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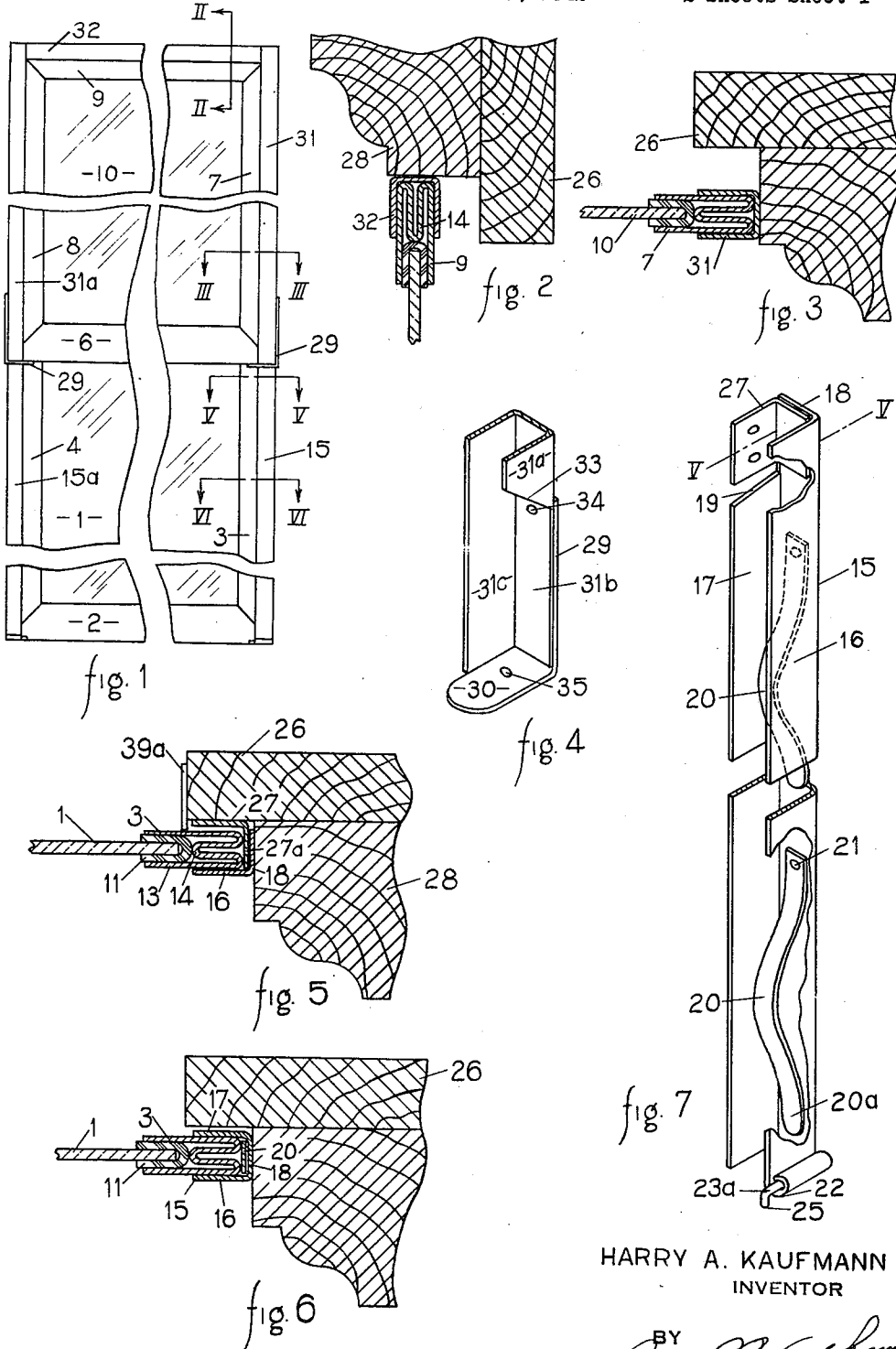
H. A. KAUFMANN

