May 7, 1935. W. R. DAVIES 2,000,825

HEATER

Original Filed June 13, 1933 2 Sheets-Sheet 1

Fig. 1.

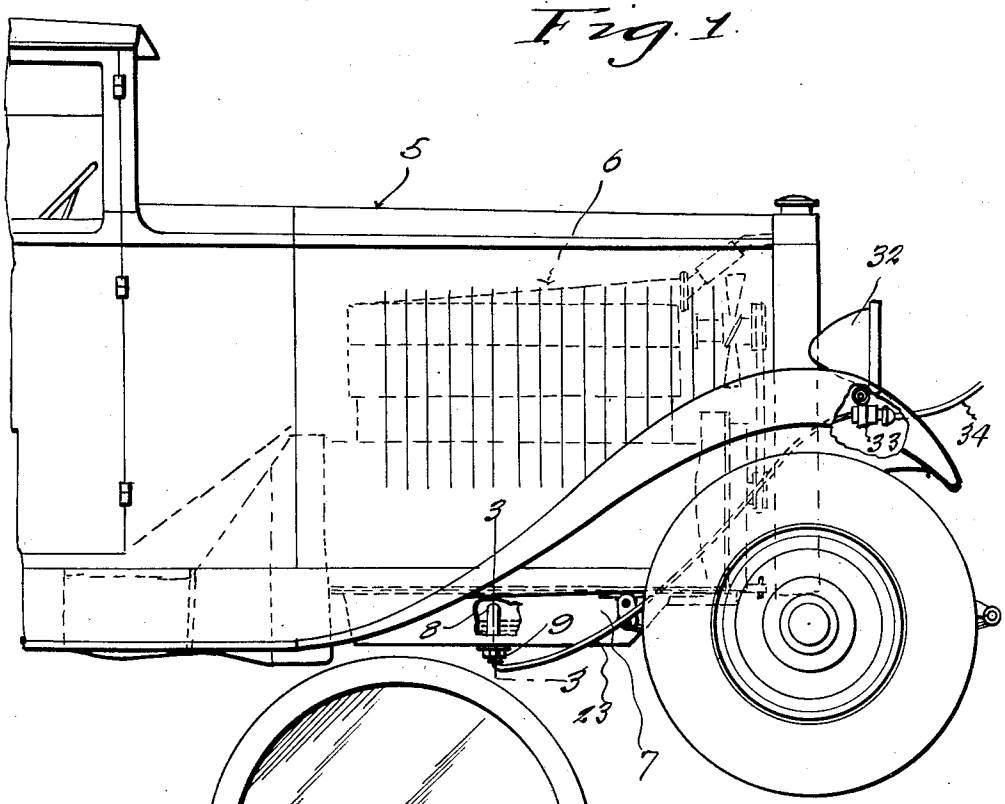
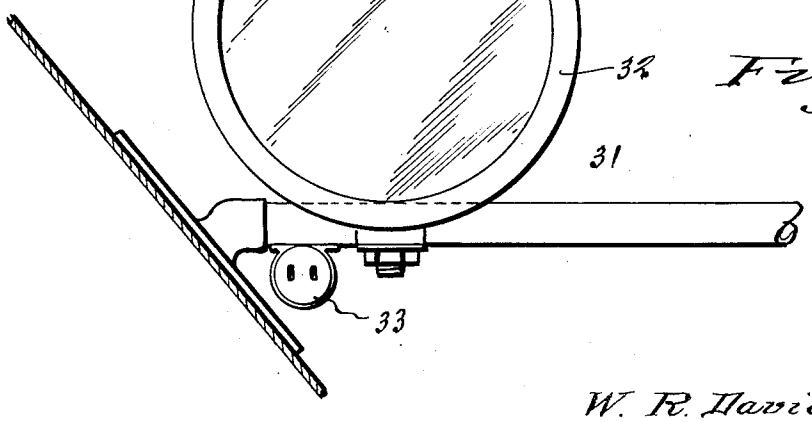


Fig. 2.



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Fig. 3.

