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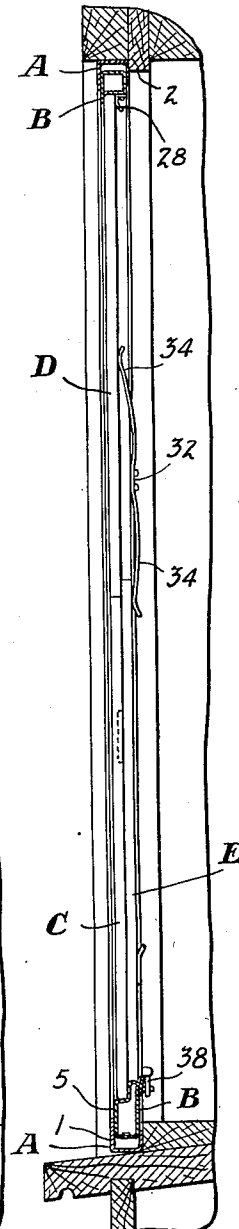
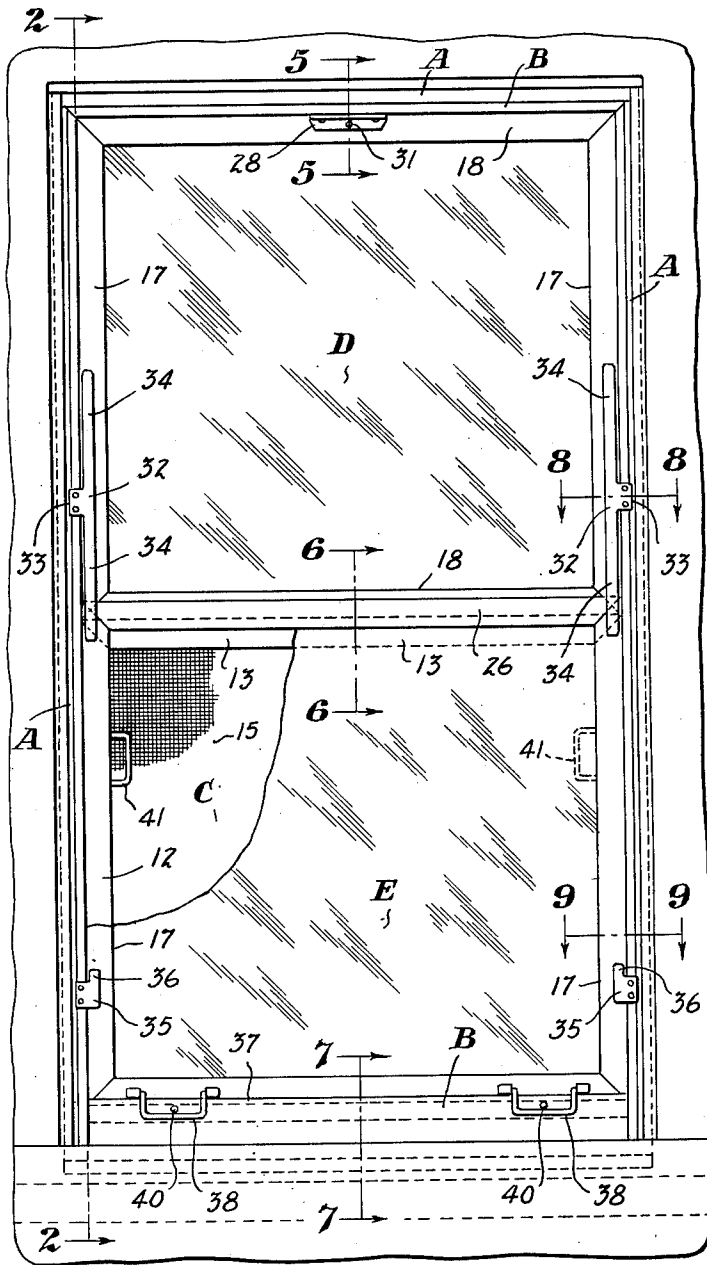
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2,463,432

