Nov. 25, 1941. W. D. BAYLEY 2,263,796

WINDOW ASSEMBLY

Filed July 29, 1937 2 Sheets-Sheet 1

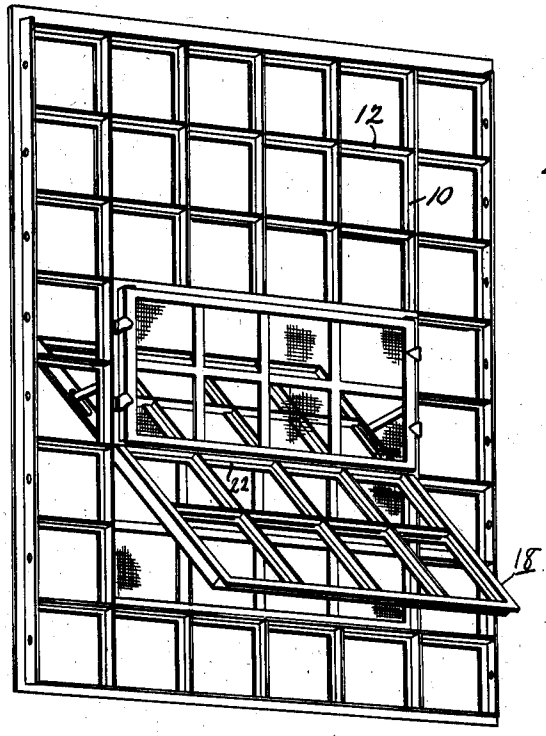


Fig. 1

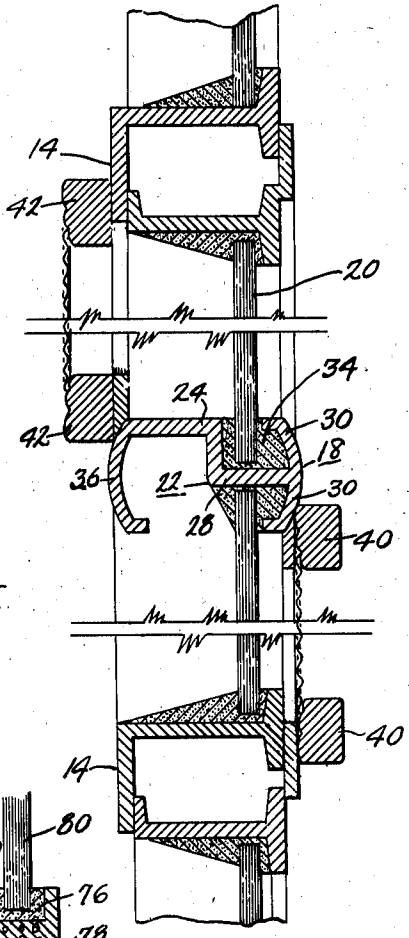


Fig. 8

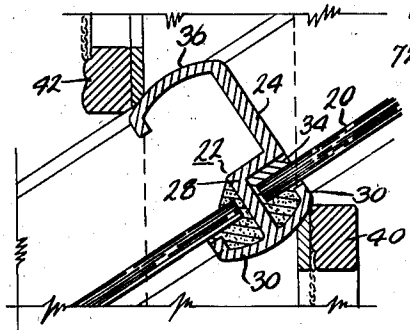


Fig. 3

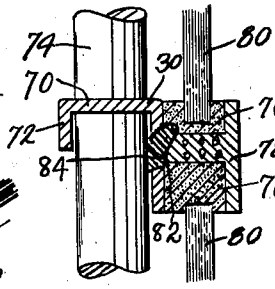


Fig. 6

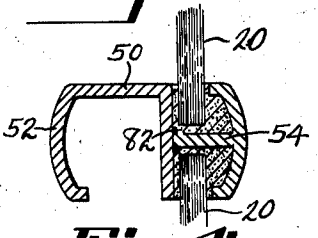


Fig. 4

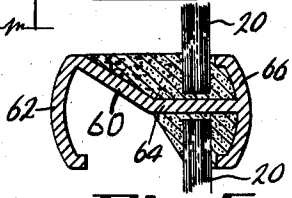


Fig. 5

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WINDOW ASSEMBLY

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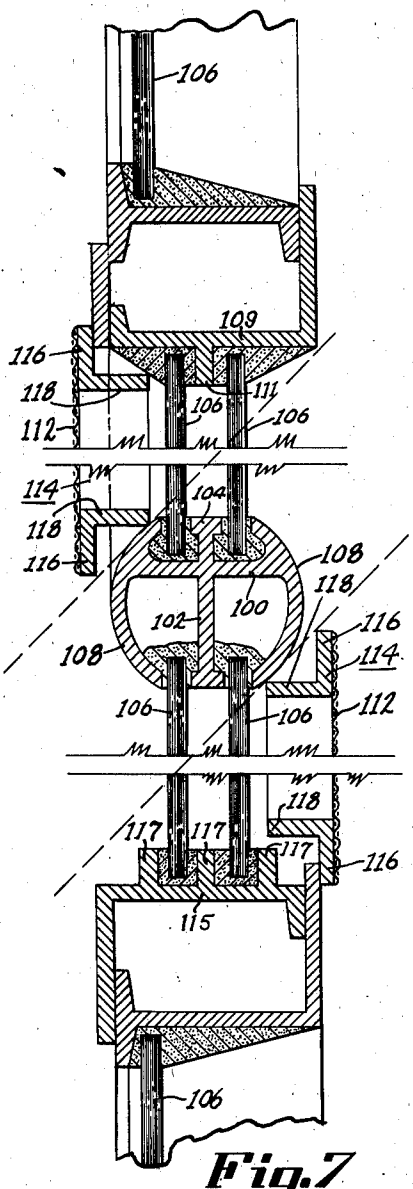


Fig. 7

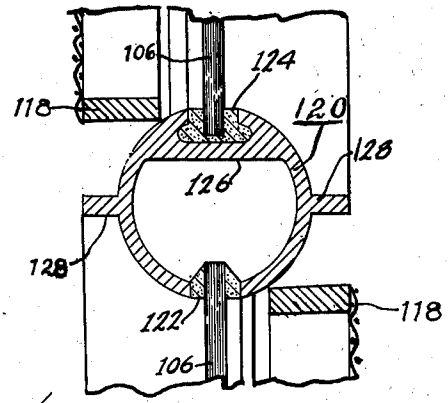


Fig. 8

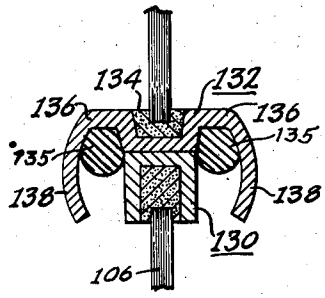


Fig. 9

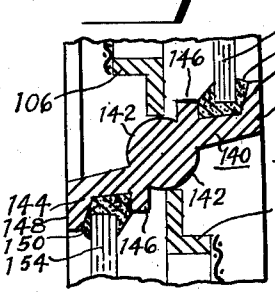


Fig. 10

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WINDOW ASSEMBLY

William D. Bayley, Springfield, Ohio

Application July 29, 1937, Serial No. 156,373

16 Claims. (Cl. 189—64)

This invention relates to a window assembly and in particular to the pivotal mounting bar for the closure assembly.

An object of this invention is to provide a pivotal mounting bar adapted to travel through an arcuate path.

Another object of this invention is to provide a pivotal bar having arcuate surfaces, which pivotal bar is provided with drainage.

Another object of this invention is to provide a pivotal bar that is easily constructed, efficient and dependable.

Another object of this invention is to provide a pivotal bar having non-corrosive contacting surfaces.

Another object of this invention is to provide a composite bar having the parts thereof made from materials of different kinds.

Another object of this invention is to provide a composite glass supporting bar having parts thereof made from different types or grades of material.

Another object of this invention is to provide a pivotal muntin bar for a swinging closure adapted for use in double glazed windows.

