

Dec. 7, 1937.

A. L. LAMBERT ET AL

2,101,550

SHIP DOOR OR HATCH CONSTRUCTION

Filed April 2, 1936

Fig. 1

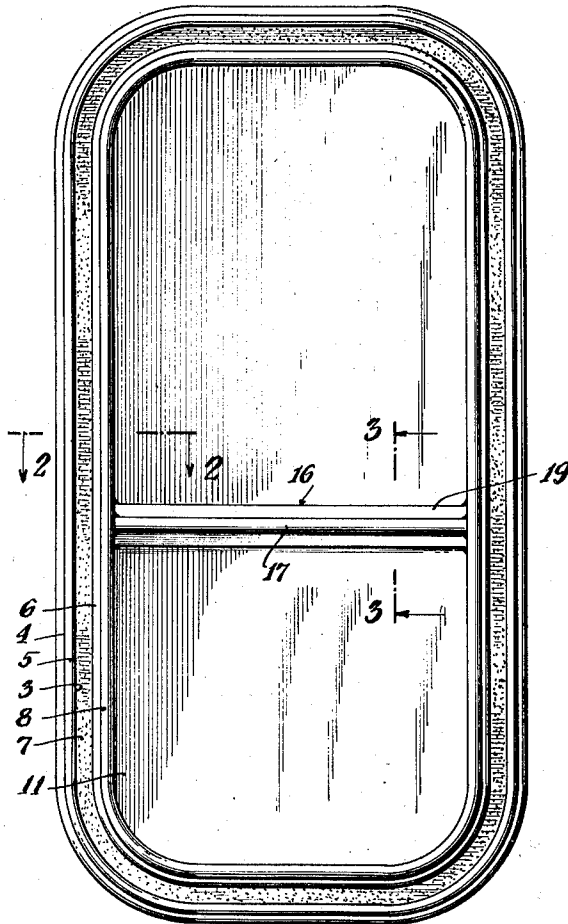


Fig. 3

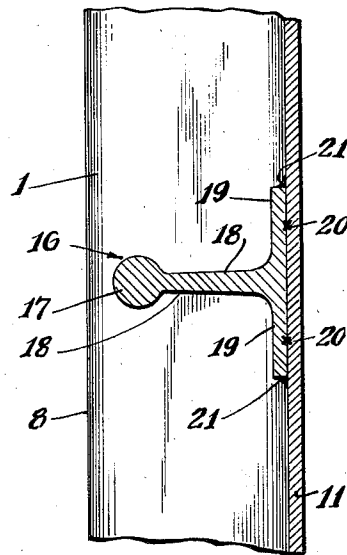


Fig. 2

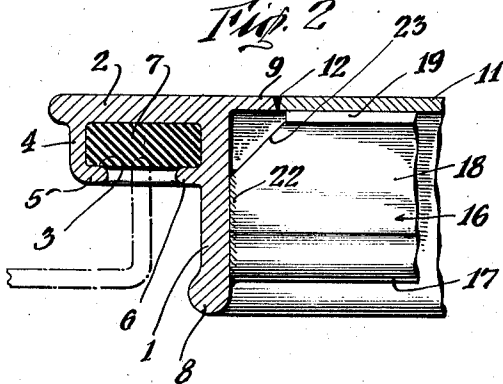
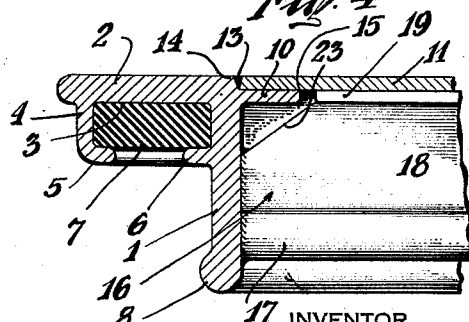


Fig. 4



INVENTOR
Albert L. Lambert
BY Francis M. Lambert
Henry Van Arsdale
ATTORNEY

UNITED STATES PATENT OFFICE

2,101,550

SHIP DOOR OR HATCH CONSTRUCTION

Albert L. Lambert and Francis M. Lambert, Narberth, Pa., assignors to Heintz Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania

Application April 2, 1936, Serial No. 72,297

6 Claims. (Cl. 114—117)

This invention relates to a ship door or hatch and to a method of constructing it, and the principal object of this invention is to provide a ship door or hatch which is sturdy, strong and durable, is corrosionless and light in weight, and a construction which is thoroughly water-tight and cannot be penetrated by vermin.

