R. A. OGLESBY.

AUTOMATIC SPEED GOVERNOR FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED AUG. 5, 1918.

1,390,376. Patented Sept. 13, 1921.

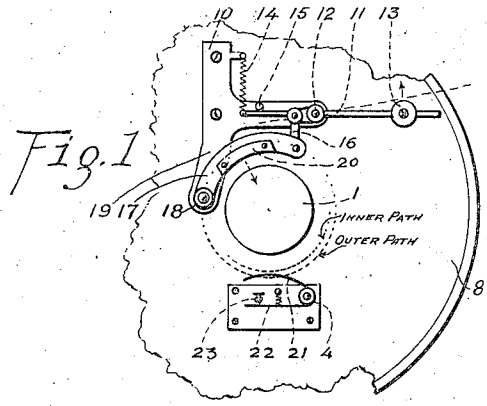


Fig. 1.

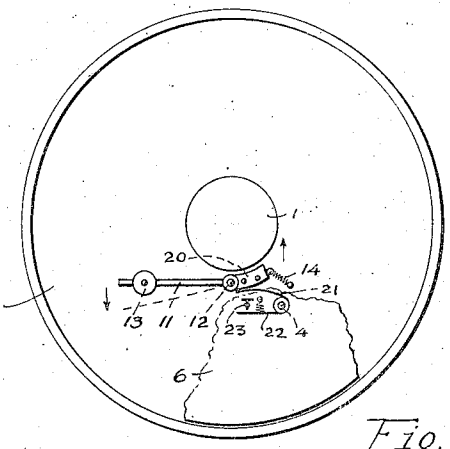


Fig. 3.

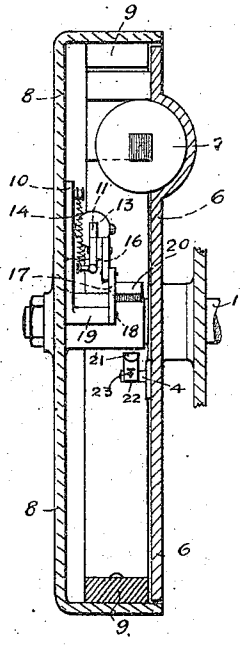


Fig. 2.

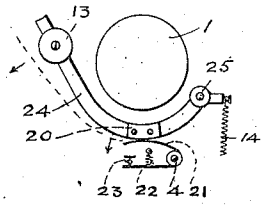


Fig. 4.

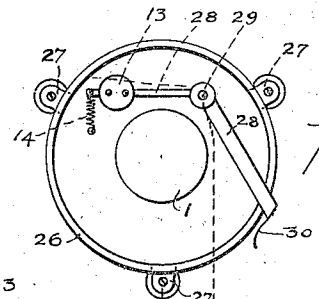
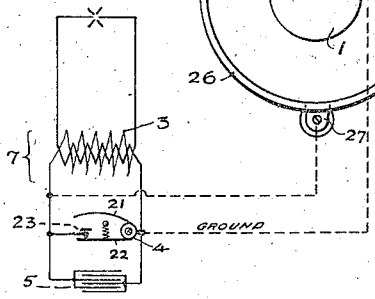


Fig. 5.



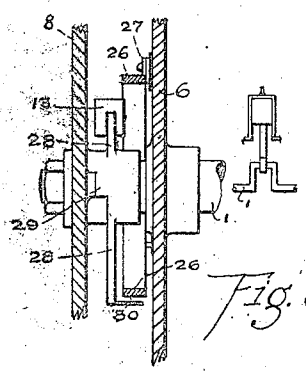


Fig. 6.

Richard Arnold Oglesby Inventor

By N. S. Amstutz

Attorney

UNITED STATES PATENT OFFICE.

RICHARD ARNOLD OGLESBY, OF SOUTH BEND, INDIANA, ASSIGNOR TO QUICK ACTION IGNITION COMPANY, OF SOUTH BEND, INDIANA, A CORPORATION OF INDIANA.

AUTOMATIC SPEED-GOVERNOR FOR INTERNAL-COMBUSTION ENGINES.

1,390,376. Specification of Letters Patent. Patented Sept. 13, 1921.

Application filed August 5, 1918. Serial No. 248,361.

To all whom it may concern:

Be it known that I, RICHARD ARNOLD OGLESBY, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Automatic Speed-Governors for Internal-Combustion Engines, of which the following is a specification.

My invention relates to improvements in automatic speed governors for internal combustion engines and it more especially comprises the features pointed out in the annexed claims.

The purpose of my invention is to provide a simple construction which will under excess speeds automatically deprive the engine spark plugs of current and that will restore current thereto at reduced speeds; and that will bring about this regulation either mechanically or electrically.

With these and other related ends in view I illustrate in the accompanying drawings such instances of adaptation as will disclose the broad underlying features without limiting myself to the specific details of adaptation shown.

Figure 1 is an elevation of the adaptation of a compound governor to a cam shifting device.

Fig. 2 is an elevation in section of the adaptation shown in Fig. 1 assembled in a completed magneto.

Fig. 3 is a detached elevation of a simple governor control for a circuit breaker cam.

Fig. 4 is a similar elevation to Fig. 3, of a modified form of governor arm and connections.

Fig. 5 is an elevation of a short circuiting governor, the circuits connected therewith being shown diagrammatically.

Fig. 6 is a side elevation of Fig. 5.

In carrying my invention into practice I may utilize numerous mechanical expedients and electric alternatives without departing from the spirit of the invention. The instances of adaptation disclosed in the accompanying drawing are exemplifications of certain equivalents which may be used separately or combined with each other or with obvious modifications as needed to meet the variable requirements of the industries in whose behalf the same may be employed.

