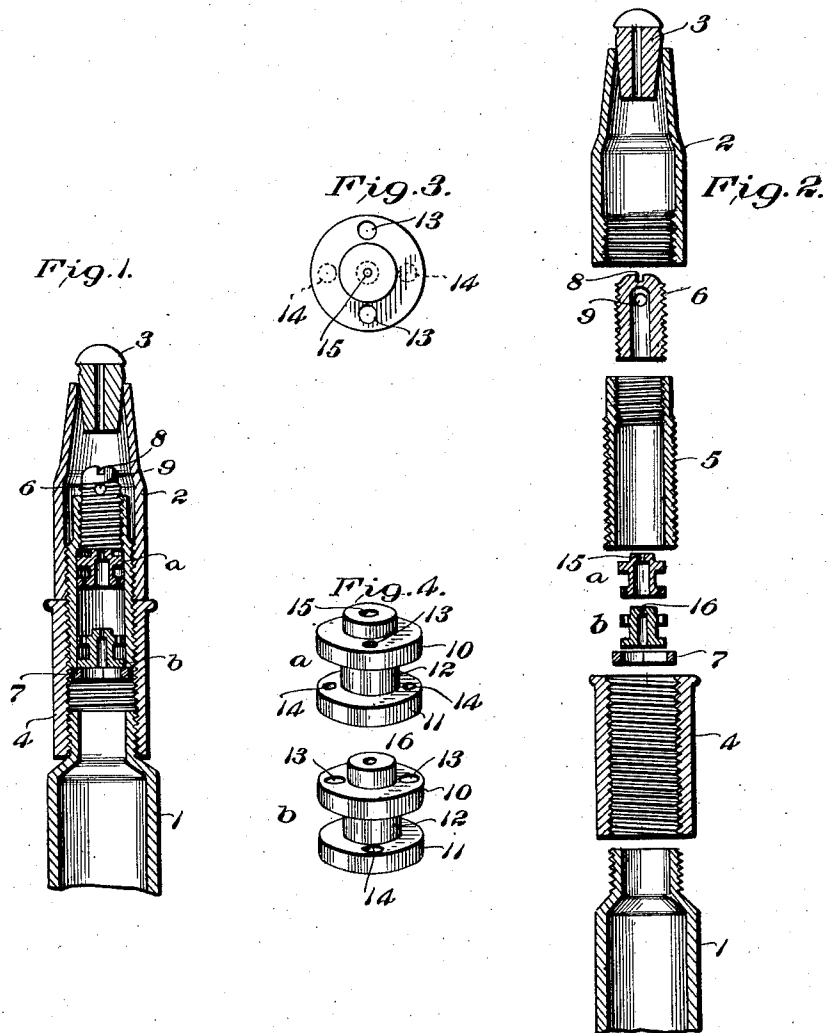


J. M. BLACKBURN.
GAS GOVERNOR.
APPLICATION FILED NOV. 30, 1910.

1,025,505.

Patented May 7, 1912.



Witnesses
J. Adolph Bishop
C. S. Brown

Inventor
James M. Blackburn
By Foster, Peunant & Coit
Attorneys

UNITED STATES PATENT OFFICE.

JAMES M. BLACKBURN, OF BALTIMORE, MARYLAND.

GAS-GOVERNOR.

1,025,505.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed November 30, 1910. Serial No. 594,961.

To all whom it may concern:

Be it known that I, JAMES M. BLACKBURN, a citizen of the United States, and resident of 407 Lorraine avenue, Baltimore, Maryland, have invented certain new and useful Improvements in Gas-Governors, of which the following is a specification.

The object of my invention is to provide a simple, cheap, and effective means of governing fluid pressure.

My present invention is particularly applicable to individual illuminating gas burners, although it may be applied on a larger scale to service pipes, in which case a single governor will answer for an entire building.

The invention is illustrated herein as applied to a single gas burner.

