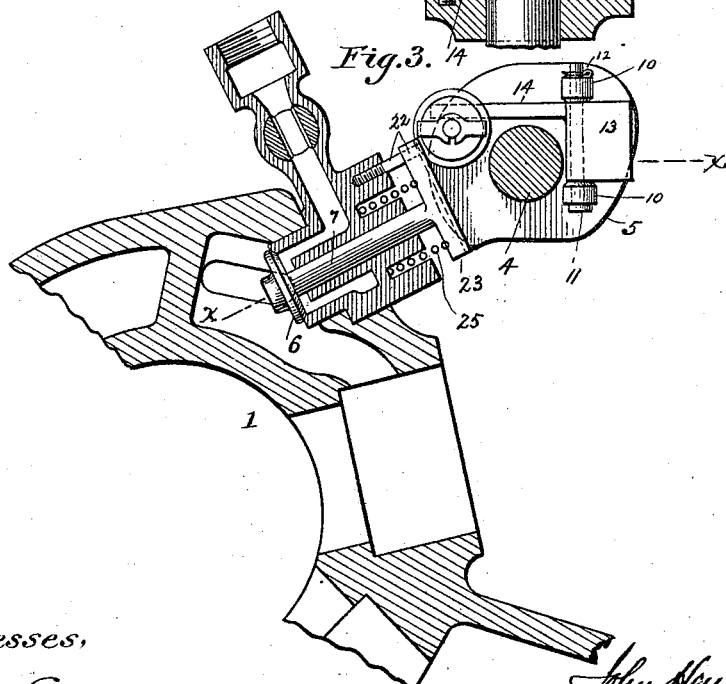
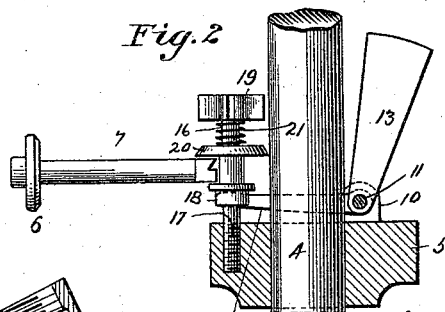
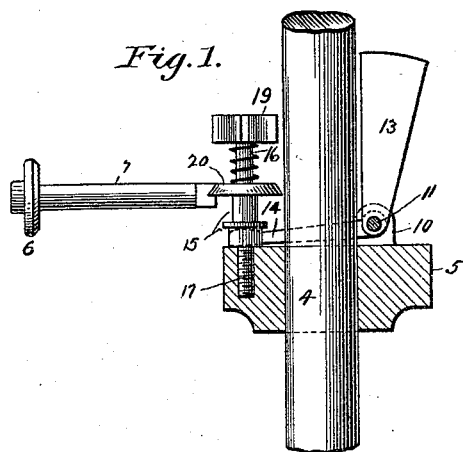


(No Model.)

J. H. HAMILTON.
GOVERNOR.

No. 456,095.

Patented July 14, 1891.



Witnesses,

H. W. Elsworth.

Percey B. Hills.

Inventor,

John Henry Hamilton,

By HIS ATTORNEYS,

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UNITED STATES PATENT OFFICE.

JOHN HENRY HAMILTON, OF SANDIACRE, ENGLAND.

GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 456,095, dated July 14, 1891.

Application filed May 11, 1891. Serial No. 392,295. (No model.)

To all whom it may concern:

Be it known that I, JOHN HENRY HAMILTON, a subject of the Queen of England, residing at Sandiacre, in the county of Derby, England, have invented certain new and useful Improvements in Governors; 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.

This invention relates to that class of gas or vapor engine governors which automatically regulate the engine speed by permitting the admission of gas to the combustion chamber when the engine is running at or below the normal rate, but cut off the supply when such normal rate is exceeded and until it is re-established. The governor is of the centrifugal type, and is adapted for use upon engines wherein the cylinder and lay-shaft are vertical.

In the accompanying drawings, Figure 1 represents a side elevation and partial section on the line *xx* of Fig. 3 of a governor embodying the invention, the governor being shown in the act of operating the gas-valve to take in gas. Fig. 2 represents a like view, the governor being shown as cutting out the gas; and Fig. 3 represents a partial cross-sectional and plan view of the parts in their relationship to a gas or vapor engine of the vertical type.

Similar numerals of reference indicate similar parts throughout the several views.

Referring to the drawings, 1 indicates the gas or vapor engine, having gas, air, and exhaust ports communicating with the combustion-chamber in any suitable manner. 4 indicates the side shaft or "lay-shaft," as it is sometimes called, of the vertical gas-engine 1, said lay-shaft being provided with a cam 5, which is shown of a shape appropriate to a two-cycle engine, and is designed to operate both the admission and exhaust ports of the engine through the instrumentality of a bent lever in a manner illustrated generally, for instance, in an application filed by Arthur Rollason and John Henry Hamilton March 26, 1891, Serial No. 386,532. Neither the particular arrangement of the ports, however, nor the shape of the cam forms any part of

the present application, inasmuch as the governor can be applied to the regulation of the gas-port valve in any similar gas or vapor engine, whether of the two-cycle or three-cycle type. It will be understood, therefore, that the form of gas-engine and gas-port valve shown in Fig. 3 is chosen merely for the purpose of illustrating one of the ways in which the governor may be employed in practice.

