Feb. 12, 1952 H. J. KAMMERER 2,585,471

WINDOW STRUCTURE

Filed May 10, 1947 2 SHEETS—SHEET 1

Fig. 1.

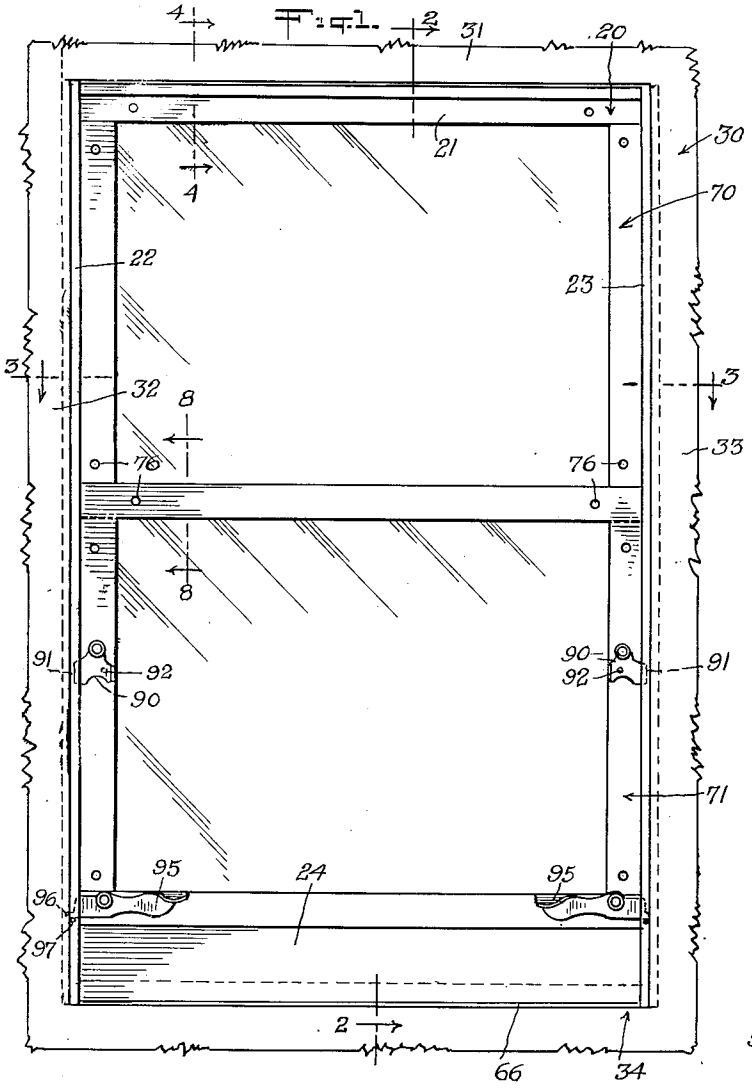


Fig. 2.

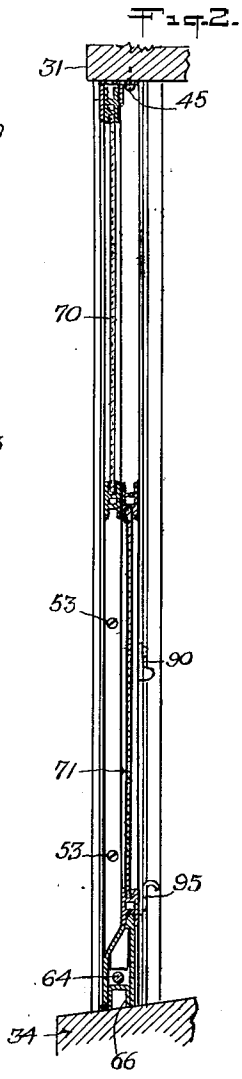
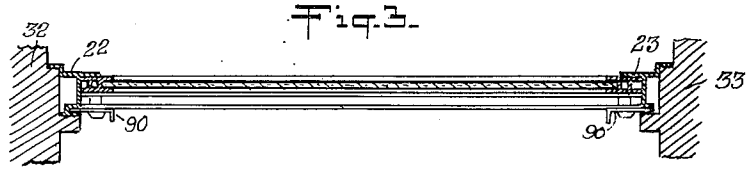


Fig. 3.



