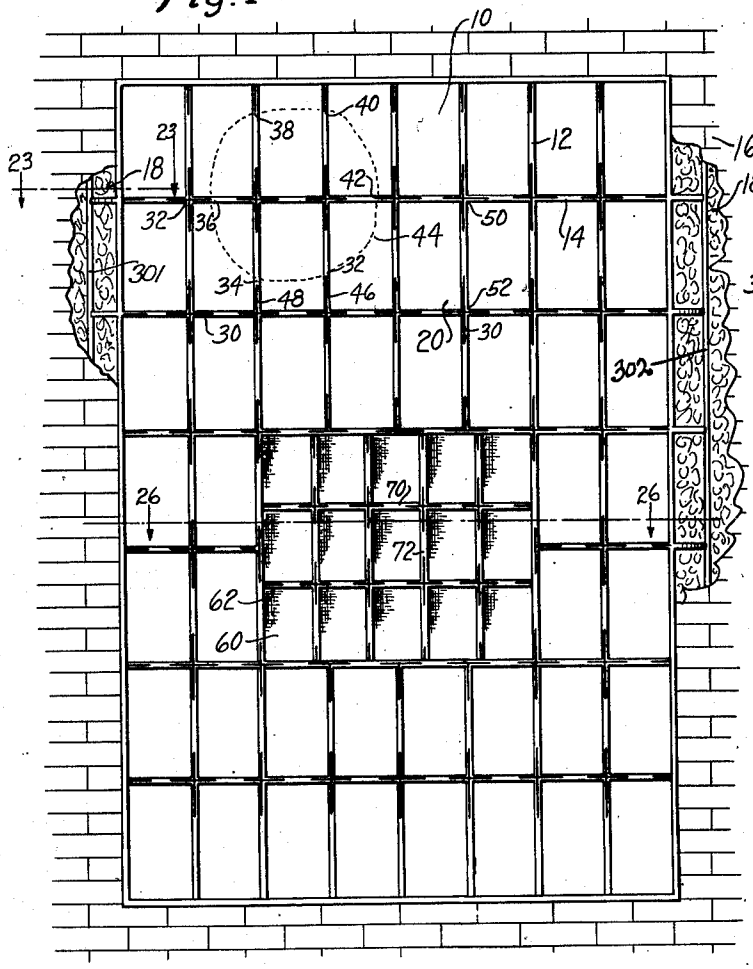
June 2, 1936. W. D. BAYLEY ET AL 2,043,207

DETENTION WINDOW

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Fig. 1



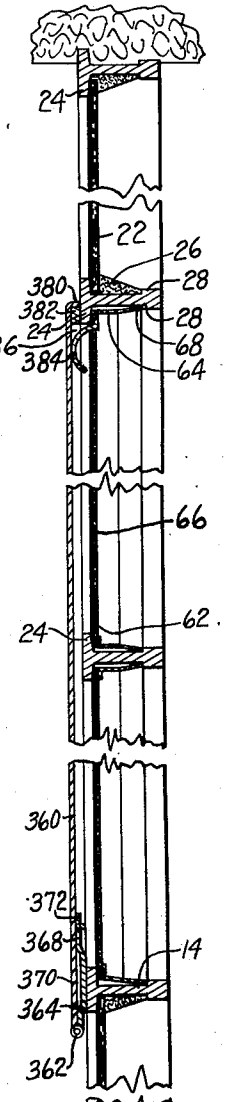


Fig. 26

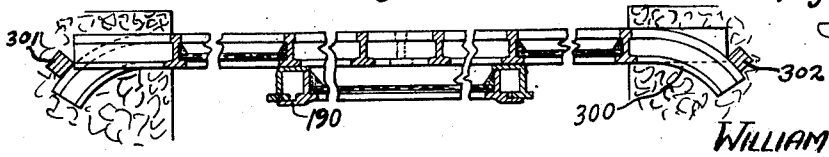


Fig. 2

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Attorneys

June 2, 1936. W. D. BAYLEY ET AL 2,043,207

DETENTION WINDOW

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Fig. 4

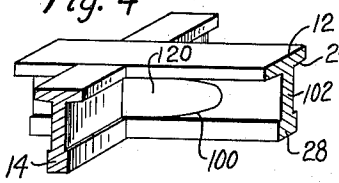


Fig. 5

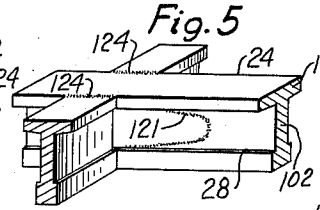


Fig. 6

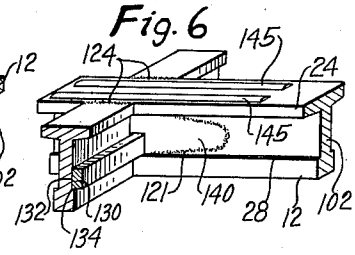


Fig. 7

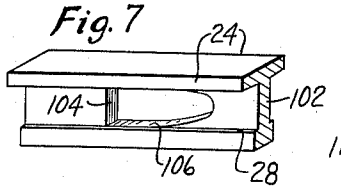


Fig. 8

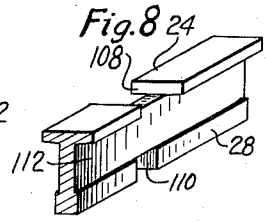


Fig. 9

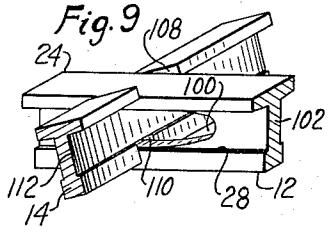


Fig. 10

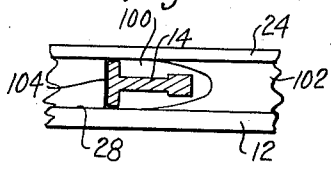


Fig. 11

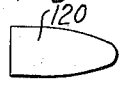


Fig. 12



Fig. 13

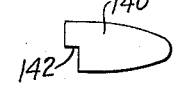


Fig. 14



Fig. 15

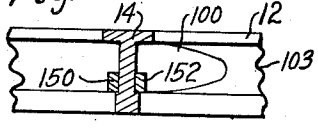


Fig. 16



Fig. 17

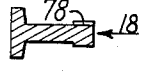


Fig. 18

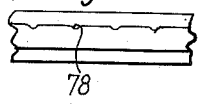


Fig. 19

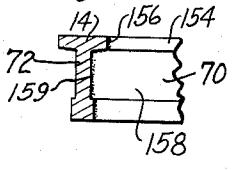


Fig. 20

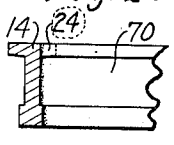
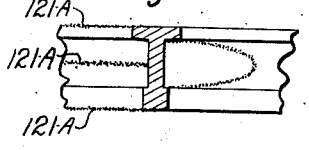


