

PATENT REQUEST: CONVENTION PATENT

We, PLASTMO LTD., being the person identified below as the Applicant, request the grant of a patent to the person identified below as the Nominated Person, for an invention described in the accompanying standard complete specification

Full application details follow:-

Applicant: PLASTMO LTD.
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Nominated Person: PLASTMO LTD.
Address: 251 Summerlea Road
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Inventor Title: PIVOTING AND LOCKING DEVICE FOR A WINDOW OR DOOR SASH

Name(s) of actual Inventor(s): John Harbom and Allan Skjodt

Address for service in Australia: CALLINAN LAWRIE, 278 High Street, Kew 3101, Victoria, Australia

Attorney Code: CL

Convention Details

<u>Application Number</u>	<u>Country</u>	<u>Country Code</u>	<u>Date of Application</u>
680,875	U.S.A.	US	5 April, 1991

Drawing number recommended to accompany the abstract - Fig. 2

D A T E D this 2nd day of April, 1992.

PLASTMO LTD.

By their Patent Attorneys:

CALLINAN LAWRIE



02

NOTICE OF ENTITLEMENT

Insert name of
applicant

We PLASTMO LTD.

of, 251 Summerlea Road, Brampton, Ontario L6T 4T8, Canada

being the applicant in respect of Application No. 13985/92 state the following:-

Complete only for
non-PCT applications

The person(s) nominated for the grant of the patent:

~~(i) is/are the actual inventor(s)~~

(i) has entitlement from the actual inventor(s) by virtue of assignment

~~(ii) is/are the applicant(s) of the basic application(s)~~

(ii) has entitlement from the applicant(s) of the basic application(s) listed on the patent request form by virtue of assignment

Complete only for
PCT applications

~~The person(s) nominated for the grant of the patent:~~

~~(i) is/are the applicant(s) of the application(s) listed in the declaration under Article 8 of the PCT~~

~~(i) has entitlement from the inventor(s) and/or the applicant(s) of the application(s) listed in the declaration under Article 8 of the PCT by virtue of~~

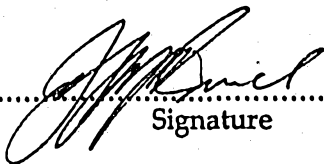
Complete for all
Convention cases

The basic application(s) listed:

(i) on the request form

~~(i) in the declaration made under Article 8 of the PCT~~

is/are the first application(s) made in a Convention country in respect of the invention.


.....
Signature

2 June 1992
.....
Date

Position held if
Corporate applicant PATENT ATTORNEY



AU9213985

(12) PATENT ABRIDGMENT (11) Document No. AU-B-13985/92
(19) AUSTRALIAN PATENT OFFICE (10) Acceptance No. 652701

(Modified Examination)

- (54) Title
PIVOTING AND LOCKING DEVICE FOR A WINDOW OR DOOR SASH
- International Patent Classification(s)
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- (57) Claim

8. A pivoting and lock engaging device for use with a window or door sash comprising: a slide block, pivoting means for interconnecting said slide block with a sash for pivoting sash away from planar alignment with a frame; a vertical opening through said slide block and spaced from said sash, with a lock engaging rod axially aligned therein, said lock engaging rod being spring biased within said opening whereby the leading end of said rod can be extended from the sliding block; a gripping tab at the opposite end of said rod for axially retracting the rod into the slide block; and a support pillar on said slide block for receiving said tab and retaining said axially retracted rod.

652701

AUSTRALIA
PATENTS ACT 1990

COMPLETE SPECIFICATION
FOR A STANDARD PATENT
ORIGINAL



TO BE COMPLETED BY APPLICANT

Name of Applicant: PLASTMO LTD.

Actual Inventor(s): John Harbom and Allan Skjodt

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Invention Title: "PIVOTING AND LOCKING DEVICE FOR A WINDOW OR DOOR SASH"

The following statement is a full description of this invention, including the best method of performing it known to me:-

BACKGROUND OF THE INVENTION

This invention relates to a pivoting and locking device for a slidable window or door. More particularly, it relates to a pivoting and locking device for retaining the sash of a horizontally slidably window or door in engagement with the frame while being pivoted out of planar alignment from the frame.

It is customary in vertically slidable window sash and frame construction that some means be provided for releasing the sash from the frame while maintaining one end of the sash secured. The sash can then be pivoted inwardly to permit washing of the outer surface of the window pane without creating a serious hazard.

