Dec. 14, 1954 R. W. EDMONDS 2,696,645

DOUBLE HUNG WINDOW SASH STRUCTURE

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Fig. 1.

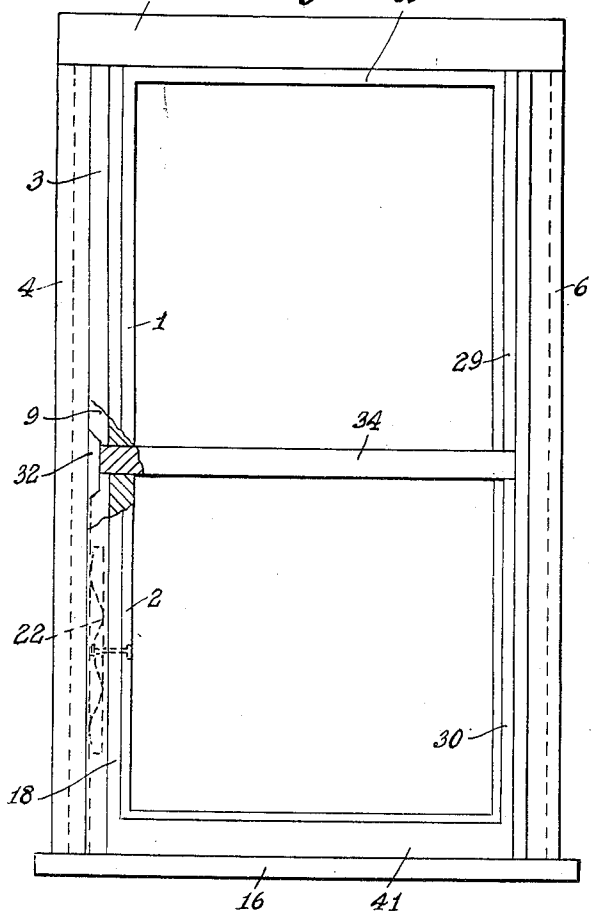


Fig. 2.

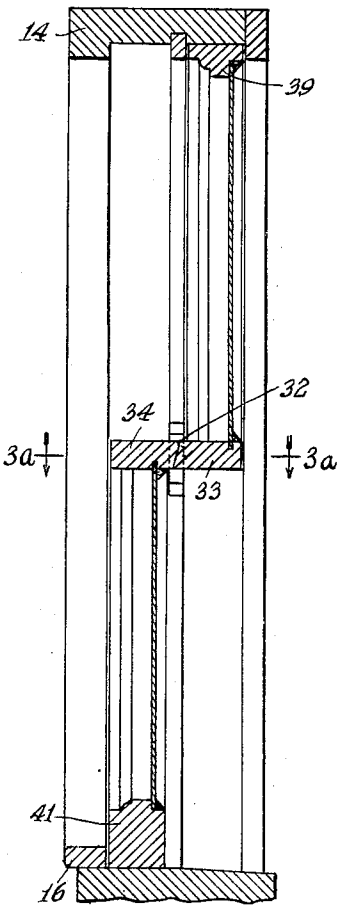


Fig. 3.

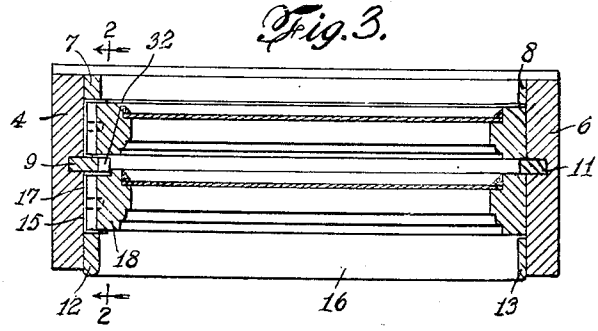
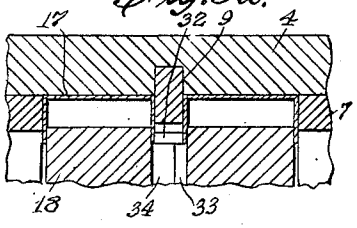


Fig. 3a.