Other objects and advantages reside in the construction of parts, the combination thereof and the mode of operation, as will become more apparent from the following description.

Fig. 1 is a perspective view of the window.

Fig. 2 is a vertical cross sectional view of a portion of the window including the closure for the ventilating area, which closure is pivotally mounted, having both inwardly and outwardly swinging portions.

Fig. 3 is an enlarged fragmentary sectional view disclosing a pivotal bar of a closure in the position of the closure partially open.

Fig. 4 is a sectional view of another modification wherein the parts are made of materials of different kinds.

Fig. 5 is a sectional view of another modification.

Fig. 6 is a sectional view showing a composite bar.

Fig. 7 is a cross sectional view of another modification which may either be a horizontal or a vertical cross sectional view.

Fig. 8 discloses a fragmentary sectional view of another type of pivotal bar.

Fig. 9 discloses another composite bar.

Fig. 10 shows a cross sectional view of another modification.

The preferred embodiment of this application is disclosed in my copending application Serial No. 13,456, filed March 28, 1935, for Detention window ripening into United States Letters Patent No. 2,137,437, dated November 22, 1938.

The disclosure in Fig. 6 is the same as Fig. 13 as originally filed in my copending application Serial No. 115,752, filed December 14, 1936, for Detention window and method of glazing same, ripening into United States Letters Patent No. 2,161,792, dated June 13, 1939.

The present invention relates to a unitary pivotal bar about which a closure swings outwardly on one side of the pivotal bar and inwardly on the other side of the pivotal bar, which bar has arcuate surfaces adapted for engagement with a screen frame or any other particular means overlying the portions vacated by the closure when swung into open position. This has been accomplished by providing a bar having vertical and/or horizontal portions extending into arcuate portions, which arcuate portions contact the screen frame and may form a seat for the glazing.

In the drawings the reference character 10 indicates vertical muntin bars, as may best be seen by referring to Fig. 1. The vertical muntin bars 10 are interconnected by horizontal muntin bars 12. The one bounding the top of the ventilating area may have a downwardly projecting flange or piece 14 welded thereto, so as to provide an abutment and a watershed for the upper portion of the closure 18, as may best be seen by referring to Fig. 2.

The closure 18 is pivotally mounted to swing with a pivotal bar 22 including an L-shaped portion 24 merging into a stem 28 constituting the stem of a substantially T-shaped portion having flanges 30, one extending upwardly and one extending downwardly along an arcuate path. One leg of the L cooperates with one of the flanges 30 to form a glazing channel 34. A glass window pane 20 is mounted in the glazing channel or seat 34.

The other leg of the L-shaped portion 24 merges into an arcuate portion 36, the outer surface of which has the same radius or different radius. Both arcuate outer surfaces bounding the flanges 30 are concentric. The arcuate surface of the flanges 30 engages a screen frame 40 overlying the outwardly swinging portion of the closure. The arcuate surface of the portion 36 contacts a screen frame 42 overlying the inwardly swinging portion of the closure. The arcuate surfaces of portions 30 and 36 travel through a circular path and always remain in contact with the screen frames. In Fig. 3 the

closure has been swung into open position without losing contact with the screen frames.

In order to reduce corrosion the material of the pivotal bar may consist of aluminum, brass, stainless steel or any other suitable non-corrosive material. This prevents streaking of the screens placed on the under side of the closure. Instead of using non-corrosive metal for the entire bar, the bar may be electroplated with a suitable non-corrosive plating, such as chromium plating.

In the modification disclosed in Fig. 4, the L-shaped portion **50**, together with the arcuate portion **52** are preferably made from comparatively soft material and the T-shaped portion **54** from hard tool resisting material. The stem of the T-shaped portion **54** is welded to one leg of the L-shaped portion **50**. In this modification both of the flanges of the T-bar cooperate with one leg of the L-bar to form a pair of glazing channels, one above the stem and one below, as shown in Fig. 4. This arrangement provides a more solid glazing seat for the upper edge of the glass. The tool-proof or tool resistant material used in the T-bar **54** deters severance of the pivotal bar, thereby increasing the value of the pivotal bar as a multi-functional bar, that is, muntin bar, pivotal bar, contact bar and detention bar.

