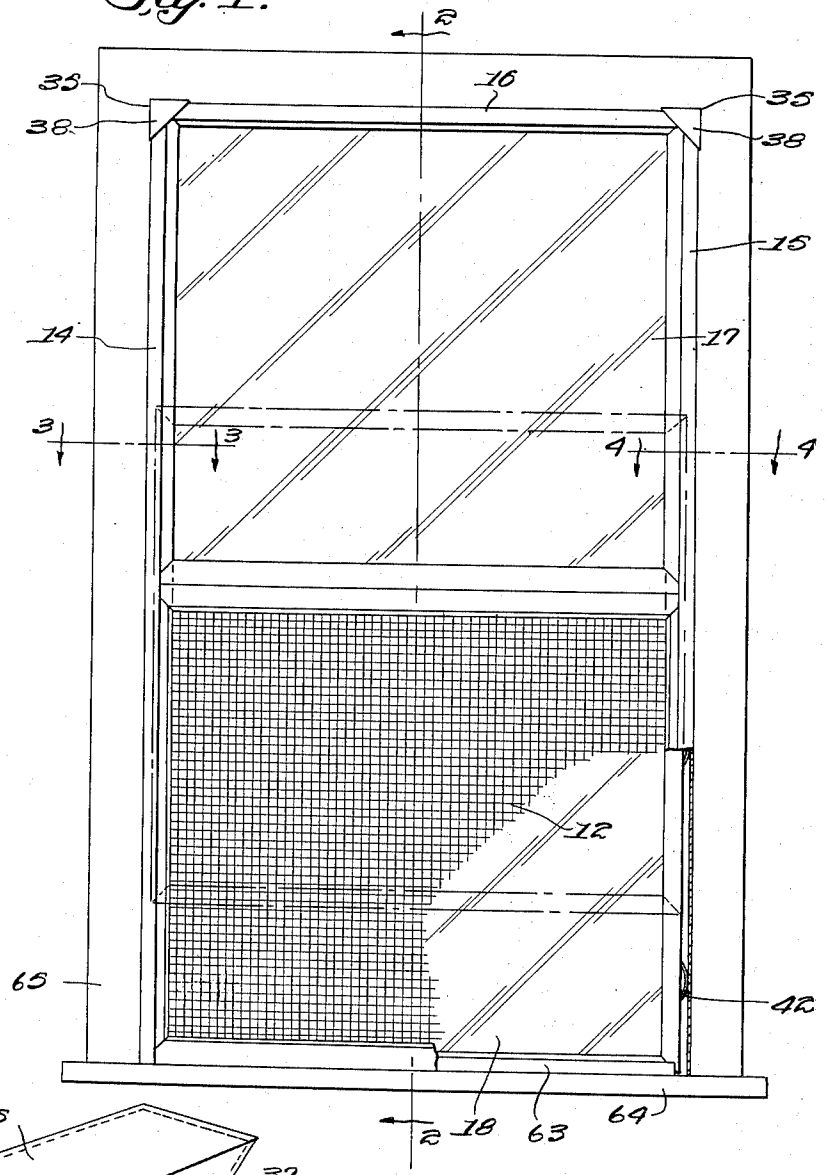
April 13, 1954 R. HUMPHREY 2,675,071

COMBINATION STORM SASH AND SCREEN

Filed April 27, 1950 2 Sheets-Sheet 1

Fig. 1.



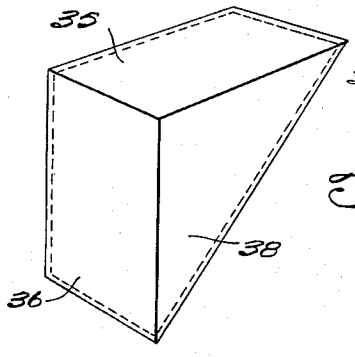


Fig. 8.

INVENTOR.
Ralph Humphrey,
BY Victor J. Evans & Co.
ATTORNEYS

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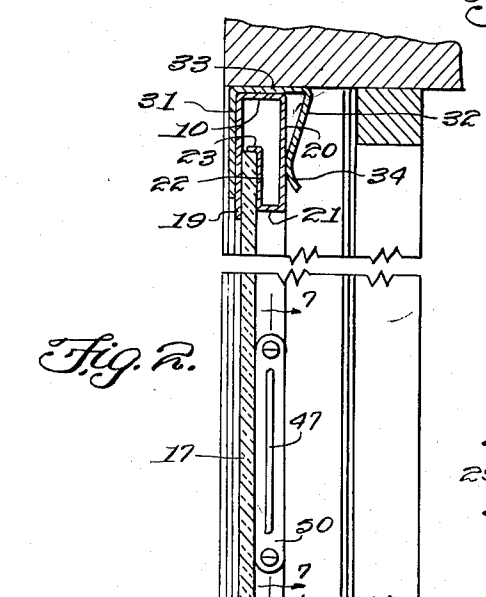


Fig. 2.

