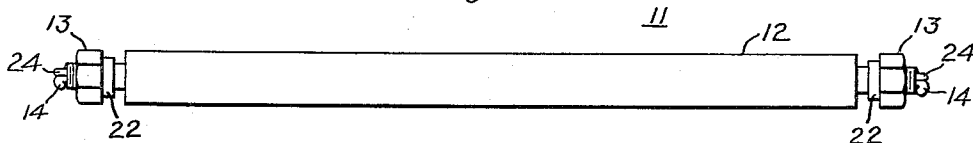


Fig. 2.

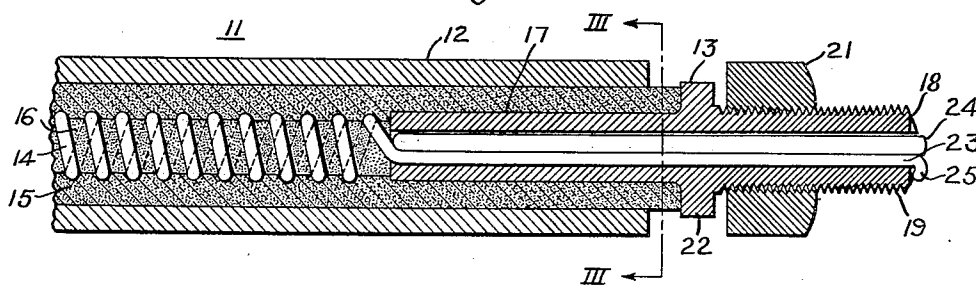


Fig. 3.

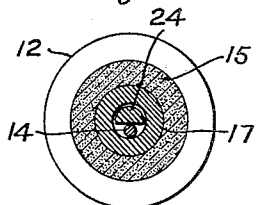


Fig. 4.

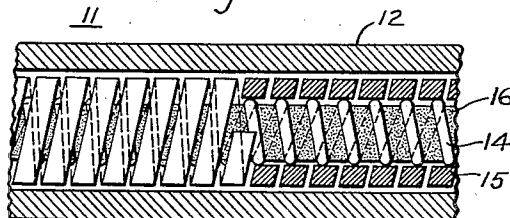
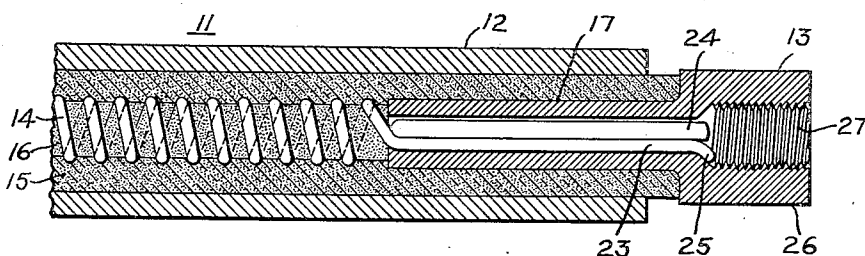


Fig. 5.



WITNESSES:

Chas. C. Groome.
G. B. Fjoflat

INVENTOR

Christian B. Backer.

BY

Lesley C. Carr
ATTORNEY

UNITED STATES PATENT OFFICE

CHRISTIAN B. BACKER, OF BROOKLYN, NEW YORK

ELECTRIC HEATING DEVICE

Application filed July 17, 1926. Serial No. 123,220.

My invention relates to sheathed electric heating devices and particularly to the terminal construction therefor.

An object of my invention is to provide a terminal for sheathed electric heating devices which may be manufactured conveniently as a unit therewith.

Another object of my invention is to provide insulating means for sheathed electric heating devices that shall insulate the resistor and terminal members from the sheath and maintain them in rigid mechanical relation therewith.

In practicing my invention, I provide a tubular member and a resistor member disposed therein. A terminal member is provided to wedgingly engage the resistor member, and initially metallic expansively oxidized material is provided for insulating the terminal and resistor members from the tubular member and also for maintaining them in rigid relation.

In the single sheet of drawings, Fig. 1 is a side view of an assembled electric heating device embodying my invention.

Fig. 2 is an enlarged view, in longitudinal section, of the device illustrated in Fig. 1.

Fig. 3 is a view in vertical section, taken in line III—III, of the device illustrated in Fig. 2.

Fig. 4 is a fragmentary view, in lateral section, of the device illustrated in Figs. 1 and 2, showing the insulating material in its metallic state, and

Fig. 5 is a fragmentary view, in lateral section, of a modification of the device illustrated in Fig. 2.

In the drawings an electric heating unit 11 comprises a tubular member 12, terminal members 13, a resistor member 14 and insulating material 15, shown more particularly in Figs. 2, 3 and 5. In Fig. 4, the heating unit 11 is shown in its initial stage before the device has been completely manufactured. In this figure, the tubular member 12 encloses the resistor member 14 and an expansively oxidizable helix 15 of magnesium metal. The resistor 14 is provided with a refractory core 16 which may be made of such material as alundum cement or magnesium powder.

In Fig. 2 of the drawings, the terminal member 13 is illustrated in an enlarged vertical section and comprises a tubular member having an end portion 17 which is surrounded by the magnesium-metal helix 15 and extends into the tubular member 12 and an outwardly extending portion 18 which is provided with screw threads 19 on which a nut 21 may be threaded. An intermediate flange portion 22 is provided on the terminal member 13 which serves as a stopping member for the nut 21.

The resistor member 14 has an end portion 23 which extends into the terminal member 13 and is wedged into engagement therewith by a wedging member 24. The wedging member 24 is shown in section in Fig. 3 and, as there illustrated, is of substantially semi-circular section. The resistor member 14 has an end portion 25 which is bent at substantially right angles to interlock with the terminal member 13.

A modified form of the terminal member 13 is illustrated in Fig. 5 and comprises inwardly and outwardly extending portions 17 and 26. The portion 26 is tapped and provided with screw threads 27 to which an electric supply conductor may be connected.

By subjecting the structure illustrated in Fig. 4 to an atmosphere of steam at a relatively high pressure, the magnesium helix 15 undergoes such change that the metal is transformed from the metallic to an oxide state and serves as an insulator, as illustrated in Figs. 2, 3 and 5. During the oxidation of the magnesium metal 15, it expands substantially 200% of its original dimensions to tightly grip the terminal member 13, and the resistor member 14 to maintain them in rigid mechanical relation with respect to each other. The magnesium oxide has very good thermal conductive qualities and is, also, a good electric insulator.

By my invention, I have provided an electric heating device that is compact, rugged and easily manufactured.

Various modifications may be made in my invention without departing from the spirit and scope thereof. I desire, therefore, that only such limitations shall be placed thereon

as are imposed by the prior art and the appended claims.

I claim as my invention:

1. An electric heating device comprising a tubular member, a resistor member disposed therein, a tubular terminal member having a portion thereof extending into said tubular member, said resistor member having an end portion extending into said terminal member, means for insulating the terminal and resistor members from the tubular member and for rigidly securing them thereto, and an elongated wedging member extending through said terminal member for wedging said resistor and terminal members into positive engagement with each other.

2. In a terminal for sheathed, insulated electric conductors comprising a sheath, a conductor in said sheath, and insulating material disposed between the conductor and sheath, said terminal comprising a hollow member having a portion extending into the sheath, one end of said resistor extending through the terminal, and a wedging member extending through the terminal and co-extensive with the resistor, whereby the terminal member is held firmly in intimate contact with the conductor.

In testimony whereof, I have hereunto subscribed my name this 30th day of June, 1926.

CHRISTIAN B. BACKER.

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