Jan. 12, 1960 R. S. WOODARD 2,920,358

WINDOW

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FIG. 1

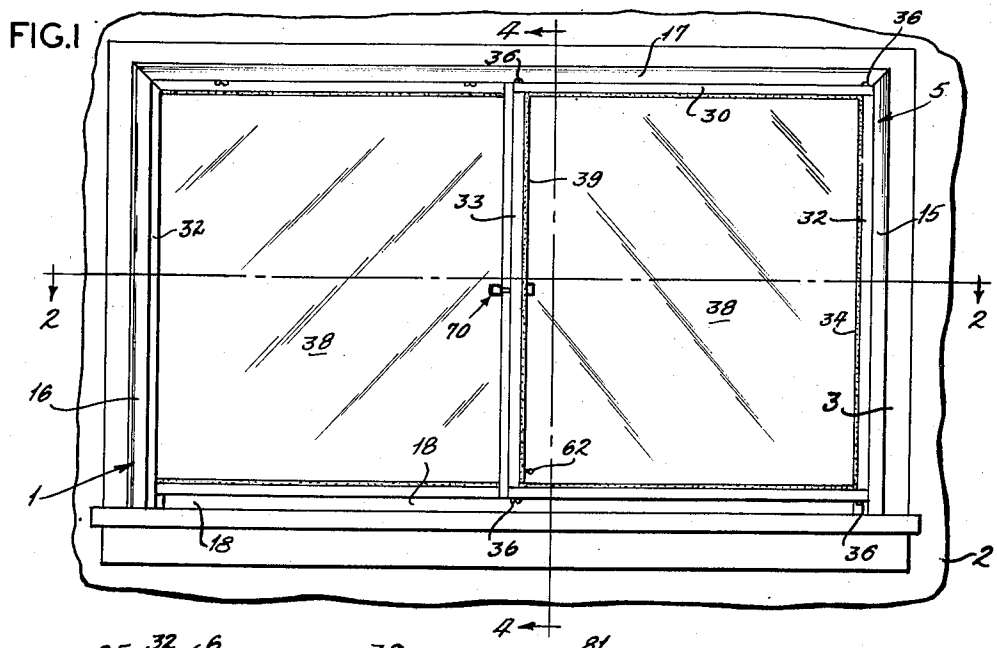


FIG. 2

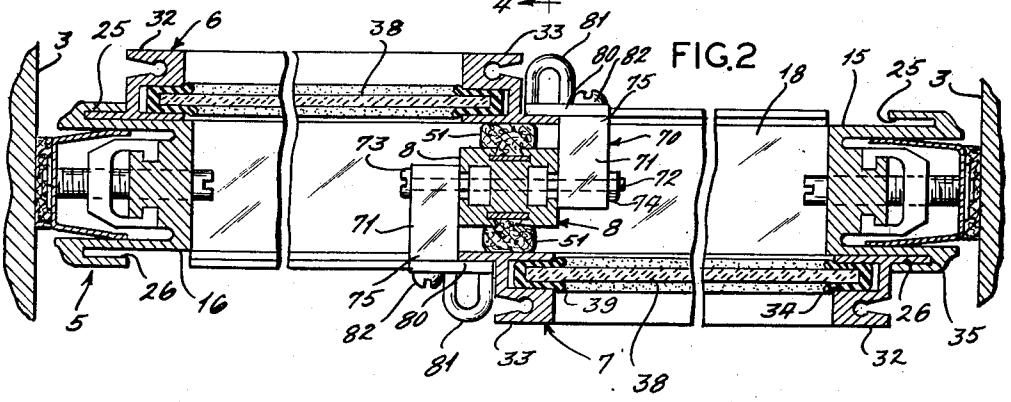
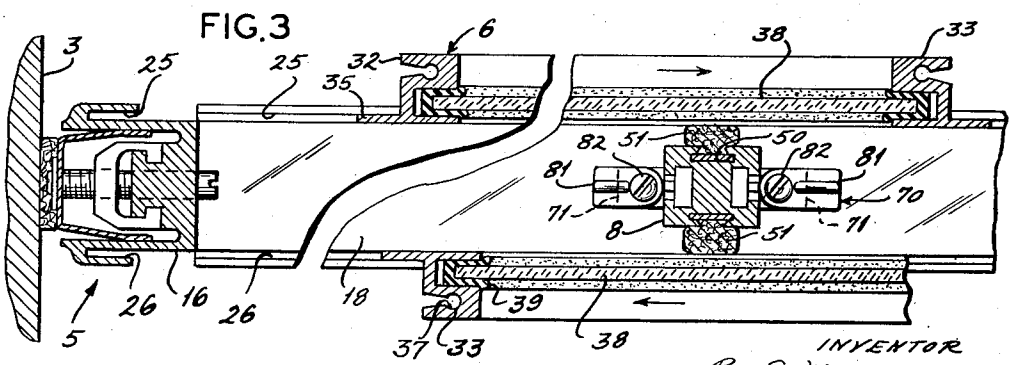


