

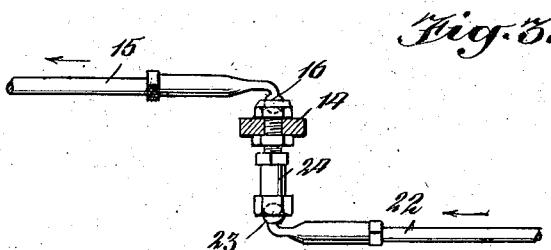
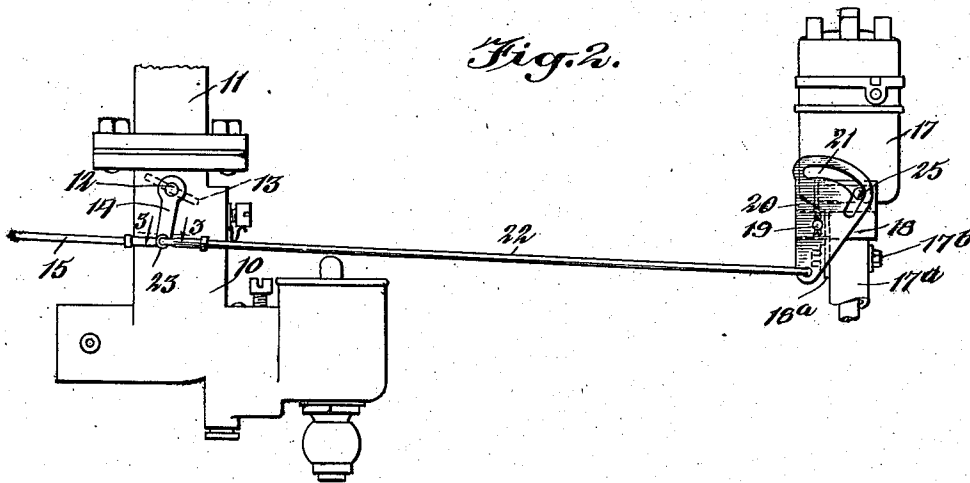
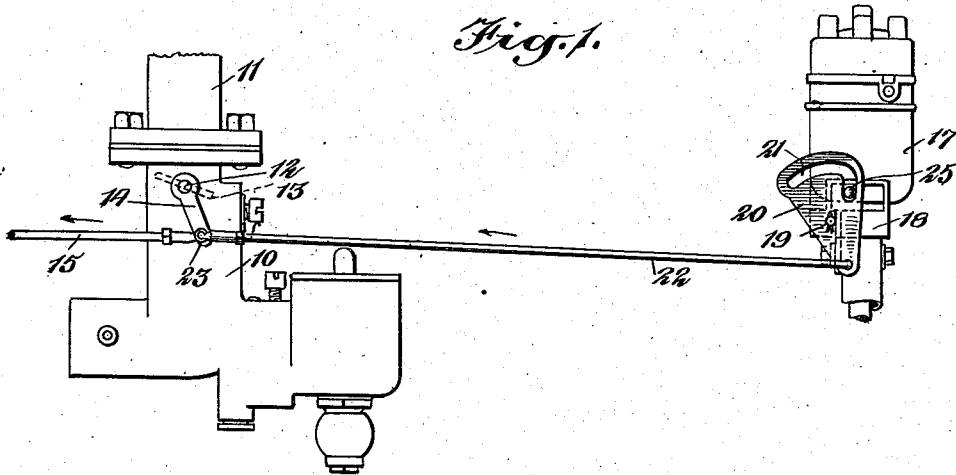
Dec. 14, 1926.

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1,611,054

AUTOMATIC SPARK CONTROLLING MEANS

Filed Nov. 11, 1925



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AUTOMATIC SPARK-CONTROLLING MEANS.

Application filed November 11, 1925. Serial No. 68,445.

The primary object of the present invention is to provide automatic means for preventing jerking of the motor of an automotive vehicle when the car is running at low speed.

The invention preferably includes means for automatically retarding the spark when the motor is running at low speed. The mechanism by which I effect such automatic retardation preferably includes an operating mechanism for the distributor controlled directly from an accelerator rod.

Specific objects of the invention are to provide a simple and practical mechanism by which movement of the accelerator rod may be transmitted to the distributor, so that the spark will be automatically advanced and retarded as the speed of the engine is accelerated or decreased; to provide mechanism which may be readily attached to any standard make of automobile; mechanism which may be manufactured with comparative economy; which will not materially increase the power necessary to pedally operate the accelerator rod; and mechanism which will be rugged, durable and efficient in use.

