E. F. CASH & A. L. BARON.

LANTERN.

No. 191,401. Patented May 29, 1877.

Fig. 1

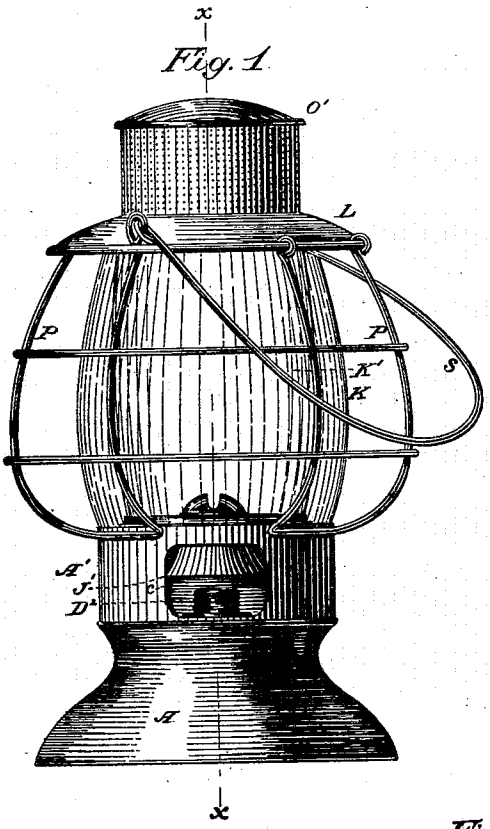


Fig. 2

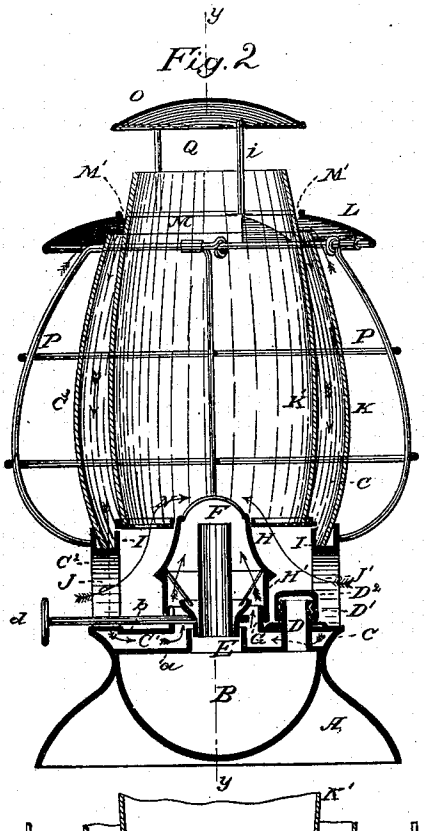


Fig. 4

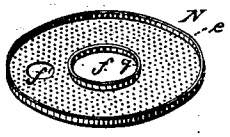


Fig. 6

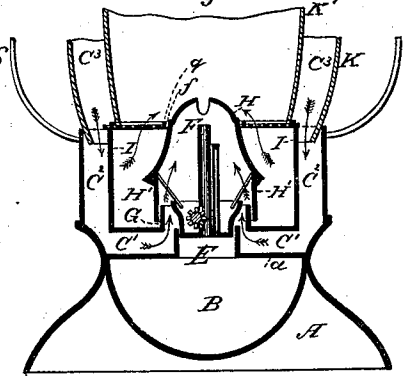


Fig. 5

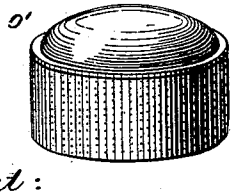
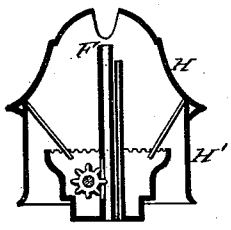


Fig. 3



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EVAN F. CASH AND ALFRED L. BARON, OF BELLAIRE, OHIO.

IMPROVEMENT IN LANTERNS.

Specification forming part of Letters Patent No. **191,401**, dated May 29, 1877; application filed April 17, 1877.