STORM WINDOW

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2 Sheets-Sheet 1



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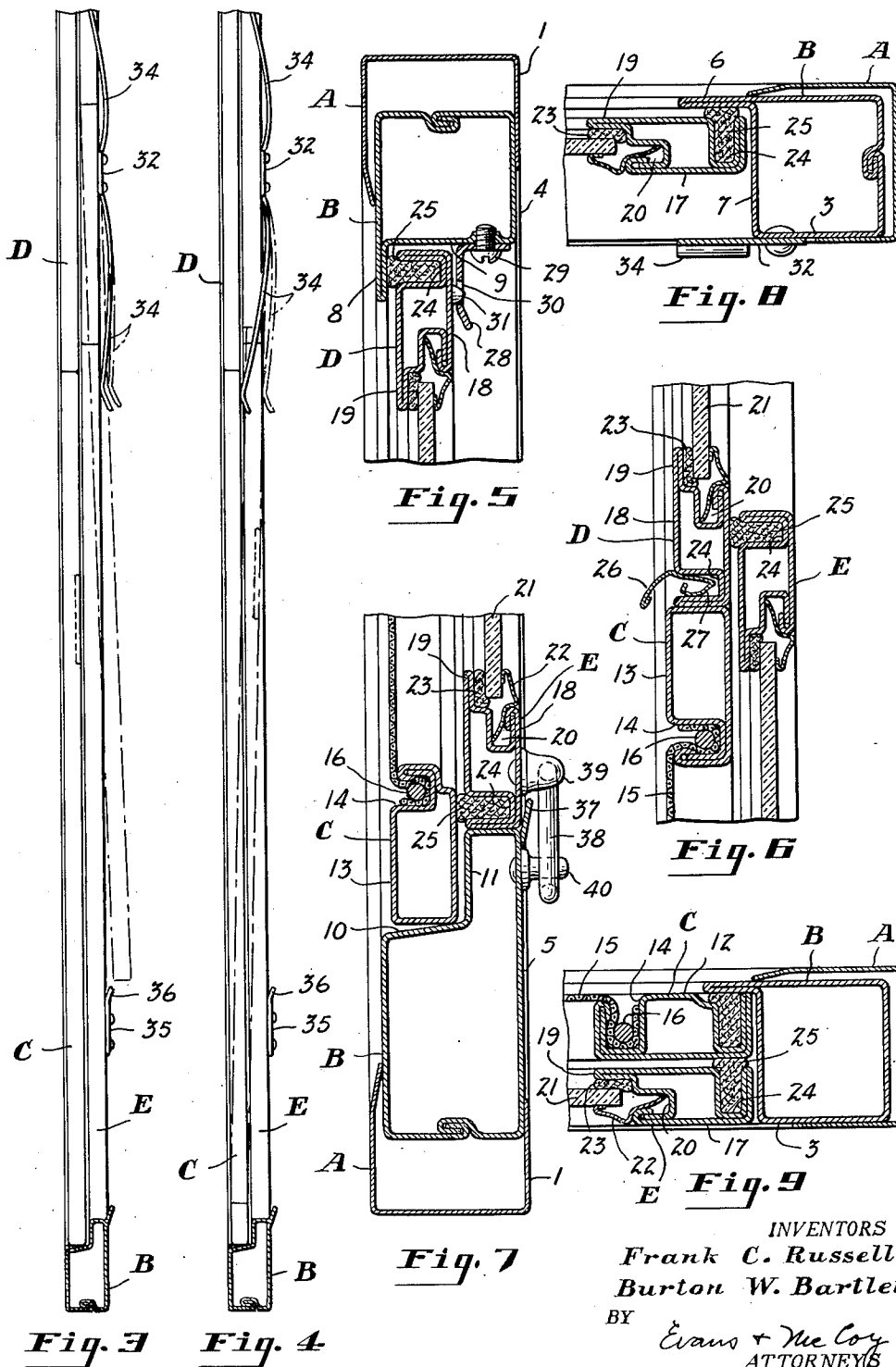
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UNITED STATES PATENT OFFICE

2,463,432

STORM WINDOW

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Application March 31, 1945, Serial No. 585,894

11 Claims. (Cl. 160—43)

1

This invention relates to storm windows and has for an object to provide an all weather window that has a permanently mounted screen therein and an inner glass sash that is adjustable from a position covering the screen to a position in which the screen is uncovered.

It is also an object of the invention to provide a window in which the sashes are securely fastened against tampering from the outside.

A further object of the invention is to provide a window of the character referred to that is effectively weatherstripped.

An additional object is to provide weatherstrips between the sashes and the sash frame that are put under pressure by outward pressure applied to the sashes.

A further object of the invention is to provide a window in which the sashes are so mounted that they may be readily removed from the inside for cleaning.

With the above and other objects in view, the invention may be said to comprise a storm window as illustrated in the accompanying drawings, hereinafter described and particularly set forth in the appended claims, together with such variations and modifications thereof as will be apparent to one skilled in the art to which the invention pertains.

Reference should be had to the accompanying drawings forming a part of this specification, in which:

Fig. 1 is an elevation of an window embodying the invention viewed from the interior;

Fig. 2 is a vertical section taken on the line indicated at 2—2 in Fig. 1.

