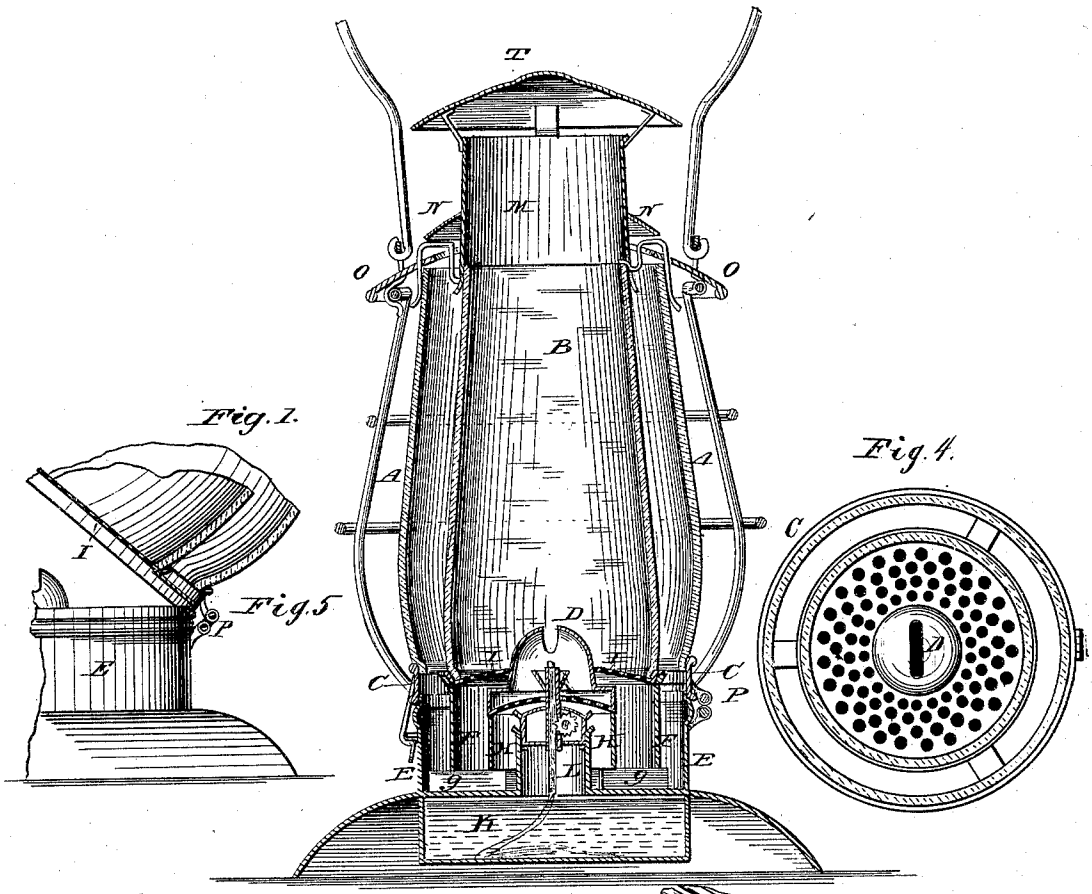
J. MORGAN & T. WALTON.

Lantern and Lamp.

No. 208,112. Patented Sept. 17, 1878.



Witnesses

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UNITED STATES PATENT OFFICE.

JOHN MORGAN AND THOMAS WALTON, OF WHEELING, WEST VIRGINIA.

IMPROVEMENT IN LANTERNS AND LAMPS.

Specification forming part of Letters Patent No. **208,112**, dated September 17, 1878; application filed August 31, 1878.

To all whom it may concern:

Be it known that we, JOHN MORGAN and THOMAS WALTON, of Wheeling, county of Ohio, and State of West Virginia, have jointly invented certain new and useful Improvements in Lanterns and Lamps, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

Figure 1 is an axial section of our improved lanterns, showing the several parts in detail. Fig. 2 is a similar view of the base of the lantern, showing the position and arrangement of an auxiliary deflecting-plate in the air-channels. Fig. 3 is an elevation or side view, showing how the double globes may be turned back to expose the burner free from all obstruction. Fig. 4 is a plan of the hinged ring and connected foraminated plate. Fig. 5 is a sectional view, showing arrangement and relative location of the two globes, their supporting-ring, and the base-ring.

