F. G. JOHNSON.

Gas-Pressure Regulator.

No. 214,153. Patented April 8, 1879.

fig. 1.

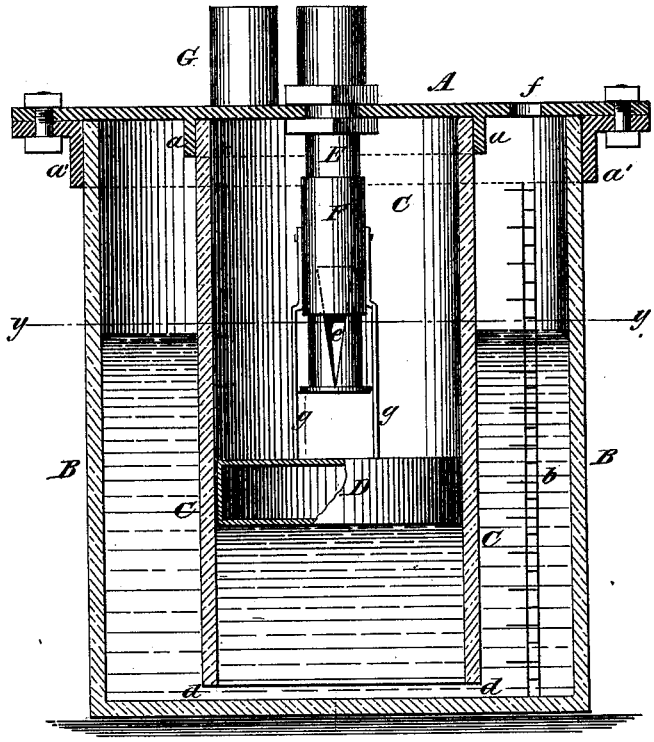
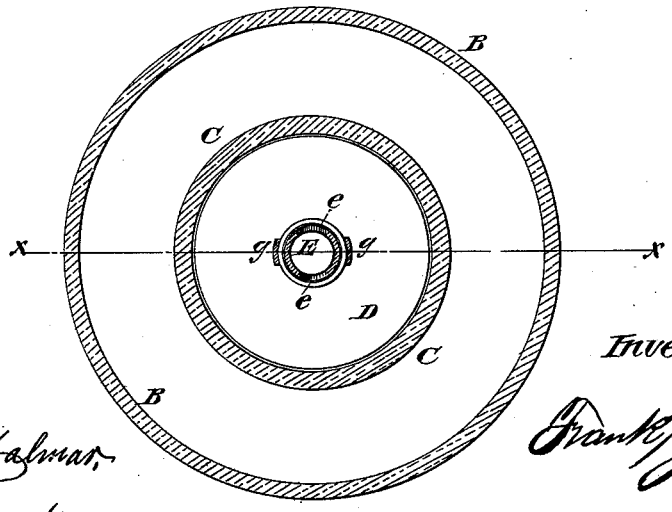


fig. 2.



Witnesses:

Ernest E. Walmar,

E. G. Lund.

Inventor:

Frank G. Johnson

UNITED STATES PATENT OFFICE.

FRANK G. JOHNSON, OF BROOKLYN, NEW YORK, ASSIGNOR OF ONE-HALF HIS RIGHT TO ALEXANDER H. DOTY, OF SAME PLACE.

IMPROVEMENT IN GAS-PRESSURE REGULATORS.

Specification forming part of Letters Patent No. **214,153**, dated April 8, 1879; application filed April 30, 1878.

To all whom it may concern:

Be it known that I, FRANK G. JOHNSON, of the city of Brooklyn, county of Kings, and State of New York, have invented new and useful Improvements in Gas-Governors; 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, making a part of this specification, in which—

Figure 1 represents a vertical section through the line *x x*, Fig. 2; and Fig. 2 represents a transverse section through the line *y y*, Fig. 1.

Like letters refer to like parts.

