

SLAM LATCH

BACKGROUND OF THE INVENTION

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Latches for panels such as windows, doors and the like are well known and are generally comprised of a catch fixed to the panel and moveable to engage a second panel or frame in a latched position. In a typical operation, the catch is engagable with a keeper on the second panel or frame in a closed position. The keeper can comprise either a separate piece or be integral with the second panel or frame.

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One such prior art latch is shown in U.S. Patent No. 5,603,535 ('535 Patent) to Jeffrey L. Antonucci, Richard E. Schlack and Paul Krape titled "SLAM LATCH", which is assigned to Southco, Inc., the assignee of the present application, and is incorporated by reference herein.

15 The '535 Patent discloses in one embodiment a latch comprising a housing and a catch to which the present invention is directed. The catch is mounted to the housing and the housing is secured in operation by an adhesive to a panel, such as a window. The catch when mounted to the housing is biased by spring force to a closed position so that the catch will automatically engage a keeper when the panel is slidably closed. For opening of the latch, the catch is manually

20 pivoted against the bias of the spring force and away from the keeper so that the panel can be slidably opened.

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The present invention discloses a modified slam latch of the type shown in U.S. Patent No. 5,603,535.

SUMMARY OF THE INVENTION

The present invention discloses a slam latch comprising a housing and a catch for securing together sliding panels such as doors or windows.

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In accordance with the present invention, an object is to provide a slam latch comprised of minimal parts and which is adapted for being secured to a panel without requiring the use of fastening members in the nature of screws or rivets.

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It is still another object of the present invention to provide a slam latch adapted for being

secured to a panel by an adhesive.

These and other objects of the present invention will become more readily apparent when taken into consideration with the following description and attached drawings.

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BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is a top plan view of an embodiment of a slam latch of the present invention shown in a mounted position.

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Fig. 2 is a left side elevational view of the slam latch of Fig. 1.

Fig. 3 is a left side elevational view of the slam latch of Fig. 1 shown in a latched position.

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Fig. 4 is an exploded perspective view of the slam latch of Fig. 1 showing its two operative parts comprising a catch and a housing.

Fig. 5 is a bottom plan view showing the slam latch of Fig. 1 in an unmounted position.

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Fig. 6a is an isolated front elevational view of the housing of Fig. 4.

Fig. 6b is an isolated sectional view of the housing taken along the line 6b-6b of Fig. 4.

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Fig. 7 is a slightly enlarged and partially sectional left side elevational view of the slam latch of Fig. 1 in a closed position.

Fig. 8 is a slightly enlarged and partially sectional left side elevational view of the slam latch of Fig. 7 with the catch moved toward an opened position.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

Referring now to the drawings in detail, wherein like reference numerals indicate like elements throughout the several views, there is shown in Fig. 1 an embodiment of a slam latch in accordance with the present invention. The slam latch 2 in Fig. 1 is shown secured to a panel 5 comprising a glass door or window in the present embodiment and is aligned with a keeper element 3 attached to the surrounding frame. Movement of the door/window as denoted by arrow A brings the slam latch 2 into close proximity with the keeper 3 until they become operatively joined in a locked or secured position as will be explained in more detail below.

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The slam latch 2 as shown in Fig. 2 comprises, as portions thereof, a housing 4 and a catch 8. The structure of the housing 4 and catch 8 are best seen in the exploded perspective view of Fig. 4.

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The catch 8 is of one-piece in construction and is comprised of essentially four operative components including a tongue section 16, a button section 10, a biasing means comprising a spring member 28 and a pin or roller member 36. The tongue section 16 is generally elongated and terminates by a latching member 18 comprising a lip in the present embodiment. The button section 10 is connected with the upper surface of the tongue 16 and includes a generally radiused outer surface. The pin member 36 is generally cylindrical in cross-section and extends from opposite sides of the tongue 16 (only one of which is visible in Fig. 4). The biasing spring 28 is generally elongated and connected with the upper surface of the tongue 16 between the button 10 and the pin member 36.

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The housing 4 is best illustrated in Figs. 4-6. The housing 4 in the present embodiment is comprised of a generally elongated bottom wall 60, opposing side walls 62 and a rear wall 64 each connected to the bottom wall 60 and a top wall 66 connected to each of the side walls 62 and rear wall 64. In this manner, the housing 4 defines a cavity that is adapted to envelope and conceal the biasing spring 28 in operation, as will be described below. In the present embodiment, each of the opposing side walls 62 are provided with substantially cylindrical aligned apertures 68 therethrough for receiving the pin member 36 on assembly. In addition, the housing 4 in the present embodiment as best seen in Fig. 6 also preferably includes at least one

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and, in the present embodiment, two wall sections 70 extending from and connected with each of the top and rear walls 66 and 64, respectively, of the housing 4 for engagement by the biasing spring 28 on assembly. In addition, as shown in Figs. 4 and 6 in the present embodiment, the upper surface of the bottom wall 60 is included with at least one and in the present embodiment two adjacent ribs 280 extending along its longitudinal axis onto which the catch 8 is adapted to seat. In the present embodiment, an advantage of the aligned ribs 280 is that there is a reduction in material of the housing 4 due to the cavities within the upper surface of the bottom wall 60 between each of the ribs 280. As should be understood, while the design of one or more ribs 280 is preferred, this is not required and the upper surface of the bottom wall 60 can also be provided of different configurations as well, such as being substantially flat.

