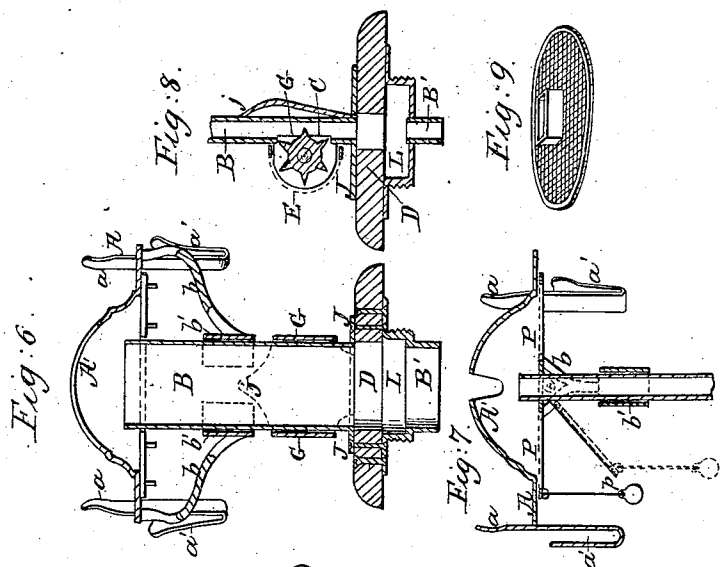
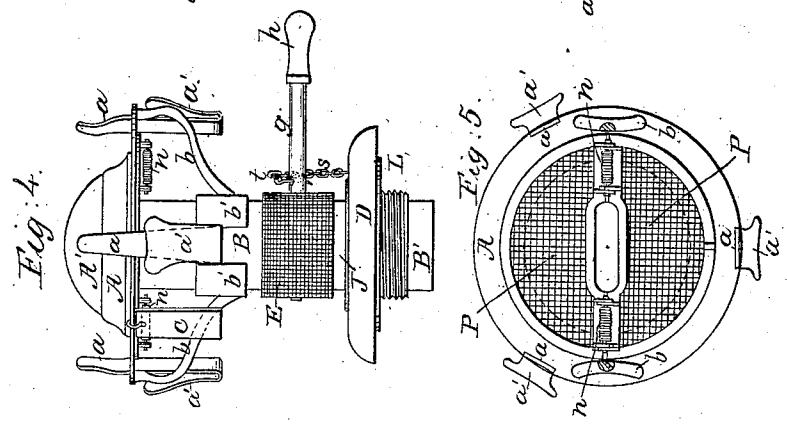
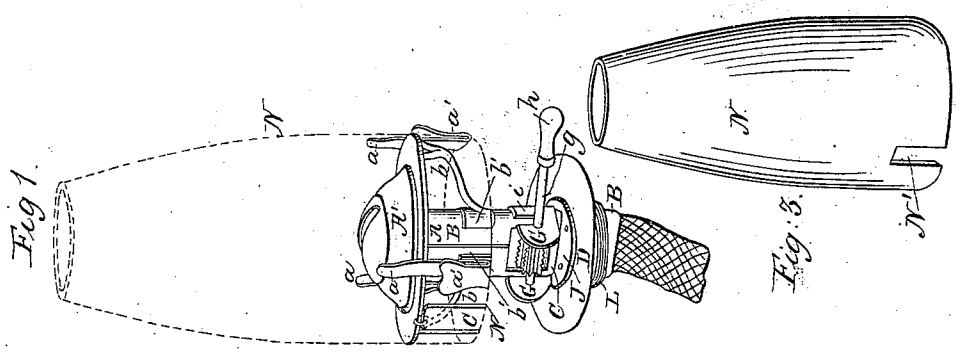
J. F. SANFORD.

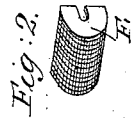
Lamp Burner.

No. 86,869. Patented Feb. 9, 1869.









Witnesses.

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Letters Patent No. 86,869, *dated February* 9, 1869.

IMPROVEMENT IN LAMP-BURNERS.

