Jan. 29, 1952 H. A. KAUFMANN 2,583,851

CONVERTIBLE WINDOW

Filed April 6, 1950 3 Sheets-Sheet 1

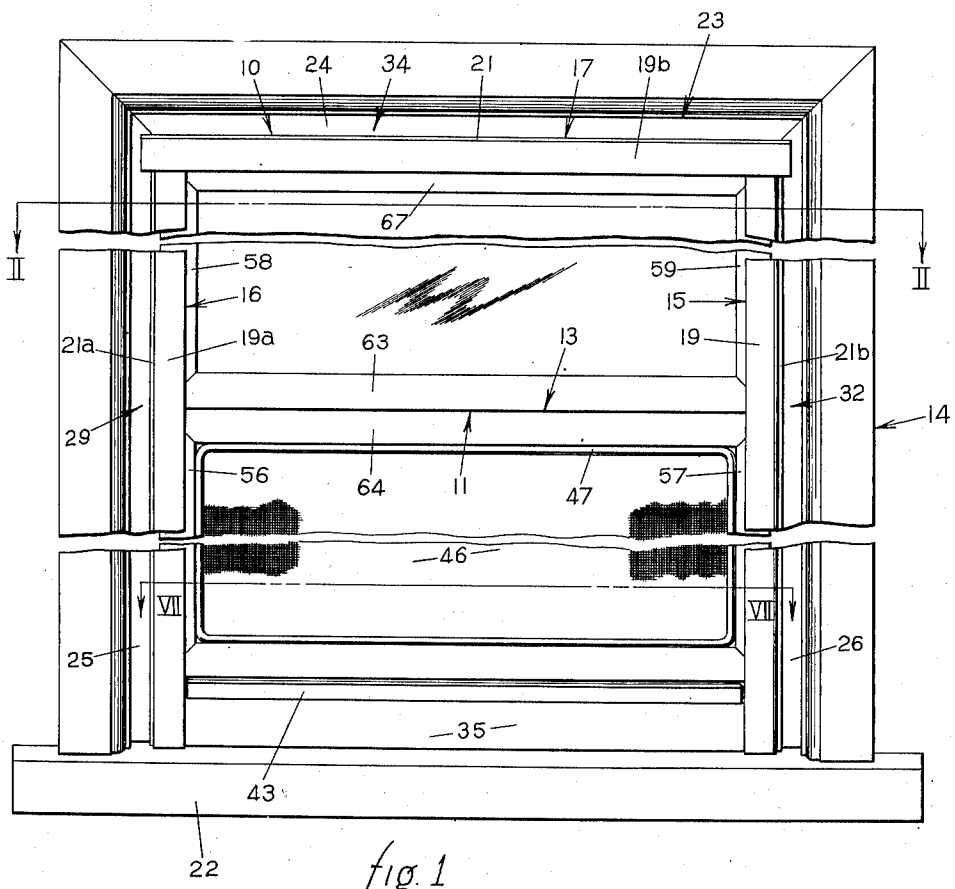


fig. 1

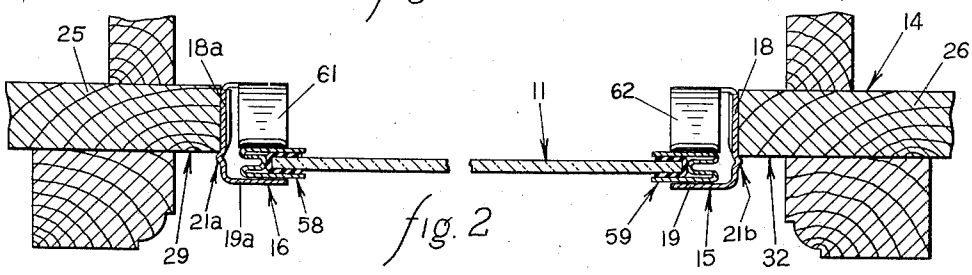


fig. 2

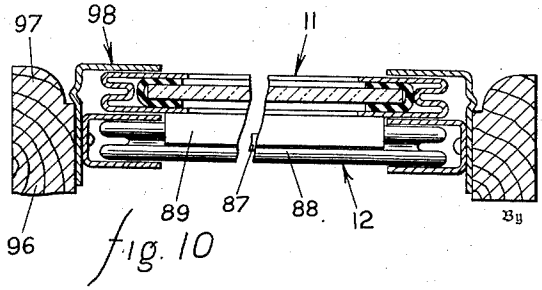


