Oct. 20, 1964 P. DI LEMME 3,153,264

LOCK FOR STORM WINDOWS

Filed May 23, 1962

Fig. 1

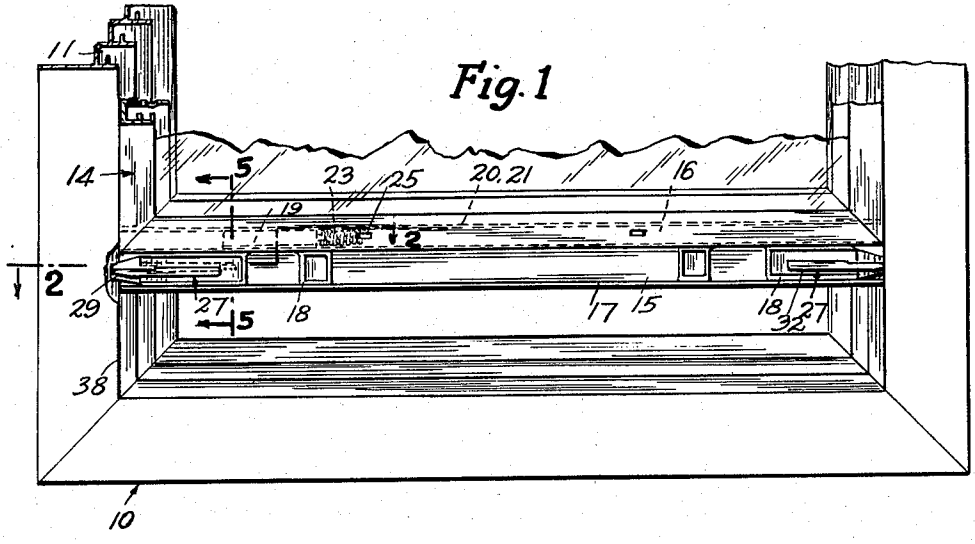


Fig. 2

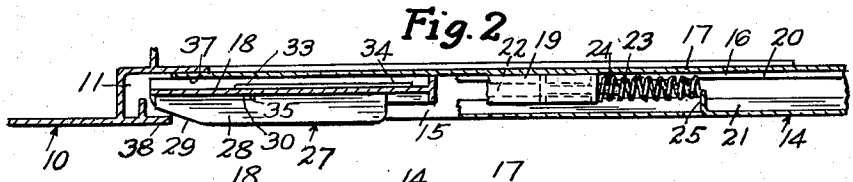


Fig. 6

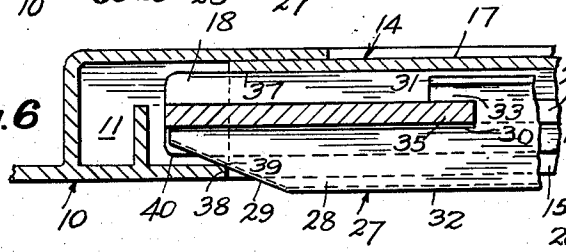


Fig. 5

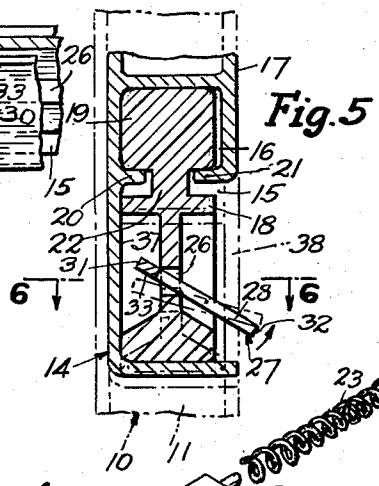


Fig. 3

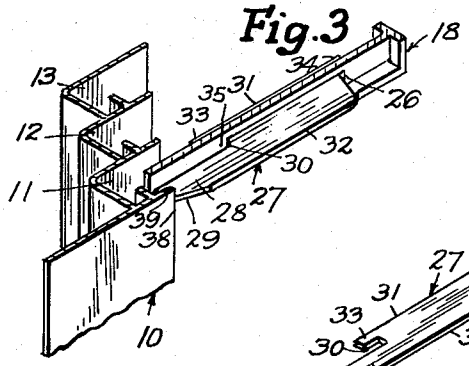
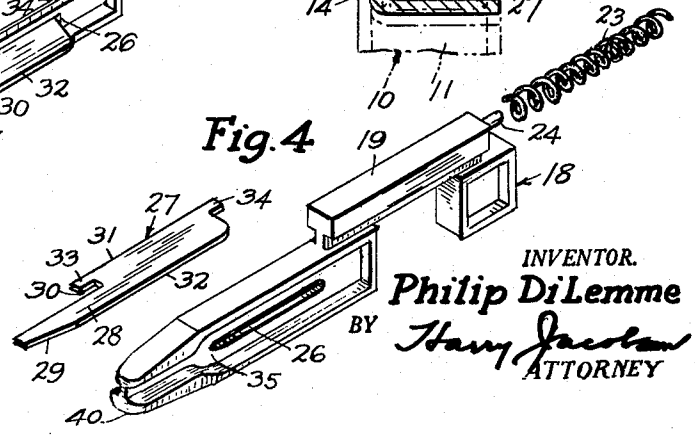


Fig. 4



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LOCK FOR STORM WINDOWS

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9 Claims. (Cl. 20—52.2)

This invention relates to window locks and particularly to locks for storm windows in which the sashes are not counterbalanced and are readily removable from and replaceable into the window frame.

It is customary in such windows, to mount the metallic sash for sliding movement in the upright channel of a suitable metallic window frame, the sash being provided at its upper end with a pivot pin and at its lower end portion with a lock element, as is shown for example in Patent No. 2,818,610. The locks heretofore known require either manual release thereof before upward movement of the sash becomes possible, or they require the formation of notches, ratchet teeth or holes at spaced intervals in the window frame channel, or they do not otherwise lock the sash automatically against downward movement at any point whatever at which the sash may be set in the frame or stopped during its upward or downward movement.

The present invention therefore includes the provision of a simple, inexpensive and dependable automatic spring-pressed wedging lock which operates like a ratchet to permit upward movement of the sash without release of the lock manually, but which operates automatically to fix the sash at any point of the window frame at which the sash is stopped during such upward movement, and which operates during a downward movement to fix the sash immediately at the point where the lock is freed from manual control or retraction.

