

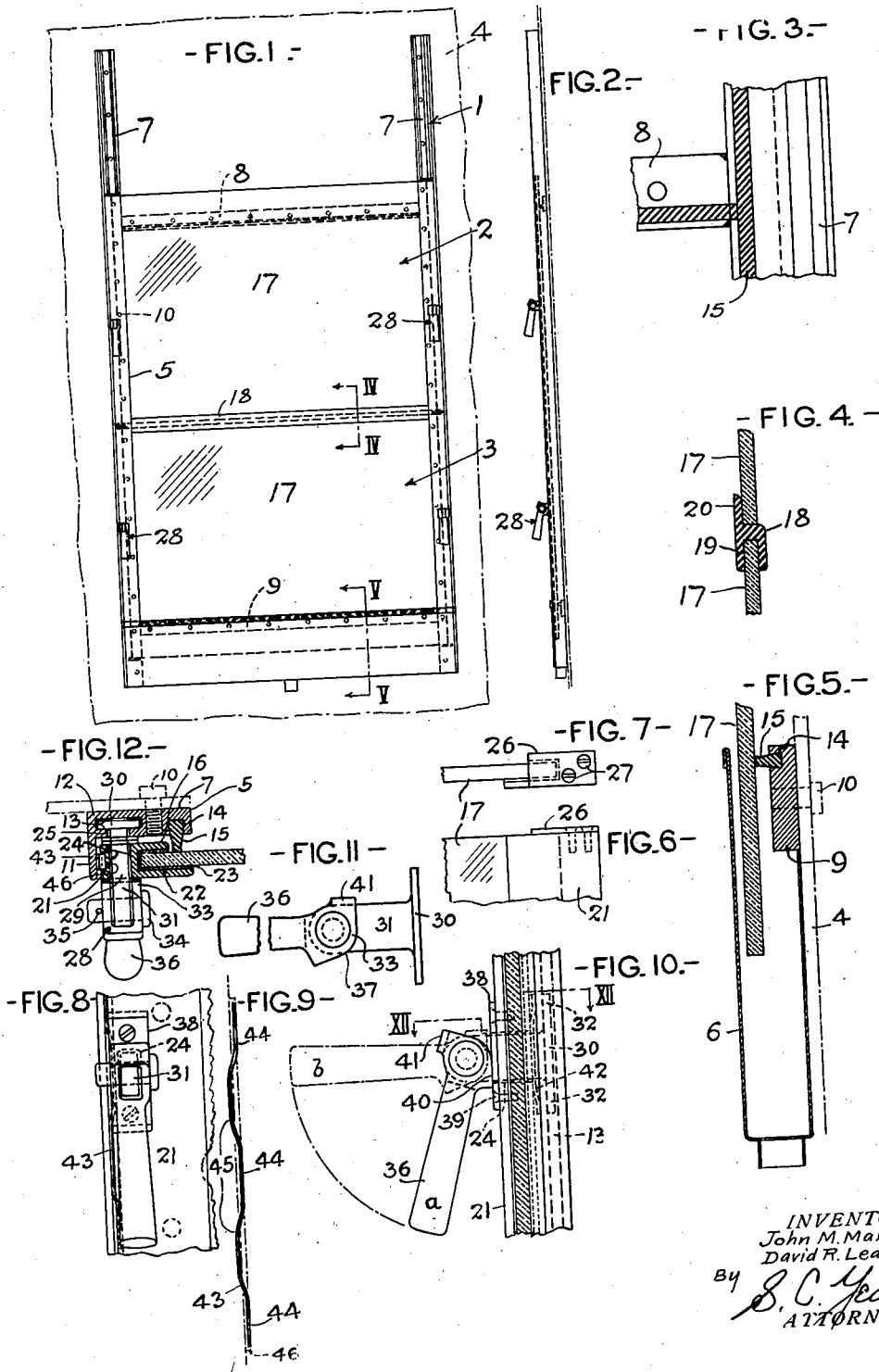
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WINDOW

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WINDOW

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This invention relates to windows and has more particular application to windows for a ship deck house employing two sliding sashes, the sashes being adjustable to provide a positionable opening therebetween for clear vision during stormy weather.

