Dec. 4, 1951 C. V. MANCINI 2,577,342

DOUBLE HUNG SASH

Filed June 8, 1948 2 SHEETS—SHEET 1

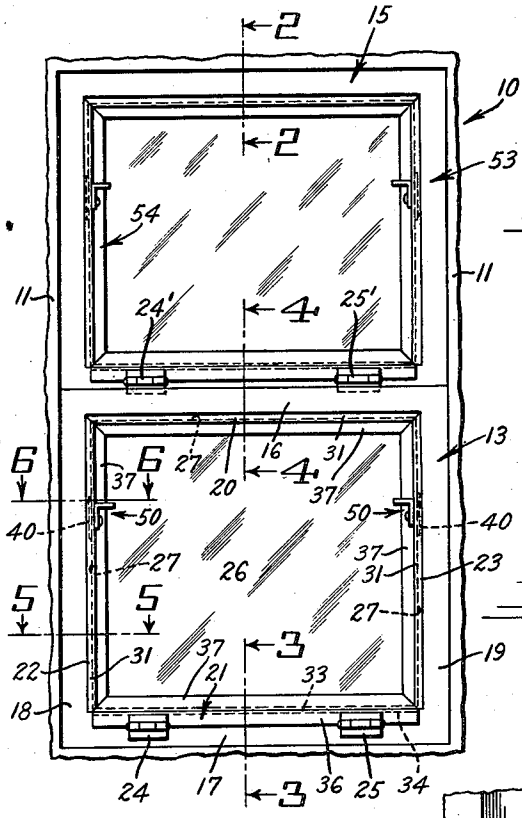


Fig. 1

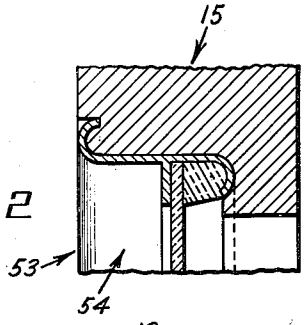


Fig. 2

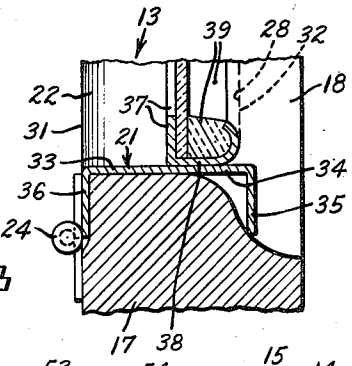


Fig. 3

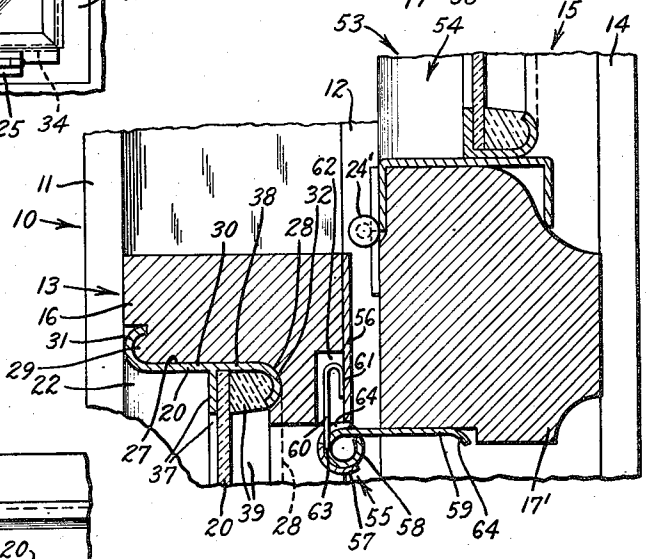


Fig. 4

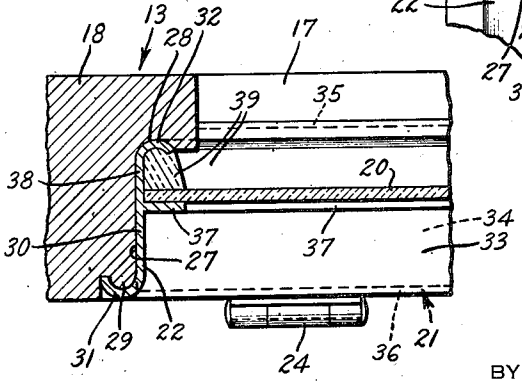


Fig. 5

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Dec. 4, 1951 C. V. MANCINI 2,577,342

