

T. VARNEY.
Vapor Burner.

Patented May 11, 1858.

No. 20,232.

Fig. 1.

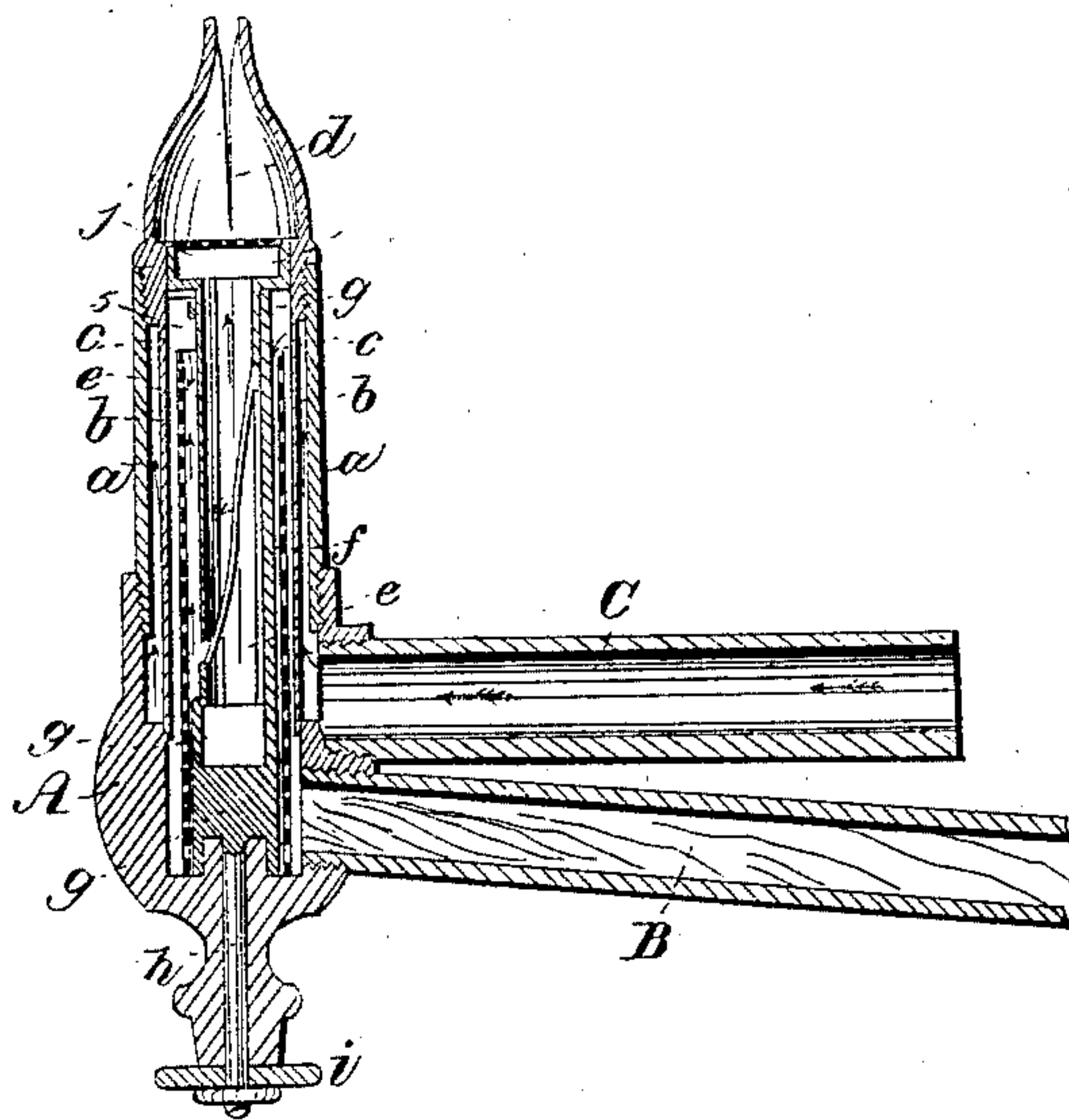


Fig. 2.