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Fig. 4.

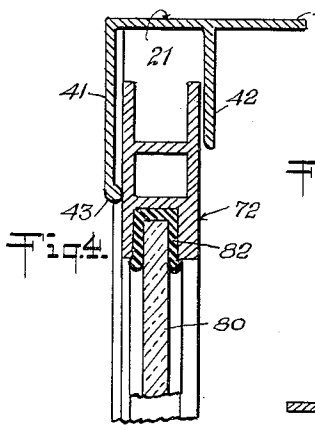


Fig. 5.

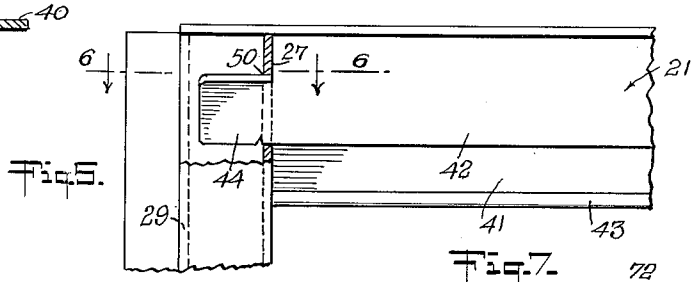


Fig. 7.

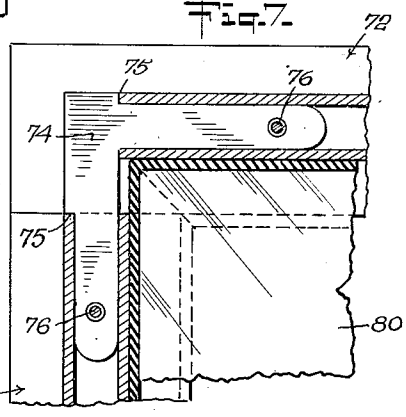


Fig. 8.

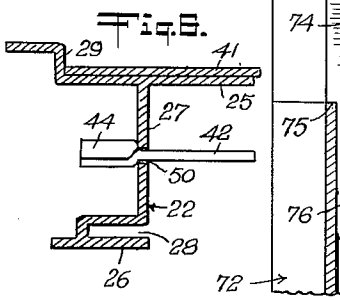


Fig. 6.

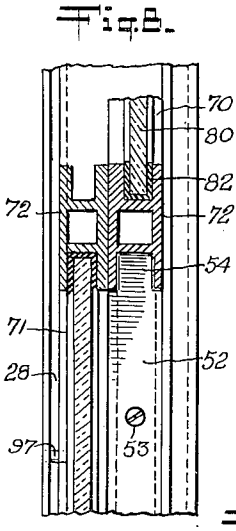


Fig. 9.

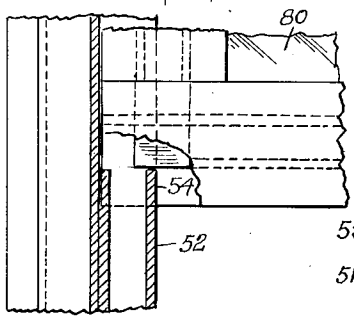


Fig. 10.

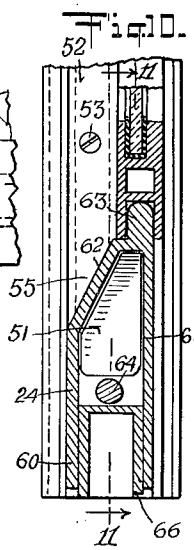


Fig. 11.

