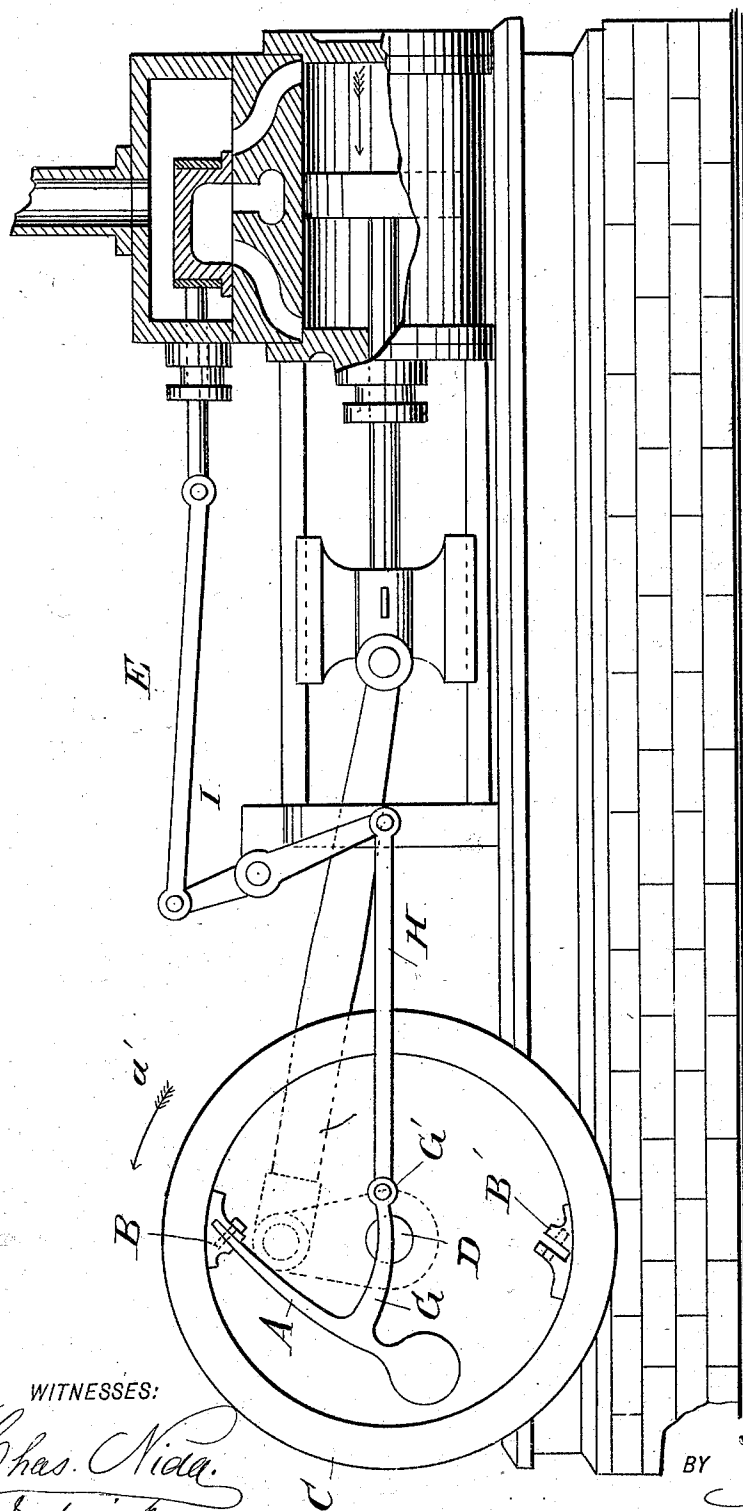


(No Model.)

R. H. THURSTON.
ENGINE GOVERNOR.

No. 504,953.

Patented Sept. 12, 1893.



WITNESSES:

Chas. Nida.
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ROBERT H. THURSTON, OF ITHACA, NEW YORK.

ENGINE-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 504,953, dated September 12, 1893.