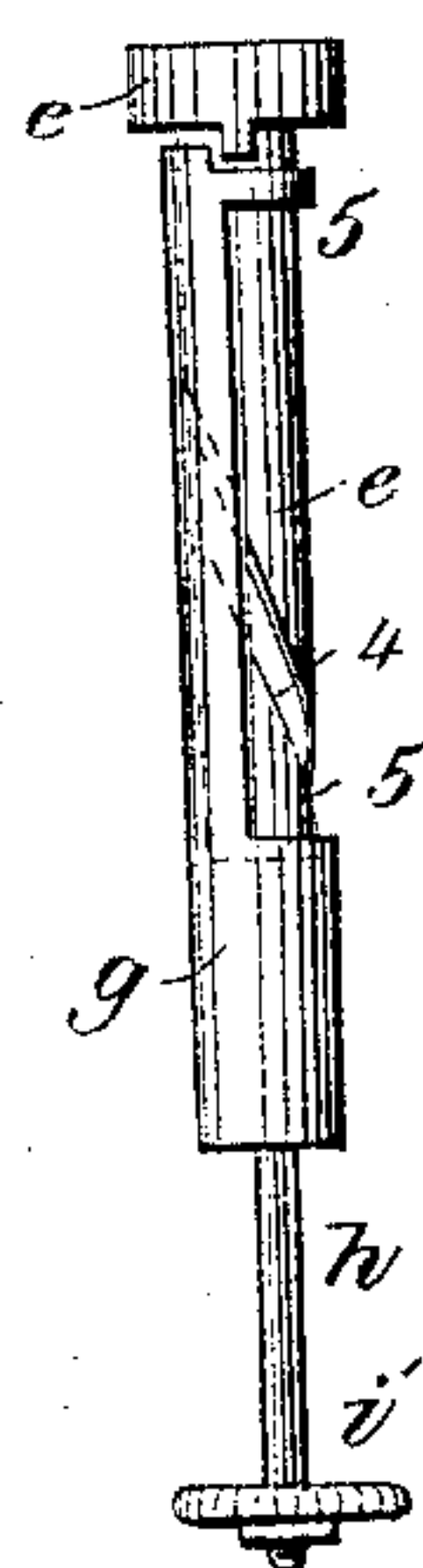
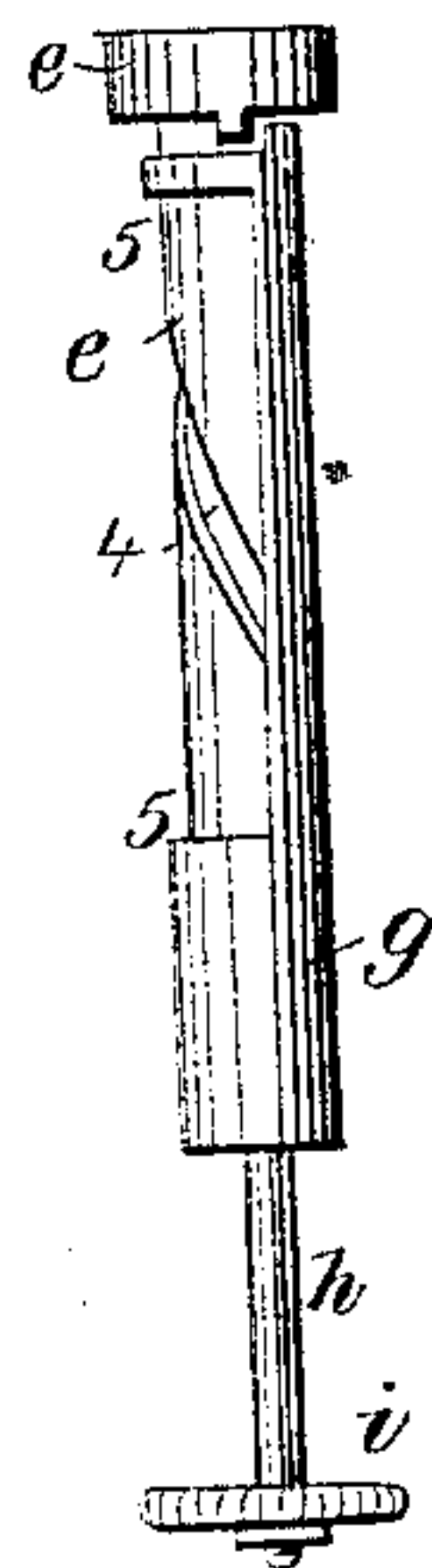


Fig. 3.



UNITED STATES PATENT OFFICE.

THOMAS VARNEY, OF SAN FRANCISCO, CALIFORNIA.

BURNER FOR VAPOR-LAMPS.

Specification of Letters Patent No. 20,232, dated May 11, 1858.

To all whom it may concern:

Be it known that I, THOMAS VARNEY, of the city of San Francisco, in the county of San Francisco and State of California, have
5 invented a new and useful Improvement in Burners for Hydrocarbon-Vapor Lamps; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying
10 drawings, making a part of this specification, in which—

Figure 1 is a vertical central section of my improved burner. Figs. 2 and 3 are elevations of a portion of the same, in different
15 conditions.

