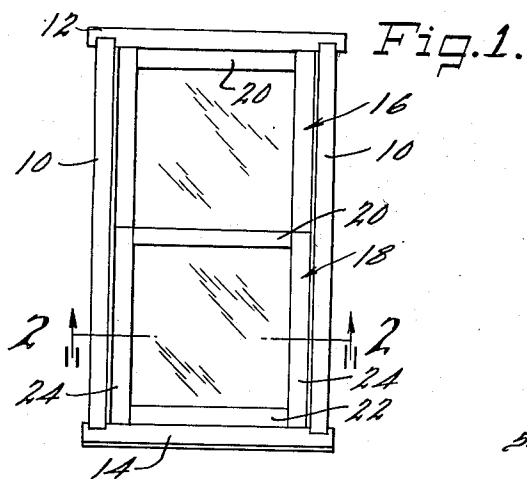
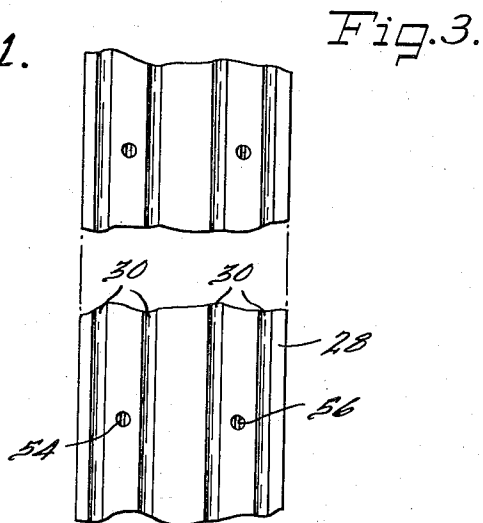
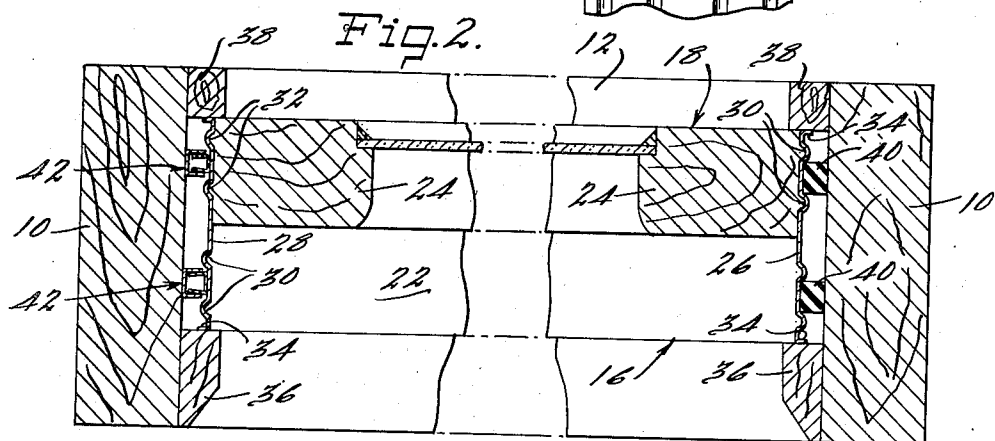
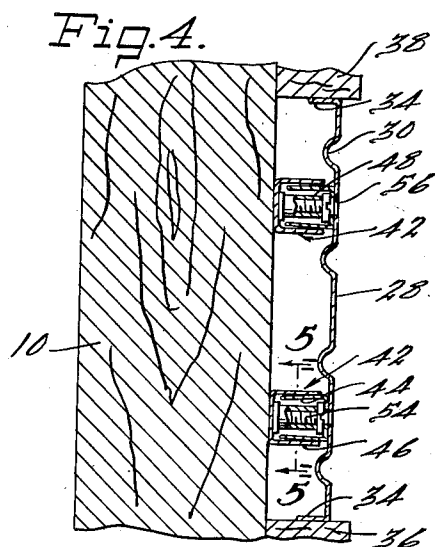
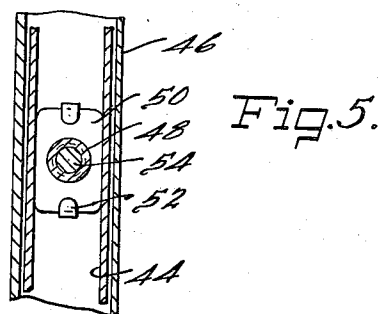


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WINDOW CONSTRUCTION
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2,767,441



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2,767,441

WINDOW CONSTRUCTION

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7 Claims. (Cl. 20—12)

This invention relates to window construction and has particular reference to a new and improved means for mounting a pair of slidable sashes within a frame.