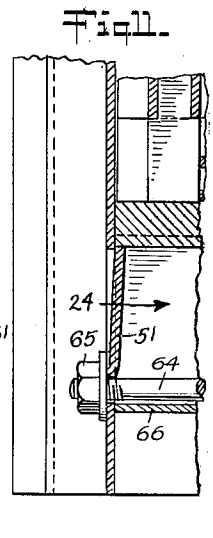


Fig. 13.

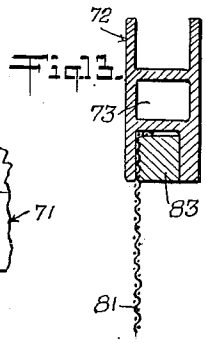
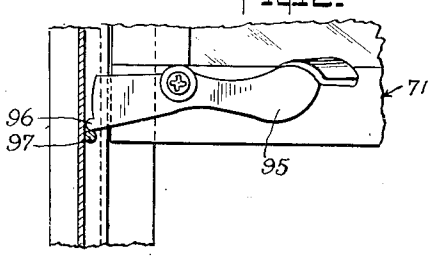


Fig. 12.



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UNITED STATES PATENT OFFICE

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WINDOW STRUCTURE

Harry J. Kammerer, Mount Vernon, N. Y.

Application May 10, 1947, Serial No. 747,271

6 Claims. (Cl. 189—75)

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My invention relates to auxiliary window construction and, more particularly, to a combination sash in which storm windows and screening may be readily interchanged.

The principal advantage of my invention is the simplicity of its construction due mainly to the utilization of uniform channels throughout.

Another advantage is that my device may be readily manufactured in a variety of sizes for adaptation to any size window frame.

An additional feature is that all fastening means securing the auxiliary window to the frame are made from the inside thereby protecting such means from rust or other aging factors due to the weather.

Also, installation and removal is easily and quickly effected due to the fact that a maximum of six screws are used to secure the combination sash to the window frame.

Another advantage is that the combination sash is adapted to position in the window frame in such a manner that the top and side portions are recessed in said frame thereby preventing any moisture from seeping between the frame and sash which ultimately would have a deteriorating effect on the sash and frame.

A further advantage is that the storm sash may be readily interchanged with screening resulting in the utilization of my invention for all year-round use.

Another advantage concerns the construction of the movable sash elements whereby uniform channel construction is utilized throughout and the component parts of the sash are positioned and secured through the use of a novel angle member.

Another feature is the provision of an adjustable channel in the lower member of the auxiliary frame which will assure a tight fit between the lower frame member and the window sill regardless of the slope of the sill.

My invention possesses other unique features and advantages which will be apparent as I proceed with the description.

With reference to the drawings—

Fig. 1 shows an inside view of a front elevation of my combination sash installed in a conventional window frame;

Fig. 2 shows a sectional view on line 2—2 of Fig. 1;

Fig. 3 shows a sectional view on line 3—3 of Fig. 1;

Fig. 4 shows an enlarged fragmental view on line 4—4 of Fig. 1;

Fig. 5 shows a fragmental view partially in section illustrating the means of securing the top member to the vertical sash guides;

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Fig. 6 is a sectional view on line 6—6 of Fig. 5;

Fig. 7 shows a fragmental sectional view illustrating the means of securing the channels of the sash frames to each other;

Fig. 8 shows a sectional view on line 8—8 of Fig. 1;

Fig. 9 shows a fragmental section view of the lower corner of the upper sash being supported by the support;

Fig. 10 shows a fragmental section view illustrating the means of engagement between the channel of the lower sash and the bottom cross member;

Fig. 11 shows a sectional view on line 11—11 of Fig. 10;

Fig. 12 shows a view of the pivotal handles and the means by which they engage the stops; and

Fig. 13 is a sectional view through a sash channel illustrating the method of securing the screening.

