J. FELT.

Lamp or Lantern.

No. 205,181. Patented June 25, 1878.

Fig. 1.

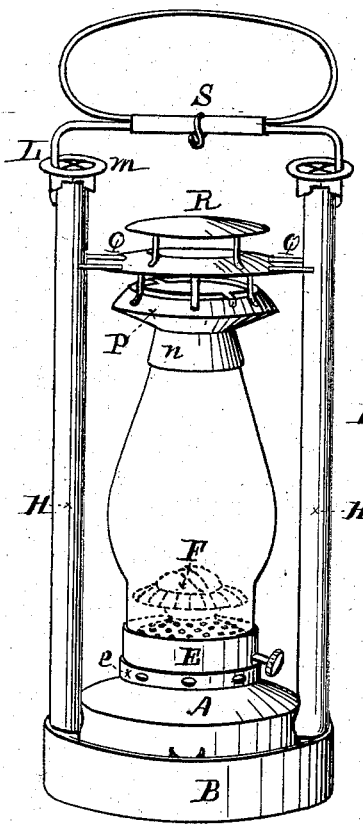


Fig. 2.

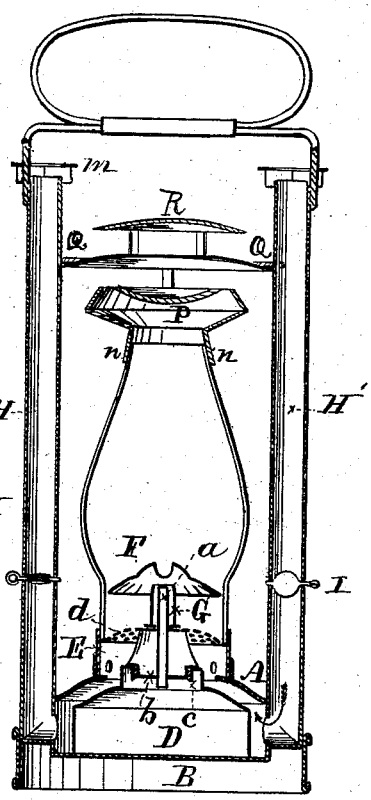


Fig. 3.

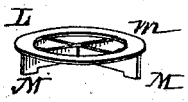


Fig. 4.

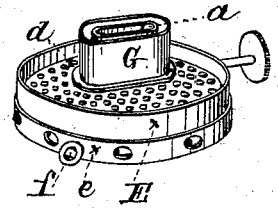


Fig. 5.

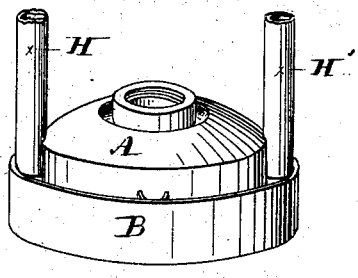
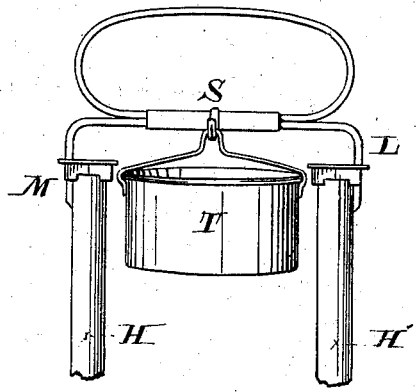


Fig. 6.



Witnesses:

E. E. Masson.

E. A. Dick

Inventor.

John Felt by

A. Pollok

his attorney.

UNITED STATES PATENT OFFICE.

JOHN FELT, OF CLAYTON, NEW YORK.

IMPROVEMENT IN LAMPS OR LANTERNS.

Specification forming part of Letters Patent No. **205,181**, dated June 25, 1878; application filed May 17, 1878.

To all whom it may concern:

Be it known that I, JOHN FELT, of Clayton, in the county of Jefferson and State of New York, have invented certain new and useful Improvements in Portable Lamps or Lanterns calculated to burn petroleum or other similar hydrocarbon liquids; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, in which—

Figure 1 is a perspective view of a lamp or lantern constructed in accordance with my said invention. Fig. 2 is a vertical section of the same, the plane of section passing through the axes of the chimney and the side tubes, shown in Fig. 1. Figs. 3, 4, 5, and 6 are perspective views of parts or details, as will be hereinafter more fully referred to.

My improvements have reference and relate more particularly to lanterns or lamps having tubular conductors of air from without to the burner for the sustenance of the flame. It is deemed unnecessary here to enumerate the different methods in which this principle of supplying air has been carried out, or to point out their shortcomings.

