H. KNOWLES.

Lamp.

No. 22,771. Patented Jan. 25, 1859.

Fig. 1,

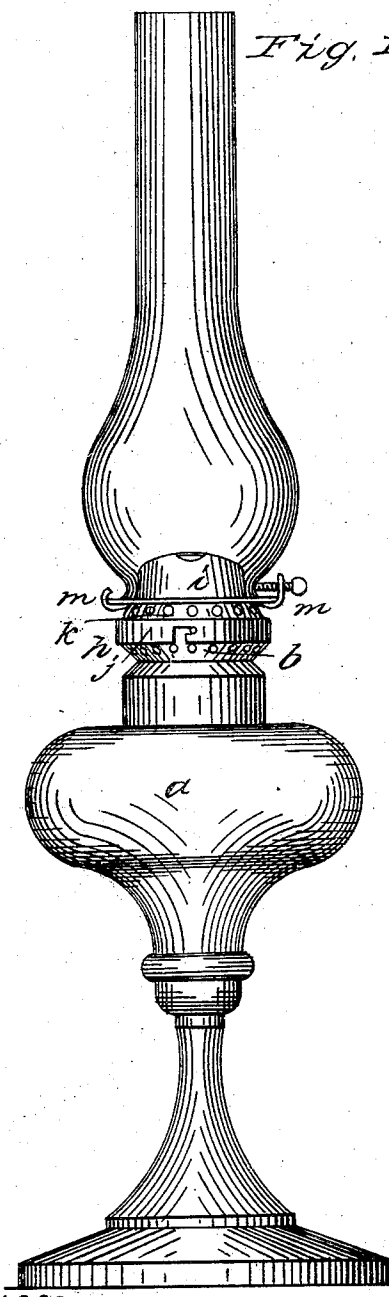
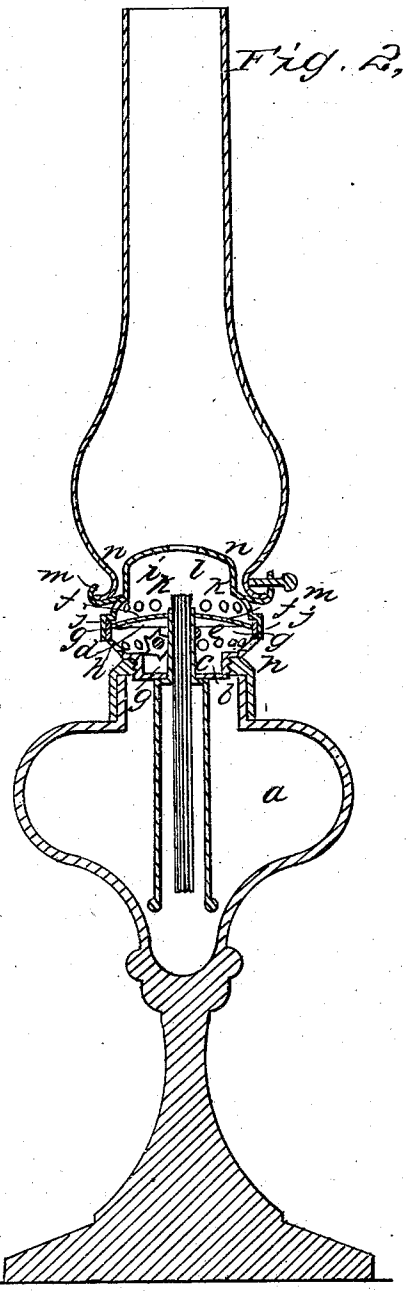


Fig. 2,



Witnesses:
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Inventor:
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N. PETERS. Photo-Lithographer. Washington. D. C.

UNITED STATES PATENT OFFICE.

H. KNOWLES, OF NEW LONDON, CONNECTICUT, ASSIGNOR TO FELLOWS, HOFFMAN & CO., OF NEW YORK, N. Y.

LAMP.

Specification of Letters Patent No. 22,771, dated January 25, 1859.

To all whom it may concern:

Be it known that I, HEZEKIAH KNOWLES, of the city of New London and State of Connecticut, have invented a certain new and useful Improvement in Lamps for Burning Lard, Tallow, and other Concrete Fats, but Which is Applicable to Burning other Substances; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1, is an elevation of a pedestal lamp with my improvement applied, and Fig. 2, a vertical section thereof.

The same letters indicate like parts in both figures.

