Jan. 16, 1934. T. JOHNSON 1,943,868

SCREEN MOUNTING FOR METAL WINDOW FRAMES

Filed Jan. 15, 1932 2 Sheets-Sheet 1

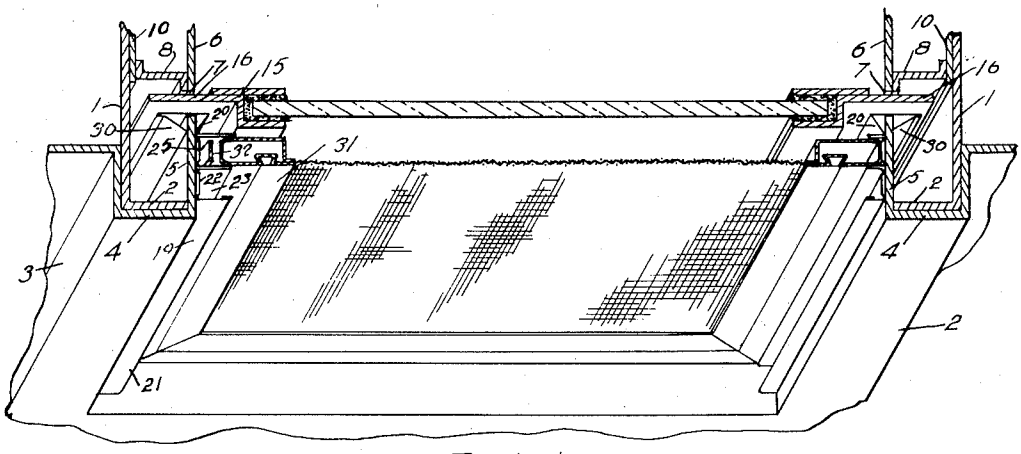


FIG. 1.

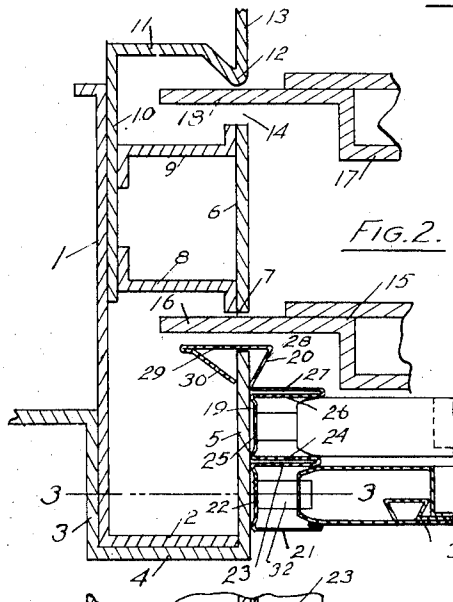


FIG. 2.

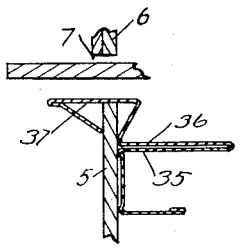


FIG. 4.

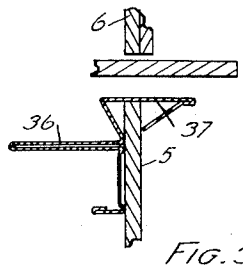


FIG. 5.

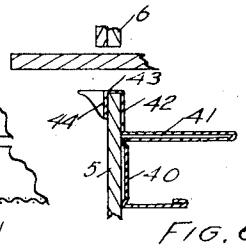


FIG. 6.

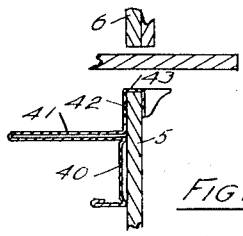


FIG. 7.