This invention comprises a pair of flexible slide rails each provided with guide elements adapted to cooperate with corresponding guide elements formed on the sashes, one of the rails being urged into engagement with the sashes and the other of the rails being provided with adjustable spacing members operable for adjusting the frictional engagement of the slide rails with each of the sashes.

In previous constructions of this type it has been found that warping or shrinking of either the sash elements or the window frame causes an improper frictional engagement between the sashes and the slide rails. Many attempts have been made to solve this problem and a number of such devices have been found to be quite successful and to operate efficiently at the time that they are installed, but after a period of time the above-mentioned shrinking or warping, which may be caused by settling of the building or by weather conditions, creates serious problems in obtaining the proper fit of the sashes within the frame.

In my copending applications Serial No. 14,897, now Patent No. 2,688,165, filed March 15, 1948, for "Window or Other Slidable Closure," and Serial No. 121,433, now Patent No. 2,619,690, filed October 14, 1949, for "Window or Other Slidable Closure," I have disclosed certain improvements relating to this type of construction. The devices disclosed in such applications have proven very satisfactory for most purposes, and while such devices will accommodate slight variations in width of either the sash elements or the frame, it has been found that variations in the dimensions of an appreciable extent create difficulties.

Accordingly, the present invention is concerned with the problem of insuring the proper frictional engagement of the sashes, even after very considerable shrinking or other distortion of either the frame or sashes has taken place. The invention accomplishes the desired results and is in addition relatively inexpensive to manufacture, easy to install both in new and already existing installations, and provides the necessary weather seal between the sash elements and the window frame.

A principal object of the invention therefore is to provide a new and improved window construction.

A further object of the invention is to provide an improved window construction wherein the frictional engagement of the sashes may be adjusted.

Another object of the invention is to provide a window construction which is inexpensive to manufacture, easy to install, and efficient in operation.

A further object of the invention is to provide an improved mounting means for slidable closures such as to permit removal of the closures from their frame.

A further object of the invention is to provide a window construction adapted for use in windows originally constructed along conventional lines.

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Another object of the invention is to provide a window construction wherein the frictional resistance to sliding movement of the closure elements may be readily adjusted and in which a seal is provided between such closures and the window frame.

Other and further objects of the invention will be apparent from the following description and claims and may be understood by reference to the accompanying drawing, of which there is one sheet, which by way of illustration shows a preferred embodiment of the invention and what I now consider to be the best mode in which I have contemplated applying the principles of my invention. Other embodiments of the invention may be used without departing from the scope of the present invention as set forth in the appended claims.

In the drawing:

Fig. 1 is a front elevational view of a window embodying my invention;

Fig. 2 is an enlarged sectional view taken along lines 2—2 of Fig. 1;

Fig. 3 is an enlarged fragmentary view of one of the flexible slide rails;

Fig. 4 is an enlarged fragmentary sectional view of a part of the structure shown in Fig. 2; and

Fig. 5 is an enlarged sectional view taken along lines 5—5 of Fig. 4.

The window construction disclosed in Fig. 1 comprises a window frame including side frame members 10, upper frame member 12, and the usual sill 14. A pair of closure elements 16 and 18 are slidably arranged within the window frame and each may comprise upper and lower frame members 20 and 22 respectively and side frame members or stiles 24. The closure elements 16 and 18 are supported for sliding movement within the window frame in spaced parallel planes.

Flexible metal slide rails 26 and 28 are mounted within the frame at each side thereof, and each of such slide rails is provided with guide elements comprising grooves 30 adapted to cooperate with corresponding guide elements comprising ridges or tongues 32 formed on the sashes for retaining the sashes in their respective planes.

The slide rails 26 and 28 may be made of sheet metal and extend from the top to the bottom of the window frame at each side thereof. The rails are flexible so as to permit deflection or distortion of portions thereof for accommodating sash elements of varying widths. Each of the rails is provided with outwardly turned flanges 34 adapted to seat against a strip of material 36 and a strip 38 at the interior and exterior sides of the window frame.

Longitudinally extending strips 40 of resilient material are interposed between the slide rail 26 and the adjacent frame member 10. The strips 40 may be made of sponge rubber or other suitable material and are secured to the slide rail 26 and extend throughout the length thereof. The strips 40 are arranged so that when the closure elements are installed each of the strips will lie in the plane of one of the sash elements 16 or 18, as disclosed in Fig. 2.

