

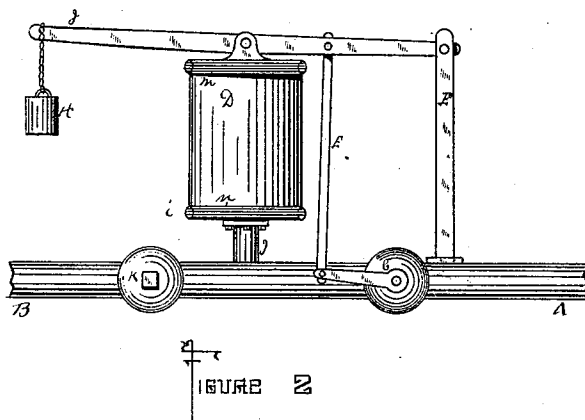
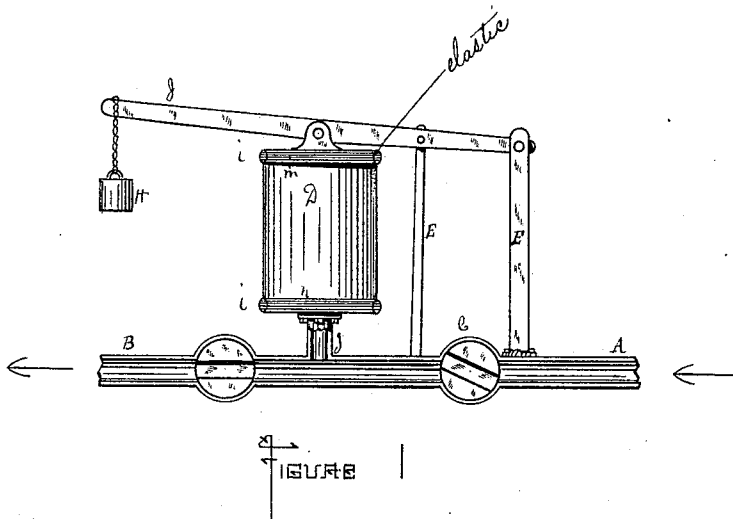
(No Model.)

J. G. BEALE & J. A. ARMSTRONG.

AUTOMATIC PRESSURE REGULATOR.

No. 337,918.

Patented Mar. 16, 1886.



Witnesses.
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UNITED STATES PATENT OFFICE.

JOSEPH G. BEALE AND JOHN A. ARMSTRONG, OF LEECHBURG, PA.

AUTOMATIC PRESSURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 337,918, dated March 16, 1886.

Application filed January 25, 1886. Serial No. 189,714. (No model.)

To all whom it may concern:

Be it known that we, JOSEPH G. BEALE and JOHN A. ARMSTRONG, citizens of the United States, residing at Leechburg, in the county of Armstrong and State of Pennsylvania, have invented a new and useful Improvement in Automatic Pressure-Regulating Apparatus; and we hereby declare the following to be a full, clear, and exact description thereof, reference being had to the drawings, forming a part of the same, in which—

Figure 1 is a side elevation with the pipes and valves in section. Fig. 2 is a full side view of same.

The natural gas escapes from the earth at a pressure varying from zero to five hundred pounds to the square inch, while its economic use can only be secured at a pressure of from one to sixteen ounces to the square inch, and it is absolutely necessary that the pressure be uniform, whatever its energy may be.

This invention is designed to reduce the pressure of gas to a uniform standard by the automatic action of the apparatus.

The invention consists in connecting a valve with machinery capable of opening and closing the valve by the automatic action of the gas whenever the pressure shall fall below or rise above a certain given degree, whereby a varying high pressure may be reduced to a uniform low pressure by the automatic action of the apparatus.

In the drawings, A represents the pipe where the gas enters, B where it passes out. C is the regulating-valve; D, the regulating-chamber. E is the connecting-rod; F, the lever-stand; G, the lever; H, the regulating-weight. *ii* are the top and bottom of the regulating-chamber. J is the connecting-pipe. K is a stop-cock. M is the wire that binds the rubber cylinder to the top and bottom of the regulating-chamber.

In the construction of our apparatus the stop-valve K may be omitted, as it is not an essential element, its office being to stop the flow of gas at any pressure when the gas is not needed.

The apparatus may be made by the use of any kind of valves, but we shall describe its construction in connection with the common plug-valve, C, which may be connected as

shown in Fig. 2, or the valve may be connected with gas-pipe in the usual manner, with a T at J. The bottom frame, *i*, is screwed onto the branch-pipe J. This frame *i* has an oval edge. A rubber pipe, D, is drawn over it and the end tightly wrapped with wire to the bottom, as shown at M. A top frame, *i*, is put in place and the gum cylinder drawn over the edge and tightly fastened with wire. The lever G, weight H, and connecting-rod E are then put in place, and the apparatus is ready for use.

When the apparatus has been so constructed and A is connected with the supply and B connected with the discharge, the valve C being adjusted to be nearly closed, the rubber cylinder stands upright, as shown in the drawings. The gas entering at A at a pressure of one hundred pounds to the inch, it passes through the valve C, and fills the regulating-chamber D. The weight H being adjusted at sixteen ounces, as soon as seventeen ounces of pressure enters the regulator the gum stretches and the lever *g* is pushed up and the connecting-rod E closes the valve C and the gas is shut off. At the instant the pressure runs down to sixteen ounces the weight H forces the cylinder D down and the valve C is again opened, and thus any given pressure can be secured by adjusting the weight H, when the automatic action of the machine will open and close the valve so as to secure any desired pressure without further attention.

The advantages of our invention are that it is simple, cheap, and reliable, as no gas escapes by working the apparatus, and as the regulating-chamber is made of rubber or other elastic flexible material there is nothing to get out of order.

What we claim as our invention is—

1. In an automatic pressure-regulator, the combination, with a gas-main having a valve, of a flexible chamber located outside of the pipe, and a lever mounted on the chamber and connected with the valve, whereby when said chamber is expanded the lever will be raised and the valve closed, as set forth.

2. In an automatic pressure-regulator, the combination, with a gas-main and a valve therein, of a flexible chamber located outside the main and communicating therewith,

a lever mounted on the upper side of the chamber and carrying a movable weight, and connections between the lever and valve whereby when the chamber is expanded the lever will be raised and the valve closed, as set forth.

3. The combination, with the main A and valve, of the flexible chamber communicating with the main, a standard, F, a lever pivoted

thereto and connected with the flexible chamber, a movable weight on the lever, a rod, E, pivoted to the lever and connected with the valve, as set forth.

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