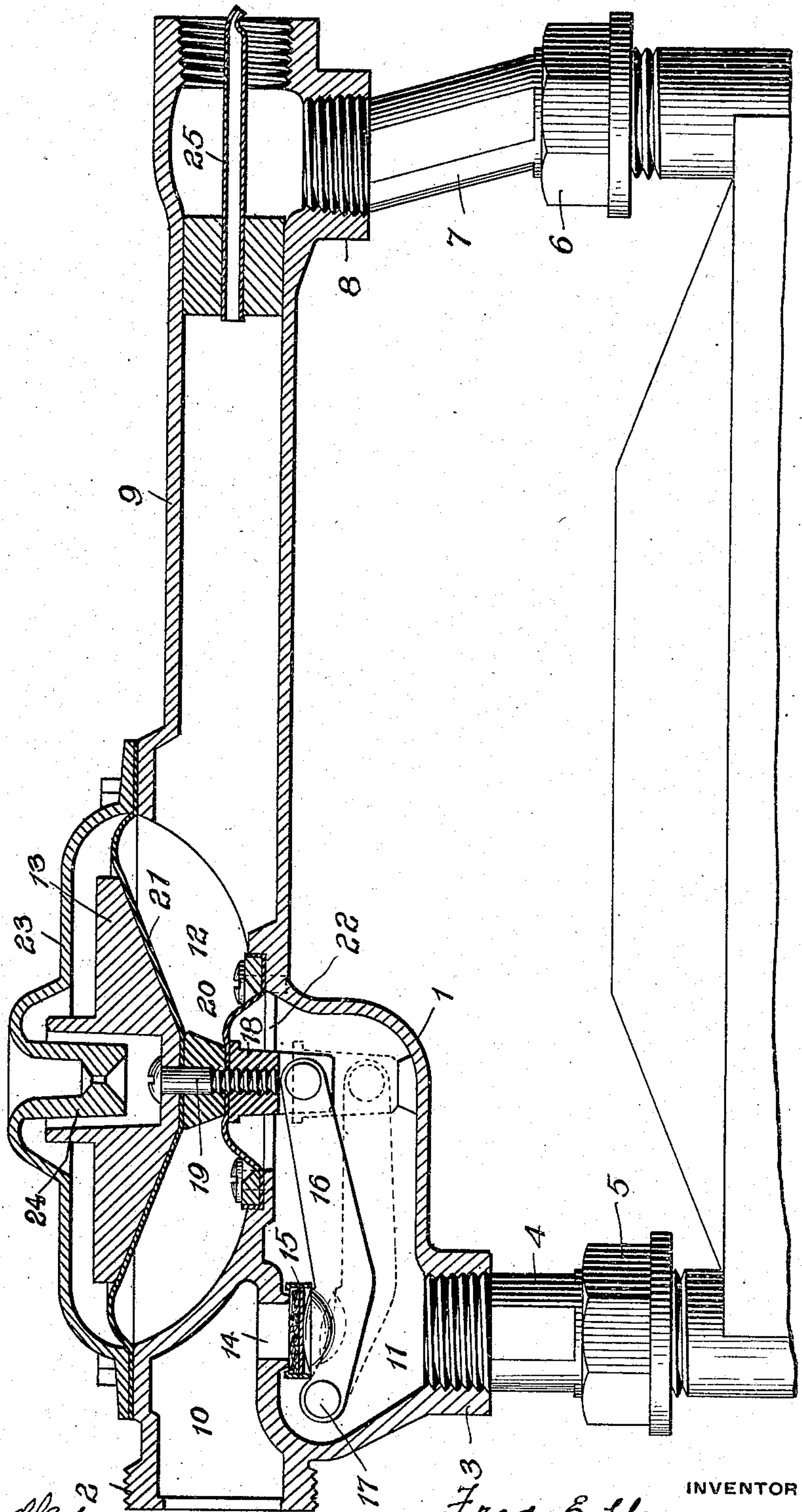


930,640.

F. E. YOUNGS.
GAS REGULATOR.
APPLICATION FILED FEB. 20, 1909.

Patented Aug. 10, 1909.



WITNESSES:

J. Herbert Bradley,
Charles Barnitt,

INVENTOR

Fred E. Youngs
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UNITED STATES PATENT OFFICE.

FRED ELLIOTT YOUNGS, OF DETROIT, MICHIGAN, ASSIGNOR TO EQUITABLE METER COMPANY, OF PITTSBURG, PENNSYLVANIA, A CORPORATION OF PENNSYLVANIA.

GAS-REGULATOR.

No. 930,640.

Specification of Letters Patent.

Patented Aug. 10, 1909.

Application filed February 20, 1909. Serial No. 479,124.