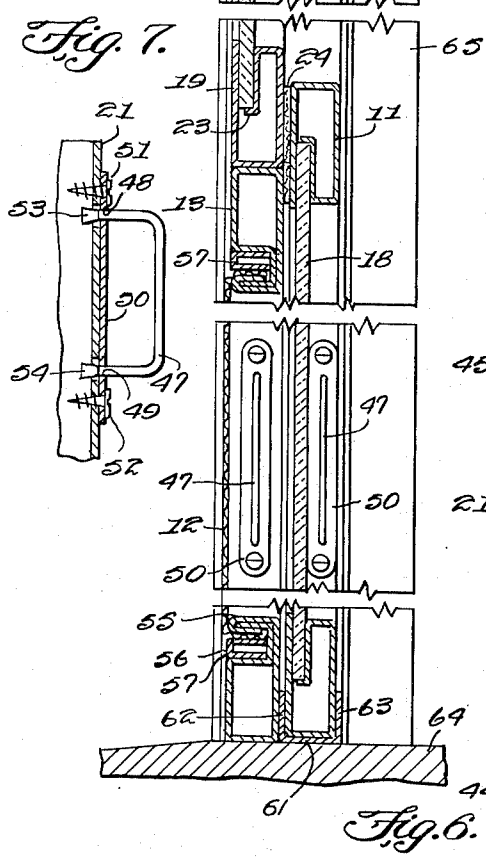


Fig. 7.



Fig. 6.

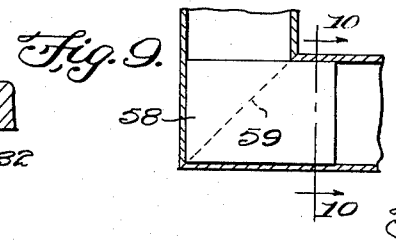


Fig. 9.

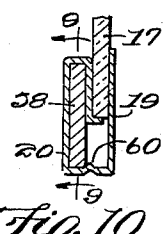


Fig. 10.

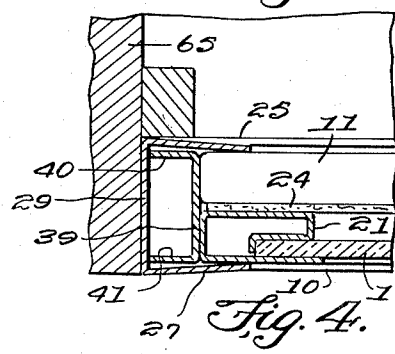


Fig. 3.

Fig. 4.

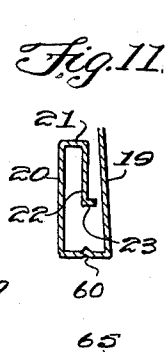


Fig. 11.

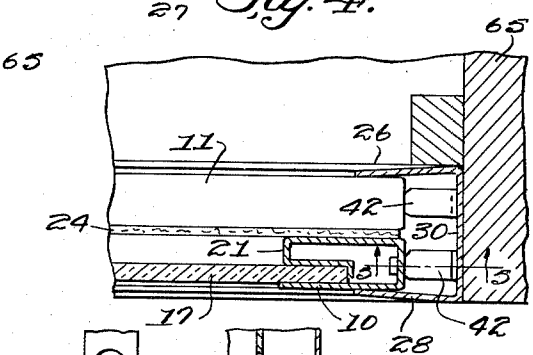
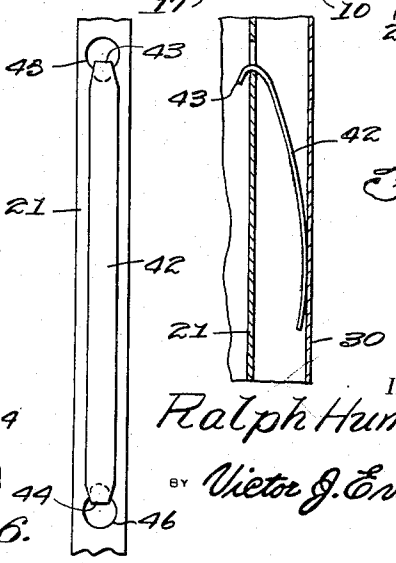


Fig. 5.