Like letters in all the figures indicate corresponding parts.

Our invention has relation to that class of hand-lanterns wherein the ascending and descending currents of air within the flame-chamber are counterbalanced by reverse currents directed toward or into said chamber through the medium of a second globe or chimney arranged outside of the globe which forms the flame-chamber, and which class of lanterns are now well known as "double-globe lanterns."

Our improvements are intended to simplify and reduce the cost of construction of devices of this class, rendering them at the same time more convenient to light, fill, and clean, less liable to disarrangement of parts when being handled, of increased efficiency in affording a strong and brilliant flame at all times, and more effective in preserving the requisite steadiness of flame or preventing its extinguishment by gusts of wind or by violently swinging the lantern, than are any of the heretofore-existing similar devices.

To accomplish all of this the invention consists, essentially, in an improved method of supplying air to the outside as well as the inside of the burner-cone; in an improved arrangement of the air-conducting channels beneath the globe; and in certain other arrangements or combinations of parts, all of which will be hereinafter first fully described, and then pointed out in the claims.

In previously-existing devices of the class to which our invention relates air has been conducted down between the two globes and thence through certain tubes to the under side of the burner-cone, while fresh air has been admitted to the flame-chamber outside of said cone, finding its entrance between the air-conducting tubes.

The cost of constructing these tubes has been found to be considerable, amounting to a serious objection, and the results attained by feeding air to the flame at different temperatures and of different densities have been far from satisfactory. Moreover, these old forms of lanterns do not permit access to the wick without removal of the chimneys bodily from their supporting-rings—an operation requiring time and considerable care in readjustment.

To obviate these as well as minor difficulties, we support the outside globe, A, upon a ring, C, and the inner globe, B, upon a foraminated plate, I, forming the air-distributer for the inner globe, and which is connected to and movable with the ring C, leaving an open space at the base of the two globes for the free passage of air.

The base proper of the lantern is formed by mounting the ring E upon the oil-cup K or other substructure. This ring E is about the same diameter as the base of the outside globe; and within it we locate a second ring, F, about the size or diameter of the inner globe. Narrow ledges or other equivalent projections, *g*, serve to elevate the bottom of ring F, as well as that of a third ring, H, above the bottom of the chamber formed by the outside wall, E, and the top of the oil-cup, allowing free passage for air beneath F and H. The cone D fits the mouth of ring H, and the wick depends within the inside tube, L. The wick-raiser shaft S projects through suitable notches in the tops of the rings or tubes toward the exterior of the base, where it is convenient of access, and so that it, with the burner, may be removed when the globes are turned back upon their hinged base.

When the several tubes are arranged in accordance with the above description the currents of air which descend between the two globes enter the channel between E and F, pass under F, and thence up through the foraminated plate I to the flame-chamber exterior to the burner-cone; and a proper proportion of the volume of this air also passes under H, and thence up to a point beneath the cone, so that the requisite supply of air for the support of the flame is admitted upon both sides of the cone.

From this arrangement it will be observed that all the air which supports the flame must first enter at the top of globe or chimney A, and then pass down between the two chimneys, the advantage of which is that the flame is fed by heated air upon both sides of the cone, in consequence of which the currents heretofore produced by admission of air of different temperatures and different densities are obviated, and the flame therefore rendered more steady and uniform.

It is obviously more advantageous to supply fresh air for the support of the flame than air from which the oxygen has been partially consumed, as is done in the majority of heretofore-existing tubular lanterns, wherein some connection is afforded between the flame-chamber and the air-conducting channels; and it is also obvious that better effects can be attained by supplying heated air rather than cold, which latter tends to cool the flame and thus retard combustion. We therefore make the central tube, M, of the dome fit over the mouth of the inner globe, B, so that it will form a practical extension of the flame-chamber, thus increasing the draft; and over the mouth of the outer globe, A, we locate the deflector-plate O, leaving a passage for air between it and tube M, and guard this passage by the deflector N, which is attached to the tube M. Suitable straps are attached to plate O for the purpose of holding the top of chimney A in proper position.

The guards N O prevent too sudden admission of air to the channel which they protect; and the tube M is, of course, provided with a suitable top, T.

To this particular construction of the dome-section of the lantern we make no claim herein.

