E. B. REQUA.
Lamp-Burner.

No. 212,401. Patented Feb. 18, 1879.

Fig. 1.

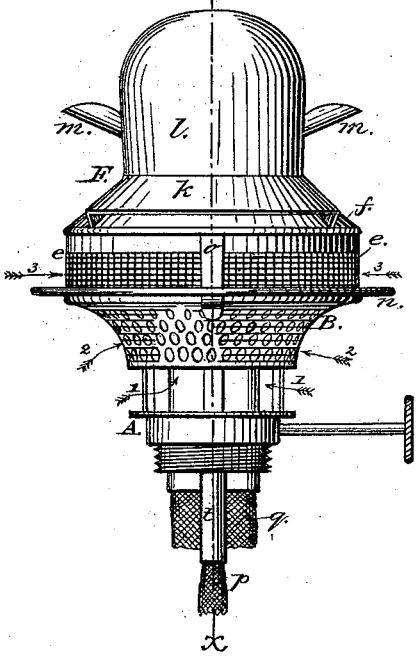


Fig. 2.

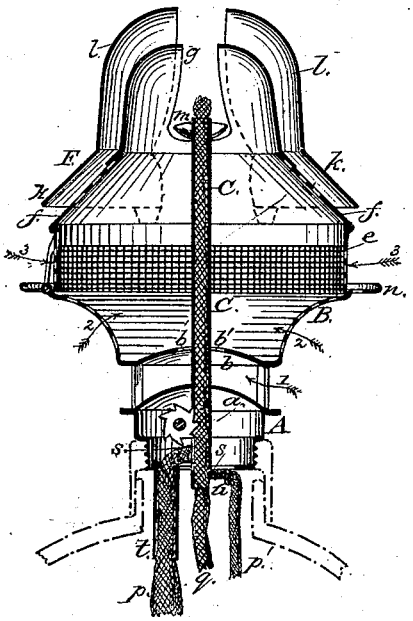


Fig. 3.

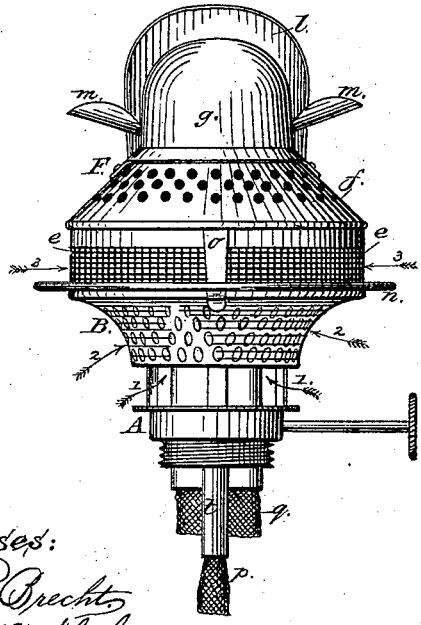
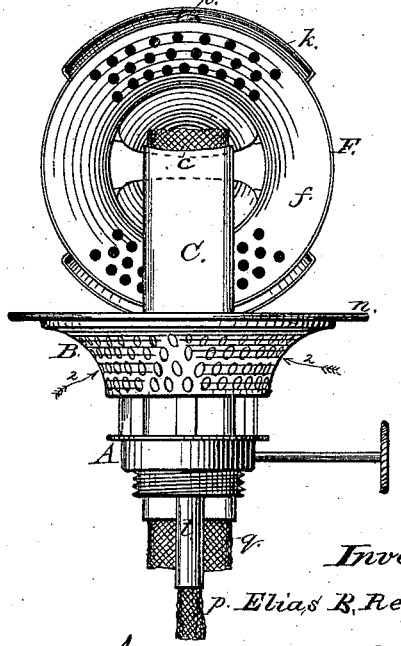


Fig. 4.



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UNITED STATES PATENT OFFICE.

ELIAS B. REQUA, OF JERSEY CITY, NEW JERSEY.

IMPROVEMENT IN LAMP-BURNERS.

Specification forming part of Letters Patent No. **212,401**, dated February 18, 1879; application filed December 21, 1878.

To all whom it may concern:

Be it known that I, ELIAS B. REQUA, of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Lamp-Burners, of which the following is a specification:

This invention relates to an improvement in that class of hydrocarbon lamp-burners provided with air-deflectors and means of providing a supply of air below the flame.

Its object is to provide for a copious supply of air to the flame to prevent heating of the oil-fount, and consequent evolution of explosive gases therein, to adapt the burner for use without a chimney when desired, and to produce a clear white flame free from odor.

It consists, first, in a hollow base constructed for attachment to a lamp, and provided with a wick-tube, in combination with the deflector section hinged upon the perforated base and constructed of the hollow frustum, the wall of which is perforated, an inner deflector-cap on the upper edge of the perforated frustum, and a deflector arranged exterior to but over the frustum and its deflector, and separated therefrom by an intervening space; second, in the combination, in a lamp-burner, of a hollow perforated base provided with a wick-tube and a deflector section, which is hinged to the perforated base, and constructed of a perforated base-ring, a perforated frustum, an inner deflector, and two outer deflector sections arranged over the inner deflector, and the perforated frustum, but separated therefrom by an intervening space; third, in certain other features, which will be fully hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a view, in elevation, of my improved burner. Fig. 2 is a section on line *x x* of Fig. 1. Fig. 3 is a view in elevation, with part of the outer deflector removed. Fig. 4 is a view in elevation, showing the top hinged section of the burner turned up to uncover the wick-tube.