DOUBLE HUNG SASH

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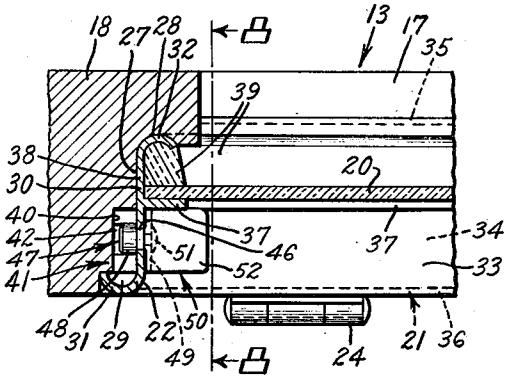


Fig. 6

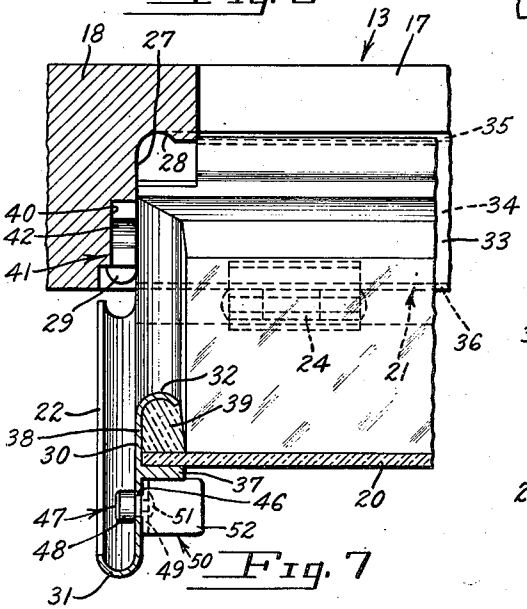


Fig. 7

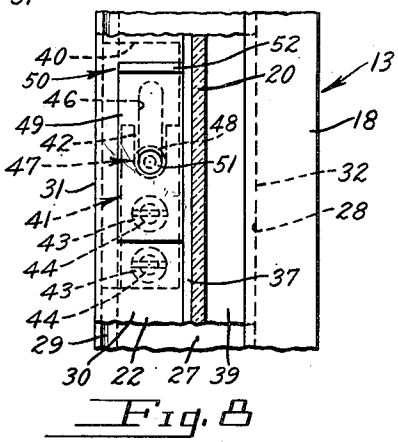


Fig. 8

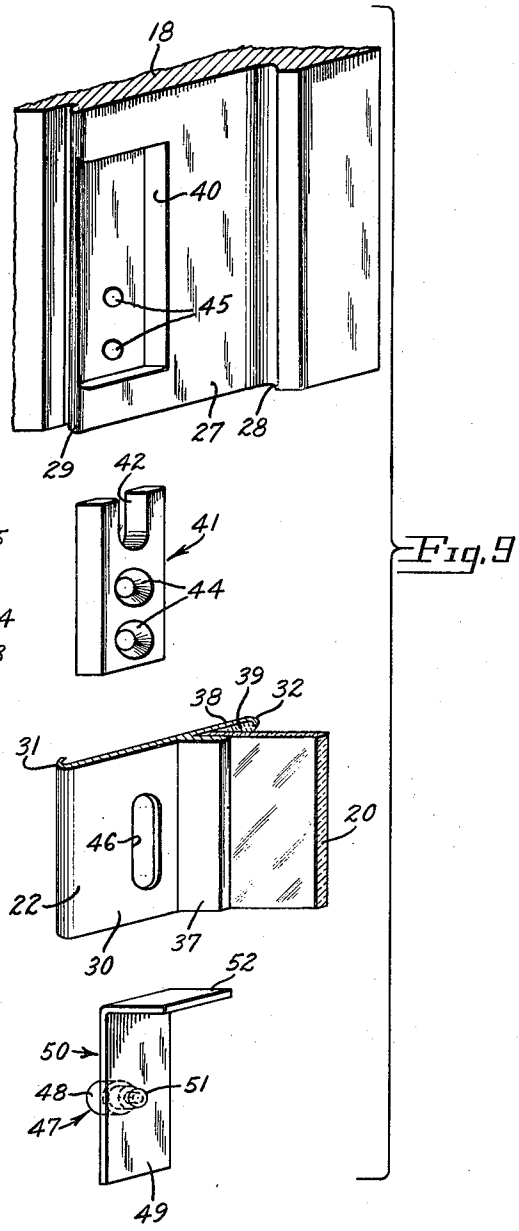


Fig. 9

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UNITED STATES PATENT OFFICE

2,577,342

DOUBLE HUNG SASH

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Application June 8, 1948, Serial No. 31,719.

5 Claims. (Cl. 20—48)

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This invention relates to new and useful improvements in building constructions and has particular relation to a double hung sash window construction.

An object of the invention is to provide a window construction comprising a sash slidable to and from open position and including means mounting the glass or the window pane or panes of the sash for swinging movement relative to the frame of the sash to and from open and closed positions.

Another object is to provide a structure as stated and wherein means are provided for securing or locking the glass or window pane or panes against casual movement relative to the sash frame and further wherein the said glass or window pane or panes are mounted for swinging movement about a horizontal axis relative to the sash frame from a position within the sash frame to a position extending to the interior of the house or other building in which the sash may be installed.

Other objects and advantages of the invention will become apparent from a consideration of the following detailed description taken in connection with the accompanying drawings wherein a satisfactory embodiment of the invention is shown. However, it is to be understood that the invention is not limited to the details disclosed but includes all such variations and modifications as fall within the spirit of the invention and the scope of the appended claims.

In the drawings:

Fig. 1 is an elevational view showing my improved sash, the view being taken as looking from the interior of a room in which a window is equipped with sash made in accordance with the invention;

Fig. 2 is a detail vertical sectional view, enlarged, taken as along the line 2—2 of Fig. 1;

Fig. 3 is a similar view taken as along the line 3—3 of Fig. 1;

Fig. 4 is a similar view taken as along the line 4—4 of Fig. 1;

Fig. 5 is a detail horizontal sectional view, enlarged, taken as along the line 5—5 of Fig. 1;

Fig. 6 is a view similar to Fig. 5 but taken as along the plane of the line 6—6 of Fig. 1;

Fig. 7 is a view similar to Fig. 6 but with the window glass or pane in open position;

Fig. 8 is a detail elevational view of a securing or locking means employed, the view being taken as along the line 8—8 of Fig. 6; and

Fig. 9 is an exploded view showing detailed enlargements of certain parts employed.

Referring in detail to the drawings, at 10 is generally indicated a window frame and mounted in said frame for vertical sliding movement between a forward strip 11 and a dividing strip 12 is a lower sash generally designated 13. Between said dividing strip 12 and a rear vertical strip 14 there is slidably mounted an upper sash, generally designated 15. Thus, I have a double hung window including the lower and upper sashes 13 and 15.

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Lower sash 13 includes an outer frame of wood or the like and which outer frame is slidable between the strips 11 and 12 and includes an upper rail 16, a bottom rail 17 and vertical or side rails 18 and 19. Hinged to the outer wooden frame of the sash 13 is an inner metal frame comprising a top rail 20, a bottom rail 21 and vertical or side rails 22 and 23. Thus, it will be understood that the inner metal frame is made up of rail members corresponding with those of the outer wooden frame. The inner metal frame has its lower rail or bottom rail 21 hinged to the bottom rail 17 of the outer frame in any suitable manner, as, for example, by the hinges 24 and 25.

