

[54] **HINGED WINDOW WITH SAFETY  
RELEASE MECHANISM**

2,820,843 4/1958 Seaburg et al. .... 49/141 X

[75] Inventors: **Yale W. Ehret, Elkhart, Ind.; Adam  
Niessner, Winnipeg, Canada**

*Primary Examiner*—Kenneth Downey  
*Attorney, Agent, or Firm*—Guy A. Greenawalt

[73] Assignee: **The Adams & Westlake Company,  
Elkhart, Ind.**

[57] **ABSTRACT**

[22] Filed: **Sept. 30, 1974**

A window construction which is characterized by a sash frame hingedly mounted at the top of an opening in a generally vertical wall and provided with a latching mechanism comprising keepers disposed on the inside of the sash frame and adjacent the bottom of the wall opening, spring pressed latch bolts supported in casings mounted at the bottom of the opening and inside the wall for engagement with the keepers when the sash frame is hinged to closed position and a mechanism for camming each bolt out of keeper engagement, with a common release bar which is adapted to be readily swung to a position where the latch bolts are withdrawn and the sash frame is released for opening movement.

[21] Appl. No.: **510,543**

[52] U.S. Cl. .... **49/141; 49/394; 292/40;  
292/153; 292/173**

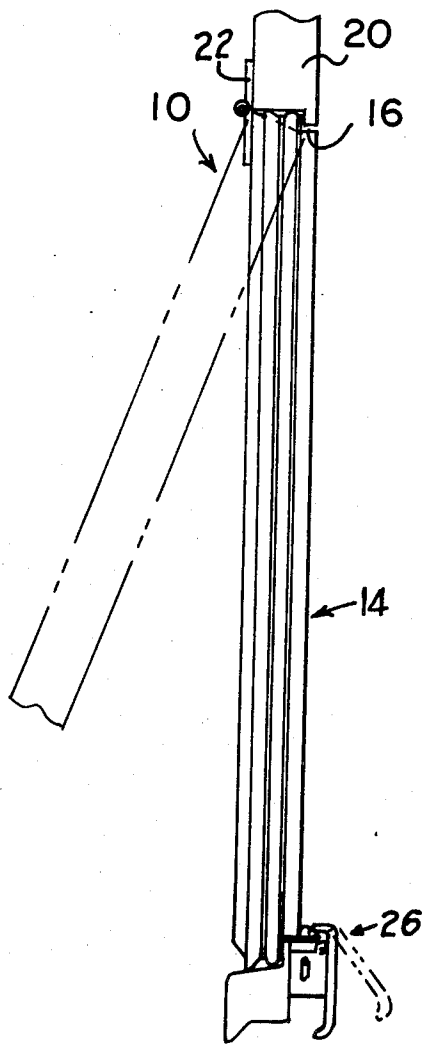
[51] Int. Cl.<sup>2</sup> ..... **E05B 65/10**

[58] Field of Search ..... **49/141, 394, 395;  
292/DIG. 71, 40, 153, 173, 169**

