July 1, 1952 M. D. ORLIN 2,601,706

WINDOW CONSTRUCTION

Filed Oct. 18, 1950 2 SHEETS—SHEET 1

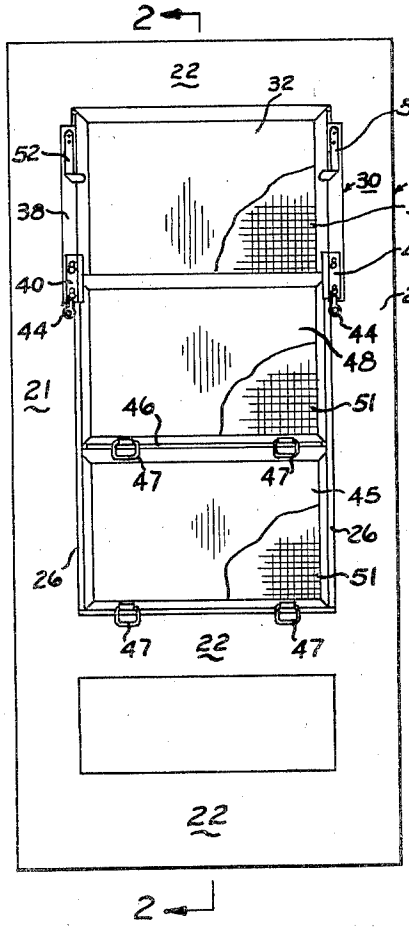


Fig 1

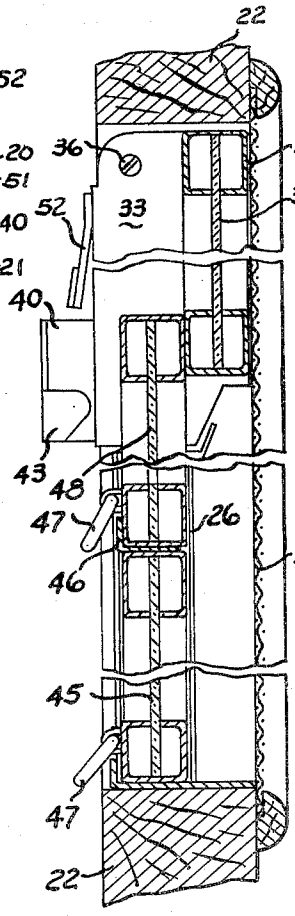


Fig 2

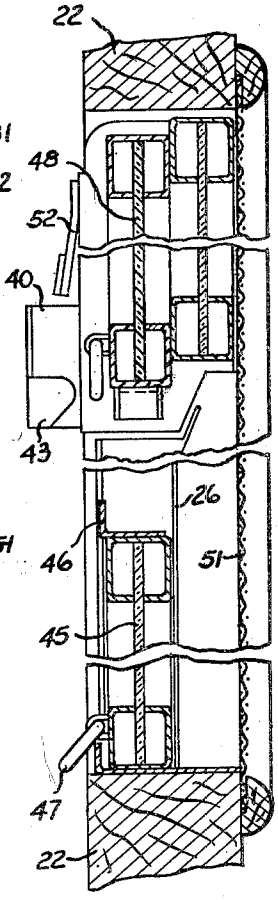


Fig 3

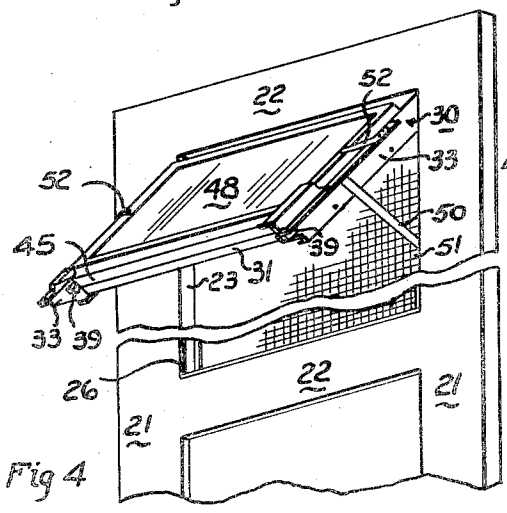


Fig 4

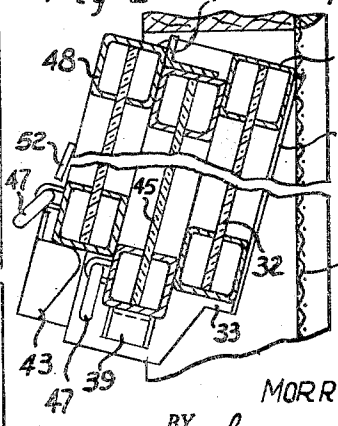


Fig 5

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WINDOW CONSTRUCTION

Filed Oct. 18, 1950 2 SHEETS—SHEET 2

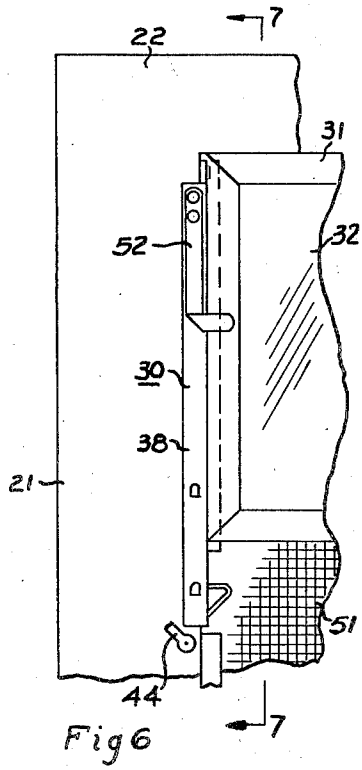


Fig 6

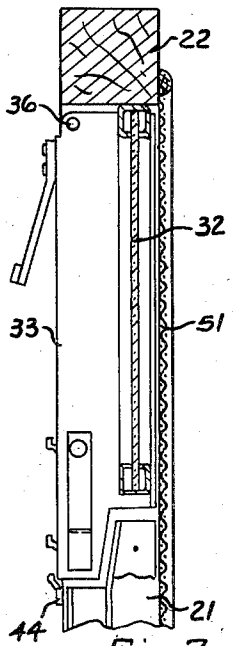


Fig 7

