

March 26, 1935.

W. H. OSTEN

1,995,939

MARINE AND OTHER WINDOW

Filed June 17, 1932

4 Sheets-Sheet 1

Fig. 1.

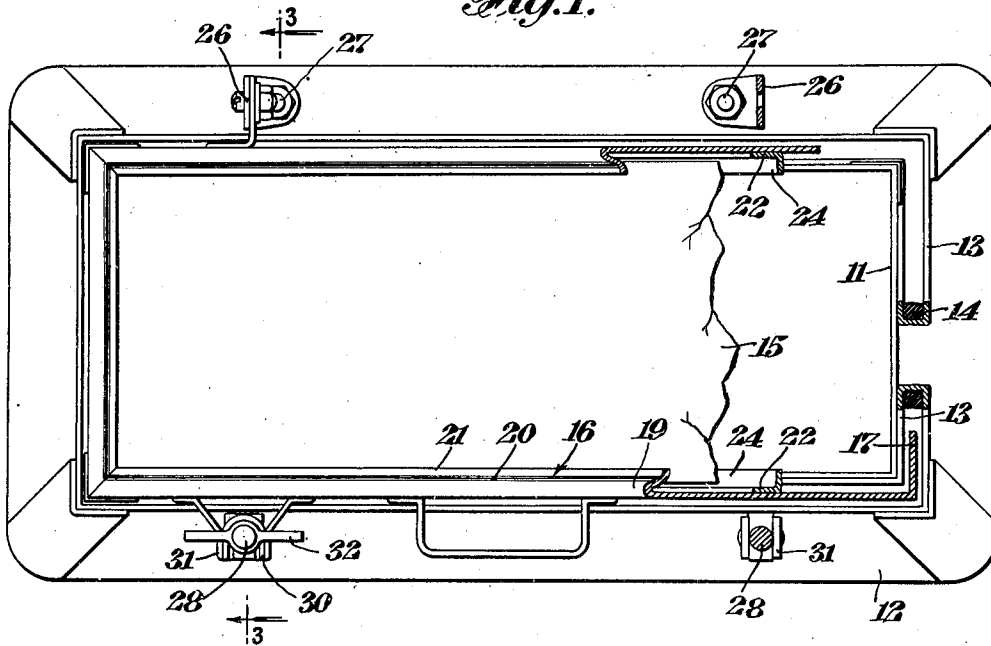
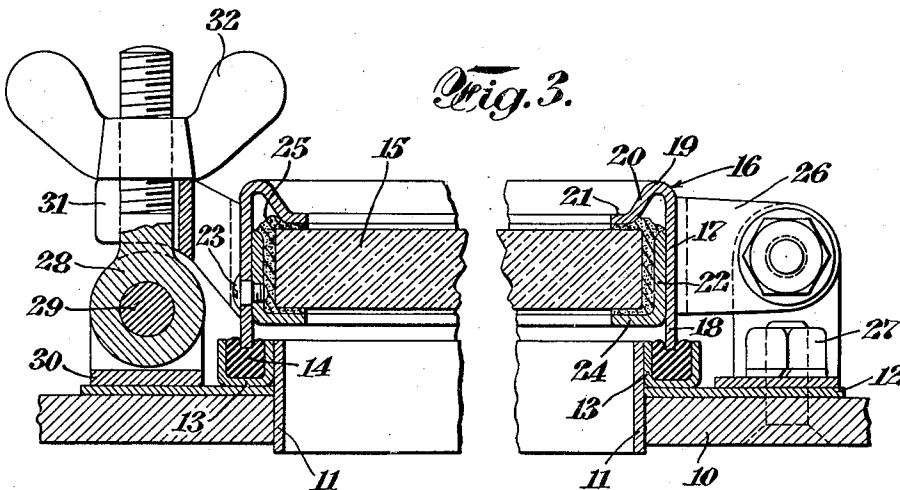


Fig. 3.



