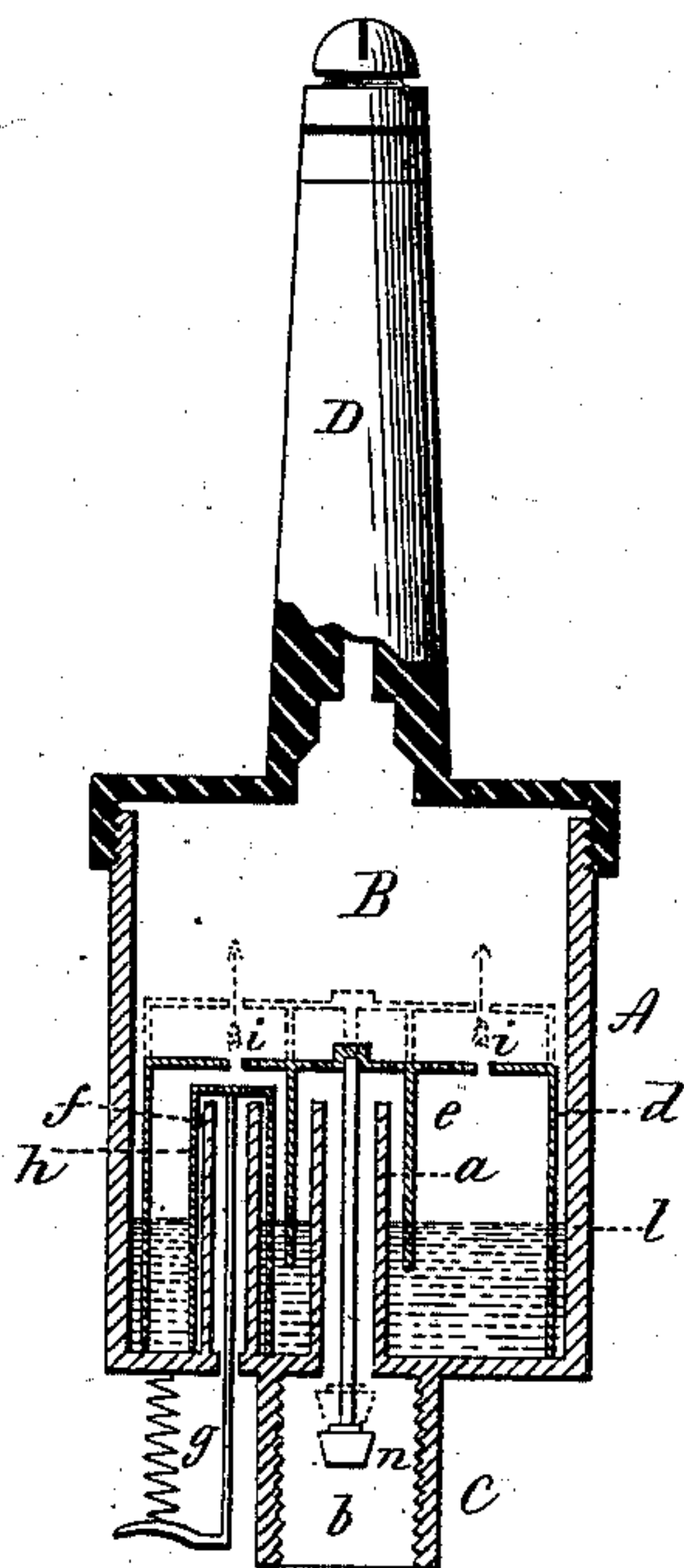


(No Model.)

N. SLEEMAN.  
Self Extinguishing Gas Burner.

No. 238,169.

Patented Feb. 22, 1881.



Witnesses.

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# UNITED STATES PATENT OFFICE.

NATHANIEL SLEEMAN, OF ANSONIA, ASSIGNOR OF ONE-HALF TO LEWIS HOTCHKISS, OF BIRMINGHAM, CONNECTICUT.

## SELF-EXTINGUISHING GAS-BURNER.

SPECIFICATION forming part of Letters Patent No. 238,169, dated February 22, 1881.

Application filed September 20, 1880. (No model.)

*To all whom it may concern:*

Be it known that I, NATHANIEL SLEEMAN, of Ansonia, in the county of New Haven and State of Connecticut, have invented a new Self-Extinguishing Gas-Burner; and I do hereby declare the following, when taken in connection with the accompanying drawing and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawing constitutes part of this specification, and represents a vertical central section.

This invention relates to an improvement in that class of gas-burners designed especially for street-lamps, and which are so constructed that a certain reduction of the pressure will automatically shut off the gas.

In the previous burners of my invention, for which Letters Patent have been granted me, I have experienced serious difficulty from the clogging of the mechanism which raises the cup for the purpose of lighting, and from the uncertainty of the operation of the extinguisher.

The object of this invention is to overcome these difficulties; and it consists in the construction hereinafter described, and particularly recited in the claim.

A represents a cylinder or case, which forms the chamber B, provided at its lower end with a socket, C, for attachment to the gas-pipes, and centrally at the top with a gas-burner, D. Within the chamber B a tube, *a*, extends from the bottom upward and opens into the chamber from the gas-inlet *b*.

