C. L. McHENRY.

CONTROLLER FOR GAS ENGINES.

APPLICATION FILED JAN. 18, 1908.

932,804.

Patented Aug. 31, 1909.

2 SHEETS—SHEET 1.

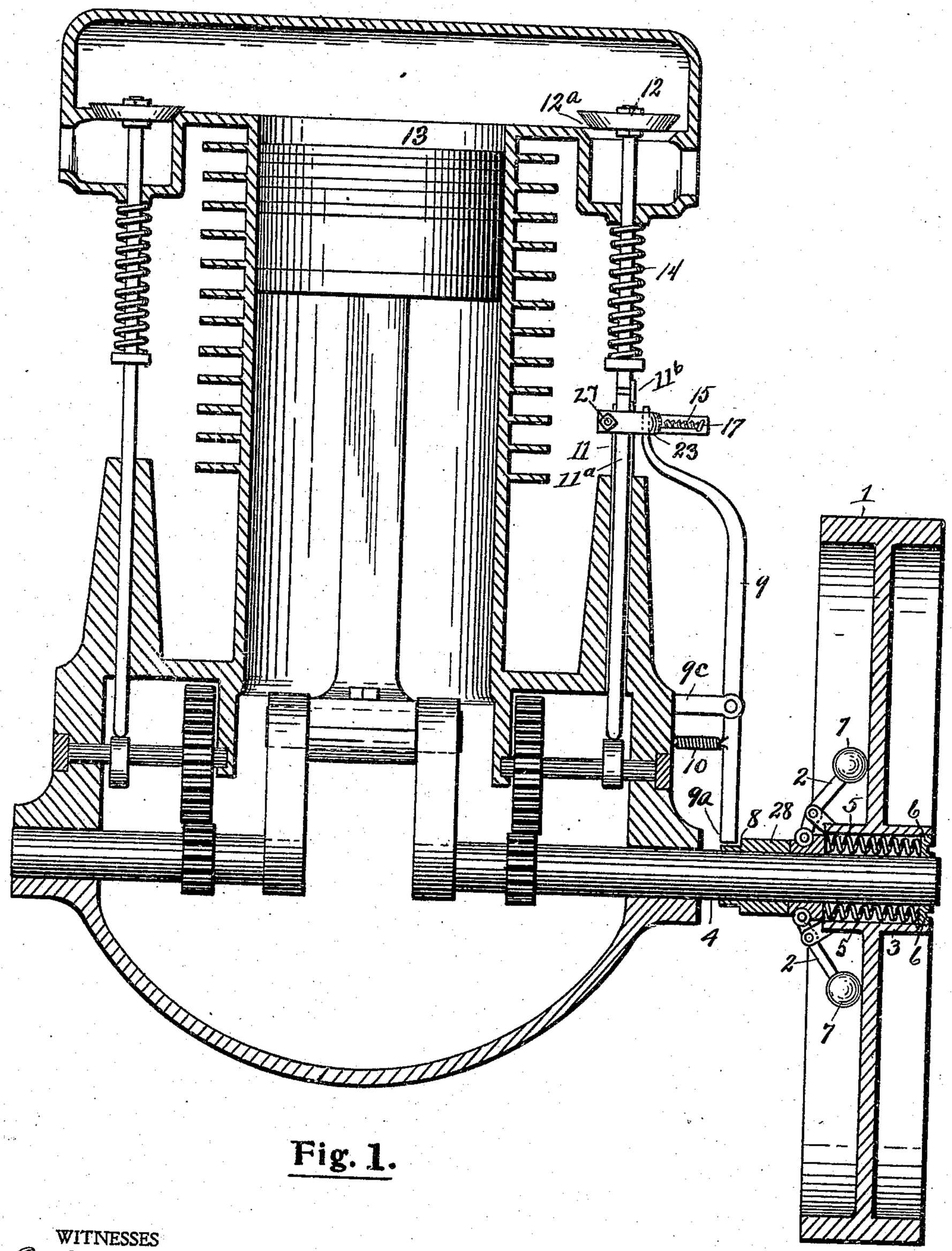


Fig. 1.