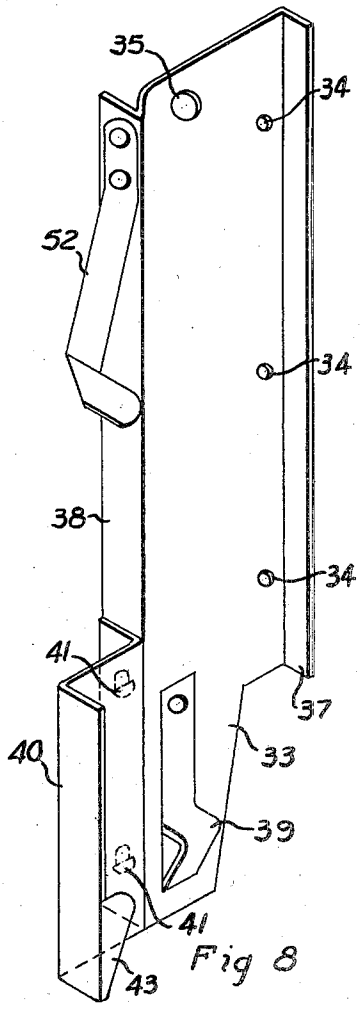


Fig 8

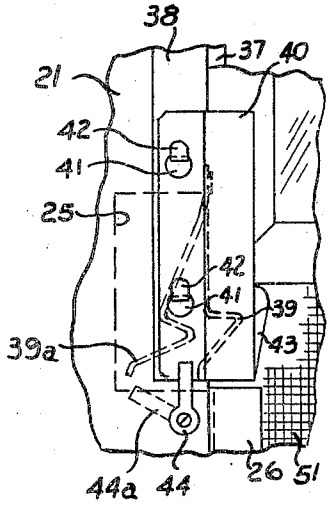


Fig 9

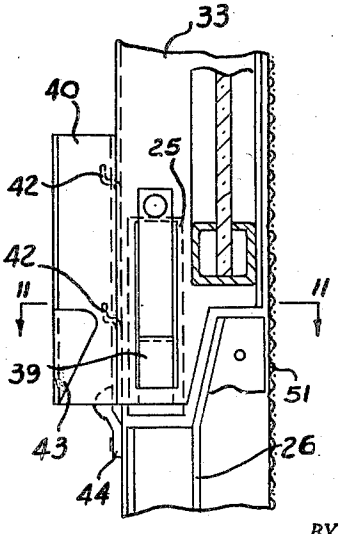


Fig 10

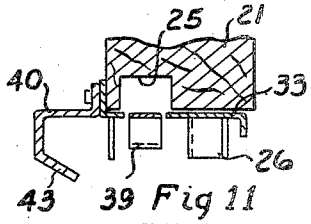


Fig 11

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UNITED STATES PATENT OFFICE

2,601,706

WINDOW CONSTRUCTION

Morris D. Orlin, Shaker Heights, Ohio

Application October 18, 1950, Serial No. 190,677

2 Claims. (Cl. 20—45)

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This invention relates to building closures and particularly to a window construction therefor.

