J. R. BLOSSOM.

GAS-GOVERNOR.

No. 186,299. Patented Jan. 16, 1877.

Fig. 1.

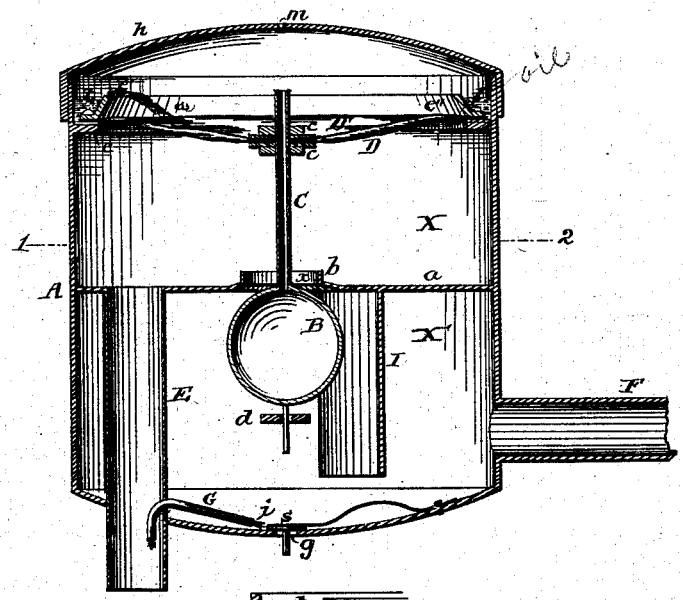



Fig. 3.

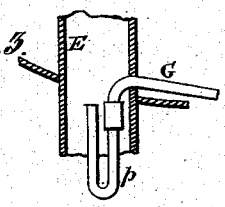
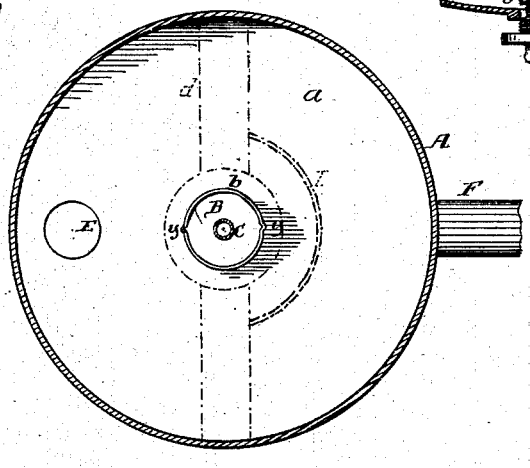



Fig. 5.


Fig. 4.


Fig. 2.




Attest:

George Thorn
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Jos. R. Blossom
By his attorney
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# UNITED STATES PATENT OFFICE.

JOSEPH R. BLOSSOM, OF BROOKLYN, NEW YORK.

## IMPROVEMENT IN GAS-GOVERNORS.

Specification forming part of Letters Patent No. **186,299**, dated January 16, 1877; application filed December 1, 1876.

*To all whom it may concern:*

Be it known that I, JOSEPH R. BLOSSOM, of Brooklyn, Kings county, State of New York, have invented Improvements in Gas-Governors, of which the following is a specification:

My invention consists of a gas-regulator constructed, as fully described hereafter, to regulate automatically the supply of gas; to prevent waste resulting from undue increase of pressure at the burners, insuring more thorough combustion, and consequent greater illumination; to prevent the accumulation of moisture in the casing, facilitate the adjustment and insure uniform and certain action of the operative parts, and to increase the durability of the diaphragm.

In the accompanying drawing, Figure 1 is a sectional elevation of my improved regulator; Fig. 2, a sectional plan on the line 1 2, Fig. 1; and Figs. 3, 4, 5, detached sectional views, showing modifications.

The casing A of the regulator or governor is of any suitable form or dimensions, and is divided by a horizontal partition, *a*, into two chambers, X X′, which communicate through a central opening, *x*, surrounded by a slight flange, *b*, and formed at the edge into a seat for the hollow valve B. The upper portion of the valve-stem C is tubular, and extends through two flexible horizontal diaphragms, D D′, clamped tightly between two nuts, *c*, on the stem, the portion of the stem below the valve being guided in a cross-piece, *d*. The edges of the two diaphragms are clamped between an annular shoulder, *e*, at the inside of the case, and a ring, $e^1$, having an upright flange, $e^2$, the ring being less in diameter than the case, leaving an annular receptacle, *t*, for oil, which, having access to the edge of the diaphragm, is absorbed by the latter, and maintains it in a soft flexible condition, imparting a durability which it could not possess if permitted to become dry and hard.

