

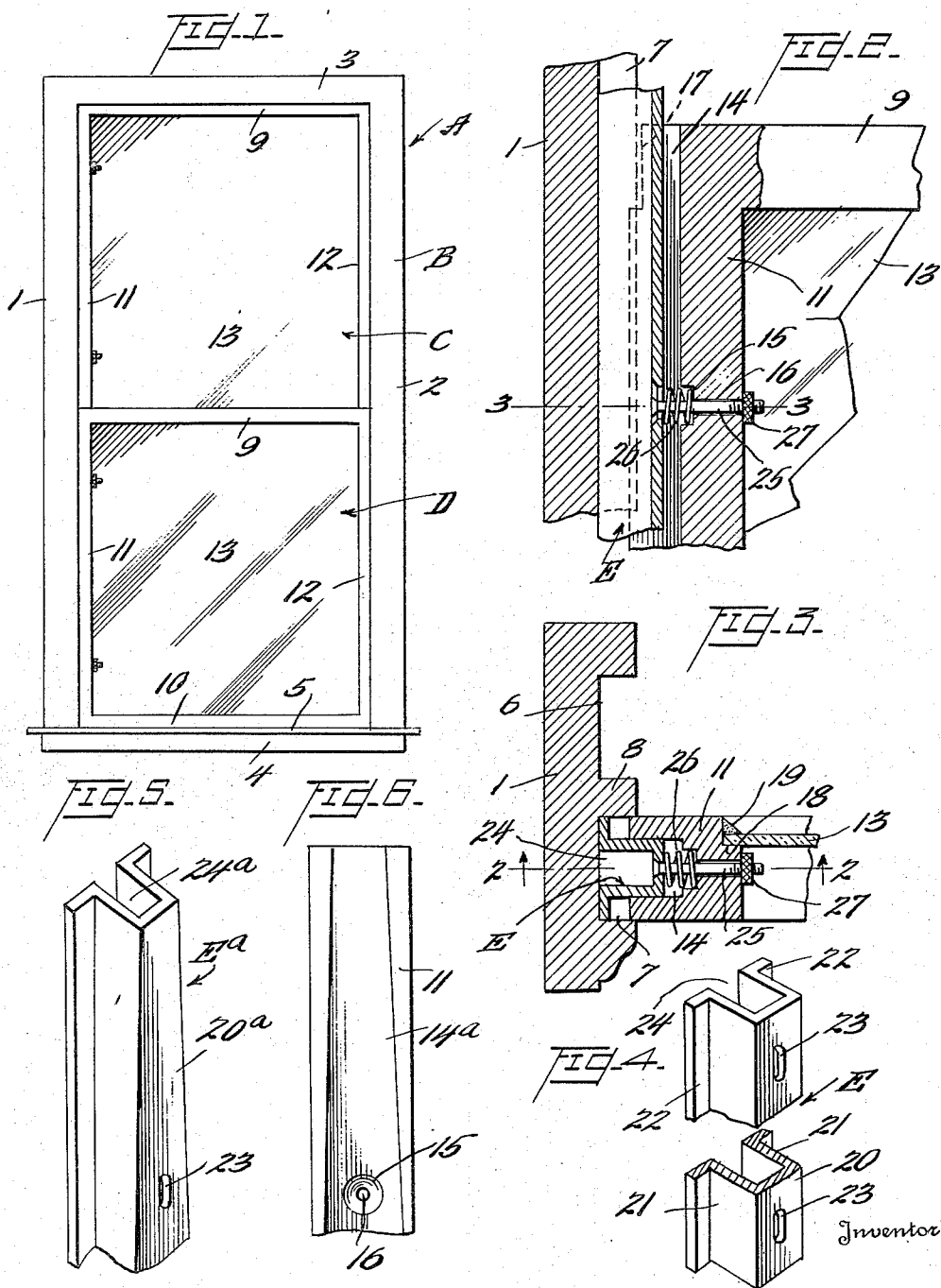
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WINDOW SASH STRUCTURE

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WINDOW SASH STRUCTURE

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1 Claim. (Cl. 20—52)

Generically this invention relates to window structures but it is more particularly directed to an improved adjustable and easily operable window sash construction.

One of the principal objects of this invention is the provision of a window sash adapted to be self-supporting at any desired elevated position and automatically adjustable to effect easy raising and lowering irrespective of weather conditions.

