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[54] **COMBINATION SCREEN, STORM SASH AND**
STORAGE UNIT
12 Claims, 10 Drawing Figs.

[52] U.S. Cl..... **160/92**

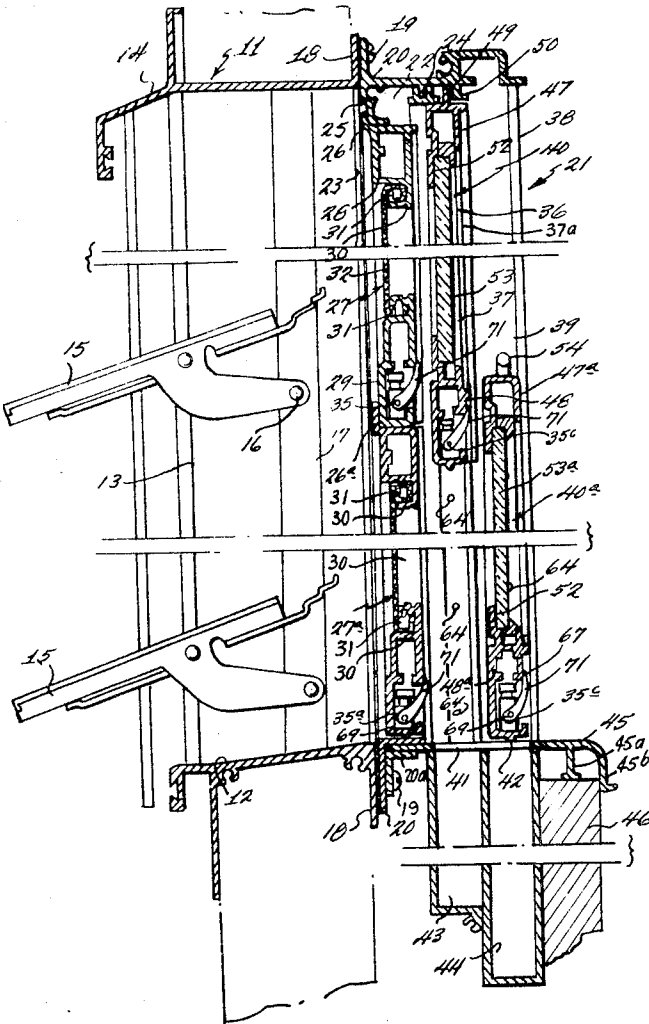
[51] Int. Cl..... **E06b 03/30,**
