

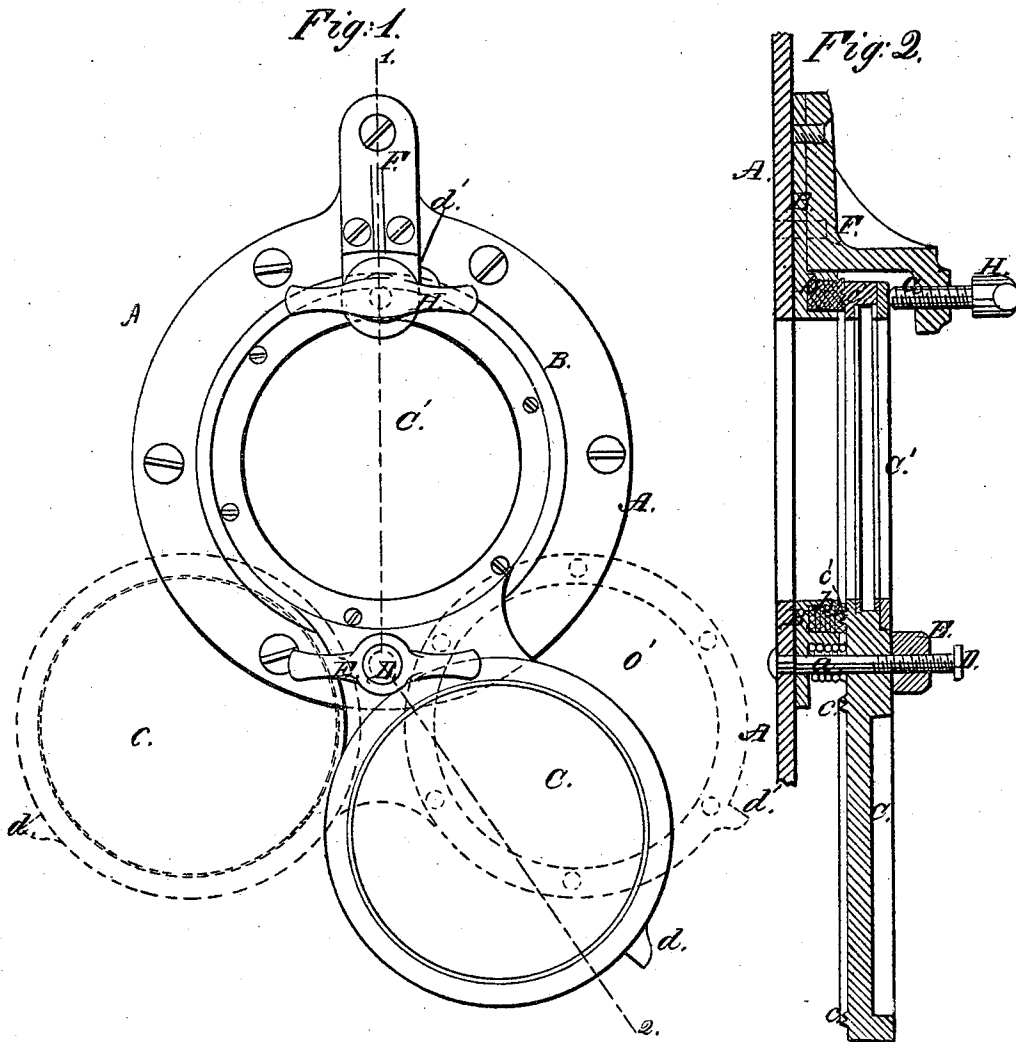
Sheet 1, 2 Sheets.

W. Darley.

Side Light for Vessels.

N<sup>o</sup> 107,165.

Patented, Sept. 6, 1870.



Witnesses.

