June 25, 1957 R. J. BUCK ET AL 2,797,269

ADJUSTABLE MOUNTING FOR DISTRIBUTOR BREAKER POINTS

Filed Feb. 25, 1955 2 Sheets-Sheet 1

Fig. 1.

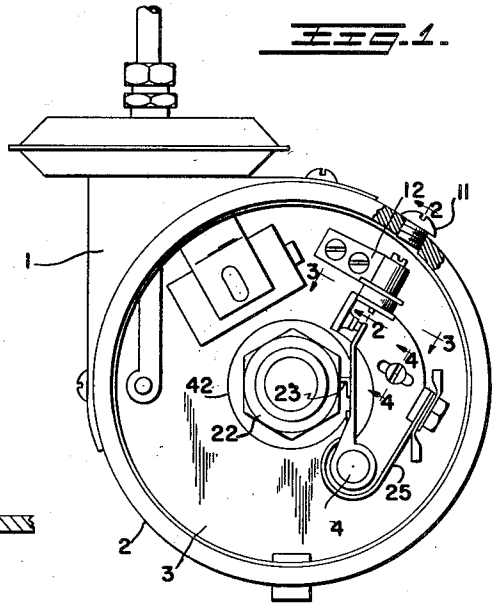


Fig. 4.

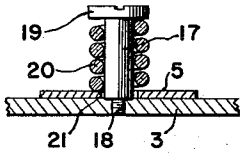


Fig. 5.

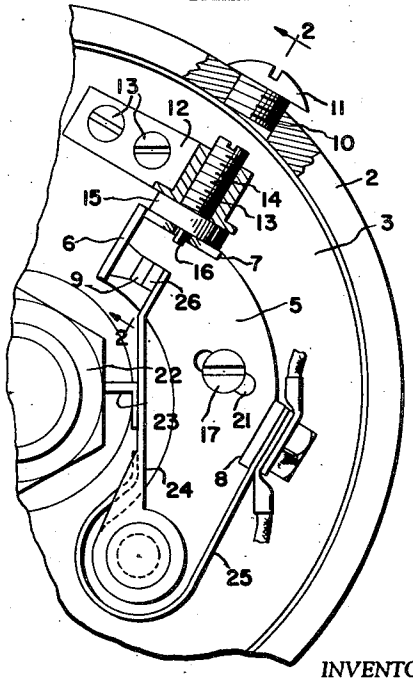


Fig. 2.

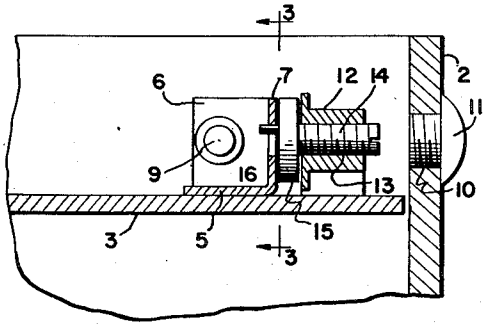
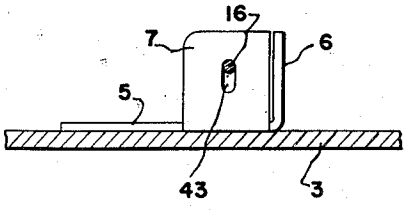


Fig. 3.



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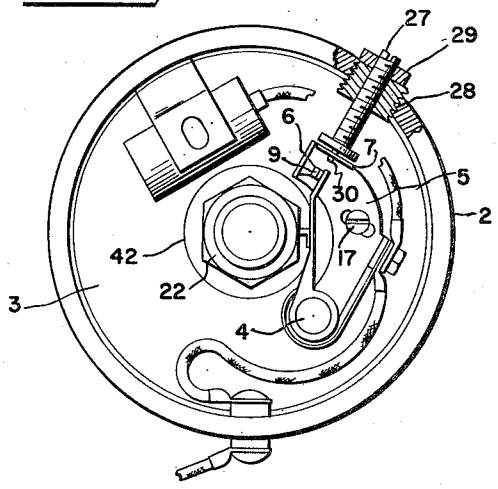
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June 25, 1957 R. J. BUCK ET AL 2,797,269

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Filed Feb. 25, 1955 2 Sheets-Sheet 2

FIG. 6



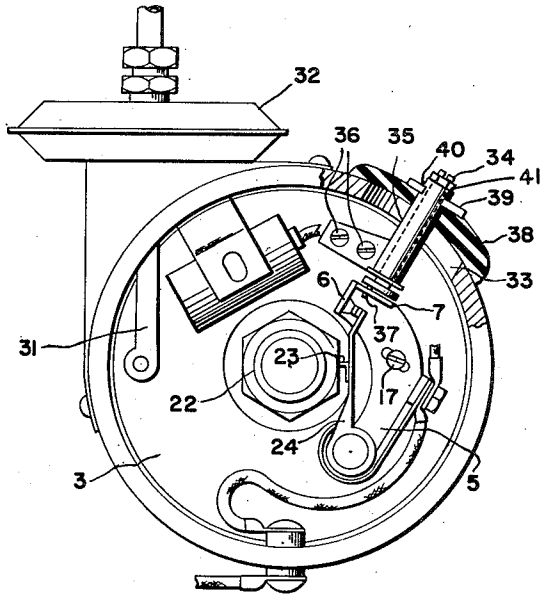


FIG. 7.