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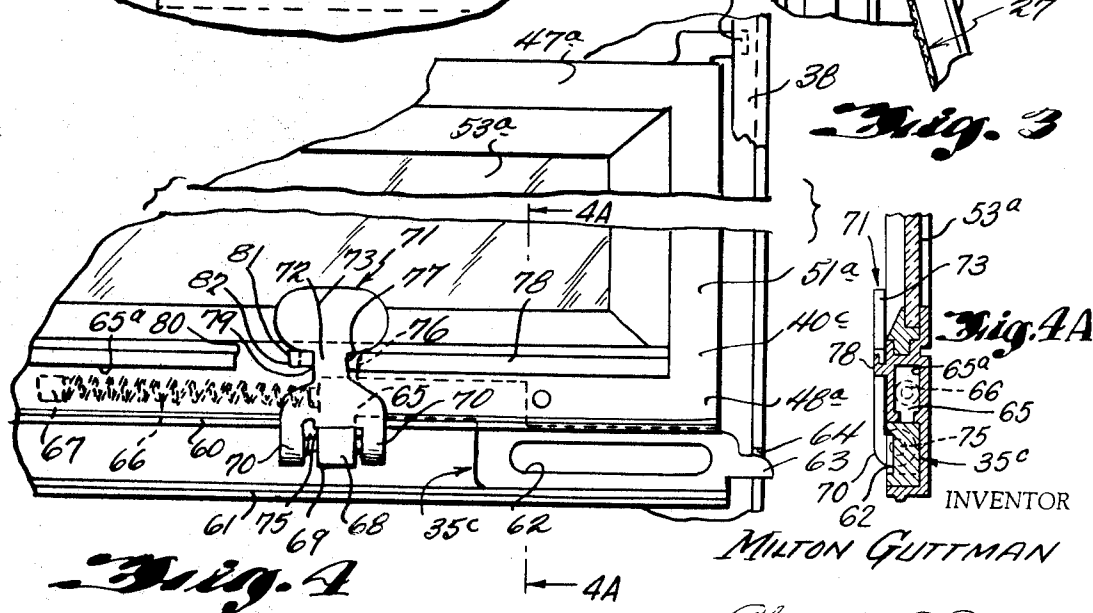
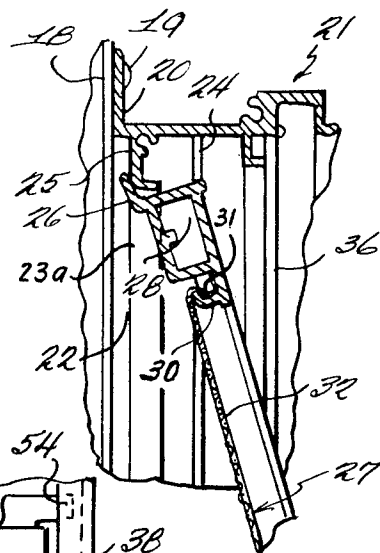
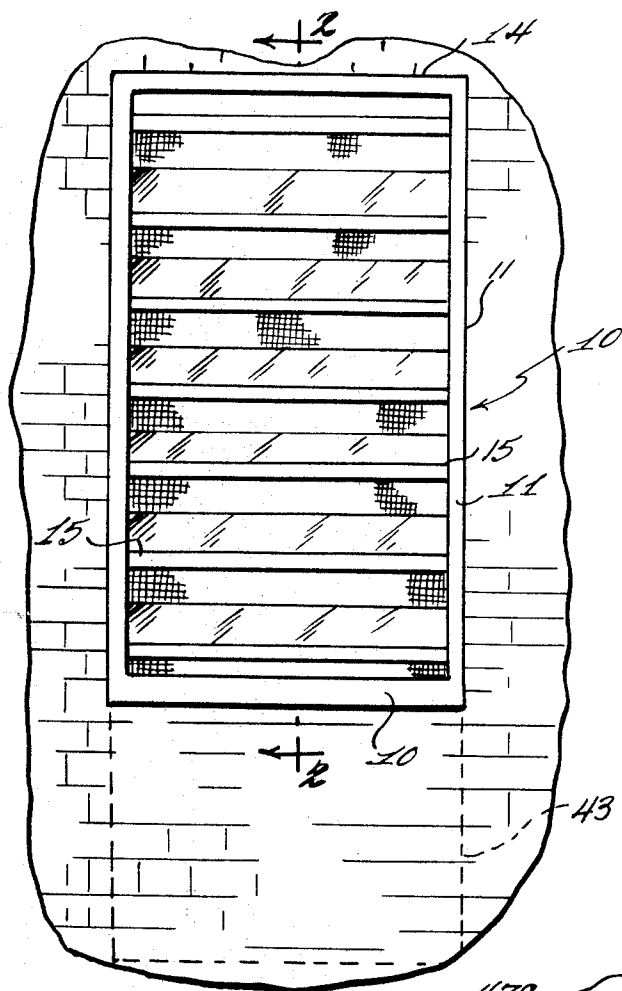
[50] Field of Search..... **160/37,**
89-92: 292(Inq)

