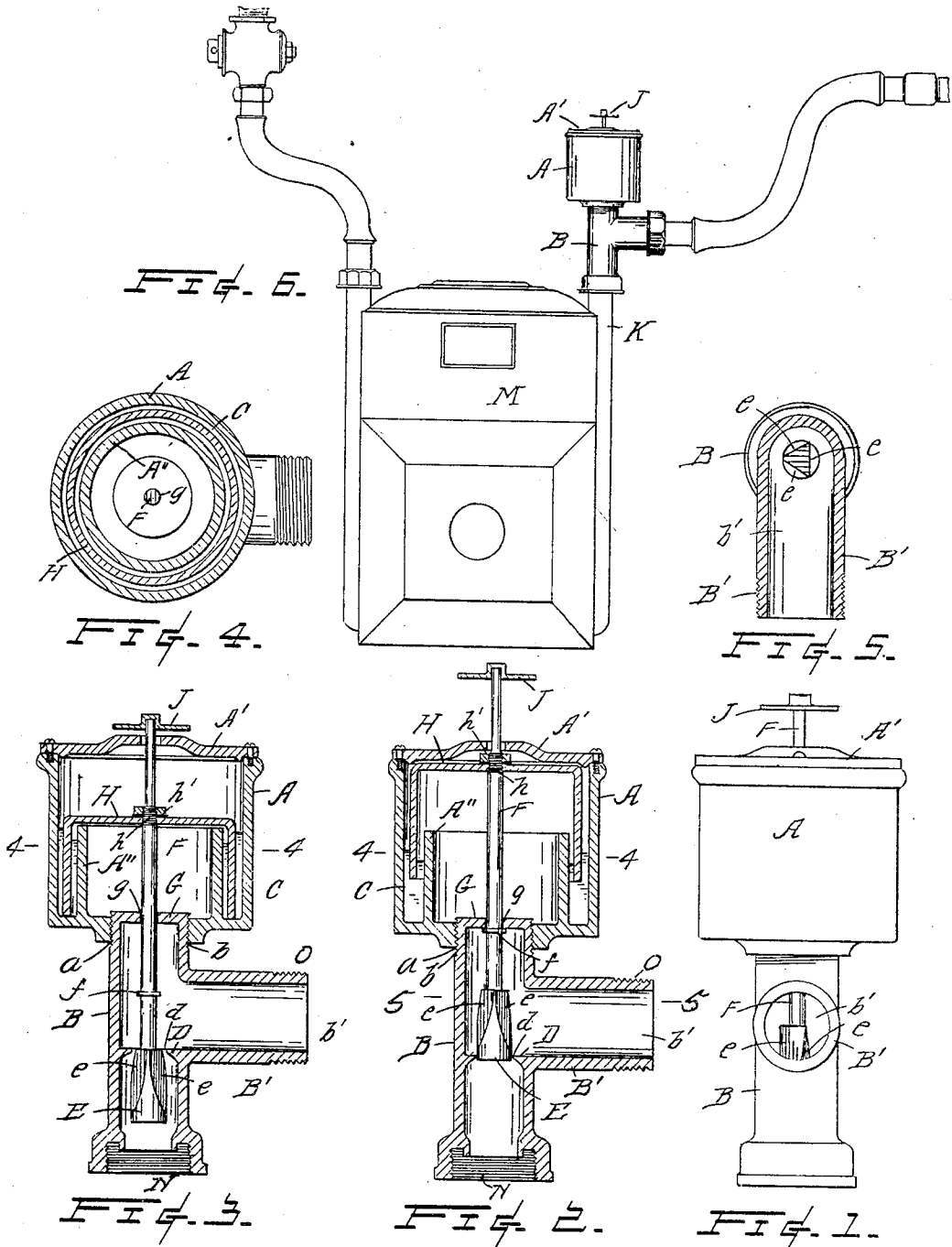


No. 810,562.

PATENTED JAN. 23, 1906.

B. H. PETLEY.
GAS REGULATOR.

APPLICATION FILED FEB. 23, 1905.



WITNESSES:

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GAS-REGULATOR.

No. 810,562.

Specification of Letters Patent.

Patented Jan. 23, 1906.

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To all whom it may concern:

Be it known that I, BENJAMIN H. PETLEY, a citizen of the United States, residing at Seattle, in the county of King and State of Washington, 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, in which—

Figure 1 is a front elevation of devices in which is embodied my invention. Figs. 2 and 3 are longitudinal vertical sections taken through Fig. 1 and respectively illustrating the valve in its most closed and open positions. Figs. 4 and 5 are horizontal sectional views taken on planes designated by corresponding numerals in the aforesaid views. Fig. 6 shows in vertical elevation a gas-meter with the invention operatively attached thereto.

The invention relates to fluid-pressure regulators, and particularly to devices of this character used for automatically controlling the pressure of illuminating or fuel gas within the service-pipes.

The object of the invention is the provision of improved means for sensitively and reliably maintaining at a substantially uniform pressure gas which is delivered to the consumer, and that, too, irrespective of the quantity used.

A further object of the invention is the provision of simple and convenient means for adjustably regulating the relative capacities of its several operative parts for the purpose of adapting the same to meet special or changed conditions of initial and delivery gas-pressures.

I attain these and other ends by the novel construction, arrangement, and adaptation of the parts of the invention, which will be now described with reference to the said drawings.

