W. N. PARK.

CONTROLLING MEANS FOR COMBUSTION ENGINES.

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Fig. 1.

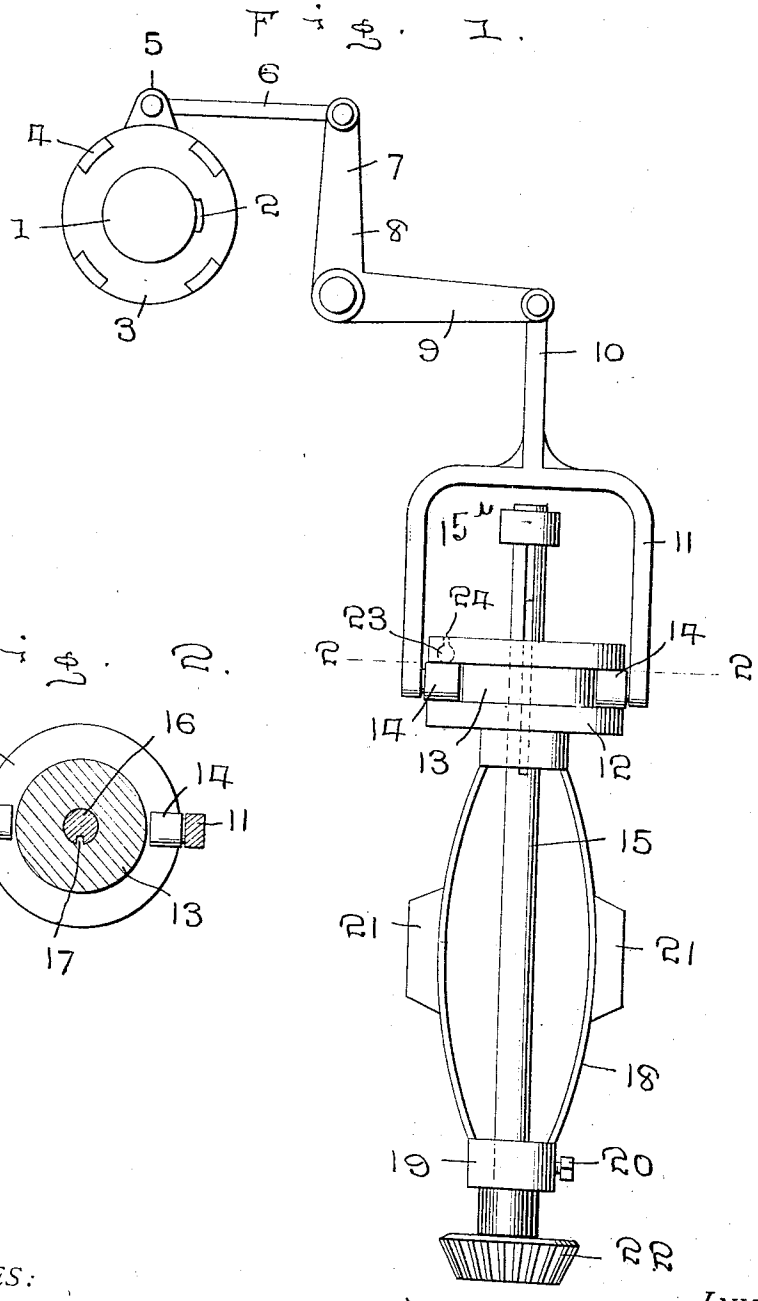


Fig. 2.

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CONTROLLING MEANS FOR COMBUSTION-ENGINES.

1,041,339. Specification of Letters Patent. Patented Oct. 15, 1912.

Application filed December 20, 1910. Serial No. 598,401.

To all whom it may concern:

Be it known that I, WILLIAM N. PARK, a citizen of the United States, residing at Corning, in the county of Steuben and State of New York, have invented certain new and useful Improvements in Controlling Means for Combustion-Engines; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to new and useful improvements in controlling means for combustion engines and my object is to provide means for advancing or retarding the sparking mechanism in the motor.

A further object is to provide a governor and connect the same to the driving shaft of the engine, and,

A further object is to provide means for connecting the commutator disk to the governor, whereby said disk will be operated to advance or retard the action of the sparking mechanism by the action of the governor.

Other objects and advantages will be hereinafter referred to and more particularly pointed out in the specification and claim.

In the accompanying drawings which are made a part of this application, Figure 1 is a diagrammatic view of the governor and means for attaching the same to the commutator disk, and, Fig. 2 is a sectional view as seen on line 2—2 Fig. 1.