To all whom it may concern:

Be it known that I, FRED E. YOUNGS, residing at Detroit, in the county of Wayne and State of Michigan, a citizen of the United States, have invented or discovered certain new and useful Improvements in Gas-Regulators, of which improvements the following is a specification.

The invention described herein relates to certain improvements in regulators for gas and has for its object a construction whereby the pressure of gas is determined by the pressure in the service pipes or at the outlet of the meter.

The invention is hereinafter more fully described and claimed.

In the accompanying drawing forming a part of this specification is shown a sectional elevation of a regulator having my improvement applied thereto.

The shell 1 of the regulator is provided with a nipple 2 for attachment to the supply lines and a nipple 3 for connection to the inlet of the meter. The connection to the meter consists of the swivel pipe 4 and the internally threaded union 5 rotatably mounted on the swivel. Connection is made to the outlet of meter by an internally threaded union 6 mounted in the bent swivel 7 screwing into the fitting 8, which is formed integral with the hollow arm 9 secured to or formed integral with the shell 1.

The shell is divided into an inlet chamber 10, a regulating chamber 11 and a pressure chamber 12. The inlet and regulating chambers are connected by a port 14 controlled by a valve 15 of any suitable construction and carried by the lever 16. This lever has one end mounted on the pin 17 and its opposite end loosely connected by a screw 19 to the diaphragms 20 and 21. The diaphragm 20 is placed across an opening 22 connecting the regulating and pressure chambers 11 and 13, while the diaphragm 21 forms the top of the pressure chamber and has its edges secured between the cover 23 and a seat on the shell 1. A suitable weight 13 preferably provided with a central recess is carried by the diaphragm 21 being secured thereto by the screw 19. A projection 24 on the cover extends down into the weight and prevents excessive lateral movement of the weight such as would injure the diaphragm, during shipment etc. The pressure chamber formed between the diaphragms 20 and 21 is connected

to the service pipes adjacent to the outlet of the meter by the hollow arm. For convenience of manufacture the opening through the hollow arm is made large but to prevent too rapid changes of pressure in the chamber 12 a plug carrying a small tube 25 is placed in the hollow arm.

It will be observed that the diaphragm 20 is subjected on its under side by pressure of gas in the regulating chamber at the inlet side of the meter while on its upper side, this diaphragm is subjected to the pressure of the gas in the service pipes on the outlet side of the meter. The pressure in chamber 11 always being slightly greater than in chamber 12, by an amount exactly representing the variable frictional resistance of the meter, results in a lifting effect on the stem 18, due solely to the difference of pressures in 11 and 12 acting on the area of the small diaphragm. Compared to the action of the pressure in 12 on diaphragm 21, this is so small in amount as to be inappreciable. The pressure in 12 which is the same as that in the outlet service lines is therefore constant, the flow being controlled by the pressure of the gas after it has passed through the meter, any variation which might be due to resistance in the meter is eliminated. While the connection of the pressure chamber with the service pipes is shown as being closely adjacent to the outlet of the meter, it will readily be understood that such connection may be made at any point in the service lines.

I claim herein as my invention:

1. A regulator having in combination an inlet chamber, a regulating chamber, a pressure chamber, a valve controlling the flow of gas to the regulating chamber, a wall or diaphragm forming a partition between the regulating and pressure chambers, a diaphragm in the pressure chamber, a mechanical connection from the regulating valve to the diaphragm in the regulating chamber and passing through such flexible wall, and a gas connection from the service lines to the pressure chamber.

2. A regulator having in combination a case or shell having inlet, regulating and pressure chambers, a valve controlling the flow of gas from the inlet to the regulating chamber, means for connecting the regulating chamber to the inlet of a meter, an arm connected to the case or shell, and provided with means for attachment to the meter outlet

and to the service lines, a weighted diaphragm arranged in the pressure chamber and subject only to the service line pressure, and means for connecting the diaphragm to
5 the regulating valve.

3. A regulator having in combination inlet, regulating, and pressure chambers, a valve controlling the flow of gas from the inlet to the regulating chamber, a flexible wall
10 or diaphragm separating the regulating and pressure chambers, and connected to the valve, a diaphragm of larger area than that between the regulating and pressure chambers arranged in the latter and connected to
15 the valve, and a connection from the pressure chamber to the service lines.

4. A regulator having in combination inlet, regulating, and pressure chambers, a

valve controlling the flow of gas from the inlet to the regulating chamber, means for
20 connecting the regulating chamber to the inlet of a meter, a hollow arm rigidly secured to the shell of the regulator and connected to the pressure chamber, means rigidly attached to said arm for connection to the outlet of a meter and the service lines, a weighted
25 diaphragm arranged in the pressure chamber and subject only to service line pressure, and means for connecting said diaphragm to the regulating valve.
30

In testimony whereof, I have hereunto set my hand.

FRED ELLIOTT YOUNGS.

Witnesses:

CHARLES BARNETT,
EDWARD F. MOSER.