E. M. LANG.

Lantern.

No. 89,871. Patented May 11, 1869.

Fig: 1.

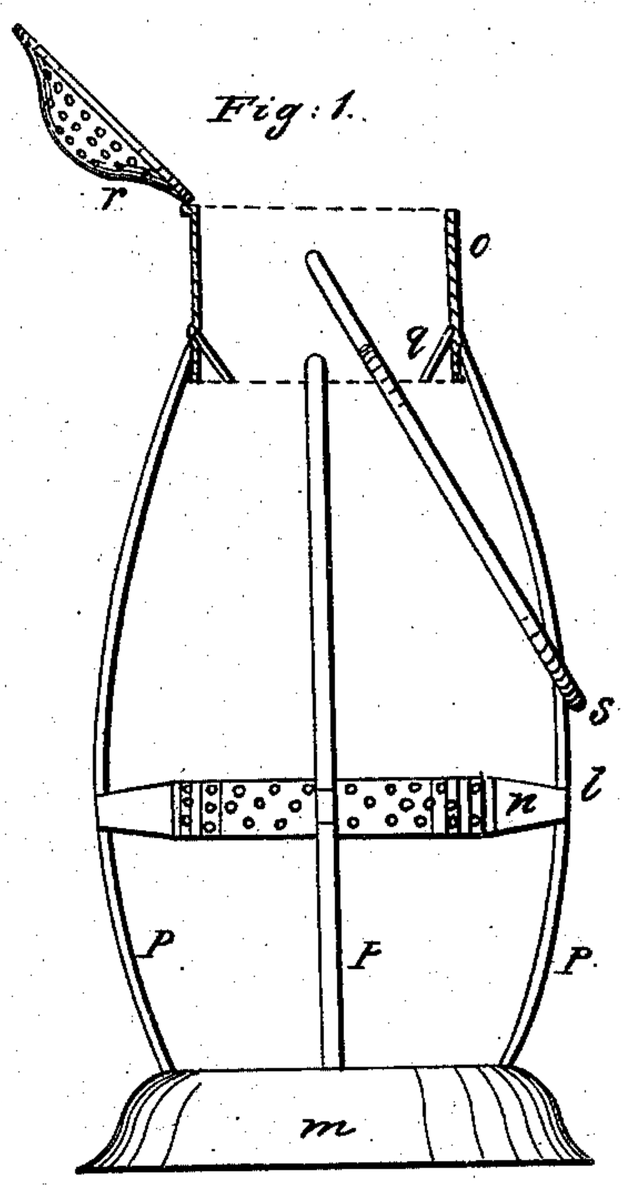
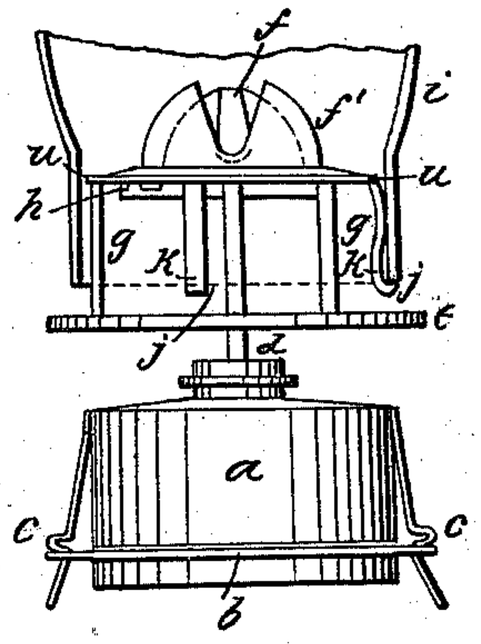


Fig: 2.



Witnesses:

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EDWARD M. LANG, OF PORTLAND, MAINE.

Letters Patent No. 89,871, *dated May* 11, 1869.

IMPROVEMENT IN LANTERNS.

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, EDWARD M. LANG, of Portland, in the county of Cumberland, and State of Maine, have invented a new and useful Improved Lamp-Burner and Lantern; and I hereby declare the following to be a full, clear, and exact description thereof, which will enable others to make and use my invention, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the skeleton or guard.

Figure 2 is a side elevation of the lamp.

This invention relates to certain improvements in double-cone burners, by which a uniform current of air is carried up around the flame on all sides, entering between the two cones, and in so arranging the cones that the flame is measurably good without a chimney.

It also consists in an improved guard, or skeleton, which slips over the lamp and its chimney, thus forming a lantern.

It further consists in the combination of a coal-oil lamp, suitable for use within-doors, with a lantern, as hereinafter described.

In the drawings—

a shows the lamp-body, having a flange, *b*, and springs, *c c*.

d is the wick-tube.

e is a broad, flat, circular disk, interposing an unperforated piece or sheet of metal between the flame and the receptacle for the oil.

f f' show double cones, *f* being supported by standards *g*, rising from the disk *e*.