INVENTOR.

Ralph Humphrey,

BY Victor J. Evans & Co.

ATTORNEYS

Patented Apr. 13, 1954

2,675,071

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COMBINATION STORM SASH AND SCREEN

Ralph Humphrey, Wichita, Kans.

Application April 27, 1950, Serial No. 158,505

3 Claims. (Cl. 160—90)

1

This invention relates to storm sash particularly adapted for use with windows of the double hung type, and in particular this invention relates to a comparatively thin frame in which upper and lower sash are slidably and removably mounted and in which a screen frame is removably positioned in the channel below the upper sash.

The purpose of this invention is to provide storm sash having a comparatively thin frame that is positioned between the outside stop and and outer face of the frame of a window and that is provided with upper and lower siding sash and a screen frame so that the window may be opened similar to a double hung window.

This invention is an improvement over my copending application for a combination storm sash and screen filed June 2, 1949, with the Serial Number 96,667, now abandoned, wherein the sash and wire holding frames are formed to provide sockets for the glass and wire whereby the thickness of the holding frame is reduced.

Various types of storm sash have been provided and metal windows have been provided with upper and lower sash of the double hung type but it has been found difficult to combine these elements in a storm sash in which a screen may also be incorporated and that is sufficiently thin to be installed in the outer edge of a window frame.

The object of this invention is, therefore, to provide means for forming glass and wire screen holding frames whereby sliding frames for glass and wire mesh are mounted in a thin channel shaped frame.

Another object of the invention is to provide a combination storm sash and screen having upper and lower sash in which the upper and lower sash and screen are readily removable from the mounting frame.

A further object of the invention is to provide an improved combination storm sash and screen in which the width thereof permits the sash to be installed in a frame beyond the outside stop and which is of a simple and economical construction.

With these and other objects and advantages in view the invention embodies a rectangular shape mounting frame channel shape in cross section having vertically disposed sides and an upper end, upper and lower sash slidably mounted in the frame, a screen frame with wire mesh therein removably mounted in the outer part of the frame, resilient means retaining the sash and screen frame against one side of the mounting

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frame and handles slidably mounted in one side of each of the frames for gripping the frames to compress the resilient means for removing the frames from the mounting frame.

Other features and advantages of the invention will appear from the following description taken in connection with the drawings wherein:

Figure 1 is an elevational view looking toward the outside of a window frame with the combination storm sash and screen incorporated therein, with part of the screen broken away to show the lower sash and with the lower sash shown in a partly elevated position in dotted lines.

Figure 2 is a vertical section through the combination storm sash and screen taken on line 2—2 of Figure 1 with parts broken away and with the parts shown on an enlarged scale.

Figure 3 is a cross section through one side of the frame taken on line 3—3 of Figure 1.

Figure 4 is a similar section through the opposite side of the frame taken on line 4—4 of Figure 1.

Figure 5 is a detail showing a section taken on line 5—5 of Figure 4 illustrating the springs in the sides of the sash and screen frame with parts broken away.

Figure 6 is an elevational view of one of the springs.

Figure 7 is a detail showing a section through the mounting of one of the handles of the frame being taken on line 7—7 of Figure 2.

Figure 8 is a detail illustrating a triangular shaped corner cap on one of the upper corners of the frame.

Figure 9 is a cross section through one of the corners of a sash frame taken on line 9—9 of Figure 10.

Figure 10 is a cross section through the lower beam of one of the frames being taken on line 10—10 of Figure 9.

Figure 11 is a similar section with the glass and filler blocks omitted and showing the outer flange in the free position.

Referring now to the drawings wherein like reference characters denote corresponding parts the improved combination storm sash and screen of this invention includes an upper outer sash having a frame 10, a lower inner sash having a similar frame 11, a screen formed with wire mesh 12 held in a frame 13, and a mounting frame formed with side channels 14 and 15 and an upper connecting channel 16.

The upper and lower sash, as indicated by the numerals 10 and 11 are formed, as shown with

continuous structural shapes bent at right angles at the corners with the side flanges mortised and glass panels 17 and 18 are mounted in the frames thereof. The frame of the upper outer sash 10 is provided with a cross plate having an outer flange or plate 19 and an inner flange or plate 20 and the plate 20 is bent inwardly forming a flange 21 the inner edge of which extends at right angles to form a flange or cross flange 22 and the end of the plate 22 is provided with a lip 23 against which the edge of the glass 17 rests. The outer flange 19 is bent to slope inwardly to frictionally grip and form a seal with the glass, the flange being sprung outwardly as the glass is forced into the frame. With the sides and ends of the sash frames formed in this manner the glass panels 17 and 18 are frictionally and rigidly held at both sides and also at the upper and lower ends whereby each frame with its glass panel forms a complete unit.

