

W. H. SMITH.

Vapor Burner.

No. 106,736.

Patented Aug. 23, 1870.

FIG. 1

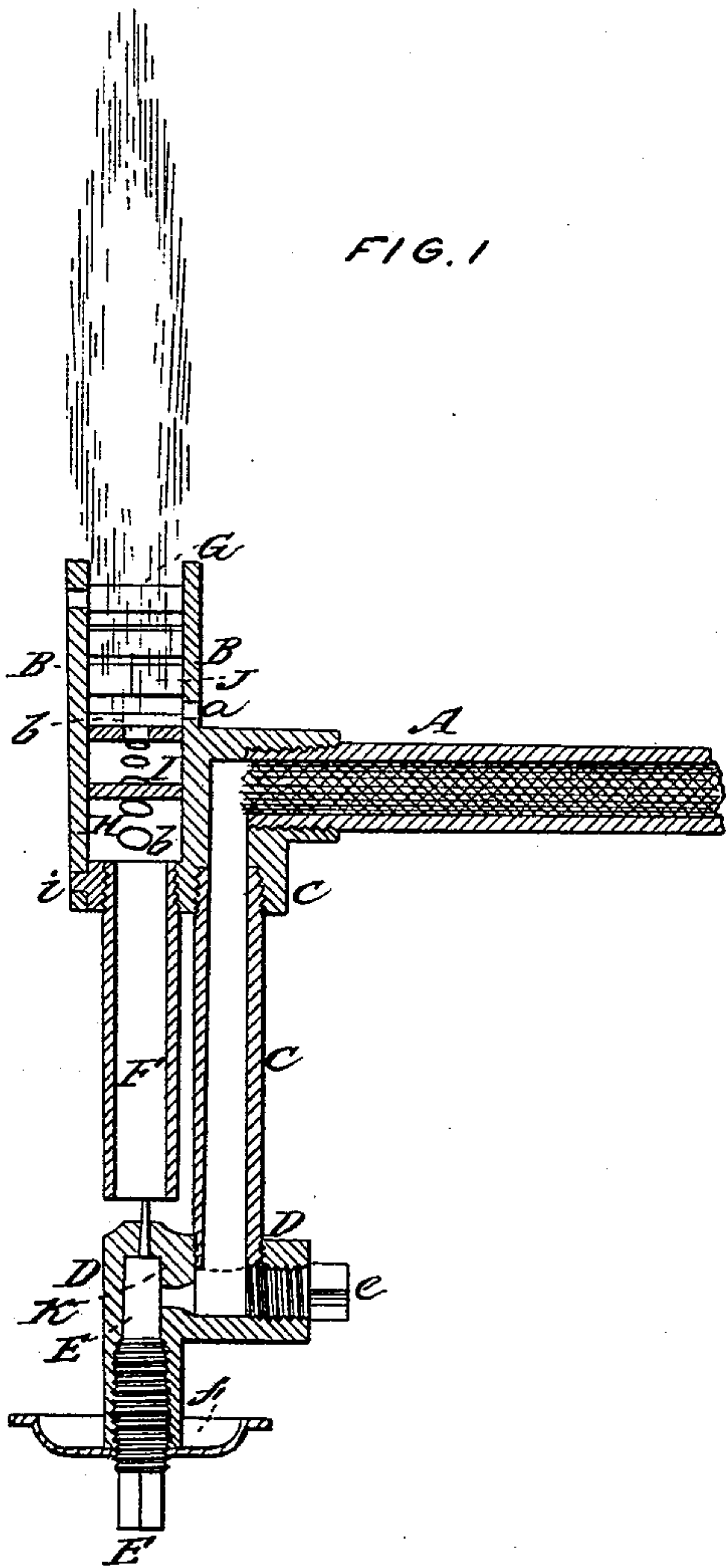


FIG. 2