In the case of horizontally slidable windows or doors, however, a sash that is disconnected from the frame and pivoted along one side may drop out of the top-track of the frame as the weight of the window or door sash may not then be fully supported in the vertical position. The applicant has created a device which is attachable at the trailing end of the sash, at the bottom and the top thereof, so that the sash can be pivoted inwardly from the frame and yet be secured in the frame at both the upper and lower end.

It is therefore an object of this invention to provide a pivoting and lock engaging device for securely retaining a horizontal sash in upwardly non-sagging position

when in pivoted outward disengagement from the frame.

It is an object of another aspect of this invention to provide a pivoting and lock engaging device for permitting a horizontally slidable window or door sash to be 5 pivoted out of planar alignment from the supporting frame.

SUMMARY OF THE INVENTION

These and other objects of the invention are achieved by means of a pivoting and lock engaging device for use in cooperation with the sash and frame of a horizontally

10 slidable window or door, said device comprising: a slide block slidably mounted within said frame; pivoting means interconnecting said slide block and sash for pivoting said sash away from planar alignment with said frame; ^{a vertical} ~~an~~ opening through said slide block and spaced from said sash,

15 ~~preferably a vertical opening,~~ with a lock engaging rod vertically or horizontally axially aligned therein, said lock engaging rod being spring biased within said opening whereby the leading end of said rod is engageable within a predetermined aperture located along said frame; ^{and} a gripping

20 tab at the opposite end of said rod for manually axially disengaging the rod from said aperture and a support ^{pinion} ~~pillar~~ on said slide block for receiving said tab and retaining said rod in such disengagement.

~~In a preferred embodiment, the pivoting means~~
~~25 interconnecting the slide block and sash includes a pinion~~
~~pivotaly seated in a hole formed through the slide block,~~

~~said pinion having a distal end with a peripheral recess~~
formed in the distal end and having a length such that the
peripheral recess in the distal end of the pinion extends
through the slide block, and locking means for removably
5 engaging said peripheral recess and abutting the slide
block whereby the pivoting means lockingly interconnects the
slide block to the sash.

The locking means preferably comprise a clip plate
having a bevelled slot formed therein for frictionally
10 engaging the pinion recess, and having a flange for abutment
~~against the sash.~~

BRIEF DESCRIPTION OF THE DRAWINGS

The pivoting and locking device of the invention will
now be described with reference to the accompanying
15 drawings, in which:

20 Figure 1 is a front elevation of a horizontally
slidable sash pivoted out of planar
alignment from a window frame of the prior
art with the sash further shown in broken
perspective outline when one pivot end
becomes disconnected;

25 Figure 2 is a partial front elevation of a window or
door sash and frame incorporating the
device of the present invention;

Figure 3 is an exploded perspective view of the
device of the present invention;



Figure 4 is a cross-sectional side elevation of the said device in locking engagement with the window or door frame;

5 Figure 5 is a cross sectional side elevation of the said device in locking disengagement with the window or door frame; and

Figure 6 is a cross-sectional perspective of a section of the window or door frame.

~~Figure 7 is an exploded perspective view of another~~
10 embodiment of the device of the present invention; and

Figure 8 is a transverse section through the slide block and window or door frame shown in
~~Figure 7.~~

15 DESCRIPTION OF THE PREFERRED EMBODIMENT

In Figure 1 a window 10 is shown consisting of a frame 12 with a window sash 14 horizontally slidable therein. The window sash¹⁴_Λ is capable of being released from the frame track at one end and pivoted inwardly on pivot
20 arms 16a and 16b so that the outside surface of the window pane can be easily cleaned. This is a conventional pivoting means for a window sash as used in the prior art.

As can be seen in broken outline of sash 14, the weight of the sash is not fully supported at its upper end
25 in this construction and pivot arm 16a is slidable out of the upper frame track (not shown). The entire sash can drop

out of the frame thereby breaking the window or injuring the cleaner.

This hazard is overcome by incorporating the device 100 of the present invention at the pivoting junction 5 between the sash and frame. Such a device is shown at the upper and lower corners of the trailing end of the window or door sash in Figure 2.

A detailed construction of the device is shown in Figure 3. This includes a slide block 102 having dimensions 10 contoured to fit within the bottom and top sliding track 134 of the frame shown in more detail in Figure 6. The upper surface of slide block 102 includes an arcuate indentation 104 with a cavity 106 located laterally of and offset from the center of block 102. A pivot hinge 108 mounted on sash 15 14 includes a mating pinion 110 for axial insertion into and rotation within cavity 106. Hinge 108 is secured to sash 14 by means of a vertical hinge plate 107 that is fixed to sash 14 by screws depicted by numeral 109. Pinion 110 is secured to and off-set laterally from the vertical hinge 20 plate 107 by rotor arm 114.