Fig. 5-A



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June 2, 1936. W. D. BAYLEY ET AL 2,043,207

DETENTION WINDOW

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Fig. 27

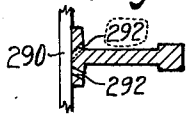


Fig. 2

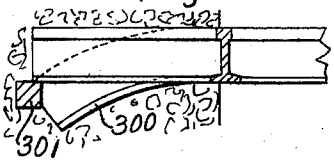


Fig. 24

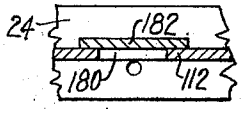


Fig. 25

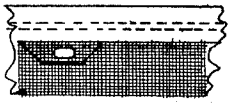


Fig. 15-A

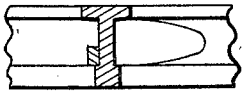


Fig. 28.

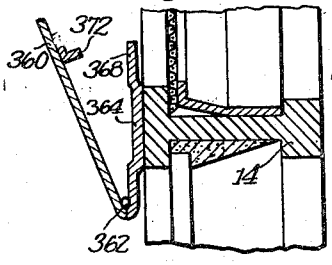
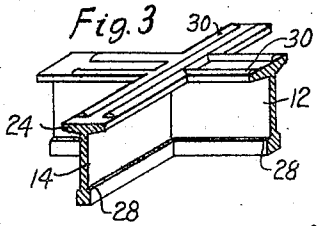


Fig. 3



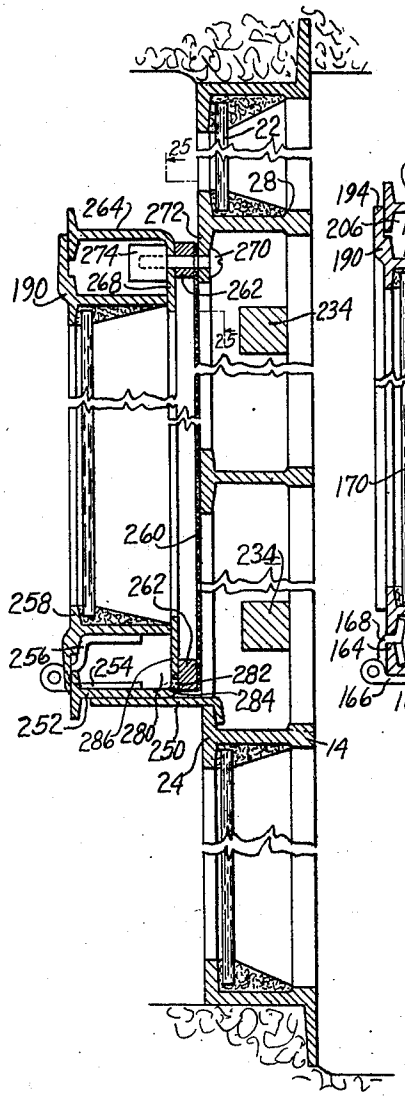


Fig. 22

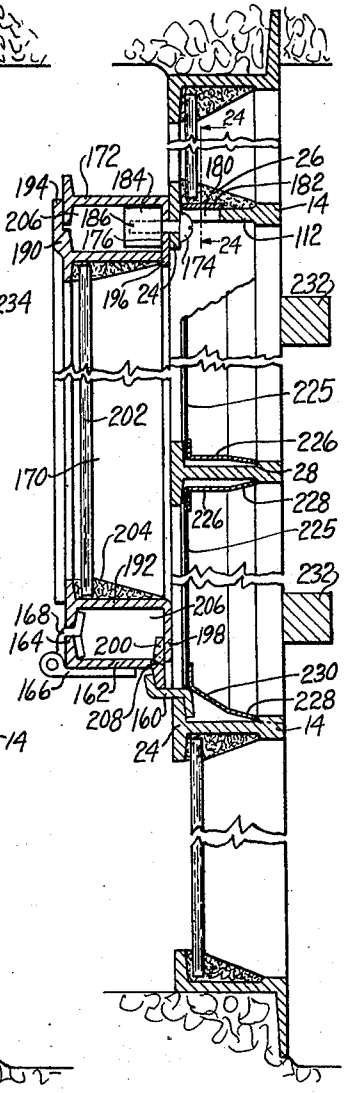


Fig. 21

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Patented June 2, 1936 2,043,207

UNITED STATES PATENT OFFICE

2,043,207

DETENTION WINDOW

William D. Bayley and Elden D. Bayley, Springfield, Ohio, assignors to The William Bayley Company, Springfield, Ohio, a corporation of Ohio

Application February 27, 1932, Serial No. 595,631

37 Claims. (Cl. 189—64)

This invention relates to a sash assembly and detention bars for penal institutions, insane asylums, sanitoriums and the like. The old construction of detention windows includes a sash assembly and detention bars independent of the sash assemblies. In this arrangement the inmates often-time develop undesirable complexes caused by the feeling of being barred. This being the case, it is very desirable to eliminate the massiveness of the structure by combining the detention bars into the sash assembly. An object of this invention is to provide detention bars in the sash assembly that offer security against sawing. This has been accomplished by providing bars made of tool-proof material, so as to eliminate the massiveness of the structure caused by the separate detention bars. This has resulted in a structure that has the detention bars and the muntin bars combined in one so that the bars are duo-functional.

Another object of this invention is to provide detention bars concealed by the muntin bars without making the muntin bars of tool-proof steel, so that the muntin bars can be machined or fabricated and so that the detention bars need not be machined or fabricated. The result of such an arrangement is economy in construction, for the reason that the muntin bars may be easily fabricated, as these are made of comparatively soft material, and the detention bars, made of tool-proof steel in whole or in part and concealed by the muntin bars, need not be machined or fabricated.

Another object of this invention is to convert the essential parts of a commercial window into a detention window with the minimum of alteration of the essential parts. This may be accomplished by lining the muntin bars with a hard material that is tool-proof, so that practically no reconstruction of the muntin bars is required. It may also be accomplished by welding a bead or beads on the muntin bars; the beads comprising a tool-proof material so as to prevent sawing of the bars. When this is done, the muntin bars may be made of soft material machined or fabricated and assembled before adding the welded bead of tool-proof material.

