March 25, 1958 D. C. REDICK 2,828,374

IGNITION DISTRIBUTOR

Filed Jan. 21, 1955

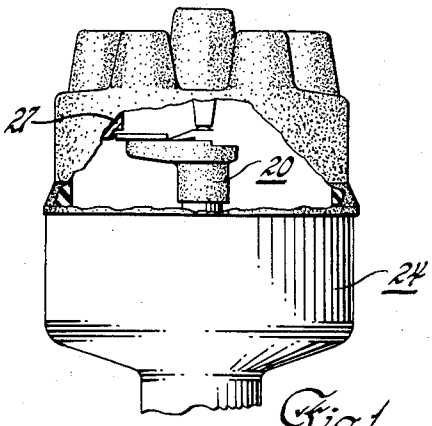


Fig. 1

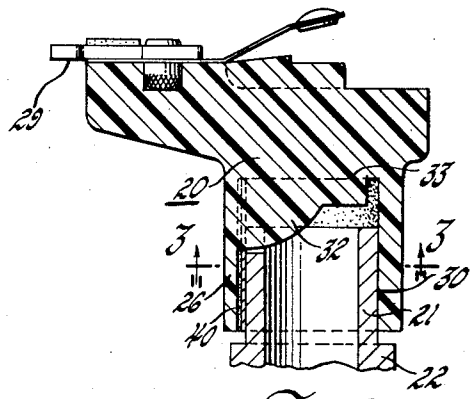


Fig. 2

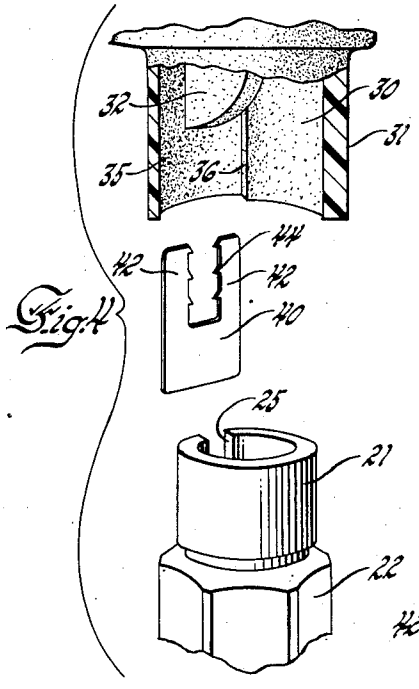


Fig. 4

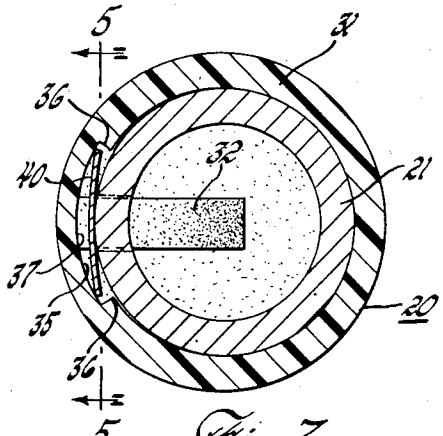


Fig. 3

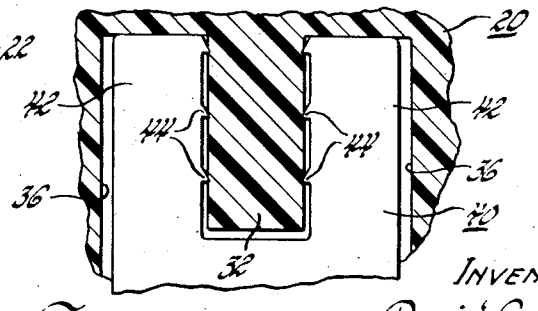


Fig. 5

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2 Claims. (Cl. 200—19)

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 cylindrical shaft, this object is accomplished by providing a resilient member that is carried by the rotor and positioned between the walls of the rotor hub socket and the shaft whereon the rotor is positioned.

It is another object of the present invention to form the socket in the hub of a distributor rotor with a sidewall recess and a lug between the sidewalls and bottom of the socket whereby a resilient member when positioned in the recess so as to embrace the lug will securely hold the rotor in position on the end of a cylindrical shaft which end has a notch therein that is adapted to embrace the lug and provide a non-rotatable driving connection between the rotor and shaft.

A still further object of the present invention is to provide a distributor rotor which may be easily applied without damage and securely held without wobble on the end of a circular shaft. This object is materialized by providing a recess in the cylindrical wall of the rotor hub socket that extends throughout the length of the socket wall to the bottom of the socket which has a lug formed thereon that extends partially into the recess so that the teeth-like projections on the arms of a bifurcated end of a resilient part may be embedded in the walls of the lug to hold the part in a position in the recess with the edges thereof in engagement with walls of the recess so the part will be in contact with the cylindrical surface of the shaft 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 of a distributor partly broken away to show the positioning of the distributor rotor on a cylindrical shaft.

