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B. W. HAYDON.
GOVERNOR FOR EXPLOSION ENGINES.
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Fig. 1.

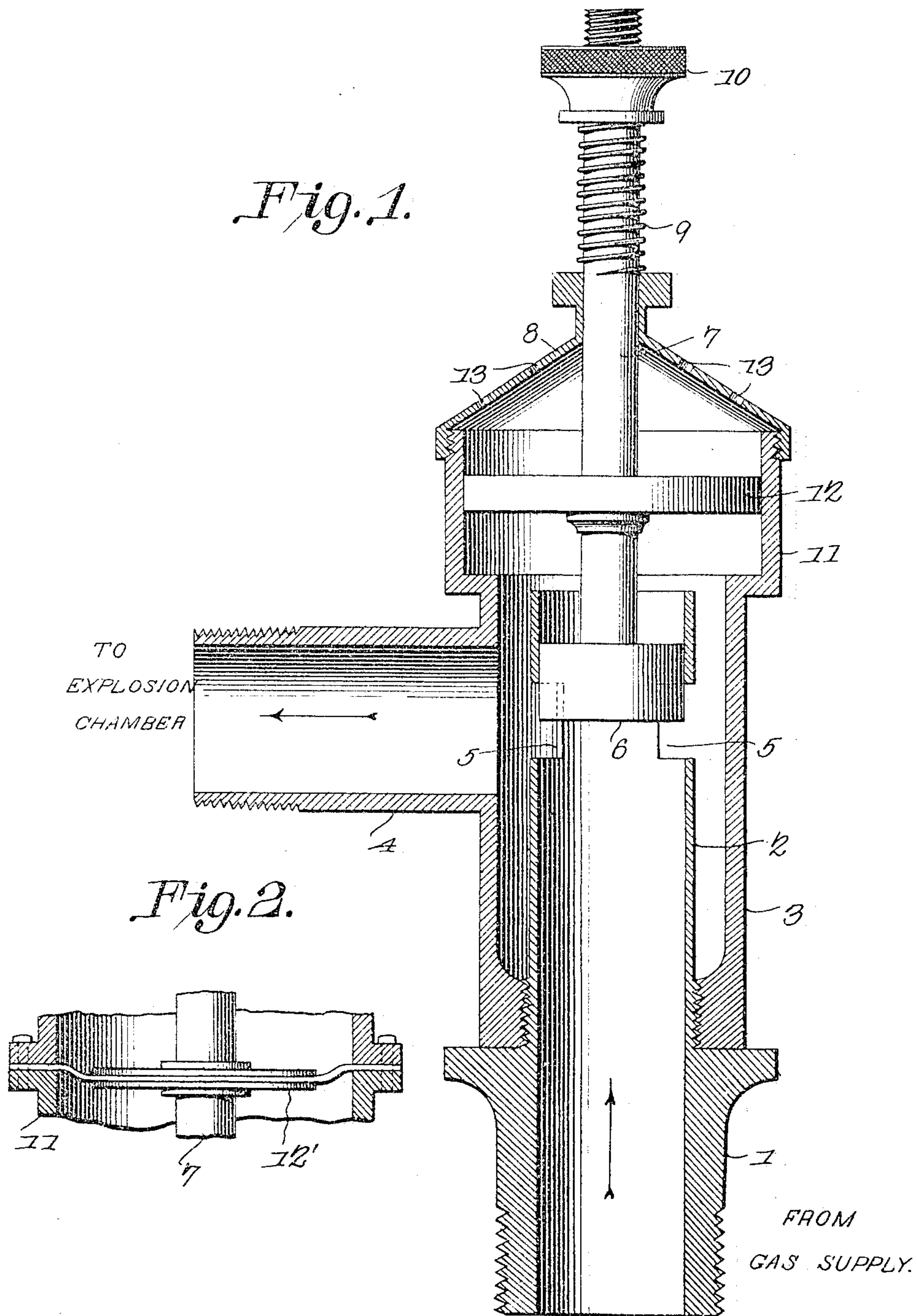


Fig. 2.

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UNITED STATES PATENT OFFICE.

BENNIE W. HAYDON, OF WACO, TEXAS.

GOVERNOR FOR EXPLOSION-ENGINES.

SPECIFICATION forming part of Letters Patent No. 782,244, dated February 14, 1905.

Application filed February 29, 1904. Serial No. 195,922.

To all whom it may concern:

Be it known that I, BENNIE W. HAYDON, a citizen of the United States, residing at Waco, in the county of McLennan and State of Texas, have invented a new and useful Governor for Explosion-Engines, of which the following is a specification.

