

(12) UK Patent Application (19) GB (11) 2 272 725 (13) A

(43) Date of A Publication 25.05.1994

(21) Application No 9310935.3
(22) Date of Filing 27.05.1993
(30) Priority Data
(31) 978900 (32) 19.11.1992 (33) US

(51) INT CL⁵
E05C 3/12
(52) UK CL (Edition M)
E2A ACAQ A106 A162 A420 A421
(56) Documents Cited
GB 0819815 A GB 0642575 A GB 0622450 A
GB 0495155 A EP 0341174 A1 US 5028082 A
(58) Field of Search
UK CL (Edition L) E2A AAR ACAQ ACAR
INT CL⁵ E05B , E05C

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(54) A slam latch

(57) A slam latch for securing a slideable window or door to a corresponding frame consists of a housing 4, a catch assembly 8 and a keeper assembly 3 wherein the catch assembly 8 is spring biased downward against the base plate of the housing 6 so as to become operatively engaged with the keeper means attached to the frame when the door or window is moved to a closed position causing the catch 8 and keeper 3 to become in juxtaposition to one another.

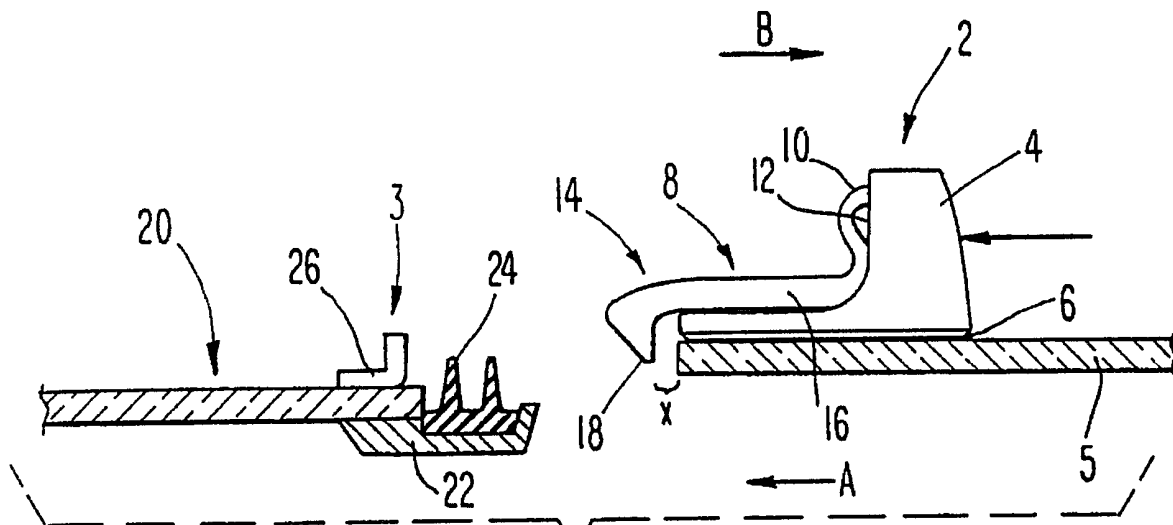


Fig. 2

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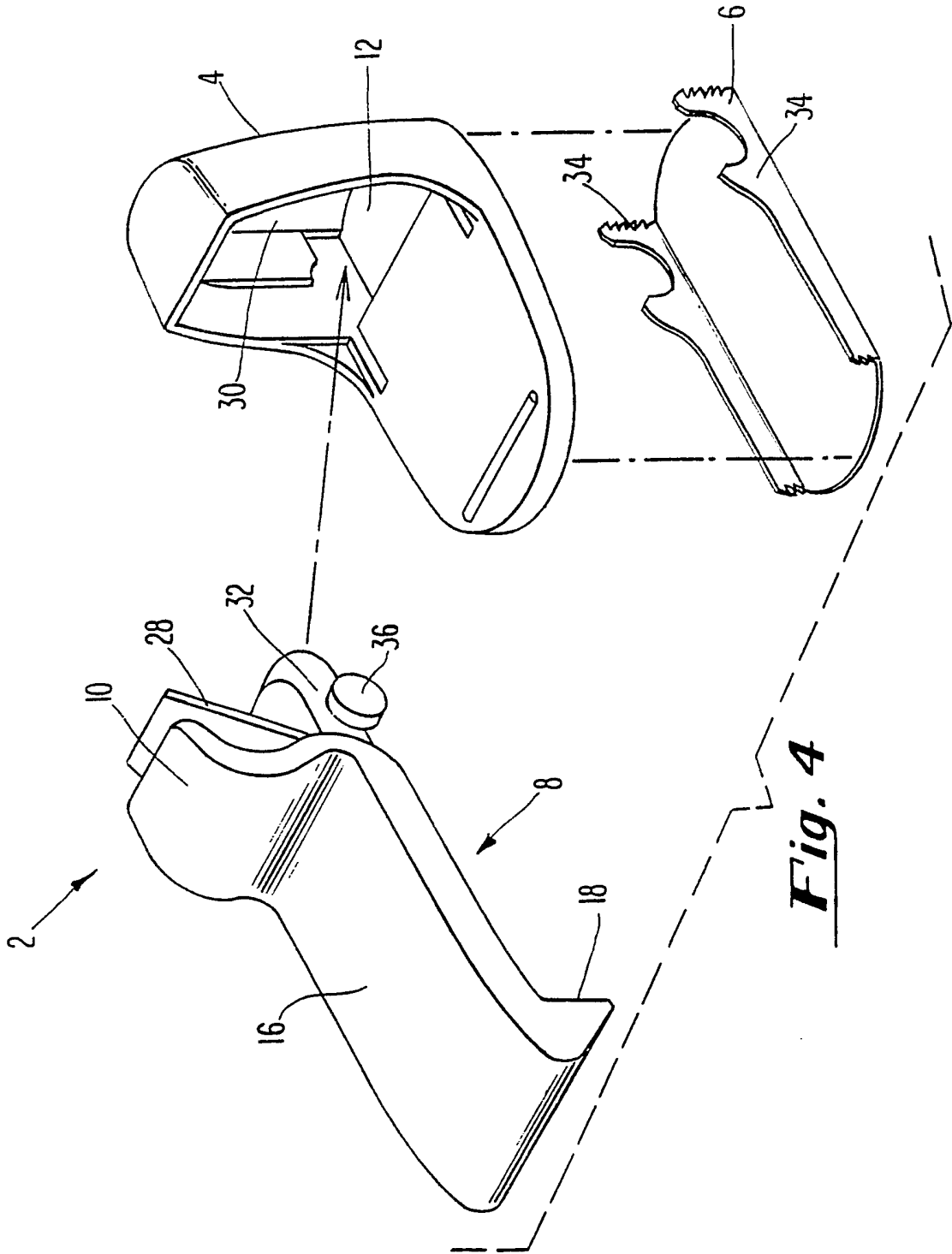
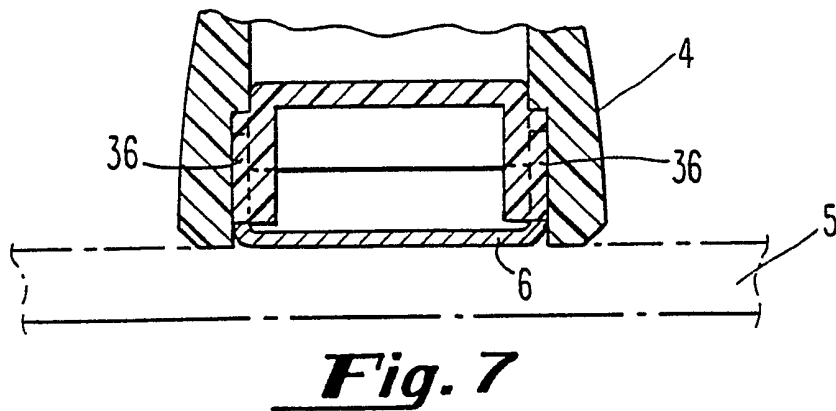
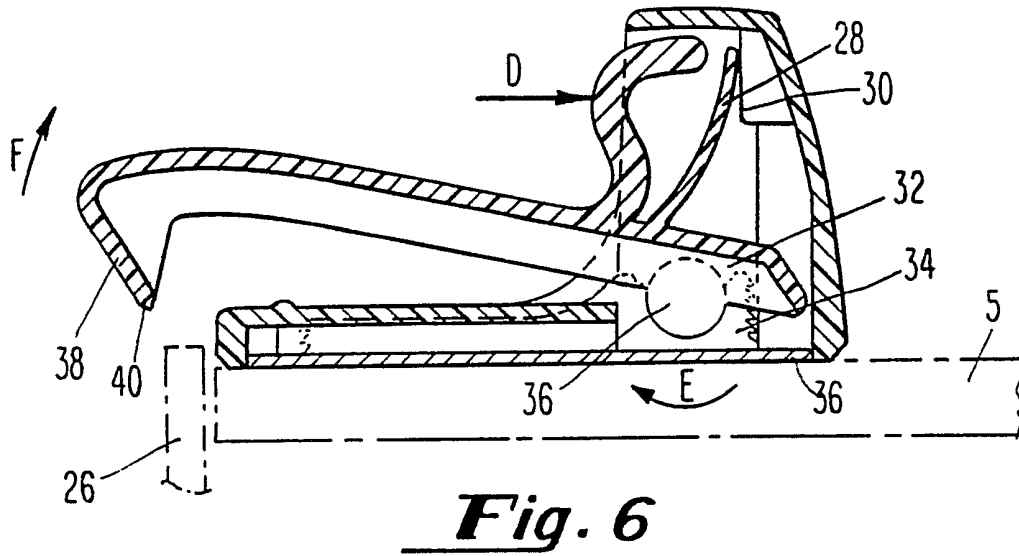
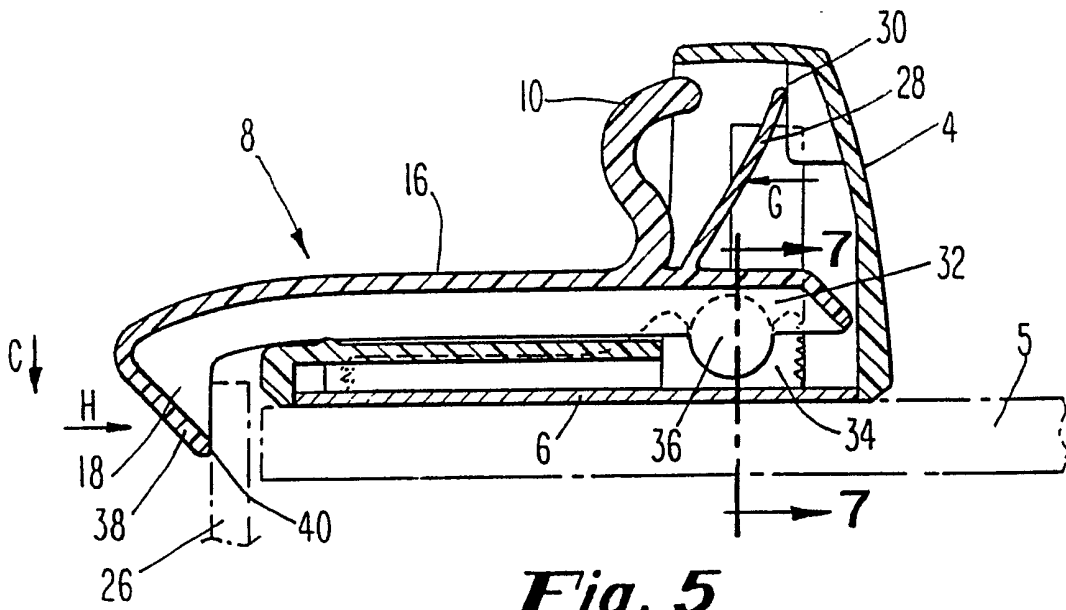


