2,902,553 MOUNTING FOR AN ADJUSTABLE IGNITION DISTRIBUTOR

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My invention relates to a mounting for an adjustable ignition distributor, and it is the object of my invention to provide improved means for the fine adjustment of the distributor.

The adjustment of the distributor determining the time of the ignition is generally effected by turning a distributor element, more particularly, the housing of the ignition distributor relative to the distributor shaft geared to the crank shaft of the engine. It is the purpose of such adjustment to time the ignition so as to meet the specific requirements in any particular case depending, for instance, on the quality of the fuel. As a rule the timing should be such that the efficiency of the engine will be a maximum while knocking of the engine is avoided. In the orthodox mounting for the ignition distributor adjustment may be effected by turning an arm fixed to the distributor housing, such arm cooperating with a stationary graduation provided, for instance, on the cylinder block or on a separate base plate fixed to the cylinder block. The arm may be clamped in adjusted position by means of a screw extending through an arcuate slot provided in the arm and engaging a threaded bore on the base plate. This known mechanism, however, requires extraordinary skill where a fine adjustment is desirable, and it is the object of the present invention to provide means which afford the possibility of effecting a fine adjustment in a very simple and reliable manner without any great physical or mental effort.

With the mounting heretofore customary as above described, a displacement of the arm on the graduation through a distance of but one millimeter results in a change of the ignition timing equivalent to a rotation of the crank shaft through 2°. Hence, such an adjustment is very coarse and does not meet the requirements. It is a more specific object of the invention, however, to provide a mounting in which the adjusting lever, even though shifted a considerable distance of about 1/4°, will change the timing 2° with respect to the crank rotation.

It is another object of the present invention to provide detent means which do not require a tool for release preparatory to effecting the adjustment as distinguished from the prior mounting means in which a screw driver or wrench was required to first loosen the clamping screw of the adjustable arm before the adjustment could be effected and to tighten the clamping screw afterwards.

Finally, it is an object of the present invention to provide means for fine adjustment of the ignition timing which means are simple, least cost, and are simple and reliable in operation. Further objects of the present invention will appear from the detailed description of a number of embodiments of the invention following hereinafter, it being understood that such detailed description serves the purpose of illustrating the invention rather than that of restricting or limiting same.

In the drawings

Fig. 1 is a plan view of the improved adjusting mechanism, and

Fig. 2 is an axial section taken through a modified adjusting mechanism, and

Fig. 3 is a section taken along line 3—3 of Fig. 2.

As shown in Fig. 1, a distributor element, such as the neck 3 of the ignition distributor housing, is mounted for rotary adjustment relative to a base plate 1 which is suitably fixed to a part 13 of the cylinder block of the engine, for instance by a clamping screw (shown) extending through a hole 2. On the neck 3 which extends through the base plate 1 a plate-shaped arm 4 is fixed by suitable means. In the embodiment shown, the arm 4 is split and clamped on the neck 3 by means of a screw 5. Hence, when the arm 4 which overlies the base plate 1 is rocked relative to the latter it will turn the neck 3 and the distributor housing rigid therewith according. A double-armed lever 6, 7 is mounted on the base plate 1 for rotation about the axis of a pin 8 which is journalled in a hole of the base plate 1. Such axis extends preferably perpendicular to the base plate 1 and parallel to the neck 3. The base plate is provided with the graduation 9.

The shorter arm 7 of the lever is provided with a portion engaging a radial slot 10 of the arm at a point P. The distance between the axis of pin 8 and the point P is a small fraction of the total length of the lever 6, 7. With the ignition, the operator will rock the lever arm 6 and read the position thereof on the graduation 9. The short arm 7 of the lever will turn the arm 4 through a fine angle. It will readily appear that the angle of rotation of the lever 6, 7 is a multiple of the angle through which the arm 4 will be turned. Therefore, the operator may shift the lever 6 through a much larger angle for effecting a certain adjustment of the neck 3 than the angle through which the arm 4 is shifted. A highly practical and compact embodiment of the invention is illustrated in Figs. 2 and 3. The neck 14 of the distributor housing extends through a base plate 11 which is suitably fixed at 12 to a portion 13 of the cylinder block. The shaft 15 extends into the distributor carrying the rotary distributor pole.

