July 20, 1937. R. T. AXE 2,087,463

WINDOW SASH CONSTRUCTION

Filed March 10, 1936 2 Sheets-Sheet 1

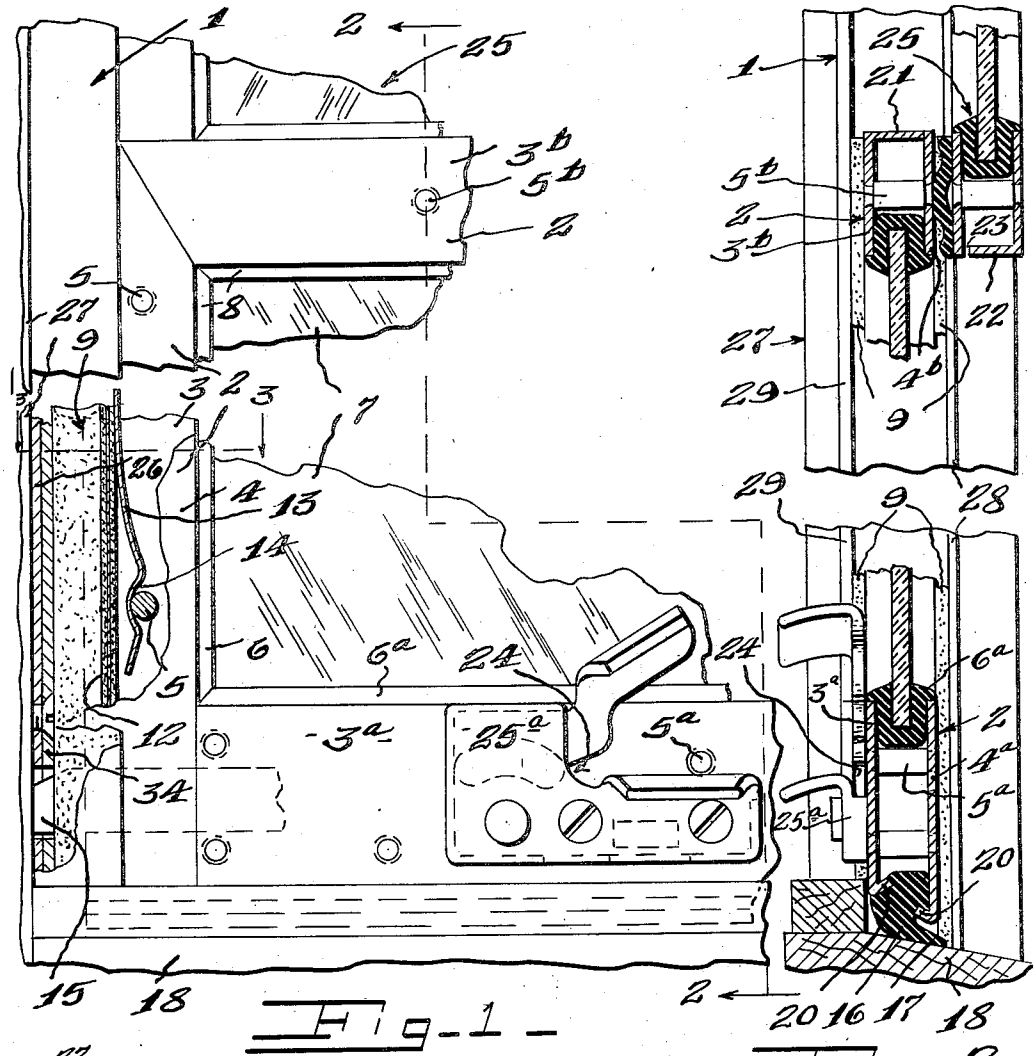


Fig-1

Fig-2

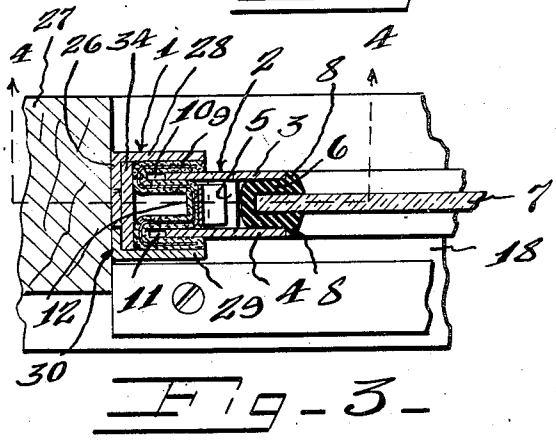


Fig-3

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WINDOW SASH CONSTRUCTION

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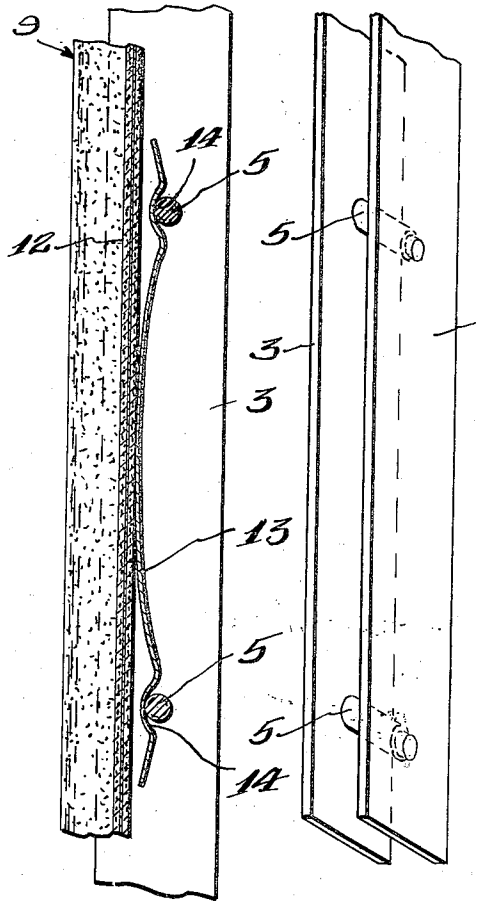


Fig-4-

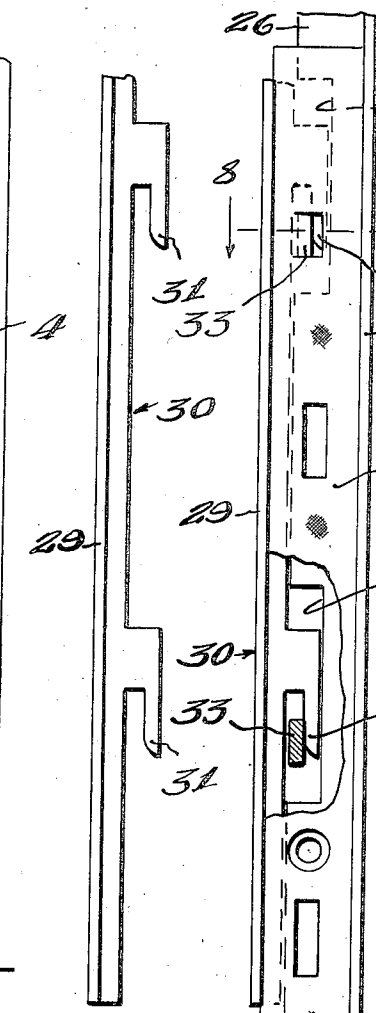


Fig-5-

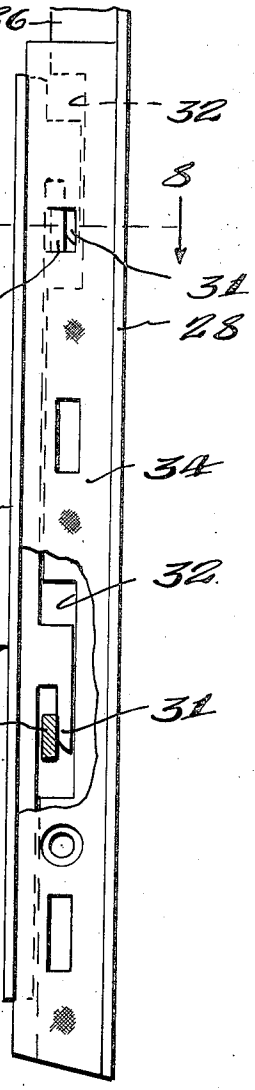


Fig-6-

Fig-7-

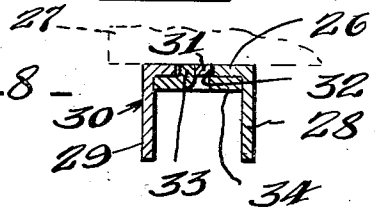


Fig-8-

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UNITED STATES PATENT OFFICE

2,087,463

WINDOW SASH CONSTRUCTION

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Application March 10, 1936, Serial No. 68,093

2 Claims. (Cl. 189—76)

This invention relates to sheet metal window sash constructions, and has for its object a sash construction or construction of the frame members of the sash, as the stiles and bottom and top rails, which is particularly simple and economical, is composed of a minimum number of parts, and is high-class in appearance.

