May 19, 1942. B. C. JAMES 2,283,635

QUICK-CONVERTIBLE SCREEN AND STORM WINDOW

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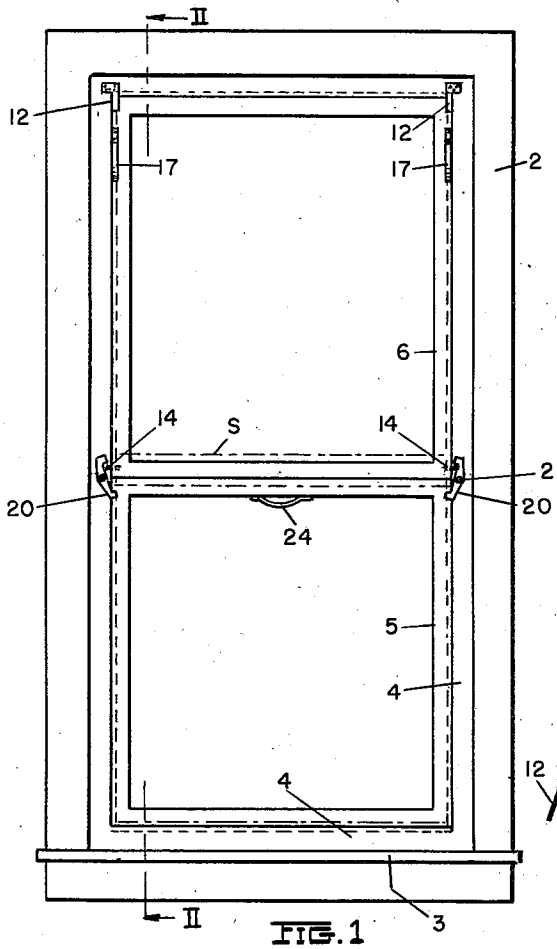


FIG. 1

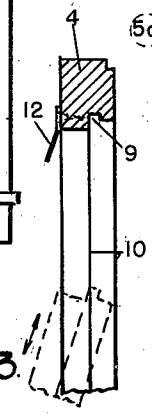


FIG. 3

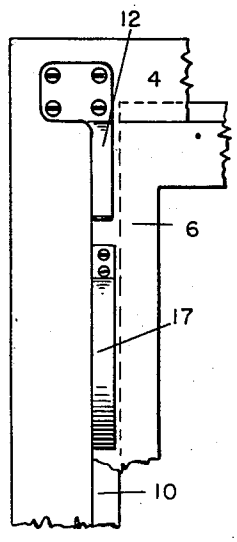


FIG. 4

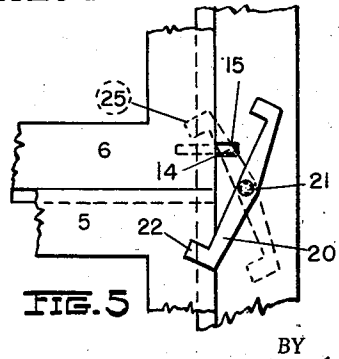


FIG. 5

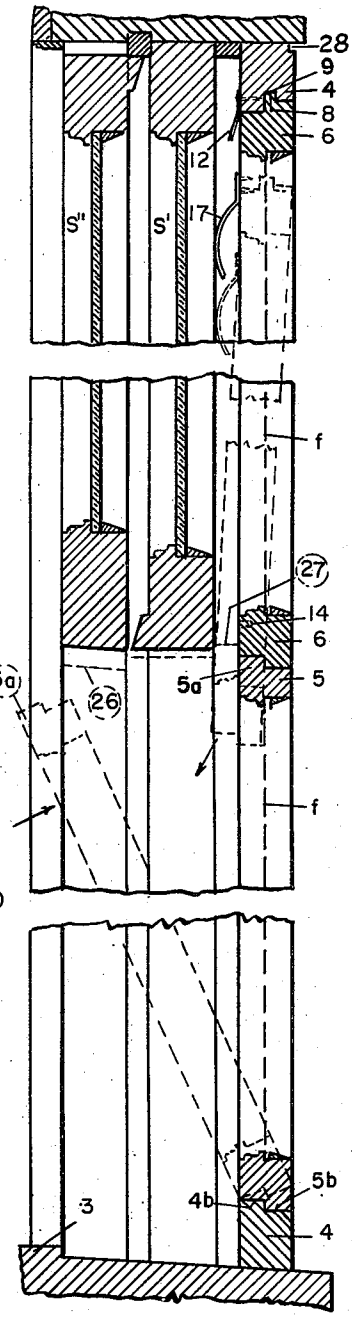


FIG. 2.

