A. L. SMITH.

Gas and Water Regulator.

No. 165,767. Patented July 20, 1875.

Fig. 1.

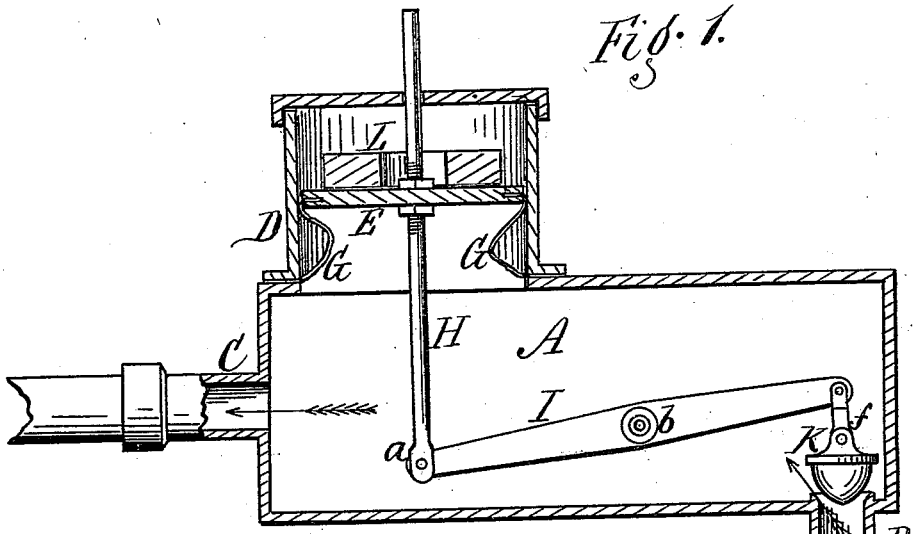


Fig. 2.

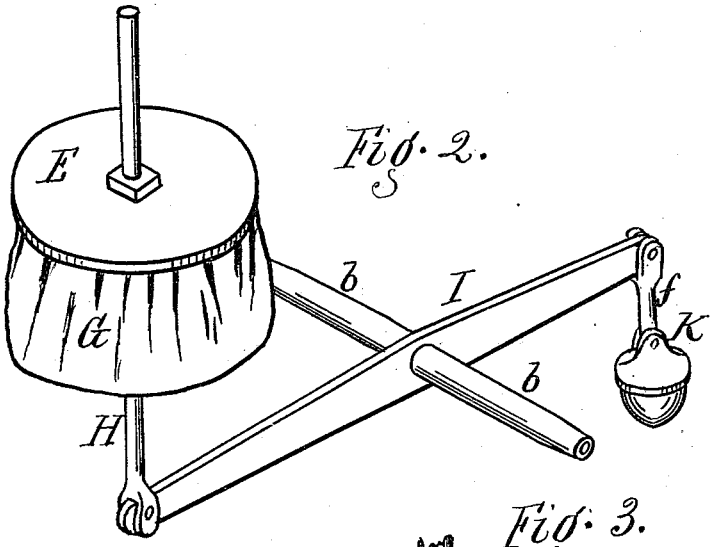
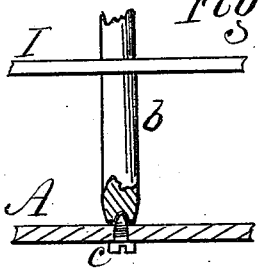


Fig. 3.



Witnesses.
Edwin. B. Scott
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Inventor.
Andrew L Smith,
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UNITED STATES PATENT OFFICE.

ANDREW L. SMITH, OF GENEVA, NEW YORK.

IMPROVEMENT IN GAS AND WATER REGULATORS.

Specification forming part of Letters Patent No. **165,767**, dated July 20, 1875; application filed December 22, 1874.

