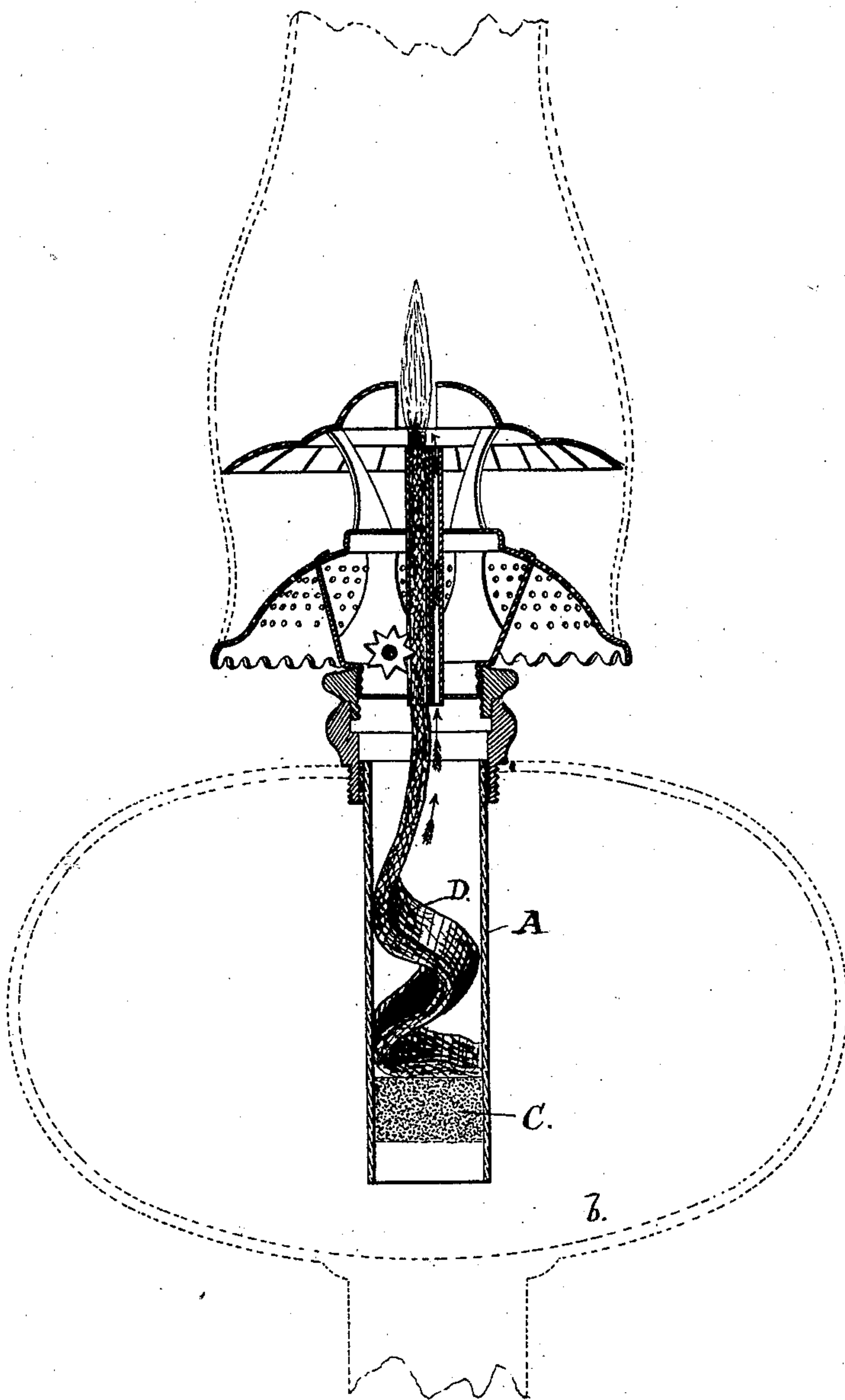


H. W. VAUGHAN.
Lamp-Burner.

No. 210,375.

Patented Nov. 26, 1878.



WITNESSES-

James Hutchinson.
D. P. Cowl

INVENTOR-

Henry W. Vaughan.
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Atty.

UNITED STATES PATENT OFFICE.

HENRY W. VAUGHAN, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF HIS RIGHT TO JOHN W. HOARD, OF SAME PLACE.

IMPROVEMENT IN LAMP-BURNERS.

Specification forming part of Letters Patent No. **210,375**, dated November 26, 1878; application filed October 9, 1878.

To all whom it may concern:

Be it known that I, HENRY W. VAUGHAN, of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Burners for Lamps; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawing, and to letters of reference marked thereon, which form a part of this specification.

The object of my improvement is to render a lamp as nearly as practicable non-explosive, whether the fluid be high or low in the body of the lamp, and even if the lamp should be upset; and, in fact, to make it safe whatever may be the character of the fluid used and under all the ordinary conditions to which lamps are subjected.

To this end the invention consists, first, in the employment of a wick-tube, preferably made of glass or other similar or equivalent non-conductor of heat, and in fluid-sealing this tube so as to prevent any communication with vapor contained in other parts of the lamp; secondly, in sustaining the whole of the wick at a point or elevation within the wick-tube above and away from the bottom of the lamp or fluid chamber sufficiently high to insure that the light will go out before the fluid-sealing of the tube is caused to cease for want of oil or fluid; and, thirdly, in the employment of a porous material within the wick-tube, to serve the double purpose of a support for the wick at the predetermined elevated position and also as a barrier or preventive of the outflow of fluid from the lamp-body or fluid-chamber through the wick-tube in case the lamp be upset, and also to act as a check against the explosion of the lamp in case the fluid-sealing should fail or be disturbed or broken by reason of tipping the lamp when the fluid is low.