In the modification disclosed in Fig. 5, the L-shaped bar has been eliminated and instead a diagonal portion **60** has been used. This diagonal portion **60** has one end merging into an arcuate portion **62** and the other end merging into the stem **64** of the T-shaped bar. In this structure the flanges **66** of the T-bar cooperate with the stem thereof to form glazing seats.

In the modification disclosed in Fig. 6 a composite bar arrangement has been utilized in a rail guard window assembly wherein the L-shaped portion **70** is provided with a downwardly projecting flange **72** along one edge. The horizontal leg portion of the bar **70** is provided with a plurality of holes receiving round or other suitably shaped detention bars **74**, as more fully disclosed in my copending application Serial No. 115,752, filed December 14, 1936, for Detention window and method of glazing same. The rail bars or L-shaped bars **70** cooperate with the vertical detention bars **74** to form a detention guard suitable for use in penal institutions or other places where there may be no ingress and egress of human bodies through the windows.

The T-shaped bar **78**, preferably having tool resistant material embedded therein, may also be much harder or different than the material used in the L-shaped bar **70**. One leg of the L-shaped bar cooperates with the T-shaped bar to form glazing channels **76**, receiving the window panes **80** overlying the detention guard. In the modification shown, the channel above the stem of the T-shaped member is shallower than the channel below the stem. This facilitates insertion of the window panes. This is similar to the difference in the depths of the channels shown in Fig. 9, which will be explained more fully later. The same arrangement may be utilized in connection with Fig. 4, where the upper channel may, for example, be much shallower than the lower, so as to accommodate the glazing. Thus, a duo-functional rail guard window assembly is produced. The stem of the T-bar **78** may be attached to the L-shaped bar **70** in any suitable manner. The angle bar **70** may be provided with an aperture **82** that is aligned with the stem of the T-bar **78** and with the detention bar **74**. This aperture **82** is used as a pocket for receiving the welding material **84**, which welds bars **70**, **78** and when desired **74**, into a unitary structure.

Instead of using horizontal pivotal or composite bars, these may be vertical bars, or for that matter, diagonally disposed bars. In any event, the closure swings about the pivotal bar.

In the modification disclosed in Fig. 7 the pivotal bar includes a bridge portion **100** having a downwardly projecting flange **102** and an upwardly projecting flange **104**, forming spacing members for two pairs of window panes **106**. Each end of the bridging portion **100** merges into an arcuate flange **108**. The radius of curvature of the outer surface of each of these flanges has a common center. The ends of the pivotal bar are pivotally mounted in the frame of the window. The pivotal bar may extend horizontally or vertically. The upper portions of the flanges **108** cooperate with the flange **104** to form longitudinal putty receiving pockets, which pockets are used as seats for the glazing **106** and the putty surrounding the edges of the window pane.

As the upper portion of the disclosure shown in Fig. 7 swings in the one direction and the lower portion swings in the opposite direction, it is necessary to provide screens **112** for the oppositely swinging portion, one located on the inside of the outwardly swinging portion and the other located on the outside of the inwardly swinging portion. The frame **114** of each screen **112** is preferably made from angle iron. The flanges **116** extending parallel to the glazing **106** abut the frame of the fixed portion of the window. The other flange **118** projects into the ventilating area towards the swinging closure. The inwardly projecting flange adjacent the pivotal bar contacts the arcuate surface **108**, so as to provide fly-tightness whether the closure is in open or closed position. This screen arrangement provides a screen that is substantially flush with the outer surface of the fixed portion of the window, only the thickness of the flange **116** and the screen overlying the same, extending beyond the outer surface of the fixed portion of the window. This results in a compact structure, neat in appearance, efficient, that can be easily constructed at a low cost. The double glazing results in low heat losses. The arcuate pivotal bar having merely the bridging portion **100** extending from the inside to the outside also reduces heat losses.

