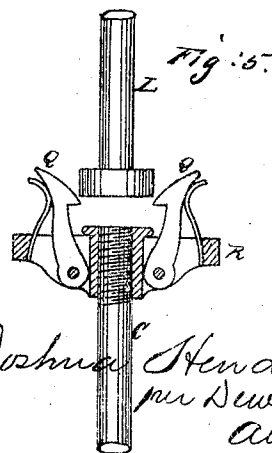
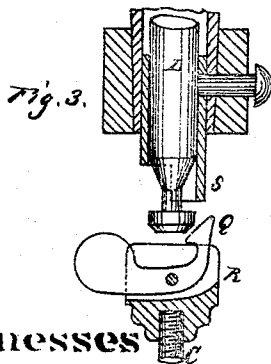
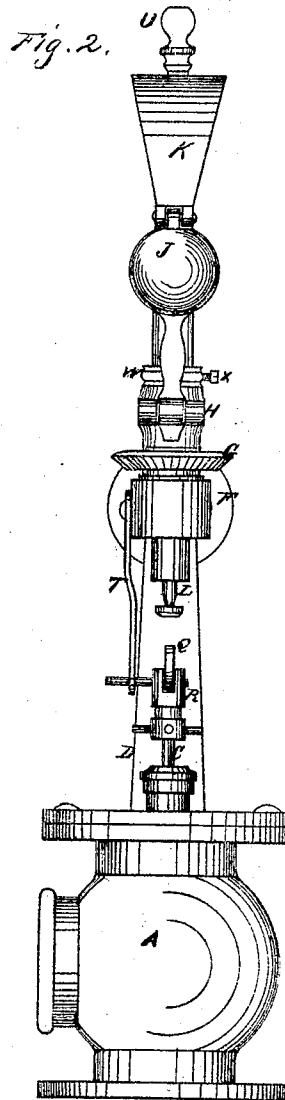
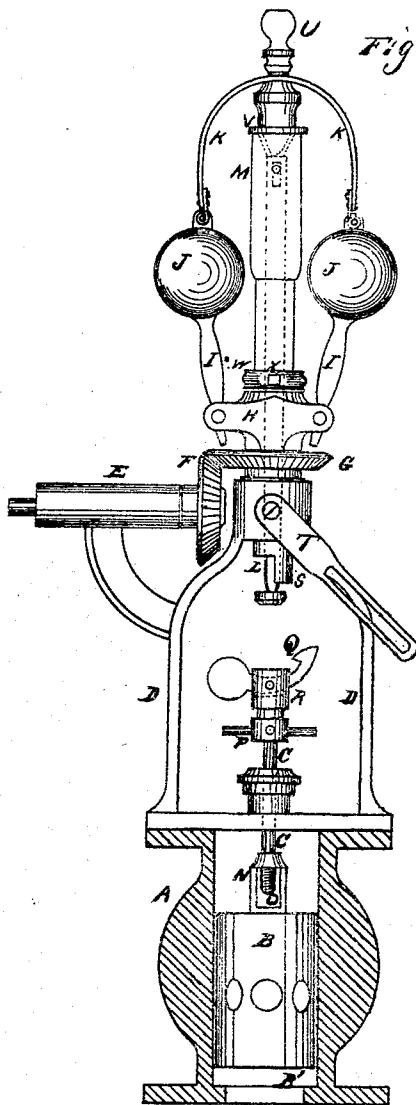


J. HENDY.
Engine-Governors.

No. 140,414.

Patented July 1, 1873.



Witnesses

John L. Boone
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UNITED STATES PATENT OFFICE.

JOSHUA HENDY, OF SAN FRANCISCO, CALIFORNIA.

IMPROVEMENT IN ENGINE-GOVERNORS.

Specification forming part of Letters Patent No. **140,414**, dated July 1, 1873; application filed April 7, 1873.

To all whom it may concern:

Be it known that I, JOSHUA HENDY, of San Francisco city and county, State of California, have invented an Engine-Governor; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

The object of my invention is to provide an improved governor for steam-engines or other machines which have need of a regulating device; and it consists, mainly, in the use of a positive-acting trip-valve, so connecting the upper and lower part of the valve-stem as to prevent all accidents liable to occur from the parting of the governor-belt, or from any cause which would prevent the acting of the governor; it also consists in a device by which the speed of the engine can be regulated while the engine is in motion without change of pulleys, and other improvements in the construction of the governor.