An important object of this invention is the provision of inexpensive window sashes adapted to retain all of the advantages of those now in use but involving novel features designed to render them more efficient and easier to operate regardless of weather conditions.

Another object of this invention is the provision of a window sash applicable to a standard window frame designed to remain at any desired point throughout the operating limits of the sash without the use of balances, weights or other like counteracting means.

A further object of this invention is the provision of resiliently controlled friction means carried by the sash and co-operating with the frame adapted to support the sash at any desired elevated position and to automatically compensate for variations in weather conditions to effect easy operation of the sash.

A still further important object of this invention is the provision of resiliently controlled friction element adapted for use with or without sash weights and the like, manufacturable either with the sash, or adaptable as an attachment with equal facility, to those already in use and in connection with standard window frames, said friction element being connected to the sash stile in such a manner as to effect a slightly delayed movement thereof upon movement of the sash in opening or closing direction.

With these and other objects in view, which will become apparent as the description proceeds, the invention resides in the construction, combination and arrangement of parts, hereinafter more fully described and claimed, and illustrated in the accompanying drawing, in which like characters of reference indicate like parts throughout the several figures, of which:

Fig. 1 is a side elevation of a window showing my improved sash construction.

Fig. 2 is a vertical section through the frame and upper portion of the lower sash taken on the line 2—2 of Fig. 3.

Fig. 3 is a horizontal section taken on the line 3—3 of Fig. 2.

Fig. 4 is a detail fragmentary perspective view of a friction element.

Fig. 5 is a perspective view of a modified friction element having a tapered tongue surface.

Fig. 6 is an edge view of a window sash complementally formed to co-operate with the tongue portion of the friction element illustrated in Fig. 5.

I am aware that many attempts have been made to provide window constructions that would permit more or less easy operation of the sashes under varying weather conditions but those with which I am familiar have required special construction not only with reference to the sash but also the window frame, embodying a number of parts and not only being expensive to manufacture but entailing added expense in installation, and it was to overcome such disadvantages by providing an improved sash attachment comprising a particular friction element including a portion which may be either uniform or slightly tapered for mounting in a complementary groove in the edge of the sash stile and connected thereto in such a manner as to effect a slightly delayed movement of the friction element upon the initial movement of the sash in either direction with respect to the frame, that I designed the device forming the subject matter of this invention.

In the illustrated embodiment characterizing this invention there is shown a window structure A comprising a window frame B, upper sash C and lower sash D.

The frame A is of conventional construction and comprises side jambs 1 and 2 and upper and lower jambs 3 and 4, respectively, and sill 5. The side jambs 1 and 2 are formed with the parallel sash grooves 6 and 7 separated by the bead 8. The upper sash C is adapted to be moveably mounted in opposite grooves 6 and the lower sash D is mounted in grooves 7 as shown in Fig. 3. Since the sashes are identical, for brevity of description, only the lower sash D will be described in detail.

Sash D comprises a top rail 9, a bottom rail 10, stiles 11 and 12, and pane 13. Stile 11 is formed in its edge surface with a longitudinally extending recess or groove 14 terminating at its bottom in a countersunk opening 15 and bolt opening 16 extending from said countersunk opening through the remaining portion of the stile. One corner of stile 11 is cut out as at 17 to permit said stile to overlap bead 8 and extend to point of contact with the upper sash C so as to act as a protection against the weather and to form a

substantial weather seal with the corresponding stile 11 of said upper sash C, as will be well understood. The opposite edge of the stile is cut out to provide a ledge 18 on which is seated pane 13 secured therein by a molding or other retaining and sealing material 19.

The friction element or member E is formed with a tongue portion 20, parallel side walls 21 which terminate at their free ends in lateral flanges 22 constituting friction surfaces when mounted in groove 7, as will directly more fully appear. Tongue 20 is formed with an elongated opening or slot 23 spaced from each end thereof. The side walls 21 form within said tongue portion 20 a trough-like recess 24 adapted to receive sash weight cords and the like when mounted in a window frame so equipped so that neither the cords nor the free movement of said friction member E with respect to the frame will be interfered with. The friction element E is mounted in groove 14 and is secured therein by bolts 25 inserted through openings 23 in said tongue 20 and through openings 16 in stile 11. In order to form a resilient and adjustable connection between said friction element E and said stile a spring 26 is mounted on each of said bolts adapted to seat in countersunk openings 15 and on tongue 20, said bolts being secured by threaded knurled nuts 27 and which nuts permit tensioning of element E with respect to the frame jamb 1, as will hereinafter more fully appear.