Fig. 3 is a fragmentary view looking toward a side edge of the window showing the inner sash being removed;

Fig. 4 is a fragmentary view similar to Fig. 3 showing the inner sash in screen closing position;

Fig. 5 is a section on an enlarged scale taken on the line indicated at 5—5 in Fig. 1;

Fig. 6 is a section on an enlarged scale taken on the line indicated at 6—6 in Fig. 1;

Fig. 7 is a section on an enlarged scale taken on the line indicated at 7—7 in Fig. 1;

Fig. 8 is a section on an enlarged scale taken on the line indicated at 8—8 in Fig. 1, and

Fig. 9 is a section on an enlarged scale taken on the line indicated at 9—9 in Fig. 1.

The window of the present invention is composed of a sub-frame A that is adapted to be mounted in a window opening, a sash frame B that is mounted in the frame A, and sashes C, D, and E which are mounted in the sash frame, the

2

sashes C and D being superimposed one upon the other and filling the opening of the frame B and the sash E being slidably mounted in frame B inside the superposed sections C and D. The lower sash C carries a screen while the sashes D and E are glass sashes, the inner sash E being of a size to cover the screen and being adjustable to a position clear of the screen.

The sub-frame A is formed of inwardly facing sheet metal channels 1 that are secured by suitable means against window stops 2 of a window opening. The sash frame B has tubular sheet metal jambs 3, a tubular sheet metal head rail 4 and a tubular sheet metal sill 5. The jambs 3 have stop flanges 6 formed along the outer edges of their interior faces 7 which are flat, inwardly of the flanges 6. The head rail 4 has a stop flange 8 along the outer edge of its interior face 9 which is flat, inwardly of the flange 8. The flanges 6 and 8 of the sash frame lie in the same plane and provide stops for the sashes C and D. The sill 5 has a depressed inclined sash seat 10 and a stop shoulder 11 at the rear edge of the seat 10. The lower sash C has tubular sheet metal stiles 12 and tubular sheet metal top and bottom rails 13 that are of substantially identical form. The stiles 12 and rails 13 are formed to provide outwardly opening channels 14 adjacent their inner edges and a wire screen 15 has marginal edges extending into the channels 14 and held therein by means of retaining strips 16 that have wedging engagement with the wire fabric.

The sashes C, D, and E are preferably of the same size and the inner sash E and the upper sash D may be of identical construction. Sashes D and E have tubular sheet metal stiles 17 and tubular sheet metal top and bottom rails 18 that are of identical form and each has a stop flange 19 at the outer edge of its interior face. Inwardly of the stop flange 19 the stiles and rails have inwardly facing channels 20. A glass panel 21 is mounted in each of the sashes D and E and these panels are held in place by retaining strips 22 which are resilient sheet metal strips projecting into the channels 20 and resiliently pressing the panels 21 against sealing strips 23 positioned between the glass panes and the stop flanges 19.

The stiles 12 of the sash C and the stiles 17 and rails 18 of the sashes D and E are formed with outwardly facing channels 24 adjacent their outer edges. Weatherstrips 25 are mounted in the channels 24 of the stiles of the sash C, the stiles and top cross rail of the sash D and in all of the

3

channels 24 of the inner sash E. The weatherstrips 25 of sashes C and D bear against the stop flanges 6 and 8 of the jambs and head rail of the frame B and the strips 25 of the sash E bear against the stiles of the sashes C and D and the bottom rails of the sashes C and D, the weatherstrips 25 of the inner sash E forming a seal extending entirely around the screen when the sash E is in its lowermost position.

The channel 24 of the bottom rail of the sash D has a drip strip 26 mounted therein. The strip 26 projects outwardly from the rail 18 and is inclined downwardly to deflect water from the space between the sashes C and D, the strip 26 being detachably held in place by the resilient expandible portion 27 that engages in the channel 24.

The stop flanges 6 of the jambs 3 extend to the sash seat 10 of the sill 5 and the two sashes C and D are of a size to substantially fill the opening of the frame B inwardly of the stop flanges 6 and 8. Sufficient clearance may be provided between the head rail 4 and the top sash D to permit the screen frame C to be tilted inwardly until its top edge clears the bottom edge of the sash D, after which it may be lifted out. A resilient angle stop 28 is secured to the interior face of the head rail 4 by suitable means such as a screw 29. The stop 28 has an aperture 30 that receives a lug 31 projecting from the inner face of the sash C the stop 28 will yield sufficiently when the sash D is pulled downwardly to release the lug 31 and free the sash.