Another object of this invention is to use tool-proof detention bars in the sash assembly. This may be accomplished by making the muntin bars either entirely or in part of a tool-proof material. It is preferable in many cases to make the interior of the bars of a tool-proof material that is covered with a softer material that may be machined or fabricated without injury to the tools.

Another object of this invention is to provide a sash assembly made from muntin bars having a portion thereof hardened or of hard tool-proof material so that the escape of the inmate cannot be readily made, as it will require the severing of a number of the bars in order to secure an opening sufficiently large for the inmate to escape therethrough. This has been accomplished by forming or welding a bead upon the surface of the detention bars near all intersections of the bars so that it will be necessary to sever a plurality of bars in order to effect an escape.

Another object of this invention is to have the muntin bars extend as anchors beyond the outer frame so that the anchors may be mortared or otherwise secured into the masonry of the wall bounding the window. This results in economy of production, a safer and better construction made with a minimum of labor and material.

Another object of this invention is to prevent rusting or eroding of muntin bars and detention bars by providing proper drainage. This has been accomplished by providing weep holes or slots for the drainage of water so as to prevent water from standing in channels found in some types of muntin bars, especially muntin bars extending across the ventilating area.

Another object of this invention is to provide a detention bar collateral to and partially concealed by the muntin bars with the minimum amount of labor and material. This has been accomplished by locating a detention bar made from tool-proof material adjacent to a muntin bar and partially concealed thereby, the two bars having their ends or any other suitable portions welded or otherwise secured together so as to hold them in a fixed relation.

Another object of this invention is to construct the parts so as to be readily and efficiently assembled. This has been accomplished by providing an aperture in the web of one of the bars sufficiently large to receive the transverse bar when oriented. The transverse bar is provided with notches in the flanges and the ribs so that when the notches register with the flange and the rib of the apertured bar, the transverse bar may be rotated through ninety degrees and then held in position by a plug welded or otherwise secured in place, said plug fitting into the remainder of the aperture. When a tool-proof detention bar is located adjacent the muntin bar, the detention bar may also be wedged in position by the welded plug so that all of the parts are held in a relatively rigid position.

Commercial windows for ordinary purposes

usually have the strong bars horizontal because the strains on such windows come in the course of handling during shipping and installation, and as a result of wind loads and of ventilator slamming. The horizontal dimension is usually less than the vertical and hence with the stronger bars, the shorter ones, increased resistance to these usual loadings results. Windows intended to confine criminals may be subject to attempted destruction through the use of a long-handled wrench secured from the power house or otherwise. This suggests having the greater strength in the bars which have the larger glass dimension—usually the vertical ones.

Another object of this invention is to provide bars that offer substantially uniform resistance to bending and twisting intermediate the junctures of the bars. This has been accomplished by inserting the stronger bar along the long side of the open space and the lighter bar or weaker bar along the short side of the open space contrary to the conventional practice. This may be accomplished, for example, by providing bars made of the same material, having the stronger bar made of heavier material, or it may be accomplished by making the stronger bar of a material that resists bending better than the weaker bar, or both.

Another object of this invention is to provide a group of spaces that are glazed or provided with window panes, and to provide another group of vacant spaces for ventilation. The muntin and detention bars of the glazed portion, and muntin and detention bars of the ventilating area, may be offset in the same plane as the plane of the window.

By offsetting the muntin bars across the ventilating area, it is possible to have the muntin bars across this area more closely spaced. This arrangement makes it more difficult to escape through the ventilating area in that it is necessary for the inmate to cut a greater number of bars. This is very desirable in that it will be just as difficult to effect an escape through the unglazed portions as through the glazed portions.

Another object of this invention is to provide a closure for the ventilating area mounted upon one of the muntin bars to completely stop ventilation throughout the ventilating area when the closure is closed. Any group of spaces may be left vacant, and the offset detention bars mounted therein for the ventilating area.

It may readily be seen that a detention window constructed like applicant's window can be assembled at the factory, shipped as a unit ready to be mounted in the building without any further work being done on the assembly aside from possibly the mounting of the window panes.

Another object of this invention is to increase the difficulty of cutting the muntin bars near the joints. This has been accomplished by using a plug for sealing the aperture in some of the muntin bars, that is made from a tool-proof material. It can be readily seen that if the plug is made from tool-proof material, it is necessary or desirable for the inmate to cut the muntin bars some place beyond the position through which the hard steel plug extends.

Further objects and advantages of the present invention will be apparent from the following description, reference being had to the accompanying drawings wherein a preferred embodiment of one form of the present invention is clearly shown.

In the drawings, Fig. 1 discloses front elevation of a detention window mounted in a wall.

Fig. 2 discloses a sectional view of another modification showing a metallic closure for the ventilating area in closed position.

Fig. 3 is a fragmentary enlarged perspective view of a joint.

Fig. 4 is another perspective of a joint found in commercial windows.

Fig. 5 is a view similar to Fig. 4 where some of the joints have been welded so as to hold the parts in fixed relation so that the welded joints offer resistance to sawing and tooling, and twisting.

Fig. 5—A shows a modification similar to the one disclosed in Fig. 5.

Fig. 6 is a view similar to Fig. 5 provided with a bar collateral to the muntin bar.

Figs. 7, 8, 9, and 10 disclose fragmentary views of the muntin bars ready for assembly and after assembly.

Figs. 11, 12, 13, and 14 disclose side elevations and end elevations of the plugs used in the modifications disclosed in Figs. 5 and 6.

Fig. 15 discloses another modification where two tool-proof bars are used with one muntin bar.

Fig. 15—A discloses a modification similar to the one disclosed in Fig. 15.

Figs. 16 and 17 disclose a method of drainage.

Fig. 18 is a view looking in the direction of the arrow 18 in Fig. 17.

Figs. 19 and 20 disclose a joint where the offset bars across the ventilating area are joined to the muntin bars of the glazed portion.

Fig. 21 is a sectional view of a modification of a detention window assembly.

Fig. 22 is a sectional view of another modification of a detention window assembly.

Fig. 23 is a sectional view taken substantially on lines 23—23 of Fig. 1 disclosing the method of anchoring the muntin bars in the wall.

Fig. 24 is a fragmentary sectional view taken on the lines 24—24 of Fig. 21.

Fig. 25 is a fragmentary sectional view taken substantially on the line 25—25 of Fig. 22.

