

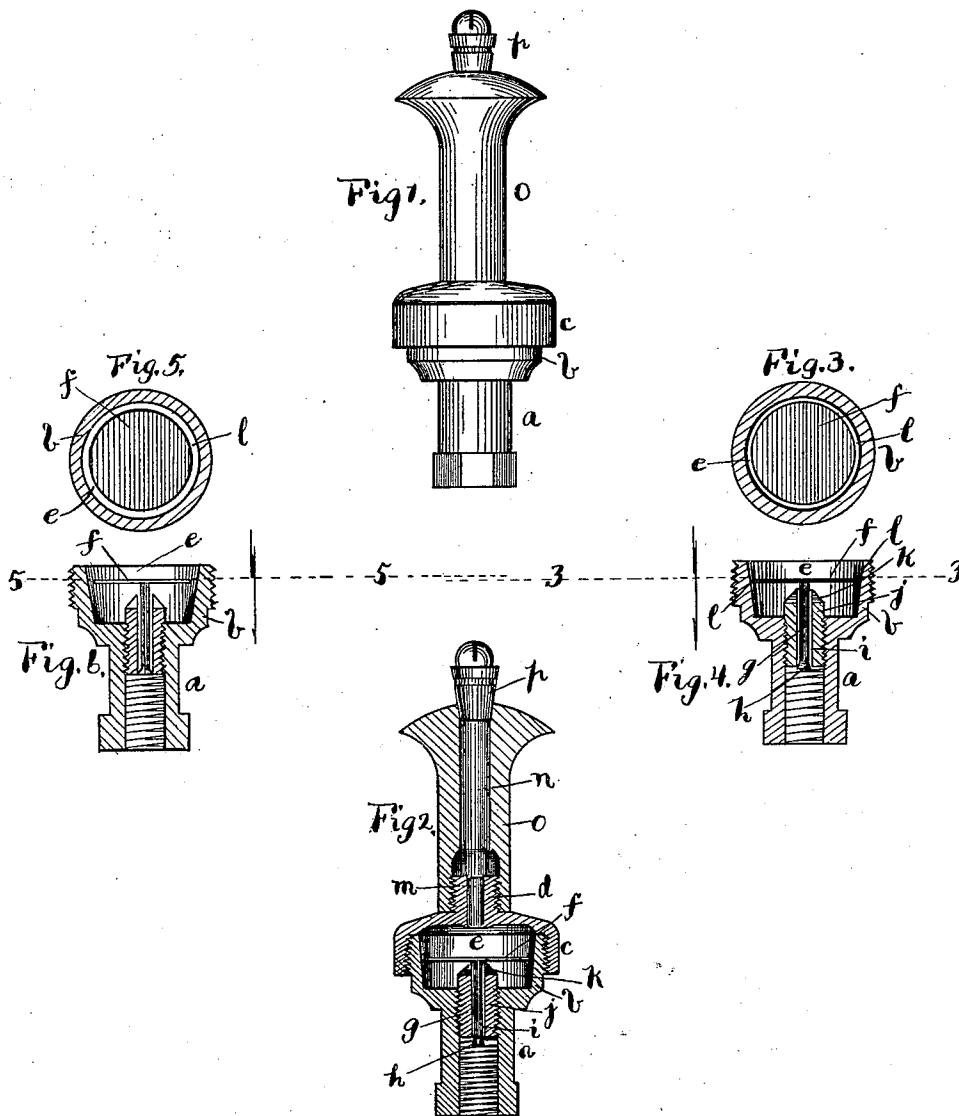
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J. ZANDER.
GAS GOVERNOR.

(Application filed Apr. 11, 1901.)

(No Model.)



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UNITED STATES PATENT OFFICE.

JOHN ZANDER, OF MORTONPARK, ILLINOIS.

GAS-GOVERNOR.

SPECIFICATION forming part of Letters Patent No. 691,429, dated January 21, 1902

Application filed April 11, 1901. Serial No. 55,385. (No model.)

To all whom it may concern:

Be it known that I, JOHN ZANDER, a citizen of the United States, residing at Mortonpark, county of Cook, and State of Illinois, have
5 invented a certain new and useful Improvement in Gas-Governors, of which the following is a specification.

It is desirable and necessary in many instances where illuminating-gas is burned by
10 cubic feet, especially so where it is impossible to use a meter, to provide means by which only the precise volume of gas in cubic feet shall be burned no matter what the pressure may be in the main or source of supply.

15 The object of my invention is to construct a regulator or governor which will automatically deliver the required volume of gas in cubic feet per hour or other period of time under all conditions of varying pressure and
20 have the supply regulated and controlled in a positive and reliable manner through the action of the regulator or governor; and the invention consists in the features of construction and combination of parts herein-
25 after described and claimed.

