(No Model.)

L. HENKLE.

LAMP.

No. 292,114. Patented Jan. 15, 1884.

Fig. 1.

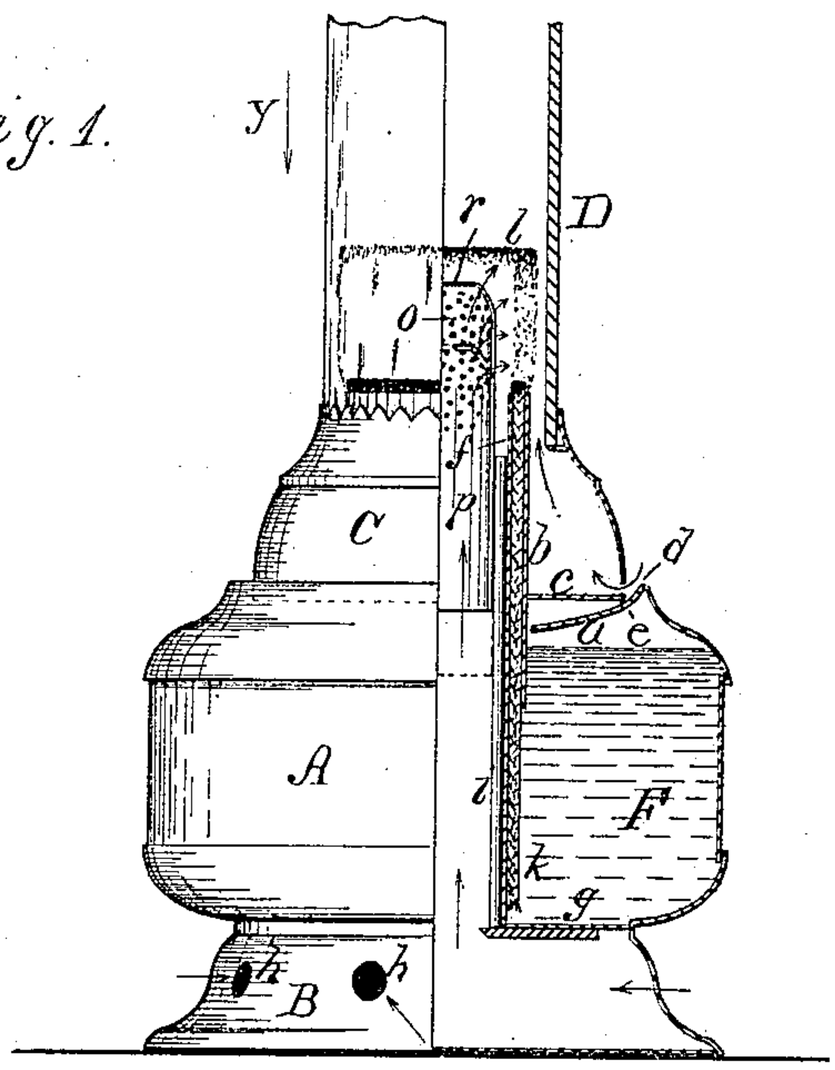


Fig. 3.

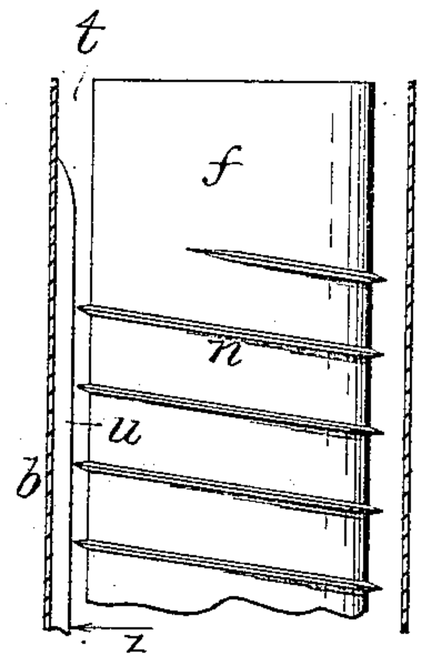


Fig. 2.

