United States Patent [19]

Nobes

[11] **3,844,066**

[45] **Oct. 29, 1974**

[54] **TILTABLY-REMOVABLE AUTOMATICALLY-LOCKING WINDOW SASH**

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[73] Assignee: **Caldwell Manufacturing Company,** Rochester, N.Y.

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[52] **U.S. Cl.** **49/182,** 49/346

[51] **Int. Cl.** **E05d 15/22**

[58] **Field of Search** 49/181, 346

[56] **References Cited**

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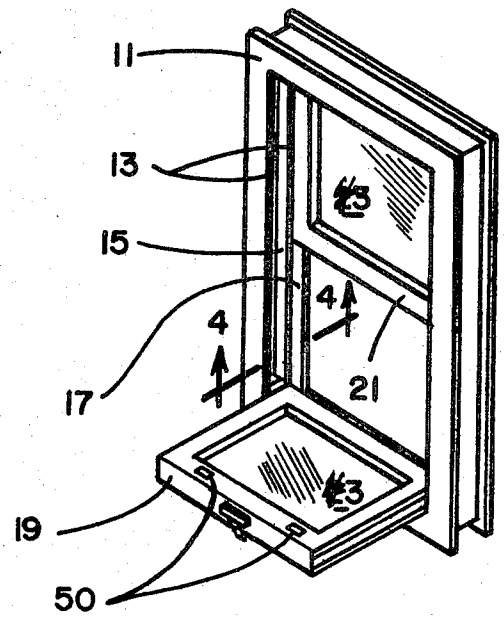
616,484	12/1898	Myers	49/181
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3,055,062	9/1962	Peters et al.	49/181 X

Primary Examiner—Kenneth Downey

[57] **ABSTRACT**

A tiltable and removable sash window, applicable to single or plural hung sash designs, where the sash is pivotally mounted on a vertically slideable slide block carried in a jamb channel, which slide block is secured to a sash balancing mechanism and is provided with a transverse bore having an out of round rotary locking pin, and a resiliently flexible leg having a locking surface with said channel, said locking surface being spaced away from a line extending from the center of said rotating pin through the point of contact of said rotating pin with said resiliently flexible arm. As the sash is tilted, the rotating motion of the sash is translated through a pivot bar to rotate the rotary locking cam which moves the flexible arm of the sliding block into engagement with the jamb channel thus securing the slideable block at the point where the sash is tilted.