A sealing strip 24 of felt or the like is secured against the outer surface of the upper horizontal member of the lower sash frame and also on the outer surface of the side members of the frame whereby with the lower horizontal member of the upper sash frame contacting the sealing strip the space between the upper and lower frames is sealed. The sections of the strip 24 at the sides of the frame also engage the inner surface of the screen frame whereby the frame is sealed at the sides.

The sash frames are slidably mounted in an outer mounting frame having channel-shaped side sections with outer inwardly inclined flanges 25 and 26 and inner flanges 27 and 28, the flanges 25 and 27 being connected by a web forming a back 29 and the flanges 26 and 28 by a web forming a back 30. The upper ends of the side members are connected by a channel-shaped cross member having an outer flange 31 and an inner inwardly inclined flange 32 with the flanges connected by a web 33. The lower edge of the inner flange 32 is provided with an inwardly extended tip 34 providing a springy action whereby the upper member of the sash frame is resiliently held against the outer flange 31.

The upper horizontally disposed member of the mounting frame is secured to the side members 14 and 15 by triangular shaped caps 35 as illustrated in Figure 8, the caps having vertical sections 36 and horizontal sections 37 with the edges of the vertical and horizontal sections connected by triangular shaped webs 38.

The side member 14 is provided with a channel shaped filler having a web 39 with flanges 40 and 41 and, as illustrated in Figure 3 the sides of the sash frame slide against the outer surfaces of the webs 39 with the frames held between the flanges 25 and 27 at one side and 26 and 28 at the other.

The frames of the upper and lower sash 10 and 11 are provided, at the opposite side with springs 42 having hook-like clips 43 and 44 on the ends and the clips extend through openings 45 and 46 in the sections 21 of the frames whereby the sash frames and screen are resiliently urged against the surface of the channel shaped filler 39 on the opposite side of the mounting frame.

The frames are also provided with handles 47 that are slidably mounted in openings 48 and 49 in base plates 50 and the base plates are secured to the sections 21 of the frame by screws 51 and 52. The U-shaped handles 47 are provided with enlarged ends 53 and 54 by which they are retained in the openings 48 and 49 of the plate 50. By this means the sash or screen is drawn toward the opposite side of the mounting frame whereby the springs 42 are compressed and with the frames held in this position they are free to pass outwardly of the storm sash with the edges thereof passing over the edge of the flange 25 on the side member 14 of the frame. The screen frame 13 is formed with a continuous rectangular shaped section with the sides formed to provide an inner flange 55 which provides a continuous groove 56 in which the edges of the wire mesh 12 are secured by channel shaped fillers as indicated by the numeral 57. With the edges of the wire mesh positioned over the groove 56 in the sides and ends of the frame the members 57 are forced into the grooves to clamp the edges of the screen in position.

The construction of the corners of the sash frame is illustrated in Figures 9 and 10 wherein blocks 58 are mounted in the corners with the blocks in the outer portions of the frame and with the blocks extended across the diagonal lines 59 of the mortise a rigid joint is provided. Indentations 60 are punched or stamped in the webs on the outer sides of the frame and these indentations provide projections that engage the lower edges of the blocks 58 and retain the blocks in position.

With the parts arranged in this manner the outer mounting frame is secured against the outer surfaces of the outside stops of a window frame and with these parts in place the upper and lower sash and screen frame are installed.

The sash and screen frames are inserted by pressing the edges containing the springs 42 into the opposite sides of the frame whereby with the springs compressed at one side with the parts as illustrated in Figure 4 the opposite sides of the frame are readily removed over the extending flanges 25 so that the edges of the frames are free to snap into grooves or openings behind the flanges.

A channel shaped base member having a back 61 with flanges 62 and 63 at the sides is mounted on the sill 64 of the window frame 65 and this channel is positioned to receive the lower edge of the lower horizontal rail or cross member of the lower sash frame 11, as shown in Figure 2. By this means the lower edge of the storm sash is sealed and the lower rail or member of the screen frame rests directly upon the upper surface of the window sill with the inner surface positioned against the flange 62 of the channel shaped base member.

