

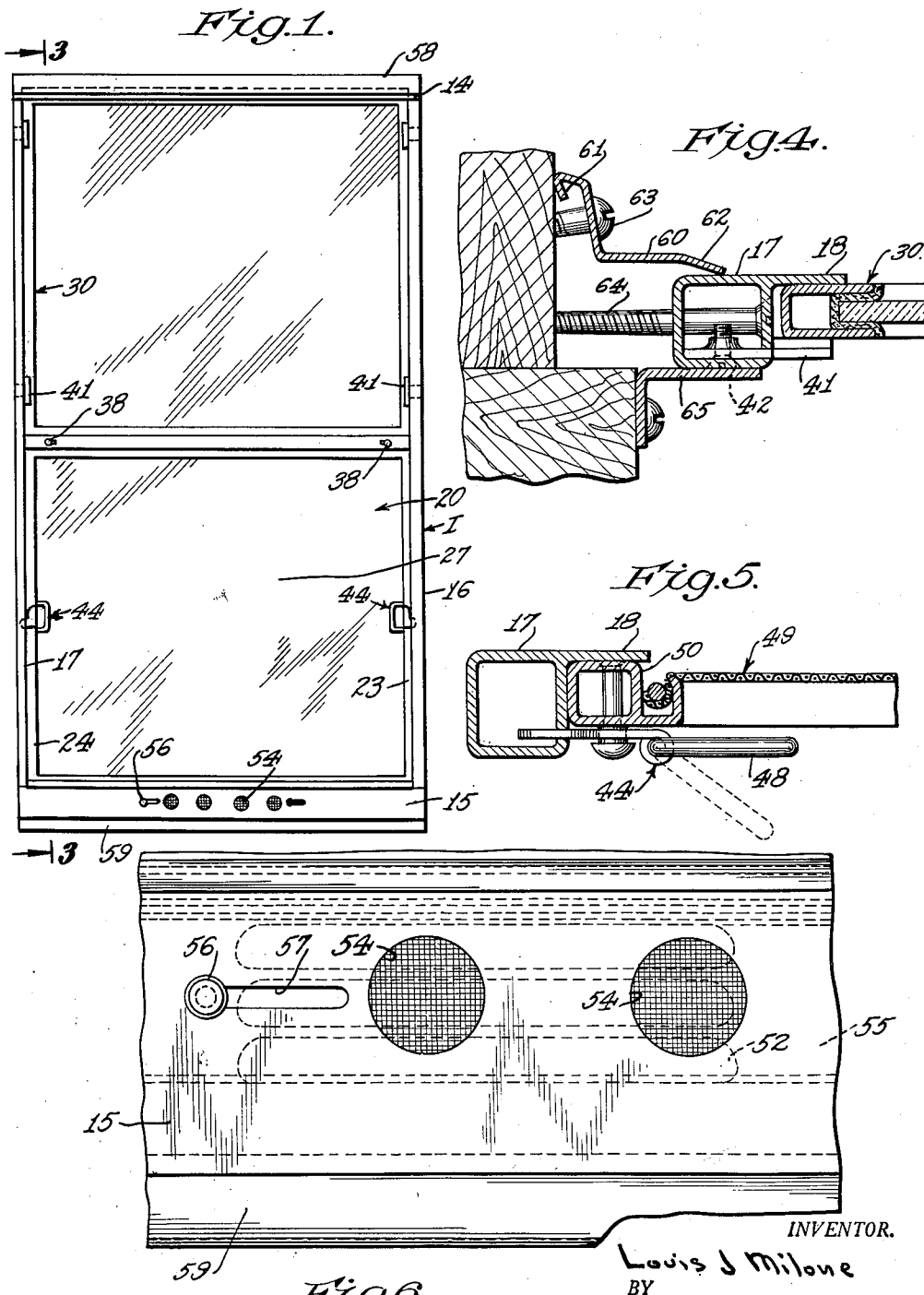
Sept. 30, 1952

L. J. MILONE
ALL-WEATHER WINDOW

2,611,934

Filed Jan. 4, 1946

5 Sheets-Sheet 1



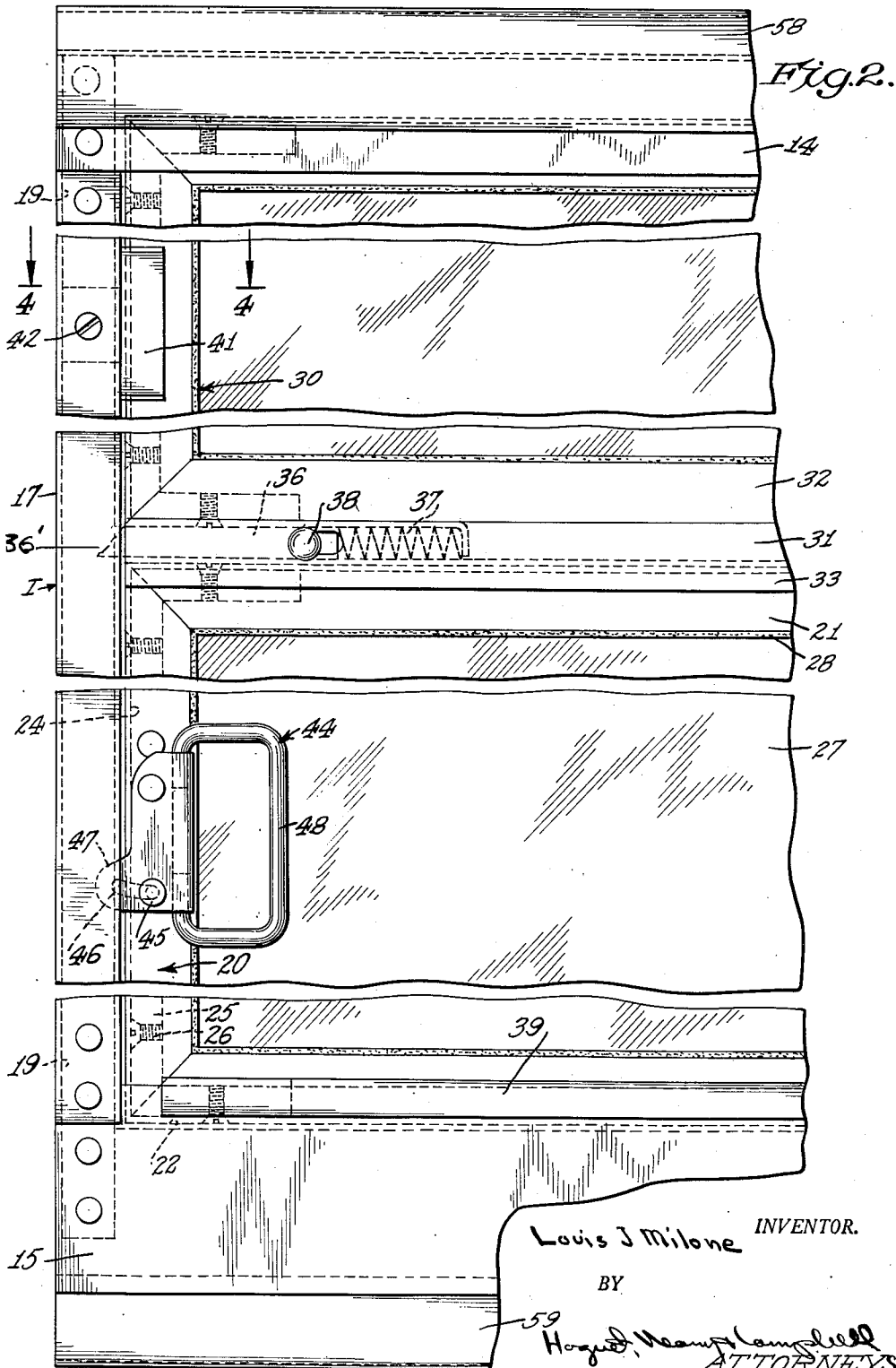