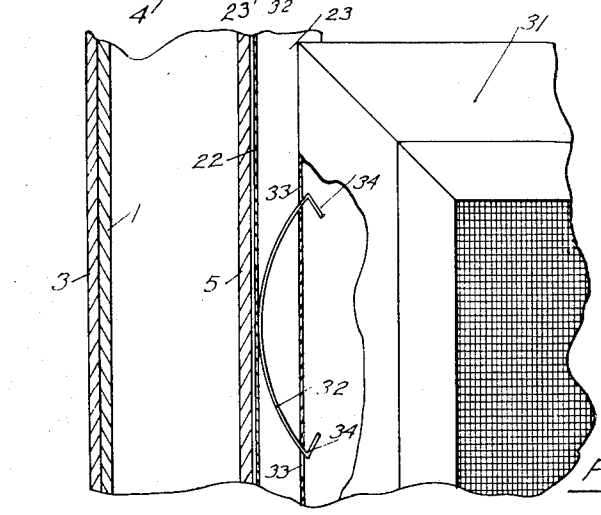


FIG. 3.

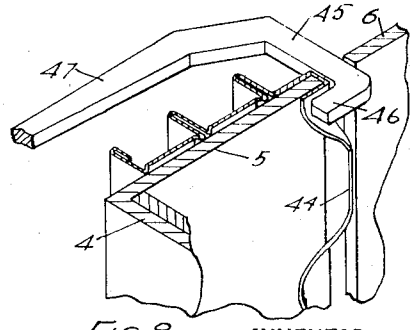


FIG. 8

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SCREEN MOUNTING FOR METAL WINDOW FRAMES

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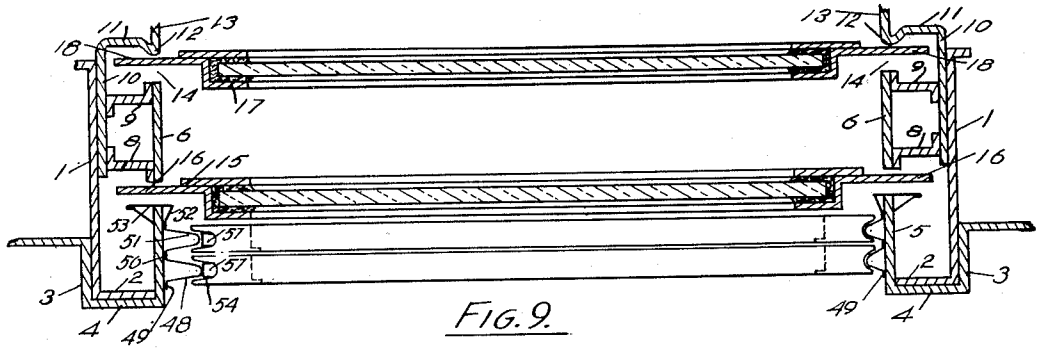


FIG. 9.

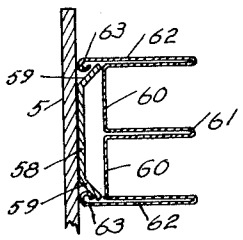


FIG. 10.

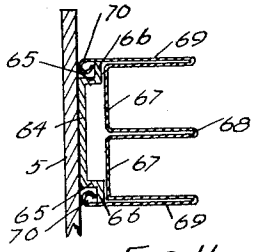


FIG. 11.

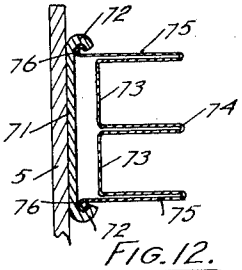


FIG. 12.

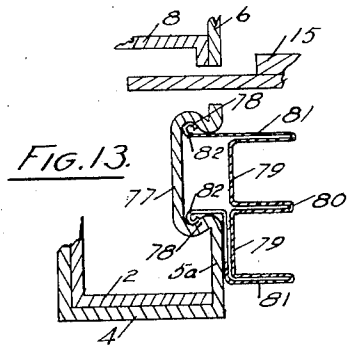


FIG. 13.