The inner metal frame carries the glass or window light 26, the mounting of which will be described in detail. Here it is noted that such inner frame is shiftable from a closed position within the outer wooden frame to an open position extending inwardly of said outer frame. This movement of the inner glass carrying frame is provided for by the hinges 24 and 25 connecting the frames. Also, it is noted that when the inner frame is in closed position the entire lower sash is adapted for vertical sliding movement between the guide strip 11 and the parting strip 12, as is customary in double hung window constructions.

On their inner edges, the top and side rails 16, 18 and 19 of the wooden frame of the lower sash are provided with flat surfaces 27 and outwardly or rearwardly such surfaces terminate in shallow inwardly or forwardly facing grooves 28. About the inner edges of the mentioned rails of said wooden or outer frame of the lower sash 13, beads 29 are formed on the forward faces of the rails.

The corresponding rails of the inner metal frame of the lower sash are in transverse section somewhat in the form of ogee curves and each such metal frame part comprises a flat major portion or body 30, the forward edge of which is bent upon itself to provide the concavo-convex or channel shaped portion 31 which, when the inner frame is in closed position, is disposed over and embraces the bead 29.

The outer edge of each body portion 30 is also bent into a concavo-convex formation or channel shape, as at 32, and when the inner frame is

closed, the convex side of the channel shaped portion 32 is received or partly received in the channel or groove 28 of the corresponding rail of the outer or wooden frame of the lower sash. With this construction, it will be clear that when the inner metal frame of the lower sash is closed, the flat portions 30 of the top and side rails 20, 22 and 23 of such frame will lie against the flat inner surfaces 27 of the corresponding rails 16, 18 and 19 of the outer or wooden frame of the lower sash.

These parts engage over a relatively wide area, preferably they should be a careful fit. In addition, under the described conditions, that is, when the inner metal frame is in closed position in the outer wooden frame of the lower sash, the reversedly bent or transversely concavo-convex portion 31 of the top and side rails of such metal frame embrace or are disposed about the beads 29 of the corresponding members of the wooden frame. Somewhat similarly the outer or convex portion of the channel-like portion 32 of the described rails of the inner metal sash are received in or partly received in the channels or grooves 28 of the complemental parts of the wooden frame of the lower sash.

It will be understood that the top and side rails of the inner metal frame may be in one piece bent into the inverted U-shaped required or they may comprise separate pieces connected at the corners in any suitable manner. The bottom rail 21 of the inner metal frame also includes a flat body portion 33 which, when the sash is closed, lies against the flat inner surface portion 34 of the bottom wooden rail 17 and, in addition, such bottom metal frame member or rail includes an outer flange 35 which overlies a portion of the outer side of the bottom rail 17 and further includes a flange 36 to which the hinges 24 and 25 are attached. With this construction, it will be seen that the said inner glass or pane carrying metal frame of the lower sash may be swung from the closed position described to the open position described. This will be illustrated by a comparison of Figs. 6 and 7 of the drawings.

Extending inwardly from the flat portions 30 and 33 of the respective inner metal frame members are inwardly directed flanges 37, which flanges are all aligned and all are located slightly inwardly of the reversedly bent portion or the transversely concavo-convex channel-like portion 32 of the top and side rails of the inner frame and a similar portion 38 carried by the lower rail of such inner metal frame. Window light or pane of glass 26 is located within such inner metal frame with its edge portions against the outer side of the described flange 37. Then the space between the edge portions of said glass pane and the channel portions 32 and 38 are filled in with putty as at 39 completing the mounting of the glass in the inner or metal frame of the lower sash 13 of the window.

The reception of the beads 29 by the concavo-convex channel-like portions 31 of the lower sash and the location of the channel-like portions 32 or at least portions thereof within the groove or channel 28, all when the hinged inner frame of the lower sash is in closed position, provides for the secure mounting of said frame in a manner to exclude air from passing between the inner and outer frames of the lower sash and in a manner such that casual movement that might result in rattle or the like is impossible.

Means are provided for securing the inner or metal frame in the closed position described and such means is adapted for manual release and manual manipulation so that the lower inner frame may be released and swung to an open position wherein it extends inwardly with respect to the outer frame of the lower sash. This releasable securing or locking means involves recesses opening through the front rounded or beaded edges 29 of the side or vertical rails of the lower outer or wooden sash and also opening through the inner flat surfaces 27 of the frame members of said sash. Such recesses in the drawings are designated 40.

