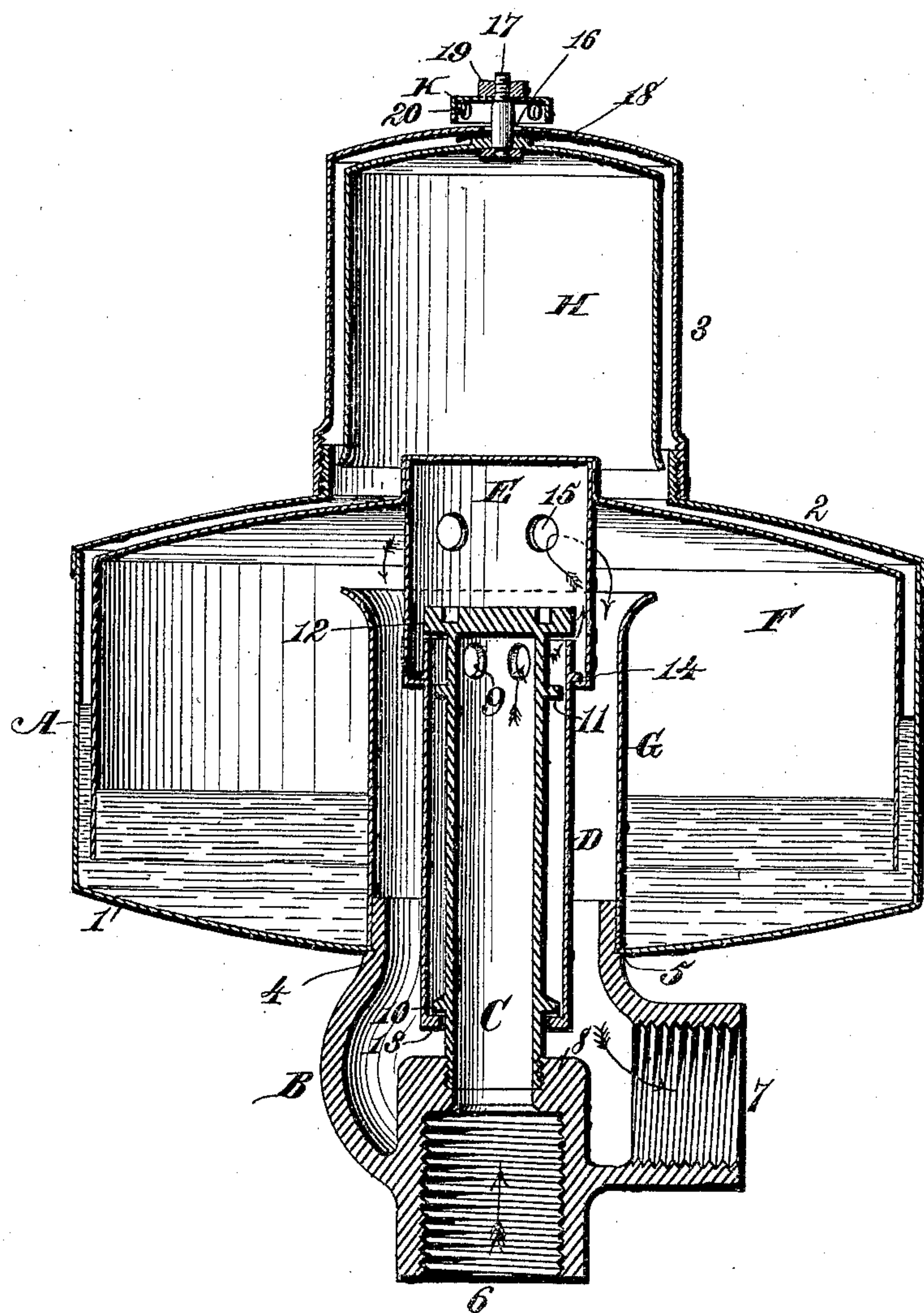


(No Model.)

H. J. BELL.
GAS GOVERNOR.

No. 401,627.

