

F. J. DENNIS.
Lantern.

No. 219,449.

Patented Sept. 9, 1879.

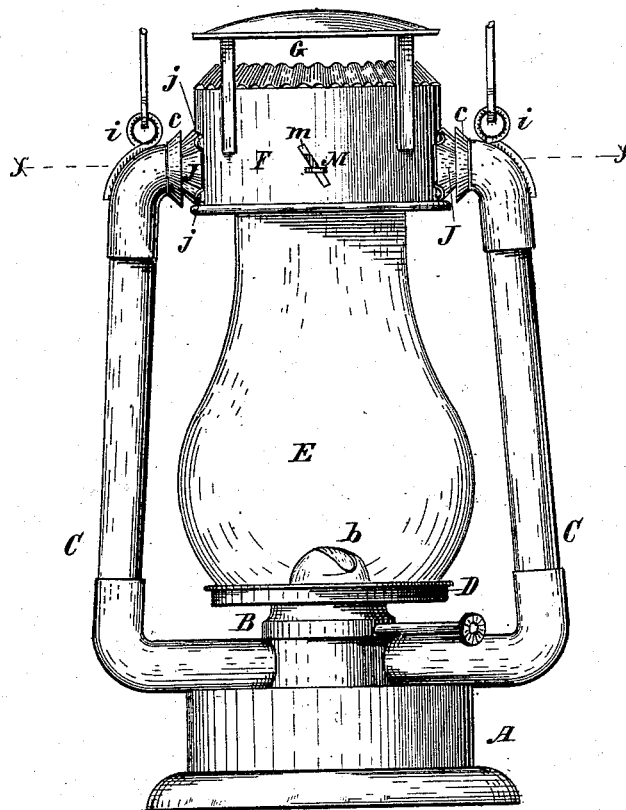


Fig 1

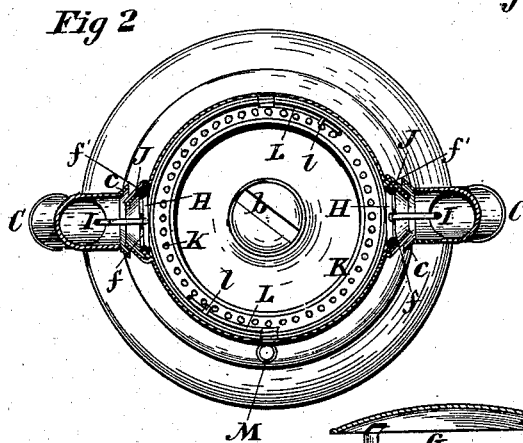


Fig 2

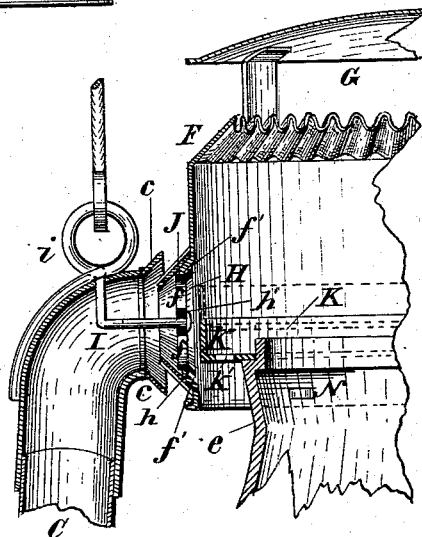


Fig 3

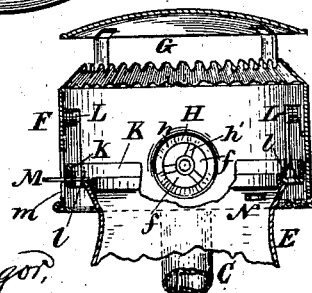


Fig 4

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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN LANTERNS.

Specification forming part of Letters Patent No. **219,449**, dated September 9, 1879; application filed May 7, 1879.

To all whom it may concern:

Be it known that I, FREDERICK J. DENNIS, of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Lanterns, which are fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents an elevation of a lantern embodying my improvements; Fig. 2, a plan section of same, taken through line *x x* of Fig. 1; Fig. 3, a detail vertical section of the cap and metallic top; Fig. 4, a detail similar section on an enlarged scale, showing the joint between the top and the tubes.

My invention relates to that class of lanterns which is generally known as "tubular," on account of the pipes or tubes through which air to support combustion is conducted to the burner, and more especially to that more limited subdivision of this class of lanterns in which a chimney-draft is also used.

