Dec. 19, 1944. V. E. ANDERSON 2,365,238

COMBINATION STORM SASH AND SCREEN STRUCTURE

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FIG.1.

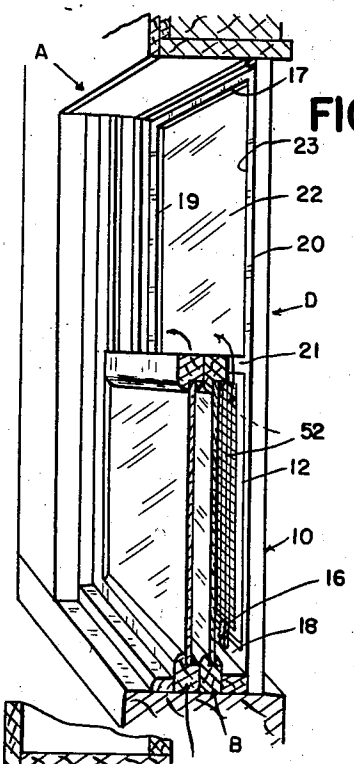


FIG.2.

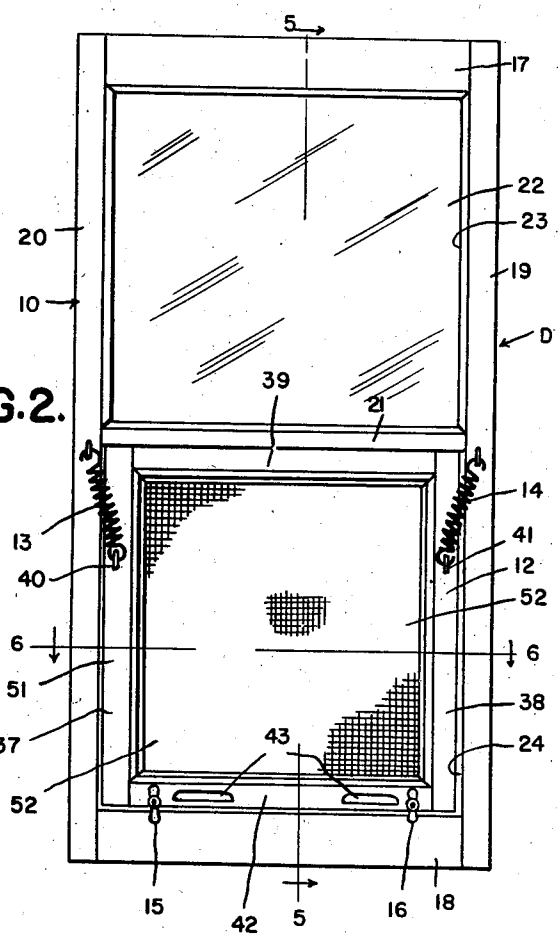


FIG.4.

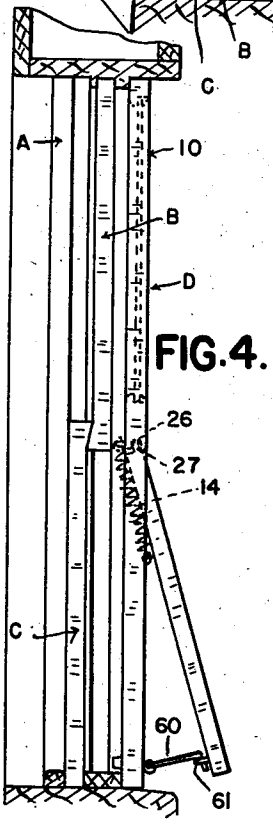
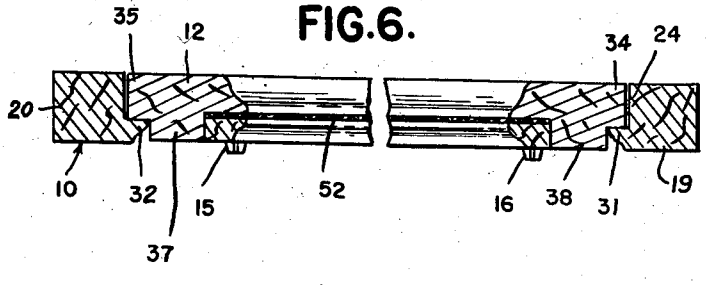


FIG.6.