It further has for its object a sash frame member which is skeleton in form and includes opposing or front and rear flat sheet body strips with spacing means, as posts, at intervals between them and with glass receiving channels supported between the inner margins of the opposing body strips from the edges of said strips, and also a weather or buffer strip between the other or outer margins.

It further has for its object an arrangement of the weather strip relatively to each side frame member or stile and the sash guide channel of the window frame.

It further has for its object a particularly simple and economical mounting of the weather strip and the arrangement of springs between the opposing body strips by which the weather strip is pressed outward into weather tight engagement with the walls of the guide channel.

Other objects will appear throughout the specification.

The invention consists in the novel features and in the combinations and constructions hereinafter set forth and claimed.

In describing this invention, reference is had to the accompanying drawings in which like characters designate corresponding parts in all the views.

Figure 1 is a fragmentary elevation, partly in section, of a window structure embodying this invention.

Figures 2 and 3 are sectional views on lines 2—2 and 3—3, respectively, Figure 1.

Figure 4 is a detail sectional view of one of the stiles of the sash, this being taken approximately on the plane of line 4—4, Figure 3.

Figure 5 is a fragmentary isometric view of one of the stiles.

Figure 6 is a fragmentary detail view of one of the window stops, which is removable for permitting the removal and replacement of the sash.

Figure 7 is a fragmentary elevation, partly broken away, of parts of the window frame which form the sash guide.

Figure 8 is a sectional view on line 8—8, Figure 7.

The construction, per se, of the window frame and removable stop shown in Figures 6, 7 and 8, forms no part of this invention, but constitutes the subject matter of another application.

This invention relates primarily to a sash construction or skeleton frame member consisting primarily of opposing front and rear, or, inner and outer, flat body strips with spacing means at intervals between them. It also further includes glass receiving channel members insertable between the inner margins of the opposing flat body strips and supported or held in position from the extreme outer edges of said margins, and also yielding strips, as a weather strip or a buffer strip, embracing the outer margins of said opposing frame members, the weather strip in each side frame member or stile coacting with the sash guide channels of the window frame and the strip on the bottom rail, being a buffer strip, coacting with the sill of the window frame.

By the term inner margins of the opposing body strips is meant the margins toward the glass pane and by outer margins, those toward the outer edge of the sash.

1 designates generally the window frame, which is formed with sash guide channels, and 2, a window sash, which is movable in the frame or in the guide channels. All four frame members of the sash are similar in construction, the stiles being exactly the same, and the top and bottom rails differing slightly from each other and from the stiles, but being generally of the same construction.

3 and 4 designate, respectively, inner and outer opposing flat body strips of each of the stiles, and 5 are spacing posts between the strips 3, 4, and located at suitable intervals, these being rigidly secured in any suitable manner, as by riveting, to the strips 3, 4. Thus the body of the frame members or stiles is skeleton in form, consisting primarily of opposing flat body strips. By reason of this construction, minimum material and manufacturing operations are required, and at the same time, the frame member is strong and sightly.

6 designates a channel member for receiving the margins of the glass pane 7, this channel member extending between the inner margins of the opposing flat body strips 3, 4, and having shoulders 8 at its outer sides which support it or locate it from further movement into the space between the strips 3, 4, so that the channel member 6 is supported between the strips 3, 4 from the outer edges of the inner margins of the strips 3, 4, as distinguished from fitting into a channel formed by the margins and by a bottom strip.

9 designates a weather strip at each side edge

of the sash, this running in the adjacent guide channel of the frame. The weather strip 9 is formed of yielding material and is also formed with grooves 10 and 11 for receiving the outer margins of the body strips 3, 4, the intermediate portion 12 of the weather strip extending between the outer margins of the flat opposing body strips 3, 4. As here shown, the weather strip is formed up from a flat piece into a double U formation. The weather strip is secured to the stiles of the sash to move therewith. In order to adjust the sash in a widthwise direction relatively to the sash guide, means is provided for thrusting the weather strip 9 outwardly into the guide channel or into snug engagement with the walls thereof.

