R. M. POTTER & W. M. SLOANE.
Pressure Regulator or Governor.

No. 209,192. Patented Oct. 22, 1878.

Fig 1.

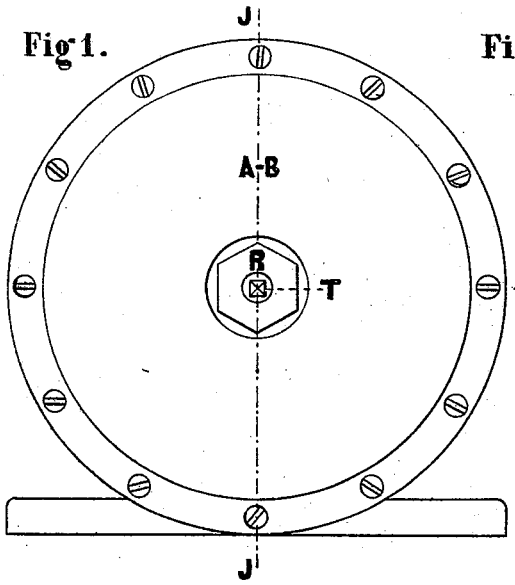


Fig 2.

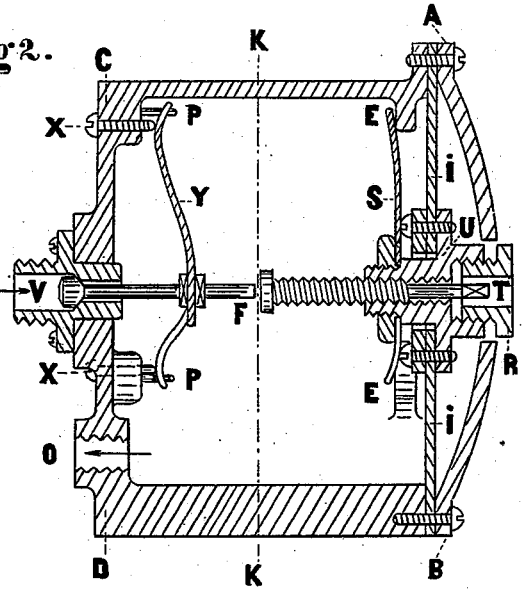


Fig 3.

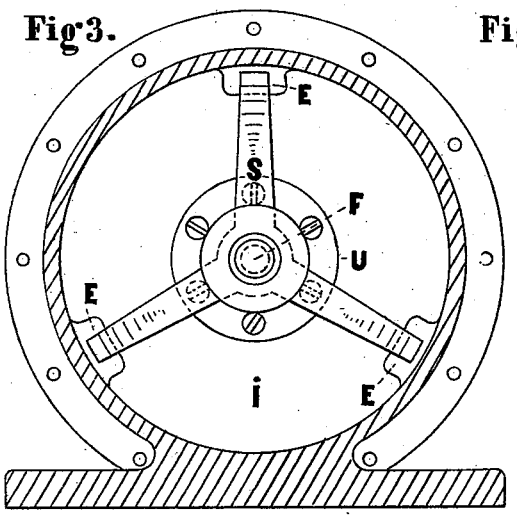
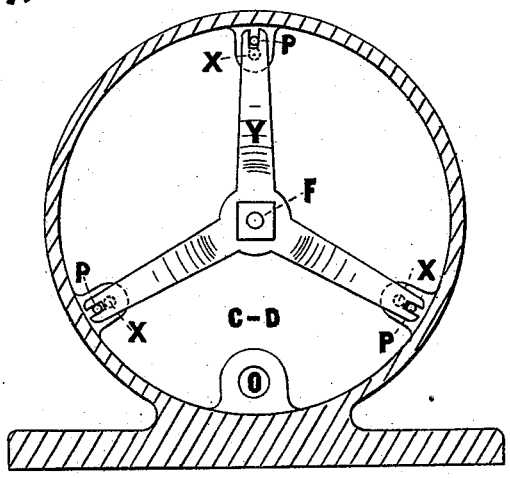


Fig 4.



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UNITED STATES PATENT OFFICE.

ROBERT M. POTTER, OF JERSEY CITY, NEW JERSEY, AND WILLIAM M. SLOANE, OF NEW YORK, ASSIGNORS, BY MESNE ASSIGNMENTS, TO WILLIAM BELL, OF NEW YORK, N. Y.

