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C. M. KINGHORN

2,576,348

SASH FRAME

Filed Jan. 29, 1947

4 Sheets-Sheet 1

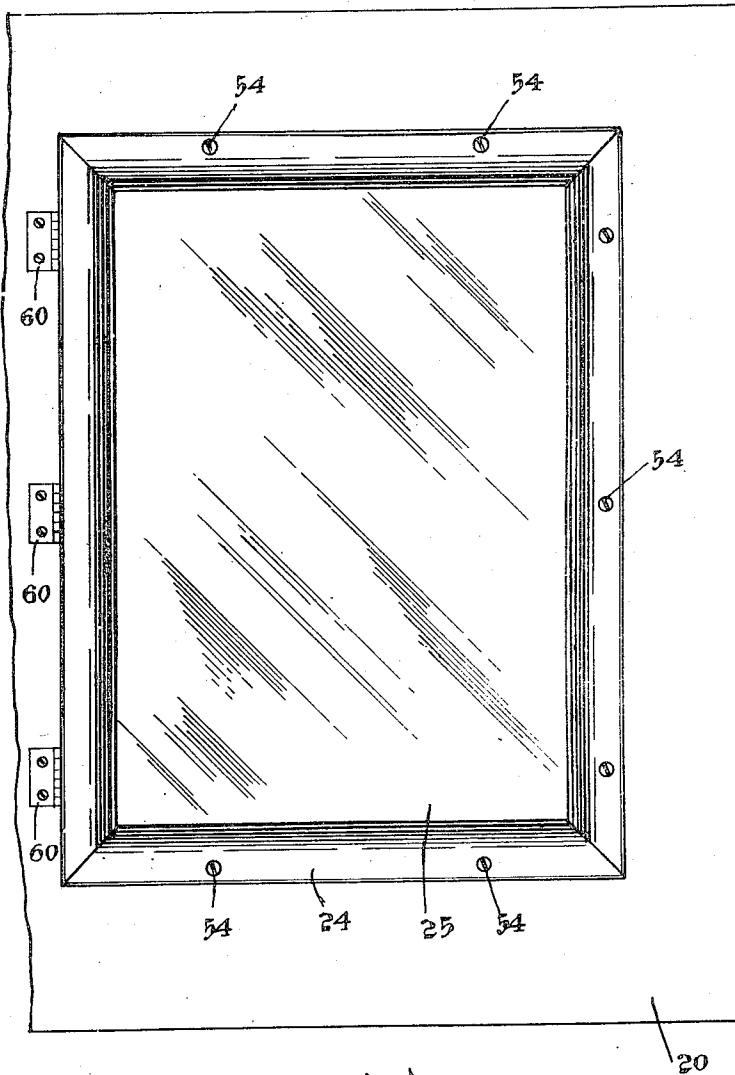


FIG. 1

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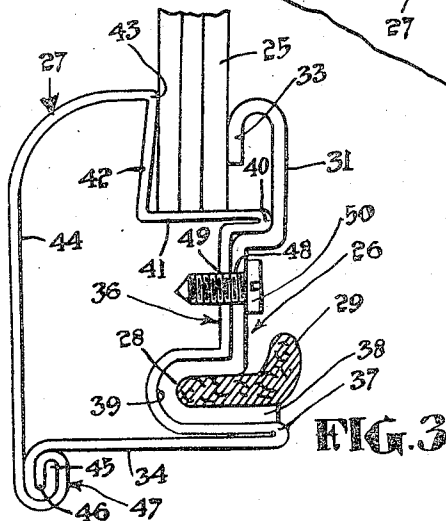
