Jan. 22, 1952 R. E. BOWERS 2,583,251

WINDOW FRAME AND SASH UNIT

Filed Nov. 10, 1947 3 Sheets-Sheet 1

Fig. 1

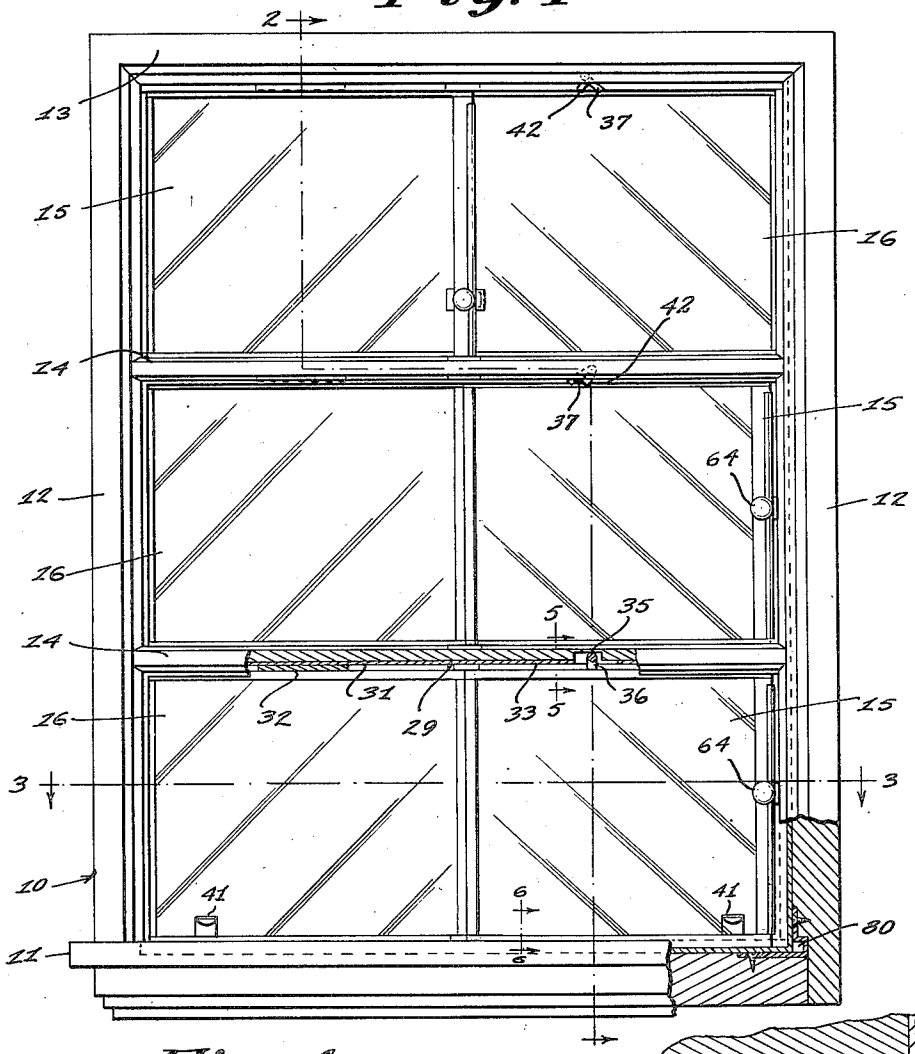
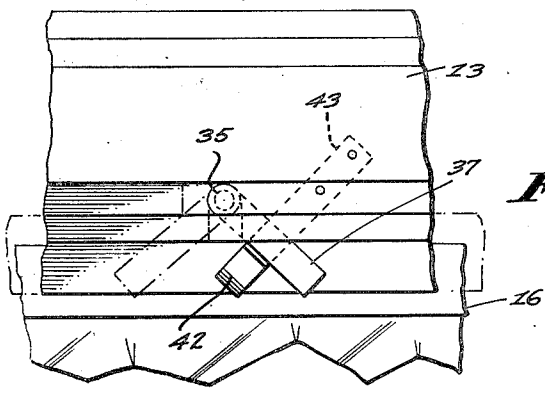


