Nov. 16, 1948. T. J. BASISTA 2,453,774

DEVICE FOR ADJUSTING BREAKER UNITS

Filed Jan. 24, 1947

Fig. 1.

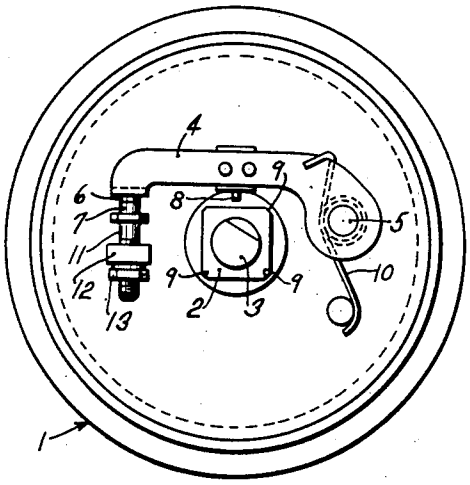


Fig. 2.

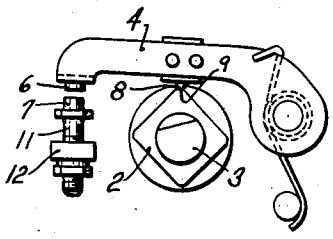


Fig. 3.

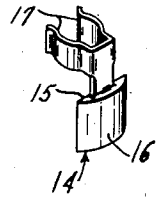


Fig. 5.

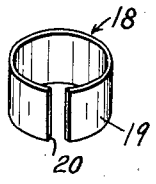


Fig. 7.

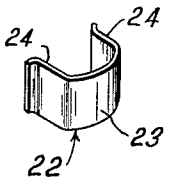


Fig. 4.

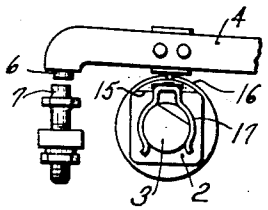


Fig. 6.

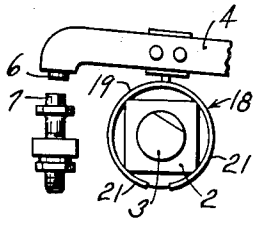
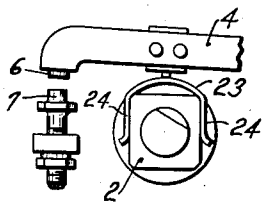


Fig. 8.



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DEVICE FOR ADJUSTING BREAKER UNITS

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Application January 24, 1947, Serial No. 724,052

1 Claim. (Cl. 33—181)

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This invention relates to the adjustment of the breaker contacts in the breaker unit of the ignition circuit of internal combustion engines, and more particularly to a means for facilitating the adjustment of the spacing of the timing contacts of the breaker.

One object of the invention is to provide means by which the spacing of the timing contacts may be effected in any position of the breaker cam.

A further object is to make possible the adjustment of the spacing of the contacts without removal of the unit from the motor assembly more speedily than is now possible and without manipulation of the motor through the starter.

Other and further objects residing in the details of the construction and the methods employed will be made apparent in the following specification and claim.

In the accompanying drawing:

Fig. 1 is a plan view of a breaker unit, parts being omitted, the breaker contacts being shown closed;

Fig. 2 is a fragmentary view similar to Fig. 1 but showing the contacts in extreme open position;

Fig. 3 is a generally perspective view of one form of the device of my invention;

Fig. 4 is a fragmentary view showing the device of Fig. 3 in operative position on the breaker cam;

Fig. 5 is a generally perspective view of an alternative form of the device;

Fig. 6 is a fragmentary view showing the device of Fig. 5 in operative position on the breaker cam;

Fig. 7 is a generally perspective view of a different alternative form of the device; and

Fig. 8 is a fragmentary view showing the device of Fig. 7 in operative position on the breaker cam.

Referring to the drawing 1 designates the breaker unit generally, the parts not essential to an understanding of the invention being omitted. In the figures the breaker cam is shown at 2, the cam shown having four high points to accommodate a four cylinder motor. The cam is carried by a vertical shaft 3 driven in the usual manner from the timing gears of the motor, not shown. The breaker arm, shown at 4, is pivoted at one end, as at 5, to the base of the breaker unit. The free end of arm 4 carries a contact point 6 engageable with a second contact point 7. Intermediate the contact 6 and pivot 5 arm 4 carries a cam follower 8 which is engageable by the high points 9 of the cam, as shown in Fig. 2,

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to separate the contacts 6 and 7. The breaker arm is pressed toward contact closing position by a spring 10. As will be understood the contacts 6 and 7 are connected in the usual ignition circuit, not shown, so that the circuit is periodically broken at the contacts by the cam as the shaft rotates.