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Fig. 4.

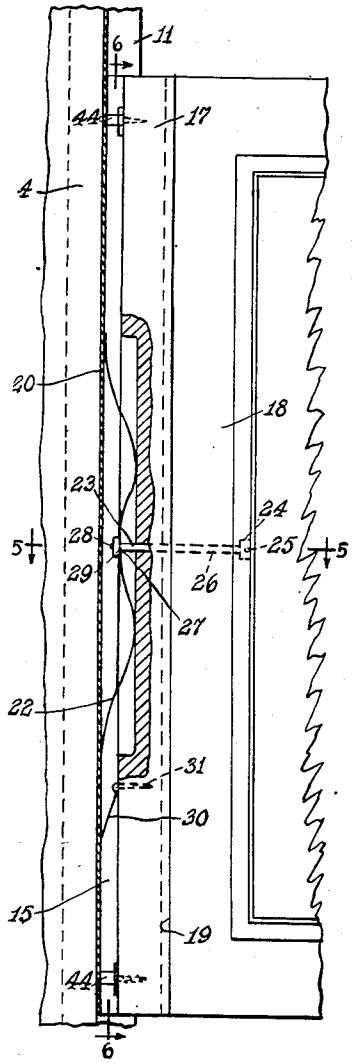


Fig. 6.

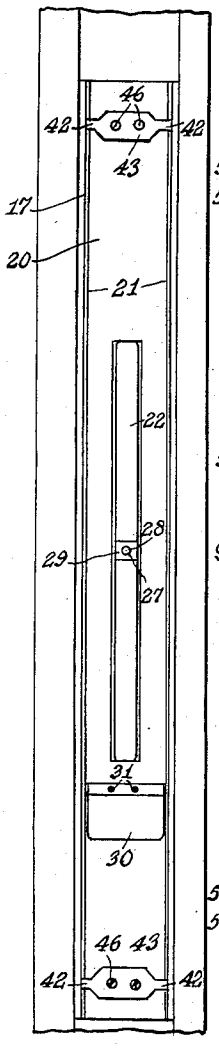


Fig. 8.

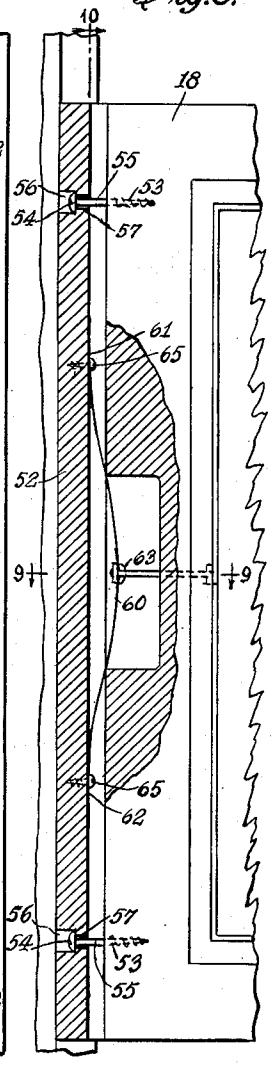


Fig. 10.

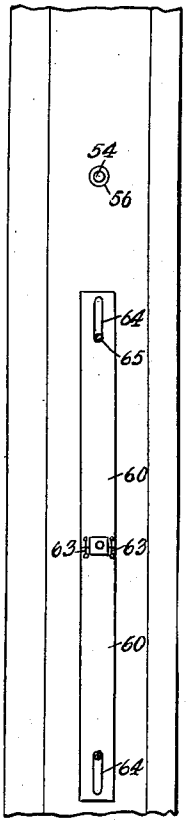


Fig. 5.

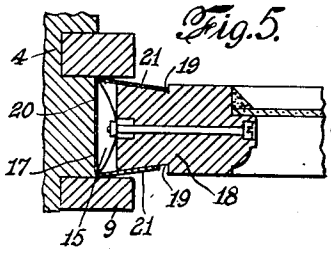


Fig. 7.