In the drawings illustrating the invention, Figure 1 is an elevation of a burner having the gas governor or regulator of the invention applied thereto; Fig. 2, a sectional elevation of the same; Fig. 3, a cross-section on
30 line 3 of Fig. 4; Fig. 4, a sectional elevation of the base of the governor or regulator, showing the controlling-valve and the float-disk therefor in the position they occupy under
35 an intermediate pressure of gas; Fig. 5, a cross-section on line 5 of Fig. 6; and Fig. 6, a sectional elevation of the base of the governor, showing the valve and the float-disk therefor in the position they occupy under a
40 high pressure of gas.

The gas governor or regulator of my invention is constructed with a base portion having a hollow stem or tube *a*, with the hole therein screw-threaded for attachment to the
45 pipe or supply-tube of an ordinary lamp-post; for use with which the governor or regulator shown is specially intended. A cup or shell *b* of a greater diameter than the diameter of the hollow stem or tube is formed integral
50 therewith and is provided on its exterior with a screw-thread for the reception of a cap or

cover *c*, screw-threaded thereonto, which cap or cover has a nipple or stem *d*.

A chamber *e* is formed in the cup or shell *b* and is closed by the cap or cover *c*, and in
55 this chamber is located a float-disk *f*, made of thin metal or other suitable material. The wall of the chamber *e* is tapered from the top downward, and the diameter of the float-disk is approximately the same as the diameter of
60 the lower end of the chamber, so that when the float-disk is raised and lowered in the chamber the space between its periphery and the wall of the chamber will vary in width according to the position of the float-disk,
65 the higher the float-disk is in the chamber the greater the width of space.

The float-disk is attached at its center to a stem *g*, the extreme lower end of which has formed thereon a tapered head or end *h*, forming
70 a controlling plug or valve. The stem, with its controlling plug or valve, is entered into and passes through a hole *i* in a plug *j*, screw-threaded into the hole or opening of the stem or tube *a*, and the diameter of the
75 hole *i* is the same as the diameter of the largest portion of the plug or head, so that when the plug is within the hole or passage *i* it will fill such passage and prevent the escape of gas through the hole or passage of the
80 plug into the chamber *e* around the float-disk; but when the controlling plug or head is wholly outside of or partially outside of the plug a space is left between its face and the wall of the opening or passage *i* through
85 which gas can pass to enter the chamber *e* around the float-disk, the volume of gas so passing being controlled by the size of the opening or space between the face of the plug or valve and the wall of the opening or pas-
90 sage. The space between the periphery of the float-disk and the wall of the chamber for the disk and the space between the face of the plug or valve and the wall of the opening or passage have a proportionate relation one
95 to the other, and this relation is one that as the space for the passage of gas around the plug or valve is decreased the space around the float-disk is increased and as the space
100 around the plug or valve is increased the space around the float-disk is decreased. The position of the float-disk in the chamber, and

consequently the position of the plug or valve, is controlled by the pressure of the gas, a high pressure acting on the disk raising the same in the chamber and at the same time
 5 raising the plug or valve, decreasing the space for the passage of gas around the plug or valve and increasing the space around the float-disk, and a low pressure permitting the float-disk to descend, such descent opening the
 10 plug or valve, giving an increased space around it for the passage of gas, with a corresponding decreased space around the float-disk. The function of the inclined walls of chamber *e* is that when the float is at its low-
 15 est position the space beneath it is nearly closed, so that the gas at a low pressure will have a certain lifting effect, whereas when the gas is at a higher pressure and the float in a higher position the lifting effect is less-
 20 ened by reason of a larger outlet for the gas around the edge of the float. It will thus be seen that the pressure of the gas itself furnishes the means for regulating and controlling its volume through the pressure acting
 25 on the float-disk and opening and closing the valve accordingly as the pressure is low or high, and any intermediate pressure between the high and low points will set the float-disk and the plug or valve accordingly, so that no
 30 matter what the pressure may be only a regulated volume of gas can pass through for consumption at the burner.

The plug *j*, carrying the valve-stem and valve, at its end within the chamber *e* has a
 35 cross slit or nick *k* therein, which furnishes a small outlet for gas beneath the float-disk for the pressure to act on the disk, and this slit or nick also furnishes an engagement for a screw-driver or other tool by means of which
 40 the plug can be set higher or lower in the stem or tube in which it is located. This setting of the plug higher or lower assists in regulating the volume of gas which passes to the burner, as with the plug set for its end
 45 within the chamber to be in a high plane as a consequence the float-disk will be raised to a higher plane in order to close the passage in the plug *j* through which the gas enters the float-disk chamber, the result being a
 50 wider space *l* between the periphery of the float-disk and the wall of the chamber, and with the plug *j* adjusted to a lower plane the float-disk does not rise to as high a plane when the plug or valve closes the passage for
 55 the gas, with the result that a less space *l* is provided around the periphery of the float-disk. It will thus be seen that the position of the plug controls the position of the float-disk, and the position of the float-disk controls the volume of gas which passes into and
 60 out of the float-disk chamber.