As is well understood the proper spacing of the contacts 6 and 7 in open position is important and for this reason contact 7 is made adjustable. As shown contact 7 is carried by a support 11 threaded in a block 12 fixed to the unit 1 and held in adjusted position in block 12 by a nut 13.

In adjusting the spacing of the contacts 6 and 7, according to conventional practice, the cam is turned to the position shown in Fig. 2 in which the follower 8 engages a high point of the cam. The spacing between the points 6 and 7 is then adjusted to the desired amount with the aid of a conventional space gauge by adjusting the position of the support 11 in block 12. When this adjustment is made without removing the unit from the motor it is necessary to turn the motor by hand, or by the starter of the motor, to bring one of the high points of the cam beneath the cam follower. This is particularly difficult to do by means of the starter as the compression of the motor tends to carry the cam beyond the high point. Relatively few cars are now provided with hand cranks so that the alternatives presented are to remove the unit for adjustment or to bring the cam to the desired position by the difficult manipulation of the starter.

To overcome this difficulty I provide a device which may be temporarily associated with the cam to move the follower, in any position to which it would normally be moved by a high point of the cam or to a position a predetermined amount beyond that position.

In Fig. 3 is shown an auxiliary cam member 14 formed with an inner plane surface 15 and an outer cylindrical surface 16 having a radius equal to the distance of the high points of the cam 2 from the axis of shaft 3. As will be apparent from Fig. 4 when the member 14 is inserted between the cam and its follower, with face 15 against the flat face of the cam, the follower 8 resting on any portion of the cylindrical surface 16 holds the contacts 6 and 7 spaced the same distance apart as would be the case were the cam turned to position a high point of the cam beneath the follower. The space separating the contacts 6 and 7 may therefore be measured and adjusted as previously described without removing the unit from the motor and without

manipulating the cam to a high position by means of the motor starter. Preferably the member 14 is provided with means for releasably holding it in operative postion against the cam. As shown in Fig. 3 such means comprises spring arms 17 formed integral with member 14 and adjusted to releasably engage shaft 3 above the cam.

An alternative form of auxiliary cam is shown in Fig. 5, comprising an annular member 18 having a cylindrical outer surface 19 and preferably split as at 20. Member 18 fits snugly over the cam 2 as shown in Fig. 6, to position the portion 19 between the cam and follower 8, the inner radius of member 18 equaling the distance of the high point of the cam from the axis of shaft 3. By this arrangement the contacts 6 and 7 are held spaced a distance greater than that desired, by an amount equal to the radial thickness of member 18 plus the leverage advantage of the arm. Since both of these amounts are known, or are easily ascertained, and are constant for a given breaker unit and a given member 18, they may be allowed for in measuring and adjusting the space between the contacts. The end portions 21 embrace the cam to hold the member in place.

As shown in Fig. 7 the auxiliary cam member 22 may take the form of a cylindrical portion 23 provided with side extensions 24 adapted to engage opposite faces of cam 2 as shown in Fig. 8, to hold the member 22 in operative position on the cam. The member 22 functions in a manner similar to member 18 and the adjustment of the contacts is made in the same manner as described with respect to member 18.

As will be apparent, by the use of the auxiliary cam member of my invention the spacing of the breaker points may be quickly and accurately effected in any position in which the breaker cam may be found and without manipulation of the starter or removal of the unit from the motor.

It will be understood that the invention is applicable to the adjustment of any usual form of breaker mechanism commonly used on automobiles, the breaker mechanism shown being illustrative only, and that it is equally applicable to six sided breaker cams serving six cylinder motors, or to whatever number of cylinders may be controlled by the cam.

I claim:

An auxiliary cam member for association with the breaker cam of the breaker unit of the ignition system of an internal combustion motor in the adjusting of the spacing of the breaker contacts thereof, which comprises a member insertable between the breaker cam and follower of the breaker unit, said member having an inner face engaging the breaker cam between two high points thereof, the outer face of said member being cylindrical and having a radius equal to the radius of the high points of the breaker cam, the circumferential extent of said cylindrical face being equal to the circumferential distance between adjacent high points of the breaker cam.

THEODORE J. BASISTA.

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