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U1S S1715

(56) Documents Cited
US 5356185 A **US 4073517 A**

(58) Field of Search
UK CL (Edition O) **E2A AARD APC**
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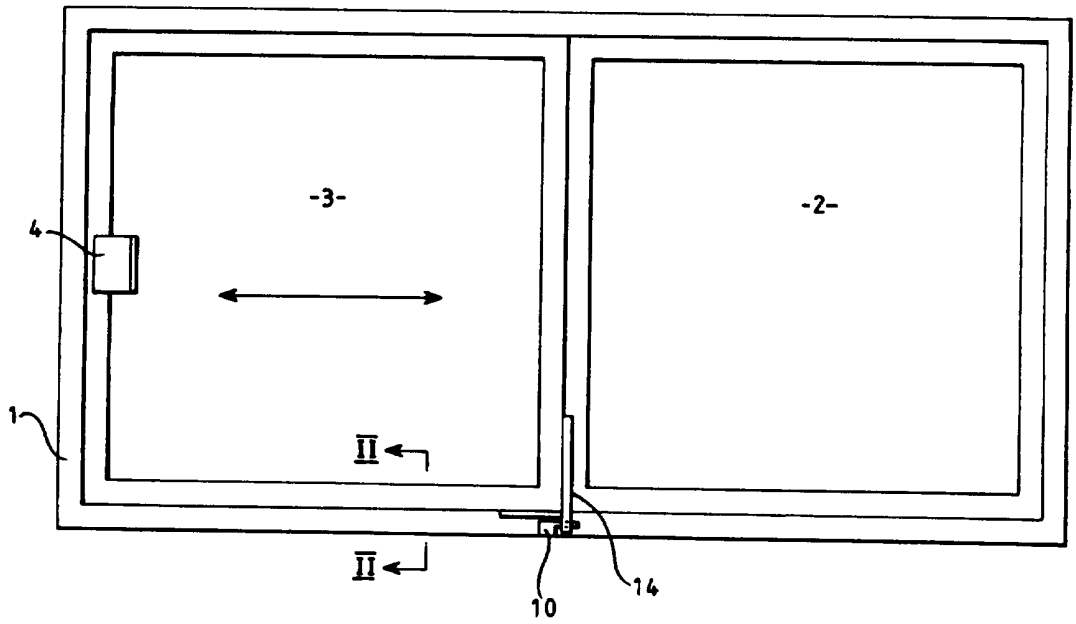
(54) Sliding door or window lock

(57) A locking device for a sliding door or window, 3 mounted in a frame, 1 comprises a locking projection 12 fixedly secured to the frame, 1 and a retaining device 14 having an opening, 33 which is engaged by the projection (12, fig 3) when the door or window 3 is closed. The retaining device, 14 comprises a locking member, 30 provided with means for fixing to the door or window, 3 and having the opening, 33 at a terminal end thereof, and a cover member, 40 mounted to said locking member, 30 for limited sliding movement. The cover member, 40 has a further opening or recess (43, fig 4) corresponding to the opening, 33 in the locking member, 30 and is also provided with an aperture (42, fig 4) such that the cover member, 40 is moveable relative to the locking member, 30, from a first position in which the aperture, 42 exposes the means for fixing the locking member, 30 to the door or window, 3 to a second position in which the opening, 33 and the further opening or recess (43, fig 4) are in registration and the means for fixing the locking member, 30 to the door or window, 3 is concealed by the cover member, 40.

FIG 1



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

The claims were filed later than the filing date within the period prescribed by Rule 25(1) of the Patents Rules 1995