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ABSTRACT: A combination double sash storm window and double sash screen particularly adapted for use with a louvered window, comprising a channeled frame positioned interiorly of the louvered window, wherein either or both storm or screen sashes may be completely removed, affording complete ventilation when the louvered window is open, including bolt means for retaining the storm or screen sashes in a selected partially open position, and a storage receptacle below the sill wherein both storm sashes may be stored when removed from the frame.



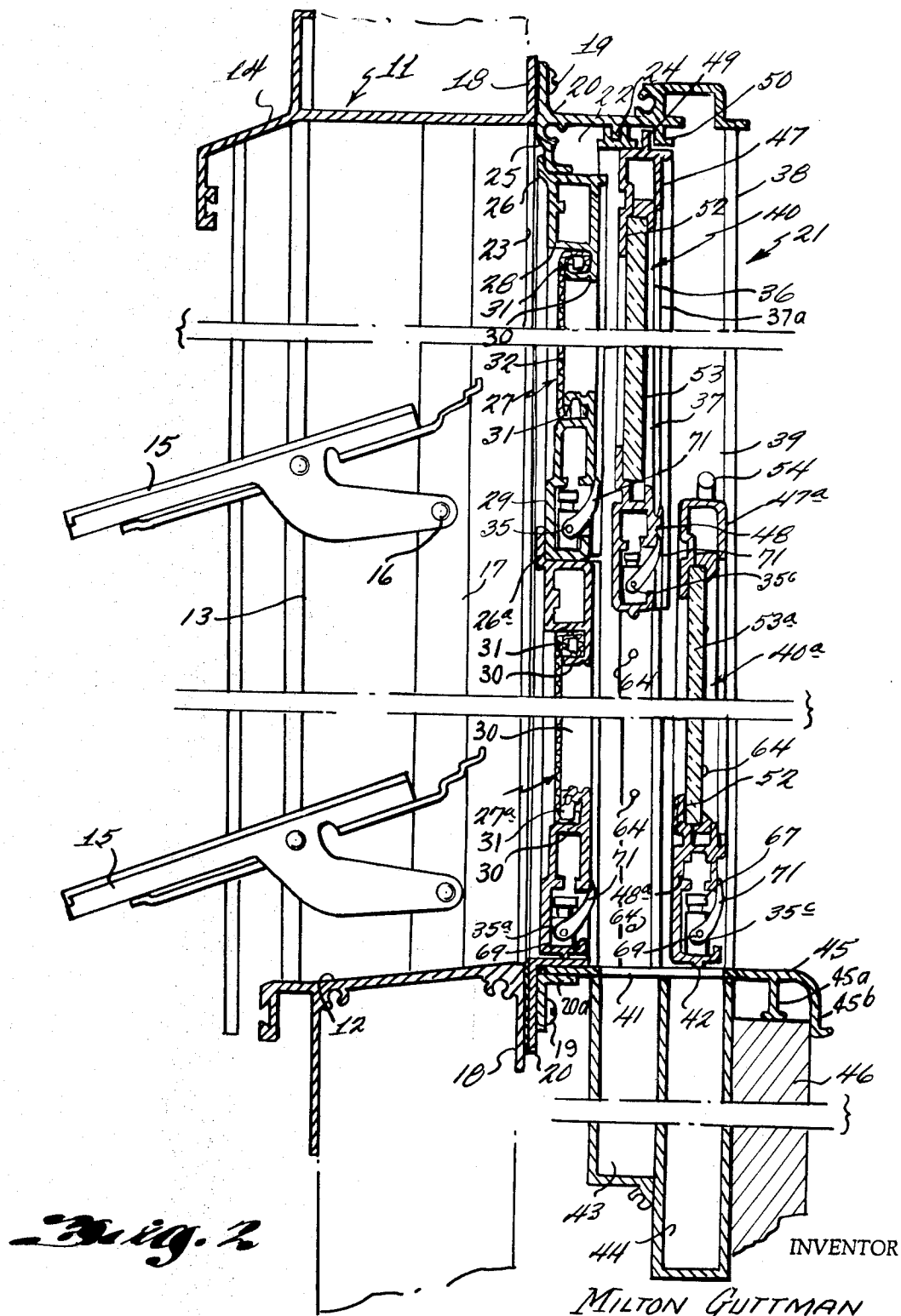


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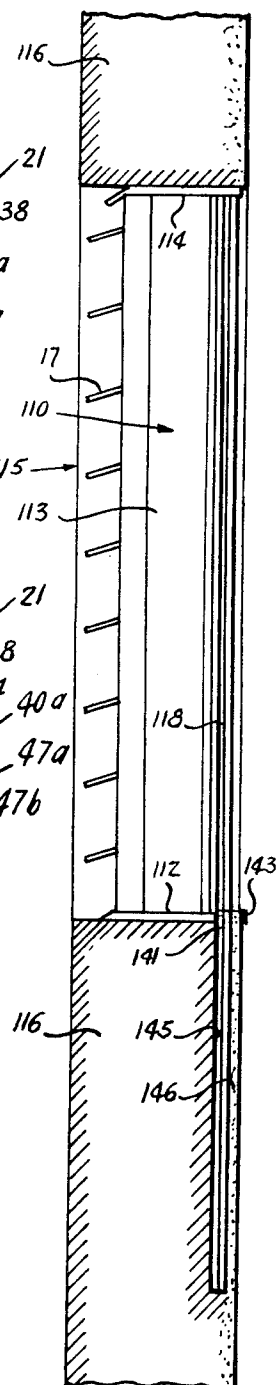
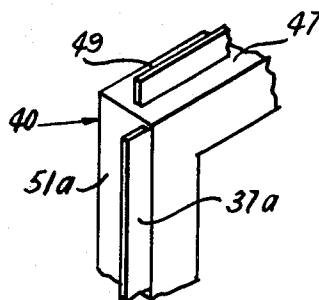
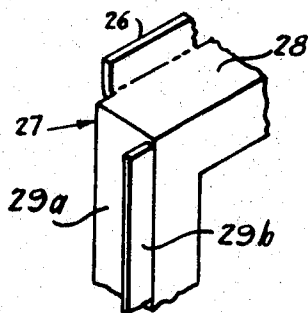
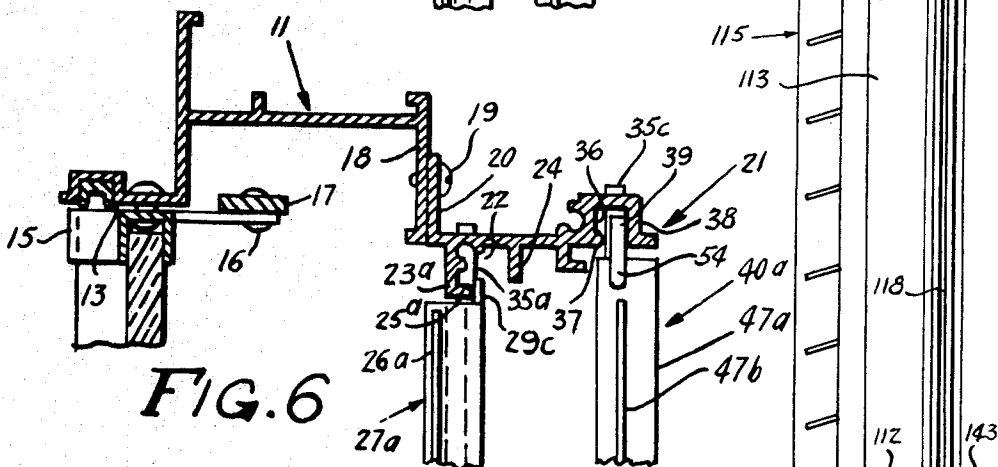
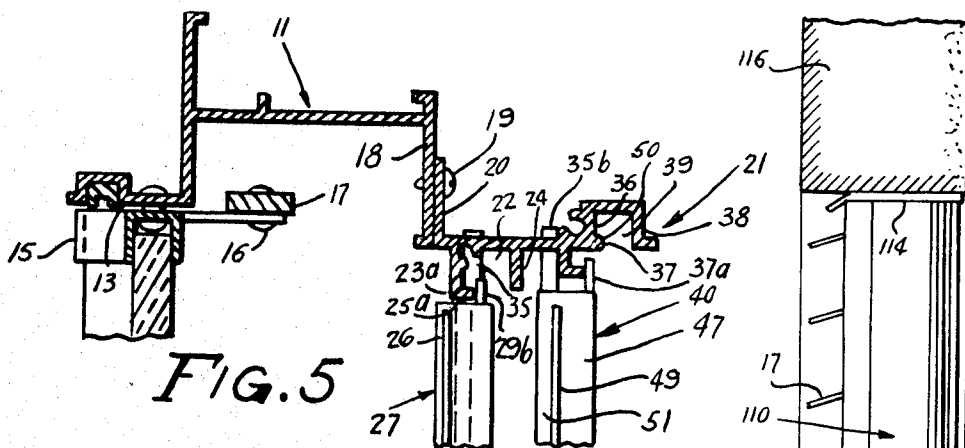


FIG. 9

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COMBINATION SCREEN, STORM SASH AND STORAGE UNIT

This invention relates to a combination screen, storm sash and storage unit, and has particular applicability to such a unit which may be formed integrally with, or subsequently attached to or positioned adjacent a louvered window construction. This application is a continuation-in-part of my copending application, Ser. No. 402,708, filed Oct. 9, 1964 now abandoned.

A primary object of this invention is the provision of a unit of this character which provides a combination screen which covers the full area of the window, in combination with a double storm window, either or both portions of which may be raised or lowered, or may be independently removed and stored in a receptacle which is formed integrally with the frame thereof.

An additional object of the invention is the provision of a storage unit integral with the frame which may be installed in the interior of the supporting wall, in the space normally used for furring strips and lath below the level of the window and sash units.

An additional object of the invention is the provision of a device of this character which may be installed in a new building with the installation of the louvered window frame, or which alternately may be subsequently added to a louvered or other window as desired.

A still further object of the invention is the provision of a device of this character wherein either of the storm sections or the screen sections, or all of them, may be removed and repositioned independently, and with a minimum of time, effort and difficulty.

A more specific object of the invention is the provision of a device of this character employing a pressure fit for the screens and the storm window sash.

An additional object of the invention is the provision of a device of this character provided with an improved retaining pin assembly and sliding lock therefor.

Still another object of the invention is the provision of a device of this character which is sturdy and durable in construction, reliable and efficient in operation, simple and inexpensive to install and assemble, and relatively inexpensive to manufacture.

A further object of this invention resides in the provision of a unit of this character which will provide full screen protection at all times while permitting complete or partial ventilation through the window opening, by adjustment or removal of the sashes, the sashes being independently operable and removable without necessarily interfering with one another.