It is a well-known fact that illuminating-gas, in order to be economically employed, should be consumed under a pressure not to exceed the weight of a column of water nine-tenths of an inch in height, while it is a fact that the supply of gas from the street-mains varies from one inch and a quarter to three inches.

The object of my invention is to regulate the supply of illuminating-gas to consumers in such a manner that each jet or burner shall be automatically furnished with only an economical supply of gas, irrespective of the surplus flow of gas through the main supply-cock, and irrespective of an excess of pressure of the gas in the main pipe, and also irrespective of the number of jets or burners that may be at any one time lighted or extinguished.

To accomplish this I provide an open jar, B B, made of glass or metal, and having on the top a suitable flange, *a' a'*. This jar is closed with a cover, A, upon the lower face of which is a circular ring or flange, *a a*, of sufficient depth to receive a hollow cylinder, C C, of glass or metal, which is fastened gas-tight within the flange *a a*, and which extends down to within a short distance of the bottom of the jar B B, so as to leave a small space, *d d*, between the bottom of the jar and the lower end of the cylinder C C.

Passing down through the center of the cover A is the supply-pipe E, which extends down about half the depth of the jar. In the lower portion of this supply-pipe is provided a V-shaped opening, (seen at *e*,) through which the gas is admitted into the cylinder C C, the bottom of this supply-pipe E being closed with a cap. Upon this supply-pipe, surrounding it, is a wide sleeve or piece of pipe, F, nicely fitted so that it will easily slide up and down, and yet be sufficiently or practically gas-tight. Attached to this sleeve or piece of pipe F are two light rods or arms, *g g*, which extend down to and are attached to a hollow float, D, which works loosely within the cylinder C C.

G is the outlet-pipe, through which the gas passes to the jets or burners; and *f* is a vent-hole, to allow the atmosphere to pass out and in.

The diameter of the cylinder C C is about half that of the jar, which leaves a large space between the sides of the jar and the cylinder. The jar contains an amount of suitable liquid equal to about half its full capacity.

Upon the outside of the jar is cut a scale in fractions of inches, which, when the jar and cylinder are made of glass, enables the consumer of gas to observe the pressure under which the gas is being consumed.

The operation of my invention is thus described: When the gas from the street-mains flows into the cylinder C C through the inlet-pipe E, if it cannot escape through the outlet-pipe G, the pressure of the gas on the liquid in the cylinder will drive the liquid down through the space *d d* and up between the cylinder and jar, as shown in Fig. 1. If the gas is allowed to pass through the outlet G, by opening the jets or burners a portion of the pressure will be removed from the liquid within the cylinder. As no gas enters the cylinder except through the V-shaped aperture *e* in the supply-pipe E, the supply of gas will be more or less cut off as the sleeve F is carried down by the float. If the pressure in the supply-pipe E is diminished, then the float will rise and correspondingly open the aperture *e*, and thus increase the supply of gas. Therefore, as the pressure on the liquid will be increased by every burner that is closed and diminished by every burner that is opened, the aperture will be correspondingly closed or opened to diminish or increase the supply of gas according to the number of burners that may at any time be employed.

The aperture *e* is made V shape in order to vary the opening more for a given rise or fall

of the liquid in the cylinder when the surplus pressure is largely in excess, because when the pressure of the gas is largely in excess the rise and fall of the liquid varies more by opening or closing a burner than when the pressure is not greatly in excess.

What I claim, and desire to secure by Letters Patent, is—

1. The combination of the pipe E, having the V-shaped opening *e*, sleeve F, and float D, as and for the purpose set forth.

2. The sleeve F, pipe E, having the V-shaped opening *e*, and float D, in combination with the jar B B and cylinder C C, operated by the action of the gas on the liquid in the jar, substantially in the manner and for the purposes described.

FRANK G. JOHNSON.

Witnesses:
E. G. LUND,
ERNEST E. MALMAR.