Fig. 26 is an enlarged sectional view taken substantially on the line 26—26 of Fig. 1.

Fig. 27 is a sectional view of another modification showing a hard detention bar welded to a flange of a T-bar.

Fig. 28 is an enlarged fragmentary view of the hinge of the closure shown in Fig. 2.

Fig. 1 has been drawn to a smaller scale than the other figures.

As may best be seen in Fig. 1, the window assembly 10 comprises transversely arranged muntin bars 12 and 14 anchored in the wall 16 as may be best seen in the broken-away portion 18.

The glazed spaces 20 bounded by the muntin bars 12 and 14 are provided with windows 22 seated against the flanges 24 of the muntin bars 12 and 14 and held in position by putty 26 or by any other suitable binding material. The shoulders or ribs 28 assist the binding material 26 in holding the window panes 22 in position, in addition to increasing the strength of the bar.

In the device disclosed in Figs. 1, 2, and 3, the muntin bars 12 and 14 are made of comparatively soft material that may be machined or fabricated so as to provide a neat appearing, uniform, and a well fitted window assembly. Material, however, that is sufficiently soft to be fabricated or machined may also be readily severed by a saw or any other cutting tool. When the sash assembly is used in detention houses such as prisons,

jails and the like, it is necessary to prevent the escape of inmates by severing of the bars. This has been accomplished by lining or welding upon the bars a tool-proof material 30 near the intersection 32 of the transversely arranged muntin bars 12 and 14. When this is done, it will be necessary to sever the bars at the portions not covered with the weld, as at 34, 36, 38, 40 and 42, in order to provide an opening, indicated by the dotted line 44 in Fig. 1, that is sufficiently large to permit the escape of the inmate. This means that it is necessary for the inmate to sever at least six muntin bars before he can escape, as a larger opening will be required for the escape due to horns or projections 46 and 48 which extend from the joints, which greatly hamper the escape of the inmate. The necessity of severing so many bars will greatly retard the chances of the inmate escaping. If it were not for the tool-proof material 30 welded upon the muntin bars near the joints 32, it would be possible in certain constructions to merely sever one muntin bar at 50 and 52, as the opening formed by two spaces, if entirely available, could permit the escape of the inmate. It, however, is practically impossible for an inmate to sever the muntin bars at 50 and 52, for the reason that the bead or weld 30 would prevent him from so doing. Additional beads may be used, as for example, on or near the ribs of the muntin bars so as to increase the difficulty of severing the bars. Instead of running the beads or welds only part way along the muntin bars, it may be desirable in some installations to have the bead extend along the entire length of the muntin bar. In addition to the beads, portions of the assembly may be made from tool-proof material, as will appear more fully later.

A plurality of small spaces 60 have been left open for ventilating purposes. Each of the smaller spaces 60 is provided with an individual screen 62 that snaps into position as best seen in Fig. 2. Each individual screen is made from a metallic frame 64 carrying the screen cloth that is soldered or otherwise secured to the frame. The frame 64 also includes a flared edge 68 that engages the shoulders 28 so as to hold the screen intermediate the flanges 24 and the shoulder or rib 28. It may be readily seen that the screen 62 cannot be removed without mutilating the flared edges 68 and/or the screen 62, especially when the screen is inserted and snapped into position from the outside. This being the case, these screens would serve two functions: the one as a "telltale", in that the removal of the screen to sever the muntin bars 70 and 72 bounding the vacant spaces used for ventilating purposes could easily be detected by the guards both on the outside and inside of the building so that an attempt at an escape by the inmate could be readily detected; and the other, to keep insects and foreign matter from passing therethrough.

The screens, being thus mounted, allow the maximum amount of light to pass through the openings, as the screen frame is completely hidden by the muntin bars. In other words, the shadow of the screen frame coincides with the shadow of the muntin bars as the shadow moves from one position to another.

As it is easier for an inmate in some cases to get out through the muntin bars or detention bars extending across the ventilating area, it is desirable to have the muntin bars across the ventilating area closer than the muntin bars across the glazed portion. As may best be seen in Fig. 1, the muntin bars 70 and 72 extending across the ventilating area are offset with respect to, and spaced closer than, the muntin bars 12 and 14, so as to increase the difficulty of escape.

The muntin bars 70 and 72 are also made of soft material that have welded thereon a tool-proof material near the corners of intersections so as to prevent the severing of these bars.

When T-shaped muntin bars having a flange and a rib are used as the horizontal bars extending across the ventilating area, it can be readily seen that if no drainage is provided, water will stand in the upper channel, which will result in the channels rusting and eroding rapidly. This being the case, the horizontal channels are drained by suitably spaced weep holes 74 as disclosed in Fig. 16, or by slots 78 extending through the rib as disclosed in Figs. 17 and 18.

In Fig. 4, a joint of transversely arranged muntin bars has been disclosed as used in commercial window construction. The assembly of this joint may best be seen in Figs. 7 to 10 inclusive. The muntin bar 12 has an opening 100 in the web 102 found intermediate the flanges 24 and the shoulders 28. The aperture 100 has a straight portion 104 and a curved portion 106 simulating a parabolic curve made to accommodate the insertion of the muntin bar 14 that is provided with a cut-away or notched portion 108 in its flange 24, a notch 110 in the rib 28, leaving the web 112 intact.

The contour of aperture 100 is purely a matter of design, as any other suitably shaped aperture may be used that permits the passage of the oppositely disposed bar and permits the rotation of the oppositely disposed bar with its edges removed through an angle of 90 degress, as will appear more fully later.

The muntin bar 14 may be inserted through the aperture 100 by having the face of the flange 24 parallel and adjacent to the straight edge 104, as best seen in Fig. 10. When the muntin bar 14 has the notches 108 and 110 registering with the flange 24 and the rib 28 of the muntin bar 12, the muntin bar 14 may be rotated, as seen in Fig. 9, into the position disclosed in Fig. 4. The assembly of the muntin bars this far is the same, regardless of the use that the muntin bars are to be placed. These muntin bars may be used in conventional sash assemblies by inserting the plug 120 into the remainder of the aperture 100, the plug 120 being shaped so as to conform to the contour of the aperture. When the plug 120 is inserted as disclosed in Fig. 4, the muntin bar 14 cannot be removed, and cannot be rotated without first removing the plug 120. In conventional window construction, the plug 120 is driven home and held in position thereafter by frictional engagement with the contour of the opening 100.