In Fig. 1 I show my combination sash frame 20 installed in a conventional window casing or frame 30. The sash frame 20 is rectangular in shape and is comprised of a horizontal top channel member 21, two vertical sash guides 22 and 23, respectively, and a bottom horizontal or cross member 24.

Figure 4 shows a sectional view through the top channel member 21 which is comprised of a base member 40 and front and rear flanges 41 and 42, respectively, which are integral with and perpendicular to the base 40. Flanges 41 and 42 are parallel to each other and spaced a sufficient distance apart to allow for the insertion of the upper portion of the upper sash element 70 which is held in position between the front and rear flanges 41 and 42. Positioned at the lower edge of the front flange 41 is a rounded projection 43 that extends for the length of the top member 21 between the vertical guides 22 and 23. The projection 43 contacts the outer surface of the top channel member of the upper sash element 70 assuring a tight fit and preventing any moisture from seeping between these two surfaces. The base member 40 is secured to the top member 31 of the window frame 30 through screws 45.

The vertical sash guides 22 and 23 respectively have a cross section area roughly approximating an H-shaped channel member (see Fig. 6). The vertical guides 22 and 23 are identical in structure with the exception that they are reversed in view of the fact that one is mounted on the left side of the frame and the other is mounted on

the right side of the frame. However, in describing the structure of the sash guides, the same numbers will apply to corresponding parts on both members. The guides have parallel front and rear walls 25 and 26, respectively, which are joined by and integral with a cross piece 27 that is perpendicular to the front wall 25 and forms the sides of a U shaped groove 28 with the rear wall 26. The front wall 25 has an angular offset 29 which is adapted to overlap and make a tight engagement with the sides 32 and 33 of the window frame 30. Located near the upper end of the vertical guides 22 and 23 and positioned in the cross piece 27 are vertical slots 50 which are adapted to engage the reduced ends 44 of the flange 42. Positioned near the lower extremity of the guides 22 and 23 are offsets 51 which may be stamped or pressed from the material being utilized. The purpose of these offsets will be fully explained later. Secured to the lower half of the guides 22 and 23 and positioned in the corner formed by the intersection of wall 25 and the cross piece 27 are U-shaped channel supports 52. The lower portions 55 of the supports 52 are shaped to coact with the upper surface of the bottom cross member 24. The upper extremities 54 of the suports 52 are shaped to conform to the lower channel of the upper sash element 70 which it supports. Through screws 53 the supports 52 and the guides 22 and 23 are secured to the sides 32 and 33 of the window frame 30.

The bottom cross member 24 is hollow in construction having a front wall 60 and a rear wall 61. The upper portion 62 of the front wall 60 is inclined upward and rearward and joins with the rear wall 61 to terminate in a rounded upper edge 63. As shown in Fig. 11, the offsets 51 of the guides 22 and 23 position and support the lower member 24. In addition, a tie rod 64, threaded at both ends, runs through the hollow member 24 and is anchored on each side to the guide members 22 and 23 through nuts 65. Positioned inside the hollow member 24 is a U-shaped channel member 66 which is free to move vertically inside the member 24. The bottom edges of the member 66 rest on the sill 34 of the window frame 30 and any irregularity in the slope of the sill 34 may be compensated for by adjusting the position of the member 66.

To assemble the frame 20 the top member 21 is placed so that the front flange 41 overlaps the upper portion of the guide members 22 and 23 and the base 40 rests on the top edges of the guide members. The reduced ends 44 of the flange 42 are guided through the slots 50 in the cross member 27. The lower member 24 is then placed between the guide members 22 and 23 so that it is positioned and supported by the offsets 51. Through some suitable means the ends 44 are twisted resulting in the top member 21 being secured to the guide members 22 and 23. The rod 64 is then placed in position and by tightening up on the nuts 65 the bottom member 24 is securely locked between the guide members 23 and 22. When this has been completed, the frame 20 is accurately and firmly secured together and the next step is to mount it in a conventional window frame through screws 45 and 53. It should be noted that the entire frame is readily assembled from pre-fabricated inter-connecting members that obviate the necessity of welding or similar types of joints.