2,359,756

WINDOW CONSTRUCTION

Filed Jan. 27, 1942

2 Sheets-Sheet 1



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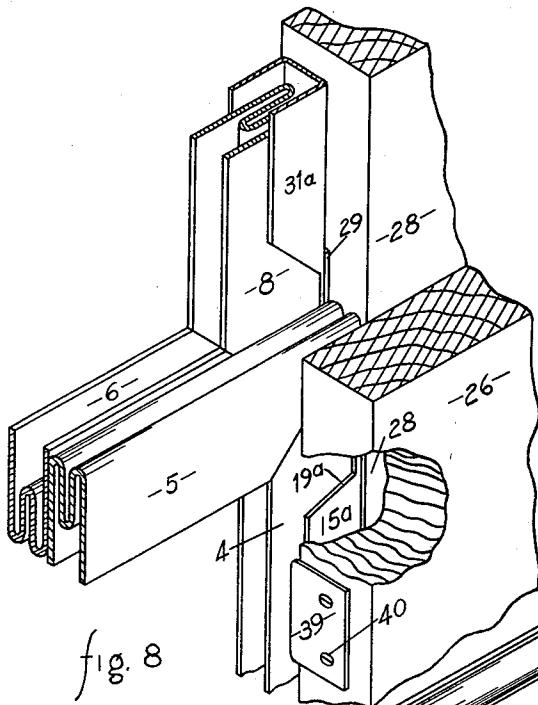
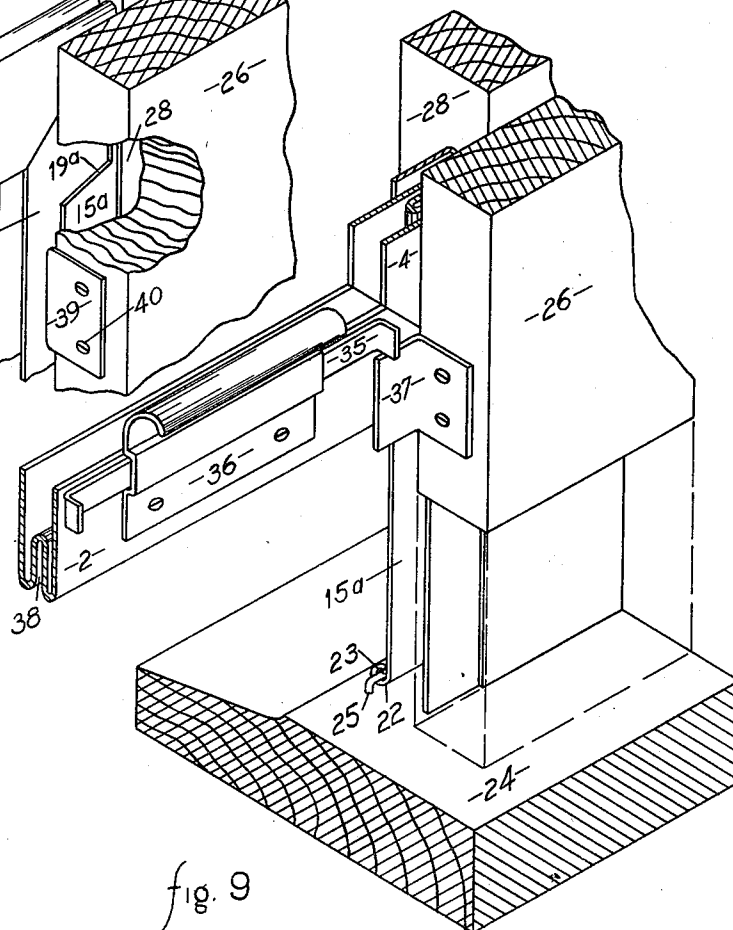
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WINDOW CONSTRUCTION

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2 Sheets-Sheet 2



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2,359,756

WINDOW CONSTRUCTION

Harry A. Kaufmann, Grosse Pointe Park, Mich.

Application January 27, 1942, Serial No. 428,347

12 Claims. (Cl. 189-72)

This invention relates to the construction of storm windows and, particularly, to a metallic sash and metallic mounting frame therefor.

In the art of manufacturing storm windows, and particularly the means for mounting same onto window frames, there has been encountered continuously the problem of designing and constructing a window and mounting therefor which is strong enough to be durable, simple enough to be inexpensively made with a minimum of material and capable of fabrication by simple and rapid processes, easy to manipulate, install and remove, and fully sealed against the entry of wind, rain or snow.

Accordingly, the principal object of my invention is to provide a storm window having metallic sash and mounting means which is fully sealed against the entry of wind, rain or snow.

A further object of my invention is to provide storm window or screen panel sash and mounting means of metallic construction which is easy to install, manipulate and remove and wherein a screen panel may readily be substituted for a window panel and vice versa.

A further object of my invention is to provide a metallic sash and mounting means for a storm window or screen panel which is extremely simple in construction so that it may be made from a minimum of materials.

