Nov. 20, 1934. H. P. GRONBECH 1,980,990

COMPOSITE WINDOW SASH AND SCREEN

Filed Aug. 9, 1933

FIG. 1

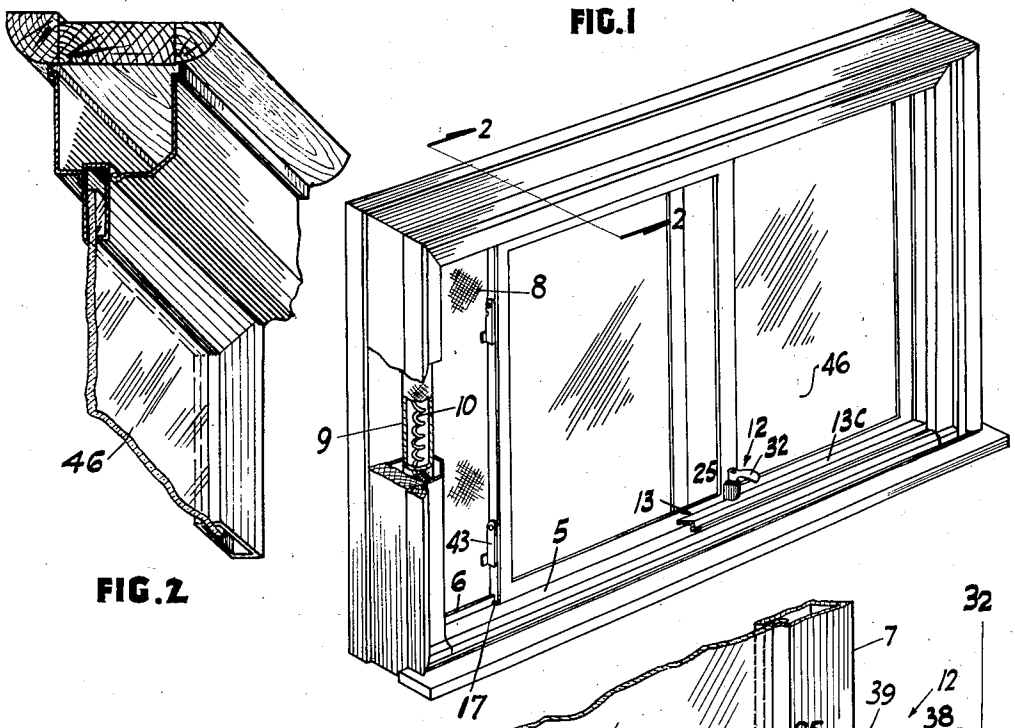


FIG. 2

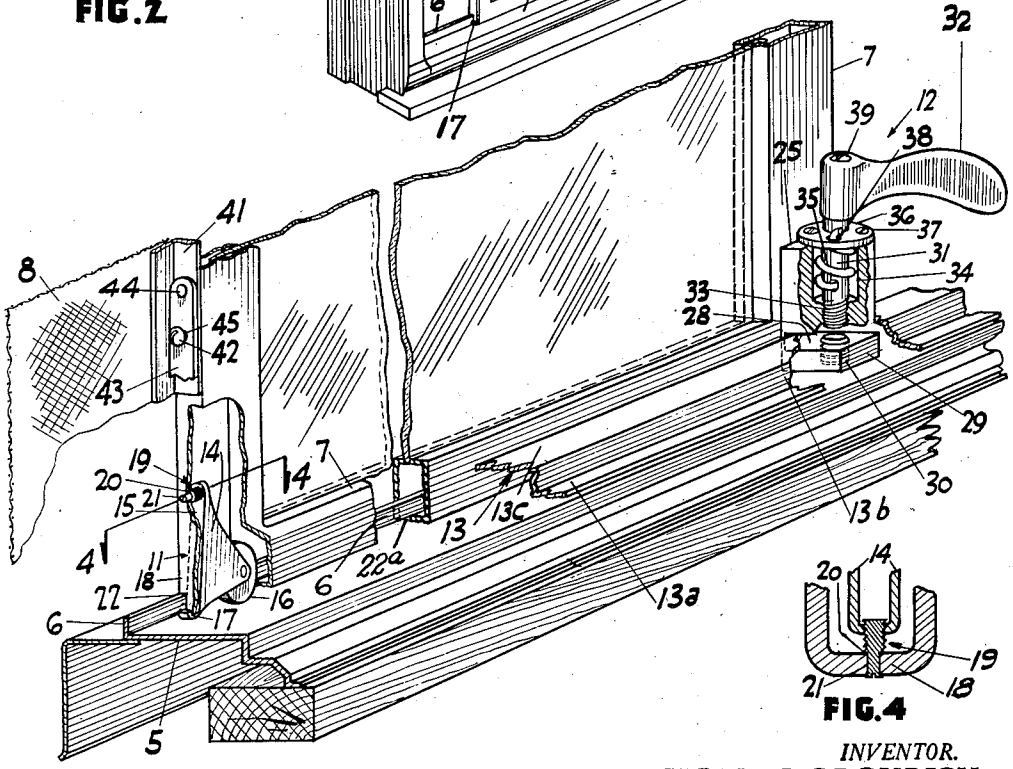


FIG. 3

FIG. 4

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COMPOSITE WINDOW SASH AND SCREEN

