

(No Model.)

H. J. BELL.
GAS REGULATING BURNER.

No. 396,257.

Patented Jan. 15, 1889.

Fig. 1.

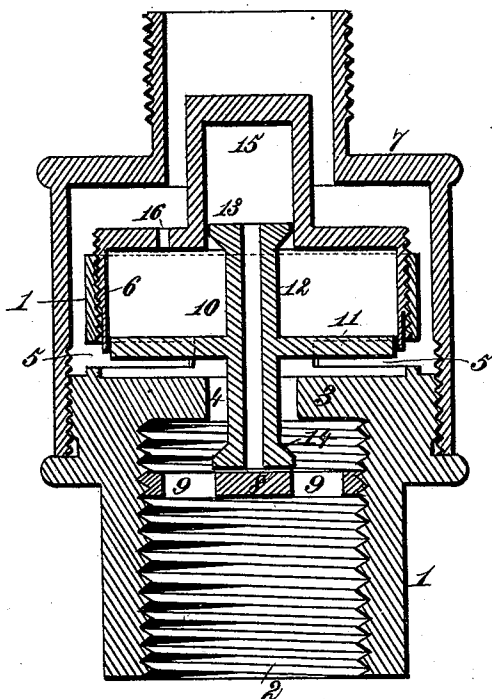


Fig. 2.

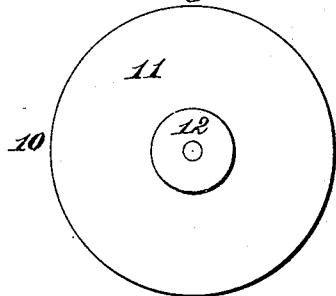
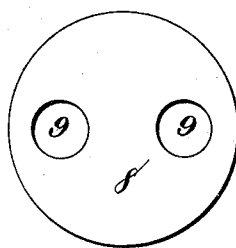


Fig. 3.



Witnesses.
Robert Emmett,
Geo. W. Rea,

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

UNITED STATES PATENT OFFICE.

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

GAS-REGULATING BURNER.

SPECIFICATION forming part of Letters Patent No. 396,257, dated January 15, 1889.

Application filed May 19, 1888. Serial No. 274,361. (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, in the county of Camden and State of New Jersey, have invented new and useful Improvements in Gas-Regulating Burners, of which the following is a specification.

The object of my invention is to provide a simple and reliable governing device for gas-regulating burners, in which the quantity of gas permitted to flow through the governor can be accurately adjusted to the capacity of the burner and its pressure automatically regulated.

To this end the invention consists in the construction and combination of parts, as hereinafter more fully set forth.

In the annexed drawings illustrating the invention, Figure 1 is a vertical section of my improved gas-regulating device. Fig. 2 is a plan of the float-valve. Fig. 3 is a plan of the adjustable valve-support.

The numeral 1 designates a metallic shell having internal screw-threads, 2, for attachment to a gas-fixtue. The lower portion of this shell is divided from the upper portion by a diaphragm, 3, having a central perforation, 4, which serves as a gas-passage. Above the partition 3 the internal diameter of the shell 1 is enlarged, and in the wall of this upper portion of said shell two or more horizontal slots, 5, are provided for the passage of gas.

The upper portion of the shell 1, above the slots 5, is internally screw-threaded to engage external screw-threads on a cap, 6, that closes the upper end of said shell. These screw-threads on the cap 6 and in the upper part of the shell 1 are of sufficient extent to permit a vertical adjustment of the cap 6 that will enable it to partially close the slots 5, and so regulate the quantity of gas flowing through said slots as will properly accord with the capacity of the burner.

The cap 6 and the upper part of the shell 1 are inclosed by an outer or upper shell, 7, the lower part of which, as shown, is provided with internal screw-threads to engage external screw-threads on the inner or lower shell,

1, while the upper part of the shell 7 is externally screw-threaded for connection with a gas-burner of any kind.

In the lower internally-threaded part of the shell 1, beneath the partition 3, is supported a disk, 8, having perforations 9 for the passage of gas. The periphery of this disk 8 is threaded to engage the screw-threads 2 of the shell 1, so that by inserting a suitable instrument into the perforations 9 the disk can be rotated and adjusted to any height in the shell. This perforated disk 8 thus forms an adjustable support for a float-valve, 10, that controls the gas-passage 4.