Another object of this invention is to provide a ship door or hatch of the character described and one which is made of aluminum or aluminum alloy.

A further object of this invention is to provide a method of constructing a ship door or hatch of the character described of aluminum or aluminum alloy, and which method is simple and practical and conserves expense.

Other objects of this invention will be in part obvious and in part pointed out hereinafter.

In order that a clearer understanding of this invention may be had, attention is hereby directed to the accompanying drawing forming a part of this application and illustrating certain possible embodiments of this invention and in which

Figure 1 is an elevation of a door or hatch embodying this invention and as viewed toward the inner face;

Figure 2 is a sectional view of an edge portion thereof, and is taken on the line 2—2 of Figure 1;

Figure 3 is a sectional view of another portion of the door or hatch, and is taken on the line 3—3 of Figure 1, and

Figure 4 is a sectional view of an edge portion of the door showing an alternative method of securing the face panel to the edge portion.

Similar reference characters refer to similar parts throughout the several views of the drawing.

Referring to the drawing, the edge portion or frame of the door comprises aluminum or aluminum alloy fashioned by the extrusion method into the cross-sectional L-shape illustrated in the drawing, establishing the door edge wall 1, the door edge face 2, and the groove or recess 3 under the face portion 2 and between the rim portion 4, which extends downwardly from adjacent the outer edge of edge face 2, and the upper part of wall 1, there being established also a retaining rib or bead 5 projecting toward the door along the lower edge of rim 4 and a similar retaining rib or bead 6 projecting in the opposite direction from the wall 1. Pocket 3 is adapted to receive and retain a suitable waterproof gasket 7, which may be rubber or other suitable material. Wall 1 may be shaped to have its free end thickened and rounded, as at 8.

Extending inwardly from the top of edge wall 1 is a panel attachment flange which, as shown at 9 in Figure 2, may be flush with the surface of the portion 2 or, as shown at 10 in Figure 4, may be offset below the surface of the portion 2. A panel plate 11, which may comprise a sheet of aluminum or aluminum alloy is embraced by the extruded edge frame of the door or hatch and, as shown in Figure 2, the edges of panel 11 abut, and are welded, as at 12, to the edge of flange 9 or, as shown in Figure 4, the panel 11 may overlap the flange 10 and may be welded, as at 13, to the shoulder 14 which is present where the flange 10 meets the edge portion 2. If desired, the panel may also be welded, as at 15, to the edge of flange 10.

The construction is preferably stiffened and reinforced by suitable cross-members 16, which are also preferably aluminum or aluminum alloy formed into suitable shape by the extrusion method. As illustrated, these cross-members are extruded into T-shape and to have a circular strengthening and stiffening bead formation 17 at the end of the leg portion 18. The top or base flanges 19 are disposed against the under surface of the panel sheet 11 and are welded thereto. They may be spot welded thereto, as at 20, and also may be fusion welded thereto at the edges, as at 21. The opposite ends abut the edge wall 1 of the edge frame and may be welded thereto, as at 22. Preferably the upper corners of the cross-members are cut away, as at 23, to escape the flange 10.

A practical method of constructing a door or hatch embodying this invention is to provide straight bars extruded so as to have the final cross-sectional shape of the edge frame, and then to bend the bars to the proper shape to form the edge portion of the door or hatch of the desired size. The sheet aluminum face panel and the extruded reinforcing and stiffening bars are then applied and welded into the structure. The rubber gasket 7 is inserted at any desirable or proper time into the groove 3 provided therefor in the extruded edge member.