[56] **References Cited  
UNITED STATES PATENTS**

1,765,775 6/1930 Schenck ..... 292/173  
2,178,378 10/1939 Schlage ..... 292/173

**9 Claims, 7 Drawing Figures**



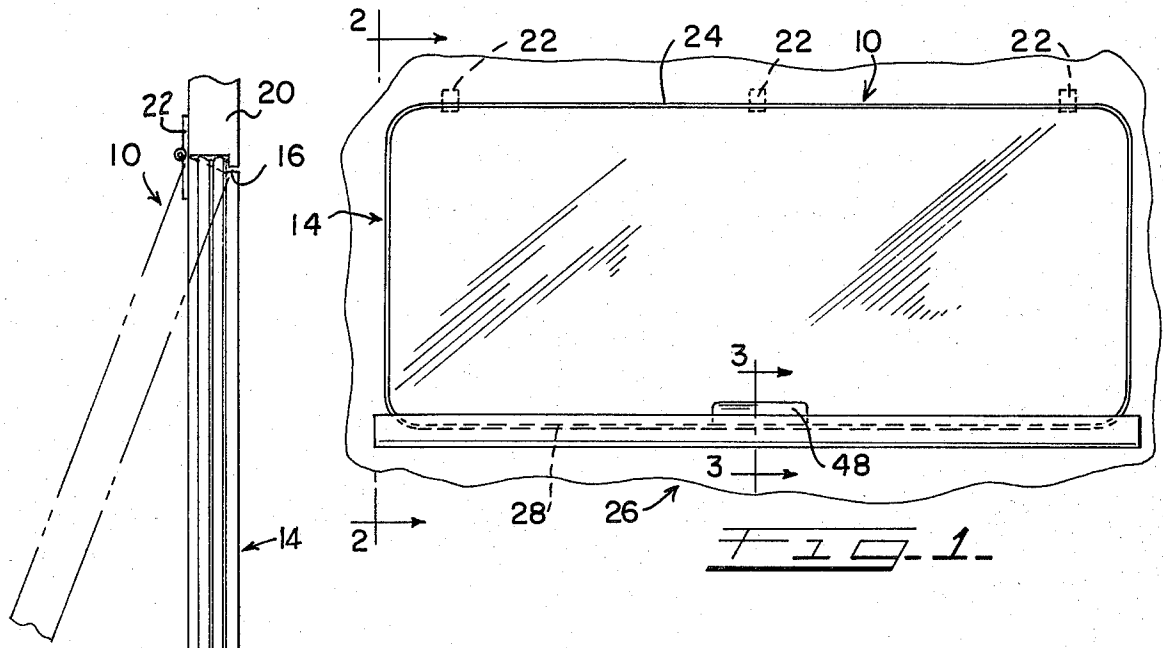


FIG. 1

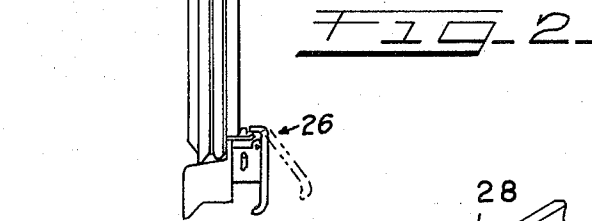


FIG. 2

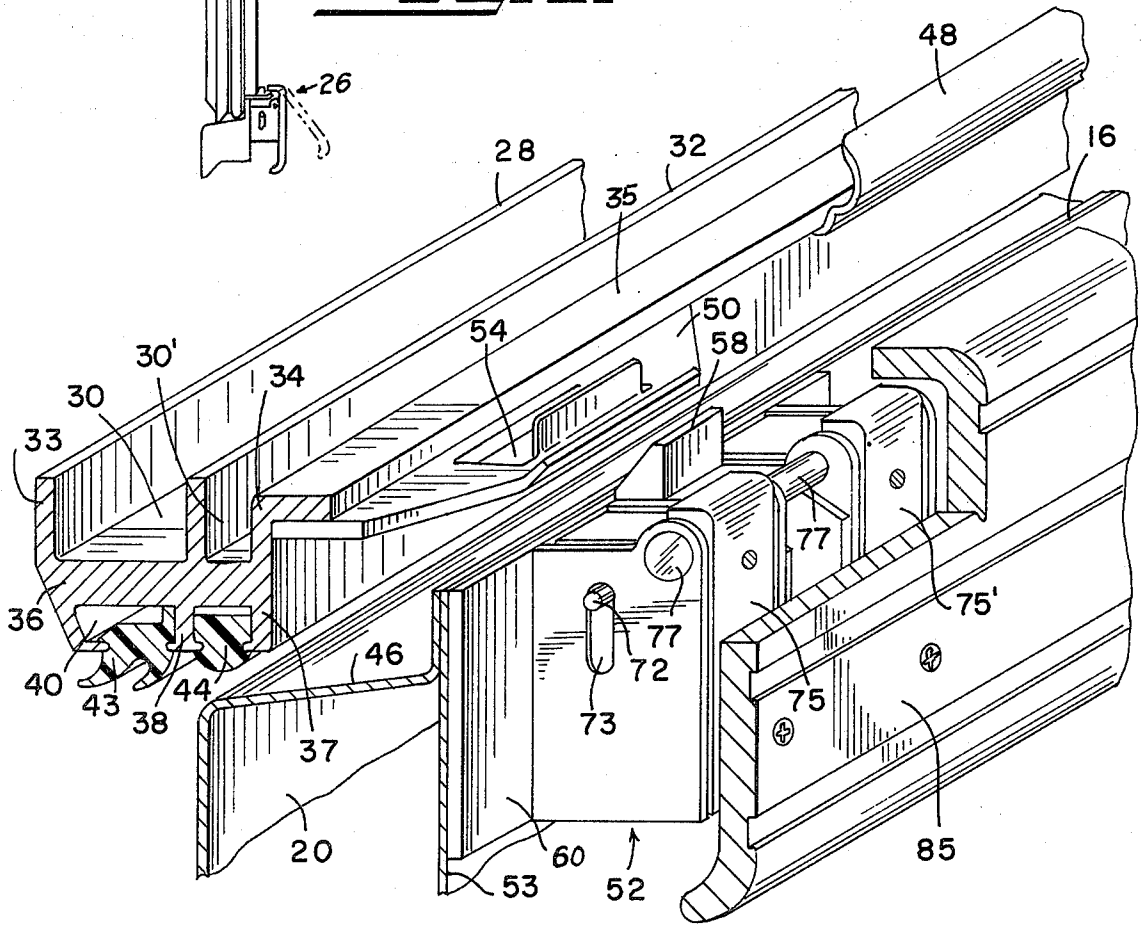