A further object of my invention is to provide a metallic sash and mounting means therefor for storm window or screen panel which is extremely simple so that it may be fabricated by simple and inexpensive processes, which require a minimum of labor.

A further object of my invention is to provide a metallic sash and mounting means therefor for a storm window or screen panel wherein the principal manufacturing processes involved are standardized rolling and standardized die cutting of a cold sheet metal and all expensive casting and extruding processes are eliminated.

Other objects and purposes of my invention will become apparent to any one skilled in the art, upon further reading of the hereinafter following disclosure, together with an inspection of the accompanying drawings.

In the drawings:

Figure 1 represents a front, outside broken view of my assembled window.

Figure 2 represents a section taken on the line II-II of Figure 1, looking in the direction of the arrows.

Figure 3 represents a section taken on the line

III-III of Figure 1, looking in the direction of the arrows.

Figure 4 is an oblique view from the inside of the window of the lower end of the upper sash mounting means.

Figure 5 is a section taken on the lines V-V of Figure 1 and looking in the direction of the arrows.

Figure 6 is a section taken on the lines VI-VI of Figure 1 and looking in the direction of the arrows.

Figure 7 is an oblique broken view from the outside of the window of the lower sash mounting means.

Figure 8 is an oblique broken view from the inside of the window of one side of the meeting rails thereof, and showing the method of mounting the upper sash adjacent this point.

Figure 9 is an oblique broken view from the inside of the window of the means for holding the lower sash in a raised position and for mounting the lower end of the lower sash.

There have been many forms of storm windows placed upon the market and in many of them the superior advantages of metallic sashes have been attempted to be utilized. All of them, however, have had one or more inherent defects which have either made their use unsatisfactory or necessitated such expense that they could be used only to a limited extent. To meet this situation, I have designed and herewith disclose and illustrate a storm window construction which fits entirely within the space outwardly of the blind stop which appears on any standard wooden window frame, utilizes the advantages of sliding windows, is easily installed, easily manipulated and is securely sealed at all points against the entry of wind or rain.

Referring now to the drawings, it will be understood that while there is therein illustrated the situation wherein the sash supports a glass panel, it will be evident that a screen panel can readily, by any of several known constructions, replace the glass panel in sash of the same type as herein disclosed. Therefore, it will be understood that although the drawings illustrate only a glass panel in the sash, the term "panel" as hereinafter used, may refer either to a glass or screen panel, excepting where specifically designated otherwise or obviously inappropriate.

In the drawings, the panel 1 is mounted in any convenient manner in the sash sections 2, 3, 4 and 5 to constitute the lower sash, and panel 10 is mounted in sash sections 6, 7, 8 and 9 to

constitute the upper sash. While for the purpose of my invention the cross section of the sash section may be of any convenient form which is generally rectangular, I have found it advantageous to make the same in the W cross section shown best in Figures 2, 3, 5 and 6. It will be observed that I make all of my sash sections from the same stock of material which greatly simplifies the problems of stocking material and assembling the section. While any convenient form of panel mounting may be used, it will be observed in Figure 5 that I mount glass panel 1 in a U-shaped rubber member 11 and place the same between the parallel walls 12 and 13 of the frame section 3 by backing the rubber member 11 against the extremity of the re-entrant portion 14 and secure a firm and stable mounting. Further details of my sash construction, including the novel and advantageous corner construction supplied therefor, is fully disclosed and described in my Patent No. 2,291,726, issued August 4, 1942. The same patent also shows an advantageous construction for inserting a screen panel into sash of the type herein used and, hence, for such disclosure, reference is hereby invited thereto.

Referring now to the means of mounting the sash in the window frame, it will be seen that said means are extremely simple to manufacture and install.

Referring to the mounting for the lower sash, attention is called to the mounting strip best shown in Figure 7, and the pressure plate 39 in Fig. 8 (plate 39a in Fig. 5). The strip particularly shown in Figure 7 is, of course, intended for use on the right hand side of the window looking from the outward side, and a mirror image of it is used for mounting the left hand side of the lower sash, looking from the outward side thereof. Particular description therefore will be made of mounting member 15 shown, it being understood that the corresponding mounting member 15-a is in all respects a mirror image thereof.

