Aug. 9, 1938. W. E. DENNIS 2,126,177

WINDOW CONSTRUCTION

Filed Jan. 2, 1936 2 Sheets-Sheet 1

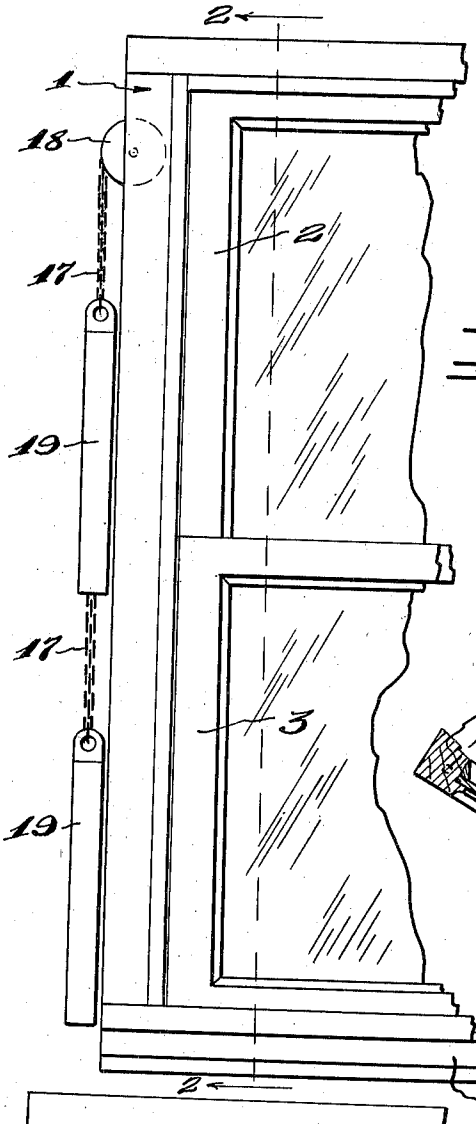


Fig-1-

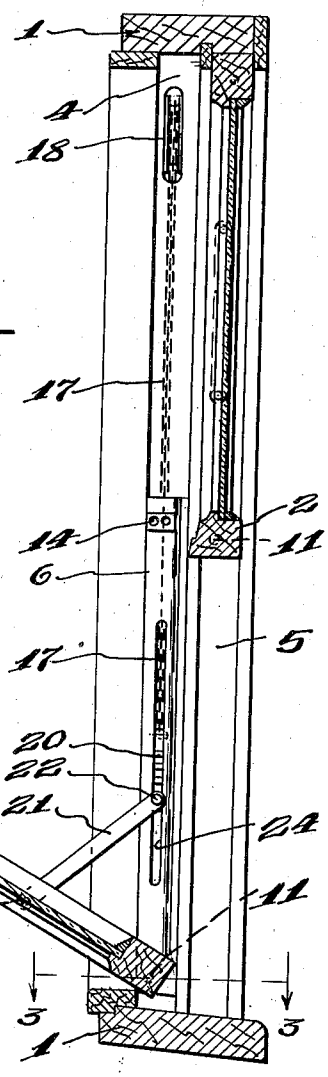


Fig-2-

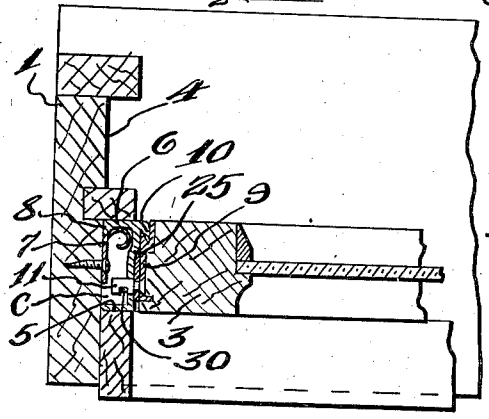


Fig-3-

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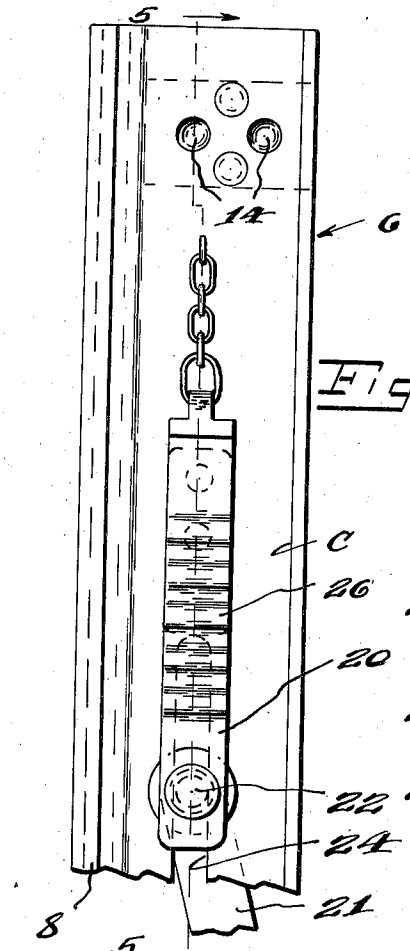


Fig. 4.