When the sash assembly is used in detention houses, it is necessary to weld the plug in position; the weld 121 serving two functions; namely, to hold the plug in position so it cannot be removed and so that the muntin bar 12 cannot be severed across the welded portion, as the weld 121 is preferably made from tool-proof material so the severing is made very difficult. In addition to the weld of tool-proof material, beads may extend on the other side of the transverse bar 14 along either web or flange of the muntin bar 12, so that it is equally as difficult to sever the muntin bar 12 on either side of bar 14. This has been disclosed at 121—A in Fig. 5—A.

The muntin bars may also be welded at 124, so as to further prevent rotation of muntin bar

14, and so as to prevent the inmate from cutting the web 112 of the muntin bar 14. As disclosed in Fig. 3, beads 30 made from tool proof material may be welded on the flange 24 of the muntin bar 12 and, if so desired, on the muntin bar 14, as another precaution against the severing of the muntin bars.

In some cases, the welding of a bead on one of the muntin bars, either vertical or horizontal, and a detention bar 130, may be used as disclosed in modification shown in Fig. 6. The muntin bars 12 and 14 are assembled as disclosed in Figs. 7, 8, 9, and 10, all parts being identical excepting the plug 120. After the muntin bars 12 and 14 have been arranged in position, a detention bar 130 is passed through opening 100 before this opening is sealed with the plug.

Preferably, the detention bar 130 has one side 132 adjacent to the web 112 so that the corner 134 rests in the corner formed by the web 112 and the shoulder 28. This arrangement partially conceals the detention bar 130. The detention bar 130 and the muntin bar 14 are held in position by a plug 140 similar to the plug 120, with the exception that the plug 140 is provided with a recess or notch 142 that accommodates the detention bar 130. The plug 140 is inserted in the aperture 100 and preferably welded at 121 so as to prevent removal of the plug, and so as to prevent the severing of the muntin bar 12. The detention bar 130 is made from tool-proof material so that escape of the inmates cannot be effected through the severing of the muntin bar, as this is prevented by the detention bar 130. If the inmate should, perchance, sever the muntin bar 14 completely it would then be impossible to make an escape without removing the detention bar 130. In addition to the detention bars 130, welds or beads 145 on the flanges 24 of the muntin bars 12 prevent the severing of the transversely arranged bars in or near the intersections if used thus, throughout the length if used continuously.

The detention bars 130 may be attached to the muntin bars 14 in any suitable manner, as, for example, by welding the ends of the detention bars 130 to the ends of the muntin bars 14 in the portion extending into the wall used in anchoring the sash assembly. The object of welding in the wall-covered spaces is to reduce the chances of the heating and slow cooling altering the degree of hardness in the exposed parts of the bars and thereby creating spots easy to saw.

When a single detention bar 130 is used extending parallel to the muntin bar 14, it is preferable to mount the detention bar 130 underneath the muntin bar 14 so that the muntin bar provides a water shed for the detention bar. This increases the life of the assembly, as hard materials oftentimes rust or erode far more rapidly than softer materials.

In some cases it may be desirable to provide a pair of detention bars, one at each side of the web, as disclosed in Fig. 15. The detention bars 150 and 152 are mounted, one on each side of the web so that it is impossible to sever the web of the muntin bar 14. When the double detention bars are used, it is preferable to have these extend along, parallel to, and partially concealed by, the vertical detention bars across the ventilating area. Instead of using one bar on each side, a tool-proof detention bar 153 may be used as disclosed in Fig. 15—A. This modification permits the use of plug 120. When detention bars 130, 150, or 152 are used, it is not necessary to carry the muntin bar 14 across the ventilating area as the detention bars extending across this area are all that are required.

When the muntin bars extending across the ventilating area are offset with respect to the muntin bars extending across the glazed portion, the muntin bars 70 and 72 may be welded to the muntin bars 12 and 14, as seen in Fig. 19, the flange 154 of the muntin bar 70 being severed at 156 and web 158 severed at 159 so as to snugly fit the flange and the web of the muntin bars 14. In the modification disclosed in Fig. 20, a portion of the flange 24 has been cut away so as to provide a notch therein for receiving the end of the muntin bar 70. This construction permits the insertion of the muntin bar 70 from one side of the unglazed portion of the window assembly.

Fig. 21 discloses a modification provided with a glazed closure for closing the ventilating area instead of the metallic closure disclosed in Fig. 2. This closure assembly, which may be used in connection with any group of spaces left vacant for ventilating purposes, is carried by a Z-shaped support 160 suitably attached to the flange 24 of the muntin bar 14 as by welding so as to form a water-tight union. A suitable T-bar 162 carried by the support 160 is provided with an upturned flange 164, and carries a hinge member 166 cooperating with a second hinge member 168 fixedly attached to the frame of a closure 170. The upper muntin bar 14 has attached thereto a cap member 172 by means of a rivet or bolt 174 passing through the flange 24 and a flange 176 integral with cap member 172. The web 112 of the muntin bar 14 has a portion cut away at 180 to permit the insertion of the rivet or bolt 174. A plate 182 extends across the opening 180, as may best be seen in Fig. 24, so as to provide a suitable retainer for the binding material 26. A metallic cube 184 is provided with a screw threaded recess 186 that receives the bolt 174. As the cube 184 cannot be rotated, it can be readily seen that the bolt 174 cannot be removed from the inside when the screen is in position, as the head of bolt 174 is hidden by the frame of the screen.

The closure 170 includes a metallic frame 190 bounding three sides of the closure, and member 192 integral with the second hinge member 168. Member 190, as best seen in Figs. 21 and 26, has a two-point contact with member 172; one at 194 and another at 196. Along the hinge side of the closure, the hinge member 168 makes a contact with the flange 164, and a depending flange 198 engages the flange 200 of the T-bar 162.

The closure 170 includes a glass pane 202 that is held in position by suitable binding material 204, as is well known to those skilled in the art. A dead air chamber 206 is formed intermediate members 172 and 190, and between members 162 and 192 when the closure 170 is in the closed position. This dead air chamber tends to reduce the heat losses. If the closure 170 is left open during a rain storm, it is conceivable that water would probably stand intermediate the flanges 164 and 200 of the T-bar 162 unless suitable drainage is provided therefor. This has been accomplished by providing small drain holes 208, as best seen in Fig. 21.

Individual screen assemblies 225 are mounted in each of the vacant spaces in the ventilating area so as to prevent insects from passing through the ventilating area, and so as to handicap the escape of the inmate by sawing the muntin or detention bars 70 and 72 extending across the area. The screen assembly 225 includes a metallic flange 226 provided with flared edges 228 that

retain the screen in position, when inserted, by engaging the shoulders of rib 28. One side of the frame 226 is beveled at 230 so as to accommodate the bracket 160 and leave space for a head of the bolt 174.

