March 23, 1937. W. O. BECHMAN 2,074,322

SPARK ADVANCE FOR MAGNETOS

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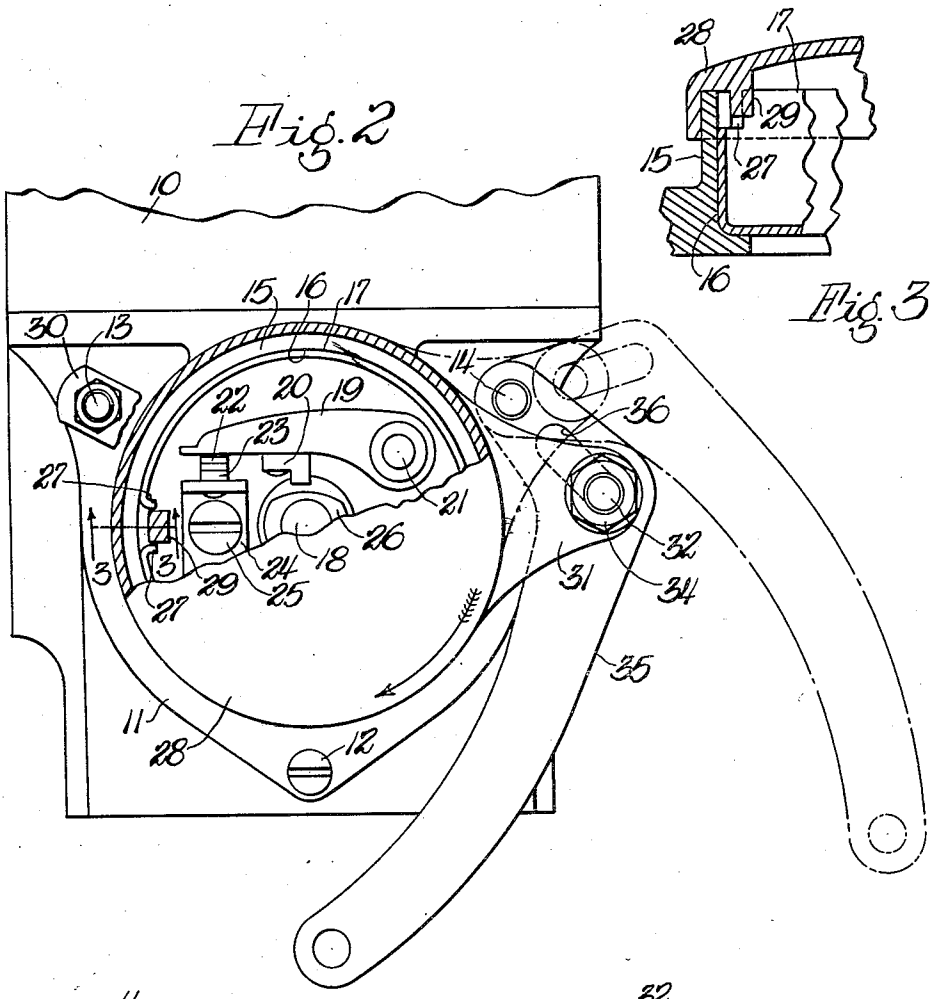


Fig. 2

Fig. 3

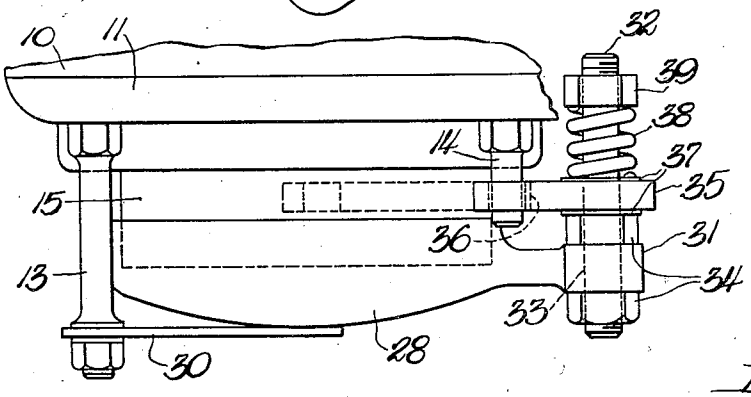


Fig. 1

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SPARK ADVANCE FOR MAGNETOS

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4 Claims. (Cl. 200—19)

This invention relates to a spark advance device for ignition timers. More specifically, it relates to an adjusting device for ignition timers incorporating a positive limit in the advancing of the spark, where the magneto has more advance than is required on different engines. This mechanism makes it unnecessary to have special magnetos as far as the stop in the breaker is concerned and makes it possible to use a standard magneto. It is customary to provide a mounting for the breaker assemblies of ignition timers, which will permit of angular movement thereof relative to the shaft on which the timing cam is located. By this means, the time at which a spark is delivered may be advanced or retarded.

The principal object of the present invention is to provide an improved linkage of a simplified construction for angularly adjusting ignition devices, which incorporates a positive stop against spark advance beyond a predetermined limit determined by the construction of the advancing linkage.

Figure 1 is a plan view of a housing on which an ignition device is mounted, showing the advance device of the invention as embodied on a magneto of conventional construction;

Figure 2 is an end elevation of the structure shown in Figure 1, with a portion broken away by a vertical section to show the breaker assembly; and,

Figure 3 is a section on the line 3—3 of Figure 2.