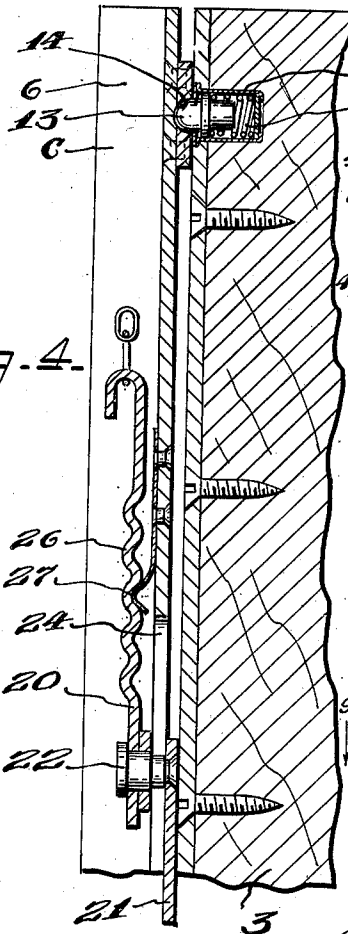


Fig. 5.

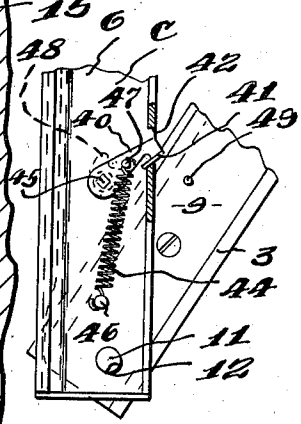


Fig. 7.

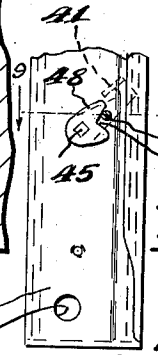


Fig. 8.

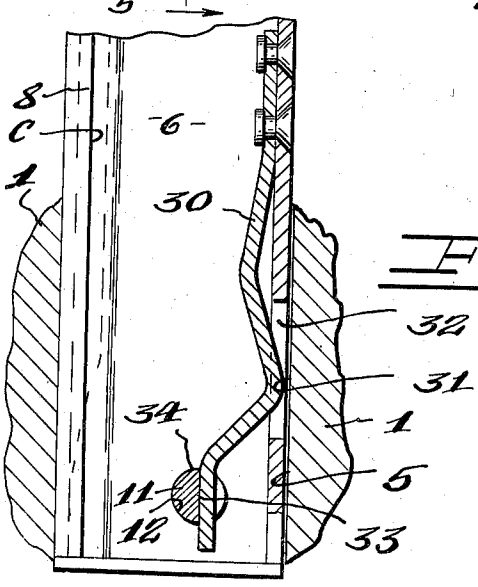


Fig. 6.

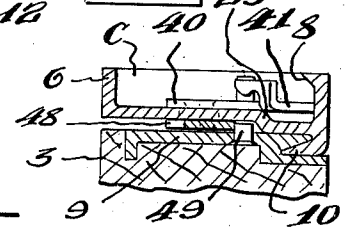


Fig. 9.

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2,126,177

WINDOW CONSTRUCTION

Wesley Eugene Dennis, Ithaca, N. Y.

Application January 2, 1936, Serial No. 57,105

2 Claims. (Cl. 20—49)

This invention relates to window constructions, and particularly window constructions whereby shoes or slides at opposite edges of the sash move in guide ways or channels in the window frame, and the sash is mounted to swing into different angular positions relatively to the frame, as well as to be raised and lowered.

It has for its object, a particularly simple and efficient mechanism connected to the counterbalancing means of the sash for holding the sash in different inclined or angular positions.

It further has for its object, a mechanism for holding the shoes or slides from sliding movement relatively to each other, or from differential sliding movement when the sash is swung or being swung into an inclined or angular position.

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

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

Figure 1 is a fragmentary elevation of a window structure embodying my invention.

