

J. L. FOULIS.
Ventilating Ships.

No. 216,951.

Patented July 1, 1879.

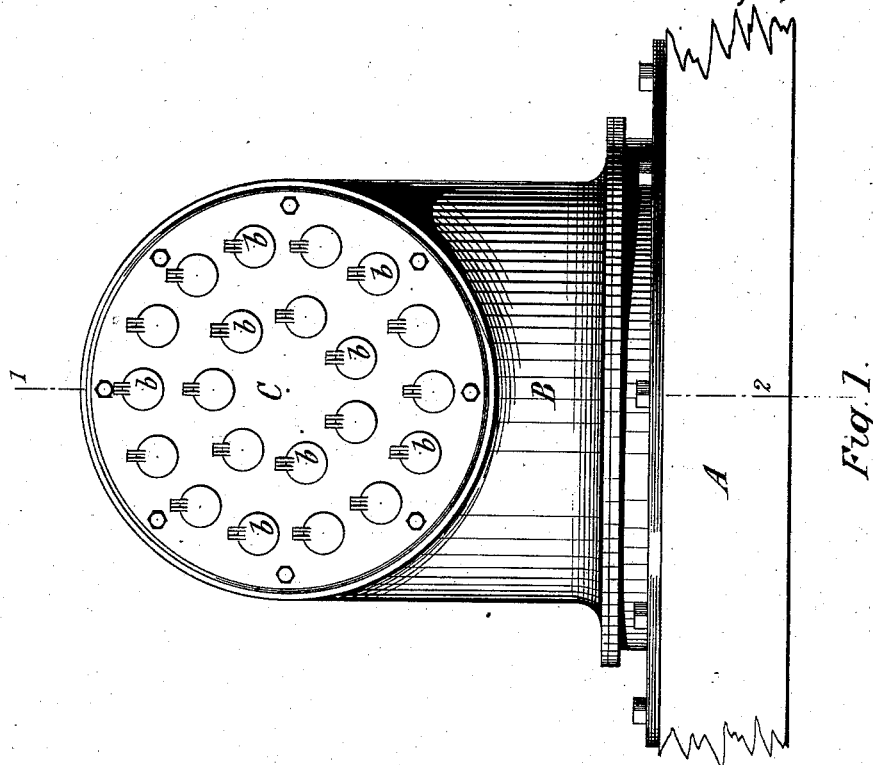


Fig. 1.

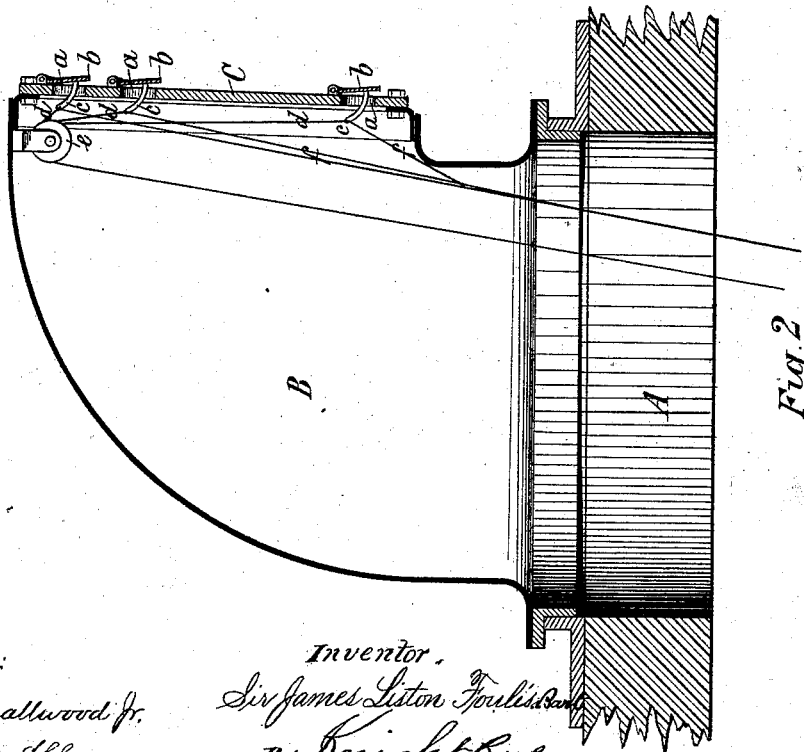


Fig. 2.

Attest:
Geo. D. Smallwood Jr.
Walter Allen

Inventor,
Sir James Liston Foulis
By Knight Bros attys

UNITED STATES PATENT OFFICE.

