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3,132,219

DISTRIBUTOR ROTOR

Filed Nov. 17, 1959

FIG. 1

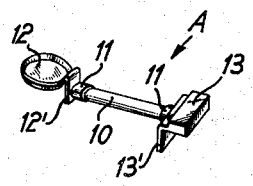


FIG. 2

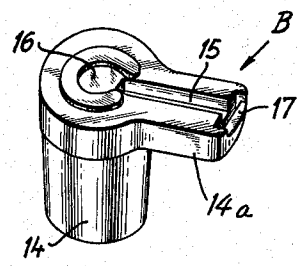
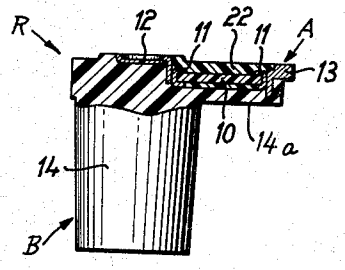


FIG. 3



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DISTRIBUTOR ROTOR

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The present invention relates to ignition distributors for internal combustion engines, and more particularly to a distributor rotor of insulating material with built-in current-conducting parts.

The current-conducting parts of presently utilized rotors for ignition systems of internal combustion engines consist of a contact member which is conductively connected with and supplies high-voltage current to a revolving distributor electrode, and in some instances also comprise a suppressor resistance which is inserted between the contact member and the revolving electrode. At least the contact member and the electrode are molded into the material of the insulating rotor body which normally consists of Bakelite. The suppressor resistance is inserted between the contact member and the distributor electrode in a subsequent step. In presently known distributor rotors which operate without a resistance, the distributor electrode and the contact member form an integral assembly which is molded into the insulating material of the runner body.

In all such prior constructions, the insertion of metallic current-conducting parts into the molds before the latter are filled with a hardenable plastic insulating material is connected with a series of difficulties, is also very time-consuming, and hence considerably increases the manufacturing cost of the distributors.

An important object of the present invention is to provide an improved runner or rotor for the ignition distributors of internal combustion engines which may be manufactured at a reduced cost and which can be assembled in a very simple and economical way.

Another object of the invention is to provide a method of assembling the novel rotor according to which the rotor may be assembled in a single step from two prefabricated components.

With the above objects in view, the invention resides in the provision of a distributor rotor for the ignition systems of internal combustion engines in which the prefabricated one-piece current-conducting component is inserted into a suitably shaped recess of the prefabricated one-piece insulating component and is thereupon anchored in the latter by a hardenable plastic substance. The insulating component may consist of pressed Bakelite which is formed with a recess adapted to receive the prefabricated current-conducting component, and the recess is thereupon filled with a hardenable casting resin or the like which latter expels air from the recess and, after hardening, anchors the current-conducting component in the insulating component.

The novel features which are considered as characteristic for the invention are set forth in particular in the appended claims. The invention itself, however, both as to its construction and its method of operation, together with additional objects and advantages thereof, will be best understood from the following detailed description of a specific embodiment when read in connection with the accompanying drawing, in which:

FIG. 1 illustrates in perspective view the prefabricated one-piece current-conducting component of the distributor rotor;

FIG. 2 is perspective view of the prefabricated one-piece insulating component; and

FIG. 3 is partly elevational and partly sectional view of the fully assembled rotor.

Referring now in greater detail to the drawing, and first to FIG. 1, there is shown a current-conducting component A which comprises an elongated rod-like suppressor resistance **10** consisting of a metallic oxide and carrying at each of its ends a connecting cap **11**. The caps **11** are fixed to a pair of lugs **12'**, **13'** and these lugs, in turn, are electrically connected with a circular contact plate **12** and a distributor electrode **13**, respectively. The contact plate conducts current to the electrode **13** through the suppressor resistance **10** when the rotor or runner is in actual use. The resistance **10**, the contact member **12**, and the electrode **13** form a prefabricated one-piece component of the distributor rotor.

FIG. 2 shows the prefabricated one-piece insulating component B whose body member **14** is of slightly conical shape and carries at its front, i.e. larger-diameter end a substantially flat radial extension or arm **14*a***. The exposed surface of extension **14*a*** at the front end of the insulating component B is formed with a groove **15** whose depth and length are selected in such a way that the groove may receive the resistance **10** together with the caps **11** and lugs **12'**, **13'**. The exposed surface at the front end of the body member **14** is formed with a rounded depression **16** for the contact plate or member **12**, and a second depression **17** is formed at the free end of extension **14*a*** for the electrode **13**. The groove **15** and the depressions **16**, **17** constitute a composite recess for reception of the current-conducting component A.

