Aug. 17, 1943. R. M. STOWE 2,326,897

METAL SASH STRUCTURE

Filed April 18, 1941 2 Sheets-Sheet 1

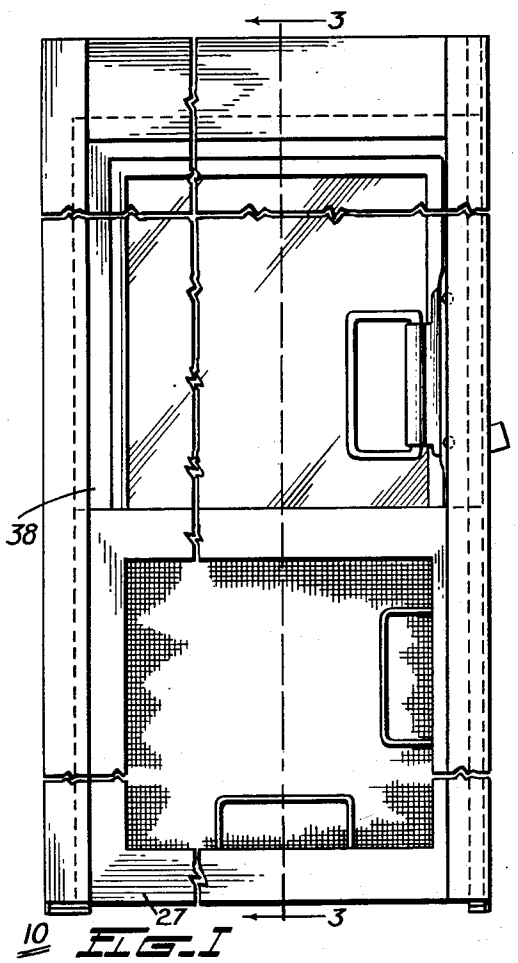


FIG. 1

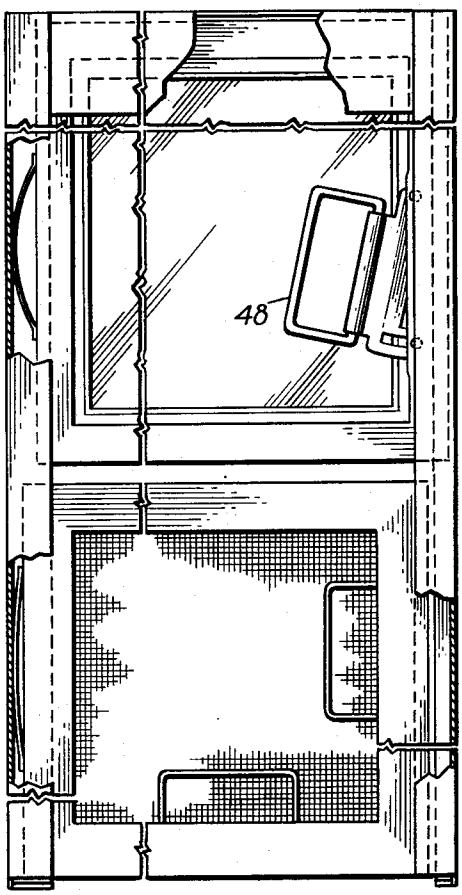


FIG. 2

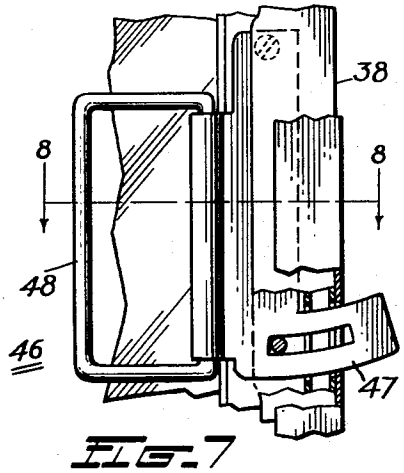


FIG. 7

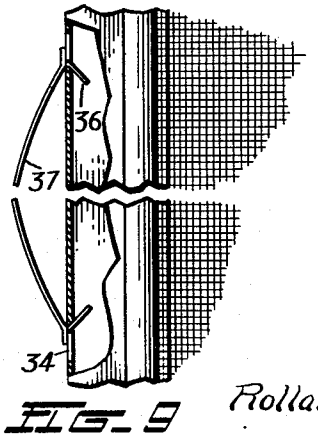


FIG. 9

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METAL SASH STRUCTURE

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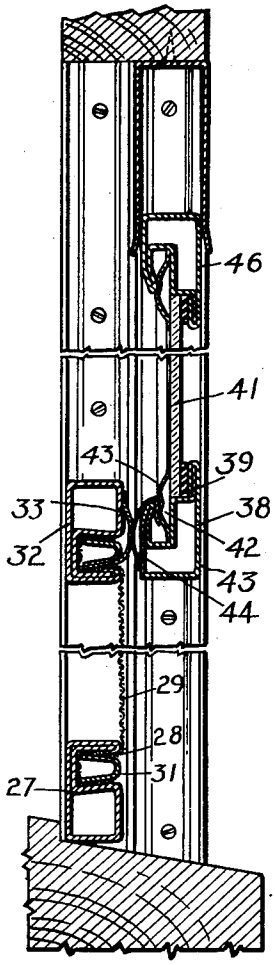


FIG. 3

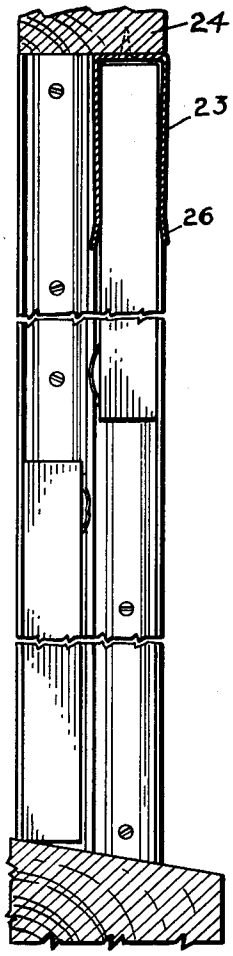


FIG. 4