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FIG.3.

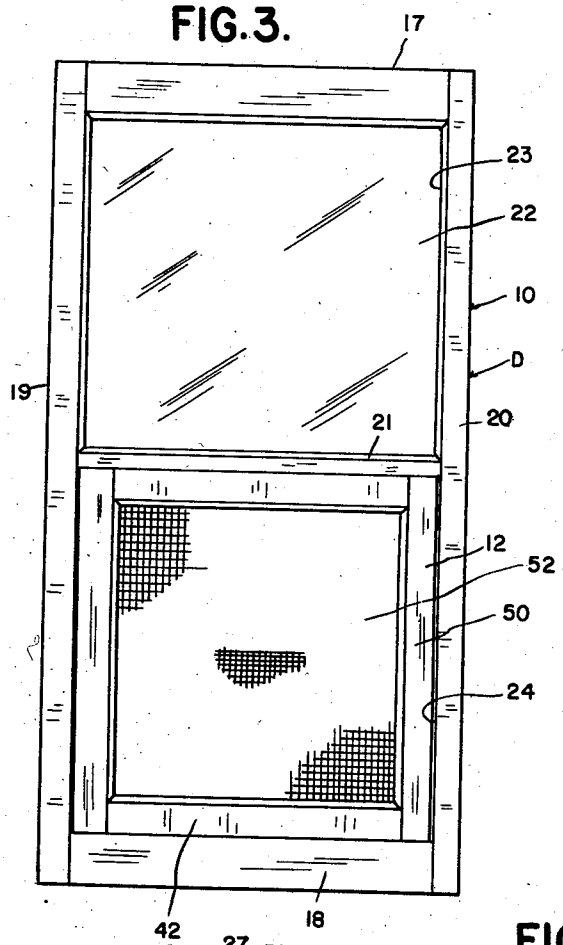


FIG.5.

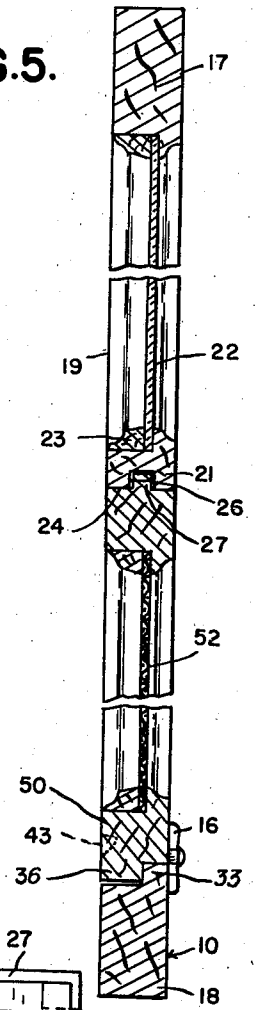


FIG.7.