The invention further includes the provision of a loosely mounted and overbalanced and tilted wedging blade carried in the slot of a spring-pressed slide, the slide being retractable manually to release the blade from its pressed wedging engagement with the edge of the guide channel of a window frame thereby to unlock the sash preliminary to a downward movement thereof, the blade automatically tilting slightly through a minute angle into a slightly straightened wedging and locking position in its slot when the slide is released from manual control and is extended by its spring, regardless of the position of the point at which the sash is stopped.

The invention further includes the provision of a simple tilting wedge blade bounded in part by a bevelled locking edge, and which merely floats or rests by gravity in an unbalanced position in the slot of a slide and which can readily be applied to standard locking slides of storm windows of the types now in common use without material changes in the window frame.

The invention further includes the provision of a lock installation comprising a window frame devoid of stop means such as holes, notches or teeth heretofore provided at intervals in the frame, the frame cooperating with an automatic but simple wedging lock which need not be manipulated to lock the sash at any point of the frame against downward movement and which need not be unlocked for upward movement of the sash.

The various objects of the invention will be clear from the description which follows and from the drawings, in which

FIG. 1 is a fragmentary elevational view of the lower part of the interior side of a storm window to which the invention has been applied.

FIG. 2 is a horizontal sectional view of the lock and associated parts taken on the line 2—2 of FIG. 1.

FIG. 3 is a fragmentary perspective view, partly in section, of the window frame together with the locking blade and part of the slide, in the locking position thereof, the sash being omitted, and showing the wedging action of the bevelled end portion of the blade.

FIG. 4 is an exploded perspective view of the lock parts.

FIG. 5 is an enlarged vertical sectional view of the lock in its unlocked position and taken on the line 5—5 of FIG. 1, the window frame channel being shown in dash-double-dot lines and the locking position of the parts being shown by dash-dot lines.