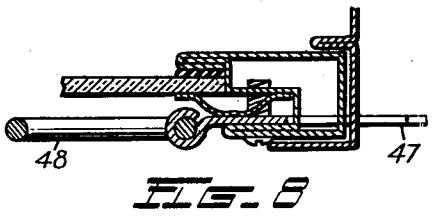


FIG. 8

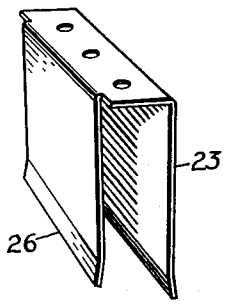


FIG. 6

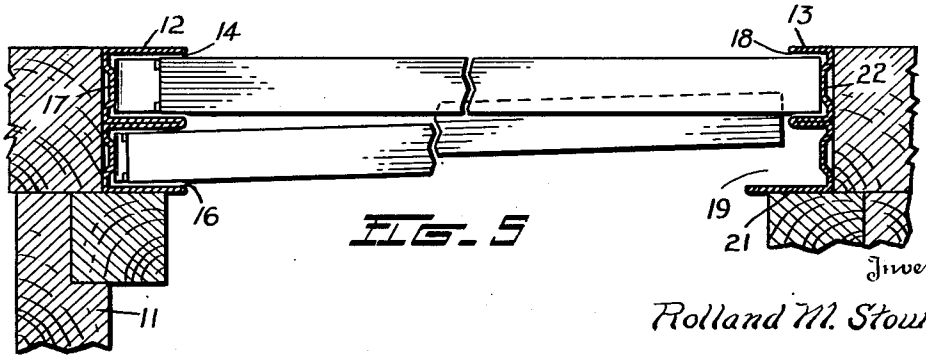


FIG. 5

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UNITED STATES PATENT OFFICE

2,326,897

METAL SASH STRUCTURE

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Application April 18, 1941, Serial No. 389,120

6 Claims. (Cl. 160—128)

This invention relates to an improved metal sash structure applicable to a conventional window as a storm sash, together with interchangeable metal framed screens.