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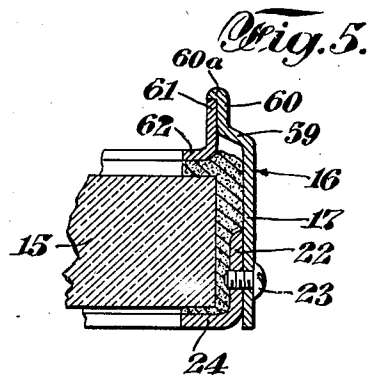
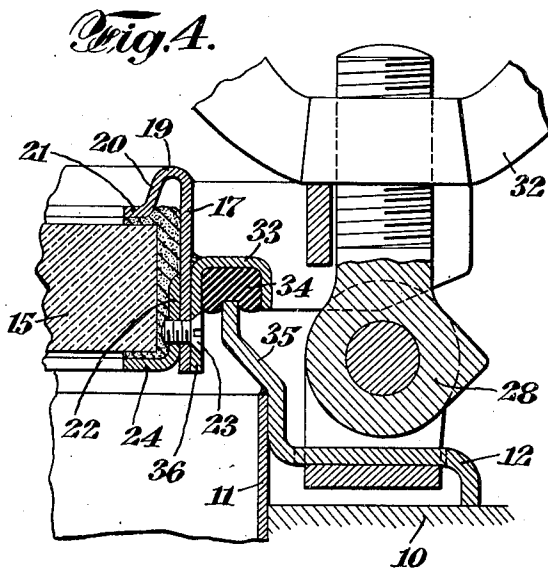
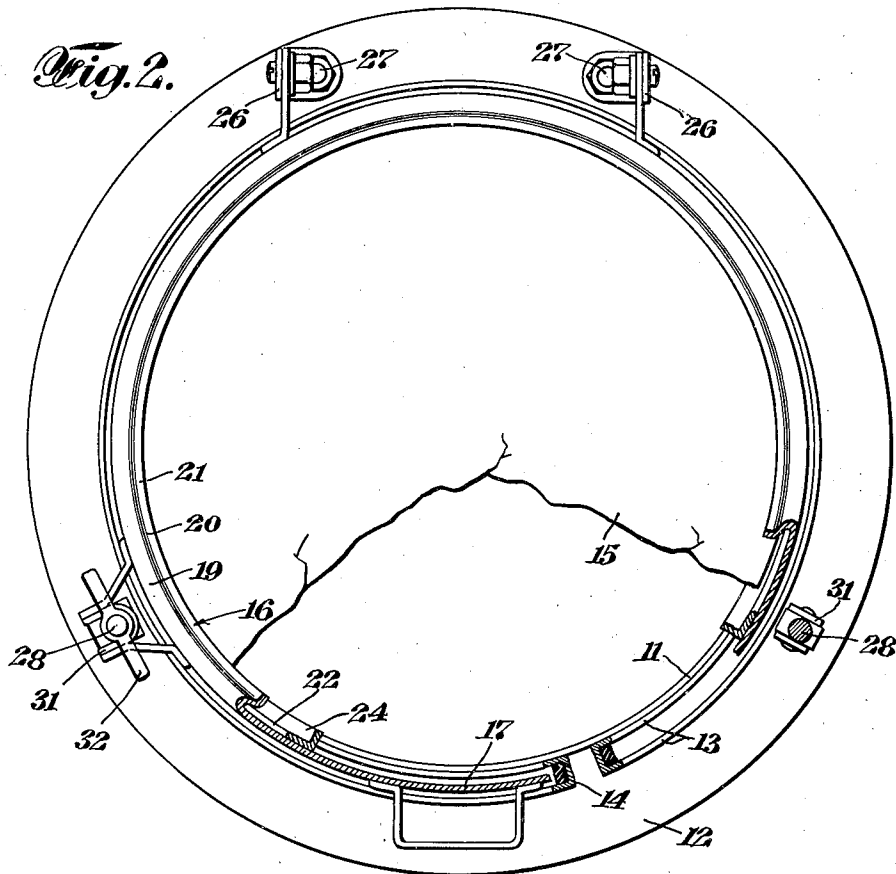
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4 Sheets-Sheet 2