Still another object of the invention is the provision of such a unit which, particularly when used with louvered windows, provides, through the specific construction and location of the screens and storm sashes on the interior of the window, a structure which may be manipulated wholly from the interior of the building in an extremely simple and expeditious manner.

A further object of the invention resides in the provision of a unit of this character, which, by virtue of its interior installation, eliminates corrosion due to exposure, and consequent repairs and service costs.

Still other objects reside in the combinations of elements, arrangements of parts, and features of construction, all as will be more fully pointed out hereinafter and shown in the accompanying drawings wherein there is disclosed a preferred embodiment of this inventive concept. In the drawings:

FIG. 1 is a front elevational view of a louvered window installation showing the internal positioning of the screen, storm sash and storage unit relative to a building.

FIG. 2 is an enlarged sectional view, partially broken away, taken substantially along the line 2-2 of FIG. 1.

FIG. 3 is a fragmentary sectional view showing the method of installation of the screens and upper storm sash.

FIG. 4 is an enlarged fragmentary detail plan view, partially broken away, showing the latch pin assembly and the upper channel engaging pins of the storm window sections.

FIG. 4A is a sectional view taken substantially along the line 4A-4A of FIG. 4 as viewed in the direction indicated by the arrows

FIG. 5 is a sectional view through the jamb section showing a screen sash and the upper storm sash in closed position.

FIG. 6 is a view similar to FIG. 5 showing the tops of the lower screen sash and the lower storm sash.

FIG. 7 is a fragmentary perspective view of one of the screen sashes showing the position of the sealing flanges thereon.

FIG. 8 is a view similar to FIG. 7 showing the position of the flanges on the upper storm sash.

FIG. 9 is a vertical sectional view of a modified form of construction showing the application of a unit constructed in accordance with the instant invention which may be employed in conjunction with an existing louvered window installation.

Similar reference characters refer to similar parts throughout the several views of the drawings.

Having reference now to the drawings in detail, there is generally indicated at 10 a combination unit constructed in accordance with the instant invention which includes a louvered external window having a frame 11 including a sill 12, channeled side rails 13 and a lintel 14. Conventional louvers 15 are pivoted by pivots 16 on the usual operating bar 17 which may be moved remotely in any desired conventional manner by suitable means, not shown. In the illustrative embodiment of the invention herein shown, the frame is constructed of extruded aluminum, or similar material, although the particular configuration and construction of the louvered window is not essential to an understanding of the invention. The frame includes an inner perpendicular marginal flange 18, to which is secured, as by means of screws 19, a perpendicular peripheral flange 20 formed integrally with the screen, storm sash and storage unit frame of the instant invention, which is generally indicated at 21. Alternatively, in new window installations the frame 21 may be formed integrally with the frame 11 as a single formed unit. Frame 21 includes an outer or screen channel 22 which is defined by a marginal outer flange 23 and an inner flange 24. A depending flange 25 extends transversely across the top of channel 22 and inwardly extending side flanges 25a extending from the sides of flange 23 provide a means for engaging top flange 26 and side flanges 29b of a screen sash generally indicated at 27. Screen sash 27 includes a top frame member 28 and a lower frame member 29, as well as side frame pieces 29a of similar construction, all containing inwardly extending reverted flanges 30 defining channels 31 to which the screen 32 is attached in the conventional manner to form an operational unit. Lower screen sash 27a is identical in construction and the sashes may be interchangeably fitted into the channel. In this case the flange 26 at the top of screen frame 27 engages the flange 25 of the frame, while the corresponding flange 26a of screen frame 27a engages exteriorly of the lower frame member 29 of the upper sash. The flanges enable the screen panels to be secured in aligned relation, the flanges precluding outward movement of the upper parts, while slidable bolt mechanisms generally indicated at 35 and 35a, and to be described more fully hereinafter, operate pins which engage in openings in the side rails of the frame to secure the screens in position. Side flanges 29b and 29c respectively provide a friction tight sealing fit with corresponding flanges 25a on the jamb section.

Removal of any screen member may be simply and expeditiously accomplished as shown in FIG. 3 wherein simply by retracting the bolts 35 and 35a, one of which is positioned on either side of the screen frame, either panel may be tilted outwardly as shown in FIG. 3 so that its associated flange, illustratively 26, disengages from flange 25, or alternatively, lower frame member 29, and the screen frame readily removed. The width of the screen sashes including their flanges 29b is such that they may readily pass between the flanges 24 for transverse removal from the channel 22 directly from the interior of the building.