In the drawing, a portion 10 of a magneto frame is shown. A magneto of this type is shown in the Borgerd et al. Patent No. 1,999,030 of April 23, 1935. Particularly when used with tractors, the ignition breaker is usually mounted directly at one end of the magneto, timing being accomplished by the magneto shaft. A casing 11 is secured to the magneto frame 10 by cap screws 12, 13, and 14. The casing 11 is provided with an annular flange 15, best shown in Figure 3, which provides a bore 16 into which the breaker cup 17 is rotatably fitted for angular movement about an axis concentric with the axis of the magneto shaft 18. The breaker cup 17 and the breaker assembly carried thereby is of a conventional construction, as shown in the Borgerd et al. Patent No. 1,982,463 of November 27, 1934. A breaker arm 19, which carries a rubbing block 20, is pivotally mounted on a shaft 21. The breaker arm carries a contact point 22, which is positioned to engage a stationary contact point 23 carried by a bracket support 24. Said support is adjustably mounted on the breaker cup by a cap screw 25. The shaft 18 carries a cam 26 operative to engage the rubbing block 20 and separate the breaker points 22 and 23.

At its upper edge, the breaker cup 17 is provided with two spaced inturned flanges 27. These flanges provide driving means for annular adjustment of the cup.

A cover 28 rotatably fitted over the flange 15 carries a driving lug 29 extending downwardly between the flanges 27, whereby the cover and the cup rotate together.

As best shown in Figure 1, the cap screw 13 carries an extension on which a spring member 30 is pivotally mounted for engagement with the center portion of the cover 28. Said member removably holds the cover in position for annular movement.

The cover 28 is provided with an adjusting arm 31 formed integrally therewith. Said arm extends laterally from the cover. A bolt 32 extends through an opening 33 formed in the adjusting arm 31 and is rigidly secured thereto by nuts 34 positioned at either side of the adjusting arm.

An adjusting member 35 of a general L-shape is pivotally mounted at the short portion of the L on an extension of the cap screw 14. The adjusting member is freely movable axially of the pivot forming portion of the cap screw to provide for easy removal with the cover 28.

The member 28 is provided with a slot 36 extending closely adjacent the pivoted end toward the long portion of the L. Said slot forms a means for adjustably connecting the member to the bolt 32. Washers 37 on either side of the member 35, a spring 38 surrounding the bolt 32, and a nut 39 threaded thereon provide means for frictionally maintaining the member 35 in position at right angles to the bolt 32.

In the operation of the device as above described, the breaker cup 16 is rotated in a clockwise direction, as indicated by the arrow in Figure 2, for advancing the occurrence of the spark. This advance is secured by rotating the cover by means of the adjusting member 35. When the maximum position of advance is reached, as illustrated by the adjusting member position shown in Figure 2, the bolt reaches the end of the slot 36, thereby providing a positive stop against further advance. To retard the spark, the member 35 is moved toward the position shown by dotted lines in Figure 2. By this movement, the adjusting arm 31 of the cover 28 is moved in an anticlockwise direction. During this movement, the bolt 32 moves along the slot 36 with the friction washers 37 sliding along the portion of the

member adjacent the slot. The friction means provided by the washers **37**, the spring **38**, and the nut **39** maintain the adjusting member in any of its positions of spark advance. Another important feature of this construction is that the cover **26** may be removed without interference caused by the provision of the adjusting mechanism, as said mechanism is removed with the cover. The pivoted portion of the member **35** slides axially over the pivot forming portion of the screw **19**.

Although applicant has shown and described only a preferred embodiment of his improved spark advance device as applied to a magneto timer, it is to be understood that he claims as his invention all modifications thereof falling within the scope of the appended claims.

What is claimed is:

1. A spark advance device for ignition timers which comprises in combination with an ignition breaker mounted for limited angular movement, an adjusting arm extending radially from the breaker, an adjusting member pivotally mounted on an axis parallel to the axis of the breaker, said arm being provided with a slot extending on a radius extending through its pivot axis, and a pin extending through the actuating arm and through said slot, said slot being formed to provide a stop against rotation of the breaker when a predetermined maximum spark advance is reached.

2. A spark advance device for ignition timers which comprises in combination with a housing, an ignition breaker rotatably mounted therein, a breaker cam rotatably mounted in the breaker, an adjusting arm extending radially from the breaker and connected thereto, an adjusting member pivoted to the housing on an axis parallel to the axis of the breaker adjacent to the periphery thereof, said arm being provided with a slot extending on a radius extending through its pivot axis, and a pin extending through the actuating arm and through said slot, said slot being formed to provide a stop against rotation of the breaker when a predetermined maximum spark advance is reached.

3. A spark advance device for ignition timers which comprises in combination with an ignition breaker mounted for limited angular movement, a cover for the breaker mounted for angular movement therewith, an adjusting arm extending radially from the breaker, an adjusting member pivotally mounted on an axis parallel to the axis of the breaker, said arm being provided with a slot extending on a radius extending through its pivot axis, and a pin extending through the actuating arm on the cover and through said slot, said slot being formed to provide a stop against rotation of the cover and the breaker carried thereby when a predetermined maximum spark advance is reached.

4. A spark advance device for ignition timers which comprises in combination with a housing, an ignition breaker mounted for limited angular movement in the housing, a breaker cam rotatably mounted in the ignition breaker, a cover for the breaker mounted for angular movement on the housing concentrically with the breaker, means for interconnecting the breaker and cover for angular movement together, an adjusting arm extending radially from the cover, an adjusting member pivoted to the housing on an axis parallel to the axis of the cover adjacent the periphery of said cover, said arm being provided with a slot extending on a radius extending through its pivot axis, and a pin extending through the actuating arm on the cover and through said slot, said slot being formed to provide a stop against rotation of the cover and the breaker carried thereby when a predetermined maximum spark advance is reached.

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