An object of the invention is to provide a sash control device at each side of the sash, and carried by the sash, of novel construction and operation for manually moving the sash longitudinally of the window casing to any desired position and for holding the sash in any of such positions.

Other and further objects of and advantages achieved by the present invention will be apparent from the following description of an approved embodiment thereof and the claims appended hereto.

Referring to the drawing forming part of this application, Figure 1 is an inboard front elevation of a window of the deck house type embodying the present invention, showing in dot and dash lines a portion of the deck house wall to which the window is secured at an opening therein; Fig. 2 is a side view of the structure of Fig. 1; Fig. 3 is an enlarged fragmental inboard front elevation of a portion of the casing at a corner thereof, the rubber sealing strip being shown in section; Fig. 4 is an enlarged fragmental section on the line IV—IV of Fig. 1; Fig. 5 is an enlarged fragmental section on the line V—V of Fig. 1; Fig. 6 is an enlarged fragmental inboard front elevation of a corner of a sash; Fig. 7 is a plan of the sash corner shown in Fig. 6; Fig. 8 is an enlarged fragmental elevation of the window at the location of one of the sash control devices showing the device and a strip spring employed with the sash, the handle of the device being shown in lowered position; Fig. 9 shows the spring of Fig. 8 removed, the sash groove in which it is disposed being indicated in dot and dash lines; Fig. 10 is a side elevation of the portion of the window shown in Fig. 8, looking from the right thereof, showing the operating handle in two positions, its raised position being shown in dot and dash lines, and the glass pane being shown in section; Fig. 11 is a view of the control device in side elevation similar to Fig. 10, showing the handle broken in raised position; and Fig. 12 is a section on the line XII—XII of Fig. 10, showing the handle in lowered position only, and a portion of the deck house wall in dot and dash lines.

The invention, while adapted for a single sash, is shown in connection with a window of the

aforsaid type, for convenience of illustration, where it is especially adapted.

The window comprises a casing, indicated generally by the reference numeral 1, an upper sash, indicated generally by the reference numeral 2, and a lower sash, indicated generally by the reference numeral 3. The sashes are disposed to the inboard side of the casing.

The casing is secured to the deck house wall 4, a portion only of which is shown and indicated by dot and dash lines, the portion having a window opening 5 which is covered or closed by the sashes when in their normal positions. When in these positions the upper sash extends somewhat above, and the lower sash extends somewhat below the respective upper and lower edges of the opening. In stormy weather it is often desirable to adjust the sashes to produce an opening therebetween to provide a clear view at the opening and the extensions of the sashes provide for a positioning of this opening as to height from the deck floor to better accommodate it for the observer in any instance, the opening, at any of these adjustments being otherwise closed. The upper sash is adapted for raising and lowering and the lower sash is adapted for lowering and raising to open and close the window. A drip pan housing 6, shown in Fig. 5, is fixed, preferably by securing it to the wall 4, below the lower sash to house this sash when lowered, the lower portion of the sash preferably extending into the housing when the sash is in normal closed position.

The window thus far described is conventional. The casing further comprises vertical side members 7, an upper cross member 8, and a lower cross member 9. The four members are secured to the wall 4 by screws 10, the upper member 8 being adjacent the upper edge of the opening 5, the lower member 9 being adjacent the lower edge of the opening 5, and the portions of the members 7 between the members 8 and 9 being adjacent the respective adjacent sides of the opening 5. The members 7 extend upwardly and downwardly beyond the opening and beyond the members 8 and 9, as shown in Fig. 1.

A sash guide 11 is disposed adjacent each side of the casing, each being preferably integral with the adjacent side member 7 to form a part thereof. The guide extends transversely in an inboard direction from its side member, extending longitudinally thereof, and the side member has a portion extending inwardly from the guide, providing a casing margin 12. The portion providing the margin 12 has a groove 13, extend-

ing longitudinally thereof adjacent the guide, dove-tailed in cross section and opening through the portion on the inboard side. The portion extends inwardly from the groove for receiving the screws 10. Inwardly from the screws the portion providing the margin 12 has a groove 14 extending longitudinally thereof in which is secured a resilient sealing strip 15 made of rubber or similar material. The cross members 8 and 9 have each a similar groove 14 and sealing strip 15. The sealing strip grooves are disposed adjacent the sides of the opening 5 and further extend preferably throughout the length of the side members 7. They are for engaging the sashes when the latter are moved theretoward and held thereagainst, as will later more fully appear, and for sealing the joint between the sashes and casing, this being especially desirable when the sashes are in full closed position.