The strips 40 are adapted to engage the frame member 10 in sealing relation so as to provide a seal between the frame and slide rail 26.

The slide rail 28 is similar in construction to the rail 26 and is provided with the guide elements 30 and flanges 34 as previously described. Longitudinally extending spacing members indicated generally at 42 are secured to the slide rail 28 on the side thereof remote from the closure elements, and such spacing members may comprise a channel-shaped strip 44 having its base seated against the slide rail 28 and a similarly formed but oppositely disposed channel-shaped strip 46 having its legs telescopically and frictionally engaging the legs of the

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channel strip 44. The strips 44 and 46 may be made of metal and are relatively flexible or spring-like in construction. The legs of each of the strips 44 and 46 are inwardly converging so that when the strips are assembled as shown in Figs. 2 and 4 the converging sides thereof will frictionally and sealingly engage each other.

Each of the strips 44 and 46 extends throughout the length of the slide rail 28 and is arranged so as to lie in the plane of or be opposed to a closure element when the device is assembled as shown in Fig. 2. The strip 46 has a plurality of internally threaded socket members 48 secured thereto at spaced intervals along its length. As disclosed in Fig. 5, such socket members may comprise a base 50 seated against the base of the strip 46 and fastened thereto by means of strips 52 which may be struck out of the metal forming the strip 46 and bent into engagement with the base 50 of the members 48. The screws 54 are threaded into internally threaded portions of socket members 48, and the heads of such screws are adapted to seat against the base of channel-shaped strips 44. The strips 44 and slide rail 28 are provided with aligned openings 56 opposite the heads of screws 54 so as to provide access to the usual slot with which the heads of such screws are provided.

The number of threaded elements 48 which are provided may be varied as desired, depending upon the height of the window. It has been found that three of such threaded means give good results, one adjacent the top of the rail, one adjacent the bottom, and the other at the center thereof.

The base of the channel-shaped strip 46 is adapted to seat against the adjacent frame 10 in sealing relation so as to provide a seal between the frame and slide rail 28. It will be seen that the spacing members 42 fix the position of slide rail 28 relative to the frame 10 and form positive stops against which the closures 16 and 18 are urged by means of the resilient strips 40 provided on slide rail 26. The resilient strips 40 therefore urge the slide rail 26 into engagement with the closures 16 and 18 and also urge the closures into engagement with the other of the slide rails so that the closures are frictionally retained in a selected position. Since the slide rails are flexible they are permitted to deflect or twist to some extent when the closure elements are raised or lowered so as to insure a good frictional contact between the closures and slide rails even though such closures may be of different widths. It should be noted that each of the strips 40 functions to urge a portion of the slide rail 26 into engagement with its associated closure independently of the spring action of the other strip 40. It should also be noted that each of the spacing members 42 is operable to take the thrust of only one of the closure elements.

The slide rails 26 and 28 may be installed by removing one of the stops 36 or 38 and arranging the slide rails in position as shown. The closure elements 16 and 18 may be placed in position by compressing the resilient strips 40 an amount sufficient to permit the guide elements 30 and 32 to be brought into registry for detachably retaining the closures in their respective planes. Since either the sashes 16 and 18 or the frame members 10 or both are subject to distortions due to shrinking, drying, settling of the building, or the like, it is necessary from time to time to adjust the frictional engagement of the slide rails with the closures, and this is accomplished by threading screws 54 into or out of the socket members 48 so as to vary the spacing of the slide rail 28 from the adjacent frame member. When installing the rail 28 it is desirable to adjust the screws 54 so that they are approximately half way between their limit positions for either direction of rotation so that thereafter the same may be adjusted to space the rail 28 either inwardly or outwardly of the frame 10. Each of the threaded members may be adjusted independently of the others, and since the rail 28 is flexible it will be seen that different portions of said rail may be adjusted so as to be spaced different distances from the frame 10 to ac-

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commodate any distortion of the sashes or frame which might occur. Thus, the frictional engagement between either one of the closure elements and the slide rails may be adjusted without affecting the frictional engagement of the other of the closures with the slide rails, while at the same time obtaining the advantages found in employing only a single slide rail at each side of the frame and also obtaining a weathertight seal between the frame and slide rails.