fig. 10

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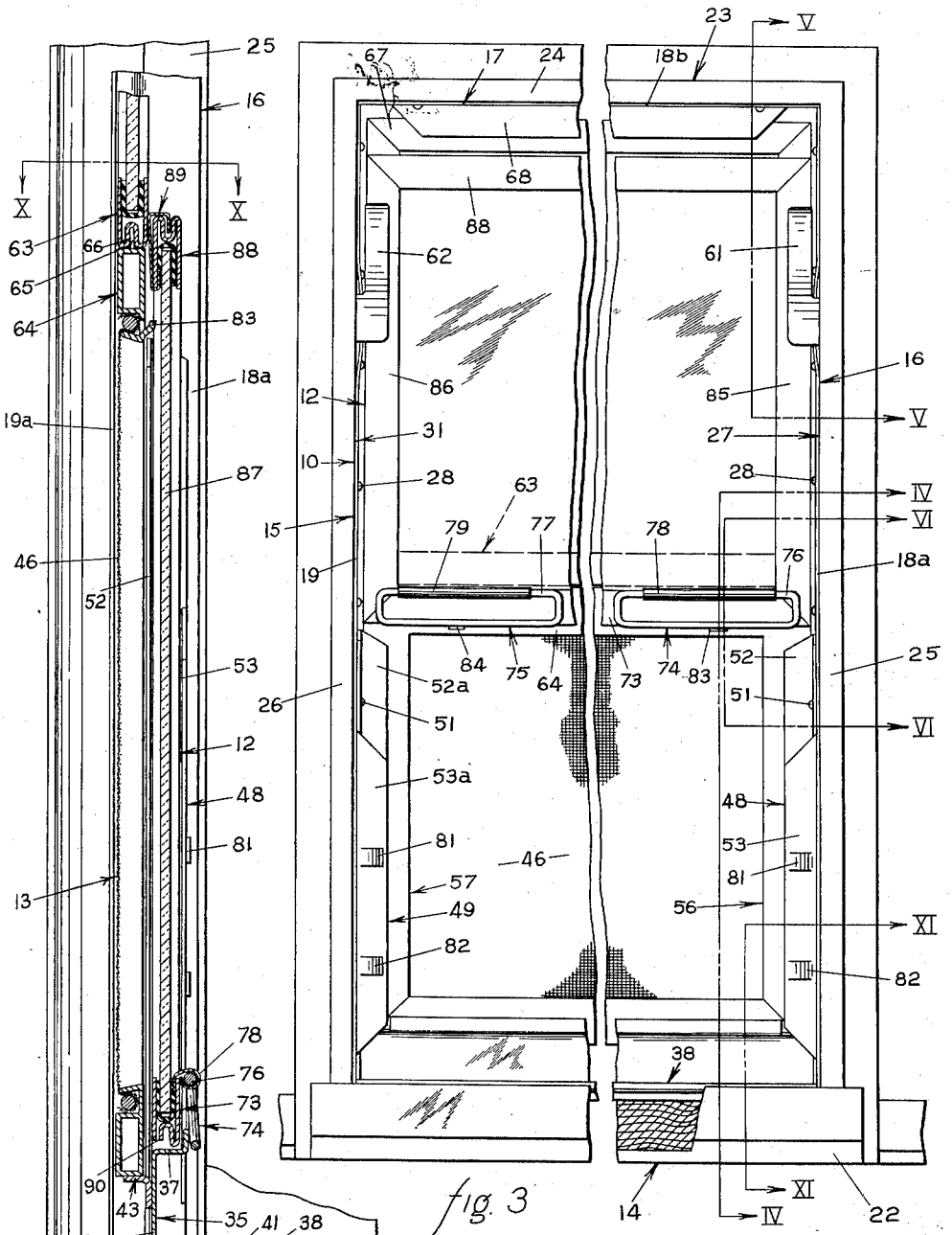


fig. 3

fig. 4

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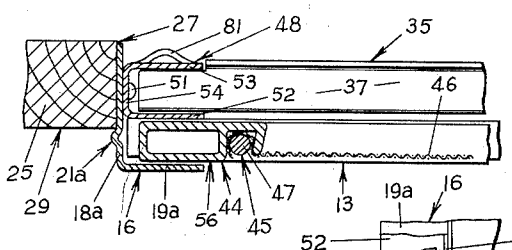


