

No. 702,236.

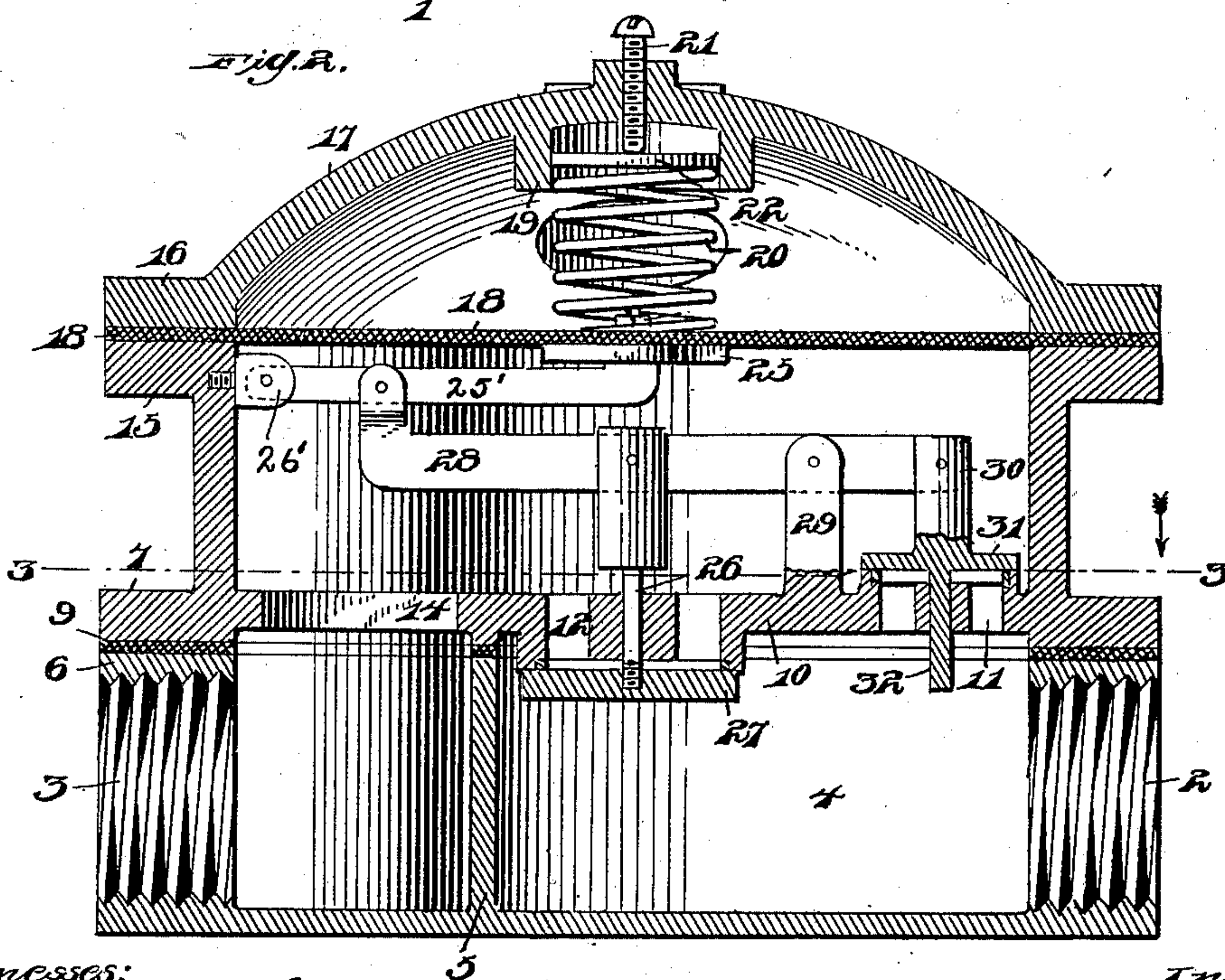
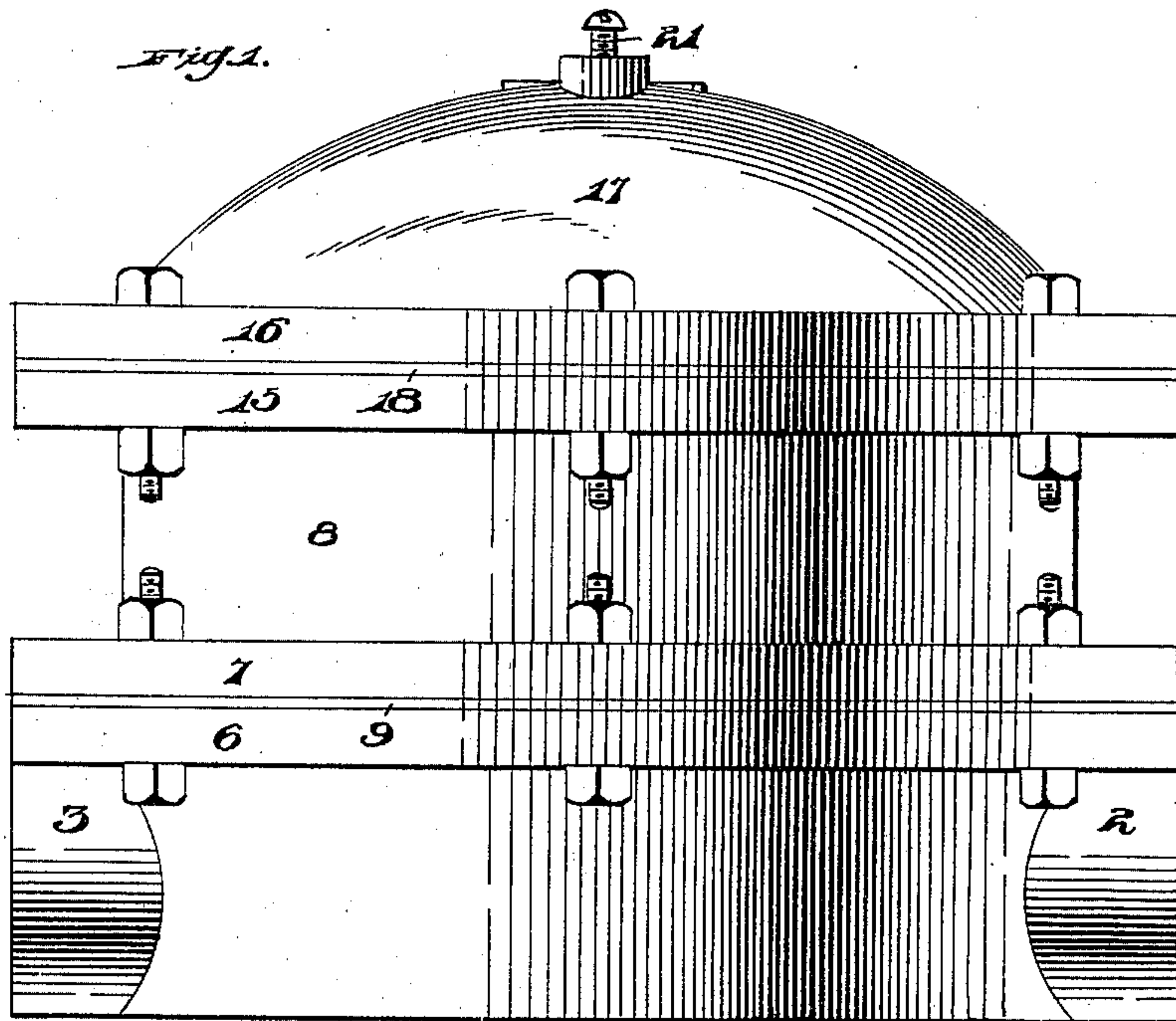
Patented June 10, 1902.