Fig. 4



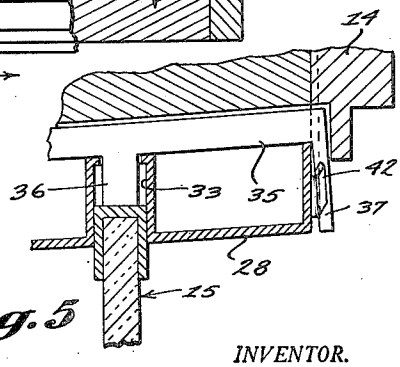


Fig. 5

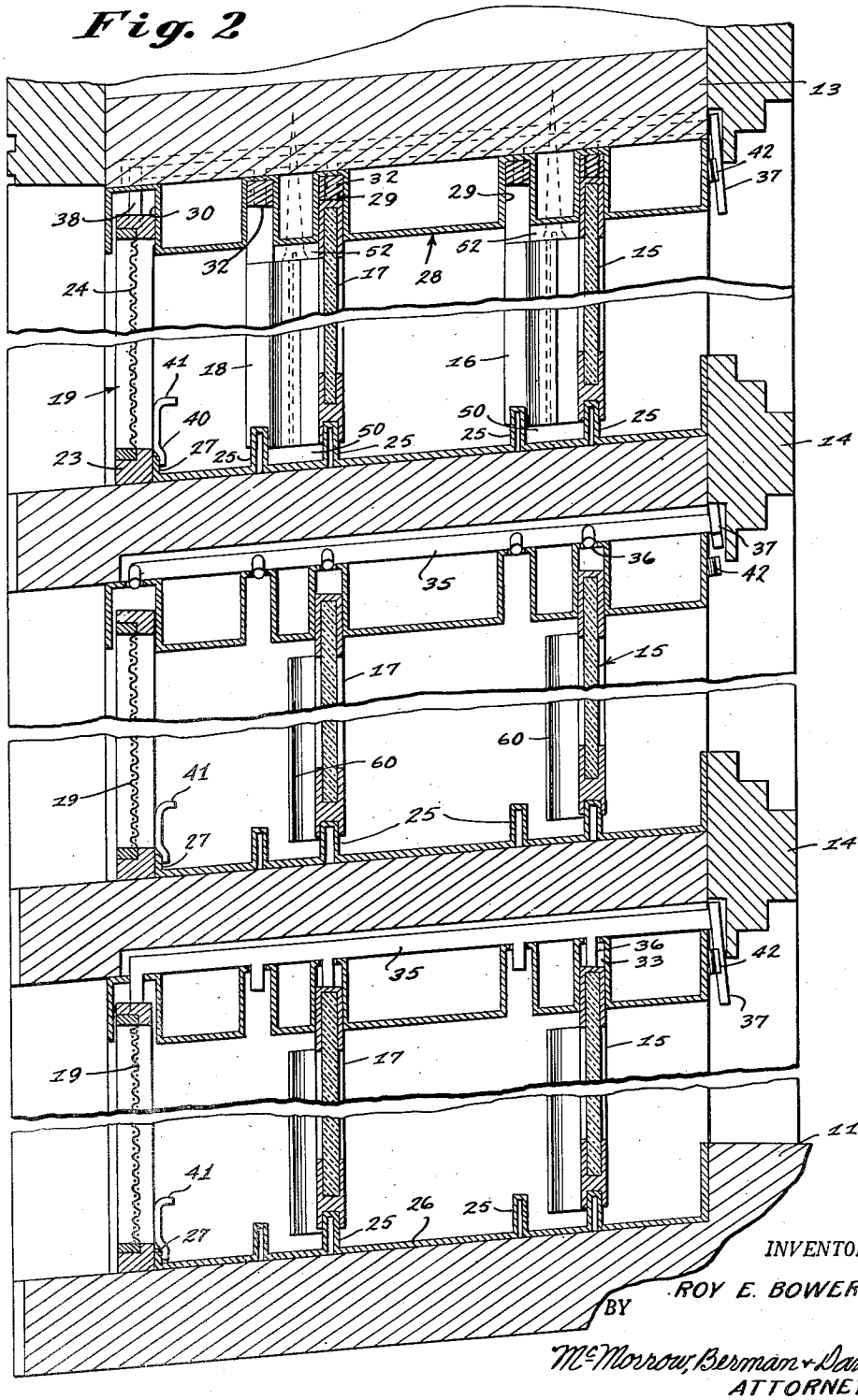
INVENTOR.
ROY E. BOWERS
BY
McMorrow, Berman + Davidson
ATTORNEYS