fig. 8

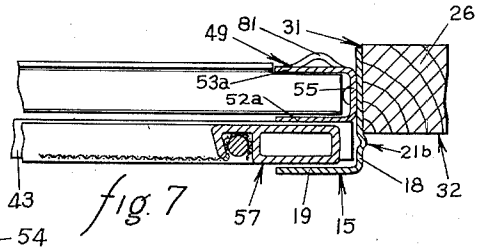


fig. 7

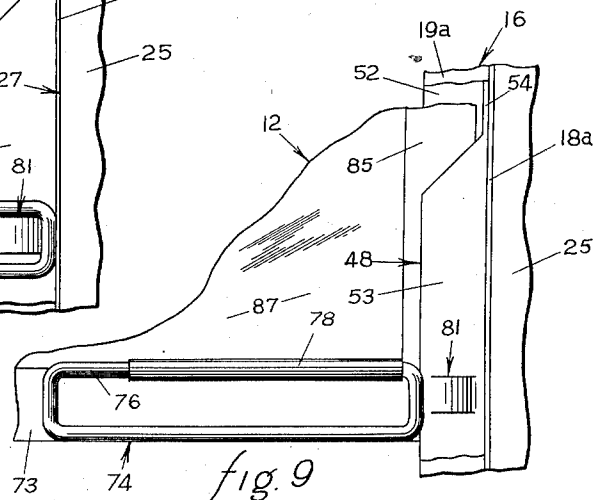


fig. 9

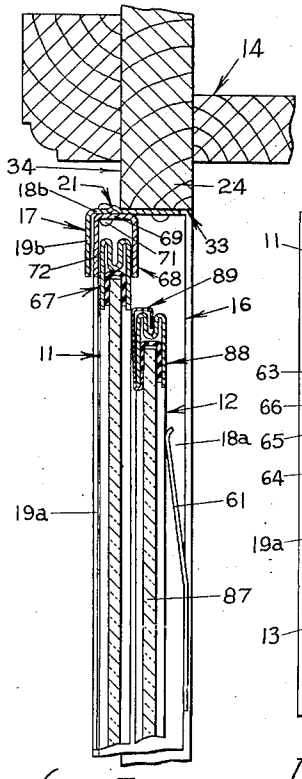


fig. 5

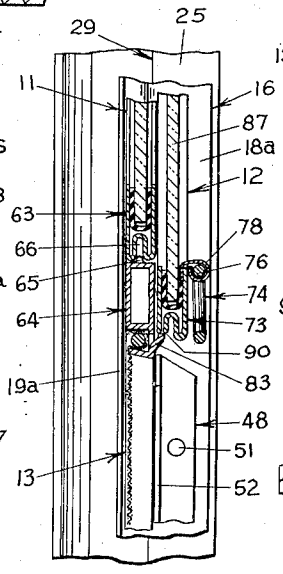


fig. 6

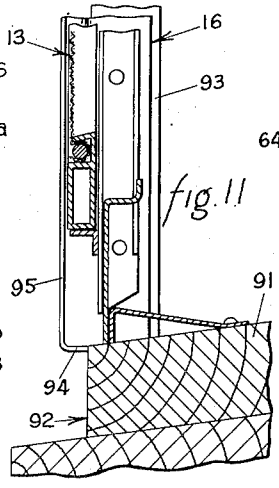


fig. 11

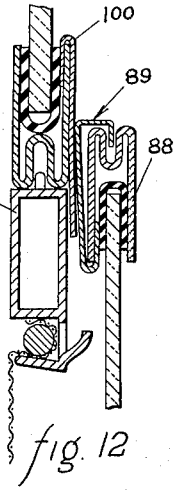


fig. 12

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Patented Jan. 29, 1952

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UNITED STATES PATENT OFFICE

2,583,851

CONVERTIBLE WINDOW

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Application April 6, 1950, Serial No. 154,340

6 Claims. (Cl. 160—90)

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This invention relates in general to a self-storing combination storm and screen sash unit and more particularly to improved means for supporting the sash thereof with respect to each other and substantially within a zone peripherally defined by the opposing surfaces of the blind stop and the sill of a conventional, double hung window frame.

Although there are many types of conventional window frames for double hung windows, such as those usually found in industrial or apartment type buildings, features of construction common to most such frames include a sill and a blind stop which latter is generally comprised of a pair of vertical elements and a top horizontal element. However, the cross-sectional contours of said sill and the blind stop may, and often do, vary substantially from one window frame to another. For example, the exterior side of the blind-stop, which faces towards the outside of the building, sometimes has an ornate bead which prevents securement of storm sash thereto. Often, the exterior surface of the sill is flush with the exterior surface of the blind stop, thereby eliminating the means upon which conventional types of storm sashes are normally supported. If either or both of these conditions exist, it is difficult at best to mount presently known types of combination storm and screen sashes upon the window frame.

The majority of presently known, combination storm and screen sash units can be conveniently installed only from the outside of the building, even though the sashes thereof may be operated from the inside after installation. Thus, where the window openings are at a considerable height from the ground, such as in office buildings or apartment houses, the installation of said present units becomes dangerous and/or difficult. Under such circumstances a combination storm and screen sash unit which is normally installed from within the building would be of great value.

It is further often desirable, particularly in office building, factory and apartment window construction, that the window unit be of the so-called self-storing type. That is, means should be provided by which at least a portion of the glass panel may be quickly and easily moved out of the way, leaving only a screen panel to close the portion of the window opening formerly closed by said glass panel, in order that it will not be necessary to remove said glass panel from the window assembly for storage purposes.

It will be evident, of course, that although these remarks have been directed particularly toward office, industrial and apartment type buildings, the problems mentioned are by no means limited thereto, but apply also, though perhaps in lesser degree, to individual dwelling units.

Accordingly, a primary object of this invention is the provision of a self-storing combination storm and screen sash unit easily mountable upon any window frame wherein at least a portion of the sill thereof lies within a zone defined by the opposing surfaces of the vertical and horizontal elements of the blind stop.

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A further object of this invention is the provision of a combination unit, as aforesaid, mountable entirely upon and substantially between the opposing surfaces of the sill and blind stop of a double hung window frame.

A further object of this invention is the provision of means for supporting the sash of said combination unit with respect to each other and the blind stop and sill of a double hung window frame, whereby the objectionable openings often occurring between said blind stop elements and said sash supporting means are positively eliminated.

A further object of this invention is the provision of sash supporting means, as aforesaid, mountable upon the opposing surfaces of the sill and blind stop of a double hung window frame by workmen operating from within the building containing said window frame.

A further object of this invention is the provision of a combination unit, as aforesaid, having double hung storm sashes disposed between the opposing surfaces of the sill and blind stop of a double hung window frame whereby a lower storm sash may be stored parallel with an upper storm sash between said upper storm sash and the upper sash of the main window.

A further object of this invention is the provision of a combination unit, as aforesaid, comprised of a lower screen sash, an upper glass sash supported upon said lower screen sash, and a lower glass sash disconnectably supportable in storage position upon said screen sash adjacent to the upper glass sash, all of said sashes being easily and quickly removable from the means supporting said sashes between and upon the opposing surfaces of the sill and blind stop of the double hung window frame.

Other objects and purposes of this invention will become apparent to persons familiar with this type of equipment upon referring to the accompanying drawings and upon reading the following specification.

