Dec. 8, 1936. G. W. HEINBUCH 2,063,096

ELECTRICAL HEATING DEVICE

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Fig. 1.

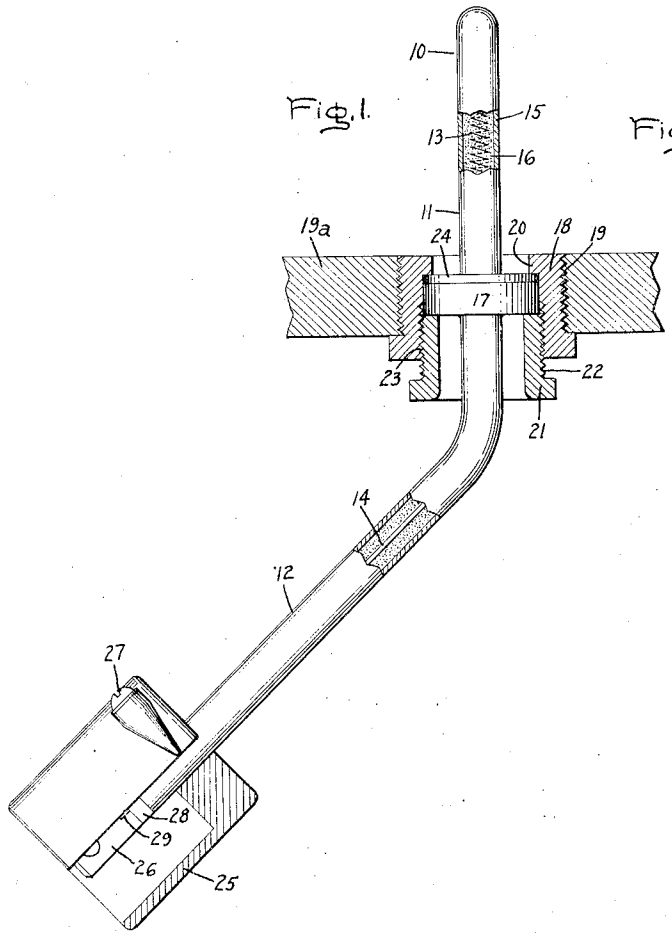
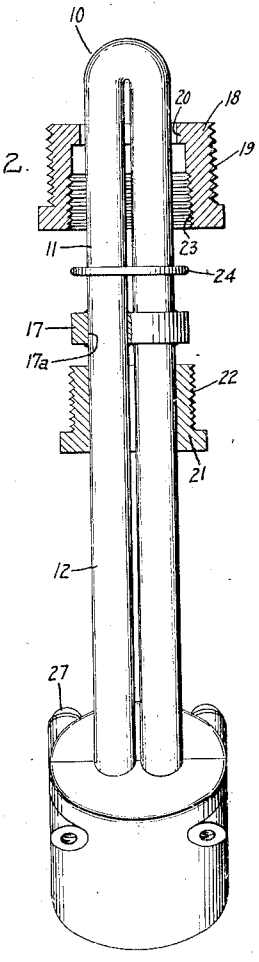


Fig. 2.



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ELECTRICAL HEATING DEVICE

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3 Claims. (Cl. 219—38)

My invention relates to electrical heating devices, more particularly to electrical heating devices of the immersion type wherein the heating element is adapted to be immersed in a liquid to be heated, and it has for its object the provision of an improved device of this character.

In the use of automobiles and similar automotive vehicles wherein a liquid is used for either or both lubricating and cooling purposes, and particularly in such vehicles operated in climates where the winter temperatures range considerably below freezing, a means for heating the lubricating oil or the fluid used for cooling the motor during operation is very desirable in order to facilitate starting during cold weather. Such means have been heretofore devised, either in the form of electric strip heaters to be clamped to the engine block, or in the form of wound electrical resistance heaters contained within a metal cylinder immersed in the cooling fluid, and suitably connected to a source of electrical energy.

It is an object of my invention to provide an improved form of electrical immersion type heater for use in connection with automobile and similar type engines, either for heating the lubricating oil or for heating the cooling fluid during cold weather conditions.

It is a further object of my invention to provide an immersion type heater of the kind above referred to, which will provide for the location of the terminal prongs at a point more convenient of access than immediately adjacent the wall of the engine in which the heater is mounted.

An understanding of my invention and other objects and advantages thereof will be obtained from a consideration of the following description and the accompanying drawing and the features of novelty thereof are particularly set out in the appended claims.