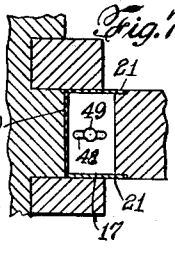


Fig. 9.

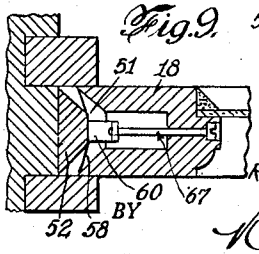
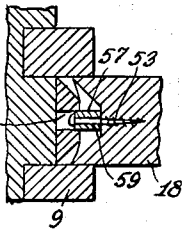


Fig. 11.



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DOUBLE HUNG WINDOW SASH STRUCTURE

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Application February 18, 1950, Serial No. 145,035

5 Claims. (Cl. 20—52.2)

This invention relates to a window of a type in which sashes slide vertically in a frame, employing friction between sash and frame as a means of maintaining the sash at any desired elevation within the frame, without using counterweights or other balancing means.

Another object is to seal the sashes in the frame against the passage of air currents when the window is closed.

Another object is to prevent the sashes from rattling in the frame.

Another object is to provide uniform operation in varying temperatures and degrees of humidity.

Another object is to permit ready removal of the sashes from the frame, and replacement thereof, without structural alteration, and to provide a lock against such removal by unauthorized persons.

To accomplish these and other objects, this invention provides improved weather tight channel friction members free of rattle, improved means for maintaining them in proper relation to the sashes, and for easily adjusting at any time the amount of friction between the channel members and frame, and whereby the sashes may be removed readily from the frame, and while the window is closed will lock themselves automatically against being removed.

Other objects and advantages of the invention will appear more clearly from the following description and drawings in which:

Fig. 1 is a frontal elevation of a window embodying the invention.

Fig. 2 is a longitudinal section on the line 2—2 in Fig. 3.

Fig. 3 is a cross section of a window showing both sashes in a lowered position.

Fig. 3*a* is an enlarged fragmentary section on the line 3*a*—3*a* in Fig. 2.

Fig. 4 is a partial frontal view with parts broken away.

Fig. 5 is a cross section on the lines 5—5 in Fig. 4.

Fig. 6 is a longitudinal section of a sash, along the line 6—6 in Fig. 4.

Fig. 7 is a partial end view of a sash showing an alternative construction.

Fig. 8 is similar to Fig. 4, showing an alternative construction.

Fig. 9 is a section along the line 9—9 in Fig. 8.

Fig. 10 is a section along the line 10—10 in Fig. 8.

Fig. 11 is an enlarged fragmentary section of a sash showing an alternative construction.

Upper and lower sashes 1 and 2 are adapted to slide vertically in a frame 3. Movement of the lower sash 2 is guided by jambs 4 and 6, the parting strips 9 and 11, and inner stops 12 and 13. Both of the sashes 1 and 2 are limited in their upper movement by a head 14 and a sill 16.

As the construction of this invention applied to the upper sash corresponds to its application to the lower sash, the construction will be described particularly only with respect to the lower sash 2, in order to avoid unnecessary repetition.

A metal channel member 17 consisting of a base portion 20 and resilient sides 21, fits on a stile 18 of the sash. The resilient sides 21 of the channel member 17, grip the stile 18 lightly to prevent rattling of the stile within the channel member, and to prevent passage of air between the stile and the sides of a channel member. The stile has notches 19 to accommodate the sides 21 of the channel member 17.

A resilient member 22 comprising a metallic leaf spring

is interposed under compression between the stile 18 and the channel member 17, seated in a mortise 20 in the stile 18, adapted to impel the channel member 17 snugly against the jamb 4, and to maintain a clearance 15 between the channel member 17 and the stile 18, slightly greater than the projection of the parting strip 11 and the inner stop 13 from the jamb 6. An alternative form of resilient member 60 (Fig. 8), as explained hereinafter more particularly in connection with another embodiment of this invention, has been used with excellent results with the sash construction here shown.

