

C. Hindle,

Governor.

N^o 65,221.

Patented May 28, 1867.

Fig. 1

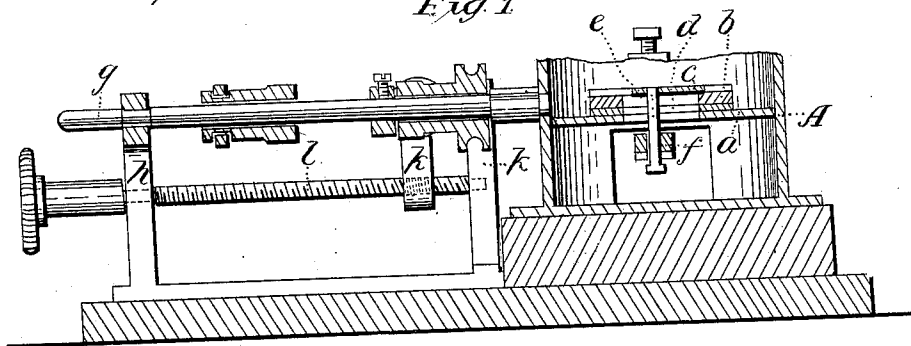
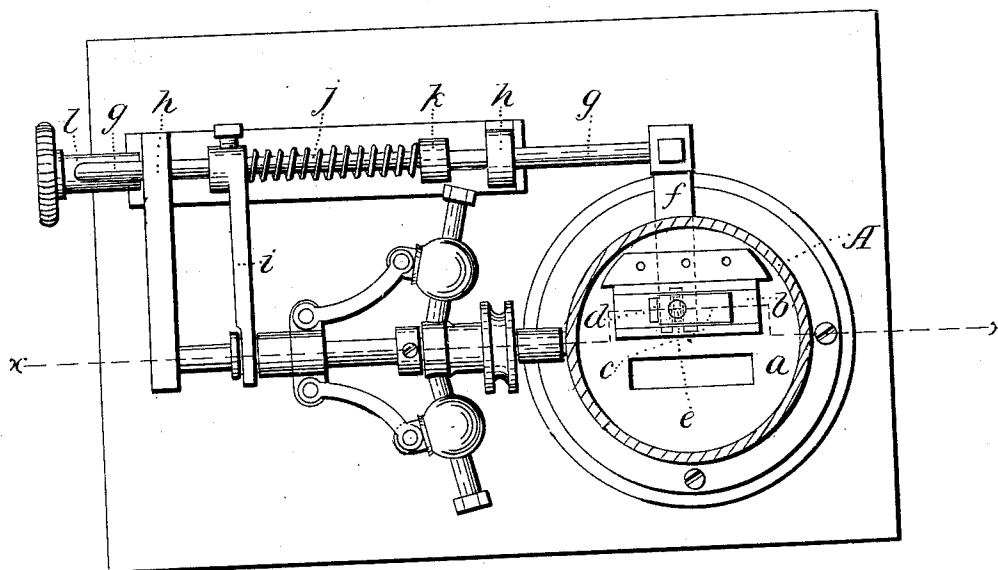


Fig. 2.



witnesses.

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per
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CHARLES HINDLE, OF BROOKLYN, NEW YORK.

Letters Patent No. 65,221, dated May 28, 1867; antedated May 16, 1867.

IMPROVEMENT IN 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, CHARLES HINDLE, of Brooklyn, in the county of Kings, and State of New York, have invented a new and improved Regulator for Air Engines; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing, forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of this invention, the line *x x*, fig. 2, indicating the plane of section.

Figure 2 is a sectional plan or top view of the same.

Similar letters of reference indicate like parts.

This invention relates to a governor or regulator for air engines, particularly of that class known as "Roper's Air Engines." This governor is combined with a regulating spring, and with a slide-valve, in such a manner that the quantity of air injected into the heating-chamber can be regulated with the greatest nicety, and the speed of the engine can be governed at pleasure.

A represents the lower part of the barrel of the air-pump used in Roper's air engine for the purpose of injecting air into the heating-chamber. Into this barrel is fitted a plate, *a*, which forms the support for the seat, *b*, of my slide-valve, *c*. This valve is intended to open and close the air-channel, *d*, and it connects by a pin, *e*, with an arm, *f*, extending through the side of the pump-barrel A. This arm is attached to a rod, *g*, which slides in suitable standards, *h*, and which connects by means of an arm, *i*, with the ball-governor, B, in such a manner that when the balls fly out the rod *g* is caused to move in the direction of the arrow marked thereon in fig. 2, and the valve *c* is opened, and if the balls sink down the rod moves back in the direction opposite said arrow, and the valve closes. The action of the governor on the valve is regulated by a spring, *j*, which is slipped on the rod *g*, between the arm *i*, which connects said rod with the governor, and a sleeve, *k*, through which the rod *g* passes freely. This sleeve forms the nut for a screw-rod, *l*, which has its bearings in the standards *h*, and which is so arranged that by its action the sleeve *k* can be made to slide on the rod *g* towards and from the arm *i*. By this motion of the sleeve the tension of the spring *j* is increased or decreased, and the effect of the governor on the valve is regulated, the tension of the spring being made to counteract the centrifugal force of the governor-balls. If the tension of the spring is increased, a higher speed is required to cause the balls to fly out, and the speed of the engine is increased, and by decreasing the tension of the spring the valve opens at a less speed, and the velocity of the engine is decreased. By this arrangement the person having charge of the engine is enabled to control the speed thereof with the greatest nicety, and furthermore, by passing the air out through the same opening through which it is admitted, the disagreeable noise is avoided which is occasioned by the regulating mechanism as at present used with Roper's and other air engines.

I claim as new, and desire to secure by Letters Patent—

The tension-spring *j* and regulating screw *l*, in combination with the governor B and valve *c*, in the pump-barrel A, arranged substantially as and for the purpose set forth.

CHARLES HINDLE.

Witnesses:

WM. F. McNAMARA,
ALEX. F. ROBERTS.