FIG. 3



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FIG. 4

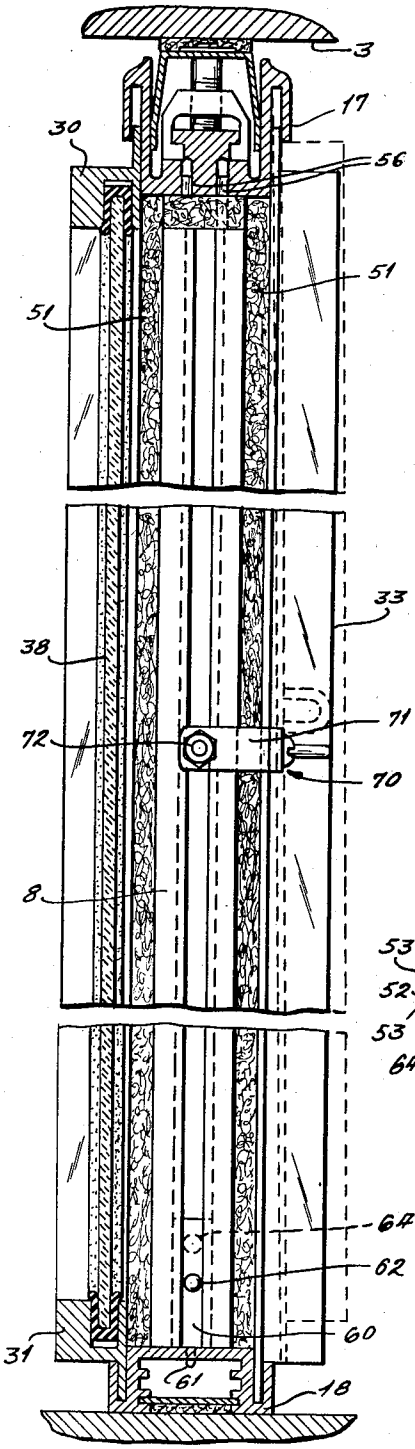


FIG. 5.