To all whom it may concern:

Be it known that I, ANDREW L. SMITH, of Geneva, in the county of Ontario and State of New York, have invented a certain new and useful Improvement in Gas and Water Regulators; and I do hereby declare that the following is a full, clear, and exact description of the construction and operation of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a central vertical section. Fig. 2 is a perspective view of the operating mechanism detached. Fig. 3 is a detail view.

My improvement relates to an automatic regulator, by which the flow of the gas to the burners, or water to the discharge, is regulated under varying pressures from the main, and is accomplished automatically by the pressure itself.

The invention consists, more particularly, in a weighted or spring piston, a loose or flexible packing connected therewith, a connecting-rod, a pivoted lever, and a valve, constituting the operating mechanism, all operating as hereinafter described.

In the drawings, A is a tight case, connected with the ordinary gas-meter or water-main by an induction-pipe, B, and with the distributing-pipes by an eduction-pipe, C. This allows a passage of the gas from the meter to the burners, or water to the discharge, through the case. The case may be of any desired form and size, and made in one or more parts; but I prefer to make it of cast-iron, in a single piece, having an opening only at the cylinder or head D, in which rests the piston. E is the piston, which is fitted to move up and down in the cylinder. G is the packing, the upper edge of which is secured to the piston, while the lower edge is secured fast to the base of the cylinder. The attachment is such that the joints are made gas or water tight, and the material also must be impervious to gas or water. The packing is made of such length as to allow considerable vertical motion to the piston, which fits to move easily in the cylinder, and the pressure of gas or water thus forces the piston up without danger of escape of the fluid, while there is but very little friction between the parts. H is a connecting-rod, made fast to the piston and moving with it. I is a lever, jointed at *a* to the connecting-rod. It is provided with arms or bearings *b b*, which extend to the opposite sides of the case A, and are connected therewith by pivot-screws *c c*, provided with conical points fitting in holes in the ends of the arms, as shown in Fig. 3, by which means a free turning movement is allowed to the lever with very little friction. Any other pivoted connection may be employed. K is a valve or cut-off, of any suitable form, attached to the rear end of the lever by a connection, *f*. The valve rests directly over the opening of induction-pipe B, which forms its seat. L is a weight or spring, which is placed over the piston to force it down when the excess of pressure beneath is removed.

The operation is as follows: The gas or water flows from pipe B into the case A, and escapes through the pipe C, and, at medium pressure, the piston E falls in the cylinder by reason of the weight or spring L thereon, thereby raising the valve K from the induction-pipe to allow free discharge; but, if undue pressure of the gas or water occurs, the pressure raises the piston E in the cylinder, thereby closing the valve K over the opening of the induction-pipe more or less, and thereby retarding and lessening the admission of the gas or water into the case. The forward pressure from the case A is therefore made uniform and equal. The desired pressure upon the piston is attained by the amount of weight or spring power applied thereon, which may be varied to suit the necessities of the case. If a spring is used instead of weights, it may be made to exert more or less pressure by the use of a set-screw or other device, by which its tension is modified. The weighted or spring piston thus acts as the governing power to regulate the flow, the pressure raising it when excess occurs, thereby closing the valve, and the gravity or spring of the piston depressing it when the excess is removed, thus opening the valve. The loose bellows-packing allows this to be done with the minimum amount of friction, and with no escape of the fluid.

This device is cheaper, more effective, and less liable to disarrangement than others with which I am acquainted.

This invention is also applicable in regulating the flow of other fluids than gas and water, and might be employed in steam.

Having thus described my invention, what I claim as new is—

In a gas or water regulator, the weighted piston E and bellows-packing G, resting loosely in the cylinder D outside of the case, in combination with the connecting-rod H, attached fast to the said piston, and the pivoted lever I, carrying the valve K inside of the case, as herein shown and described, and for the purpose specified.

In witness whereof I have hereunto signed my name in the presence of two subscribing witnesses.

A. L. SMITH.

Witnesses:
R. F. OSGOOD,
EDWIN B. SCOTT.