

Jan. 12, 1937.

F. R. GOOD

2,067,391

ROTOR FOR DISTRIBUTORS OR THE LIKE

Filed June 10, 1935

2 Sheets-Sheet 1

Fig. 1.

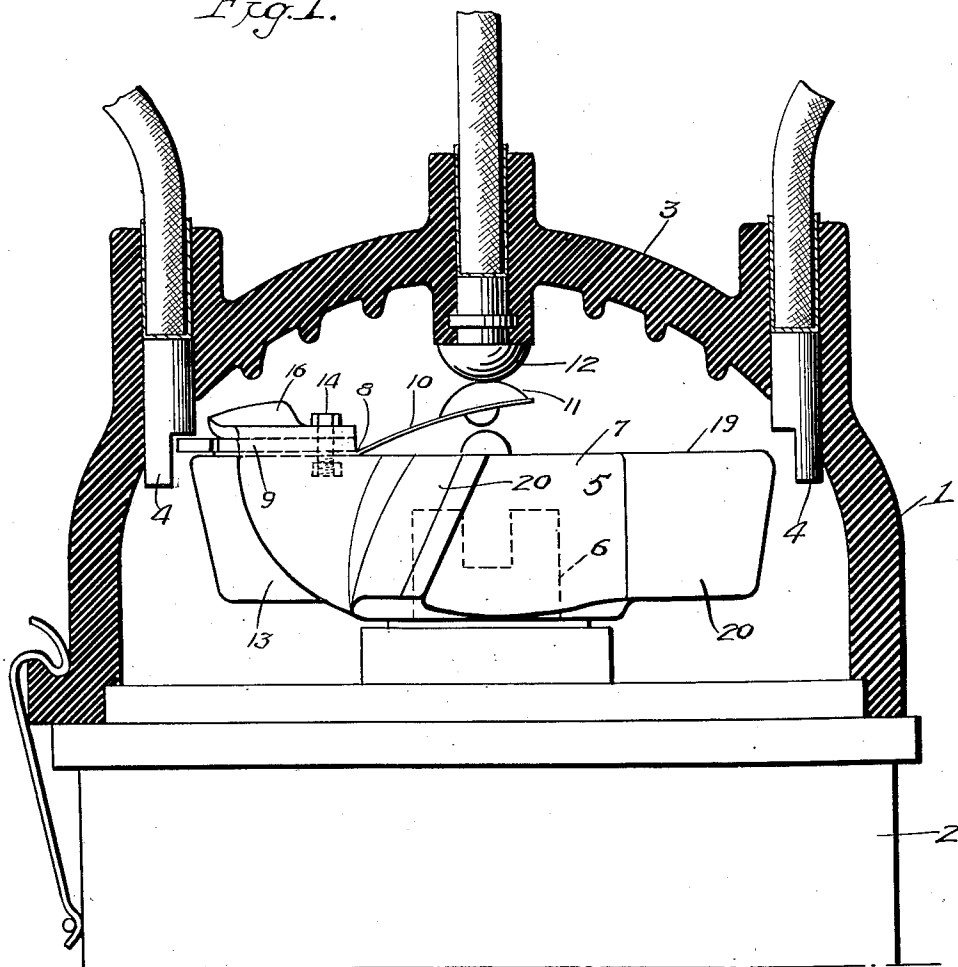
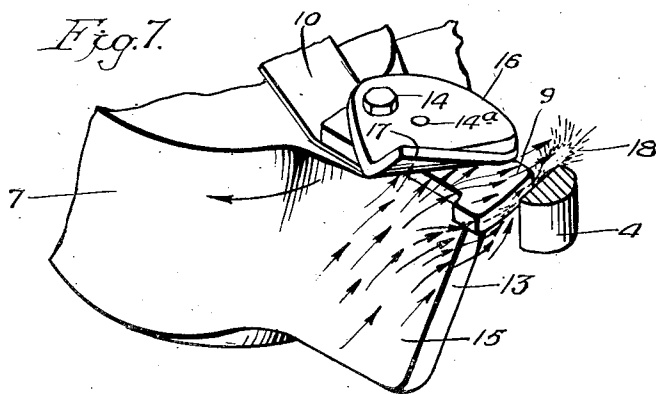


Fig. 7.