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ADJUSTABLE MOUNTING FOR DISTRIBUTOR BREAKER POINTS

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Application February 25, 1955, Serial No. 490,639

7 Claims. (Cl. 200—31)

This invention relates generally to breaker point mountings for distributors of internal combustion engines, and more particularly to mountings which render the breaker points adjustable with the engine operating.

This invention constitutes a modification and improvement over applicant's prior Patent No. 2,640,891, issued June 2, 1953, and this application is a continuation-in-part of application Serial No. 480,502, filed January 7, 1955, for Adjustable Mounting for Distributor Breaker Points, now abandoned.

The primary object of this invention is to provide an improved and simplified construction in adjustable breaker point mountings of distributors so that the dwell time of the breaker points may be readily adjusted by an unskilled mechanic with the engine running.

A more specific object of this invention is to provide an improved and simplified adjustment construction in breaker point mountings of distributors, wherein the dwell time of the breaker points may be adjusted exteriorly of the distributor casing with the engine running.

A further object of this invention is to provide an improved and simplified construction in breaker point mountings of distributors, wherein the dwell time of the breaker points may be adjusted quickly and efficiently without the requirement of special tools, gauges, and other instruments.

Another object of this invention is to provide an improved and simplified construction in breaker point mounting for distributors, wherein the construction is readily adapted to be installed on distributors in common usage with internal combustion engines, with only a slight modification of the distributor being necessary.

A still further object of this invention is to provide an improved and simplified construction in breaker point mountings of distributors wherein the normally stationary breaker point may be readily adjusted relative to the movable breaker point from the exterior of the distributor casing and with the engine running.

With the foregoing and other objects in view, this invention resides in the following specification and appended claims, certain embodiments and details of construction of which are illustrated in the accompanying drawings, in which:

Figure 1 is a plan view of the preferred embodiment of this invention, with the distributor cap being omitted;

Fig. 2 is a partial view in side elevation of the adjustment means for the breaker point mounting taken along the line 2—2 of Fig. 1;

Fig. 3 is a partial view, in elevation, of the breaker point adjustment means taken along the lines 3—3 of Fig. 1;

Fig. 4 is a partial view in side elevation of the friction means used to hold the breaker point mount in any adjusted position, taken along the line 4—4 of Fig. 1;

Fig. 5 is an enlarged plan view of that portion of Fig. 1 illustrating the mounting and adjustment means of the invention;

Fig. 6 is a plan view of a modification of this invention; and

Fig. 7 is a plan view of another modification of this invention.

Referring more particularly to the preferred embodiment a distributor 1 of the vacuum break type is illustrated, having a casing 2, housing a movable mounting disc 3. Secured to the disc 3 is a stud 4 which pivotally carries, adjacent to disc 3, a base plate 5. Plate 5 is provided with upstanding flanges 6, 7, and 8, which are formed preferably by a stamping operation from a single piece of sheet metal.

Flange 6 has secured thereto, by welding or other suitable means, a breaker contact point 9. Flange 7 is provided with a vertically elongated slot 43 (Figure 3). Opposite the normal position of flange 7 the casing 2 is tapped at 10 to provide an access opening, normally closed by screw 11. A mounting bracket 12 is secured by screws 13, or other suitable means, to disc 3. This bracket is tapped at 13 to threadably receive the adjustment screw 14. Screw 14 is provided with an enlarged portion 15 having an eccentrically positioned crank pin 16 extending therefrom.

The pin 16 of screw 14 is held in engagement with the slot 43 in flange 7 of the plate 5. A locknut (not shown) may be disposed on the screw 14 to lock the screw relative to the bracket 12, in any adjusted position.

To hold the plate 5 in any adjusted position, the simple and effective construction illustrated in Fig. 4 is provided. A screw 17 is threaded into disc 3, at 18. Carried beneath the head 19 of screw 17 is a coil spring 20 which is compressed between the screw head and the plate 5 to hold the plate 5 in any adjusted position, by friction. A slot 21 is provided in plate 5 to accommodate screw 17 and hence the length of the slot will determine the range of angular adjustment of plate 5 about stud 4.