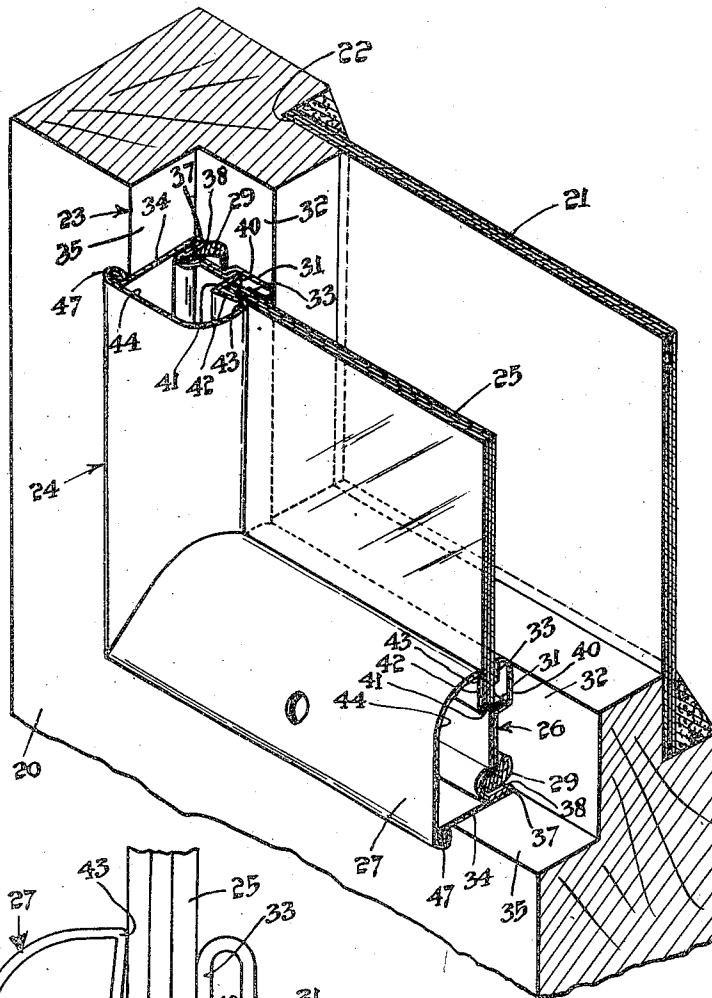
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4 Sheets-Sheet 2



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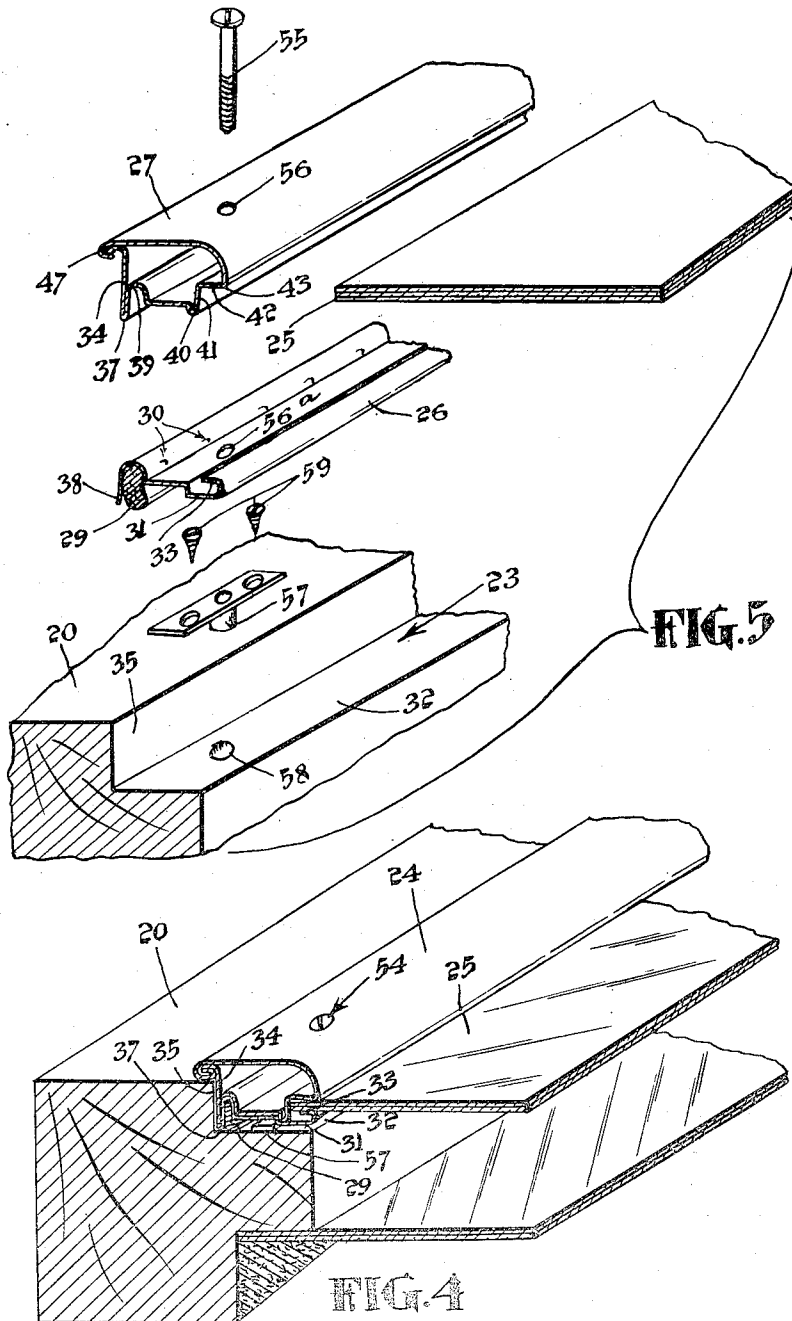
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SASH FRAME