Fig. 4



Slam Latch

Background of the Invention

Latches for windows, doors and the like are well known and are generally comprised of a catch fixed to the door or window and movably engageable with the panel or frame of the portal in question. The catch is engageable with a keeper that is attached to the other panel/frame of the portal depending on the arrangement and will so engage when the portal is in the closed position. Metal latches on window frames are perhaps the most familiar latches whereby the catch pivots or swings about a post in a base secured to one of the window frames. The catch slides under and engages the keeper which is generally comprised of a metal flange secured to the other frame when the catch and keeper are in juxtaposition to one another. As such, the window is closed and locked. Turning the catch in the opposite direction unlocks the window and allows its opening.

Latches may also be comprised of a catch that is biased by a spring or other means that actuates the catch in a generally lock-wise direction with respect to the keeper. This allows for the automatic engagement of catch and keeper when the window or door is forcefully closed. There is no need for manual manipulation of the catch into the flange of the keeper.

The present invention is a novel latch whose catch is biased in this manner so that when applied to sliding doors or windows, the catch automatically engages the keeper when the door/window is slideably closed. The present invention also comprises a latch that is easibly opened through the application of

manual pressure at a point on the catch that pivotally forces it in a direction opposite to that of its bias thereby disengaging it from its locked position with the keeper so as to allow the door/frame to be
5 slideably opened.

United States Patent No. 3,918,754 to Isbister shows a plastics fastener for use in an automobile glove box whereby the latch unit is formed as a one-piece resiliently flexible plastics material
10 comprising two body portions that are hinged to one another and which are further hinged to a latch and button respectively. Manual actuation of the button moves the catch from an operative, keeper engaging position to an inoperative, keeper-disengaged
15 position. This enables the glove box door to open accordingly.

United States Patent 3,841,674 to Bisbing discloses a sliding-action slam latch for securing a door panel in closed position. The slam latch is of
20 one-piece construction and is installed in a single opening in the door panel and is self retained therein. The latch operates by a spring biased sliding action to engage the door frame or stricker plate. In one embodiment of the invention, the spring
25 bias is provided by the resilience inherent in the plastic material from which the latch is made.

Finally, U.S.S.N. 07/763,321 filed on Sept. 20, 1991 also discloses a slam latch for a sliding or hinged
30 cabinet door that is comprised of side and rear walls from which extends a flexible lower plate having a catch. The latch mounts in an aperture positioned so that the flexible lower plate extends beyond the edge of

the door and over the edge of an adjacent panel to secure the two together.

The slam action principle disclosed in the above references is well known in the art and is embodied in a number of designs which usually incorporate a housing that encloses several components, one of which is a sliding bolt or pivoting spring biased catch. The general characteristic of these slam latches is the actuation of the latch to secure the door or window by cooperation with a door-frame-mounted striker plate when the door or window is pushed or slammed shut. In order to open the door/window secured with such a latch, a finger or pawl is provided for the manual exertion of force against the spring bias which disengages the catch from the striker plate.

The present invention is a novel slam latch for use in sliding glass doors that is of simplistic design and manufacture. The novel slam latch of the present invention is easy to operate and has eliminated the need for a pinned, biased connection between the catch and housing. Simple exertion of lateral pressure against the resilient portion of the latch is then translated into outward movement of the catch element itself, thereby disengaging it from the keeper unit. The slam latches of the present invention are particularly useful in sliding windows of automobiles and vans.