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QUICK-CONVERTIBLE SCREEN AND STORM WINDOW

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5 Claims. (Cl. 20—55)

In the common construction of window screens and storm windows it is customary to place and remove the screen and storm windows from the outside. In many cases this is objectionable because of requiring a ladder. In an effort to obviate this, constructions have been proposed which could be placed or removed from the inside of the window. These however have necessitated the opening of both upper and lower window sashes, and have been particularly objectionable to house-wives in that they required the taking down of the curtains and window-furnishings in order to permit access through the open upper sash for that portion of the operations necessitating such access. All together, such constructions have tended to involve more annoyance and trouble than the more simple constructions placed and removed entirely from the outside. In accordance with the present invention however, a construction now becomes possible in which the storm sashes and screens can be quickly and easily placed or removed from the inside, through the lower sash, it being unnecessary to disturb the upper sash or window hangings, and interchangeable and interlocking screen and storm window glass panels can be easily set or be substituted as desired.

To the accomplishment of the foregoing and related ends, the invention, then, comprises the features hereinafter fully described, and particularly pointed out in the claims, the following description and the annexed drawing setting forth in detail certain illustrative embodiments of the invention, these being indicative however, of but a few of the various ways in which the principle of the invention may be employed.

In said annexed drawing:

Fig. 1 is an elevational view of a window equipped with construction in accordance with the invention, the view being taken from within and the regular window sashes being in dotted outline to better show the present construction which is normally on the outside thereof; Fig. 2 is a vertical section thereof taken on a plane substantially indicated by line II, Fig. 1, on enlarged scale and broken out centrally of each sash on account of space limitations, the lower window sash being raised; Fig. 3 is a fragmentary vertical sectional view showing the guiding action of the support-frame during placement or removal of the auxiliary sash element; and Figs. 4 and 5 are fragmentary elevational views of details.

Referring more particularly to the drawing, there is shown a window with casing 2, and sill 3 and framing which may be of any usual construction. Therewithin is a support-frame 4 for the interchangeable screen or storm window sashes 5, 6 of the present invention, the support-frame 4 being placed in the window frame at the outside and being secured relatively permanently by any desired means, while the auxiliary sash elements 5, 6, with their screen or glass filling represented by *f* for convenience in Fig. 2, are movable into or out of said support-frame, as desired. In Fig. 1, as noted, for clearer showing of the structure of the invention, the regular window sashes S are shown in dotted lines, for the customary double-hung two-sash window. It will be readily understood, as in fact shown in Fig. 2, that the upper sash S′ and the lower sash S″ are, as normally, slidable up and down, and for the purposes of the present invention the upper sash S′ is merely left in its normal upper position and the lower sash S″ is raised into upper position. The upper auxiliary screen or glass sash element 6 is receivable into the support-frame 4, having for instance a tongue 8 which fits into a groove 9 in the support-frame at the top. At the sides of the support-frame 4 shoulders 10 externally serve as stops against which the auxiliary sash element, screen or glass, comes to position. And, during the act of placing or removing the auxiliary elements, particularly the upper, such shoulders or ledges 10 provide a guide against which the sash may slide. A positive track-way is thereby provided, receiving and guiding the auxiliary sash in movement accurately against displacement. As a further guide means, an upper end-guide 12 is provided at each side on the support-frame 4, this being for instance of metal and extending downwardly and sufficiently angularly to receive and accurately position the upper end of the auxiliary sash element 6 for engagement in the tongue and groove joint. The lower part of the auxiliary sash 6 has two projections or lugs 14, one at each side, extending in the general plane of the sash, and when the auxiliary sash element is up in proper engagement in the support-frame 4, these projections or lugs 14 set into recesses 15 which are correspondingly positioned in the inner face of the support-frame 4, as shown more particularly in Fig. 5. As a further assistance in the guiding and positioning of the upper auxiliary sash element, a resilient member 17 may be carried at each side, on the stile near the top, and such resilient elements may be of curved spring character so as to ride against the external faces of the upper window sash stiles, reduc-

ing the manual effort requisite to accurately slide the auxiliary sash element into position. The upper auxiliary sash, as indicated foregoing, is held by the projections 14 in recesses 15, and the lower sash fits by offset shoulders against the upper sash and also in position against the shoulder 10 of the lower portion of the support-frame 4.