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4 Sheets-Sheet 3



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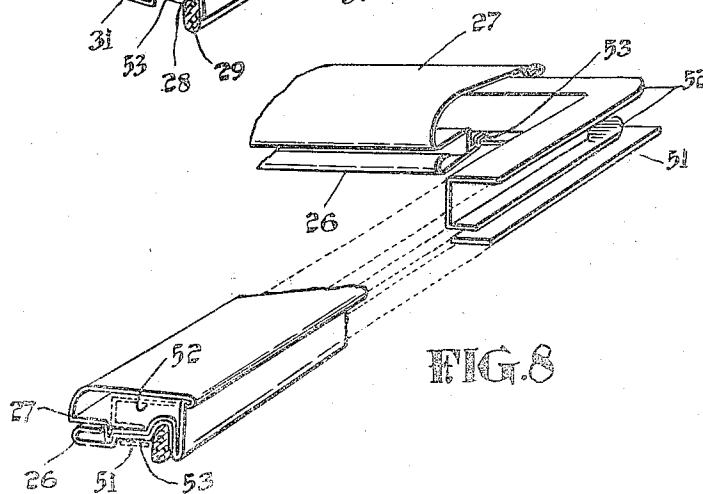
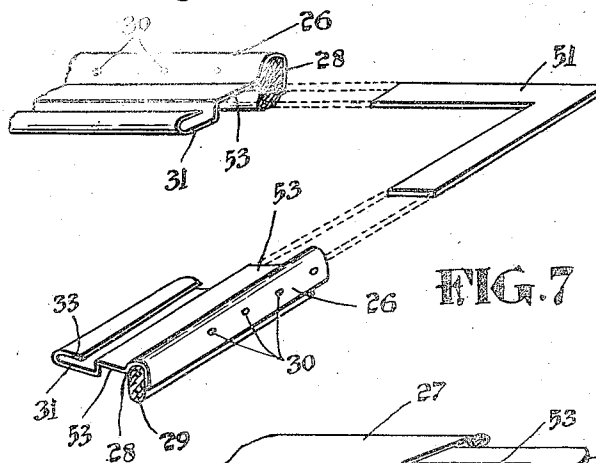
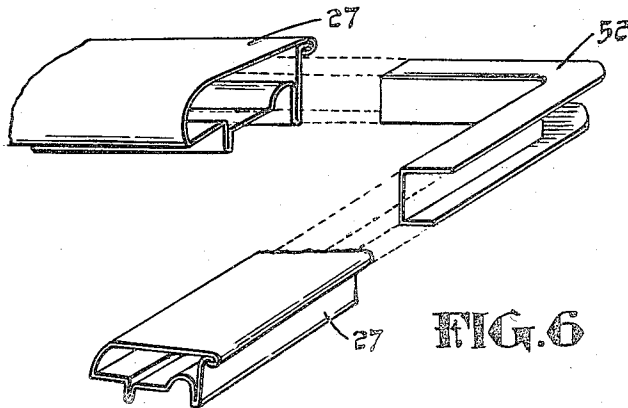
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SASH FRAME

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4 Sheets-Sheet 4



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SASH FRAME

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9 Claims. (Cl. 20—55)

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This invention relates to improvements in double glazed sash frames in which the outer glazing is permanently secured in the outer portion of a main sash frame and the inner glazing is carried by a supplementary frame which is removably fitted in a recess at the inner side of said main frame.