Jan. 22, 1952 R. E. BOWERS 2,583,251

WINDOW FRAME AND SASH UNIT

Filed Nov. 10, 1947 3 Sheets-Sheet 2

Fig. 2



Jan. 22, 1952 R. E. BOWERS 2,583,251

WINDOW FRAME AND SASH UNIT

Filed Nov. 10, 1947 3 Sheets-Sheet 3

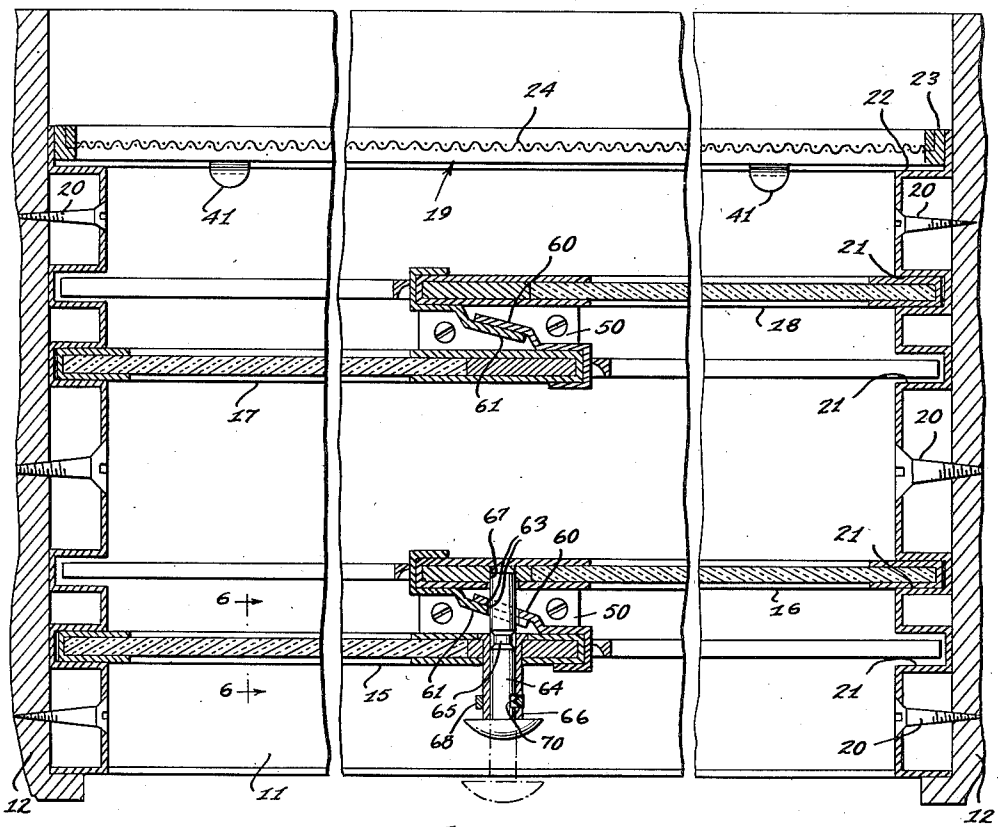


Fig. 3

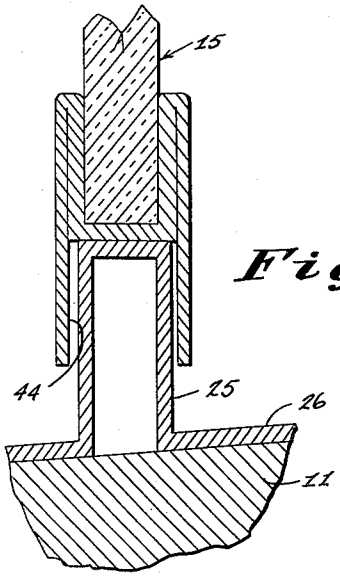


Fig. 6

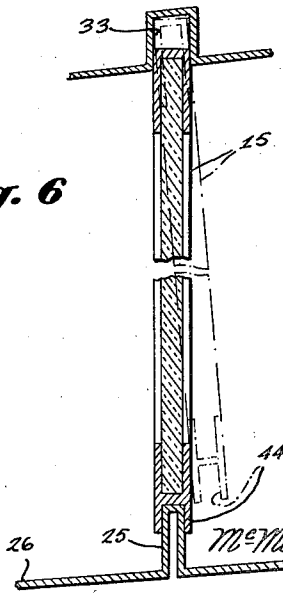


Fig. 7

INVENTOR.
ROY E. BOWERS
BY
McMorrow, Berman & Davidson
ATTORNEYS

Patented Jan. 22, 1952

2,583,251

UNITED STATES PATENT OFFICE

2,583,251

WINDOW FRAME AND SASH UNIT

Roy E. Bowers, St. Louis, Mo.