To all whom it may concern:

Be it known that we, EVAN F. CASH and ALFRED L. BARON, of Bellaire, in the county of Belmont and State of Ohio, have invented a new and useful Improvement in Lanterns; and we do hereby declare that the following is a full and exact description of the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The object we have in view is the construction of a lantern adapted for use with coal-oils of ordinary tests, so constructed that the lantern may be subjected to any violence of motion or exposure to wind without extinguishing the light; and the novelties which constitute our improvements consist, principally, in the means by which currents of air to support combustion introduced within the globes are carried finally into the cone around the burner, and at the same time other currents of air, passing directly through openings in the sides of the base, are conducted to the flame above the cone, which two currents counterbalance, as hereinafter more fully explained; in the construction of a peculiar air-chamber in the upper part of the base, communicating with the interior of the cone in openings in the sides of the upper part of the base, through such air-chamber; and in the construction, combination, and arrangement of the various operative parts, all as more particularly and in detail described.

In order that those skilled in the art may know how to make and use our lanterns, we now proceed to describe the same, having reference to the drawing, making a part of this specification, in which—

Figure 1 is an elevation of our lantern; Fig. 2, a central vertical section of the same upon the line *x x* of Fig. 1; Fig. 3, a vertical section of the cone and its jacket; Fig. 4, a separate view of the perforated diaphragm or disk; Fig. 5, a separate view of one of the caps; Fig. 6, a central vertical section of the lower portion of the lantern upon the line *y y* of Fig. 2.

In our lantern, A represents the lower, and A′ the upper, part of the base. Within the lower base the oil-reservoir B is secured in any proper manner, provided always that there are no openings for air around the oil-reservoir, or, in fact, upon the under side of the base. This oil-reservoir is a close vessel, preferably of metal, with a flat top, with no opening leading into it except that for filling, and for the bottom of the burner, hereinafter described.

Placed upon the oil-reservoir is the air-chamber C, which, preferably, occupies the whole height of the upper base A and the space between the globes, and is composed of several distinct portions or divisions. The lower portion C^1 of the air-chamber occupies a space between the top of the oil-reservoir *a* and a diaphragm, *b*, and extends entirely across the interior of the upper base A′. A tubular connection, D, for filling the oil-reservoir extends from such reservoir up through the air-chamber C^1 and through the diaphragm *b*, and terminates in a screw-nozzle, D^1, covered with a proper screw-cap, D^2. Another tubular connection, E, springs from the center of the top of the oil-reservoir, and is adapted for any suitable close-fitting reception of the bottom of the burner F, so that the lamp-wick shall have convenient entrance into the said oil-reservoir. Another tubular connection, G, also central, and around the tube E, and considerably larger, springs from the diaphragm *b*, and is adapted for close fitting with the jacket of the cone H, which, preferably, is placed over it, so that there is a convenient and closed air-passage between the air-chamber C^1 and the interior of the cone around the burner.

The middle portion of the air-chamber C^2 is a chamber which extends entirely around the interior of the upper part of the base, above the diaphragm *b*, between the walls of such base and an inner wall, I, extending about as high as the base A′, and this chamber is open at the top and the bottom, and in no other places. This portion of the air-chamber has one or more openings, but preferably two openings, J J, opposite to each other, extending through the walls of such air-chamber, and having walls *c c*, closing all access to the

interior of such air-chamber. In one of these openings J the nozzle D^1 is placed, so as to give convenient access for filling the oil-reservoir; and the ratchet *d* may be placed and operated in the other opening J.

It is evident that, instead of the construction just described of this portion C^2 of the air-chamber, any tubular connection might be made from the portion C^1 of the air-chamber with the upper portion C^3 without departing from the spirit of our invention.

The upper portion of the air-chamber C^3 lies between the outer globe K and the inner globe K′ of the lantern. The globe K fits closely within the top of the upper base A′, and may have also support by the upper walls *c c* of the openings J J′, and extends up to within a short distance of the reflector L, between which and the top of the globe K is a free open space, M. The inner globe, K′, whose bottom should be of a size to correspond nearly with that of the inner wall I, fits into a perforated disk, N, with upturned flange *e*, to receive and hold the bottom of the globe K′, which disk rests upon the walls I. In the center of this disk is an opening, *f*, with upturned flange *g*, through which opening the top of the cone passes, and serves to hold the disk, and consequently the globe K′, in position, and also a small opening, *f′*, for the admission of a match for lighting. This inner globe K′ extends up through the reflector, with a space, M′, between it and the reflector clear and open, and terminates at a point a little below the cap O, leaving a clear open space, Q, between the top of said globe and the under side of said cap. The air-chamber C consequently extends from the space M down through the portions C^2 and C^1 to the interior of the cone.