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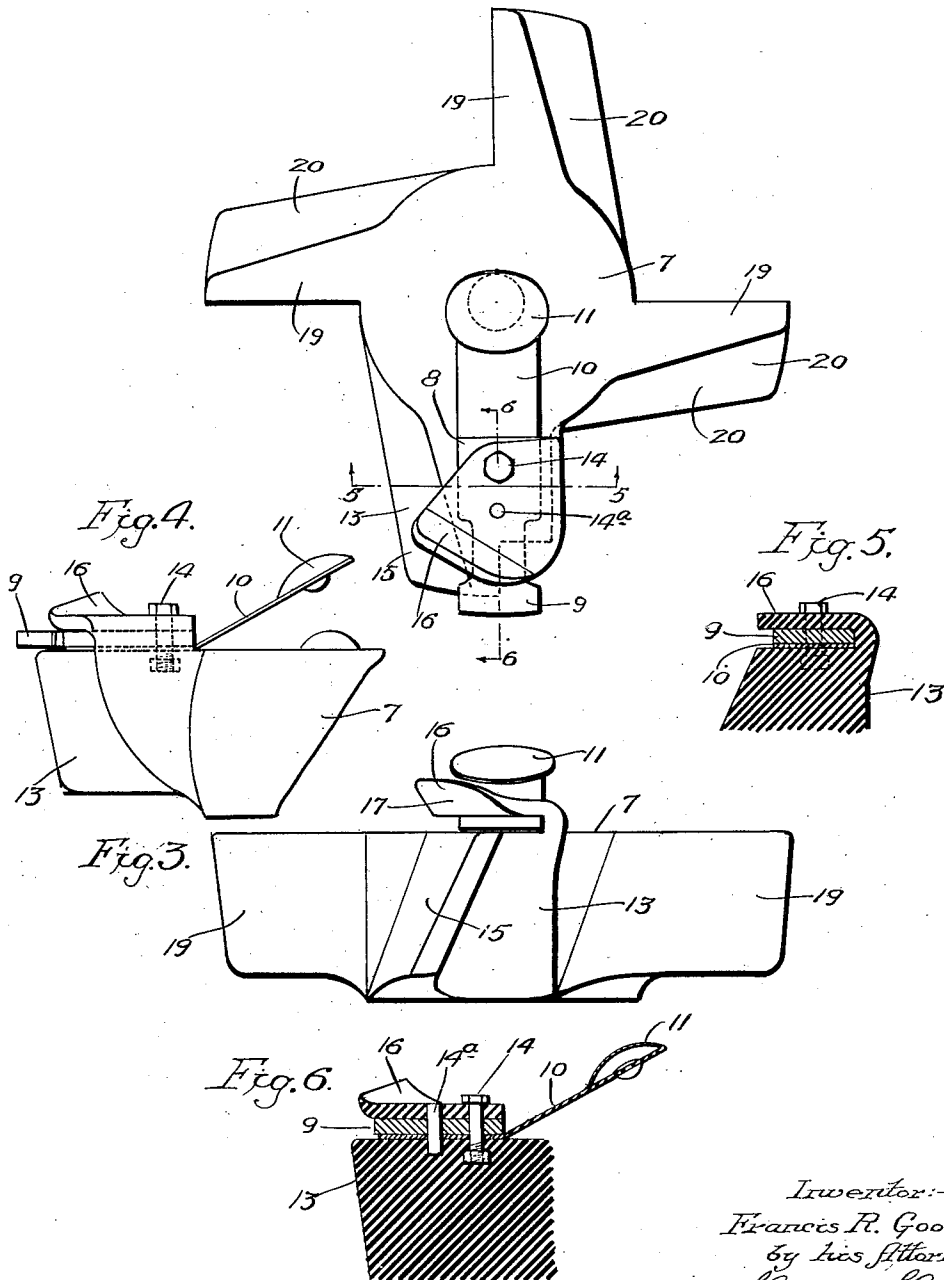
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Fig. 2.



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UNITED STATES PATENT OFFICE

2,067,391

ROTOR FOR DISTRIBUTORS OR THE LIKE

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Application June 10, 1935, Serial No. 25,956

8 Claims. (Cl. 200—21)

This invention relates to ignition current distributors for engines such as those used in automobiles and like devices and, more particularly, to a novel rotor structure for such distributors. The principal object of the invention is to provide a rotor structure embodying novel means for preventing deleterious effects of high tension current on the contacts of the distributor. It is characteristic of the conventional ignition current distributor that the intense heat of the current arcs, which occur at the contacts of the device, tends to burn and pit the contacts. In accordance with this invention, this deleterious action is substantially prevented by providing means on the rotor of the distributor whereby the current arcs are blown away from the contacts and are rapidly extinguished, so that the intense heat of the said arcs is substantially preventing from affecting the contacts.

The invention may be clearly understood from the following detailed description in connection with the accompanying drawings illustrating a specific embodiment of the invention.

