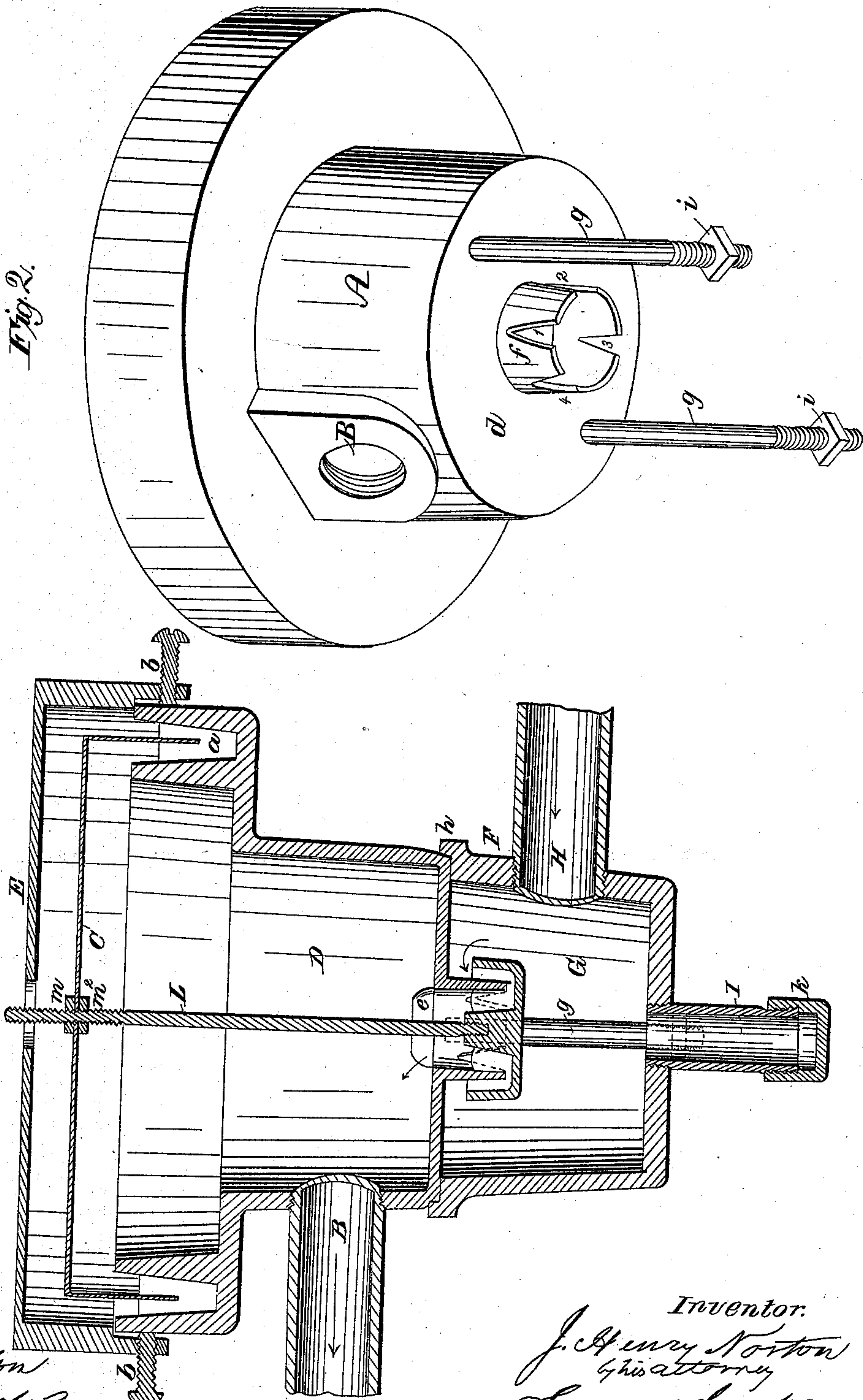


J. H. NORTON.  
Gas Regulator.

No. 35,538.

Patented June 10, 1862.



Witnesses:  
Edward Mason  
R. C. F. Schwaab

Inventor:  
J. Henry Norton  
by his attorney  
Samuel Cooper



# UNITED STATES PATENT OFFICE

J. HENRY NORTON, OF BOSTON, MASSACHUSETTS.

## IMPROVEMENT IN GAS-REGULATORS.

Specification forming part of Letters Patent No. 35,538, dated June 10, 1862.