Similar letters of reference indicate like parts in all the figures.

This invention relates to the construction of burners for burning the vapor of benzol or of other hydro-carbons that can be burned
20 in vapor-lamps, in such a manner that the admixture with the vapor, of the necessary quantity of air, supplied by a blowing apparatus, to make it burn with a brilliant flame, shall be effected within the burner
25 instead of within the reservoir.

To enable others to make and use my invention, I will proceed to describe its construction and operation.

30 A, Fig. 1, is a socket or cup, constituting the lower portion or base of the burner, having screwed into it a tube *a*, into the top of which is screwed another tube *b*, somewhat smaller, the latter tube extending
35 down into the lower part of the socket or cup A, to which it fits in such a manner that there is no communication from the exterior to the interior of the tube *b*, except through holes *c, c*, near the top of said tube.
40 The tube *b*, has formed upon or attached to its upper extremity the tip *d*, of the burner, which is represented in the drawing as being of the form commonly employed for benzol vapor-lamps, but which may be
45 of any other suitable form. There is, however, no direct communication between the upper part of the tube *b*, and the burner-tip, as such direct communication is prevented by a tube *e*, (see also Figs. 2 and
50 3) which is fitted tightly into the upper part of the said tube *b*. This tube *e*, which extends nearly down to the bottom of the tube *b*, is except at the upper part which fits tightly to the said tube *b*, much smaller
55 than the said tube *b*; and the said tube *e*, is open at its top and bottom but its top is

covered with a diaphragm *j*, of wire gauze, and it has a spiral slot 4, extending nearly from top to bottom. Between the tubes *b*, and *e*, is placed a loose tube *f*, of perforated
60 metal which I call the wick tube, which is concentric to *b*, and *e*, and which rests on the bottom of the cup or socket A, and extends upward nearly to the junction of the tubes *b*, and *e*, and is open at the top. A
65 wick is wound or lapped around or otherwise applied to the exterior of the wick-tube *f*, as shown tinted red in Fig. 1, said wick loosely filling the space between the tubes *f*, and *b*.

70 *g*, is a tube which I call the regulator, having an open top and closed bottom and a straight slit 5, extending nearly all up one side. This tube is fitted to the exterior of the inmost tube *e*, and is furnished at the
75 bottom with a stem *h*, which passes through the bottom of the socket A, and which is provided below the socket with a knob *i*, by which to turn the regulator on the tube *e*, for the purpose which will be presently ex-
80 plained.

B, is a pipe leading from the reservoir of the lamp to the lower part of the socket A, and communicating with the space between
85 the tubes *f*, and *b*, which is occupied by the wick before mentioned. This pipe B, is also filled with wick to supply the liquid from the reservoir to the burner by capillary attraction.

90 C, is a pipe leading from a blowing apparatus such as is commonly used in benzole-lamps or of any other suitable kind driven by clockwork or other means; said pipe entering the upper part of the socket A, and communicating with the space between the
95 tubes *a*, and *b*.

The operation of the burner is as follows: The liquid is drawn up by capillary attraction into the burner by the wick in the pipe
100 B, and that around the tube *f*, and is vaporized by the heat of the tube *b*, when a light is applied to the burner; and the air forced through the pipe C, passes in the direction of the arrows shown in Fig. 1, first up the
105 space between the tubes *a*, *b*, then through openings *c*, then down the inside of the wick-tube, where it takes up the vapor which is given off through the perforated wick-tube, and with said vapor passes
110 through that part of the slot 4, (in the inmost tube) which is exposed by the slot 5, in the regulator, and then passes up through

the inmost tube *e*, and the diaphragm *j*, to the tip of the burner, where it burns with a brilliant flame. By turning regulator *g*, its slot 5, is made to open slot 4, in the tube *e*, higher up or lower down the tube, and so that the air has a shorter or longer distance to pass through which causes it to be more or less charged with vapor, and hence the regulator serves to regulate the supply of vapor so that the air may be charged to such a degree that perfect combustion will result and a brilliant flame without smoke will be produced.

This burner overcomes all the difficulties resulting from changes of atmospheric tem-

perature with ordinary benzol apparatus or vapor lamps, and burns many materials which cannot be burned with advantage by those apparatus, as very inferior benzol, naphtha, or camphene.

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

The arrangement of the tubes *a*, *b*, *e*, *f*, and the passages between them, the burner-tip, the wick, and the pipes B, C, substantially as herein set forth.

THOMAS VARNEY.

Witnesses:

ROBT. H. AUSTERS,
GEO. ROBINS.