The sashes are disposed in vertical alignment to each other at the inboard side of the casing and have side portions providing side margins 16, each being opposite to and overlapping the frame side margin 12 adjacent thereto. Each sash is disposed between the guides 11 for movement longitudinally relative thereto.

The sashes are similar to each other; therefore a description of one will suffice.

The sashes are formed each of a pane of glass 17, the panes being frameless at least at the top and bottom, and are aligned in the same vertical plane. When in closed position the adjacent edges of the panes are sealed by a sealing strip 18 which extends across these edges. The strip is made of rubber or other suitable material, and is carried by the lower sash. To this end the strip is provided with a groove 19 in which the upper edge of the lower pane fits, and to which it is secured by cement or other suitable means. The strip is provided, at its inboard side, with an upwardly extending flange 20 which flares in an inboard direction at its upper edge, as shown in Fig. 4, to facilitate closing the sashes. A strip of these characteristics provides a weather-proof seal for the panes at their adjacent edges. If this strip 18 should obstruct the vision, as for instance if it should be level with the eyes of a man in the deck house, it may be adjusted above or below the eye level without opening the window by moving both sashes upward or downward in the aforescribed manner. The strip is preferably normally slightly above the eye level.

The strips 15 have direct contact with the panes of glass at all four sides when the panes are brought into engagement with the strips, as will later more fully appear. Each sash margin 16 is composed partly of a portion of the glass, that portion which engages the strip 15 adjacent thereto, and partly of a metal strip 21. As the sashes are similar in this respect and as the margins 16 are similar, a description of one sash side portion or margin will suffice.

The metal strip 21 extends the full length of the pane of glass and is provided at its inner edge with a channel 22, in which the adjacent side edge portion of the pane fits, and a sheet of rubber 23 or other suitable material is disposed around the pane of glass within the groove to provide a seal.

The outboard side of the strip 21 is shorter than the inboard side to provide room for engagement of the strip 15 by the pane, as clearly shown in Fig. 12.

The strip 21 is provided with an orifice 24 which is in line with the slot-like opening 25 of

the groove 13. The pane of glass is held within the groove 22 against longitudinal movement relative thereto by caps 26 disposed one at each end of the groove over the pane of glass and secured to the strip by screws 27.

Each of the sashes is provided at each of its opposite sides with a sash control device, indicated generally by the reference numeral 28, and as these devices are similar a description of one will suffice. While a vertical window with vertically movable sashes has thus far been described, it will be understood that the invention is applicable not only to this type of window but also to a window where the sashes move horizontally.

The device 28 comprises a mounting 29 having a head 30 disposed in the groove 13 and a stem 31, integral with the head, extending in an inboard direction therefrom through the slot-like opening 25, through the orifice 24, and for a considerable distance inboardly therebeyond. The stem makes a working fit with the opening 25 so that the mounting may move longitudinally with the sash, it being a feature of the invention that the device moves with the sash during the latter's movement longitudinally of the frame, the head 30 during this movement freely moving in the groove 13 longitudinally of the casing. The stem further makes a working fit with the orifice 24 so that the sash may move transversely of the casing relative to the stem and casing, as will presently appear.

The head 30 is preferably elongated in a direction longitudinally of the groove 13, as shown in Fig. 10, providing wing-like extensions 32 which, if made long enough, may serve as a guide, in which case the guide 11 may, if desired, be dispensed with. Furthermore in an obvious manner if desired a guide stud may be threaded into the metal strip 21, one at each side and spaced longitudinally from the mounting 29 with its head in the opening 25 to serve as the guide for the sash in place of the guide 11.

The stem 31 is preferably rectangular in cross section and is elongated in a direction longitudinally of the sash, the orifice 24 being similarly shaped.

