

J. H. IRWIN.
Lamps.

No. 151,703.

Patented June 9, 1874.

Fig. 1.

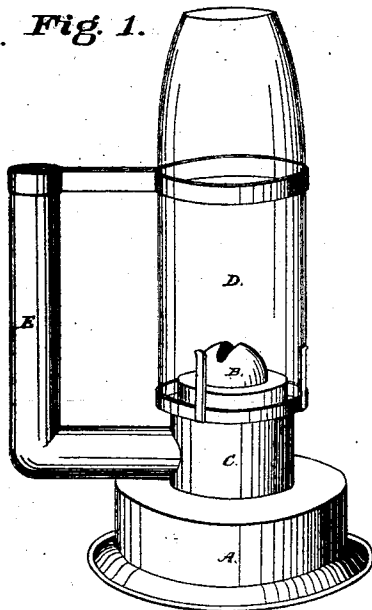


Fig. 2.

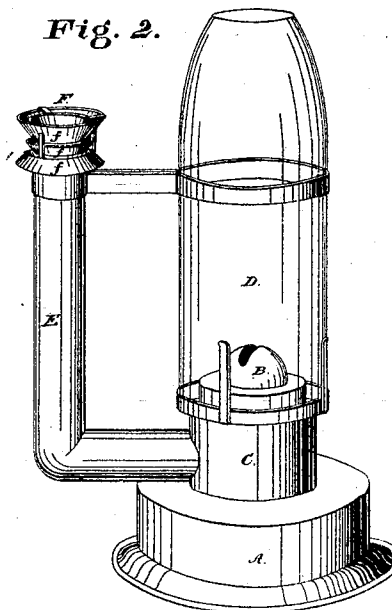


Fig. 3.

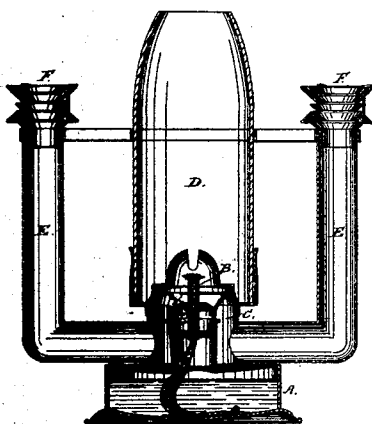


Fig. 5.

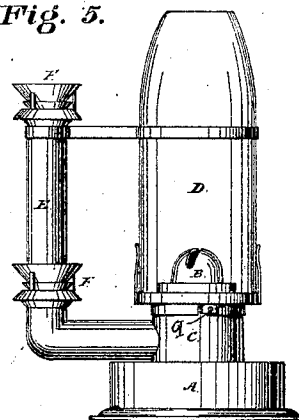


Fig. 6.

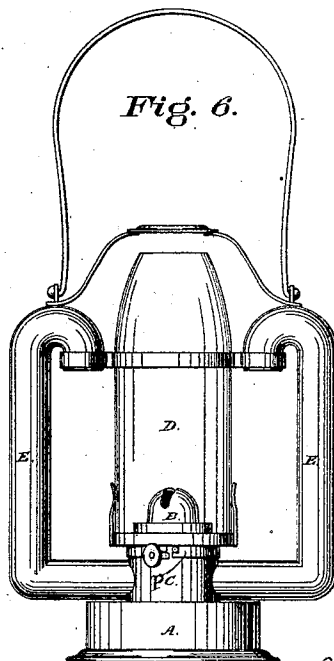


Fig. 7.

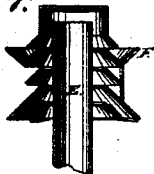
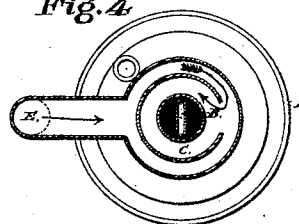


Fig. 4.



Attest:~

C. Clarence Doole,
J. B. Smith

Inventor:~

J. H. Irwin
By his atty R. O. Smith

UNITED STATES PATENT OFFICE.

JOHN H. IRWIN, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN LAMPS.

Specification forming part of Letters Patent No. **151,703**, dated June 9, 1874; application filed May 15, 1874.

To all whom it may concern:

Be it known that I, JOHN H. IRWIN, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a new and useful Improvement in Lamps; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 represents my lamp, and Fig. 2 represents the same with an air injector attached. Fig. 3 is a sectional elevation of the same lamp provided with two air-tubes. Fig. 4 is a horizontal section representing a modified construction of air-chamber. Fig. 5 shows an elevation of my lamp with two injectors. Fig. 6 is an elevation showing my improvement adapted to the purposes of a lantern. Fig. 7 is a sectional elevation of a hooded air-tube injector.

