United States Patent

[11] **3,553,408**

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[54] **CONTACT BREAKER ASSEMBLIES**
4 Claims, 5 Drawing Figs.

[52] **U.S. Cl.** **200/166,** 200/19
[51] **Int. Cl.** **H01h 1/00**
[50] **Field of Search** 200/19, 31, 166H, 166B8

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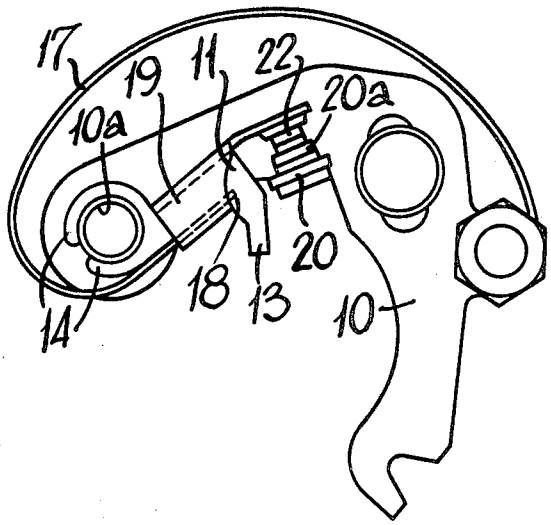
ABSTRACT: A contact breaker assembly in which one end of a conductive leaf spring is engaged in a longitudinally extending groove in an insulating heel member, and is trapped therein by a first limb of a conductive shell. A second limb of the shell engages a face of the heel member remote from the face containing said groove, and is provided with an extended portion carrying the movable contact. The first limb and the one end of said spring are provided with mating parts securing the shell to the spring whereby the shell and the spring are locked to the heel member.



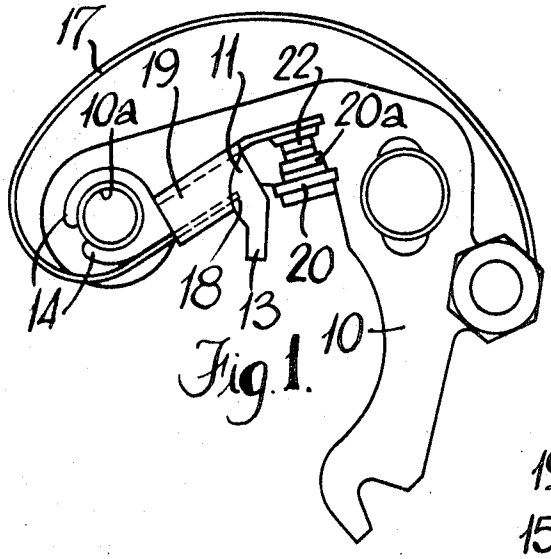


Fig. 1.

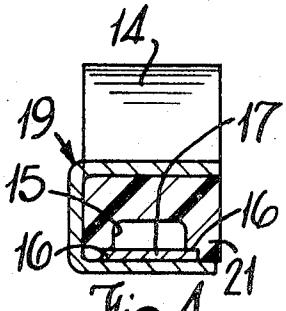


Fig. 4.