Application filed September 28, 1892. Serial No. 447,149. (No model.)

To all whom it may concern:

Be it known that I, ROBERT H. THURSTON, of Ithaca, in the county of Tompkins and State of New York, have invented a new and Improved Engine-Governor, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved centrifugal governor, which is very simple and durable in construction, and arranged to uniformly and accurately govern the speed of the engine, according to the load.

The invention consists of a flexible weighted arm adapted to be fastened at one end to a revoluble wheel, disk or other device, the said arm being directly connected with the valve gear.

The invention also consists of certain parts and details, and combinations of the same, as will be hereinafter described and then pointed out in the claims.

Reference is to be had to the accompanying drawing forming a part of this specification, in which the figure is a side elevation of the improvement, as applied on an ordinary stationary engine.

The improved engine governor is provided with a flexible arm A, attached at one end at B to a wheel, disk or arm C, secured on the main driving shaft D of the engine E. On the free end of this arm A is formed or secured a weight F, and on the arm is secured or formed an extension G, pivotally or otherwise connected with a link H, or other part of the valve gear I of the engine E. The connecting point G' of the extension G with the link H is adapted to swing in the arc of a circle passing through the center of the shaft D, the center of the arc being at the attaching point of the arm A with the wheel C. The arm A is preferably made of a piece of steel or other flexible material to form an unarticulated arm. The arm is sufficiently strong so as to hold itself in position by its strength as a spring acting against the radial effort of centrifugal force, and by its location on the right side of the line joining the center of the rotation and its point of suspension, effects the result desired through the action of inertia. When the engine is running at a normal rate of speed, the arm A remains in the position shown, and the connecting point G' moves in a circle con-

centric to the shaft D, so that a uniform travel or stroke is given to the valve. On an increase or decrease of speed the position of the arm is changed and consequently that of the connecting point, so that the connecting point moves nearer to or farther from the center of the shaft D, and consequently less or more throw is given to the valve to admit less or more motive agent to the cylinder. In case the engine should run at an extreme high rate of speed, the arm will swing outward to such a degree that the point G' will move close to or over the center of shaft D and the valve gear would come to a standstill and all motive agent cut off from the cylinder, until the speed decreases and the arm swings inward to move the connecting point C' outward and to again actuate the valve gear. It will be seen that this governor comprises all eccentrics, connecting rods and other parts of the ordinary complex shaft-governor now employed for regulating the workings of the engine. All the characteristic elements of such ordinary shaft-governors are combined in the single unarticulated arm A above described.

As illustrated in the drawing, a device B' similar to the device B is located diametrically opposite the latter, and serves to attach the arm A on the opposite side of the shaft D in case it is desired to reverse the movement of the engine.

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

1. An engine governor consisting of a flexible arm adapted to be rigidly secured at one end to a revoluble wheel, arm or other device, the said flexible arm being directly connected with the valve gear of the engine, substantially as shown and described.

2. An engine governor consisting of a single unarticulated arm rigidly secured at one end to revoluble wheel or equivalent, the free end of the arm being weighted and directly connected with the valve gear of the engine, substantially as shown and described.

3. A governor for prime motors, consisting of a single piece, so far as its essential elements are concerned, uniting balls, arms, springs, and eccentrics with their connections in one single unarticulated piece, in the sense that this piece has no joints, as pins, knife-

edges, or hinged parts, substantially as shown and described.

4. An engine governor consisting of a single unarticulated flexible arm rigidly secured
5 at one end to a revoluble wheel or equivalent and carrying at its free end a weight, the said arm being directly connected with the valve gear of the engine at a point in a circle passing through the center of the wheel, the center
10 of the circle being the fastening point of the arm on the wheel, substantially as shown and described.

5. In a device of the class described, the combination with the valve gear of a revoluble wheel or equivalent, and a single unarticulated, flexible arm, rigidly fastened at one end to the said wheel or its equivalent and directly connected with the said valve gear, substantially as shown and described.

ROBERT H. THURSTON.

Witnesses:

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