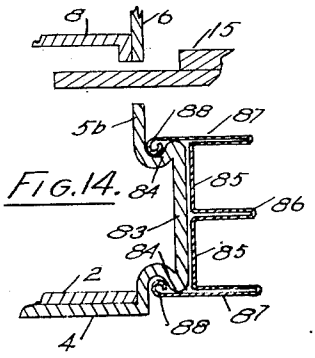


FIG. 14.

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UNITED STATES PATENT OFFICE

1,943,868

SCREEN MOUNTING FOR METAL WINDOW FRAMES

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Application January 15, 1932. Serial No. 586,873

20 Claims. (Cl. 156—14)

The present invention is designed to provide a screen mounting for metal window frames which may be readily attached to the frame. This is particularly designed for window frames of the double-hung type. It is not unusual for windows to be placed in buildings without the initial installation of screens, and under such circumstances it has been common to secure the screen mountings to the metal window frames by drilling or tapping holes in the window frames and securing the screen frames thereon with screws. This involves a very substantial cost of installation. The use of such frames in many places where window screens are not desired makes it undesirable at least to provide all metal window frames with screen mountings. Consequently the manner of attaching screen mountings to window frames of this type is of importance. The present invention accomplishes this in a very simple and efficient manner and in a manner in which the screen mountings may be readily attached with a minimum of labor at the place of installation. Features and details of the invention will appear from the specification and claims.

A preferred embodiment of the invention is illustrated in the accompanying drawings as follows:—

Fig. 1 shows a perspective view, partly in section, of a window frame with the mounting in place.

Fig. 2 an enlarged sectional view of one side of a window frame with a screen in place.

Fig. 3 an elevation of a portion of the frame mounting and screen showing a detail of the screen structure.

Figs. 4 and 5 show sectional views of the frame and mounting adapted to a single screen guide.

Figs. 6 and 7 show sectional views of the opposite sides of the frame showing a modified method of securing the screen mountings to the frame.

Fig. 8 a perspective sectional view showing the manner of securing the screen mounting shown in Figs. 6 and 7.

Fig. 9 a sectional view of a screen mounting and screen showing a modified form of screen mounting.

Fig. 10 a sectional view of the frame and screen mounting showing a modified structure and manner of securing the screen mounting.

Fig. 11 a similar section showing a slightly modified form of mounting.

Fig. 12 a sectional view showing a further modification and manner of securing a screen mounting.

Fig. 13 a sectional view of a modification of screen mounting in which the frame is pre-formed for receiving the mounting.

Fig. 14 a similar view of a modification in which the frame is pre-formed.

In all the structures except Figs. 13 and 14 a standard form of window frame is used, an exemplification of such a form being indicated in Figs. 1 and 2. The double-hung window frames while having slight modifications follow in general the scheme of frame, sash guides, and arrangement shown in these figures.

The frame has a back plate 1 with an L-shaped bottom 2, an outside plate 3 of U-formation, the back member of this plate being back of the plate 1, the outside face of the plate being formed at 4 along the L-extension 2 and an inwardly turned face of the window frame being formed by the plate 5. A central dividing plate 6 is arranged inside of the sash guide slot 7. It is mounted on Z-shaped plates 8 and 9 extending from the plate 1. An inner face plate 10 is secured inside the plate 1 and has a laterally extending portion 11 and has an outwardly turned guide edge 12 and an inwardly extending finish plate 13. A guide slot 14 for the bottom sash is arranged between the guide edge 12 and the plate 6.

A top sash 15 has slide extensions 16 which extend through the guide slots 7 and the bottom sash 17 has slide extensions 18 which extend through the guide slots. A screen mounting 19 has an attaching portion 20. The mounting is preferably formed with two guide grooves and these are formed by U-bends in sheet metal strips. The outer guide has an outer flange 21, back plate 22 and inner flange 23. The inner guide groove has an outer flange 24 which is connected by a bend with the flange 23, a back plate 25 and an inner flange 26. The attaching portion extends from the flange 26 by a plate 27 which is bent back on the flange 26. An inwardly extending member 28 extends from the member 27 and is inclined away from the plate 5. A strip 29 extends from the member 28 through the guide slot 7. A spring strip 30 is secured to the strip 29 by a fold on the back edge of the strip 29. The part 30 is of resilient metal.