The upper and lower sash elements 70 and 71, respectively, are comprised of four uniform channel members 72. The channel members as shown

in Fig. 13 are H-shaped with a hollow square shaped center area 73. The intersecting corners of the sash elements 70 and 71 are accurately positioned and secured to each other through the use of angle members 74. The angle members 74 have the same cross section dimensions as the hollow area 73 of the channels 72 and, as shown in Fig. 7, when the angle members 74 are utilized to join the edges of two channels together, an accurate and tight joint is assured. The angle members 74 have shoulders 75 on their upper edges which are adapted to engage the walls of the channel 72 so that the angle member 74 will be accurately positioned and will be prevented from extending too far into the hollow area 73. Screws 76 are then inserted to secure the angle member 74 to the channels. All of these parts are accurately machined with a result that the sash elements may be quickly and readily assembled presenting a neat and attractive appearance.

The glass 80 or screening 81 may be inserted in the channels of the sash elements before final assembly. The gasket 82, of rubber or other similar material, may be utilized to hold the glass 80 securely in the sash element. The screening 81 is secured to the channels of the sash element as shown in Fig. 13 through the use of splines 83. This method of installation saves considerable time in that it eliminates the preliminary stretching of the screening prior to securing it in the ordinary sash frame. After the sash element has been three-quarters assembled, the screening is placed in the channels and the fourth channel member is then secured, completing the sash. The splines are then driven into the channels containing the screening and in doing so they not only firmly secure the screening in the sash frame but also stretch the screening with the result that the completed job is taut and neat appearing. Utilization of this method also saves considerable time in labor and material.

To install the sash elements in the frame 20, the upper portion of the sash element 70 is inserted between flanges 41 and 42 of the top member 21. The sash is then lifted upward and then lowered so that the lower channel of the sash 70 will engage and be supported by the projections 54 of the supports 52.

The lower sash element 71 is slidably mounted as follows: Mounted on either side of the sash are pivotal locking members 90. The locking members 90 are equipped with flat fingers 91 that may be pivoted to engage in the groove 28 after the sash 71 has been placed in position in the frame. Through a ball and spring arrangement 92 the locking members 90 are held in position when engaged in the groove 28. The sash 71 may then be raised and lowered, it being held in perfect alignment for vertical movement by the locking members 90. As shown in Fig. 10 the bottom channel of the lower sash 71 fits snugly over the rounded edge 63 of the lower member 24 assuring a tight weatherproof seal.

The lower sash 71 is also equipped with pivotal handles 95 which have a projection 96 at their extreme end. The projections 96 also ride in the grooves 28 and the window may be raised and locked at any desired height by having the projection 96 engage any one of a plurality of stops 97 that are vertically spaced in the groove 28.

The sash elements 71 and 70 may be readily removed and changed with sash elements containing screening. As can be seen, it is also a

simple matter to mount the combination frame in a conventional window frame and its removal is also facilitated in view of the minimum number of devices that are utilized to attach the frame to the conventional window frame.

In manufacturing my device, I contemplate using a light weight metal such as aluminum or other similar alloy metals. It would also be possible to manufacture this device from plastics and the like.

While the invention has been described in detail with respect to a present preferred form which it may assume, it is not to be limited to such details and form since many changes and modifications may be made in the invention without departing from the spirit and scope of the invention in its broadest aspects. Hence, it is desired to cover any and all forms and modifications of the invention which may come within the language or scope of any one or more of the appended claims.

I claim:

1. A window sash frame construction which comprises vertical side guide members, a transverse member at the bottom of said guide members and adapted to be disposed therebetween, said transverse member having end openings, and offset elements struck from the material of the guide members to extend into said openings to hold the transverse member in position, the upper forward-face of said tranverse member sloping downwardly and outwardly, and a longitudinally extending rib or projection on the top of the transverse member adapted to project into a peripheral groove of a lower sash element.