When pinion 110 is axially mounted within cavity 106, sash 14 may be pivoted with respect to slide block 102. Arcuate indentation 104 permits the swing of the rotor arm 114 during pivoting. It will be understood that hinge plate 25 107 is sufficiently spaced above arm 114 so that the sash rides above the upper surface of slide block 102 and is

allowed to pivot within the arc defined by the arcuate indentation 104. This pivoting construction allows sash 114 to pivot outward and away from the slide block and accompanying window frame without hinderance.

5 Slide block 102 includes a vertical opening 116 at one end of said block and spaced from the mounted sash. A pair of diametrically opposed arcuate ramps or pillars 118a and 118b are spaced apart on opposite sides of opening 116. These include upwardly rising top surfaces or ramp surfaces
10 120a and 120b respectively which are positioned in opposite elevation for purposes to be explained below. The pillars include retaining notches 122a and 122b at the upper ends of the respective ramps.

A lock engaging rod 124 is mounted within vertical
15 opening 116 and is axially slidable therewithin. Rod 124 includes a gripping tab 126 at the upper end and a retaining collar 128 fitted at the lower end to restrain compression spring 130 coaxially around the shaft of rod 124. The inner flange 129 of retaining collar 128 is secured by a snap-fit
20 into the retaining groove 132 of the rod.

The assembly of the various elements and their interaction is shown with particular reference to Figures 4 and 5. Figure 4 is an end cross-section showing sliding block 102 slidably mounted within track 134 of a window or
25 door frame 12. In Figure 4, the leading end of rod 124 is shown axially located in block opening 116 in the down

position where it is locked into a frame aperture 136 located at the base of track 134. In this position, the gripping tab 126 has been turned to be free of pillars 118 so that compression spring 130 biases the rod into the fully extended down position.

To effect release of rod 124 from aperture 136, the rod is drawn upwardly against the force of the compression spring 130 by rotation of gripping tab 126 on the rising ramps 120a and 120b respectively of pillars 118a and 118b.

10 The pillars hold the tab and attached rod out of aperture 136 so that slide block 102 is then allowed to freely slide within track 134. When rod 124 is thus held in the upright position, spring 130 is compressed and ready to direct the rod downwardly again should the gripping tabs be released.

15 In Figure 6, a cross-section of window or door frame 12 is shown containing an outer frame 12a and an inner frame 12b to provide mounting for slide blocks for outer and inner sashes respectively. Each of said outer and inner window or door frames include a track 134 with a series of one or more

20 frame apertures 136. The mounted window sashes are horizontally slid within the respective frames, carrying their attached pivoting and locking device along with them.

The engaging rod in each device is then manually released to slide downwardly into one of the predetermined apertures 136

25 along the travel path of the sash. The sash is thus held at the pivot point while it is otherwise released to pivot in

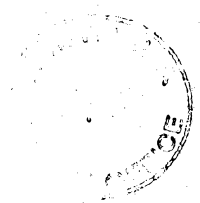
along the vertical axis of one side of the sash when the sash is released from the frame.

~~Although the description has proceeded with reference~~
to a vertical rod engagement between rod 124 and aperture
5 136, it will be understood that the rod can be horizontally
aligned to engage one or more apertures formed in the side
walls of the frame.

Figures 7 and 8 illustrate an embodiment of the
invention in which pivot hinge 208 mounted on a sash by
10 means of connectors such as screws (not shown) passing
through holes 209 has a pinion 210 for axial insertion
through and rotation within hole 206. Pinion 210 is
secured to and off-set laterally from the vertical hinge
plate 207 by rotor arm 214.

15 Pinion 210 is of sufficient length to pass through
hole 206 whereby distal end 216 having a peripheral recess
218 extends past surface 220 of slide block 222, as shown
more clearly in Figure 8. Clip plate 224 having a tapered
slot 226 with enlargement 228 has a width sufficient to
20 allow clip plate 224 to slide in guided travel between
opposed walls 230, 232 of slide block 222 to align slot 226
with pinion 210 whereby slot enlargement 228 receives pinion
recess 218 in a snap-fit relationship. Upstanding flange
234 abuts end 236 of slide block 222 and allows removal of
25 clip plate 224 by prying the clip plate away from the end
~~236 of the slide block 222.~~

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2
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2

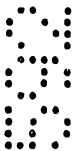


~~Clip plate 224 abuts against surface 220 of slide~~
block 222 to join the slide block to the window or door sash
and prevent accidental withdrawal of pinion 210 from the
slide block.