Conducive to a better understanding of this invention, it may be well to point out that in the past open porches, breezeways and other areaways have been enclosed by employing a number of so-called "combination storm and screen doors" assembled side by side around the periphery of the area to be sheltered. These "combination" structures comprise a rectangular frame having removable screened or glazed panels adapted to be interchangeably mounted thereon. The panel not being used at any particular time being separately stored apart from the frame structure.

During the summer months when the screened panels are being used it is impossible to prevent rain and wind from entering the enclosed area during inclement weather unless the screened panels are bodily removed and replaced by the glazed ones. This is both, inconvenient and laborious.

Furthermore during the winter season it is impossible to wash the outer side of the glazed panels from the inside of the enclosure.

The primary object of this invention therefore is to provide a multiple hung sash and window opening for a wall section whose area may be approximately the entire area of the section while at the same time permitting ready adjustment, removal and replacement of the sash, and permitting entire clearance of the window opening while retaining the sash in the frame work, freely movable back to closure position.

Another object is to provide a device of the type stated that includes a fly screen covering for the opening that is permanently attached to the frame, while permitting the utilization of the regular sash for all its uses, movements and adjustments.

Another object is to provide a window having a plurality of sash members movable in a single track terminating in a storage magazine wherein the sashes may be stored, one behind the other, thereby enabling the frame work to be made of thinner stock than would be required if a separate track were provided for each sash.

Still another object is to provide a storage magazine hingedly mounted at its top edge so that the magazine may be swung inwardly without any portion thereof extending through the window opening, thereby enabling the entire opening to be covered with a fly screen lying entirely in the plane of the outer face of the framed opening.

Still another object is to provide a simple and

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efficient device that can be easily attached to constructions and one not liable to get out of order.

Additional objects, advantages and features of invention reside in the construction, arrangement and combination of parts involved in the embodiment of the invention, as will appear from the following description and accompanying drawings, wherein:

Figure 1 is a front elevation of the window construction exemplifying the invention;

Figure 2 is an enlarged broken vertical sectional view thereof taken along the line and in the direction of the arrows 2—2 of the Figure 1;

Figure 3 is a similar view showing the middle sash in its raised position;

Figure 4 is a perspective view of the window showing the sash magazine in its raised position clear of the window opening;

Figure 5 is a fragmentary broken view similar to that of the Figure 4, showing both the middle and lower sashes in their raised position;

Figure 6 is a fragmentary enlarged front view of the left end of the sash magazine shown in the Figure 1, without its storage bracket;

Figure 7 is a side view, partly in section, taken along the line and in the direction of the arrows 7—7 of Figure 6;

Figure 8 is an enlarged perspective view of one of the magazine side flanges and storage brackets;

Figure 9 is a fragmentary front view of the lower left hand corner of the magazine showing the storage bracket in place;

Figure 10 is a fragmentary right end view of the same partly in section; and

Figure 11 is a cross-sectional view taken along the line and in the direction of the arrows 11—11 of Figure 10.

My invention in the form or embodiment shown in the drawings and briefly described, comprises the frame 20 having stile and rail portions 21 and 22 respectively joined together to define a window opening 23. The frame may be fabricated from any suitable rigid material and is preferably made of wood or aluminum.

The width and height of the frame may be varied to suit the purpose for which it is to be used. If used in association with similar units to enclose an open porch the dimensions of the frame are similar to that of a door.

In Figure 1 there is seen such a door-like section having thereon sashes 32, 45 and 48 which are fitted into the frame opening 23 and close it against the passage of air.

Reference numeral 26 indicates two facing

U-shaped tracks or channels in which the sashes 45 and 48 are free to move in a vertical direction.

These window sashes have metal or wooden frames having handles 47.