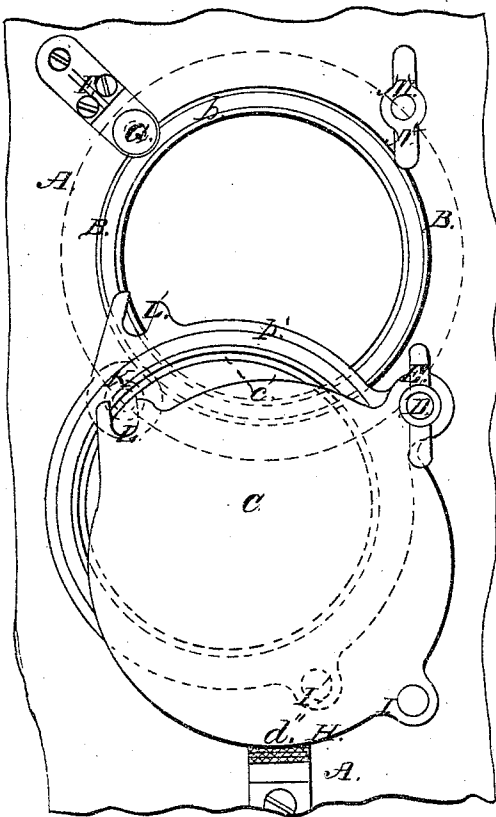
Cha Mills  
Fred Walker

Inventor.

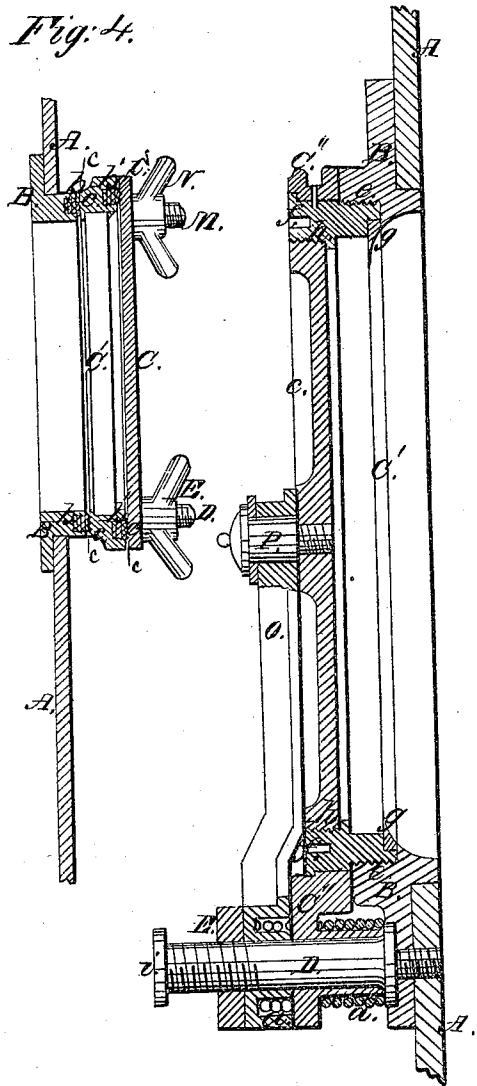
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*Fig. 3.*



*Fig. 4.*



*Fig. 5.*

*Witnesses.*

*Cha Mills*  
*Fred Walker*

*Inventor.*

*W. Darley*

# United States Patent Office.

WILLIAM DARLEY, OF CHATHAM, ENGLAND.

*Letters Patent No. 107,165, dated September 6, 1870.*

## IMPROVEMENT IN SIDE LIGHTS FOR VESSELS.

The Schedule referred to in these Letters Patent and making part of the same

I, WILLIAM DARLEY, of Chatham, in the county of Kent, (late foreman of the Royal Dock-yard, Chatham, in the county of Kent,) have invented Improvements in Ship's Illuminators or Scuttles, of which the following is a specification.

This invention relates to certain peculiar constructions and arrangements of ship's illuminators or scuttles, applicable both to men-of-war and to the mercantile navy, whereby facility of adjustment and of opening and closing are combined with economy and simplicity of construction.

The essential feature of this invention consists in making the dead-light and glass revolve on a pivot, in lieu of fitting them with the ordinary hinges.

The dead-light and glass are made in one frame, balancing each other, or nearly so, or the dead-light or glass, or both together, are made to turn independently on a pivot, the said dead-light or glass, or both, being at all times parallel to the face of the scuttle or opening to be covered.

The frame surrounding the scuttle or opening to be covered contains a packing of vulcanized India rubber, or other suitable material, and the frame of the dead-light and glass, which may be of iron, is provided with a raised annular projection, which is forced against the packing by the action of two or more screws or nuts, employed for securing the said dead-light or glass in their closed position.