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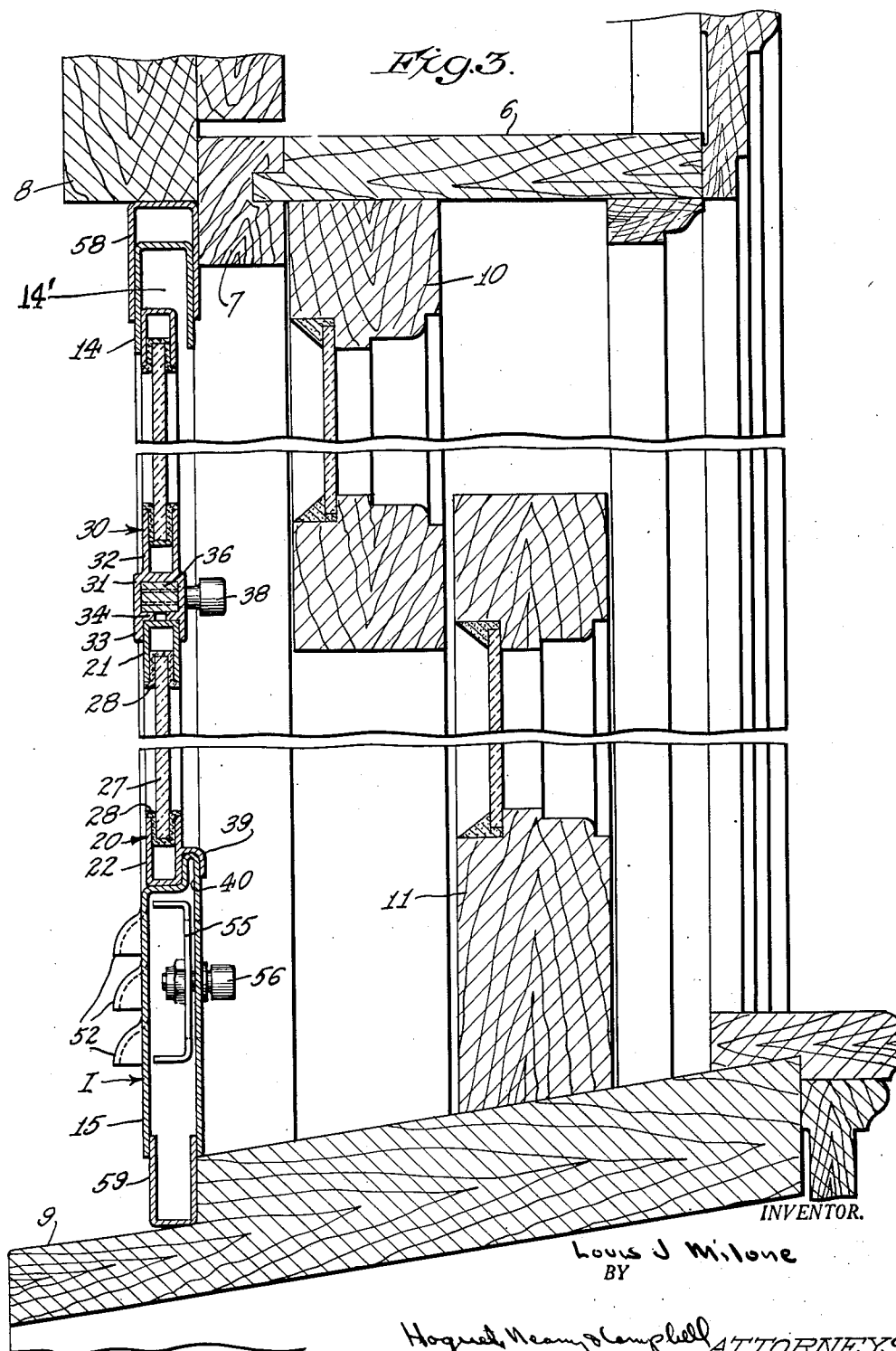
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ALL-WEATHER WINDOW