Figure 2 is a sectional view of a distributor rotor and a circular distributor shaft showing the connection therebetween according to the present invention.

Figure 3 is a sectional view of the distributor rotor along line 3—3 in Figure 2 showing the shape of the circular distributor shaft and the socket in the distributor rotor hub.

Figure 4 is an exploded view showing a portion of the distributor rotor shaft, the portion of the distributor rotor and the means which forms the tight connection between the rotor and shaft.

Figure 5 is an enlarged sectional view along lines 5—5 in Figure 3.

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 on the circular end 21 of a cam

shaft 22 as located in a distributor 24. The end 21 of shaft 22 on which the rotor 20 is positioned has a cylindrical surface uninterrupted by flat surfaces as generally heretofore have been utilized. The shaft 22 as shown in the drawings is preferably formed of tubular stock and has a notch 25 in the tubular wall portion which forms end 21. The rotor 20 is formed to have a hub portion 26 which has a recess or socket 30 of a diameter slightly larger than the end 21 of shaft 22 as is defined by a cylindrical wall 31. The wall 31 is formed with a lug 32 which is molded when the rotor 20 is formed. This lug 32 is located and connected to the base or bottom 33 of recess 30 and is aligned with the contact 29 of the rotor to locate the contact 29 in proper timing relation relative to the stationary points 27 of the distributor and to the cam surface on shaft 22 when the lug 32 is received in and embraced by the walls of notch 25 to form a driving connection between the shaft 22 and rotor 20.

The circular wall 31 which forms socket 30 is formed with a recess 35 that is arcuate in cross section, see Figure 3, and which extends the entire depth of socket 30 from the exterior of the hub 26 end to the base 33 and is so located relative to the lug 32 so that the lug 32 substantially bisects the recess 35 where the lug 32 is joined to that portion of the walls which forms the recess 35.

The recess 35 extends a substantial distance around the inner periphery of the walls 31 which form socket 30 and is formed with oppositely disposed re-entrant walls 36 which form an abutting surface for the purpose which will be hereinafter set forth.

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. 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 and connection between the distributor rotor and shaft which were initially tight became loose and the rotor wobbles 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.

The above difficulties are appreciably minimized when the distributor rotor 20 is furnished with a member or means 40 which provides a tight releasable connection between the rotor 20 and shaft 22. This means consists of a unitary part formed of a flat piece of preferably stamped metal that normally has a width less than the distance between walls 36 of recess 35, see Figure 3. The part is provided with a bifurcated end which defines a pair of arms 42 that are spaced sufficiently to embrace lug 32. The arms 42 also have teeth-like projections 44 which are sized to be embedded in the material which forms the lug 32 when the arms 42 embrace the lug 32 as in Figure 5. When the member 40 is in position in recess 35, it is held therein as shown in Figure 5 by the teeth-like projections 44 which are embedded in the body material of lug 32 when the arms 42 embrace the lug 32.

From the above it is manifest that when the rotor 20, which has the member 40 positioned therein, is applied over the end 21 of shaft 22, a central portion of the member 40 will be in contact with the circular surface of the shaft 22 while the external edges of member 40 ride on the curved surface of the wall which forms recess 35. Thus the member 40 serves as a spring means to releas-

ably hold the rotor **20** in position against wobble or axial movement on the shaft. The lug **32**, when the rotor is in this position, will not only angularly locate the rotor on the shaft but will also form a driving connection therebetween so that the rotor **20** will be constantly rotated in correct angular relation with the cam surfaces on shaft **22**.

The holding member **40**, according to the present invention, is particularly adapted to permit the rotor to be removed from the shaft **22** without injury for replacement, inspection or other purposes. When the rotor **20** is applied to the shaft the entrapped air in socket **30** escapes through recess **35** so that a tight connection between the rotor **20** and shaft **22** is assured. This connection is maintained by the spring action of the holding means **40** in spite of any subsequent growth of the material which forms the rotor **20**.

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 rotor assembly for use in an ignition distributor which includes a cylindrical shaft having a notch at one end thereof, said assembly comprising; a rotor having a hub portion which includes a blind socket therein opening at one end of the hub and adapted to fit over and embrace said shaft, an inwardly extending lug formed integrally with said hub portion within said socket and adjacent the blind end thereof and adapted to fit into

said notch for preventing relative rotation between the rotor and the shaft, said hub portion also including an arcuate recess in the wall thereof which extends axially of the socket and is substantially equally disposed on opposite sides of the lug, and a normally flat bifurcated spring member adapted to straddle and engage the lug and bear at its opposed edges on the walls of the recess, said member and notch being so dimensioned that the member is sprung inwardly toward the arcuate wall of the recess through pressure applied from the shaft when the rotor is forced over the shaft for forming a binding, releasable connection therebetween which prevents shifting of the rotor relative to the shaft.

2. The structure as claimed in claim 1 wherein adjacent sides of the bifurcations of the spring member each include a plurality of opposed tooth-like projections which are adapted to bite into the lug so as to hold the member to the lug as the member is initially assembled in the rotor socket portion.

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