July 6, 1948. R. L. P. BRAUN ET AL 2,444,627

ELECTRICAL HEATER FOR LIQUID COOLED ENGINES

Filed Oct. 14, 1946

Fig. 1.

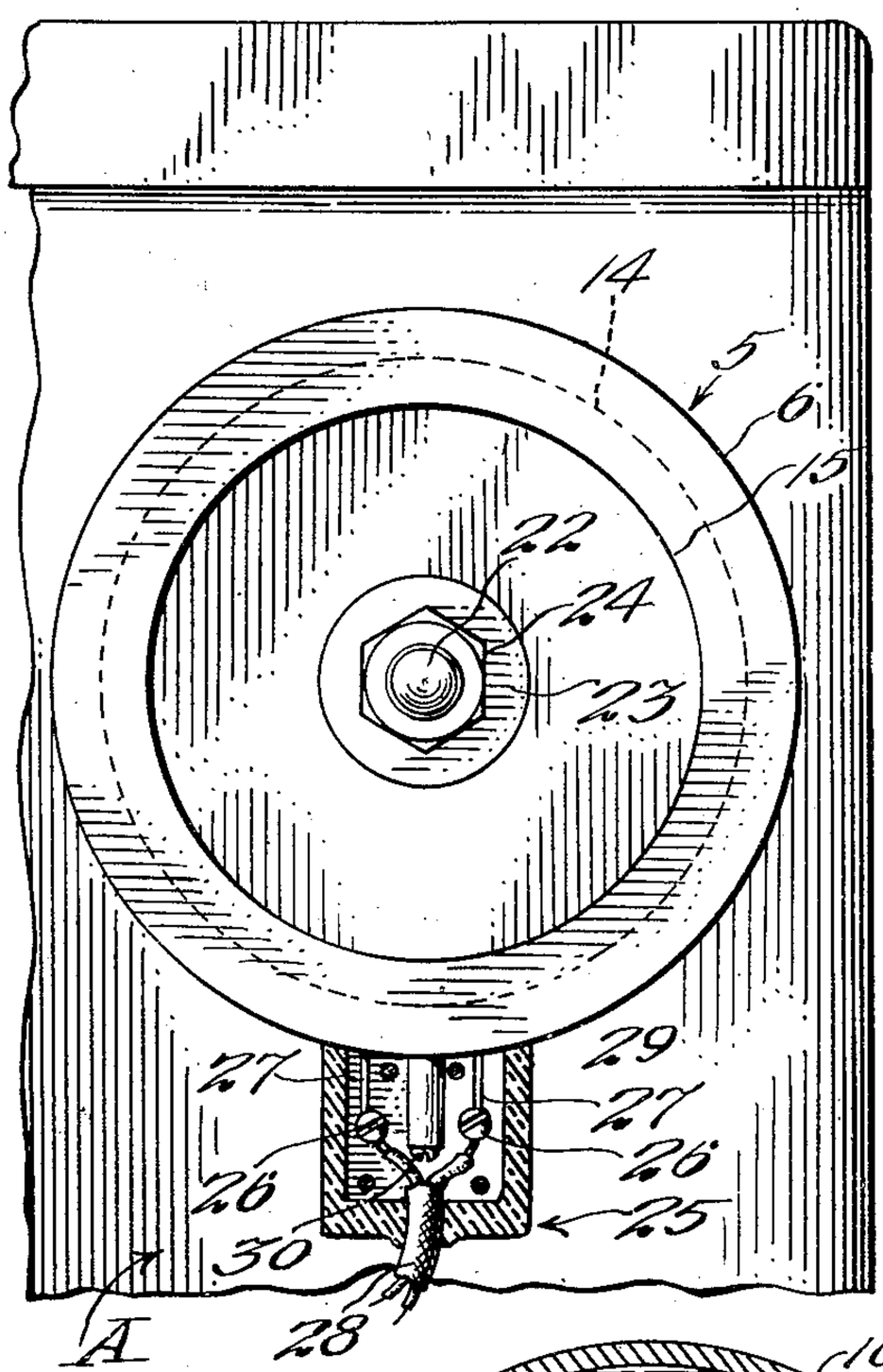
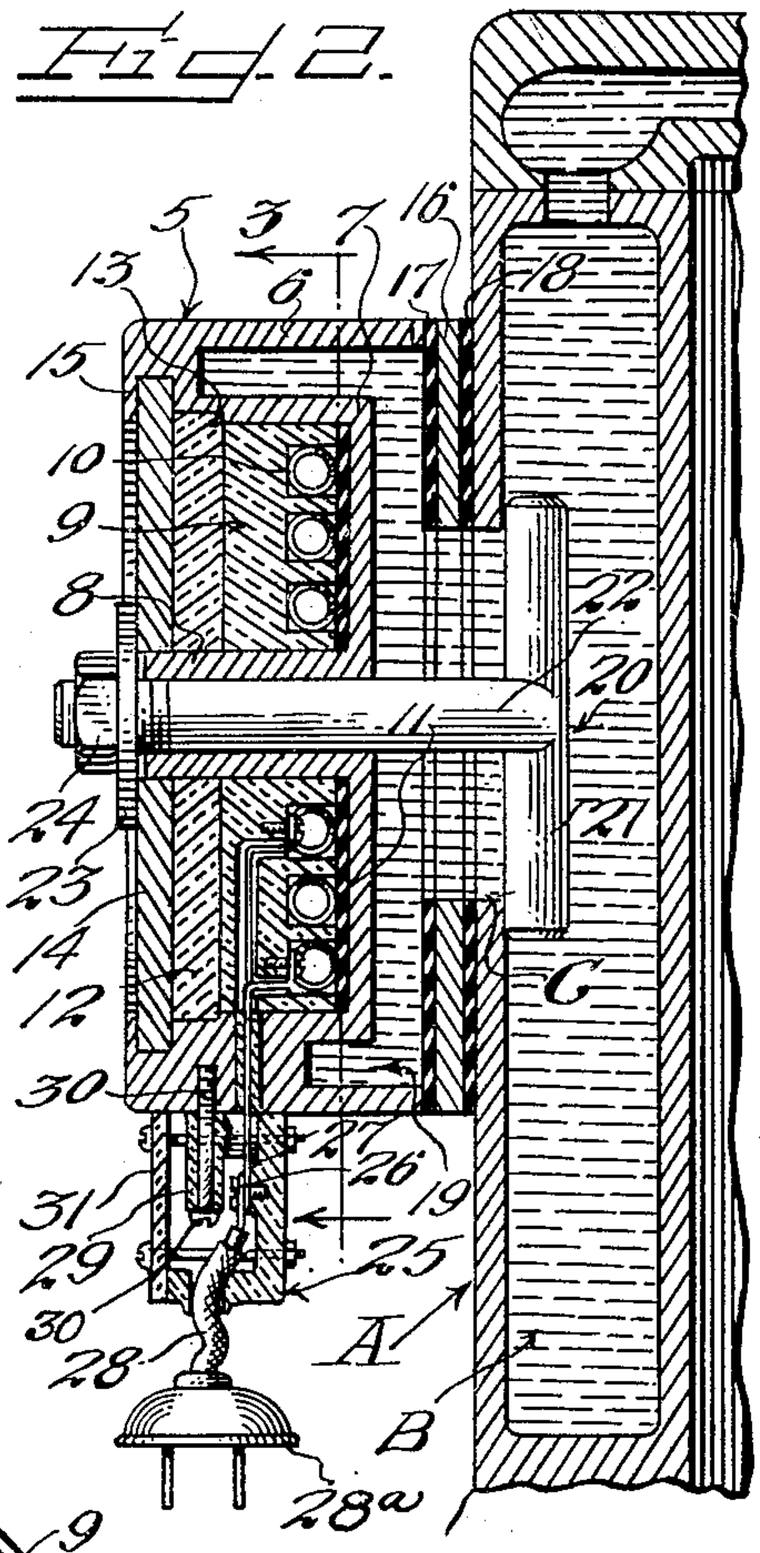