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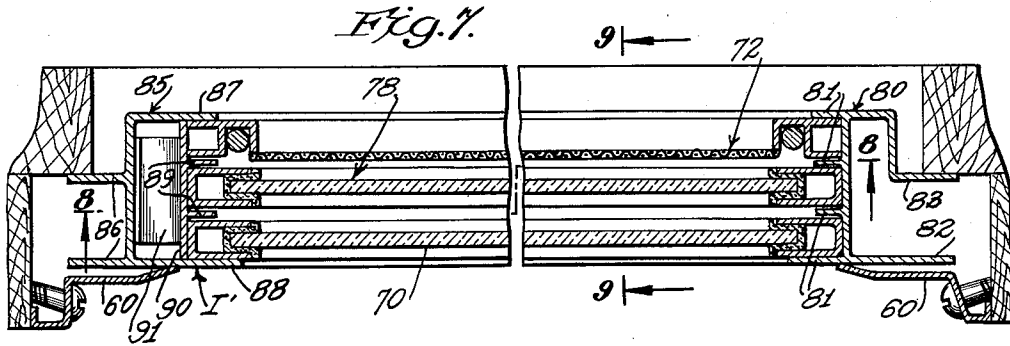
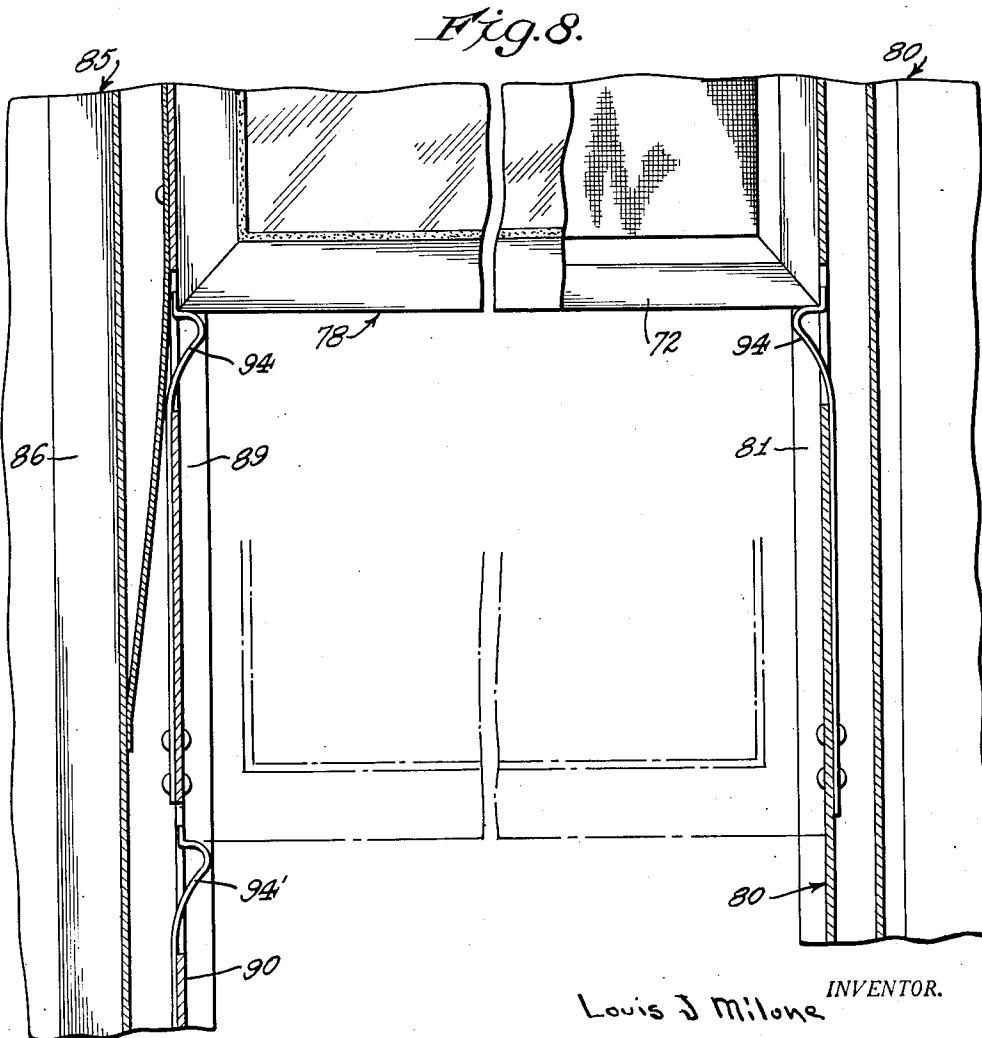
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5 Sheets-Sheet 4



