Dec. 16, 1958 D. C. REDICK ET AL 2,864,967

IGNITION DISTRIBUTOR

Filed April 27, 1954 2 Sheets-Sheet 1

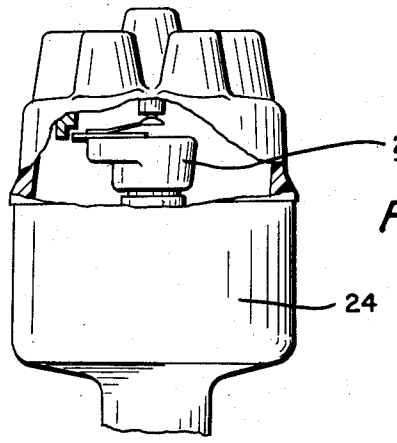


Fig. 1

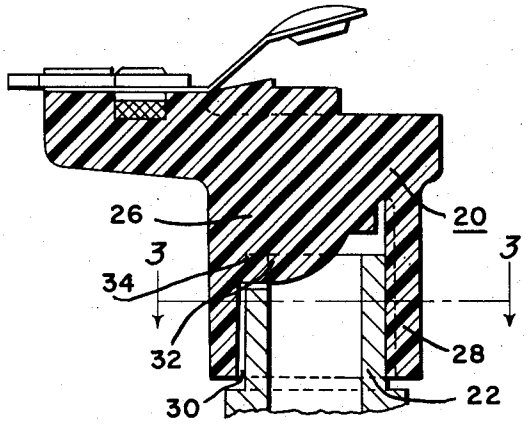


Fig. 2

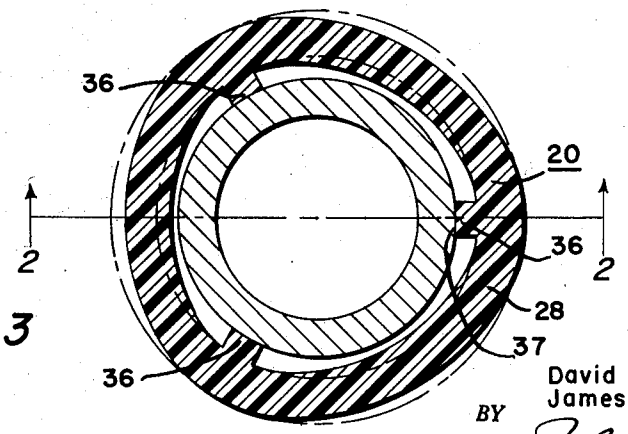


Fig. 3

INVENTOR.
David C. Redick
James C. Norris

BY

Attorney

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IGNITION DISTRIBUTOR

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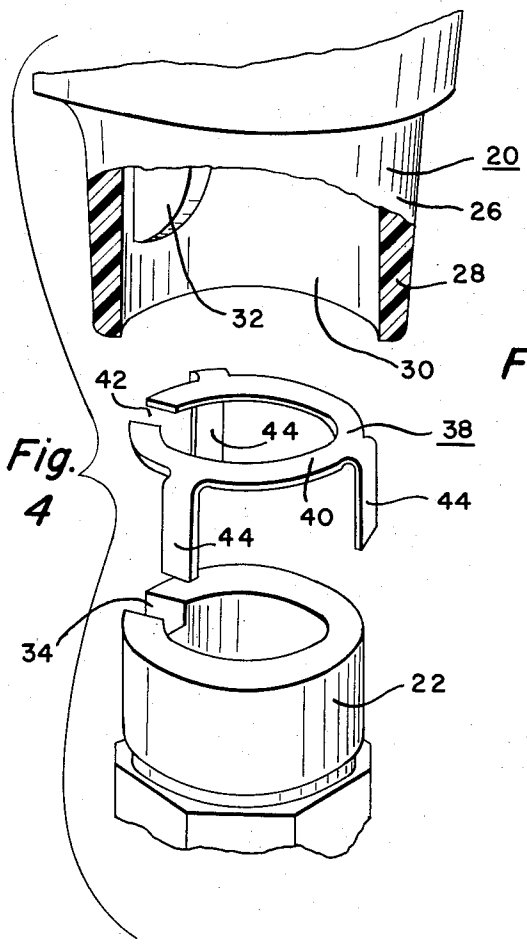


