

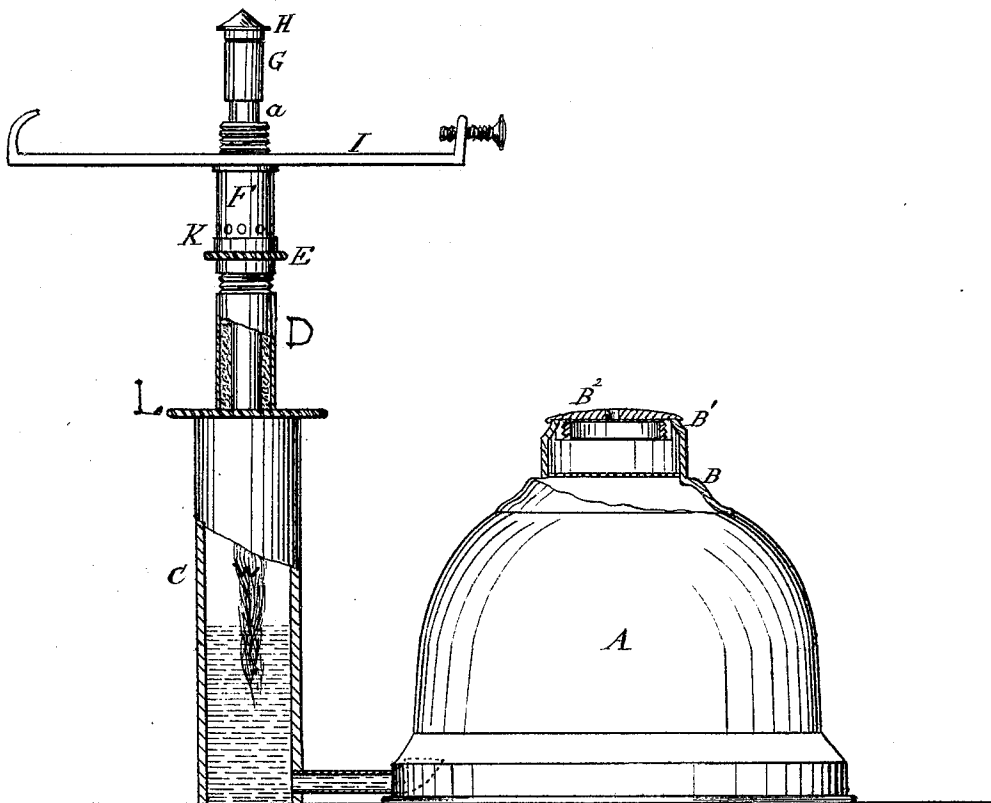
JOHN COOK.

Lamp for Burning Vapor from Hydrocarbon Oils.

No. 126,625.

Patented May 14, 1872.

Fig. 1.



Witnesses:

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IMPROVEMENT IN LAMPS FOR BURNING THE VAPOR FROM HYDROCARBON OILS.

Specification forming part of Letters Patent No. 126,625, dated May 14, 1872.

To all whom it may concern:

Be it known that I, JOHN COOK, of the city, county, and State of New York, have invented certain new and useful Improvements in Lamps and in Burners for the safe production and combustion of hydrocarbon-vapor gas for illumination.

My invention relates to the lamp in which the fluid is held for immediate consumption, and is so constructed that it may be drawn from the lamp without danger of being vaporized therein while the lamp is in use, and of a burner therefor, for the production and consumption from the materials in such lamp of hydrocarbon-vapor gas for illumination, in such manner as renders the parts, separately and in combination, entirely free from such dangers as attend the lamps and burners for such purposes hitherto generally used; and that others skilled in the art may make and use my invention I make this full, true, and exact description thereof, and of its mode of operation.

Figure No. 1 is a view, in elevation, of a lamp and burner containing my invention.

A represents the lamp used to contain the material for the production of hydrocarbon-vapor gas for illumination, and at elevation of the letter B there is a wire-gauze soldered by its edge all around to the inside of the upper part of said lamp, and when filled for use the hydrocarbon material should not be permitted to rise above the level of the wire-gauze. As a substitute for a wire-gauze in this position, it may be similarly placed in the chamber of the cover of the lamp at B¹, and the letter B² represents the place of a vent-hole in the top of the cover of said lamp, and an upright tube, G, of about one inch diameter, closed at the bottom, and resting on the same plane with the lamp, and connected with it by a short pipe from the bottom of the lamp, so that the contents of such lamp may freely flow from it into said tube; or said tube may be annexed, by solder, to said lamp, with a small opening from said lamp into said tube, for the purpose before mentioned; and the said tube rises to a level of the top of the cover of said lamp, and has a nut fastened to the inside of the top thereof to receive my burner, to be hereinafter described.

It has long been a desideratum to obtain a

burner for the production and combustion of hydrocarbon-vapor gas for illumination, which, while it should afford the requisite degree of illumination, should also, by reason of the principles employed in its construction and use, be rendered free from the dangers of such appalling accidents as have frequently attended the burners for this purpose hitherto generally used.

