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S. A. WILKIE
DISTRIBUTOR HEATER
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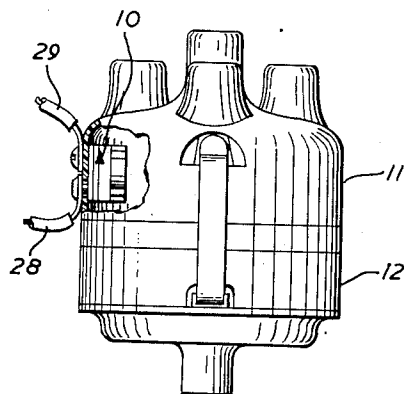


Fig. 2

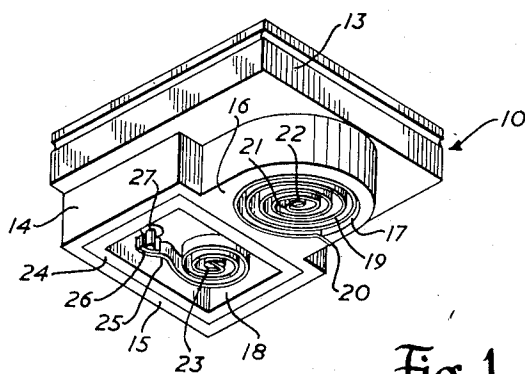


Fig. 1

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DISTRIBUTOR HEATER

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2 Claims. (Cl. 219-19)

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This invention relates to a distributor heater which may be employed to increase the efficiency of commutation in an electrical high tension distributor of an internal combustion engine.

I have observed that during atmospheric conditions of high humidity and particularly when the temperature is between 25° and 40° Fahrenheit the efficiency of spark commutation in the distributor is much less than that experienced in dry, warm weather. When the distributor contacts become worn or carbonized, or otherwise fouled, the efficiency loss is more aggravated. It is well known that on cold, damp days there is much more difficulty experienced in starting the engine of an automobile. This is due to the two factors of high humidity and condensation by reason of low temperatures.

It is a primary object of the invention to provide a distributor heater which will quickly act to remove water condensate from the high tension distributor points or contacts.

Another object of the invention is to provide a distributor heater of this type and including thermoresponsive switch means whereby the heater is cut off as soon as the interior of the distributor attains a temperature corresponding to that normally attained by the distributor components by reason of adjacent location to the engine parts during normal running of the latter.

With these and other objects in view the invention generally comprises the combination with a distributor housing having a removable cover and electrical high tension switch means in the housing, of a metal support member mountable within the cover and projecting therewithin to define a heating chamber and a switching chamber, both of which are exposed to the interior of the housing but which are arranged so that the switching chamber is disposed out of the path of radiation from the heater in the heating chamber. An electrical resistance heater or equivalent is mounted in the heating chamber and is connected electrically in series with a thermoresponsive member mounted in the switching chamber, the latter member carrying a switching contact at a movable free end thereof to effect opening of the electrical circuit of the electrical heater. A stationary switch contact is adapted to be engaged by the contact of the thermoresponsive member and electrical connections extend exteriorly of the support member and the casing from the stationary contact and the electrical heater to the battery circuit of an automobile, say, by way of the ignition circuit.

Other objects of the invention will be ap-

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preciated by a study of the following specification taken in conjunction with the accompanying drawings.

In the drawings:

Figure 1 is a perspective view of a distributor heater according to the invention.

Figure 2 is a view of an electrical high tension distributor housing with a portion of the cover cut away to reveal the mounting of a distributor heater of the invention therein.

Referring in more detail to the drawings, the distributor heater of the invention illustrated in Figure 1 comprises a suitable support member 10 preferably of metal of any suitable shape adapted to be set into the cover 11 of a distributor housing 12 as illustrated in Figure 2. In the form of the invention illustrated, the support member has a base part 13 having a projection 14 extending therefrom forming a series of walls 15 and 16 which define the open heater chamber 17 and the open switching chamber 18. If an electrical resistance heater is employed, such as the coiled form 19 illustrated, it may have one end 20 set into a slot of the wall 16 whereby electrical connection is made to the support member itself.