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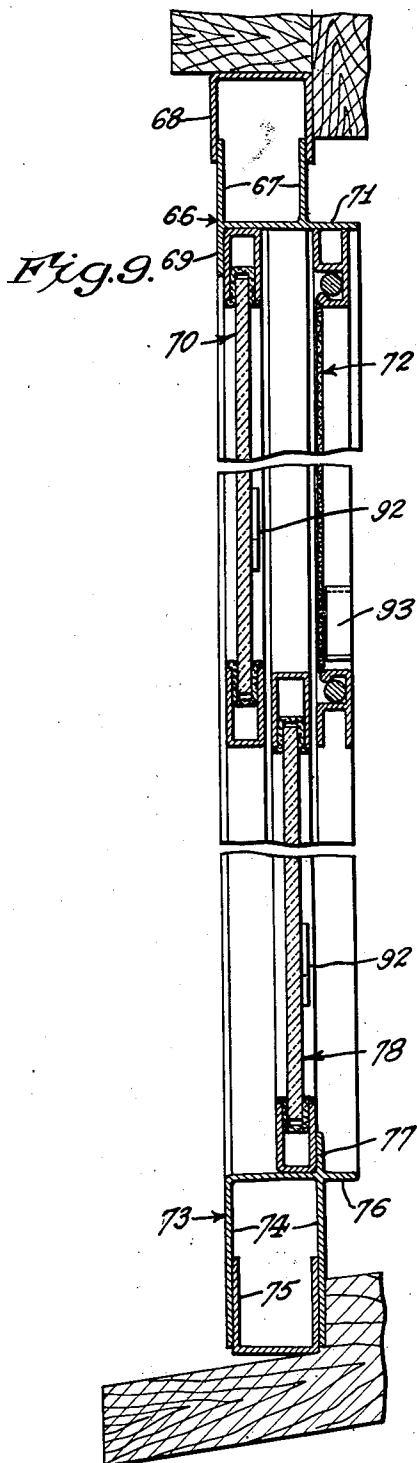
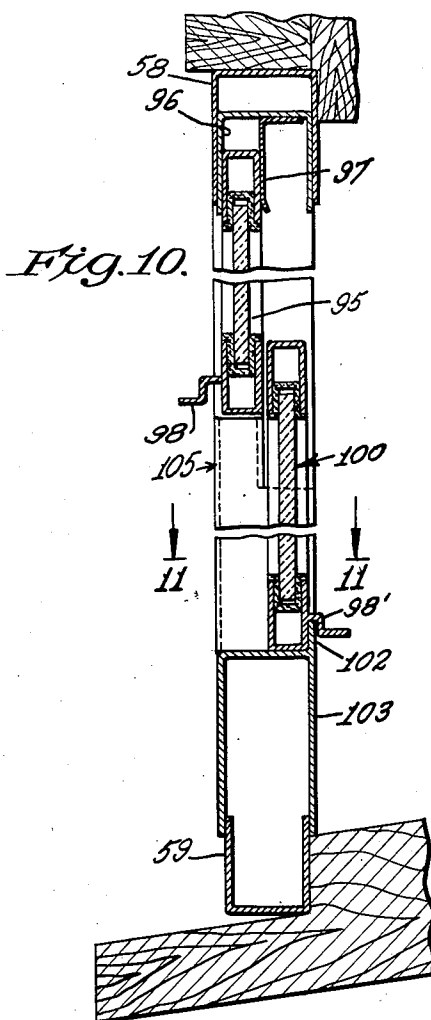
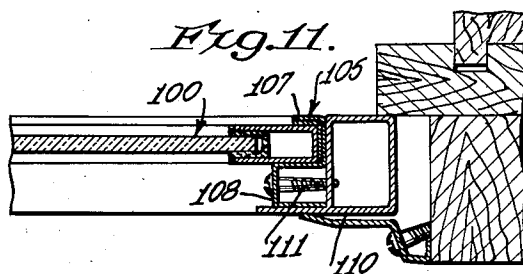
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5 Sheets-Sheet 5