In meeting those objects and purposes, heretofore mentioned, as well as others incidental thereto and associated therewith, I have provided sash supporting means including guide angles for removably supporting an upper glass sash, a lower glass sash and a lower screen sash entirely upon and substantially between the opposed surfaces of the sill and blind stop elements of a double hung window. The upper and lower glass sashes and the screen sash are slidably and

removably held within said zone by said guide angles and means attached thereto.

For illustrations of a preferred embodiment of my invention, reference is made to the accompanying drawings in which:

Figure 1 is a broken, front or exterior, elevation view of the combination storm and screen unit to which this invention relates as appearing from the outside of a building in which it may be installed.

Figure 2 is a cross-sectional view taken along the line II—II of Figure 1.

Figure 3 is a broken rear, or interior, elevation view of the said combination storm and screen unit as appearing from the inside of the said building.

Figure 4 is a cross-sectional view substantially as taken along the line IV—IV of Figure 3 but showing the lower glass sash in the lowered position.

Figure 5 is a cross-sectional view taken along the line V—V of Figure 3.

Figure 6 is a cross-sectional view taken along the line VI—VI of Figure 3.

Figure 7 is a cross-sectional view taken along the line VII—VII of Figure 1 with the lower glass sash in the raised position.

Figure 8 is a fragmentary view of a corner of the upper glass sash and means for supporting same.

Figure 9 is a fragmentary view of a portion of said sash with said supporting means in a different position.

Figure 10 is a cross-sectional view of Figure 4 substantially as taken along the line X—X, and showing a variation in blind stop structure.

Figure 11 is a sectional view substantially as taken along the line XI—XI of Figure 3 and showing the lower portion of a double hung window frame containing said combination unit and having a sill whose exterior edge is flush with the exterior edge of the blind stop associated therewith.

Figure 12 is a fragmentary sectional view similar to the meeting rail portion of Figure 4 showing a modified construction.

Construction in general

For the purposes of convenience in description, the terms "left" or "leftwardly" and "right" or "rightwardly," as used in this specification, shall be understood to mean leftwardly and rightwardly of the combination unit, or parts thereof, when positioned as appearing in Figures 1 and 2, or as viewed from the exterior of the building in which the unit is installed. The terms "interior" or "interiorly" and "exterior" or "exteriorly" shall have reference to parts of said combination unit toward and away from, respectively, the interior of the building in which the said combination unit 10 is installed. The terms "upper" or "upwardly" and "lower" or "downwardly" shall be understood to refer to the said combination unit and parts thereof when positioned and/or operating in their normal manner of use. The terms "inner" or "inward" and "outer" or "outward" will refer to the geometric center of the combination unit.

In meeting the objects and purposes above set forth I have designed a screen and window combination in which suitable frame elements are mounted on the opposed, or mutually facing, surfaces of the blind stop of a conventional window frame rather than on the exterior surfaces of such a frame as is common with presently known storm window units. A pair of double hung sash structures, carrying glass panels, are mounted within the frame and a sash structure carrying a screen panel may also be mounted in said frame directly below the upper of the two glass carrying sashes. The mounting of the frame structure on the opposing faces of the blind stop permits such mounting to be done from the inside of the building, and yet the structure hereinafter described is of sufficient compactness that it will not decrease the total effective size of the window opening by an unreasonable amount The general arrangement can best be seen in Figures 1 to 4, inclusive, wherein the storm and screen sash unit 10 to which this invention relates is shown as comprised of an upper glass sash 11, a lower glass sash 12 and a screen sash 13 which sashes are all supported within the window frame 14 of the building.

In the following description, reference will usually be made only to the left side of the window as viewed from the outside with the understanding throughout that the other side is identical therewith. In this manner the description will be shortened and simplified without loss of clarity or completeness.

The unit structure generally is comprised of a pair of vertical guide angles 15 and 16 affixed to the opposed faces of the blind stop and a similar guide angle 17 is affixed to the under surface of the blind stop at the top of the window. A sill structure is provided at the bottom of the window opening to provide complete mounting of the sash panels. A U-shaped channel is affixed by its web to the lower end of the vertical guide angle on each side of the window frame to receive and guide the lower glass sash. It is spaced from the outer flange provided on the vertical guide angles a distance sufficient to provide therebetween another channel for the reception and guiding of the screen sash. A similar U-shaped channel is affixed to the top guide angle at the outer portion thereof for reception of the upper end of the upper glass sash and suitable springs are affixed to the respective vertical guide angles near the upper ends thereof for holding the upper glass sash against the outer flange of said guide angles.

The window frame 14 (Figures 1 to 5) with which the herein disclosed storm and screen sash unit may be used is indicated generally as comprised of a window sill 22 and a blind stop 23 having a top horizontal element 24, a left vertical element 25 and a right vertical element 26.

The unit frame structure

The right, left and top guide angles 15, 16, 17, respectively, (Figures 1, 2, 5 and 7) have substantially similar cross-sectional contours, and are provided with side flanges 18, 18*a*, and 18*b* and face flanges 19, 19*a* and 19*b*, respectively, which are preferably perpendicularly disposed with respect to each other. These angles may be fabricated in any convenient, conventional manner, such as by rolling or extruding, from any suitable material, such as aluminum or steel.

Referring now only to the left guide angle 16, and understanding that the others are duplicates thereof, the side flange 18*a* is provided with a longitudinally disposed bead 21*a* (Figures 1, 2 and 7), which bead extends out of the plane of the side flange in the opposite direction to that of the face flange. Such bead is preferably parallel to that edge of the side flange which is

connected to the face flange, and is preferably spaced therefrom a distance slightly less than the thickness of one of said sashes.