Fig. 4

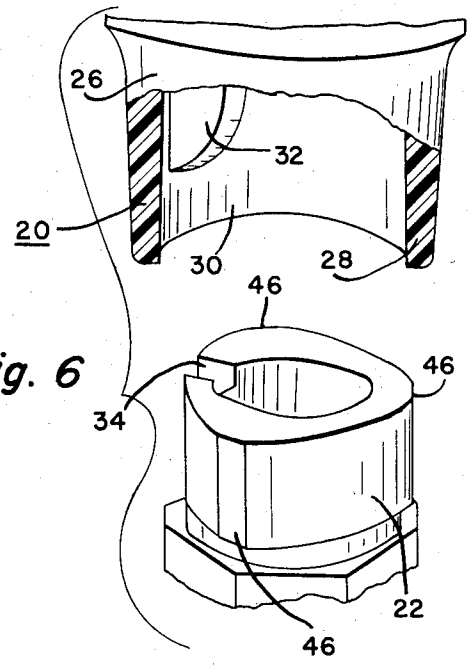


Fig. 6

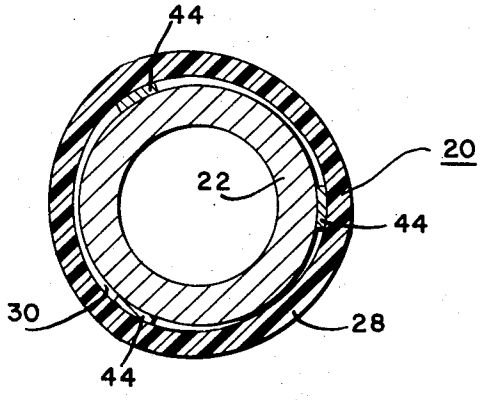


Fig. 5

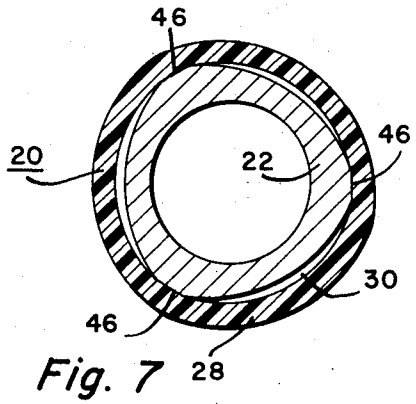


Fig. 7

INVENTOR.
David C. Redick
James C. Norris

BY

Attorney

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IGNITION DISTRIBUTOR

David C. Redick, Anderson, and James C. Norris, Pendleton, Ind., assignors to General Motors Corporation, Detroit, Mich., a corporation of Delaware

Application April 27, 1954, Serial No. 425,812

4 Claims. (Cl. 313—149)

This invention relates to attaching devices and more particularly to an attachment between a distributor rotor and shaft.

It is an object of the present invention to securely position a distributor rotor on the end of a shaft in a distributor, this object being accomplished by providing relatively thin walls on the hub portion of the rotor which defines a shaft receiving recess so that the insulating material forming the walls will be stressed and the shape of the recess will be changed when the rotor is applied to one end of the shaft.

It is another object of the present invention to associate a means with the end of a shaft and a recess in a thin walled hub portion of a distributor rotor of insulating material so that the material forming the walls of the hub will be stressed and change the shape of the recess when the rotor is applied to an end of the shaft.

It is another object of the present invention to associate a means with the end of a shaft and a recess formed by a thin walled hub portion of a distributor rotor of insulating material so that the material forming the walls of the hub will be stressed and change the shape of said recess when the rotor is applied to an end of the shaft.