Said mounting member 15 is of generally U-shape as best shown in Figures 6 and 7. It has parallel sides 16 and 17 and a bottom 18. It is preferably rolled from a single sheet of material so that bottom 18 is, excepting for a rounded corner thereof, at right angles to both of sides 16 and 17. Of course, it is conceivable that this member may be made by any of several other methods. The side 17, being that inward of the building into which this window is to be mounted, has at its upper extremity the portion 19 cut out therefrom to an extent of approximately two inches on a window of ordinary domestic size. This distance, of course, will vary widely in different installations and is dictated primarily by convenience. Positioned to be received in the cut out portion 19 of member 15 is an angle iron 27 which, as shown in Figures 5 and 7, is fastened in any convenient manner, as by screws, to the blind stop 26 and having its angle portion 27-a spaced sufficiently away from frame member 28 to receive part 18 of member 15 snugly therebetween. This serves to hold the upper end of member 15 in position against lateral displacement with respect to the window frame but permits it to move outwardly therefrom.

At the lower end of member 15, sides 17 and 18 are cut back with respect to sides 16 so that said side 16 extends beyond the rest of the section to form an extended flap thereon. This extended flap is then bent around as at 22 (Fig-

ures 7 and 9) to receive and hold pivotally a rod member 23 which is bent as at 23-a and inserted at 25 into the wooden portion of window ledge 24. The said flap 22 is thus bent back sufficiently that side 16 is made of length equal to the sides at 17 and 18 so that the same rests evenly upon window ledge 24 and in position that side 17 is adjacent and parallel to but somewhat spaced from the blind stop 26 and side 18 rests snugly against the brick molding 28 of the window frame. At its upward end, members 27 and 15 terminate immediately below the bottom section of the upper sash when the same is in its uppermost or closed position and should barely clear the bottom surface of hereinafter mentioned part 30 of angle member 29. Springs may be placed in any convenient number within each of members 15 and 15-a and fastened in any convenient manner as by riveting at 21 to part 18 thereof. These springs may be of any convenient shape for the exertion of pressure against the adjacent portion of sash section 3 (best shown in Figures 6 and 7) but preferably having turned back ends 20-a so that the sash will pass over same smoothly in either direction.

It will be observed that the bent portion 22 can slide on rod 23 toward or away from part 28 of the window frame so that member 15 under the urging of springs 20 can be pressed tightly against member 28 of the window frame without regard to the precise position of rod 23.

Plate 39 (Fig. 8) is fastened in any convenient manner, as by screws to the face of member 26 and caused to bear on its outward edge against the inward side of the sash section 4 with sufficient pressure to cause a slight distortion outward of both the sash section and the panel contained therein. A mirror image of this construction is present on the opposite side of the window (numeral 39-a in Fig. 5). By this distortion, the sash itself is caused to bear by its upper section 5 tightly against the bottom section 6 of the upper sash, and positive pressure is imposed upon such contact. While the window construction is not entirely unworkable without this plate, its use provides better alignment of parts when the lower sash is being installed, and, more important, its use provides that the meeting sections of the upper and lower sashes will bear tightly together.

It should be noted that, as shown by the cut-out portion of member 26 in Figure 8, this pressure plate is placed below the cut-out part 19-a of member 15-a (corresponding to above described cut-out 19 of member 15). By this positioning, it is sufficiently below the upper section 5 of the lower sash to secure in said lower sash sections the proper resiliency to accomplish its purposes.

Referring now to the upper sash supporting means, U-shaped channels 31, 31-a and 32 are of the same cross sectional construction as the above discussed channels 15 and 15-a. They are affixed to the brick mold 28 in any convenient manner as by screws and positioned as shown in Figures 2 and 3. The spacing from blind stop 26 should be only sufficient to permit the reception of the lower sash between said blind stop and sash mounting section as shown in Figure 8.

The top sash section 9 is received into sash mounting section 32 in the manner shown in Figure 2. The side sections 7 and 8 of the upper sash are received into the side sash mounting sections 31 and 31-a in the manner best shown in Figures 3 and 8. At the lower extremities of each