Figure 2 is a sectional view on line 2—2, Figure 1.

Figure 3 is a sectional view on line 3—3, Figure 2.

Figure 4 is an enlarged, fragmentary, inner face view of one of the shoes or slides, showing the second slide, its connection to the counterbalancing means, and the ratchet and pawl mechanism for holding the sash in different angular positions.

Figure 5 is a sectional view on line 5—5, Figure 4.

Figure 6 is a fragmentary, inner face view, partly in section, of one of the slides adjacent the pivotal connection between the slide and the sash, showing one form of means for holding the slides from differential sliding movement when the sash is tilted into inclined position.

Figure 7 is a fragmentary elevation, partly in section, of a slide and sash showing another exemplification of the slide locking mechanism.

Figure 8 is a fragmentary elevation of the opposite side of the slide from that seen in Figure 7.

Figure 9 is a section on line 9—9, Figure 8.

I have here illustrated my invention as embodied in a window construction having upper and lower sashes, both of which are slidable and tiltable. As the mechanism for each sash is the same, it is necessary to describe that for one sash only.

1 designates a window frame.

2 designates the upper sash, and 3 the lower sash.

The window frame is formed with the usual guide channels 4 and 5 for permitting the raising and lowering of the sashes 2, 3.

6 is a slide or shoe at each edge of the sash, or at the edge of each stile thereof, these shoes being movable in the sash guide channels 4 or 5. They are held therein by a spring strip 7 overlying a lip 8 at the edge of one of the sides of a recess or channel C, formed in each slide 6. Each sash 2 or 3 is provided with a metal strip 9 at its edge, which strip interlocks at 10 with the slide to form a weather tight joint. Each sash is pivoted to the slides 6 as by trunnions 11 secured to the strips 9 and journalled in suitable openings 12 in the slides 6, these trunnions extending into the recess or channel C in the slide 6. Each sash 2 or 3 is movable about the pivotal axis of the trunnions 11 into different inclined or angular positions out of the plane of the sash when the sash is closed, or out of the plane of the window guides and shoes or slides 6, and is normally held from unintentional pivotal movement by an impositive locking means here shown as a spring pressed poppet 13 carried by the sash near the edge thereof remote from the trunnion, and coacting with sockets 14 provided in each slide 6. The springs 15 of the poppets are located in metal sockets or thimbles 16 inserted in the stiles of the sash and secured to the strips 9.

The sash, when in inclined position, is held in this position by the counterbalancing means, and also by a ratchet and pawl mechanism. The counterbalancing means may be of any conventional construction. That here shown being a cable 17 running over a pulley 18 in the frame and connected to a weight 19 and to the sash 3 through coupling means to be described. A similar weight and cable is connected to the upper sash 2. The connections between the counterbalancing means or the cable and the sash 2 comprise a second slide 20 movable along each slide 6, and connected to the cable 17, a link 21 pivoted at one end at 22 to the second slide 20, and at its other end at 23 to the sash. The slide 20 is movable along a slot 24 formed in each slide 6, and the pivot 22 connecting the slide 20 and the link 21 extends through the slot so that the slide 20 and the link are arranged on opposite sides of the slide 6. The second slide 20 is located in the recess or channel formed in each slide 6, and the link 21 is interposed between each slide 6 and the strip 9 at each edge of the sash. In order to provide space for the link 21, the slide 20 is formed with an offset at 25, as seen in Figures 3 and 9. When the sash 3 is moved into an inclined position, the second carriage or slide 20 moves downwardly in the slot or guide 24 against the action of a counterbalancing means.

Preferably, a mechanism is employed for holding the second slide 20 from any tendency to shift out of its adjusted inclined position. This

mechanism is here shown as a ratchet and pawl between each first slide 6 and the second slide 20. It comprises a rack 26 and a pawl 27, the rack being here shown as formed on the second slide 20, and the pawl as provided on the first slide 6. The rack 26 and pawl 27 are provided with rounding teeth, so that the ratcheting action takes place in both directions when sufficient force is applied to overcome the holding action of the rounding teeth.

When the sash is swung into inclined position, the slides 6 can have a sliding movement relatively to each other as they are no longer held in synchronism by the sash. Means is provided for holding them from such differential movement when the sash is swung to inclined position. This means includes a locking member or members which automatically lock the slides from movement relatively to the frame when the sash is moved to inclined position.