Within the lower portion of each such recess is a latch block generally designated 41 having a notch 42 opening through its upper end. These latch blocks are held in place as by screws 43 passing through openings 44 in the latch blocks and threaded into holes or openings 45 in the frame members 18 and 19. The latch blocks lie flush with the inner faces 27 of the frame members and the upper ends of the latch blocks are spaced from the upper ends of the recesses 40 as best illustrated in Fig. 8.

Each vertical inner frame member or side rail 22 and 23 is provided in its flat portion 30 with a vertically extending slot 46 and when the inner or metal frame is in closed position, this slot 46 has its lower portion overlapping the notch 42 in the latch block 41 and has its upper portion disposed a considerable distance above the upper end of such latch blocks but still within the length defined by the recess 40 in the adjacent frame member of the lower sash.

Extending through the slots 46 are latch bolts 47 each having an enlarged diameter inner end portion 48 adapted to be received in a notch 42 of a latch block and each having its outer end passing through the vertical portion 49 of a finger piece 50 and headed over at the outer side of such vertical portion as at 51. Finger pieces 50 in addition to the vertical portions 49 include horizontal portions 52 adapted to be grasped as between the thumb and index finger for manipulation.

When the inner or metal frame is closed, the latch bolts 48 pass inwardly through the open inner edges of the recesses 40 and then are dropped down, moving in the slots 46 so that their enlarged diameter portions 48 enter the recesses 42 in the upper ends of a pair of latch blocks. Under these conditions, the inner or metal frame is secured in closed position, which closed position has been described above. When it is desired to open the inner metal frame, the finger pieces 50 are raised as by grasping their horizontal portions 52 so as to carry the latch bolts upwardly out of the notches 42 and then the entire inner frame is swung forwardly on the hinges 24 and 25. Thus, it will be seen that the inner frame is easily latched closed and that the latch means is easily released and the inner frame swung open.

The inner frame may be swung open for the purpose of ventilation or so that the outer surface of its window light or pane of glass 26 will be convenient for cleaning without the necessity of the cleaner sitting outside on the window sill or even sliding upwardly the lower window sash. Further, the inner frame may be swung slightly open to afford some ventilation even though there is rain. Also, swelling of the wooden outer frame of the lower sash, such as makes difficult or even prohibits its being raised in its ways between the strips 11 and 12, will not prevent the user from obtaining ventilation since the metal

frame may yet be swung to open position on its hinges 24 and 25.

The construction of the upper sash 15 is identical with the construction of the lower sash 13. Thus, such upper sash includes an outer wooden frame generally designated 53 and vertically slidable in the main window frame 10 as between the parting strip 12 and the outer guide strip 14. Carried by this outer wooden frame 53 is an inner metal frame generally designated 54.

The outer frame 53 is of exactly the construction of the outer wooden frame comprising the rails 16, 17, 18 and 19 and the inner or metal frame 54 is of exactly the construction of the inner metal frame of the lower sash and which comprises the top and bottom rails 20 and 21 and the side rails 22 and 23. Thus, the metal frame 54 of the upper sash 15 is hinged to the bottom rail of the outer or wooden frame 53 of such sash as by hinges 24' and 25'.

Since the construction of the upper sash 15 is but a duplicate of the lower sash, including the inner and outer frames and the releasable latching means for securing the inner frames in closed positions within the outer frames, further description of the upper sash is believed unjustified.

Means are provided for preventing the entrance of air between the meeting rails of the upper and lower sashes 15 and 13. This means is carried by one of such meeting rails as, for example, the upper rail 16 of the lower sash 13 and (Fig. 4) such means cooperates with the lower rail 17' of the upper sash 15.

Referring particularly to Fig. 4 of the drawings, the described window stripping means is generally designated 55. Such means is fully disclosed in my copending application Serial No. 31,720 filed June 8, 1948 for Storm Sash. Here it is noted that such means includes a plate-like portion 56 secured against the outer surface of the top rail 16 of the lower sash and at the lower edge of said rail having a curved or hook-like portion 57 formed therein by bending of the lower edge portion thereof.