The left guide angle **16** is secured to the inner face **27** (Figure 7) of the left blind stop element **25** by any suitable means, such as the nails **28** (Figure 3) so that the bead **21***a*, thereof, is positioned adjacent to the exterior edge **29** of the element **25**, and further so that the face flange **19***a* extends toward the right blind stop element **26**. The side flange **18** of the right guide angle **15** is similarly secured to the inner face **31** of the right element **26**.

A guide channel **48** (Figures 4 and 7), of U-shaped cross-section, which is approximately half as long as the vertical guide angle **16** is secured to the inner surface of the side flange **18***a* near the lower end thereof, said securement being by any convenient means, such as the nails **51** which also hold the lower part of the guide angle **16** against the blind stop element **25**. Its exterior flange **52** (Figure 3), which extends upwardly substantially further than the interior flange **53** is parallel with and spaced from the interior surface of the adjacent face flange **19***a* a distance sufficiently greater than the thickness of the screen sash to permit reception of said screen sash between said flanges. The flanges of the guide channel are spaced from each other a distance sufficiently greater than the thickness of the lower glass sash **11** to permit its snug, sliding reception therebetween.

The top guide angle **17** (Figures 1 and 5), extends between the upper ends of the blind stop elements **25** and **26**, and its side flange **18***b* is secured to the lower face **33** of the top blind stop element **24** by any suitable means in a manner similar to that of said side angles. The opposite ends of the face flange **19***b* overlap the exterior surfaces of the face flanges **19** and **19***a*, and the exterior portions of the opposite ends of the side flange **18***b* extend beyond the upper ends of the side flanges **18** and **18***a*.

The holding channel **68** (Figure 5) extends between the upper opposed edges of the face flanges **19** and **19***a*, and is secured to the lower surface of the side flange **18***b* by any suitable means such as the screws or rivets **71**. The exterior, depending flange **72** of said holding channel preferably extends downwardly approximately the same distance as the adjacent face flange **19***b* and is disposed snugly adjacent thereto.

A removable sash support base **35** (Figures 1 and 4), having a riser flange **36** and a support flange **37**, substantially perpendicular thereto, extends between the lower ends of the guide angles **15** and **16**. The support base **35** is preferably disposed so that the opposite ends of the riser flange **36** bear against and are substantially parallel with the interior surfaces of the face flanges **19** and **19***a*, and further so that the support flange **37**, which extends interiorly from the upper edge of the riser flange **36** for support of the lower glass sash **12**, lies substantially within a horizontal plane spaced upwardly from the window sill **22** when the lower edge of the riser flange **36** is resting thereupon. An L-shaped sill plate **38** (Figures 3 and 4) is secured upon the sill **22**, by means such as the nails **42**, and extends between the lower ends of the side flanges **18** and **18***a* so that its vertical flange **39** extends downwardly from its horizontal flange **41**. The vertical flange **39**, which is parallel with the plane of said face flanges **19** and **19***a*, is spaced interiorly therefrom sufficiently to permit snug reception of the riser flange **36** between said face flanges and the vertical flange **39**.

An L-shaped support angle **43** (Figures 1 and 4), whose length is preferably slightly less than the distance between the opposing edges of the face flanges **19** and **19***a*, is secured to the external surface of the riser flange **36** of the support base **35**. The support angle **43** is preferably parallel with, and spaced downwardly from, the support flange **37** and extends in the opposite direction therefrom for supporting the screen sash **13**.

The glass and screen sash structure

The upper and lower glass sashes **11** and **12**, respectively (Figures 1 to 5) are preferably, but not necessarily, each comprised of a rolled metallic frame structure such as that disclosed in my Patent No. 2,291,726. The glass sashes are preferably relatively thin, identical in width and preferably approximately equal in height. It will be recognized that both the width and length of the glass sashes may be varied with respect to each other without departing from the scope of this invention. However, the combined vertical length of the upper glass sash **11** and the screen sash **13** is preferably slightly less than the vertical distance between the support flange **37** of the base **35** and the web **69** of the holding channel **68** to permit insertion of these sashes.

The screen sash **13** (Figures 1, 3, 4 and 7) may be comprised of any convenient, conventional type of screening mounted in a metallic frame of a conventional type. Said frame is preferably substantially equal in thickness to the frame of the said glass sashes, for reasons which will hereinafter become apparent. The screen sash (Figure 7), which is preferably identical in width to the glass sash, may, for example, be comprised of frame elements or rails **44**, each of which have a tubular portion and a portion providing a sidewardly opening, longitudinally disposed slot **45**, into which an edge of the screen panel **46** may be placed and held fast by means of a suitable strip **47**.

The vertical side rail **58** of the upper glass sash **11** (Figures 1 and 2) is held against the interior surfaces of the face flange **19***a* by the flat spring **61** which spring is secured to the inner surface **27** of the vertical blindstop element **25**. It will be clearly understood that the number and type of springs used may be varied within the scope of this invention depending upon the specific requirements and the size of the sash. The top rail **67** is snugly and slidably received into the holding channel **68**.

