No. 645,403. Patented Mar. 13, 1900.

S. L. McADAMS.

GAS REGULATOR.

(Application filed Aug. 3, 1899.)

(No Model.)

Fig. 1.

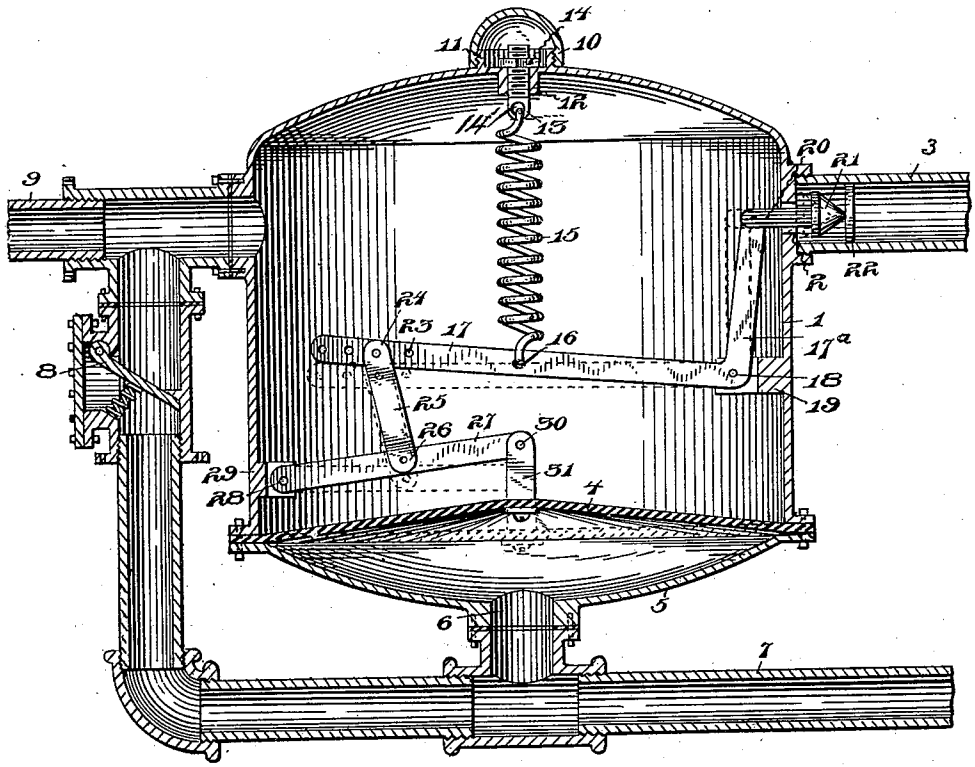


Fig. 2.

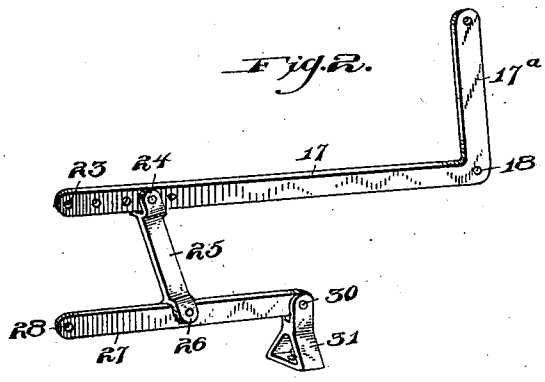
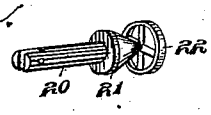


Fig. 3.



WITNESSES:

J. P. Appleman.

E. E. Potter

INVENTOR

S. L. McAdams.

BY

N. C. Ewert & Co.

ATTORNEYS.

UNITED STATES PATENT OFFICE.

SYLVESTER L. McADAMS, OF BEAVER FALLS, PENNSYLVANIA.

GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 645,403, dated March 13, 1900.

Application filed August 3, 1899. Serial No. 725,960. (No model.)

To all whom it may concern:

Be it known that I, SYLVESTER L. McADAMS, a citizen of the United States of America, residing at Beaver Falls, in the county of Beaver and State of Pennsylvania, have invented certain new and useful Improvements in Gas-Regulators, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in gas-pressure regulators, and more particularly to that class wherein it is desired to reduce a high pressure from the main to a few ounces of pressure in the house-supply pipe.

The invention has for its objects the provision of novel means whereby the leakage of the diaphragm is conducted to an auxiliary pipe leading out of the building into the open air, thereby preventing an explosion; furthermore, to provide a safeguard that will conduct the overpressure of gas into the auxiliary main in case the working parts fail to operate.

Another object of the invention is to construct an apparatus of the above-described class that will be extremely simple in its construction, strong, durable, and comparatively inexpensive to manufacture.

With the above and other objects in view the invention finally consists in the novel construction, combination, and arrangement of parts to be hereinafter more fully described, and specifically pointed out in the claim.