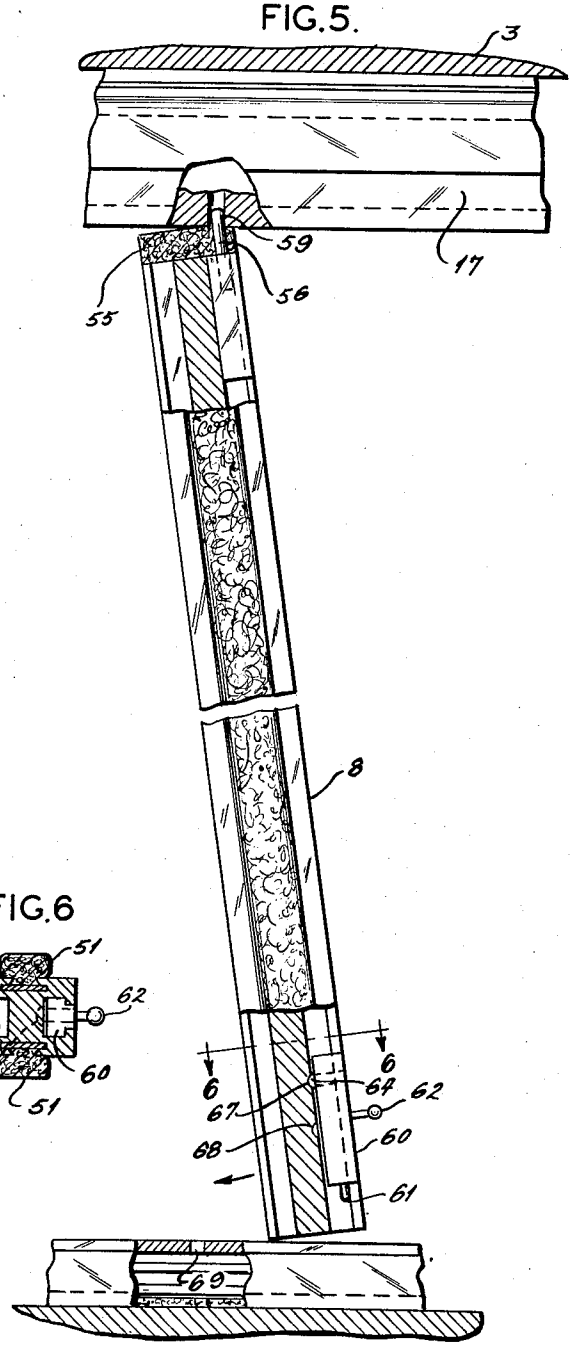


FIG. 6

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WINDOW

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Application August 8, 1957, Serial No. 676,987

1 Claim. (Cl. 20—11)

This invention relates generally to sliding windows, and has particular application to expansible frames of the character described in my Patents Nos. 2,518,969 and 2,768,410.

The devices shown and described in my patents, to which reference has been made, are storm sash, and in the illustrative embodiment shown in those patents the sash has been glazed. In the device of the present invention, the expansible frame is not glazed, but is constructed to receive insert panels which slide. The window has particular application as a storm window, but its utility is not confined thereto. It can, for example, be used as a prime window.

In sliding windows known heretofore, it has been common practice to provide the windows along the meeting margins in the center of the sliding inserts with oppositely disposed lips, which engaged one another when the windows are shut. In the case of permanent, prime windows, a permanent post is sometimes provided in the center of the windows, against which the edge of the window inserts bear. The first of these arrangements is unsatisfactory for several reasons. The inserts must fit exactly, else the lips will not engage if the windows are too big, or the windows will not fit snugly at the outside edges if the windows are too small. Furthermore, they are difficult to make tight along the overlapping lips, and are difficult to lock in position. In the case of the prime windows with the permanent central post, the inserts are hard to remove and replace. Such a permanent central post is impossible for use in an inside storm window, because it renders the insert sliding in the channel outside of the post impossible to remove, on account of the lack of clearance between the storm window and the prime window.

One of the objects of this invention is to provide a window of the sliding insert type with a center post of such construction that the inserts can readily be removed.

Another object is to provide such a window construction in which the inserts may be locked in position, and provide a snug seal around the entire frame.

Still another object is to provide such a window which can be used as an inside storm window, which will permit the removal of an outside prime sliding window through the frame of the storm window.

Other objects will become apparent to those skilled in the art in the light of the following description and accompanying drawing.

In accordance with this invention generally stated, a window of the sliding insert type is provided with a removable center post. The window is preferably of the expansible frame type. The inserts are preferably made with a frame identical on all four edges, so that inserts of the same size can be used interchangeably inside and out. A universal locking device is also provided, which can be used on either side of the removable post. The sill rail is so constructed as to permit the removal over it of inserts in a prime window located outside of the frame of which the sill rail is a part.

The frame of the window of this invention may be assembled rigidly at the factory, set in place in the window opening, and installed with the use of only a screw driver. This ensures that the frame is square, since the expansion member conforms to the contour of the walls defining the window opening, while the frame remains undistorted. The frame has a flat face of substantial width, which permits the installation of the removable post, and its secure fit.