A particular object of this invention is to provide a supplementary sash frame construction comprising an inner and outer rail bar assembly adapted to be detachably fitted together in secured relation to form a glazing channel between the marginal portions of said rail bars along the inner sides thereof.

A particular feature of the construction of this supplementary sash frame is that it readily permits separation of the inner and outer rail bar assembly to allow replacement of the glazing. Accordingly, the complete framework of the inner rail bar, which has been soldered or otherwise secured together at the corner portions, may be separated as a unit from the framework of the outer rail bar to permit the insertion of a new pane of glass. The inner framework may then be re-assembled with the outer framework to secure the glazing in place. This assembly has considerable advantages over the conventional single bar type of supplementary sash frames in which the inner glazing must be permanently secured, as any attempt to insert a new glass would result in the distortion of the glazing channel rail of the frame.

Another advantage of the present invention is that the interfitted relation of the inner and outer rail bar frames provides a greater strength to the assembly which tends to resist the stresses and shocks to which the supplementary sash frame is normally subjected to such as when the frame is swung open on its hinges from the main sash frame for cleaning purposes or when the main frame is closed with a sudden jolt.

A further object of this invention is to provide a hollow construction outer rail bar assembly, formed from a single strip of sheet metal, with a rolled joint at the seam edges. This rolled joint provides a marginal projection along the outer edge of the frame and not only greatly increases the strength of the outer rail bar but eliminates the tendency towards spreading along the seam edge.

Other objects, advantages and characteristic features of the invention will be more readily understood from the following detailed description taken in connection with the accompanying drawings, in which:

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Fig. 1 is an elevational view showing the supplementary sash frame as it appears when hingedly secured to the main sash frame.

Fig. 2 is a sectional view in perspective of a corner portion of the main sash frame showing the assembled supplementary sash frame seated in the recess provided therefor.

Fig. 3 is an enlarged end view of the inner and outer rail bars in their assembled relation.

Fig. 4 is a perspective view of a section of the main sash frame showing the manner in which the supplementary sash frame is secured to the main sash frame.

Fig. 5 is an exploded view of the assembly shown in Fig. 4.

Fig. 6 is an exploded view showing an outer rail bar corner reinforcing member in its relation to the corner of a pair of adjoining outer rail bars.

Fig. 7 is an exploded view showing an inner rail bar corner reinforcement member in its relation to the corners of a pair of adjoining inner rail bars.

Fig. 8 is an exploded view showing the adjoining corner fragments of the assembled inner and outer rail bars with their corner reinforcement members as shown in Figs. 6 and 7.

Referring more particularly to the drawings, 20 designates the main sash frame in which the outer glazing panel 21 is permanently secured in any suitable manner in a recess 22 provided therefor. The inner side of frame 20 is provided with a recess 23 adapted to receive a supplementary sash frame 24 in which the inner glazing panel 25 is secured.

As shown in the accompanying drawings, the supplementary sash frame 24 comprises inner and outer rail bars 26 and 27.

The inner rail bar 26 is shaped at its outer marginal portion to provide a recess 28 adapted to receive a suitable packing or window sealing strip indicated at 29, said packing being held in place by suitable anchoring prongs 30 preferably formed by stamping the outer surface of recess 28. The inner end of the rail bar is substantially C-shaped as indicated at 31 to provide an abutment panel engageable with the abutment wall 32 of frame recess 23. The marginal portion of panel 31 is inturned to provide a flange 33, the outer surface of which is adapted to engage the inner marginal surface of glazing panel 25 in supporting relation.

The outer rail bar 27 is of hollow metal construction formed from a single strip of sheet

metal. The outer end wall 34 is substantially flat to engage the end supporting wall 35 of frame recess 23. The inner side wall 36 is shaped to receive inner rail bar 26 in nested relation so as to hold said inner rail bar in abutting engagement with the abutment wall 32 of frame recess 23 when the assembled supplementary sash frame 24 is fitted therein. Accordingly, the sheet metal is folded back upon itself along the inner surface of outer end wall 34 to provide a tongue extension 37 adapted to flank the outer marginal wall 38 of rail bar 26 so that the free end edge of tongue extension 37 is engageable with said abutment wall 32. A recess 39 is formed adjacent the tongue extension 37 into which the recessed portion 28 of rail bar 26 is nested and a second tongue 40 is formed opposite the open side of C-shaped panel 31, said tongue 40 extending into the inner recess thereof. The inner end wall 41 of rail bar 27 is formed as a continuation of that portion of the sheet which has been folded back upon itself to provide the tongue 40 and constitutes an abutment wall engageable with the end edge of glazing panel 25. A supporting side wall 42 juts out from said abutment wall 41 at an angle of less than 90° so that the marginal surface 43 remote from said abutment wall 41 will be in pressure contact with the outer marginal surface of glazing panel 25 in supporting relation thereto. The outer side wall 44 is formed by shaping the sheet metal to curve convexly from the marginal surface indicated at 43 from which it extends to meet the free seam edge of outer end wall 34. The free seam edges 45 and 46 of outer end wall 34 and side wall 44, respectively, are rolled together in interlocking relation to form a joint 47 which overlies the inner surface of frame 20 when the assembled supplementary frame 24 is fitted therein.

