C. M. CRESSON.

Gas Regulator.

No. 47,189. Patented April 11, 1865.

Fig. 1

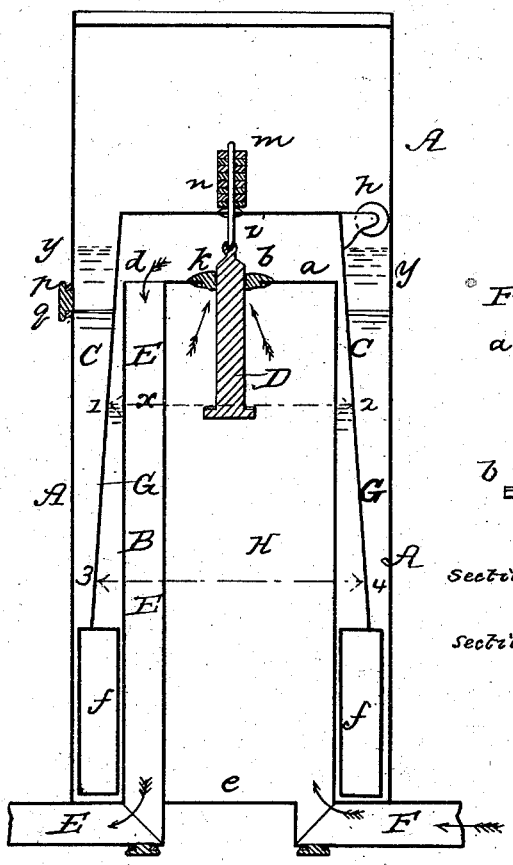
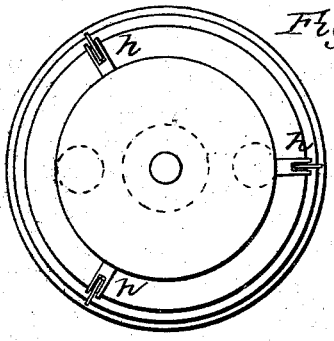


Fig. 2



Witnesses
Wm. Christie.
Wm. Kelcany

Fig. 3

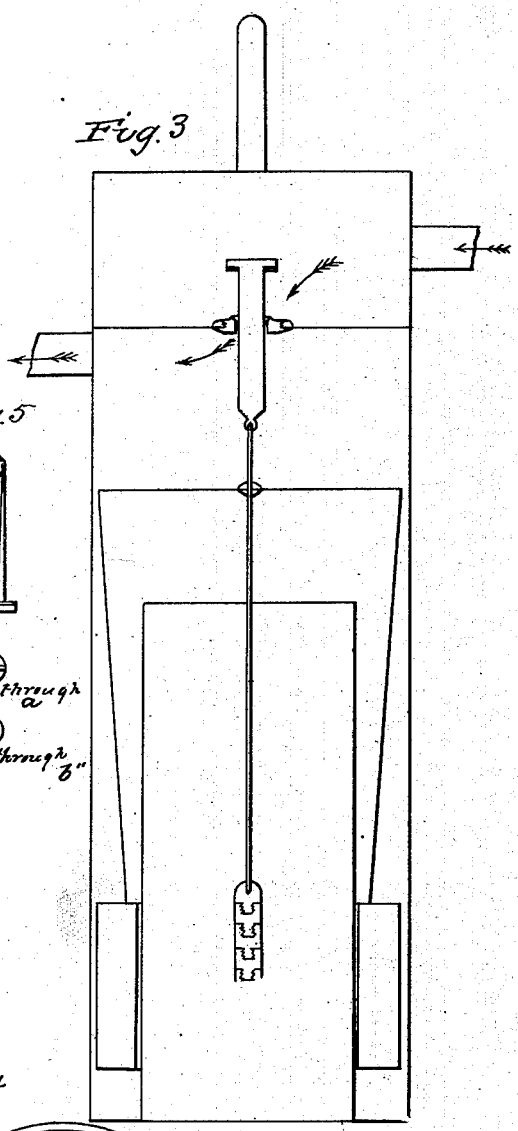
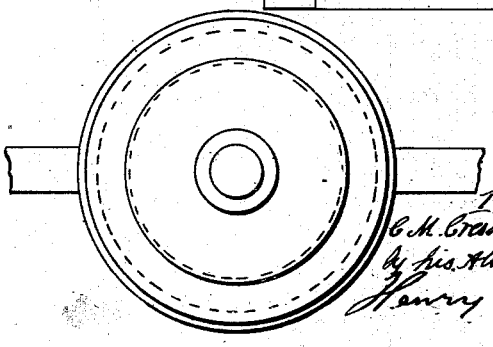


Fig. 5

Section through a

Section through b

Fig. 4



Inventor
C. M. Cresson.
by his Attorney
Henry Howson

UNITED STATES PATENT OFFICE.