When closed, the inserts of the window of this invention are provided with a continuous seal entirely around each of the inserts, and the vertical meeting rail of the insert panel frame lies flat against and along a sealing strip on the removable post, held snugly in place by the lock. In the drawings, Figure 1 is a view in front elevation of a window constructed in accordance with one embodiment of this invention, set in a window opening in a wall;

Figure 2 is a sectional view taken along the line 2—2 of Figure 1;

Figure 3 is a sectional view corresponding with the view shown in Figure 2 except that it is a fragmentary view, partly broken away, showing the lock in unlatched position and the sliding inserts in partly opened position;

Figure 4 is a sectional view taken along the line 4—4 of Figure 1;

Figure 5 is a fragmentary view, partly broken away, in front elevation, showing the removable post being inserted in the frame; and

Figure 6 is a sectional view taken along the line 6—6 of Figure 5.

Referring now to the drawings for one illustrative embodiment of window of this invention, reference numeral 1 indicates the completed window in a window opening in a wall 2. The window opening is defined by walls 3. In the embodiment shown, the window 1 is a storm window on the interior side of a prime window, not here shown. The window 1 is made up of a frame 5, sliding inserts 6 and 7, and a removable center post 8.

The frame 5 is made up of side rails 15 and 16, a top rail 17 and a sill rail 18. In the embodiment shown, both side rails 15 and 16 and top rail 17 are equipped with expanders of the character shown and described in my Patent No. 2,768,410. As in the sash of that patent, the expander screws may be omitted from one of the side rails. Each of the side rails 15 and 16, the top rail 17 and sill rail 18 is provided with an outside receiving lip 25 and an inside receiving lip 26. In the assembled frame, the lips 25 of all of the frame members are aligned so as to make a continuous inwardly opening channel around the entire frame. The lips 26 are all aligned so as to form a continuous inwardly opening channel around the entire frame. However, in the embodiment shown adjacent the juncture of the side rails and the sill rail, the sill rail channel terminates short of the corresponding side rail channel, so as to leave a space. This space at each end of the track defined by the sill rail channel lips is provided to enable dust or lint to be swept out of the track onto the sill.

The bottom rail 18 differs from the remaining rails in that it is not provided with an expander, and is only about half as thick as the side and top rails. Thus, in commercial practice, the side and top rails are approximately one inch thick, while the bottom rail is only a half inch thick. That is to say, the bottom rail 18 projects only about a half inch above the sill of the window opening. This is shown particularly in Figure 4. The channels defined by the receiving lips 25 and 26 of the sill rail 18 serve as tracks for the sliding inserts 6 and 7.

In the embodiment shown, the sliding inserts 6 and

7 are identical. Each of them is provided with a frame made up of a top rail 30, a bottom rail 31 and side rails 32 and 33. Each of these rails is identical, and includes a glazing groove 34, and an outwardly extending flange 35, which runs continuously around the outside of the frame. The frame is held together with metal screws 36 extending into holes 37, formed when the frames are extruded. Panes 38 of glass, are held in position and sealed by means of rubber or vinyl channel shaped sealing strips 39 seated in the grooves 34.

The inserts 6 and 7 are put into the channels 25 and 26 of the frame in the usual manner of sliding windows. That is, the flange 35 along the top rail of the insert is inserted into the channel of the top rail of the frame and the insert is raised as high as it will go, at which time the lower edge of the flange of the bottom rail of the insert will clear the upper edge of the sill rail track, permitting the window to be lowered into place with the flange of the bottom rail of the insert within the channel-track of the sill rail. This is shown in Figure 4, where, in dotted lines, the position of the insert for removal or replacement is shown.

The center post 8 is preferably an extruded bar, and is rigid. In the embodiment shown, it is provided on its front and back faces with mortises 50 running the full length of the post, for the reception of sealing strips 51 which, in the embodiment shown, are wool pile. On its two side faces, the post 8 is provided with channels 52 over which lips 53 extend part way.