In the operation of placing a screen or storm sash, the upper auxiliary sash element 6, with screen or glass as appropriate to the season, is first inserted through the opening from inside, the lower window sash being raised, as shown in Fig. 2, and the upper end of the auxiliary sash is started against the shoulders 10 of the stiles of the support-frame 4 and is slid up into position, the side-springs 17 riding against the upper window sash to the extent necessary, and the guides 12 receiving and directing the advancing end so that the tongue 8 carries into the groove 9 at the top, and the lateral projections 14 slide into the recesses 15 and the upper auxiliary sash element is positioned, and it is held even though there is no sash under it. The lower auxiliary sash element 5 is then set in place, the bottom end first, and by a swinging movement of the upper end, as indicated in Fig. 2, the lower auxiliary sash element is closed into interlocking position with the upper. To lock the lower element against displacement, a retainer 20 is pivotally mounted as at 21 on the inner face of each stile of the support member. Advantageously this may be a dual retainer, as shown more particularly in Fig. 5, and when set on its pivot 21 in position as shown in full lines the ear 22 sets across on the lower auxiliary sash element 5 and locks it in position. The upper sash element 6 is of course also positively held by the inter-fitting shoulder engagement between such upper and lower sashes, and this is also weather-tight.

To remove the auxiliary sash elements, as for instance in substituting screens for storm glass, or vice versa, the retainer 20 is swung on its pivot 21 to position as shown in dotted lines in Fig. 5. This unlocks the lower auxiliary sash element 5, and it may be quickly removed by pulling on the thumb-hold 24, Fig. 1. The lower auxiliary sash element being swung inwardly as in dotted line position in Fig. 2, can be withdrawn from the support-frame, the dual retainer 20 with its ear 25 meanwhile holding the upper sash safely locked against displacement even though accidentally knocked against or jarred. On now swinging the retainer 20 into full line position as in Fig. 5, the lugs 14 are uncovered, and by grasping the lower rail of the upper auxiliary sash element 6, it may be swung inwardly to clear the lugs 14 from their receiving-recesses and the entire auxiliary sash may be quickly slid down and out. It will be noticed that the retainers 20 are easily operable from a point below the check rail of ordinary double hung windows.

In cases where the regular window sashes when in upper position project lower than indicated foregoing, as particularly for instance the lower sash extending down to a position such as indicated at 26, Fig. 2, the upper auxiliary sash element 6 is inserted and removed as described foregoing, but the lower auxiliary sash 5 is inserted by first bringing its upper end adjacent the lower end of the auxiliary sash element 6 such that the narrow nose 5a of the auxiliary sash 5 first slides up into the space between the lower rail of element 6 and the lower rail of the window sash S', as indicated in dotted line position 27 and this raises the auxiliary sash element 5 such that its lower narrow nose or ledge 5b can be passed over the shoulder 4b of the support frame 4 and then be dropped down into lower engagement and the upper rail of the auxiliary sash 5 is given a further slight outward movement requisite to seat the nose or ledge 5a in position shown in full lines in Fig. 2. And, conversely in removing, the lower auxiliary sash element 5 is, by means of the handle 24, pulled slightly inward sufficiently to allow the nose or shoulder 5a to be raised up into the space between the lower rail of element 6 and the lower rail of the window sash S', and the lower shoulder 5b thus being cleared above the shoulder 4b of the support-frame 4, the lower end of the auxiliary sash element 5 is swung inwardly and downwardly and removed. Irrespective thus of conditions encountered in different window installations, there is room for movement in positioning or un-positioning the auxiliary sash elements with the lower regular window sash raised.

Storm-tight engagement of the assembly is secured, as seen, by the tongue and groove engagement above and by the mating shoulder engagement on the sides and elsewhere. The running in of water above may be insured against also by providing a calking rabbet 28, which may be tightened with putty or other desired material.

