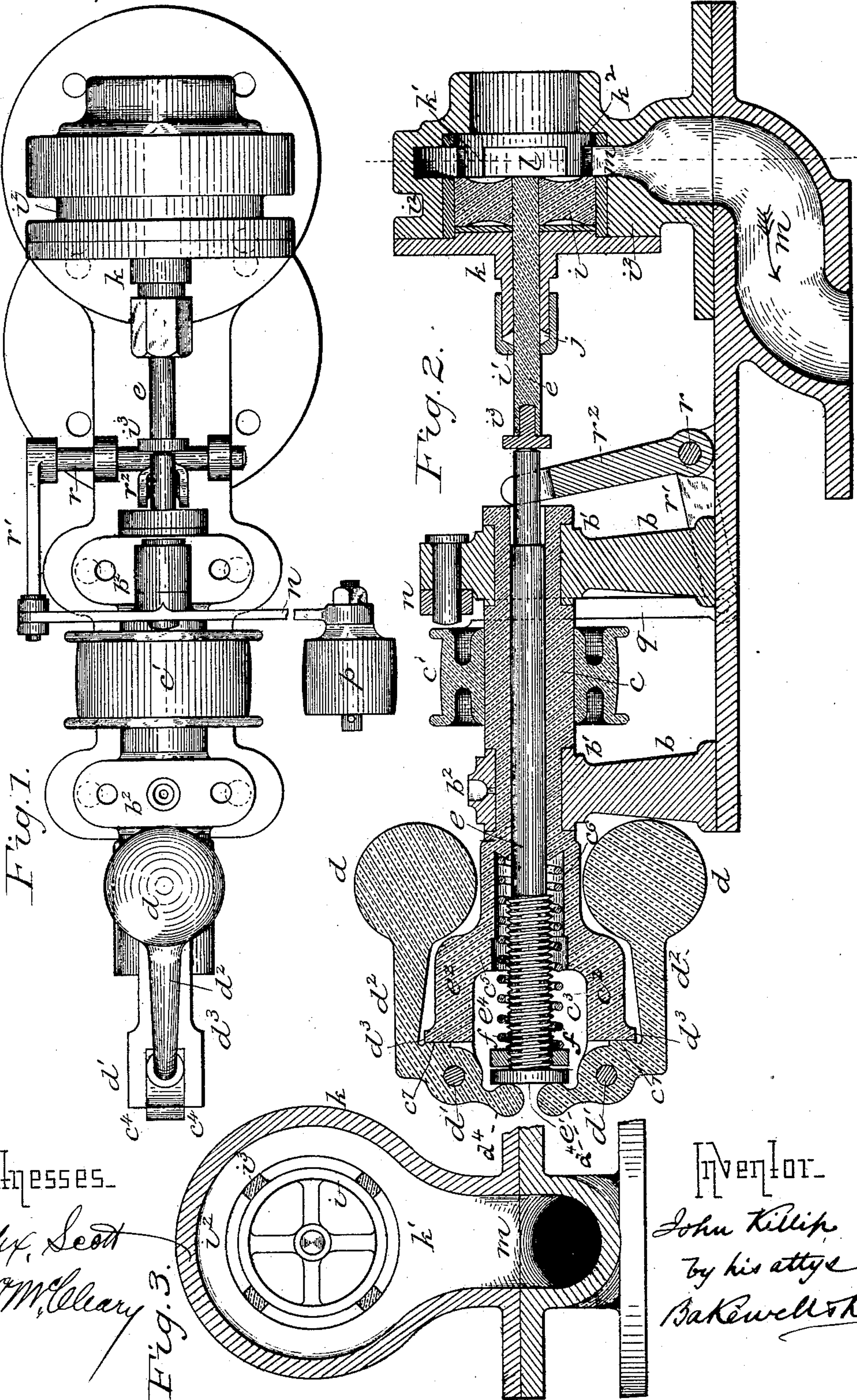


(No Model.)

J. KILLIP.
STEAM GOVERNOR.

No. 318,120.

Patented May 19, 1885.



Witnesses.
Alex. Scott
J. M. McElroy

Inventor.
John Killip
by his attys.
Bakerwell & Sons

UNITED STATES PATENT OFFICE.

JOHN KILLIP, OF ALLEGHENY CITY, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO HENRY C. BAIR, OF SAME PLACE.

STEAM-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 318,120, dated May 19, 1885.

Application filed July 17, 1884. (No model.)

To all whom it may concern:

Be it known that I, JOHN KILLIP, of Allegheny City, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Steam-Governors; and I do hereby declare the following to be a full, clear, and exact description thereof.

My invention consists of an improvement in the steam-governor which forms the subject-matter of an application, No. 69,215, filed by me in the United States Patent Office on August 12, 1882.

In the drawings, Figure 1 is a plan view of my improved governor. Fig. 2 is a longitudinal vertical section on the line xx of Fig. 1. Fig. 3 is a vertical cross-section on the line yy , Fig. 1.