CHARLES M. CRESSON, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVED GAS-REGULATOR.

Specification forming part of Letters Patent No. **47,189**, dated April 11, 1865.

To all whom it may concern:

Be it known that I, CHARLES M. CRESSON, M. D., of Philadelphia, Pennsylvania, have invented an Improvement in Gas-Regulators; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

My invention consists in the use, in gas regulators, of a holder of the tapering form described hereinafter, so that as the said holder falls the pressure of gas in the outlet-pipe shall be increased to compensate for the increased friction of a large amount of gas demanded for a large number of burners in extended gas fitting.

In order to enable others skilled in the art to make and use my invention, I will now proceed to describe its construction and operation.

On reference to the accompanying drawings, which form a part of this specification, Figure 1 is a vertical section of my improved gas-regulator; Fig. 2, a sectional plan view of the same; Fig. 3, a vertical section illustrating a modification of my invention; Fig. 4, a sectional plan of Fig. 3, and Fig. 5 a view of the valve.

On reference to Figs. 1 and 2, A represents a cylindrical casing, within which is another cylindrical casing, B, there being an annular space, C, between the two for containing the water, glycerine, or other suitable fluid. The inner casing is closed at the top, with the exception of an opening, *b*, for receiving the valve D, and another opening, *d*, communicating with the outlet-pipe E, which passes through the bottom *e* of the casing, there being an opening in the latter communicating with the inlet pipe F. G is the gas-holder, which is made in the form of a hollow frustum of a cone, closed at the top, as seen in Fig. 1, and which is contained in the annular space C between the two casings, the lower edge of the holder being secured to an annular float, *f*, adapted to but arranged to move freely in the said annular space C. The accurate vertical movement of the holder within the exterior casing is insured by three guide-rollers, *h*, each of which turns in a bracket attached to the upper end of the holder and bears against the interior of the casing. The valve D is suspended to a pin, *i*, attached to the top of the holder, and passes through the seat *k* on the top of the inner casing, B, the valve being of the peculiar construction described in my application for a patent for regulating-valve, filed March 11, 1864, and subsequently allowed. From the top of the holder projects a pin, *m*, for receiving the detachable weight *n*. Water, glycerine, or other suitable fluid is introduced into the regulator, *q* being its initial level; but owing to the pressure of the gas in the holder the level of the fluid within the same will be about at *x*, while that on the outside of the holder will be at *y*.

In order that the advantages of my invention may be thoroughly understood, it may be well to allude here to gas-regulators having cylindrical instead of tapering holders described above.

An ordinary regulator, with a cylindrical holder, is intended to preserve an equal pressure in its outlet-pipe. As a natural consequence, the supply is deficient at distant burners when all are lighted. In other words, the ordinary regulator affords no compensation for the loss caused by the friction of the gas in passing to distant burners. Supposing the holder G to be in such a position that the line 3 4 (an imaginary line) coincides with the water-line *a*, the pressure must be estimated by the area of a circle of which the line between the points 3 4 is the diameter.

When the pressure of the gas, however, has so far diminished that the line 1 2 coincides with the water-level *x*, then the area of supporting-pressure has increased in proportion to the difference in extent of an area of a circle of which the line 3 4 is the diameter between that of the area of a circle of which the line 1 2 is the diameter.

It will be seen, therefore, that as the holder falls the area of supporting-pressure decreases. In other words, the pressure in the outlet-pipe is increased to compensate for the increased friction of the large amount of gas demanded for a great number of burners in extended gas-fittings.

The modification illustrated in Figs. 3 and 4 will be readily understood without further description.

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

The use, on a gas-regulator, of a holder of the tapering form herein described, for the purpose specified.

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

CHARLES M. CRESSON.

Witnesses:
HENRY S. NAGERT,
J. S. URSENGARTEN.