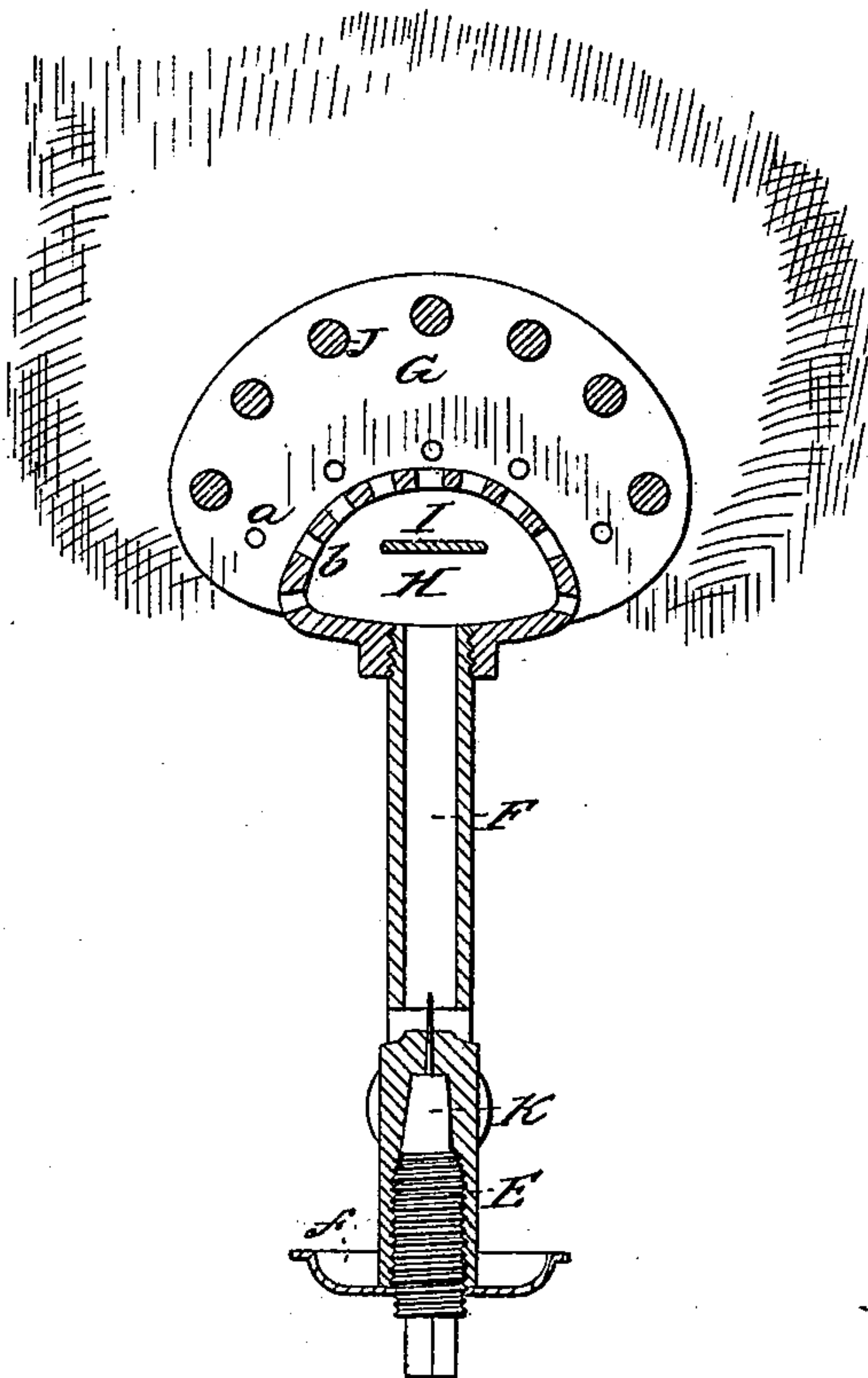
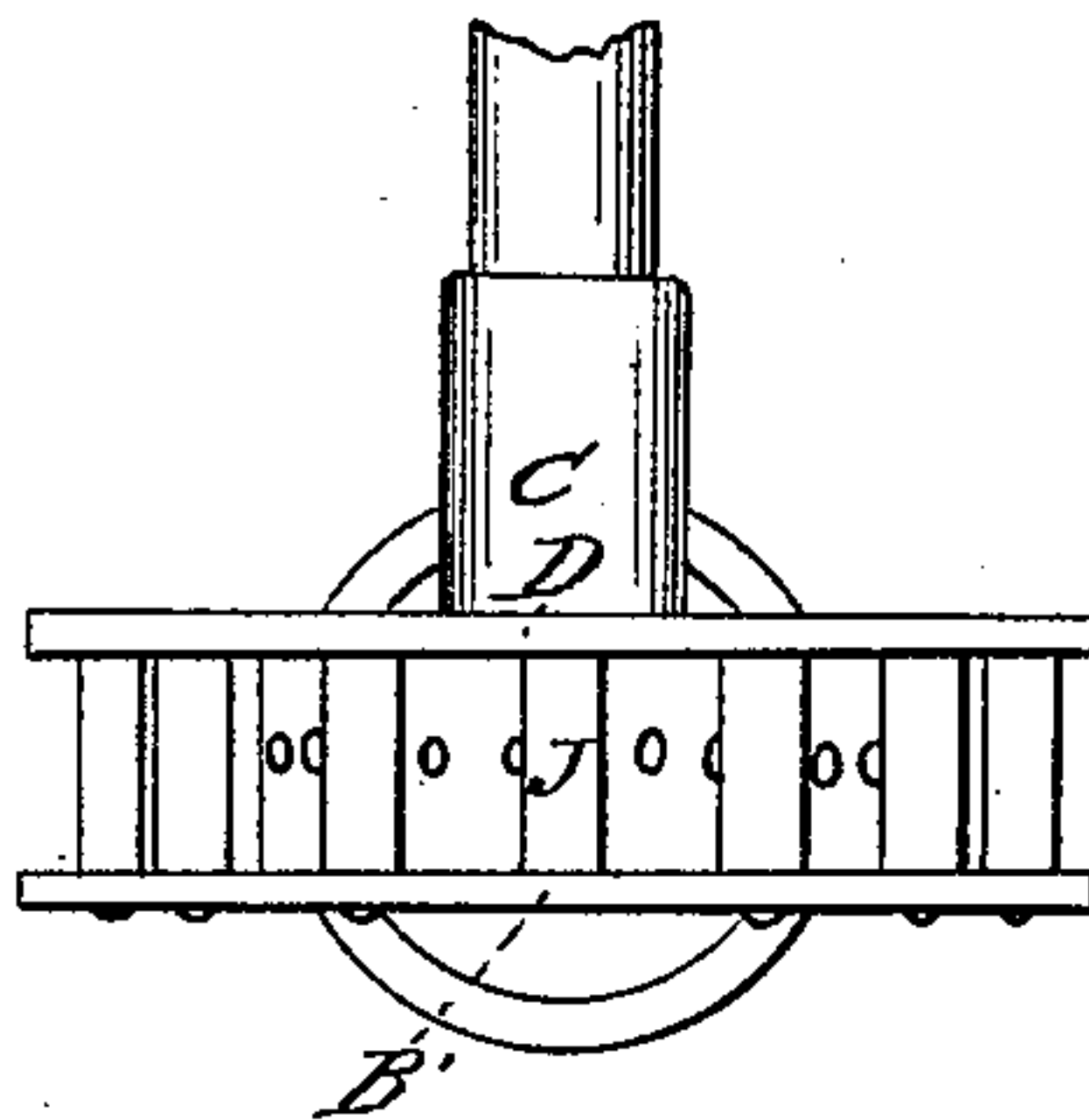