*To all whom it may concern:*

Be it known that I, J. HENRY NORTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in the Construction of Gas-Regulators, 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 middle of my improved "regulator;" Fig. 2, a perspective view of the upper part of the box or shell, the lower chamber being removed.

In the construction of "gas-regulators" I have found in practice that whenever the flow of the gas through the inlet-pipe is checked either by an elbow or a sudden bend in the pipe, or by any body of metal placed opposite to and near the mouth of the pipe, that a deposit of tar from the gas is the result.

The object of my present invention is to avoid this checking of the flow of the gas and this consequent deposit, and also to avoid the use of levers and pivots with which the gas may come in contact and, by depositing its impurities on them, obstruct their operation; and my invention consists substantially in the following construction and arrangement of parts, which, as a whole, constitute my improved regulator.

That others skilled in the art may understand and use my invention, I will proceed to describe the manner in which I have carried out the same.

In the said drawings, A is a circular bowl of cast iron, with an outlet at B where the service-pipe is attached. It has a trough around its edge, which is partially filled with quicksilver, as shown at *a*, Fig. 1, in which the edge of an inverted cup, C, of sheet metal, is placed to prevent the escape of gas from the chamber D, thus formed, except through the outlet B. A cover, E, of cast-iron, is secured by screws *b* to the edge of the part A to protect the cup C, which is free to rise and fall beneath it, as it is influenced by the pressure of gas in the chamber D.

On the bottom *d* of the part A is cast a projecting cylinder, *f*, in the edge of which is formed a series of notches, 1 2 3 4, of varying depth, a central hole, *e*, opening through the

bottom into the chamber D. Two rods, *g*, with screws on their ends, are also attached to the bottom *d*.

A second part or bowl, F, is connected with the first one. The bottom edge of the part A rests within a rim, *h*, and the rods *g* pass through holes in the bottom of the part F, the two being drawn up tight together by nuts *i*. The holes around the rods, and also the joint around inside of the rim *h*, are rendered gas-tight by cement, in the usual manner. The chamber G in the part F has an inlet, H, through which gas is admitted. A vertical pipe, I, at the bottom of the part F, with a screw-cap, *k*, on its end, serves for the collection and removal of any deposit from the gas.

A rod, L, is suspended by two screw-nuts, *m m'*, from the center of the cup C. It has attached to its lower end a cup, M, filled with quicksilver. By adjusting the nuts *m m'* this cup is brought into the proper position corresponding with the greatest number of burners to be supplied by the service-pipe B, or with the greatest probable pressure to be maintained in the chamber D, so that the proper amount of opening through the notches 1 2 3 4 may be provided to supply the amount of gas required by the number of burners in use at any one time.

The following is the operation of the apparatus. The gas enters at the inlet H into the chamber G, and, as indicated by the arrows, passes over the edge of the cup M and through so much of the openings 1 2 3 4 of the cylinder *f* as may be exposed above the quicksilver in the cup M, through the passage *e* into the chamber D, where its pressure tends to raise the cup C. As the pressure in this chamber D is increased by shutting off the burners supplied by the pipe B, the cup M will be raised and a larger portion of the openings 1 2 3 4 in the cylinder *f* will be closed. The rise and fall of the inverted cup C is thus communicated directly to the cup M without the intervention of levers or pivots, and there is no part of the regulator that is liable to be clogged by deposits from the gas. At the same time the cost of its construction is less than that of any other regulator with which I am acquainted.

I am aware of the patent granted to John



H. Powers September 1, 1857, for improvements in gas-regulators. I do not, therefore, claim to be the first to use a cup or trough of quicksilver as a seat for the valve which regulates the flow of gas into the pressure-chamber D.

I am also aware that a cup of quicksilver suspended from the float has been used to close, more or less, the mouth of a bent inlet pipe to regulate the flow of gas into a pressure-chamber like the chamber D; but in such regulators the current or stream of gas flowing through the inlet pipe received a check by the short turn of the pipe, and also by its striking on the body of quicksilver in the cup, and a deposit in the pipe and cup was the consequence. This difficulty I have entirely over-

come by admitting the gas from the inlet-pipe H into a chamber, G, from which it flows quietly through the notches or ports in the valve *f* into the pressure-chamber D.

What I claim as my invention, and desire to secure by Letters Patent, is—

The chamber G, into which the gas is poured from the inlet-pipe H, in combination with the valve *f*, communicating with the pressure-chamber D when said valve is commanded by the quicksilver-cup M, suspended directly from the inverted cup C, substantially as specified.

J. H. NORTON.

Witnesses:

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