When the ratchet or feed-wheel chamber A of the burner is screwed to a lamp-fount, as shown in Fig. 2, and the wick lighted, air is drawn in over the cap *a* of this chamber, in the direction indicated by the arrows 1, and by the concave bottom *b* of the perforated base section B is deflected against the lower portion of the wick-tube C, which extends upward through a slot, *b'*, in said concave bottom, said slot being so large as to leave an air-passage between its edge and the surface of the burner. Air also flows inward in the direction of arrows 2, through the perforations of the base section B and in the direction of the arrows 3, through perforations in the band *e*, which forms the lower portion of the hinged upper deflector section, F. Upon this band *e* sets a hollow conic frustum, *f*, upon the top of which is secured an inner cap deflector, *g*, having the usual wick-passage.

Through the wall of the frustum *f*, and on opposite portions thereof below the sides of the wick-passage of the inner deflector, *g*, are formed groups of perforations, which permit a portion of the air which has entered the chamber around the burner to escape therefrom, and this escaping air strikes the skirts *k* of two outer deflector sections, *l*, which lie at a little distance above the perforated portions of the wall of the frustum, the spaces between their outer edges and said frustum being left open. These outer deflector sections *l* cover and are separated by an intervening space from the sides of the inner deflector, *g*, said space serving as an air-passage through which the air escaping through the perforations in the frustum *f* is deflected directly upon the sides of the blaze.

At the ends of the wick-passage of the inner deflector, *g*, are arranged ear-like pieces of metal *m*, having a width about equal to that of the wick-passage, and inclining upward and outward from near the end edges of said passage. They may be secured directly to the inner deflector, to the frustum *f*, or to the outer deflector sections *l*, their function being to protect the ends of the flame from upward currents of air.

The top of the wick-tube C has a concave crescent shape, as at *c*, in order that the intermediate portion of the wick end may be more exposed to the air than the edges.

The letter *n* indicates a rim secured to the top of the perforated base section, for the purpose of supporting a shade-ring, and *o* is a spring secured to the band *e*, and having an

inwardly-bent tip, which passes through a slot in the rim *n*, and catches under the edge of the perforated base section.

The burner which I have described and illustrated is intended for use either with or without a chimney. When a chimney is used it may rest upon the rim *n*.

As the slot or wick-passage of the inner deflector, *g*, would be too small for the passage of all the air which enters the burner-chamber over the ratchet or feed-wheel chamber, and through the perforations of the base section B and band *e*, the perforations of the frustum *f* are provided, in order that the excess of air may escape, and, meeting the currents of cold air flowing inward under the skirts *k* of the deflector sections in the direction of arrows 3, be deflected with these cold-air currents upon the sides of the blaze.

The greater proportion of oil in all wick-tubes goes to the outer edges of the wick, so that the corners or edges of the flame have heretofore been the most troublesome to manage; but by making the top of the tube crescent-shaped it will be seen that the edges of the wick are least exposed to the air. The greater proportion of vapor is evolved from the exposed middle portion of the wick when the largest quantity of air is delivered, and consequently a more active combustion takes place at the center of the wick, compensating for the excess of oil at the edges and keeping the flame even and approximately straight at its top edge. The ear-like shields or guards *m* contribute to this effect by preventing upward currents of air from striking the edges of the flame.

In the form of burner shown, the top of the wick-tube is at such a distance from the oil-fount that, without additional means for carrying the oil upward to or near the burning-point, the flame would be apt to diminish in size as the oil-level becomes low in the fount, owing to the decrease of wick-surface immersed; and in order to overcome this I have arranged feeder-wicks *p p'* on opposite sides of the main wick *q*. The lower portion of the main wick-tube is provided with openings *s*, in order to permit these feeder-wicks to come in contact with the main wick. One of these feeder-wicks, *p*, is shown as passing through a small tube, *t*, attached to the bottom of the screw-nozzle of the feed-wheel chamber, and the other feeder-wick is held in contact with the main wick simply by having its end bent through a wire loop, *u*, attached to the bottom of said nozzle. The oil drawn upward by these wicks is delivered to the main wick and prevents the supply to the flame from becoming too small.

Having now described the construction and explained the operation of my invention, I claim—

1. The hollow perforated base constructed for attachment to a lamp, and provided with a wick-tube, in combination with the deflector section hinged upon the perforated base and constructed of the hollow frustum, the wall of which is perforated, the inner deflector or cap on the upper edge of said perforated frustum, and a deflector arranged exterior to but over the perforated frustum and its deflector, and separated therefrom by an intervening space, substantially as and for the purpose described.

2. The combination of a hollow perforated base provided with a wick-tube and a deflector section hinged to said base and constructed of the perforated ring, the perforated frustum on the upper edge of the ring, the inner deflector on the frustum, and two outer deflector sections, arranged over the inner deflector and perforated frustum, but separated therefrom by an intervening space, substantially as described.

3. The combination, with the perforated base section, of the upper hinged section, composed of the perforated band *e*, hollow frustum *f*, having the perforations in wall, the inner deflector, and the outer deflector sections having the skirts *k* lying above the perforations in the frustum wall, substantially as and for the purpose set forth.

4. The combination, in a lamp-burner, of the feed-wheel chamber, the perforated hollow base portion, constructed with an elongated slot for the passage of the wick-tube, and likewise forming an air-passage, said perforated base being supported at a distance above the feed-wheel chamber to allow the passage of air under the bottom of the perforated base and through the elongated slot therein along the wick-tube, substantially as described.

5. The combination, with the deflector *g* and perforated frustum *f*, of the outer deflectors, *l*, having the flaring skirts *k*, separated from the frustum by an intervening space, substantially as described.

In testimony that I claim the foregoing I have hereunto set my hand in the presence of the subscribing witnesses.

ELIAS B. REQUA.

Witnesses:

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ROBERT D. WYNKOOP.