A fork-shaped cam 33 is disposed at the inboard end portion of the mounting 29 with a branch of the fork adjacent each of the vertical sides of the mounting. The branches and mounting are provided with aligned horizontal holes through which a headed pin 34 extends, the pin being provided at its free end with a hole 35 for a cotter pin (not shown) for securing the pin in place. The cam is thus rotatably secured to the mounting 29 and is further provided with a handle 36 formed preferably integral therewith for rotating it.

The handle has two extreme positions, a lower position *a* and a raised position *b* (see Fig. 10). Each of the fork branches is provided with a cam face 37 similar in all respects, and the metal strip 21 is provided with a plate 38 orificed to freely embrace the stem 31 and secured to the strip 21 by screws 39. The plate 38 is disposed opposite the cam faces for coaction therewith. The cam faces begin at a point substantially on a horizontal line through the axis of the pin 34 when the handle is in raised position, and extend in a downward direction by increasing radii to points where sufficient cam action will have been provided. These faces are curved, as shown in Fig. 10. Beyond these points of maximum cam action the faces 37 are straight, as shown in Fig. 10. These straight faces engage the plate

38 when the handle has reached its lowered position, indicated at *a*, and provide a stop for the handle, the handle being inclined in this position away from the sash sufficiently to provide room for grasping it.

The branches of the fork-shaped cam 33 are connected at their tops by a cross bar 41 which engages the top of the stem 31 to provide a stop for the cam and handle when the handle has been raised to its position indicated at *b*.

A compressible spring 42 made of bent strip metal is disposed between the opposed margins of the metal strip 21 and the window casing. The spring is bent to provide end portions in the same plane and a central portion out of the plane of the end portions. The spring is orificed at the central portion and the stem 31 extends through this orifice thereby securing the spring to the sash so that when the sash moves longitudinally of the casing the spring will move with it. The operation of this spring will be later more fully described.

A compressible spring 43 made of bent strip metal is disposed between the inner face of the guide 11 and the adjacent side face of the metal strip 21. This spring is best shown in Fig. 9, which shows an edge view of the spring similar to the showing made in Fig. 8.

The spring is provided with portions 44 in one plane and other portions 45 in another and parallel plane. The metal strip 21 is provided with a groove or pocket 46 in which the portions 44 are housed to hold the spring against appreciable end movement so that it will move with the sash during longitudinal movement of the sash relative to the casing. The spring is maintained under compression, the portions 44 pressing against the bottom of the groove 46 and the portions 45 pressing against the inner face of the guide 11. The springs 43 are provided preferably one at each side of each sash. They operate to prevent rattling of the sash and to centralize the sash to facilitate the movement thereof longitudinally of the casing. Also when the window is of the vertical type the springs 43 yieldingly resist lowering of the sash to prevent sudden dropping of the sash should it inadvertently be left free to drop.

The sash as shown in the drawing is pressed and held in sealing relation with the sealing strips 15 (lowered position of the handle). This position of the parts can be attained at any position of the sash longitudinally of the casing. This position was attained by moving the handle from its position *b* to its position *a*. At the position *b* of the handle it will be understood that the sash is released from the casing and that the plate 38 preferably engages the cam faces, shown dotted in Fig. 10, although this released position is not so shown; also that the spring 42 is substantially uncompressed. When the handle 36 is moved downwardly the cam faces, through their engagement with the plate 38, force the sash margin transversely toward the casing margin against the resistance of the spring 42 which is simultaneously compressed until the sash engages the adjacent sealing strip 15, compressing same, and the sash is held in this position when the handle has reached the position *a*. When the handle is moved upwardly from the position *a* it reverses the movement of the cam faces thereupon releasing the sash, and the spring 42 reacts to move the sash away from the casing and from the adjacent sealing strip 15, insuring separating the glass from the strip

15 should there have been any adhesion between the two.

With the handle in position *b* and stopped by the cross bar 41, it is then in rigid position to serve as a handle for raising the sash. It will be understood that the handles of both the devices of a sash are similarly moved downwardly and upwardly to effect the aforesaid movements and holding of the sash at both sides so that there will be uniform holding of the sash in any longitudinally moved position thereof relative to the frame, and when the sash is in full closed position it will be sealed at the four sealing strips 15. Furthermore it will be understood that when the handles of the sash are both in the raised position they will be operated together to lift the sash so that there will be uniform lifting at both sides thereof.