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17 Claims. (Cl. 156—39)

This invention relates to improvements in window construction and particularly to the means whereby the window is rollingly mounted in its frame, the means governing the manual opening and closing thereof and the means providing for its adjustability within the frame.

An important object of the invention is to improve and simplify the carriage mechanism, as well as other parts in general, disclosed in my application on a similar article which resulted in Patent #1,922,286, August 15, 1933.

Another important object is the incorporation of improved means providing for automatically locking the sash in any position in which it may be placed.

Another important object is the incorporation of means providing a more perfect balance of the sash whereby its operation is effected with greater ease.

Still another object of the invention is to provide means for accurately adjusting the position of the window sash with relation to its guiding means with a view not only to cause the sash to operate easily but also to apply a proper tension to the screen element which is connected with said sash as set forth in my recently issued patent above referred to.

Still other objects, features and advantages will hereinafter appear when the following disclosure is read in the light of the accompanying drawing wherein—

Fig. 1 is a perspective view of the structure, portions thereof being broken away to show interior construction.

Fig. 2 is a fragmental section on an enlarged scale, the plane of section being indicated by the line 2—2 on Fig. 1.

Fig. 3 is an enlarged reproduction of the lower portion of Fig. 1 parts being broken away to contract the view and other parts being broken away to disclose interior construction.

Fig. 4 is a transverse sectional detail, greatly enlarged, on the plane indicated by line 4—4 on Fig. 3.

Referring in a general way to the main parts of the construction shown in the drawing, a window sill or stool 5 preferably of sheet metal is provided, which has projecting from its upper face an upstanding flange 6 to serve as a guide for the sash 7. To the left hand edge of the sash as viewed in the drawing, is secured a window screen 8 which winds upon and unwinds from a roller 9, said roller being provided with an internal torsion spring 10 which serves to automatically roll up the screen 8 when the sash is moved toward the left.

The present invention pertains more particularly to two cooperating sash-control elements, namely, the adjustable roller-carrying means 11 for rollingly mounting the sash upon the stool 5, and a locking device 12 which is carried by the sash and which cooperates with a guide 13 to releasibly hold the sash in its adjusted position against the opposition of the torsion spring 10 which tends to move the sash toward the closed position.

The roller-carrying means 11 preferably comprises a sheet metal clip having triangular side portions 14 and a base portion 15 which unites said side portions in spaced relation to each other thereby providing for pivotally mounting between them the roller 16. At its lower end said clip is provided with a saddle portion 17 which is positioned to underlie the lower edge of the sash end piece 18. This construction not only provides means for supporting that end of the sash upon the saddle member, but it also creates a tilting or slightly pivotal relation between the roller-carrying member and the adjacent corner portion of the sash. At its upper end the roller-carrying member is provided between its side pieces 14 with a screw threaded opening wherein is inserted an adjustable screw 19, said screw having a shoulder portion 20 which bears against the inner side of the sash end piece 18 when the device is in its operative position with the roller 16 serving to support the adjacent parts upon the upper surface of the stool or sill 5.

The screw 19 has a reduced end portion 21 which projects through a hole provided therefor in the sash end piece 18, this part of the screw being shaped for turning by means of a screw driver in order that the screw may be adjusted in such a manner that the upper end of the clip 11 may be adjusted thereby tilting the clip to thus force the roller portion thereof down to the desired extent. This operation will increase the space between the adjacent corner portion of the sash and the sill to the desired extent in order to insure that the weight of the window will at all times be carried by the roller 16 and undesirable slidable friction between the sash and the stool 5 be thereby eliminated.

The lower portion of the sash end piece 18 has a slot 22 cut thereinto to receive the guide flange 6, said guide flange being of sufficient height to provide a considerable vertical adjustment of the sash without risk of separating it from its guide.