The frame bar **109** bounding the upper portion of the closure may be provided with a downwardly projecting flange **111** which forms a partition and putty receiving seats. As the glazing below the pivotal bar may be inserted any suitable distance up into the cavity between the arcuate flanges **108** and the downwardly projecting flange **102**, the bottom frame member **115** has been provided with three upwardly extending flanges **117** cooperating to form glazing channels or glazing seats receiving the glazing and rigidly supporting the glazing in position along the bottom.

In the modification disclosed in Fig. 8 the pivotal bar **120**, substantially circular in contour, is provided with a longitudinal slot **122** and a channel **124** located over the bridging portion **126**. The slot **122** and the channel **124** form glazing seats. These seats support the putty surrounding the adjacent edges of the window panes. Outwardly projecting flanges **128** form stops, limiting the swinging movement of the closure about its pivot. The main purpose is to permit the pivotal bar **120** to be small in relation to the

window thickness. The swinging movement of the closure is arrested by the stops 128 abutting or engaging the inwardly projecting edges 118 of the screen frame. Thus, it is seen that the inwardly projecting edges 118 of the screen frame constitute duo-functional edges in that the edges contact the arcuate surfaces of the pivotal bar and form a stop for the swinging movement of the closure.

Referring to the modification disclosed in Fig. 9, a composite bar has been shown including a channel-shaped portion 130, which may be of cast material, or suitably extruded material, and a sheet metal member 132 substantially 3-shaped when inverted. The sheet metal portion 132 includes a channel portion 134 merging into horizontal portions 136, as viewed in Fig. 9, terminating in arcuate flanges 138. The sheet metal portion 132 may be suitably attached to the channel portion 130 by welding or in any other suitable manner. In this modification the channel in member 132 is much shallower than the channel in member 130. This permits insertion of the glazing upwardly into the upper channel over the lower edge, where it may be slipped into the lower channel. By having the channels of unequal depth this facilitates the glazing operation.

A pair of tool resistant members 135 is nestled between the arcuate portions 138 and the medial glass supporting portion of the assembly. The tool resistant rods prevent the easy severance of the pivotal bar assembly in the event inmates should try to effect an escape through the ventilating area.

In the modification shown in Fig. 10 a rolled pivotal bar 140 has been shown. This bar includes a pair of diametrically disposed arcuate surfaces 142. The center of curvature of these arcuate surfaces coincides with the normal axis of rotation of the pivotal bar, about which axis the closure swings. The bar 140 also contains a pair of glass supporting flanges 144, oppositely disposed with respect to the center of rotation of the pivotal bar and oppositely disposed with respect to a common plane formed by corresponding sides of the flanges, this common plane containing the axis of rotation.

The flange 144 positioned above the common plane, as viewed in Fig. 10, has two upwardly projecting flanges 146 and 148 cooperating to form supports for the putty 150 surrounding the lower edge of the glass pane 152.

The opposite flange 144 positioned below the common plane, as viewed in Fig. 10, has two downwardly projecting flanges 146 and 148 cooperating to form supports for the putty 150 surrounding the upper edge of the glass pane 154.

The glass panes 152 and 154 are offset with respect to a vertical plane extending through the axis of rotation of the pivotal bar 140, as viewed in Fig. 10. This offset relation permits the use of a pair of screen frames 160 and 162, positioned adjacent to, but on opposite sides of the vertical plane referred to above. The screen frames have been shown as L-shaped in cross sectional area. It is within the purview of this invention to utilize any other suitable type of screen frame. Likewise, the screen above the pivotal bar may be aligned with the screen below the pivotal bar if so desired. The offset relation of the glass panes permits of such a construction.

By shearing or cutting away the flanges 144 adjacent each end, the projecting cylindrical core portion may be used as journals mounted in suitable bearings or holes in the fixed frame portion bounding the sides of the ventilating area. The core portion and also the flanges may have embedded therein non-annealable material, resulting in a tool resistant bar adaptable for use in detention and security windows. The upwardly projecting channel may in some installations be made shallower than the downwardly projecting channel or vice versa, for the same purpose as set forth in connection with Figs. 4 and 9, that is, to facilitate the glazing operation.

