

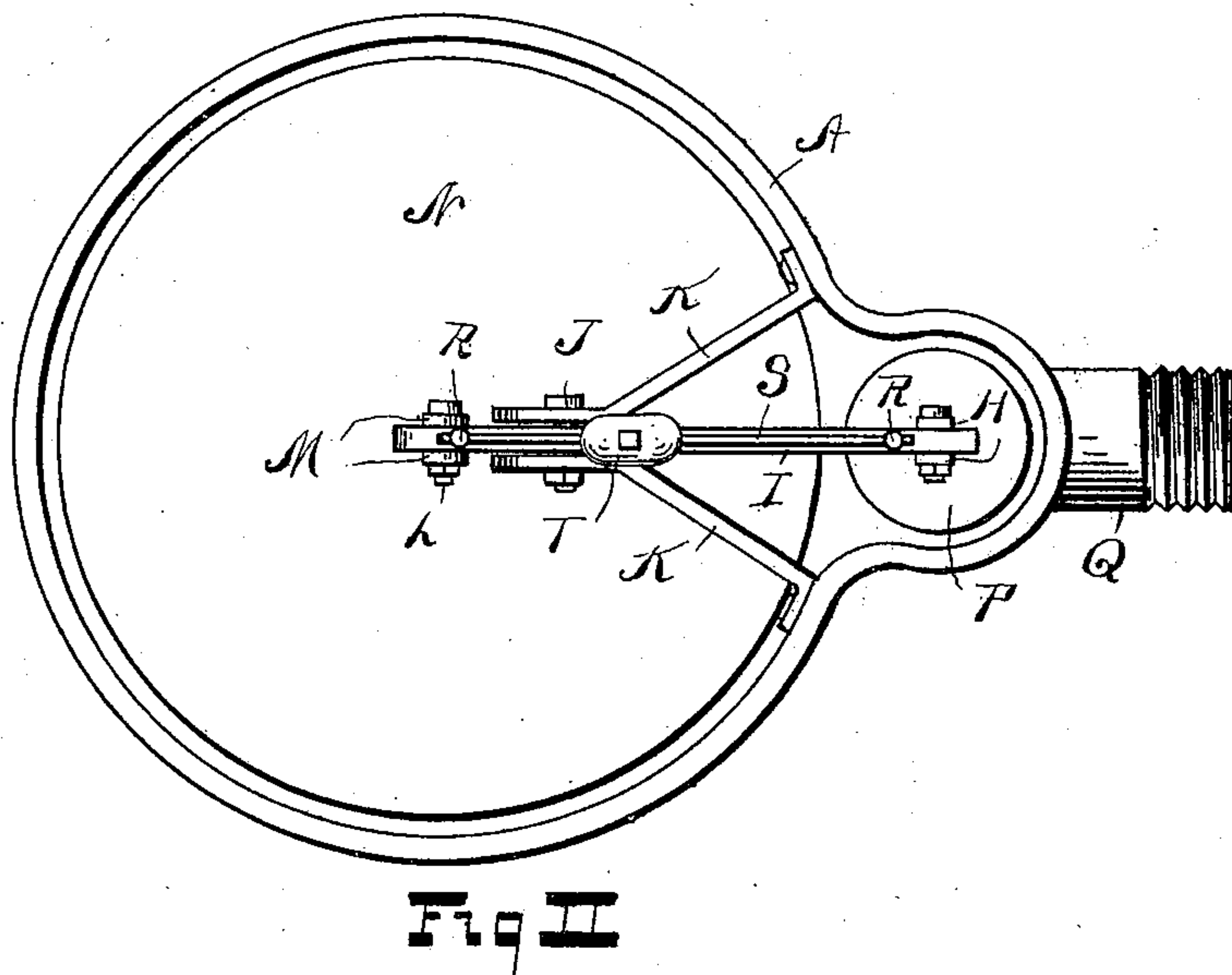