Extending through a hole 42 in the disc 3 is the usual rotary cam 22 which is contacted by the usual follower 23 secured to an arm 24, which, in turn, is secured about stud 4 for pivotal movement relative thereto. The follower 23 is biased toward the cam 22 by spring extension 25 of arm 24 which is secured to upstanding flange 8 of plate 5. The arm 24 carries a breaker point 26 adjacent to breaker point 9.

It is the wearing away of the follower 23 and the wear or burning of the breaker points 9 and 26 which necessitate the adjustment of the breaker points to insure the operation of the engine at its greatest efficiency.

The operation of the invention will now appear quite obvious. With the engine upon which the distributor is mounted running in the idle position, the parts of the distributor adjustment means will be in the position shown. The screw 14, carried by the movable disc 3, will be directly in line with the access opening 10 in the casing. By removing the cap screw 11, a screwdriver may be inserted through the casing to engage screw 14 which may then be rotated to effect, through the crank pin 16 and slotted flange 7, an angular adjustment of plate 5 about stud 4. This obviously will vary the position of breaker point 9 carried by the plate flange 6. The force necessary to move the screw 14 to make the desired adjustment will only be that required to overcome the friction holding means of the screw 17 and spring 20. Once the engine is running with the apparent greatest efficiency and smoothness, the cap screw 11 is replaced to prevent dust and moisture from entering casing 2.

Figure 6 is illustrative of the invention as applied to a non-vacuum break type distributor, wherein the disc 3 does not move relative to the casing. In this case the adjustment screw 27 extends through a bushing 28 in casing 2. A lock nut 29 may be utilized to hold the

screw in any adjusted position. The screw **27** has an eccentrically positioned integral crank pin **30** which engages the slot of flange **7** on plate **5**. Any rotary adjustment of screw **27** will operate to overcome friction holding means **17** and **20** to move plate **5** about stud **4** to adjust the position of normally stationary breaker point **9** relative to breaker point **26**.

Figure 7 is illustrative of a modified form of the invention as applied to the vacuum break type of distributor. The disc **3** is normally shifted clockwise by means of the link **31** connected to the vacuum means **32**, the details of which are not important to this invention. In order to have the adjustment screw for the breaker points readily accessible from the exterior of the casing, such as the screw **27** in Fig. 6, then it is necessary to provide the casing **2** with a slot **33**. An adjustment screw **34** is threaded through a bracket **35** and engages slotted flange **7** by means of integral crank pin **37** extending therefrom. The bracket **35** is secured to disc **3** by screws **36** or other suitable means. To prevent dust and moisture from entering the casing through slot **33**, while still permitting the shift of bracket **35** and disc **3** relative to casing **2**, a cover **38** is provided. The cover **38** is held about the protruding portion of bracket **35** by means of a C-clamp **39** engaging an undercut section **40** in bracket **35**. A locknut **41** may be utilized, if desired, to hold the adjustment screw in any adjusted position. It is obvious that rotary movement of screw **34** will give the same adjustments as in the previously discussed constructions.

The invention obviously has its greatest application in motor vehicles in which most motorists are quite desirous of having their engines running smoothly, both for purposes of added power and gasoline economy. In actual tests made upon heavy grades, where the efficiency of operation or lack of the same will readily appear to the motorists, it was found that the simplicity of the adjustment construction of this invention provided a ready and simple means to permit the motorist to tune up his own engine without necessity of the expenditure of time or money in visiting a garage.

The invention also contemplates the utilization of a flexible drive cable arrangement, (not shown) connected between the adjustment screw and the dashboard of a vehicle so that, if desired, the motorist could adjust the points without leaving his seat. Since the operation of devices remotely by drive cables is old in the art, no claim to such a device is made here.

It is thus seen that the invention provides a simplified, economical, efficient, and improved manner in which the breaker points of a distributor may be adjusted. It is readily realized that certain obvious other modifications in structure are possible to the construction of the present invention, and it is intended that the scope thereof only be bound by the scope of the appended claims. It is also obvious that various distributor designs might require certain design changes in the structure of the invention in order to readily adapt the same to such distributor.

We claim:

1. An adjustable breaker point mechanism for use in a distributor of the vacuum break type for the ignition systems of internal combustion engines including a casing, a movable mounting disc secured therein and a cam operator extending through the disc which comprises a movable plate means, including a slotted flange pivotally secured to the movable plate means, friction means to hold the plate in adjusted position, a first breaker point secured to the movable plate, a second breaker point, an arm pivotally secured to the disc and carrying said second contact point in normal contact with said first contact, a bracket secured to said movable disc adjacent said slotted flange on the movable plate means, and eccentric means carried by the bracket and engaging said slotted flange to move said plate relative to the disc and hence vary the position of the first breaker point relative to said second breaker point.