The invention consists in uniting the metallic top of the lantern and the feed-tubes by a joint, on which the top may be turned to permit the removal of the globe.

It also consists in a sliding ring within the metal top, which operates to hold the globe in position, and also to close the upper portion of the air-chamber.

It also consists in various other special devices and combination of devices, all of which will be hereinafter more fully described, and definitely pointed out in the claims.

In the drawings, A represents the oil-pot, which is of the ordinary construction in this style of lantern, and B the burner, which is provided with the usual slotted cone *b* in general use now in burners for kerosene-oil. Below the burner is an air-chamber, which is also an ordinary feature of construction in this kind of lanterns.

Two air-tubes, C, are arranged on opposite sides of the lantern, their lower ends connecting and opening into the air-chamber at the burner.

The usual plate or gallery D is arranged upon the cone of the burner, upon which is placed the glass globe or chimney E, at the upper end of which is a large bead, *e*, the upper side of which is made tolerably flat, so as to form a

seat for the globe-holder; and above this seat the body of the globe projects slightly, as shown in Fig. 4 of the drawings.

The metal top F is made of somewhat larger diameter than the upper end of the globe, so that it may fit down over the latter slightly. The upper edge of this top is turned inward and crimped, as shown in the drawings. An ordinary cap-plate, G, surmounts the top, being arranged a little above the latter, so as to operate as an ejector to the products of combustion at the upper end of the chimney. This metallic top, instead of being fixed to the tubes or any other part of the lantern, is attached to the former by a pivoted connection, on which it may be turned, the construction of which I will proceed to explain.

The upper ends of the feed-tubes are bent inward at the upper end of the globe, the openings being a little above the latter. In the top apertures *f* are made on opposite sides about as large or little larger than the tube-openings. The ring H is constructed of suitable size to fit these apertures in the top, being provided at one edge with a flange, *h*. The edge of the top around the outside of the openings *f* is also turned outward somewhat, to make a kind of flange, *f'*, which is adapted to fit the ring H as a bearing, the flange *h* of which is upon the inside of the aperture, as shown in Fig. 4 of the drawings. The ring H is also provided with arms or spokes *h'*, to which a rod or wire, I, is attached, and thence extends outward slightly into the tube, and is bent upward and carries through and outside of the tube, to which it is securely fastened in any suitable way. I prefer to make the bend in this wire outside of the tube to form an eye, *i*, for the attachment of the bail. The rings H are thus firmly secured to the tubes, and it is evident that the top may be turned on the rings as bearings. In this instance injector-plates are used for the purpose of turning the currents of air into the tubes, and these plates are constructed and arranged so as to permit the top to be turned.

The upper ends of the tubes C are provided with flaring flanges *c*, and annular injector-plates J are attached to the outside of the top F, being arranged around the apertures *f*. The flanges *c* on the ends of the tubes act with the

plates J as injectors to turn currents of air into the feed-tubes, which otherwise would pass these tubes and tend to exhaust or interrupt the air-feeding current in the tubes. The injector-plates J are conical in shape, and are corrugated to provide openings *j*. The cone-shaped ends of these tubes project into and are held within the flaring flange *c* on the ends of the tubes, but are not attached thereto, and therefore will turn around therein as the top turns on its bearings, thus accommodating the movement of the latter upon its axis.

A ring or narrow annular plate, K, is arranged loosely within the metallic top, and is provided with a vertical flange, *k*, at its outer edge, which fits the interior of the top. This ring is also provided with perforations *k'*, and may be moved up and down within the top.

Springs L are attached to the interior of the top F, and arranged to bear upon the ring K so as to hold it down, but at the same time permit it to move upward under pressure. In this instance these springs are ordinary bent springs, one end being attached to the top and the other or free end passing loosely through a loop, *l*, on the ring, so as to permit the latter to turn to some extent within the top.

A pin, M, is attached to the ring K, and passes out through a slot, *m*, in the top, which is inclined, as shown in Fig. 1 of the drawings. This pin serves to raise the ring K whenever desired. The inclination of the slot gives to the latter a partial rotation within the top as it is raised, thereby avoiding a binding of the parts, which would occur if the ring was raised directly upward at one side.

Stops or projections N are provided on the inside of the top opposite to the pin-slot, which prevent the ring K from descending below a certain point on that side of the lantern, the same result being obtained by the pin and slot on the other side.