The float-valve 10 consists of a disk-shaped float, 11, formed on or rigidly attached to a central tubular stem, 12, having enlargements or shoulders, 13 and 14, at its opposite ends. The shoulder 14 is suitably beveled, as shown in Fig. 1, and serves as a valve for the gas-passage 4, through which the lower end of the stem 12 projects. The float 11 is located at or about the center of the stem 12, above the partition 3, and is of such diameter as to fit closely but freely in the lower part of the cap 6, without binding therein, so that it can rise and fall freely with the varying pressure of gas, and so cause the valve 14 to control the passage 4 and regulate the quantity of gas or its flow through the passage 4 in inverse proportion to its pressure. The enlargement or shoulder 13, on the upper end of the tubular stem 12, is located in a tubular guideway or chamber, 15, that is closed at the top and forms the upper contracted portion of the cap 6, which is surrounded by the contracted portion of the upper or outer shell.

It will be seen that the tubular stem 12 is adapted to admit a quantity of gas into its guideway or chamber 15 above the enlarged upper end of said stem. The gas thus admitted to the chamber 15 will serve as an elastic cushion to balance the tendency to upward movement of the float 11 and valve 14 when acted on by the upward flow of gas, and thus prevent the closing of the passage 4 at any pressure so long as any part of the slots 5 are opened to supply gas to the burner. Any leakage of gas around the periphery of

the float 11 into the cap 6 is relieved through a perforation, 16, that discharges into the outer shell, 7, which surrounds said cap.

The operation of this gas-governing device is as follows: In its normal position, when the gas is turned off, the valve 14 rests on the center of the disk 8, as shown in Fig. 1, and the passage 4 is entirely open. When the gas is turned on, it passes into the lower part of the shell 1, and through the passage 4 to the under side of the float 11, which slightly rises under the pressure, thus lifting the valve 14 from the disk 8, and permitting gas to pass through the tubular stem 12 into the chamber 15, where it exerts a counterbalancing pressure on the upper enlarged end of said stem, to prevent the closing of the valve 14 at any pressure of gas so long as any part of the slots 5 are open. From beneath the float 11 gas passes through the slots or exit-openings 5 into the outer shell, 7, and thence to the burner. In adjusting the governor for use the cap 6 can be rotated in the upper part of the shell 1, so as to cause it to engage therewith for a greater or less distance and thereby leave the lateral exit-openings 5 entirely uncovered, or partially close the same to regulate the quantity of gas flowing therethrough; in accordance with the capacity of the burner. Should the pressure of gas be excessive, it will act on the extended surface of the float 11 with sufficient force to lift said float within the cap 6, and cause the valve 14 to approach the passage 4 more closely, and thereby reduce the quantity of gas flowing through the governor in a given time. When the pressure is reduced, the contrary effect will be produced by the gradual descent of the float. The described arrangement of the gas-passages 4 and 5 with relation to the valve 14, beneath the passage 4 and the float 11 above said passage, thus furnishes an automatic volumetric governor in which the pressure of gas is governed from above in exact accord with the requirements of the burner.

It is obvious that by means of the adjustable cap 6, controlling the quantity of gas flowing through the lateral gas-passages 5 in a given time at normal pressure, the governor

can be readily arranged to suit the capacity of the burner, while the float-valve will automatically regulate the pressure above the central gas-passage.

What I claim is—

1. In a gas-governor or gas-regulating burner, the combination of a shell, 1, having a contracted central gas-passage, 4, and provided with lateral gas-passages 5, located above said central passage, an adjustable cap, 6, to control the quantity of gas flowing through said lateral gas-passages, the shell 7, surrounding said cap and lateral gas-passages, and a float-valve, 10, comprising a valve, 14, beneath the central gas-passage, 4, and a disk-float, 11, above said passage to control the pressure of gas at the burner, substantially as described.

2. In a gas-governor or gas-regulating burner, the combination of the shell 1, having a central gas-passage, 4, and lateral gas-passages 5, the adjustable cap 6, adapted to control the quantity of gas flowing through the lateral gas-passages, said cap being provided with a central upper chamber or guideway, 15, and a perforation, 16, the shell 7, surrounding said cap and lateral gas-passages 5, and the float-valve 10, having a tubular stem, 12, carrying a valve, 14, beneath the central gas-passage, 4, and a disk-float, 11, above said passage, substantially as described.

3. In a gas-governor or gas-regulating burner, the combination of the shell 1, having a partition, 3, provided with central gas-passage, 4, and lateral gas-passages 5, located in the shell above said partition, the adjustable cap 6, to control the lateral gas-passages, a float-valve, 10, to control the central gas-passage, an adjustable support, 8, for said float-valve, and a shell, 7, surrounding the cap 6 and lateral gas-passages 5, said shell being adapted to connect with a burner, substantially as described.

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

HAROLD J. BELL.

Witnesses:

WALDRON SHAPLEIGH,
ROBERT S. CLYMER.