It will be noted that groove 24 is adapted to receive sash weight cords, coil springs or balances already in use or to be used in connection with the operation of the sash and thereby preventing their interference with the friction member 20, so that said member 20 under the action of springs 26 constantly and frictionally bears against the frame side jamb 1, maintaining the sash in any desired raised or lowered position, said springs 26 automatically compensating for the expansion or contraction of the jambs and sashes, thereby not only insuring at all times easy operation of the sash but effecting a weather tight connection between the sash and frame. Operation of nuts 27 effect tensioning adjustment of the friction member E with respect to the frame. This construction prevents sticking of the sash and by virtue of the elongated openings 23 a slightly delayed movement of the friction member is effected, thereby allowing a slight advance movement of the sash up or down, tending to break any sticking which might initially occur between the tongue 20 and groove 14 of the sash stile with a consequent easy operation of the sash under varying and difficult weather conditions.

Fig. 5 shows a slightly modified friction element E^a. This form is similar to friction element E, shown in Fig. 4, except that tongue 20^a is substantially wedge shaped, that is, one end being wider than the other. Fig. 6 shows stile 11 formed with groove 14^a corresponding to groove 14 except that it is complementally formed to receive tongue 20^a. Said friction element of member E^a is mounted in groove 14^a on springs 26 and adjustably secured to the stile by bolts 25 as heretofore described in connection with member E. The operation with respect to friction element or member E^a is similar to element E above described, except that by virtue of its tapered formation and the correspondingly shaped stile groove 14^a, upon initial movement of the sash the separation of the friction member from its groove is more easily effected. With this construction,

as with that described in connection with element E, when the sash is initially moved the friction element E^a tends to remain in place with relation to the window frame side jamb 1, causing bolts 25 to move upward in slots 23 and at the same time, by virtue of such tapered construction, the contact engagement of said element with the groove is completely broken. This construction breaks any sticking between said contacting surfaces and renders raising of the sash easy. Then as the sash is lowered the above action is reversed, causing tongue 20^a to be wedged tightly between the sides of the groove 14^a of the sash stile, so that when the sash is completely lowered a tight fit is assured, thereby eliminating the possibility of air or rain leakage. From the above the operation of the sash would seem to be sufficiently clear to render further explanation unnecessary.

While I have shown my improved friction element and co-operating parts as applied to one side or stile of the sash, it is to be understood that it may be similarly applied to the opposite side when desired.

It will be apparent that I have designed a window sash structure including novel friction strip or element construction permitting use without interfering with sash weight, cords and the like and applicable with equal facility where such balances and the like are not used, equally adaptable to a single or multiple sash construction, manufacturable at a negligible cost, readily attachable to sashes already in use, rendering easy operation of the sash under varying weather conditions, effecting a weatherproof connection and efficient for the purposes intended.

Although in practice it has been found that the form of the invention illustrated in the accompanying drawing and referred to in the above description as the preferred embodiment is the most efficient and practical, yet realizing the conditions concurrent with the adoption of the invention will necessarily vary, I desire to emphasize that various minor changes in details of construction, proportion and arrangement of parts, may be resorted to within the scope of the appended claim without departing from or sacrificing any of the principles of this invention.

Having thus described my invention, what I desire protected by Letters Patent is as set forth in the following claim:

The combination with a window frame, a window sash adjustable therein and including a tapered groove stile member, a yieldable element positioned in said groove and including a tongue portion adapted for wedging engagement therein formed with a tapered front wall and with right angularly extending side walls terminating at their free ends in lateral flanges constituting frictional surfaces adapted to engage said frame, said front wall being formed with a longitudinal extending slot, and means in connection with said grooved stile member for yieldably supporting said element therein, said means including a bolt extending through the sash stile member and through said slot to permit relative movement between the stile and said yieldable element, and a spring mounted on said bolt intermediate said stile member and the front wall to force said yieldable element into frictional engagement with said frame, whereby in the elevation of the sash the latter moves prior to the movement of the yieldable element.

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