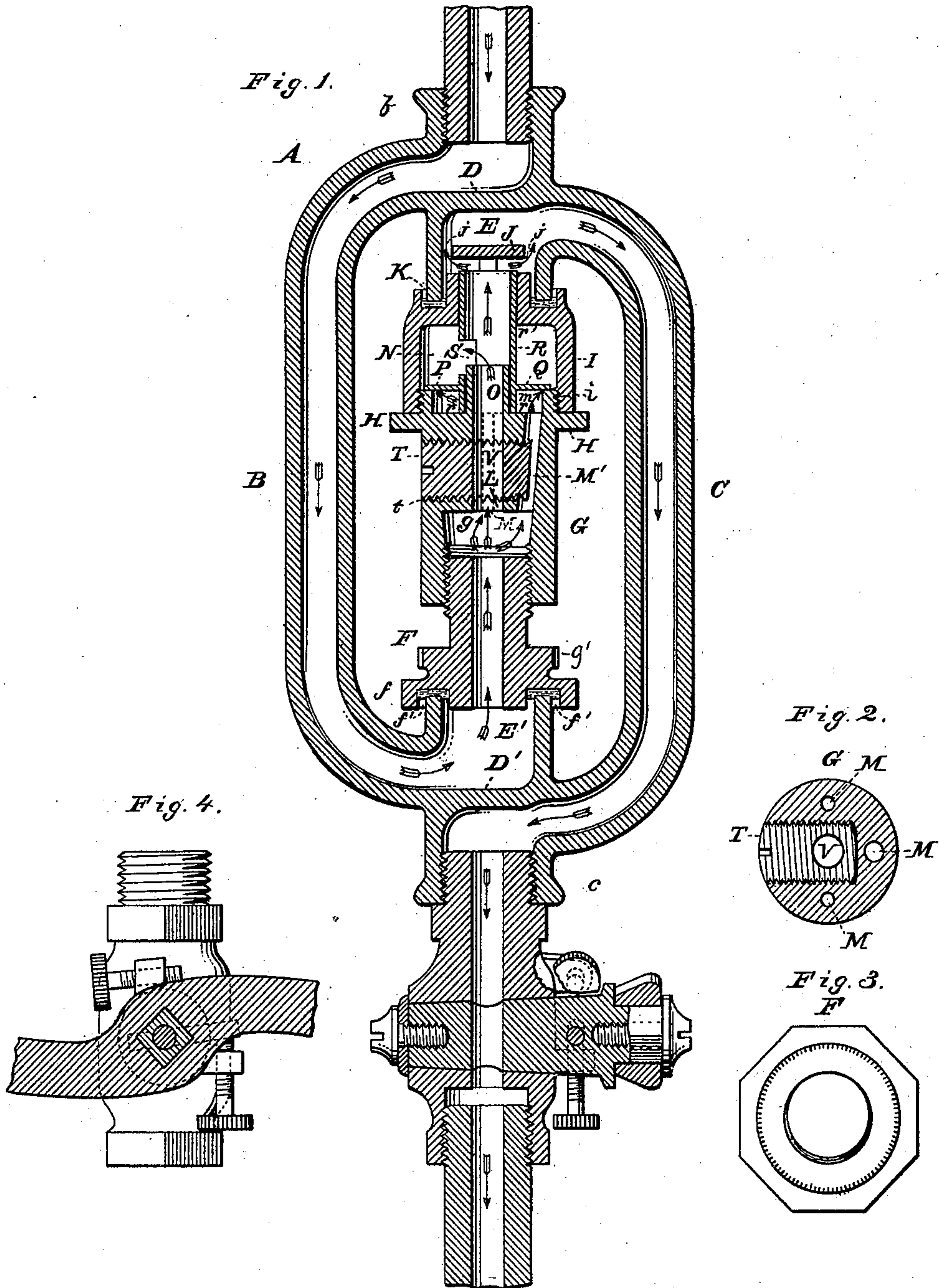


(No Model.)

J. FRANKLIN.
REGULATOR FOR GAS LAMPS.

No. 396,995.

Patented Jan. 29, 1889.



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REGULATOR FOR GAS-LAMPS.

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To all whom it may concern:

Be it known that I, JOHN FRANKLIN, a citizen of the United States, and a resident of Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Regulators for Gas-Lamps; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of this invention and is a vertical section. Fig. 2 is a detail and a horizontal section. Fig. 3 is a detail and a top view. Fig. 4 is a detail.

The invention relates to improvements in gas-lamps; and it consists, mainly, in the construction and novel combination of the parts of the volumetric regulator for the gas flowing from the source of supply to the flame.

It further consists in certain details of construction and arrangement, hereinafter described, and pointed out in the claim hereto appended.

Referring to the drawings by letter, A designates the regulator-yoke, consisting, mainly, of the downdraft-flue B on one side, connected by means of the internally-threaded nozzle *b* with the gas-supply pipe, and the downdraft-flue C, connecting by means of the internally-threaded nozzle *c* with the tube descending to the lamp. The said flues are separated at the upper and lower ends of the yoke, respectively, by the partitions or diaphragms D D', so that they do not directly communicate. Standing within the yoke and inward from the respective diaphragms are the tubular chambers E E', between the ends of which the parts of the regulator are situated. The regulator proper consists of certain parts situated between and connecting the said chambers.