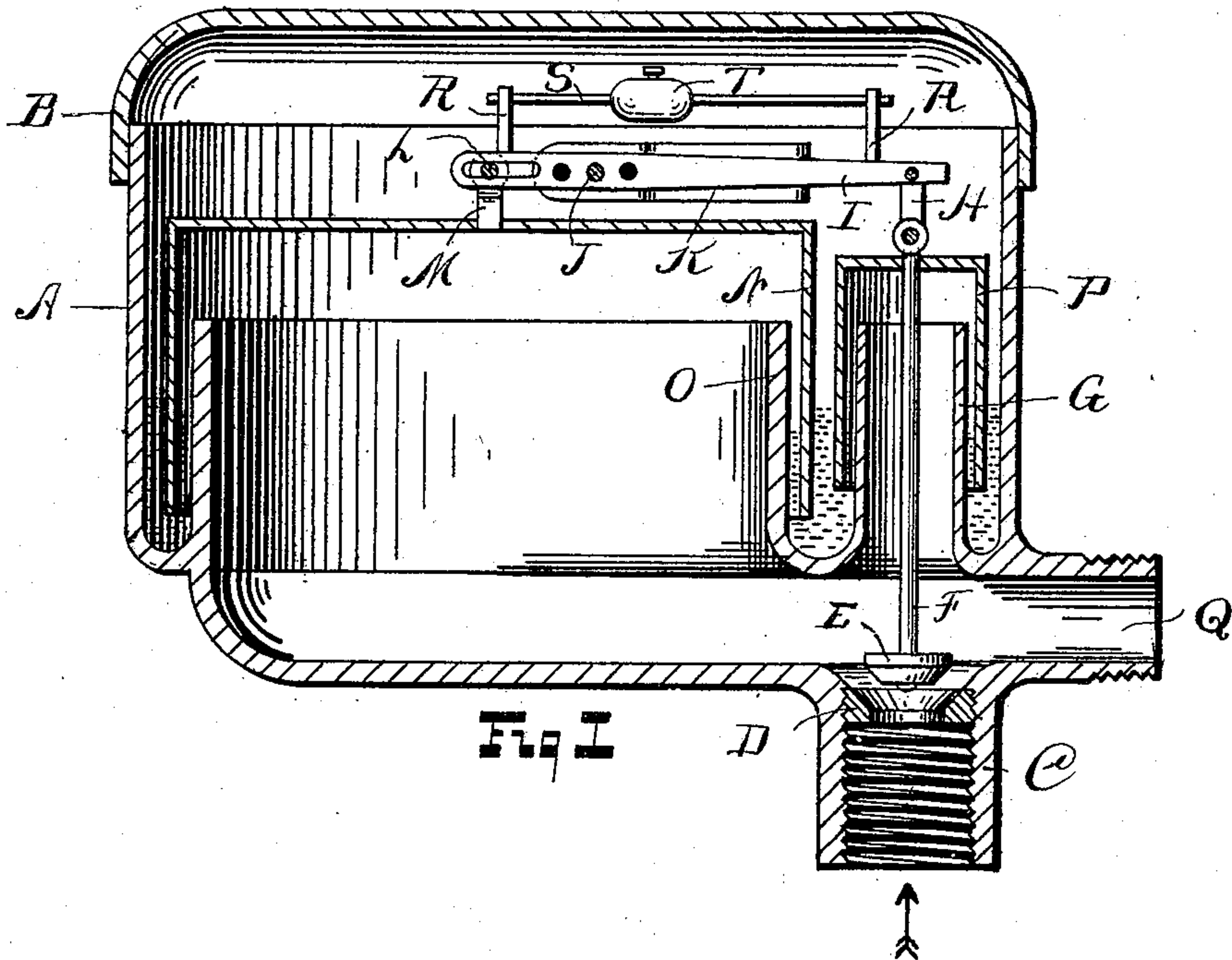
No. 635,733.