It will suffice to say that the object of the present invention is to overcome certain difficulties and objections which have been encountered in the use and practical application of tubular lanterns, as will more fully appear from the following description of the construction and arrangement of my improved lantern.

The lamp and burner used in connection with my invention present no particular novelty. Any of the known standard burners may be employed.

In the drawings I have shown a burner having an elevated deflector, with peripheral springs, which rest against the chimney, as in the well-known Collins or sun burner. The wick-tube *a*, proceeding from the cap *b*, screws into the collar *c* of the oil-vessel D, and is surrounded, resting upon the foraminous air-distributer and chimney-rest *d*, by a tubular sleeve, G, which extends to a point not lower than the top of the wick-tube. This tubular sleeve is provided with a horizontal flange, which closes the space around the tube, and thus affords additional protection to the base of the flame against any possible disturbance of the air affecting it in the space under the deflector and above the air-distributer.

The latter is rigidly connected with an upright flange, E, on top of a chamber, A, which surrounds the oil-vessel. This flange extends above and below the air-distributer, the upper part constituting a lateral chimney-holder, the lower part being provided with air-holes, through which air may be admitted under the air-distributer to the burner. A sliding ring, *e*, pierced with corresponding holes, surrounds the lower part of said flange, so that its orifices can be brought in juxtaposition with those of the flange whenever it is desirable to admit air directly to the burner. But when it is necessary or desirable to admit air through the tubular side columns, hereinafter to be described, the air-orifices in the flange are closed by shifting the ring to bring the unperforated parts of the ring opposite the orifices in the flange. Air will be thus prevented from reaching the burner through the side orifices mentioned. To conveniently move the sliding ring, I provide it with a stud or finger-piece, *f*, as shown in Fig. 4.

The chamber A around the oil-vessel communicates with the outside air by means of two columns, H H′, or tubular frame of the lantern, open on top, and provided with suitable valves I, by means of which the flow of air may be intercepted when necessary. These columns I extend to a point as high above the top of the chimney as practically possible. I have found it of great importance in violent gusts of wind that the air-admission openings in the tubes should be as far removed as possible from the point of ingress to the air-receptacle surrounding the oil-chamber or to the burner, in order to equalize the pressure of air during its descent; and I have also found that, unless the air-inductor be elevated above the chimney, the variations in the currents of air or directions of winds would materially influence the flame, and the heat thrown out by the chimney would prevent the air entering the columns.

In each of the columns a valve or damper, I, is arranged, which may be operated from without by means of a knob or finger-piece, to more or less or entirely close the air-passage through the columns when in high storms

the air is too violently forced into the lamp. I would observe, however, that by making the tubular columns of sufficient height there will be but little or no use for such valves.

Each column is surmounted by a cap, L, of a peculiar construction, as shown in perspective view in Figs. 1 and 3 and in side elevation in Figs. 2 and 6. The cap, which may be permanently connected with the top of the column or fitted on to be removable therefrom, is composed of a flat annular disk, *m*, rigidly connected with a cruciform blade made of two metal strips, M, bisecting each other at right angles. This cap is made of larger diameter than that of the column, and is put on in such a way as that the line of intersection of the surfaces M shall coincide with the axes of the column and the axis of the annular disk. The object of this contrivance is to prevent accidental counter-currents or effects of suction taking place in the columns. Whenever a blast of air passes over the orifice of an open tube, an outward current of air will be induced from the column, which will cause air being drawn into the lamp from the chimney, either extinguishing the flame or producing smoke and flickering. The flat disk on top of the column, however, will divide the air into the two layers, the upper of which passes over the top of the column too far removed to affect the draft, and the lower, which, being caught by the converging surfaces M, will be thrown down the column and forced out into the chamber, as shown by the arrow in Fig. 2,

I have found it advantageous to make the interior diameter of the annular disk *m* somewhat smaller than that of the column H H′.

With the chimney is combined a top or cap or ventilator of a peculiar construction. It may be said to be composed of the several parts, as follows: A collar or ferrule, *n*, fitting the top of the chimney, is attached to a double cone or two truncated cones, P, united at their bases. The opening of the upper cone is partially closed by a spheroidal disk, with its convex side down, and leaving spaces or openings along the annulus, which forms the juncture of the upper cone with the disk. By means of stays or supports is held a certain distance above, and rigidly connected with the double cone P, an annular slightly concavo-convex deflector, Q, overhanging the opening between the spheroidal disk and the double cone P, and this concavo-convex annulus is, in its turn, surmounted by a spheroidal cap, R, held above it by means of stays, so as to overhang the opening of the annular deflector Q.

To insure greater security in the adjustment and steadiness of the top or ventilator upon the chimney, I provide the part Q, as the one which is nearest to the column H H′, with guides embracing said columns; but they may be dispensed with, or other means of adjustment used in lieu thereof.

