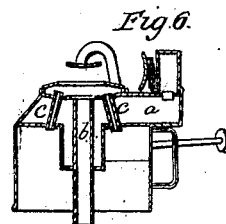
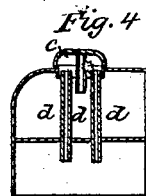
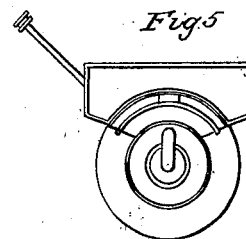
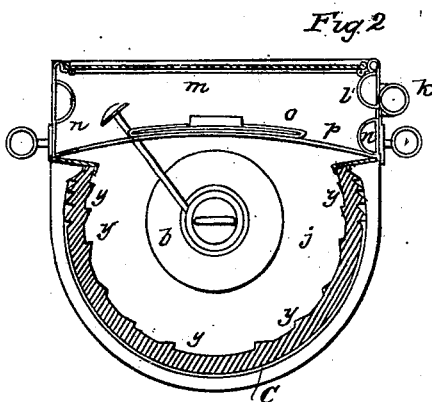
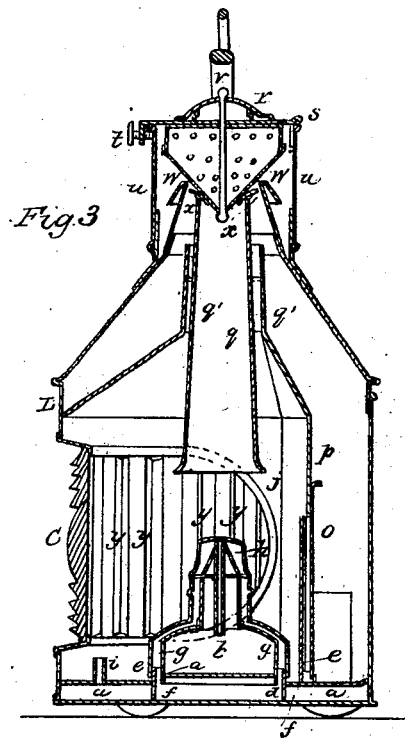
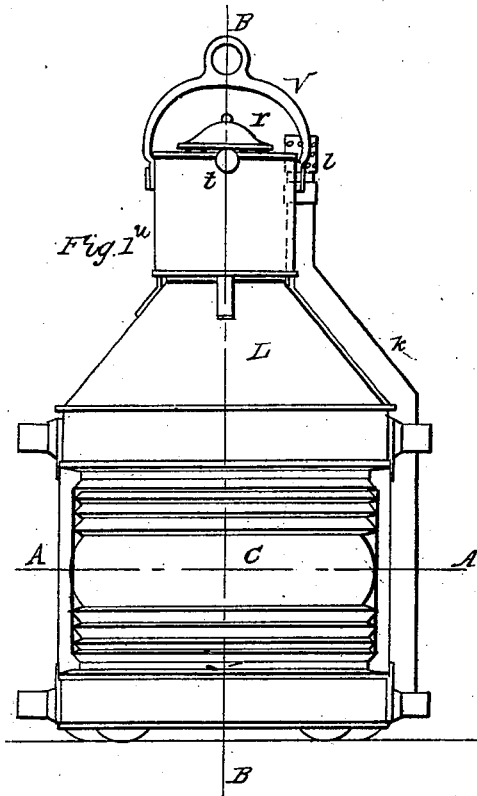


W. HARVIE.
Lamp and Lantern.

No. 107,366.

Patented Sept. 13, 1870.



Witnesses
John Brown
Charles Russell

Inventor
Wm. Howe

UNITED STATES PATENT OFFICE.

WILLIAM HARVIE, OF GLASGOW, NORTH BRITAIN.

IMPROVEMENT IN LAMPS AND LANTERNS.

Specification forming part of Letters Patent No. 107,366, dated September 13, 1870.

To all whom it may concern:

Be it known that I, WILLIAM HARVIE, of Glasgow, in the county of Lanark, North Britain, have invented certain Improvements in the Construction of Lamps and Lanterns and in lenses employed therewith; and I do hereby declare the following to be a full, clear, and exact description of the same.

This invention relates to certain improvements in the construction of lamps and lanterns, and is particularly applicable to those used for ships' lights, harbor-lights, as well as railway-signal, station, and train lamps, while it is also applicable to other purposes. In carrying it out, the lantern in which the lamp is placed is constructed in two divisions or chambers with two bottoms, inclosing an air-space between them, and connected therewith is a tube or passage passing down from the top of the lantern, through which the air necessary for the combustion of the oil in the wick is supplied, the lamp being double-cased and having an air-space around it, which communicates directly with the air-space inclosed by the two bottoms hereinbefore referred to.

The top part of the air-space surrounding the lamp is inclosed by a cap in the ordinary way, through which the flame escapes, and the entire lamp is inclosed in the lantern by a sliding door, so as to form a separate chamber, and to cut off access in that way with the atmosphere of the outside chamber.