In order to provide a weather-tight connection between the sashes C and D and the sash frame B, means is provided for pressing the sashes C and D against the stops 6 and 8. The sash holding means is in the form of stops 32 that are mounted on the jambs 3 slightly above the midpoint between the upper and lower ends thereof. The stop members 32 are formed of resilient sheet metal and have laterally extending attaching portions 33 that are attached to the inner faces of the jambs 3, and upwardly and downwardly extending resilient arms 34 that project into the sash frame opening and normally bear against the stiles of the sashes C and D. As shown in Figs. 2, 3 and 4, the arms 34 are adapted to be swung outwardly to receive the inner sash E between them and the superposed sashes C and D. Adjacent the lower ends of the jambs 3, stop plates 35 are attached which are spaced at considerable distance beyond the lower ends of the downwardly extending arms 34, the stop plates 35 having inwardly inclined upper edge portions 36 to facilitate the entry of the sash E into the space between the stops 35 and the stiles 12 of the sash C.

As shown in Fig. 3, the upper edge of the sash E may be inserted into the frame opening and pushed upwardly beneath the arms 34 far enough for the lower end of the sash to clear the stops 35, whereupon the lower end of the sash E may be swung inwardly against the sash C and slid downwardly within the stops 35 into engagement with the sill 5. If it is desired to position the sash E clear of the screen 15, the sash E may be pushed upwardly beneath the resilient arms 34 until its lower edge is above the screen and the sash E will be retained in its raised position by the spring arms 34.

A wedging plate 37 is attached to the inner face of the sill 5 and is engaged by the lower edge of the sash E when the sash E is lowered into en-

4

gagement with the sill, so that the lower edge of the sash E is crowded toward the sash C and the weatherstrip 25 at the lower edge of the sash E is pressed against the bottom rail 18 of the sash C. When the sash E is in its lowermost position, its upper end is pressed toward the bottom rail of the top sash E by the downwardly projecting spring arms 34, so that all of the weatherstrips 25 carried by the sash E are held under sufficient pressure to provide an effective seal extending entirely around the screen. At the same time the upper spring arms 34 press against the inside of the top sash D to press its weatherstrips 25 against the stop flanges 6 and 8. Handles 38 are pivoted to brackets 39 attached to the bottom rail 18 of the inner sash E and these handles are adapted to hook over pins 40 attached to the sill 5 to normally retain the sash E in its lowermost position. The sash C may be provided with handles 41 to facilitate its removal from the frame.

For permanently closed windows the screen sash C is not desirable. The sashes C, D, and E are preferably of the same size so that when desired the screen sash C may be removed and replaced by the glass sash E. Regardless of whether the three sashes are mounted in the frame B or whether the two glass sashes are mounted in the frame the sashes are effectively weatherstripped by reason of the outward pressure of the spring stops 32 acting upon the weatherstrips 25.

The storm window frame per se is claimed in my copending application Serial No. 69,488, filed January 6, 1949.

It is to be understood that variations and modifications of the specific device herein shown and described for purposes of illustration, may be made without departing from the spirit of the invention.

What we claim is:

1. A window comprising a sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, stops along the outer edges of the interior faces of the jambs and head rail, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash fitting between the jambs inwardly of said superposed sashes, each sash having stiles and top and bottom rails, the lowermost of the superposed sashes having a screen mounted therein and the other sashes having glass mounted therein, said inner sash being of a size to cover said screen, and means for pressing said inner sash outwardly against said superposed sashes.

2. A window comprising a sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, stops along the outer edges of the interior faces of the jambs and head rail, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash fitting between the jambs inwardly of said superposed sashes, each sash having stiles and top and bottom rails, the lowermost of the superposed sashes having a screen mounted therein and the other sashes having glass mounted therein, said inner sash being of a size to cover said screen, weatherstrips interposed between said inner sash and said superposed sashes, and means for pressing said inner sash outwardly against said superposed sashes.

3. A window comprising a sash frame adapted to be mounted in a window opening and having

5

two jambs, a head rail and a sill, stops along the outer edges of the interior faces of the jambs and head rail, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash fitting between the jambs inwardly of said superposed sashes, each sash having stiles and top and bottom rails, the lowermost of the superposed sashes having a screen mounted therein and the other sashes having glass mounted therein, said inner sash being of a size to cover said screen, the stiles and rails of said inner sash having channels opening to their outer side faces, weatherstrips in said channels engageable with stiles and rails of said superposed sashes, and means for pressing said inner sash outwardly against said superposed sashes.

