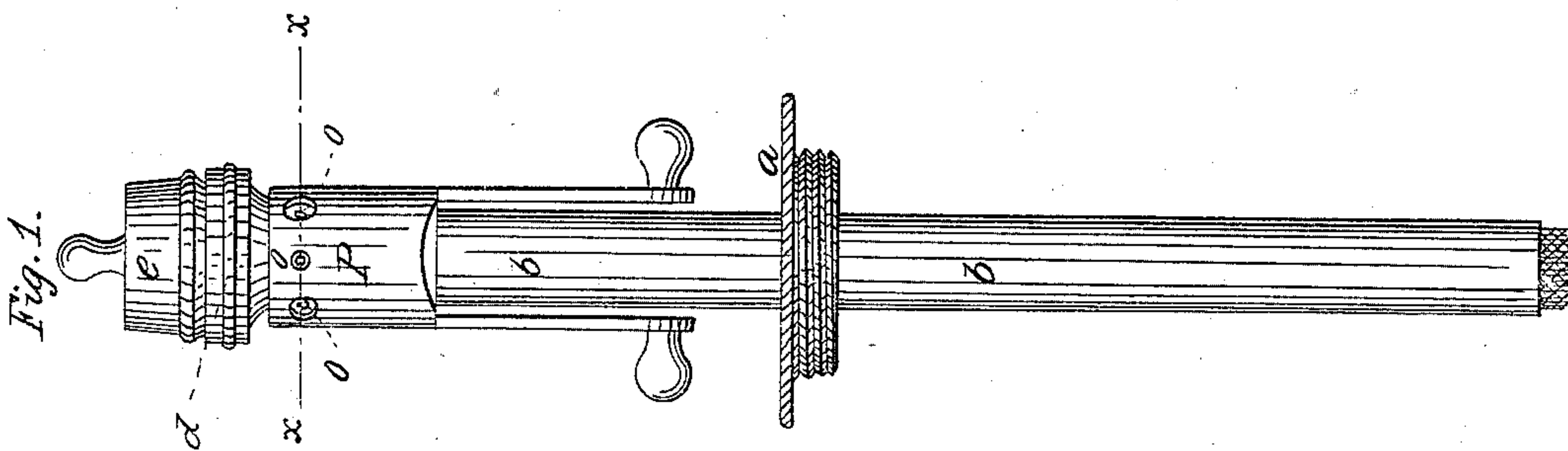
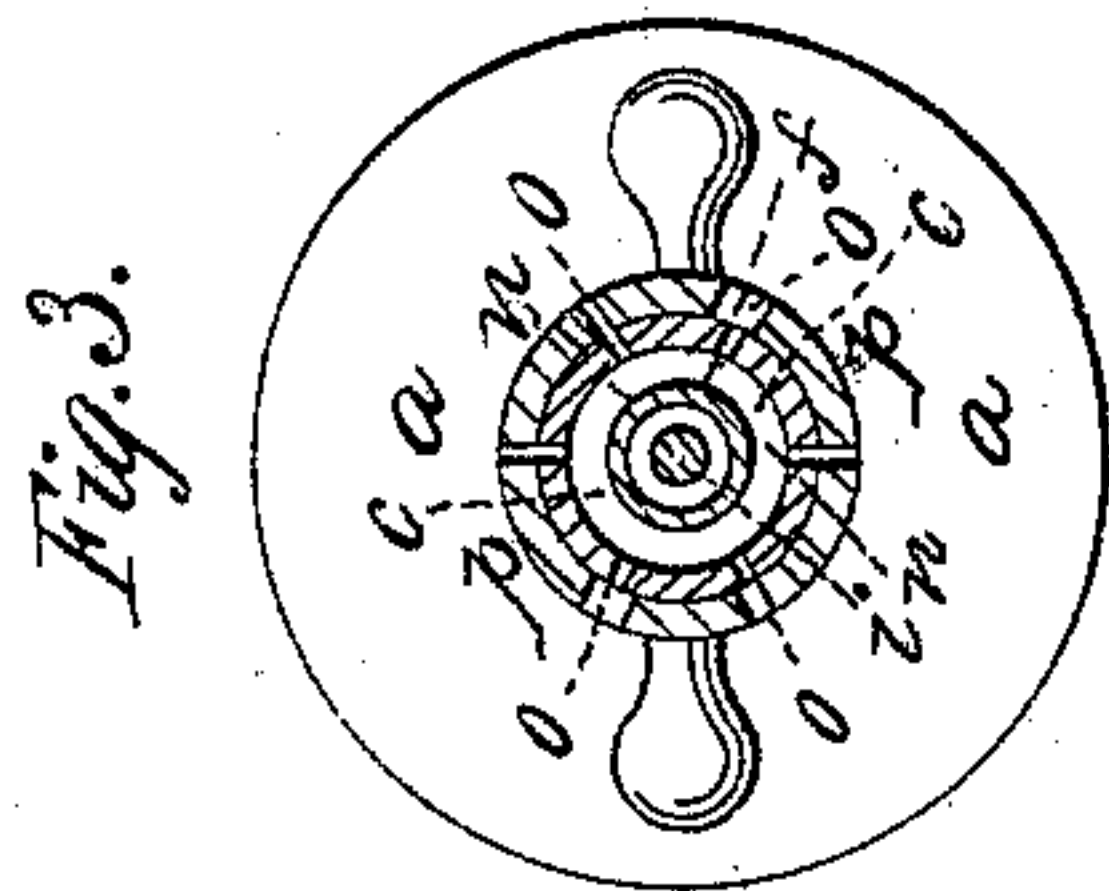