This invention relates to a class of lamps or lanterns wherein the air for the support of the illuminating-flame is received at a point nearly or quite as much elevated above the flame as is the outlet for the products of combustion. This method of receiving said air-current and its mechanical effects is employed in the well-known (so-called) tubular lanterns, and is particularly described in various patents heretofore granted to me for said lanterns. First, the object of this invention is to adapt to a lamp mechanical means to prevent the smoking or extinguishing of the flame thereof when said lamp is being moved up or down; second, to prevent the smoking or extinguishing thereof when carried from place to place in any direction, and from the effect of ordinary atmospheric disturbances.

It is well known that a lamp in which hydrocarbon oil is employed cannot be moved up and down, except with great care, without causing it to smoke and be extinguished. This is because the air-currents caused by these motions interfere with the proper ventilation of the lamp, and prevent the ingress of the required volume of fresh air. A current of air moving with a downward inclination upon the open top of the chimney will impede the escape of the products of combustion, and in a proportionate degree will pre-

vent the ingress of fresh air at the bottom, and thus cause smoke.

My invention is designed to prevent these effects without returning to the flame any of the products of combustion, or air heated by contact with the chimney, which would prevent it from flowing freely downward; and it therefore consists, first, in combining with a lamp-burner or wick-tube a surrounding air-chamber and a draft-tube, extending therefrom to a point detached from the outlet of the chimney-top, and nearly or quite as high above the flame as the outlet for the products of combustion; and, second, in combining with said draft-tube an atmospheric injector, to cause the air-currents, in whatever direction moving, to enter said air-tube and descend to the flame.

That others may fully understand my invention, I will particularly describe it.

A is the lamp, constructed with a wick-tube, B, and surrounding air-chamber C, similar to those described in the patents for tubular lanterns heretofore granted to me. The burner is surmounted by the transparent chimney D. A tube, E, enters the air-chamber C, and is secured thereto. The open end of said tube is elevated to a point nearly or quite as far above the burner as the outlet for the products of combustion or top of the chimney D.

A lamp constructed as shown in Fig. 1, with open-end air-tube E, will operate satisfactorily while remaining stationary or being moved up or down, but a lamp which is being carried in the hand is subjected to a complication of movements and eddy currents, which would frequently cause it to smoke. I therefore place upon the open end of the air-tube E an injector, F, as shown in Fig. 2. This injector is composed of a number of conical shells, *ff*, arranged with their bases outward and concentric with the axis of the tube E. Their effect is to deflect into the tube E the atmospheric currents which come in contact with said plates, from whatsoever direction, and thus insure a current of air through said tube uniformly in one direction. When the lamp, with a single tube, is subjected to certain tipping movements, in which, for instance, the chimney has an upward move-

ment, and the tube E a downward movement, there will be a deficient supply of oxygen and the flame will smoke, because the movement of the chimney retards the escape of the products of combustion, and the movement of the tube produces an induced exhaust current at the bottom of the chimney, and thus, if the movement is violent, the whole current may be reversed within the chimney and the tube. This effect will be neutralized by the employment of a second or balancing tube, as shown in Fig. 3, or a little less perfectly by a double air-chamber, as in Fig. 4, wherein the entrance to the air-chamber is on the side opposite the insertion of the tube, and, therefore, a portion of the said column will be on the opposite side of the axis from said tube, and to that extent will counteract the effect of the oscillation spoken of; or the employment of two or more injectors located on the tube E, substantially as shown in Fig. 5, will also, to a considerable degree, counteract the effect of unequal oscillation. Lamps for use out of doors, or as lanterns, may be constructed with the tops of the tubes curved and opening downward, as in Fig. 6, or with their tops, in effect, turned over by caps, as in Fig. 7. In case the draft-tubes are curved, or covered with caps, the chimney-outlet should always be covered with a cap, as shown. The advantage of this modification is in the exclusion of rain from the tubes and chimney.

In case a no-chimney burner is employed the top of the air-tube should be on a level, or practically on the level of the outlet of the burner-deflector, or slot in the conical deflector, so that, whatever the kind of burner, the relation between the entering column of fresh air and escaping column of products of combustion must be practically preserved.

To guard against accidents which might cause the displacement of the chimney and burner, I secure the burner-cone with a bayonet-fastening, as shown at *p* in Fig. 6, and secure the same from movement by a spring-latch, *q*, which is attached to the cone, and engages with one of the bayonet-pins, as shown in Fig 5.

Having described my invention, what I claim as new is—

1. A lamp provided with an air-chamber surrounding the wick-tube, and with one or more independent air-tubes, E, detached from the chimney, receiving air on a plane nearly or quite as far above the flame as the outlet of the chimney for the products of combustion.

2. In combination with the burner, having the wick-tube surrounded by an air-chamber, and provided with one or more independent draft-tubes, E, the atmospheric injectors F at the open ends of said tubes, as set forth.

J. H. IRWIN.

Witnesses:

REBECCA J. ELDER,
FREDERICK A. WAIT.