Patented Apr. 16, 1889.



Witnesses.
Robert G. Smith,
Vinton Coombs.

Inventor.
Harold J. Bell.
By
James L. Norris.
Atty.

UNITED STATES PATENT OFFICE.

HAROLD J. BELL, OF GLOUCESTER CITY, NEW JERSEY, ASSIGNOR TO THE
WELSBACH INCANDESCENT GAS LIGHT COMPANY, OF NEW JERSEY.

GAS-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 401,627, dated April 16, 1889.

Application filed January 16, 1889. Serial No. 296,516. (No model.)

To all whom it may concern:

Be it known that I, HAROLD J. BELL, a citizen of the United States, residing at Gloucester City, in the county of Camden and State of New Jersey, have invented new and useful Improvements in Gas-Governors, of which the following is a specification.

This invention relates to gas-governors of a character especially adapted for use in connection with a gas-meter; and it consists in the construction and combination of parts, as hereinafter described and claimed.

The annexed drawing, illustrating the invention, is a central vertical section of a gas-governor embracing my improvements.

Referring to the drawing, the letter A designates the governor-casing, which consists of three sheet-metal shells, 1, 2, and 3, that are connected by means of screw-threads, solder, or otherwise. The lower shell, 1, is cup-shaped and provided centrally with a circular opening, 4, that closely surrounds the upper cylindrical end of a T-fitting, B, having a shoulder, 5, on which the shell 1 is supported. This T-fitting B is provided with a gas-inlet, 6, and a gas-outlet, 7, as shown. The shells 2 and 3 form the upper portion of the governor-casing, the upper shell, 3, being detachable through its screw-threaded connection with the intermediate shell, 2, which is preferably soldered to the lower cup-shaped shell.

Within the T-fitting B is a central nipple, 8, that forms a support for a governor inlet-tube, C, which has a screw-threaded connection with said nipple. The upper end of the governor-tube C is closed at the top, beneath which is a series of lateral openings or gas-exits, 9. On the outside of the tube C, near its upper and lower ends, are annular shoulders 10 and 11, which serve as guides for a vertically-movable valve-tube, D, that surrounds the governor-tube. The closed top of the governor-tube projects laterally in the form of an annular flange, 12, which serves as an upper valve-seat for the tubular valve D, the lower end of which has an inward-projecting flange, 13, that seats beneath the lower annular shoulder, 10, on the governor-tube. The valve-tube D, which is of less length than the governor-tube, is thus seated

at two points. The upper portion of the valve-tube D is provided with an outer annular shoulder, 14, for attachment of an enlarged tubular gas-chamber, E, that is centrally attached to the under side of a bell-shaped float, F, which dips into a fluid (preferably glycerine) contained in the lower shell or basin, 1, of the governor-casing. The gas-chamber E projects above the governor-tube C, and is provided with lateral openings 15 for exit of gas into the space beneath the float.

To the upper end of the T-fitting B, within the governor-casing, is attached a tube, G, which surrounds the tubular valve D and lower portion of the gas-chamber E, thereby forming a passage for the exit of gas from the governor to the outlet 7 of the T-fitting B, to which the governor is attached.

In the top of the upper shell, 3, is an air-opening, 16, through which is passed a stem, 17, on the upper end of an inverted cup or bell shaped float, H, that is suspended within the shell 3 above the float F of the gas-governor. Beneath the top of the shell 3, and surrounding the lower end of the stem 17, is a leather washer, 18, which serves as a valve to close the air-opening 16 in the top of said shell. The upper end of the stem 17 is provided with an annular shoulder to support a perforated cap, K, which is secured in place by a nut, 19, on the upper screw-threaded end of said stem. This cap K normally rests on the upper surface of the shell 3, and being secured to the stem 17, as described, it serves therewith as a means of suspending the bell-shaped float H, so that it can rise and fall freely. In order to permit the passage of air when the cap and float are in a lowered position, said cap K is provided with air-openings 20, thus affording a free passage for air through or beneath the perforated cap and through the air-opening 16 into and from the space between the governor-casing and bell-shaped float F of the gas-valve and within the bell-shaped float H of the air-valve. It will be seen that by this construction an air-cushion is provided within the governor-casing on the outside of the gas-valve float above the surface of the liquid contained in the lower shell or basin of the governor-casing.