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

To all whom it may concern:

Be it known that I, JOHN F. SANFORD, of Keokuk, in the county of Lee, and State of Iowa, have invented certain new and useful Improvements on Lamp-Burners; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a perspective view of the improved burner with chimney attached.

Figure 2 is a perspective view of the covering of the wick-adjuster, detached from the burner.

Figure 3 is a perspective view of a chimney adapted for the improved burner.

Figure 4 is a front elevation of the burner.

Figure 5 is a bottom view of the upper portion of the burner, with portions of its supporting-arms broken away to show the springs of the hinged half of the diaphragm.

Figures 6, 7, and 8, are sectional views, intended to show, more particularly, the construction of the burner.

Figure 9 is a perforated or wire-gauze diaphragm, adapted for use at the base of the chimney, as a protector and current-intercepter.

Similar letters of reference indicate corresponding parts in the several figures.

This invention relates, particularly, to certain novel improvements on lamp-burners, which are designed for use with oils the vapors of which are highly inflammable and explosive.

One object of my invention is to secure safety in the burning of such oils, by so constructing a burner that the conduction or radiation of heat from the flame shall not materially affect the temperature of the oil in the reservoir of the lamp.

Another object is to prevent the communication of flame to any portion of the lamp below the cone which surrounds the upper end of the wick-tube, by the application, to the base of the said cone, of a perforated diaphragm, through which flame cannot pass.

Also, to so construct such diaphragm, that access can be had, through it, to the upper end of the wick-tube, for lighting the lamp, or for receiving a light therefrom, without removing the chimney of the lamp.

To enable others skilled in the art to understand my invention, I will describe its construction and operation.

In the accompanying drawings—

A′ represents the "cone" of the burner, which is surrounded at its base by a flange, or rim, A, and which has an opening through it for the passage of the flame.

At regular distances apart, and affixed to the annular flange, or rim, A, are stirrups, *a′*, which extend beneath this flange so as to receive and afford a support for the chimney N, and allow the lower portion of this chimney to extend below the flange A, and form a skirting for concentrating the draught of air on its way into the cone.

There are, also, spring-fingers *a a a* applied to the flange A, which extend above it, and press outwardly against the chimney N, thereby centring and keeping it steady in its place in the stirrups *a′*, as shown in fig. 1.

For the purpose of attaching the cone and its flange to the wick-tube B, the arms *b b* are used, having clasps *b′ b′*, formed upon their lower convergent ends, which clasps receive and embrace the wick-tube, and also allow the cone and flange to be raised, or depressed, or removed, at pleasure.

To the base of the cone, a perforated diaphragm, P, is applied, which may be made of fine wire gauze, of perforated metal, of perforated glass, or of any other suitable material.

This diaphragm will prevent flame from passing through it, and will consequently obviate liability of accident from the flame of the lamp communicating with any inflammable substance, or gas, on or about the lamp below the said diaphragm. It will also allow light to pass through it, particularly if it be made of glass, thus preventing such a large shadow around the base of the lamp, as is found so objectionable in the use of lamps having the rays of light intercepted by imperforated plates, and burners, which, although perforated, do not allow light to pass downwardly through them.

One portion, or half of the circular diaphragm P, is firmly fixed to the cone and its flange; the other half is hinged at *n n*, and provided with a pendent wire, *p*, by which it can be drawn down, as indicated in red, fig. 7.

The hinges are provided with springs, as shown, which will return the portion P to its place, when the wire *p* is released.

This hinged portion of the diaphragm will allow access to the upper end of the wick-tube B, for lighting the lamp, or receiving a light therefrom, without removing the chimney.

To render this operation very convenient, I form, in any suitable manner, an opening, N′, through the base or skirting of the chimney N, which opening may be closed, except in the act of inserting a taper through it, by a valve, *c*, or other equivalent device, hinged to the edge of the annular flange A, as shown in figs. 1 and 4.

The perforated diaphragm P is also designed to and will prevent a too rapid ascent of cool air to the flame. It modifies and softens the draught, and supplies heat to the air in its passage to the flame, so that cold currents or irregular currents shall not impinge upon the flame, and cause it to flicker, or burn unsteady.