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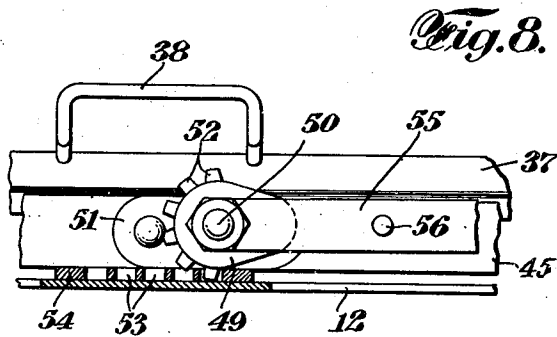
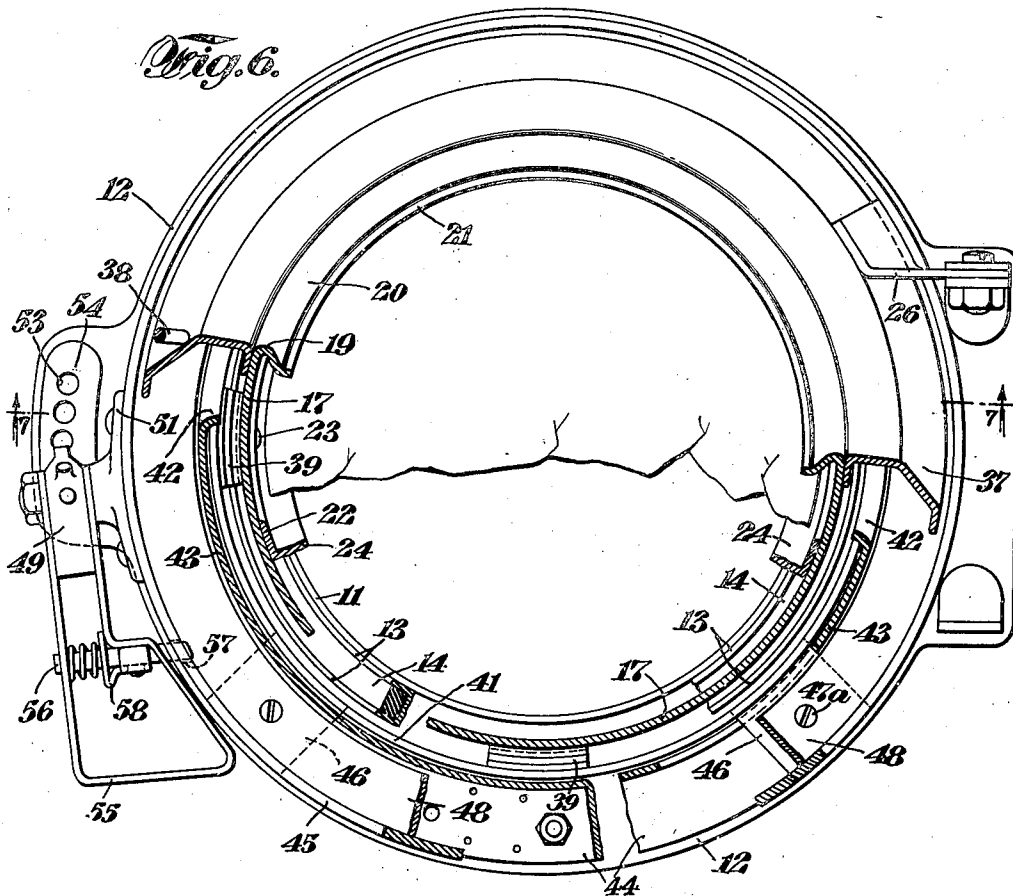
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4 Sheets-Sheet 3



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4 Sheets-Sheet 4

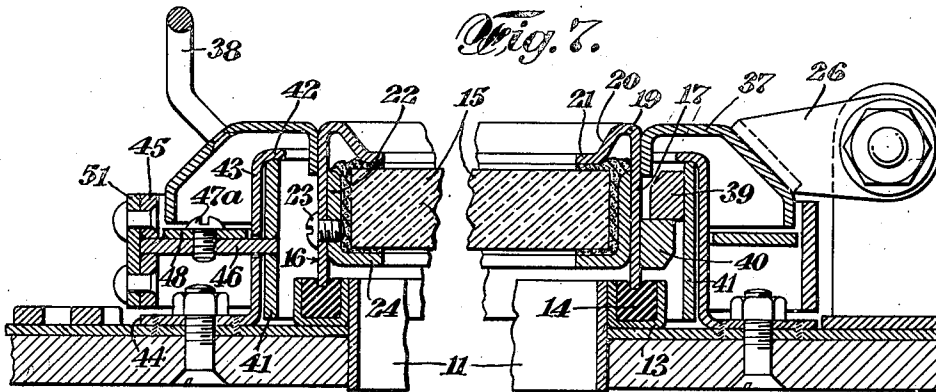


Fig. 9.