It has been found to be preferable for the parting strip 11, the inner stop 13, and the outer stop 8 to project from the jamb 6 somewhat less than is standard practice, in order to keep within convenient limits the necessary clearance 15 between the stile 18 and the base portion 20 of the channel member 17. On the other hand, the parting strip 9, the inner stop 12, and the outer stop 7 preferably extend farther from the jamb 4 than the parting strip 11, the inner stop 13, and the outer stop 8 extend from the jamb 6, in order to afford ample guides for the channel members 17.

Check rails 33 and 34 are cut away at their end adjacent to the parting strip 9 for a distance approximately equal to the clearance 15. With this arrangement, the stile 18 may be pushed manually into the channel member 17 with sufficient force to depress the resilient member 22; the opposite stile 30 thus being caused to clear the parting strip 11 and the inner stop 13, so that the sash may be lifted clear of the frame in either an inward or outward direction, although, as is obvious, if the lower sash 2 is to be lifted outwardly from the frame, the upper sash 1 first must be lifted outwardly from the frame, and, on the other hand, if the upper sash 1 is to be lifted inwardly from the frame, the lower sash 2 first must be lifted inwardly from the frame.

A member 23 with a terminal flange 24 having a slot 25 extends through an aperture 26 in the stile 18 and extends also through an aperture 27 in the resilient member 22. The member 23 is threaded at and adjacent to its end 28, and is fitted with a nut 29 which bears on the resilient member 22. The member 23, upon being turned, for example, by means of a screw driver, causes an axial movement of the nut 29, hence a change in pressure on the resilient member 22 by the nut 29, and a corresponding adjustment of tension of the resilient member 22.

A resilient member 30 comprising a thin rectangular sheet of metal is secured to the stile 18 by pins 31, is bent outwardly therefrom and bears lightly on the base portion 20 and the sides 21 of the channel member 17 so as to prevent a flow of air between the channel member 17 and the stile 18.

With the sashes 1 and 2 in fully raised and fully lowered positions, respectively, i. e., with the window closed, check rails 33 and 34 overlap each other, as shown in Fig. 2. Level with this overlap, an extension 32 is secured to the parting strip 9, that projects laterally approximately the distance that the check rails are cut away, so as to fit snugly against the check rails 33 and 34 where they are cut away, when the window is closed.

In this fully closed position of the window, in which the sashes 1 and 2 may be locked together in the usual manner against vertical movement, the extension 32 of the parting strip 9 stops the checkrails 33 and 34 from being moved horizontally and this prevents the stiles 29 and 30 from clearing the stops 8 and 13 and the parting strip 11, and hence prevents the sashes 1 and 2 from being lifted out of the frame as explained above. When the sashes 1 and 2 are moved down and up respectively so that the checkrails 33 and 34 clear the extension 32, the sashes 1 and 2 are free to be lifted out of the frame as explained.

Movement of the channel member 17 laterally with respect to the stile 18 is limited by arms 42 of plates 43, which extend through openings 44 of the sides 21 of the channel member 17, the plates 43 being secured to the stile 18 by screws 46.

As an alternative construction by which movement of the channel member 17 with respect to the stile 18 may be limited, base portion 20 (Fig. 7) of the channel mem-

ber 17 is extended longitudinally at each of its ends beyond the sides 21, and is turned up at each end to form an end closure 47, in which there is a slot 48. Extending through the slot 48 and secured in the stile 18 is a pin having a head 49 of a diameter somewhat greater than the width of the slot 48.

As an alternative construction, in place of the channel member 17, as above described, a deep groove 51 (Fig. 9) is cut in the stile 18 for its entire length. A wooden strip 52, the length of the stile 18, and of cross-section similar to that of the groove 51 is arranged with respect to the groove 51 as hereinafter explained, and is secured against axial and excessive lateral movement with respect to the stile 18 by screws 53 (Fig. 8) with heads 54 and shanks 55. The screws 53 are screwed into the stile 18, through holes 56—57 bored through the strip 52. The upper portions 56 of said holes are of a diameter slightly larger than the heads 54 of the screws 53, while the lower portions 57 of said holes are of such diameter as to make an easy fit of the shanks 55 of the screws 53. Desired latitudinal motion of the strip 52 is had by axial play in the upper portions 56 of the holes 56—57 of the heads 54 of the screws 53. The lower portions 56 of the holes 56—57 form a stop against the heads 55 of the screws 53.