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ALL-WEATHER WINDOW

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3 Claims. (Cl. 20—55)

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This invention relates to improvement in window constructions.

One of the objects of this invention is an improved storm window construction of the type in which the winter glass insert panels lie in the same vertical plane and in which provision is made for permitting their ready removal, more particularly for facilitating substitution of summer screen insert panels or storm and protective unbreakable metal or wood panels for the glass insert panels and vice versa, and which includes improved means for winter ventilation and improved means for fitting the storm window frame in the window openings of different width and height and in window openings which are not of true rectangular shape.

Another object of this invention is an improved sash frame for sliding glass sashes and a sliding screen sash in which the screen sash may be readily slid into a stored winter position and in which either of the glass sashes or the screen sash may be readily removed, and which includes improved means for holding the upper glass sash in its uppermost position, the screen sash in its stored position, and the lower glass sash in full open position for summer storage and in partly open position for winter ventilation purposes.

Another object of this invention is an improved window construction of the double hung type arrangement in which the lower glass sash may be readily removed and replaced by a screen sash and vice versa.

Other objects of the invention will appear from the following description taken in connection with the drawings, in which;

Figure 1 is an interior elevational view of a storm window with interchangeable lower glass and screen insertion panels constructed in accordance with this invention;

Figure 2 is a broken interior elevational view of the left-hand end section of Figure 1 showing details of construction;

Figure 3 is an enlarged broken vertical section on the line 3—3 of Figure 1 showing the storm window in position in a window opening;

Figure 4 is a horizontal section on the line 4—4 of Figure 2;

Figure 5 is a horizontal section through the storm window frame and screen insert panel;

Figure 6 is a partial indoor view of the ventilating section of the storm window frame an enlarged scale;

Figure 7 is a broken horizontal section of a triple sliding sash construction;

Figure 8 is a broken partial vertical section on the line 8—8 of Figure 7;

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Figure 9 is a broken vertical section on the line 9—9 of Figure 7;

Figure 10 is a broken vertical section showing another embodiment of this invention; and

Figure 11 is a horizontal section on the line 11—11 of Figure 10.