The inward end 21 of the heater is fastened to an insulated post 22 which connects electrically by means of a suitable wire (not shown) to the post 23 extending into the switching chamber 18 and mounting the inward end of a thermoresponsive member in the form of a conventional bimetallic strip.

An open housing 24 of a thermal and electrical insulating material is in the form of an insert and forms the side walls of the switching chamber 18 whereby the thermoresponsive member can act substantially under the influence of the temperature of the air surrounding it rather than by conduction of heat through metal parts of the support member to the walls of the chamber 18.

The free end 25 of the thermoresponsive member carries a contact 26 thereon adapted to engage with the stationary contact post 27, the latter being connected electrically to an electrical lead 28 (Figure 2) projecting exteriorly of the support member and cover 11 but being insulated from the support member. The lead 29 merely serves as a ground connection for the support member.

In use, the lead 23 is connected in the ignition circuit of the automobile in such manner that when the ignition is turned on the heater 19 is electrically energized to cause the temperature of the atmosphere within the housing 12 to be raised

to a degree at which the water droplets condensed upon the electrical contacts in the distributor are caused to evaporate. The bi-metallic thermoresponsive member is adjusted to be closed at temperatures less than 80° Fahrenheit and, accordingly, if the atmosphere within the distributor is below this temperature at any time the heater 19 will become effective to heat the interior of the distributor so long as the ignition switch is on. However, it will be appreciated that so soon as the engine becomes sufficiently warm and by its radiation and conduction of heat effects to the distributor causes the latter to in any case attain a temperature within its interior of a value greater than the opening temperature of the thermoresponsive switch member, then the heating element 19 will no longer be active.

It will therefore be seen that in many circumstances the heating element 19 will not become active at all but will become so when the temperature of the distributor components are less than, say, 80° F. I prefer to choose a value of about 80° F. for the activating temperature because there are conditions of very high humidity on relatively warm days when distributor commutation is affected. On the other hand, it is not practical to set this temperature at too high a value, for it should be sufficiently low that the heating element is cut out of the electrical circuit after the automobile engine has been running a short time for it is not desirable to waste battery energy.

It should be particularly observed that the heating chamber and the electrical switch chamber are disposed in such manner that the switch chamber is isolated from direct radiation extending from the heating element 19. Moreover, the thermoresponsive member is thermally isolated by the insulation 24 from heat conduction by way of walls 13 and 15 from the heating element 19. Insulation against heat conduction by this or equivalent means becomes necessary for the desired action when the metal of the support member is of relatively high heat conductivity and the cut-out temperature of the thermoresponsive member is of a low value.

Although I have shown one specific form of my invention, it will be appreciated that there will be many obvious modifications apparent to skilled persons, having regard to the general combination and arrangement of components which I have set forth. It is therefore intended that the

present disclosure should not be construed in any limiting sense other than that indicated by the scope of the following claims.

What I claim as my invention is:

1. A heater for an electrical high tension distributor of the class employed for internal combustion engines, comprising in combination: a body adapted to be mounted within a distributor; open chambers in said body defined by a pair of separate open cavities disposed therein in side by side relationship; electrical heating means in one of said chambers; a thermo-responsive switching member disposed in the other of said chambers and having electrical switching contacts; thermal insulating means substantially isolating said thermo-responsive member from said body; means electrically connecting said electrical heating means to said body; and separate means electrically connecting said heating means and said thermo-responsive member electrically in series.
2. The combination, with the terminal cover of an electrical high tension distributor for an internal combustion engine, of: a metallic body disposed inwardly of said cover and projecting into the interior thereof; open chambers in said body defined by a pair of separate open cavities disposed therein in side by side relationship; electrical heating means in one of said chambers; a thermo-responsive switching member disposed in the other of said chambers and having electrical switching contacts; thermal insulating means substantially isolating said thermo-responsive member from said body; means electrically connecting said electrical heating means to said body; and separate means electrically connecting said heating means and said thermo-responsive member electrically in series.

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