An arm 16 formed on the plate having a split hub portion overlies the base plate 11 and is clamped by a screw 17 on the neck 14. In a bore of the base plate 11 a pin 18 is journalled which is formed with a collar 24, an eccentric 20, and a handle 21. This pin extends through a radial slot 19 of the arm 16 in which the eccentric 20 is positioned. A helical spring 25 surrounds the pin 18 and is braced against the base plate 11 and a cotter pin 26 extending through pin 18. A washer 27 may be inserted between the spring and the cotter pin. Hence, the spring will compress the arm 16 between the collar 24 and the base plate 11. The eccentric 20 virtually constitutes the shorter arm, and the handle 21 constitutes the longer arm of a double-armed lever which acts in a manner similar to that of lever 6, 7 of Fig. 1. The handle 21 is provided with a projection 22 which slidably engages a graduated marginal zone 23 of the base plate 11 and has a sharp edge adapted to engage the graduations. Thus, the projection 22 and the graduations constitute detent means which will resiliently arrest the lever in any adjusted position.

If the operator wishes to adjust the distributor housing, he will simply lift the handle 21 thus disengaging the projection 22 from the graduations 23 and relieving arm 16 from the frictional engagement between the collar 24 and the base plate 11. Then he may freely turn the handle 21 to thereby effect the desired fine adjustment of the distributor housing. Thus, no necessity arises to employ any tool for that purpose. If desired, the base plate may be formed by the portion 13 of the cylinder block directly.

From the foregoing description it will be understood
that the adjusting arm, such as 4, of the distributor housing is actuated by the additional fine adjustment lever at an appropriate ratio of transmission, the longer lever arm serving as a handle and the shorter lever arm engaging the arm of the distributor housing. The engagement may be effected by a slot provided in the latter arm and by a stud provided on the lever. Alternatively, the shorter lever arm may be virtually formed by an eccentric engaging the slot of the distributor housing arm. The fine adjustment is facilitated by a graduation. Detent means are provided to prevent an accidental change of the adjustment. Such detent means may act by friction.

While the invention has been described in connection with several different embodiments thereof, it will be understood that it is capable of further modification, and this application is intended to cover any variations, uses, or adaptations of the invention following, in general, the principles of the invention and including such departures from the present disclosure as come within known or customary practice in the art to which the invention pertains, and as fall within the scope of the invention or the limits of the appended claims.

What I claim is:

1. A mounting for an ignition distributor, the combination comprising a base plate, a distributor element mounted for rotary adjustment relative thereto, an arm overlying said base plate and fixed to said element, a slot in said arm, a pin including an eccentric and a handle extending through said slot and mounted on said base plate for rotation about an axis, said eccentric being in engagement with said slot for fine adjustment thereof, detent means for arresting said handle on said base plate in any adjusted position.

2. A mounting for an ignition distributor according to claim 1, wherein said detent means include groove means provided in said base plate, a projection provided on said handle for engagement thereof with said groove means, spring means braced against said pin and said base plate for maintaining said projection in engagement with said groove means.

3. A mounting for an ignition distributor according to claim 1, wherein collar means are provided on said pin overlying said arm, spring means surrounding said pin and braced thereagainst and said base plate for urging said collar means into contact with said arm and for compressing said arm between said collar means and said base plate to thereby maintain said arm in an adjusted position by friction with said base plate.

4. A mounting for an ignition distributor, the combination comprising a base plate, a distributor element mounted for rotary adjustment relative thereto, an arm overlying said base plate and fixed to said element, a slot in said arm, a pin including an eccentric and a handle extending through said slot and mounted on said base plate for rotation about an axis, said eccentric being in engagement with said slot for fine adjustment thereof, detent means including groove means provided in said base plate, a projection provided on said handle for engagement thereof with said groove means, spring means braced against said pin and said base plate for maintaining said projection in engagement with said groove means in an adjusted position, collar means provided on said pin overlying said arm, said spring means being adapted to compress said arm between said collar means and said base plate to thereby hold said arm in an adjusted position by friction with said base plate.

5. A mounting for an ignition distributor according to claim 4, wherein the distance between said axis and the point of engagement of said eccentric with said slot is a small fraction of the total length of said handle.

References Cited in the file of this patent

UNITED STATES PATENTS

58,427 Johnson -------------- Oct. 2, 1866
100,130 Eldredge -------------- Feb. 22, 1870
1,519,022 Drisher ------------- Dec. 9, 1924
1,795,937 Dorsey ------------- Mar. 10, 1931

FOREIGN PATENTS

380,072 Great Britain ------------ Sept. 5, 1922
839,295 France -------------- Mar. 30, 1939