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WINDOW OR OTHER SLIDABLE CLOSURE

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This invention relates to a construction for use in windows or other slidable closures, and more particularly to a construction wherein the joint between the closure and its frame is weatherproof and which will not rattle.

An object of the invention is to provide a construction of the type indicated, having improved sealing characteristics to eliminate draft and the entry of dust.

A further object is to provide improved mounting means for windows or other closures, whereby the closure may be easily mounted in or removed from its frame when desired.

A further object is to provide an improved closure construction wherein the frictional resistance to sliding movement is controlled and substantially constant, so that the need for sash cords and weights is eliminated.

A further object is to provide a construction which is substantially noiseless, weatherproof and dustproof, and which may be applied to closures originally constructed on conventional lines.

The invention comprises a window frame having mounted on each of the jambs thereof a metallic flexible rail grooved to receive in sliding relation a correspondingly flanged or grooved sash, the rail being urged into contact with the sash by flexible bellows members which also serve to form seals and to form a heat-insulating space between the flexible strip and the jambs.

Further objects and advantages of the invention will be apparent from the following description, taken in connection with the appended drawing, in which:

Fig. 1 is a front elevation of a window sash and frame embodying the present invention.

Fig. 2 is an enlarged sectional view, partly broken away, taken on the line 2—2 of Fig. 1.

Fig. 3 is an enlarged fragmentary view taken on the line 3—3 of Fig. 1.

Fig. 4 is an enlarged perspective view showing the bellows strip in detail.

It is to be understood that the invention is not limited in its application to the details of construction and arrangement of parts illustrated in the accompanying drawing, since the invention is capable of other embodiments and of being practiced or carried out in various ways. Also it is to be understood that the phraseology or terminology employed herein is for the purpose of description and not of limitation.

The construction shown in the drawing comprises a window frame of usual construction except as indicated hereinafter, set in place in a

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wall 10 of a building. Viewed from within the building as in Fig. 1, the frame is provided with the usual upper molding 12, lateral molding 14, 15, and lower molding 16. The other figures illustrate the elements of the frame, including jambs 18, crown plate 20, and a conventional sill 22. The upper sash comprises upper and lower rails 24, 26 and stiles 28, 29. The lower sash comprises upper and lower rails 30, 32 and stiles 34, 35. The panes of the upper and lower sashes are indicated respectively at 36 and 38.

Overlying and spaced from the jambs 18 are vertical slide rails 44 and 45, formed of metal such as copper or aluminum, and of such flexibility that they may bend somewhat to accommodate themselves to slight irregularities in the stiles of the respective sashes. Each of the slide rails is formed with a pair of grooves 46 for each of the sashes and is formed with interior and exterior flanges 48, 49 which terminate short of the jambs 18, so that the slide rail may move toward and away from the jamb to accommodate itself to irregularities in the lateral dimensions of the sash. Alternatively, the flanges 48, 49 may be slidable in slots or kerfs formed in the jamb 18, as disclosed in my copending application Serial No. 14,897, filed March 15, 1948. Intermediate each pair of grooves 46 the slide rails are yieldingly supported along their entire lengths by metallic spring members 50 each of which is formed of a pile of two or more folds in bellows form with the inner and outer folds secured respectively to the jamb 18 and to the slide rail by cement 52 or other suitable means. This arrangement provides a sealed dead air space 54 between the spring members 50 to act as heat insulation.

Each of the stiles of the sashes is formed with a pair of tongues or ridges 56, shaped to fit in the grooves 46 of the slide rail in sliding relation thereto. The tongues 56 may be formed by means of a shaper or other tool, which decreases the overall width of the sashes to the extent indicated particularly in Fig. 3, to leave sufficient space for the slide rails. Alternatively, the stiles may be formed with grooves to receive tongues or ridges formed in the slide rail.

Where the device of the present invention is used to replace a conventional window construction, the dividing rails in the jambs 18 are first removed. The spring members 50 are then cemented to the jamb 18 in properly spaced relation, and the slide rail 44 is then cemented to the members 50.

As used herein, the adjective "exterior" means

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situated toward the exterior of the building, relative to an "interior" element which is disposed nearer to the interior of the building. Thus, the plane of the upper sash is exterior relative to the plane of the lower sash and also relative to a median plane which lies between the two, and which may be said to divide the slide rails into what are hereinafter referred to as exterior and interior portions.

In the operation of the device, it will be seen that the slide rail will yield to accommodate itself to variations in the lateral dimensions of the sashes, such as may arise from swelling or shrinking, and will also accommodate itself to distortion of the frame itself from a truly rectangular shape, such as may arise from settling of the building. It will be noted that the exterior and interior portions of the slide rails need not yield equally, but that the rail may rotate or twist about its longitudinal axis to accommodate itself to varying pressures on its exterior and interior portions as defined above. The amount of yielding movement of the slide rails 44, 45 may be sufficient to permit the sashes to be inserted in or removed from the frame by simply exerting horizontal pressure thereon.

The spring members 50 may also be used as seals by embedding them in grooves in the sashes, in the manner indicated in my copending application above identified.

Although the invention has been described with reference to certain specific embodiments thereof, it may be embodied in other forms within the skill of artisans in this art, and is not limited except in accordance with the terms of the following claims.

I claim:

1. In a closure construction comprising a rectangular frame including a jamb, and a pair of closure members slidable in said frame in parallel spaced planes; flexible slide rail spaced from said jamb and having slidable tongue-and-groove engagement with both closure members, and two spaced strips of resilient corrugated metal interposed between the jamb and the slide rail urging the latter inwardly while permitting rotation or twisting of the slide rail about its longitudinal axis, said corrugated strips having the folds thereof extending longitudinally of said jamb and

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slide rail and sealingly engaging the same throughout their lengths so as to form a seal between said jamb and slide rail.

2. In a closure construction comprising a rectangular frame including a jamb, and a plurality of closure members slidable in said frame in parallel spaced planes; a resilient floating slide rail spaced from said jamb and having slidable tongue-and-groove engagement with the closure members, and a plurality of spaced strips of resilient metal in bellows form extending longitudinally between the jamb and the slide rail throughout the length of the jamb and independently urging the slide rail inwardly while permitting portions thereof to rock or deflect about its longitudinal axis in response to varying pressures exerted by said sashes.

3. For use in a closure construction comprising a rectangular frame including a jamb and a pair of closure members slidable in said frame in parallel spaced planes; a flexible floating slide rail provided with longitudinally extending guide elements adapted to cooperate with corresponding guide elements formed on both of said closure members, and a pair of spaced, longitudinally extending, resilient members secured to said slide rail in sealing relation throughout its length and adapted to engage said jamb in sealing relation so as to form a seal between said jamb and slide rail, said resilient members being adapted to independently urge portions of said slide rail inwardly against said closure members so as to permit portions of said slide rail to rotate or twist about its longitudinal axis.

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