The diaphragms may be of any suitable materials; but I prefer leather for the lower, and bladder for the upper, the latter conveying to and retaining the necessary amount of oil upon the lower, protecting it, and preventing the contact of air, which tends to evaporate or harden the oil.

The inlet-pipe E extends through the bottom of the case, and communicates, through the partition, with the chamber X, while the outlet-pipe F leads from the chamber X′. A small siphon-tube, G, which may be filled with porous or fibrous substance *i*, has a minute orifice at the inner end, and extends through the pipe E, near the bottom of the chamber X, its end within the pipe being lower than that within the chamber. To an opening, *g*, in the bottom of the case, is applied a valve, *s*, having a pin smaller than the opening extending through the latter, to permit the valve to be raised from the outside to test the presence of and remove moisture from within the case; and in the detachable cap *h* is a central opening, *m*, provided with a burner, if required, to detect the escape of any gas, if leakage occurs in the diaphragm.

A curved apron, I, suspended from the partition *a*, between the valve and the outlet, extends nearly to the bottom of the case. The pressure of gas upon the flexible diaphragm determines the position of the valve in respect to its seat, and regulates the extent of the opening *x*, and the passage of gas through the same, the apron I preventing such a current of gas toward the outlet as would cause undue pressure upon the opposite side of the valve.

Shot, introduced through the hollow stem C, weights the valve below its seat, and prevents that overbalancing which results from placing the main weight above the diaphragms; but additional adjustment may be obtained by small weights (in addition to the shot) applied to the end of the stem, but free from contact with the diaphragm, to prevent abrasion. The flange *b* around the opening *x*, or the elevation of the partition at this point, causes moisture in upper chamber to flow to the inlet E, instead of upon the valve, and also prevents tarry matter from flowing to or accumulating upon the valve-seat.

Minute indentations *y* are made in the partition, preferably at the edge of the opening *x*, to permit the passage of a small volume of gas should the valve be suddenly closed, thus equalizing the pressure. Any moisture which accumulates in the lower portion of the casing will be conducted through the siphon G, or by the fibrous material *y*, into the inlet E. As, however, a small portion of gas might pass in-

ward through the pipe, I bend the same to form a U-trap, *p*, from which the water will flow, but through which the gas cannot pass. (See Fig. 3.)

Although I have shown a spring-valve, *s*, a valve of different construction may be employed—for instance, a screw-plug having flat faces or recesses *n*, Fig. 4, through which the water can pass when the plug is turned to bring the recesses above the bottom of the casing.

While it may be preferable to form a receptacle, *t*, between the flange $e^1$ and the casing, it may be formed by means of two flanged rings, as shown in Fig. 5; and instead of bringing the oil into direct contact with the edge of the diaphragm, it may be conducted from the receptacle by a wick or fibrous material, *w*.

I am aware that a hollow valve and tubular stem have been combined with a float, and make no broad claim to these features; but

I claim—

1. The combination, with the flexible horizontal diaphragm, of a tubular stem and a hollow valve, guided by a cross-piece, *f*, below the valve, whereby the load may be introduced into the guided valve from above the diaphragm, as set forth.

2. The chamber X, communicating with the inlet E, and having an outlet, *x*, above the valve, flanged or elevated above the bottom of the chamber, as set forth.

3. The combination of the valve, valve-stem, and two flexible diaphragms, clamped together at the edges, and to the stem which passes through both diaphragms at the center, as and for the purpose set forth.

4. The combination of the valve, valve-stem, and two non-metallic flexible diaphragms of different materials, clamped together at the edges and to the stem, as and for the purpose set forth.

5. The combination of the flange or ring *e*, horizontal diaphragms, and flanged clamping-ring $e^1$, forming an annular oil-receptacle at the edge of the diaphragm clamped between the two, as set forth.

6. A regulator provided with a continuous open passage, arranged to permit the continuous escape of drip from the bottom of the casing to the inlet-pipe, as described.

7. The U-shaped pipe *p*, communicating with the bottom of the chamber and with the inlet-pipe, and forming a trap, as specified.

8. The valve *s*, arranged at the bottom of the regulator, and closing an outlet communicating with the atmosphere, for the purpose set forth.

9. The apron I, arranged between the valve and outlet, for the purpose specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOSEPH R. BLOSSOM.

Witnesses:

HENRY J. SCHENCK,

HERBERT BLOSSOM.