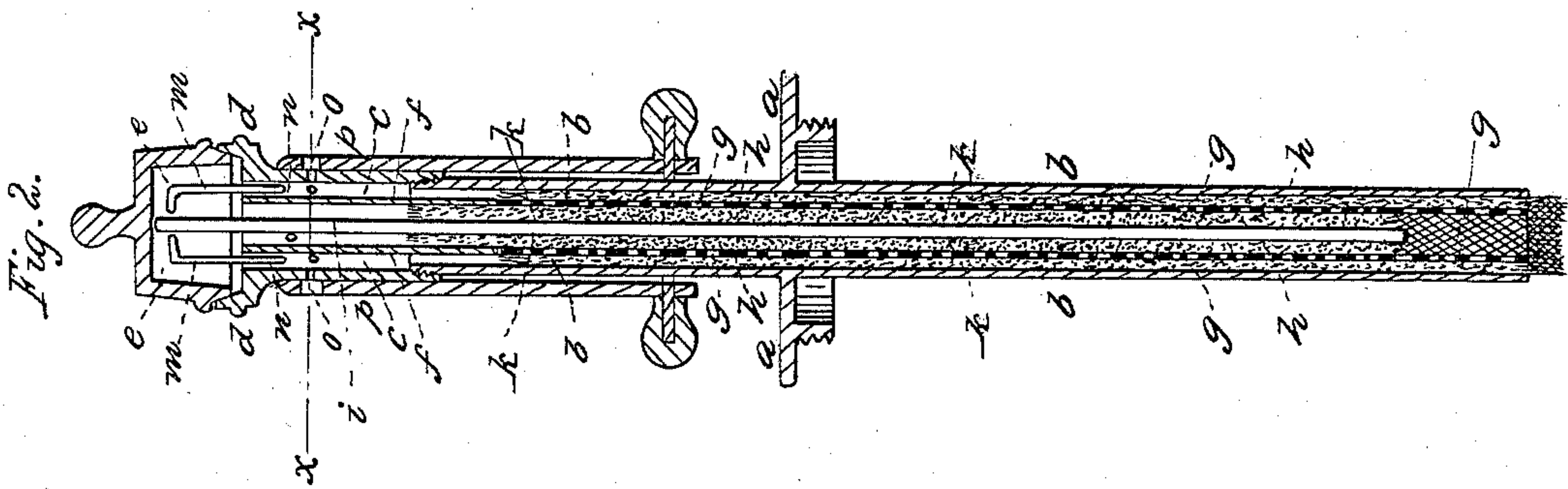