5 Slide block 222 preferably has bevelled sides 240,
242 for ease of insertion into the corners of door or window
frame 12.

The pivoting and locking device of the present
invention is mounted at the top and bottom corners of the
10 trailing end of a slidable window or door sash in the manner
shown more particularly in Figure 2. When the sash is
normally fitted into position on the frame, the respective
upper and lower lock engaging rods are normally held in
their retracted position with their axial springs compressed
15 in the manner shown in Figure 5. The gripping tab is held
in position on the opposed pillars to hold the leading end
of the rod out of contact with the window or door frame
track and any aperture that might be located in that area.

In the particular embodiment shown in Figure 3, the
20 opposed pillars 118a and 118b include upwardly rising ramps
120a and 120b respectively. When the rod is in the
retracted position of Figure 5, the bottom surfaces of the
ends of gripping tab 126 rest in retaining notches 122a and
122b. In such retracted position, the sash is freely
25 slidable within the window or door frame and carries the
sliding blocks of the devices along with it.



When a window, for example, is to be washed on its outer surface, the sash is slid along the frame to a point where the lock engaging rods 124 are released from the retaining notches 122 and rotated so that gripping tabs 126
5 slide down along the ramps allowing rods 124 to be extended axially into locking engagement with apertures 136, as viewed in Figure 4, as sash 14 continues to be slid along the frame to lock the window sash in place along its trailing side. The window sash is otherwise disengaged from
10 the frame in a conventional manner, at its other end, so that it swings inwardly to make the surface of the glass readily available for washing.

When washing has been completed, the sash is fitted back into the frame and the locking rods disconnected from
15 their respective apertures by rotating the gripping tabs in the opposite direction. This causes the engaging tabs to slide up the ramp surfaces of the opposed pillars until they contact the retaining notches at the upper end, as viewed in Figure 5, whereby rods 124 are retracted from engagement
20 with the frame so that the sash is once again freely slidable within the track of the frame.

It will be understood that various modifications can be made without departing from the essential features of the invention as particularly disclosed or from the scope of the
25 appended claims.

The claims defining the invention are as follows:-

1. A pivoting and lock engaging device for use in cooperation with the sash and frame of a horizontally slidable window or door, said device comprising:

- 5
- a) a slide block slidably mounted within said frame;
 - b) pivoting means interconnecting said slide block and sash for pivoting said sash away from planar alignment with said frame;
 - c) a vertical opening through said slide block and spaced from said sash, with a lock engaging rod axially aligned therein, said lock engaging rod being spring biased within said opening whereby the leading end of said rod is engagable within a predetermined aperture located along said frame; and
 - d) a gripping tab at the opposite end of said rod for retracting and axially disengaging the rod from said aperture and a support pillar on said slide block for receiving said tab and retaining said retracted rod in such disengagement.

10

2. A device as claimed in claim 1 wherein said support pillar comprises a pair of pillars on diametrically opposed sides of said slide block opening.

15

3. A device as claimed in claim 2 wherein each of said pillars has an upper surface of predetermined rising elevation whereby axial rotation of said gripping tab in one direction will cause the tab to ride up on said upper surface and thereby axially withdraw the rod within said opening, and axial rotation of said tab in the opposite direction will permit said rod to axially descend in said opening.

20

4. A device as claimed in claim 3 wherein each of said opposed pillars include a tab engaging surface at the upper end of said upper surface for retraining said tab and maintaining said rod retracted in disengagement within said opening.

5 5. A device as claimed in claim 4 wherein said pivoting means includes a pivot hinge comprising a pinion for engaging an opening on the upper surface of said slide block, said engaging opening being axially off-set on said slide block, a hinge plate secured to the sash, and a rotor arm joining said pinion and hinge plate whereby said sash is pivoted out and away from said frame when rotated on said pinion.

10

6. A device as claimed in claim 5 wherein said slide block has an arcuate indentation formed on the upper surface and said engaging opening is formed within the arcuate indentation whereby the rotor arm can swing within the arcuate indentation during pivoting of the sash.

15

7. A device as claimed in claim 5 wherein said lock engaging rod is spring biased within said opening by means of a compression spring mounted in said opening and axially aligned around said rod between the slide block and a retaining collar at the leading end thereof.

20

8. A pivoting and lock engaging device for use with a window or door sash comprising: a slide block, pivoting means for interconnecting said slide block with a sash for pivoting sash away from planar alignment with a frame; a vertical opening through said slide block and spaced from said sash, with a lock engaging

rod axially aligned therein, said lock engaging rod being spring biased within said opening whereby the leading end of said rod can be extended from the sliding block; a gripping tab at the opposite end of said rod for axially retracting the rod into the slide block; and a support pillar on said slide block for receiving said tab and retaining said axially retracted rod.