Mounted for pivotal movement in this curved portion 57 is a curved or transversely eye-shaped portion 58 of a second plate-like member 59 extending outwardly and disposed in contacting engagement with the under surface or lower surface of the rail 17'. A spring means 60 has one end 61 welded or otherwise fixed to the rear face of the plate-like portion 56 and such spring means is located as in a pocket 62 cut into the rail 16. The other end of the spring means 60 is designated 63 and passes through a slot 64 in the upper side of the curved portion 57 and is rigidly anchored to the curved or eye-shaped portion 58 of the second member. This spring means thus tends to retain the plate-like portion of the second member in the position of Fig. 4 or against the under surface of the rail 17' and the spring means will bring such plate-like portion back to that position when it is moved therefrom. It will be understood that the plate-like portions 56 and 59 and the curved portion 57 and the transversely eye-shaped portion 58 are all elongated and extend for lengths equal to the distance between the opposite parting strips 12 of the window frame.

With this construction, if it is desired to slide the lower sash 13 upwardly, it is done without any attention to the weather strip or device 55 since as said sash is pushed upwardly the plate-like portion 59 of the second member of said weather stripping will rock downwardly, the curved portion and eye 58 forming a hinged joint.

This rocking movement takes place against the opposition of the spring 60 and as the lower sash is pushed upwardly the plate-like means comes to ride against the vertical rails of the upper sash. Then when the lower sash is closed and the plate-like portion 59 moves below the underside of the rail 17', the spring returns the plate-like portion to the position shown. Similarly, if the upper sash is pulled downwardly the plate-like portion 59 is pushed, rocking with a hinged motion against action of the spring 60 and when the upper sash is sufficiently down the end portions of this plate-like member will ride against the vertical rails of the upper sash. To prevent any undue scratching of the rails of the upper sash by the free or outer edge portion of the plate 59, such edge portion is shown curved as at 64.

From my copending application referred to above, the details of construction of the means 55 will be apparent, but here it is noted that depending on the length of the pieces employed, a number of the springs 60 will be employed.

Having thus set forth the nature of my invention, what I claim is:

1. In a window sash, an outer frame comprising a top, a bottom and two spaced parallel side rails having aligned flat inner surface portions, an inner frame having a closed position within said outer frame and comprising top, bottom and side rails having aligned flat outer surface portions facing the flat inner surface portions of the outer frame when the inner frame is in closed position, longitudinally extending beads on the forward faces of three of the rails of the outer frame, forward extensions on the rails of the inner frame, laterally disposed transversely hollow portions on the forward edges of said extensions and overlying and embracing said beads when the inner frame is in closed position, forwardly facing longitudinally extending channels in forward facing portions of the said three rails of said outer frame and spaced rearwardly and laterally of said beads, rearward extensions on the rails of the inner frame, means intermediate said extensions for mounting a pane of glass in said inner frame, laterally disposed portions on the inner edges of said rearward extensions and entering and having a fit against the inner walls of said channels of the rails of the outer frame when the inner frame is in closed position, means hinging a rail of the inner frame to the fourth rail of the outer frame in such manner that said inner frame may be swung from said outer frame, and manually releasable means for securing said inner frame in closed position in said outer frame.

2. In a window sash, an outer frame comprising a top, a bottom and two spaced parallel side rails having aligned flat inner surface portions, longitudinally extending beads on the forward faces of said top and side rails at the junctures of said faces with said flat inner surface portions, said top and side rails having a thickened portion extending laterally at the inner edges of said flat inner surface portions, said thickened portions having forwardly facing channels formed therein, an inner frame having a closed position within said outer frame and comprising top, bottom and side rails having aligned flat surface portions facing the flat inner surface portions of the outer frame when the inner frame is in closed position, laterally disposed transversely hollow portions on the forward edges of the top and side rails of the inner frame and receiving and em-

bracing said beads when the inner frame is in closed position, laterally disposed portions on the inner edges of said top and side rails of the inner frame and seating in said channels when said inner frame is in closed position, means hinging the bottom rail of said inner frame to the bottom rail of said outer frame for swinging movement of the inner frame to and from closed position, and means releasably securing said inner frame in closed position.