S. L. McADAMS.
GAS REGULATOR.

(Application filed Apr. 13, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 3.

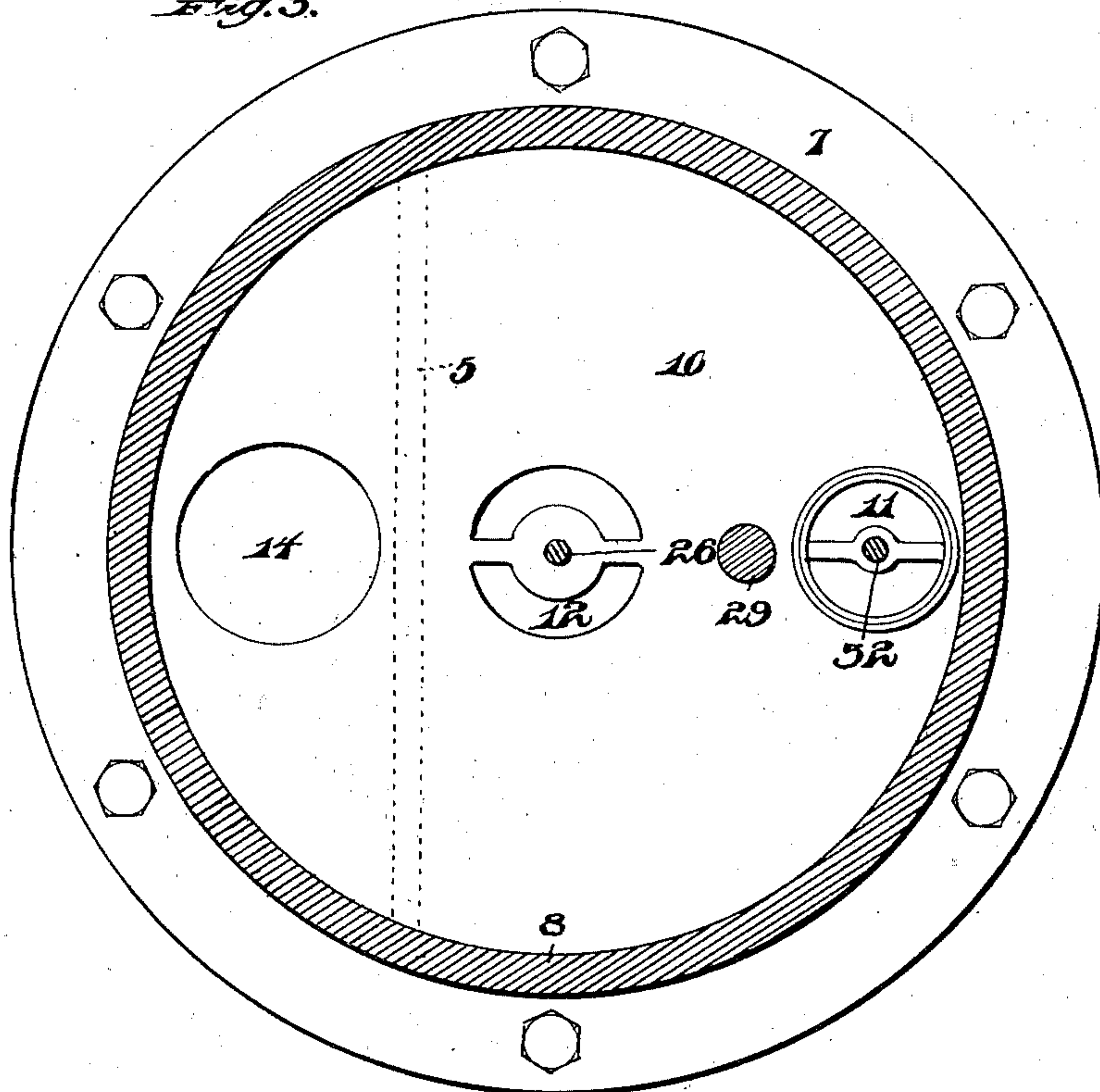
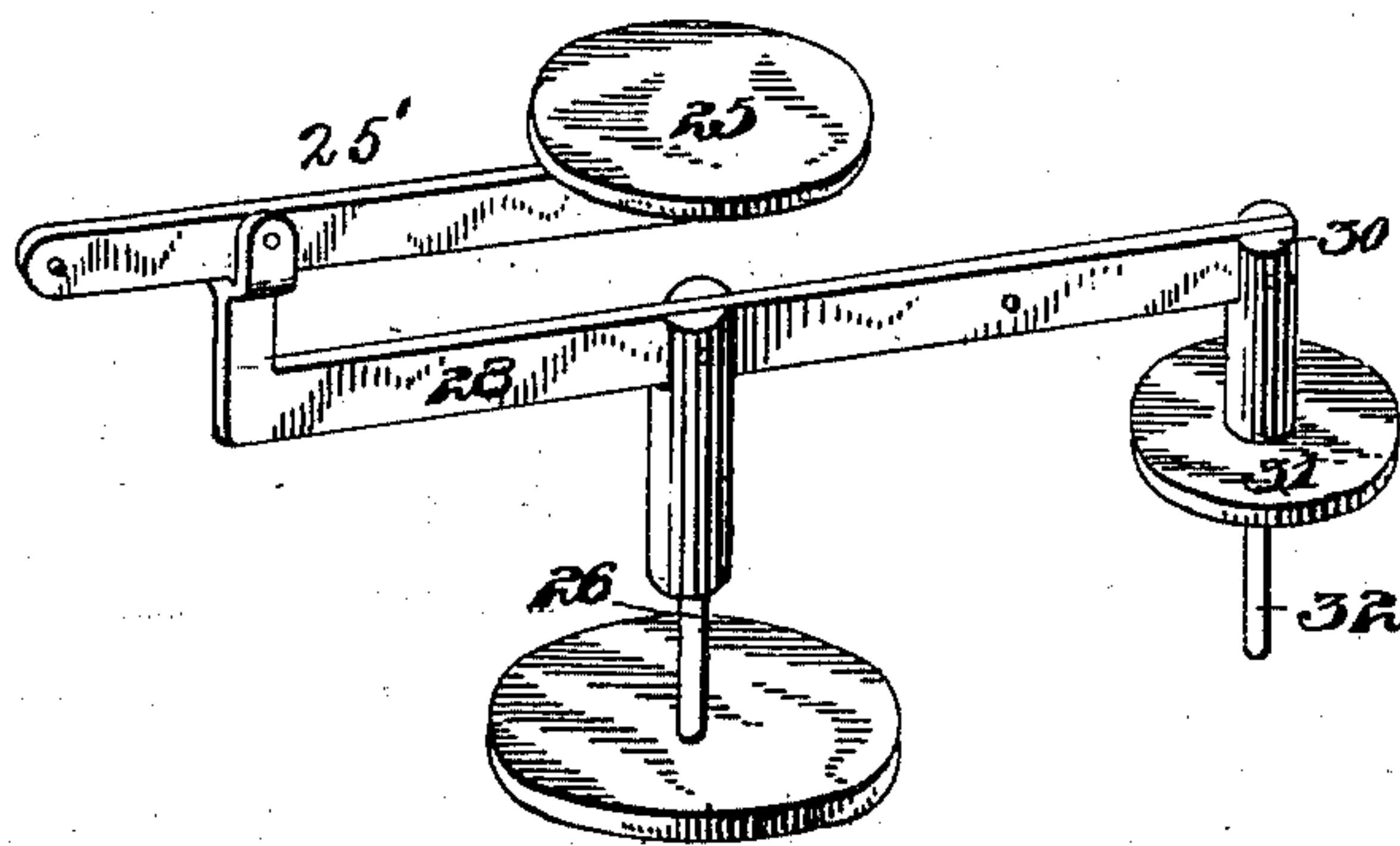