Patented Oct. 31, 1899.

W. S. ADAMS.
GAS REGULATOR.

(Application filed Aug. 9, 1898.)

(No Model.)



WITNESSES

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GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 635,733, dated October 31, 1899.

Application filed August 9, 1898. Serial No. 688,150. (No model.)

To all whom it may concern:

Be it known that I, WILSON S. ADAMS, a citizen of the United States of America, residing in Kansas City, in the county of Wyandotte and State of Kansas, have invented a new and useful Gas-Regulator, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to improvements in gas-regulators.

The object of my invention is to provide a gas-regulator which will deliver to the service gas at a uniform pressure regardless of any variation of the degree of pressure in the supply.

My invention has further for its object the providing of a gas-regulator the construction of which insures extreme sensitiveness in action and which may be readily adjusted to deliver gas at any desired pressure.

My invention provides, further, a gas-regulator so constructed as to be easily taken apart and cleaned.

My invention provides, further, certain new and useful features of construction hereinafter fully described and claimed.

In the accompanying drawings, illustrative of my invention, Figure I represents a central vertical sectional view, and Fig. II represents a plan view with the cover removed.

Similar letters of reference indicate similar parts.

A indicates the casing, which may be of any desired conformation, but which it is desirable to have tubular in form, the top being open and the bottom closed.

B denotes the cover, fitted to the top of the casing A and removable therefrom. Any desirable means may be employed for securing the cover against removal from the casing.

As shown in Fig. I, the casing is provided near its side at the bottom with an inlet-pipe C, which is internally screw-threaded and which has secured in it near the top a valve-seat D. The said valve-seat is preferably externally screw-threaded around its periphery, so as to be readily removed from the pipe C for the purpose of cleaning. Adapted to seat itself in the seat D is a valve E, secured to the lower end of a vertical valve-stem F, which extends through the axial cen-

ter of a vertical tubular wall G, which has its lower end supported by the casing A. The upper end of the stem F is pivotally secured to the lower ends of two links H, the upper ends of which are in turn pivotally secured to the right end of a horizontal lever I, which is pivotally mounted by means of a pin J between two horizontal inwardly-extending supporting-arms K, the outer ends of which are secured to the inner periphery of the casing. The arms K are provided with several transverse openings corresponding, respectively, to similarly-disposed holes arranged along the lever I and adapted to have inserted therein the pin J. By this disposition of the said pin-holes the fulcrum-point of the lever I may be varied to suit required conditions. The left end of the lever I is provided with a longitudinal slot, through which passes a pin L, which is secured in the bifurcated upper end of a vertical rod M, the lower end of which is secured centrally to the upper end of a common inverted-cup-shaped float N, the lower end of which is immersed in a liquid sealing material, preferably mercury, contained in an annular chamber formed between the inner periphery of the casing A and the enlarged tubular wall O, the lower end of which is supported by the casing in a similar manner to the means of supporting the smaller tubular wall G. The mercury sealing liquid also encircles the said tubular wall G. Secured to the stem F, near its upper end, is an inverted cup P, which encircles the wall G without touching it and has its lower end located within the sealing-mercury. The function of this inverted cup is simply to prevent the escape of gas around the stem F and to dispense with packing around the stem, which would make so much friction as to destroy the sensitiveness of the regulator.

Communicating with the interior of the casing A, near the bottom and at its side, is a discharge-pipe Q, which is connected with the service-pipe of the house.

Secured to the upper side of the lever I and located one at each side of the supporting-pin J are two vertical rods R, the upper ends of which are connected by a horizontal rod S, upon which is mounted a longitudinally-slid-

able balance-weight T, adapted to be secured at any desired position upon the rod S and by means of which the proper adjustment for operating the machine is secured. This construction enables one to move the weight T to the right or left of the fulcrum-point of the lever I, thus throwing the weight of the counterbalance with or against the weight of the float N and provides a wide range of regulation of pressure of the gas passing into the service-pipes.