Like letters of reference indicate like parts in each.

The drawings illustrate my invention as applied to a horizontal governor. Upon a suitable bed-plate or casting, a , are standards b , upon which, in suitable boxes, b' , is a hollow shaft or spindle, c . On the shaft c is a driving-pulley, c' . At one end of the shaft c are two arms, c^2 , extending longitudinally from the sides of the shaft beyond the end of the same. The outer end of each arm c^2 is bifurcated or recessed, forming two lugs, c^4 , on each. Between the lugs c^4 of each arm is a pin, d' , upon which is pivoted one of the arms, d^2 , of the balls d . Extending longitudinally through the shaft c is a sliding rod, e , which has a head or enlargement, e' , at its outer end between the arms c^2 of the shaft c . The outer end of the shaft c is bored out to a larger diameter for a short distance inward, as at c^5 , and is provided with a shoulder, c^6 , at the inner end of said bored-out portion. A strong spiral spring, f , is placed on the rod e , and bears at one end on the shoulder c^6 , and at the other against the head e' of the rod e , or against a tension-nut, e^4 , placed thereon, and its function is to press the rod e outward. Extending inward from the pivots d' and attached to the arms d^2 are short arms d^4 , which bear against the outer face of the head e' . On the inner ends of the arms d^2 , just back of the pivots d' , are projections or shoulders d^3 , which, when

the balls are at rest, bear or rest upon the straight surfaces c^7 , at the bottom of the recesses between the lugs c^4 . When the governor is at rest, the rod e , being forced out by the spring f , and bearing against the arms d^4 , forces the balls d inward toward the shaft c , as shown in Fig. 2, and causes the projections d^3 to rest against the surfaces c^7 . Thus the surfaces c^7 act as stops to limit the inward movement of the balls. The other end of the rod e bears or abuts against the end of the valve-stem i' . The valve-stem i' passes through a stuffing-box, j , which is secured to the valve-box k . The valve i is fastened to the inner end of the valve-stem i' , and works in the valve-chamber k' , having its seat at k^2 , around the steam-inlet l . The valve is guided in its movement by an annular guide, i^2 , having radial arms i^3 , said arms being recessed in the sides to permit the free passage of the steam through the chamber k' , around and at the rear side of the valve i . The exit-port is shown at m , and it is led back through the bed-plate or casting a to or near to the center of the device, where the casing is provided with a flange, m' , by means of which it is attached in the required position. The valve i is overbalanced on the side next to the steam-port l , so that its constant tendency is to move away from its seat, and to cause its stem i' to bear against the end of the rod e . This overbalancing is effected by reason of the fact that the entire outer surface of the valve is exposed to the action of the steam on the side next to the entrance-port l , while that portion of the rear side of the valve which is occupied by the valve-stem i' is not exposed to the pressure of the steam, so that there is less bearing-surface for the steam at the rear side.

In connection with my improvement I show means for closing the steam-port l in case the belt which drives the pulley c' should become broken. Pivoted to the top of one of the standards b is a lever, n , in one end of which is journaled the pulley p , which bears upon the upper surface of the belt which drives the pulley c' , and will be maintained in an elevated position so long as such belt is taut, but in case the belt breaks will be permitted to

fall downward. The other end of the lever n is connected to a pitman, q , the lower end of which is pivoted to one arm, r' , of the rock-shaft r , which shaft has its bearings in the frame of the governor. Another arm, r^2 , of the rock-shaft r extends up to the rod e , where it is bifurcated, so as to encircle the rod on two sides, and is capable of turning with its shaft, so as to come in contact with the disk i^3 on the end of the valve-stem i' .

The operation of this part of my device is as follows: If the belt upon which the pulley p rests breaks, the fall of the pulley p causes the other end of the lever n to raise the pitman q , and thereby turn the rock-shaft r , so as to cause its arm r^2 to come in contact with the end of the valve-stem i' , and close the valve i , thereby shutting off the steam at the port l .

This device is simple in its construction and very efficient in its action. By thus combining in a steam-governor the feature of overbalancing the valve and a safety device which will close the valve in case of accident to the driving mechanism, I obtain a simple and ef-

fective construction, and reduce the chances for disorder and liability to breakage.

I do not desire to claim, broadly, a steam-governor in which the pressure of the steam in the valve-chamber acts upon the governor.

What I claim as my invention, and desire to secure by Letters Patent, is—

In a steam-governor, the combination of the governor-stem with a throttle-valve overbalanced on the side opposite to the governor-stem, and having a stem which abuts against the end of the governor-stem, but is disconnected therewith, so that the valve-stem shall be held against the governor-stem in its reverse movement by the pressure of the steam in the valve-chamber, substantially as and for the purpose specified.

In testimony whereof I have hereunto set my hand this 29th day of May, A. D. 1884.

JOHN KILLIP.

Witnesses:

W. B. CORWIN,
THOMAS B. KERR.