In assembling the mounting the strip 29 carrying with it the spring strip 30 is forced through the slot 7. The strip 30 after it passes through the slot snaps out into position back of the plate 5, thus securing the mounting in place on the

plate 5. The inclination of the member 28 allows of a slight tilting of the mounting as a whole as the strip 29 is being forced through the slot, thus assisting in its entry. The screen frame 31 is preferably formed of sheet metal of rectangular form in cross section and this frame is adapted to slide in the guides formed in the mounting. In order to permit of the easy insertion and detachment of the screen frame from the mounting the screen guides at one side are slightly deeper than the screen guides at the opposite side and the screen frame in the side having the deeper guides is provided with spring inserts which permit the insertion of the screen frame in the guides far enough to permit the insertion of the screen frame in the opposite guide. The frame then is moved laterally into its position and held in the inserted position by the springs. In the structure shown the springs 32 are leaf springs which extend through openings 33 in the edge wall of the screen frame and have hooks 34 which hold the springs in the frame. These springs readily yield in permitting the frame to be forced into the deeper guide slot the distance necessary to permit the insertion of the opposite side of the frame in the guide at the opposite side of the window. The springs also frictionally hold the screen frames in any adjusted position. This is particularly desirable where two screen frames are used and with such construction the upper screen frame is held in its adjusted position by the frictional engagement of the springs.

The mountings are of a length to exactly fill the window frame and the top and bottom of the mountings engage the ends of the frame, the bottom engagement being indicated in Fig. 1. Thus the spring engagement of the screen frames tends to hold the screen mountings back in engagement with the side of the window frame, or plate 5. It is, therefore, apparent that by merely forcing the mountings into place, passing the strips 29 and 30 through the slot 7 the mountings are completely assembled in place for receiving the screens. This may be very quickly done at a very small cost of installation and without tools, or any fitting on the job.

In some installations but a single screen frame is used involving the use of but a single guide. In Figs. 4 and 5 a mounting is shown adapted for the single screen frame. Here there is a single U-bend 35 and a return attaching member 36 having a means of attachment 37 corresponding exactly to the attaching member 20 and the mounting is secured in the window frame in exactly the same manner as the structure shown in Figs. 1 and 2. The inner flange of the guide in the mounting shown in Fig. 4 is deeper than the flange shown in Fig. 5 to permit of the convenient entry of the screen frame in the manner described with relation to Fig. 1.

In the structure shown in Figs. 6 and 7 the screen mounting 40 is U-shaped, as in Figs. 4 and 5, and the return member 41 is secured to the inner flange of the U-shaped mounting 40. A strip 42 extends inwardly along the plate 5 and in direct engagement therewith. An inwardly extending strip 43 extends through the guide slot 7 and has a portion initially extending beyond the back face of the plate 5. After the insertion of the strip 43 portions at least are bent back into clamping engagement with the plate 5. This is conveniently accomplished by a tool 45 formed of thin plate metal that can be passed through the slot 7 and has the bending finger 46 which engages the inner edge of the strip 44 and bends it down into clamping engagement with the plate 5, as indicated in Fig. 8. The tool has a handle 47 by means of which it may be moved along the slot and swung over sidewise so as to complete the bending action. In this way the assembly of the mounting on the job may be accomplished very quickly and by the use of the tool 45 only. In Figs. 6 and 7 the mounting is arranged for a single screen and in Fig. 8 for a double screen, the U-bend united guides following the same general construction as that shown in Figs. 4 and 5 and Figs. 1 and 2.

