W. H. FORBES.

PORT-HOLE PROTECTORS FOR SHIPS.

No. 193,793. Patented July 31, 1877.

Fig. 1.

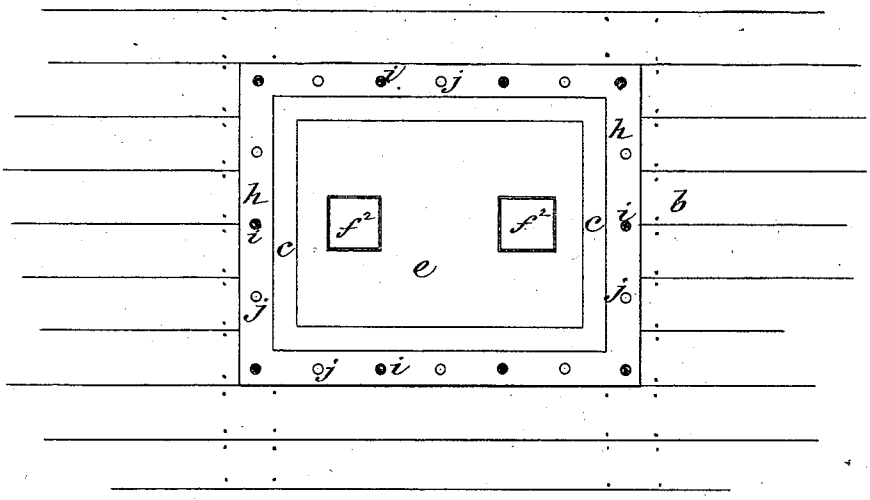


Fig. 2.

Fig. 3

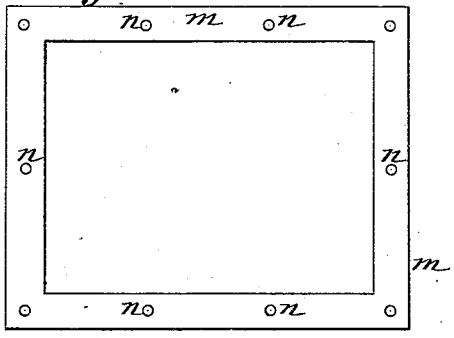
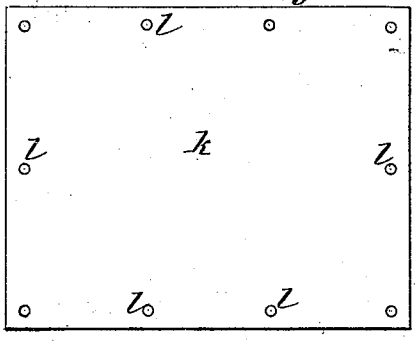


Fig. 4.



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IMPROVEMENT IN PORT-HOLE PROTECTORS FOR SHIPS.

Specification forming part of Letters Patent No. **193,793**, dated July 31, 1877; application filed June 5, 1877.

To all whom it may concern:

Be it known that I, WILLIAM H. FORBES, of the city of Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Port-Hole Protectors for Ships, which improvements are fully set forth in the following specification and accompanying drawing.

My invention relates to port-hole protectors or seals for sea-going vessels, to prevent leakage. Ordinarily the port-holes of sea-going vessels are closed by solid plugs or stoppers calked from the outside at the joints, and over which an outside planking is nailed to the side of the ship. When the ship is being unloaded this planking must be torn off to open the ports; and besides, the oakum calking is not reliable, but under the constant rolling of the ship works loose, and there is in its use more or less leakage, not only injuring the cargo, but endangering the safety of the ship. The renailing of boards upon the ship's side at every voyage is very objectionable. Then the expense of calking and boarding all the port-holes is a considerable item, and is always a source of more or less concern to the captain, for, as the ship is loaded principally through the port-holes, this matter of protecting the ports must be attended to during such operation. Sheet-rubber packing has been used in connection with expensive construction and means of fastening for inside and outside covers of such ports.