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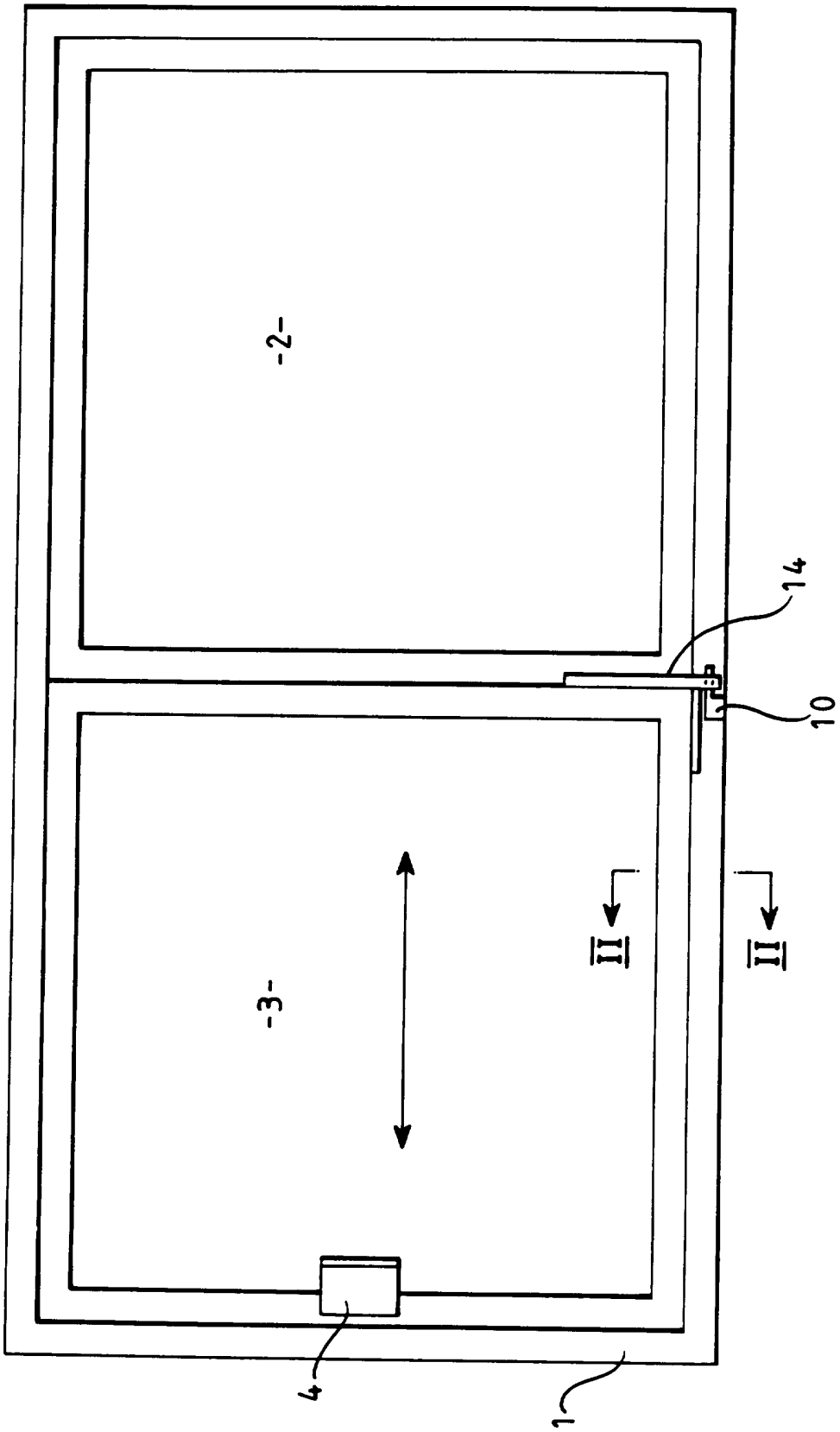
FIG 1



