

R. S. MERRILL.

Lamp.

No. 54,935.

Patented May 22, 1866.

Fig: 1.

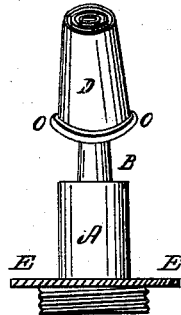


Fig: 4.

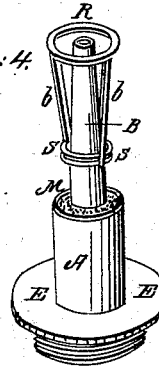


Fig: 3.

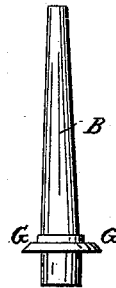
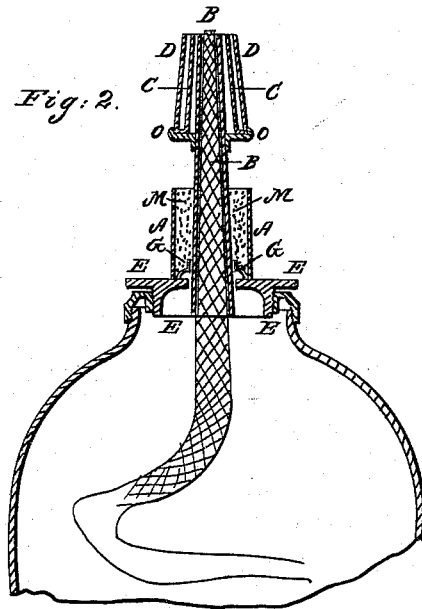


Fig: 2.



Witnesses:

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UNITED STATES PATENT OFFICE.

RUFUS S. MERRILL, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. 54,935, dated May 22, 1866.

To all whom it may concern:

Be it known that I, RUFUS SPAULDING MERRILL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Lamps; and I hereby declare that the following is a full, clear, and exact description of the same.

My invention relates more particularly to the burners of lamps in which fluid or certain products of the distillation of petroleum or coal-oil or other light hydrocarbon fluids are burned; and the object of my invention is to render such lamps perfectly safe and increase their illuminating power.

The danger attending the use of such light volatile hydrocarbon fluids has several sources: first, the heat conveyed from the burner to the cap of the lamp aiding the development of vapor, whose expansive force may exceed the resistance of the fluid-vessel and result in its exploding; second, the condensation of vapor or excess of fluid drawn up by the capillary action of the wick at the tip of the burner causing it to overflow and rendering the fluid thus collected around the base of the burner liable of being ignited.

These are the principal defects which it is proposed to be obviated by these my improvements, and they consist, first, in the method, hereinafter more fully explained, of insulating the wick-tube from the metallic cap; and, secondly, in the mode, hereinafter described, of collecting the overflow and condensed vapor at and around the burner, and of keeping the burner at a comparatively low temperature.

To enable others to make and use this my invention, I shall now proceed to describe the same, referring to the accompanying drawings, in which—

Figure 1 is an elevation, partly in perspective, of my improved burner. Fig. 2 is a vertical section through the axis thereof; Fig. 3, an elevation of the wick-tube detached; and Fig. 4, a perspective view of a modification, in part, of the burner.

In the said drawings, E is the cap of the fluid-vessel or base of the burner. As usual, it is provided with an annular screw-threaded flange, whereby it is secured to the metallic collar cemented to the fluid-vessel.

In most burners heretofore constructed the wick-tube is directly attached to the cap. This is generally effected by soldering. The ob-

jection to this mode of construction is twofold: First, the heat of the flame is conveyed from the tip of the burner to the cap; and, secondly, the solder is often melted by the heat thus transmitted or by the overflowing burning-fluid igniting in the immediate vicinity of the solder.

To remedy this I insulate the wick-tube in the manner as follows: I leave a central opening in the cap, through which the wick-tube B passes without touching the sides of said opening and projecting a short distance below into the vessel. From the cap plate rises a concentric cylindrical socket, A, within which the lower half of the wick-tube is held by being embedded in plaster-of-paris, M, or other suitable plastic and cementing non-conductor of heat. To prevent the wick-tube, which is slightly tapering from the base to the tip, from slipping down into or from being drawn out of the reservoir, I provide the tube with an annular flange, G, made in preference in the shape of an inverted cup, care being taken, first, to interpose some plaster-of-paris or other like substance between the internal parts of the cap and the edges of the cup-flange.

For the better appreciation of the second part of my invention, I would observe that the fluids now mostly sought to be used as a burning-fluid are the products of the distillation or refining of the petroleum-oils, and which are hydrocarbons of a highly-inflammable character, so that their use in ordinary lamps is attended with much danger. Having before explained their causes or sources, I would further observe that to remove these various improvements have been suggested and used, but none to my knowledge appear to have answered the purpose. Thus the insulating the tip of the burner, although preventing the heat of the flame from being transmitted to the cap of the burner, does not prevent the condensation of the vapor and the overflowing of the fluid and the dangers accompanying the same. On the other hand, devices producing currents or jets of air along the wick-tube were applied for the purpose of keeping the tube cool; but by this means the condensation was only accelerated and the flow of the fluid down the tube by no means stopped. Other devices similar in character have been adapted to burners with no better success. The object of the second part of my invention therefore is to effectually remedy these defects, and I

have accomplished it by the construction of a burner attachment, as follows:

With a centrally-perforated disk, *o*, having an upper flange on the outside periphery and an under flange on the inner periphery, I combine one or two concentric cones, *C* and *D*, of a pitch equal to that of the wick-tube, under such an arrangement as to leave annular spaces or chambers equal in width, but closed at the bottom, around the wick-tube and flush with the tip thereof. In making this attachment I prefer entirely to dispense with solder. Each of the three pieces composing it may be struck up in the manner well known.

I have here shown the lower disk to consist of a thin plate struck up so as to form the outer and inner flanges, while the cone *C* is shown struck up with a horizontal flange, bracing it against the outer flange of the disk *o*, and the cone *D* made without flange and held in place by the outer flange of the disk *o* projecting above the flange of the cone *C*; but the disk may be made with grooves and the cones may shut into the grooves, so as to form a tight joint therein. These cone attachments when slipped onto the wick-tube will be securely held in place without solder, which presents the additional advantage of being easily removed for the purpose of cleaning the lamp or trimming the wick.

From the foregoing it will be understood that the excess fluid drawn up by the capillary action of the wick and the condensed vapors will

be collected in the chambers, and there, by abstracting the heat of the burner, cool the inclosed wick-tube and become revaporized to supply the flame.

The second annular chamber has for its office to maintain an equable temperature in the first chamber and to heat the outer air before striking the flame; but the latter chamber may be dispensed with.

Having thus described my invention, and the manner in which the same is or may be carried into effect, I claim—

1. The method herein described of insulating the wick-tube from the cap of the vessel by the interposition of a non-conductor of heat, in the manner and for the purpose set forth.

2. The combination, with a cap provided with a socket to contain the insulating cementing substance, of the wick-tube provided with an annular plate to prevent its being moved within the cementing matter.

3. As an attachment to and in combination with the wick-tube, annular chambers or reservoirs arranged in the manner and for operation as described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

RUFUS S. MERRILL.

Witnesses:

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THEODORE M. PLIMPTON.