Although screens having metal frames have been commercially available for sometime, it has been the practice to equip windows with wooden frame storm sash. It is evident that these structures required distinct manufacturers, and this therefore involved provision of two types of mounting on each window, one or the other of which was always unused, exposed to the elements and of unsightly appearance. Effort has been made to combine the installation and use of screen and storm sash structures by providing a frame for double sash window openings that is adapted to receive and mount screen and storm sash members alternatively or in combination. While, in a measure, this constituted an improvement, it necessitated the use of a more or less permanent additional frame in a window opening that, together with the frame or frames of the screen and storm sash, reduced the light area to an objectionable degree.

The present invention is intended to simplify and improve the conditions of application and use of storm sash, and this therefore constitutes one of its objects.

Another object of the invention lies in the provision of a metal framed storm sash so proportioned as to be alternatively applicable with a metal framed screen to a conventional window opening.

Another object of the invention lies in the provision of a metal framed storm sash of a size to enclose a single sash of a double hung window, the storm sash being mounted in guides by which is facilitated adjustment to enclose either sash of a window.

Another object of the invention lies in the provision of a pair of metal framed storm sashes, screens, or both, mounted in guide members attached to a window casing, which, in window enclosing position, have overlapping rails connected by insect proof or weather strip material.

Another object of the invention lies in the provision of a pair of metal framed storm sashes, or one storm sash and one screen, mounted in common guide members in a window opening that, by reason of the adjustability of at least one of the sashes, either of the sashes or screen may be removed or inserted at will.

Other objects and advantages of the invention will be more fully understood from a consideration of the following specification, taken in conjunction with the accompanying drawings; and in which

Figure 1 is an inside elevational view of a screen and storm sash as applied to a conventional sliding double sash window;

Figure 2 is a view similar to Figure 1, showing the storm sash in a position of adjustment to facilitate removal of a screen and substitution of a lower storm sash, parts being broken away to disclose certain of the structural details of the sash mounting;

Figure 3 is an enlarged vertical sectional view, taken substantially on the line 3—3 of Figure 1 and shows the position of use of a combined storm sash and screen;

Figure 4 is a vertical end view, partly in section, of the structure of Figure 3 showing the upper sash adjusted to separate the screen and sash meeting rails and facilitate removal of the screen;

Figure 5 is a top plan view, partly in section, showing the method of removing the screen when the storm sash has been adjusted to the position shown in Figures 2 and 4;

Figure 6 is a fragmentary perspective detail of the head channel with which the upper storm sash is engaged;

Figure 7 is an enlarged fragmentary elevational view of a combined latch and operating handle for the storm sash, parts being broken away to show certain structural details;

Figure 8 is a horizontal sectional view taken substantially on the line 8—8 of Figure 7; and

Figure 9 is an enlarged fragmentary vertical sectional view of the storm sash or screen spring mounting.

Reference is now had to the drawings wherein the numeral 10 is employed to generally designate a structure embodying one form of the invention as applied to a conventional double sash window. As shown in Figure 5 of the drawings, opposite vertical sides of a window casing 11 are fitted with guide members 12 and 13. The guide member 12 is formed with two inwardly opening channels 14 and 16. The base wall of each channel, to reduce the area of contact with a screen or sash, may be formed with an inner ridge or rib 17. The member 13 is formed with channels 18 and 19. With the exception of the inside wall 21, the depth of channels 18 and 19 is considerably less than the depth of channels 14 and 16, the purpose of this being hereinafter more fully set forth. The wall 21, being adjacent the casing stop, is of the same proportions as the inside wall of the channel 16.

The base walls of the channels of member 13 may also include contact ridges or ribs 22.

Between the upper ends of the walls that form channels 14 and 18 is a channel member 23 that opens downwardly, being secured in any suitable manner to the head jamb 24 of the window casing, and aligned with channels 14 and 18. The side walls of the channel of member 23 are of considerably greater length than the walls of the members 12 or 13, and terminate in slightly flared flanges 26 of the general nature shown.