F is a tubular foot-piece provided with a circumferential flange, *f*, near its lower end, which end extends into the chamber E', the flange having on its lower side an annular seat in which rests the edge of the wall of

the said chamber. The upper end of the foot-piece F is threaded externally to engage the internally-threaded bore of the cylinder G, within which is the gas-chamber *g*, immediately above said foot-piece. The flange *f* of the cylinder G is made angular on its edge to receive a wrench, and the portion *g'* has its edge milled. The cylinder G has near its upper end a circumferential flange, H, upon which the lower edge of the cap-piece I rests. The part or flange *i* of the cylinder above the flange H is externally tapped to engage the internally-tapped lower end of the cap I. The upper part or neck, J, of the cap is reduced in diameter, closed at its end, and made cylindrical, and has on its side the laterally-extending openings or ports *j*, for a purpose hereinafter explained.

K is an annular seat on the shoulder of the cap, between the neck and body, for the reception of the edge of the wall of the tubular chamber E. By means of the screw-engagement between the foot-piece F and cylinder G the seats of the foot-piece and cap can be driven tight against the edges of the tubular chambers E E', so that perfect air-tight communication can be established between the flues B and C.

L is a central vertical bore in the upper part of the cylinder above the gas-chamber *g*, and having a suitable caliber, which is determined by experiment.

M M are bores through the upper part of the cylinder G, which bores preferably incline outward as they ascend, and open above in the circular chamber *m*, formed above the flange H, and which opens directly into the interior chamber, N, of the cap-piece I, the two chambers being separated only by the float hereinafter described.

O is a tubular nipple extending upward from the cylinder G to a suitable height above the central bore, L, of the cylinder and having the same caliber as said bore, so that the escape of gas upward will be unobstructed.

P is the float, composed of a disk, Q, which rests normally upon the edge of the wall of the chamber *m*, and the central vertical tube, R, the part *r* of which, below the disk, loosely surrounds the nipple O, and the part *r'* of which, above the disk, fits closely,

but not tightly, in the interior of the neck or upper part, J, of the cap, both ends of the tube R being open.

S designates one or more lateral openings made in the part *r*' of the tube R, and serving a purpose hereinafter explained.

T is a screw having a suitable diameter and entering a tapped opening, *t*, in the side of the cylinder G, below the flange H. The said screw has a diametrical opening, V, through it of equal size to and registering with the central bore, L, of the cylinder. By giving a quarter-turn to the said screw, the communication between the upper and lower parts of said bore can be opened or closed, and consequently the gas may be admitted to or cut off from the nipple O, and when so cut off can find its way to the chambers *m* only through the bores M.

When the lamp is made small, there are but two bores, which are opposite; but when the lamps are of larger size three of said bores are made, one, M', being opposite the screw-opening *t* and being slightly larger than the remaining ones, which are opposite each other and equally distant from the opening M'.

The bores L, M, and M' constitute flues, up which the gas ascends on its way to the lamp.

The manner in which the invention operates is as follows: The gas (which may be either coal-gas, water-gas, or natural gas) flows from the supply-pipe into the updraft-flue B, and thence upward through the regulating apparatus into the downdraft-flue C, the course being shown by the arrows on the drawings. From the latter downdraft-tube it flows to the lamp. When the screw T is turned so as to fully open the communication into the nipple O, the gas, having a direct vertical escape, ascends through the bore L, little, if any, escaping upward through the bores M. The gas is then driven by the whole power from the source of supply to the lamp, which will consume it as rapidly as it is supplied; but when a number of lamps are connected to the same source of supply and it is necessary to keep the flame of any one lamp stable and steady when the supply of gas to others is cut off and the screw T is turned to

cut off the updraft through the bore L, the gas then ascends through the bores M and M', (when the latter is used,) and by its pressure against the under surface of the float raises the latter, and thereby raises the part *r*' of the tube R, so that the upper edge of said tube more or less closes the openings or ports *j*, thus regulating the flow of gas to the lamp. When the pressure is too great, the tube R, rises partially closing the ports, and when the pressure is reduced the said tube falls, more fully opening the ports. Thus the flow of gas is equalized and regulated for varying pressure. In order to prevent a too quick and abrupt motion of the float and prevent all jar from said motion, the lower part, *r*, of the tube R is fitted loosely over the nozzle O, so that some gas can ascend between the two. The said ascending gas escapes into the chamber above the float through the lateral openings S, thus cushioning the float above and preventing too much rapidity of motion. The float is cushioned below by the gas in the chamber *m*. In the larger-sized lamps, the bore M', being somewhat larger than the bores M, which are opposite each other, is partially closed when the screw T is turned to close the bore L, because if the escapement through the bore M' were greater than through either bore M the edge of the float opposite the screw would be lifted by said escapement, and the float might bind in the chamber N.

In the larger lamps the three bores, M, M, and M' are necessary to permit a sufficient feed of gas.

Having described my invention, I claim—

The combination, with the yoke, the foot-piece, the cap, and the float, of the cylinder having the central vertical opening and the bores M M', the said bore M' being larger than the bores M, and the screw having the opening V and adapted to partially close the bore M', substantially as specified.

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

JOHN FRANKLIN.

Witnesses:

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