Thus, weather-construction as tight as desired may be had, but the removal and changing of the auxiliary sash elements may be accomplished particularly rapidly and easily, merely by opening the lower window sash and without disturbing the curtains or mountings. Removal to permit window-washing is in this manner convenient and rapid, without requirement of necessity of waiting for general seasonal removal of storm windows as otherwise necessary. With the system of guides provided, the movement of the upper auxiliary sash element is accurate and rapid, without requiring close attention to the details of movement, the guiding being automatic in its character, and the elements in position are securely locked until such time as a seasonal change from screens to glass or vice versa is desired.

Other modes of applying the principle of the invention may be employed, change being made as regards the details described, provided the features stated in any of the following claims, or the equivalent of such, be employed.

I therefore particularly point out and distinctly claim as my invention:

1. In window construction involving a support-frame for positioning in a window frame outside the regular window sashes, auxiliary upper and lower sash elements to fit in said support-frame, guides at the upper part of said support-frame to direct the top of the upper sash element into the support-frame, shoulders along the sides of said support-frame to prevent lateral displacement of said sash element, curved spring guide means on said upper auxiliary sash element to prevent inward displacement thereof, lateral projections on the lower part of said upper auxiliary sash element, recesses in said support-frame to receive said projections, shoulder means at the top of the lower sash element to engage the upper sash element, and dual retaining means centrally pivoted to the support-frame near the joint of the upper and lower auxiliary sash elements and having an upper ear to extend over the lateral projection on the upper auxiliary

sash element when turned in its direction and a lower ear to lock the lower auxiliary sash element when turned in its direction.

2. In window construction involving a support-frame for positioning in a window frame outside the regular window sashes, auxiliary upper and lower sash elements to fit in said support-frame, guides at the upper part of said support-frame to direct the top of the upper sash element into the support-frame, shoulders along the sides of said support-frame to prevent lateral displacement of said sash element, curved spring guide means on said upper auxiliary sash element to prevent inward displacement thereof, lateral projections on the lower part of said upper auxiliary sash element, recesses in said support-frame to receive said projections, shoulder means at the top of the lower sash element to engage the upper sash element, and dual retaining means centrally pivoted to the support-frame near the joint of the upper and lower auxiliary sash elements and having ears directed toward the auxiliary sash elements and movable over either respectively.

3. In window construction involving a support-frame for positioning in a window frame outside the regular window sashes, auxiliary upper and lower sash elements to fit in said support-frame, guides at the upper part of said support-frame to direct the top of the upper sash element into the support-frame, shoulders along the sides of said support-frame to prevent lateral displacement of said sash element, resilient guide means on said upper auxiliary sash element to prevent inward displacement thereof, lateral projections on the lower part of said auxiliary element, recesses in said support-frame to receive said projections, shoulder means at the top of the lower sash element to engage the upper sash element, and dual retaining means centrally pivoted to the support-frame near the joint of the upper and lower auxiliary sash elements and having an upper extension to position over the lateral projection on the upper auxiliary sash element and a lower extension to alternatively lock over the lower auxiliary sash element.

4. In window construction involving a support-frame for positioning in a window frame outside the regular window sashes, auxiliary upper and lower sash elements to fit in said support-frame, shoulders along the sides of said support-frame top prevent lateral displacement of said sash element, resilient guide means on said upper auxiliary sash element to prevent inward displacement thereof, lateral projections on the lower part of said auxiliary element, recesses in said support-frame to receive said projections, shoulder means at the top of the lower sash element to engage the upper sash element, and dual retaining means centrally pivoted to the support-frame near the joint of the upper and lower auxiliary sash elements and having an upper extension to position over the lateral projection on the upper auxiliary sash element and a lower extension to alternatively lock over the lower auxiliary sash element.

5. In window construction involving a support-frame for positioning in a window frame outside the regular window sashes, auxiliary upper and lower sash elements to fit in said support-frame, shoulders along the sides of said support-frame to prevent lateral displacement of said sash element, resilient guide means on said upper auxiliary sash element to prevent inward displacement thereof, shoulder means at the top of the lower sash element to engage the upper sash element, and dual retaining means centrally pivoted to the support-frame near the joint of the upper and lower auxiliary sash elements and having ears extending toward said auxiliary sash elements and placeable over the upper or the lower auxiliary sash element selectively according to the angle of inclination.

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