Feb. 11, 1936. R. M. WILLIAMS 2,030,488

CIRCUIT BREAKER

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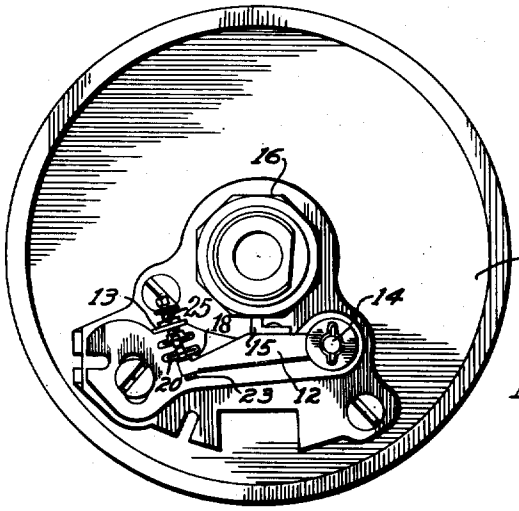


FIG. 1

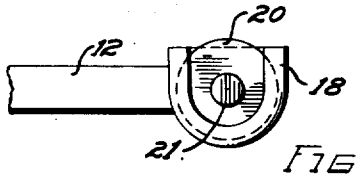


FIG 3

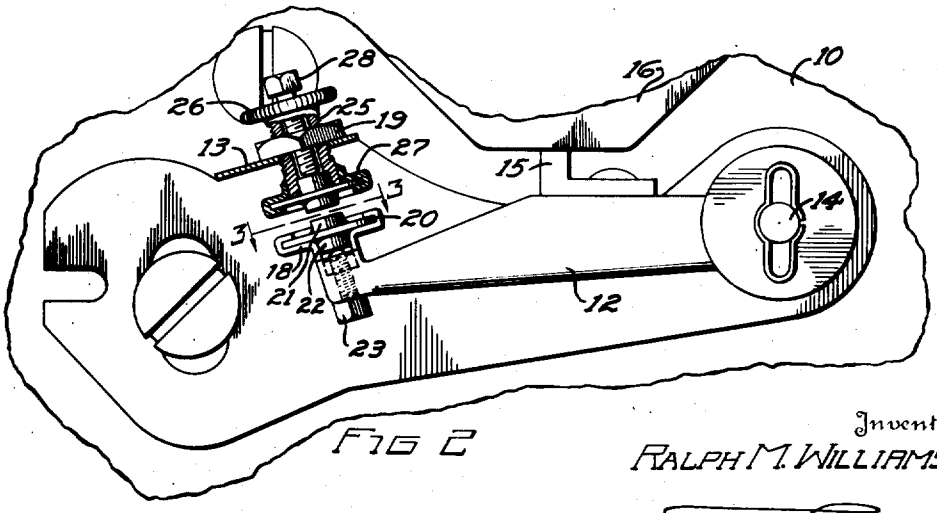


FIG 2

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CIRCUIT BREAKER

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9 Claims. (Cl. 200—166)

This invention relates to internal combustion engines and more particularly to the ignition system of such engines.

Hitherto it has been the practice in ignition system circuit-breaker construction to form the contact points of the breaker as integral parts of the stationary and removable arms. The contact points are usually of tungsten or the like, and because of the difficulty of dressing down these points when they become worn and pitted, it has been customary in shop practice to replace the stationary and movable arms by new arms. Since the arms themselves do not become worn their renewal represents an unnecessary expense.

It is therefore a general object of the invention to provide a novel and improved form of circuit-breaker for the ignition system of such engines, and more particularly it is an object of the invention to provide a circuit-breaker for the ignition system in which the contact points may be replaced without discarding the supporting arms or other parts of the breaker.

A still further object of the invention is to provide a circuit-breaker of the above description which shall be simple, inexpensive and reliable.

An important feature of the invention is that a plurality of contact points may be mounted on a single removable member and may be selectively placed in operative position in the breaker.

Other and further features and objects of the invention will be more apparent to those skilled in the art, upon a consideration of the accompanying drawing and following specification wherein is disclosed a single exemplary embodiment of the invention with the understanding, however, that such changes may be made therein as fall within the scope of the appended claims without departing from the spirit of the invention.

In said drawing:

Figure 1 is a top plan view of the distributor of an internal combustion engine with the cap removed to show the improved circuit-breaker mechanism.

Figure 2 is an enlarged top plan view, partly in section, of the circuit-breaker structure shown in Figure 1, and

Figure 3 is a side elevational view of the contact holder and contact point shown in Figure 2 taken along the line 3—3.