2. An adjustable breaker point mechanism for use in a distributor for the ignition systems of internal combustion engines including a casing, a cam, and a plurality of breaker contact points adapted to be intermittently separated by the cam which comprises a screw, threaded through the casing of the distributor from one side to the other, said screw having an eccentric crank pin at the end thereof which is interior of the casing, a normally stationary plate for supporting one of the breaker points within the casing, and an upstanding flange having an elongated slot therein for receiving the crank pin of the screw, integrally formed with said plate, said screw, upon rotation in either direction from outside of the casing, acting through the crank pin and slotted flange to adjust the position of the plate and thereby the breaker contact point carried thereon.

3. An adjustable breaker point mechanism for use in a distributor for the ignition systems of internal combustion engines including a casing, a cam, and a plurality of breaker contact points adapted to be intermittently separated by the cam which comprises a screw, threaded through the casing of the distributor from one side to the other, means to lock the screw against rotation, said screw having an eccentric crank pin at the end thereof which is interior of the casing, a normally stationary plate for supporting one of the breaker contact points within the casing, friction means to hold the plate in any set position, and an upstanding flange having an elongated slot therein for receiving the crank pin of the screw, integrally formed with said plate, said screw upon rotation, with sufficient force to overcome the friction holding means from outside of the casing, acting through the crank pin and slotted flange to adjust the position of the plate and thereby the breaker contact point carried thereon.

4. An adjustable breaker point mechanism for use in a distributor for the ignition systems of internal combustion engines including a casing, with a slot therein, a movable mounting disc secured therein and a cam-operator extending through the disc which comprises a movable plate, means pivotally secured to the mounting disc, a first breaker contact point secured to said movable plate means, a second breaker contact point, an arm pivotally secured to the disc and carrying said second contact point for normal contact with said first contact point, bracket means secured to said disc, and eccentric means carried by said bracket and engaging said movable plate means for adjusting said plate means and the breaker contact carried thereby, said eccentric means extending through the slot in the casing to make the adjustment means accessible from the exterior of the casing.

5. An adjustable breaker point mechanism for use in a distributor for the ignition systems of internal combustion engines including a casing with a slot therein, a movable mounting disc secured therein and a cam-operator extending through the disc which comprises a movable plate, means pivotally secured to the mounting disc, a first breaker contact point secured to said movable plate means, a second breaker contact point, an arm pivotally secured to the disc and carrying said second contact point for normal contact with said first contact point, bracket means secured to said disc, eccentric means carried by said bracket and engaging said movable plate means for adjusting said plate means and the breaker contact carried thereby, said eccentric means extending through the slot in the casing to make the adjustment means accessible from the exterior of the casing, and a dust cap secured about the portion of the eccentric means extending from the casing to cover the slot in the casing for all positions of the movable disc.

6. An adjustable breaker point mechanism for use in a distributor for the ignition systems of internal combustion engines including a casing, a mounting disc secured

therein, and a cam-operator extending through the disc which comprises a movable plate pivotally secured about a mounting stud secured to the mounting disc, a first upstanding flange on said plate, a first breaker contact point secured to said first upstanding flange, a second breaker contact point, an arm pivotally secured about the mounting stud to the disc and carrying said second contact point in normal contact with said first contact point, a slotted second upstanding flange on said plate, adjustment means secured to the disc, said adjustment means having an eccentrically mounted pin engaging the slot of said second upstanding flange to move the plate about the stud and hence change the position of the first contact point, and an access opening in said casing in substantial alignment with said adjustment means.

7. An adjustable breaker point mechanism for use in a distributor for the ignition system of an internal combustion engine wherein said distributor has an outer casing including an aperture therethrough, the combination comprising; a horizontally disposed disc positioned within said casing and rotatable with respect thereto, a cam positioned above said disc, a post carried on the rotatable disc, a breaker point base pivotally mounted adjacent one end thereof on said post, a first upwardly extending flange at the other end of said base, a breaker point carried by said flange and a second upwardly extending flange spaced from the first mentoned flange, a breaker point arm pivotally mounted on said post and insulated therefrom,

a breaker point positioned on said arm and adapted to engage the breaker point on said first mentioned flange, a cam follower carried by the arm and positioned to bear against the cam, means resiliently urging the cam follower against the cam and simultaneously urging the breaker point on the arm towards engagement with the breaker point on said first mentioned flange, and eccentric adjusting means accessible through said casing aperture and reacting against said second mentioned flange for shifting the position of said breaker point base for adjusting the position of said breaker point base relative to the breaker point arm for varying the breaker point adjustment of the distributor.

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