The upper sash pane 32 is held in a frame 31 having a pair of laterally extending and facing side plates 33 which may be formed integral therewith or attached thereto. If made separately for attachment to the frame 31 as shown in the drawings, each side plate 33 has a rear flange 37 against which the sash frame 31 is seated and held in place by screws passing through the holes 34 as shown in Figures 6, 7 and 8.

The side plates are made in pairs there being a right hand and a left hand plate associated with each frame 31. Figure 8 illustrates a left hand plate of which the right hand plate is a mirror image.

The structure just described is pivotally mounted at the upper end of the window opening 23 by means of pivot pins or bolts 36 seated in the hole 35 at the upper edge of each plate 33 as shown in Figures 2, 4, 7 and 8.

Each side plate 33 has a front flange 38 that rests on the front face of the frame stiles 21 as shown in Figure 6. A support lock 39 Fig. 8 made of flat spring material is located in an opening cut proximate the lower edge of each side plate 33 and in alignment with the upper edge of the guide channels 26. These locks 39 are movable inwardly to an alternate position 39*a* Fig. 9 wherein they occupy a recess 25 cut in the edge of the stile 21.

A storage bracket 40 is attached to the front flange 38 by means of hooks 42 engaged in holes 41. This structure permits the bracket 40 to be installed at the point of use thereby making for a more compact shipping package. Each bracket 40 has a rearwardly extending support shelf 43.

The upper sash together with the side plate and bracket structure just described comprise the structure hereinafter to be referred to as the magazine member 30. The magazine member is secured in place against pivoting by means of clamps 44 which engage the lower edge of the bracket 40 as is shown most clearly in the Figure 9.

As seen in Fig. 2 the aforementioned guide channels 26 are positioned in a plane immediately forward of the plane of the upper sash frame 31 and stop just short of the magazine 30 in alignment with the support locks 39 thereof, so that the sashes 45 and 48 can be slid from the channels into the magazine 30 in front of the sash frame 31.

The outer face of the window opening 23 is covered by a fly screen 51 that is permanently mounted on the frame 20. The screen 51 may also take the form of an expanded metal multi-slotted structure having a plurality of closely spaced flat slats that prevent the entrance of both direct rays of the sun and insects while permitting the free passage of air and light. This type of screening is presently available commercially under the trade-name of "Koolshade" and provides shade for an inclosure without the use of supplementary awnings or curtains.

The structure illustrated in the Figure 1 shows the window with the sashes in their closed positions. The lower sash 45 is seated between the guide channels 26 and rests on the bottom of the opening 23. The middle sash 48 is positioned between the guide channels 26 with its lower edge abutting the upper edge of the lower sash 45. A water-tight seal is provided between these two edges by the flange 46 of the lower sash as can be seen from the Figure 2.

As seen in Fig. 2 the lower face of the magazine frame 31 is overlapped by the upper rail of the middle sash 48 to form a weather tight seal at that point. The retracted support locks or latches 39*a* press against the upper edges of the middle sash 48 and prevent the movement or rattling of the several interfitted sashes.

The window is opened by sliding the middle sash 48 into the magazine 30 until it clears and rests on the latch 39 as shown in the Figure 3. In this position one-third of the window opening is free for the passage of air. To clear the opening further the lower edge of the sash 48 is moved forward to seat on the bracket shelf 43 and the lower sash 45 is moved up into the magazine 30 behind sash 48 until the sash 45 in turn rests upon the latch 39.

In this position the window opening is two-thirds clear. The contained sashes 45 and 48 are prevented from falling out of the magazine by the flat springs 52 which press against the upper portion of the sash 48 while its lower portion is confined by the brackets 40. The retainer spring 52 may, of course, take other shapes than that shown.

To clear the opening completely, the locks 44 holding the magazine 30 in place are moved to their alternate positions 44*a* as shown in the Figure 9 and the entire magazine is pivoted forward and upward on its pivot pins 36 to take the position illustrated in Figures 4 and 5. Reference numeral 50 indicates a support arm that holds the magazine in its open position.

With the magazine 30 in its pivoted position, the entire wall opening is clear. Furthermore with the magazine in this position, the two sashes 45 and 48 may be removed entirely from the magazine by manually retracting the sash retainers or latches 39 to their alternate positions 39*a*, whereupon the sashes can be pulled clear of the magazine.

The tilted position of the glass 32 permits both of its surfaces to be easily reached. Thus both sides of all the sash glasses can be easily cleaned from the inside of the enclosed area without disturbing the fly screen 51 which remains in place during all the manipulations of the window members.