Referring now to the drawing for a more complete disclosure of this invention, there is shown in Figures 1 and 2 a distributor housing 10, for an internal combustion engine, in which a circuit-breaker for making and breaking the electric circuit of the ignition system is mounted. The circuit breaker includes a pivotally mounted arm 12 and the stationary bracket or abutment 13.

The arm 12 is pivotally mounted at one end thereof on the pin 14 so that it may be oscillated to make and break the low tension circuit of the ignition system. The block 15 of the arm is resiliently held against the cam 16 by means of a spring (not shown), and oscillation of the arm is caused by rotation of the cam in the usual manner.

The arm 12 is provided at its end with a holding means in which a contact point carrying means may be engaged. The holding means preferably comprises a flanged pocket or slide 18, open at the top to permit insertion and removal of the contact point carrying means therein.

The carrying means preferably comprises a plate 20 in the form of a disc having a pair of contact points 21 and 22, one of which is fastened to each side of the disc.

By utilizing a pair of contact points mounted on the same supporting means substitution of a new contact point for a used point is readily accomplished by removing the disc, turning it over and re-inserting it in the holder.

Friction alone may be depended upon to hold the disc in place, or a locking screw 23 which is threaded in the arm and is adapted to bear against the inner contact point may be utilized to secure the disc and points in place in the arm.

Substantially the same structure may be utilized for the stationary contact point, but since the stationary point must be adjustable in and out with reference to the cam to permit obtaining the proper clearance between points the contact holder is preferably in the form of a hollow screw 25 threaded through the abutment 13. The screw 25 is provided with a milled head 26 to permit hand adjustment of the position of the point, and the screw may be locked in place by means of a locking nut 19. A suitably flanged slide or pocket 27 is provided on the end of the screw and a locking screw 28 is threaded into the holding screw to lock the contact point in place.

It is apparent that the contact points may be readily removed and replaced in their holders and that the contact points themselves are simple and inexpensive.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a circuit-breaker structure, the combination of a contact point holding screw, a slide on the end of the screw, a locking screw within the holding screw, and a reversible contact point

structure comprising opposed contact faces held in the slide by the locking screw.

2. In a circuit-breaker structure, the combination of a contact point holding means, a slide on the end of the holding means, a locking means within the holding means and a contact point structure comprising a disc and a contact projecting through the disc, said disc being held in the slide by the locking means.

3. A circuit-breaker structure comprising a contact point holder, a slide on the end of the holder, a plate frictionally held in the slide, a contact point projecting from the sides of the plate, and means for increasing the friction between the plate and slide.

4. A circuit-breaker structure comprising a contact point holder, a slide on the holder, a plate frictionally held in the slide, and a pair of contact points mounted one on each side of the plate.

5. In a circuit-breaker for the ignition system of an internal combustion engine, a means of providing for ready replacement of the contact points in the contact point holder comprising a pair of opposed flanges on the contact holder and a coacting flange on the contact point between said opposed flanges, said flanges frictionally engaging each other.

6. In a circuit breaker structure having a movable contact breaker arm, a slide on the breaker arm, a disc positioned in the slide, said disc carrying a contact point on each side thereof, locking means on the breaker arm engaging the disc to maintain it in position in the slide, a fixed bracket, an adjustable contact holding screw mounted in the bracket in spaced alignment with the contact carrying disc, a slide on the end of the adjustable contact holding screw, a contact carrying disc within the said slide member on the adjustable screw, and a locking screw within the adjustable holding screw engaging the disc on the screw, said adjustable contact holding screw being adapted to be adjusted relatively to the fixed bracket to maintain its contact point in desired spaced relation with the contact point carried by the breaker arm.

7. In a contact breaker structure, a movable breaker arm, a recess on the breaker arm, a disc positioned in the recess, said disc carrying a contact point on each side thereof, locking means to engage the disc and maintain it in position in the recess, a fixed arm, a contact holding means on the fixed arm comprising a recess with a contact disc positioned therein, a locking screw in the contact holding means adapted to hold the second contact disc in its recess, and means for variably fixing the position of the contact holding means with respect to the movable breaker arm to maintain the contacts in the desired relationship.

8. A reversible metal contact unit for a circuit breaker comprising a circular plate element and contact elements extending co-axially from opposite faces of the plate element, said plate and contact elements being integral.

9. In a circuit breaker, the combination of a pivotally mounted arm having a pocket on its free end; and a contact element comprising a plate removably engageable in said pocket, and contact points projecting from opposite faces of said plate, said contact element being reversible endwise in the pocket to place either contact point in effective position.

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