The gas admitted to the governor passes

through the inlet 6 of the T-fitting B into the governor-tube C, and thence through the openings 9 into the upper portion of the tubular valve D and over the upper edge of said valve into the gas-chamber E, thence through the openings 15 to the interior of the gas-valve float F in the space above the glycerine or other fluid with which the governor is supplied, and through the tube G to the outlet 7 of the T-fitting, as indicated by the arrows in the drawings.

The pressure of gas within the gas-valve float F causes said float to rise and carry with it the attached tubular gas-valve D, so that it will approach its upper valve-seat, 12, more or less closely and act as a volumetric governor in a well-known manner. At the same time, should the pressure of gas within the bell-shaped float F be so great as to depress the fluid in the basin of the governor, thereby causing the fluid to rise on the outside of the float between it and the governor-casing, the air between said float and casing will act as an elastic cushion for the float F and the surrounding liquid, and will raise the air-valve float H sufficiently to carry the valve-washer 18 into close contact with the lower side of the opening 16, and thus prevent any escape of liquid.

It will be seen that the shoulder 10, near the lower end of the governor-tube C, and the flange 13 on the lower end of the tubular valve D form in effect a lower valve and seat that prevent the leakage of gas between the governor-tube and valve-tube, besides serving as a guide for the latter.

The air-openings 20 in the cap K allow the air to pass freely with the rise and fall of the liquid in the governor-casing before the opening 16 is closed by the rise of the air-valve. When the air-valve is down, the lower edge of the cap K, by coming in contact with the shell 3, would, were it not for the openings 20, prevent the entrance and exit of air.

It will be seen that this governor acts by a "governed pressure" in such a manner as to regulate the volume and pressure of the gas in a simple and effective way without liability of leakage.

This governor is designed for attachment to a meter or at some other convenient place in the house, and not for use on a chandelier, unless the latter is of large size.

In a gas-governor of this construction the

movable parts of the gas-valve are so arranged that a contact of gas at a right angle anywhere within the valve is balanced by a similar contact on the opposite side, thus providing an absolutely-balanced valve of simple construction.

What I claim as my invention is—

1. In a gas-governor, the combination of a central governor inlet-tube having a closed top and lateral gas-exits and provided with a valve-seat, a balanced gas-valve surrounding said governor inlet-tube, a gas-chamber attached to the balanced valve and provided with lateral gas-exits, a bell-shaped float attached to said gas-chamber and dipping in a liquid contained in the governor-casing, an air-valve located in the upper part of said casing, and a tube surrounding the balanced gas-valve and communicating with the governor-outlet, substantially as described.

2. In a gas-governor, the combination, with a governor-casing containing a liquid and a balanced gas-valve having a float that dips into said liquid, of an air-valve having a float suspended within the upper part of the governor-casing and provided with a perforated cap on the outside of said casing, substantially as described.

3. In a gas-governor, the combination of the casing A, the fitting B, having an inlet and an outlet, the governor inlet-tube C, having lateral gas-exits and upper and lower valve-seats, the tubular balanced gas-valve D, having a gas-chamber, E, provided with lateral gas-exits, the float F, connected with said valve, the tube G, surrounding the tubular gas-valve, and an air-valve located in the upper part of the governor-casing, substantially as described.

4. In a gas-governor, the combination, with the casing having an air-opening, 16, in its upper part, the gas-valve, and the gas-valve float, of the bell-shaped float H, having a stem, 17, passed through the air-opening 16, the valve-washer 18, located on the float-stem beneath said opening, and the perforated cap K, secured to the stem above the air-opening, substantially as described.

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

HAROLD J. BELL.

Witnesses:

WILLIAM E. BANONS,
CLAUDE A. SIMPLER.