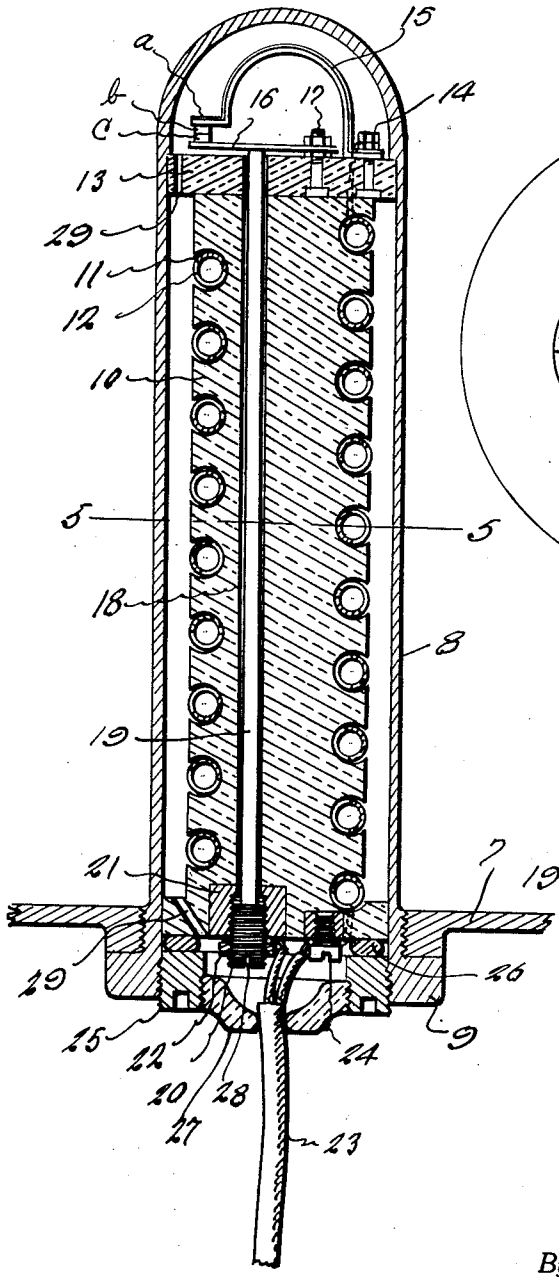


Fig. 4.

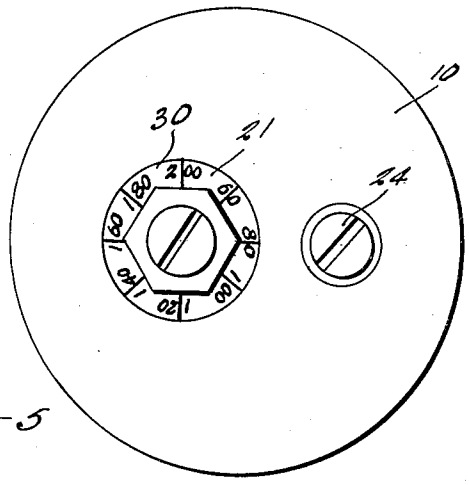
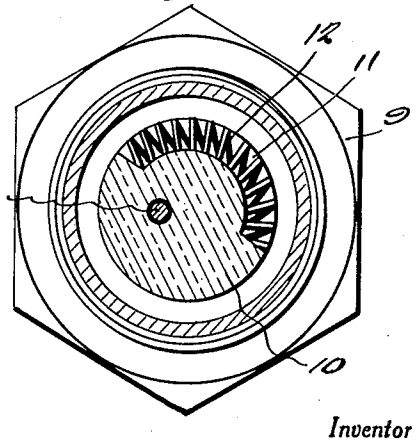


Fig. 5.



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UNITED STATES PATENT OFFICE

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HEATER

Walter R. Davies, Missoula, Mont.

Application June 13, 1933, Serial No. 675,629
Renewed November 26, 1934

1 Claim. (Cl. 219—38)

This invention apertains to new and useful improvements in electrical heaters and more particularly to a heater especially adapted for crank case use on automobile engines.

The principal object of the present invention is to provide a heater for installation in an engine crank case whereby the lubricant therein can be easily and thoroughly heated during cold weather preparatory to starting the engine.

During the course of the following specification and claim, other important objects and advantages of the invention will become apparent to the reader.