Summary of the Invention

The present invention is a simple, easy to use slam-latch for use on sliding doors or windows wherein a plate serves as the attachment base for the latch to the door/window and also serves as the pivot and retainer for the catch, thereby eliminating the need for a pinned

connection between the catch and housing. The construction and design of the slam latch also transfers any force applied against the door or glass (such as attempts at forced entry) directly from the attachment plate to the catch, rather than from the plate through the housing to the catch. The slam latch also includes a spring mechanism that is integral with the catch so as to bias it in a keeper-engaging direction and therefore does not require a separate spring for this purpose.

10 Brief Description of the Drawings

Fig. 1 is a top view of the entire slam latch assembly in operative relationship with an open door/window.

15 Fig. 2 is a lateral side view of the same assembly taken from a perspective of lines 2-2 in Fig. 1.

Fig. 3 is a lateral side view of the same assembly set forth in Fig. 2 with the door/window in a closed and locked position.

20 Fig. 4 is an exploded schematic of the catch assembly showing its three operative parts - catch, base and housing.

Fig. 5 is an exposed cross-sectional side view of the catch assembly of the present invention in closed and locked position.

25 Fig. 6 is an exposed cross-sectional side view of the catch assembly when force is exerted to open it.

Fig. 7 is a partial cross-sectional view taken along lines 7-7 of Fig. 5.

Detailed Description of the Invention

30 Referring now to Fig. 1, the entire slam latch assembly of the present invention is shown in operative relationship with a sliding door or window to which it

is attached. The catch assembly (2) is secured to the glass of the door or window using any suitable adhesive and is aligned with the keeper element (3) which is attached to the surrounding frame. The components may
5 be made out of metal or plastic although plastic is the preferred embodiment. Movement of the door/window as denoted by arrow A which closes same brings the catch assembly (2) into close proximity with the keeper (3) until they become operatively joined in a locked or
10 secured position as will be examined more fully below.

Referring now to Fig. 2, the catch assembly (2) of the present invention is shown from a side view as it appears attached to a sliding glass window or door (5). The catch assembly (2) consists of a housing (4) which
15 is attached by a base plate (6) directly to the glass or panel surface and the catch (8) itself which is one piece construction comprised of essentially four operative components. A spring biasing means (not shown) operates within the housing as will be more fully
20 described below. A button section (10), integral and operatively associated with said spring means, protrudes from the housing aperture (12) and is actuated by the application of force in the direction of arrow B.

The catch (8) extends from the button (10) by a
25 tongue section (16) and ends in a pointed lip (18) that actually engages the keeper (3) and secures the door/window in a locked position. The lip (18) hangs down from the tongue section (16) and is separated from the base of the housing (6) a sufficient distance (x) to
30 enable engagement with the keeper element.

The fixed keeper portion (3) of the slam latch of the present invention is also shown in Fig. 2. The keeper assembly (3) consists of the glass window or door

panel (20) the frame (22), a U-shaped rubber gasket (24) and the L-shaped keeper (26). As will be described in greater detail and briefly described in Fig. 1, movement of the sliding door or window for purposes of closing it (arrow A) forces the tapered lip (18) over the U-shaped rubber gasket (24) and into a mechanically coupled engagement with the keeper assembly (3) securing and locking the window/door (5) to the frame (22) as shown in Figure 3.

10 Figure 4 shows the catch assembly (2) in an exploded perspective comprising the three unit elements, namely the housing (4), the catch (8) and the base plate (6). As shown by the arrows, the catch (8) fits into the aperture of the housing (12) so that the spring means (28) abuts with and is flush against the inside of the rear wall (30) of the housing (4). Integral with the spring means (28) is a pivot (32) which movably engages a U-shaped journal (34) of the base plate (6) by a pin or roller member (36). Assembled, the abutment of the spring means (28) against the inside of rear wall (30) provides a point of tension against which the spring means (28) can bias about the pivot (32) and journal (34).

25 Figure 5 show a cross-sectional lateral view of the catch assembly (2) with the elements of Fig. 4 in assembled relationship to one another. The catch (8) is contained within housing (4) which is attached to the door or window (5) by the base plate (6). The catch (8) is secured to the housing assembly (4) by the pivot (32) which is movably connected or inserted into the U-shaped journal (34).