Referring to Figures 1 to 6, the frame of the window opening, Figure 3, may be of any usual construction as disclosed. It comprises a head member consisting of parts 6, 7 and 8, a sill member 9, and side guide frame members, not shown, for double hung sashes 10 and 11.

The glass and screen insert panel frame disclosed generally at 1 in Figures 1, 2 and 3 comprises an upper downwardly opening channel head member 14, a downwardly opening bottom channel frame member 15, and side frame members 16 and 17 which may be hollow and rectangular in cross section as indicated in Figures 4 and 5 and each of which is provided with an outdoor weather flange 18 against which the glass and screen insert panels abut.

As disclosed in Figure 2, the upper cross frame or head member 14 may be connected to the side frame members 16 and 17 against which the upper frame member abuts by means of strips 19, which may be secured to the frame members by any suitable means, such as by rivets or the like.

The side frame members 16 and 17 abut the bottom cross frame member 15 as shown in Figure 2 and may be connected thereto by strips 19. This provides a sash and screen insert panel frame of rigid construction.

The frame of the lower glass insert panel generally indicated at 20, may be constructed of upper and lower channel members 21 and 22, Figure 3, and side channel members 23 and 24 connected at their corners to reinforcing angle bars 25 by screws 26.

The pane 27 carried by this panel may be provided with a channeled rubber glazing strip 28, Figure 3, over which the parts of the frame of the panel are telescoped prior to being connected together.

The frame of the upper glass insert panel generally indicated at 30, comprises upper and lower channel members and channel stiles, Figure 2, connected together by means of screws fastened to angle irons in the same manner as the frame of the lower glass insert panel.

The lower frame member 31 of the upper insert panel, as more particularly shown in Figure 3, comprises an upwardly facing channel section 32 corresponding to the lower frame member of the lower glass insert panel, and downwardly extending flanges 33 which are provided with in-

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wardly extending flanges 34 defining longitudinally extending slideways for latches 36 engaging recesses in the side members 16 and 17 to hold the upper glass insert panel in the position indicated in Figure 3. These latches are moved into the recesses by any suitable spring means, such as indicated at 37, Figure 2, and are provided with operating knobs 38 extending through slots in the indoor flange 33.

The flanges 33 and 34 define a downwardly opening channel in which is seated the upper frame member 21 of the lower glass insert panel.

As shown in Figure 3, the lower frame member 22 of the lower glass insert panel may be provided with an indoor sealing flange 39 which engages over an upwardly extending portion 40 on the inside edge of the lower frame member 15 of the glass and insert panel frame I.

As shown in Figures 2 and 4, the upper glass insert panel may be held against the outdoor flanges 18 of the side frame members of the glass and insert panel frame I by means of resilient plates 41 which may be secured to the side frame members 16 and 17 by means of a screw 42.

The lower glass insert panel may be locked at each side in position in the frame I by means of a combination handle and latch comprising a pivoted latch 44, Figure 2, which is pivoted on the stile of the lower glass insert panel and guided thereon and limited in its pivotal movement by means of a pin 45 mounted in the stile and passing through an arcuate slot 46 in the latch. The latch is provided with a locking portion 47 which in the position in Figure 2 engages in a slot in the side frame member 17 of the frame I. Pivoted on the latch is a handle 48, which may be swung toward the glass insert panel in an out of the way position and away from the glass insert panel into a position where it may be grasped by the hand to raise the lower glass insert panel.

In mounting the glass insert panels in the frame I the upper glass insert panel 30 is raised upwardly, from about the position of the lower sash panel 20 as shown in Figure 1, and moves between the flanges 18 and the retaining plates 41 to a position where the latches 36 on either side of the panel enter recesses in the side members 16 and 17. These latches 36 retain the upper panel in closed position. It will be noted that the latches 36 have beveled ends as shown at 36' of Figure 2, which beveled ends extend beyond the recesses. As a result the latches prevent the panel from moving downwardly unless they are manually retracted but because of the beveled ends 36' the upper panel may be raised into the opening of the channel member 14 as indicated at 14' without manually disengaging the latches 36 with the knobs 38. The upper edge of the lower glass insert panel 20 is then moved into the bottom channel in the upper panel 30 and both panels are moved upwardly a sufficient distance to permit the lower edge of the lower panel 20 to pass over the edge 40 of the lower frame 15, after which both glass insert panels are lowered into the position shown in Figures 2 and 3 with the sealing edge 39 of the panel engaging the edge 40. The upper glass insert panel may be made secure by means of the latches 36 and the lower glass insert panel 20 is secured in position by means of the latches 44 as described. Both of the panels 20 and 30 may be readily removed from the inside by reversing the above-described operations.