In Fig. 9 a further modification is shown of the mounting in that the edges of the screen frame are provided with grooves which engage guides formed on the mountings which extend into these grooves. The outer guide of a double mounting has a U-shaped bend 48 with a foot strip 49 along its outer edge, a connecting foot strip 50 along its inner edge, and a second U-bend 51 extending from the strip 50 and terminating in a foot strip 52. An attaching member 53 extends from the strip 52 and is of the same general structure as the attaching member 20 in Figs. 1 and 2 and is put in place on the frame in exactly the same manner. The screen frames are provided with grooves 54 which extend along the guide edges of the return bends 48 and 51. Springs 57 are arranged in the screen frame in the same manner as in the structure shown in Fig. 1 and a screen groove at the side having the spring is slightly deeper than the screen groove at the opposite side permitting the insertion of the screen by the engagement of the deeper groove. The depression of the spring permits of the movement into place of the edge of the screen frame.

In the structure shown in Fig. 10 the window frame is prepared with a plate 58 which is secured to the plate 5 by spot welding, or any other convenient manner. The edges of this plate are bent outwardly at 59 making under-formed shoulders along the edge of the strip. The screen mounting is formed of two U-bends 60 united by a connecting bend 61. The outside of the outer flange of the outer guide and the inner flange of the inner guide are return strips 62 terminating in rolled edges 63. The strips 62 are resilient and can be sprung apart so as to permit the passage of the rolled edges 63 past the edges of the out-turned portions 59 so that the rolled edges snap under the under-formed shoulders 59 and thus lock the mounting in place.

In the structure shown in Fig. 11 a plate 64 somewhat similar to the plate 58 is used. This plate 64 is secured to the plate 5 of the frame by spot welding, or other convenient means. It has the out-turned edges 65 and flanges 66 on the out-turned portions 65. The screen has the U-shaped mounting guides 67 united by a fold 68. Strips 69 on the outer flanges of the outer guide and the inner flange of the inner guide terminate in rolled edges 70 which are snapped under the flanges 66 to secure the mounting in place.

In Fig. 12 a plate 71 is secured to the plate 5 of the frame by spot welding, or convenient means. It has the in-turned flanges 72 providing under-formed shoulders on the inner faces of the strips 71. The screen guide is formed of the U-bends 73 united by a fold 74. Return strips 75 are folded back from the flanges of the mounting and are provided with rolled edges 76 which can be snapped under the under-formed shoulders of the edges 72 to secure the mounting in place.

In the structure shown in Fig. 13 the plate 5a has formed in it a channel 77 with under-formed edges 78. The screen mounting has a U-bend 79 united by a fold 80 and is provided with return strips 81 which terminate in folds 82 which can be snapped through their resiliency into the channel engaging the under-formed shoulders 78, thus locking the mounting in place.

In Fig. 14 the frame is formed with a plate 5b having a channel 83 formed therein, the edges of this channel forming outwardly faced under-formed shoulders 84. The screen mounting has U-bends 85 united by a fold 86 and return strips 87 are arranged on the outer and inner faces of the mounting and these strips have folds 88 which are adapted to snap by the edges of the shoulders 84 and to engage the shoulders 84 through the resilience of the strips so as to lock the mounting in place.

It will be noted in all the forms, except that shown in Figs. 6, 7 and 8, the complete assembly is made without the use of tools and as shown in Figs. 6, 7 and 8 by the simple tool there illustrated. Preferably in each structure the mounting strips are of the full length of the frame and are locked against up and down movement by the top and bottom of the frame. The form of the guides may be varied without changing the invention. The details of the attaching member may be varied without departing from the invention and while I have shown as an exemplification of my invention various modifications, it will be understood that I do not wish to be limited to these variations except as expressed in the claims.

What I claim as new is:—

1. A screen mounting adapted for attachment to metal window frames having a guide for a sliding window sash, said mounting being formed of sheet metal and having yieldable interlocking parts adapted to secure the mounting on the frame through the engagement of the parts and movable into interlocking position through a yielding of the parts.

2. A screen mounting adapted for attachment to metal window frames having a guide for a sliding window sash, said mounting being formed of sheet metal and having resilient yielding interlocking parts adapted to secure the mounting on the frame through the engagement of the parts and movable into interlocking position through the yielding of the parts and locking the mounting on the frame through the movement of the parts into position in response to the resilience of the parts.