30 When the catch assembly (2) and keeper unit (3) are in juxtaposition and operatively joined to one another

such that the door or window is closed as shown in Fig. 5, the spring means (28) which comprises a flange or lever is in abutment with the rear wall of the housing (4). This point of contact provides the spring with a reference to which it can bias the tongue (16) and lip (18) downward towards the plane created by the surface of the window or door. (arrow C). The force exerted by the bias of the spring means (28) retains the catch (8) in the secured or locked position when the catch assembly (2) and keeper assembly (3) are in close proximity and engaging relationship with one another whereby the door or window is closed. The same bias maintains the catch (8) parallel with the surface of the window/door (5) when the catch and keeper assemblies are not so engaged. This allows for the slam-latch function of the device as will be hereinafter described.

Figure 6 is a cross-sectional lateral view of the present invention as shown in Fig. 5 with force (arrow D) being applied to the button (10) so that the catch assembly (2) is releaseably opened from the keeper assembly (3) allowing for the opening of the window or door in question. As can be seen from the drawing, force applied against the button using ones thumb or fore-finger results in a pivoting action of the catch (8) about the U-shaped journal (34) in a clockwise direction (arrow E) afforded by the operative connection of the pin (36) portion of the pivot (32) to the journal (34) in the base (6). Manual pressure against the button (10) must be strong enough to over-come the bias of the spring forcing the catch (8) downward (arrow C, Fig. 5). Application of this force (arrow B, Fig. 2) pivots the catch (8) in a clockwise direction (arrow E) and results in the upward movement of the catch (8)

(arrow F) thereby disengaging it from the keeper element (26).

Assembled then, as seen in Fig. 5, the pointed lip (18) is urged downward as indicated by arrow C by the
5 biased force exerted laterally by the spring means (28) as it pushes against the inner wall of rear wall (30) as indicated by arrow G. This is brought about by the translation of lateral force (G) into vertical force (C) occurring at the point where the pivot (32) and journal
10 (34) are rotatively coupled.

Referring now to Fig. 6, the lateral force exerted against the button (10) (shown by arrow D) will be resisted by the bias of the spring means (28) but, as
15 opposed to the bias, will translate into an opposite, upward vertical movement of the lip (18) (arrow F) which, operationally, disengages the catch (8) from the keeper element (26) and allows for window/door movement. The same upward movement (arrow F) of the catch (8) will occur when the window/door is closed as lateral force
20 (arrow H, Fig. 5) is exerted against the tapered, pointed lip (18) as the keeper element (26) is forced against the lip (18) and moves along the slanted or curved frontal edge (38) of lip (18). In operation, this occurs during the sliding of the door/window to a
25 closed position whereby the lip (18) initially engages the keeper which operationally engages and moves along the lip's edge (38) until it comes to the tip (40) at which time the compacted spring means (28) which is now compressed forces the lip (22) down into locking engage-
30 ment with the keeper element (26).

Figure 7 is a cross-sectional lateral view of the catch assembly (2) taken along lines 7-7 of Fig. 5 showing the geometric and functional relationship of the

housing (4) the base plate (6) and the pivot (32) of the catch (8). This arrangement enables lateral forces exerted by the bias of the spring to be translated into longitudinal, downward forces of the catch (8) so as to enable engagement with the keeper assembly (3) in order to secure the door or window in the closed position. This arrangement also enables the application of manual force, opposite to that of the spring bias, against the button which is then translated in longitudinal, upward movement of the catch resulting in the disengagement of the catch from the keeper.

