Dec. 4, 1956 A. I. ALSTROM 2,773,113

BREAKER POINT MECHANISM

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Fig. 1.

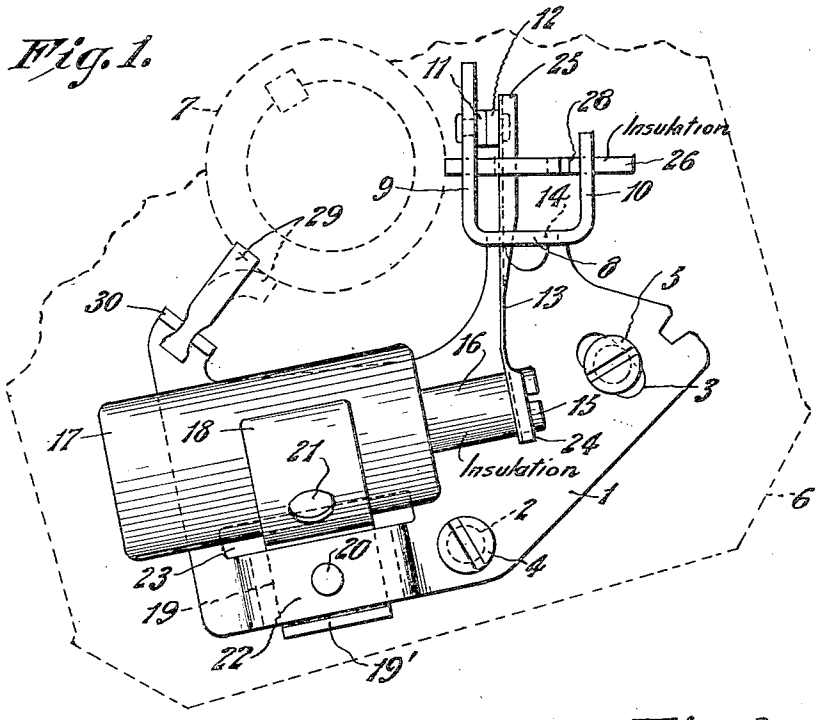


Fig. 2.

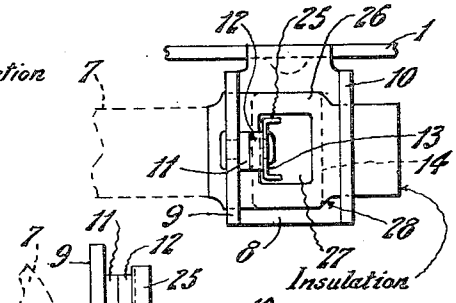


Fig. 3.

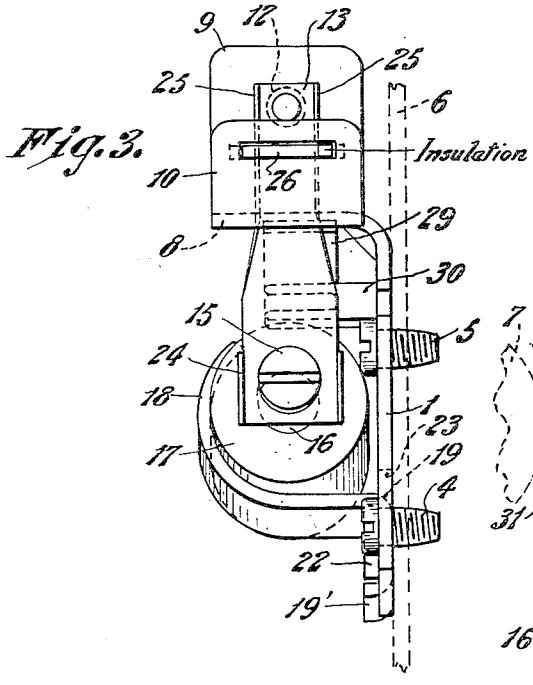
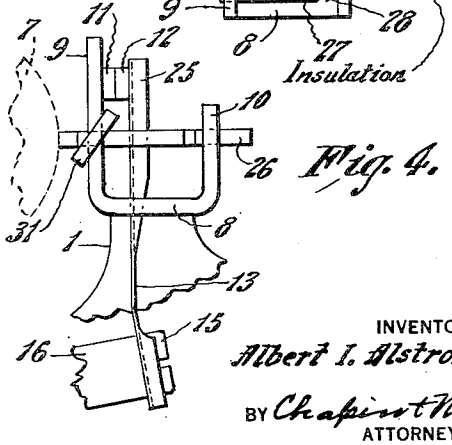


Fig. 4.



