E. S. RITCHIE.

LANTERN.

No. 170,451. Patented Nov. 30, 1875.

Fig. 1.

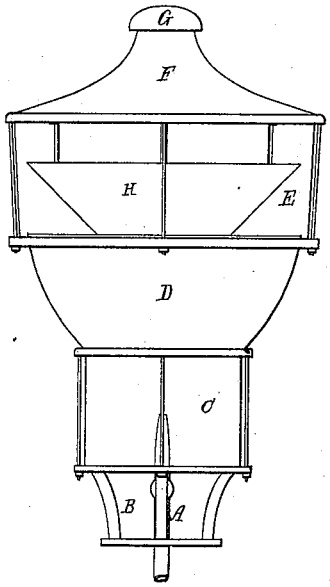
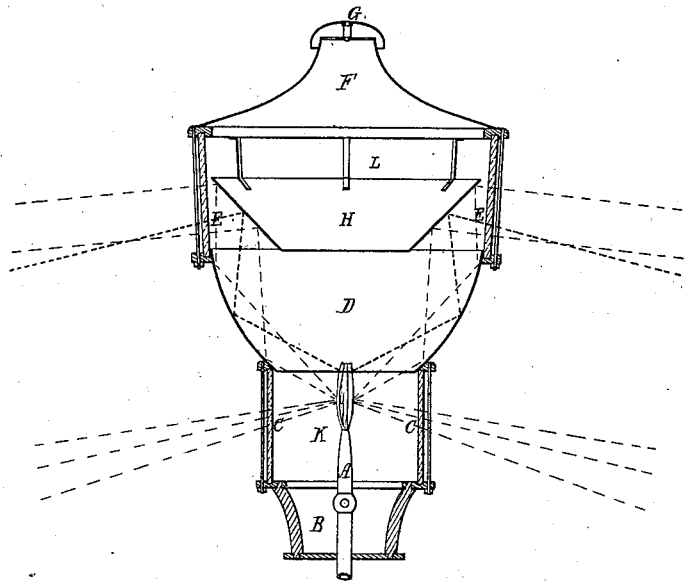


Fig. 2.



Witnesses.
S. N. Piper
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UNITED STATES PATENT OFFICE.

EDWARD S. RITCHIE, OF BROOKLINE, MASSACHUSETTS.

IMPROVEMENT IN LANTERNS.

Specification forming part of Letters Patent No. **170,451**, dated November 30, 1875; application filed May 22, 1875.

To all whom it may concern:

Be it known that I, EDWARD S. RITCHIE, of Brookline, of the county of Norfolk and State of Massachusetts, have invented a new and useful Improvement in Lanterns, or apparatus for illuminating purposes; and do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a front elevation, and Fig. 2 a transverse and vertical section, of my improved lantern, such as I have designed for the illumination of streets or other public or private ways and places.

The object of my improvement is to collect and dispense, horizontally or thereabout, and utilize much of the light that from the burner of a lantern is usually thrown upward and wasted.

In order to accomplish this I employ, in connection with the burner and lantern-case, two reflectors, one parabolic, or thereabout, in vertical section, on its inner reflecting-surface, and the other of suitable form to intercept and to reflect in the required direction or directions the rays reflected by the first or paraboloidal one.

The paraboloidal reflector I do not usually continue below the upper portion of the flame of the burner, so as to intercept the direct rays proceeding horizontally or downward therefrom; yet, when it may be desirable to throw all or most of the rays upward to the auxiliary reflector, the paraboloidal one may be extended below and around the flame in a manner to accomplish such effect.

Those parts of the case which circumscribe the upper reflector and the flame of the burner I usually make transparent, in whole or in part, in order that rays of light from the flame may freely pass out from the lantern in the desirable directions.

In the drawings, A denotes the burner, arranged in a frame, B, having within it one or more glass panes, or a glass tube, C, to surround the burner and form around it a chamber, K, through whose perimeter or periphery the light from such burner may be transmitted. Surmounting the frame B is a truncated paraboloidal or bowl-shaped reflector, D, which, as shown, is open at both ends, and has its focus somewhat above the top of the burner, or so as to be within or near its flame, the inner surface of such reflector being the reflecting one. This reflector is surmounted by another chamber, L, formed, in part, by glass panes, or by a tube, E, of glass, which, in turn, is covered by a dome or head, F, open at its center and crowned by a cap, G. Within the chamber or space over the paraboloidal reflector is placed an auxiliary reflector, H, of suitable form, having its reflecting-surface inclined relatively to the axis of the paraboloidal reflector, so as to receive the upward rays reflected from the latter, and reflect them horizontally or in directions more or less inclined to the horizon, as may be desirable.

When the light is to be dispersed equally in all directions about the auxiliary reflector, it may be conical, or the frustum of a cone, in form, with its outer surface the reflecting one; but, should the light be required in one direction or a few directions only, one or more plane or curved reflectors may be substituted or used to produce the necessary result.

It may in some cases be desirable to make this mirror convex or concave in vertical section.

Although I have termed the lower reflector "parabolic" or "paraboloidal," I do not confine my invention to making this reflector strictly parabolic in vertical section, as it may be approximately so, or bowl-shaped. It may even be conical in form, and still operate to advantage—that is, intercept rays from the flame and reflect them from its inner surface upon the surface of the upper reflector.

With a lantern so made, it will be seen that rays from the flame will or may be diffused horizontally, or nearly so, through both the glasses, the auxiliary reflector or reflectors serving to intercept and reflect and utilize much of the light which without it would be lost for illuminating purposes.

I claim—

1. In a lantern, the combination of the paraboloidal or bowl-shaped or conical reflector D and the auxiliary reflector H, or reflectors, arranged to operate together and with the burner A, substantially as specified.

2. The lantern provided with separate light-diffusive chambers K L, the intermediate paraboloidal or bowl-shaped reflector D, and the auxiliary reflector H, all arranged as, and, with the burner A, substantially as, explained.

EDWARD S. RITCHIE.

Witnesses:

R. H. EDDY,

J. R. SNOW.