The inner rail bar 26 is provided with spaced openings 48 registering with similar openings 49 in the inner side wall 36 of outer rail bar 27. Fastening elements 50, preferably metal fastening screws, are inserted through said openings 48 and 49 for securing said rail bars together in nested relation.

The inner and outer rail bars 26 and 27 are separately cut into the desired lengths, according to the dimensions of the frame required, and their end edges mitred and soldered or otherwise suitably secured together to form separate inner and outer rail frames. As shown in Figs. 6, 7 and 8, the rail bar frames 26 and 27 may be provided with metal reinforcing elements 51 and 52, respectively, said reinforcing elements being inserted and brazed or otherwise secured in place prior to the above mentioned soldering operation. According to the preferred embodiment of this invention, reinforcing element 51 comprises a flat L-shaped metal bar which is brazed to the outer surface of the rail bars 26 in the intermediate section indicated at 53 between recess 28 and C-shaped abutment panel 31. Reinforcing element 52 comprises an L-shaped channel bar which is inserted between the walls of the tubular rail bars 27 and brazed thereto.

In assembling the supplementary sash frame 24 the glazing panel 25 is fitted to outer rail bar frame 27 so that the marginal end edges are in abutting engagement with inner end wall 41. The inner rail bar frame 26 is then nested into the inner side walls of frame 27 and secured thereto by fastening elements 50. Glazing panel 25 is thus securely held in place between the inner supporting flange 33 of frame 26, which

overlies end wall 41, and the marginal surface 43 of supporting side wall 42 in frame 27.

A particular feature to be noted in this arrangement of the glazing between the supporting flange 33 and the marginal surface 43 of the supporting wall 42 is that both the flange and the marginal surface sections are so constructed as to exert a resilient pressure contact against the inner and outer surfaces of the glazing panel instead of the more rigid types of support afforded by the conventional frames. Such a resilient pressure is intended to reduce the tendency toward breakage of the glazing in the more rigid types of support. The pressure of the supporting members against the inner and outer marginal surfaces of the glazing panel is constantly maintained and is sufficient to prevent a loose fitting or rattling of the panel in the frame. Thus it will be seen that the usual cementing of the panel in the glazing channel may readily be dispensed with.

As shown in Figs. 4 and 5, the assembled supplementary sash frame 24 is fitted to the main sash frame 20 so that the sealing strip 29 and the abutment panel 31 of inner rail frame 26 are in pressure contact with abutment wall 32 of recess 23 and the outer end wall 34 of outer rail frame 27 is disposed adjacent the end supporting wall 35 of said recess. The frame 24 is then secured to frame 20 by suitably spaced securing means generally indicated at 54 which force fit the frame 24 against abutment wall 32 to provide a proper seating of the sealing strip 29. The tongue extension 37 of end wall 34 engaging abutment wall 32 prevents undue distortion or flattening out of the sealing strip. In addition, the C-shaped abutment panel 31 of inner rail frame 26 is pressed against abutment wall 32 and in turn exerts a further pressure on flange 33 against the inner marginal surface of glazing panel 25.

The securing means 54 may be of any suitable form which will force fit the supplementary sash frame 24 to the abutment wall 32 of recess 23. In the present instance (Fig. 5) I have shown bolts 55 extending through registering openings 56 and 56a in the inner and outer rail frames 26 and 27 and threaded into retaining elements 57 which are inserted in recesses 58 in abutment wall 32 and secured to said abutment wall by retaining screws 59.