FIG. 6 is an enlarged fragmentary horizontal sectional view of the wedging blade and the carrying slide therefore taken on the line 6—6 of FIG. 5.

In the embodiment of the invention shown by way of example, the window frame 10 is of the usual type, being an extruded metallic section having suitable channels as 11, 12 and 13 for the slidable reception of glazed sashes as 14 or of screened sashes as is customary, the interior surface of the sash being flush with the interior surface of the adjacent flange of the receiving channel. Each of the sashes has a suitable pivot pin (not shown) at the upper end thereof sliding in its channel in a well known manner as in Patent No. 2,818,610, and a pair of locks at the lower portion thereof adapted respectively to engage opposite channels.

The present invention is concerned primarily with such locks, which are mounted as shown within the transverse channels 15 at the bottom of the lower horizontal rail 17 of the window sash 14. The generally rectangular locking slide 18 is provided with an upper spring-holding head 19 sliding in the upper channel 16 of the sash rail 17, which channel is partly closed at its bottom by the opposed flanges 20, 21 entering the constricted neck 22 of the head.

The compression spring 23 is mounted in the upper sash channel 16 above the flanges 20, 21 and inwardly of the head 19, one end of the spring encircling the pin 24 projecting from the inner end of the head and the other end of the spring being held by the lug 25 pressed out of the material of the interior face of the sash rail as shown in FIGS. 1 and 2. Said spring urges the slide 18 outwardly into the channel as 11 of the window frame. It will be understood that a pair of locks, one at each end of the lower sash rail 17, is mounted in the channels 15, 16 for engagement with opposite sides of the window frame, and that in the present invention said frame need not be mutilated in any manner for proper locking action.

To attain such action, the outer part of the slide 18 is slotted with the horizontal or longitudinally extending slot 26 for the loose reception and retention of the wedging blade 27. Said blade is preferably made of thin sheet metal having a generally rectangular perimeter provided with an operative outer end portion 28 of reduced width having a bevelled locking edge 29 at its interior side edge and adjacent the outer end of the slide. A short longitudinal groove 30 is made between the side edges 31 and 32 of the blade to form the outer tongue 33. A second similar tongue 34 projects inwardly at the exterior side edge 31 and extends beyond the inner end of the slot. Said blade is of lesser thickness than the width of the slot 26 and is loose in said slot. The greater part of the blade passes through the slot and lies between the slot and the edge 32. Consequently, the blade is overbalanced and permanently assumes a position tilted downwardly and interiorly of the slide as best seen in FIG. 5, rotation of the blade by gravity into its maximum tilted position being determined by the engagement thereof with the slide.

To insert the blade into the slide, the outer end portion 28 thereof is first passed through the outer end of the slot and then moved outwardly until the material 35 of the

slide adjacent the outer end of the slot enters the blade groove 30. The blade is then straightened to carry the tongues 33 and 34 against the adjacent exterior face of the slide, and the slide with the blade carried thereby is inserted into the channels 15, 16 of the window sash in position to engage the outer end of the spring 23. The interior faces 37 of the channels 15 and 16 engage the exterior faces of the slide which is held in position by the flanges 20, 21 and which is urged by the spring 23 outwardly enough to advance the portion 28 into the channel 11 until the bevelled edge 29 of the tilted blade engages the edge 38 of the window frame channel flange. To enable the end portion 28 of the slide easily to enter its channel, the end edge 40 thereof is rounded or tapered as seen in FIGS. 4 and 6. Excessive cutting or nicking of the locking edge 38 of the frame channel by the bevelled locking edge 29 of the blade, is prevented by optionally bevelling said frame edge as shown as 39 in FIGS. 3 and 6.

In operation, the slide 18 is urged outwardly by the spring 23 to press the blade edge 29 firmly against an extremely small area which is practically a point of the edge 38 or 39 of the channel flange, the blade being tilted in the slot 26 of the slide through an extremely small but significant angle by the otherwise unsupported weight of the sash toward a more horizontal position than when the lock is released, as shown by the dash-dot lines of FIG. 5. The weight of the sash and its attempt to move downwardly when unlocked or released from control, tends immediately to carry downwardly with it the parts at the exterior side of the blade between and including the tongues 33 and 34 while the blade edge 29 is prevented from so moving downwardly by its engagement with the frame edge 38. The consequent extremely slight counter clockwise rotation of the blade, (as viewed in FIG. 5), wedges the edge 29 against the frame edge, the blade swinging inwardly and acting as a wedge. When the blade is fixedly wedged between the frame edge and the top of the slot 26, the slide and the sash carrying the slide are also locked against downward movement until the slide is manually retracted against the action of the spring 23.