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BREAKER POINT MECHANISM

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3 Claims. (Cl. 123—146.5)

This invention relates to improvements in breaker-point mechanisms, such for example as are adapted for use in controlling the electric ignition systems of internal combustion engines.

The breaker point mechanism of this invention, while capable of other applications, is particularly designed for use in connection with flywheel magnetos, such for example as the type shown in the Allen L. Brownlee Patent No. 2,583,466, granted January 22, 1952. Magnetos of this type comprise three separate units, which have to be assembled on the engine by the engine manufacturer. One unit consists of the stator of the magneto and the breaker-point mechanism. These are mounted on a plate, which is adapted to be bolted to the engine block. A second unit is the cam for actuating the breaker-point mechanism and this is adapted to be fixed to the crankshaft of the engine. The rotor of the magneto is mounted in the flywheel of the engine and is adapted to be fixed to the engine crankshaft after the other two units have been put in place. Thus, the breaker-point mechanism that is mounted on the stator plate is not related to its actuating cam by the magneto manufacturer and it is desirable that all its parts be held together in proper relationship during shipment and in a manner such as to enable the engine manufacturer to easily and properly relate the parts with the least effort.

The invention has for an object the provision in a breaker-point mechanism, having a spring arm, carrying at one end the movable breaker point and fixed at its other end by a single screw to a stationary support, and a plunger to enable such arm to be actuated from the cam, of two spaced supports slidably supporting the plunger, the spring arm passing between the two supports and being interengaged with the plunger so that the spring arm prevents the plunger from falling out of its supports and the plunger prevents the spring arm from swinging about the axis of the single screw that clamps it to its support.

The invention will be disclosed with reference to the one illustrative embodiment of it in the accompanying drawings, in which,

Fig. 1 is a front elevational view of a breaker-point mechanism embodying the invention;

Fig. 2 is a fragmentary top plan view thereof;

Fig. 3 is a side elevational view thereof; and

Fig. 4 is a fragmentary front elevational view showing a modification.

Referring to these drawings: the breaker-point mechanism includes a flat supporting plate 1 (Fig. 1), having a hole 2 and a slot 3 extending therethrough, and respectively adapted to receive fastening screws 4 and 5, whereby the plate 1 may be clamped, as shown in Fig. 3, tightly against a suitable support, such for example, as the stator plate of a magneto, indicated in part by dotted lines at 6. The slot 3 (Fig. 1) is curved from the center of hole 2 to allow the plate 1 to be swung about the screw 4 as a pivot and bodily shift the breaker-point mechanism

toward or away from a cam, such as that indicated by dotted lines at 7, which actuates the mechanism. The plate 1 has a part 8, bent outwardly therefrom at right angles, and two arms 9 and 10 bent outwardly from the inner and outer ends of part 8 and at right angles to the latter.

The arm 9 extends beyond arm 10 to carry on that face, which confronts arm 10, the stationary breaker point 11, which is suitably fixed, as indicated to arm 9. The companion breaker point 12 is suitably fixed to one end of a spring breaker arm 13 which extends through a hole 14 (Figs. 1 and 2) in the part 8 and is clamped at its other end by a screw 15 to the post 16 of insulating material, which carries one terminal of a suitable condensor, housed within a metallic casing 17. The terminals of this condenser are connected one to casing 17 and the other to the screw 15. This screw is also used to clamp beneath it a wire that extends from the ungrounded side of the primary winding of the magneto. The condenser casing 17 is clamped to plate 1 in any suitable manner. As shown, a clip is provided having a curved part 18 to partially embrace the casing 17 and a flat part 19 which is suitably secured, as indicated, by spot welding at 20, to plate 1. The curved part 18 (Fig. 1) has a hole 21 therethrough and solder is applied through this hole for the purpose of fastening the clip and condenser casing 17 together. The plate 1 has a portion 22 struck up far enough to receive beneath it the flat part 19 and this portion 22 and the slot 23, through which the clip passes, are each made long enough to allow the clip, and the attached condenser casing 17, to be shifted in the direction of the axis of the latter in order to adjust the spring pressure that holds the breaker points 11 and 12 engaged. After this adjustment has been made, the clip is secured by spot welding part 19 to part 22 as described. When the plate 1 is clamped to the stator plate 6, the part 19 will be clamped between part 22 and plate 6. The clip may have an upturned outer end 19' to engage the outer edge of part 22.