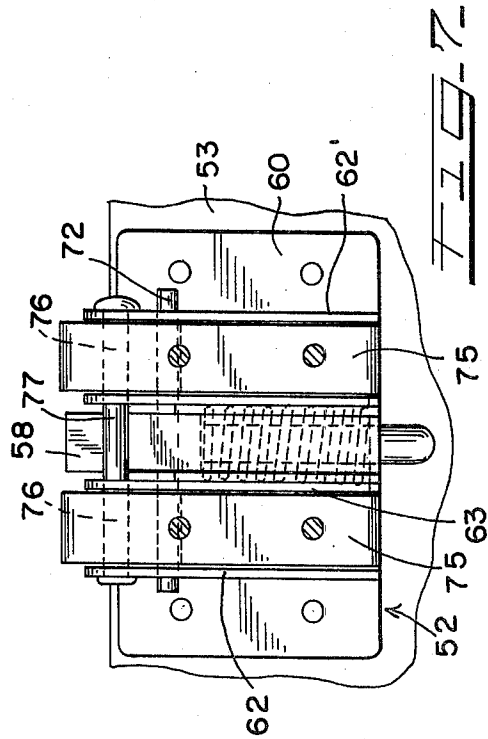
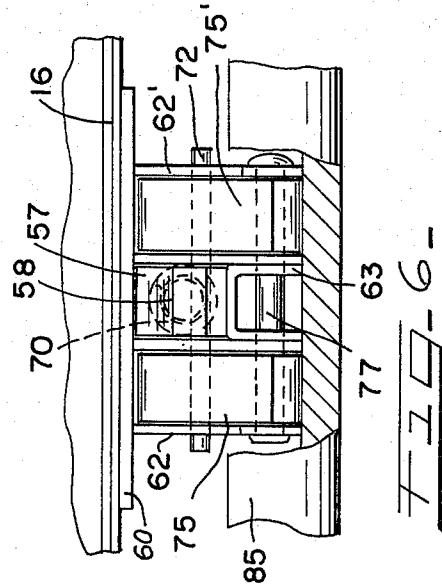
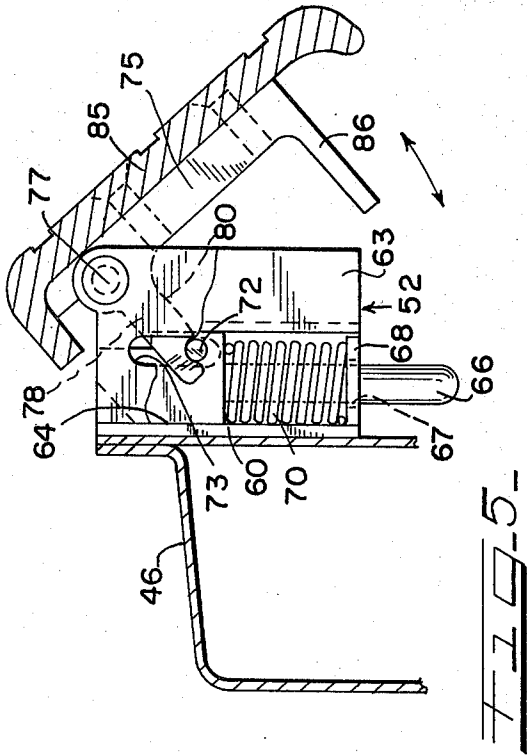
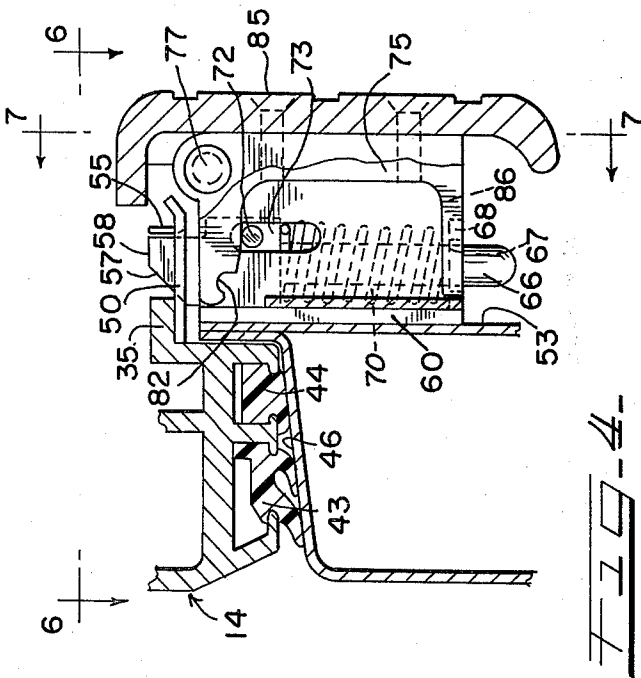