FIG. 3



WITNESSES:

L. Buiringer  
& Fischer

INVENTOR:

W. H. Smith



# United States Patent Office.

WILLARD H. SMITH, OF NEW YORK, N. Y.

Letters Patent No. 106,736, dated August 23, 1870.

## IMPROVEMENT IN VAPOR-BURNERS.

The Schedule referred to in these Letters Patent and making part of the same

*To all whom it may concern:*

Be it known that I, WILLARD H. SMITH, of the city, county, and State of New York, have made certain new and useful Improvements in Light Oil Vapor-Burners; and I do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings and letters of reference, they making part of this specification, in which—

Figure 1 represents a vertical central longitudinal section of a burner with my improvements.

Figure 2, a vertical central cross-section of the same.

Figure 3 is a top view of the same.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to have a vertical vapor-burner for burning light oil, which produces a large, broad, and brilliant flame, is well protected against the wind, so that it may be used in the street or open air, and it is so constructed that it can be manufactured for a small expense, has great durability, and can be regulated with more accuracy and facility than those heretofore known.

To enable others skilled in the art to make and use my invention, I will proceed to describe its details of construction and operation.

A represents a horizontal wick-tube for supplying the burner. It leads from the oil-basin, and is fitted on a hub projecting from the rear heating-plate B of the burner, and from there the oil is conducted into the vertical vapor-tube C, secured in the same projection on the back of the plate B.

The lower end of this wick-tube is secured into the horizontal projection of the vertical socket D, in which the vertical valve or regulating-screw E is arranged, for the purpose of regulating the supply of vapor, in accordance with the consumption of the desired flame of the burner.

F represents the air and gas-mixing tube, which is arranged vertically and centrally above the said valve-screw, with a sufficient space between its lower end and the socket D to admit the air to pass between them and pass up into the said tube.

G is the mouth or tip of the burner, into the lower socket of which the said air-tube is screwed. It is constructed with two similar-shaped heating-plates, B and B', one in front and the other in rear, connected together at the top by studs, between which the flame of the burner is guided.

In order to mix the air passing up the air-tube with the vapor in a superior manner, I form in the lower portion, between these plates, a chamber, H, into which the air-tube leads, and have in it, above the opening of the air-tube, a flat cross-plate or piece,

I, so that the vapor and air passing up from the said tube strikes against the same, are reflected in various directions, and, consequently, mixing themselves in said chamber in superior manner.

J J J represent a series of cross-studs between the plates B and B', which are distributed along near the upper periphery of the said plates, in about the same distances apart, and serve the purpose of heating and mixing the vapors between them and the upper periphery of the chamber H, which latter is perforated or made with jet-holes, *b b b*, in a manner to direct the currents of the vapors passing from the said chamber toward the said studs; and I have also a series of perforations, *a a a*, in the plate B, distributed along the upper periphery of the chamber H, through which I obtain a secondary supply of air and oxygen, so that the combustion of the vapors between said plates B and B' is effected with great energy, and thereby a brilliant flame obtained.

The valve-screw E is made with a shoulder, K, to provide it from being forced in its seat extravagantly, and causing thereby the escape-opening to become too large for use.

Above and below this shoulder I provide the said screw with a conical portion, and with seats in the socket D to fit those portions, so that a double valve-seat is obtained for the screw, by means of which the stoppage of the oil through said valve is made more durable and positive.

The socket *c*, into which the tubes A and C are secured, and the rim *d* for forming the chamber H, and cross-studs J J between the plates B and B', and a small stud, *i*, are all formed on and cast with the heating-plate B.

The plate B' is made simply flat, with corresponding holes in it to pass over the ends of the studs J J and the stud *i*, and said plate is placed and riveted, by means of said studs, to the plate B, whereby the upper portion or tip G of the burner is completed.

The socket D is then furnished and fitted with the screw E, with the screw-plug *e*, waste-cup with the tube C, the tip G furnished with the tube F, and the upper end of the tube C screwed into the socket *c*, whereupon the burner is entirely completed.

From this it will be seen that this burner is of simple and durable construction, and can be manufactured for a limited expense.

Having fully described my invention,

What I claim therein, and desire to secure by Letters Patent, is—

1. The employment of the chamber H, provided with jet-holes *b b*, in combination with the plates B and B' and the studs J J, substantially as and for the purpose herein shown.

2. The jet-holes *b b* and studs J J, when arranged

in relation to each other, and used for the purpose substantially as herein described.

3. The employment of the perforations *a a*, when used in combination with the vertical heater-plate B and B', when connected together by studs J J, substantially as and for the purpose herein stated.

4. The employment of the cross-plate<sup>41</sup>I, when arranged relatively to and in combination with the chamber H, substantially as and for the purpose set forth.

5. The arrangement of the vertical heating-plate B

and B', when connected together by studs, and employed to guide the flame vertically, for the purpose herein stated.

6. The employment of the double valve and seats, of the socket D and screw E, in combination with the shoulder K, substantially as and for the purpose herein set forth.

W. H. SMITH.

Witnesses:

L. RUISINGER,  
S. FISCHER.