2 Claims, 5 Drawing Figures



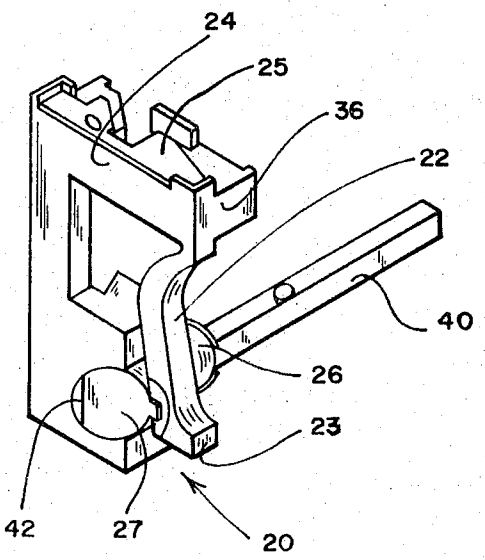


FIG.3

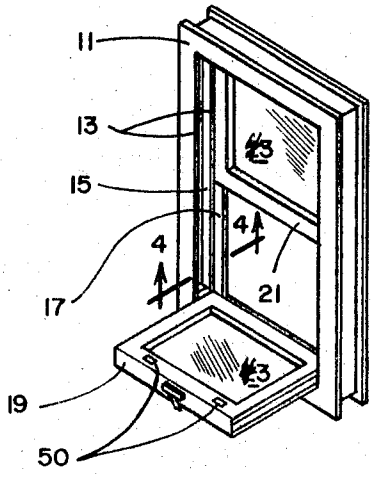


FIG.1

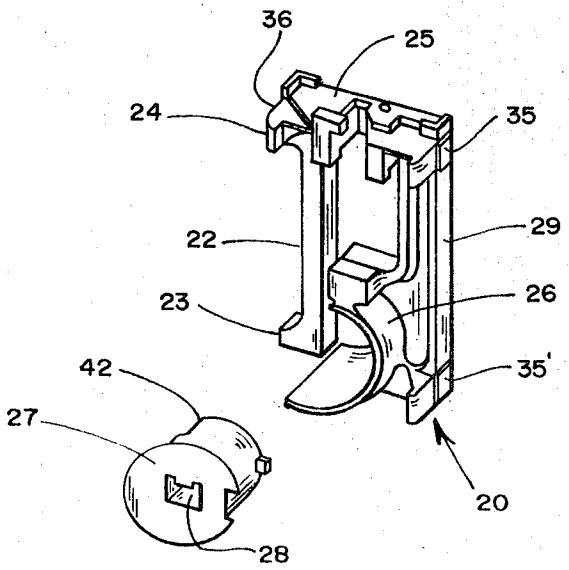
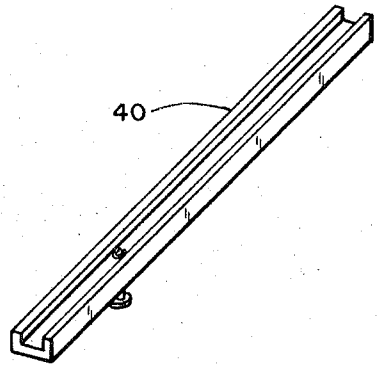