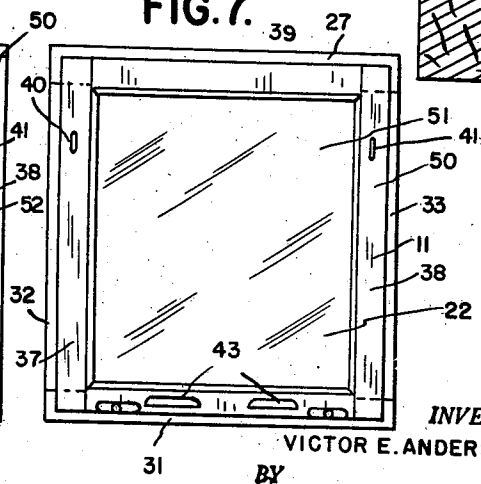
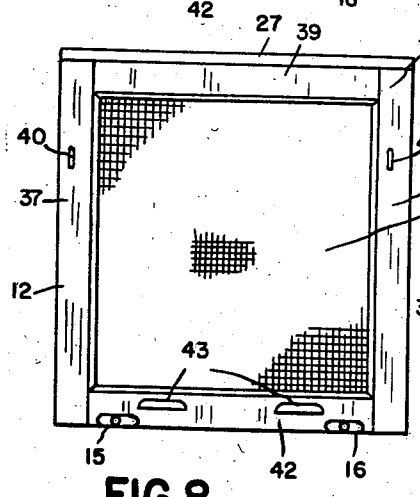


FIG.8.



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COMBINATION STORM SASH AND SCREEN STRUCTURE

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Application December 7, 1942, Serial No. 468,1[illegible]

3 Claims. (Cl. 160—180)

This invention relates generally to storm sash and refers more particularly to an improved storm sash and screen combination.

One of the essential objects of the invention is to provide a combination of the type mentioned having glass and screen inserts which may be readily and easily removed and interchanged whenever desired from the inside of the building upon which they are mounted. Thus it is unnecessary to employ skilled labor, ladders and tools as in the past when inserts are removed, interchanged or replaced.

Another object is to provide an improved combination wherein easy and efficient ventilation may be readily obtained without swinging the entire storm sash outward relative to its supporting frame or providing slots or openings in the rails of the sash as heretofore. Moreover, my structure avoids the use of slidable inserts which require guides and other added fixtures that increase the cost thereof.

Another object is to provide a storm sash and screen combination that is constructed in such a way that it may provide an indirect ventilation through the upper portion of an ordinary sliding double sash window structure when the upper sash thereof is lowered, and will cooperate with the lowered sash of the window structure to effectively prevent rain, snow, sleet, etc., from entering the building while being ventilated.

Another object is to provide a combination of the type mentioned wherein only the lower portion thereof is adapted to be operated or moved. The upper portion is rigid or fixed. Thus, the general mechanical difficulties now existing in other forms of storm sash are reduced and a better air-tight storm structure is provided.

Another object is to provide a storm sash and screen combination wherein the glass and screen inserts at the lower portion thereof are interchangeable and are substantially similar in size or area to the size of the ordinary window. Heretofore when separate storm sash and screens in their entirety were interchanged, a tight fit with the ordinary window frame was not always obtained because window frames of like size in a home or building are not or do not always remain square or close enough to their exact size to permit separate storm sash and screens to be interchanged and obtain a tight fit. With my construction the frame of the storm sash remains fitted to the window frame and only the lower glass insert and screen insert therefor are interchanged. Hence a tight fit is assured because the inserts are interchanged accurately and tightly within the storm sash frames instead of the window frames.

Another object is to provide a combination wherein yieldable elements, preferably in the form of coil springs, are employed for holding the inserts in proper assembled position relative to the frame of the combination. Actually these springs serve as flexible hangers and hinge elements for the inserts when swung outwardly relative to the frame.

Another object is to provide a combination that is simple in construction, economical to manufacture, easy to install, and efficient in operation.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a sectional perspective view of a storm sash and screen combination applied to an ordinary sliding double sash window structure and showing the upper sash in lowered position permitting indirect circulation of air from the outside through the screen insert and upwardly over the lowered sash to the inside of the window frame.

Figure 2 is a front elevation of a storm sash and screen combination embodying my invention;

Figure 3 is a rear elevation of the combination;

Figure 4 is an edge elevation of the combination when a glass insert is employed and showing the insert swung outwardly and held in such position by a hook and eye, the window frame being in section;

Figure 5 is a vertical sectional view taken substantially on the line 5—5 of Figure 2;

Figure 6 is a cross sectional view taken substantially on the line 6—6 of Figure 2;

Figure 7 is a detail view of the glass insert;

Figure 8 is a detail view of the screen insert.