Describing the locking device at the opposite

end of the sash, the casing or supporting means preferably consists of a block 25, which at one side is secured to the front face of the sash 7 by any suitable means as by welding the same thereto. Said block has a deep horizontal slot 28 cut into its lower portion to receive the flange 13c which, together with the stool 5, preferably runs from end to end of the window casing. Said slot 28 is much wider than the thickness of the flange 13c in order that considerable vertical adjustment may be provided for the portion of the sash to which the block is attached.

The foot portion 29 of the block below the slot 28 has a vertically adjustable screw abutment 30 mounted therein. Vertically above this screw abutment is mounted a screw member 31 which is manually turnable by means of a handle 32 fastened to the upper end thereof. The screw threaded portion of said member 31 cooperates with a screw threaded bore 33 with which the block 25 is provided. Above said bore 33 said block has a chamber 34 within which is mounted a torsion spring 35 that cooperates with the screw threaded member 31 and tends to rotate the same down to a clamping position after it has been released by the manual operation of the handle 32. The block 25 is provided with a cap 36 which is attachable by means of the screws 37. Said cap is provided with a small opening 38 through which the upper end of the torsion spring is caused to project, the other end of said spring being inserted into or otherwise secured to the screw member 31.

In assembling the locking device, after the lower end of the spring 35 has been attached to the screw member 31 the upper end of the spring is caused to project through the hole 38 in the cap 36 and tension is then put into the spring by turning the cap the required extent before fastening the cap down by means of the screws 37. The handle 32 is provided with an attaching screw 39 because it is necessary that the screw member 31 and the handle remain separate until after the screw member 31 has been put into place.

Describing more in detail the preferred construction of the guiding member 13, this member is preferably a plate Z-shaped in cross section having a foot flange 13a which is welded or otherwise secured to the window stool 5. The upstanding web 13b is sufficiently high to provide, beneath the upper flange 13c, ample space for the travel of the foot portion 29 of the block 25.

As shown in Fig. 4 the outer end of the adjusting screw 21 is slightly flared to prevent said screw from slipping inwardly.

In Fig. 1 of the drawing, the window is shown partly open, the space at the left side of the sash being covered by the screen 8, and said screen being welded to the angle bar 41. Referring to Fig. 3 said angle bar is provided with an aperture through which may project a screw 42 carried by the sash. A locking lever 43, pivoted to the angle bar at 44, is provided with a slot or deep notch 45 which cooperates with the shank and head of screw 42 to detachably secure the screen to the sash. Two of such locking levers are shown. This construction is covered in the application referred to supra.

Before the screen 8 is attached to the sash the final adjustment of the sash is made by regulating the portion of the screw 20 so as to depress the roller 16 to the desired extent, and also by adjusting the abutment screw 30 at the opposite side of the sash so that said screw will engage the lower surface of the flange 13c and thus throw the weight of the sash upon the roller 16. It should be observed that the continuous tension of the spring retracted screen 8 upon the left edge of the sash tends to hold the abutment screw 30 in frictional engagement with the flange 13c.

In Fig. 1 of the drawing a stationary sash 46 is provided rearwardly of the plane in which the sliding sash 7 travels, in order to insure at all times a complete closure of the window opening.

I claim:

1. In a window frame construction, a sash, means attached to said sash and creating a constant sidewise pull thereupon, a window stool including a locking guide, means to rollingly mount said sash on the top surface of said stool, and a locking element attached to said sash and normally operatively engaging said guide.

2. In a window frame construction, a sash, a roller, a screen windable upon and off of said roller and detachably secured to said sash, a spring in said roller, said spring being placed in tension whereby to create a constant pull on the adjacent side of said sash, a window stool including a locking ledge, means to rollingly mount said sash on said stool, an operating handle including a spring and a part carried by said handle and normally held in engagement with said ledge by said spring to oppose the pull of the roller spring.

3. In a device of the kind described, an inclinable sash, a window stool, and adjustable roller-carrying means for rollingly mounting said sash upon the top surface of said stool.

4. In a window frame construction, a sash, a window stool including a flanged member which, together with said stool, extends from end to end of the window opening, means creating a pull on the side of said sash normally tending to keep said sash closed, and a locking device including a turnable operating handle threadedly mounted on said sash and having a part yieldingly held in engagement with said flanged member to oppose the closing movement of said sash from any position it may be stationed.

5. In a device of the kind described, a sash, a window stool, and means to rollingly mount said sash on the top surface of said stool.

6. In a device of the kind described, an inclinable sash, a window stool, and means to rollingly mount said sash on said stool, said mounting means being adjustable in order to vary the inclination of the sash.

7. In a device of the kind described, a sash including a roller, a window stool upon which said roller rolls and carries said sash, and means to adjust said roller relatively to said sash.