Referring to accompanying drawings for a more complete explanation of my invention, Figure 1 is a front view of my governor. Fig. 2 is a side view of my governor. Fig. 3 is an enlarged view of the catch and the parts near it. Fig. 4 is a bottom view of the sleeve around the upper stem, showing the manner of cutting it away. Fig. 5 shows a modification where two catches are used with springs.

A is the valve-chamber, containing the valve B, and provided with a stuffing-box upon its top, through which the lower part C of the valve-stem passes. The bracket D supports the sleeve E, and the shaft of the bevel-gear wheel F turns on this sleeve. The bevel-wheel F drives the bevel-wheel G, and this operates the cross-head H, into which the lower ends of the arms I are hinged. The weights or balls J are secured to the upper ends of these arms, which move outward and inward in vertical planes by the action of the centrifugal force caused by the speed of the governor, and by the force of the spring K when the centrifugal force decreases. The valve-stem is divided into two parts—the lower stem C and the upper stem L. The upper stem is connected with the sliding sleeve

M, to which the spring K is secured, and is thus caused to move up and down by the varying movements of the governor-balls and their consequent action on the sleeve, to which the rod is connected by a pin and slot. The lower stem C is attached to the valve of an adjusting-screw, O, and stirrup N, or turn-buckle, and by means of a thumb-wheel, P, near the upper end of the stem C, the valve can be adjusted up or down, as desired, without stopping the governor. The upper and lower stems are coupled by means of a catch, Q, which is pivoted in a short sleeve, R, secured to the upper end of the stem. The catch is made, as shown, with an arm extending across the sleeve and terminating in a weight at the opposite side, by which the catch will always be held in contact with the lower end of the upper stem L. A groove is turned in the lower end of the stem L, into which the catch falls, and thus connects the two stems together, and any motion imparted to the upper one by the action of the balls will be conveyed through the lower stem to the valve. The sleeve through which the upper stem passes is cut, so that one-half of it, S, extends some distance below the other half, and when the governor is running the catch is turned so as to stand below the half-sleeve S.

Any decrease of motion in the governor below what is safe or desirable, either by the breaking of the belt or from any other cause which would allow the valve to open too much, will bring the catch up against the sleeve S, and it is thus by its shape drawn back so as to detach it from the groove in the stem L. This allows the lower stem C and valve B to drop at once, and thus shut off steam from the engine. When the valve drops it strikes upon a seat, B', which is made below the valve in the chamber A for the purpose of arresting the fall of the valve independently of the shutting off of the steam, which is done by the closing of the openings or ports in the sides of the valve in the manner common to this class of valves.

In my construction of a double valve-stem it is manifest that when suddenly closed by detaching the lower stem the valve must have some support, as it is no longer suspended by a continuous stem. In large governors the

weight of the valve will be sufficient to close it; but in very small ones a spiral spring may sometimes be necessary, the spring surrounding the stem C. In order to connect the stems the catch is turned half-round so as to enter the recess or part of the sleeve which is cut away. After the engine is started the thumb-wheel, and with it the catch, can be again turned so as to stand below the part S. In order to hold the lower stem in position and to prevent it from turning by the action of the screw upon the lower stem, a spring, T, is pivoted to the upper part of the bracket D, so that it can be turned up out of the way, or it may be turned down in front of the stem. The lower part of the spring is slotted vertically, and this slot passes over the end of a pin which projects from the lower stem. The slot allows the stem to move up and down, but prevents it from turning, so that after the catch is set in the proper position and the spring brought down the engine can be left without danger.

An oil-cup, U, at the top, serves to receive oil for the spindle, which drops over the outside of the head just below the spring and is received into a cup at V, whence it passes down the spindle.

In order to repair or clean the upper part of the governor this part is held in position by a collar, W, and set-screw X, which serve to prevent the gears from jumping out or separating in case the valve should drop, and as

the stem is made in two parts it is manifest that by simply loosening the set-screw the whole upper part can be instantly removed without disturbing the valve, and, if necessary, the engine can be run by the throttle-valve for a short time while repairing these parts.

By this construction I am enabled to provide a governor which is simple and efficient, and is absolutely safe.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The divided stem C L, in combination with a mechanism for connecting and disconnecting the two parts, substantially as set forth.

2. The weighted catch Q secured to the lower stem C, in combination with a groove in the lower end of the upper stem L for connecting or disconnecting the two stems, as described.

3. The sleeve, made with the projecting section S, in combination with the catch Q, for the purpose of automatically disconnecting the two stems, substantially as set forth, and for the purpose described.

In witness whereof I have hereunto set my hand and seal.

JOSHUA HENDY. [L. S.]

Witnesses:

JOHN L. BOONE,
C. M. RICHARDSON.