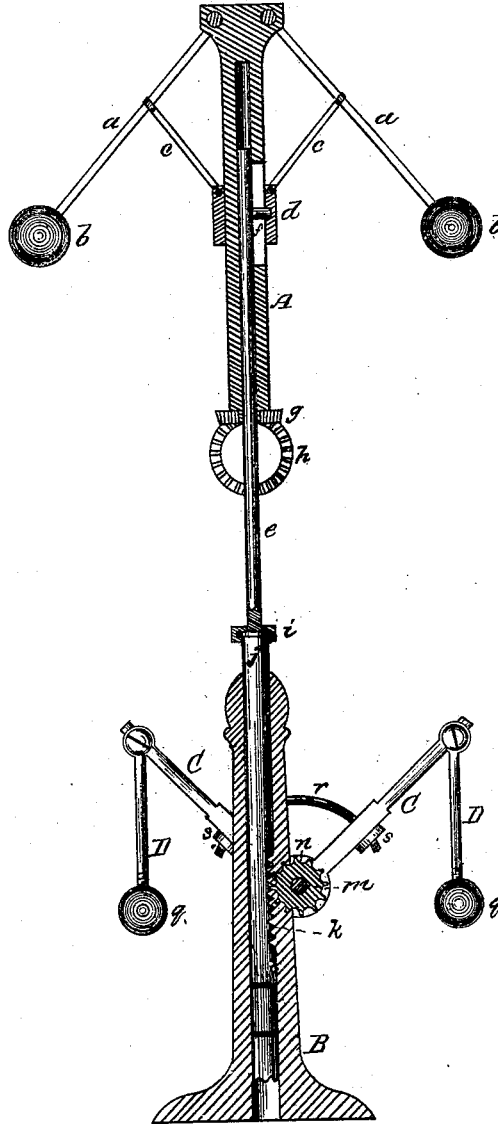


W. A. HATHAWAY.
GOVERNORS.

No. 180,341.

Patented July 25, 1876.

Fig. 1.



WITNESSES
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Geo. R. Porter

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Fig. 2

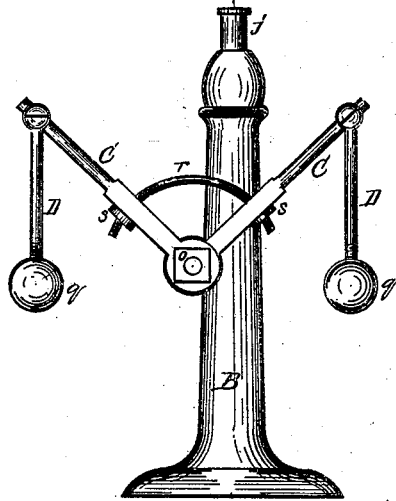


Fig. 4

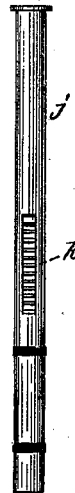


Fig. 3

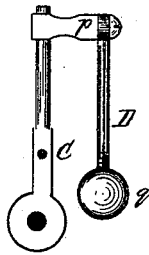
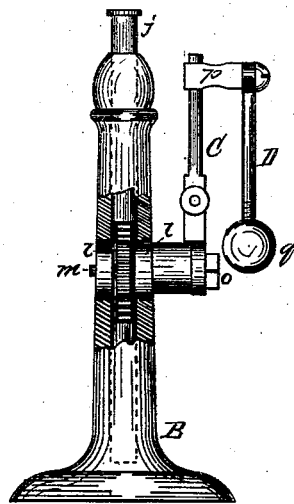


Fig. 5



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UNITED STATES PATENT OFFICE.

WILLIAM A. HATHAWAY, OF WICKFORD, ASSIGNOR OF ONE-HALF HIS
RIGHT TO JOHN MAGLONE, OF BELLEVILLE, RHODE ISLAND.

IMPROVEMENT IN GOVERNORS.

Specification forming part of Letters Patent No. **180,341**, dated July 25, 1876; application filed
May 31, 1876.

To all whom it may concern:

Be it known that I, WILLIAM A. HATHAWAY, of Wickford, in the county of Washington and State of Rhode Island, have invented a new and valuable Improvement in Governors; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

Figure 1 of the drawing is a representation of a part vertical longitudinal section of my invention, showing it applied to a governor. Fig. 2 is a side view of my improved regulator; Fig. 3, a detached view of one of the weighted arms; Fig. 4, a detached view of the rack bar or rod; Fig. 5, a part sectional view of the regulator.

This invention has relation to steam-governors; and consists in connecting with the governor-rod a regulator, consisting of swinging rods having weights at their lower ends, their upper ends being pivoted to arms which are secured to a gear-wheel working in teeth upon a rack bar or rod, as will be hereinafter more fully described.

In the accompanying drawings, A represents the hollow rod, to the upper end of which are pivoted the governor-arms *a*, carrying upon their lower ends suitable weights *b*. The rods *a* connect with short arms *c*, which, in turn, are pivoted to a sleeve, *d*. The rod *e* is connected to the sleeve *d* by a pin, *f*, and an elongated slot or opening is formed in the hollow rod A, to allow the free vertical play of the pin *f* and rod *e*, when the sleeve *d* is acted upon by the governor-rods *a*. The rotation of the rod A is effected by a cog-wheel, *g*, upon the lower end thereof meshing in the teeth of a bevel-gear wheel, *h*.

This form of governor I have merely shown to more fully illustrate the application and operation of my improved regulator, as it does not form any part of my invention. I do not wish to be understood as limiting myself to any particular form of governor.

Connected by a swivel-joint, *i*, to the rod *e* is a rod, *j*, the same having formed upon its periphery serrations or teeth *k*, and works within a standard, B, the lower end of the

rod *j* connecting with the valve of the engine, and the standard B bolted or otherwise secured over the opening in the valve-casing. The standard B is formed with two flanges, *l*, forming bearings for a short rod, *m*, upon which is fitted a cog-wheel, *n*, the teeth of which mesh with the teeth upon the rod *j*. Secured to the rod *m*, by a screw-nut, *o*, are two arms, C, to the ends of which are secured bars *p*, for receiving the pivoted rods D, carrying suitable weights *q*. The arms C are adjusted to or from each other by a semicircular screw-rod, *r*, and nuts *s*.

When the arms *a*, with their weights *b*, of the governor are at speed, the balls or weights *q*, with their rods or bars D, hang in a vertical position. As the speed changes, the bars D and weights *q*, attached to the arms C, change their position in proportion to the upward and downward movement of the balls *b* of the governor. The change thus produced causes the weights *q* to assume positions farther from or nearer to the fulcrum upon which the arms C turn, and, by so doing, cause a greater or less weight to act upon the governor-rod through the rack and pinion, and cause a controlling or regulating action upon the governor.

Having now fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A regulator for governors, consisting of the arms C, arranged relatively as shown, and pivoted weighted rods D, connected to the governor and valve-rod, substantially as and for the purpose set forth.

2. In a regulator, the arms C and pivoted weighted rods D, in combination with the gear-wheel *n* and rod *j*, with teeth *k* upon the valve-rod, substantially as and for the purpose specified.

3. The combination, with the arms C and pivoted weighted rods D, of the regulator-rod *r* and screw-nuts *s*, substantially as and for the purpose described.

In testimony that I claim the above I have hereunto subscribed my name in the presence of two witnesses.

WILLIAM A. HATHAWAY.

Witnesses:

JAMES A. THOMAS,
JOHN B. PEIRCE.