A further object of the present invention is to locate a plurality of spaced projections on the inner surface of a recess defined by a thin walled hub portion of a distributor rotor so that the projections when engaging surface portions of a shaft that has a smaller diameter than the diameter of said recess will cause the material of said walls to be stressed and the shape of said recess to be changed when the hub portion of said rotor is applied to the end of said shaft.

A still further object of the present invention is to stress the walls of a hub which defines a recess in a distributor rotor when the rotor is applied over the end of a shaft. This object is accomplished by either forming the shaft so that it is out of round or by positioning a member that maintains a plurality of projections in spaced relation to each other so that the walls of the hub will be stressed and the recess formed thereby will change its shape when the rotor is applied over the end of the shaft.

Further objects and advantages of the present invention will be apparent from the following description reference being had to the accompanying drawings wherein a preferred embodiment of the present invention is clearly shown.

In the drawings:

Figure 1 is a view partly in section of a distributor and rotor embodying the present invention.

Figure 2 is a cross-sectional view of a distributor embodying one embodiment of the present invention as mounted on a distributor shaft.

Figure 3 is a cross-sectional view along line 3—3 in Figure 2.

Figure 4 is an exploded view in perspective and partly in section showing another embodiment of the present invention.

Figure 5 is a cross sectional view of the parts in Figure 4 as assembled with each other.

Figure 6 is an exploded view in perspective and partly in section showing another embodiment of the present invention.

Figure 7 is a cross sectional view of the parts in Figure 6 as assembled with each other.

In the drawings the numeral 20 designates a distributor rotor, formed of an insulating material, preferably of molded "Bakelite," or other similar material, that is adapted to be fitted or applied on the end of a cam shaft 22 of a distributor 24. The rotor 20 is formed to have a hub portion 26 that has relatively thin walls 28 which define a recess or socket 30 that is preferably circular in shape. A lug 32 formed on the body of rotor 20 and located adjacent the base portion of recess 30 when received in a slot 34 in shaft 22 forms a driving connection between the shaft 22 and rotor 20 when the rotor 20 is applied over the end of the shaft 22.

The present invention is directed to the attachment between the distributor rotor 20 and a cam shaft 22. It has been found that when rotors are applied to an end of a cam shaft, frequently air is trapped therebetween which makes it difficult to correctly position the rotor 20 on the shaft 22 so that the lug 32 on the rotor is received in slot 34. Frequently considerable force must be applied on the rotor 20 to accomplish this positioning. This force on occasion has caused the walls of the hub portion to crack, etc. Further it has been found that many of the materials used in rotor construction tend to "grow" or expand with age. Thus frequently connections between the distributor rotor and shaft which were initially tight became loose and the rotor wobbled so as to upset the timing of the internal combustion engine with which it is associated. It is to the alleviation of these as well as other difficulties that the present invention is directed.

In Figures 2 and 3, the hub portion 26 of distributor 20 is formed with thin walls 28 and a plurality of spaced inwardly facing lugs or projections 36 within a recess 30 as defined by walls 28. Recess 30 is preferably circular in shape when walls 28 are unstressed and has a diameter greater than shaft 22. The lugs 36 formed on walls 28 are sized so that a circle which is defined by the inner extreme surfaces 37 of lugs 36 will have a diameter slightly smaller than the diameter of the shaft 22. These surfaces 37 on lug portions 36 will engage the surface of the shaft when rotor 20 is applied on the end of shaft 22 and cause the thin walls 28 to be stressed and cause the configuration of the circular recess to change as shown in the exaggerated view in Figure 3. The walls 28 by stressing will cause the diameter of the circle as defined by the surfaces 37 of the lugs to increase to permit the rotor 20 to be applied to shaft 22. Further these stressed walls will constantly exert a force between surfaces 37 and shaft 22 so the rotor 20 will be tightly but removably held on the shaft. Manifestly the dimensions of the shaft 22, recess 30, lugs 36 and the thickness and materials used in walls 28 must be selected so that the thin walls 28 will not crack when stressed and air which would be entrapped in the recess may escape in the areas between the spaced lugs 36 so that the rotor 20 may be readily applied without injury to the end of the shaft 20.