IMPROVEMENT IN PRESSURE-REGULATORS OR GOVERNORS.

Specification forming part of Letters Patent No. **209,192**, dated October 22, 1878; application filed March 28, 1878.

To all whom it may concern:

Be it known that we, ROBERT M. POTTER, of Jersey City, in the county of Hudson, State of New Jersey, and WILLIAM M. SLOANE, of New York, in the county and State of New York, have invented a new and useful Improvement in Pressure-Regulators or Governors, which improvement is fully set forth in the following specification and accompanying drawing, in which—

Figure 1 is a front view; Fig. 2, a vertical transverse section through line J J; Figs. 3 and 4, illustrating, respectively, vertical transverse sections to the right and left of line K K in Fig. 2.

The object of our invention is to furnish a device which shall govern or regulate the escape of compressed air, gas, steam, or water—gaseous or liquid fluid—to any desired degree of pressure.

The instrument consists of a casing or box, A B C D, with detachable cover A B, Fig. 2. The seat or back of said casing or box is provided with two openings at V and O, the former being constructed to accommodate the valve V, and designed to regulate the inflow of the compressed gaseous or liquid fluid, the latter opening, O, serving as the outlet of said fluid, the valve V having a spring or springs attached, which shall insure the complete closure of the opening at V, except the tension of said spring or springs be suspended. We have preferably chosen the sheet-spring Y, (more clearly shown in Fig. 4,) as it facilitates more easily any auxiliary adjustment that may be required, it resting on the adjustable screws X, and being guided by the pins P in suitable recesses or notches at the spring's extremities.

Between the casing or box A B C D and the cover A B is a flexible disk or diaphragm, I, plane or corrugated, held in position by the cover A B, and rendered air-tight by packing, said flexible disk or diaphragm having in its center a suitable cap, U, and stuffing-box R, designed to support the spindle F, the latter bearing a thread and rendered adjustable by means of a key, to be introduced through the cover A B at T.

Experiment having proven the benefits to be derived from the auxiliary spring S, Figs. 2 and 3, we have introduced it to aid and stiffen the flexible disk or diaphragm I in its action. This spring, being similar in its character to the spring Y, is fastened to the disk or diaphragm I, as indicated, the lugs E of the casing A B C D showing resistance to the tension of its extremities.

It will now be evident that if the adjustable spindle F be relieved of its contact at F with the valve V, as shown in Fig. 2, the gaseous or liquid fluid will be prevented from entering the casing A B C D by the self-closing valve V.

By, however, applying the key to the adjustable spindle F at T, thereby bringing the latter in contact with the valve V at F, whereby the spring tension of valve V is partially suspended and the orifice at V opened, the gaseous or liquid fluid will be permitted to enter and its pressure subsequently brought to bear upon the flexible disk or diaphragm I, causing said disk I, with its spindle, to recede from valve V, the tension of the spring of the latter tending to close valve V, thereby reducing the amount of pressure of the gaseous or liquid fluid which has been permitted to enter the casing A B C D, and consequently reducing the pressure of its escape through O.

It is now further evident that the more highly compressed the gaseous or liquid fluid the greater the pressure upon the disk or diaphragm I, which subsequents a tighter closing of the valve V, followed by a corresponding reduction of pressure within the casing A B C D. We therefore have but to regulate the adjustable spindle F at T for the desired degree of pressure-escape at O.

The springs Y and S are not confined to the shape indicated, it being obvious that several or more extremities may be selected.

We also do not confine ourselves to the use of the spring Y in the self-closing valve V, as any automatic-closing valve will answer.

What we claim as new, and desire to secure by Letters Patent, is—

1. In a self-closing valve, V, the centrally-attached sheet-spring Y, guided by pins P, and rendered adjustable by the set-screws X

in the extended valve-seat C D at the spring's extremities, substantially as and for the purpose set forth.

2. The combination of the flexible disk or diaphragm I, having centrally-attached threaded cap U, with the therein-adjustable spindle F, substantially as and for the purpose described.

3. In a pressure-regulator or governor, the combination of a self-closing valve with the adjustable spindle F, diaphragm I, and spring S, all acting upon each other, substantially as shown and described.

ROBERT M. POTTER.
WM. M. SLOANE.

Witnesses:
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