In the drawings:

Figure 1 is a side elevational view of an automobile showing the crank case thereof equipped with the present invention.

Figure 2 is a fragmentary detailed sectional view showing the connector whereby the usual commercial 110 volt supply can be connected to the heater.

Figure 3 is a fragmentary enlarged vertical sectional view taken substantially on line 3—3 of Figure 1.

Figure 4 is an elevational view of the lower end of the heater core.

Figure 5 is a cross section substantially on line 5—5 of Figure 3.

Referring to the drawings wherein like numerals designate like parts, it can be seen, in Figure 1, that numeral 5 generally refers to the body portion of an automobile with numeral 6 generally referring to an internal combustion engine having the crank case 7. As is clearly shown in Figure 3, threadedly disposed through the bottom of the crank case 7 is the elongated cylindrical shell 8, the thread portion thereof being located at the lower end thereof at which end is located the polygonal shaped enlargement 9 with which a wrench or similar tool can be engaged for permitting insertion or retraction of the shell 8.

Numeral 10 represents an elongated cylindrical shaped di-electric core which is provided with a spiral grooveway 11 therein extending from one end of the core to the other and as can be clearly seen in Figure 3, this groove is undercut so that compression of the coiled conductor 12 will be required to insert the same into this grooveway and obviously, when the conductor 12 is permitted to expand in the said grooveway, it cannot be easily unseated.

Numeral 13 represents a partition in the upper portion, or the closed portion of the shell 8 and by a binding post 14, one end of the thermostatic bi-metal element 15 is secured at one end while its opposite end is provided with a laterally disposed portion *a* having a contact *b* opposed to the contact *c* on the spring contact arm 16 which is secured to the partition 13 by the binding post 17.

Through the partition 13 and longitudinally through the core 10 is a bore 18 through which the rod 19 is slidable the upper end of the rod being attached to the arm 16, or at least engaging the same so that the arm 16 can be adjusted upwardly with respect to the contact *b*. The lower end of this rod 19 is provided with a threaded head 20 which is seatable in the internally threaded socket element 21 which is partly embedded in the lower end of the core 10. A nut 22 on this head 20 serves to secure one of the conductors of the core 23 electrically connected with the rod 19 while the other conductor of this core 23 is connected to the binding post 24 which is, in turn, connected to one end of the aforementioned coil 12. The other end of this coil is connected to the bi-metal element 15. An externally threaded annulus 25 is threaded into the lower end of the shell 8 and against the packing 26 to make the connection substantially leakproof and inside of this annulus 25 is a threaded di-electric plug 27 having an opening therein through which the core 23 extends. This plug 27 can be removed and a screw driver can be inserted into the slot 28 in the lower end of the rod head 20 to permit adjustment of the rod which in turn controls the thermostatic arm 16, thus determining the temperature at which the thermostatic switch controls the electrical coil.

Suitable openings 29 can be provided in the lower portion of the core 10 and in the partition 13 so as to permit the circulation in this shell 8. Suitable calibrations 30 can be provided on the bottom of the socket element 21 as shown in Figure 4 to properly gauge the adjustment of the rod 18.

In Figure 2, numeral 31 represents the usual cross bar which supports the head lamp 32 and on this is suitably secured a connector 33 which, as shown in Figure 1, serves to connect the 110-volt conductor 34 to the aforementioned core 23 in the manner substantially shown in Figure 1.

While the foregoing specification sets forth the invention in specific terms, it is to be understood that numerous changes in the shape, size, and materials may be resorted to without departing from the spirit and scope of the invention as claimed hereinafter.

What is claimed is:

An electric heater for liquid tanks comprising a di-electric core, a heat coil wound on the said core, a thermostatic switch secured to one end of the core in electrical connection with the said coil, means at the opposite end of the core for fastening the core to a tank so that the thermostat end will project into the tank, means extending longitudinally through the core for adjusting the said thermostatic switch, said thermostatic switch comprising a bi-metal element provided with a contact and a complementary contact, a strip spring supporting the complementary contact, the said adjusting means consisting of an elongated rod slidably disposed through the core and adapted to engage the strip spring at one end and at its opposite end provided with a threaded head threadedly disposed into the outer end of the core.

WALTER R. DAVIES.