With the above noted and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts, as will be more fully hereinafter set forth and pointed out in the claims. The invention may be more fully understood from the following description in connection with the accompanying drawings, wherein

Fig. 1 is a diagrammatic view in side elevation, showing a carburetor, a distributor, and the mechanism by which the accelerator rod controls the distributor. The distributor is shown in retarded position.

Fig. 2 is a view similar to Fig. 1, but showing the position of the parts when the distributor has been moved to advance the spark.

Fig. 3 is an enlarged detail on the line 3-3 of Fig. 2.

In the drawings I have used the reference character 10 to designate the carburetor of an automotive vehicle, this carburetor being bolted to the intake manifold 11 in the usual manner. Twelve (12) is the rock shaft mounting the butterfly valve indicated at dotted lines 13 which controls the admission of fuel to the manifold. The rock shaft

12 is operated through the medium of a crank arm 14 by the accelerator rod 15, the accelerator rod having a ball and socket connection 16 with the crank arm. The invention as thus far described may be entirely conventional, such mechanism or its equivalent being used on all standard makes of automobiles for controlling the speed of the engine, the accelerator rod 15 being usually operated by a pedal (not shown).

The present invention is more particularly concerned with the provision of means for automatically advancing the spark as the throttle valve 13 is opened, and retarding the spark as the throttle valve 13 is closed. The distributor 17 is rotatably mounted to turn with support 17^a, this support having bolted thereto as at 17^b the down offset extensions 18^a of a bearing plate 18 carrying a stud 19 which serves as a fulcrum for a cam plate 20 having a cam slot 21 therein. The plate 20 is fulcrumed intermediate its ends, and at its lower end is pivotally connected to one end of an operating rod 22. The other end of the operating rod has a ball and socket connection 23 with suitable link mechanism 24 connected to the crank arm 14. Thus, as the accelerator rod is moved in either direction, motion is transmitted directly through the operating rod 22 to swing the cam plate 20 about its fulcrum 19.

Projecting radially from the distributor is an operating arm preferably carrying a roller 25, accommodated in the cam slot 21. It will be noted that the cam slot is of general L shape, so that as the plate is swung from the position of Fig. 1 to the position of Fig. 2, the roller will be moved from retarded to advanced position, thereby advancing the spark. It will also be noted that the longer arm of slot 21, after the roller has reached the position of Fig. 2, will have no effect, except a holding effect on the roller, the longer arm of the slot merely providing clearance for movement of the plate as the accelerator rod is operated at high speeds of the engine.

By virtue of the foregoing construction, the spark will be initially advanced as the speed of the engine is initially increased, and after the engine has reached a normal running speed, no further movement of the roller will be had, the rear end of slot 21 simply providing clearance for further movement

of the accelerator rod. It will also be noted that as the accelerator rod is shifted to the left as in Fig. 1, throttling down the engine, the spark will be automatically retarded so that there will be no jerking or knocking of the engine at low speeds.

It will be understood that the mechanism which I have employed to carry out the invention is subject to a wide variety of variations. The means for instance, by which I mount the cam plate 20 on the distributor may be considerably varied. Any appropriate linkage might connect the operating rod 22 to the accelerator 15. In fact numerous changes and alterations might be made in the general form and arrangement of parts described, without departing from the invention. Hence I do not wish to limit myself to the details set forth, but shall consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

I claim—

1. In an engine, a distributor and a controlling arm projecting radially therefrom, a controller plate acting on the controlling arm, means for controlling the acceleration of the speed of the engine, operatively connected to said controller plate, said control-

ler plate having a cam slot therein receiving the controlling arm.

2. The combination with a distributor having an arm projecting radially therefrom, of a plate fulcrumed intermediate its ends adjacent the distributor, and having a cam slot therein co-acting with the arm, and an operating rod pivotally connected to the plate.

3. The combination with a distributor rotatably mounted upon a support, of a bearing plate secured to the support, a controller plate fulcrumed intermediate its ends on the bearing plate, a roller projecting radially from the distributor and working in an approximately L shaped cam slot in the controller plate.

4. In an automotive engine, the combination with an accelerator rod for regulating the speed of the engine, and a distributor including a radially projecting arm, of a plate fulcrumed intermediate its ends adjacent the distributor, and having a cam slot therein, coacting with the arm, and means operatively directly connecting the accelerator rod with the plate whereby the spark is advanced or retarded as the speed of the engine is accelerated or reduced.

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