of said sections 31 and 31-a, is a cut out portion shown at 33 in Figure 4 which, as shown in Figure 8, extends from the lowermost extremity of said member 31 or 31-a a distance equal to or slightly greater than the vertical width of the cross-section of the lower sash. This enables the topmost section 5 of the lower sash to lie directly against the bottom section 6 of the upper sash, thus to seal the same against the entry of wind and/or rain. At the lower extremity of each of sections 31 and 31-a (Figs. 1 and 4), appears also right angle members 29 (being mirror images of each other) which are each pivotally fastened to the mid-portion of U-sections 31 and 31-a by any convenient manner, such as a rivet, generally indicated at 34. This angular member is of transverse width equal to the corresponding width of section 31. At 35 is shown a raised portion which engages the re-entrant groove on the bottom of section 6 of the upper sash by which to hold member 29, and particularly part 30 thereof, from becoming accidentally displaced. This angle member 29 constitutes the vertical support for the upper sash. Its horizontal portion 30 should be long enough to contact the sash sufficiently to hold it and to provide sufficient size for ready manual manipulation thereof to move it on its pivot 34 out of sash supporting position. The vertical leg of member 29 should be long enough to permit it to move on pivot 34 and entirely clear the lowermost corners of member 21 without undue difficulty. In installation fitted for an ordinary house window, I have found it convenient to make the vertical leg of member 29 about two inches in length and the horizontal leg about one inch in length. By placing raised portion 35 sufficiently close to bottom part 31-b of section 31 that when angle 29 is swung outwardly portion 35 strikes side 31-c, the outward movement of the angle 29 is prevented. This will prevent improper persons from removing the sash from the outside of the house.

The windows are inserted into the sash supporting means as follows: The members 15 and 15-a are moved outwardly of the building to which they are attached around their respective pivot points 22 and allowed to lie horizontally on the window sill. The members 29 are each moved on their respective pivot points 34 inwardly to open the bottom portion of channels 31 and 31-a. The operator may then insert the sash sections 7 and 8 of the upper sash into the sash mounting sections 31 and 31-a at the respective lower ends thereof and slide said upper sash upwardly until its upper section is received into channel 32. Members 29 are then moved back into a vertical position by which they respectively close the lower ends of channels 31 and 31-a to hold the upper sash window in position. The raised portion 35 fits into the re-entrant groove at the bottom of sash 6, the same being of the same cross section as the sash member 3 shown in Figure 5, by which said member 29 is held against accidental displacement.

The lower sash may now be turned obliquely so that a person standing on the inside of the building may pass said sash through the open lower part of the window to get it outside of the blind stop 26, after which it is turned so that the upper section 5 thereof is horizontal but the whole panel is tilted inward of the window so that section 5 is closer to the blind stop 26 than is the bottom section 2. In this position the top section 5 of the lower sash is brought under section 6 of the upper sash and introduced between

said member 6 and angle member 27 (and also the counterpart of angle 27 on the other side of the window). The window is then pushed upwardly slightly while the bottom part of the sash is brought inwardly until said sash rests against blind stop 26 and the outer extremities of plates 39 and 39-a on both sides of the window. It is then pushed upwardly between blind stop 26 on both sides of the window and upper sash supporting sections 31 and 31-a until it is in its extreme upward position. At this point it is then possible to raise the lower sash supporting channels 15 and 15-a from the horizontal position above indicated into the upright position, to fit tightly against the blind stop and the brick mold as is shown in Figures 5, 6 and 9, and having the portion 18 at the extreme upper end of each of said sash-supporting sections lying between part 27-a of angle iron 27 on each side of the window and brick mold 28. The lower sash may then be lowered and introduced into sections 15 and 15-a, and lowered further past and against plates 39 and 39-a into closed position.

In this closed position it will be seen that the lower sash itself holds the sections 15 and 15-a in position and the springs 20 and 20-a located in both of sections 15 and 15-a act against the lower sash to hold said sections 15 and 15-a tightly in weather-sealing relationship against the adjacent surface of brick mold 28 on both sides of the window. The upper end of the lower sash, then, is held in position by the bottom rail 6 of the upper sash on the outside and by plate 39 (and its counterpart on the other side of the window) on the inside. Thus the said sections 15 and 15-a are likewise firmly held in position. The bottom portion of the lower sash is held in position by the sides 16 and 17 of the lower end of each of channels 15 and 15-a, which at their lower ends are held against inward or outward movement by their respective members 23. Thus it will be seen that my improved construction in this lower sash-supporting means presents a peculiar situation in that the members 15 and 15-a hold the lower sash in position at the bottom end thereof and are themselves held by the lower sash in position at the top ends thereof. It will be observed also that the resilient members 20 and 20-a operate to hold said channels 15 and 15-a tightly against the adjacent surface of the brick molding by which to seal the same against the entry of wind or rain therebetween.

The bottom section 2 of the lower sash may be fitted with any convenient means for holding said lower sash in any selected raised position. I have found, however, that a slide bar 35 held in position by a bent over portion 36 and one or more angle irons 37, which in turn are screwed or otherwise fastened to blind stop 26, provides a convenient and easily installed means for this purpose. Obviously, the angle irons 37 may be installed in several positions along blind stop 27 to provide a plurality of raised positions for said lower sash. While not essential to the construction of my window, it will be noted that manufacturing convenience will be attained by using the same angle irons for member 37 as for members 27.

