SAMUEL COOPER.

Lamp for Cooking Apparatus.

No. 128,022. Patented June 18, 1872.

Fig. 1.

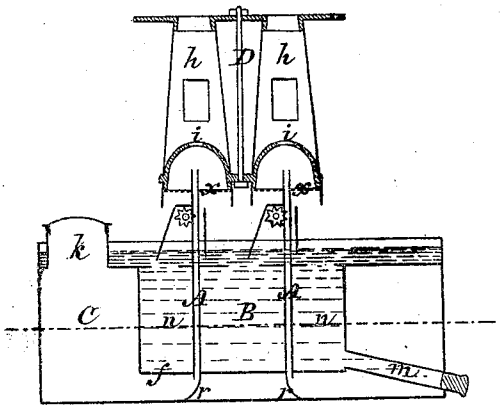


Fig. 3.

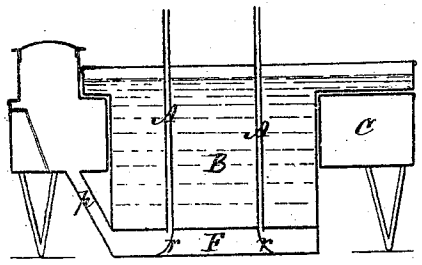


Fig. 4.

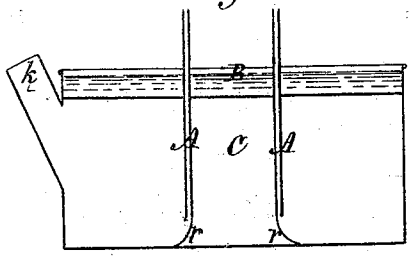


Fig. 2.

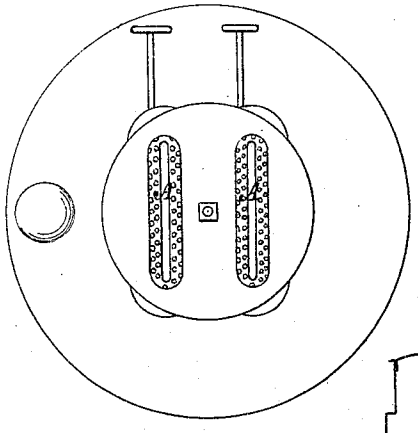
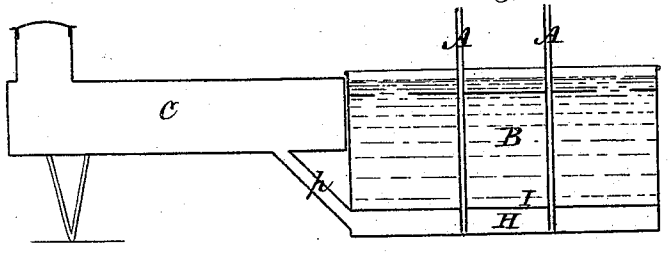


Fig. 5.



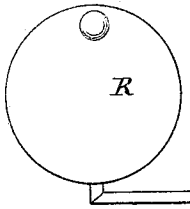
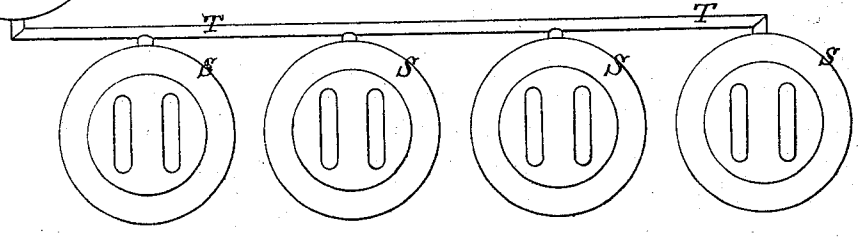


Fig. 6.



Witnesses.

A. B. Stoughton.

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UNITED STATES PATENT OFFICE.

SAMUEL COOPER, OF WASHINGTON, DISTRICT OF COLUMBIA.

IMPROVEMENT IN LAMPS FOR COOKING APPARATUS.

Specification forming part of Letters Patent No. 128,022, dated June 18, 1872.

To all whom it may concern:

Be it known that I, SAMUEL COOPER, of Washington, District of Columbia, have invented certain Improvements in Lamps for Burning Kerosene or Coal Oil, of which the following is a full, clear, and exact description, reference being had to the accompanying drawing making a part of this specification, in which drawing—

Figure 1 represents a lamp having my improvements attached; Fig. 2, a plan of the same; and Figs. 3, 4, 5, and 6, various modifications of the same, which will be referred to hereafter.