The fully assembled rotor R is shown in FIG. 3. In accordance with my method, the current-conducting component A is inserted into the composite recess **15–17** in the insulating component B, and the recess is thereupon filled with a hardenable synthetic plastic substance **22**, e.g. an epoxy resin, a polyester resin or the like, which airtightly fills each zone of the composite recess and, after hardening, anchors the current-conducting component A in the insulating component B. Of course, the outer side of the contact member **12** and a portion of the electrode **13** remain exposed after the application of the filler **22**, while the latter may completely surround the resistance **10**. During the assembly of the rotor R, the filler **22** may be introduced at a temperature of about 40° C., and the temperature of components A, B may be in the range of about 160° C.

Without further analysis, the foregoing will so fully reveal the gist of the present invention that others can, by applying current knowledge, readily adapt it for various applications without omitting features that, from the standpoint of prior art, fairly constitute essential characteristics of the generic and specific aspects of this invention and, therefore, such adaptations should and are intended to be comprehended within the meaning and range of equivalence of the following claims.

What is claimed as new and desired to be secured by Letters Patent is:

1. In the ignition distributor of an internal combustion engine, a rotor comprising, in combination: an insulating component having a front end and a recess in said end; a prefabricated one-piece current-conducting component received in a portion of said recess and including a contact member connectable to a source of electric current and a distributor electrode conductively connected with the contact member; and a hardened resin airtightly filling the remainder of said recess and anchoring the current-conducting component in the insulating component, said resin forming an airtight seal about a portion of said current-conducting component.

2. In the ignition distributor of an internal combustion engine, a rotor comprising, in combination: a one-piece

insulating component having a front end and a recess in said end; a prefabricated one-piece current-conducting component received in a portion of said recess and comprising a contact member connectable to a source of electrical energy, a resistance conductively connected with the contact member, and a distributor electrode conductively connected with the resistance; and a hard plastic substance received in and airtightly filling the remainder of said recess and constituting the sole means for anchoring the current-conducting component in the insulating component, said plastic substance forming an airtight seal around said resistance.

3. In the ignition distributor of an internal combustion engine, a rotor comprising, in combination: an insulating component having a front end and a recess in said end; a prefabricated one-piece current-conducting component received in a portion of said recess and comprising a rod-like suppressor resistance having two ends and a contact cap fixed to each of its ends, a lug fixed to each of said caps, a contact member connectable to a source of electrical energy and fixed to one of said lugs, and a distributor electrode fixed to the other lug; and a hard plastic substance received in an airtightly filling the remainder of said recess and constituting the sole means for anchoring the current-conducting component in the insulating component, said plastic substance forming an airtight seal about said resistance.

4. In the ignition distributor of an internal combustion engine, a rotor comprising, in combination: an insulating component consisting of a conical body member having a larger-diameter front end and a radial arm extending from the body member at said front end, said arm having a free end formed with a first depression and also having a groove communicating with said depression and extending toward said body member, and the body member having a second depression communicating with said groove, said groove and said depression constituting a composite recess at the front end of said insulating component; a prefabricated one-piece current-conducting component comprising a resistance received in said groove, a distributor electrode conductively connected with the resistance and received in said first depression, and a contact member connectable to a source of electric current, received in said second depression, and conductively

connected with said resistance, said current-conducting component filling a portion of said recess; and a hard synthetic plastic substance received in and airtightly filling the remainder of said recess and constituting the sole means for anchoring the current-conducting component in the insulating component, said plastic substance forming an airtight seal about said resistance.

5. In the ignition distributor of an internal combustion engine, a rotor comprising, in combination: an insulating component consisting of a conical body member having a larger-diameter front end and a radial arm extending from the body member of said front end, said arm having a free end formed with a first depression and also having a groove communicating with said depression and extending toward said body member, and the body member having a rounded second depression communicating with said groove, said groove and said depressions constituting a composite recess at the front end of said insulating component; a prefabricated one-piece current-conducting component comprising an elongated resistance received in said groove, a distributor electrode conductively connected with the resistance and received in said first depression, and a circular contact plate connectable to a source of electric current, received in said second depression, and conductively connected with said resistance, said current-conducting component filling a portion of said recess; and a hard synthetic plastic substance received in and airtightly filling the remainder of said recess and constituting the sole means for anchoring the current-conducting component in the insulating component, said substance sealing said resistance from the atmosphere.

References Cited in the file of this patent

UNITED STATES PATENTS

1,997,460	Fitzsimmons	Apr. 9, 1935
2,037,524	Mahaffey	Apr. 14, 1936
2,267,818	Decker	Dec. 30, 1941
2,419,469	Spiro	Apr. 22, 1947
2,571,040	Juvinal et al.	Oct. 9, 1951
2,593,205	Short et al.	Apr. 15, 1952
2,772,372	Slick	Nov. 27, 1956
2,790,020	Redick et al.	Apr. 23, 1957
2,828,374	Redick	Mar. 25, 1958