It will now be understood that I have disclosed and described a storm window installation wherein the materials therefor may all be fabricated by rolling a sheet metal stock, and wherein there is required for both the sash and the mounting means only two principal kinds of rolled stock. It is evident that this greatly re-

duces the cost of manufacture over the forms of storm windows now known to the trade in which several different kinds of complicated pieces, often extruded, are necessary for their fabrication. It will also be noted that the two principal kinds of elements which are used, namely the W-shaped sash channels and the U-shaped mounting channels, are of utmost simplicity so that the rolling operation is also reduced to a minimum. It will be understood further that the installation of this window into the wooden window frame of a building is a simple matter requiring only a few moments' time for the insertion of a few screws, and the boring of a hole for each of members 23. Yet, together with these features of simplicity, I have disclosed a window which is absolutely sealed at all points against the entry of wind or rain by having flat surfaces engage flat surfaces.

It will, of course, be observed that any of many well known forms of rubber sealing strips may be placed in the re-entrant groove 38 of the bottom section 2 of the lower sash to secure an absolute seal against the entry of wind or rain between the same and the window sill. However, it has been found advantageous to omit this sealing strip in order to secure a slight leakage of air from the outside by which to prevent the windows from steaming and frosting. It will also be observed that a rubber strip may also be placed in a corresponding position in the bottom section 6 of the upper sash or in the re-entrant groove of the top section 5 of the lower sash for contacting the adjacent sash section. This, however, I have found to be unnecessary in the construction herein disclosed and illustrated, for the reason that the flat surfaces of sections 5 and 6 lying together as they are permitted to do by my cut-out portion 33 of section 31 (and the corresponding construction on the other side of the window) provides an amply sufficient seal and makes further sealing means entirely unnecessary.

It will be observed that while I have selected for illustration and described in particular detail a particular embodiment of my invention, that there are several variations of the herein disclosed construction which may advantageously be used and which will still utilize the teaching of my invention. By way of example of some variations and not with any thought of exclusive listing of them may be suggested the following: resilient members 20 and 20-a may be widely varied both in form and in number and may conceivably even be hung from the sides 16 and 17 of the channel 15 rather than from the bottom 18 thereof, and may also be fastened to the sash sections 3 and 4, provided only that means be provided for a resilient pressure abutting itself against the sash sections 3 and 4 to press the channels 15 and 15-a tightly against the adjacent faces of the brick mold; that channels 31, 31-a, and 32 may be replaced by sections having only a single member adapted for insertion into the re-entrant groove 14 of the sash section, provided only there is provided a proper base upon which to hang pivotally the angle member 29 and its counterpart on the other side of the window.

Having thus fully disclosed and described and illustrated my invention, I claim:

1. Means for mounting a pair of sliding window panels having sash of a generally rectangular cross section onto a wooden window frame having a blind stop thereon and a portion thereof extending outwardly of said blind stop com-

prising: a U-shaped channel affixed to the upper side of the window frame and outwardly of the blind stop thereof, and opening toward the center of said frame for the reception of the top section of an upper sash; a pair of U-shaped channels located one on each side (and in the portion to be adjacent to the position of said upper sash when in its closed position) of said window frame and outwardly of the blind stop thereof opening toward the center of said frame to receive the side sections of said upper sash; each of said last-named sections having at its lowermost extremity a portion cut out from the side thereof near said blind stop, and each of said last-named sections having at its lowermost extremity a right angle member pivoted by one leg thereof to the mid-portion of said channel in such position with respect to the size of said right angle member that the other leg thereof will be closely adjacent to the bottom end of said section; a pair of channels of U-shaped cross section, each positioned closely adjacent to said blind stop and opening toward the center of said window frame, pivoted at the bottoms thereof for movement outward from said blind stop and of length to extend from the bottom of said window frame opening to a point closely adjacent to the plane of the last-mentioned leg of the above-mentioned right angle members when the same are in their lowermost position, said last-mentioned sections each having resilient means located between the walls thereof, said sections each having also a portion cut out from the walls thereof adjacent to said blind stop, and at the upper ends thereof; a pair of right angle members affixed by one leg thereof to said blind stop in the area projected thereon by said last-mentioned cut out portions when said last-mentioned U-shaped channels are lying in operative position against said blind stop, and the other legs of each of said last-mentioned right angular portions lying closely adjacent to the bottom portion of each of said last-mentioned U-sections, on the sides thereof remote from the adjacent surfaces of the window frame and in position close thereto to hold the bottom of said last-mentioned sections close to the adjacent surfaces of said window frame, while permitting movement parallel thereto, and a pair of pressure plates affixed to said blind stop one on each side of the window opening and bearing against the inward surface of the vertical sections of the lower sash whereby said upper sash may be retained in the first above-mentioned U-shaped channels and held therein against falling by the first above-mentioned right angle members and the lower sash may be held partly by said last-mentioned pair of U-shaped channels and partly by a portion of the upper sash on its outside and said pair of pressure plates on its inside, and itself partly holding said last-mentioned pair of U-shaped channels in position for sealing said sash against the passage of wind or rain between itself and said window frame.

