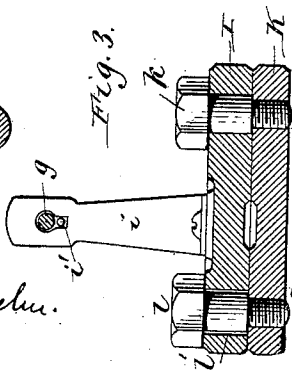
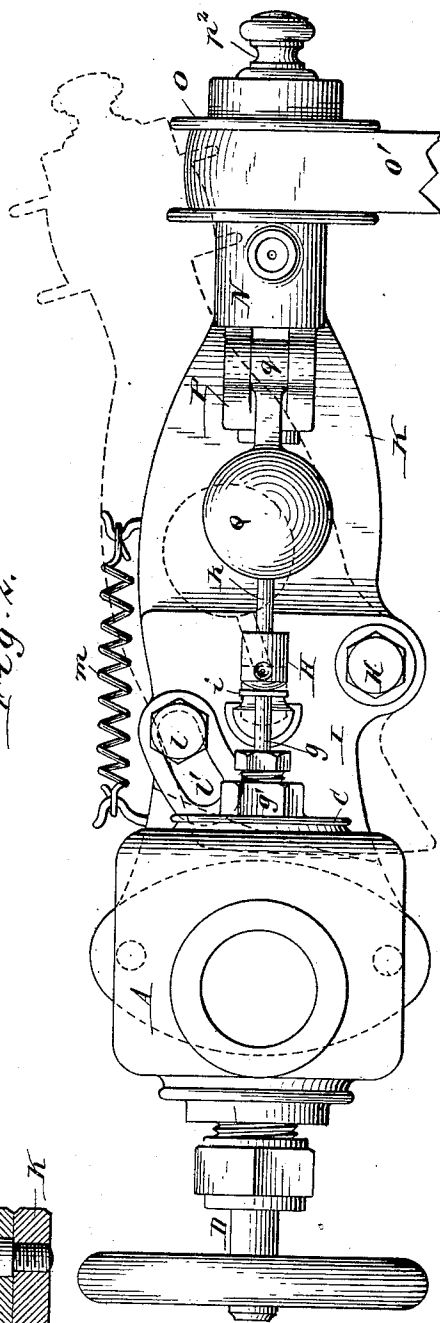
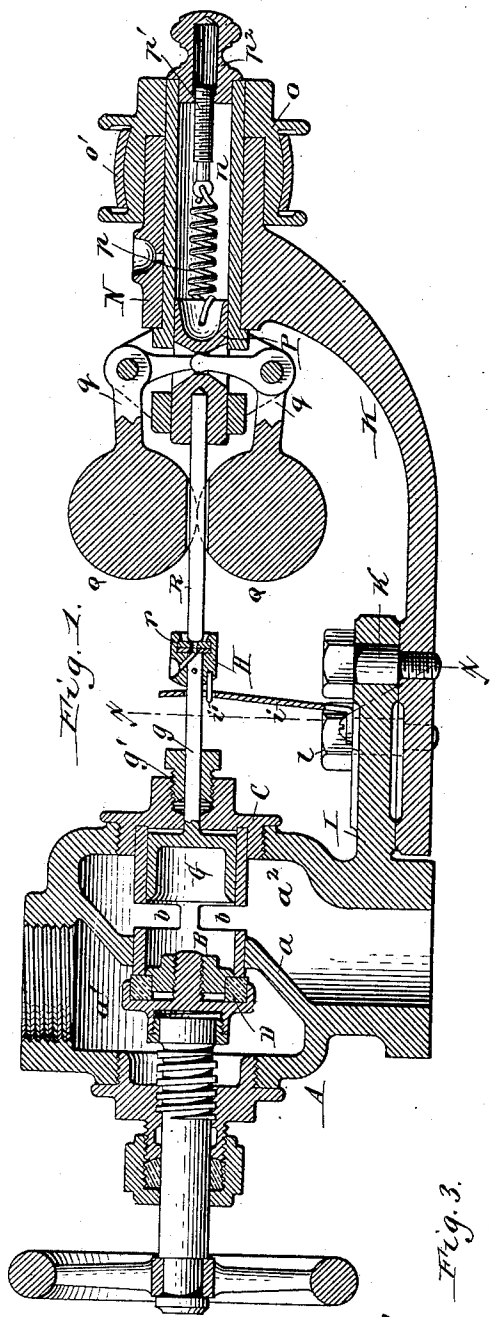


(No Model.)

F. HART.
GOVERNOR.

No. 472,293.

Patented Apr. 5, 1892.



Witnesses:
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UNITED STATES PATENT OFFICE.

FREDERICK HART, OF POUGHKEEPSIE, ASSIGNOR TO D. H. BURRELL & CO.,
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GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 472,293, dated April 5, 1892.

Application filed May 29, 1891. Serial No. 394,545. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK HART, a citizen of the United States, residing at Poughkeepsie, in the county of Dutchess and State of New York, have invented new and useful Improvements in Governors for Steam-Engines, of which the following is a specification.

This invention relates to a mechanism whereby the governor-valve is automatically closed and the steam is shut off from the engine when the governor becomes inoperative by the breaking or running off of the governor-belt.

In the accompanying drawings, Figure 1 is a longitudinal sectional elevation of my improved governor. Fig. 2 is a top plan view thereof. Fig. 3 is a vertical cross-section in line *x x*, Fig. 2.

Like letters of reference refer to like parts in the several figures.

