

(No Model.)

B. F. DAY.
GAS REGULATOR.

No. 469,464.

Patented Feb. 23, 1892.

FIG. 1.

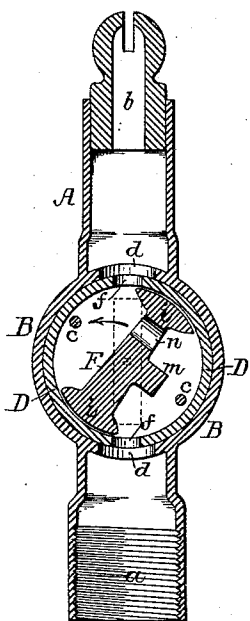


FIG. 2.

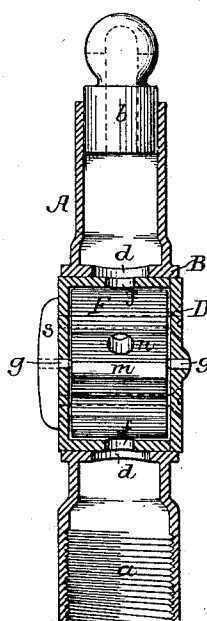
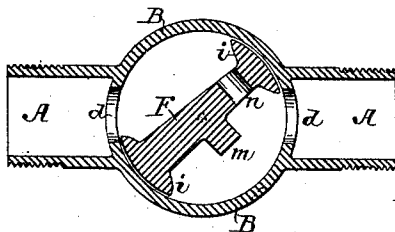


FIG. 3.



FIG. 4.



Witnesses:
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Inventor:
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UNITED STATES PATENT OFFICE.

BENJAMIN FRANKLIN DAY, OF NORRISTOWN, PENNSYLVANIA.

GAS-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 469,464, dated February 23, 1892.

Application filed June 22, 1891. Serial No. 397,017. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN FRANKLIN DAY, a citizen of the United States, and a resident of Norristown, Montgomery county, Pennsylvania, have invented certain Improvements in Gas-Regulators, of which the following is a specification.

My invention consists of certain improvements in the gas regulator or governor for which I obtained Letters Patent No. 384,182, dated June 5, 1888, the objects of my present invention being to simplify and cheapen the construction of the regulator and to adapt it for application directly to a gas-burner tube or other gas-conveying pipe. These objects I attain in the manner hereinafter set forth, reference being had to the accompanying drawings, in which—

Figure 1 is a vertical section of a gas-burner with regulator constructed in accordance with my invention. Fig. 2 is a section of the burner taken in a plane at right angles to that of Fig. 1 and showing the burner-tip and regulating-pendulum in elevation. Fig. 3 is a detached elevation of said regulator-pendulum, and Fig. 4 is a sectional view illustrating modifications of the invention.

All of the views shown are drawn to an exaggerated scale.

In Figs. 1 and 2, A represents an ordinary gas-burner tube internally threaded at its lower end *a* for application to the gas-pipe and having at the top the usual tip *b*. On the tube A is formed a cylindrical enlargement B, open at the ends and having at top and bottom ports *d* within the tube, and to this cylindrical enlargement of the burner-tube is snugly fitted a cylindrical casing D, permanently closed at one end and having at the other end a cap secured by transverse screws *c*, this casing having in top and bottom ports *f*, coinciding with the ports *d*. From each end of the casing D projects inward a conical lug or pintle *g*, and to these pintles is hung, so as to be free to vibrate, the pendulum F, which extends across the cylindrical casing D, and is by preference enlarged at each end, as shown at *i*, this pendulum having on one side a projection *m*, which causes a preponderance of weight on that side, and thus causes the pendulum to hang normally in the in-

clined position shown in Fig. 1, so that the enlarged heads *i* do not materially obstruct the ports *f*. In the pendulum, on one side of the axis of the same, is formed an opening *n*, and when the pendulum is in its normal position this opening provides the only communication between the upper and lower ports *f* in the casing D, so that the gas entering the lower port passes up along one side of the pendulum through the opening in the same, and thence to and through the upper port *f*.

I find that the position of the pendulum is governed by the pressure of the gas in the supply-pipe and the consequent force of the flow, increase of pressure causing a movement of the pendulum in the direction of the arrow, Fig. 1, so as to cause the heads *i* of said pendulum to be carried over the ports *f* to a greater or less extent, thus obstructing said ports to a degree commensurate with such increase of pressure, the pressure and rate of flow at the burner-tip being thereby rendered practically constant.

The cylindrical casing D has at its permanently-closed end a projecting wings, whereby it may be turned in the cylindrical enlargement B of the burner-tube, so as to cause the regulating-pendulum F, when hanging in its normal position, to obstruct the ports *f* to any desired extent, depending upon the volume of flow which it is desired to maintain at the tip of the burner.

The construction of regulator which I have described involves the employment of but few parts of simple and inexpensive character, and I am thereby enabled to apply it to an ordinary gas-burner without unduly increasing the cost of the latter.

Although I prefer for purposes of adjustment, as above described, to use as a carrier for the pendulum the cylindrical casing D, rotatable in the enlargement of the burner-tube, said pendulum may be hung directly within the cylindrical enlargement of a tube, if desired, as shown, for instance, in Fig. 4, and although my improved regulator has been designed with especial reference to its application to a gas-burner the main features of the invention are also applicable to regulators to be used in connection with pipes or passages generally for the conveyance of gas, and it is

immaterial whether such pipes are vertical, as in Fig. 1, or are horizontal, as in Fig. 4, or at an angle, and the direction of flow through the pipe is also immaterial, as the action of the pendulum is not affected either by the direction of flow or the position of the pipe so long as care is taken to so weight the pendulum that it will hang normally in a position inclined in respect to the direct line of flow and so that it will act as a valve for governing the area of one or both of the ports of the cylindrical casing.

The use of the transverse opening in the pendulum is preferred in all cases, although the regulator is operative even without such opening if the space between the upper head of the pendulum and the bore of the casing is sufficient to provide for the necessary flow of gas from one side of the pendulum to the other or to the outlet-port.

Having thus described my invention, I claim and desire to secure by Letters Patent—

1. The combination, in a gas-regulator, of a cylindrical casing having inlet and outlet ports, with a pendulum hung within and extending across said casing, the ends of said pendulum forming valves which open and close the ports as the pendulum swings, substantially as specified.

2. The combination, in a gas-regulator, of a cylindrical casing having inlet and outlet ports, with a pendulum hung within said casing and extending across the same, so as to be interposed between the ports, said pendulum having a transverse opening which serves

as a communication between the ports in the casing, substantially as specified.

3. The combination, in a gas-regulator, of a cylindrical casing having inlet and outlet ports and a pendulum hung within said casing and extending across the same, said pendulum having a projecting weight on one side, whereby it is caused to hang normally in a position inclined in respect to the direct line of flow of the gas, substantially as specified.

4. The combination, in a gas-regulator, of the cylindrical casing having opposite inlet and outlet ports and a pendulum hung within said casing and extending across the same, so as to be interposed between said ports, said pendulum having a transverse opening and having at the ends enlarged heads serving as valves to restrict the flow through the ports of the casing, substantially as specified.

5. The combination of a gas pipe or tube having a cylindrical enlargement with inlet and outlet ports within the tube, a cylindrical casing adapted to said enlargement, but capable of being turned therein, and also having inlet and outlet ports, and a pendulum hung within said casing and extending across the same, so as to be interposed between the inlet and outlet ports, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

BENJAMIN FRANKLIN DAY.

Witnesses:

EUGENE ELTERICH,
HARRY SMITH.