2. Means for mounting a pair of sliding sash in a window frame having a blind stop thereon and a portion thereof extending outwardly of said blind stop with respect to a building to which said frame is attached, said means comprising: means located at the top of said window frame for slidably engaging the top section of an upper sash and retaining the same against lateral movement with respect thereto and preventing the entry of wind or rain between said sash sections and the adjacent portion of said frame; a pair

of U-shaped channels at the sides of said frame and in the portion thereof adjacent to the side sections of said upper sash when the same is in its closed position, said last-named channels each having a portion cut out from their sides nearest the said blind stop and at the lowermost end of each thereof and extending upwardly a distance at least as great as the vertical extent of whichever is the greater of either the bottom section of the upper sash or the top section of the lower sash, and right angle means affixed pivotally to said last-named U-shaped channels near the bottoms of each thereof, effective to hold in one position thereof said upper sash in closed position and capable of being removed from said position to permit said upper sash to slide downwardly; all of said foregoing mentioned members being spaced away from said blind stop a distance substantially equal to the transverse thickness of the lower sash sections; a pair of U-shaped channels pivoted at the bottoms of each thereof to the sill of said window frame in position so that when said last-mentioned U-shaped channels are in an upright position they will respectively lie closely in the right angular recess defined on each side of the window by the outer surface of said blind stop and the adjacent surface of the window frame outwardly of said blind stop; a resilient member within the U portion of each of said channels acting against the lower sash positioned within said last mentioned U-shaped channels to force each of the said channels tightly against the adjacent sides of the window frame, said last mentioned channels each extending from said window sill to a point closely adjacent the lowermost extremities of the first, above mentioned U-shaped channels; a cut out portion near the upper extremity of the said last-mentioned pair of channels and on the side thereof adjacent the blind stop; means affixed to said blind stop operating through said cut out portions to lie closely adjacent the bottom of each of said U-shaped channels near the upper end of each thereof to hold each of them closely against the adjacent portion of said window frame but to permit movement of each of them parallel to said adjacent surface of said window frame, and a pair of pressure plates affixed to the blind stop, one on each side of the window, and bearing one against the inward surface of each vertical section of the lower sash.

3. Means mounting a pair of sliding sash in a wooden window frame, said window frame having a blind stop thereon and a portion of said frame extending outwardly of said blind stop with respect to a building in which said window frame is mounted, said means comprising: means at the top of said window frame providing sliding engagement with the top section of an upper sash and holding same against lateral displacement from said window frame and preventing the passage of wind or rain between said sash and the top of said window frame; means on one side of said window frame and mounted thereon slidably engaging the adjacent section of the upper sash throughout its entire length when said sash is in its uppermost position and holding said side of said sash against inward or outward movement with respect to said window frame and preventing the passage of wind or rain between said sash section and the adjacent portion of said window frame; releasable means holding said sash in its uppermost position; all of said foregoing means being located on said window frame and spaced from said blind stop

outwardly of the building to which said window frame is attached a distance substantially equal to the thickness in the same direction of the lower sash; means mounted in the lower portion of said window frame and engaging one side of the lower sash in a manner to permit vertical motion thereof and prevent transverse motion thereof, said means being pivotally mounted at its lower end and unrestricted at its upper end as to inward and outward motion, means associated with said window frame on said side thereof preventing movement of the upper end of said last mentioned means perpendicularly away from the nearest adjacent surface of said window frame but permitting movement inward or outward parallel to said nearest adjacent surface of said window frame.