Internal combustion engines to which governors of this class are adapted have the same attached to the crank shaft 1, or any other rotating member. The governing action rests in supplying current or withholding it from the usual spark plugs. These are supplied from an armature coil 7 through the secondary 3 of armature coil 7 from impulses set up in the primary of such coil by the breaker 4 whenever it is actuated by the cam 20 and the impulses are accentuated by the usual form of condenser 5.

The armature coil 7 is supported on a plate 6 which is supported by a projection from the engine frame that is concentric with the shaft 1. On this the plate 6 may be rocked to and fro as needed to advance or retard the spark in any well known manner.

Outside of this plate a supporting plate or cap 8 is secured to the crank shaft itself so as to rotate with it. This plate carries the permanent field magnet 9 in close proximity to the heads of the armature coil 7 inducing periodic impulses in this coil. A cam 20 rotates with the plate 8 and once for each revolution, if its radial position is not changed moves the circuit breaker shoe 21 and the contact arm 22 to break the circuit at contact 23 each time the best point of an induced impulse is reached. If these breaks occur once for each revolution invariably the engine speed will vary with the load etc., making it impossible to hold an unvarying uniform speed within desired limits.

To bring about the governing function at excessive speeds the spark plugs 2 may be deprived of current so that the number of explosions in the engine cylinders will be reduced and the speed lowered accordingly. As soon as the lower speed limit is reached the spark plugs are again supplied with current to restore the interrupted explosions and the speed again rises. The range of the high and low speed limits depends on the sensitiveness of the governing means.

A governor support 10 shown in Figs. 1 and 2 may be used to embody a self-contained unit fastened to the inside of the magnet carrier 8. The specific mechanical features of this adaptation are not made a part of this invention and no claim to such structure is made herein but the same is made the subject of a separate application Serial #248,354 filed Aug. 5, 1918. However in this form of governor, an arm 11 is

pivoted at 12 to a projection of the support 10. The long end of this arm carries an adjustable or fixed weight 13 and the shorter end has a coil spring 14 secured to it so as to act in opposition to the centrifugal action of the weight 13 as it revolves with the carrier 8. A limit stop 15 may be provided to define the distance the spring 14 can act, if the same is desired. Between the pivot 12 and the spring 14 a link 16 is attached. This link transmits the movement of arm 11 to the cam lever 17 in reduced amount so as to delicately move the cam 20 in and out radially to the center of shaft 1. The cam lever 17 is pivoted at 18 to a projection 19 that extends out from the support 10.

In the form of adaptations shown in Figs. 1 and 3 the cam 20 moves in an opposite radial direction to the weight 13 while in Fig. 4 they both move in the same direction. The adaptation exemplified in Fig. 4 through the action of the radially moved cam 20, that is secured to governor 24 which is pivoted at 25 to the magnet plate 8, will separate the breaker arm 22 from contact 23 at the time when no current is being generated and hold these out of engagement throughout the current generating period, thus depriving spark plugs 2 of ignition currents.

The only difference between the features instanced in Figs. 1 and 3 lies in the latter being a single lever while the former is of the compound lever type. In effect the compound system produces a smaller displacement of cam 20 for a given movement of the weight 13 than the direct type shown in Fig. 3 however the more delicate ratio may be approximated by proportioning the distance the weight 13 and the cam 20 are placed from the fulcrum 12.

To produce the same effect on the spark plugs 2, electrically, the expedient instanced in Fig. 5 may be used. In this a ring 26 having supports 27 is secured to the armature plate 6 in an insulated manner and a wire connection made therefrom to the side of the primary circuit which is attached to contact 23. A governor arm 28 is pivoted to the one magnet carrier 9 at 29. Its one end carries a weight 13 and a spring 14 is attached to the same end to work in opposition to the weight. The other end of the arm 28 at 30 has a contact spring which at excessive speeds engages the ring 26 and grounds the primary and thus deprives the spark plug of ignition current. In this type the mechanical deterioration of the breaker points through recurring hammer action is of course present but in the other exemplifications wherein the cam itself is removed from action such deterioration is entirely obviated.

It is, in the broadest sense immaterial whether either one of the exemplifications instanced in Figs. 1, 3, 4 or 5 be used so long as the presence or absence of ignition current at the spark plugs 2 is controlled automatically through a variation of speed in the engine, hence the use of all alternatives is claimed consistent with the prior state of the art.

What I claim is,—

1. In ignition systems for internal combustion engines, a crank shaft, an engine casing, an armature plate supported by said casing, a magnet supporting member supported by the crank shaft, a permanent field magnet thereon, a coil on the armature plate adapted to have currents induced therein as the magnet is moved adjacent thereto, a circuit breaker supported on the armature plate, means rotative with the magnet adapted to actuate the breaker, one or more spark plugs for the engine, connections from the coil to the spark plugs, a centrifugal governor carried in unison with the field magnet movement, and means controlled by the governor for automatically depriving the spark plugs of current at excessive engine speeds and restoring the same at lowered speeds.

2. In speed governing systems for internal combustion engines, a main engine shaft, a movable field magnet, a stationary armature, means for moving the field magnet adjacent the armature through the rotation of the engine shaft, a circuit breaker connected to the armature and supported against rotation, other connections from the latter to an ignition circuit, a centrifugal governor carried in unison with the field magnet movement, and means for automatically controlling the ignition circuit through the action of the governor, said means being arranged to deprive the ignition circuit of current at excessive engine speeds and restore the current at lowered speeds.

In testimony whereof I affix my signature.

RICHARD ARNOLD OGLESBY.