Although glass panes have been referred to throughout the specification, it is within the purview of this invention to use any other sheet material that is translucent and/or transparent.

Although the preferred modification of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts which generally stated consist in a device capable of carrying out the objects set forth, in the novel parts, combination of parts and mode of operation, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

1. A pivotal bar for a closure for a ventilating area, said closure having a portion located on one side of the pivotal bar swinging inwardly and a portion located on the other side of the pivotal bar swinging outwardly, said bar having a cross sectional area including an L-shaped portion having one leg merging into an arcuate portion and the other leg united to a T-shaped portion the arms of which are arcuate having the center of the radius of curvature concentric with the radius of curvature of the arcuate portion, one arm of the T together with the stem of the T cooperating with one leg of the L-shaped portion to form a glazing channel.

2. A pivotal bar for a closure for a ventilating area, said closure having a portion located on one side of the pivotal bar swinging inwardly and a portion located on the other side of the pivotal bar swinging outwardly, said bar having a cross sectional area including an L-shaped portion having one leg merging into an arcuate portion, a T-shaped portion united to said L-shaped portion, the arms of the T-shaped portion being arcuate having the center of the radius of curvature concentric with the radius of curvature of said arcuate portion, one arm of the T together with the stem of the T cooperating with one leg of the L-shaped portion to form a glazing channel.

3. A pivotal bar for a closure for a ventilating area, said closure having a portion located on one side of the pivotal bar swinging inwardly and a portion located on the other side of the pivotal bar swinging outwardly, said bar having a cross sectional area including an L-shaped portion having one leg merging into an arcuate portion, and a flange extending outwardly from the L-shaped portion, said flange merging into an arcuate portion diametrically disposed with respect to the first arcuate portion, said arcuate portions having a common center, one leg of the L-shaped portion and one of the arcuate portions forming a glazing seat for the glazing of the closure.

4. A detention window assembly including a rail guard having a plurality of parallel deten-

tion bars held in fixed spaced relation by an angle bar having a vertically disposed flange projecting downwardly in parallel relation with respect to the detention bars, said angle bar being made of comparatively soft toolable material, and a substantially T-shaped muntin bar for supporting the glazing arranged in parallel relation with respect to the angle bar and having the stem abutting the downwardly projecting flange of the angle bar so that the flange of the angle bar and the T-bar form a substantially H-shaped cross sectional configuration, the channels of which are adapted to support the glazing.

5. In a detention window assembly including a rail guard having a plurality of parallel vertically disposed detention bars held in fixed spaced relation by a plurality of transversely disposed angle bars each of which has a downwardly projecting flange arranged in substantially parallel relation with respect to the detention bars, and a T-shaped muntin bar having the stem of the T abutting the downwardly projecting flange and welded thereto, the T-bar being adapted to support the glazing for the window.

6. A detention window assembly including detention bars, a rail bar having a flange projecting in a plane substantially parallel to the plane of the detention bars and a T-shaped bar having the stem thereof fixedly attached to the side of said flange so that the stem, one flange of the T-bar and the side of the flange of the bar cooperate to form a seat for the glazing.

7. A window assembly including a composite muntin bar, said muntin bar including a toolable portion having a substantially L-shaped cross sectional area, and a tool resistant T-shaped portion having the stem of the T arranged normal to the outer side of one of the legs of said L-shaped bar and welded thereto, the stem and one flange of the T portion cooperating with only the adjacent leg of the L-shaped portion to form a glass receiving seat, the putty holding the glass concealing and protecting the weld.

8. A detention window assembly including a composite multi-functional muntin, detention and contact bar, said bar including a T-shaped portion of tool resistant material and another portion of toolable material interconnected to the stem of the T-shaped portion, the flanges of the T-shaped portion having an arcuate contact surface of non-corrosive material, the portion of toolable material being provided with an arcuate surface of non-corrosive material so that the contacting surfaces will be subject to very little corrosion.