SIR JAMES LISTON FOULIS, BARONET, OF COLINTON, COUNTY OF MID-LOTHIAN, NORTH BRITAIN.

IMPROVEMENT IN VENTILATING SHIPS.

Specification forming part of Letters Patent No. **216,951**, dated July 1, 1879; application filed April 22, 1879; patented in England, June 24, 1878.

To all whom it may concern:

Be it known that I, Sir JAMES LISTON FOULIS, baronet, of Colinton, in the county of Mid-Lothian, North Britain, have invented new or improved apparatus or appliances for preventing the entrance of water into and for ventilating boats or vessels, the same being especially adapted for enabling boats of small dimensions to proceed to sea with safety, of which the following is a specification.

My said invention has for its object to effect the ventilation of sea-going boats and vessels, and at the same time prevent the admission of water when in foul weather the said vessels are under hatches—that is, when the hatchways, ladder-ways, and other deck-openings are closed to prevent ingress of water.

The apparatus or appliances by means of which I effect this object consist of a plate of metal or other material having therein openings, over the exterior of each of which openings is a hinged flap or valve, in such a position and of such a size that when in contact with the said plate they completely cover the said openings therein, but when hanging free will allow air to pass through the said openings from the exterior to the interior of the vessel.

To each flap or valve is attached an arm, which projects through the openings in the plate, and which is projected and retracted by means of ropes or chains attached to the inner end, for the purpose of either more completely exposing or closing the openings, as may be desired.

The accompanying drawings represent my apparatus as applied to a special ventilating shaft or funnel fixed over an opening in the deck of the vessel, Figure 1 being a front elevation, and Fig. 2 a vertical section taken on the line 1 2, Fig. 1, in which Fig. 2, for the sake of clearness, such only of the flaps or valves as lie on the line of section are shown.

The portion of the deck represented is marked A, and the ventilating shaft or funnel is marked B. The opening of the said shaft or funnel is covered by a plate, C, in which are openings *a*.

A flap or valve, *b*, is hinged to the plate C over each of the said openings *a*. When in

their normal position these flaps or valves *b* hang, as shown in Fig. 2, in such a position (by the inclination of the plate C or otherwise) that they are not in contact with the said plate C, and consequently when, in rough weather, the vessel is under hatches, the ventilation of the interior of the vessel is maintained by the passage of air between the said flaps or valves *b* and the plate C and through the openings *a* therein. On waves breaking over the vessel, or when, in other manner, a rush of water takes place, the flaps or valves *b* are pressed by the force of the said water into close contact with the plate C, and these, by covering the openings *a* therein, prevent the water from gaining access to the interior of the vessel.

Attached to each flap or valve *b* is an arm, *c*, projecting through the openings *a*, and to each of these arms *c* are attached two ropes or chains, one of which, *d*, passes over a pulley, *e*, the other rope or chain, *f*, hanging free.

The ropes or chains *d* may be attached to a rope or chain, on pulling which the valves or flaps *b* are closed against the openings *a* in the plate C, and the ropes or chains *f* may be attached to a rope or chain, on pulling which the flaps or valves *b* are moved out away from the said openings.

The shaft A may be fitted to deck in a circular seating, so that it may be turned with its opening in any direction relatively with that of the wind or that in which the vessel travels; and similar shafts may be arranged in any number and position, so that they will, when the vessel is under hatches, effect the ventilation of any or all of the cabins or other compartments of the interior of the vessel.

Each plate C may be provided with any suitable number of openings *a* and flaps *b*, and these openings and flaps may be of other forms and arranged in other manner than as shown. For instance, the holes and flaps may be oblong, and be arranged in straight line instead of in circles; and instead of being upon ventilating-shafts, they may be fixed in any other convenient or suitable part of the vessel—such, for instance, as the sides of the companion; or the openings may be formed in such convenient or suitable part of the vessel

itself, flaps or valves being hinged over the said openings, as described with regard to the plates, and in all cases so that the air will be admitted to the interior of the vessel from the exterior through the openings.

What I claim, and desire to secure by Letters Patent, is—

The perforated plate C, flaps or valves *b*, hinged to said plate to project therefrom, arms *e*, attached to said flaps, and the ropes or chains *d f* and pulley *e*, for operating said flaps or

valves, all substantially as and for the purpose set forth.

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

JAMES LISTON FOULIS, BART. [L. S.]

Witnesses:

ST. JOHN V. DAY,

115 *St. Vincent Street, Glasgow.*

WM. GOURLEY,

18 *Young Street, Edinburgh.*