*d* is an inverted cup arranged to move vertically within the chamber, and provided with a flange, *e*, surrounding the tube *a*, extending downward, but to a less extent than the outer flange or side of the cup, as shown, so that when the cup rests on the bottom of the chamber B, or other support prepared for it, the inner flange, *e*, will not reach the bottom. At one side of the central tube, *a*, is a second similar tube, *f*, through which a spindle, *g*, extends and is attached to an inverted cup, *h*, which surrounds the tube *f*. The cup *d* is constructed with one or more perforations, *i*, at or near the top, and opening into the space outside the flange *e*.

The chamber B is supplied with mercury up to a point above the lower edge of the flange *e*, as at *l*, so that when the cup stands upon its support the lower edge of the flange *e* will be immersed therein. Hence gas entering through the tube *a* passes within the flange *e*, from whence it cannot escape, because of the immersion of the lower edge of the flange *e* in the mercury; but if the cup be raised, as indicated in broken lines, so as to take the flange *e* above the surface of the mercury, then the gas will pass below the flange *e*, above the mercury, thence through the opening *i* into the burner. The weight of the cup is such that the pressure of the gas upon the small surface within the flange *e* is not sufficient to raise it; but when the cup is raised so as to permit the gas to enter within the entire cup, the pressure of the gas on the increased area is sufficient to support the cup in that raised position, and thus maintain a constant flow under that predetermined or standard pressure of the gas. If, then, the cup be down, so as to cut off the flow of gas, the cup may be raised by pressing upward on the spindle *g*, which raises the cup *h* against the cup *d*, so as to raise the said cup *d* to a position to permit the flow of the gas, and when free the spindle *g* and its cup *h* return to their place of rest, and may be aided in so doing by means of a spring, or its equivalent, applied thereto. If the pressure be reduced below that required to support the cup *d*, then the cup will fall and bring the flange *e* into the mercury, and thereby cut off the flow of gas and extinguish the light.

It is desirable to regulate the flow of gas, so that if the pressure should from any cause be increased from the standard pressure, the subsequent increase in flow of gas may be avoided. To this end a valve, *n*, is attached to the cup *d* by a spindle through the tube *a*, so that if the cup rises the valve *n* will rise toward the opening into the chamber and diminish that opening until the standard pressure or flow is obtained; or the valve may be applied above and work in the same relative manner to govern the passage from the chamber to the burner. By this construction the gas-burner is brought entirely above and cen-



trally over the governing mechanism, which is the most desirable position, because of less shadow than when at one side, and overcomes the friction and liability to clog of the burner, and also places the cup-raising device where it has no effect whatever upon the free movement of the cup, it being entirely independent and detached from the cup. Again, the free flow of gas into the chamber above the cup prevents any liability of "jumping." Adjusting-weights may be applied directly to the cup, so as to vary or change the said pressure.

While the cup *h* attached to the spindle is preferred, the spindle may be made to fit so close in the cylinder that the escape of gas around it would be impossible. I do not, therefore, wish to limit the invention to the cup *h* as a means for preventing the escape of gas around the spindle, but prefer it to any other device known to me.

I do not broadly claim a burner combined with a chamber having a cup with differential flanges immersed in mercury to regulate and cut off the gas; neither do I broadly claim a regulating-valve to govern the flow of gas, as such I am aware is not new; but

What I do claim is—

1. In a self-extinguishing gas-burner, the combination of the following elements: first, a case which contains the extinguishing apparatus, and provided with a vertical tube extending up from the bottom and opening from the gas-supply, and also provided with a fluid surrounding said tube; second, an inverted cup over said tube, its side immersed in the said fluid, and arranged to move vertically within the said case, provided upon its inside with a flange extending downward around said tube into the fluid, so as to entirely cut off the flow of gas, but to a less depth than the side of the cup, and a gas-opening between said flange and the side of the cup into the gas-chamber above; third, a stationary burner opening from the gas-chamber, all substantially as described.

2. In a self-extinguishing gas-burner, the combination of the following elements: first,

a case which contains the extinguishing apparatus and forms a gas-chamber above said apparatus, and provided with a vertical tube extending up from the bottom and opening from the gas-supply, and also provided with a fluid surrounding said tube; second, an inverted cup over said tube, its side immersed in the said fluid and arranged to move vertically within the said case, provided upon its inside with a flange extending downward around said tube into the fluid, so as to entirely cut off the flow of gas, but to a less depth than the side of the cup, and a gas-opening between said flange and the side of the cup into the gas-chamber above; third, a stationary burner opening from the gas-chamber; fourth, a valve attached to and moving with said cup, operating by the movement of the said cup to regulate the flow of the gas through the said tube, all substantially as described.

3. In a self-extinguishing gas-burner, the combination of a self-acting extinguishing apparatus, within a case which forms a gas-chamber above said apparatus, with a stationary burner opening from said gas-chamber, with a tube extending from the bottom of the inclosing-case upward within the extinguishing-cup, and a spindle movable vertically in said tube, whereby the said extinguishing-cup may be mechanically raised for the purpose of opening the flow of gas, substantially as described.

4. In a self-extinguishing gas-burner, the combination of a self-acting extinguishing apparatus, within a case which forms a gas-chamber above said apparatus, with a stationary burner opening from said gas-chamber, and a tube extending from the bottom of the inclosing-case upward within the extinguishing-cup, a spindle movable vertically in said tube, and an inverted cup attached to the upper end of said spindle and surrounding said tube, substantially as and for the purpose specified.

NATHANIEL SLEEMAN.

Witnesses:

J. H. SHUMWAY,  
L. D. ROGERS.