Application November 10, 1947, Serial No. 785,081

2 Claims. (Cl. 20—52)

1

My invention relates to window frame and sash units, and more particularly to such units wherein one or more pairs of complementary sashes are slidable in the frame. More specifically, my invention relates to such units which include means for demountably attaching window sashes, storm window sashes and screens in a single frame.

With the foregoing in view, an object of my invention is to provide an improved window frame and sash unit of the class described.

A further object is to provide an improved window frame and sash unit of the class described which includes novel means for detachably securing sashes and/or screens in a window frame.

A further object is to provide a novel window frame and sash unit of the class described, which includes novel means for detachably securing sashes and/or screens in a window frame, and which means comprises rail portions of said sash and/or frame which are relatively recessed for slidably mounting said sash on said frame, which relatively recessed portions include releasing portions permitting releasing movement of a sash and screen seated therein for removing such sash or screen therefrom, and key means associated with said released portions for locking or releasing a sash or screen seated therein.

Other objects and advantages reside in the particular structure of the invention, combination and arrangement of the several parts thereof, and in the particular mode of operation, all of which will be readily apparent to those skilled in the art upon reference to the attached drawings in connection with the following specification, wherein the invention is shown, described and claimed.

In the drawings:

Figure 1 is a front view of a window frame and sash unit according to the invention, with parts broken away and shown in longitudinal vertical section;

Figure 2 is a transverse vertical section taken substantially on the planes of the line 2—2 of Figure 1, but on an enlarged scale and with parts broken away;

Figure 3 is a horizontal transverse section on the same scale as Figure 2, but taken on the plane of the line 3—3 of Figure 1 with the window sashes in the closed, locked, position;

Figure 4 is an enlarged fragmentary front view showing a detail;

Figure 5 is a fragmentary vertical section on an enlarged scale and taken substantially on the plane of the line 5—5 of Figure 1;

2

Figure 6 is a fragmentary vertical section taken substantially on the plane of the line 6—6 of Figure 3;

Figure 7 is a fragmentary vertical section on an enlarged scale and showing the manner of removing a sash from the window frame.

In the drawings, wherein like reference characters have been used throughout to designate like parts, 10 designates generally a window frame according to the invention which is provided with a sill 11, vertical stiles 12, a top rail 13 and at least one intermediate rail 14. In the embodiment shown, I have provided two intermediate rails 14, as will be apparent from Figure 1.

Referring specifically to Figure 2 and to Figure 3, a plurality of pairs of front and rear window sashes 15 and 16 is provided between the sill 11, lowermost intermediate rail 14, such rail 14 and the uppermost intermediate rail 14, and such last-named intermediate rail and the top rail 13. Outwardly of such sashes 15 there are provided similar pairs of storm sashes which comprise front and rear sashes 17 and 18, respectively. Outwardly of the storm sashes 17 and 18 there are provided screen members 19. As each group of sashes 15, 16, storm sashes 17, 18, and screens 19 is similar to the corresponding elements, it will suffice to describe but a single set. In this connection, it is to be understood that the upper surface of the sill 11 comprises structure corresponding to the upper surface of each intermediate rail 14, while the under surface of the top rail 13 comprises structure similar to the structure of the under surfaces of the intermediate rails 14, 14.

Referring specifically to Figure 3, the inner surface of each of the stiles 12 is formed to provide a plurality of spaced, vertically-extending grooves 21 to receive the end edges of the sashes 15, 16, 17 and 18. Preferably, the grooves 21 are formed in a sheet of sheet metal which is suitably secured to the stiles in any suitable manner, as by means of the screws 20.

The upper surface of the sill 11 and the upper surfaces of the intermediate rails 14 are formed to provide a plurality of vertically-extending tracks or tongues 25 on which the lower edges of the sashes 15, 16, 17 and 18 are slidable transversely of the frame 10. Preferably, the tongues 25 are formed by up-struck portions of a body of sheet metal 26, the forward or outer edge of which is formed to provide a vertically-extending flange 27 against which the lower frame portion of the frame 23 of the screen 19 seats. In like manner, the forward portion of the sheet metal

body providing the grooves 21 for the stiles is formed to provide a shoulder 22 against which is seated the frame 23 of the screen 19. Drain openings 80 are formed through each tongue 25 and flange 27 at each end thereof.