From the foregoing description, it appears that the screen 225 after it has been snapped into position cannot be removed without mutilating the frame 226 or the screen 225, or both.

Details of the screen structure have not been fully set forth in this application for the reason that this forms the subject matter of our copending application Serial No. 588,155, filed January 22, 1932 ripening into Patent No. 1,948,230 issued Feb. 20, 1934.

If the muntin bars 12 and 14 extend through the ventilating area, it may be desirable to provide additional detention bars to prevent the escape of the inmate. In the modification disclosed in Fig. 21, this has been accomplished by providing the detention bars 232, each of which are carried by the muntin bars 12 or 14 as the case may be. The detention bars 232 may be made from tool-proof material and welded to the muntin bars so as to be held in position. Instead of carrying the detention bars 232 on the outside of the muntin bars, detention bars 234 may extend through the webs of the muntin bars, extending transversely across the vacant spaces. This is disclosed in the modification shown in Fig. 22. In this modification the closure is carried on a bracket 250 suitably attached to the flange 24 of the lower muntin bar 14 so as to form a watertight joint. The support 250 carries a closure frame member 252 that may be soldered or riveted in position. A stationary hinge member 254 is mounted upon closure frame member 252, and carries a movable hinge member 256 supporting a closure 258. A screen 260 having a frame 262 is mounted intermediate the closure 258 and the muntin bars 14 extending across the ventilating area. A cap member 264 having a flange 268 is held in position by bolts 270 passing through the flange 272 of the muntin bar 14, and through the screen frame 262, and held in position by a nut 274 that is made similar to, and mounted in, the same manner as the nut 184 already described. As the screen 260 is attached to the frame 262 by solder, it can be readily seen that as the bolts 270 are tightened, a tight joint will be formed intermediate member 264 and a flange 272 due to the semi-plastic properties of solder. A two-point contact along the entire periphery of the enclosure is made much the same as in the modification disclosed in Fig. 21. Drainage of the dead air space 280 is effected by a drain 282 formed beneath frame 262 and through the aperture 284 in a member 286.

In the modification disclosed in Figs. 21 and 22, it can be readily seen that it is impossible for an inmate who is within the building to get at the screws 174 and 270 respectively, without first removing a screen. If an attempt be made to make an escape, a man cannot saw his way out of a barred window unless he has opportunity to saw or file, or perhaps drill at various different periods spaced over perhaps many months. The process which they use is, saw a little and mix the sawdust with soap and thus secure a black, pasty material, fill up the crevice until conditions are favorable for them to get to it again. The "telltale" feature of the screen, showing wrinkles or other defects, is valuable because it directs attention of the guard to the fact that it has been removed and replaced.

The distinguishing features shown in Figs. 21 and 22 will now be more fully set forth. The one, namely, Fig. 22, provides field attachment details when there is a screen between the window and the closure, whereas in Fig. 21 there is no screen in this position. Fig. 21 differs in providing means for providing a fair size bolt 174 in the T-section or bar 14 having a comparatively small bolt head surface in the flange 24. In other words, this figure has the hole 180 in the flange with the purpose of permitting the head of the bolt to extend up into the space normally occupied by the flange and then fixes the defect and provides a hold for the putty with the applied piece 182. Comparing the like details of Fig. 22, the flange 272 is widened through the introduction of a welded piece. This, of course, entails dropping the enclosure frame down, and to that extent is less desirable than the similar detail of Fig. 21, for the reason that the window admits less light and the detention feature is perhaps somewhat more conspicuous. Another advantage disclosed in both of these figures is that a water-tight condition at the sill of the closure is provided. Members 160 and 250 in Figs. 21 and 22 respectively, permit the mounting of these parts on the lower side of any suitable group of spaces left vacant for ventilating purpose and provides a seat for the closure when it is field applied. Such an arrangement permits the leaving of any suitable group of spaces open for ventilating purposes in a commercial window, the selected group of spaces depending upon the demands of the particular installation.

Instead of providing the detention bars 232 or detention bars 234 of tool-proof material spaced from the muntin bars, the muntin bars may be provided with a bar 290 made from tool-proof material held in place by welding as disclosed in Fig. 27. Holes 292 extending through the rib 28 or the flange 24, depending upon the position of tool-proof bar 290, permit the welding of the plate 290 to the muntin bar. The bar 290 may extend along the horizontal bars or along the vertical bars. When so used it may either take the place of the bar 130 disclosed in Fig. 6 or it may be used with bar 130 extending parallel thereto and/or at right angles thereto; when used at right angles, bar 290 being tool-proof protection in one direction and bar 130 in the other. When extending at right angles to bar 130 in Fig. 6, the bar 290 would be equivalent to the heads 145. As tool-proof material comes much higher than softer material, it is apparent that the modification disclosed in Fig. 27 will, in some cases, reduce the cost of the assembly.

In the mounting of the sash assembly in the wall, it is desirable to anchor at least some of the muntin bars in position. This has been accomplished as best disclosed in Figs. 23 and 26 by having some of the muntin bars curved at 300. In our preferred modification, one bar is curved at one end, and each adjacent bar arranged parallel thereto is curved at the opposite end. This staggered arrangement of the curved bars permits the assembly of the bars as disclosed in Figs. 4 to 10, as only one end of each bar is bent. A retaining member 302 is welded to the ribbed corner of the curved muntin bar and to the flange of the succeeding straight bar. Aside from the facility provided for assembly, using the kind of intersection shown in Figs. 4, 5, 6, etc., there is the merit of anchoring the guard well into the center of the

wall and thus providing increased strength of anchorage.

The practice in jail construction is to provide as little difference in the surface of the window and the inner wall as conditions admit of. This makes the straight bars fairly close to the edge of the wall. The curved bars have a better hold. And again, the vertical members **301** and **302**, secured to both the straight and the bent ends or secured merely to one set, increase the hold of the window in the wall.

In some installations it may not be necessary to supply reinforcements to the muntin bars made from tool-proof material as either the plug **120** or the plug **140** may be made from tool-proof material so that the muntin bars cannot be severed close to the intersection of the bars. When the plugs **120** or **140** are located in the vertical bars and extend up from the horizontal bars, it will be necessary to sever a muntin bar **6** above the plugs **120** or **140**, which leaves a horn extending up from the horizontal bars that handicaps the escape of the inmate.