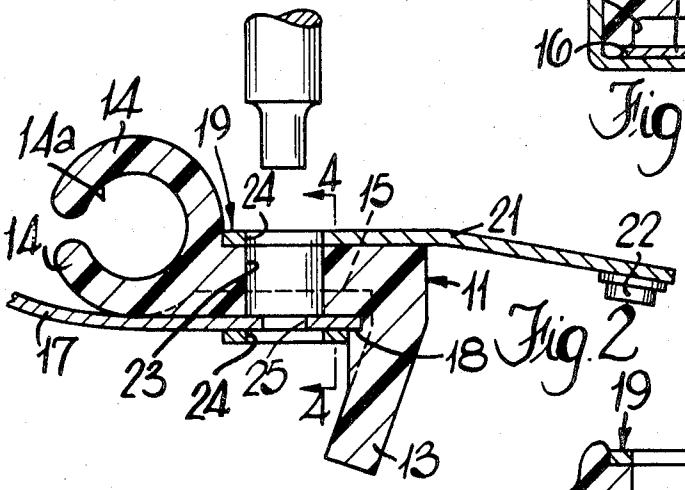


Fig. 2

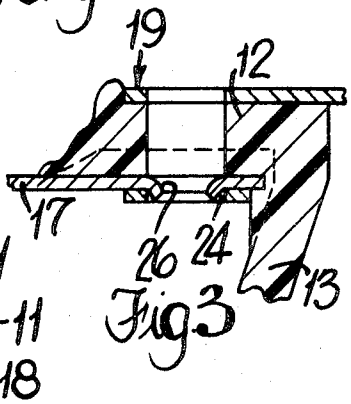


Fig 3

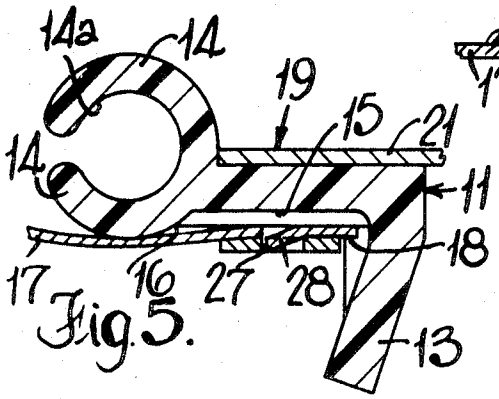


Fig. 5.

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CONTACT BREAKER ASSEMBLIES

BACKGROUND OF THE INVENTION

This invention relates to contact breaker assemblies, for use in ignition distributors.

SUMMARY OF THE INVENTION

A contact breaker assembly according to the invention includes an insulating heel member, a conductive leaf spring one end of which is engaged in a longitudinally extending groove in the heel member, and a conductive shell having a first limb which traps said one end of the spring in said groove and a second limb which engages a face of the heel member remote from the face of the heel member containing said groove, one of said limbs of the shell being extended and carrying a movable contact of the assembly and said one end of said spring and said first limb of shell including mating parts securing the shell to the spring.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings:

FIG. 1 is a plan view of a contact breaker assembly according to one example of the invention;

FIG. 2 is a fragmentary sectional view of the contact breaker assembly shown in FIG. 1 at one stage during its manufacture;

FIG. 3 is a fragmentary sectional view of the assembly shown in FIG. 2 in finished condition;

FIG. 4 is a view taken along the line 4–4 in FIG. 2; and

FIG. 5 is a view similar to FIG. 2 of a modification.

DETAILED DESCRIPTION OF THE INVENTION

Referring first to FIGS. 1 to 4 of the accompanying drawings, the assembly includes a molded insulating heel member 11, having a body part 12 of generally rectangular cross section. At one end of the body part 12 is an integral cam follower 13 which extends generally at right angles to the body part 12, and at its end remote from the cam follower 13, the member 11 includes a pair of integral, part-circular resilient arms 14 which define a passage 14*a* therebetween. The heel member 11 is pivotally mounted on a sleeve 10*a* upstanding from an arcuate plate 10, and the sleeve extends through the passage 14*a* in the heel member 11. The arcuate plate 10 is, in use, pivotally mounted on the timing plate of an ignition distributor, for pivotal movement about the axis of the sleeve 10*a*. The arcuate plate is formed intermediate its ends, with an integral upstanding tab 20, on which is mounted a fixed contact 20*a* of the contact breaker assembly.

The face of the body part 12 of the heel member 11, adjacent the cam follower 13 is formed with longitudinally extending channel 15, the sidewalls of which include respective longitudinally extending, outwardly presented shoulders 16. One end of a leaf spring 17 is engaged in the channel 15, with its edges in contact with the shoulders 16. The free end of the leaf spring 17 is engaged with an inwardly presented shoulder 18 defined at the root of the cam follower 13 and the opposite end of the spring 17 is anchored to the plate 10. Engaged with the body part 12 of the heel member 11 is a metal shell 19 of generally inverted U-shaped configuration. One of the limbs of the shell 19 is extended to define an arm 21 which carries a movable contact 22 of the contact-breaker assembly, and the other limb of the shell 19 traps the end portion of the spring 17 against the shoulders 16.