FIG. 3



## HINGED WINDOW WITH SAFETY RELEASE MECHANISM

This invention relates to window constructions and is more particularly concerned with improvements in a hinged window mounting of the type which includes a latch arrangement for holding the window in a closed position in a supporting frame while providing a safety release mechanism enabling the window to be quickly released for swinging to an open position.

Window constructions have been proposed heretofore for vehicles, such as, busses or the like, having passenger accommodating enclosures wherein provision has been made for normally holding the glass frame or sash in a closed position in a mounting frame and for enabling the sash latching or locking means to be disengaged so as to permit the window to be opened. In most of the prior arrangements the sash has been held with a latch or lock mechanism of conventional design. Generally, such arrangements have not been entirely satisfactory because the mechanism for operating the latch or lock has not been fully accessible, its operation has not been apparent or it has been difficult to manipulate with the result that valuable time may be lost in searching for the device or in manipulating the device when it is found. It is a general object of the invention, therefore, to provide a window construction wherein a sash is mounted in an opening in a supporting wall with a safety release mechanism which may be quickly found and easily operated so as to enable release of the sash for opening movement with minimum loss of time and little effort.

A more specific object of this invention is to provide an improved window construction which is especially adapted for mounting in the wall of a vehicle, such as, a passenger bus, or the like, wherein the sash frame is hinged so as to permit it to swing to an open position and a latch mechanism is provided which will securely retain the sash in a closed position in the mounting frame while enabling a quick release of the sash for opening movement by operation of a swingable release bar which is disposed on the inside of the vehicle wall where it is readily accessible for quick operation.

A further object of the invention is to provide a window construction for mounting in an opening in the wall of a passenger bus, or similar location, which comprises a sash frame hinged at the top for outward swinging movement and having a quickly releasable fastening device at the bottom for holding the sash frame in closed position in the wall opening, which fastening device includes a keeper on the sash frame and a latch bolt mechanism on the wall adjacent the bottom of the opening having a movable bolt with which the keeper is engaged when the sash frame is swung to closed position and a release mechanism including a pivoted bar member and associated means operable by swinging the release bar to withdraw the bolt from keeper engagement.

A still further object of the invention is to provide a window construction for mounting in an opening in a generally vertical wall which comprises a sash frame hinged at one side thereof for outward swinging movement and a latch mechanism at the opposite side of the frame which is readily accessible for operation from a position adjacent an inside face of the wall, wherein the latch mechanism includes keepers on the sash frame and keeper engaging latch mechanisms on the wall with

spring pressed latch bolts and an elongate release bar which is pivotally mounted and connected to a camming device for withdrawing the latch bolts which camming device is operated by pivotal movement of the release bar so as to free the sash frame for outward swinging movement.

Another object of the invention is to provide a window construction which comprises a sash frame hinged in an opening in a generally vertical wall and a quickly releasable fastening mechanism at the side of the sash frame opposite the hinge connection which includes a keeper member on the sash frame and a wall mounted, cooperating latch bolt mechanism which includes a spring urged, slidably mounted latch bolt for engaging the keeper member and a release bar with an associated pivoted cam device for sliding the bolt, by movement of the release bar, between a position where the bolt engages the keeper and a non-engaging position where the sash frame is released for swinging movement.

FIG. 1 is an elevational view, largely schematic, showing the inside face of a hinged sash frame mounted in an opening in a supporting wall, with a latch mechanism which embodies the principal features of the invention;

FIG. 2 is a sectional view, largely schematic, taken on the plane indicated at 2—2 on FIG. 1;

FIG. 3 is a cross sectional, perspective view, to an enlarged scale, showing a portion of the sash frame and a portion of the mounting wall framing with the view being taken on a plane extending through the release bar and indicated at 3—3 on FIG. 1 and with the sash approaching closed position;

FIG. 4 is a cross sectional view, to an enlarged scale, showing a portion of the sash frame and a portion of the mounting wall framing with the sash in closed and latched position, the view being taken on the same plane as in FIG. 3 and with portions broken away;

FIG. 5 is a cross sectional view, to an enlarged scale, showing a portion of the sash frame and a portion of the mounting wall framing with the latching mechanism in open position;

FIG. 6 is a fragmentary view, taken on the line 6—6 of FIG. 4, and with portions broken away; and

FIG. 7 is a view taken on the line 7—7 of FIG. 4, with the release bar removed.

Referring first to FIGS. 1 and 2 of the drawings, there is illustrated a hinged window construction with a latch arrangement including a safety release mechanism which incorporates the principal features of the invention. In the form illustrated the window comprises a sash frame assembly 10 which includes a glass panel assembly 12 supported in the outer frame 14, the latter being of generally rectangular shape. The sash supporting frame 14 is mounted for outward swinging movement in the opening 16 in a vertically disposed supporting wall 20, such as, for example, the side wall of a bus or other passenger vehicle, by means of a set of hinge members 22 spaced along the top rail 24 of the sash frame 14 and the top edge of the opening 16. Latch mechanism 26 is mounted in part on the bottom rail 28 of the sash frame 14 and in part on the inside face of the wall 20 at the bottom edge of the wall opening 16.