WITNESSES

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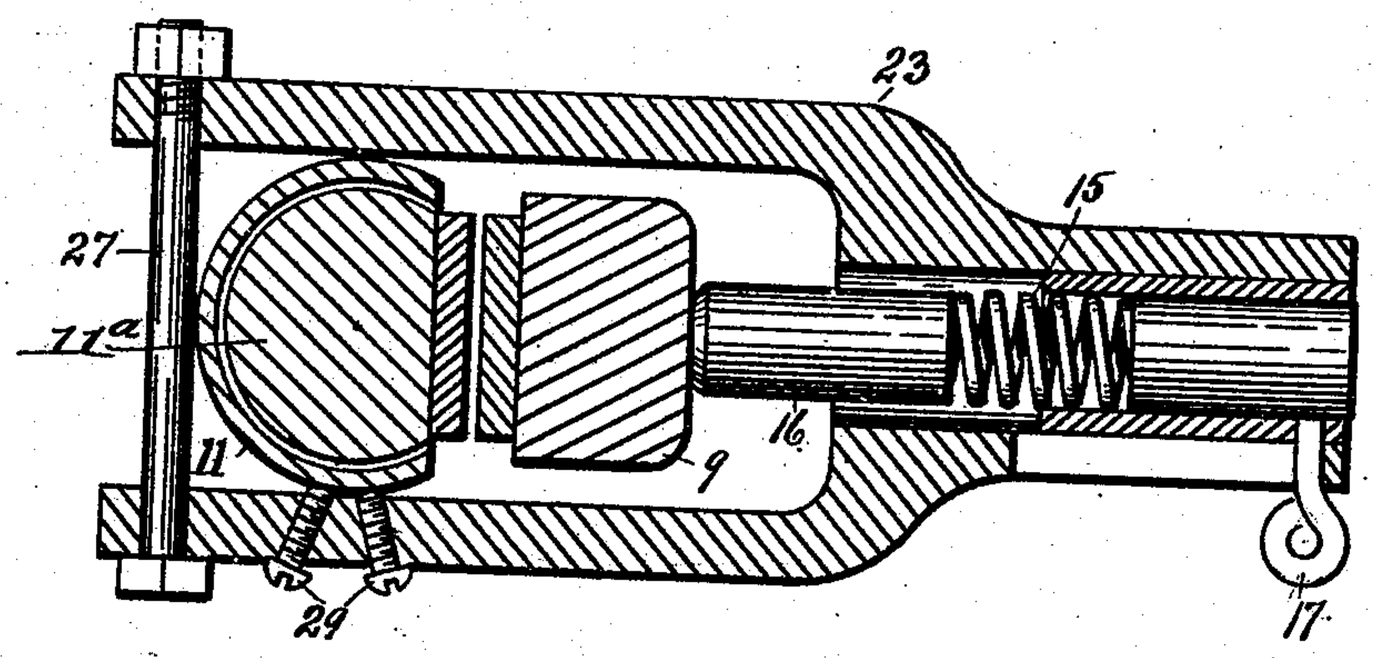


Fig. 3.