2. A window sash frame construction which comprises vertical side guide members, a transverse member at the bottom of said guide members and adapted to be disposed therebetween, said transverse member having end openings, and offset elements struck from the material of the guide members to extend into said openings to hold the transverse member in position, the upper forward face of said transverse member sloping downwardly and outwardly, and a longitudinally extending rib or projection on the top of the transverse member adapted to project into a peripheral groove of a lower sash element, vertical supporting elements disposed in vertical abutment with the inner faces of said guide members and connected thereto, the upper ends of said supporting elements being provided with projections extending upwardly and adapted to be disposed in a lower peripheral groove of an upper sash member resting thereon.

3. A window sash frame construction which comprises vertical side guide members, a transverse member at the bottom of said guide members and adapted to be disposed therebetween, said transverse member having end openings, and offset elements struck from the material of the guide members to extend into said openings to hold the transverse member in position, the upper forward face of said transverse member sloping downwardly and outwardly, and a longitudinally extending rib or projection on the top of the transverse member adapted to project into a peripheral groove of a lower sash element, vertical supporting elements disposed in vertical abutment with the inner faces of said guide members and connected thereto, the upper ends of said supporting elements being provided with projections extending upwardly and adapted to be disposed in a lower peripheral groove of an upper sash member resting thereon, the lower ends of said vertical supporting members being sloped or bevelled to lie in close abutment with the sloping forward wall of said transverse member.

4. A window sash frame construction which comprises vertical side guide members, a transverse member at the bottom of said guide members and adapted to be disposed therebetween, said transverse member having end openings, and offset elements struck from the material of the guide members to extend into said openings to hold the transverse member in position, the upper forward-face of said transverse member sloping downwardly and outwardly, and a longitudinally extending rib or projection on the top of the transverse member adapted to project into a peripheral groove of a lower sash element, a bolt extending through the lower portion of said transverse member with its ends projecting through the walls of the respective guide members, and nuts on the ends of said bolt to securely hold the transverse member with respect to the guide members.

5. A window sash frame construction which comprises vertical side guide members, a transverse member at the bottom of said guide members and adapted to be disposed therebetween, said transverse member having end openings, and offset elements struck from the material of the guide members to extend into said openings to hold the transverse member in position, the upper forward face of said transverse member sloping downwardly and outwardly, and a longitudinally extending rib or projection on the top of the transverse member adapted to project into a peripheral groove of a lower sash element, vertical supporting elements disposed in vertical abutment with the inner faces of said guide members and connected thereto, the upper ends of said supporting elements being provided with projections extending upwardly and adapted to be disposed in a lower peripheral groove of an upper sash member resting thereon, a bolt extending through the lower portion of said transverse member with its ends projecting through the walls of the respective guide members, and nuts on the ends of said bolt to securely hold the transverse member with respect to the guide members.

6. A window sash frame construction which comprises vertical side guide members, a transverse member at the bottom of said guide members and adapted to be disposed therebetween, said transverse member having end openings, and offset elements struck from the material of the guide members to extend into said openings to hold the transverse member in position, the upper forward face of said transverse member sloping downwardly and outwardly, and a longitudinally extending rib or projection on the top of the transverse member adapted to project into a peripheral groove of a lower sash element, vertical supporting elements disposed in vertical abutment with the inner faces of said guide members and connected thereto, the upper ends of said supporting elements being provided with projections extending upwardly and adapted to be disposed in a lower peripheral groove of an upper sash member resting thereon, the lower ends of said vertical supporting members being sloped or bevelled to lie in close abutment with the sloping forward wall of said transverse member, a bolt extending through the lower portion of said transverse member with its ends projecting through the walls of the respective guide members, and nuts on the ends of said bolt to secure-

ly hold the transverse member with respect to the guide members.

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