4. A window comprising a sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, stops along the outer edges of the interior faces of the jambs, and head rail, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash fitting between the jambs inwardly of said superposed sashes, each sash having stiles and top and bottom rails, the lowermost of the superposed sashes having a screen mounted therein and the other sashes having glass mounted therein, said inner sash being of a size to cover said screen, the stiles and rails of said inner sash having channels opening to their outer side faces, weatherstrips in said channels engageable with stiles and rails of said superposed sashes, weatherstrips interposed between said stops and the upper of said superposed sashes, and means for pressing said inner sash outwardly against said superposed sashes.

5. A window comprising a sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, the jambs and head rail having stops along the outer edges of their inner faces, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash slidably fitting between the jambs of the frame inwardly of said superposed sashes, and resilient stops on said frame engaging the inner side of the inner sash and pressing the same outwardly against said superposed sashes.

6. A window comprising a sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, the jambs and head rail having stops along the outer edges of their inner faces, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash slidably fitting between the jambs of the frame inwardly of said superposed sashes, resilient stops on said frame engaging the inner side of the inner sash and pressing the same outwardly against said superposed sashes, and weatherstrips interposed between the inner sash and said superposed sashes.

7. A window comprising a sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, the jambs and head rail having stops along the outer edges of their inner faces, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash slidably fitting between the jambs of the frame inwardly of said superposed sashes, stops attached to the lower portion of the jamb and engageable with the inner side of the inner sash adjacent its lower end and stops attached to the jamb and spaced upwardly from said lower stops, said upper stops being yieldable

6

to facilitate swinging of the lower end of the inner sash inwardly past the lower stops.

8. A window comprising a sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, the jambs and head rail having stops along the outer edges of their inner faces, superposed sashes abutting edge to edge and filling the frame opening inwardly of the stops, an inner sash slidably fitting between the jambs of the frame inwardly of said superposed sashes, and stops attached to said jambs, each stop comprising a resilient sheet metal member having a central attaching portion and inwardly bowed spring arms extending upwardly and downwardly from said attaching portion and engageable with the inner face of said inner panel.

9. A window comprising a sash frame adapted to be mounted in a window opening and having tubular metal jambs, a tubular metal head rail and a tubular metal sill, the jambs and head rail having integral stop flanges along the outer edges of their interior faces, said faces being flat inwardly of said flanges, the sill being formed to provide a depressed sash seat and a stop shoulder along the inner edge of the seat, superposed sashes abutting edge to edge and filling the frame opening inwardly of said stop flanges, each of said sashes having tubular metal stiles and rails, the stiles of said sashes and the top rail of the uppermost sash being formed to provide outwardly opening channels, weatherstrips in said channels engageable with said stops, and means for yieldably pressing said sashes outwardly toward said stops.

10. A window comprising a sash frame adapted to be mounted in a window opening and having tubular metal jambs, a tubular metal head rail and a tubular metal sill, the jambs and head rail having integral stop flanges along the outer edges of their interior faces, said faces being flat inwardly of said flanges, the sill being provided with a depressed sash seat and a stop shoulder along the inner edge of the seat, upper and lower sashes of substantially the same size abutting edge to edge and filling the frame opening inwardly of said stops, an inner stop for the upper sash detachably secured to the head rail, an inner sash of substantially the same size as the others fitting between the jambs inwardly of the superposed sashes, the lower of the superposed sashes having a screen mounted therein, the other sashes having glass therein, weatherstrips interposed between the stiles and rails of the inner sash and stiles and rails of the superposed sashes, and means for pressing said inner sash outwardly against said superposed sashes.

11. A window comprising a metal sash frame adapted to be mounted in a window opening and having two jambs, a head rail and a sill, the jambs and head rail having stop flanges along the outer edges of their interior faces, said faces being flat inwardly of said flanges, the sill being provided with a depressed sash seat and a stop shoulder along the inner edge of the seat, a lower sash fitting between the flat interior faces of the jambs and resting on said seat, a screen mounted in said sash, an upper glass carrying sash fitting between the top edge of the lower sash and the interior face of the head rail and between the flat interior faces of the jambs, an inner stop detachably secured to the interior face of the head rail, an inner glass carrying sash fitting between the jambs, said sashes each having tubular metal stiles and rails, the stiles and rails of the glass

carrying sashes having outwardly facing channels and the stiles of the screen sash having outwardly facing channels, weatherstrips mounted in all of said channels in the inner sash and engageable with stiles and rails of the superposed sashes, weatherstrips in the channels of the stiles of the superposed sashes and in the channel in the top rail of the upper sash that engages with said stop flanges, a drip strip secured in the channel of the bottom rail of the super sash, and resilient stops pressing said inner sash outwardly against said superposed sashes.

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