The letter A designates the upper part of the containing-case, which is provided with a removable cover A', and is connected to a lower part B by providing a screw-threaded *b* upon the end of the latter which registers with a correspondingly-threaded aperture *a* in the bottom of the first-named part. The said top part of the case is desirably formed cylindrical, with an interiorly and concentrically disposed wall A'', forming thereabout an annular cavity C for the reception of the mercury or other liquid seal S. The said

lower part of the case is provided with a branch B', having therein an outlet-passage *b'*, and below which, in the chamber of the main portion of the part B, is a partition D, having a centrally-disposed aperture *d*. Fitted loosely within this opening is a cylindrical-shaped valve E, which is cut or otherwise formed with a plurality of inwardly-sloping peripheral faces *e* for the purpose of furnishing means to increase the area of the port-opening as the valve descends and diminish the same during its upward movement. Integrally connected to this valve and in axial alinement therewith is a stem F, which projects upwardly through an aperture *g* in a cross-partition G, provided at or near the top of the case part B, and extends thereabove through the said cover A'. Upon the stem is a collar *f*, which is positioned so that it will come in contact with the partition thereabove when the valve has been lifted to its fullest extent, as indicated in Fig. 2. Rigidly secured to the stem, as by screw-threads *h* and a lock-nut *h'*, is an inverted-cup-shaped member or float H, of such diameter that its pendent rim will be submerged in the said seal. J is a detachable weight, which is carried exteriorly of the case by the protruding end of the said stem to furnish supplemental means tending to open the valve. The apparatus can be installed at any position between the gas-main and the service-pipe, and conveniently so at the discharge-pipe K of the meter M, which may be accomplished by the provision of screw-threads N and O, respectively, upon the inlet and outlet ends of the casing, of which the former is desirably made internally and the other external to adapt them to the ordinary terminals as at present in use.

The operation of the invention is as follows: Gas entering the casing from below passes up about the valve and exerts a lifting pressure upon the float, which, if sufficient to overcome the combined downward pressures of the atmosphere and the weights of the valve and its connected parts, will cause the upward movement and consequent reduction in the valve-opening to check the quantity of gas flowing therethrough. When for any reason, as by the consumption of the gas contained within the service-pipe, the pressure of the gas acting to elevate the float is diminished, it will be incapable of sustaining the valve in its elevated position, which then

will drop, admitting an increased amount of gas through the valve-opening until an equilibrium is established between the said opposing forces, either when the gas is being consumed or its use discontinued. Variations may be made to increase or diminish the pressure of the gas within the delivery end of the apparatus without the removal of the said casing-cover by simply replacing or supplementing the weight carried upon the upper end of the valve-stem, and the amount of the valve-opening may be nicely regulated by distending or contracting the length of the casing through the medium of the screw connection between its parts.

Among the advantages of the invention is the provision of a valve which cannot be wedged within its port nor caused to be stuck therein from an accumulation of foreign matter carried by the gas. Neither can the passage of gas through the said port be completely shut off by the valve in any of its positions, as is common with other regulating-valves of this character when the controlling devices thereof are subjected to a sudden increase of gas-pressure. Furthermore, the valve can be adjusted from the exterior of the case without removing the cover of same and without the necessity of providing holding means to prevent the rotation of the valve during such manipulation.

The valve is adapted to a wide range of capacity, being dependent solely upon the area of the largest available opening. Its construction is such that it requires a considerable movement to effect even a slight change in the quantity of gas supplied, thus insuring a high degree of sensitiveness or efficiency, and in connection with the cooperating parts is capable of maintaining a practically uniform pressure at the burner regardless of the pressures prevailing in the supply-main.

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

1. In a device of the character described, the combination with a two-part casing, a valve controlling a port in the casing, a stem and a float, of means provided on the stem for limiting the closing movement of the valve, and means for effecting the adjustment of the casing parts for varying the relative position of the said valve to the port which it controls whereby the amount of valve-port opening may be regulated

2. In a device of the character described, the combination with the casing provided with inlet and outlet gas-openings, a valve-seat and an annular chamber for containing a liquid seal and a removable cover for said casing, of an inverted-cup-shaped member having its depending wall projecting into said chamber, an elongated tapering valve connected to said member, said valve being

of less area at its largest part than the area of said valve-seat, whereby a capacity will be afforded around the valve at all positions of the same, and means to adjust the position of the said valve from the exterior of the casing without detaching said cover therefrom.

3. In a device of the character described, the combination with the casing provided with gas inlet and outlet openings, and partitions extending across the casing above and below the said outlet-opening and severally provided with axially-disposed apertures, of a valve of less cross-sectional area throughout than the aperture of said lower partition said valve passing through said lower partition and having a stem extending up through the aperture and carrying a float thereabove, and means provided on said stem below the level of the upper partition for limiting the upward movement of said valve.

4. In a device of the character described, the combination with the casing provided with inlet and outlet openings and having a valve-port therebetween, a tapering valve of less diameter than the said port and positioned therein, said valve being provided with a plurality of flat inwardly-sloping faces whereby the area of the port-opening is increased through descending movement of the valve, a stem for said valve, and a float carried upon said stem.

5. In a device of the character described, a two-part casing, means for adjustably connecting them together, a valve located within the casing and means whereby the adjustment of the parts of the casing will effect the adjustment of said valve.

6. In a device of the character described, the combination with a casing part provided with gas inlet and outlet openings and having a valve-port therebetween, another casing part having an annular seal-chamber therein and adjustably connected to the first-named part, a cylindrical valve of less diameter than the said valve-port and extending therethrough said valve being formed so that the port area thereabout is increased correspondingly with its downward movement and diminished during its ascending movement but at no time closing the said port, a stem projecting up through the second-named casing part, a float secured to said stem having a depending circular wall projecting interiorly of said annular chamber, means provided intermediate the float and valve for limiting the upward movement thereof, and a removable weight for the said stem exteriorly of the casing.

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

BENJAMIN H. PETLEY.

Witnesses:

PIERRE BARNES,
E. SNYDER.