The parts are all arranged so that when the globe or chimney is in place upon the perforated plate the ring K will rest upon the seat provided for it by the bead *e*, as shown in Fig. 4 of the drawings, and will be held thereto by the action of the springs above it, so that it constitutes an elastic globe-holder, and at the same time closes the space between the upper end of the globe and the top F a little above the lower end of the latter. There is thus formed an annular recess or air-chamber around the upper end of the globe, which connects with the ends of the air-tubes, so that air turned into this chamber will also be turned into the tubes.

In operation, air-currents are turned into the upper ends of the tubes by means of the injector-plates outside of the top F, which have already been described, and also from the chamber below the ring K by the combined operation of the lower end of the top and the upper end of the globe, the beveled head *e* of which greatly assists in the necessary deflection or turning of the air-currents. The perforations *k'* in the plate K permit some of the

air in high winds to escape up through the plate into the top above the globe, thereby preventing a too great acceleration of the feed-current, and also serving at all times to somewhat cool the top and adjoining parts.

The apertures in the top F opening into the feed-tubes, it will be seen, are partly above and partly below the ring K, so that there is also a connection between the feed-tubes and the interior of the top above the ring or globe-holder. This arrangement prevents the exhaustion of air from the ends of the feed-tubes under certain sudden movements of the lantern or under the influence of certain currents of air.

In order to remove the globe, the pin attached to the ring K is forced upward in its slot, thereby carrying the globe-holder up on that side of the lantern. The top is then turned upon its axis, when the upward end of the globe may be pulled outward and the globe removed from its support. It is evident that the globe may be replaced by reversing this movement.

In some respects the construction of the lantern, as described above, may be varied without departing from the characteristics of my invention. The rings which constitute the bearings of the top may be secured to the tubes in some other way; and even when the wires are used, as shown, they may be carried directly outward to the tubes, instead of being bent upward to form attachments for the bail. This ring-bearing may also be a disk, if it is not desired to provide a communication between the ends of the tubes and an interior chamber; and in case the injector-plates are employed above to keep up the supply of air through the tubes to the burner, it is evident that the joint between the tubes and the top would necessarily be modified somewhat in construction.

The springs which hold down the ring K may also be of any construction suitable for this purpose; and I do not confine myself to the special device by means of which I get a rotary movement of the ring within the top.

The perforations in the ring may also be dispensed with, though I prefer to employ them to accomplish the beneficial effect above described.

This method of supporting the top upon pivots I have found to be a desirable improvement, for it saves all expedients for obtaining a vertical movement of the top, while at the same time it permits it to be extended down over the upper end of the globe for the purpose already stated.

Having thus described my invention, what I claim as my invention, and desire to secure by Letters Patent, is—

1. In a lantern, a top, F, connected with the feed-tubes by pivotal supports, on which it is free to turn, substantially as and for the purposes set forth.

2. The globe E, in combination with the tubes C, the metallic top F, supported on piv-

otal bearings attached to the tubes, and an elastic globe-holder, K, substantially as described.

3. The annular bearings H, in combination with the top F, provided with apertures *f*, and rods or wires I, connecting the bearings and feed-tubes, substantially as described.

4. The feed-tubes C, provided with flaring mouths at their upper ends, in combination with the top F, mounted on pivotal bearings secured to the tubes, and injector-plates J, secured to the top and entering loosely the flaring mouths of the feed-tubes, so as to turn therein, substantially as described.

5. The rod or wire I, which secures the top bearings to the tubes, extending out through the latter, and provided with eyes *i* for the attachment of the bail outside of the tubes, substantially as described.

6. A turning top, in combination with a ring, K, arranged to move vertically within the top, the globe E, and springs arranged to bear upon the upper side of the rings, substantially as described.

7. The ring K, provided with loops *l*, in combination with the springs L and the top F, substantially as described.

8. The top F, provided with the inclined slot *m*, in combination with the ring K, pin M, and holding-springs L, substantially as described.

9. The ring K, in combination with the globe E and the top F, whereby the ring serves both as a globe-holder and to close the space between the globe and the top, to form an air-chamber around the upper end of the globe, substantially as described.

10. The top F, in combination with the globe E and the ring K, provided with perforations *k'*, whereby communication is provided between the fresh-air chamber below the ring and the interior of the top above the ring, substantially as described.

11. The globe or chimney E, in combination with the top F, an annular fresh-air chamber around the upper end of the globe, and the tubes C, communicating through the top with both the fresh-air chamber and the interior of the top above the globe, substantially as described.

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