Referring to the drawings in which similar reference numerals designate corresponding parts throughout the several views, 1 indicates the commutator shaft which is constructed in the usual or any preferred form and 2 indicates a circuit breaker adapted to coöperate with parts of the commutator.

Surrounding the shaft 1 is the commutator disk 3, which is likewise constructed in the usual or any preferred form and has around its periphery contact points 4, which are adapted to coöperate with the circuit breaker.

The form of commutator herein shown is designed to be used in connection with a four-cylinder engine, thereby requiring four contact points for obtaining the proper ignition of the gases and as the speed of the engine varies at different times, it becomes necessary to advance or retard the point of ignition or the time of making the spark.

When using a stationary ignition point, the gas would be exploded at the same time whether the engine was running at two hundred and fifty revolutions per minute or at three hundred and fifty revolutions per minute so that at the higher speed, the gas would not be exploded at the highest point of compression, but would be delayed until after this point had been passed, in which event the engine does not develop its full power. To this end, therefore, I provide my improved means for advancing or retarding the point of ignition, whereby the explosion will always occur at the point of highest compression, thus relieving the crank shaft and bearings of the extra strain occasioned by improper ignition. In accomplishing this result, the disk 3 is provided with an ear 5, to which is attached one end of a link 6, the opposite end of the link being attached to one arm 7 of a bell crank lever 8, the opposite arm 9 of the bell crank lever being attached to a pitman 10, the bell crank lever being pivotally mounted to any suitable object or part of the engine.

One end of the pitman 10 is bifurcated to form a yoke 11, the ends of which extend on opposite sides of a head 12, said head having a circumferential groove 13, into which extend rollers 14 carried by the ends of the yoke. The head 12 is slidably mounted upon a shaft 15 and in order to cause the head to rotate with the shaft and at the same time permit the head to move longitudinally thereof, the shaft is provided with a channel 16, into which extends a rib 17 on the head. The channeled end of the shaft 15 is provided with a rigid stop collar 15ª for limiting the outward movement of the head 12.

One end of the head 12 has attached thereto spring arms 18, the opposite ends of said arms being attached to a collar 19, which collar surrounds the shaft 15 and is adjustably attached thereto by means of a set screw 20. By means of the set screw 20 the entire governor consisting of the head 12, collar 19 and connecting arms 18 may be adjusted longitudinally of the shaft 15, while the movement of said governor upon said shaft is limited by the stop collar 15ª.

The spring arms 18 are provided at their longitudinal centers with weights 21, which are adapted to cause said arms to swing outwardly by centrifugal force when the shaft 15 rotates, thus automatically moving the drum longitudinally of said shaft.

The head, spring arms and shaft upon

which the head is mounted serve as a governor and the shaft is connected to the crank shaft of the engine in any suitable manner, as by providing a cog 22 on the shaft 15 and connecting said cog with a similar gear (not shown) attached to the crank shaft of the engine.

In order to properly lubricate the rollers 14, cavities 23 may be formed in the upper face of the groove 13, in which any suitable form of lubricant retaining medium may be placed and communicating with the cavities is a port 24 through which the oil may be introduced into the cavities.

In operation when the engine is first started, the speed thereof is naturally at a low point so that the contact points will be turned to such point as to cause the spark or ignition coincident to the cylinder of the engine reaching its highest point of compression and as the speed of the engine gradually increases, the spring arms 18 will be extended and the head moved downwardly, which will result in rocking the bell crank lever and gradually moving the position of the contact point with respect to the circuit breaker, thus gradually advancing the point of ignition as the speed of the engine increases, in which event the point of ignition is always maintained at a proper position to explode the gases when the piston of the engine has reached its highest point of compression. It will likewise be seen that as the speed of the engine decreases, the contact points of the commutator will be properly adjusted to retard the ignition, thus adapting the device for use in connection with an engine at whatever speed the engine may attain.

It will further be seen that in view of the simplicity of the device, it can be readily attached to the engine and at a minimum expense.

It will further be understood that this device can be used in connection with all forms of engines using a gaseous exploding product for propelling the engine.

What I claim is:—

An attachment for engines comprising a shaft having one end thereof channeled, a head slidably mounted on the channeled end of said shaft and rotatable therewith, a collar mounted on said shaft, means for adjustably securing said collar longitudinally of said shaft, spring arms connected at opposite ends to said head and collar, weights carried centrally of said spring arms, and a rigid stop collar carried by the end of said shaft for limiting the outward movement of said head.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WILLIAM N. PARK.

Witnesses:
LENA BARBER,
FRANK H. FERRIS.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."