The gas passes from the chamber *e* above the float-disk through a passage *m* in the neck or stem *d* and enters the passage *n* in the
 65 burner-tube to pass out at the slit of the tip *p*, as usual.

The operation is as follows: The plug *j* is

properly adjusted, so as to have its discharge end in the chamber *e* at the proper point for the operation of the float-disk and valve to
 70 pass a predetermined volume of gas, and when adjusted and the governor or regulator is attached to the lamp-post or other place where it is to be used the pressure of the admitted gas, irrespective of what it may be,
 75 will operate to automatically raise and lower the float-disk and close and open the plug or valve to the precise extent required for the passing of the predetermined volume of gas in cubic feet per hour or other stated period
 80 of time for consumption at the burner, and the volume of gas passed will be determined by the pressure-governor, so that in every case the same number of cubic feet will be
 85 passed in a given period of time, thus insuring the burning of only so many cubic feet of gas in a given time, thereby regulating and controlling the consumption of gas as required.

What I regard as new, and desire to secure 90 by Letters Patent, is—

1. In a gas-governor, the combination of a float-disk located and operating in a chamber, with a space around its peripheral edge
 95 varying in width from the rise and fall of the float in the chamber, and a valve controlling a passage leading to the chamber and having a relation to the disk to close the passage with the rise of the float-disk and open the
 100 passage with the fall of the float-disk coincidingly with the widening and lessening of the space around the peripheral edge of the float-disk, substantially as described.

2. In a gas-governor, the combination of a chamber having a downwardly-tapered wall, 105 a float-disk located and operating in the chamber and having a diameter to leave a space between its peripheral edge and the wall of the chamber increased and decreased by the rise and fall of the float-disk in the chamber, and
 110 a valve controlling the inlet of gas and carried by the float-disk, substantially as described.

3. In a gas-governor, the combination of a chamber having a downwardly-tapered wall, 115 a float-disk located and operating in the chamber and having a diameter to leave a space between its peripheral edge and the wall of the chamber, increased and decreased by the rise and fall of the float-disk in the chamber, a
 120 valve controlling the admission of gas into the chamber carried by the float-disk and a plug having its discharge end entered into the chamber and having a passage closed and opened by the controlling-valve with the rise
 125 and fall of the float-disk, substantially as described.

4. In a gas-governor, the combination of a chamber having a downwardly-tapered wall, 130 a float-disk located and operating in the chamber and having a diameter to leave a space between its peripheral edge and the wall of the chamber, increased and decreased by the rise and fall of the float-disk in the chamber, a

valve controlling the admission of gas into the chamber having a tapered face and carried by the float-disk, a plug having its discharge end entered into the chamber and having a passage of a diameter corresponding to the largest diameter of the valve and closed and opened by the controlling-valve with the rise and fall of the float-disk, substantially as described.

5. In a gas-governor, the combination of a stem, a shell or casing on the stem, a cover for the shell or casing, a chamber in the shell or casing closed by the cover, a float-disk located and operating in the chamber and having a diameter to leave a space between its peripheral edge and the wall of the chamber, increased and decreased by the rise and fall of the float-disk in the chamber, a valve controlling the admission of gas into the chamber having a tapered face and carried by the float-disk, and a plug having its discharge end entered into the chamber and having a passage of a diameter corresponding to the largest diameter of the valve, closed and opened by the controlling-valve with the rise and fall of the float-disk, substantially as described.

6. In a gas-governor, the combination of a stem, a shell or casing on the stem, a cover for the shell or casing, a chamber in the shell or casing closed by the cover, a float-disk located and operating in the chamber and having a diameter to leave a space between its peripheral edge and the wall of the chamber, increased and decreased by the rise and fall of the float-disk in the chamber, a valve controlling the admission of gas into the chamber having a tapered face and carried by the float-disk, a plug having its discharge end entered into the chamber and having a passage

of a diameter corresponding to the largest diameter of the valve, closed and opened by the controlling-valve with the rise and fall of the float-disk, and a burner tube and tip attached to the cap or cover and communicating with the float-disk chamber, substantially as described.

7. In a gas-governor, the combination of a chamber having a downwardly-tapered wall, a float-disk located and operating in the chamber and having a diameter to leave a space between its peripheral edge and the wall of the chamber increased and decreased by the rise and fall of the float-disk in the chamber, a controlling-valve carried by the float-disk, and an adjustable plug having its discharge end entered into the chamber and having a passage closed and opened by the controlling-valve with the rise and fall of the float-disk, substantially as described.

8. In a gas-governor, the combination of a chamber having a downwardly-tapered wall, a float-disk located and operating in the chamber and having a diameter to leave a space between its peripheral edge and the wall of the chamber, increased and decreased by the rise and fall of the float-disk in the chamber, a controlling-valve having a tapered face and carried by the float-disk, and an adjustable plug entered into the chamber and adapted to be raised and lowered therein and having a passage of a diameter corresponding to the largest diameter of the valve and closed and opened by the controlling-valve with the rise and fall of the float-disk, substantially as described.

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