In the drawings:

Fig. 1 is a sectional view of a distributor embodying the invention;

Fig. 2 is a plan view of the rotor provided by the invention;

Fig. 3 is an elevational view of the rotor;

Fig. 4 is a partial elevational view of the rotor the right side of Fig. 2;

Fig. 5 is a sectional view taken along line 5—5 of Fig. 2;

Fig. 6 is a sectional view taken along line 6—6 of Fig. 2; and

Fig. 7 is a fragmentary perspective view illustrating more clearly the operation of the inventive features.

Referring particularly to Fig. 1 of the drawings, there is illustrated an ignition current distributor whose stationary parts are of conventional form. Such a device comprises a hollow casing 1 formed of insulating material, such as "bakelite", and having a lower part 2 and an upper part or cap 3. It will be understood that the cap 3 is removably attachable to the lower part 2. The cap 3 carries stationary contacts 4 which are spaced circumferentially, the number of these contacts depending upon the number of cylinders of the engine with which the device is to be associated, as will be well understood.

The rotor 5 which is specially constructed in accordance with the invention, as will be described in detail hereinafter, is adapted for re-

movable mounting on the end of the rotatable shaft 6 in conventional manner. Referring particularly to the several views illustrating the rotor structure, the rotor comprises a body 7 formed of insulating material, such as "bakelite", and a contact element 8 carried by the said body. In the specific form shown, the contact element 8 comprises a rigid member 9 and a resilient member 10 electrically connected to the member 9 and having at its free end a button-like contact 11 which is adapted to be engaged by the contact 12, as shown clearly in Fig. 1. It will be understood that the contact member 9 is brought into cooperation successively with the stationary contacts 4 during rotation of the rotor.

In accordance with the invention, there is provided a blade 13 extending from the body 7 and which may be formed integrally with the said body. The contact member 9 is mounted upon and extends outwardly along the top of the blade 13 and is secured thereto by suitable means, such as a bolt 14 and a pin 14a, which may also serve to secure the resilient contact member 10. The blade 13 is formed so as to provide an inclined surface 15 (see Fig. 7) disposed in such manner and having such angularity that it functions cooperatively with the contact member 9 to direct a stream of air toward the current juncture between the contact member 9 and a cooperating stationary contact 4, as indicated by the lower arrows in Fig. 7, the direction of rotation of the rotor being clockwise as viewed in Fig. 7.

In further accordance with the invention, there is provided a small auxiliary blade 16 which may be formed integrally with blade 13, as shown in Fig. 5. The contact members 9 and 10 may seat beneath blade 16 as clearly illustrated. The bolt 14 may be inserted through openings in blade 16 and members 9 and 10, and may engage a nut imbedded in the molded material of blade 13. The pin 14a may be inserted through the elements and held in place by friction. The auxiliary blade 16 is formed to provide an inclined surface 17 disposed in such manner and having such angularity with respect to the contact member 9 that it functions to direct a second stream of air toward the current juncture of member 9 and contact 4, as illustrated by the upper arrows in Fig. 7. It will be seen that the surfaces 15 and 17 form a substantially V-shaped structure. Thus, as the rotor rotates, two streams or jets of air are directed toward the said current juncture, one from below

the contact element 9 and the other from above the said element. It will be noted that these air streams are in a direction generally tangential and opposite to the rotary path of contact member 9. The effect of this is to blow the current arc, which is set up between the member 9 and the contact 4, tangentially backward away from these cooperating elements, as illustrated diagrammatically at 18 in Fig. 7. As a result of this action, the current arc is removed from the cooperating contact elements and is extinguished rapidly, so that the burning of the contact elements is substantially prevented. It is very important that the air-directing surfaces 15 and 17 be properly located and disposed at the proper angles in order to obtain the most satisfactory operation.

In further accordance with the invention, there are provided a plurality of blades 19 extending from the rotor body and spaced circumferentially thereabout, as illustrated clearly in Fig. 2. These blades 19 are each similar to the blade 13, and each of them has an inclined air-directing surface 20 which is similar to the air-directing surface 15 and is disposed at the same angle. The blades 19 serve a dual purpose. They serve to balance the rotor unit mechanically and, in addition, the air-directing surfaces 20 function to direct streams of air toward the stationary contacts of the distributor, thereby enhancing the action above described and cooling the said contacts and insuring further against burning of the same.