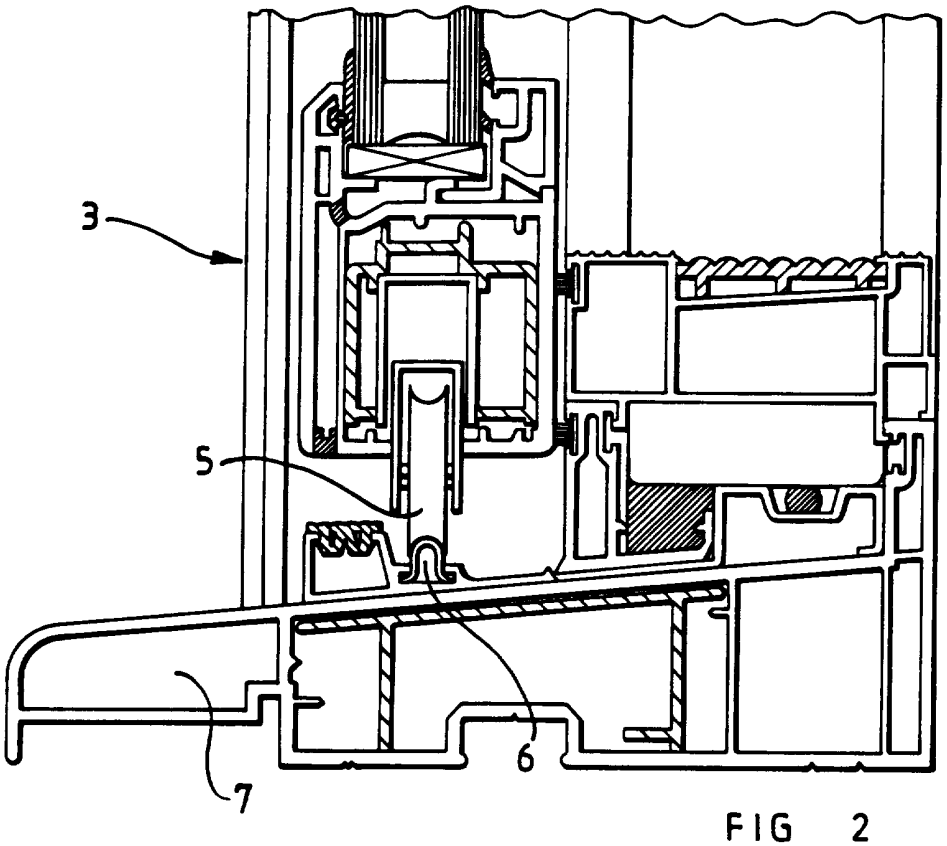


FIG 2

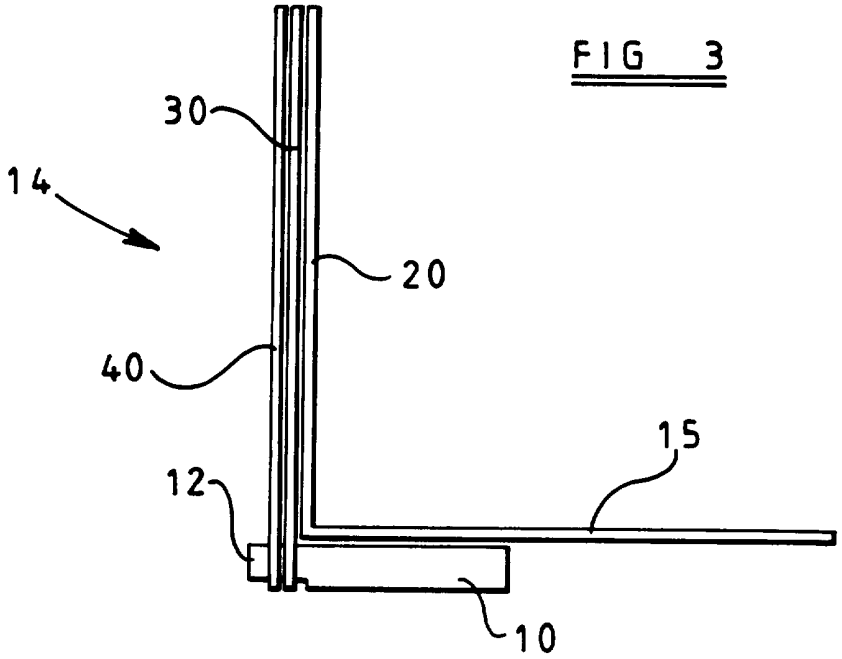


FIG 3

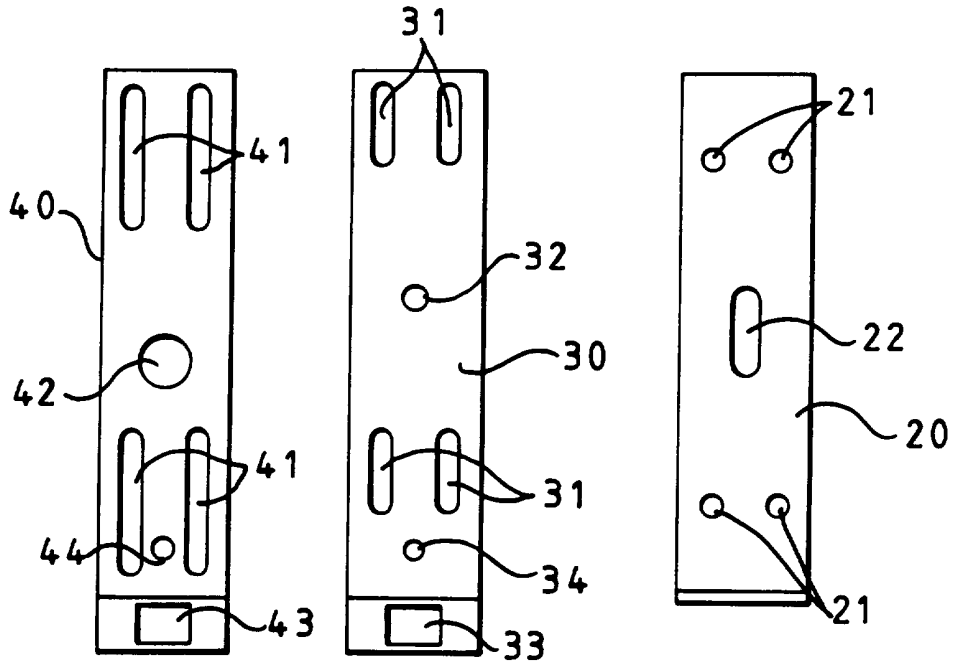


FIG 4

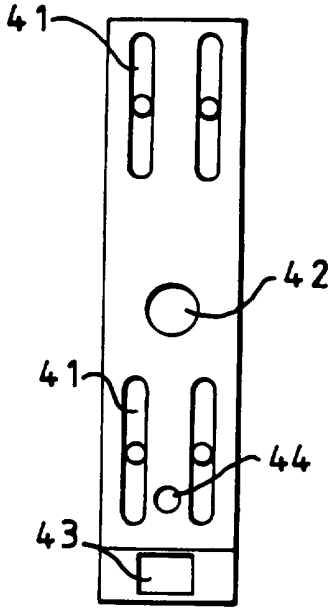


FIG 5

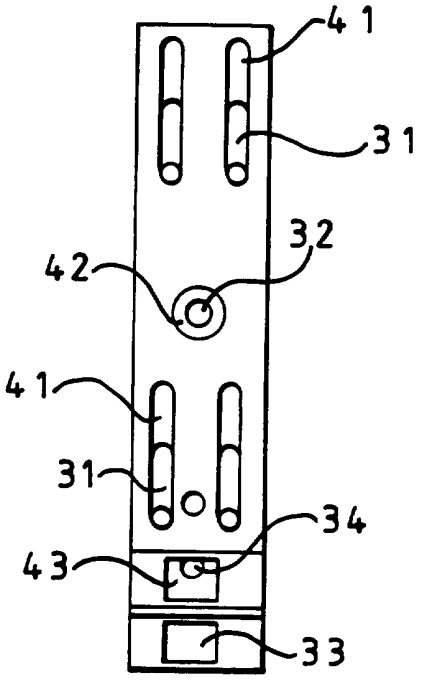


FIG 6

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Title: Improvements Relating to the Security of Doors and Windows

This invention relates to improvements in security for sliding doors and windows, and in particular to an improved locking device useful on sliding patio doors.

Patio doors conventionally comprise a pair of fully glazed panels, one of which is fixedly mounted and the other of which slides between opened and closed positions. Such doors are notoriously weak points in the security of buildings, eg residential properties, in which they are installed. Improvements have been made to the locking systems fitted to the sliding panel at the edge which engages the door frame when the door is closed. However, security may nonetheless be compromised due to the possibility of the door being lifted off the track on which it slides, at the opposite side of the sliding panel, which is referred to in the following as the "free edge" of the sliding panel.

There has now been devised a locking device for a sliding door or window which improves the security of the door or window.

According to the invention, there is provided a locking device for a sliding door or window mounted in a frame, the locking device comprising a locking projection fixedly secured to said frame adjacent the free edge of said door or window and a retaining device extending from said free edge and having an opening which is engaged by said projection when said door or window is closed, wherein said retaining device comprises a locking member provided with means for fixing to said free edge of said door or window and having said opening at a terminal end thereof, and a cover member mounted to said locking member for limited sliding movement relative thereto, said cover member having at a terminal portion thereof a further opening or recess corresponding to the opening in the locking member and also being provided with an aperture such that the cover member is moveable relative to the locking member from a first position in which the aperture exposes the means for fixing the locking member to said door or window to a second position in which the opening and the further opening or recess are in registration and the means for fixing the locking member to the door or window is concealed by the cover member.