A helical spring is fitted into the pivot or axis on which the dead-light, or glass, or both turn, in order that, when the same are being opened, they shall be forced out of contact with the packing, preparatory to turning them on their pivot.

A tightening-nut is also fitted onto the pivot or axis, for the purpose of assisting the screw or nut, or screws or nuts, hereinbefore referred to, in receiving the dead-light and glass, and also for fixing the same when adjusted or turned on the pivot in any desired position, so as to leave the opening either entirely or only partially closed.

These improved scuttles or illuminators may be applied to the ports of ships' cabins, to ships' sides between the frames, to water-tight or other bulkheads, and to fighting parts of iron ships; and,

In order that my said invention may be fully understood, I shall now proceed more particularly to describe the same, and for that purpose I shall refer to the several figures on the annexed drawing, the same letters of reference indicating corresponding parts in all the figures.

Figure 1, of my drawing, represents a front elevation, one modification of my improved ship's illuminator or scuttle, fully closed by the glass.

Figure 2 is a vertical section of the same, taken along the line 1 2 in fig. 1.

A represents a ship's side, and

B is a flanged ring fitted onto the mouth of the scuttle.

C C' is a frame, hung on a centrally placed pin or pivot, D, the part C constituting the dead-light and the part C' the glass. This frame C C' is balanced on its pivot or fulcrum D, so that it will offer the smallest possible resistance when being turned thereon.

The pivot or fulcrum D is securely fixed into the ship's side and flange formed on the ring B, and a helical or other spring, *a*, is interposed between the frame C C' and the said flange, for the purpose hereinafter explained.

A screw-thread is cut on the outer end of the pivot, and an ordinary nut, capable of being turned by a spanner or wrench, or a butterfly-nut, E, capable of being turned by hand, is screwed thereon, so as to press or bear against the surface of the frame C C'.

An India-rubber packing-ring, *b*, is let into an annular groove made in the ring B, and corresponding projecting rings, *c c'*, are formed on the inner faces of the dead-light and glass-frame.

F is a strong bracket fixed to the sides of ships, and to the flange of the ring B, and carrying a tightening-screw, G, provided with a suitable head or handle, H, for turning the same.

The inner end of this screw presses or bears upon the edge of the dead-light or glass at a point diametrically opposite to the point where the nut E on the pivot presses.

When open, the frame C C' hangs as shown in dotted lines in fig. 1, being balanced, but when the opening is to be closed, the glass or the dead-light, as the case may be, is turned up, so as to coincide with or cover the ring B, and is then secured and made water-tight by tightening the nut E on one side and the screw G on the opposite side of the glass or dead-light frame, thereby causing the projecting ring *c* or *c'* to be imbedded in the India-rubber packing.

A stop, *d d'*, is formed on the rim of the dead-light and glass, which bears against the side of the bracket F, when either the glass or dead-light is properly closed.

On opening the scuttle the screw G and nut E are unscrewed slightly, so as to remove the frame C C' from contact with the India-rubber packing, the spring *a*, forcing outward the said frame when the pressure is removed therefrom.

The arrangement shown at figs. 1 and 2 is adapted for the smaller sizes of scuttles, but when large scuttles, say up to twelve inches diameter, are required, then I employ three or more tightening-screws or nuts, disposed so as to bear at several points all round the glass or dead-light frame.

Figure 3 represents a front elevation of a slightly modified arrangement of my improvements in ships' scuttles or illuminators, adapted to a twelve-inch scuttle, showing the glass partly closed and the dead-light fully open.

Figure 4 is a vertical section of the same, showing both the glass and dead-light fully closed.

A is the ship's side.

B, the flanged ring fitted onto the mouth of the mouth of the scuttle.

C, the dead-light, and

C', the frame carrying the glass.

In this modification the dead-light and glass are made separate, and are opened and closed independently of each other, but they both turn upon one pivot or fulcrum, D, which is common to the two. Or, if preferred, such may have a separate pivot or fulcrum of its own.

E is the tightening-nut on the pivot D.

G is the tightening-screw in the fixed bracket F, situate opposite to the pivot D.

I I' are lugs, formed on the rim of the dead-light and glass, for the reception of a loose screw which screws into the socket K, (shown in dotted lines) when the dead-light and glass, or the glass only, is closed.