While I have illustrated and described a preferred embodiment of my invention, it is understood that this is capable of modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. In a closure construction comprising a frame and a pair of closure members slidable therein in parallel spaced planes, a flexible slide rail at each side of said frame provided with guide elements adapted to cooperate with corresponding guide elements formed on said closure members for slidably retaining said closure members in their respective planes, a pair of longitudinally extending strips of resilient material interposed between one of said slide rails and the adjacent side of said frame, each of said strips resiliently urging a portion of said one slide rail into engagement with a closure member and such closure member into engagement with the other of said slide rails so as to frictionally retain said closure members in a selected position, and a pair of longitudinally extending spacing members between said other slide rail and the other side of said frame, each of said spacing members providing a fixed stop operable for fixing the position of said other slide rail relative to said frame, and a plurality of threaded means associated with each of said spacing members and spaced along the length thereof, said threaded means being independently adjustable for varying the spacing of portions of said other slide rail from said frame so as to provide for independent adjustment of the frictional engagement of said slide rails with each of said closure members.

2. In a closure construction comprising a rectangular frame and a closure member slidable therein, a flexible slide rail at each side of said frame provided with guide elements adapted to cooperate with corresponding guide elements formed on said closure member for slidably retaining said closure member within said frame, a longitudinally extending strip of resilient material interposed between one of said slide rails and the adjacent side of said frame, said strip resiliently urging said one slide rail into engagement with said closure member and said closure member into engagement with the other of said slide rails so as to frictionally retain said closure member in a selected position, and a longitudinally extending spacing member between said other slide rail and the other side of said frame, said spacing member being arranged opposite said closure member and providing a fixed stop operable for fixing the position of said other slide rail relative to said frame, and threaded means associated with said spacing member and operable for adjusting the same so as to permit adjustment of the frictional engagement of said slide rails with said closure member.

3. Closure construction according to claim 2 wherein said strip of resilient material provides a seal between said one slide rail and frame and said spacing member provides a seal between said other slide rail and frame.

4. For use in a closure construction including a rectangular frame and a pair of closure members slidable therein in parallel spaced planes; a flexible slide rail adapted to be arranged between said frame and closure members and provided with guide elements adapted to cooperate with corresponding guide elements formed on said closure members for slidably retaining said closure members in their respective planes, and a pair of longitudinally extending spacing members secured to said slide rail, said spacing members being adapted to fix the posi-

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tion of said slide rail relative to said frame and comprising a longitudinally extending spacing strip movably mounted on said slide rail and substantially coextensive in length therewith, and threaded means associated with said strip and spaced along the length thereof, each of said threaded means being operable for adjusting the position of a portion of said strip relative to said slide rail so as to provide for adjustment of the spacing from said frame of that portion of said slide rail adjacent thereto, said strip being adapted to sealingly engage said frame so as to form a seal between said slide rail and frame.

5. In a closure construction including a frame and a pair of closure members slidable therein in parallel spaced planes; a flexible slide rail adapted to be arranged between said frame and closure members and provided with guide elements adapted to cooperate with corresponding guide elements formed on said closure members for slidably retaining said closure members in their respective planes, and a pair of longitudinally extending spacing members secured to said slide rail, each of said spacing members being substantially coextensive in length with said slide rail and adapted to engage said frame to fix the position of a portion of said slide rail relative to said frame, each of said spacing members including a plurality of threaded means spaced along the length thereof, each of said threaded means being operable for adjusting the width of the adjacent portion of a spacing member so as to provide for adjustment of the spacing of a portion of said slide rail from said frame.

6. Closure construction according to claim 5 wherein said spacing members are adapted to provide a seal between said slide rail and frame.

7. For use in a closure construction including a rec-

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tangular frame and a pair of closure members slidable therein in parallel spaced planes; a flexible slide rail adapted to be arranged between said frame and closure members and provided with longitudinal guide elements adapted to cooperate with corresponding guide elements formed on said closure members for slidably retaining said closure members in their respective planes, and a pair of longitudinally extending spacing members secured to said slide rail, each of said spacing members being adapted to engage said frame and to fix the position of a portion of said slide rail relative to said frame, each of said spacing members comprising a longitudinally extending channel-shaped strip having its base secured to said slide rail on the side thereof remote from said guide elements and an oppositely disposed channel-shaped strip having its legs telescopically and sealingly engaging the legs of said first-mentioned strip, said oppositely disposed strips being adapted to sealingly engage said frame so as to form a seal between said slide rail and frame, and threaded means associated with said strips and spaced along the length thereof, each of said threaded means being operable for adjusting the relative position of said strips so as to provide for independent adjustment of the spacing of portions of said slide rail from said frame, said slide rail being provided with openings therein for providing access to said threaded means.

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