

(No Model.)

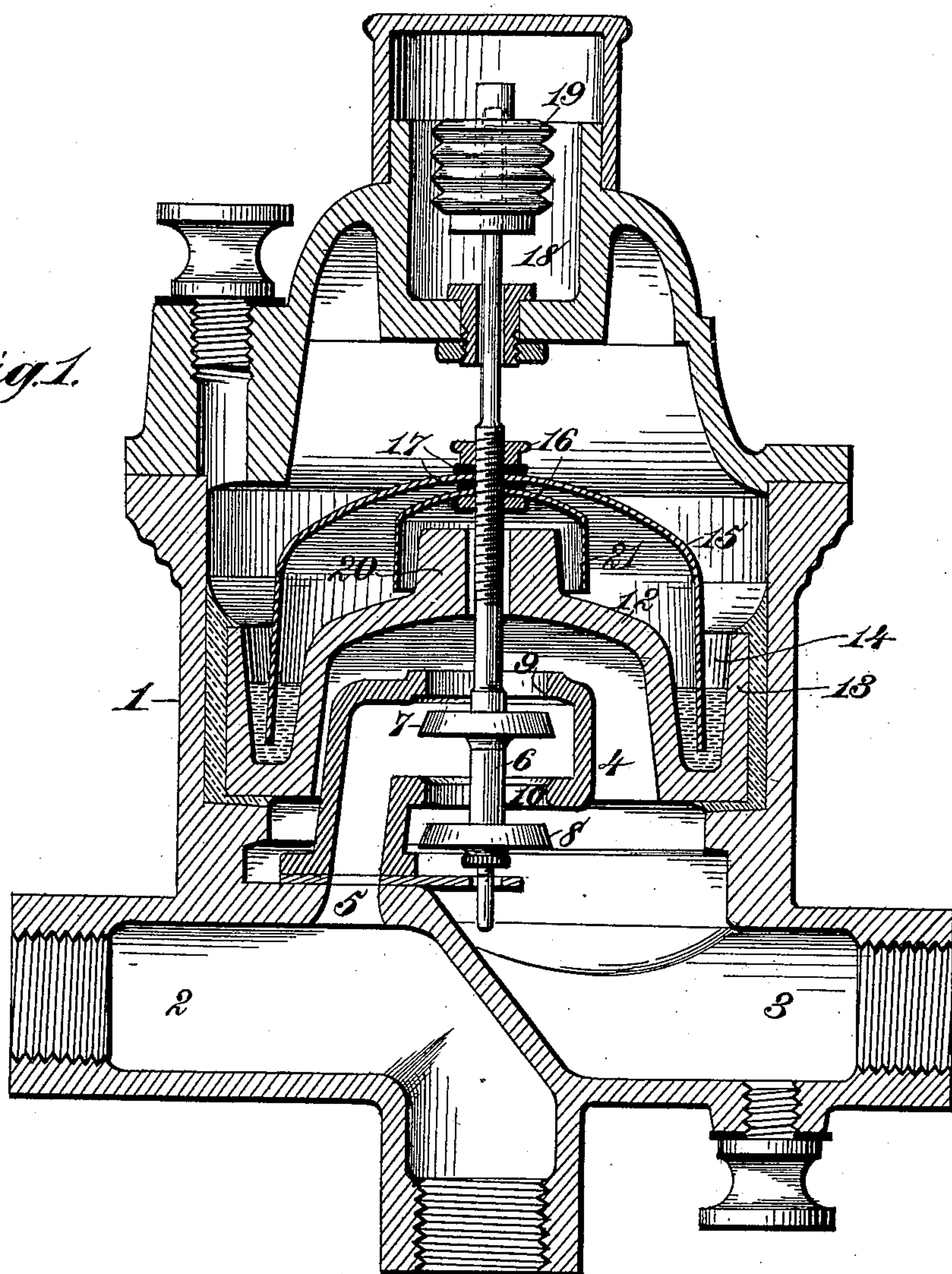
W. H. BRADLEY.

GAS GOVERNOR OR PRESSURE REGULATOR.