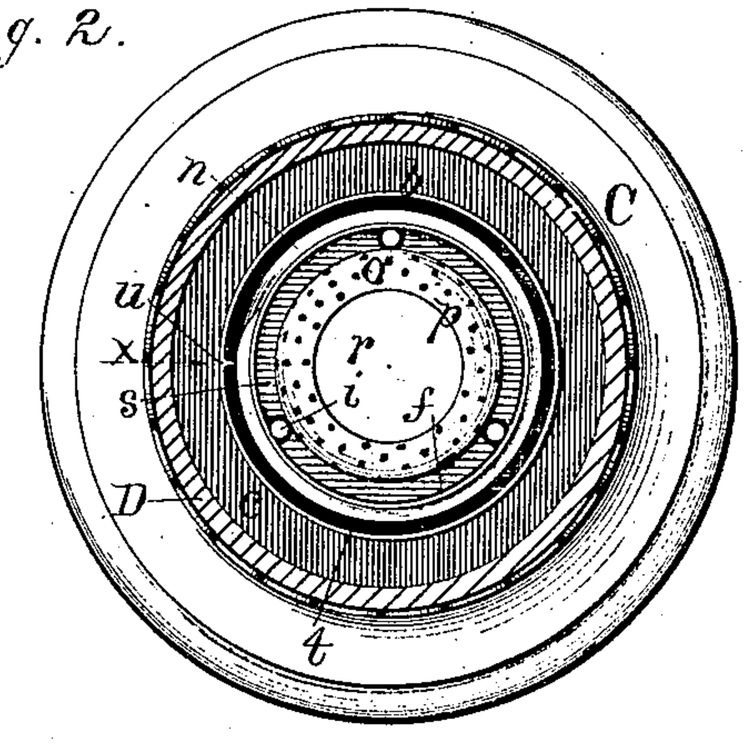
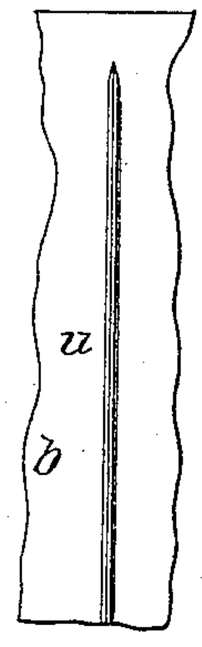


Fig. 4.



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UNITED STATES PATENT OFFICE.

LEONARD HENKLE, OF ROCHESTER, NEW YORK.

LAMP.

SPECIFICATION forming part of Letters Patent No. 292,114, dated January 15, 1884.

Application filed June 16, 1883. (No model.)

To all whom it may concern:

Be it known that I, LEONARD HENKLE, of Rochester, in the county of Monroe and State of New York, have invented a new and useful Improvement in Lamps, which improvement is fully set forth in the following specification and accompanying drawings.

The object of my invention is to improve the Argand lamp by supplying devices by means of which to conduct air to the flame in such a manner that the latter will be more fully supplied with oxygen for the purpose of a more complete combustion than has heretofore been effected, and by combining other improvements in the construction of the lamp, all of which are hereinbelow fully described, and more particularly pointed out in the claims.

Referring to the drawings, Figure 1 is a side general view of my improved lamp, it being shown in elevation on the left of the center vertical line and centrally vertically sectioned on the right of said line; Fig. 2, a plan of the upper parts of the same, viewed as indicated by arrow *y* in Fig. 1, the chimney shown as being transversely sectioned near its base; Fig. 3, a side elevation of the inner wick-tube *f*, showing the spirals *n*, the outer wick-tube, *b*, being vertically and centrally sectioned, the view of the inner tube being taken as indicated by arrow *x* in Fig. 2; and Fig. 4 shows a portion of the outer tube *f* and the rib *u* in elevation, viewed as indicated by arrow *z* in Fig. 3, the latter three figures being drawn to a scale twice the size of that to which the first figure is drawn.

Referring to the parts, A is the oil-fount, provided with a suitable foot, B, to rest upon the table. The conical case C of the burner—a separate piece—rests concentrically upon the upper plate, *a*, of the oil-fount. The upper part of the case C is suitably shaped to receive the base of the glass chimney D. The outer wick tube or cylinder, *b*, of the wick-space is made rigid with the case C by a suitable stay, *c*, which may be a plate, as shown, or separate wires or other pieces, as may be convenient. The tube *b* extends down into the oil-space F, passing through a central circular opening in the plate *a*, fitting sufficiently close to said opening to form a stopper therefor. The case C has its bearing upon the plate *a* at *e*, and the said plate is made to incline inward, for the purpose of draining toward the center any oil that might ooze out at the joint between the plate and tube *b* should the lamp be tipped to one side. A vertical tube, *f*, which forms the inner tube for the wick *k*, stands concentrically within the oil-fount, rigidly secured to the bottom plate, *g*, thereof, so as to hold the oil, and gives to the oil-space an annular form. The plate *g* is cut away within the tube *f*, to form a clear passage for the air to the interior of the flame, said air having ingress through openings *h* in the foot B, as indicated by arrows.