As shown in Figure 4, the lower rail **63** of the upper glass sash **11** is supported upon the upper rail **64** of the screen sash **13**. A plurality of positioning ears **65** (Figure 4) are secured to the upper edge of the screen rail **64** for reception into a slot **66** in the lower edge of the lower rail **63** of the upper glass sash **11**, thereby preventing accidental, lateral displacement of the lower rail **63** of the upper glass sash with respect to the screen upper rail **64** when said upper glass sash and screen sash are properly assembled.

In normal operation, the lower glass sash **12** is disposed between the flanges of the guide channels **48** and **49**, the lower rail **73** thereof rests upon the support flange **37** of the sash support base **35**. The flat springs **61** and **62** are preferably so tensioned and so positioned with respect to the face flanges **19** and **19***a*, that the lower glass sash **12** may be moved upwardly and downwardly be-

tween said flat springs and the interior surfaces of the frame of the upper glass sash 11.

The upper rail 64 of the screen sash 13 is provided with a support bracket 83 which is disposed inwardly of the side rail 56. The support bracket 83 extends from the interior surface of the screen sash upper rail 64 into the plane of the lower glass sash 12 preferably to a point located between the interior surface of the lower glass sash frame 10 and the exterior surface of the glass panel 87 supported therein. Thus, when the lower glass sash 12 is slid upwardly or downwardly within its supporting channel members 48 the support bracket 83 will not scratch the glass. However, the support bracket 83 does extend a sufficient distance from the screen upper rail 64 to engage and support the lower rail 73 of the lower glass sash 12 when said lower glass sash is lifted above said bracket and then moved downwardly thereagainst. Support bracket 84 is correspondingly positioned near the other side of the screen sash and functions similarly.

In raised position the said lower sash will be under the springs 61 and 62 and the action thereof will urge it snugly against the upper screen rail so that there is no reasonable likelihood that the said lower sash will become accidentally disengaged from its supporting brackets. Cut-out portions 99 may be provided to receive the said brackets and to provide a flat surface for them to bear against.

When the lower glass sash is thus resting upon the brackets 83 and 84, it is in the storage position adjacent to and substantially parallel with the upper glass sash 11.

Since the lower glass sash and screen sash are of substantially the same length, the sill support angle 43 is spaced downwardly from the adjacent support flange 37 and the support brackets 83 and 84 are disposed near the lower edge of the screen sash upper rail 64 to prevent interference between the said support brackets and the upper rail 68 of the lower glass sash 12 when said lower sash is resting upon the support flange 37. Although the length of the lower glass sash may be varied somewhat, it will be recognized that said length must be such that said lower glass sash can be received between the support brackets and the top guide angle 15.

The above described vertical offset between the screen and lower glass sash provides an overlap between the lower rail of the upper sash and the upper rail of the lower glass sash, as shown in Figure 4, which inhibits the passage of air between the said two rails. To provide further against such passage of air, a resilient, preferably metallic sealing member 89 is secured to the upper rail 68 of the lower sash 12 (Figures 3 and 10), and extends between the opposed edges of the flanges on the channel members 48 and 49.

A rectangularly shaped handle 74 (Figures 3, 4, 6, 8 and 9), preferably fabricated from wire, is slideably engaged along its upper portion 76 by a cylindrical bracket 78 which bracket is secured to the lower rail 73 of the lower glass sash 12 in any conventional manner near the leftward end thereof. The handle 74 is horizontally slideable toward and away from the vertical guide angle 16. A plurality, here two, of integral protrusions 81 and 82 are provided along the interior faces of the interior flange 53 of the channel member 48. These extend into the path of the vertical movement of the handle when it is extended toward the adjacent guide angle 16 and engages said upper portion 76 to provide support for the lower glass sash 12 in a partially raised position for ventilation purposes. Similar handle construction 79 is provided at the rightward side of the lower sash together with similar supporting and cooperating structure.

Alternate structures

In the event that the sill 91 (Figure 11) has an exterior edge 92 flush with the exterior edge of the blind stop 93, the lower end of the vertical face flange 95 may be bent inwardly to engage the window sill exterior edge 92 thereby improving the exterior appearance of the combination unit 10. All other features of the structure hereinabove described in detail remain the same.

If the blind stop (Figure 10) should have an ornamental bead 97 along the exterior edge thereof, there will be no interference with the mounting of the unit herein described and it may be applied in exactly the same manner as above described. This is not true with other units with which I am familar.

The combination unit 10 may be converted into solely a storm window unit by removing the screen sash 13 therefrom and placing a pair of channel members (not shown), between the face flanges 19 and 19*a* and the exterior flanges of the U-channels in place of the screen for the purpose of supporting the upper glass sash 11.

In Figure 12 there appears a modification which adds materially to the appearance of the unit. A strip 100 is bent at its upper edge and is inserted into, and held by, the lower rail of the upper sash in the same manner as the glass panel. The lower edge extends downwardly sufficiently to cover the meeting line of the lower edge of the upper sash and the upper edge of the screen sash. It extends the full distance between the side members of the upper sash. The sealing strip 89, where used, will then bear against the strip 100 instead of against the lower rail of said upper sash.

Operation

The storm window and screen sash frame is first mounted on the sill and opposed faces of the blind stop of the main window frame with which the storm window and screen unit is to be used. The panels may then be installed. First, the lower edge of the screen panel is inserted between the U-channels and the face flanges 19 and 19*a* of the guide angles and is passed downwardly until it rests on the screen support angle 43. The upper glass sash is then inserted under the springs 61 and 62 and moved upwardly until it is received into the holding channel 68. The lower edge of the upper glass sash is then moved first exteriorly toward the face flanges 19 and 19*a* and then downwardly against the screen sash so that the positioning ears 65 thereon (Figure 4) are received into the peripheral groove 66 along the lower edge of the upper glass sash.