In the accompanying drawing, Figure 1 is a longitudinal section through a gas burner embodying the invention; Fig. 2 is a similar view, all of the parts being separated; Fig. 3 is a plan view of one of the movable valves; and Fig. 4 is a perspective view of the two valves.

Referring to the drawing, 1 indicates the terminal of a gas fixture, 2 the usual burner tube adapted to be screwed onto the terminal, and 3 the burner tip. My improved governor device is so constructed that it may be inserted between the terminal 1 and the burner tube 2 by anyone, without the need of special tools and skilled labor. The device consists of a fitting 4 which is internally threaded throughout its length and adapted to engage the end of the terminal 1; a second fitting 5 externally screw threaded in its lower portion for insertion into the upper end of the fitting 4 and internally threaded in its upper portion to receive the governor cap; a governor cap 6 threaded for insertion into the upper part of the fitting 5; two valves *a*, *b* arranged to slide in the fitting 5, and a ring or stop 7 for sustaining the valves.

The governor cap 6 is closed at its upper end and is preferably provided with a notch or recess 8 to receive a screw driver or other instrument whereby the cap may be adjusted in the fitting 5. Near the upper end of the cap, there is an opening or openings 9 through which the gas passes and by ad-

justing the cap up and down, these openings are more or less closed by the fitting 5. A fixed adjustment is thus provided for which will depend upon the normal pressure of the gas.

To provide for fluctuations in the pressure of the gas, I use the valves *a*, *b*, each of these valves preferably comprising upper and lower circular flanges 10, 11 and a connecting tubular portion 12. In the upper flange of each valve there are openings 13 and in the lower flange there are similar openings 14, the openings 13 and 14 being preferably staggered or offset, for purposes to be presently described. In the valve *a*, there is a central opening 15 and in the valve *b* is a similar opening 16, the opening 16 being smaller than the opening 15. The valves *a*, *b*, are preferably made of aluminum or other very light metal so that they may rise under abnormal pressures of the gas. The flanges 10, 11 are arranged to fit freely but not loosely in the part 5 so that they may rise and fall readily, but without permitting any material amount of gas to pass around them. The ring 7 may be of any suitable material, its only function being to form a rest or stop for the lower valve *b*. The lower end of the governor cap 6 forms a stop for the upper valve *a* when raised by the gas pressure. It is also adapted to shut off communication through the side openings 13 of the upper valve. By arranging the openings 14 out of register with the openings 13 in the valves, the flow of gas through these openings is broken up and the pressure of the gas at the burner tip thereby rendered more uniform. Furthermore, the flow of gas through the lower openings 14, impinging on the upper flange of each valve, acts to raise the valves and renders their automatic operation easy and reliable. The openings 13, 14 in the valve *b* are larger than the like openings in the valve *a*. The combined area of all openings in the valve *a* is, however, preferably slightly less than in valve *b*. The valves are preferably provided with cylindrical portions projecting above the flanges 10 to form seats. The openings 15 and 16 preferably extend but a part way through each

valve, the remaining distance being bored out to a larger extent, as shown. This is for the reason that it is easy to drill the larger openings, and the smaller openings can be more accurately drilled through short distances.