Without going into detail, it may be stated that a principal cause of the dangers hitherto arising from the use of such burners has been the great heat from the flame from them, by reason of their ill construction and their unsafe relation to the body of the material used; for the production of such gas has so heated it in such vessel as to convert it into a highly-expanded vapor, whence the most serious of such accidents have arisen.

Others have used materials for the production of this gas for illumination, and have placed the vessel containing them above the level of the burners they have used to consume them, and they have dispensed with a wick to draw such materials up by capillary attraction to the burner, which is a main feature of my invention; and to secure a supply of material for their burners they depend upon pressure; but in all such cases they are compelled to use various forms of metallic valves to admit and stop the flow of material to their burners; and, besides being inconvenient in handling, the uncertainty of the perfect action of such valves in all cases, though care be exercised with them, renders them more or less dangerous in use, besides their liability frequently to get out of order.

By the devices used in my burner—and I call it my safety-burner—I obviate all danger of vaporizing the material in the vessel used to contain it, and I avoid all the dangers thus arising from the use of such burners as are first mentioned to produce and consume hydrocarbon-vapor gas for illumination; and I also avoid all dangers subject to arise from placing the vessel containing the material for the production of this gas above the level of the burners used to consume it.

In the drawing, the letter *a* represents the tube of the burner, and the letter *w* the wick, which is drawn up to within a sixteenth of an inch of the top of the tube, when it is cov-

ered with a wire-gauze, which is not shown in the drawing. The top of the burner H is made to slip over the top of the tube, and it is provided with a flange around its top of greater diameter than the top, and below it, and near its lower edge, is a series of small holes for the emission of light when the lamp is in use; and rising from the bottom of said tube, to which it is united by solder, is a circular packing-box, covering about two-fifths of the length of said tube, with a part of its lower portion broken away and showing the packing of moistened pulverized alum and plaster of Paris, or of any other non-conducting substance used to prevent the passage of heat down the tube from the flame, when the lamp is in use, to the material below the lower end of the burner; and the top of said packing-box is covered by a screw-cover or a plunger, E, and from the top of said packing-box rises a sleeve, F, covering about two-fifths of the remaining portion of said tube; and around the base of said sleeve is a series of holes, K, for the admission of cold air, to pass up, when the lamp is lighted, between the interior of said sleeve and the exterior of said tube; and while the space between the interior of said packing-box and said sleeve, respectively, and the exterior of said tube, may be as represented in the model, it may be made as much greater as manufacturers may desire without departing from the principle of my invention; yet such space should in no case be less than the area of space within the tube aforesaid. The letter L indicates the roughened edge of the flange, by which to attach said burner to the lamp or to detach it from it; and the letter I indicates a metallic holder for a shade for said burner.

And the operation of my invention is as follows—that is to say: When the burner is screwed to the top of the tube annexed to the lamp, the lower end of the wick will descend into the tube annexed to the lamp, which I construct in two parts or sections, as first stated—the lamp and the tube, with provision for the flow of the material from the lamp into the said tube, whence it is drawn up in the wick by capillary attraction to the burner; and to secure a regular flow of such material I provide a vent in the top of the cover of said lamp; and to prevent the escape of any vapor of such material, which may be vaporized at a moderately low temperature, I provide against igniting any such vapor, as from any cause might be created, by permanently affixing a wire-gauze in the inside of the top of the lamp, as before stated, above the level of such material; and I attach my burner to the upper

end of the tube annexed to the lamp, the lower end of the wick of said burner descending into the material for the production of hydrocarbon-vapor gas placed in said lamp; and when the lamp is lighted, as it may be, by an ordinary friction-match, the flame thereby created so increases the temperature of the top of the burner, its flange, and the wire-gauze on the top of the wick, as not only to secure a regular supply of material from below by capillary attraction through said wick for a constant light, but also to convert it, at the point of combustion, into a perfect hydrocarbon-vapor gas for illumination; and the packing-box with its non-conducting contents, and the sleeve with its provision for the admission and flow of cold air between it and the exterior of the tube of the burner, keep the tube below the point of combustion so cool, when the lamp is in use, as to permit the draught by capillary attraction of only so much of such material as is not only converted into the aforesaid vapor gas, but also entirely consumed, without any waste whatever thereof which occurs with vapor-gas burners of most other descriptions, and which also results, by actual experiment, in a saving of about forty per centum, for a given amount of illumination, in the material consumed; and the division of the lamp into two sections, with the construction of the burners, as set forth, prevents the vaporization of the material anywhere in said lamp except at the point of combustion; and the wire-gauze over the top of the wick not only prevents the charring of the wick, but also prevents the deposit of solid carbon in the top of the burner, or in the holes for the emission of light from it.

My lamp and my burner may be constructed of brass or any other suitable metal, and is well adapted for the use, as before mentioned, of those grades of naphtha which range in gravity from sixty-three to seventy-six or eighty—an article of greater abundance and of less cost for illumination than any other in the market.

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

The combination of the lamp A C with the burner-tube, provided with packing-box D containing non-conducting material, perforated sleeve F, and burner H, all constructed and arranged as described and shown.

JOHN COOK.

Attest:

W. B. HERBERT,
O. S. X. PECK.