M. SAFFORD.  
Vapor Burner.

No. 20,977.

Patented July 20, 1858.





# UNITED STATES PATENT OFFICE.

M. SAFFORD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF AND GEORGE P. KINNEY, OF SAME PLACE.

## BURNER AND WICK-TUBE FOR VAPOR-LAMPS.

Specification of Letters Patent No. 20,977, dated July 20, 1858.

*To all whom it may concern:*

Be it known that I, MARK SAFFORD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Hydrocarbon-Vapor Burners; and I do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, is a side elevation and, Fig. 2, a longitudinal section of a burner containing my invention.

This burner is to be applied to a fountain or oil reservoir so that its main wick and outer tube shall extend into the same, and be held in the neck of the reservoir by means of the screw cap, *a*, shown in the drawings, as affixed to the said outer tube, *b*. This outer tube extends above the said cap, *a*, and is connected with or screwed into a vapor generator, *c*, on whose upper end is a cup *d*, provided with a bell shaped extinguisher or cover, *e*. From the cup, *d*, a tube, *f*, extends downward within the vapor generator and opens into such cup, and another or wick tube *g*, which is made foraminous or is formed with numerous fine holes throughout it. This wick tube *g*, is surrounded by the outer tube, *b*, and carries on its outer surface, the main wick, *h*, which is a tubular wick and is made to extend from the vapor generator through and out of the tube *b*.

A rod, *i*, projecting from the cover or extinguisher, *e*, extends through the tubes *f*, and *g*, and has an auxiliary wick, *k*, enveloping it and so fastened to it as to be capable of being raised or lowered with the cap, *e*. This auxiliary wick should closely fit the bore of the foraminous wick tube.

Surrounding the opening of the tube *f*, into the cup *d*, is a series of wires or heat conductors *m, m*, which, when the auxiliary wick is enflamed, enter its flame and serve to convey heat into the vapor generator. Furthermore, the tube *f*, is furnished with one or more lateral holes *n*, arranged in it as shown in Fig. 2.

The generator has a series of jet holes, as shown at, *o, o, o*, in Fig. 3, (which is a section taken on the line *x, x*, of Figs. 1, and 2.) These jet holes have a closing slide, *p*, applied to them and the outer tube and constructed so as to be capable of being turned laterally on the said tube and of shutting off

or closing either one or more of the jet holes.

The auxiliary wick is applied to the extinguisher in the manner above described, in order that it may not only be drawn upward with the extinguisher and enflamed so as to impart heat to the heat conductors— or to the vaporizer in order to vaporize the liquid of the main wick, but so that subsequently it may be depressed within its tube so far below the jet holes *o, o, o*, as not to be charred or burned by the heat produced by the flame of the vapor which may issue out of such holes.

The wick tube *g*, is made foraminous in order that the auxiliary wick may be supplied with the liquid hydrocarbon from the main wick, whenever the auxiliary wick may not be long enough to enter the fluid in the reservoir, or the surface of such fluid may fall below the lower end of the said auxiliary wick.

When the wick *h*, is depressed so far as to enable the extinguisher to cover the cup or top of the vapor generator, any vapor from the auxiliary wick will not only be intercepted by the extinguisher and prevented from passing into the air outside of the burner, but such vapor will be made to pass through the hole or holes *n, n*, and enter the main wick, and from thence pass into the generator—

I claim—

1. The combination of the auxiliary wick with a lifter or rod, or with the same and an extinguisher so as to enable such wick to be moved in its tube in manner and for the purpose essentially as specified.

2. I also claim in combination with the vapor generator and its auxiliary wick tube, a closing cap or extinguisher and one or more conduits *n, n*, applied in the wick tube substantially in manner as specified, the whole being to produce effects as stated.

3. I also claim a foraminous wick tube, or its equivalent in its combination with a main wick and an auxiliary wick applied to it, and to operate with it substantially in manner, as hereinbefore explained.

In testimony whereof, I have hereunto set my signature.

MARK SAFFORD.

Witnesses:

R. H. EDDY,  
F. P. HALE, Jr.