The upper part of the lantern is also formed double, with a conical cap inside and a hole in its center, through which any smoke or unburnt gases given off by the combustion of the oil escape.

The chimney of the lantern is formed so that, in the case of a storm, when any air may blow down the top opening it cannot reach the flame, but is deflected by means of the cone, and escapes through side openings.

Description of Drawing.

Figure 1 is a front elevation; Fig. 2, a sectional plan on the line A A, Fig. 1; and Fig. 3 is a section on the line B B, Fig. 1.

On these figures similar parts are indicated by corresponding letters of reference.

The lantern L is provided with a double bottom, the space *a* between them forming an air-chamber, from which air is supplied for combustion to the lamp *b*.

A circular opening is cut in the inner bottom, *c*, and round the upper side of it a rim, *d*, is formed, over which an outer casing, *e*, on the lamp *b* is placed, and the space *a* between the bottom is inclosed by a perforated plate, *f*, through which the air is supplied to the annular space *g*, through which it passes to the burner *h*.

Small tubes *i* are also fitted in the inner bottom, *c*, through which air passes into the inner chamber, *j*, of the lantern.

The air passes into the lantern by a tube, *k*, Figs. 1 and 2, fitted with a perforated cap, *l*, and communicates with the outer chamber, *m*, by a tube, *l'*, from whence it passes into the air-chamber *a* by two tubes, *n n*, placed one at each side of the lantern, as seen on Fig. 2; or air may be admitted by tubes passing down the inside of the lantern or through the bottom.

Communication is obtained with the inner chamber, *j*, for the purpose of lighting and trimming the lamp, by a sliding door, *o*, which is fitted in the partition *p*, and in which a small orifice or sight-hole, filled with glass, is formed, or it may be formed in the partition *p*, so that the light may be inspected without opening communication with the external atmosphere.

The smoke or unconsumed gases pass up the duct *q* and the annular space *q'*, and escape to the atmosphere by perforations formed in the conical cap *r*, which is hinged to the outer casing at *s*, and is fastened by a screw, *t*, as shown at Fig. 3.

The top of the lantern is inclosed by a cylinder, *u*, to which the handle *v* is fixed, as shown on Fig. 1, and, to prevent gusts of wind passing down the duct during a storm, the outer casing of the lantern is carried up inside of the cylinder *u* and turned over, so as to form a bell-mouthed flange, *w*, by which means the air is deflected and passes out by an annular opening at the bottom of the cylinder *u*. Such accidents are still further

guarded against by forming a flange, *x*, round the conical cap *r*, as shown on Fig. 3.

The lantern is furnished with a dioptric lens, *C*, with semicircular ends, and formed in one piece, as shown. The exterior face of the lens is formed with prismoidal ribs of the usual form, and the illuminating-power of the light is still further increased by forming prismoidal ribs *y* on the interior surface of the lens, as shown on Figs. 2 and 3.

Fig. 4 is a section of a lamp in which common oils, in contradistinction to paraffine-oil, may be burnt, and which may be used in lanterns constructed according to this invention.

a is the vessel in which the oil is contained, and the air necessary for combustion is conveyed to the burner *c* through the tubes *d*.

Fig. 5 is a plan, and Fig. 6 a vertical section, of another lamp, in which common oils may be burnt.

The oil is contained in the upper part, *a*, of the lamp, and the wick is placed round the outside of the tube *b*, the air necessary for combustion passing up through the tube *b* to the interior of the flame, and by the tubes *c* to the exterior of the flame. The bottom part of the tube *b* is perforated, and communicates with the air-space in the bottom of the lantern in which it is placed.

An Argand burner may also be used as the illuminating apparatus in these lamps.

I do not here claim, broadly, the construction of the within-described lens, as it may form the subject of another application for Letters Patent.

Claims.

1. A lantern having an air-space, *a*, at the bottom, communicating with an air-chamber surrounding the lamp and with an exterior tube extending to the top of the lantern.

2. The semicircular lens *C*, with its horizontal ribs on the face and vertical ribs at the back, inclosing a chamber, *j*, containing a lamp, *b*, as set forth.

3. The chambers *m* and *j*, partition *p*, and sliding door *o*, arranged as described.

4. The flue *a*, annular passage *q'*, conical cap *r*, and conical top of the lantern, with its flange *w*, arranged as specified.

5. The combination of the subject-matter of the fourth claim and the cylinder *u*, as described.

6. The tube *l*, its perforated cap, tube *l'*, chambers *m a*, and tubes *n*, arranged and communicating as set forth.

7. The flange *x* in its cap *r*, for the purpose specified.

8. The combination of tubes *c* and tube *b*, extending into and through the oil-reservoir, and carrying an external tubular wick, as specified.

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

WM. HARVIE.

Witnesses:

JOHN BROWN,
THOMAS RUSSELL.