The under surfaces of the top rail 13 and of the intermediate rails 14 are covered with a sheet metal support 28 which is formed to provide a plurality of spaced channelways 29 therein in which are slidably received the upper edges of the sashes 15, 16, 17 and 18. In like manner, the outer edge portion of the support 28 is formed to provide a channelway 30 to receive the upper edge of the screen frame 23. Referring specifically to Figures 1 and 2, it is noted that each channelway 29 is formed with a keeper portion 31 which includes a depending abutment or floor 32 which substantially abuts the upper edges of the sashes 15, 16, 17 and 18, whereby to prevent vertical movement of the sashes while permitting lateral sliding movement thereof. The channelways 29 also include a release portion 33 laterally of the keeper portion 31, in which release portion the sashes are vertically movable, whereby to disengage the lower edges thereof from the tongues 25.

A lock shaft 35 extends through each top rail 13 and intermediate rail 14 in the region of the channelways 29. Each shaft 35 is provided with an integral radially-extending key 36 which normally extends into each release portion 33 to lie substantially flush with the abutment 32, whereby to normally prevent vertical movement of the sash positioned in a release portion. Each shaft 35 extends across the channelway 30 for the screen and is likewise provided with a key 38 which normally extends into the channelway 30 to prevent vertical movement of the screen therein. The inner end of the shaft 35 is provided with a handle 37 of any suitable form to permit pivoting of the shaft whereby to move the keys 36 and 38 out of the release portions 33 of the channelways 29 and 30, whereby to permit vertical movement of the sashes positioned in such release portions, and vertical movement of the screen. As is clearly shown in Figure 7, upon vertical movement of a sash into the release portion 33, the lower grooved edge 44 thereof will clear the related tongue 25, whereby the sash is swingable inwardly to the broken line position, and then downwardly to remove the same from the window frame. The lower rear portion of the screen 19 is formed to provide a pair of depending keepers or flanges 40 which extend over the vertical flange 27 of the lower body of sheet metal 26. Handle members 41 are provided for the screen 19, whereby upon retraction of the key 38 from the channelway 30, the screen may be lifted upwardly and swung inwardly or outwardly to clear the flange 27, and thus permit removal of the screen.

Referring specifically to Figure 4 and Figure 5, it is noted that the handle 37 for the shaft 35 is adapted to pass over the hooked end 42 of the leaf spring 43, whereby to lock the handle 37 in at least a position wherein the keys 36 and 38 are advanced so as to lock the sashes and screen in place. The hooked end 42 of the spring 43 is depressible manually to permit the handle to be swung to a position to retract the keys 36 and 38.

As is shown in Figure 6, the lower edges of the sashes 15, 16, 17 and 18 are formed with grooves 44 to slidably fit atop the tongues 25. Obviously, this structure could be reversed and the tongues 25 could be placed on the sashes with the grooves 44 in the upper surfaces of the sill and intermediate rails.

Referring specifically to Figures 2 and 3, it is noted that weather blocks 50 are provided at intermediate portions of the sill 11 and intermediate rails 14 on the upper surfaces thereof between the adjacent pairs of tongues 25. These blocks are adapted to underlie the abutting edges of the sashes 15 and 16 and 17 and 18 to prevent cold air from entering through the window. In like manner, the opposite portions of the sheet metal bodies 28 on the under surface of the top rail 13 and intermediate rails 14 are formed to provide depending weather blocks 52 between each pair of trackways 29. Such weather blocks 52 overlie the upper side surfaces of the sashes to prevent cold air from entering the house.

Referring specifically to Figure 3, the abutting vertical edges of each pair of sashes 15, 16 and 17, 18 are formed to provide weather guards 60 and 61. Each of such weather guards comprises a resilient strip of sheet metal which is reversely bent at an angle to overlie the inner or outer face of the related sash. The guards 60 and 61 are complementary to each other, whereby when the sashes are in the closed position, as shown in Figure 3, the weather guard 60 of the sash 15 or 17 will overlap the rearwardly-directed weather guard 61 of the forward sash 16 or 18. The guards 60 and 61 are preferably formed with alignable apertures 63 therethrough for the reception of a locking bolt 64. The bolt 64 is formed with an annular groove 65 therein intermediate its ends, and is slidable in a bushing 66 carried by the innermost frame of sash 15 or 17. The outermost frame of sash 16 or 18 is preferably formed with a recess 67 to receive the free end of the bolt 64. The bushing 66 is formed with a leaf spring 68 which extends through a slot formed in the bushing 66 to engage the groove 65 with the bolt, whereby to hold the latter in a retracted position. Obviously, though not shown, a second groove, such as that at 65, could be provided on the bolt 64 to retain the same in a locked position. Instead, I have provided a slot 70 in the bolt which is engaged by the spring 68 to lock the same in the advanced or locking position. Obviously, with the bolt in the full line position, Figure 3, the sashes 15 and 16 are locked against sliding or vertical movement. In like manner, when the bolt 64 is moved to the broken line position, the sashes may be freely slid and/or removed.