By reversing the steps outlined above, the window can be easily and quickly closed in case of sudden showers.

Since all of the elements remain mounted upon the frame 20, even when the opening is entirely clear for ventilation of the enclosed area, there is no need to provide storage space for any of the elements during certain seasons of the year. Furthermore, the amount of ventilation desired can be regulated by the proper manipulation of the three movable elements, in contrast to prior art devices which required that their openings be either entirely closed or entirely open.

In the foregoing specification, the invention is described as having two movable sashes, but a single movable sash could also be used if only a small window opening is needed.

The suspension of the magazine 30 from its top portion provides a structure that is movable inward and entirely clear of the window opening. No part of the tilted magazine 30 protrudes beyond the outer face of the frame opening 23. The entire area of the opening 23 can therefor be protected by a fly screen lying in the plane of the outer face of the frame. No special convex

shaped screens or half screens are required as is the case with window sashes that pivot about their mid-sections. The provision of a bracket **40** spaced inwardly from the upper sash **32** and the channel **26** makes it possible to employ a single track or channel to accommodate two sashes which are stored one behind the other in the magazine as explained above.

This feature makes it possible to use stile stock of standard thickness such as it would not be possible to use if a separate channel would have to be provided for each sash. Thus the bulk of the frame is reduced and the material cost is likewise reduced without any sacrifice of structural rigidity.

It will now be clear that there has been provided a device which accomplishes the objectives heretofore set forth. While the invention has been disclosed in its preferred form, it is to be understood that the specific embodiment thereof as described and illustrated herein is not to be considered in a limited sense as there may be other forms or modifications of the invention which should also be construed to come within the scope of the appended claims.

I claim:

1. A window structure, comprising in combination, stiles and top and bottom rails together defining a framed opening, an upper sash member including laterally extending and facing side plates hingedly mounted at the top thereof in the said opening and normally lying in the vertical plane thereof, each of the said side plates having a body portion lying parallel to the stile surface forming the frame opening, and a flange portion at a right angle thereto and extending away from the opening; each of the said stiles having a single longitudinally extending guide channel open to the said framed opening, lying in a plane immediately forward of the plane of the first sash member and terminating at the said side plates, retaining means comprising a flexible latch mounted on each side plate proximate the lower edge of the body portion in alignment with the said channel and a flexible finger mounted on the body portion proximate the upper edge thereof and extending into the frame opening inwardly of the plane of the aforesaid flange; storage brackets mounted on each side plate flange including a shelf portion aligned with the said latch; middle and lower sash members slidably mounted in abutting engagement in the said channels below the said upper sash member and together with the said upper sash member normally closing the said opening, the said middle sash being slidable longitudinally of the said channels between the said side plates away from the upper sash, and into engagement with the said storage bracket shelf and finger, the said lower sash being slidable longitudinally of said channels between the said side plates and into engagement with the said latches between the said middle and upper sashes, the said upper sash member and its retained middle and lower sashes being swingable inwardly out of the vertical plane of the frame opening to fully clear the opening for the passage of air and means for maintaining the three sashes in open swung position.

2. A window structure, comprising in combination, stiles and top and bottom rails together defining a framed opening, an upper sash member including laterally extending and facing side plates hingedly mounted in the said opening and normally lying in the vertical plane thereof, each of the said side plates having a body portion lying parallel to the stile surface forming the frame opening, and a flange portion at a right angle thereto extending away from the opening; each of the said stiles having a single longitudinally extending guide channel open to the said framed opening, lying in a plane immediately forward of the plane of the first sash member and terminating at the said side plates, retaining means comprising a flexible latch mounted on each side plate proximate the lower edge of the body portion in alignment with the said channel and a flexible finger mounted on the body portion proximate the upper edge thereof and extending into the frame opening inwardly of the plane of the aforesaid flange; storage brackets mounted on each side plate flange including a shelf portion aligned with the said latch; middle and lower sash members slidably mounted in abutting engagement in the said channels below the said upper sash member and together with said upper sash member normally closing the said opening, the said middle sash being slidable longitudinally of the said channels between the said side plates away from the upper sash, and into engagement with the said storage bracket shelf and finger, the said lower sash being slidable longitudinally of said channels between the said side plates and into engagement with the said latches between the said middle and upper sashes, the said upper sash member and its retained middle and lower sashes being swingable inwardly out of the vertical plane of the frame opening to clear the opening for the passage of air, and means for maintaining the three sashes in open swung position.

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