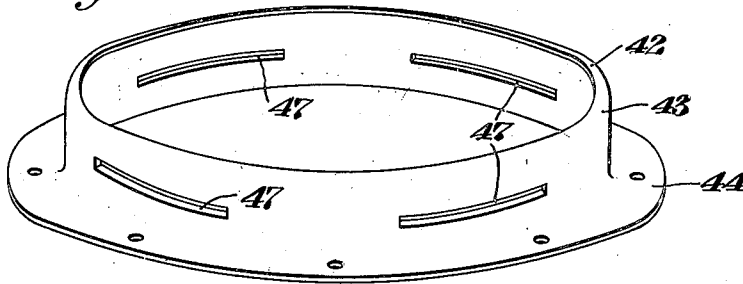


Fig. 10.

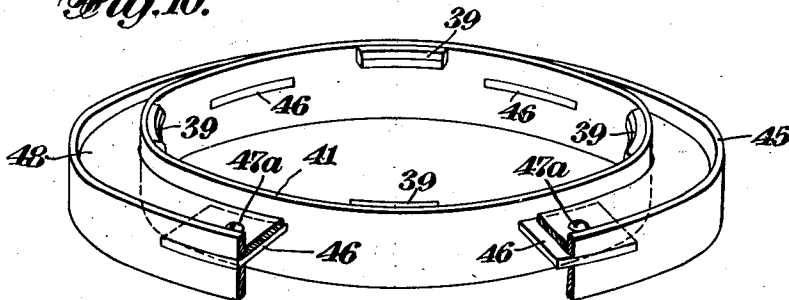
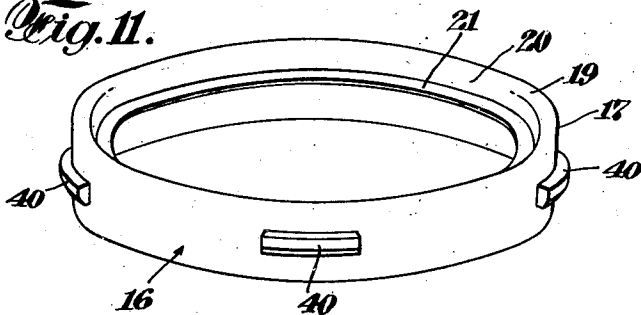


Fig. 11.



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UNITED STATES PATENT OFFICE

1,995,939

MARINE AND OTHER WINDOW

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Application June 17, 1932, Serial No. 617,847

8 Claims. (Cl. 114—178)

My invention relates to metal framed windows, particularly for use in marine and aeronautical work for port lights, transoms, etc.

Sashes for port lights and other windows of this general type have heretofore been formed of a ring of cast brass or similar alloy having a flange projecting radially inwardly, against which the edge portion of the pane of glass is pressed by a ring which is provided with screwthreads, and threaded or otherwise secured in the edge of the enclosing sash. This type of frame was necessarily made of cast material and was, therefore, relatively heavy, a disadvantage for aeronautical work, and which limited the material of which the sash could be made to relatively expensive metals. The windows and sashes heretofore used were commonly secured to the port or window frame by a hinge at one edge and by a ring bolt to swing into position to engage projections on the sash and to be tightened to hold the sash in fluid-tight engagement with the port or frame, or to be released and swung out of engaging position to permit the port light or window to be opened. This type of ring bolt is an unsightly and clumsy element.

An object of the present invention is to provide a window or port light of which the sash and frame may be made of sheet metal, spun or pressed to the required shape, and may, therefore, be made of lightweight and of rustless or resistant alloys.

A further object of the invention is to provide a construction of window or port light sash and frame in which the securing elements are largely concealed and covered by the sash or frame, and in which the sash means may be engaged and pressed into fluid-tight contact with the port or frame at spaced intervals throughout its periphery.

With these and other objects in view which will more fully appear from the following description, the invention comprises the port light or window described in the following specification and claims.

The various features of the invention are illustrated in the accompanying drawings, in which—

Fig. 1 is a face view of a rectangular port light or window embodying my invention, parts being broken away to show the features of construction.

Fig. 2 is a similar view of a circular port light.

Fig. 3 is a section taken on the line 3—3 of Fig. 1 or Fig. 2, the cross sectional view being the same in either case.