Referring now to the drawings, A is the frame, and B and C, respectively, are the vertically sliding glass sash of an ordinary sliding double sash window of a building such as a dwelling.

D is a storm sash and screen combination embodying my invention and applied to the outer side of the frame A of the window structure aforesaid.

Preferably the combination D has a frame 10, interchangeable inserts 11 and 12, respectively, coil springs 13 and 14, respectively, for holding the respective inserts in assembled relation to the frame, and fasteners 15 and 16, respectively, for

holding the inserts in closed position relative to the frame 10.

As shown, the frame 10 of the combination is substantially rectangular shaped and has top and bottom rails 17 and 18, respectively, side rails 19 and 20, respectively, and an intermediate cross rail or bar 21 rigidly secured together. A pane 22 of glass is mounted within the opening 23 bounded by the rails 17, 19, 20 and 21 and constitutes a fixed or rigid closed upper portion of the combination, while framed glass and screen inserts 11 and 12, respectively, may be used alternately in the space 24 bounded by the rails 21, 19, 20 and 18 and constitute exchangeable lower portions of the combination.

Preferably the lower edge of the cross rail 21 is provided throughout its length between the side rails 19 and 20 with a downwardly opening channel shaped groove 26 constituting a fulcrum for a transversely extending rib 27 on the upper edge of each insert 11 and 12, respectively, while the side rails 19 and 20, respectively, and bottom rail 18 of the frame are provided substantially flush with their forward faces with inwardly extending lateral flanges 31, 32 and 33, respectively, that constitute abutments for outwardly projecting lateral flanges 34, 35 and 36, respectively, of the inserts 11 and 12.

Upon the inner face of the side rails 37 and 38, respectively, of each insert 11 and 12, near the top rail 39 thereof are hooks 40 and 41 which are adapted to be engaged by the lower ends of the coil springs 13 and 14 anchored at their upper ends upon the inner faces of the side rails 19 and 20 of the frame 10 at points adjacent the intermediate cross rail 21. These springs 13 and 14 serve the dual purpose of flexible hangers and hinges for the inserts 11 and 12 so that the inserts will be maintained in proper assembled relation to the frame 10, especially the intermediate cross rail 21 thereof, regardless of whether the inserts are in closed or open position. In this connection it will be apparent that these springs hold the rib 27 at the upper edge of each insert within the channeled groove 26 in the intermediate cross rail 21 of the frame so that each insert may swing in the groove 26 from closed position to the outwardly inclined position illustrated in Figure 4.

At the bottom of each insert, preferably on the inner face of the lower rail 42 thereof, are two rotatable fasteners 15 and 16 which may be turned by hand about their pivots into engagement with the inner surface of the lower rail 18 of the frame 10, as illustrated in Figure 2, to hold the respective inserts in closed position. When in this position the lateral flanges 34, 35 and 36, respectively, of the respective inserts overlap and fit snugly against the lateral flanges 31, 32 and 33, respectively, of the frame 10 to provide an air-tight joint between the parts. If desired, one or more suitable grooves 43 may be provided in the inner surface of the bottom rail 42 of each insert to serve as a finger recess when swinging the respective inserts outwardly.

Each insert 11 and 12 is a complete unit having a rigid frame 50 of substantially square configuration. The insert 11 contains a glass pane 51, while the insert 12 contains wire mesh or screen material 52. Preferably the frames 50 of the inserts and the main frame 10 of the combination are formed of wood, however it is apparent that any suitable material may be employed as desired. Likewise the shape or configuration of the respective parts may be varied as desired. The essence of the invention resides in the provision of a storm sash having a rigid closed upper portion and removable interchangeable glass and screen inserts such as 11 and 12, respectively, in the lower portion, said inserts being held in assembled relation with the frame 10 by springs such as 13 and 14 that serve as yieldable hanger and hinge elements for said inserts.