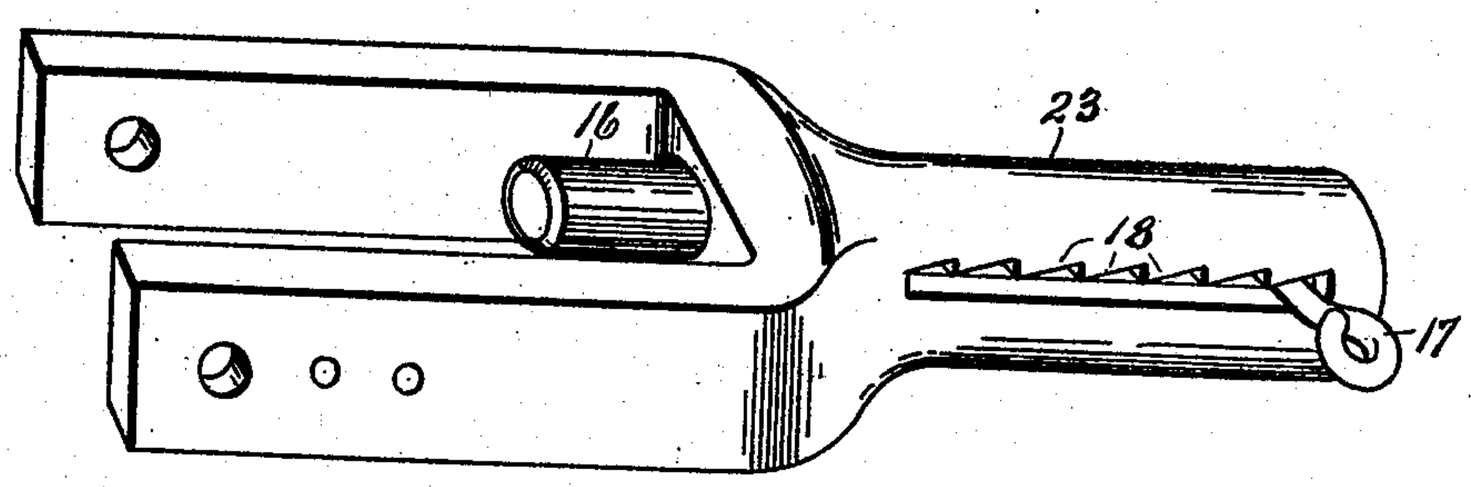


Fig. 2.

WITNESSES

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# UNITED STATES PATENT OFFICE.

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## CONTROLLER FOR GAS-ENGINES.

932,804. Specification of Letters Patent. Patented Aug. 31, 1909.

Application filed January 18, 1908. Serial No. 411,391.

*To all whom it may concern:*

Be it known that I, CLARENCE L. McHENRY, who am a citizen of the United States, residing at Lansing, county of Ingham, State of Michigan, have invented a certain new and useful Improvement in Controllers for Gas-Engines, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

This invention relates to controllers for gas engines, and has for its object an improved device for regulating the speed at which a gas engine is allowed to run without stopping the operation of the engine, and without changing the quality of the gaseous mixture supplied by the carbureter as a means for varying the engine's speed.

In the drawings:—Figure 1, is a front elevation of that portion of a gas engine to which the device is appurtenant, showing its relation thereto. Fig. 2, is a perspective of the device itself, and the operation of the hook-up rod controlling the exhaust valve of the engine. Fig. 3, is a sectional plan of the device, and of the adjacent portions of the hook-up rod and push rod.

1 indicates the fly wheel of an engine, whose speed of rotation may be automatically regulated to a degree by the ball governors 2. At various points in the sleeve 3, which encircles the shaft 4, are located spiral springs 5 controlled by screws 6 by means of which the degree of yielding resistance offered to the centrifugal movement of the balls 7 may be regulated, when the device is at rest. Engaging within a niche or shoulder 8 of the collar 28 which adjoins and is in a way a continuation of the sleeve 3, is the lower end $9^a$ of the hook-up lever 9, which is fulcrumed at $9^c$, and which is kept pressed against said collar 28 by the spring 10. This lever extends above the fulcrum preferably to about double the distance of its extent from the fulcrum to the shoulder 8. Engaging against its upper end is the bolt 16 which projects from the main portion of a Y-shaped device 23, whose branches engage on each side of a push rod casing 11, on the upper end of whose valve rod $11^a$ is mounted the valve 12, by whose closure upon its seat $12^a$ the creation of a vacuum in the cylinder 13, prior to the indrawing of a gaseous charge, is made possible. The valve is kept normally, though yieldingly, on its seat by the pressure of the spring 14. The tips of the branches of the Y-shaped device or coupling piece may be joined by a bolt 27 which serves to clamp the device as tightly about the casing 11 as desired. The stay pins 29 may also be used for further securing purposes.