4. Means for supporting the lowermost of a pair of sash in a window frame including a U-shaped member characterized as follows: means at the lowermost end thereof pivotally mounting said member on the sill of said window frame; resilient means within said channel and positioned to act parallel with the sides of said channel; and at the uppermost end of said channel a portion cut out of the side thereof; and angle means fixedly mounted on said frame in register with said cut-out portion holding said U-shaped member against movement in the plane of said frame but permitting free movement thereof out of the plane of said frame.

5. Means for mounting one of a pair of sash in a window frame having a blind stop thereon and a portion extending outwardly of said blind stop with respect to a building to which said frame is attached, said means comprising: a member engaging a side section of said one of said sash in a manner permitting mutual longitudinal movement therebetween but preventing mutual transverse movement, the other of said sash held in position outwardly of said blind stop a distance substantially equal to the thickness of the said one of said sash; pivotal mounting of one end of the above mentioned member at an end of said window frame and the other end of said member being unrestricted against movement out of the plane of said frame; and the end of said one of said sash remote from the pivotally mounted end of said side member being positioned between a portion of the other of said sash and said blind stop and held against outward movement solely thereby.

6. In means for mounting a pair of sash in a window frame to permit the meeting rails thereof to lie tightly against each other; a pair of U-shaped channels engaging each side of the upper of said sashes and a portion cut out from the side of each of said channels adjacent said meeting rails and of size sufficient to permit the other of said sashes to lie in said opening directly against the sash held by said channels.

7. In window construction, a sash and means holding the ends thereof against outward transverse movement, relatively small rigid plates bearing against said sash, and distorting the mid-section thereof outwardly from its normal alignment, whereby pressure is secured urging said sash into weather sealing relationship with at least a portion of said holding means.

8. In means for mounting a sash in a frame and weather sealing same thereto, means holding said sash in position comprising a U-shaped member partially engaging the side of said sash; resilient means within said member bearing against said sash urging said U-member against

said frame, said U-member being relatively free throughout its full length to move with respect to said sash according to the urging of said resilient means or with respect to said frame in one direction according to the movement of said sash, whereby said U-member will take a position relative to said frame determined by said sash and prevent the passage of wind or rain between said sash and said frame, a cut-out portion at the upper end of said member on the inward side thereof and means mounted on said frame extending through said cut-out portion limiting movement of said member away from said frame in the plane thereof but permitting free movement of said member out of the plane of said frame.

9. Means for mounting a lower storm sash outside a blind stop comprising: pivoted means retaining the bottom of said sash against inward or outward movement, an upper sash bearing against the outward side of the upper end only of said lower sash, a pair of small rigid plates affixed to said frame bearing outwardly against an inner surface one at each side of said lower sash at a point thereon spaced longitudinally thereof from the point of contact of said upper sash and holding the upper end of said lower sash tightly against the lower end of the upper sash, said pair of plates positioned to distort the middle of said sash outward of a plane through the upper and lower ends thereof.

10. Means for mounting a lower storm sash outside a blind stop comprising: pivoted means retaining the bottom of said sash against inward or outward movement, an upper sash bearing against the outward side of the upper end of said lower sash, and a small rigid plate affixed to said frame bearing outwardly against an inner surface at each side of said lower sash and intermediate its ends.

11. In window construction, a sash, means holding the bottom against outward movement,

means holding the top against outward movement, a relatively small rigid plate bearing against an inner surface of said sash at a point longitudinally intermediate the above-mentioned points of holding, said plate being positioned to intersect the normal plane of the inner surface of said sash and distorting outwardly a portion of said sash intermediate its upper and lower ends.

12. Means for mounting a pair of sliding sash in a window frame having blind stops thereon and a portion thereof extending outwardly of said blind stop with respect to a building to which said frame is attached, said means comprising: means slidably retaining the upper of said pair of sash in position, said upper sash being spaced away from said blind stop a distance substantially equal to the transverse thickness of the lower sash; a pair of U-channels pivotally mounted to the sill of said window frame and lying in the right-angular recess defined on each side of the window frame by the outer surface of said blind stop and the adjacent surface of said frame outwardly of said blind stop; resilient means within said channels; said channels extending from said window sill to a point closely adjacent the lowermost extremity of the upper sash; a cut-out portion near the upper extremity of said pivotally mounted channels, which cut-out portion is on the side of each of said channels adjacent the respectively adjacent blind stop; means mounted on said blind stop extending through said cut-out portion and lying closely adjacent the bottom of each of said U-shaped channels near the upper end of each thereof, and a pair of pressure plates affixed to the blind stop, one on each side of the window and each bearing against the inward surface of each vertical section of the lower sash.

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