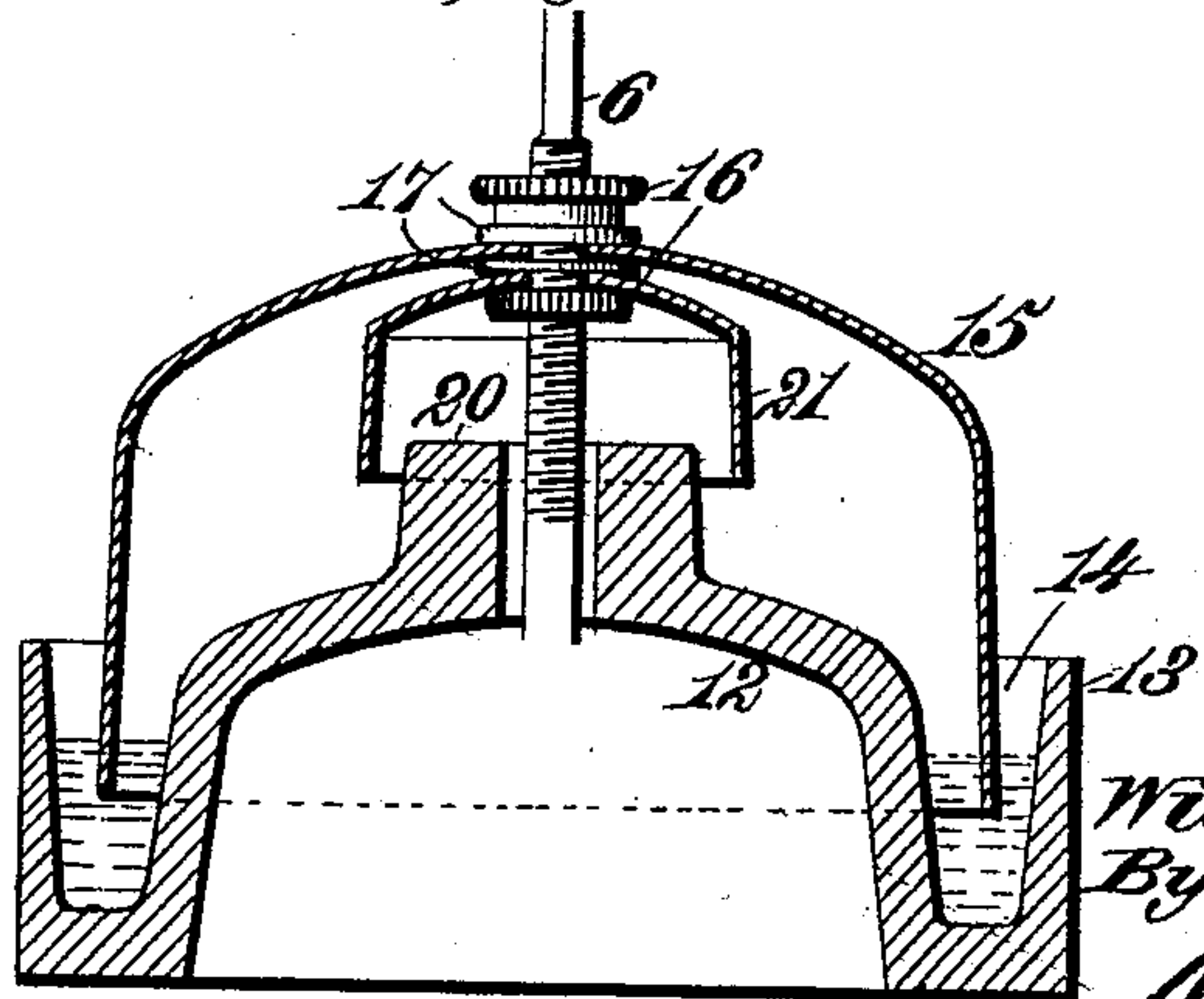
No. 390,064.

Patented Sept. 25, 1888.

*Fig. 1.*



*Fig. 2.*



*Witnesses.*  
*Robert G. Smith.*  
*Geo. H. Rea.*

*Inventor.*  
*William H. Bradley.*  
*By James L. Norris.*  
*Atty.*



# UNITED STATES PATENT OFFICE.

WILLIAM H. BRADLEY, OF ALLEGHENY, PENNSYLVANIA.

## GAS GOVERNOR OR PRESSURE-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 390,064, dated September 25, 1888.

Application filed December 9, 1887. Serial No. 257,441. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM H. BRADLEY, a citizen of the United States, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented new and useful Improvements in Gas Governors or Pressure-Regulators, of which the following is a specification.

My invention relates to gas governors or pressure-regulators of the type shown, described, and claimed in Letters Patent of the United States Nos. 352,072, 354,844, and 361,908, granted to me upon the 2d day of November, 1886, the 21st day of December, 1886, and the 26th day of April, 1887, respectively.

It is the object of my invention to provide an apparatus capable of being attached to the supply or service pipes of wall, pendent, or other lights, whereby the consumption of gas is maintained in proper proportion to the number of burners actually in use, or, in other words, the pressure is so controlled that if only one-half or one-third the whole number of burners are lighted the intensity and size of each gas-flame will be the same as it would be if the whole number were in use simultaneously.