Fig. 2.



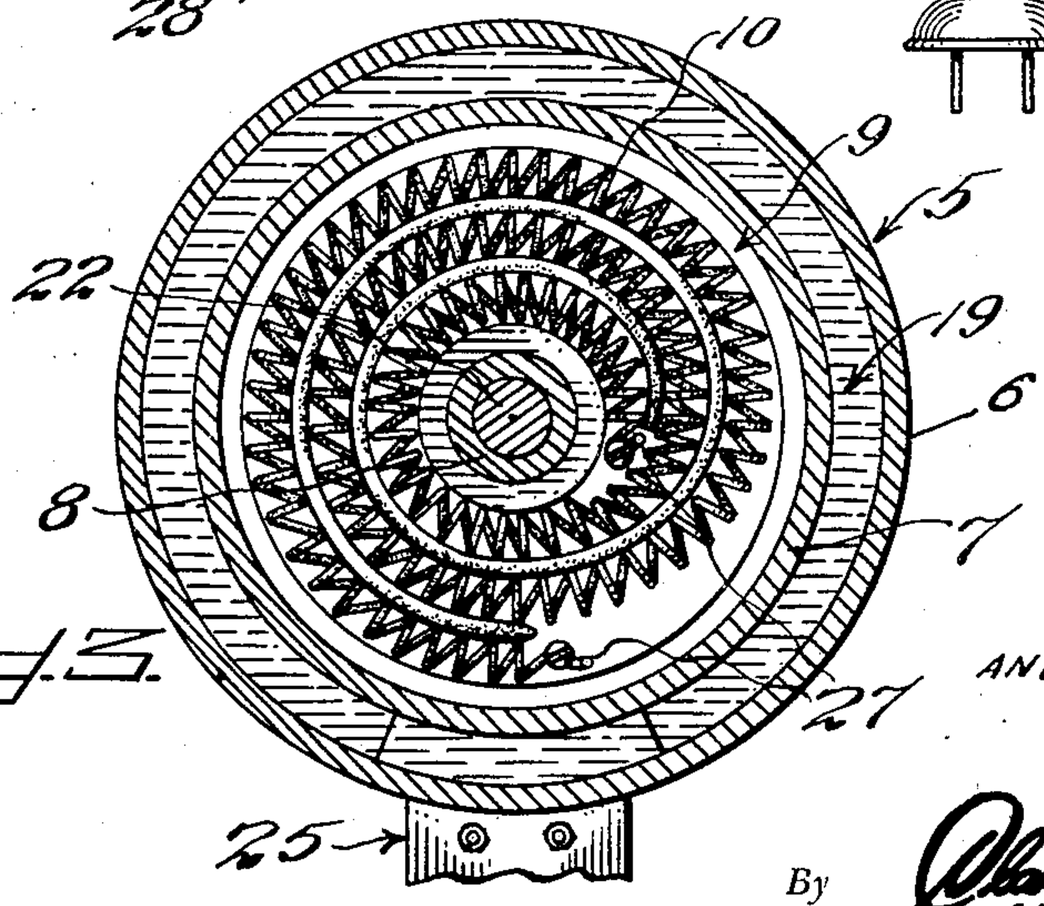


Fig. 3.

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ELECTRICAL HEATER FOR LIQUID COOLED ENGINES

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3 Claims. (Cl. 219—38)

1

The present invention relates to certain new and useful improvements in what is believed to be a new type electrical heater for liquid cooled engines, the invention having particular reference to an attachment type heater for application to an existing expansion plug hole in the water circulation jacket of an automobile engine or the like.

These types of heaters, many of which are disclosed in the prior art to which the invention relates, are simply substituted for the conventional expansion plug after the latter is removed and are such as to expose and apply the source of heat to the cooling liquid in the cylinder block circulating system whereby to sufficiently warm the water or other cooling liquid to a temperature sufficient to facilitate starting the engine in cold weather. The fact that these pre-heaters are generally well-known makes it unnecessary to dwell upon a description of fundamental needs and purposes. We are disposed to mention, however, that the heater shown in the drawings and to be hereinafter particularly described, is similar in certain structural respects to the one covered in a patent granted to us June 11, 1946, under Number 2,401,847.

In carrying out the specific principles of the invention we have evolved and produced a novel structural device which is such as to constitute an improvement on the device set forth in the above identified patent and similar devices covered in various other germane patents with which we are already familiar.

In reducing to practice the preferred embodiment of the present invention, we have found it expedient and practicable to employ simple casing means embodying a water or liquid chamber designed to communicate with the water circulating space in the aforementioned cylinder block jacket, said casing being characterized by a central tubular hub portion to accommodate the stem of a T-shaped bolt which is employed for effectively securing the casing to the jacket in alignment with the expansion plug hole.

More specifically, novelty is predicated upon a casing which is characterized by an annular rim, this surrounding an internal cup-like receptacle, said receptacle being provided with the aforementioned hub and serving to effectively accommodate the electrical heating unit and having covering and retaining means therefor.

Other objects, features and advantages of the invention will become more readily apparent from the following description and the accompanying illustrative drawings.

2

In the drawings, wherein like numerals are employed to designate like parts throughout the views:

Figure 1 is a fragmentary elevational view of a cylinder block showing the electrical heater attachment, constructed in accordance with our ideas, mounted thereon, certain portions being shown in section.

Figure 2 is a view at right angles to Figure 1, parts essentially in section and showing the complete picturization and co-action of said parts, and

Figure 3 is a section on the line 3—3 of Figure 2, looking in the direction of the arrows.

In Figure 2, the motor block, including the water circulating jacket, is denoted by the reference character A and the cooling liquid in the circulating space is denoted at B, the expansion plug hole, a customary part of the jacket, is indicated at C.