3. In a window sash, an outer frame comprising a top, a bottom and two spaced parallel side rails having aligned flat inner surface portions, longitudinally extending beads on the forward faces of said top and side rails at the junctures of said faces with said flat inner surface portions, said top and side rails having a thickened portion extending laterally at the inner edges of said flat inner surface portions, said thickened portions having forwardly facing channels formed therein, an inner frame having a closed position within said outer frame and comprising top, bottom and side rails having aligned flat surface portions facing the flat inner surface portions of the outer frame when the inner frame is in closed position, laterally disposed transversely hollow portions on the forward edges of the top and side rails of the inner frame and receiving and embracing said beads when the inner frame is in closed position, laterally disposed portions on the inner edges of said top and side rails of the inner frame and seating in said channels when said inner frame is in closed position, the bottom rail of said inner frame transversely in the form of an inverted U and straddling the upper portion of the bottom rail of the outer frame when the inner frame is in closed position, means hinging the free edge portion of the bottom rail of the inner frame to the bottom rail of the outer frame for swinging movement of the inner frame to and from closed position, and means for securing said inner frame in closed position.

4. In a window sash, an outer frame comprising top, bottom and side rails having aligned flat inner surface portions, longitudinally extending beads on the forward faces of said top and side rails at the junctures of said faces with said flat inner surface portions, an inner frame having a closed position within said outer frame and comprising top, bottom and side rails having aligned flat surface portions facing the flat inner surface portions of the outer frame when the inner frame is in closed position, means hinging the bottom rail of the inner frame to the bottom rail of the outer frame for swinging movement of said inner frame from said closed position to an open position, said outer frame having a recess opening through a bead and the inner surface of a side rail thereof, a latch block having a notch opening through its upper end, means securing said block in a vertical position in the lower portion of said recess, a side rail of said inner frame having a vertically extending slot in the flat surface portion thereof in position to have its lower end overlie the notch in said block when said inner frame is in closed position, a latch bolt passing through and vertically movable in said slot, a finger piece on said bolt at the inner side of said side rail of the inner frame for manual manipulation of said bolt, said latch bolt adapted when the inner frame is in closed position to be located in said notch to secure the inner frame in closed position and to be raised upwardly along said slot and out of said notch and move out through the edge of said recess with the side rail of said inner sash as the latter is swung open, laterally disposed transversely hollow portions on the forward edges of the top and side rails of the inner frame and receiving and embracing said beads when the inner frame is in closed position, and said flat surface portions of the side rails and said laterally disposed hollow portions of said inner frame serving to close the side and edges of said recesses when said inner frame is secured in closed position.

5. In a window sash, an outer frame comprising top, bottom and side rails having aligned flat inner surface portions, longitudinally extending beads on the forward faces of said top and side rails at the junctures of said faces with said flat inner surface portions, said top and side rails having a thickened portion extending laterally at the inner edges of said flat inner surface portions, said thickened portions having forwardly facing channels formed therein, an inner frame having a closed position within said outer frame and comprising top, bottom and side rails having aligned flat surface portions facing the flat inner surface portions of the outer frame when the inner frame is in closed position, laterally disposed transversely hollow portions on the forward edges of the top and side rails of the inner frame and receiving and embracing said beads when the inner frame is in closed position, laterally disposed portions on the inner edges of said top and side rails of the inner frame and seating in said channels when said inner frame is in closed position, aligned flanges on the top and side rails of said inner frame in spaced opposed relation to the laterally disposed portions on the inner edges of said rails, a glass in said inner frame and having its forward sides of its edge portions against said flange, a sealing compound filling the space between the edge portions of said glass and said laterally disposed portions on the inner edges of said rails of the inner frame, means hinging the botom rail of said inner frame to the bottom rail of said outer frame for swinging movement of the inner frame to and from closed position, and means releasably securing said inner frame in closed position.

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