This invention relates to improvements in explosion-engines in which gas or gasolene mixed with air is used as an explosive compound.

The principal object of the invention is to provide a governor for controlling the supply of the explosive compound to the engine, the governor being operable on the suction-stroke of the engine when a partial vacuum is created in the cylinder to induce the flow of the explosive mixture thereinto.

A further object of the invention is to construct a governing device that will be extremely sensitive to variations in the degree of vacuum in the cylinder of the engine, so that when the engine is running at high speed and the vacuum is formed more quickly than at normal speed the pressure of the atmosphere will serve to move a controlling-valve in such manner as to reduce the quantity of the explosive compound admitted to the cylinder.

A still further object of the invention is to provide a device of this character which may be adjusted in order to control the speed of the engine.

With these and other objects in view, as will more fully hereinafter appear, the invention consists in the novel construction and arrangement of parts hereinafter described, illustrated in the accompanying drawings, and particularly pointed out in the appended claim, it being understood that various changes in the form, proportions, size, and minor details of the structure may be made without departing from the spirit or sacrificing any of the advantages of the invention.

In the accompanying drawings, Figure 1 is a sectional elevation of a governor constructed in accordance with the invention. Fig. 2 is a similar view of a portion of the device, illustrating a modified construction.

Similar numerals of reference are employed to indicate corresponding parts throughout both figures of the drawings.

The coupling 1 is connected to the source of supply of the explosive compound, and this may be in the nature of previously-formed gases or a mixture of gasolene and air.

The upper portion of the coupling is in the form of an elongated tube 2, which extends within the casing 3, that is screwed or otherwise secured to the coupling, the internal diameter of said casing being greater than the external diameter of the tube 2. The casing has an extension 4, which is coupled to the cylinder of the engine and serves to permit the passage of the explosive compound to the cylinder.

In the tube 2, which is open at the top, are formed one or more ports 5, the effective area of which may be controlled by a slidable piston-valve 6. The piston is secured to a stem 7, which extends out through a suitable opening formed in a cap-piece 8 at the upper end of the casing, and is surrounded by a coiled compression-spring 9, the upper end of the stem being threaded to receive a nut, which may be adjusted to alter the stress of the spring.

The upper portion of the casing 3 is of greater diameter than the main body thereof and is bored out to form a cylinder 11 for the reception of a piston 12, which is also secured to the stem 7 and moves with the stem and piston 6. The upper portion of this cylinder 11 is in communication with the atmosphere through suitable openings 13, formed in the cap, so that the upper face of the piston 12 is at all times exposed to the atmospheric pressure, while the tendency of the spring 9 is to lift the piston against such pressure.

The explosive compound will be drawn through the coupling 1, tube 2, ports 5, and thence into the casing, discharging through the passage 4 into the explosion-chamber during the suction-stroke of the engine. Should the engine be traveling at a high rate of speed, the partial vacuum will be formed more quickly than usual, and this will tend to form

a partial vacuum within the cylinder 11, and the atmospheric pressure on the upper face of the piston 12 will tend to depress said piston, and thus move the piston-valve 6 downward and lessen the effective area of the ports 5, so that the supply of fuel to the engine will be lessened and its speed proportionately reduced. Should the engine be running at slow speed, the vacuum will not be formed so quickly and the piston 12 will not respond to the same extent, so that a greater quantity of explosive compound may be passed to the cylinder.

It is obvious that by adjusting the stress of the spring the speed of the engine may be regulated, inasmuch as increased resistance of the spring will render the piston 12 less sensitive, and therefore permit the engine to operate at a much higher rate of speed, while a reduction of the degree of force exerted by the spring will allow the piston to more quickly respond to the vacuum-pressure, and thus reduce the speed of the engine.

While a spring has been shown as the means for offering resistance to the movement of the piston, it is obvious that a dash-pot or similar retarding medium may be employed.

In some cases the structure may be slightly modified, as illustrated, for instance, in Fig. 2,

wherein the diaphragm 12' takes the place of the piston 12.

Having thus described the invention, what is claimed is—

In a governing device for explosion-engines, a casing connected to the inlet-port of the engine, a cylinder forming a part of the casing, said cylinder being open at one end to the atmosphere, a ported tube extending within the casing and serving to admit an explosive compound thereto, the inner end of said tube being open, said tube being of less diameter than the casing to permit the free passage of the explosive mixture, a piston-valve arranged within the tube to control the effective area of the port of the latter, a piston in said cylinder, said piston being of greater area than the valve, a stem connecting the valve and piston and extending through the end of the casing, a spring encircling said stem, and means for adjusting the stress of the spring.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

BENNIE W. HAYDON.

Witnesses:

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