

J. J. KENNEVAN.
Gas-Regulating Burner.

No. 213,335.

Patented Mar. 18, 1879.

Fig. 1.

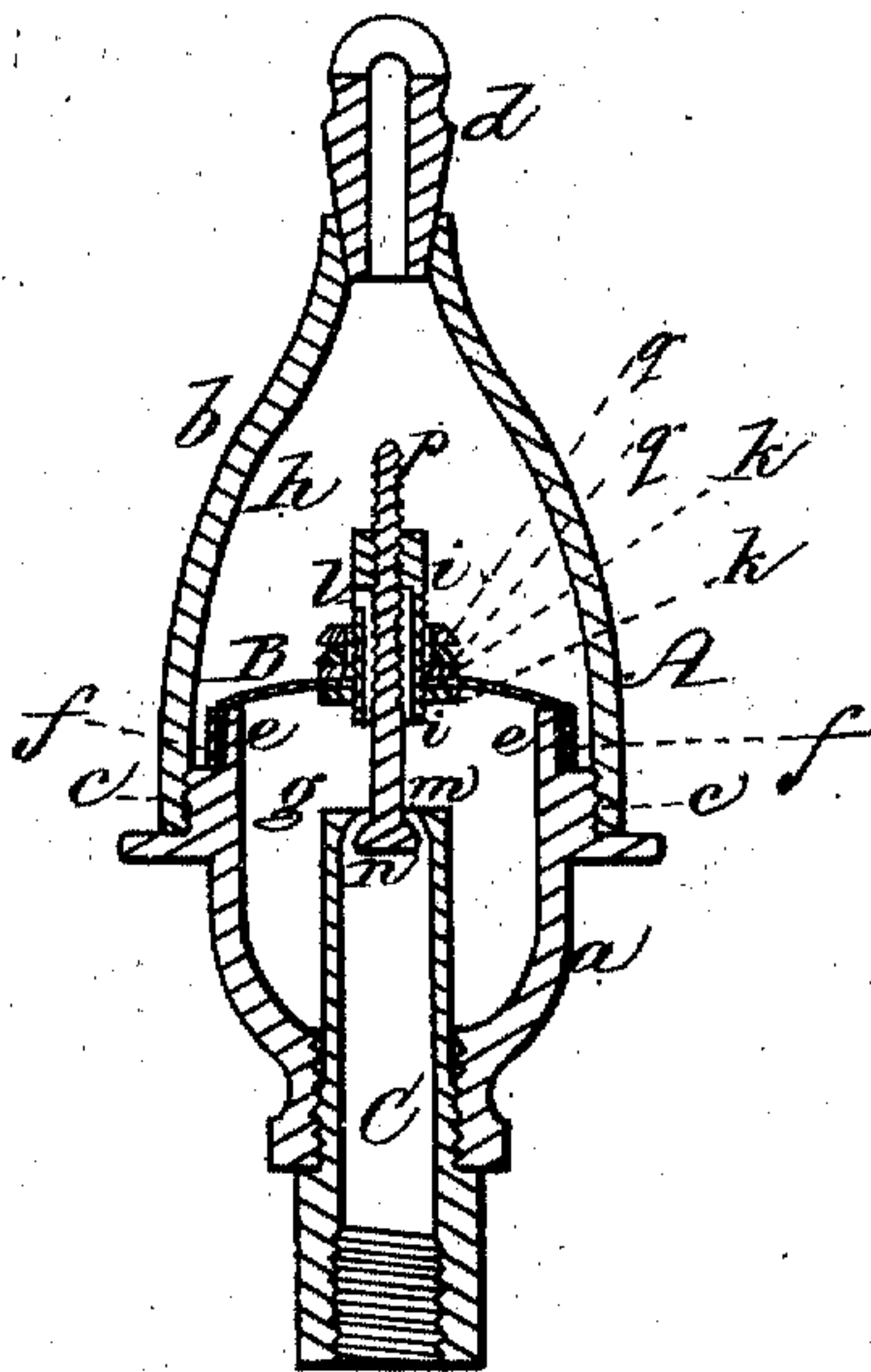
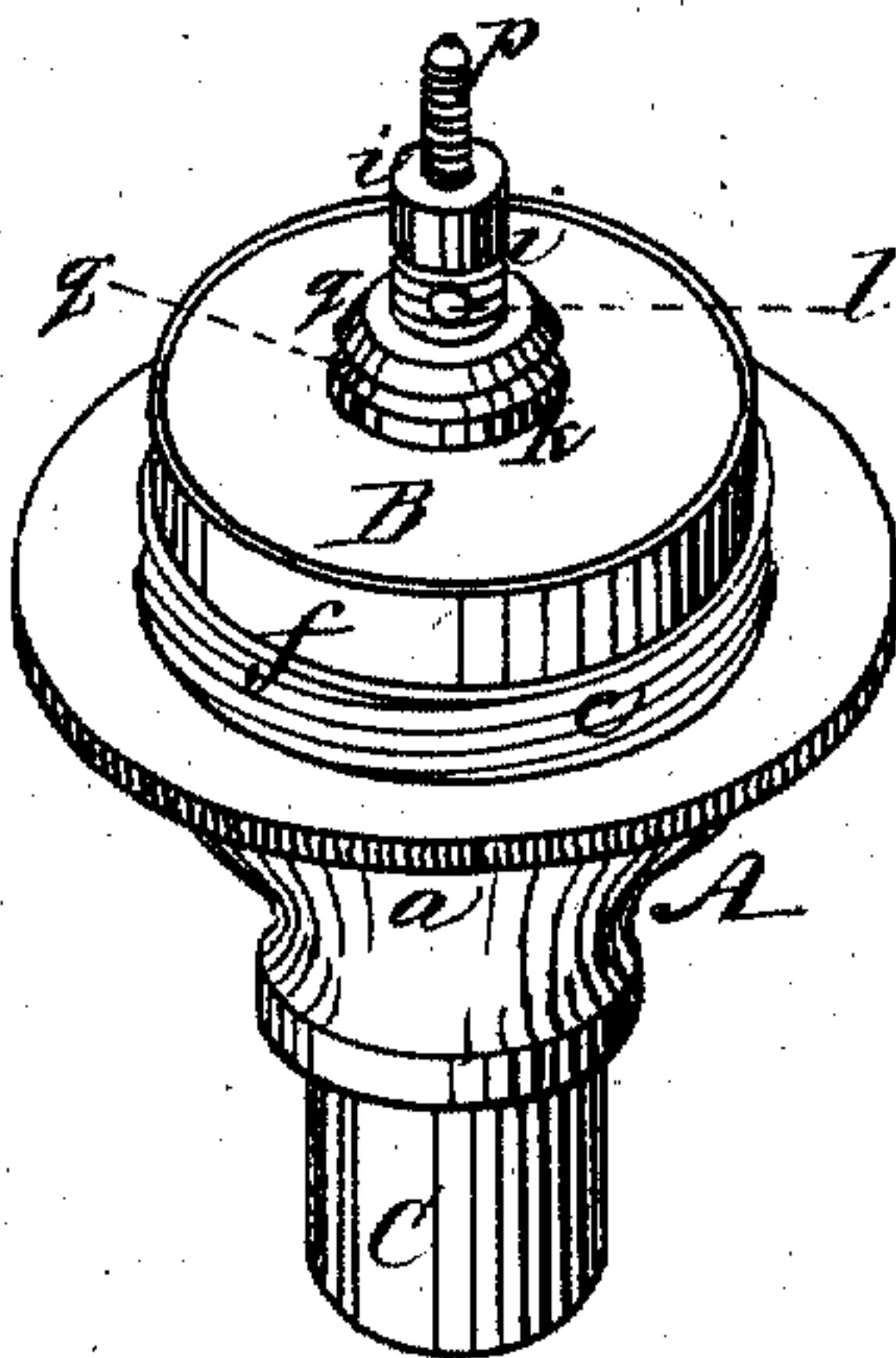