The breaker arm 13 has side flanges 24 near its fixed end and other side flanges 25 near its other end which flanges stiffen the spring arm and cause it to flex only in the part that lies between the flanges 24 and the flanges 25. This arm 13 is adapted to be actuated from cam 7 by means of a plunger 26, which is slidably supported in the arms 9 and 10 and suitably interengaged with the breaker arm 13. As shown, the plunger is of rectangular cross sectional shape and its wide faces parallel the part 8. The plunger has a hole 27 therethrough and through this hole the breaker arm 13 passes, whereby the breaker arm and its plunger are operatively interengaged so that the plunger cannot fall out of its supporting arms 9 and 10 and the breaker arm 13, which is held to its support merely by a single screw 15, cannot swing about the axis of such screw. The inner end of plunger 26 is adapted to ride on the outer periphery of cam 7, being pressed thereagainst by the spring arm 13. The outer end of this plunger is made narrower than the rest to form shoulders 28 (Fig. 2) which are adapted to abut the inner face of arm 10 and prevent undue outward displacement of the plunger and excess movement of the breaker arm 13.

The plate 1 (Fig. 1) usually carries a felt 29 for wiping the periphery of cam 7, in the manner indicated by dotted lines in Fig. 1 and this felt is pressed into a slot formed in a lug 30 struck up from plate 1.

In Fig. 4 is shown a modification which consists in the addition of a rectangular piece of felt 31 for the purpose of preventing lubricant that is picked up by plunger 26 from reaching the breaker points 11 and 12. This felt has paralleling its sides a long central slit that enables the felt to be slipped onto the arm 9 previous to the assembly

of the plunger in arms 9 and 10. Then, after this felt has been positioned with its slit aligned with the opening in arm 9, the plunger 26 is pushed into its opening and through the slit in the felt. The arrangement is important where there is leakage of oil along the crankshaft and onto the cam, from which some of the oil may be picked up by the plunger 26, because it effectually prevents the oil from reaching the breaker points.

The breaker-point mechanism is generally supplied by the magneto manufacturer assembled in proper relation on the stator plate. It may, for example, be used in place of the breaker-point mechanism shown in the above-named Brownlee patent. Also, the breaker-point mechanism may be sold separately from the stator of the magneto as for example, as a replacement part. In either case, the actuating cam for the breaker-point mechanism is supplied separtely and is assembled by the engine manufacturer in proper relation with the actuating plunger. Consequently, it is desirable that the plunger be maintained in its guiding and supporting arms. This is done by suitable interengagement of the plunger with the spring breaker arm. Such interengagement may, for example, be effected in the very simple manner shown herein, by passing the spring breaker arm 13 through the hole 27 in the plunger 26. In addition, such interengagement serves to guide the breaker arm 13 so that the breaker points 11 and 12 are maintained in proper alignment and it also enables the breaker arm to be held to its support by a single screw.

The invention thus provides a breaker-point mechanism, which is adapted for mass production at low unit cost and in which the parts are related in a simple and fool proof manner such as to enable efficient operation over a long life of useful service.

What is claimed is:

1. Breaker-point mechanism, comprising, a supporting member having first and second arms disposed in spaced and substantially parallel relation, a breaker point fixed to the first arm facing toward the second arm, a plunger extending between said arms and slidably mounted at its ends therein for movement in a direction at right angles thereto, a spring breaker arm fixedly supported at one end from said member and extending between said two arms substantially parallel therewith and at right angles to the direction of movement of the plunger, a breaker point fixed to the other end of said breaker arm and yieldably held engaged with the first breaker point by the spring pressure of said breaker arm, and interengaging means on the plunger and breaker arm for guiding the latter to maintain the breaker points in alignment and to prevent disengagement of the plunger from said arms.

2. The combination, as claimed in claim 1, in which a condenser casing having a terminal post is clamped to said member and the spring breaker arm is fixed to said post, said casing being adjustable in a direction approximately parallel to the direction of sliding movement of the plunger to vary the pressure that holds the breaker points engaged.

3. Breaker-point mechanism, comprising, a supporting member having first and second arms disposed in spaced and substantially parallel relation, a breaker point fixed to the first arm facing toward the second arm, a plunger extending between said arms and slidably mounted at its ends therein for movement in a direction at right angles thereto, said plunger having at a location intermediate its ends and between said arms an opening which extends through it at right angles to the direction of its sliding movement, a spring breaker arm fixedly supported at one end from said member and extending in a direction substantially at right angles to said direction through said opening and having an end projecting beyond the plunger, and a breaker point fixed to said breaker arm and held to the first-named breaker point by the spring pressure of the breaker arm.

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