My object is to provide a comparatively cheap and simple construction of seal or protector for the port-holes, and that can be easily and quickly applied and be used as a device in connection with the usual solid plug or stopper, which is the simplest form of port-hole closer. The improvement is more especially adapted for use by the merchant marine, in which the lading and unlading are chiefly done through the port-holes. The port-holes are fitted with metallic casings or boxes for use with the usual plug or stopper secured by screw-bolts, with outside countersunk heads and interior cross-bars and nuts. I combine with the casing or boxing a metallic frame, countersunk in the outside of the vessel, and permanently secured in place contiguous to and flush with the outer face of the box or casing, and also flush with the outer side of the stopper when in place. This countersunk frame serves as the base or means by which a sheet of india-rubber is secured, covering the entire port and lying flush upon and independent of the plug or stopper.

An outer coincident frame or plate secures and clamps the rubber sheet in place, and is independent both of the sealing rubber cover and the fastening countersunk plate, being secured by screw-bolts passing through holes in the outer frame, the sealing rubber cover, and into screw-holes in the countersunk frame.

To unseal the port-holes the outer frames and the sealing rubber covers are removed. These two removable parts, in connection with the fixed countersunk part and the fastening-screws, constitute the essential feature of my invention as a port-hole seal, whereby all leakage is prevented, and a perfect security is obtained with the advantages of use over and over, and facility in such use.

Referring to the drawings, Figure 1 represssnts an elevation of a portion of the side of a ship with one of the port-holes therein closed, but not sealed or protected; Fig. 2, a section of the same, showing the sealing device secured in place. Fig. 3 is the outer securing-frame, and Fig. 4 the rubber sealing cover.

The port-holes are all provided with a box or casing, *a*, which extends through the double walls *b* of the ship. It has an outer end rim, *c*, flush with the ship's side, and an inner rim, *d*, against which the wooden plug or stopper *e* is driven from the outside to close the port-hole, and is secured by screw-bolts *f*, which pass through a cross-bar, *g*, and clamp it by nuts g^2 against the inner wall. The heads f^2 of these screw-bolts are flush with the outer face of the wooden plug, and the latter is flush with the box-rim. Bordering the latter is a metallic frame, *h*, countersunk and permanently secured to the timbers by spikes or wrought-nails *i*, so as to be flush with the outer wall and the box-rim. The sealing or protecting device is secured to this frame, and for this purpose it is provided with screw-threaded holes *j* at suitable intervals. A rubber sheet, *k*, covers the port-stopper and the countersunk frame, and has holes *l*, corre-

sponding to those in said frame. An outer metallic frame or plate, *m*, coincident with the inner fixed one, is placed over the rubber sheet, and has holes *n* coincident with those in the rubber cover, through which pass screw-bolts *r* into the threaded holes *j* in the fixed frame *h*, and thus secure an independent clamping-plate hard down upon the rubber sheet, covering all the joints and effectually sealing the port-hole. The outer frame *m* may be a plate, and the holes *n* therein are not screw-threaded. To open the port-holes, when the ship has been lighted sufficient for the purpose, the screw-bolts *r* are unscrewed from the outer side, and the outer frame *m* and rubber cover *k* removed. The plug or stopper *e* can then be taken out by unscrewing its cross-bar fastening-bolts.

The sealing device is separate and independent from the closing-plug, and can be put on and taken off readily, and is a durable appliance. It can be applied to any ship by simply fitting the port-holes with the countersunk plates, and providing the separate sealing cover and its securing metallic frame.

The outer frame may be made in sections, but a continuous bearing upon the rubber sheet is preferable. This separate sealing device affords every facility for access and for repairs, if need be, from the ship's side.

A solid outer plate, as shown in Fig. 2, will cover and protect the rubber sheet. If desired, the outer frame or plate and its rubber cover may be countersunk to bring the device flush with the ship's side.

I claim—

1. A ship's port-hole seal or protector, consisting of the fixed countersunk metallic frame, the outside rubber cover and the independent outside securing metallic frame or plate, adapted for use as described.

2. The combination, with the port-hole box or casing, the plug or stopper, and the screw-bolts, cross-bar, and nuts for securing the same, of the fixed countersunk frame, the rubber cover, its outside securing-frame, and the outside screw-bolts, all substantially as herein set forth.

In testimony whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM H. FORBES.

Witnesses:

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