From the foregoing description it will be seen that the sash may be released and adjusted to a desired position by a single operation. That is to say, it is only necessary to grasp the handles when they are in position *a*, move them upwardly to position *b* to release the sash from sealed engagement with the casing, and then raise or lower the sash as desired without the employment of any other device or the necessity of shifting the hands. Thus the adjustment of the sash is possible by a single simple operation, and all use of threaded locking means, separate locking means and raising handles, and other similar devices wherein it is first necessary to operate a device (or devices) to release the sash, and another device (or devices) to raise or lower the sash, have been avoided.

It will further be noted that it is only necessary, in case it is desired to remove the sash from the casing, to remove the pins 34 which free the cams, the sash then being free for removal in an inboard direction from the mountings 29.

While there has been hereinbefore described an approved embodiment of this invention, it will be understood that many and various changes and modifications in form, arrangement of parts and details of construction thereof may be made without departing from the spirit of the invention and that all such changes and modifications as fall within the scope of the appended claims are contemplated as part of this invention.

The invention claimed and desired to be secured by Letters Patent is:

1. A window comprising a casing having a portion along each of two oppositely disposed sides thereof providing side margins, an opening between said margins, and a groove in each portion, dove-tailed in cross section, opening in an inboard direction through the adjacent margin and extending longitudinally thereof; a sash for said opening disposed at the inboard side of said margins adapted for movement longitudinally relative thereto for positioning said sash, said sash having side portions providing margins opposite to and overlapping said casing margins, each said sash margin having an orifice in line with the adjacent groove opening and a cam-coacting face adjacent said orifice; and a device at each said sash margin, carried by said sash and bodily movable therewith during said longitudinal movement, having a mounting provided with a head disposed in the adjacent groove for movement therein during said sash movement, and a stem extending from said head with a working fit through said adjacent groove open-

ing and the adjacent sash orifice to the inboard side of said sash, said device further having a cam pivotally connected to said mounting opposite said cam-coacting face operable when rotated in one direction through engagement with the adjacent cam-coacting face, to move said sash at its margin adjacent said cam toward said casing and when rotated in the opposite direction to free said adjacent margin, and a handle connected to said cam for rotation thereof.

2. A window comprising a casing having oppositely disposed spaced sides; a sliding sash spanning said space and having sides overlapped respectively by said casing sides, one of said casing sides having a groove extending longitudinally thereof provided with a flange extending inwardly from a longitudinal edge thereof and said adjacent sash side having an orifice registering with said groove; and a device movable longitudinally of said groove, having a portion disposed in said groove and overlapping said flange, said device extending through said orifice for support of said sash, said device further having a cam for coaction with said orificed side for locking said orificed side to said adjacent casing side at any position of said sash, and a handle for moving said sash rotatable with said cam for operating same.

3. A window comprising a casing having oppositely disposed spaced sides; a sliding sash spanning said space and having sides overlapped respectively by said casing sides, one of said casing sides having a groove extending longitudinally thereof provided with a flange extending inwardly from a longitudinal edge thereof and said adjacent sash side having an orifice registering with said groove; a device movable longitudinally

of said groove, having a portion slidably disposed in said groove and overlapping said flange, said device extending through said orifice for support of said sash, said device further having a cam for coaction with said orificed side for locking said orificed side to said adjacent casing side at any position of said sash, and a handle for moving said sash rotatable with said cam for operating same; and a flange extending from each said casing side over the outer edge of the adjacent sash side guiding said sash during its sliding movements.

4. A window comprising a casing having oppositely disposed spaced sides; a sliding sash spanning said space and having sides overlapped respectively by said casing sides, one of said casing sides having a groove extending longitudinally thereof provided with a flange extending inwardly from a longitudinal edge thereof and said adjacent sash side having an orifice registering with said groove; a device movable longitudinally of said groove, having a portion slidably disposed in said groove and overlapping said flange, said device extending through said orifice whereby said sash will be supported on said device, said device further having a cam for coaction with said orificed side for locking said orificed side to said adjacent casing side at any position of said sash, and a handle for moving said sash rotatable with said cam for operating same; and a stop on said orificed side for holding said rotatable handle, when in cam-released position, against further rotation in cam-releasing direction.

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