5

9. A device as claimed in claim 8 wherein said support pillar comprises a pair of pillars on diametrically opposed sides of said slide block opening.

10. A device as claimed in claim 9 wherein each of said pillars has an upper surface of predetermined rising elevation whereby axillary rotation of said gripping tab in one direction will cause the tab to ride up on said upper surface and thereby axially withdraw the rod within said opening, and rotation of said tab in the opposite direction will permit said rod to axially descend in said opening.

11. A device as claimed in claim 10 wherein each of said opposed pillars include a tab engaging surface at the upper end of said upper surface for retaining said tab and maintaining said rod axially retracted within said opening.

12. A device as claimed in claim 11 wherein said pivoting means includes a pivot hinge comprising a pinion for engaging an opening on the upper surface of said slide block, said engaging opening being axially off-set on said slide block, a hinge plate for securement to a sash, and a rotor arm joining said pinion and hinge plate.

20

13. A device as claimed in claim 12 wherein said slide block has an arcuate indentation formed on the upper surface and said engaging opening is formed

within the arcuate indentation whereby the rotor arm can swing within the arcuate indentation during pivoting thereof.

14. A device as claimed in claim 12 wherein said lock engaging rod is spring biased within said opening by means of a compression spring mounted in said opening and axially aligned around said rod between the slide block and a retaining collar at the leading end thereof.

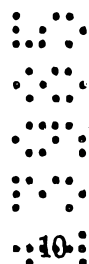
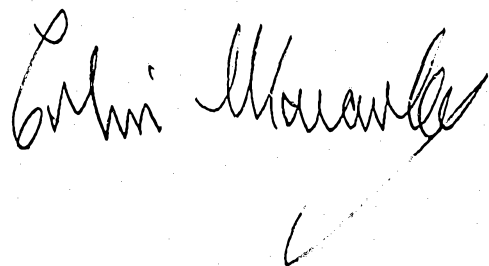
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D A T E D the 31st day of May, 1993.

PLASTMO LTD.

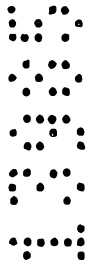
By their Patent Attorneys:

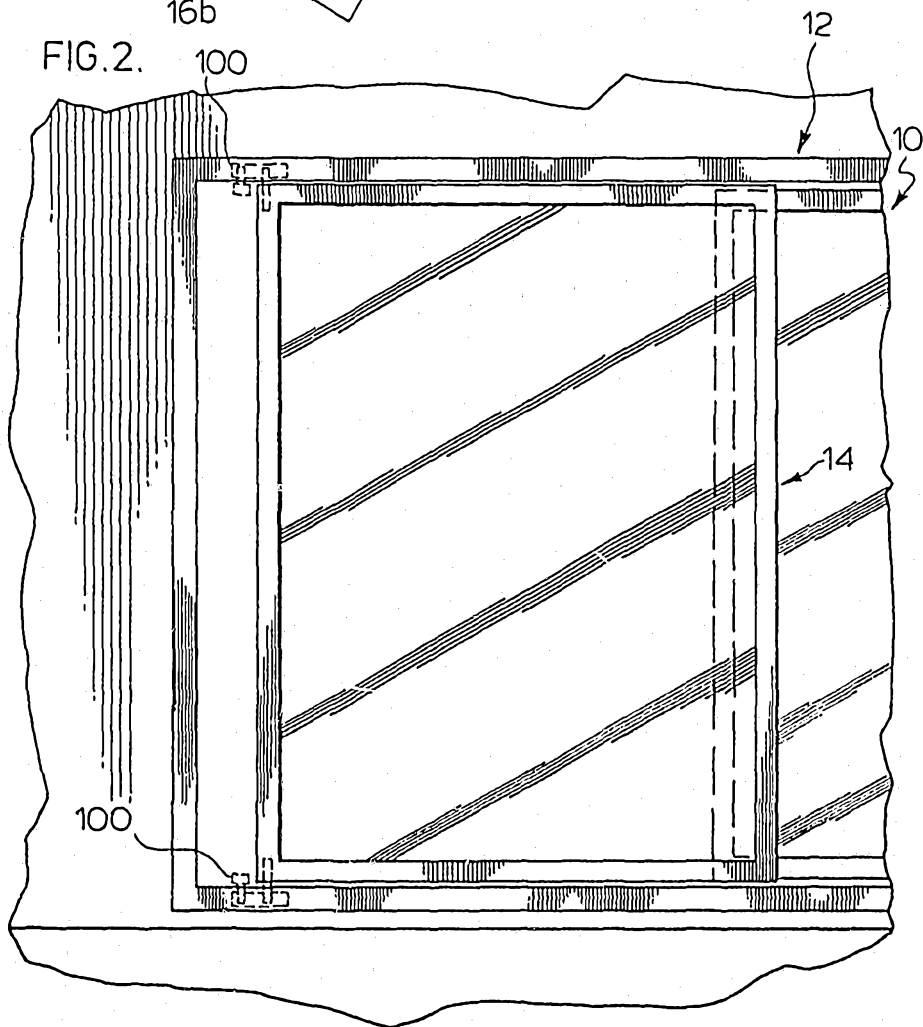
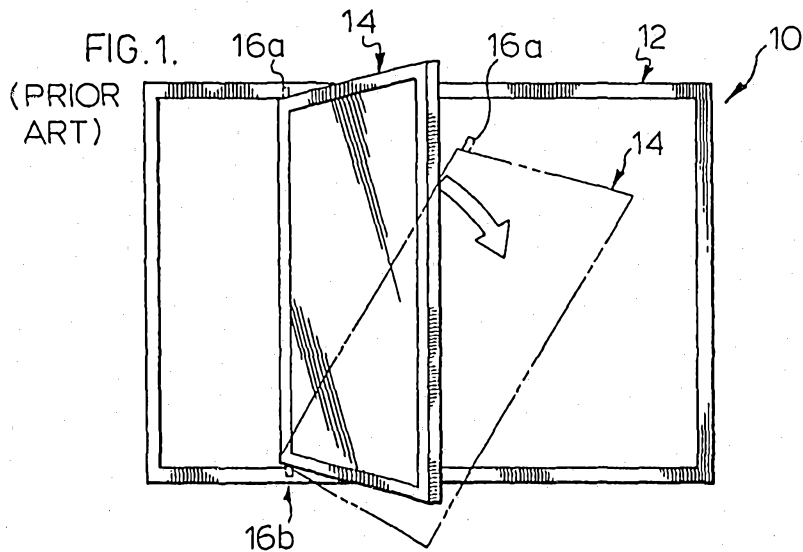