Tool-proof material as used in the specification and claims, designates a material that offers great resistance to the operation thereon by tools such as saws, drills, and the like. Toolable material designates a material that may be fabricated and machined without offering great resistance to the tools used thereon.

In milder climates or in cases where a small group of spaces have been left open for ventilation, a metallic closure **360** may be used as disclosed in Fig. 2. The metallic closure **360** is hinged at **362** to a stationary hinge member **364** welded or otherwise attached to the muntin bar **14**. Member **364** is provided with a contact edge **368** that is in a plane offset with respect to the portion of member **364** that is welded to the muntin bar **14** so as to form a two-point contact and a chamber **370** between the closure **360** and member **364**. An L-shaped edge **372** is carried by the closure **360** so as to provide a water shed and prevent water coming in between the edge **368** and the closure **360**. Member **372** is preferably welded or soldered to the closure **360** so as to form a closed joint therebetween. The upper and the side edges of the closure **360** are flared at **380** so as to embrace the stops **382** carried by the flanges **24** of the muntin bars **12** and **14**, thereby forming a comparatively tight closure. A weather strip **384** having sufficient springiness welded or otherwise attached to the flange **24** is curved outwardly and engages the enclosure **360** when this is in a closed position so as to form a tight contact and incidentally the air chamber **386**.

While the form of embodiment of the present invention as herein disclosed, constitutes a preferred form, it is to be understood that other forms might be adopted, all coming within the scope of the claims which follow.

What is claimed is as follows:

1. In a detention sash assembly a metallic frame having a glazed portion and an unglazed portion, transversely arranged T-shaped muntin bars extending across the unglazed portion and carried by said frame and at least one tool-proof detention bar extending across said unglazed portion and intersecting some of the T-shaped bars.

2. In a detention sash assembly, a metallic frame having a glazed portion and an unglazed portion, the glass of the glazed portion being insertable from the outside, a plurality of transversely arranged muntin bars extending across the glazed portion and a plurality of tool-proof detention bars carried by said frame, said detention bars extending across said unglazed portion and parallel to some of said muntin bars, said detention bars being arranged in close proximity to some of said muntin bars.

3. In a sash assembly, a metallic frame having a glazed portion and an unglazed portion, the glass of the glazed portion being insertable from the outside of the window, a plurality of transversely arranged muntin bars extending across said glazed portion, a plurality of transversely arranged muntin bars extending across said unglazed portion, tool-proof detention bars extending across said unglazed portion and carried by some of the muntin bars extending across the unglazed portion, and a closure for the unglazed portion opposite the said detention bars.

4. In a sash assembly, a metallic frame having a glazed portion and an unglazed portion for ventilation, the glass of the glazed portion being inserted from the outside of the window, said metallic frame including a plurality of transversely arranged muntin bars extending across said glazed portion, a plurality of tool-proof detention bars extending across said glazed portion and parallel to said muntin bars, a plurality of detention bars extending across the unglazed portion, some of which are tool-proof, and a closure for the unglazed portion oppsite the detention bars.

5. In a detention sash assembly, a plurality of transversely arranged toolable muntin bars arranged in interlocked relation, and a body of tool-proof material on at least a part of said muntin bars so as to prevent sawing of the bars, said tool-proof material extending a short distance from the juncture of said bars.

6. In a detention sash assembly, a plurality of transversely arranged muntin bars arranged in interlocked relation, said bars including a toolable portion and a tool-proof portion, said tool-proof portion extending a short distance from the juncture of said bars.

7. In a detention sash assembly, a plurality of transversely arranged muntin bars arranged in interlocked relation, said bars including a body of toolable material and bodies of tool-proof material integral therewith, said tool-proof material extending a short distance from the juncture of said bars.

8. In a sash assembly, having a plurality of transversely arranged T-shaped muntin bars forming spaces, window panes in some of said spaces, leaving a group of spaces vacant for ventilation, the muntin bars extending across the ventilating area having a rib forming a channel intermediate the rib and the flange of the T-shaped bar; and drainage ducts extending from said channels whereby water is drained therefrom.

9. In a detention sash assembly, a pair of transversely arranged T-shaped muntin bars forming right angles with one another, each of said bars having large flanges adjacent one end of the web against which the glazing is mounted, and small flanges adjacent the other for retaining the putty, and a detention bar of tool-proof material arranged adjacent to the web so as to be partially shielded by one of said flanges and carried by said other muntin bar.

10. In a sash assembly, a T-shaped muntin bar, a plurality of T-shaped muntin bars interlocking said first muntin bar, each of said bars in-

cluding large flanges adjacent one edge of the web and smaller flanges adjacent the other edge of the web, and a plurality of detention bars intersecting said first muntin bar and seated in the corner formed by the web and one of the flanges.

11. In a sash assembly, a T-shaped muntin bar, a plurality of transversely arranged T-shaped muntin bars intersecting said first muntin bar, each of said muntin bars having large flanges adjacent one edge of the web and smaller flanges adjacent the other edge of the web, and means associated with said bars for preventing the severing of the bars so as to effect an escape through the sash assembly.

12. In a sash assembly, a T-shaped muntin bar, a plurality of T-shaped muntin bars intersecting said first mentioned muntin bar, each of said bars having a web terminating in a large flange against which the glazing is seated along one side and a smaller flange on the opposite side for retaining the putty, and a plurality of tool-proof detention bars arranged in parallel relation adjacent to said plurality of muntin bars, said detention bars being at least partially concealed by the T-shaped bars.

13. In a detention sash assembly, a metallic frame having a glazed portion and an unglazed portion, a plurality of transversely arranged T-shaped muntin bars across said unglazed portion, said muntin bars being carried by said frame, and means of tool-proof material supported by and extending along opposite sides of the bars to prevent sawing thereof to effect escape, said means extending at least partially across the ventilating area.

14. In a sash assembly, a metallic frame having a glazed portion and an unglazed portion, said glazed portion including a plurality of transversely arranged muntin bars and at least two tool-proof detention bars intersecting at least one of said muntin bars, said tool-proof detention bars extending along opposite sides of the muntin bars and in close proximity thereto so as to prevent sawing of the muntin bars to effect an escape.

15. In a detention sash assembly, a metallic frame having a glazed portion and an unglazed portion for ventilation, a plurality of transversely arranged muntin bars extending across said glazed portion, said muntin bars being interlocked at their juncture, at least a portion of said muntin bars being made of tool-proof material which extends in transverse relation from said juncture.