Upward movement of the sash from any position requires no manipulation of the slide. In FIG. 5 is shown in full lines, the position assumed by the parts when upward movement of the sash is begun. Since the blade 27 is loose in the slot 26, raising the sash first moves the tongues 33 and 34 upwardly out of the dash-dot line position shown, but does not initially move the blade edge 29 from its locked position in which it is firmly pressed against the flange edge 38. Raising the tongues 33 and 34 causes slight rotation of the blade in a clockwise direction as viewed in FIG. 5 and permits the blade edge 29 to slide over the flange edge 38 without biting into or wedging itself thereagainst, much in the manner of a ratchet pawl. When upward movement of the sash is halted and the sash is released from manual control, its weight immediately acts to rotate the blade slightly in a counterclockwise direction automatically as previously described. When the sash is to be lowered, the slide is manually retracted against the action of the spring 23 to withdraw the wedging blade portion 29 away from the frame edge 38 or 39, thereby to free the sash for movement until the slide is again released.

It will now be seen that the frame extrusion needs no processing or mutilation to cooperate properly with the slide and wedging blade carried thereby, that the lock herein provided is simple, inexpensive and applicable to many of the conventional types of storm windows and that the various objects of the invention have been adequately attained.

While certain specific forms of the invention have herein been shown and described, various obvious changes may be made therein without departing from the spirit of the invention defined by the appended claims.

I claim:

1. A storm window comprising a window frame provided with a sash-receiving channel, a sash sliding substantially vertically in the channel, a slide carried by the sash, a spring urging the slide to move longitudinally toward and part way into the channel, the slide having a blade-receiving and blade-retaining longitudinal slot therein and between the sides and ends thereof, and means to lock the sash against downward movement and to permit upward movement of the sash when the slide is in the locking position thereof in the sash, said means comprising a blade passing loosely into the slot and having part thereof extending beyond one side of the slot and another part thereof extending beyond the opposite side of the slot, the blade being thinner than the width of the slot to permit the blade to rotate slightly within the slot, the blade having a terminal bevelled edge arranged to engage and wedge against an edge of the frame at all times under the action of the spring on the slide except when the bevelled edge is retracted and freed from the edge of the frame to permit downward movement of the sash.

2. The window of claim 1, the blade part on the interior side of the slot being of greater weight than the blade part on the exterior side of the slot whereby the blade is at an overbalanced tilted position in the slot in both the locking and unlocking positions of the locking means.

3. A storm window comprising a window frame provided with a sash-receiving channel, with a sash sliding in the channel and with a spring-pressed slide carried by the sash and urged toward and part way into the channel, the slide having a blade-receiving longitudinal slot therein, a blade passing loosely into the slot and having part thereof on one side of the slot and part on the other side of the slot, the blade being thinner than the width of the slot to permit the blade to rotate slightly within the slot, the blade having a bevelled end portion adapted to engage and wedge against an edge of the frame, the bevelled end portion of the blade being entirely on the interior side of the slot, the blade having an inwardly extending groove at the inner end of the bevelled portion defining a tongue at one end of the outside edge of the blade and exteriorly of the slot, and a second tongue at the other end of the outside edge of the blade, the tongues removably maintaining the blade in its loose position in the slot.

4. A storm window lock comprising a slide having a substantially rectangular longitudinal slot therein and in spaced relation to the sides and ends of the slide, and a blade of lesser thickness than the width of the slot passing loosely through the slot and having the greater and weightier part thereof on the interior side of the slot thereby to bias the blade toward a tilted position, means on the blade at the exterior side of the slot to retain the blade in the slot the blade having one end edge adapted frictionally to engage an upright continuous edge of a window frame and to lock the window sash carrying said lock against downward movement while permitting upward movement of the sash.