The operation of the improved device to prevent flickering or extinguishment of the flame is substantially as follows: Violent swinging of the lantern or sudden gusts of wind operate to force air within the flame-chamber either downwardly or upwardly. Any downward current within the flame-chamber is, of course, followed by a corresponding current between the two globes. These two meeting at the region of the plate I and the burner-cone, and the outside current having been changed in its direction from downward to upward through the intervention of tubes F and H, they are opposed to each other, and, being of about the same force, they operate to render each other of no effect upon the flame, or to counterbalance or counteract each other.

In like manner, any upward tendency of air in the flame-chamber is followed by a similar tendency of air in the channel between the globes. From the region of the flame these two are opposed to each other by reason of the described arrangement of tubes or passages, and their joint effect can only produce a slight rarefacation of the air, and this without the production of any materially disadvantageous current. In this manner and for these reasons the flame is maintained at a steady and uniform state under all circumstances of ordinary handling and use of the lantern. The flame-chamber being slightly elongated beyond the mouth of globe A, when the burner is lighted the draft will be upward, fresh air being supplied in a quiet and uniform current through the proper air-channels.

A secondary foraminated plate may be placed within the chamber between tubes E and F, as at I′ in Fig. 3, and this will serve to aid in the proper distribution or dissemination of the incoming air-currents. This plate may conveniently be supported upon the ledges *g*, or elsewhere, as desired. Its use is, however, in no way essential to the successful operation of the improved lantern.

For convenience in removing the globes, the dome is hinged at some convenient point, so that it may be thrown back, as has heretofore been done in this class of lanterns.

The ring C, supporting plate I and the two globes, is hinged, as at P, so that the pair may be conveniently thrown back, as indicated in Fig. 3, thus exposing the burner free of all obstruction for lighting and trimming or cleaning. In previous forms of double-globe lanterns it has not been regarded as practicable to hinge the globe-supporting plate, for the reason that the air-tubes would thus have to be broken, and the fitting or registration of the corresponding parts would be difficult and expensive to accomplish.

In the construction shown herein, since all the auxiliary air-channels are formed of concentric cylindrical tubes, the parts required to fit thereon or thereover may be easily adjusted, and are capable of being very cheaply made.

The lantern would, of course, operate, if the cylinder or tube E were perforated, so as to admit air directly therethrough; but such perforations would destroy the effect of the arrangement whereby the air supplied is rendered of uniform temperature.

When constructed in accordance with the foregoing description, the lantern is found by practical tests to admirably fulfill the various purposes and objects of the invention, as previously stated, and to accomplish the offices of an illuminating apparatus in a manner superior to the more expensive styles of lanterns.

Having thus fully described our invention, we desire to add that we are fully aware of numerous forms of double-globe illuminating

devices wherein air is supplied to the flame from the channel between the globes, to all of which, however, some one or all of the objections previously alluded to are applicable. We do not therefore wish to be understood as laying any broad claim to a double-globe lantern; but

What we do claim as new, and desire to secure by Letters Patent, is—

1. In a double-globe lantern, the combination, with the exterior globe and the base, of a ring or cylinder located between the two, and adapted to direct all the air from the space between the globes to the flame-chamber, and to exclude air not passing through said space, substantially as and for the purposes set forth.

2. In a lantern wherein the currents within the flame-chamber are counterbalanced, substantially as explained, the combination of the three concentric rings or tubes, the double globe, and the burner-cone, the several parts being arranged as set forth, and adapted to convey heated air to the flame-chamber outside of the cone and to a point beneath the cone, for the purposes and objects mentioned.

3. The combination, with the exterior ring or tube, of the two interior tubes having air-passages beneath them, substantially as shown and described.

4. In a double-globe lantern, the exterior imperforate ring E, serving as a support for the hinged upper section of the lantern, forming an air-conduit, and adapted to exclude cold air from the flame-chamber, as and for the purposes set forth.

5. In a double-globe lantern wherein air from the space between the two globes is conducted through a series of channels formed in the base-section of the lantern, the combination of the exterior imperforate ring E and the ring C, hinged thereto and supporting the two globes, said ring C being located substantially as explained, so as to cause the two globes to swing over their corresponding annular air-channels, substantially as shown and described.

In testimony that we claim the foregoing we have hereunto set our hands in the presence of two witnesses.

JNO. MORGAN.
THOS. WALTON.

Witnesses:
WORTH OSGOOD,
W. N. WOOD.