The locking device according to the invention is advantageous primarily in that it provides added security at the free edge of the sliding door or window, thereby preventing the door or window being lifted out of the frame. Because the means by which the locking member is fixed to the door or window is concealed, in normal use, by the cover member, it is difficult or impossible to remove the locking device from the door or window. When the window is closed, the projection engages in both the opening and the further opening or recess, thereby preventing the cover member being moved relative to the locking member, and thereby preventing the fixing means becoming exposed.

Preferably, the locking member and the cover member are slidably mounted to a base member. The base member, locking member and cover member are preferably held together by fasteners, eg rivets, passing through suitably formed apertures. To permit limited sliding movement of the locking member and the cover member, the apertures in those components are preferably longitudinal slots. The slots in the cover member will generally be greater in length, eg twice the length, than those in the locking member.

The base member is conveniently formed as an upstanding limb of an L-shaped bracket, the other limb of which may be provided with fixing holes for fixing to the door or window.

The base member, locking member and cover member are conveniently formed of mild steel.

The locking projection is conveniently formed integrally with a block of mild steel which is fixed, eg by screws, to the frame.

The invention will now be described in greater detail, by way of illustration only, with reference to the accompanying drawings, in which

Figure 1 is a schematic view of a patio door fitted with a locking device according to the invention;

Figure 2 is a sectional view along the line II-II in Figure 1;

Figure 3 is a side view of the locking device according to the invention;

Figure 4 is an exploded front view of three plates forming part of the locking device according to the invention;

Figure 5 shows a front view of the three plates in their final, fitted arrangement; and

Figure 6 is a front view of the three plates in an intermediate arrangement adopted during fitting of the locking device.

Referring first to Figure 1, a patio door comprises a frame (1) within which are mounted a fixed glazed panel (2) and a sliding glazed panel (3). The sliding panel (3) can be moved by means of a handle (4) from an open position, in which the edge of the sliding panel (3) carrying the handle (4) is spaced from the adjacent edge of the frame (1), to the closed position shown in Figure 1, in which the edge of the sliding panel (3) carrying the handle (4) engages the adjacent edge of the frame (1). The sliding panel (3) is fitted with a generally conventional lock (not shown).

As shown in Figure 2, the sliding panel (3) slides on rollers (5), which are rotatably mounted at the underside of the sliding panel (3), along a track (6) which extends along a sill (7) forming part of the frame (1).

A locking block (10) having a horizontally extending pin (12) formed integrally therewith is fixedly secured to the sill (7), eg by screws, inwardly of the track (6) and adjacent the free edge of the sliding panel (3) when the latter is in the closed position. In use, the pin (12) engages a retaining device (14) fitted to the corner of the sliding panel (3). As shown in Figure 3, the retaining device (14) comprises an L-shaped base member (15), the upstanding limb of which constitutes a base plate (20) to which are secured a locking plate (30) and a cover plate (40). The base plate (20), locking plate (30) and cover plate (40) are secured together by means of four rivets (for clarity, the rivets are omitted from all the Figures). As can be seen from Figure 4, the rivets pass through respective fixing holes (21) in the base plate (20), first longitudinal slots (31)

in the locking plate (30) and second longitudinal slots (41) in the cover plate (40). The base plate (20), locking plate (30) and cover plate (40) are held together by the rivets sufficiently closely as to retain their mutual disposition under the influence of friction, but not so tightly as to prevent the locking plate (30) and cover plate (40) being slid relative to the base plate (20) and/or each other by the application of manual force. The extent to which the locking plate (30) may move relative to the base plate (20) is limited by the length of the first longitudinal slots (31). Similarly, movement of the cover plate (40) relative to the base plate (20) is limited by the second longitudinal slots (41), the second longitudinal slots (41) being double the length of the first longitudinal slots (31).

The base plate (20) has a generally central fixing slot (22) of equal length to the first longitudinal slots (31) in the locking plate (30). The locking plate (30) has a fixing bore (32) which is in registration with the fixing slot (22) irrespective of the position of the locking plate (30) with respect to the base plate (20). The cover plate (40) has a generally central circular opening (42) which, by appropriate sliding movement of the cover plate (40), can be brought into registration with the fixing bore (32).

The locking plate (30) and the cover plate (40) have corresponding threaded bores (34,44 respectively) by which they may be fastened together.