The wick-tube B rises from a disk, D, which should be made of wood, or some other good non-conductor of heat.

The lower end of tube B is secured, by a flange, J, or other means, to the upper side of disk D, and the male screw L and lower termination B′ of the wick-tube are secured in a suitable manner to the bottom side of the said disk. Thus it will be seen that the metallic continuity is broken by the disk D, and that injurious heat will not be conducted to that portion of the wick-tube which enters the oil-reservoir of the lamp, or which is in contact therewith.

The disk D may be made large enough to prevent the temperature of the oil-reservoir from being raised by heat which is radiated from the flame, and by those metallic parts of the burner which are above this disk.

Figs. 6 and 8 show clearly this feature of my invention.

Directly above the disk D, a rectangular opening is made through one side of the wick-tube B. This opening is nearly as wide as the width of said tube, and receives through it the serrated edges of the wick-adjuster C, shown in figs. 1 and 8.

The wick-adjuster C is a hub, having a number of wings radiating from its axis, and arranged, at proper distances apart, around the same. These wings have teeth or spurs formed on their outer edges, for penetrating the wick, and taking firm hold thereof.

Through the centre of the adjuster, a rod or spindle, *g*, passes, carrying a handle, *h*, on one end, which may be made of wood, or other poor conductor of heat, to prevent burning the fingers while adjusting the wick.

One advantage of the rotary adjuster C, over the spurred wheels hitherto used for adjusting wicks, is, that this adjuster presents rows of spurs nearly across the entire width of the wick, and thereby acts uniformly upon it, while, with the narrow wheels, sometimes one side of a wick will be forced up, (or down,) while the other side is not acted upon at all, causing the wick to clog tightly in the tube, and be unequally adjusted.

The spindle *g* has its bearings in two ears, G G, which are formed on a spring tension-plate, *j*.

The slot *i*, in one of said ear-bearings G, allows the wick-adjuster to be readily removed from the burner, when the cap E is not in its place.

The back portion *j* is bent, as shown in fig. 8, so that its upper end presses against the tube B, and holds the adjuster C in contact with the wick, under more or less spring-pressure, as may be required.

The bearing and its spring-back may be secured to the wick-tube, as shown in fig. 8, or may be applied loosely thereto.

To prevent the communication of flame to that portion of the wick which is exposed, by making an opening in tube B for the adjuster C, a cap, E, made chiefly of wire gauze or other suitable perforated or imperforated material, may be used, as shown in the drawings. It is held in place by the ear-bearings G, and may be removed at pleasure.

By making a hole through the spindle *g*, and inserting a pin, *l*, which is attached by chain *s* to the disk D, through the said hole, as shown in fig. 4, the wick-adjuster cannot be turned so as to raise the wick too high.

This device will serve as a precaution to careless servants, and prevent them from adjusting the wick so as to break or smoke a chimney.

It will be seen from the above description that my improved burner has no cavities or chambers in or about where inflammable vapors or gases might accumulate, which fact is regarded as a point of superiority over all other lamp-burners for burning explosive oils.

In fig. 9, I have represented a disk having a short tube secured centrally to it, and also having a great number of perforations through it. This disk may be made of wire gauze, or of any other suitable material, and, when in use, it is slipped upon the wick-tube B, and adjusted so as to come just within the bottom of the chimney. When thus arranged, the disk will prevent currents of cold air from rushing too violently into the cone A′.

This disk, shown in fig. 9, is especially designed for use in sick-rooms, when a dim but steady light is required.

Having described my invention,

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

1. The perforated diaphragm P, constructed and so applied to the flanged cone, as to admit of access to the upper end of the wick-tube within the cone, substantially as described.

2. A locking-device, applied to the wick-adjuster, substantially as and for the purposes described.

3. The cover E, to the wick-adjuster, substantially as described.

Witness my hand, in matter of my application for a patent for improvement in lamp-burners, this 9th day of October, A. D. 1868.

JNO. F. SANFORD.

Witnesses:

R. T. CAMPBELL,

A. HOERMANN.