The body part 12 is formed with a transverse bore 23, and the limbs of the shell 19 are each formed with holes 24, which when the shell 19 is engaged with the body part 12, are aligned with the bore 23. The end portion of the spring is formed with a hole 25 concentric with the hole 24 in the adjacent limb of the shell 19, but of smaller diameter.

In order to secure the spring 17 and the shell 19 to the heel member 11, a punch is introduced through the bore 23 in the heel to deform the portion of the spring 17 surrounding the hole 25 outwardly to define a tubular spigot 26 (FIG. 2) engaging the wall of the hole 24 in the limb of the shell 19 adjacent the spring 17. Thus, the spring 17 and the shell 19 are interconnected by the spigot 26, and since the spring 17 is engaged in the channel 15 in the body portion of the heel member 11 then the shell 19 is held by the spring 17 against disengagement from the body part 12 in a vertical direction. Opposite ends of the two limbs of the shell 19 engage respectively one of the arms 14, and the cam follower portion 13 of the heel member 11 to prevent disengagement of the shell 19 from the heel member 11 in a longitudinal direction.

In the modification shown in FIG. 4, the holes 24 in the limbs of the shell 19, and the bore 23 in the heel member 11 are eliminated, and the limb of the shell 19 remote from the arm 21 is formed with a square hole 27. Instead of the hole 25, the end portion of the spring is formed with an integral, resilient, upstanding tongue 28 which, when the heel member 11, the spring 17, and the shell 19 are assembled projects into the hole 27 in said one limb of the shell 19, to interconnect the shell 19 and the spring 17 in a similar manner to that described above. During assembly of the parts the tongue 28 is flexed to a position wherein it is coplanar with the end portion of the spring 17, to facilitate movement of the parts relative to one another to achieve the correct position, and which, after assembly, springs back to engage in the hole 27.

It will be appreciated that since the body portion 12 of the heel member 11 is formed with the channel 15, then its mass is relatively low, and so the inertia of moving parts of the contact-breaker assembly, in use, will be correspondingly lower than that of a conventional contact-breaker assembly utilizing a solid heel member. It has been found that such a lowering in the inertia of the moving parts of the assembly leads to a more efficient contact-breaker assembly for use at high engine speeds, since the decrease in inertia gives rise to an increase in the engine speed at which contact bounce within the contact-breaker assembly occurs.

It will be appreciated that FIGS. 1 and 2 are not true sections of the assembly, since the channel 15 is not shown in section. The channel 15 is shown in dotted lines and the heel member is full in the interest of clarity.

I claim:

1. A contact-breaker breaker assembly including an insulating heel member, said heel member having a longitudinally extending groove, a conductive leaf spring having one end engaged in said groove thereof, and a conductive shell having a first limb which traps said one end of the spring in said groove and a second limb which engages a face of the heel member remote from the face of the heel member containing said groove, one of said limbs of the shell having an extended portion carrying a movable contact of the assembly, and said one end of said spring and said first limb of the shell including mating parts securing the shell to the spring.

2. The assembly as claimed in claim 1 wherein said mating parts include an aperture in said first limb of the shell and a projection on said one end of the spring, with said projection engaged in said aperture in said first limb.

3. The assembly as claimed in claim 2 wherein said projection is in the form of a resilient tongue which is flexed to permit assembly of the shell to the heel member and which after assembly springs back to engage in the aperture in said first limb of the shell.

4. The assembly as claimed in claim 1 wherein the groove in the heel member includes a pair of longitudinal shoulders with which said one end of the spring is engaged, the base of the groove spaced from said one end of the spring, and said groove serving to reduce the inertia of the heel member as compared with a heel member without a groove.