Both the locking plate (30) and the cover plate (40) are longer than the base plate (20) and are provided at their lower ends with corresponding rectangular openings (33,43) which are dimensioned to receive the pin (12).

In use, the retaining device (14) is fixed to the lower corner of the free edge of the sliding panel (3) by means of screws passing through the horizontal limb of the retaining device (14). The block (10) is fixed to the sill (7) and, after installation of the sliding panel (3) in the frame (1), the sliding panel (3) is moved to the closed position. The positions of the locking plate (30) and cover plate (40) relative to the base plate (20) are adjusted until the pin (10) engages the rectangular openings (33,43). In this condition, the relative positions of the base plate (20), locking plate (30) and cover plate (40) are as shown in Figure 5. The sliding panel (3) is then

moved from the closed position slightly, to disengage the pin (10) from the rectangular openings (33,43). The cover plate (40) is then raised relative to the locking plate (30) and base plate (20), to the position shown in Figure 6. In this position, the circular opening (42) is aligned with the fixing bore (32). A suitable fastener, eg a screw, is introduced through the fixing bore (32) and fixing slot (22) and engaged with the frame of the sliding panel (3). This fixes the position of the locking plate (30) relative to the base plate (20) and hence relative to the sliding panel (3). The cover plate (40) is then slid downwards until the rectangular opening (43) in the cover plate (40) comes into registration with the rectangular opening (33) in the locking plate (30), ie the cover plate (40) is returned to the position shown in Figure 5. In this position, the fastener which was introduced through the fixing bore (32) is concealed by the cover plate (40). Finally, a grub screw is engaged with the threaded bore (44) in the cover plate (40) and the threaded bore (34) in the locking plate (30). This prevents further movement of the cover plate (40) relative to the locking plate (30).

When the sliding panel (3) is now moved to the closed position, the pin (12) engages in the rectangular opening (33,43) and prevents the sliding panel (3) being lifted off the track (6). Since the fastener is concealed by the cover plate (40), it is difficult or impossible to release the locking bracket (14) from the pin (12). Even if the grub screw is removed from the threaded bores (34,44), the cover plate (40) cannot be moved since it is retained by the pin (12).

Claims

1. A locking device for a sliding door or window mounted in a frame, the locking device comprising a locking projection fixedly secured to said frame adjacent the free edge of said door or window and a retaining device extending from said free edge and having an opening which is engaged by said projection when said door or window is closed, wherein said retaining device comprises a locking member provided with means for fixing to said free edge of said door or window and having said opening at a terminal end thereof, and a cover member mounted to said locking member for limited sliding movement relative thereto, said cover member having at a terminal portion thereof a further opening or recess corresponding to the opening in the locking member and also being provided with an aperture such that the cover member is moveable relative to the locking member from a first position in which the aperture exposes the means for fixing the locking member to said door or window to a second position in which the opening and the further opening or recess are in registration and the means for fixing the locking member to the door or window is concealed by the cover member.

2. A locking device as claimed in claim 1, wherein the locking member and the cover member are slidably mounted to a base member.

3. A locking device as claimed in claim 1 or claim 2, wherein base member, locking member and cover member are held together by fasteners passing through suitably formed apertures.

4. A locking device as claimed in claim 3, wherein the apertures in the locking member and the cover member are longitudinal slots.

5. A locking device as claimed in claim 4, wherein slots in the cover member are twice the length of those in the locking member.

6. A locking device as claimed in any preceding claim, wherein the base member is formed as an upstanding limb of an L-shaped bracket.

7. A locking device as claimed in any preceding claim, wherein base member, locking member and cover member are formed of mild steel.

8. A locking device as claimed in any preceding claim, wherein the locking projection is formed integrally with a block of mild steel which is fixed to the frame.

9. A sliding door or window fitted with a locking device as claimed in any preceding claim.

10. A locking device substantially as hereinbefore described and as illustrated in the accompanying Figures.

The Patent Office

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Application No: GB 9526268.9
Claims searched: All

Examiner: A Angele
Date of search: 21 January 1997

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.O): E2A(APC, AARD)

Int Cl (Ed.6): E05C-019/00, 021/02; E05B-065/08; E05B-003/46, -007/28

Other:

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
A	US 5356185 A R S CAMERON	
A	US 4073517 A M W BILLS	
	See whole document unless otherwise indicated.	

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.