It is intended that during certain seasons of the year a screen insert panel be substituted for the lower glass insert panel. A part of such a screen

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insert panel is disclosed in Figure 5 showing the screen 49 and the cross-sectional shape of a stile at 50. Supported on the stiles of the screen frame may be latches 44 which may be of the type described above in connection with Figure 2.

When it is desired to substitute the screen insert panel for the lower glass insert panel, the latches 44 are withdrawn, and both upper and lower glass insert panels 20 and 30 are raised (causing the latches 36 to disengage) after which the lower glass insert panel 20 may be removed and the panel 30 then drops back and the latches 36 engage and hold it in position. The screen insert panel is then inserted in place of the panel 20.

If desired, insert panels carrying metal or wooden sheets may be substituted for the glass panels as protection against hurricane damage or to prevent breakage and entry through the windows of an unoccupied house or building. These protective panels are inserted as described above in connection with the glass panels.

For the purpose of providing for ventilation the lower frame member 15 of the glass and screen insert panel frame I is provided with louvres 52 in its exterior wall, Figure 3, and its inside wall may be provided with screened openings 54, Figure 6, which may be covered by a sliding plate 55 operated from the interior of the building by means of a knob 56, the shank of which operates in a slot 57 in the inside wall of the lower frame member 15.

For the purpose of fitting the glass and screen insert frame I in the frame F of the window opening, the upper frame or head member 14 of the frame I is provided with a telescoping channel member 58, Figures 1, 2 and 3, which may telescope over the member 14 and engage it with sufficient friction to be supported thereby and to be held in adjusted position after it has been adjusted upwardly and angularly against the head member 8 to conform to the frame of the window opening.

The bottom frame member 15 of the glass and screen insert panel frame I is provided with a channel member 59, Figures 1, 2 and 3, telescoping interiorly thereof and frictionally engaging the same. This member may be adjusted vertically or angularly to fit the sill of the window opening. Both of the members 58 and 59 may be adjusted so as to fit the glass and screen insert panel frame to the size and shape of the window opening.

After the glass and screen insert panel frame I has been properly positioned, it may be held in the frame of the window opening by means of metallic strips 60 which extend substantially the full length of the frame I, provide a finished appearance and act as weather strips, as shown in Figure 4. Each of the strips 60 may be provided at one edge with an intumed foot portion 61 to engage the side frame members of the wooden frame of the window opening and at its other edge with an inclined portion 62 adapted to engage the side frame members 16 and 17 of the frame I. Each strip 60 may be held in position by wood screws 63 preferably extending in the direction disclosed so as to draw the strip 60 against the frames. The strips 60 also engage the ends of the channel 58 and retain it in its extended position.

As shown in Figure 4, long wood screws 64 may pass through and connect the side frame members 16 and 17 to the wooden frame of the window opening. These wood screws may be used to

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hold the frame I in the frame of the window opening and as a means for centering and orientating the frame I in the window opening.

In cases where the frame I is much smaller than the window opening interior angle irons such as disclosed at 65, Figure 4, may be provided, and these may be secured to the wooden frame of the window opening by screws as shown.

In the construction disclosed in Figures 7, 8 and 9, provision is made for slidably supporting two glass sashes and a screen sash. In this construction, the metallic window frame indicated generally at I', comprises a head or upper frame member 66, Figure 9, which is provided with upwardly extending flanges 67, which are adapted to be frictionally engaged by a channel member 68. The frame member 66 is also provided with an outdoor sealing flange 69 with which the upper glass sash 70 engages and with a horizontally extending flange 71 with which the sash screen 72 engages when it is moved into its upper stored position.

The sill or lower frame member 73 of the frame I' is provided with downwardly extending flanges 74 which frictionally engage over a channel member 75. The lower frame member 73 is also provided with a laterally extending flange 76 on which the sash screen 72 rests when it is in its lowermost position, and with an upwardly extending flange 77 forming an indoor seal with the lower glass sash 78.

The frame I' also includes a side frame member 80, Figure 7, which is provided with glass sash and screen sash guiding flanges 81 with the outdoor flange of greater height than the remaining flanges for sealing purposes. This frame member is also provided with inwardly extending flanges 82 and 83, the latter being of stepped form with its inner edge offset horizontally to bring it closer to the flange 82, so that the frame may be secured in position in the frame of the window opening by an angle iron 60 as disclosed in this figure.