The groove 26 in the lower edge of the cross rail 21 and the engaging rib 27 on each insert not only cooperate to provide a simple hinge assembly for the inserts but also permit quick and easy removal of the inserts from the main frame 10. Due to this construction such interchange of inserts or removal thereof may be easily effected from inside the building upon which the combination is mounted. Moreover, the cross rail 21 of the main frame 10 serves as a bottom frame member for the upper fixed glass pane 51 as well as a hinge or fulcrum element for the lower removable inserts 11 and 12, respectively.

In practice the main frame 10 of the storm sash combination may fit against the usual blind stops between the side uprights of the ordinary sliding double sash window frame of a dwelling or other building, however it is apparent that such frame may be mounted upon the outer face of the window frame in any suitable manner to provide a tight storm sash connection with the window frame. Preferably the main frame 10 of the storm sash combination may be attached to the window frame by screws or may be hung with regular storm sash or screen hangers the same as conventional storm sash or screens are hung. In fact, the storm sash and screen combination is such that it could be used alone as the main window structure in a building, especially in temporary housing projects of the type now being carried out for factory workers.

When used alone, i. e., not in combination with a regular window structure, the frame 10 of the combination could be fixed or mounted in a window opening in the housing structure in any desired manner to permit the inserts 11 and 12 to be alternately used in the frame 10.

When it is desired to remove or interchange the inserts 11 and 12, the insert in the frame 10 is swung outwardly to clear the lower or bottom rail 18 of the main frame and then is pressed or pulled downwardly to remove or withdraw the rib 27 from the groove 26. Then the insert is allowed to move upwardly in substantially parallel relation to the main frame to relieve tension on the springs 13 and 14. When in this relieved position the lower ends of the springs 13 and 14 may be readily disengaged from the hooks 40 and 41 on the main frame so that the insert may be removed entirely from the combination. To replace the insert or to substitute the other insert in the frame 10, the reverse procedure is followed, i. e., the lower ends of the springs 13 and 14 are first engaged with the hooks 40 and 41 on the insert, then the latter is pressed or pulled down so that the rib 27 may be engaged with the groove 26 in the cross rail 21. The springs 13 and 14 will then automatically move the insert upwardly into assembled position with the frame.

Should it be desired to provide direct ventilation when the glass insert 11 is mounted within the frame 10 of the combination, the lower sash of the ordinary window may be raised and the glass insert 11 may be swung outwardly and held in its outermost position by a hook 60 and eye 61. Should it be desired to provide indirect

ventilation when either of the inserts are employed, the upper sash of the ordinary window may be lowered beside the lower sash so that air may enter the lower portion of the storm sash combination either through the opening therein provided by the outwardly swung glass insert 11 or through the screen insert 12, as illustrated in Figure 4. Such air will then flow upwardly over the top edge of the lowered upper window sash as illustrated in Figure 1 to the interior of the building. Thus, when both window sash are in lowered position as illustrated in Figure 1, the air from the outside may enter the building, but rain, snow, sleet, etc., is prevented from entering by the fixed upper glass portion 22 of the storm combination and by the lowered sash of the window structure.

Thus, from the foregoing, it will be apparent that I have provided an efficient all weather and all year protection which may be readily applied at low installation cost. In fact, the combination is so well constructed and easy to operate that any unskilled person may interchange the inserts in a very few minutes. The convenience of the change-over and the small storage space required for the inserts not being used are important factors of my construction. Moreover, the change-over, i. e., the interchanging of inserts can always be made from inside the building, hence ladders, tools, etc., are unnecessary. It should also be noted that the glass pane 51 and wire mesh 52 in the inserts 11 and 12, respectively, are held in place by wood moldings such as 70, hence putty and the like has also been dispensed with entirely and a better and more sturdy structure is provided.