Returning to Fig. 3, this operative relationship of the catch assembly (2) and keeper assembly (3) can be seen when the door/window is in the closed and secured position. As the window or door is slideably closed, the pointed tip (18) abuts the U-shaped rubber gasket (24) which, due to its resilient character, bends and gives way to the biased force of the spring means (28). The L-shaped keeper (26) however, is firmly attached to the glass/panel (20) and frame (22) and is an immovable ledge over which the catch (8) must move. The force exerted on the catch (8) against the keeper (26) once contact is made moves the tapered lip and tongue in an upward direction (Fig. 6, arrow F) as the tension against the bias in the spring means (28) is increased. The point of abutment between keeper (26) and lip (18) moves along the edge of the lip (38) which may be curved or slanted until it reaches and passes the tip (40) of the lip (18) of the catch at which time the tension that has built up in the spring means forces the lip (18) downward into locking engagement with the keeper (26) as shown in Fig. 3. The U-shaped rubber gasket (24), extending beyond the plane as defined by the sliding

door or window (5) is again, resilient in character, and bends in favor thereof as engagement takes place, thereby forming a seal at the junction between the sliding window/door and the main frame glass or panel.

5 It is recognized that minor alterations and changes can be made with respect to the slam latch as herein described and disclosed. These changes may not be reflected in the specific embodiments as set forth herein but they are still considered within the spirit
10 and scope of the present invention as set forth in the following claims.

Claims

What We Claim Is.

1. A slam latch for securing a slideable window or door to a corresponding frame comprising.
 - a) A housing secured to said window or door by a base plate;
 - b) A catch assembly operatively disposed within an aperture in said housing; and
 - c) A keeper assembly secured to said frame that engages said catch thereby securing said window to said frame.
2. Slam latch of claim 1 wherein said catch assembly is comprised of a spring means, a button and a tongue portion extending therefrom that ends in a tapered lip.
3. The slam latch of claim 2 wherein said spring assembly abuts against the inside rear wall of said housing.
4. The slam latch of claim 3 wherein said spring means further comprises a pivot that is secured to and operatively connected with said base plate.
5. The slam latch of claim 4 wherein the abutment of the spring means against the inside rear wall of the housing creates a tension so as to bias the button outward from said aperture.
6. The slam latch of claim 5 wherein said tension created by said spring means simultaneously acts to bias the tongue and associated lip in a direction downward with respect to the base plate of the housing.

7. The slam latch of claim 6 wherein the spring bias actuated lip engages and secures said catch assembly to said keeper when said catch and said keeper are in juxtaposition to one another.

8. The slam latch of claim 7 wherein lateral force exerted against said button in a direction opposite to that of the spring bias pivots said tongue so as to move it upward thereby disengaging the lip from the keeper when in secured relationship thereto.

9. The slam latch of claim 2 wherein said catch assembly is of one piece construction.

10. A slam latch for securing sliding glass windows and doors to their corresponding frame comprising a catch assembly operatively secured within a housing attached to said window or door by means of a base plate, said catch assembly pivoted against a biased spring means within said housing assembly that maintains the catch of said catch assembly in a downward orientation with respect to said base plate so as to actuate engagement and coupling when the catch is brought in to juxtaposition with a keeper assembly secured to the frame.

11. The slam latch of claim 10 wherein said catch assembly further comprises a button integral and operatively associated with said spring means so that manual operation thereof disengages the catch from said keeper when the two are in engaged and secured position.

Examiner's report to the Comptroller under Section 17 (The Search Report) -13-

GB 9310935.3

Relevant Technical fields

(i) UK Cl (Edition L) E2A (AAR, ACAQ, ACAR)

(ii) Int Cl (Edition 5) E05B; E05C

Search Examiner

P A MAKIN

Databases (see over)

(i) UK Patent Office

(ii)

Date of Search

4 AUGUST 1993

Documents considered relevant following a search in respect of claims 1-11

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
X	GB 819815 (COACH) whole document	1, 2, 3, 10
X	GB 642575 (HOPE) whole document	1, 2, 3, 9, 10
X	GB 622450 (GIBBONS) whole document	1, 2, 3, 10
X	GB 495155 (BERESFORD) whole document	1, 2, 3, 10
X	EP 0341174 A1 (FERLO) whole document	1-10
X	US 5028082 (KRONBETTER) whole document	1-10



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Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

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