A represents the valve-casing of the governor, which is divided by a partition *a* into an inlet-chamber *a'* and an outlet-chamber *a''*.

B represents a cylindrical valve-seat or bushing arranged in an opening formed in the partition *a*. The inlet end of this valve-seat is open and projects into the inlet-chamber *a'*, while its opposite end is closed by a screw-cap C, which surrounds the bushing and is secured in the valve-casing.

b represents an annular row of ports or openings formed in that portion of the valve-seat which is arranged within the outlet-chamber *a''*, and through which the steam passes from the interior of the valve-seat into the outlet-chamber.

D represents a hand-valve arranged within the inlet-chamber *a'* and closing against the end of the valve-seat B.

G represents the cup-shaped automatic valve arranged within the valve-seat between the ports *b* and the closed rear end thereof and controlling the passage of the steam through said ports.

g represents the stem of the automatic valve projecting through a stuffing-box *g'* in the screw-cap C and provided at its outer end with a cup-shaped step or sleeve H.

I represents a horizontal base-flange formed on the lower portion of the valve-casing un-

derneath the valve-stem, and *i* is a spring-arm, which is secured with its lower end to this base-flange and bears with its upper end against the sleeve H, so as to press the latter and the valve-stem outwardly and hold the automatic valve open. The spring is provided near its upper end with an opening, through which the valve-stem passes, and the sleeve is provided with a pin *i'*, which projects into a notch in the spring and prevents the sleeve and valve-stem from turning.

K is a bracket, which carries the governor-balls and connecting parts, and which is pivoted to the base-flange of the valve-casing by a vertical pivot-bolt *k*, which is arranged on one side of the longitudinal central line of the governor. The lower portion of this bracket is arranged underneath the base-flange of the valve-casing, and is further connected with the base-flange by a bolt *l*, which plays in a segmental slot *l'*, formed in the base-flange, and is secured with its lower end to the underlying portion of the bracket, whereby the bracket is movably attached to the base-flange and the oscillatory movement of the bracket on its pivot is limited. The pivot-bolt is arranged on one side of the central line of the governor and the attaching-bolt and segmental slot on the opposite side of the central line.

m is a longitudinally-arranged spring, which connects the bracket with the base-flange on the same side of the central line on which the attaching-bolt is arranged and which tends to draw the bracket out of the central line.

N represents a bearing arranged at the outer end of the bracket, and *n* is a hollow spindle turning in said bearing.

O is the pulley secured to the outer end of the hollow spindle and turning on the cylindrical outer portion of the bearing N.

O' is the belt which runs around this pulley and transmits motion to it from a pulley on the engine-shaft. This belt is arranged on that side of the governor on which the pivot of the bracket is arranged, so that the pressure which the belt exerts against the pulley and the outer end of the bracket distends the bracket-spring and holds the attaching-bolt

against the outer end of the segmental slot, in which position of the parts the axial line of the bracket is in line with the axial line of the valve-casing, as represented in full lines 5 in Fig. 2.

P represents a cylindrical block arranged in the inner portion of the hollow driving-spindle.

p represents a regulating-spring arranged 10 within the spindle and connected with its inner end to the cylindrical block P and with its outer end to a screw-bolt p' , which engages with a screw-nut p^2 , seated against the outer end of the hollow spindle.

15 Q represents the governor balls or weights attached to elbow-levers q , which are pivoted to the inner portion of the hollow spindle and connected with the cylindrical block P.

R is a stem, which extends from the block 20 P to the sleeve H on the valve-stem. This sleeve may be provided with washers r , against which the stem R bears, and which receive the wear.

When the parts are in their normal position, (represented in Fig. 1 and in full lines in 25 Fig. 2,) the spreading movement of the governor-levers, whereby the automatic valve is closed, is transmitted to the valve-stem g by the bracket-stem R and the contracting movement of the governor-levers, whereby the 30 valve is opened, is followed up by the spring i , which presses the valve outward and holds the sleeve H in contact with the stem R. When the governor-belt breaks or runs off 35 either pulley, the pressure on the bracket is removed and the bracket-spring swings the bracket backwardly into the position represented by dotted lines in Fig. 2. This movement of the bracket causes the inner end of 40 the bracket-stem R to approach the valve-casing and push the valve-stem inwardly,

thereby closing the automatic valve and cutting off the steam from the engine.

I claim as my invention—

1. The combination, with the valve-casing 45 and the governor-valve arranged therein and provided with a stem, of a bracket pivoted to the valve-casing, a governor-spindle and pulley mounted on said bracket and held normally in line with the valve-stem by the governor-belt, and means whereby the bracket 50 and spindle are moved out of the normal position when the pressure of the belt is removed, whereby the spindle is automatically placed at an angle to the valve-stem, thereby 55 closing the valve, substantially as set forth.

2. The combination, with the valve-casing and the governor-valve arranged therein, of a bracket pivoted on one side to the valve-casing, a spring connecting the other side of 60 the bracket with the valve-casing, a governor-spindle and pulley mounted on the bracket, and bolt and slot whereby the pivotal movement of the bracket is limited, substantially as set forth. 65

3. The combination, with the valve-casing, the governor-valve arranged therein, and a valve-stem provided with a step-sleeve, of a bracket pivoted on one side of the valve-casing, a spring connecting the other side of 70 the bracket with the valve-casing, a governor-spindle and pulley mounted on the bracket, a spring attached to the valve-casing and tending to hold the valve open, and a stem connecting the governor-spindle with the step-sleeve, substantially as set forth. 75

Witness my hand this 25th day of May, 1891.

FREDERICK HART.

Witnesses:

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