A wire guard, P, surrounds the outer globe, and extends from the upper part of the base to the reflector, which is hinged and provided with a catch.

The cap O rests upon supports *i*, secured to the top of the reflector; or, instead of such cap and supports, a cap, O′, (shown in Fig. 5,) having perforated sides, which rest directly upon the top of the reflector, may be used. The cone H has a jacket, H′, and preferably the two are struck up in one piece. A proper handle, S, for carrying the lantern, is secured to the top of the reflector.

The operation of the lantern is as follows, supposing it to be ready for use:

A lighted match, introduced through the opening J and the small opening *f′*, serves to light the wick. Almost directly the heat from the flame heats the interior of the inner globe K′. The air which is contained in the lower portion C^1 of the air-chamber rushes immediately into the cone around the burner, and supplies combustion. The air taken from the air-chamber C^1 is immediately supplied with the air which is in the air-chamber C^2, and this in turn with the air in the air-chamber C^3, between the globes, which in turn receives continually a fresh supply of cold air through the space M. At the same time that this current is in movement another air-current is entering by the openings J J′, and passing up around and above the cone and supporting combustion, and also acting as a counter-balance to the first-described air-current. If the lantern, however, is suddenly raised the resultant movement of the air contained within the inner globe and that contained in the air-chamber act as counter-balances, and the result is that the light, although depressed, is not extinguished. When the lantern is suddenly lowered or dropped, the movements of the air in the inner globe and in the air-chamber, and the air entering at the openings J J′, all act as counter-balances, and the flame, although it springs upward to some extent, is not extinguished. If the lantern is oscillated or swung by the hand as it follows the path of a circle, and is in different positions either raised or lowered, the results corresponding to those just above described will be observed.

The advantages of this lantern may be stated as follows:

It may be constructed cheaply, and yet be very durable in use. It is very attractive in appearance, entirely safe, convenient, and easily managed. It may be used for railroad purposes, as well as for all other purposes for which lanterns are intended, and in all uses, under every exposure, it will be found to produce a clear, smokeless, odorless, and unextinguishable light.

Having thus described our lantern, its manner of use, and some of its advantages, what we claim as new therein and our invention, for which we desire Letters Patent, is—

1. In a lantern, the combination of the air-chamber C^3 between the two globes, the air-chamber C^2 between the double walls of the upper part of the base, and the air-chamber C^1 between the top of the oil-reservoir and the diaphragm above it, said air-chambers being closed except for the entrance of air above the outer globe and for the exit of air into the interior of the cone, substantially as and for the purposes set forth.

2. In combination with the upper base A of a lantern, and the air-chamber C^2 extending around said upper base, the openings J J′ in such upper base, substantially as and for the purposes set forth.

3. In a lantern, the combination of the openings J J′ and the perforated disk N, substantially as set forth.

4. In a lantern, the combination of the openings J J′, the disk N, and the air-chambers C^1 C^2 C^3, substantially as set forth.

5. In a lantern, the combination of the base A A′, the oil-reservoir B, and the opening J, extending through the air-chamber C^2 with-

out openings into said air-chamber, substantially as and for the purposes set forth.

6. The method of counterbalancing the air-currents in a lantern by admitting fresh air taken from above the outer globe, through connecting-chambers exclusively, into the cone, and fresh air through the sides of the base exclusively to points above the cone, the two currents being kept separate and apart, substantially as described.

This specification signed and witnessed this 14th day of April, A. D. 1877.

EVAN F. CASH.
ALFRED L. BARON.

Witnesses to signature of Evan F. Cash:
RANDOLPH COYLE,
L. W. SEELY.

Witnesses to signature of A. L. Baron:
DAVID RANKIN,
JOHN J. POWELL.