The lower glass sash is then installed by inserting its lower edge into the upper ends of the U-channels 48 and 49 and urging said sash downwardly in said channels until it contacts the flange 37 of the support base 35. It will be observed that the interior flanges of the two respective U-channels are cut off somewhat shorter than are the webs and outer flanges thereof in order to facilitate this insertion.

When it becomes desirable to provide a limited amount of ventilation through the unit 10, the

handles 74 and 75 are drawn toward each other in order that their upper portions will clear the protrusions 81 and 82, and the lower glass sash is then raised as desired. The said handles are then moved sidewardly away from each other and the sash is allowed to come downwardly, The upper portions 76 and 77 will be engaged by one of the pairs of protrusions 81 and 82 and the window will be held in a selected raised position thereby.

If it is desired to move the lower glass sash upwardly to its full open position, which is the same as its storage position, the said lower sash is, with the handles 74 and 75 first moved toward each other to clear said protrusions 81 and 82, lifted upwardly until the lower rail 73 thereof is entirely above the brackets 83 and 84. At this point, said lower sash will have been urged between the springs 61 and 62 and the face flanges 19a and 19. The tension of the springs 61 and 62 will urge the lower sash exteriorly against the upper glass sash. A slight downward movement of the lower glass sash will then cause the surfaces defined by the cut out portions 90 to rest upon the upper surfaces of the brackets 83 and 84. The brackets will support said lower glass sash in its upper or storage position and the action of said springs 61 and 62 will assure that said sash will not accidentally slip off said supporting brackets.

It will be seen that the support brackets 83 and 84 provide an uncomplicated, positive means for supporting the lower glass sash 12 in the storage position without necessitating that said lower sash be moved inwardly of a plane defined by the interior edges of the blind stop 23 at any time, including the movement of said lower glass sash upwardly into or downwardly out of said storage position.

The lower glass sash is removed from the combination unit by sliding it downwardly and interiorly from the storage position after disengaging the lower rail 73 thereof from the brackets 83 and 84. The upper glass sash 11 may then be removed by urging it upwardly slightly until it is disengaged from the positioning ears 65 and then drawing it interiorly and downwardly. This need for upward movement of the upper glass sash to effect such disengagement is the reason why the distance between the said web 69 of the channel 68 and the flange 37 of the base 35 is slightly greater than the combined vertical lengths of the screen sash 13 and upper glass sash 11. The screen sash 13 may also be removed by moving it upwardly to clear the U-channels 48 and 49, and then interiorly and downwardly.

Although the above mentioned drawings and description apply to one particular, preferred embodiment of the invention, it is not my intention, implied or otherwise, to eliminate other variations or modifications which do not depart from the scope of the invention unless specifically stated to the contrary in the hereinafter appended claims.

I claim:

1. In means for supporting sash with respect to each other and substantially within a zone defined peripherally by the sill and blind-stop of a window frame, said blind-stop having an exterior edge, the combination comprising: a plurality of guide angles having side and face flanges, said side flanges being secured to the opposing surfaces of said blind-stop substantially along the full length thereof and having lengthwise beads

intermediate the lengthwise edges thereof and extending therefrom out of said zone adjacent to said blind-stop exterior edge, and said face flanges extending into said zone substantially within a single plane disposed externally of said blind-stop; a first glass sash removably held against and parallel with said face flanges and resilient means secured to said blind-stop removably holding said glass sash within said zone and near the top thereof; a second glass sash and means secured to said side flanges slidably holding said second glass sash adjacent to, interiorly of, and parallel with said first glass sash and within said zone; and means for disconnectably engaging and supporting said second glass sash in a raised position.

2. In means for supporting storm and screen sash with respect to each other and substantially within a zone peripherally defined by the sill and blind-stop of a window frame, said blind-stop having an exterior edge, the combination comprising: a plurality of guide angles having first and second flanges, said first flanges being secured to the opposing surfaces of said blind-stop substantially along the full length thereof and having lengthwise beads intermediate the lengthwise edges thereof and extending therefrom out of said zone and positioned adjacent to said blind-stop exterior edge, and said second flanges extending into said zone substantially within a single plane disposed externally of said blind-stop; co-planar upper glass sash and lower screen sash within said zone and resilient means secured to said blind-stop removably holding said sash in said zone adjacent to said second flanges; a second glass sash and means secured to said first flanges adjacent to said sill slideably holding it within said zone adjacent to, interiorly of, and parallel with said co-planar sashes; and means secured to the top rail of said screen sash between the side rails of said second glass sash for disconnectably engaging said second glass sash when in the raised position.