The complete edge frame may comprise a plurality of the extruded edge bars curved as and where necessary and having their abutting ends welded together. Preferably the complete edge frame is made of either two or four pieces welded together at the joints.

Also, straight lengths of the extruded bars for the edge frame and lengths of extruded bars for the cross-members may be provided, and from which suitable lengths may be cut to provide the

edge frame and cross bars of the doors or hatches of any desired shape and size. Thus expense and labor may be conserved and the doors and hatches may be completed quickly.

5 It will be noted that the entire construction comprises but a very small number of parts and is devoid of bolts, screws and rivets, and these features are also conducive to reducing expense, labor and time required for assembly.

10 Our invention not only produces a ship door or hatch made of aluminum but also has successfully overcome the difficulties involved in establishing the contour and shapes, and of assembling and securing aluminum parts together.

15 It is obvious that an extruded metal edge frame constructed in accordance with this invention may be used for doors that are not watertight as well as for doors that are watertight, and that in the case of any non-watertight door, the panel

20 11 may be riveted to the inwardly extending attachment flange, for instance flange 10, where a flush face is desired. The panel may also be extended to overlay and be riveted to the flush flange 9. Also for a non-watertight door or

25 hatch, the gasket 7 may be omitted and the panel may be perforated or of expanded metal. Accordingly, it will be noted that the inwardly extending attachment flanges, 9 or 10, of the extruded edge frame are suitable for the attachment

30 of a door panel either by spot welding, fusion welding, or riveting. As many changes could be made in the above construction, and as many apparently widely different embodiments of this invention could be made without departing

35 from the scope thereof, it is understood that all matter contained in the above description or shown in the drawing shall be interpreted as illustrative and not in a limiting sense.

What we claim is:

40 1. A light weight ship door or hatch comprising an aluminum panel and extruded aluminum members, the ends of which are butt welded together to form a frame extending continuously around said panel, said frame being welded to

45 said panel and having a stiffening wall portion extending at right angles to the plane of said panel.

2. A light weight ship door or hatch comprising an aluminum panel and an aluminum frame

50 extending continuously around said panel, said

frame having a stiffening wall portion extending at right angles to the plane of said panel and a panel attachment flange extending inwardly of said wall portion, said flange being of substantially the same thickness as said panel and butt 5 welded to said panel.

3. A light weight ship door or hatch comprising an aluminum panel and an aluminum frame of generally L-shaped cross-section extending continuously around said panel, said frame having 10 a panel attachment flange of similar thickness as said panel and extending inwardly from and flush with the surface of the face of said frame, said panel being butt welded to said flange.

4. A light weight ship door or hatch comprising 15 an extruded aluminum frame extending around and secured to an aluminum panel, said frame being of irregular cross-section and having a face portion surrounding and disposed in the same plane with the face of said panel, a stiffening 20 flange extending inwardly from the said face portion, and an attachment flange forming an integral part of said frame and extending inwardly toward and joined to the marginal edge portion of said panel. 25

5. A light weight ship door or hatch comprising an extruded aluminum frame extending around and secured to an aluminum panel, said frame being of irregular cross-section and having 30 a face portion, a stiffening flange extending laterally inward from said face portion, and an attachment flange forming an integral part of said frame and disposed in offset relation to said face portion, and said panel being supported thereon and secured thereto with the outer face 35 of the panel flush with the face portion of said frame.

6. A light weight ship door or hatch, an extruded aluminum frame of irregular cross-section and having a face portion defining the marginal 40 portion of the face of said door or hatch, a stiffening flange extending laterally inward from said face portion, and flange portions formed integrally with and extending laterally from said face portion and said stiffening flange, 45 respectively, and cooperating with said face portion and said stiffening flange to define a gasket recess.

ALBERT L. LAMBERT.

FRANCIS M. LAMBERT. 50