L L' are notches, also formed on the rims of the dead-light and glass, for the purpose of engaging with the stationary stud or pin M.

This stud or pin is screwed at its outer end and provided with a tightening-nut, N, capable of being screwed down onto the dead-light, or onto the frame of the glass, as required.

b b' are India-rubber packing-rings, let into grooves made respectively in the fixed ring B, and in the frame C' of the glass; and

c c' are projecting rings formed respectively upon the faces of the glass-frame and dead-light, for the purpose of insuring a perfectly water-tight joint when the shuttle is closed.

In cases where a glass only is fitted to the scuttle, then the India-rubber ring b' will be dispensed with.

Two helical, or other openings, are employed, the one being interposed between the frame of the glass and the fixed ring B or side of the ship, according as the flange of the ring B is inside or outside the ship, while the other spring is interposed between the frame of the glass and the dead-light. The object of these springs is to force the glass or dead-light clear of its packing preparatory to its being opened, and to yield sufficiently to allow of these parts being screwed up tight against the packing again, when requisite.

In this modification it will be seen that there are four bearing points round the glass or dead-light for the tightening-nuts or screws to bear or press against, whereby perfect security and tightness are obtained.

By placing the flange of the fixed ring B outside the ship, a larger scuttle may be employed, and where the space or interval between the ship's frames is limited, it will be formed advantageous to make the glass and dead-light separate, as shown in figs. 3 and 4, by reason of their then occupying a smaller space.

Should it, however, be preferred to make the dead-light and glass in one frame, then the ring B should be made sufficiently deep to admit of the frame C C' working in front of or over the angle-iron frames of the ship, but within the surface of the wood lining on the ship's side.

d' is a buffer or stop of India rubber, to check the fall of the dead-light or glass.

Figure 5 is a section taken through the fulcrum, pin, or pivot, of another modification, based upon the principles hereinbefore described.

The main alteration in this modification is the substitution of marginal screws on the rims of the dead-light and glass, for securing and tightening them in their places, for the nuts and screws pressing upon the rims of the dead-light and glass in the previously-described arrangements.

A is the ship's side.

B, the fixed ring.

C C', the dead-light and glass.

D, the pin or pivot upon which both turn.

E, the tightening-nut on the pivot.

a a' are the helical springs for easing off the dead-light and glass as they are unscrewed.

The glass-frame C' screws, by means of a marginal screw at e, into the fixed ring B b, and is surrounded by a ring, C'', in which it turns freely when being screwed or unscrewed, it being held in such ring by a pin and circumferential groove.

This ring C'' pivots on the pin D, and is forced outward as the glass is unscrewed by the pressure of the spring a.

ff are two recesses or holes made in the glass-rim, for the entrance of a key for unscrewing the same.

The piece of glass itself is secured in its frame by a small ring, g, held in position against a shoulder on the rim, so as not to strain the glass, by means of small screws.

The dead-light C screws, by means of a marginal screw, h, into the glass-frame C', and is here shown as attached centrally to a radius bar or arm, O, in which it turns freely on the pin P. This radius arm is pivoted on the pin or pivot D, and is held down by the nut E.

In lieu of using a radius arm, the dead-light may be simply connected by a ring and chain to the ship's side or frame, and be stowed close to its work when not in use.

i is a head screwed into the pivot D to prevent the nut E from becoming detached, and thereby liable to be mislaid.

In those cases wherein the dead-light and glass, mounted according to my invention, are not made to balance each other, suitable balance weights may be employed, if desired.

#### Claim.

1. The combination of a frame, B, a pivot arranged at one side of the frame, a dead-light hung to the said pin and device, substantially as described, for securing the dead-light in its position on the frame.

2. The combination of the above, a frame carrying a glass, c' and springs a, interposed between the frame B, the movable frame and the dead-light, as set forth.

3. The combination of the frame B, fulcrum-pin D, and frame C C', balanced on the said pin and having a glass at one end and a disk at the other, as specified.

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

WM. DARLEY.

Witnesses:

|                |   |                                                                                     |
|----------------|---|-------------------------------------------------------------------------------------|
| CHAS. MILLS,   | { | <i>Clerks to Mr. I. Henry Johnson, 47 Lincoln's Inn Fields, Middlesex, England.</i> |
| FRED. WALKSEN, |   |                                                                                     |