In Figures 4 and 5 another embodiment of the present invention is shown wherein an element 38 is positioned between shaft 22 and the walls 28 of recess 30. Element 38 generally comprises an annular portion 40 that has a segment 42 removed therefrom to permit a lug 32 to pass into engagement with slot 34 when the portion 40 is positioned on the end of the shaft 22 as shown in the drawings. The element 38 further has a plurality of spaced projections 44 depending from the annular portion 40 that are adapted to embrace the walls of shaft 22 and stress the

walls 28 of rotor hub 26 when the rotor 20 is applied to shaft 22 so that the recess 30 will assume a shape other than circular as shown in Figure 5.

In Figures 6 and 7 the stressing of the walls 28 of rotor hub 26 is accomplished by a plurality of projections 46 that are formed on shaft 22. In this embodiment the shaft 22 is formed so that certain portions thereof are of smaller diameter than the recess 30 in hub 26 and other portions have a diameter slightly greater than the diameter of the recess so that as the rotor 20 is applied to shaft 22, the portions of larger diameter as represented by projections 46 in the drawings will engage and stress the walls 28 of recess 30 so that the recess assumes the noncircular shape as shown in Figure 7 of the drawings.

It is manifest the exaggerated views showing the attachment of the distributor rotor on the cam shaft, according to the present invention, may be used in any suitable distributor and rotor therefore. The present invention is not directed to the type of distributor or rotor shown but an attachment wherein the walls of any suitably shaped recess or socket are stressed by a plurality of circumferentially located spacers that are positioned between the rotor and the end surfaces of a shaft whereon the rotor is positioned.

While the embodiment of the present invention as herein disclosed constitutes a preferred form, it is to be understood that other forms might be adopted.

What is claimed is as follows:

1. A coupling adapted to be positioned on the end of a cylindrical rod, comprising; a member having a thin walled portion defining a cylindrical socket of greater diameter than the diameter of said rod, and means disposed between the walls of the socket and the cylindrical surface of the rod for distorting the configuration of the socket to a noncylindrical shape when said member is applied over the end of said rod.

2. In an ignition distributor, the combination comprising; an ignition distributor rotor comprising a block of insulating material having a thin walled hub portion defining a cylindrical socket, a cylindrical shaft adapted to support said rotor having external dimensions less than the dimensions of said socket, and means disposed within the socket and engaging the cylindrical shaft surface for stressing the thin walled material of said hub for distorting the configuration thereof when said rotor is applied to the end of said shaft.

3. An ignition distributor rotor comprising; a molded block of insulating material having; a thin walled hub portion normally defining a substantially circular recess having a detent therein, a plurality of spaced projections on wall portions of the hub disposed within said recess, said hub being adapted to be applied to a smooth surface cylindrical end of a shaft having a notch in said end so the detent of said hub is received in the notch of said shaft for limiting rotative movement therebetween and said projections having arcuate inner end portions being adapted to engage smooth surface portions of said shaft for stressing the thin walls of said hub so the shape of said recess is other than circular when said rotor is applied to the end of said shaft.

4. In an ignition distributor, the combination comprising; an ignition distributor rotor of insulating material having a thin walled hub portion defining a cylindrical recess, a cylindrical shaft adapted to support said rotor having an external diameter less than the diameter of said recess, and an element adapted to be positioned on the end of said shaft and within said recess having a plurality of spaced projections adapted to embrace the side surfaces of said shaft end and cause the thin walls of said hub to be stressed for distorting the cylindrical configuration of said recess to a noncylindrical configuration when said rotor is applied to the end of said shaft when said element is positioned thereon.

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