Fig. 4 is a detail section through a modified form of frame and sash,

Fig. 5 is a sectional view of a part of a modified form of window sash or holding rim.

Fig. 6 is a face view of a window or port light having the holding and sealing means concealed in the frame work of the sash, parts being shown broken away to show the interior construction.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6.

Fig. 8 is a side view of a portion of the sash and frame taken from the left of Fig. 6.

Figs. 9, 10 and 11 are perspective views of various elements of the sash and frame construction of Fig. 6.

Referring more particularly to Figs. 1, 2 and 3, the invention is shown as applied to a wall 10 having an opening which is framed with a cylindrical rim made of sheet metal 11. The rim 11 may be of rectangular cross section for the type of window shown in Fig. 1, or of circular cross section for the window of Fig. 2. It is secured to the wall 10 by means of a flat flange 12 secured to and extending upwardly from the outer surface of the rim. Also secured to the outer surface of the rim 11 and against the face of the flange 12 is a U-shaped channel 13, the free edges of which are flush with the outer edge of the rim 11 and which receives a filling 14 of rubber or other suitable resilient composition against which the edge of the window or port light sash may be pressed and sealed. The opening within the rim 11 is closed by a pane of glass 15 enclosed in a sash, the edge of which may be pressed against the resilient filling 14.

The glass 15 is mounted in a ring or rim 16 having a wall element 17 one edge of which abuts and seals with the gasket 14 as at 18. The wall element 17 is straight in cross section. The edge of the wall opposite the sealing edge 18 is bent at 19 in a curvature of nearly 180° and continued in an inwardly tapering extension 20 toward the interior face of the glass 15 and then extends a short distance to form a flange 21 facing the inner face of the glass 15. The portions 19, 20 and 21 form a stiff, strong, retaining flange to resist the force of wind and water thrown against the outer surface of the pane of glass 15. With this construction sufficient strength may be obtained with sheet metal of relatively thin gauge or thickness.

The pane of glass 15 is held in position against the flange 21 by means of a retaining ring having an annular wall 22 fitting the inner surface of the wall 17, and secured thereto by means of screws 23, and a flat flange extension 24 encircling the edge portion of the outer surface of the glass 15.

In assembling the glass in the sash, a mass of sealing composition 25 of suitable material, such as white lead in linseed oil, or other gasket, is placed about the edge portions of the glass, the glass is then placed within the rim 16 and the ring 22 is inserted and pressed toward the glass until the latter is tightly clamped between the flanges 21 and 24 and sealed by the sealing mass. The screws 23 are then inserted, holding the glass in place. The sash may be held in position and pressed against the gasket 14 by any suitable means.

In the form of the invention shown in Figs. 1, 2 and 3 the rim 16 is supported at one side by a hinge or hinges 26 secured to the wall 10 by means of bolts 27. It may be swung on the hinges either to open or to position against the gasket 14. It may be secured in closed position tightly against the gasket 14 by means of a ring bolt 28 pivoted on a pintle 29 secured in brackets 30 to the wall 10 and slidable between spaced lugs 31 against which a wing nut 32 may be threaded on the stem of the bolt to draw the rim tightly against the gasket 14.

In the form of the invention shown in Fig. 4 the arrangement of the glass holding rim and retaining ring is the same as in Figs. 1, 2 and 3. The sealing channel 13 and gasket 14 are, however, not mounted on the frame 11; instead, an annular channel member 33 is welded on the outer periphery of the wall 17 in the reverse position to the gasket 14 and is provided with a gasket 34 which seals against a ring 35 secured to the frame 11 or, the frame 11 might be formed to seal against the gasket 34 directly. The screw 23 for retaining the ring 22 may extend through an extension 36 of one wall of the channel 33, serving still further to secure the latter to the rim 16 and to strengthen the structure. It will be obvious that the ring 22, 24 and the return flange 19—21, and in Fig. 4 the gasket 34, all serve to strengthen the rim of the sash so that the latter has the greatest mechanical strength for a metal of a given thickness or gauge.

In the form of the invention shown in Figs. 1 to 4 inclusive, the window or port light is held tightly against the gasket 14 by the exposed eyebolt and thumb nuts 32. The construction of the sash is, however, highly advantageous for the novel form of port light shown in Figs. 5—10 inclusive, in which the locking elements are concealed by the rim of the sash when the latter is closed and which, therefore, presents a smooth and neater appearance.