In the form of window construction illustrated, the glass panel assembly 12 has the margins thereof seated in a glazing channel formed by the glass receiving, in-

wardly opening recesses 30, 30' of the peripheral supporting frame member 14 with suitable gasket means (not shown), the top and bottom rail portions of which have the cross section shown in FIG. 3. The recesses 30, 30' which are in inwardly opening, parallel relation are separated by rail or rib member 32. The inwardly extending rail member 32 is spaced on one side from an outer face forming side portion 33 which extends inwardly of the frame 14 in a plane parallel with the plane of the rail member 32. On the other side the member 32 is spaced from an inner face forming portion 34 which is in a parallel plane and which has a relatively narrow inside flange 35 on its innermost edge which extends in a plane normal to the plane of the face portion 34 and offset inwardly of the plane of the base portion 36 of the frame, the latter extending in a plane normal to the plane of the sash panel 12.

The sash frame 14 has its outer and inner face forming portions 33 and 34 extended at 36 and 37 in the direction outwardly of the outer peripheral edge of the frame for co-operation with an outwardly extending peripheral rib member 38, which is spaced intermediate the face extensions 36 and 37, in providing outwardly opening recesses 40 and 42 extending continuously about the periphery of the frame. A resilient sealing gasket 43 of rubber or similar material is seated in the recess 40 and extends about the entire periphery of the frame 14. A spacer member 44 of resilient material is seated in the recess 42. The seal or gasket member 43 and the spacer 44 are of a size and configuration to engage the outwardly slanting ledge formation 46 on the wall 20 which surrounds the opening 16 so as to properly center the sash frame 14 in the opening 16 and provide a satisfactory weatherseal when the sash frame 14 is in the closed position. A sash pull 48 is secured on the flange 35 for finger gripping in swinging the sash on the hinges 22 between open and closed position.

The flange 35 of frame 14 also has mounted thereon one or more keeper members or keeper plates 50 forming a part of the sash latching or locking assembly 26. Each keeper plate 50 is secured by welding or other fastening means to the bottom or outer face of the flange member 35 and extends inwardly in a plane generally normal to the plane of the sash frame assembly 14 for co-operation with a lock bolt or latch bolt mechanism or assembly 52 which is mounted on the inside face 53 of the wall 20 adjacent the opening 16. The keeper plate 50 has a bolt receiving aperture 54 with a portion of the plate material being turned up at 55 to provide, in the form illustrated, a bolt engaging surface in a vertical plane when in the closed or latched position (FIG. 4). The free margin of the keeper plate 50 is bent up at 56 to form a beveled surface for striking the beveled surface 57 on the end of the latch bolt 58 when the sash frame is swung to closed position.

The latch bolt or lock bolt assembly 52 (FIGS. 3 to 7) comprises a back plate or base plate 60 which serves as a mounting plate for securing the assembly 52 on the face 53 of the wall 20. Two identical side plate members 62, 62', which are in the form of elongate channel sections of U-shaped cross section, are mounted in laterally spaced, vertically extending relation (FIGS. 6 and 7) on the back plate 60 and a vertically extending center plate member 63 also in the form of a channel section of U-shaped cross section, forms a spacer which is secured between oppositely disposed side walls of the plate members 62 and 62'. The three plate members

62, 62', and 63 are arranged with the open sides remote from the back plate 60. The dimension of the center plate member 63 in the direction normal to the plane of the back plate 60 is less than the corresponding dimension of the side plate members 62 and 62' and the center member 63 is secured in spaced relation to the back plate 60 so as to co-operate with the back plate 60 and the oppositely disposed walls of the side plate members 62 and 62' in defining a vertical guide chamber 64 (FIG. 6) in which the bolt member 58 is confined for vertically slidable movement.