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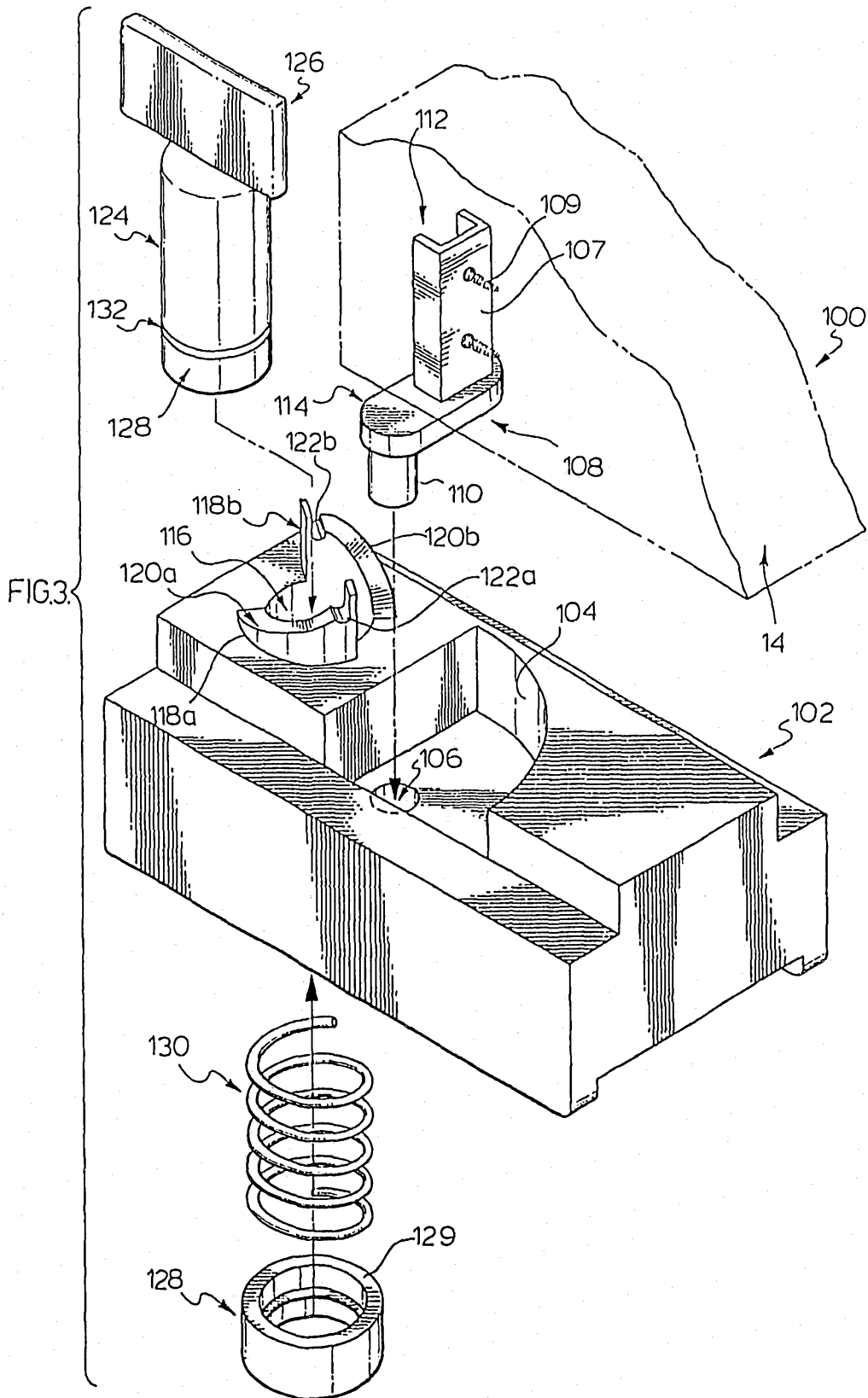