In the drawing, Fig. 1 is a side elevation partly in section of a heater unit arranged in accordance with my invention; and Fig. 2 is a front elevation of the heater of Fig. 1, but having certain parts in different positions in order to illustrate more clearly the construction of the heater.

In the drawing, I have illustrated a form of heating device wherein the terminal box itself is separate and removed from the securing means for the heating device. The heating element 10, which is bent into hairpin form, (as shown in Fig. 2) comprises sections 11 and 12 bent at an angle to one another, the section 11 containing a resistance heater wire 13 coiled into a helix and the section 12 containing long terminal wires 14, all enclosed within a continuous metallic sheath 15 and electrically insulated therefrom by powdered heat refractory electrically insulating material 16 compacted within the sheath 15 and about the resistance wire and terminals.

A metal support member 17 in the form of a disc having transverse apertures 17a therethrough is mounted on the heating element adjacent the junction of sections 11 and 12, the legs of the heating element passing through the apertures, and is rigidly secured thereto in any suitable manner, as by soldering so as to form a water tight joint therewith.

A screw plug member 18 is provided having an external screw thread 19 adapted to cooperate with a suitable tapped opening in a wall 19a of the engine block, and the inner end of the plug member 18 is formed into an inturned flange 20. As shown, a central circular passage is provided in the member 18 through which the heating element section 11 may pass. When assembled, as shown in Fig. 1, the support member 17 is secured within the plug member 18 abutting the flange 20 by a second screw plug 21 of lesser diameter, mounted loosely on the heating element on the opposite side of the member 17 and having an external screw thread 22 adapted to engage with an internal screw thread 23 on plug 18. In other words, the member 17 is securely clamped between the flange 20 and the plug 21. A copper asbestos washer 24 is provided between member 17 and flange 20 for insuring a water-tight joint between these members.

The long heating element section 12 is provided for the purpose of permitting the location of the terminal box 25 and terminal prongs 26 at some point more convenient of access than that immediately adjacent the engine wall. The terminal box 25 may be cast on the ends of the sheath 15, or may be, as shown, formed in two halves which are clamped upon the ends of the sheath by means of the screws 27. The terminal wires are electrically connected within the sheath to the resistance heater wire which extends in a helical coil through section 11 and the terminal wires extend through section 12 of the element, projecting beyond the ends of the sheath through insulating washers 28. The terminal prongs 26 are welded to the ends of the terminal wires as illustrated at 29 and abut the washers 28.

While I have shown a particular embodiment of my invention, it will be understood, of course, that I do not wish to be limited thereto since many modifications may be made and I, therefore, contemplate by the appended claims to cover any

such modifications as fall within the true spirit and scope of my invention.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. An electrical immersion heater for automobile engines and the like comprising a metallic sheath, a member rigidly secured to the outer wall of said sheath intermediate its ends and projecting outwardly therefrom, a resistance conductor within said sheath on one side of said projecting member, terminal members within said sheath on the opposite side of said projecting member and electrically connected with said resistance conductor, a pair of members engaging opposite sides of said projecting member to clamp it between them, means securing said pair of members in clamping relation with said projecting member, and means adapted to secure one of said clamping members in an aperture provided for it in a wall of said engine so that the portion of said sheath encasing said resistance conductor projects into said engine through said wall, while the terminal members on the other side of said projecting member remain outside of said wall.

2. An electrical immersion heater for a water jacketed internal combustion engine and the like comprising a heating element consisting of a metallic sheath bent into substantially hairpin form with the ends thereof in juxtaposed position, a metallic disc having a pair of apertures therethrough for receiving the two legs of said sheath, means rigidly securing said disc to said sheath, the legs of said sheath extending for a material distance beyond said disc, a resistance heating conductor within the U-shaped bent portion of said sheath and the legs thereof extending at least to said disc, elongated terminal conductors connected to the ends of said resistance conductor and extending through the legs of said sheath and projecting from the ends of said legs, and a screw plug detachably secured to said metallic disc having an exterior screw thread adapted to be threaded into a corresponding threaded aperture provided for it in a wall of said jacket.

3. An electrical immersion heater for automobile engines and the like comprising a heating element consisting of a metallic sheath enclosing a resistance conductor and bent into hairpin form with the ends juxtaposed and provided with terminals, means for securing said heater in a wall of said engine comprising a bored plug having a circumferential flange extending into the bore and having external and internal screw-threads, a metal disc through which the legs of said sheath pass, means rigidly securing said disc to said legs, and a second bored plug externally screw-threaded and adapted to engage said internal screw thread on said first plug and seat said disc on said flange.

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