The form of the invention shown in Figs. 6 to 11 inclusive, is illustrated as applied to a window having the same arrangement of rim 11, channel 13 and gasket 14 as shown in Fig. 3, and with the sash rim 17 sealing tightly in the gasket 14 when in closed positions. The hinge 26 is not secured directly to the rim 17 but is secured to a skirt 37 which is welded or otherwise attached at its inner edge to the rim 17 and extends outwardly to overlie and cover the means for securing and locking the window in closed position. The skirt 37 is provided with a handle 38 for swinging it on the hinge when unlocked.

The window rim 17 is locked tightly and fixedly against the gasket 14 by means of a series of wedge shaped lugs 39 on ring 41 which overlie and engage similarly spaced lugs 40 on the exterior of the rim 17 and which (39) are in turn carried on a rotatable collar 41 confined between the plate 12 and an inturned flange 42 of a

ring 43, which latter is secured by welding to the plate 12 through an outturned flange 44 and by means of bolts 27, securing the whole port light structure to the skin of the ship (10 in Fig. 3) at the same time.

The collar 41 may be so rotated about its axis that, in one position, the lugs 40 are offset relative to the lugs 39, and pass freely below the latter. The collar 41 may then be rotated to cause the lugs 39 to slide over the lugs 40, and the contacting surfaces of the lugs 39 and 40, being slightly inclined, wedge the rim 17 downwardly to force its lower edge against the gasket 14 and seal the window.

The collar 41 is rotated from a rotatable ring 45 to which it is secured by flat plates 46 that extend through appropriate elongated slots 47 in the ring 43 and which are secured by screws 47a to an annular flat plate 48 extending inwardly from the ring 45. The securing of the plates 46 to the rings 41 and 45 enables the ring 45 to be positioned, or adjusted in position, relative to the position of the wedging ring 41.

The ring 45 may be rotated to locking and unlocking positions by any suitable mechanism. Preferably the actuating means for the rotation comprises a hub 49 rotatably mounted on the projecting stud 50 of the bracket 51 on the ring 45, and provided with radial spokes 52 that mesh in spaced openings 53 in a plate 54 mounted on the plate 12. The hub 49 is rotated on the stud 50 by means of a handle 55 secured to the hub. The arrangement is such that when the handle 55 is pressed in the utmost down position, as shown in Fig. 8, the ring 45, and with it the collar 41, is rotated in such a manner as to cause the lugs 39 to overlap the lugs 40 and wedge the rim against the gasket 14.

A spring pressed latch 56 may be provided on the handle to engage a suitable opening 57 in the ring 45 when pressed into locking position. This latch may be withdrawn by means of a finger catch 58 and the handle 55 pulled outwardly or upwardly, causing the hub 49 to rotate and swing the rings 45 and 41 into position to release the lug 40. Thereupon the window or port light may be opened by means of the handle 38.

In the above modifications the return bend and flange construction 18—21 are shown as being formed by bending the continuation of the rim 17. Instead of this construction, however, the construction shown in Fig. 5 may be employed, in which the upper or interior margin of the rim 17 is offset at 59 toward the center of the rim and then continues in a short cylindrical margin 60 and bent inwardly 90° to form the shoulder margin 60a. To the latter margin there is then secured, by welding or other suitable means, an inner ring 61 having a flange 62 bearing against the interior surface of the glass 15. It will be apparent that this and other modifications of construction may be made within the scope of my invention.

The above arrangement provides a port light or window in which the locking drawbolts are dispensed with and in which the window, either in open or closed positions, presents a smooth neat appearance. Moreover, the construction is such that the window can be easily swung and locked in closed position without the necessity of tightening nuts or swinging the drawbolts into position.

The construction of window sash or rim is one that provides great strength with lightness. The form of flange 19—21 and 60—62 is capable of re-

sisting enormous pressures without being distorted or bent inwardly. The union of the retaining members 22—24 on the rim 17 adds greatly to the stiffness and strength of the latter. Through these improvements it is economically possible to employ much more expensive alloys, such as stainless steel alloy and metals which do not corrode.

What I claim is—

1. A window sash comprising a peripheral sheet metal glass enclosing wall, said wall having a reversely bent edge to form a retaining flange, a ring mounted on the inner surface of said wall, and a pane of glass between said ring and said flange, hinged means to support said wall, retaining lugs on the outer surface of said wall, a rotatable ring encircling said wall and having lugs to engage the lugs of said wall, and means to rotate said ring.