The other side frame member 85 is provided with parallel straight flanges 86 corresponding to the flanges 82 and 83 and with flanges 87 and 88, which together with the flanges 89 on a floating glass sash and screen sash guiding member 90 constitute guides for the sashes. This member 90 is pressed against the sides of the sashes and screen by means of a spring 91. The construction is such that the sashes may be removed from the frame by pressing them toward the left, Figure 7, until their right-hand sides clear the flanges 81 as is obvious.

As disclosed in Figure 9, the glass sashes may be provided with lifts 92, and the screen sash may be provided with a lift 93, all of which may be of any suitable construction.

As disclosed in Figure 8, the sashes may be held in raised position by spring stops 94 and 94'. One spring stop, as shown at the right side of Figure 8, may be employed to hold the screen sash 72 in place in stored position, a similar spring stop may be employed to hold the lower glass sash 78 in full open position and a spring stop 94' to hold it in partly raised position, and spring stops such as 94 may be employed to hold the upper glass sash 70 in position in the sash frame. As shown in Figure 8, some of the spring stops may be mounted on the side frame member 80 and others on the floating member 90 of the side frame member 85 as found desirable.

In the modification disclosed in Figures 10 and 11 provision is made for supporting the upper glass sash and for permitting sliding move-

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ment of the lower glass sash and its removal from the metallic window frame and for permitting the insertion of a screen sash in place of the lower glass sash.

The upper glass sash disclosed at 95, Figure 10, is held against the outdoor flange of the head or upper frame member 96 of the metallic window frame by means of a spring angle flange 97. The lower frame member of the upper glass sash 95 may be provided with an outdoor weather flange 98 also constituting a lift by means of which the upper glass sash may be raised from the exterior. The lower glass sash 100 is of the same construction as that of the upper glass sash, and in this case the flange 98' may serve not only as a lift but also as a weather sealing means in connection with a flange 102 extending upwardly from the sill or lower frame member 103.

Secured to the side members of the window frame in the window opening, in position to guide the lower glass sash, are members 105, Figures 10 and 11, which are of the cross sectional shape shown in Figure 11, and each of which includes an indoor sealing flange 107 constituting, together with a U-shaped portion 108, a guide for the lower glass sash. The portion 108 may be secured to the side frame member 110 by any suitable means such as a screw 111.

The flange 107 terminates at its upper end a short distance below the middle of the metallic window frame in order that the lower glass sash, when raised into its uppermost position, may clear the upper end of the flange to permit its removal and to permit the insertion of a screen sash in its place. The U-shaped securing portion 108 of the member 105 extends to the middle of the metallic window frame and constitutes the support for the upper glass sash 95 as clearly indicated in Figure 10. Provision is made for fitting the metallic window frame to window openings of different heights the same as in Figures 1 to 9.

While this invention has been described with references to preferred embodiments illustrated in the drawings, it is to be understood that this is not to be considered limiting and that all rights are reserved as to all changes and modifications that fall within the principles of this invention and the scope of the appended claims.

I claim:

1. In a window construction, a window frame to be inserted in a window opening in a structure, said window frame comprising a head member, a sill member and opposite side members defining a single, substantially rectangular aperture in which a plurality of sashes are received, said head member being of channel form opening downwardly, said sashes including an upper insert panel and a lower insert panel, said upper panel telescoping in said channel head, cooperating latch means on said upper panel and on at least one of said opposite side members for holding said upper insert panel securely against downward movement and in a telescoping position in said channel head, said latch means including a movable latch member having a downwardly and outwardly inclined portion which engages a cooperating edge on another cooperating member permitting upward movement of said upper panel without manual release of said latching means, said latch member also having a horizontally disposed edge portion restraining said upper panel against downward movement and requiring manual actuation to release said upper panel for downward movement, out of

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said channel head, and spring means carried by said window frame bearing against and urging at least one of said panels against said window frame in weather-tight relation thereto.

2. The window construction set forth in claim 1, comprising a frame on each of said panels, a downwardly opening channel at the bottom of the frame of the upper insert panel, the upper edge of the frame of the lower insert panel fitting in said channel.

3. The window construction set forth in claim 1, comprising frames for each of said insert panels, a downwardly opening channel at the bottom of the frame of the upper panel, a slideway in the bottom of the frame of the upper panel above said channel, said latching member being slidably mounted in said slideway for movement toward and away from said one of said opposite side members of said window frame, said channel being complementary to the top of the frame of the lower panel and receiving it telescopically.

LOUIS J. MILONE.

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