16. In a sash assembly, a metallic frame having a glazed portion and an unglazed portion for ventilation, said metallic frame having a plurality of transversely arranged bars extending across the glazed portion arranged in interlocking relation, a closure mounted adjacent to said ventilating area, said bars having beads of tool-proof material welded thereto, said beads extending across the juncture of said bars so as to prevent the sawing thereof adjacent thereto.

17. In a sash assembly, a plurality of transversely arranged interlocking muntin bars forming spaces, window panes in certain of said spaces, leaving a group of spaces open for ventilation; a closure mounted on one side of said muntin bars for closing said ventilating area; a pair of beads welded to each bar, some of said beads extending across the juncture of the bars and at least a short distance therefrom.

18. In a window assembly a plurality of duo-functional transversely arranged detention bars and muntin bars forming spaces some of which are glazed, leaving a group of spaces vacant for ventilation, the bars across the more vulnerable area of the window being more closely spaced than the bars across the less vulnerable area.

19. A detention sash assembly including a plurality of duo-functional transversely arranged muntin bars dividing the window into a plurality of spaces some of which are glazed leaving a group open for ventilation, the bars across the more vulnerable area being more closely spaced than the bars across the remaining portion so as to give the more vulnerable area proportionate protection.

20. A sash assembly including a plurality of transversely arranged unitary duo-functional muntin and detention bars forming spaces some of which are glazed leaving a group of spaces vacant for ventilation, and detention bars arranged in spaced relation with respect to said transversely arranged bars extending across the ventilating area so as to give added protection to the more vulnerable portion of the window.

21. A sash assembly including a plurality of transversely arranged unitary duo-functional muntin and detention bars forming spaces some of which are glazed, leaving a group of spaces vacant for ventilation, and additional detention bars extending across the ventilating area, said additional detention bars being arranged in spaced relation with respect to the muntin bars and within the plane of the window so as to give added protection across the more vulnerable portion of the window.

22. A sash assembly including a plurality of transversely arranged unitary duo-functional muntin and detention bars forming spaces some of which are glazed leaving a group of spaces vacant for ventilation, and a plurality of detention bars arranged in offset relation with respect to the muntin bars extending across the ventilating area, said detention bars being arranged across the spaces intermediate adjacent muntin bars so as to give added protection to the more vulnerable area of the window.

23. A sash assembly including a plurality of transversely arranged unitary T-shaped duo-functional muntin and detention bars dividing the window into a plurality of spaces, some of which are glazed and leaving a group of spaces unglazed for ventilating purposes, and rectangular bars extending across the ventilating area and located between the webs of the T-shaped bars to give added protection to the more vulnerable portion of the window.

24. A sash assembly including a plurality of transversely arranged unitary T-shaped duo-functional muntin and detention bars dividing the window into a plurality of spaces, some of which are glazed and leaving a group of spaces unglazed for ventilating purposes, and rectangular bars extended across the ventilating area in offset relation with respect to the detention bars so as to give added protection across the ventilating area.

25. A window including a plurality of unitary duo-functional muntin and detention bars forming spaces some of which are glazed at least one space being left vacant for ventilation and other bars medial in position extending across the ventilating area, said other bars being made of tool resisting material to protect the more vulnerable area of the window.

26. A window for detention purposes including a plurality of transversely arranged unitary duo-

functional detention and muntin bars forming spaces some of which are glazed, leaving a group of spaces vacant for ventilation, said bars including irregular shaped bars having flanges suited to stand lateral stresses with a degree of equality of resistance from either side, and other bars of different form unsuited for support and maintenance of glass arranged in spaced relation, said other bars being made of tool resistant material without machining operation.

27. A window including a plurality of transversely arranged duo-functional detention and muntin bars some of said bars having extensions anchored in the wall, some of the extensions being curved and others straight so as to more firmly anchor the window.

28. A window including a plurality of transversely arranged duo-functional detention and muntin bars, opposite ends of some of the bars extending into the wall, one of which is curved and the other straight so as to co-operate to more firmly anchor the window.

29. A window including a plurality of transversely arranged duo-functional detention and muntin bars at least one of said bars including an extension diverging from the plane of the window and another bar having an extension extending in a plane parallel to the window.

30. A window including a plurality of transversely arranged duo-functional detention and muntin bars at least one of said bars including an extension diverging from the plane of the window and another bar having an extension extending in a plane parallel to the window, and means associated with the extensions for anchoring the window.

31. A window including a plurality of transversely arranged duo-functional detention and muntin bars at least one of said bars including an extension diverging from the plane of the window and another bar having extensions extending in a plane parallel to the window, and means including a bar attached to the end of the extensions forming an anchor in the wall.

32. A window including a plurality of transversely arranged duo-functional detention and muntin bars, the bars running along one direction extending beyond the window one end of each bar being curved and the other end extending in a plane parallel to the window, the curved end of one bar being oppositely disposed to the curved end of another bar.

33. A window including a plurality of transversely arranged duo-functional detention and muntin bars, the bars running along one direction being arranged in parallel and having extensions beyond the window frame, alternate extensions being curved so as to form an anchor.

34. In a detention window assembly, a group of parallel muntin bars, a second group of parallel muntin bars intersecting said first group of bars and dividing the window into a plurality of spaces, glass inserted from the outside of the window for glazing some of said spaces leaving a group of spaces vacant for ventilation, and a group of tool proof detention bars intersecting at least one group of muntin bars.

35. In a sash assembly, a metallic frame having a glazed portion and an unglazed portion, the glass of the glazed portion being insertable from the outside of the window, a plurality of transversely arranged muntin bars extending across said glazed portion, and a plurality of tool-proof detention bars extending across at least a portion of the windows and carried by said muntin bars, and a closure for the unglazed portion on the side opposite said detention bars.

36. In a sash assembly, having a plurality of transversely arranged muntin bars forming spaces, each of said muntin bars including a web portion subtended by oppositely disposed enlarged portions forming a glazing channel, window panes in some of said spaces, leaving a group of spaces vacant for ventilation, the muntin bars extending across the ventilating area, and drainage ducts extending from said channels whereby water is drained therefrom.

37. In a sash assembly wherein some portions are glazed and other portions unglazed for ventilation, said assembly including muntin bars extending across the glazed portion and continuing across the unglazed portion as detention bars, each of said bars including a horizontal web portion subtended by a flange along one side and an enlarged portion on the opposite side, said flange, web and enlarged portion forming a channel for the glazing and putty of the glazed portion, and drainage ducts extending from the channel across the unglazed portion whereby water is drained therefrom.

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