8. In a device of the kind described, a sash, a roller mounted in its bottom side edge and acting as a support for said sash, a window stool, said stool forming a track upon which said roller rolls, a member extending along the lower side of the window opening and including a flange, said flange being in spaced relation to said sash, said member being rigid with relation to said window stool, means fastened to and creating a pull on the side of said sash whereby to throw the weight of said sash on said roller and thence on said stool, means to adjust the height of said roller relatively to said sash, a locking element including a turnable operating handle threadedly mounted on said sash, and yieldable means acting upon said handle and opposing the manual turning thereof whereby to maintain a releasable

locking contact of the locking element with said flange in any position the sash may be placed.

9. The combination with a horizontally movable window sash and a frame for said sash having a stool; of a roller-carrying device mounted in a tilting manner upon said sash and having a roller positioned to engage the stool to support the sash, said device being provided with a screw threaded bore and an adjusting screw having a threaded portion engaging said bore, also having a diametrically reduced portion and a shoulder portion, said reduced portion being accessible through a hole in a portion of the sash which is engaged by said shoulder portion, said screw being adapted for rotation to adjust the roller-carrying device to the desired tilted position.

10. In a construction of the character described, a device to aid in supporting a slidable window sash in a frictionless manner, said device comprising a sheet metal clip having a base portion one end of which is bent to form a saddle at one side of said base portion, there being a side member struck up from each edge of said base portion and directed toward the face thereof which is opposite to said saddle, an anti-friction roller mounted between the side plates thus provided, and means carried by the end portion of said base member which is opposite to said saddle to cooperate with the sash to adjust the device with relation thereto.

11. The combination with a horizontally movable window sash and a frame for said sash having a stool; of a roller-carrying device mounted in a tilting manner within the frame of said sash and having a roller positioned to travel upon said stool to aid in supporting the sash, said device being provided with a screw threaded bore and an adjusting screw having a threaded portion engaging said bore a diametrically reduced portion and a shoulder portion, said reduced portion being accessible through a hole in one of the vertical walls of an end piece of the sash, the reduced portion of said screw being adapted to receive a tool for the purpose of rotating the screw to adjust the tilted position of the roller-carrying device.

12. The combination with a horizontally slidable window sash having a chamber in a lower corner portion thereof; of a clip mounted within said chamber, said clip having a foot portion provided with a saddle which is adapted to receive a downwardly directed edge portion of the sash, such edge portion of the sash having at a higher point a hole therethrough, an adjustaing screw having a screw threaded connection with said clip, a portion of said screw projecting through said hole and being rotatable by means of a tool to tilt said clip with relation to the frame of the window, said saddle of the clip acting as a fulcrum about which the tilting movement occurs, and a roller carried by the lower portion of the clip and thereby positioned to travel upon the window stool, the height of said roller with relation to the window sash being variable by the adjusting of said screw.

13. In a device of the kind described, a sidewise slidable [inclinable] sash having a longitudinal slot in the bottom portion thereof, and a window stool provided with an upstanding guide flange designed to enter said slot, said flange being of sufficient height to provide for inclinably adjusting said sash without separating it from said flange.

14. In a device of the kind described, a window frame having a sheet metal stool portion provided with an upstanding guide flange, a horizontally slidable sash having a lower portion provided with a slot to receive said flange with a working fit, a Z-plate having a foot flange secured to said stool and a top flange the edge of which extends along the face of the sash adjacent thereto, a clamping device secured to said sash, said device having a slot which loosely receives the upper flange of said Z-plate, said clamping device having clamping means adapted to act upon said upper flange to releasably clamp the sash in adjusted positions, and a roller support for said sash secured thereto in spaced relation to said clamping device.

15. In a device of the kind described, a window frame having a sheet metal stool portion provided with an upstanding guide flange, a horizontally slidable sash having a lower portion provided with a slot to receive said flange with a working fit, a Z-plate having a foot flange secured to said stool and a top flange the edge of which extends along the face of the sash adjacent thereto, a clamping device secured to said sash, said device having spring-impelled manually releasable clamping means normally engaging said upper flange to hold the window in adjusted positions, and a roller support for said sash secured thereto in spaced relation to said clamping device.

16. In a window frame construction, a sash, a roller, a screen windable upon and off of said roller and detachably secured to said sash, a spring in said roller, said spring being placed in tension whereby to create a constant pull on the adjacent side of said sash, a window stool including a locking ledge, means rollingly mount said sash on said stool, an operating handle including yieldable means and a part carried by said handle and normally held in engagement with said ledge by said yieldable means to oppose the pull of the roller spring.

17. In a device of the kind described, an inclinable sash mountable in a window frame, means to rollingly mount said sash in said frame, said mounting means being adjustable in order to vary the inclination of said sash.

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