The lock bolt 58 has a body or head portion 65 of a generally square or rectangular cross section so as to be slidably received in the vertical guide chamber 64. An elongate pin 66 depends from the bottom face of the head or body portion 65 which extends through a guide aperture 67 in a guide flange 68 which extends forwardly at the bottom of the back 60. A compression spring 70 encompasses the pin 66 with the lower end seated on the guide flange 68 and the opposite upper end seated against the downwardly facing bottom surface of the bolt body portion 65 so as to urge the bolt 58 upwardly in the guide chamber or housing 64. The upward movement of the lock bolt 58 is limited by an elongate cross pin 72 which is secured in the body portion 65 and extends on opposite sides thereof through a pair of vertically extending, elongate slots 73 in the oppositely disposed side walls of the side plate members 62 and 62'. The slots 73 are of identical size and are aligned transversely so as to accommodate vertical movement of the pin 72.

The side plate members 62 and 62' form housings on opposite sides of the bolt path for bolt operating levers 75 and 75' of identical construction. Each of the operating lever members 75 and 75' is of generally U-shaped configuration and they are mounted in the housing forming side plate members 62 and 62' in an identical manner. Each member 75 and 75' has a bore 76 in an upper corner which is adapted to receive a common pivot bolt or cross pin 77 mounted in the upper outer corners of the side plate members 62 and 62' and extending through both of the latter members. Each member 75 and 75' has an upper cam arm forming portion 78 extending in the direction of the back plate 60 and having on its under side or edge face a curved cam surface 80 which extends to a cross groove formation 82 near the free end thereof, which is of a size and configuration to seat therein the cross pin 72 on the bolt body portion 65 and releasably hold the latch bolt 58 in retracted position. In the locked or operating position of the bolt 58 the cam surface 80 rests on the cross pin 72 as shown in FIG. 4 and the relationship of the cam surface 80, the pivot pin 77 and the cross pin 72 is such that upon pivoting the lever members 75 and 75' outwardly the cam surface or cam faces 80 will ride on the cross pin 72 and force the bolt downwardly against the force of the compression spring 70 until the cross pin 72 seats in the groove 82 in the cam arm 78 so as to withdraw the bolt head 65 from the keeper opening 54. The cam levers 75 and 75' are bolted or otherwise secured to an elongate channel shaped latch or lock release bar 85 which extends along the bottom of the opening 16 and serves a common operating or release bar for any number of the lock assemblies 52 which it may be desired to employ. It is generally desirable to employ more than one lock assembly 52 and co-operating keeper plate 50, particu-

larly, when the sash frame is of substantial length. The release bar 85 is of a size sufficient to cover the lock assembly or assemblies 52. A lower arm 86 on each of the cam levers 75 and 75' is of a length sufficient to limit the clockwise pivoting, as viewed in FIGS. 4 and 5, of the release bar 85 so that it is held in the desired plane vertically when in the normal closed position of FIGS. 3 and 4.

In the operation of the window, when the sash is in the closed position, all that is required to open the window is to lift upward on the release bar 85 so as to withdraw or retract the latch or lock bolt members 58 and push outwardly on the sash frame 14. To close the window the release bar may be pushed down and the sash slammed shut or the sash may be pulled shut with the release bar up and then latched or locked by pushing the release bar down.

While in the form illustrated the sash frame is pivoted at the top of the opening, it will be understood that the mounting may be at a side or at the bottom of the opening with the latch and release mechanism arranged to accommodate the direction of swinging movement.

We claim:

1. A window construction which comprises a sash which includes a generally rectangular glass panel supporting sash of a size for closing an opening in a generally vertical wall, means at the one side of said opening mounting said sash frame for swinging movement in a direction outwardly of said opening, and a latch assembly for releasably holding the sash in the opening when the sash is in a closed position, which latch assembly includes a keeper member mounted on the side of the sash frame which is opposite the mounting means and a latch bolt mechanism mounted adjacent the corresponding edge of said opening which includes a housing and a retractable spring pressed keeper engaging bolt mounted therein, a release bar swingably mounted on said housing, said release bar extending along said edge of said opening where it is accessible for manual operation on the inside of said wall, said release bar having an arm thereon with a cam surface and said bolt having means engageable by said cam surface for retracting said bolt to withdraw it from said keeper member.