For the purpose of more clearly bringing out the features of the invention, one application of use includes a metal framed screen 27, shown mounted in the channels 16 and 19 of the members 12 and 13, respectively. This screen includes a frame formed with hollow metal rails, each of which also includes a recess 28. The edges of a wire cloth 29 are anchored in the recesses 28 by retainers 31, substantially as shown. The upper horizontal rail 32 of the screen may be provided with a full length spring strip 33. As indicated in Figure 9, one vertical rail of the screen may be formed with one or more pairs of slots 34, with which the flanged ends 36 of an arched spring clip 37 are engaged. The width of the screen frame is such that by inserting the rail, in which the spring clips are secured, into channel 16 and compressing such clips, the opposite vertical rail will clear the side walls of channel 18, allowing this vertical rail to enter channel 19. Action of the spring clip 37 laterally adjusts the screen from the position of Figures 2 and 5 to the position indicated for the storm sash in these figures.

The present illustration of the invention also provides a storm sash 38 that includes a hollow metal frame, the rails of which are formed with seats 39 to receive the edges of a panel 41. Adjacent the seats 39 each of the rails is formed with a recess 42 in which is mounted a spring-like glazing strip 43. The lower horizontal rail 43 of the sash 38 is provided with a spring strip 44 which is contoured to interfit the spring strip 33 of the screen 27 when the rails 32 and 43 are in overlapping arrangement, as shown in Figure 3. The sash 38 is also fitted with one or more spring clips 37 and is adapted to be mounted in the members 12 and 13 in the manner described in connection with the mounting of screen 27. When the sash 38 is in position of use, rail 43 overlapping rail 32 of the screen, the upper horizontal rail 46 projects only part way into the head channel 23 (see Figure 3).

In some instances it may be found desirable to provide a latching structure for securing the screen 27 in the position shown in Figure 3. Generally speaking, however, the very nature of a screen precludes the need of such structure. It is desirable that a latch be provided for the sliding storm sash 38 not only for the purpose of maintaining it in any of several desired positions, but also to prevent undesired adjustment thereof from the exterior of the window. In the present instance, a latching device 46 is provided, being mounted in one of the vertical rails of the storm sash 38. This latch includes a latching bar 47 operable by means of a handle 48. The handle 48, being at all times accessible, is also utilized to insert and remove the sash and adjust it when in position of use. It will be noted that the latching bar 47 projects through a suitable opening in the edge of a vertical sash rail and this bar is adapted to engage any of several slots formed in the base wall of the guide channel 18. One of the slots is so located as to secure the sash 38 in the position shown in Figure 3. Another slot may be located to secure this sash in a partly opened position. The latching device, being combined with the operating handle, eliminates added or duplicate hardware in the structure where such hardware cannot readily be concealed. It is evident from the disclosure of the latching device in Figures 7 and 8 that it is pivotally mounted within a vertical sash rail and that in use the handle 48 is substantially the only portion projecting beyond the rail. This latching device is more fully disclosed in my co-pending application Serial No. 389,119, filed on even date.

Attention is now directed to the advantages obtainable by means of the structure above described in the installation and use of screen and storm sash combinations. It is first assumed that a screen is required in a window opening. By reason of the present structure the screen 27 may be mounted in the guide channels 16 and 19 for the purpose of enclosing the lower sash of the window. It is evident that a further screen could be mounted in the guide channels 14 and 18 to enclose the upper portion of the window, but since this is not the common practice, the storm sash 38 is so mounted. The drawings thus illustrate the warm weather use of the invention in the provision of a lower screen and upper storm sash. When necessitated by a change in weather, the screen 27 may be removed and a storm sash similar to the sash 38 substituted therefor. This is accomplished in the following manner: The handle 48 of the latching device of the sash 38 is moved to the position of Figure 2 and the storm sash 38 moved upwardly in the channel member 23 from the position of Figure 3 to that of Figure 4. The meeting rails 32 and 43 now do not overlap and it may be seen that the screen 27 is freely removable in the manner already described and indicated in Figure 5. A storm sash is then substituted for the screen and the upper sash 38 returned to the position of Figure 1, with its lower rail overlapping the upper rail of a newly inserted storm sash. Suitable weather stripping, similar to that provided on the screen 27, seals the meeting rails of the two sashes. With the exception of the location of the weather stripping the lower storm sash may be identical with the sash 38.