3. A screen mounting adapted for attachment to a metal window frame having a sash guide slot, said mounting comprising an attaching portion adapted to extend into the guide slot.

4. A screen mounting adapted for attachment to a metal window frame having a sash guide slot, said mounting comprising an attaching portion adapted to extend through the guide slot and engage the frame back of the guide slot.

5. A screen mounting for attachment to a metal window frame having a sash guide slot, said mounting being formed of sheet metal and having an attaching portion adapted to extend through the guide slot and to engage the frame back of the guide slot through a change in the shape of the sheet metal after insertion.

6. A screen mounting for attachment to a metal window frame having a sash guide slot, said mounting being formed of sheet metal and having an attaching portion adapted to extend through the guide slot and having a resilient portion snapping into engagement with the frame back of the slot upon insertion.

7. A screen mounting for attachment to metal window frames having a sash guide slot therein, said mounting having a portion adapted to extend through the sash guide slot and by deformation after insertion extend into engagement with the frame back of the guide slot.

8. A screen mounting formed of sheet metal having a U-bend and an attaching strip extending from the inner flange of the U-bend, said attaching strip being bent to engage and secure through the medium of the strip itself the mounting on a metal window frame.

9. A screen mounting adapted for attachment to metal window frames having a sash guide slot therein, said mounting having a U-bend forming a guide for the screen and an attaching portion extending from the inner flange of the U-guide and having a strip extending therefrom adapted to extend through the window frame slot and to engage the frame back of the slot.

10. A screen mounting formed of sheet metal adapted for attachment to metal window frames comprising a plurality of united U-bends, the inner U-bend having an extension bent and adapted through the medium of the extension itself for attachment to the window frame.

11. A screen mounting formed of sheet metal adapted for attachment to metal window frames having guide slots comprising a plurality of united U-bends, the inner flange of the inner U-bend having an attaching extension adapted to extend through the guide slot of the window frame and secure the mounting through the engagement of the attaching extension at the back of the window slot.

12. In a window, the combination of a frame, said frame being provided on the side thereof with under-formed shoulders; and screen mountings formed of sheet metal and having attaching extensions adapted to engage said under-formed shoulders.

13. In a window, the combination of a frame, said frame being provided on the side thereof with under-formed shoulders; and a screen mounting formed of sheet metal having U-shaped guides and return strips extending from the outer and inner flanges of the mounting, said return strips terminating with shoulders engaging the under-formed shoulders of the frame.

14. In a window, the combination of a metal window frame; a plate secured to the side of the metal window frame having under-formed shoulders formed on the edges of the plate; and a screen mounting formed of sheet metal and having attaching portions with shoulders engaging the under-formed shoulders of the plate.

15. The combination of a window having a metal frame, the side of the frame having formed therein channels with under-formed shoulders along the edges of the channels; and a screen mounting having attaching extensions with shoulders engaging the under-formed shoulders in the frame.

16. In a window, the combination of a frame having under-formed shoulders formed on the side thereof; and a screen mounting having resilient portions provided with shoulders engaging the under-formed shoulders on the frame.

17. A screen mounting adapted for attachment to a window frame comprising a guide portion U-shaped in cross section; and attaching portions formed integrally with the guide plate by folds

at the edges of the guide plate, the attaching portions extending along the flanges of the guide plate and terminating in attaching shoulders.

18. A screen mounting adapted for attachment to a window frame comprising a guide portion U-shaped in cross section; and attaching portions formed integrally with the guide plate by folds at the edges of the guide plate, the attaching portions extending along the flanges of the guide plate and terminating in rolled attaching shoulders.

19. A mounting for screens comprising two U-bends united by a fold between them; and attaching plates formed on the outer flanges of the mounting by return folds, said attaching plates being supplied with attaching shoulders at their edges.

20. A mounting for screens comprising two U-bends united by a fold between them; and attaching plates formed on the outer flanges of the mounting by return folds, said attaching plates being supplied with rolled attaching shoulders at their edges.

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