3. In a self-storing metal storm and screen sash unit supportable upon, and substantially within, the zone peripherally defined by the opposing surfaces of the sill and blind-stop of a double hung window frame, said blind stop having an exterior edge, the combination comprising: a plurality of guide angles having first and second flanges, said first flanges each having a longitudinally disposed bead intermediate the lengthwise edges thereof and extending therefrom oppositely to said second flange, and said first flanges being secured to said blind-stop opposing surfaces along the full length thereof, said beads extending out of said zone and positioned adjacent to said blind-stop exterior edge and said second flanges extending into said zone and lying substantially within a single plane disposed externally of said blind-stop; a screen sash and means slidably and removably holding same within, and near the bottom of, said zone adjacent to the second flanges, and a first glass sash and resilient means removably holding same against said second flanges supported upon said screen sash and co-planar therewith; a second glass sash and means slideably holding same adjacent to, interiorly of, and parallel with, said first glass and screen sashes with its upper rail partially overlapping the lower rail of the upper sash when said glass sashes are in closed position; a resilient strip between said rails; and means extending from the screen upper rail into the plane of said second glass sash between the vertical rails there-

of for disconnectably engaging the lower rail of said second glass sash when in a raised position.

4. In a self-storing, metal storm and screen sash unit supportable upon the opposing surfaces of the blind stop and sill of a double hung window frame and primarily within the zone between two planes defined by the interior and exterior edges of said blind stop, the combination comprising: a pair of vertical guide angles having first and second flanges, said first flanges each having a bead lengthwise thereof, intermediate the longitudinal edges thereof and extending therefrom in a direction opposite to said second flange, and said first flanges being secured to the opposed surfaces on the opposed sides of said blind-stop and extending the length thereof, said beads being located adjacent to the exterior edges of said blind-stop, and said second flanges extending into said zone and lying within a plane disposed externally of said beads; a horizontal guide angle having first and second flanges identical in cross-section with said vertical guide angles and extending between the upper ends thereof, the first flange of the horizontal angle being secured to the surface of said blind-stop facing said zone, the second flange thereof extending into said zone adjacent to the vertical second flanges, and the bead thereof extending out of said zone adjacent to said blind-stop exterior edge; a U-channel associated with the lower portion of each of said guide angles to form two adjacent, parallel and inwardly facing side channels; a screen sash slideably and removably held by and within the exterior of said side channels adjacent to the vertical second flanges within said zone; a first glass sash and means removably holding same within said zone against said vertical second flanges adjacent to said horizontal angle, said first sash being co-planar with and supportable upon the screen sash; a second glass sash slideably held within said zone by and within said interior of said side channels adjacent to, interiorly of, and parallel with said first glass and screen sashes; a pair of spaced, horizontally slideable handles secured to the lower rail of the second glass sash and means secured to the vertical guide angles and selectably engageable by said handles for holding said second glass sash in a partially raised position; and a bracket extending from the screen upper rail at a point between the side rails of the second glass sash a short distance into the plane of said second glass sash for disconnectably engaging the lower rail thereof and supporting the second sash in a storage position.

5. In a self-storing, metal storm and screen sash unit supportable entirely upon and substantially between the mutually opposed surfaces of the sill, the top horizontal element and the two vertical side elements of a blind-stop in a double-hung window frame, said blind-stop elements having exterior edges, the combination comprising: a pair of substantially identical, vertical guide angles extending between the sill and the top blind-stop element, each angle having perpendicularly disposed face and side flanges, each said side flange having a longitudinally disposed bead intermediate its longitudinal edges and extending therefrom in the opposite direction from said face flange, and one of the side flanges being secured to each of said opposed surfaces of the vertical elements with said beads being snugly adjacent to and externally of the said exterior edges of said vertical elements, and said face flanges extending toward each other and lying within a single plane spaced externally of said exterior edges; a horizontal guide angle identical in cross-section with said vertical guide angles and extending between the upper ends thereof, the side flange thereof being secured to the lower surface of said top horizontal element, the face flange thereof extending downwardly parallel with, externally of, and adjacent to the upper ends of the face flanges of said vertical angles and the bead thereof extending upwardly adjacent to and externally of the exterior edge of the top element; a screen sash and means holding same vertically, slideably and removably adjacent to the interior surfaces of said face flanges of the vertical guide angles; a glass carrying upper sash and resilient means holding same against said face flanges and adjacent to the horizontal guide angle, said upper sash being co-planar with and supportable upon the screen sash; an interengaged extension and receptacle located, respectively, on one and the other of the upper edge of the screen sash and the lower edge of the upper sash; a glass carrying lower sash and means removably and slideably holding same between said side flanges for upward and downward movement substantially within a plane parallel with, and adjacent to and interiorly of, the plane of the screen sash; a pair of spaced, horizontally slideable handles secured to the lower rail of the upper glass sash and means secured to the vertical guide angles and selectably engageable by said handles for holding said upper glass sash in a partially raised position; and a pair of spaced brackets extending from the upper rail of the screen sash at points between the side rails of the lower glass sash a short distance into the plane of said lower glass sash for disconnectably engaging the lower rail thereof and supporting the lower glass sash in a storage position.

6. In means for supporting storm and screen sash with respect to each other and substantially within a zone peripherally defined by the sill and blind-stop of a window frame, said blind-stop having an exterior edge, the combination comprising: a plurality of guide angles having first and second flanges, said first flanges being secured to the opposing surfaces of said blind-stop substantially along the full length thereof and having lengthwise beads intermediate the lengthwise edges thereof and extending therefrom out of said zone and positioned adjacent to said blind-stop exterior edge, and said second flanges extending into said zone substantially within a single plane disposed externally of said blind-stop; co-planar upper glass sash and lower screen sash within said zone and resilient means secured to said blind-stop removably holding said sash in said zone adjacent to said second flanges; a second glass sash and means secured to said first flanges adjacent to said sill slideably holding it within said zone adjacent to, interiorly of, and parallel with said co-planar sashes.

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