30, Figure 6, designates the locking member, here shown as a spring pressed brake carried by each slide 6 within the channel C thereof and acting to press, at 31, against a part other than the slide when the sash is swung to inclined position. As here illustrated, the locking member presses through a slot 32 in the slide 6 against the wall of the sash guide 4 or 5, and it is operated to so press by the trunnions 11. Each trunnion 11 is formed with a cam having high and low points, the cam being here shown as provided by flattening off at 33 one side of the trunnion providing the low point of the cam. The locking member normally engages the low point of the cam. However, when the sash is swung into an inclined position, the trunnion is turned so that the high surface 34 thereof engages the locking member and presses it outwardly away from the trunnion, or the axis thereof, thus pressing the locking member at 30 against the wall of a sash guide and holding the slide from sliding movement.

As seen in Figures 7, 8 and 9, a slightly different form of locking means for the slides is shown, this consisting of a member 40, corresponding to the locking member 30 Figure 6, mounted in the recess C of the slides 6 and shiftable to carry a shoe 41 through a slot 42 in the side wall of the recess C of the slide into frictional engagement with the side wall of the sash guide of the window frame, when the sash 3 is swung into an angular position. The member 40 is actuated by a spring 44 and controlled in its movement by the sash 3 during the pivotal movement of the sash. The locking member 40 is pivotally mounted to the slide within the recess C, and it is here shown as mounted upon a rocking pin 45 extending through the slide to the opposite side thereof. The spring 44 is anchored at 46 at one end to the slide, and at its other end at 47 to the locking member 40. The arrangement of the spring and locking member is such that during the pivotal movement of the locking member 40, the spring, or the end 47 thereof attached to the lever, moves from one side of the dead center line to the other during the movement of the locking member 40 into and out of operative position, and thus operates the locking member with a snap action and holds it in its normal and shifted or operated positions. The dead center line is a line passing through the pivots 45 and 46. This locking member 40 is operated by the sash when it is swung into and out of tilted or angular positions.

This operating means, as here shown, comprises a rock arm 48 mounted on the rocking pin 45 on the opposite side of the slide 6 to that on which the locking member 40 is located, and a pin 49 on the strip 9 secured to the edge of the sash. The rock arm 48 is formed with a notch 50 for receiving the pin 49. When the sash is in normal position, the pin 49 is located in the notch 50 of the lever 48. When the sash is swung outwardly into the position shown in Figure 7, the pin thrusts against one side wall of the notch and rocks the unit consisting of the lever 48, locking pin 45, and locking member 40, into the position shown in Figure 7 from a position in which the spring 44 is on the opposite or left hand side of the dead center line. When rocked into the position shown in Figure 7, from that shown in dotted lines Figure 8, the shoe 41 of the locking member 40 presses against the wall of the sash guide or channel and holds the slide from movement. After the locking member has been moved into the position shown in Figure 7, the pin 49 moves out of the slot 50 of the lever 48. When the sash is again swung back into normal position, the pin 49 again enters the slot of the lever 48 and during continued swinging movement of the sash the pin 49 presses against the opposite wall of the slot 50 in the lever 48 and actuates the locking member 40 out of the position shown in Figure 7. The slide 6 at each edge of the sash is provided with a locking member 40 and associated mechanism and hence, when the sash is moved to a tilted position the slides are held from differential movement in the sash guides.

What I claim is:

1. The combination with a window frame formed with a sash guide, sash slides at opposite edges of the sash, the slides being movable along the guide, the sash being pivoted to the slides to move out of the plane of the guide, and sash balancing means; of coupling means between the balancing means, the slides. and the sash to counterbalance the sash and slides when the sash is raised and lowered, and to hold the sash in any one of a plurality of inclined positions when the sash is moved about its pivotal axis relatively to the slides, and an impositive spring pressed locking means including elements on the edges of the sash and the opposing portions of the slides for holding the sash from unintentional pivotal movement relatively to the slides.

2. The combination with a window frame formed with a sash guide, sash slides at opposite edges of the sash, the slides being movable along the guide, the sash being pivoted to the slides to move out of the plane of the guide, and sash balancing means; of coupling means between the balancing means, the slides, and the sash to counterbalance the sash and slides when the sash is raised and lowered, and to hold the sash in any one of a plurality of inclined positions when the sash is moved about its pivotal axis relatively to the slides, said coupling means including a second slide movable along each of the first slides, and to which the balancing means is connected, and a link pivoted at one end to each of the second slides, and at its other end to the sash, ratchet mechanism between the slides, and a spring pressed poppet including coacting elements on the edges of the sash and the opposing surfaces of the slides for holding the sash from unintentional pivotal movement relatively to the slides.

WESLEY EUGENE DENNIS.