The frame 21 includes an additional flange 36, which defines an upper sash channel 37, and an inner flange 38 which defines an inner or lower sash channel 39. The channels contain respectively upper and lower sashes generally indicated at 40 and 40a respectively, which sashes are substantially identical, with the exception of certain minor details to be discussed hereinafter.

Each channel 37 and 39 has a full width opening 41 and 42 respectively at its bottom which opens into a vertically positioned storage receptacle 43 and 44 respectively, each of which is of a depth to accommodate completely one of the storm sashes 40 or 40a. These receptacles are used for storage of one or more of the sashes, when it is desired to provide either fifty percent or one hundred percent open space interiorly of the louvered window.

Frame 21 is provided at its bottom with a sill 45, which is normally fitted over the plaster wall 46 interiorly of the room, with the sash compartments extending into the space normally containing furring and lath interior of the plaster wall, and between it and the building frame. A depending flange 45a rests on the plaster below sill 45, while an outer flange 45b overlies the inner edge of the plaster. A horizontal flange 20a extending from lower flange 20 serves as an auxiliary support for sill 45.

Each storm sash section includes a channeled extruded aluminum frame including a top rail 47 and a bottom rail 48. The top rail of section 40a is provided with a flange 49, which, when the sash is in its upper position, engages behind the shoulder 50 interiorly of the channel 37 with a pressure fit to retain the top of the upper storm sash in position. Suitable side rails are provided at 51 and 51a, and all of the frame portions are provided with inwardly extending flanges 52, to which are secured glass storm panes 53 and 53a in the conventional manner. Side flanges 37a provide a tight friction fit with internal flanges 36 to retain the upper sash in position. The bottom frame members 48 and 48a each contain bolt mechanisms 35b and 35c, identical to the bolt mechanisms 35, and which will be described in detail hereinafter, while the lower storm sash 40a is provided on its top rail 47 with a flange 47a and pins 54 which extend laterally beyond the side sash member 51a, and normally engage behind the flange 38. The purpose of these pins will be described more fully hereinafter.

The bolt mechanisms 35, 35a, 35b and 35c may be substantially identical, and accordingly only one will be described. In FIGS. 4 and 4A the bottom frame member 48a of lower storm sash section 40a is shown as provided on its inner face with a pair of ridges 60 and 61 defining a groove, between which is mounted a sliding bolt member 62 for transverse lateral movement, the outer portion of which is provided with a bolt extension 63 which engages in a selected one of a plurality of openings 64 which are positioned at suitable spaced intervals in channel 39, so that the lower storm sash section may be opened and secured in a selected position of adjustment either in fully open position, or in a variety of partially open positions. The bolts of the screen sections and upper sash section are used primarily for securing purposes with the screen in fully closed position, although they may be employed alternatively to hold any one of these sections in a partially open position if desired for any reason.

The opposite end of each bolt member 62 has an upwardly extending lug 65 which extends into a channel 65a in bottom frame member 48a, and which is connected to one end of a spring 66, the other end of which engages a lug 67 interiorly of the channel 65a, with spring 66 normally biasing bolt 63 into extended position. A depending lug 68 in vertical alignment with lug 65 contains a transverse bore through which extends a pin 69 which extends between the legs 70 of a bifurcated latch handle member generally indicated at 71, which includes a reduced neck portion 72 and a thumb or finger engaging piece 73. The legs 70 are spaced apart a greater distance than the width of lug 68 to permit lateral movement of latch member 71, and a spring 75 is positioned in the space thus formed around pin 69, with its ends engaging respectively the latch piece 71 and the lug 68. Rotative movement of the latch

member 71 is thus permitted about the pin 69 in a direction toward and away from the sash, the spring 75 normally serving to bias the latch member into flush engagement with the sash. The surface of neck 72 adjacent the bolt member 63 is normally chamfered as at 76 to provide a bevel. This bevel is adapted to engage a correspondingly inwardly beveled shoulder 77 of a rib 78 which extends along the lower surface of lower sash frame member 48a and which is provided with a first open portion 79 and a second open portion 80. When the beveled edge 76 engages beneath the shoulder 77, the spring 75 holds latch piece 71 in flush or latching position, with bolt 63 extended and retained in position. Rotation of finger piece 73 will release the finger piece from its latching engagement and permit retraction of bolt member 63 against the bias of spring 66. After the bolt is retracted it may be retained in retracted position by releasing the finger piece and permitting the neck 72 to engage in the opening 80 with the beveled shoulder 76 engaging beneath a corresponding bevel 81 on a projecting portion 82 of rib 78 between the openings 79 and 80.

Means for retaining the bolts in retracted position are desirable when the several sections are positioned in the storage cabinets 43 or 44, so that they may be readily removed from the cabinets without the possibility of the bolt member 63 engaging or wedging in the sides thereof.

