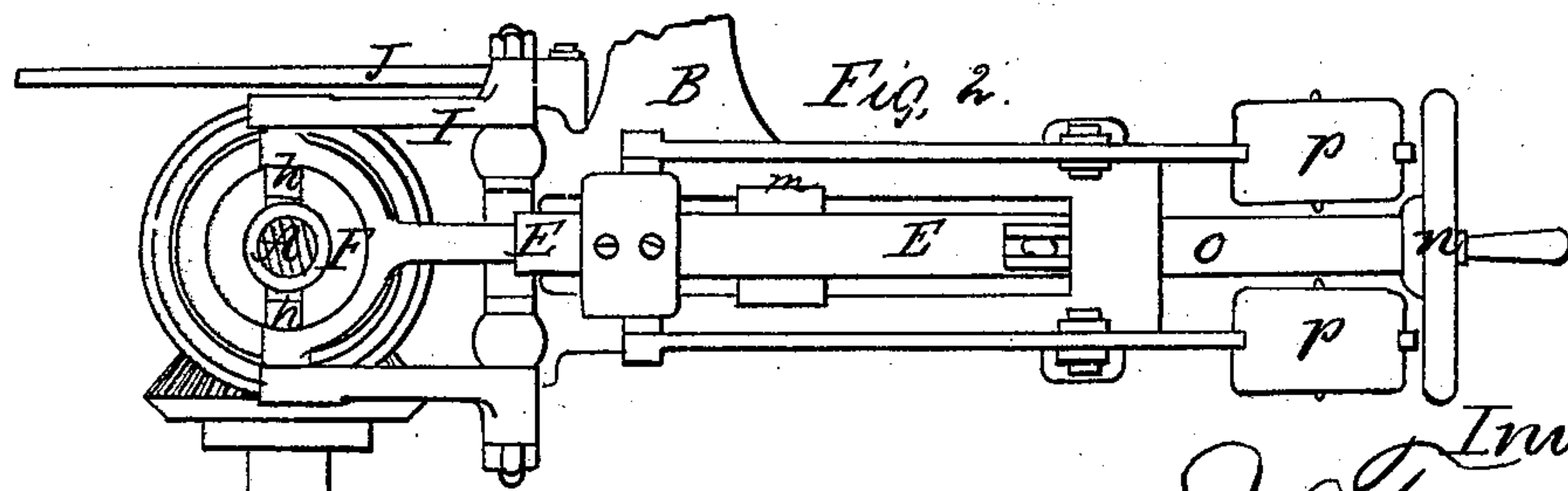
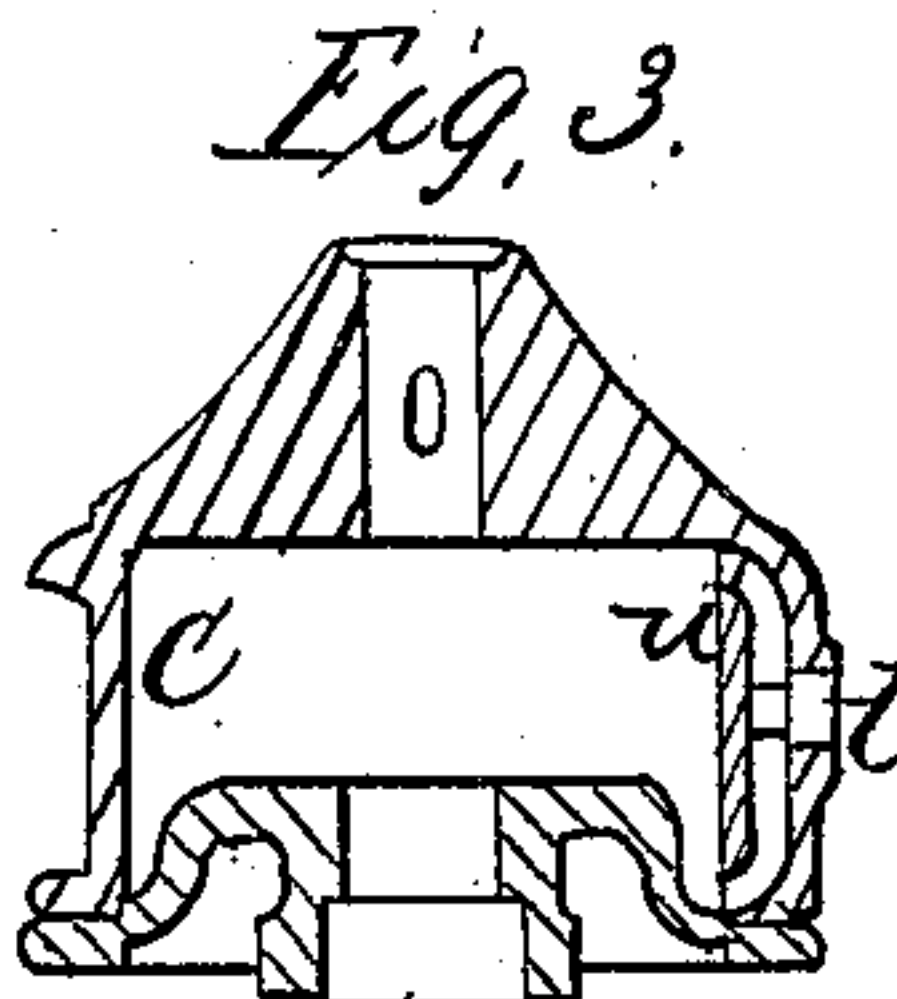


*Patented Feb. 10. 1869.*



Inventor,  
J. F. Arcot,  
per Brown, Cumberbidge  
attys





JOSEPH FARCOT, OF ST. OZEN, (SEINE,) FRANCE.