In describing the invention in detail reference is had to the accompanying drawings, forming a part of this specification, wherein like numerals of reference indicate corresponding parts throughout the several views, in which—

Figure 1 is a vertical sectional view of my improved gas-pressure regulator. Fig. 2 is a perspective view of the levers employed for operating the valves and regulating the flow of gas. Fig. 3 is a detail view in perspective of the inlet gas-regulating valve.

Referring to the drawings by reference-numerals, 1 indicates a suitable casing, which is preferably cylindrical in form, having a gas-inlet 2 communicating with the gas-inlet pipe 3 from the main gas-pipe. A diaphragm 4 is arranged in the lower part of the casing and is clamped between the bottom 5 and the casing 1. The bottom 5 of the casing is provided with an outlet 6, communicating with the gas-escape pipe 7, said gas-escape pipe communicating with the outlet or supply pipe 9. The said gas-escape pipe 7 has arranged therein a check-valve 8. The top of the casing has a centrally-arranged screw-threaded annular flange 11 and on its inner face is provided with an interiorly-screw-threaded bushing 12, which is adapted to receive the exteriorly-screw-threaded hanger 13, adjustable vertically by the nut 14, mounted thereon. This adjusting-nut is inclosed by the threaded hood 10, engaging the annular flange 11. The lower end of the hanger 13 is provided with an eye 14′ to receive the upper end of the resistance-spring 15, the lower end of which is connected to the horizontally-extending arm of the substantially L-shaped lever 17, which has formed integral therewith at its one end the vertically-extending arm 17^a. This lever is pivotally secured at the intersection of its two arms, as shown at 18, to a bracket 19, formed integral with the inner face of the casing 1. At its upper end the vertical arm 17^a has pivotally connected thereto a valve-stem 20, which extends outwardly through the gas-inlet 2 and carries on its free end a valve 21, having a guide 22 of greater diameter connected thereto. This guide is of a diameter about equal to that of the opening in the inlet-pipe 2 and assures a perfect seating of the valve 21 over the gas-inlet 2. A link 25, having bifurcated ends 24 26, connects the horizontal arm of the lever 17 near its free end with a lever-arm 27, with which the said link connects at or near the center thereof. This lever-arm 27 is pivotally supported at its one end, as shown at 28, to a bracket 29, formed integral with the inner face of the casing 1 on the side opposite to the bracket 19, and at its other end this lever-arm is pivotally connected, as at 30, to a support 31, secured centrally of the diaphragm 4. This link 25 is made adjustable in its connection with the lever 17 by providing the latter at its free end with a series of apertures 23.

The operation of my improved gas-pressure regulator is as follows: Assuming that the parts have been adjusted to their proper po-

sitions, as shown in Fig. 1 of the drawings, by means of the adjusting-nut 14, the gas-inlet valve 3 will allow a sufficient quantity of gas to enter the casing to bring about the desired pressure in the supply-pipe 9. In case the pressure increases the diaphragm will expand, carrying with it the yoke 31, lowering the lever 27, carrying with it the arm 25, and operating the lever 17, thereby moving the parts toward the position shown in dotted lines of Fig. 1 of the drawings and closing the inlet-valve. In case the parts become out of order and do not operate in the manner desired the increased pressure will automatically open the check-valve 8, allowing the surplus pressure of gas to escape through the gas-escape pipe 7, leading to the open air and out of the building, thereby preventing any explosion that would otherwise be liable to occur. In case there is a leakage in the diaphragm the surplus pressure will escape by way of the outlet 6 into the gas-escape pipe 7 and thence to the open air, as heretofore described.

It will be noted that various changes may be made in the details of construction without departing from the general spirit of my invention.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

In a gas-regulator, the combination with the casing provided near its upper end with a gas-inlet and a gas-outlet oppositely arranged, a diaphragm secured in said casing near the bottom thereof, and a gas-escape pipe arranged at the bottom of the casing and communicating therewith beneath the diaphragm, of a screw-threaded hanger arranged centrally in the top of said casing, an adjusting-nut mounted on said hanger and engaging the top of said casing, a hood secured to the casing and inclosing said adjusting-nut, a substantially L-shaped lever pivotally secured to the inner face of said casing above the diaphragm and having its shorter arm extending in a vertical position, its longer arm extending in a horizontal position and provided with a series of openings, a resistance-spring connected at its lower end to the center of said horizontal arm and at its upper end to said hanger, a yoke secured to the center of said diaphragm and extending above the same, a horizontally-extending lever-arm 27 pivotally connected at one end to said yoke and at its opposite end to the innner face of said casing, a vertically-extending bifurcated arm pivotally connected at one end to the center of said lever 27 and at its opposite end adapted to be adjustably connected to one of the openings of the said longer arm of the L-shaped lever, a valve-stem operating through the said casing into the gas-inlet and pivotally connected at its inner end to the vertical arm of the L-shaped lever, a valve suitably connected to the outer end of said valve-stem, and a concentric guide secured to the outer end of said valve and of greater diameter and adapted to assure the seating of the valve when operated by the pressure of the gas, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

SYLVESTER L. McADAMS.

Witnesses:
JOHN NOLAND,
E. W. ARTHUR.