5. The window lock of claim 4, said blade part on the interior side of the slot extending longitudinally past one end of the slot, and the blade part on the exterior side of the slot extending longitudinally past both ends of the slot, said blade part constituting the blade retaining means.

6. A storm window installation comprising a window frame having an upright sash-receiving channel including a flange, a removable window sash slidable in the channel and means for locking the lower end portion of the sash to any point of the flange comprising a slide carried by said end portion of the sash for bodily longitudinal movement toward and from the flange and having a single longitudinal slot therein approximately along the middle line thereof, a spring carried by the sash and urging the slide toward the flange, and a blade of lesser thickness than the width of the slot passing through the slot and having the

greater part thereof on the interior side of the slot and having a bevelled end portion wedged against the flange in the normal extended position of the slide to lock the sash against downward movement relatively to the window frame and to permit upward movement of the sash in the extended position of the slide, the slide constituting the sole means for supporting the blade, the blade and the slide being movable longitudinally as a unit away from the flange and against the action of the spring.

7. The storm window installation of claim 6, the sash having a channel therein receiving and guiding the slide, said channel being open at the interior face of the sash for manual access to the slide, the blade being rotatable slightly in the slot and permitting upward movement of the sash in the frame without retraction of the slide, the blade preventing downward movement of the sash when the slide is released and is extended by the spring, the blade permitting downward movement of the sash only when the slide is retracted.

8. A storm window comprising

a window frame provided with a sash-receiving channel having an upright surface of the interior side of the frame and having

a continuous uninterrupted upright and relatively narrow locking edge extending from and substantially perpendicularly to said surface toward the exterior side of the frame,

a sash removably mounted for upward and downward movement in said channel, and

a spring-pressed locking means including

an elongated retractable blade carrier mounted on, and for movement transversely of, the lower part of the sash,

a permanently tilted relatively thin blade of substantially the same thickness as the width of the locking edge carried by the carrier and tiltable relatively to the carrier normally to engage a point of the locking edge forcibly, thereby to lock the sash automatically against downward movement in the channel, while permitting only upward movement of the sash during such engagement, said means being releasable manually against the spring pressure to retract said blade and carrier simultaneously from said edge thereby to permit downward movement of the sash until said blade and locking edge are automatically reengaged by the cessation of manual retracting force on the blade, the sash being removable from the channel on the retraction of said blade.

9. A storm window comprising

a window frame provided with a sash-receiving channel having an upright surface at the interior side of the frame and having

a continuous uninterrupted upright locking edge extending from said surface toward the exterior side of the frame,

a sash removably mounted for upward and downward movement in said channel, and

spring-pressed locking means including

a permanently tilted retractable blade carried by the lower part of the sash normally to engage a point of the locking edge forcibly, thereby to lock the sash automatically against downward movement in the channel, while permitting only upward movement of the sash during such engagement, said means being releasable manually against the spring pressure to retract said blade from said edge thereby to permit downward movement of the sash until said blade and locking edge are automatically reengaged by the cessation of manual retracting force on the blade, the sash being removable from the channel on the retraction of said blade,

the channel having a relatively thin flange on the interior side thereof,

said upright surface being planar and on the flange,

the continuous locking edge extending substantially through the thickness of said flange,

the sash having a surface on the interior side thereof coplanar with the interior surface of the flange,

means on the sash for guiding the locking means to move bodily in a straight line path toward and from and in a direction substantially perpendicular to the locking edge,

the locking means comprising a slide mounted in the guiding means of the sash and having

a longitudinal slot therein,

a spring urging the slide toward the locking edge, the blade having a part on the exterior side of the slot and another part on the interior side of the slot, and having

a bevelled edge extending between that end edge of the blade adjacent the locking edge and the interior side edge of the blade,

the blade straightening slightly but remaining tilted under the weight of the sash to increase the pressure of the bevelled edge of the blade on the locking edge when the manual retracting force exerted on the slide ceases.

References Cited in the file of this patent

UNITED STATES PATENTS

Re. 24,552	Flicker	Oct. 21, 1958
2,735,521	Amerding	Feb. 21, 1956