The operation of the invention is as follows: The governor cap 6, which operates as a valve, is adjusted to limit the flow of gas through the opening or openings 9 according to the normal pressure in the mains. That is, the higher the normal pressure, the smaller will be the opening or openings 9. The adjustment of the cap 6 may be changed at any time without disturbing the burner, by removing the tip 3 and inserting a suitable instrument into the notch or opening 8. When the gas pressure is low, the valve *b* will rest on the support 7 and the valve *a* upon the valve *b*. When so situated, the gas will pass through the central openings of both valves and also through all of the side openings. These openings are arranged so as to be just large enough to pass sufficient gas under the lowest prevailing pressures. As the pressure rises the flow of gas will first raise the upper valve and it will seat on the bottom of the cap 6, limiting the flow of gas to the capacity of the central opening 15 of the upper valve, the two valves thus assuming the positions shown in Fig. 1. Should the pressure rise still higher, the lower valve will rise and will be seated on the bottom of the upper valve, thus cutting off all flow of gas through the side openings of both valves, and limiting the supply of gas to what will pass through the central opening in the lower valve, which is smaller than the central opening in the upper valve. It will be seen that I have provided a gas governor having means for permanent adjustment and having automatically operated means for three different adjustments according to pressure. In the first adjustment, for low pressure, the two valves rest one upon the other in the bottom of the recess of the fitting 5. In the second adjustment, the upper valve stands at the top of the recess and the lower valve at the bottom, as shown in Fig. 1, limiting the flow of gas to the capacity of the opening 15 of the upper valve. In the third adjustment, the two valves are at the upper part of the recess in the fitting 5 and the flow of gas is limited to the capacity of the small central opening 16 on the lower valve. This system of valves might be amplified so as to provide further adjustments, but the three automatic adjustments, together with the permanent adjustment referred to, are ample for ordinary purposes.

It will be seen that my device can be manufactured very cheaply and that it is adapted for use in connection with any ordi-

nary gas burner and may be applied thereto with the aid of a simple pipe tongs or pliers.

In describing my invention, what I claim and desire to secure by Letters Patent, is:

1. A gas governor comprising a fitting having a central recess, a pair of valves movably fitted to said recess and each provided with a plurality of gas passages there-through, one of the passages in the lower valve being smaller than the corresponding passage in the upper valve whereby both valves may be supported one bearing upon the other by a gas cushion in the recess, and stops for limiting the movement of said valves.

2. A gas governor comprising a fitting having a central recess, a pair of valves, adapted to slide in said recess and each having two flanges fitting the recess and provided with openings, suitable stops for said valves, and means for always maintaining the adjacent flanges of said pair of valves in spaced relation.

3. A gas governor comprising a fitting having a central recess, a pair of valves adapted to slide in said recess and each having two separated flanges and openings through said flanges, the openings in one flange being out of register with the openings through the other flange, suitable stops for said valves, and means for always maintaining the adjacent flanges of said pair of valves in spaced relation.

4. A gas governor comprising a fitting having a central recess, a pair of valves bearing on the wall of the recess and adapted to slide in said recess, and suitable stops for said valves, each of said valves having a central opening for the passage of gas, the opening in the lower valve being smaller than the opening in the upper valve, whereby both valves may be supported one upon the other by a gas cushion in the recess.

5. In a gas governor, the combination of a fitting having a central cylindrical chamber, a cap adjustably mounted in the upper end of the fitting and having a lateral opening adapted to be more or less closed by adjustment, a plurality of valves movable in the chamber, the upper valve being adapted to seat on said cap, and means for preventing the lower valve from dropping out of the chamber, the said valves being adapted to be operated automatically by the flow of gas to cut off more or less gas according to the pressure.

6. A gas governor comprising a fitting having a central cylindrical recess, a valve adapted to slide in said recess and having a central opening for the passage of gas and two separated annular flanges engaging the wall of said recess, openings in said flanges for the passage of gas, and means for automatically interrupting the flow of gas

through the openings in said flanges under certain predetermined conditions of pressure in said recess.

7. A gas governor comprising a fitting
5 having a central cylindrical recess, a valve adapted to slide in said recess and having a central opening for the passage of gas and two separated annular flanges engaging the
10 wall of said recess, openings for the passage of gas in said flanges, the openings in one flange being staggered relative to the open-

ings in the other flange, and means for interrupting the flow of gas through the openings in said flanges under certain predetermined conditions of pressure in said recess. 15

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

JAMES M. BLACKBURN.

Witnesses:

CLARENCE E. BIRELT,
WILLIAM O. PEIRSON.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."