At the top of the post 8 is a pad 55 of felt, rubber or other resilient material. Extending from the top of the post 8, near one side face, are two pins 56, projecting through and beyond the felt pad 55. At the bottom of the post 8, in the channel 52 on the side of the post at which the pins 56 are located, is a sliding block 60. The sliding block 60 carries a pin 61 projecting downwardly from the block 60. A handle 62 is fastened to the block 60, and projects beyond the post 8, between the lips 53, as shown in Figure 6. A spring biased detent 64 is carried by the block 60 and projects from the inside face of the block. The detent 64 is received in the upper position of the block 60 (shown in Figure 5) by an upper dimple 67, and in the lower position of the block (shown in Figure 4) by a lower dimple 68. The upper dimple 67 serves to hold the block in position with the pin 61 clear of the end of the post.

Also mounted on the post 8 is a universal locking device 70. The locking device 70 consists of a pair of rotatable blocks 71 mounted on opposite ends of a shaft 72. The shaft 72 extends through a hole in the web between the two channels 52 of the post 8. In the embodiment shown, the shaft 72 has a head 73 at one end, an a nut 74 on the other, threaded, end. The blocks 71 are mounted asymmetrically on the shaft 72, so that one end 75 of each of the blocks projects beyond the reach of the sealing strips 51, when they are turned in the direction shown in Figure 2. Mounted on the end 75 of each of the blocks 71 is a movable latch member 80, having a handle member 81. The latch 80 is mounted on the block 71 by means of a screw 82, which permits the latch 81 to be rotated manually.

The rails of the frame 5 of the embodiment of window shown in the drawings, are joined rigidly by any suitable means, such as bolts, rivets, or the like, to form the frame 5. The frame 5 is rigid and square. The frame is then set into the window opening, and the expanders are moved outwardly against the faces of the walls defining the window opening by screwing the screw members, shown in Figure 2, until the felt strips of the expanders tightly engage the walls defining the window opening. As is explained in connection with the storm sash of Patent No. 2,768,410, the expanders conform to the contour of the wall, leaving the frame of the window rigid and square. The center post is then put into place by inserting the upper pins 56 into holes 59 in the web

of the upper rail, as shown particularly in Figure 5, and, when those pins are in position, and the post is positioned vertically, by pushing the sliding block 60 against the bias of the detent 64 in the upper dimple 67 until the detent clears the dimple to permit the lower pin 61 of the block 60 to enter hole 69 in the sill rail. The entry of the detent 64 into the lower dimple 68 holds the block 60 in that position.

The pins 56, being set near the right edge of the post 8, as viewed in Figure 5, make this post readily insertable from the right, by moving the lower end of the post clockwise, since the pins will make contact with the hole 59 in the upper rail while the lower end of the post is still swung well away from the vertical. It can be seen that by making two sets of holes in the upper and sill rails, the post can be installed from either side. The pad 55, being resilient insures a tight fit, and permits the post to be installed without distorting the frame. The locking device 70 is put into the position shown in Figure 3, with the blocks 71 turned to the position at which they lie substantially parallel with the channels 52, and with the latches 80 turned outwardly at right angles to the post 8.

The inserts 6 and 7 are then placed in position in the channels 25 and 26, as has been explained heretofore.

It can be seen that it does not matter whether the inserts 6 and 7 are put respectively on the inside or outside of the window, or on the right or left side of the post 8. They are interchangeable. When, as shown in Figure 2, they are in closed position, the flange 25 of the side rail 32 of each of the inserts is within the channel 25 or 26, as the case may be, of the side rails 15 and 16, the flanges of the top and bottom rails of the inserts are within the channels 25 and 26 of the top and sill rails of the frame, and the flanges of the rails 33 of the inserts 6 and 7 are snugly against the sealing strips 51 along the full length of the post 8.