As seen in Figures 1, 3 and 4, springs are used for effecting this adjustment, these being located between the opposing strips 3, 4, those here shown being leaf springs 13, each seating at its ends at 14 against two of the spacing posts 5 and having their intermediate portions bowed outwardly and pressing against the intermediate part of the double U formation of the weather strip 9. Any suitable number of such springs may be employed.

The weather strip 9 is secured from movement relatively to the stile during the raising and lowering of the sash by the friction between the springs 13 and the weather strip and also by the bolt 15 of the sash lock, which bolt is located in the bottom rail of the sash and projects through a slot in the weather strip, as seen in Figure 1. The sash bolt and its operating mechanism may be of any suitable form, size and construction and forms no part of this invention.

As seen in Figure 2, the bottom rail of the sash is formed of opposing body strips 3*a* and 4*a* secured together by spacing post 5*a*. The glass receiving channel member 6*a* is the same as the glass receiving member 6. However, the buffer strip 16, which is held between the outer or lower margins of the opposing body strips 3*a*, 4*a*, is different in construction from the weather strip 9. The buffer strip 16 is here shown as having a flexible tongue portion 17 extending beyond the lower edge of the bottom rail, in order to engage and flex against the sill 18 of the frame. The body portion thereof is in the form of a barb or arrow-head in cross section and interlocks with inwardly extending flanges 20 at the lower edges of the opposing strips 3*a* and 4*a*, these inwardly extending flanges being in different horizontal planes. In placing the buffer strip in position, the arrow-head formation is forced between the flanges separating them against the resiliency of the strips 3*a* and 4*a*, until said flanges snap behind the barbs of the arrow-head formation.

The top rail of the sash is substantially of the same general construction as the stiles and bottom rail, it including opposing flat sheet metal body strips 3*b* and 4*b* held together by spacing posts 5*b* but the upper side thereof is also closed by a flange 21 instead of by a weather strip or buffer strip, this flange being usually formed integral with one or the other of the strips 3*b* or 4*b*.

In the window here shown, a stationary upper sash 25 is shown. 22 designates the bottom rail of this stationary upper sash, which is generally the same in construction, as the stiles and rails, particularly the upper rail of the sash 2. That here shown is formed with a ventilating or breather opening 23. The sash 2 is also formed with a ventilating or breather opening for ventilating the interior of the sash frame member, and thus avoiding the accumulation of moisture. The breather opening is provided by a space 24 between the base plate 25*a* of the operating means for the bolt 15 and the underlying body strip 4*a*.

The guide channel of the window frame may be of any suitable form, size and construction. That here shown comprises a strip 26 in the form of an angle iron having a base flange secured, as by screws, to the body or window frame or the post structure 27, the other flange 28 forming one side of the guide channel. The other side of the guide channel is formed by one flange 29 of the removable window stop 30. This is also in the form of an angle iron. The other flange of the angle iron formation of the window stop 30 is cut away to form hooks 31 for entering slots 32 in the base flange 28 of the strip 26 and interlocked by a vertical movement with shoulders 33 on a strip 34 secured, as by welding, to the inner side of the base flange of the strip 26, the shoulders 33 extending into the slots of the base flange.

The construction of the removable window stop or the construction of the channel of the sash guide forms no part of this invention.

What I claim is:—

1. In a window construction, the combination with a window frame formed with channels providing sash guides, of a sash having frame members extending into the channels, each frame member comprising opposing flat body strips and spacing posts at intervals connecting the same, a glass receiving channel member extending between the inner margins of the opposing body strips and supported from the edges of said margins, and a weather strip carried by said body strips and formed with grooves for receiving the outer margins of said strips, the intermediate portion of the weather strip extending between the outer margins of the strips.

2. In a window construction, the combination with a window frame formed with channels providing sash guides, of a sash having frame members extending into the channels, each frame member comprising opposing flat body strips and spacers between them, a glass receiving channel member extending between the inner margins of the opposing body strips and supported from the edges of said margins, a weather strip carried by said body strips and extending into the adjacent channel and also extending into the space between the outer margins of said body strips, and spring means located between the body strips and pressing the weather strip outwardly against the walls of the guide channel.

ROY T. AXE.