The aforementioned casing is denoted by the numeral 5 and comprises a casting which includes an annular rim portion 6 this surrounding in spaced relation, an integral cup-like receptacle 7. The central portion of said receptacle is fashioned into a tubular attaching and assembling hub 8. The receptacle serves to accommodate the electrical heater unit 9, this being an annular body of insulation surrounding the hub 8 and fitted snugly in said receptacle. As shown in Figure 3, the inner face of said annular insert 9 is formed with a spiraling channel which serves to accommodate the coiled and spirally bent resistance wire or heating element 10. A mica ring 11 serves as a cover for the channel means and heater wire 10, this as shown better in Figure 2. An asbestos ring 12 is fitted over the hub and seated on a shoulder-ledge 13 formed therefor in the receptacle 7. This part 12 is held in place by a cover of appropriate flexible material, said cover denoted by the numeral 14, and said cover being annular and held in place by a surrounding lip 15.

An appropriate seal is utilized for purposes of butting the open side of the casing against the jacket A and said seal embodies a ring 16 of appropriate material and gaskets 17 and 18 provided on opposite sides thereof. These elements 16, 17 and 18 cooperate with the annular rim 6 and the receptacle 7 in defining a water chamber 19 which lines up with the expansion plug hole C, thus allowing the water or other cooling liquid to flow from the space B into the chamber of said casing 5 for heating purposes.

The entire assemblage is held operatively in place by a T-shaped bolt 20 whose head 21 spans

the hole C, said head being located in the water space B. The shank or stem 22 extends outwardly through and beyond the hub 8 where it is threaded to accommodate a washer 23 and the retaining nut 24.

The numeral 25 denotes a porcelain fitting or lead box which is mounted exteriorly on the casing. The box is provided with binding posts 26 to accommodate the leads 27, from the electrical heating means on the interior of the casing. The binding posts also serve to accommodate the wire ends from a cord 28 having a prong equipped plug 28*a*. This plug may be connected up with house current or any source of electrical supply. The box 25 includes a sleeve or socket 29 to accommodate a bolt 30 which is employed for fastening the box removably on the casing. The box also includes a suitable cover 31. It is understood, of course, that we are not particularly concerned with the source of electrical supply, or the ways and means of delivering electrical current to the leads 27 connected with the resistance wire 10.

In practice, the expansion plug (not shown) is removed from the expansion plug opening C and the device 5 is bolted thereto by way of the T-shaped bolt 20. The liquid in the space B flows out through the hole C into the chamber 19 where it is heated for purposes of warming same to the desired temperature.

A careful consideration of the foregoing description in conjunction with the invention as illustrated in the drawings will enable the reader to obtain a clear understanding and impression of the alleged features of merit and novelty sufficient to clarify the construction of the invention as hereinafter claimed.

Minor changes in shape, size, materials and rearrangement of parts may be resorted to in actual practice so long as no departure is made from the invention as claimed.

We claim:

1. A water heater attachment for application to a standard expansion plug hole in a water circulating jacket, comprising a casing open on one side, said open side being applicable to the exterior of said jacket in alignment with said expansion plug hole, said casing being closed at its outer side, being provided with internal electrical heating means and with a central tubular hub, said hub being open at opposite ends, and a T-shaped bolt and nut assembly, the cross-head of said bolt being adapted to span the expansion plug hole and to engage marginal portions of the jacket surrounding the hole, the shank of the bolt extending outwardly through and beyond the hub and secured in place.

2. A water heater attachment for application to and connection with a standard-type expansion plug hole in an automobile water circulating jacket comprising a substantially circular casing including an annular rim, open on its inner side and adapted for disposition against the exterior surface of said jacket in alignment with the stated expansion plug hole and provided on its outer side with an integral cup-like receptacle located concentrically within the confines of said rim, an electrical-type heater unit removably lodged in said receptacle, cover and clamping means mounted on the outer portion of the casing and covering said receptacle and retaining said heater unit in the receptacle, and bolt and nut means for simultaneously assembling and holding the cover means in place and also detachably connecting the entire attachment with said jacket.

3. A water heater attachment adapted to be mounted exteriorly on an automobile water circulating jacket in alignment with the usual expansion plug hole in said jacket comprising a casing which is open on that side which is applied to said jacket, the opposite side of said casing being provided with an integral cup-like receptacle and said receptacle being located within the confines of the casing, said receptacle having a central tubular hub and said hub being open at opposite ends, an electrical type heater unit situated in the receptacle and surrounding the hub, annular cover means surrounding the hub and fitted in the outer portion of said receptacle, a bolt mounted in said hub and provided with a clamping nut holding the cover means in place, and further provided on its inner end with means connectible with the stated jacket and adapted to hold the entire attachment in operative position on the jacket.

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The following references are of record in the file of this patent:

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2,401,847	Urbant et al.	June 11, 1946