In the drawing is represented, in dotted lines, the outline of a lamp body or vessel for receiving and holding the main supply of the fluid, and with my invention applied thereto, and which, with its attachments, is shown in vertical section.

A is the wick-tube, which may be of any appropriate material; but I prefer to make it of

something having as little heat-conducting property as possible—as, for instance, of glass; and when made of glass or kindred translucent material it has the additional advantage of permitting a ready inspection of the height of the fluid in the tube, and also of the quantity of unconsumed wick remaining at any time. This tube A, as shown, is made of a length such that it shall not reach to the bottom of the reservoir or fluid-chamber *b*; but, on the contrary, a space is left between its lower end and the reservoir-bottom, as shown, and so that whenever the quantity of fluid within such reservoir has a higher level than the bottom of the tube the latter shall of necessity be fluid-sealed, or closed by the liquid. At a short distance above the lower end of the tube, and within it, I place a porous plug or bottom, C, which may be made of any material which will permit the fluid to work through its pores, by capillary attraction or otherwise, to feed the wick D, which is entirely above it, but which will not permit a flame under any conditions to pass through it. This porous material may be of artificial filter-stone, or of any equivalent suitable for the purpose.

This tube and its porous floor or support being thus constructed, and the tube being connected to the burner of a lamp, and the wick being inserted into the tube, so as to partially or nearly fill the same, it will now be seen that the whole may be said to constitute a lamp within a lamp; that there is left but little space within the wick-tube for either gas or air above the fluid or oil which will be contained therein, so that within the tube itself there is nothing to promote or invite explosions, for the limited quantity of gas therein has its direct upward outlet to the flame, and is constantly fed thereto for the ordinary illuminating purposes; that none of the gas within the tube A can possibly descend, because the liquid or oil sealing offers an absolute barrier or check; that no gas which may be evolved in the reservoir *b* can have any communication or connection with any gas or air in the tube A, because of this liquid-sealing; that when the level of the fluid in *b* is at any point above the bottom of tube A the latter remains fluid-sealed, being immersed in such fluid. It will also be seen that when the

fluid shall have been so far consumed as that its level is below the bottom of the wick-floor or plug C, then a space within the tube and beneath such plug is not filled with fluid, and consequently the upward supply of fluid through this porous plug begins to cease just when the consumption of fluid approaches that stage, which would soon result in an unsealing of the lower end of the tube, and therefore the flame must diminish and soon expire for want of a supply of fluid before such unsealing can take place; and thus there is prevented any commingling or possible connection of the gas within the tube with that within the reservoir, or of contact of the wick with either the gas or the liquid in the reservoir.

The essential features, it will be observed, are a wick-tube and a wick which never reaches to its bottom, and a porous plug or wick floor or support within such tube, and which affords the only communication between the reservoir and such tube.

Any contrivance in and near the lower end of the wick-tube which will prevent the wick reaching or extending all the way down to its end, and yet which will permit the fluid to be drawn up into the wick, will of course keep the lower end of the tube sealed and prevent an explosion or communication outside of such tube.

The described wick-tube may be applied or attached to the metallic part or to the dome of the burner in any well-known or convenient manner.

I have shown the glass tube as furnished with a threaded metal ring or rim at its top, and to which it is cemented, such ring being adapted to be screwed to the upper part of the burner.

In some cases the tube may reach down to the bottom of the lamp or reservoir, and the porous wick-support be placed at the extreme lower end of such tube; but in such cases the bottom of the tube should be serrated, notched, or otherwise adapted to admit the fluid.

I am aware that the stem or support of a

lamp has been extended through the reservoir to serve as a wick-tube, and used in connection with a siphon; but such tube had no porous plug or diaphragm.

Any slight air-inlet in the body of the lamp to which my burner is applied will be sufficient to prevent a vacuum as the oil is consumed.

I claim—

1. A laterally-imperforate wick-tube reaching nearly or quite to the bottom of the fluid-chamber of the lamp, and operating, by means of a porous plug or its equivalent at or near its bottom, to retain all the wick above such plug or equivalent, and also to prevent any communication of the vapor or air within such tube with the vapor or air contained in the other parts of the lamp.

2. A wick-tube provided with an internal wick support or floor near its bottom, serving to sustain all the wick at an elevation above but near the bottom of the lamp and above the lower end of such tube, such support acting by capillary attraction to afford the only means of supplying oil or liquid to the wick within the tube, as and for the purpose set forth.

3. In combination with a non-perforate wick-tube extending to or nearly to the bottom of the oil-chamber, a diaphragm of porous material within the same near its bottom, serving not only to prevent the pouring out of fluid from the main reservoir in case of overturning the lamp, but also to prevent explosions in case the fluid-sealing be interrupted or broken by tipping the lamp when the fluid is low.

4. In combination, a non-perforate wick-tube extending to or nearly to the bottom of the oil-chamber, a porous plug within said tube at or near its bottom, and an inlet to admit air into the body of the lamp, substantially as and for the purposes set forth.

H. W. VAUGHAN.

Witnesses:

GILMAN E. JOPP,
THOS. A. MILLETT.