It has been found that the introduction of air from outside the distributor to the interior thereof with a view to ventilation and cooling is very objectionable in that it permits dirt to enter the distributor, and the deleterious effect of this outweighs any advantage in ventilation and cooling. In the practice of the present invention, therefore, the distributor should preferably be closed against the admission of air, as in the conventional distributor, but the air within the distributor is utilized to the advantage above set forth. In actual practice, it has been found that the features of the invention greatly prolong the life of the distributor by preventing the deleterious action above mentioned and at the same time, the current distribution of the device is enhanced due to the rapid breaking of the current arcs.

The rotor provided by the invention may be used readily in existing distributors of conventional form. It will be seen that in order to replace the ordinary type rotor with the rotor of the invention, it is merely necessary to remove the cap of the distributor and interchange the rotors. Thus the rotor structure has the additional advantage of lending itself to replacement in existing devices.

Although the invention has been described with reference to a specific embodiment, it will be understood that the details above described need not be adhered to and that the device is susceptible to variation while maintaining the principal features thereof.

I claim:

1. A rotor for an ignition current distributor, comprising a rotatable insulating body, a contact element carried by said body and adapted to cooperate successively with the stationary contacts of the distributor, and means on said rotor for directing a stream of air toward the current juncture of said element and a cooperating stationary contact in a direction to blow

the current arc at said juncture away from said element and said contact, whereby burning of said element and said contact is substantially prevented.

2. A rotor for an ignition current distributor, comprising a rotatable insulating body, a contact element carried by said body and adapted to cooperate successively with the stationary contacts of the distributor, and an air-directing surface on said body arranged cooperatively with said contact element to direct a stream of air toward the current juncture of said element and a cooperating stationary contact in a direction generally tangential and opposite to the rotary path of said element, whereby the current arc at said juncture is blown tangentially backward away from said element and said contact, and burning thereof is substantially prevented.

3. A rotor for an ignition current distributor, comprising a rotatable insulating body, a contact element carried by said body and adapted to cooperate successively with the stationary contacts of the distributor, and a plurality of air-directing surfaces carried by said body and arranged cooperatively with said contact element to direct a plurality of streams of air toward the current juncture of said element and a cooperating stationary contact in a direction generally tangential and opposite to the rotary path of said element, whereby the current arc at said juncture is blown tangentially backward away from said element and said contact, and burning thereof is substantially prevented.

4. A rotor for an ignition current distributor, comprising a rotatable insulating body, a contact element carried by said body and adapted to cooperate successively with the stationary contacts of the distributor, and a pair of air-directing surfaces carried by said body on opposite sides of said contact element and arranged cooperatively to form a V-shaped structure so as to direct a plurality of streams of air toward the current juncture of said element and a cooperating stationary contact in a direction to blow the current arc at said juncture away from said element and said contact, whereby burning of said element and said contact is substantially prevented.

5. A rotor for an ignition current distributor, comprising a rotatable insulating body, a contact element carried by said body and adapted to cooperate successively with the stationary contacts of the distributor, and a plurality of air-directing blades spaced circumferentially about said body and arranged to direct air toward said stationary contacts, one of said blades being arranged cooperatively with said contact element to direct a stream of air toward the current juncture of said element and a cooperating stationary contact in a direction to blow the current arc at said juncture away from said element and said contact, whereby burning of said element and said contact is substantially prevented.

6. A rotor for an ignition current distributor, comprising a rotatable insulating body, a contact element carried by said body and adapted to cooperate successively with the stationary contacts of the distributor, a plurality of air-directing blades spaced circumferentially about said body and arranged to direct air toward said stationary contacts, one of said blades being arranged cooperatively with said contact element to direct a stream of air toward the current juncture of said element and a cooperating sta-

tionary contact in a direction to blow the current arc at said juncture away from said element and said contact, and an auxiliary blade arranged cooperatively with said contact element to direct a similar stream of air, whereby burning of said element and said contact is substantially prevented.

7. In an ignition distributor including a rotor and adapted for use in an internal combustion motor, means associated with said rotor adapted to produce a stream of air in a direction substantially perpendicular to the plane of rotation of said rotor upon rotation thereof, and additional means cooperatively associated with said rotor and said first named means adapted to intercept and deflect a substantial portion of

said air stream laterally into the path of the current arcs normally occurring in said distributor, when energized, upon rotation of said rotor.

8. A rotor for an ignition current distributor, comprising a rotatable insulating body, a contact element carried by said body and adapted to cooperate successively with the stationary contacts of the distributor, and means on said rotor comprising an air-deflecting vane for directing a stream of air toward the current juncture of said element and a cooperating stationary contact in a direction to blow the current arc at said juncture away from said element and said contact, whereby burning of said element and said contact is substantially prevented.

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