2. A window construction as set forth in claim 1 wherein said means on said latch bolt which is engageable by said cam surface on said release bar arm comprises a pin on said latch bolt and said release bar arm has a cross groove disposed for engaging said pin on said latch bolt so as to hold said latch bolt in an inoperative position while permitting ready release for movement to keeper engaging position by swinging movement of said release bar.

3. A window construction which comprises a pane carrying sash frame of generally rectangular shape mounted in a generally rectangular opening in a wall which is disposed in a generally vertical plane, said opening having an outwardly extending ledge formation, and said sash frame having a continuous weather sealing element extending about its peripheral edge, means hingedly mounting said sash frame at one side of the opening for outward swinging movement and for movement into said opening where said sealing element will engage said ledge formation, and a latch assembly disposed at the side of said sash frame and said opening which is opposite the hinged mounting for holding said sash frame in closed and sealed position in said opening, which latch assembly includes a keeper member

mounted on said sash frame and a retractable keeper engaging bolt slidably mounted on said wall adjacent said opening, a bolt operating means including a manually operable swingably mounted release bar which is accessible on the inside of said wall and means connecting said release bar to said bolt which includes a pin extending from said bolt and a means on said release bar having a cam track forming surface riding on said pin whereby said release bar may be operated quickly retracting said bolt and releasing said sash frame so as to permit outward swinging movement thereof.

4. A window construction as set forth in claim 3 wherein said latch assembly includes means forming a housing in which said bolt is slidably mounted, a spring urging said bolt to an operative position for engaging said keeper member and wherein said release bar is swingably mounted on said housing and said release bar has an arm on which said cam surface is disposed so as to engage said pin and retract said bolt upon predetermined swinging movement of said release bar.

5. A window construction as set forth in claim 3 wherein said latch assembly includes means forming a housing in which said bolt is slidably mounted, a pair of cam levers pivotally mounted on opposite sides of the path of movement of said bolt, a cross pin mounted on and extending from said bolt on opposite sides thereof, said cam levers having a cam surface engaging opposite ends of said cross pin, and means connecting said cam levers with said release bar whereby said cam levers swing with said release bar to operate said bolt.

6. In a window construction wherein a sash frame is adapted to be hingedly mounted in a wall opening and held in closed position in the opening by a quickly releasable latch mechanism which includes a manually operable release bar, said latch mechanism comprising a keeper member adapted to be carried on the sash frame and a bolt mechanism adapted to be mounted adjacent the opening and having a spring backed latch bolt operable for latching engagement with the keeper member, said bolt mechanism comprising a backing plate, means forming a bolt chamber in which the bolt is slidably mounted, a pair of housing forming means on opposite sides of said bolt housing and bolt retracting cam means mounted in said pair of housings operably connected to said manually operable release bar.

7. In a window construction as set forth in claim 6 wherein said bolt retracting cam means comprises a cam lever disposed in each of said pair of housings, pivotal mounting means for each said cam lever, each said lever having an arm extending radially from said pivotal mounting means on which there is a cam surface engaging a cross pin on said bolt and means connecting said cam levers to said release bar.

8. In a window construction as set forth in claim 6 wherein said bolt retracting cam means comprises a cross pin on said latch bolt, cam arms pivotally mounted in said pair of housings on which there are cam surfaces engaging said cross pin which cam surfaces have a configuration adapted to force said bolt in a direction to retract said bolt when said cam arms are pivoted in a predetermined direction.

9. In a window construction as set forth in claim 8 wherein said cam arms are part of a pair of cam levers of generally U-shape which are secured to a common manually operable release bar.

\* \* \* \* \*