What I claim as my invention is:

1. A portable storm sash combination, comprising an upright elongated rigid frame formed of top, bottom and side rails, said elongated frame having a cross bar between and rigid with the side rails intermediate their ends and dividing the elongated frame into upper and lower openings, a panel within and permanently closing the upper opening, the cross bar being secured to and constituting a bottom frame member for said panel, the underside of said cross bar being provided throughout its length with a downwardly opening channel shaped groove, a removable sash insert having lateral flanges within the lower opening, the upper edge of said insert being provided substantially throughout its length with an upstanding rib fulcrumed within the groove aforesaid in the underside of the cross bar whereby the insert may swing bodily outward about its fulcrum relative to the frame, the insert being quickly removable from the frame by disengaging the rib of the insert from the groove in the cross bar, the side and bottom rails aforesaid of the frame being provided with lateral flanges constituting abutments for the lateral flanges of said insert, coil springs terminally connected to the side rails of the frame and to the insert and normally maintaining the fulcrum engagement aforesaid between the rib of the insert and the groove in the cross bar, said springs normally holding the lateral flanges of the insert against the lateral flanges of the side and bottom rails of the frame, and one or more detachable connections between the bottom rail of the frame and said insert for holding the lateral flanges of the insert against the lateral flanges of the side and bottom rails of the frame to provide a tight joint between the parts.

2. A portable storm sash combination, comprising an upright elongated rigid frame formed of top, bottom and side rails, said elongated frame having a cross bar between and rigid with the side rails intermediate their ends and dividing the elongated frame into upper and lower openings, a transparent panel within and permanently closing the upper opening, the cross bar being secured to and constituting a bottom frame member for said panel, the underside of said cross bar being provided throughout its length with a downwardly opening channel shaped groove, a removable sash insert within the lower opening, the upper edge of said insert being provided substantially throughout its length with an upstanding rib fulcrumed within the groove aforesaid in the underside of the cross bar whereby the insert may swing bodily outward about its fulcrum relative to the frame, the insert being quickly removable from the frame by disengaging the rib of the insert from the groove in the cross bar, coil springs terminally connected to the elongated frame and to the insert and normally maintaining the fulcrum engagement aforesaid between the rib of the insert and the groove in the cross bar, said springs and their connections constituting the sole supports for said insert when its lower portion is swung outward away from the frame, and one or more detachable connections between the elongated frame and said insert for holding the insert in closed position against the frame to provide a tight joint between the parts.

3. A portable storm sash combination for use with a frame of a double sliding sash window structure, comprising an upright elongated rigid frame substantially equal in area and attachable to the window frame, said elongated frame being formed of top, bottom and side rails and having a cross bar between and rigid with the side rails intermediate their ends dividing the elongated frame into upper and lower openings, a transparent panel within and permanently closing the upper opening, the cross bar being secured to and constituting a bottom frame member for said panel, the underside of said cross bar being provided throughout its length with a downwardly opening channel shaped groove, a removable sash insert within the lower opening, the upper edge of said insert being provided substantially throughout its length with an upstanding rib fulcrumed within the groove aforesaid in the underside of the cross bar whereby the insert may swing bodily outward about its fulcrum relative to the frame, the insert being quickly removable from the frame by disengaging the rib of the insert from the groove in the cross bar, coil springs terminally connected to the elongated frame and to the insert and normally maintaining the fulcrum engagement aforesaid between the rib of the insert and the groove in the cross bar, means for holding the insert in an outwardly swung position against the tension of said springs, and one or more detachable connections between the elongated frame and said insert for holding the insert in closed position relative to the elongated frame to provide a tight joint between the parts, said insert when swung outward facilitating indirect circulation of air from the lower opening in the elongated frame through a space provided in the upper part of the sliding window structure above the upper sliding sash thereof when said upper sash is slid downward to a lowered position.

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