If desired, the spring bolt retracting means in the operating handle 71 may be omitted from the bolts of the screen sections 27 and 27a as an economy measure.

From the foregoing the use and operation of the instant invention should be readily understandable. Screen sections 27 and 27a are normally installed for protracted periods, but may be readily removed for cleaning or other purposes, merely by retracting their respective bolt assemblies 35 and 35a, and tilting either section outwardly until its associated flange 26 or 26a disengages with the associated flange 25, or the corresponding lower frame section 29. Replacement is simple, merely by reengaging the flanges, and releasing the bolt mechanisms to engage in the associated opening 64. Similarly, the storm sash 40a may be readily removed if desired for cleaning, or other purposes, merely by retraction of the respective bolt mechanism, and disengagement of the pins 63 from the associated flange openings 66. The width of all the sections is such that they may be tilted outwardly laterally between the flanges 24, 36 and 38 without the necessity for vertical disalignment. Sash 40 may be removed by withdrawal of the bolt mechanism and disengagement of the pressure fit provided through flanges 49 and 37a. Sash member 40a may be raised and lowered as desired, and the respective bolt mechanisms engaged in any one of the pairs of openings 64 on opposite sides of the frame to retain the sash in a selected position of adjustment. When not in use, the bolt mechanisms may be retracted and latched as previously described, and either or both of the storm sections moved downwardly into storage receptacles 43 or 44.

In removing and replacing the lower storm sash section after retraction of the bolt mechanisms it is necessary slightly to tilt the sash vertically to disengage the slightly protruding pins 54 from their associated flange 38. However, this movement is very slight, and the projecting pins insure retention of the innermost or lower sash member in order to retain the assembly in position. Normally the friction fit of the screen sections will retain these sections without difficulty, while the friction fit of the flanges and the bolts of the upper storm sash and the bolts and pins of the lower storm sash section serve effectively the same purpose.

FIG. 9 discloses the application of a complete unit in accordance with this invention in an existing window frame 111 which includes a sill 112, side rails 113 and a lintel 114 set in a window opening 115 in a building wall 116. A louvered window structure of any conventional type includes louvers 117 and conventional operating mechanism (not shown). A molding 118 is constructed substantially exactly in accordance with the previously discussed unit 21 and includes corresponding

channels for the reception of screens and storm sashes. In this form, bottom openings 141 through the sill 143 communicate with a receptacle 145 formed internally of the plaster or other type wall finish 146 using an area normally occupied by the furring strips and laths. Moldings can be attached to the wall surfaces around the window opening in alignment with the edge of the storage receptacle, and the integral receptacle may then be installed, after which the wall surface may be finished as desired, in alignment with the remainder of the interior wall surface. Alternately corresponding flanges may be formed integrally with the sash frame, which could then be attached directly to the sides of the opening, thus eliminating the molding.

This location allows the storm sash to be held at a distance from the window unit so as to create a buffer zone or insulation media, more effectively protecting the window unit.

It also provides the means for storage without the necessity of utilizing any of the supporting wall, which would tend to weaken the supporting wall and which might require reinforcement for the wall opening. Provision of a storage receptacle of this kind permits use with multiple type window frames, without affecting the appearance of the interior wall surface.

From the foregoing it will now be seen that there is herein provided a combination screen, storm sash and storage unit which accomplishes all of the objects of this invention, and others, including many advantages of great practical utility and commercial importance.

As many embodiments may be made of this inventive concept, and as many modifications may be made of the embodiment hereinbefore shown and described, it is to be understood that all matter herein is to be interpreted merely as illustrative and not in a limiting sense.

I claim:

1. In combination with a building structure defining an enclosure, the enclosure comprising the interior of the building structure, said building structure having at least one window opening therein, and a window frame in said window opening, a window in said frame, and a combination screen, storm sash and storage receptacle positioned interiorly of said window and including top, bottom and side frame members formed with a plurality of channels, a pair of independently removable screen sashes superposed in vertical alignment in one of said channels, laterally extending retractable bolt means at each side of the bottom of each screen sash to facilitate removal and replacement of the screens, said one of said channels having openings therein engageable by said bolt means, completely removable storm sashes in the others of said channels, the bottom frame member having openings therein, and means comprising side, end and bottom walls and a central partition defining two storage receptacles for the reception of two selected sashes, one receptacle being in vertical alignment with each opening.