Serious difficulties have been experienced in producing a clear and steady flame in lamps for burning concrete fats, and specially tallow, and also in supplying the material to the wick in a sufficiently fluid state to prevent the wick from carbonizing to such an extent as in a short time to seriously check the capillary attraction by which the material is supplied in the liquid state to the upper part of the wick.

The object of my invention is to remedy the difficulties heretofore experienced, and to this end my said invention consists in combining with the deflector which has heretofore been employed in lamps for directing a current of air across the flame above the wick, and with a surrounding chimney provided with suitable apertures for the admission of a current of air inside the chimney and outside of the said deflector, a second deflector which surrounds the wick tube at or near the upper edge thereof, leaving a narrow space between the edge of the said deflector and the wick tube for the passage upward of a current of air all around the wick, the said deflector being extended outward to the neck or ferrule at the neck of the lamp to form a chamber with apertures all around for the admission of air which becomes highly heated before escaping upward around the wick tube.

In the accompanying drawings (*a*) represents the glass reservoir of a pedestal lamp, made of the required capacity, for containing a sufficient supply of tallow, or other concrete fat, or other suitable material to be burned with a wick. The upper part of the said reservoir is formed with a neck to which is properly secured a metallic ferrule (*b*) which carries a flat metallic wick tube (*c*) extending down into the tallow or other material and suitably formed for conducting the heat to melt the tallow, &c., if applied to burning concrete fats, and provided also with suitable means, as at (*d*) for elevating or depressing the wick. This wick tube is connected with the ferrule by arms or a plate (*e*). And above the arms or plate (*e*) there is what may be termed a diaphragm deflector (*f*) fitted to the inside of the ferrule near the upper edge thereof, and which extends inward to within a very short distance of the wick tube and nearly on a level with the upper edge thereof. It should not extend above the wick tube but may be slightly below, the position represented in the drawings I have found in practice to be the best. I have contemplated fitting the said diaphragm deflector to the ferrule so as to slide therein with suitable means for adjusting its height relatively to the upper edge of the wick tube, as other deflectors have heretofore been made adjustable. The chamber (*g*) thus formed within the ferrule by this deflector confines the heat; and air is admitted to this chamber through a range of holes (*h*) in the periphery of the ferrule. The air thus admitted is heated and rarefied by the heat within the chamber, and rising in consequence escapes upward with great velocity in a thin film around the wick tube to feed the flame at the upper edge of the wick tube, the position of the deflector, relatively to the upper edge of the wick tube, inclining the current all around inward toward the wick; hence the importance of an accurate adjustment of the position of the deflector.

Above the wick tube is placed the usual deflector (*i*) for supplying air to the flame above the wick. It is formed in the shape of a semisphere with an elongated aperture at top of the form of a horizontal section of the wick tube, but a little larger. The base spreads out, and is provided with a cylindrical ring, as at (*j*) to fit over the upper part of the ferrule, with what is termed a bayonet joint, so that it can be readily taken off and put on, and secured in place. A series of holes (*k*) are made all around through the base for the admission of air to feed the flame above the wick. In this way a second chamber (*l*) is formed be-

tween the two deflectors and surrounding the lower part of the flame so that the heat given out by this part of the flame heats the lower diaphragm deflector, which, by conduction, heats the chamber (*g*) below, and in this way not only are the currents of air below the deflectors heated, the better to supply combustion, but more heat is conducted down to the tallow or other material in the reservoir, to keep the tallow, &c., in a fluid state, than can be obtained in lamps of any other construction, except such as have metallic conductors placed in the flame, such conductors being seriously objectionable.

The base of the upper deflector is provided with brackets (*m*) suitably formed to receive and hold the lower edge of the glass chimney, leaving an open space (*n*) for the free entrance of a current of air to the inside of the chimney to supply the required draft, and to feed the flame above the upper deflector. Without this latter supply of air the flame, however intense below the upper deflector, would give but a feeble light and would be liable to smoke.

I do not claim separately either of the deflectors above described, nor the introduction of a current of air at the base of the chimney and between it and the upper deflector. But

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

The lower or diaphragm deflector surrounding the wick tube at or near its upper edge, substantially as, and for the purpose, specified, in combination with the upper deflector, and the chimney having suitable openings for the supply of a draft of air to the inside and to feed the flame outside of the upper deflector, substantially as, and for the purpose, specified.

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Witnesses:

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