My invention has for its object to remove entirely the danger of explosion to which lamps of this character have heretofore been liable; and consists in the introduction of a trap between the flame and the space within the oil-holder, so that there can never be an open passage between them, the trap being so arranged that it cannot be emptied by the continued burning of the oil. Where the wick-tubes or the body of a lamp containing a volatile hydrocarbon become sufficiently heated to generate an inflammable vapor, if this vapor be mixed in suitable proportion with atmospheric air an explosive mixture will be formed which no longer burns silently, but which readily ignites down through the wick-tubes, and an explosion is the result. To prevent such accident, and to render it even impossible, I prolong the wick-tubes down into the oil, and make them of such a length that the capillary attraction of the wick will be insufficient to draw up the oil from the bottom of the wick-tubes to the burning-point, and the lamp will consequently go out before the oil in the oil-holder has descended to the bottom of the wick-tubes. There thus remains constantly in the wick-tubes a sufficient quantity of oil to cut off the communication between the oil-holder and the burning-point of the wick. By experiment I have found that a wick of felt-cloth—which is the material generally employed in lamps for cooking purposes—will carry up the ordinary kerosene-oil a distance of about four inches, so as to produce a good flame. When the oil, however, descends to a distance of about four and a half inches below the burning-point, the lamp will give notice that the oil requires to be replenished by the sinking of the flame, and by a peculiar smell produced by the imperfect combustion, and shortly after this, if the oil be not supplied, the lamp goes out. That this may take place invariably before the space within the lamp is brought into communication with the flame at the burning-point, I have found that a wick-tube of six inches in length is sufficient, as such a tube will always contain an inch or more of oil after the lamp has gone out.

In Fig. 1 is represented a vertical section through a lamp arranged for cooking, in which, for the purpose of preventing the charring and wasting of the wicks by the heating of the wick-tubes, the latter, A, are made to descend through a chamber of water, B, by which means the tubes are thoroughly cooled and the wicks are preserved. The water-chamber B descends into the oil-holder C, its bottom plate, *f*, reaching to near the bottom of the oil-holder, thus forming a shallow space between the two, into which the wicks enter the oil. The wick-tubes A descend through the water and are soldered to the bottom plate *f* of the water-chamber. D is the chimney, consisting of two flues, *h*, of sheet-iron, and of suitable burners, *i*, the bottom edges of which rest upon a sheet of perforated tin, *x*, which fits closely to the wick-tubes and lies about half an inch beneath the burning-point. These details, however, form no part of the present invention, and need not be further described. The oil-pot is replenished through a tube, *k*, and at *m* is a tube for the purpose of drawing off the water when the water-chamber requires to be cleaned.

Fig. 2 is a plan of the lamp represented in Fig. 1. The wick-tubes A are six inches in length. When the oil-holder is full, the oil ascends to a corresponding level in the wick-tube; but when the oil descends below the point *n*, which is four and one-half inches beneath the burning-point, the flame languishes and soon expires. It will be perceived that with these conditions the wick-tubes can never be emptied of oil by the continued burning of the lamp, and, consequently, even if there were inflammable vapor or an explosive mixture within the oil-holder, that an explosion could not take place for want of an open passage between the flame and the oil-holder. A lamp of this construction embodies a still further

preventive of danger from this source, as inflammable vapor can never be generated or accumulated within it, for the wick-tubes are kept thoroughly cooled by passing down through the water, and can, consequently, neither generate vapor themselves, nor communicate heat to the oil-holder; and such is their length that the lamp may be burned even in the hottest weather without danger, with no water in the water-chamber, the radiation from their exposed surface being sufficient to keep them cool. As before stated, however, the water serves the very necessary purposes of preventing the charring of the wick, and of producing a more uniform and steady flame.

Fig. 3 is a modification of the lamp, in which the oil-holder C is annular, and the water-chamber is in a separate vessel, having a shallow chamber, F, beneath it, to which the oil is delivered to the oil-holder through the tube *p*. In Fig. 4 the water-chamber B is shallow, and in Fig. 5 it is entirely detached from the oil-holder C, which communicates with the shallow chamber H beneath the water-chamber by the tube *p*.

In Fig. 6 is represented a plan for a series of lamps, or a range for the purpose of doing any amount of cooking, the oil from the single oil-chamber R passing to the various lamps S through the tube T.

It will be observed that in Fig. 5 the bottom ends of the wick-tubes A pass through the bottom plate I of the water-chamber and rest on the bottom plate of the shallow chamber H, so that the wicks can only reach to the bottom of the tubes and not project therefrom, and that, when they are lighted and turned up ever so little, the bottom ends of the wicks no longer reach quite to the bottom of the tubes. Should, now, an improper material, such as naphtha, or other fluid lighter than kerosene, be accidentally or ignorantly used in the lamp, and should the wicks be capable of drawing up such fluid even to a height of six inches or more, the tube could never be absolutely emptied of liquid, as the wick could not at any time quite reach to the bottom of the tube, so that neither through accident, carelessness, or malice could this lamp be so operated as to produce an explosion.

The lamps represented in Figs. 1, 3, and 4 are designed to burn wicks of indefinite length, the curved flaps *r* on one side of the bottom ends of the wick-tubes deflecting the wicks out toward the circumference of the lamp.

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

The combination of the long wick-tube A and wick with the oil-reservoir C, when so arranged as that the wick cannot, by capillary attraction, empty the reservoir, thus preventing communication between the flame and any gas that may collect in the reservoir, substantially as described.

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Witnesses:
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