While I have shown and described what is now thought to be the preferred embodiment of my invention, it is to be understood that the same is susceptible of other forms and expressions. Consequently, I do not limit myself to the precise structure shown and described hereinabove, except as hereinafter claimed.

I claim:

1. In a window assembly, a window frame including a horizontally disposed sill and a pair of spaced apart upstanding stiles each having the lower end secured to said sill, a horizontally disposed rail positioned between said stiles above and in parallel spaced relation with respect to said sill and secured to said stiles, at least one intermediate horizontally disposed rail positioned between said stiles and in parallel spaced relation with respect to said first named rail and sill and secured to said stiles, a pair of upstanding tracks arranged in spaced relation positioned longitudinally of and upon the upper surface of said sill and of said intermediate rail, a support

arranged longitudinally of and dependingly supported from the under surface of each of said first named rail and said intermediate rail, said support being provided with at least a pair of channelways extending inwardly from the lower face thereof, a window sash supported on said track and in said channelways for horizontal sliding movement, an abutment positioned in each of said channelways and extending inwardly from one end thereof and terminating at a point spaced from the other end engageable with the upper end of the adjacent window sash when the latter has been moved to a position contiguous thereto, a vertically arranged key positioned in each of said channelways and spaced from the adjacent abutment and mounted in each of said channelways for movement from a vertical position in engagement with the upper end of the adjacent sash when the latter is moved to a position contiguous thereto to a horizontal position out of engagement with the upper end of the adjacent sash when the latter has been moved to a position contiguous thereto, a shaft positioned transversely of and rotatably supported in said rail intermediate the ends thereof secured to said keys and having one end projecting from the face adjacent the inside face of said sill, and hand actuable means on the projecting end of said shaft for effecting the rotative movement of the latter to thereby cause the keys to be moved into and out of engagement with the upper ends of the sashes.

2. In a window assembly, a window frame including a horizontally disposed sill and a pair of spaced apart upstanding stiles each having the lower end secured to said sill, a horizontally disposed rail positioned between said stiles above and in parallel spaced relation with respect to said sill and secured to said stiles, at least one intermediate horizontally disposed rail positioned between said stiles and in parallel spaced relation with respect to said first named rail and sill and secured to said stiles, a pair of upstanding tracks arranged in spaced relation positioned longitudinally of and upon the upper surface of said sill and of said intermediate rail, a support arranged longitudinally of and dependingly supported from the under surface of each of said first named rails and said intermediate rail, said support being provided with at least a pair of channelways extending inwardly from the lower face thereof, a window sash supported on said track and in said channelways for horizontal sliding movement, an abutment positioned in each of said channelways and extending inwardly from one end thereof and terminating at a point spaced from the other end engageable with the upper end of the adjacent window sash when the latter has been moved to a position contiguous thereto, a vertically arranged key positioned in each of said channelways and spaced from the adjacent abutment and mounted in each of said channelways for movement from a vertical position in engagement with the upper end of the adjacent sash when the latter is moved to a position contiguous thereto to a horizontal position out of engagement with the upper end of the adjacent sash when the latter is moved to a position contiguous thereto, a shaft positioned transversely of and rotatably supported in said rail intermediate the ends thereof secured to said keys and having one end projecting from the face adjacent the inside face of said sill, hand actuable means on the projecting end of said shaft for effecting the rotative movement of the latter to thereby cause the keys to be moved into and out of engagement with the upper ends of said sashes, and interengaging means on said hand actuable means and on said support for holding the keys in their position of engagement with the upper ends of the sashes.

ROY E. BOWERS.

REFERENCES CITED

The following references are of record in the file of this patent:

UNITED STATES PATENTS

Number	Name	Date
686,981	Long	Nov. 19, 1901
1,181,331	Metzger	May 2, 1916
1,442,397	Gorrani	Jan. 16, 1923
2,107,192	Takach	Feb. 1, 1938
2,371,724	Young	Mar. 20, 1945