Engaging through the main portion of the device is a spring 15, (see Figs. 2 and 3) which, with adjustable degrees of pressure, engages against this hook-up lever 9, or rather forces the bolt 16 against it. The position of the spring within the device, and consequently the degree of projection of the bolt between the branches of the same and against the hook-up lever, is regulated by the position of the handle or stem 17, in any one of the notches 18. If a low speed is desired, and consequently unusually sharply defined terminations of the periods when the valve 12 is moved from its seat, the stem is set so that the pressure of the bolt against the hook-up lever 9 is increased, resulting in allowing a corresponding compression of the springs 5, which in turn compels the ball regulators to move away from the hub, and thereby decrease the speed of rotation of the fly wheel accordingly. If however, a higher speed is desired, the stem and its related spring 15 and bolt 16 are moved further toward the rear of the body portion of the device, by moving the handle or stem 17 into one of the more rearward of the notches 18. This results in the lever 9 being held less closely against the contact block $11^b$, on the valve rod $11^a$, so that it does not follow up as promptly as before with its lower end, the recession of the collar 28 and sleeve 3 along the shaft 4 toward its outer end and against the pressure of the springs 5. The position of the handle or stem 17 along the notched main or body portion of the Y-shaped device 23 indicates at a glance, to one familiar with the possible ranges of speed, the rate at which the engine is then running. It is obvious that for this bolt and its holding notches there could easily be substituted a screw engaging lengthwise of the body portion of the device, whereby the projection or retraction of the bolt through the medium of the spring could be effected. In either case, as the movement of the end of the lever whereon the device is mounted does

not exceed one-fourth of an inch, it is obvious that, unlike the springs 3 on the fly wheel shaft, adjustment could be made at any time when the engine is running, instead of merely when it is stationary. A pivoted eccentric could similarly be substituted for either of these without departing from the spirit of the idea here disclosed.

What I claim is:—

1. A controller, having in combination with a valve rod and a pivoted lever adapted to engage with a moving portion of an engine, a casing within which said valve rod slidably engages, a member supported by said casing and engaging about the lever, and resilient means slidably engaging through the body portion of said member and against said lever, adapted to be adjusted with respect to said member to engage with varying degress of pressure against said lever, substantially as described.

2. A controller for a gas engine, having in combination a valve rod, a casing within which said rod may reciprocate, a pivoted lever adapted to have one end forced into frictional engagement with said valve rod, and means carried by said casing and adapted to engage against the adjacent portion of said lever whereby the degree of pressure exerted by said lever upon said valve rod may be varied, substantially as described.

3. In combination with a valve rod, a rotatable shaft, a fly wheel mounted thereon, a ball governor whereby the speed of rotation thereof may be controlled, a casing about a portion of the length of the valve rod, a pivoted lever intermediate said valve rod and said fly wheel, and adjustable means yieldingly engaging about said valve rod and lever whereby the lever may be moved to influence the governors and thereby the speed of rotation of the fly wheel, substantially as described.

4. In combination with a pivoted lever, a ball governor and a supporting shaft therefor, with respect to which said ball governor is movable, a valve rod, a casing within which the same is slidable, and an adjustable member supported by said casing resiliently forcing the opposite end of said lever from that adjacent to said ball governor against said valve rod, substantially as described.

5. In combination with a valve rod, a casing therefor, a lever, adjustable means for causing a frictional engagement between the valve rod and the lever, comprising a coupling piece engaging about said members, resilient means engaging through the body portion of said coupling piece and against one of the members, whereby it is forced against the other, substantially as described.

In testimony whereof, I sign this specification in the presence of two witnesses.

CLARENCE L. McHENRY.

Witnesses:
VIRGINIA C. SPRATT,
WILLIAM M. SWAN.