In order to lock the windows in position, the outside insert is first pushed to its closed position, while the inside insert remains at least partly open. The block 71 on the side of the post adjacent the edge of the flange of the rail 33 of the outside insert is turned at right angles to the post, and the latch 80 is turned to engage the outer side of the flange, as shown in Figure 2. The latch 80 is tapered slightly so as to wedge the flange and rail 33 against the felt 51. The inside insert is then slid to its closed position, and the remaining locking device is positioned similarly to lock it in position and to hold it snugly against the sealing strip 51. It can be seen that the locking members are arranged to operate on either side, so that it makes no difference whether the insert 6 is on the left side and the insert 7 is on the right, as shown in Figure 2, or whether their positions are reversed. The locking device is operative in either position.

In removing the inserts, the inner insert 7 may be taken out, the removable post 8 taken out, and the outside insert 6 removed. If the window 1 is a storm window on the inside of a sliding prime window, the inserts of the sliding prime window can be removed through the frame of the window 1. If the prime window is of a different type, it can be washed, or replaced, as if the frame of the window 1 were not there.

Numerous variations in the construction of the window of this invention, within the scope of the appended claim, will occur to those skilled in the art in the light of the foregoing disclosure. For example, various means may be used to keep the sliding block 60 in place. The handle 62 can be provided with a threaded shank, engaging in a threaded hole in the block, so that the handle can be tightened against the surface of the web of the post 8 to maintain it in any desired position. In lieu of the two pins 59 in the upper end of the post 8, a short slot may be provided in the web of the top rail, and a short tab or ear can be provided on the top of the post 8. In order to facilitate the installation of the post, a small stop member can be provided on the

under surface of the web of the top rail, adjacent the corner of the post in its mounted position, so that the post can simply be slid until it reaches the stop, and the pins inserted within the holes in the top rail. The kinds of sealing strips which are used form no part of this invention, and can be made of any suitable material. Also, the precise configuration of the various members, and their means of joining, may be varied without departing from the spirit of this invention. Thus, for example, the frames of the sliding insert panels may be mitered at their corners, instead of being butt joined. The center post may have a different cross-sectional configuration, so long as provision is made for sealing members along the sides, and for accommodating some form of anchoring means at the top and bottom of the post. So also, the sill rail may be given a different cross-sectional configuration, although the one shown has the advantage of permitting the insertion of a sealing strip at the bottom, as shown particularly in Figure 4. The locking device **70** can also be somewhat differently constructed. For example, the shaft **72** need not have a head at one end and a threaded section at the other. It may take the form of a pair of tap screws, or a double ended threaded shaft, or it may simply be peened at the ends, for example. It may also contain a means for biasing the block members **71** toward the post, so as to hold them snugly and continuously in frictional engagement therewith.

In windows more than about four lights high, a cross bar can be run between the side rails of the frame, to define an upper window area and a lower window area. Normally, the upper window area will be in the nature of a transom, with a single light which is not designed to slide. However, the upper part of the window can also be made with sliding insert panels. The cross bar is preferably made inverted U-shaped in cross section, with a heavy, thick web between the depending legs of

the U. Outboard of each of the legs are two, oppositely directed receiving lips, one forming a channel into which the flange of the upper rail of the insert panel of the lower window extends, and the other forming a channel or track into which the lower flange of the upper window panel extends. When such a cross bar is used, the center post of the lower window extends into the channel between the depending legs, and requires only a single pin top and bottom, because the post is held against turning by the legs of the cross bar channel.

Having thus described the invention, what is claimed and desired to be secured by Letters Patent is:

In a window structure of the horizontally sliding insert type, the improvement comprising a window frame with upper and sill rails having inner and outer panel-retaining means, a vertical center post extending between the upper and sill rails and intermediate the inner and outer panel-retaining means, and manipulable mounting means releasably connecting said vertical center post with said upper and sill rails, said center post being provided with a universal lock comprising blocks mounted on opposite sides of said center post on an axis at right angles to the long axis of said post, for movement between a position with the long axis of the block parallel to the long axis of the post to a position with the long axis of the block at right angles to the long axis of the post, and a latch member rotatably mounted on an end of said block on an axis parallel with the long axis of said block.

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