Fig. 2.



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Att'y

UNITED STATES PATENT OFFICE.

JOHN J. KENNEVAN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN GAS-REGULATING BURNERS.

Specification forming part of Letters Patent No. **213,335**, dated March 18, 1879; application filed January 25, 1879.

To all whom it may concern:

Be it known that I, JOHN J. KENNEVAN, of Boston, county of Suffolk, and State of Massachusetts, have invented an Improved Automatic Pressure-Regulating Gas-Burner, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 is a vertical section through the center of a gas-burner constructed in accordance with my invention. Fig. 2 is a perspective view of the same, with the upper portion of the shell and its tip removed.

My invention has for its object to provide a gas-burner which, after being adjusted to burn a given quantity of gas, will regulate itself automatically, so that the amount of gas consumed per hour will remain the same without regard to the pressure in the street-pipes or the size of the orifice at the tip of the burner through which the gas escapes; and my invention consists in certain details of construction, as hereinafter set forth and specifically claimed.

To enable others skilled in the art to understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, A represents the shell of a gas-burner, which is formed of two portions, *a* *b*, screwed together at *c*, the upper portion, *b*, being provided with an ordinary removable tip, *d*. Across the top of the lower portion, *a*, of the shell extends a leather diaphragm, B, which is stretched over a vertical flange, *e*, and secured thereon by means of a ring, *f*, forced over it. This diaphragm serves to divide the interior of the burner into two separate chambers, *g* *h*, which communicate with each other through a short tube, *i*, which is secured to the diaphragm by means of screw-nuts *k* *k* on its opposite sides, the bottom of the tube *i* being open, and the portion above the diaphragm being provided with one or more lateral apertures, *l*, through which the gas from the chamber *g* is free to flow into the chamber *h*, and thence to the tip *d*, where it is burned.

Within the lower end of the burner is screwed a short tube, C, which extends up into

the chamber *g*, and at the top of this tube is formed a conical aperture, *m*, the sides of which constitute a seat for the conical valve *n*, the vertical stem *p* of which passes up through the tube *i*, at the upper end of which is formed a screw-thread, with which engages a corresponding thread cut on the outside of the stem *p*, so that by turning the latter the position of the valve with respect to its seat, and the consequent size of the inlet-aperture *m*, can be regulated to vary the amount of gas consumed, the diameter of the stem *p* being less than that of the interior of the tube *i*, so as to leave a space between them for the free passage of the gas from the chamber *g* to the chamber *h*.

If desired, the diaphragm B may be weighted by using one or more washers, *q*, which are slipped over the tube *i*, and serve to depress the diaphragm quickly when the pressure is removed from its under surface.

The valve *n* having been adjusted to cause the burner to consume a given number of feet of gas per hour, (which can be determined by a suitable test,) the stop-cock (not shown) is opened and the gas flows up through the tube C and conical aperture *m* into the chamber *g*, and up through the tube *i* into the chamber *h*, whence it passes directly to the tip *d*, and when lighted the pressure of the gas on the under side of the diaphragm is such that the valve *n* will be maintained at such distance from its seat as to admit the exact quantity of gas desired; and should the pressure of the gas in the street-main increase, the additional pressure upon the under side of the diaphragm B will raise it and the valve *n*, so as to contract the size of the inlet-aperture *m* sufficiently to allow of the passage to the tip *d* of only just the predetermined number of feet of gas per hour; and any diminution of the pressure of the gas will cause a proportional descent of the valve *n*, and consequent enlargement of the inlet-aperture to a size sufficient to admit exactly the same number of feet of gas per hour, as before; and thus, after the valve *n* is once adjusted, there will be no variation whatever in the quantity of gas burned in a given time until a new adjustment is effected, whether the pressure in the gas-pipes be more or less, or the size of the outlet-orifice where

the gas is burned be increased or diminished, a burner thus constructed being well adapted for street-lamps, where it is of great importance to know that a burner, after being once adjusted for a given quantity of gas per hour, cannot by any possibility be made to consume a greater quantity, even if the tip should be blown out or one with a larger orifice be substituted, or the pressure of the gas should be increased.

By constructing the burner with two separate gas-chambers, communicating with each other as desired, the gas is allowed to come into contact with the upper as well as the under surface of the diaphragm, which is a great advantage, as the oil contained in the gas is thus allowed to act equally upon both surfaces of the leather diaphragm, and serves as a preservative to keep it soft and pliable and prevent it from cracking, and thus becoming useless, as is liable to occur where the gas comes into contact with the under side only of the diaphragm, as heretofore, in which case the upper surface soon becomes dry and cracked, when the diaphragm must be replaced by a new one.

The above-described burner, which is of exceedingly simple construction and is not liable to get out of order, presents the further ad-

vantage that if the diaphragm should break or give away from any cause the gas will pass directly up to the tip, as in a burner of ordinary construction.

It is evident that my invention may be applied to automatic pressure-regulators for use in connection with a number of burners without departing from the spirit of my invention.

I am aware that a valve operated by a flexible diaphragm through the medium of the gas pressure is not new, and hence I make no claim thereto; but

What I claim as my invention is—

In combination with a gas-burner or pressure-regulator having its interior divided by a flexible diaphragm into two separate gas-chambers, *g h*, the tube *i*, attached to the diaphragm and forming a means of communication between the two gas-chambers, and the valve *n*, having its stem made adjustable within the tube *i*, through which it passes, all constructed to operate substantially in the manner and for the purpose described.

Witness my hand this 20th day of January, A. D. 1879.

JOHN J. KENNEVAN.

In presence of—

P. E. TESCHEMACHER,
W. J. CAMBRIDGE.

Correction in Letters Patent No. 213,335.

It is hereby certified that the word "a" occurring in the first line of the claim, between the words "in" and "combination" of the printed specification herein contained, is not found in the original specification on file in the Patent Office.

April 3, 1879.