It will be understood that any disturbances of air at or about the top of the chimney, produced either by moving about the lantern or by gusts of wind, is by means of this cap, thus constructed, rendered harmless.

Supposing the lantern to be moved about in any given direction—for instance, down—then the air around the chimney-top, instead of being disturbed, and consequently producing smoke or the extinguishment of the flame, will be deflected sidewise by coming in contact with the lower side of the double cone, thus maintaining the proper equilibrium of pressures, whereby permanent draft is kept up. If the lantern be moved upward, then the air will be deflected from the chimney by the top R, and if moved sidewise, by the double cones. In no case, however, will the deflecting of the air cause the least disturbance in the chimney, because of the presence of the spheroidal disk overhanging the opening in chimney.

To further provide against any accidental excessively strong currents of air directly upward, I use at the bottom of the lantern, encircling the lower part of the air-chamber which surrounds the oil-vessel, but to project below the bottom thereof, a hoop, B, the object of which is to break such currents of air and wholly or in part prevent them from producing about the caps L upon the tubular column H H′ suction, the effect of which would be the reversing of the current of air in said columns.

Any upward currents of air which may pass between said hoop and the air-chamber surrounding the oil-vessel will be caused to ascend along the tubular column, to be caught by the annular disks *m*, and be deflected by them, in conjunction with the angular blades M, into the tubes or columns, conveying such air to the combustion-chamber of the lamp.

To complete the description of my lantern, I would mention the handle, which consists of a wire loop engaging, to be capable of swinging action, in a sleeve secured by a wire brace to the top of the tubular column H and H′. A hook, S, is soldered to the sleeve, upon which a heating-vessel, T, may be suspended when the lantern, being used in the interior of a house as a common lamp, is to be utilized as a nursery-lamp, to heat or keep warm water or other liquids, or for any other purpose.

From the preceding description the operation of my said invention will have been understood; but I would lay stress upon the fact that by the improvements described I have accomplished the following results, viz: The flow of air to the lamp is rendered constant and uniform; the draft of air through the column or columns can be regulated, and the air received through it or them is not contaminated by any of the products of combustion; by providing means for separate supplies of air my improved lamp can be made to operate in all kinds of weather and under all circumstances; no air can enter the chimney or

the combustion-chamber of the lamp, except through the air-chamber surrounding the lamp. The flame will therefore be steady.

Having thus described my said invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. The combination, in a lantern, with a lamp having its burner, oil-vessel, and chimney, of an air-chamber surrounding said oil-vessel, and communicating with tubular columns which extend above the chimney, or any top or air-deflecting appurtenances of said chimney, without communicating therewith, as described.

2. The combination, in a lantern in which the oil-vessel is surrounded by an air-chamber communicating with columns admitting air from above the chimney, as shown and described, of an auxiliary air-chamber surrounding the burner underneath the combustion-chamber of the lamp, with the means herein shown and described of admitting, at pleasure, air within said chamber independently of that conveyed by the columns, all substantially as herein set forth.

3. In combination with the wick-tube and foraminous air-distributer of a kerosene-oil burner of otherwise ordinary or suitable construction, the tubular sleeve surrounding said wick-tube and resting upon said air-distributer; but such sleeve is claimed only when provided with a bottom flange snugly fitting the wick-tube, as herein shown and set forth.

4. The combination, in a lantern, of a lamp and its appurtenances, an air-chamber surrounding it, columnar air-tubes communicating with the air-chamber and valves in said air-tubes, all substantially as shown and set forth.

5. In combination with columns conducting air to the lamp from without, as described, the caps composed of annular disks overhanging and connected with cruciform air-deflecting blades, substantially as shown and set forth.

6. The combination, with the lamp, the air-chamber, and columnar air-ducts, of a hoop encircling the lower part of the said air-ducts and air-chamber, as and for the purposes set forth.

7. In a lantern having a lamp and air-supply contrivances, as herein shown and set forth, the chimney and removable chimney-top, constructed and arranged for operation substantially as herein shown and set forth.

8. The chimney-top composed of the following elements in combination, viz: first, a double cone provided at its lower end with a ferrule or sleeve fitting the top of the chimney, and at its upper end with a spheroidal cap, leaving an annular opening between it and the cone, as described; second, a concavo-convex annular disk overhanging the annular opening in the cone, as described; and, third, a spherical cap overhanging the opening in the concavo-convex disk, as shown and set forth.

9. The combination, with the tubular columns, the wire brace and handle of the hook, arranged as shown and described, and for the purposes set forth.

In testimony whereof I have signed this specification in the presence of two subscribing witnesses.

JOHN FELT.

Witnesses:
STEPHEN HALE,
PERRY CASWELL.