2. A window sash comprising a peripheral sheet metal glass enclosing wall, said wall having a reversely bent edge to form a retaining flange, a ring mounted on the inner surface of said wall, and a pane of glass between said ring and said flange, hinged means to support said wall, retaining lugs on the outer surface of said wall, a rotatable ring encircling said wall and having lugs to engage the lugs of said wall, means to rotate said ring, and a skirt mounted on said wall and overlying said lugs.

3. A window sash comprising a peripheral sheet metal glass enclosing wall, said wall having a reversely bent edge to form a retaining flange, a ring mounted on the inner surface of said wall, and a pane of glass between said ring and said flange, hinged means to support said wall, retaining lugs on the outer surface of said wall, a rotatable ring encircling said wall and having lugs to engage the lugs of said wall, means to rotate said ring, a skirt mounted on said wall and overlying said lugs, a ring having a flange to retain said rotating ring and provided with openings, an operating ring, and connecting means extending beneath said skirt from said operating means through said openings to said rotatable ring.

4. A window construction comprising an encircling peripheral wall having one edge extension at a reentrant angle to the surface of glass to be held, means to hold glass against said reentrant extension, a peripheral channel mounted on said peripheral wall and opening toward the edge opposite said reentrant extension, a gasket in said peripheral groove, a wall frame having an edge sealing against said gasket and means mounted on said wall frame for pressing said peripheral wall toward said frame to cause the edge of the latter to seal in said gasket.

5. A glass holding sash comprising a peripheral glass enclosing wall, spaced lugs mounted on a periphery of said wall, a rotatable retaining ring having lugs movable to position to engage and retain lugs on said wall, a spoked hub secured to said rotatable ring on a pivot radial thereto, a fixed plate having spaced means to be engaged by said spokes as said hub is rotated and a handle secured to said hub and rotatable in a plane at right angles to the plane of said frame.

6. A glass holding sash comprising a sheet metal peripheral enclosing wall, a flange having a glass retaining edge within and spaced slightly from one edge of and from the inner surface of said wall and joined to said edge by a connecting member extending outwardly directly from said retaining edge to said wall, a retaining ring secured to said wall and spaced from said flange, a gasket retaining sheet metal channel mounted on said wall and opening toward the edge thereof opposite said flange, and a gasket in said channel.

7. A port light window for marine and aeronautical structures, including a frame and a sash comprised of stainless steel sheet material, said frame including a rim member having a port hole opening, a flange member secured to the outer periphery of said rim member, said flange being adapted to be secured to a wall, a U-shaped channel member secured upon said flange adjacent the said rim member and extending around the periphery of said rim member with the legs of said channel member extending away from the said flange and a filling of resilient material disposed within said channel member, and said sash including a pane of glass, an enclosing rim member for said glass one edge thereof being turned inwardly to resiliently abut against one face of said glass and the other edge thereof being extended to engage within the said channel member of the frame and against the said resilient material contained therein when the said sash is disposed in a port hole closing position, a ring member adapted to be inserted within said sash rim member against the opposite face of said glass, means to fixedly position said ring member to said sash rim member, means to seal the edges of said glass retained between the resilient turned in edge of the rim and the ring member against fluid and air infiltration, hinge means to support said sash frame upon said frame flange, and means to secure the sash in a port hole closing position.

8. A port light window for marine and aeronautical structures including frame and sash elements comprised of stainless steel sheet material, said frame including a rim member having a port hole opening, a flanged ring member secured to the outer periphery of said rim member, the flange portion thereof being adapted to be secured to a wall, and the said sash element comprising a glass enclosing rim having one edge thereof turned inwardly to resiliently contact with the face of a pane of glass enclosed by said rim, a ring member adapted to be disposed within said rim against the opposite face of said glass, means to secure said ring to said rim, means to seal the peripheral edges of said glass against fluid and air infiltration between the rim and ring, and a U-shaped channel member disposed about the periphery of said rim with the open channel thereof facing towards the frame of said window, said channel being disposed on said sash in a position permitting the ring member of the said frame to engage therein when the said sash is in a port hole closing position, a filling of resilient material in said channel, means to pivotally support said sash upon the flange of said frame and means to secure the sash in a port hole closing position.

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