In the construction of governors of this class a mercury seal is employed to permit the free movement of the valve-stem and at the same time prevent the leakage of gas. It has been found in practice that sudden leaps in pressure—such as may take place in the pipes taking gas from natural sources—are liable to cause the mercury in the cup to splash or rise over the dome of the mercury cup or shield, thereby causing a waste, which, if repeated, may disable the apparatus. Moreover, if employed upon steamers or railways, the oscillation of the casing would be extremely liable to produce the same result.

It is the purpose of my invention, therefore, to provide simple and inexpensive means whereby these objections may be obviated and the regulator thereby adapted to use in controlling the flow of natural gas or upon railways or other conveyances.

The invention consists to this end in the several novel features of construction and new combinations of parts hereinafter fully set forth, and definitely pointed out in the claims.

In the accompanying drawings, Figure 1 is a central vertical section of an apparatus embodying my invention. Fig. 2 is a detail section of the dome of the mercury-cup, showing the valve-stem passing through the same, the auxiliary shield being shown in dotted lines and in its highest position.

In the said drawings, the reference-numeral 1 designates the casing or shell within which the parts are arranged, said casing having a gas-inlet, 2, and an outlet, 3. Between the inlet and outlet is a valve-chamber, 4, so arranged that the gas to reach the outlet must pass through said chamber, a passage, 5, being provided leading to the latter from the exit-pipe.

Within the chamber 4, I arrange a valve-stem, 6, carrying valves 7 and 8, which close upon valve-seats 9 and 10, respectively. The valve-stem passes above the chamber 4 and through the center of a dome-shaped shell, 12, partly surrounding the said chamber and cutting off all access to the casing above said dome, save through the central opening for the valve-stem. A crown-shaped flange, 13, surrounds the dome 12, leaving an annular space, 14, to form a mercury chamber or cup.

Upon the valve-stem above the dome is mounted a cup-shaped shell, 15, inverted and having its edge lying in the mercury-cup. The stem 6 passes through the shell and is fastened thereon with a tight joint by means of nuts 16 on opposite sides and an interposed washer or washers, 17. Above the shell the stem is prolonged into a chamber, 18, where it is balanced by suitable weights, 19.

Upon the summit of the dome 12, I form a central boss, 20, having an opening for the valve-stem, and between the lower nut 16 and the sealing-shell 15 is interposed an auxiliary shell, 21, which incloses the boss 20, but not so closely as to have actual contact therewith. The position of this auxiliary shell is so adjusted by means of the nuts 16 that when the valve-stem 6 is at its lowest point the edge of the said auxiliary shell will be in close proximity to or in actual contiguity to the dome at the base of the central boss, 20. The portions of the parts are such that the rise of the stem 6 to seat the valves will not raise the edge of the auxiliary shell so far as the top of the boss, as shown in Fig. 2. If, now, the



mercury is thrown over the top of the dome, it will strike the side of the auxiliary shell 21, or possibly both the shell and the boss 20, and will flow back over the top of the dome into the mercury-cup. The perpendicular side of the boss and the inclosing edge of the auxiliary shell effectually prevent any escape of mercury through the central opening in the boss for the valve-stem.

10 The operation of the governor is so familiar to those skilled in the art as to require no description.

It will be seen that when the outside pressure is one or more pounds and the governed pressure is less—say six to eight tenths—when the taps are all shut off the inside pressure remains the same and closes the valves. Without this small dome the outside would leak in so as to make balance pressure equal on both sides of the governor.

What I claim is—

1. In a gas governor or regulator, the combination, with the dome of the mercury cup or shield, having a central elevation or boss, and with a valve-stem passing through an opening in the same, of an auxiliary shell or shield mounted on said stem and surrounding the boss, substantially as described.

2. The combination, with the dome of the mercury-cup, having a central boss surmounting the same, and with a valve-stem passing through a central opening in said boss, of a sealing-shell and an auxiliary shell, both mounted on the valve-stem, the former dipping in the mercury-cup and the latter surrounding the boss, substantially as described.

3. The combination, with the dome of the mercury-cup, having a central boss surmounting it, and with a valve-stem passing through an opening in said boss, of a sealing-shell and an auxiliary shell, the latter arranged beneath the former and inclosing or surrounding the boss, both shells being adjustably mounted on said valve-stem, substantially as described.

4. The combination, with the dome of the mercury-cup, having a central boss, 20, of the valve-stem 6, the sealing-shell 15, the auxiliary shell 21, surrounding the boss, and the nuts 16, turning on a threaded portion of the valve-stem, substantially as described.

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

WILLIAM H. BRADLEY.

Witnesses:

SAMUEL B. THOMPSON,  
A. FRASER LEGGATE.