The said securing means may extend around the four sides of the framework or, as shown in Fig. 1, the supplementary sash frame 24 may be hinged to the main sash frame 20 by any suitable hinge connections generally indicated at 60, and the securing means spaced around the remaining three sides.

From the foregoing it will readily be seen that a broken glazing panel may easily be replaced without distortion or damage to the supplementary sash frame rails. The inner rail frame 26 is separated from outer rail frame 27 by the removal of screws 50 and a new glazing panel is inserted. The inner and outer rail frames are then reassembled in nested relation and the resulting sash frame fitted to the main sash frame. Where the supplementary sash frame is hinged to the main frame it is only necessary to swing it open on its hinges in order to separate the inner and outer rail frames.

The rolled joint 47 of the outer rail frame 27 is so interlocked that any shock or strain, due to jarring or improper hanging of the supplementary frame, such as stress while swinging on its hinges, will not distort or spread the joint.

It will be seen that any force or strain applied will cause the seam edges 45 and 46 to grip one against the other in resistance of any such force or strain.

Having thus described the preferred embodiment of this invention it will be understood that various modifications may be resorted to within the scope and spirit of the invention as defined by the appended claims.

I claim:

1. In a sash assembly comprising a main sash frame recessed about the inner marginal portion and a supplementary sash frame fitted in said recess, said supplementary sash frame comprising a hollow outer frame member recessed about its inner marginal portion to receive a glazing panel and an inner frame member provided with a flange projection at its inner marginal portion, said inner and outer frame members being detachably fitted together to provide a glazing channel between the recessed portion of said outer member and the flange of said inner member with said inner frame member having its flange projection butted against one wall of the main sash recess so that when the assembled supplementary sash frame is secured in the recess of the main sash frame pressure is applied to the inner frame member to cause said flange to bear against the glazing panel.

2. In a sash frame assembly of the kind described a glazing retaining sash frame fitted in a main sash frame comprising a hollow frame member formed from a single strip of sheet metal shaped to provide a glazing panel recess along the inner marginal surface thereof and a second recess along an adjacent side wall, a glazing panel and a second frame member recessed along one side thereof to receive a sealing strip and provided with an inturned flanged marginal portion, said frame members being detachably secured together with the sealing strip recess of said second frame member disposed in interfitting relation with the second mentioned recess of said hollow frame member and the flanged marginal portion disposed in opposing relation to the glazing panel recess to form a glazing channel to retain said glazing panel in secured relation.

3. In a sash assembly comprising a main sash frame recessed about its inner marginal surface and a glazing frame fitted in the recess of said main sash frame, said glazing frame comprising a hollow outer frame member formed from a single strip of sheet metal shaped to provide a glazing panel recess along the inner marginal surface thereof, a second recess along an adjacent side wall and a flat outer end wall engaging the main sash recess in supporting relation, a glazing panel and a second inner frame member recessed along one side thereof to receive a seal-

ing strip and provided with an inturned flanged marginal portion, said outer and inner frame members being detachably secured together with the sealing strip recess of said second frame member disposed in interfitting relation with the second mentioned recess of the hollow frame member and the flanged marginal portion disposed in opposing relation to the glazing panel recess to form a glazing channel to retain said glazing panel in secured relation.

4. In a sash assembly as set forth in claim 3, said second frame member being provided with a panel member adjacent the inturned flanged marginal portion, said panel member engaging one wall of the main sash recess and serving to support the inturned flanged portion against said glazing panel in retaining engagement.

5. In a sash assembly as set forth in claim 3, said second frame member being provided with gripping means to retain the sealing strip in the recessed portion thereof.

6. In a sash assembly as set forth in claim 3, said hollow frame member being provided with an extension member along the inner marginal portion of the outer end wall, said extension engaging the surface of the main sash recess in abutting engagement to prevent undue distortion of the sealing strip.

7. In a sash assembly as set forth in claim 3, said glazing panel recess comprising an abutment wall supporting the end edge of said glazing panel and a side supporting wall arranged with respect to said abutment wall so that the marginal surface remote from said abutment wall will be in pressure contact with the marginal surface of the glazing panel in supporting relation thereto.

8. In a sash assembly as set forth in claim 3, said hollow frame member being provided with a rolled joint at the seam edges thereof.

9. In a sash assembly as set forth in claim 3, the seam edges of said hollow member being rolled in interlocking relation to provide a flange extension along the inner marginal surface of said main sash frame.

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