ABSTRACT

A pivoting and locking device for slidable window (14) or door sash for retaining the window (14) or door sash in engagement with the frame (12) when pivoted out of planar alignment with the frame (12). A slide block (102) slidably mounted within the frame (12) and pivotally connected to the sash (14) has means for selectively engaging apertures (136) formed in the frame (12) for locking one end of the sash (14) at top and bottom to the frame (12) while permitting the sash (14) to pivot from the frame (12).







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102
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FIG. 4.

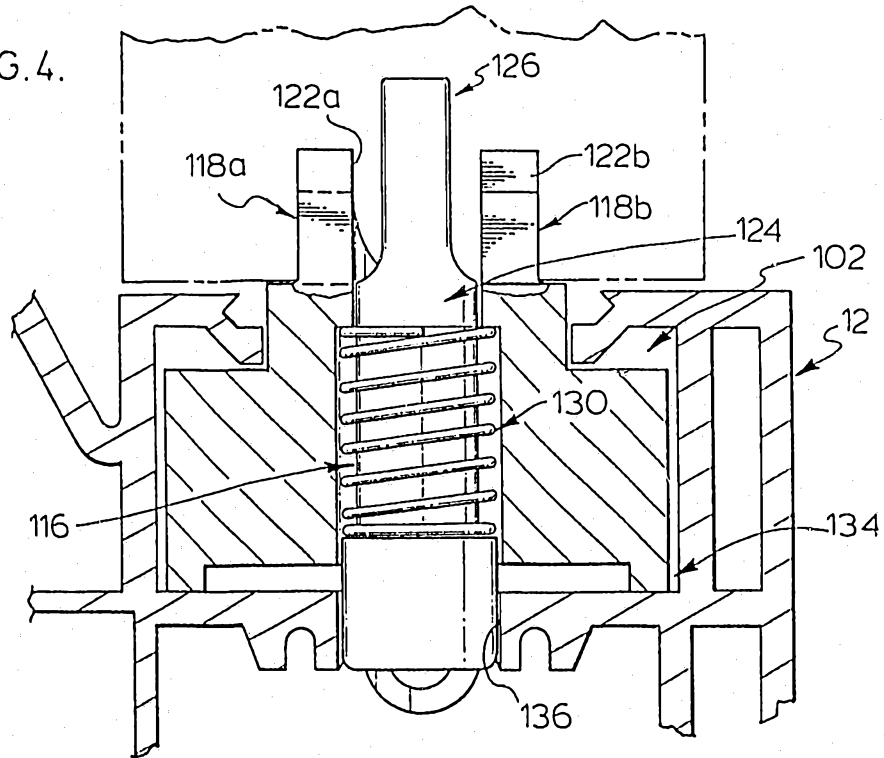
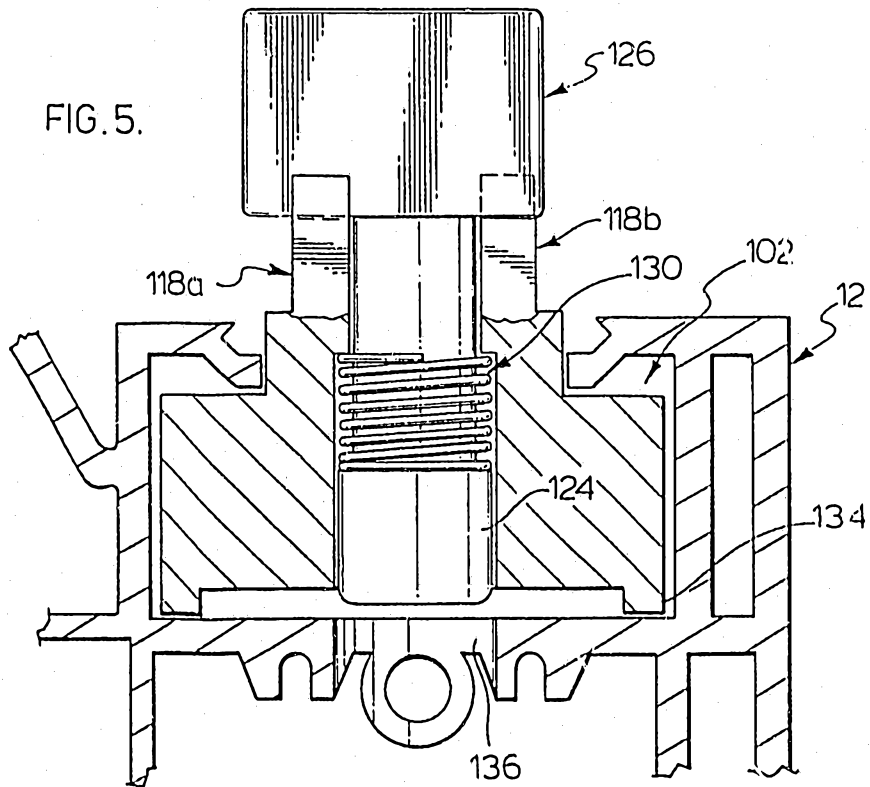
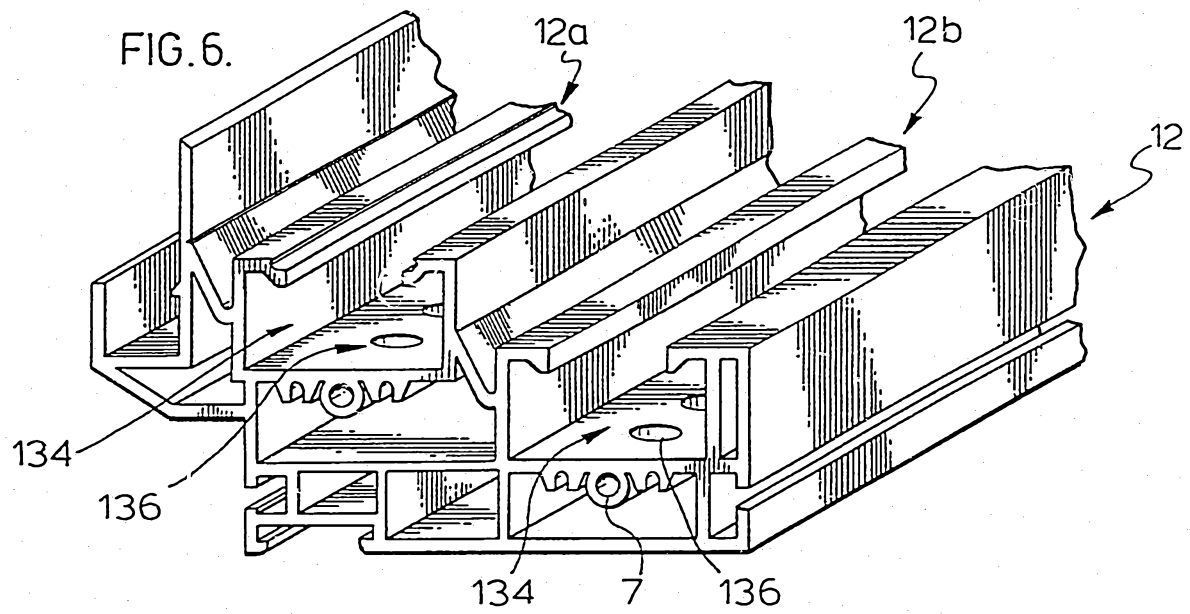


FIG. 5.



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