9. A detention window assembly including a composite muntin bar having an L-shaped portion made of toolable material and a V-shaped portion made of tool resistant material, the L-shaped portion having a flange attached to the end of one leg, said flange being parallel to the other leg, the stem of the T-shaped portion being secured to said other leg in a direction normal thereto so as to cooperate therewith to form a pair of oppositely disposed channels, the material bounding the channels being substantially H-shaped in cross sectional area, and detention bars intersecting the L-shaped portions extending substantially normal thereto, the glazing seated in the channels extending substantially parallel to the detention bars.

10. A detention window assembly including a composite muntin bar having an L-shaped portion made of toolable material and a T-shaped portion made of tool resistant material, the stem of the T-shaped portion being secured to one leg of the L-shaped portion in a direction normal thereto so as to cooperate therewith to form a pair of oppositely disposed channels, the material bounding the channels being substantially H-shaped in cross sectional area, and detention bars intersecting the L-shaped portions extending substantially normal thereto, the glazing seated in the channels extending substantially parallel to the detention bars.

11. A pivotal bar for a closure for a ventilating area, said closure having a portion located on one side of the pivotal bar swinging inwardly and a portion located on the other side of the pivotal bar swinging outwardly, said pivotal bar having a portion substantially H-shaped in cross sectional area, a flange projecting outwardly from one leg of the H-shaped portion, said flange merging into an arcuate portion, and an arcuate portion on the opposite side of the H-shaped portion.

12. A pivotal bar for a closure for a ventilating area, said closure having a portion located on one side of the pivotal bar swinging inwardly and a portion located on the other side of the pivotal bar swinging outwardly, said bar including a pair of members each of which is substantially channel-shaped, the channel of one of which forms a glazing seat, the opposite sides of the said one channel-shaped member being interconnected to arcuate portions concentrically disposed, the bottom of one of the channel-shaped members being interconnected to the bottom of the other channel-shaped member so that the channels open in opposite directions, thereby forming oppositely disposed glazing seats.

13. A pivotal bar for a closure for a ventilating area, said closure having a portion located on one side of the pivotal bar swinging inwardly and a portion located on the other side of the pivotal bar swinging outwardly, said bar including a pair of members one of which is a substantially channel-shaped cast member, the channel of which forms a glazing seat, the other a sheet metal member including a channel-shaped portion, the opposite sides of the channel-shaped portion being interconnected to arcuate portions concentrically disposed, the bottom of the channel-shaped cast member being interconnected to the bottom of the channel-shaped portion of the sheet metal member so that the channels open in opposite directions, thereby forming oppositely disposed glazing seats.

14. A pivotal bar for a closure for a ventilating area in a detention window, said closure having a portion located on one side of the pivotal bar swinging inwardly and a portion located on the other side of the pivotal bar swinging outwardly, said pivotal bar including a medial glass supporting portion merging into a pair of arcuate portions, and a pair of tool resistant bars nestled on either side of the medial portion, each of said tool resistant bars being held in position by one of said arcuate portions, said tool resistant bars preventing easy severance of the pivotal bar to thereby prevent escape through the ventilating area.

15. A glazed window assembly including a muntin bar, said muntin bar having a portion substantially L-shaped in cross sectional area, a flange extending outwardly from one side only of said L-shaped portion so as to project between

adjacent window panes in a direction normal to the plane thereof, said flange supporting an arcuate portion, and a second arcuate portion diametrically disposed with respect to the first arcuate portion, said second arcuate portion being supported upon one of the legs of said L-shaped portion, said flange and one leg of the L-shaped portion cooperating to form a support for the putty supporting the glass.

16. A pivotal bar for a closure for a ventilating area, said closure having a glazed portion located on one side of the pivotal bar swinging inwardly and a glazed portion located on the other side of the pivotal bar swinging outwardly, said pivotal bar including a pair of members one of which is substantially channel shaped, the other member including a channel shaped portion the sides of the channel shaped portions being interconnected to arcuate portions concentrically disposed, the bottom of the first channel shaped member being juxtaposed upon and connected to the bottom of the channel of the second member, so that the channels open in opposite directions thereby forming oppositely disposed glazing seats.

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