A thin sheet of resilient material 58 (Fig. 9) is placed between the groove 51 and the strip 52, tacked to the strip 52, and adapted to form a seal against air currents.

An alternative form 60 of the resilient member 22 as explained above, is shown in Figs. 8 and 10 which has been found to give excellent results, comprises two resilient elements 61 and 62 which are held in swingable relation to each other by hinge loops 63. Slots 64 are provided in the resilient elements 61 and 62, through which pins 65, with heads 66 are secured in the strip 52 to maintain the resilient member 60 and the strip 52 in proper relation to each other. A tension adjusting assembly 67 corresponds to that shown in Fig. 4, nos. 23–29, as described above. When pressure is applied to the resilient member 60 by the tension adjusting assembly 67, the resilient elements 61 and 62, using mortise ends 68 as fulcrums, press outwardly away from the stile 18 at their extremities 69, 70.

As an alternative construction, the holes 56 (Fig. 11) are continued through the stile 18, of uniform diameter, and the screws 53 are provided with tubular casings 59 of inside diameter to fit about the screws 54 and allow for free axial movement of the screws 53 in the casings 59, of outside diameter to fit snugly in the holes 56, and of a length equal to that of hole portion 57.

The embodiments of the invention shown and described herein are illustrative only. The invention is not to be understood as limited beyond the spirit and intendment of the appended claims.

I claim:

1. A window assembly comprising a window frame having two vertical sides, each side comprising a jamb provided with a parting strip, an inner stop, and an outer stop, an upper and a lower sash having stiles, an elongated channel friction member adjacent a stile of each sash disposed between the sash and the jamb and having a base portion facing the stile and resilient side portions slidably embracing the adjacent stile, each channel member being carried by the adjacent sash, a resilient member under compression between the base portion of each channel member and the side of the adjacent stile adapted to resiliently press the channel member outwardly from the stile and to maintain a clearance between the stile and the base portion of the channel member over the entire height of the sash while permitting the sash to be pressed laterally toward the channel member by manual pressure sufficient to compress the resilient member, the parting strip and the inner stop and the outer stop on the side of the sashes remote from the channel members extending outwardly from the adjacent jamb a distance which is less than the distance between the base portions of the channel members and the stiles adjacent thereto when the channel members are spaced from the stiles to their greatest extent by said resilient members, whereby to permit withdrawal of the sashes from the frame over the parting strip and the stops upon lateral displacement of the sashes against the resilient member, and means for adjusting the tension on each resilient member, said means including a shaft passing through the resilient member and the adjacent stile and having a head portion on the inner side of the stile and a threaded end adjacent the resilient member, and a cooperating member threadedly engaging the shaft and movable axially thereof upon rotation of the head portion to adjust bearing pressure upon the resilient member, arms extending from the stile, projecting into accommodating slots in the channel member sides, and adapted to prevent longitudinal and limit lateral movement of the channel member in relation to the stile.

2. In a window assembly according to claim 1, a sheet of flexible material affixed along one of its sides to the stile, extending diagonally therefrom to the base portion of the channel member, for the width of the opening between the channel member sides, forming a compressible closure of the clearance between the stile and the base portion of the channel member.

3. In a window assembly according to claim 1, a closure at each end of the channel member, a slot in each closure adapted to accommodate a pin secured in and disposed longitudinally of the stile and adapted to confine movement of the channel member toward and away from the stile.

4. In a window assembly according to claim 1, a parting strip, a lateral projection therefrom where checkrails of the lower and upper sash overlap each other, and accommodating cutouts on checkrails of the upper and lower sashes.

5. A window assembly according to claim 1, wherein a stile of each sash is provided with a mortise adapted to contain the resilient member.

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