Within the tube *f*, at its upper end, is fitted a perforated thimble, *p*, reaching above the upper end of the tube, within the flame *l*. The upper part of the thimble is made slightly conical, as shown, and closed at the upper end by a horizontal imperforate cap, *r*. The conical part of the thimble is perforated with small holes *o*, also the upper part of the cylindrical portion of the thimble down some distance, as shown. The thimble may be made to fit the interior of the tube *f* and slide therein; but I prefer to make it (or where it is opposite the flame, at least) of a less diameter than the interior of the tube, so as to stand slightly away from the flame. As shown, the thimble is a straight cylinder, save as to the conical part above described, and fitted within vertical rods *i* on the interior of the tube *f*. These rods serve to support the thimble in place, and may be secured to either the latter or to the tube. The thimble is designed to be vertically adjustable within the tube, and flat springs or other projections at the side of the thimble and pressing against the interior of the tube would serve as means to hold the thimble in place as well as the rods shown. A flange, *s*, Fig. 2, is turned horizontally outward at the lower end of the thimble to substantially close the annular space between the thimble and tube, so that the ascending air shall flow along the interior of the tube and out at the perforations *o* against the flame, as indicated by arrows. The air for the exterior surface of the flame enters through holes *d*, around at the bottom of the case C, above the stay-plate *c*, and so moves up between the flame and inte-

rior of the chimney, as indicated by arrows. It will be seen that air passing out at the perforations through the cylindrical part of the thimble will be projected in horizontal shafts or jets against the inner surface of the flame, while that passing out through the conical part of the thimble is given an oblique upward direction and strikes the flame at points above the end of the thimble. This permits the upper end of the thimble to be adjusted at a level lower than the top of the flame, and to be covered by the latter from view, while the flame is supplied with shafts or jets of air all the way to the top thereof. The chimney is a straight cylinder; or it may, if desired, be contracted at a point so far above the flame as not to affect the latter.

It is well understood that if the flame of a lamp be solidified or condensed by any means only a comparatively small surface of the flame will be presented to the action of the air, while the interior of the volume or body of the flame will be of a dull-red color, giving but little light and resulting in much smoke, on account of a low degree of combustion at that part of the flame. This is to a great extent true in the case of the Argand lamp in common use, in which the contracted chimney tends to solidify the flame and cause it to be wire-drawn and shoot up in a long shaft of dull flame through the axis of the chimney. Instead of being solidified, if the flame were expanded and rendered thinner, a much greater proportional amount of surface would be presented to the action of the air, resulting in better combustion and a much more brilliant light. An effort has already been made to expand the Argand flame by introducing a horizontal circular button concentrically within the flame at a short distance above the wick, to turn the center column of air outward against the flame, and then contracting the latter again immediately over the button. This, however, fails to produce the best results, for in this flame combustion is not permitted to be fully accomplished. In my present invention I construct the burner so that the interior of the circular flame is beat against at all points by minute outward-moving shafts of air in great numbers from a point near the wick to the top of the flame. This, by having the perforations properly proportioned as to size and numbers, causes the flame to assume the form of an expanded, straight, vertical cylinder, in which all the carbon has an opportunity to become consumed, resulting in a smokeless cylinder of white flame. The carbon that fails to become burned at the lower part of the flame is burned at some point farther up, until, from the length of the cylinder of flame, all is consumed. By vertically adjusting the wick the flame may be lengthened or shortened, as is usual, and by correspondingly adjusting the thimble the flame, whether long or short, will be supplied with air-jets throughout its whole length from the perforations *o*. The wick is adjusted vertically by turning the case C around upon its bearing upon the oil-fount. In Fig. 3 is shown the upper part of the tube *f*, it being provided externally with a spiral projecting edge or coarse screw-thread, *n*. The outer tube, *b*, for the wick is provided internally with a longitudinal, thin, sharp-edged ridge, *u*, which nearly meets the edges of the spiral *n*. Both spiral and ridge project into the wick-space *t*, and both dent or sink into the fiber of the wick. The tube *b*, as was above stated, is rigid with the case C, and when the latter is turned upon the oil-fount, as just stated, the wick, on account of the ridge *u*, will turn with said tube, and move up or down the incline of the spiral, depending upon the direction in which the case is turned.

I claim as my invention—

1. In a burner for Argand lamps, a wick-tube provided at its upper end with a thimble, forming, with the wick-tube, a passage for the inner upward-moving current of air, said thimble being vertically adjustable in the wick-tube and made conical at its upper end, with perforations through its straight and conical parts, so that some of the jets of air flowing outward through the perforations shall impinge horizontally and others obliquely against the inner surface of the flame, substantially as set forth.

2. In a burner for Argand lamps, the inner wick-tube provided internally at its upper end with a circular part or thimble, forming, with said wick-tube, a passage for the central upward-moving air for the flame, said thimble being reduced in diameter at its upper end, or made conical thereat, and perforated in such a manner that some of the jets of air flowing outward through the perforations move horizontally and others obliquely against the flame, substantially as set forth.

3. In a burner for Argand lamps, a wick-tube provided at its upper end with an internal thimble, forming, with said wick-tube, a passage for the inner upward-moving current of air for the flame, said thimble being perforated to turn the air in jets against the flame and made adjustable within the tube, substantially as described.

LEONARD HENKLE.

Witnesses:
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M. A. THOMPSON.