FIG.2



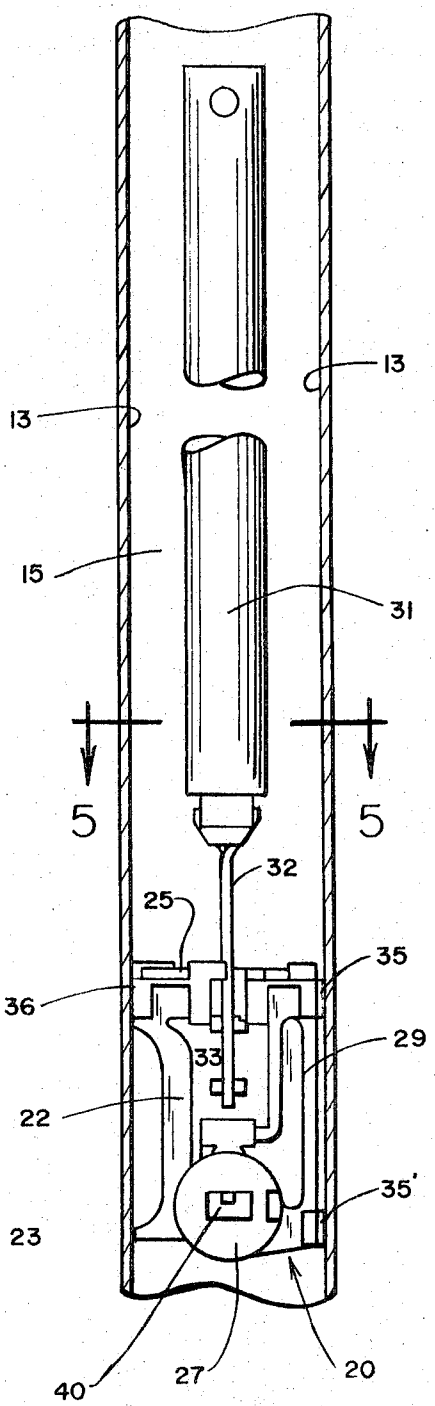

13
13
15
31
5
5
32
25
35
36
33
29
22
35'
23
40
27
20

FIG. 4

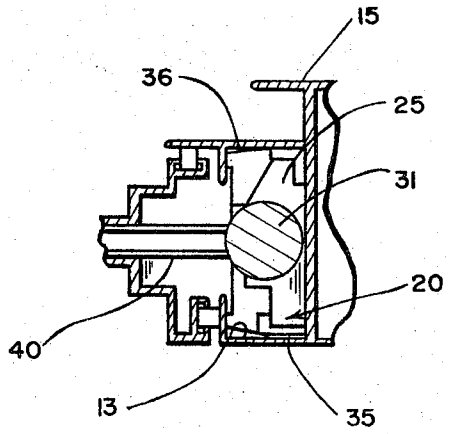

15
36
25
31
20
40
13
35

FIG. 5

TILTABLY-REMOVABLE AUTOMATICALLY-LOCKING WINDOW SASH

SUMMARY OF THE INVENTION

The flexiblle arm of the sliding block is so formed and positioned that the locking surface with the jamb channel is tangential to the camming surface of the rotary locking element, thus exerting a relatively uniform force on the jamb channel regardless of variations in the size of the jamb channel due to production variances. This reduces the distortions heretofore formed in similar mechanisms and results in a longer life and more secure locking of the slide block upon the pivoting of the window sash. Such a construction also permits its use in heavier sashes than has heretofore been possible.

DESCRIPTION OF THE PRIOR ART

Heretofore, various means have been employed for engaging the sliding block in the jamb channels so as to prevent movement after the sash has been removed. However, all of these means have utilized relatively fixed blocks which do not have a flexible leg cooperating with the rotating cam so as to allow for variations in the tolerances of the jamb channels. Examples of such blocks are described in the following references:

L. E. Peters U.S. Pat. No. 3,055,062 L. E. Peters U.S. Pat. No. 3,146,501 R. J. Weidner et al., U.S. Pat. No. 3,434,236 D. M. Trout U.S. Pat. No. 3,482,354.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** is a front elevational view of a double hung window illustrating the normal position of an upper sash and the pivoted position of the lower sash;

FIG. **2** is an exploded perspective view of the mount of the present invention showing also its relationship with the sash pivot bar;

FIG. **3** is a perspective view of the mount of the present invention showing rotary locking element in locking position;

FIG. **4** is a partial vertical cross-section through the window frame of FIG. **1** along lines **4—4** showing the mount in use;

FIG. **5** is a horizontal cross-section along lines **5—5** of FIG. **4.**

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to the drawings, with respect to FIG. **1,** the window consttuction comprises a conventional stationary frame **11** adapted to be set into a building construction. The inner surface or jamb of the frame **11** is provided with spaced walls **13** defining parallel vertical guide channels **15** and **17** within which are respectively hung window sashes **19** and **21,** each having a glass pane **43.** The upper or rear sash **21** is shown in its normal vertical position. The lower or front sash **19** is shown in its tilted pivoted position.

FIG. **1** shows the environment of the present invention, omitting details of the frame, and the balancing mechanism, as well as other structural details which may be considerd conventional. As for balancing mechanisms, which may be used with the present invention, any balancing mechanism will serve the purpose, including the cord type balance mechanism as shown in the Dinsmore patent, U.S. Pat. No. 3,358,404, or the spiral type as shown in the Tappan patent, U.S. Pat. No. 2,580,705. Since windows are symmetrical in construction, it is believed necessary to describe only one-half thereof in detail. Consequently, only the details of one side of the window are shown.

As shown in FIGS. **2, 3** and **4,** slide block **20,** which slides vertically in guide channels **15** and **17,** is of a generally rectangular shape having a flexible leg **22** with locking surface **23** extending from head **24,** which is attached to balance mechanism **31** through rod **32** and pin **33.** Rod **32** and pin **32** extend through an opening in head **24** and are secured into position in metal head plate **25** of slide block **20.** The metal head plate **25** serves as a stiffener for head **24** and prevents distortion of head **24** from the forces exerted by the balance mechanism **31.** Slide block **20** also has a transverse partial bore **26** for receiving rotary locking element **27,** having a U-shaped opening **28** for receiving pivot bar **40.** Side **29** of slide block **20** has two extending surfaces **35, 35'** which engage one side of channels **15** and **17** in frictional engagement when the slide block is in locked position to secure said block in the locked position.

