

R. S. MERRILL.  
Lamp Burner.

No. 111,074.

Patented Jan 17, 1871.

FIG. 1.

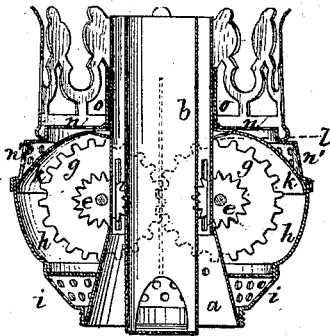


FIG. 3.

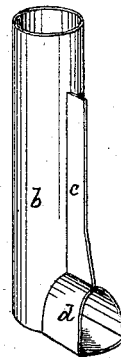
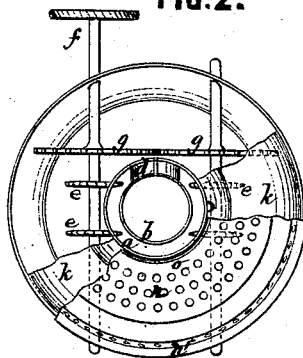


FIG. 2.



WITNESSES. *W. Bailey*  
*C. B. Nottingham*

*Rufus S. Merrill*  
by atty *A. Pollock*

# United States Patent Office.

RUFUS S. MERRILL, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF,  
WILLIAM B. MERRILL, AND JOSHUA MERRILL, OF SAME PLACE.

Letters Patent No. 111,074, dated January 17, 1871.

## IMPROVEMENT IN LAMP-BURNERS.

The Schedule referred to in these Letters Patent and making part of the same.

### *To whom it may concern:*

Be it known that I, RUFUS S. MERRILL, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Argand or Round-wick Burners, of which the following is a specification.

My invention relates to that class of Argand or round-wick burners in which a series of ratchets or equivalent devices are employed to raise the wick; and

It consists—

First, in the arrangement of a chamber or case surrounding the wick-tubes and inclosing the wick-raising devices in such manner that it shall serve to divide or separate from each other the two draughts or currents of air which enter the burner, the one passing to the exterior and the other to the interior of the flame.

Second, in the combination, with the exterior wick-tube, of the interior wick-tube, provided with a longitudinal fin by means of which it is attached and secured in proper position in relation to the exterior tube.

Third, in forming the base of the removable part of burner of a perforated plate, the outer edges of which are bent down at an angle with the remainder of the plate, so that when the said portion of the burner is in position the air which forms the exterior draught must pass through two sets of perforations at angles with one another before reaching the flame.

The manner in which my invention is or may be carried into effect will be understood by reference to the accompanying drawing, in which—

Figure 1 is a vertical central section of a burner made in accordance with my invention.

Figure 2 is a plan view of the same.

Figure 3 is a view of the inner wick-tube, detached from the burner.

*a* is the outer, and

*b*, the inner wick-tube.

The two are united together by means of a fin, *c*, on the inner tube, which extends nearly the length of the two tubes, and is soldered to the outer tube.

At or near the bottom of the inner tube is a horizontal tube *d*, the open end of which is soldered to the outer tube, in which an opening of corresponding size is formed.

I prefer to close the bottom of the inner tube *b* in order to prevent all possible interference of the oil in the reservoir with the central draught, and I make a small perforation in the bottom of the tube, so as to allow whatever oil may gather there to run back into the reservoir.

In this lamp a flat wick is used, which, before being put into the lamp, is bent so as to bring its edges nearly together, and is then inserted in the lower end

of the burner between the two tubes, the edges of the wick passing up around the air-conduit *d*, and on opposite sides of the fin *c*. In order to facilitate the insertion of the wick, I prefer to make the lower end of the outer wick-tube flaring, although this is not absolutely necessary.

The wick-raising device is composed of ratchet-wheels *e*, like those employed with flat-wick burners, arranged around the wick so as to grasp it simultaneously at four or more points, according to the number of wheels employed. In this instance, I use four wheels, arranged in pairs on shafts placed on opposite sides of the wick-tube.

The shafts are mounted in suitable bearings in the burner, and are operated by means of a spindle or button, *f*, from the outside of the burner, motion being imparted from the one shaft to the other by means of gear or toothed wheels *g*, as shown in figs. 1 and 2.

The wick-raising wheels are inclosed in a case or chamber, *h*, which is of sufficient capacity to receive not only the ratchet-wheels, but also the gears *g*. This chamber serves also to divide the air into two currents or draughts. The inner or central draught can be taken either below or through the chamber *h*.

When taken below the chamber, it enters through perforations *i*, and thence passes under the bottom of the said chamber, through the tube *d*, and into the central tube *b*.

Perforations for the same purpose may, however, be formed in the sides of instead of below the chamber, and in this case it is quite necessary to have above the point where the perforations are made, a cap or cover, *k*, for the chamber, or an equivalent division-plate, which, when the parts of the burner are put together, will serve to divide the lower from the upper draught.

I prefer, however, whether the central draught be taken below or through the chamber, to provide the latter with a cap or cover, which is dished or depressed around the wick-tube, as shown in fig. 1, so as to catch the oil which may run down the exterior of the tube. This oil runs down into the chamber *h* through a small hole, *l*, and thence finds its way back to the oil-reservoir through a hole, *m*, or other suitable outlet.

The upper part of the burner, consisting of the chimney-rest and springs, is made removable, so that it, together with the chimney which it carries, may be readily removed from or fitted to the burner. To this end, the chimney-rest or base *n* of the removable part of the burner is secured to a sleeve, *o*, which fits the outer wick-tube *a*, as seen in fig. 1. The removable part of the burner, which is thus steadied and held in proper position, rests upon the top of the chamber *h*.

The base *n* is formed of a perforated plate, the outer

portion, *n'*, of which is bent down at angles with the horizontal portion, and the air which forms the exterior draught must pass first through the perforation *n'*, and then, changing direction, through the perforations *n*, before it can reach the flame. By thus passing through two sets of perforations, at angles with each other, the current of air is finely divided and equalized, and the flame is rendered more steady.

In conclusion, I would state that I do not, broadly, claim dividing the air which enters the burner into exterior and interior draughts; nor do I claim the employment for this purpose of a partition, floor, or plate, arranged upon the exterior of the wick-tubes; but

Having now described my invention, and the manner in which the same is, or may be, carried into effect, What I claim, and desire to secure by Letters Patent, is—

1. The combination, with the inner and outer wick-tubes of an Argand burner and the ratchets or other wick-raising devices arranged upon the exterior of the said tubes, of a chamber or case, inclosing the said ratchets or other wick-raising devices, and separating

the exterior draught from the central draught, substantially as herein shown and described.

2. The inner and outer wick-tubes, united by means of a longitudinal fin or strip extending the whole or nearly the whole length of said tubes, as described, and combined with a tube or conduit for conveying the central draught to the inner tube, as shown and described.

3. The removable portion of the burner, provided with a base composed of a perforated plate, the outer portion of which is bent down at an angle with the remainder, so that the air forming the exterior draught must pass through two sets of perforations at an angle with one another before reaching the flame, substantially as shown and described.

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

RUFUS S. MERRILL.

Witnesses:

M. BAILEY,

EDM. F. BROWN.