Fig. 4.



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UNITED STATES PATENT OFFICE.

SYLVESTER L. MCADAMS, OF BEAVERFALLS, PENNSYLVANIA.

GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 702,236, dated June 10, 1902.

Application filed April 13, 1901. Serial No. 55,764. (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 Beaverfalls, 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.

10 This invention relates to certain new and useful improvements in fluid-pressure regulators, and is particularly adapted for use as a gas-pressure regulator.

15 The invention is particularly adapted for use in connection with natural gas, wherein it is desired to reduce the maximum pressure in the main line to a minimum pressure at the point where the gas is consumed.

20 Briefly described, the invention comprises a casing having an inlet at one side and an outlet at the opposite side, with a horizontal dividing-wall or partition within the casing separating the same into two compartments, the gas being fed into the larger compartment and out through the smaller compartment. A shell is mounted on the casing and forms the top thereof, this shell being provided with openings or ports through which the gas from the inlet is permitted to pass 25 into the shell and from thence through the outlet. Arranged within this shell is a pair of valves mounted upon a beam to control the pressure of gas permitted to pass to the outlet, these valves being regulated by a diaphragm backed by a regulating-spring, all of which construction will be hereinafter described and more fully explained.

30 In describing the invention in detail reference is had to the accompanying drawings, 40 forming a part of this specification, and wherein like numerals of reference will be employed for indicating like parts throughout the several views, in which—

45 Figure 1 is a side elevation of my improved gas-regulator. Fig. 2 is a vertical sectional view of the same. Fig. 3 is a cross-sectional view taken on the line 3 3 of Fig. 2. Fig. 4 is a detail perspective view of the counter-balanced valves.