The upper and lower sash are free to slide upwardly and downwardly in the frame with the screen frame removed and the screen frame 13 is removably mounted below the lower end of the upper sash 10 whereby the upper sash frame 10 and the screen may remain in position permanently and the inner or lower sash frame 11 is free to be actuated upwardly or downwardly as may be desired. The inner or lower sash frame 11 is resiliently held by the springs 42 in elevated positions in the frame.

It will be understood that other modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. A combination window and screen therefor for mounting between a header and a window sill that comprises a pair of spaced vertically directed channels extending from the header to the sill, a channel member having a pair of spaced surfaces adjacent the upper ends of said spaced

channels and secured to said header, a channel secured to said sill and having a second pair of spaced surfaces adjacent the lower ends of said spaced channels, a window sash, a second window sash, and a screen sash each of said spaced channels having a back that is wider than the combined thicknesses of said window sashes and having flanges that extend from said back toward the other of said spaced channels, the said flanges of each of said spaced channels defining a narrow elongated opening therebetween and resiliently gripping the sashes throughout their height, one surface of the first said pair of spaced surfaces being generally in register with the front flanges of said spaced channels and the other surface of the first said pair of spaced surfaces being substantially midway between the front and rear flanges of said spaced channels, said surfaces of the first of said pair of surfaces inclining away from each other to define an elongated opening to receive one of said sash therebetween, said channel secured to the header having resilient arms frictionally engaging said sash, one surface of said second pair of spaced surfaces being substantially midway between said front and rear flanges of said spaced channels and being in register with said other surface of the first said pair of spaced surfaces, the other surface of said second pair of surfaces being generally in register with the rear flanges of said spaced channels, said window sashes having a combined height greater than that of either of said spaced channels whereby the bottom of one of said window sashes is normally coextensive with the top of the other of said window sashes when said window sashes are disposed between said front and rear flanges of said spaced channels, said other surface of the first said pair of spaced surfaces normally holding the top of one of said window sashes against lateral movement in response to the pressure exerted on said one window sash by said front flanges of said spaced channels, and said one surface of said second pair of spaced surfaces normally holding the bottom of the other of said window sashes against lateral movement in response to the pressure exerted on said other window sash by said rear flanges of said spaced channels, said screen sash being shorter than said other window sash and being disposed in end to end relation with the said one window sash.

2. A combination window and screen therefor for mounting between a header and a window sill that comprises a pair of spaced vertically directed channels extending from the header to the sill, a channel member having a pair of spaced surfaces adjacent the upper ends of said spaced channels and secured to said header, a channel secured to said sill and having a second pair of spaced surfaces adjacent the lower ends of said spaced channels, a window sash, a second window sash, and a screen sash, each of said spaced channels having a back that is wider than the combined thicknesses of said window sashes and having flanges that extend from said back toward the other of said spaced channels, the said flanges of each of said spaced channels defining a narrow elongated opening therebetween and resiliently engaging the sashes throughout their height, the said flanges being inclined toward each other, one surface of the first said pair of spaced surfaces being generally in register with the front flanges of said spaced channels and the other surface of the first said pair of spaced surfaces being substantially midway between the front and rear flanges of said spaced channels, said surfaces of the first of said pair of surfaces inclining away from each other to define an elongated opening to receive one of said sash therebetween said channel secured to the header having resilient arms frictionally engaging said sash, one surface of said second pair of spaced surfaces being substantially midway between said front and rear flanges of said spaced channels and being in register with said other surface of the first said pair of spaced surfaces, the other surface of said second pair of surfaces being generally in register with the rear flanges of said spaced channels, said window sashes having a combined height greater than that of either of said spaced channels whereby the bottom of one of said window sashes is normally coextensive with the top of the other of said window sashes when said window sashes are disposed between said front and rear flanges of said spaced channels, said other surface of the first said pair of spaced surfaces normally holding the top of one of said window sashes against lateral movement in response to the pressure exerted on said one window sash by said front flanges of said spaced channels, and said one surface of said second pair of spaced surfaces normally holding the bottom of the other of said window sashes against lateral movement in response to the pressure exerted on said other window sash by said rear flanges of said spaced channels, said screen sash being shorter than said other window sash and being disposed in end to end relation with the said one window sash.

3. A combination window and screen therefor as claimed in claim 1 wherein the first said pair of spaced surfaces are the flanges of a springy channel, wherein said second pair of spaced surfaces are the flanges of a channel, wherein a sealing strip extends between said bottom of said one window sash and said top of said other window sash whenever said bottom and said top are coextensive, and wherein the pressure of said flanges of said spaced channels provides a seal between said strip and said bottom and said top of said window sashes.

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