Letters Patent No. 87,034, dated February 16, 1869.

IMPROVEMENT IN STEAM-ENGINE GOVERNORS.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, JOSEPH FARCOT, of St. Ouen, (Seine,) Empire of France, have invented a new and useful Improvement in Governors for Marine or other Engines; and I do hereby declare that the following is a clear, full, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a vertical central section of my improved governor;

Figure 2 is a sectional plan of the same; and

Figure 3 is a sectional view of the cylinder, taken on a plane at right angles to the one represented in fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates to that class of pendulum governors which are more especially used for marine engines, and is designed as a substitute for the four-ball governor.

The improvement consists in the construction of a single pendulum, with two balls, the weight of which is held in equilibrium by a counter-balance, placed on the vertical axis of rotation.

It further consists of a novel device for changing the velocity of the balls without stopping the engine.

It likewise consists in the application of springs, parallel to the axis of rotation, for the purpose of bringing the balls to their normal condition, and also for checking irregularity in the movements consequent upon shocks.

Also, the invention consists in the application of a small air-cylinder and piston around the axis of rotation, which serves as a regulator.

To enable others skilled in the art of constructing governors, I will proceed to describe my invention, with reference to the drawings.

A is a vertical shaft, which rotates in bearings *a a*, that are secured to a fixed frame, B, of any suitable construction.

On said shaft, an air-cylinder, C, is rigidly secured, which is provided at its upper end with pins *c c*, forming centres of vibration for arms *b b*.

These arms cross each other, and are provided at their upper ends with the balls *d d*, the movements of which are steadied by fixed guide-rods *e e*.

The lower ends of these arms *b b* are connected to a sliding sleeve, D, by means of jointed rods *f f*.

Thus a single reversed-pendulum governor is formed, the weight above the centres of vibration of which is counterbalanced by a weight, *g*, placed around the shaft A, and also by the sliding pieces below the centres of vibration.

E is a horizontal-vibrating lever, the centre of vibration being movable, for the purpose of changing the normal velocity of the balls, which is accomplished in the following manner:

The lever E is shaped at one end so as to fork around a loose sleeve, F, and engage with the same by means of the pins *h h*. The other end is held in suspension by the springs G G', which are parallel to the axis of rotation, and are secured to an oscillating lever, *i*.

*j* is a slot in the lever E, for the reception of a movable centre-pin, *k*, which can be moved by attaching a sliding block, *l*, to a nut, *m*, said nut being operated by means of a hand-wheel, *n*, which is fast on the screw-shaft *o*.

The lever E is also counterbalanced by weights *p*, as shown in the drawings.

By thus changing the centre of vibration, the tension of the springs G G' is also changed, and thereby raises or lowers the sleeve F, which determines the normal condition of the balls.

To increase the precision of the governor, the air-cylinder C is provided with a hollow piston, H, which moves on the shaft A, with the sleeves D and F, its hollow stem being fastened to the sleeve D by the pins *s s*, which pins are allowed to move freely in the slot *r* of the shaft A.

The inside of the cylinder C is provided with an air-passage, *u*, formed along a raised portion of its wall, as distinctly shown in fig. 3.

A slightly-conical screw, *t*, passes from the outside of the cylinder, through the middle of this passage, and regulates the passage of air from one end of the piston to the other.

It will be seen that by the action of the piston H, and the springs G G', all irregularities of movements, consequent upon shocks or other causes, are effectually overcome, and the action of the governor attains a high degree of sensibility and precision.

The action of the governor is transmitted to the throttle-valve of the engine by means of the bell-crank I and the rod J.

Motion is imparted to the governor in the usual or any suitable manner.

What I claim, and wish to secure by Letters Patent, is—

1. The arrangement of the arms *b b*, balls *d d*, guide-rods *e e*, and connecting-rods *f f*, substantially as herein shown and described.

2. The arrangement of the vibrating lever E, the springs G G', sleeve F, and the movable centre-pin *k*, sliding block *l*, nut *m*, and screw-shaft *o*, substantially as herein set forth.

3. The cylinder C and piston H, in combination with the sliding sleeve D, substantially as herein set forth.

In testimony whereof, I have signed my name to this specification, before two subscribing witnesses.

JH. FARCOT.

Witnesses:

DUMAS,  
PH. GEUTY.