It is evident from the foregoing that any window provided with the guide channels of the invention, together with two storm sashes and one screen, meets all weather requirements and, further, that a screen and storm sash is insertable, adjustable, and removable from the interior of the window without the aid of tools or fastening devices. It is also apparent that the upper storm sash may be removed, cleaned, and reinstalled without removing the screen, or that the screen may be removed without removing the storm sash. Thus, this structure is extremely flexible both as to application and use.

Although applicant has shown and described only one embodiment of the invention, it will be understood by those skilled in the art that modifications may be made for different window opening requirements, and such modifications are within contemplation of the invention insofar as they are within the spirit and scope of the annexed claims.

Having thus set forth my invention what I claim as new and for which I desire protection by Letters Patent is:

1. The combination of double channel guide members mounted on the vertical walls of a window casing and a downwardly opening channel at the top of said casing; with a pair of interchangeable metal framed panels, each of said panels being of a size to enclose a substantial portion of the window opening, the upper rail of the outermost of said panels being receivable within said downwardly opening channel to a variable extent, said panels in full window enclosing position having their meeting rails in overlapping relationship, the outermost of said panels being further movable into said downwardly opening channel to vertically separate the overlapping panel meeting rails to facilitate removal of the innermost of said panels in a direction to, in part, pass through the space occupied by the outermost of said panels prior to its being further moved into said downwardly opening channel.

2. An enclosure for a window comprising a pair of framed panels of identical width, means for receiving and mounting said panels in close parallel relationship for movement into full window enclosing position with the meeting rails thereof in overlapping relationship, and further means receiving the upper portion of the outermost of said panels when said panels are in a position to enclose said window, said outermost panel being further receivable by said means to vertically separate the panel meeting rails and facilitate removal of the innermost of the panels from the window.

3. An enclosure for a window comprising a pair of framed panels arranged with their meeting rails in overlapping relationship when in full window enclosing position, guide means mounting said panels for sliding movement out of full window enclosing position, means for receiving to a variable extent the upper edge portion of one of said panels to vertically separate the meeting rails of said panels and facilitate direct lateral removal of one of said panels from said window opening in a path that is at least in part, through the space occupied by the other of said panels prior to movement of said other panel more fully into said means, and further means for securing at least one of said panels in a predetermined position of adjustment with respect to the panel receiving means.

4. An enclosure for a window comprising a pair of framed panels of identical width, means mounting said panels for movement into full window enclosing position with the meeting rails of said panels in overlapping relationship, said panel mounting means including parts requiring insertion and removal of said panels from a common side of said window, and further means normally receiving only a portion of the outermost panel when in full window enclosing position, the outermost panel being further receivable by said means to vertically separate the panel meeting rails and facilitate removal of the innermost of the panels from the panel mounting means and the window.

5. The combination of guide members applicable to a window casing, each of said members having a pair of parallel adjacent channels therein and a downwardly opening channel at the top of said casing aligned with only one of the channels of each of said members; with a pair of metal framed panels, each of said panels being of a size to enclose a substantial portion of the window opening and having vertical rails projecting into corresponding channels of said guide members and being freely movable in said members to enclose the upper or lower portion of the window opening, said panels in full window enclosing position having their meeting rails in overlapping relationship, one of said panels when in window enclosing position projecting slightly into said downwardly opening channel and being further movable thereinto to vertically separate the overlapping panel meeting rails, the other of said panels being laterally movable to disengage first one and then the other of the channels of said guide members and in part pass through the space normally occupied by the other of said panels prior to its being moved more fully into said downwardly opening channel whereby to facilitate removal of the panels.

6. The combination of double channel guide members mounted on the vertical walls of a window casing and a downwardly opening channel at the top of said casing, said last mentioned channel being aligned with the outermost channel of each of said guide members; with a pair of interchangeable framed panels, said panels being freely movable in said guide members to a position with their meeting rails in overlapping relationship to fully enclose the window opening, the lowermost of said panels being mounted in the inner channels of said guide members and the uppermost of said panels being mounted in the outermost channels of said guide members and projecting partially into said downwardly opening channel, the uppermost of said panels being further movable into said downwardly opening channel to vertically separate the panel meeting rails and facilitate removal of the lowermost panel from said guide members in a lateral direction to, in part, pass through the space occupied by the uppermost of said panels prior to movement thereof to separate the panel meeting rails.

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