The cone *f'* is placed within *f*, being connected thereto by studs, *h*.

i is the chimney, slipping down over the cones, and held a short distance above the disk *e*, by the outwardly-pressing spring-arms *j*, having hooks, *k*, on their lower ends, to embrace the lower extremity or base of the chimney.

By this arrangement, and the sheet or disk *e*, the air necessary to combustion is admitted in an unbroken sheet between the base of the chimney and the disk *e*. Thus a complete and uniform supply of air is afforded to the flame.

The inner cone, *f*, is steep in form, and has a uniform slot therein, for the emission of the flame. Over this is placed the cone *f'*, having a larger slot, and wider, the edges thereof being sufficiently far from each other to allow the flame of the wick to issue through without contact with such edges.

The purpose of this is to allow the current of air rising between the cones to pass upwardly by the sides and edges of the flame to the chimney above, so that the flame does not touch the outer cone on the edge of its slot, but is supplied with a constant current of air around it. This very much improves the combustion, and prevents any of the carboniferous substance escaping unconsumed in the form of smoke.

Thus the flame is whiter and purer, and its combustion of the oil more complete, thus removing, to a great extent, the liability to stain or "smoke up" the chimney, or to emit an odor.

The air entering the chamber below the cones in an even sheet, rises between the cones, and passes upward between the flame and the edges of the slot in the outer cone, the flaring form of which admits thereof, as before set forth.

The plate of the outer cone extends into the chimney-space at *u*, but does not come in contact with the inner periphery of the chimney at this point.

l shows a guard, or skeleton, which, when combined with the lamp, forms a lantern, and is attachable thereto, and removable therefrom.

The base, *m*, has an aperture, through which the lamp is inserted, through the ring *n*, and into the cap *o*.

The lamp is secured in the lantern, or skeleton by the springs *c c*, as before set forth.

When placed in the guard *l*, the annular space between the disk *e* and the base of the chimney is surrounded by the perforated ring *n*, held by the wire guards *p p*, which also connect the base with the cap of the lantern, or skeleton. This is for the purpose of protecting the lamp-flame, so that when a puff of air strikes the lantern, or when the lantern is swung backward or forward, a too great rush of air into the chimney is prevented, the excess passing out of the holes in the band, instead of entering the chimney.

It will be observed that the lamp below the disk *e* is, when in the lantern, exposed to the open air, which prevents the disagreeable odor arising from the closed lanterns, such as are in common use. It is but little liable to become heated at the lamp-top, because of being so exposed, and therefore but little liable to emit unpleasant gases or odors.

Within the cap of the guard is a conical piece, *q*, to receive the chimney-top, admitting the air around the top, but preventing it from so disturbing the flame as to cause smoke.

The cap has a hinged cover, *r*, which can be thrown back, so that a vessel can be placed thereon, to heat water, &c.

Thus the lamp shown in fig. 2 may be used for a house-lamp, and it is only necessary to slip over the same, as described, the guard, or skeleton, to be enabled to use the same as a lantern for purposes out of doors.

By thus employing the chimney of the house-lamp with the skeleton, we are enabled to obtain a brilliant light from a coal-oil burner as a lantern-light, without that degree of heat which has rendered it necessary to employ large glasses to such extent as to render the lantern too bulky for convenient use.

The exposure of the lamp to the air is nearly as complete with the skeleton as if the same were removed. This preserves the whole in that cool state

which cannot be attained in a closed lantern of the ordinary construction. The bail *s* is attached to the cap, as common.

The two cones heat the air before its passage upward by the edges of the slot of the outer cone.

The whole or unperforated disk renders the danger of explosion less imminent, because the lamp-top and body are thereby kept cool, and measurably isolated from the heat of the flame.

By the use of the disk *e*, and the admission of the air in the annular space between the disk and the base of the chimney, the flame is less likely to be extinguished by puffs of air, both when the lamp is used alone or with the skeleton or guard. But when employed with the guard as a lantern, this disk is of peculiar importance, because, with a foraminous disk, the access of the air would be so irregular that the flame would be easily blown out.

The slot of the inner cone may be made of uniform width, or widened at its outer ends a little, if desired.

The throwing back of the hinged cover *r*, as when the lantern is standing, and in use for a time, will prevent the heating of the lantern, and consequent smoke and odors.

A disk of metal will answer the purpose of the conical piece *q*.

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

1. The combination of the annular air-space formed by the base of the chimney, slightly elevated above the disk *e*, the unperforated disk *e*, the two cones, with the flaring or wider slot of the outer and the narrower slot of the inner, all as and for the purposes described.

2. In combination with the unperforated disk *e*, the deflector and chimney-base, the outwardly-pressing spring-hooks, as and for the purposes described.

3. The unperforated disk *e*, in combination with the annular air-space, as and for the purposes set forth.

4. The cap *o*, when provided with the conical piece of metal *q* and hinged cap *r*, as and for the purposes set forth.

Witnesses:

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