50 To put my invention into practice, I provide a casting 1, which in the form herein shown is substantially circular in shape; but

of course this may be of any shape desired. It is provided at one end with an inlet 2, which is or may be threaded, as shown, for 55 connection with the main supply-line, (not shown,) and at its opposite side with an outlet 3, which may also be threaded, as shown, for connection to the supply-line (not shown) leading to the building from the main supply 60 pipe or line. The chamber 4 within this casting is divided by a partition or wall 5, separating the chamber into two compartments, that in which the gas is received from the main supply pipe or line being of greater capacity than the chamber through which the 65 gas is fed to the line leading to the building. This casting is provided with a peripheral flange 6, and bolted to this flange or otherwise rigidly secured thereto is a flange 7, that 70 is formed integral with an annulus or ring 8. A gasket or washer 9 is preferably placed between the flanges 6 7 in order to form a perfectly-tight joint. The annulus or ring 8 has a bottom 10 or horizontal dividing-wall, in which 75 are arranged openings 11 12, communicating with the chamber 4, and with an opening 14, which communicates with the outlet-chamber. The annulus or ring is also provided with a flange 15, which is bolted or otherwise rigidly 80 secured to the flange 16 of the cap or crown piece 17. A suitable diaphragm 18 is secured between the flanges 15 and 16 and held therein by the bolts which fasten the flanges together. The cap or crown piece 17 has formed 85 integral therewith a sleeve or collar 19 centrally of its inner face to receive the upper end of the pressure-regulating spring 20. The pressure of this spring is increased or diminished by means of a set-screw 21, operating 90 through the cap or crown piece, and a disk or plate 22, which engages the upper end of the spring. The lower end of this spring rests on the diaphragm 18, above the disk 25, on the other side thereof. This disk 25 is carried 95 on a lever 25', pivoted at its other end to a bracket or eye 26', pivoted in the annulus or ring 8. Pivotaly connected to the lever 25' is a lever or beam 28, which has pivoted centrally thereof a stem having a shank 26, which 100 operates through the bottom 10 and carries on its lower end a disk valve 27. The lever or beam 28 is pivotally supported by a bracket or standard 29, carried by the bottom 10, and

at its other end this beam or lever has pivoted thereto by means of the shank 30 a counter-balance-valve 31, the latter having a guide-stem 32, which operates through the bottom 10.

5 For the purpose of illustration we will assume that the main supply-line has a pressure of one hundred pounds and the pressure desired to be delivered to the building for consumption is one ounce. The spring 20 is
10 set to one-ounce pressure, which will depress the valve 27 from its seat, as well as raising the valve 31 from its seat, these valves being at opposite sides of the bottom 10, and the maximum pressure thus desired is passing
15 through the openings 11 and 12 and through the opening 14 to the supply-line. The diaphragm is the governor of the regulator. When the pressure becomes greater in the
20 outlet-chamber than the amount to be carried, it will force the diaphragm against the pressure of the spring 20, automatically shutting off the flow of gas until the pressure is reduced below the required amount which is to be carried, and then the spring 20 will act
25 on the diaphragm through the series of levers, open the valve, and maintain a uniform pressure at all times. In case the pressure in the receiving-chamber should be increased this pressure will be greater upon the valve 27,
30 tending to partially close this valve, and also through the connection of the beam 28 partially serving to close the valve 31, so as to maintain the same pressure passing into the chamber within the annulus or ring and
35 through the opening 14 into the delivery-chamber and outlet.

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

40 In a gas-regulator, the combination of a single casing, having a horizontal dividing-wall forming an upper and a lower compartment in said casing, a vertical partition in the lower compartment formed integral with

the dividing-wall forming an inlet and an out- 45
let chamber, the said horizontal dividing-wall having openings 11, 12, establishing communication between the upper compartment and the inlet-chamber, and having an open- 50
ing 14 establishing communication between the upper compartment and the outlet-chamber, an upwardly-extending standard carried by the horizontal dividing-wall, a beam piv- 55
otally secured to said standard, a valve carrying a depending stem connected to one end of said beam, said valve being seated on the upper face of said horizontal dividing-wall and having its stem operating therethrough, a stem carrying a shank pivotally connected to said beam intermediate of its length, said 60
stem operating through the said horizontal dividing-wall and carrying a valve on its lower end which valve seats against the under face of the horizontal dividing-wall, a lever having its one end pivotally secured to 65
the casing and carrying a disk on its free end, the other end of said beam being pivotally secured to said lever, said beam and lever being substantially parallel with one another and with said horizontal dividing-wall, a flat 70
diaphragm forming the upper end of said upper compartment mounted in said casing and engaged by said disk, said diaphragm being in horizontal alinement with said lever and beam, a dome secured to the casing, and a 75
spring having its one end bearing against said diaphragm above said disk and means carried by the dome for guiding and adjusting said spring whereby the desired pressure for consumption may be had by adjustment 80
of said spring, substantially as described.

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

SYLVESTER L. McADAMS.

Witnesses:

JOHN NOLAND,
A. M. WILSON.