Slide block **20** is preferably made of a plstic material and is machined or otherwise smoothly finished, at least on its sliding surfaces **35, 35', 36** and **23.**

Rotary locking element **27** has an out of round camming surface **42** and is disposed in the transverse partial bore **26.** Rotary locking element **27** has an out of round cam surface **42** which interacts with flexible leg **22** when the window is pivoted, as shown in FIG. **3.**

It will be noted that locking surface **23** of leg **22,** which cooperates with the camming surface of the rotary locking element **27,** is located in a position spaced away from a line extending from the center of said rotating locking element through the line of contact of said rotating locking element with resiliently flexible leg **22.** This provides a leveraged force which is applied against the wall **13** of guide channel **15** and conversely by friction surface **35** and **35'** of the other side of the slide block against the other wall **13** of guide channel **15.** This construction permits variations in the tolerances of the guide channels **15** and **17** which inevitably result from production variances. It also permits a wider tolerance so as to prevent or eliminate any possibility of binding of the slide block **20** during the operation of the window in normal position. Further, it will be clear that the locking effect of a slide block **20** of the construction of the present invention has an added advantage of providing a cantilevered, spring lock. This construction permits wider variation in the tolerances of the guide channels.

As shown in FIG. **1,** a finger operated sliding guide lock **50** is shown which is of unique construction. This sliding guide lock holds the window in position in the normal operating condition.

The operation of the locking slide block will be clearly understood by reference to the drawings in which, as we have previously noted, flexible leg **22** is free of locking contact with the walls **13** of channel **15** and also permits the sliding of friction surfaces **35, 35'** when the window is in the normal operating position. Upon the unlocking of the sliding guide lock **50,** the head rail is permitted to be pulled out into the pivoted position as shown in FIG. **1.** The movement of the sash is transmitted through pivot bar **40** to the rotary lock-

ing element **27** which exerts a leverage fore on flexible leg **22** and pushes locking surfaces **23, 36, 35** and **35'** into engagement with the walls **13** of channel **15,** thus holding the slide block into the locked position while the window is in the pivoted-out position for cleaning.

The provision of the flexible leg cooperating with the camming surface of the rotary locking element permits a more rigid construction of guide channels **15** and **17,** since the locking action of the block with the leverage force applied to the locking surfaces do not rely upon the deformation of the walls **13** of channels **15** and **17.** A longer lasting and more uniformly operating mechanism is provided. The locking mechanism of the present invention, because of the greater leveraged force which may be exerted upon the guide channel by the pivoting of the sash, permits its use with heavier windows due to the greater efficiency of the lock.

Thus, we have provided a sash lock and mounting block which provides a simple and easily operable means for anchoring the counterbalance and for securely locking the sash in pivoted position. The device may be simply fabricated from plastic material such as nylon or from any suitable metal and the balance bracket may be of metal or aluminum. Of course, the window frame sash and other parts may be of aluminum, wood, or other materials, as desired.

While this invention has been described with reference to certain features, structure, and material, it will be apparent that various other modifications might be made without departing from the principle and scope of this invention.

1. A tilt-out window construction comprising a support frame having a guide channel with an elongated opening,

a sash mounted for vertical movement in said frame which is pivotal about an axis normal to said movement into a position extending out of said support frame,

a sash balancing mechanism disposed in said guide channel, a vertically slidable slide block mounted in said guide channel connected to sash balancing mechanism said slide block having a generally rectangular shape with means at the head for receiving attaching means to the balance mechanism, and a transverse partial bore therein integral with said block directed to said elongated opening, said transverse partial bore having an out of round rotary locking element with a camming surface rotatably journaled therein, and a deformable, flexible leg integral with said slide block extending from the head of said slide block and out of contact with said slide channel, said deformable flexible leg having an extension on one side with a locking surface for contacting said side channel, said extension of said leg with said locking surface being located in a position with respect to said rotating locking element so that said locking surface is spaced away from a line extending from the center of said rotating locking element through the line of contact of said rotating locking element with said resiliently flexible arm, said out of round rotary locking element being connected to said sash and actuating said locking surface into engagement with said channel in response to the tilting of the window sash.

2. The tilt-out window of claim **1** wherein said rotary locking element is actuated by a removable pivot bar and is rotated into locking position by the tilting of the sash out of said support frame.

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