2. In combination with a building structure defining an enclosure, the enclosure comprising the interior of the building structure, said building structure having at least one window opening therein, and a window frame in said window opening, a window in said frame, and a combination screen and storm sash positioned interiorly of said window and including a unitary frame including top, bottom and side frame members formed with first, second and third channels, a pair of screen sashes removably superposed in said first channel, means retaining each screen sash in position in said first channel, a completely removable storm sash vertically movable in said second channel, and a second completely removable storm sash vertically movable in said third channel, and laterally extending retractable bolt means at each side of the bottom of each storm sash, said second and third channels each having a plurality of openings in each side thereof for selectively receiving said bolt means, means for holding said bolt means in extended position, additional means for holding said bolt means in retracted position, each bolt means including a body having an upwardly extending lug and a transversely apertured depending lug, ribs on the lower rail between which said body

slides, a pin extending through the aperture in said lower lug, a handle pivoted on said pin for movement toward and away from said pin, and means for retaining said handle in one of two positions of adjustment comprising the means to retain said bolt means in extended or retracted position, said last mentioned means including a third rib having a pair of openings therein extending parallel to the ribs between which said bolt body slides, and said handle having a reduced neck portion engaging in one of said openings comprising the means to retain the handle in its selected position of adjustment.

3. In combination with a permanently installed louvered window including a frame having an outwardly extending perpendicular marginal flange, a combination screen, storm sash and storage receptacle comprising a unitary frame including top, bottom and side frame members formed with first, second and third channels, including a perpendicular peripheral flange abutting said marginal flange in face-to-face relation; means releasably securing said peripheral flange, and hence said unitary frame to said marginal flange on the interior of the louvered window, a pair of screen sashes removably superposed in said first channel, laterally extending retractable bolt means at each side of the bottom of each screen sash, said first channel having openings therein engageable by said bolt means, an upper storm sash vertically movable in said second channel, and a lower storm sash vertically movable in said third channel, laterally extending retractable bolt means at each side of the bottom of each storm sash, said second and third channel each having a plurality of openings in each side thereof for selectively receiving said bolt means, the bottom frame member beneath each of said second and third channels having an opening therein dimensioned to admit a sash, and means comprising side, end and bottom walls, and a central vertical dividing partition between said side walls defining two storage receptacles each dimensioned completely to contain one of said sashes integrally formed on the underside of said bottom frame member with one receptacle positioned below and in vertical alignment with each opening.

4. The structure of claim 1 wherein each screen sash has a top rail with an upwardly extending flange thereon, and a bottom rail, the top of said first channel is formed with a depending flange engageable by the upwardly extending flange of one screen sash and the upwardly extending flange of the other screen sash engages the outer surface of the bottom rail of the other section.

5. The structure of claim 1 wherein said second channel has a depending flange at its top, and said first storm sash has an upwardly extending flange at its top engageable with said depending flange of said second channel.

6. The structure of claim 5 wherein said third channel has an inner peripheral flange, and said second storm sash has a pair of laterally extending pins at its top engaging behind the side portion of said peripheral flange.

7. The structure of claim 1 wherein means are provided for holding said bolt means in extended position and additional means are provided for holding said bolt means in retracted position.

8. A combination screen, storm sash and storage receptacle comprising a frame formed with first, second and third channels, a pair of screen sashes removably superposed in said first channel, laterally extending retractable bolt means at each side of the bottom of each screen sash, said first channel having openings therein engageable by said bolt means, an upper storm sash, vertically movable in said second channel, and a lower storm sash vertically movable in said third channel, laterally extending retractable bolt means at each side of the bottom of each storm sash, said second and third channels each having a plurality of openings in each side thereof for selectively receiving said bolt means, the bottom of each of said second and third channels having an opening therein, said means defining a storage receptacle of a dimension completely to contain one of said sashes positioned below each opening, means for holding said bolt means in extended position,

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additional means for holding said bolt means in retracted position, each bolt means including a body having an upwardly extending lug and a transversely apertured depending lug, ribs on the lower rail between which said body slides, a pin extending through the aperture in said lower lug, a handle pivoted on said pin for movement toward and away from said pin, and means for retaining said handle in one of two positions of adjustment comprising the means to retain said bolt means in extended or retracted position.

9. The structure of claim 8 wherein said last mentioned means includes a third rib having a pair of openings therein extending parallel to the ribs between which said bolt body slides, and said handle has a reduced neck portion engaging in

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one of said openings comprising the means to retain the handle in its selected position of adjustment.

10. The structure of claim 7 wherein the portion of said third rib on the outer side of each opening is undercut and the corresponding side of said neck portion is beveled to engage said undercut portion.

11. The structure of claim 10 wherein spring means normally bias said bolt means to extended position.

12. The structure of claim 11 wherein additional spring means surrounding said pin bias said handle toward said sash and the openings in said third rib.

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