The lay-shaft 4, upon which the cam 5 is fixed, is to be geared to the crank-shaft, as will be understood by those skilled in the art, so as to be driven at the desired relative speed. The cam 5 is provided upon its upper surface with lugs or projections 10, serving as bearings for the headed pin 11, held therein by the securing device 12. Upon the pin 11 is mounted the rocking weight 13, having a forward arm 14, upon whose free end rests a sleeve 15. The sleeve 15 rests upon a stud 16, having a screw-threaded end 17, whereby it is affixed to the cam 5. It also has a shoulder 18 and a head 19. The sleeve 15 is provided with a disk 20, preferably beveled at its periphery, as shown, and between this disk and the head 19 is interposed a spring 21, tending to force the sleeve downwardly. The gas-port valve 6 is provided with an operating-rod 7, which may be connected directly to it, so as to form its stem, as shown, or may be an intermediate rod or lever between the stem and governing device. At its outer end it is provided with a transverse end piece 23, forming an elongated contact-surface and having a beveled groove, as shown. The transverse end piece 23 is provided with an aperture through which passes the pin 22, the function of said pin being to prevent rotary movement of the stem 7, while at the same time permitting longitudinal movement thereof. A spring 25 tends to hold the gas-port valve 6 to its seat.

The mode of operation will be readily understood. The lay-shaft 4 being geared to the crank-shaft of the engine, rotates with a speed proportionate at all times to the speed of the crank-shaft. When the engine is running at or below its normal speed, the tension of the spring 21 will be sufficient to maintain the parts in the position shown in Fig.

1, so that with every revolution of the lay-shaft the disk 20 will come in contact with the transverse end piece 23, and in passing by said end piece will push or force it inwardly against the tension of the spring 25, and will thereby lift the gas-valve 6 from its seat, permitting the engine to take a charge of gas. As soon as the disk 20 passes the transverse end piece 23 the force of the spring 25 will cause the gas-valve 6 to close. When the engine, and consequently the lay-shafts 4, attains a speed greater than the normal speed, the rocking weight 13 will be thrown outwardly by centrifugal force, as indicated in Fig. 2, and the arm 14 will raise the sleeve 15 in such manner that the disk 20 will be above the plane of the transverse end piece 23, so that in passing by said transverse end piece it will be above it and will not come in contact with it. Consequently the gas-port valve will not be operated by the disk 20 and the gas-charge will therefore be cut out until the speed of the engine is reduced to the normal, so as to restore the parts to the position indicated in Fig. 1. While the stud or pin 16, upon which the push piece or disk 20 is sleeved, and the weighted lever are for convenience mounted upon the cam-disk 5, it will be apparent that they might, without departing from the spirit of my invention, be mounted upon any other suitable plate or disk collar attached to the lay-shaft.

Having thus described my invention, what I claim is—

35 1. A governor for gas or vapor engines, comprising a valve stem or rod, an actuating push-piece connected to and moving with a rotating part of the engine, said push-piece consisting of a disk mounted upon a pin and
40 adapted to slide longitudinally thereon, and a spring acting against the disk, the valve-rod being extended into the normal path of movement of the disk, so as to be normally actu-

ated thereby, and a weighted lever for moving the disk out of the plane of the valve-rod extension when the normal speed of the engine is exceeded, substantially as described. 45

2. A governor for gas or vapor engines, consisting of a valve stem or rod having at its free end a cross-piece provided with a beveled recess, a disk having a beveled periphery, said disk being connected to and moving with a rotating part of the engine, a pin upon which the disk is mounted to slide longitudinally, a spring acting against the disk, and a weighted lever for sliding the disk when the normal speed of the engine is exceeded, substantially as described. 55

3. A governor for gas or vapor engines, consisting of a valve stem or rod having at its free end a cross-piece provided with a beveled recess, a disk having a beveled periphery, said disk being connected to and moving with a rotating part of the engine, a pin upon which the disk is mounted to slide longitudinally, a spring acting against the disk, a weighted lever for sliding the disk when the normal speed of the engine is exceeded, and a pin passing through the cross-piece and preventing the same from turning, substantially as described. 65 70

4. A governor for gas or vapor engines, consisting of a valve stem or rod having at its free end a cross-piece 23, provided with a beveled groove or recess, a sleeved disk 20, having a beveled periphery, a pin 16, mounted upon a plate or disk connected to the lay-shaft, a spring 21, and a weighted lever whose forward arm extends beneath the disk-sleeve, substantially as described. 75 80

In testimony whereof I affix my signature in presence of two witnesses.

JOHN HENRY HAMILTON.

Witnesses:

ARTHUR ROLLASON,
WILLIAM BROWN.