My invention is operated as follows: The regulator is first secured, by means of the pipe C, to the pipe leading from the meter, and the pipe Q is connected with the service-pipes. Gas then being admitted will cause the float N to rise, thus elevating the left end of the lever I and depressing the right end thereof, forcing the valve E toward the valve-seat D and tending to close the same and shut off the gas. Any closing off of the passage of gas out of the pipe Q will increase the pressure of gas within the casing below the float N, causing it to rise, and thus close the entrance in the pipe C, while the contrary effect will be occasioned by letting out more gas through the pipe Q. When it is desired to take out the working parts for cleaning, it is but necessary to remove the cover B from the casing, after which the float N, sealing-cup P, and all parts connected therewith may be removed by disconnecting the ends of the supporting-arms K from the casing-wall, the diameter of the valve E being smaller than the distance between the inner sides of the tubular wall G. It will be noted that all the operative parts outside of the valve E are located outside of the part of the casing in which the gas is contained, and therefore the working parts are free from the injurious deposits from the gas, rendering the regulator not liable to the causes of disorder to which this class of regulators is usually exposed. It will also be noted that in the construction of the regulator no part is formed so as to provide a trap adapted to catch condensed products of the gas, but that all such matter forming in the service-pipes will pass through the pipe Q into the casing, from which it will pass into the meter through the valve-opening in the pipe C.

My invention is capable of many modifications without departing from its spirit.

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

1. In a gas-regulator, the combination with the casing comprising an upper and a lower chamber, the lower chamber being provided with inlet and outlet openings for the passage of gas and the two chambers connecting through two tubular walls around which is adapted to be retained a sealing liquid, of a valve controlling the gas-inlet opening, a float encircling one of the said tubular walls and connected therethrough to the valve, a float encircling the other tubular wall, and a lever pivotally supported above the floats and con-

nected thereto at its ends, substantially as described.

2. In a gas-regulator, the combination with the casing inclosing two chambers one an air-chamber and the other a gas-chamber, the gas-chamber being provided with gas inlet and outlet openings, and two openings connecting the two chambers, of two suitably-sealed floats closing the said two openings respectively, a lever pivoted in the air-chamber between the two floats to which it is connected at its ends, and a valve controlling the gas-inlet opening and operated by the movement of the said lever, substantially as described.

3. In a gas-regulator, the combination with the casing inclosing two chambers, one an air and the other a gas chamber, the two chambers being connected by two openings and the gas-chamber provided with gas inlet and outlet openings, of two suitably-sealed floats closing the two openings respectively, a lever connected at its ends with the two floats respectively and pivoted to a suitable support located in the air-chamber, a valve controlling the said gas-inlet opening, and a rod extending through one of the two openings connecting the two chambers and connecting the lever with the valve, substantially as described.

4. In a gas-regulator, the combination with the casing inclosing two chambers, one an air and the other a gas chamber, the gas-chamber being provided with gas inlet and outlet openings, and the two chambers being connected by two openings, of a valve controlling the gas-inlet opening, a float closing one of the openings leading from the gas-chamber to the air-chamber, a rod extending through the other of said openings and connected at one end with the said valve, a lever pivoted in the air-chamber and connected at one end with the other end of the rod and connected at the other end to the said float, a float carried by the rod and closing the opening in which the rod is located, and means for preventing the passage of gas around the two floats into the air-chamber, substantially as described.

5. In a gas-regulator, the combination with a gas-chamber provided with an inlet and an outlet opening, of a valve controlling the said inlet-opening, two openings leading from the gas-chamber to the outside thereof, two suitably-sealed floats closing the said two openings and subjected always to the same gas-pressure relatively, a lever connecting the two floats, and means by which the movement of the floats is made to operate the said valve, substantially as described.

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

WILSON S. ADAMS.

Witnesses:

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