The lower surface of the bottom wall of the housing 4 is best illustrated in the bottom plan view of Fig. 5 and sectional view of Fig. 6b. In the present embodiment, preferably the housing 4 includes a perimeter 320 and a first cavity extending within the lower surface of the bottom wall and terminating by an inner cavity surface 322. Further, preferably the bottom wall 60 of the housing 4 includes at least one boss 324 connected with and extending from the inner cavity surface 322. In the present embodiment, there are four bosses 324 each generally triangular in shape defined by two walls and a radiused connecting portion and positioned at each of four corners on said inner cavity surface 324. In this embodiment, the two walls are attached together at first ends and with their second ends spaced at greater than 90° and attached to the radiused connecting portion. In addition, in the present embodiment, preferably each of the four bosses 324 have a terminating end positioned at substantially the same plane as the end of the perimeter 320 and include a substantially triangular shaped cavity 326 extending within the terminating end to the inner cavity surface 322. In addition, in the present embodiment, preferably the bottom wall 60 of the housing 4 is further provided with a channel 328 within the inner cavity surface 322, which is defined by continuously extending inner and outer walls positioned between the perimeter 320 and bosses 324 and extending in a continuous fashion along three sides; specifically, in the present embodiment along the sides 360 and rear 362 of the bottom wall 60 but not the front 364. As should be understood, the channel 328 in the present embodiment can be divided in other configurations as well, such as extending along each of the four sides of the bottom wall 60 or around each of three sides except the rear. The configuration of the lower surface of the bottom wall in the present embodiment is advantageous from the

standpoint that it provides a reduced material and also provides for improved flow of adhesive material when mounting, as will be more fully described below.

Upon assembly of the catch 8 within the housing 4, the pin member 36 is inserted into
5 the cylindrical apertures 68 provided through the side walls 62 of the housing 4. As shown in Fig. 7, when the catch 8 is in a closed position, preferably at least a portion of the lower surface of the tongue 16 engages a portion of the upper surface of the bottom wall 60 of housing 4, which is due to the force exerted by the biasing spring 28 in the direction of arrow G through engagement with the two wall sections 70 of the housing 4. As illustrated in Fig. 8, an
10 application of force in a direction of arrow D moves the catch 8 in the direction of arrow F against the bias of the biasing spring 28 toward its opened position.

As described earlier, in the present embodiment, the housing 4 is secured by a suitable amount of an adhesive to the panel 5; for example, a commercially available urethane adhesive
15 can be used for this purpose. The adhesive can be applied to the lower surface of the bottom wall of housing 4 and/or to the panel 5. The lower surface of the bottom wall of the housing 4 is then brought into engagement with the surface of panel 5, which forces the adhesive material to flow into the spaces within the lower surface of the bottom wall; in particular, in the present embodiment, the adhesive will flow into at least a portion of and preferably into the entire
20 channel 328, which has been found to improve adhesion between the housing 4 and panel 5. The perimeter 320 within the bottom wall operates as a barrier to keep the adhesive material from leaking out.

Figs. 1-3 illustrate a latching operation of the slam latch 2 with a keeper 3. In the present
25 embodiment, the keeper 3 is attached to the frame and includes a ramped front surface 24 and a cavity 26. As illustrated in Fig. 2, as the panel 5 is moved into the direction of arrow A for latching, the lip 18 engages the ramped surface 24 causing the catch 8 to move first in a clockwise direction (not shown), with the catch 8 then moving counterclockwise to a latched position as the lip 18 is received into the cavity 26 shown in Fig. 3. For unlatching, the catch 8 is
30 moved in the manner shown in Fig. 8 by application of pressure on the button 10, which is ordinarily accomplished by an operator using his or her fingers to exert the pressure upon the button 10. As should be understood, other configurations or arrangements of the keeper 3 can

also be utilized.

5 The components of the slam latch 2 of the present invention can be comprised of any suitable material, such as suitable metal or plastic material. In the present embodiment, preferably the housing 4 is comprised of nylon and the catch is comprised of acetal, although other suitable materials can also be used.

10 In view of that set forth above, it should be understood that there are advantages of the slam latch of the present invention. One particular advantage is that the device can be maintained in a secure position against a panel such as a glass window or door by using a conventional adhesive. There are two features in the present invention which operate to maintain the connection between the housing 4 and panel. One feature is that one or both of the upper and lower surfaces of the bottom wall of the housing 4 can be provided with a novel arrangement of cavities, which has the effect to reduce the amount of material and accordingly
15 the weight of the device. In the present embodiment, the lighter weight of the housing 4 in the present embodiment is one factor which both helps to make the process easier to secure the device to the panel and also to keep the device in the mounted position. Another feature attributed to the improved adhesive property of the slam latch of the present invention is a result of the configuration of cavities provided within the lower surface of the bottom wall of the
20 housing 4. Specifically, one important element is a channel provided within the lower surface of the bottom wall, which extends around three sides close to the perimeter in the preferred embodiment, into which the adhesive material flows as the slam latch 2 is pressed against the panel 5 during mounting.

25 It is to be understood that the above description of the present invention is susceptible to various modifications, changes and adaptations by those skilled in the art, and that such modifications, changes and adaptations are to be considered within the spirit and scope of the invention, as set forth by the claims which follow. For instance, it should be understood that the housing 4 of the present invention can be provided having its lower surface configured as
30 described above, such as shown in Fig. 6, and with the upper surface of bottom wall being substantially flat or other configurations known in the prior art. In addition, the reverse can be true in that the upper surface of the bottom wall can be configured as described in detail in the

present application such as shown in Fig. 4, and with the lower surface of the bottom wall being configured substantially flat or other configuration known in the art. In addition, the housing 4 can be configured in a manner to combine both of the arrangements described above with respect to the upper and lower surfaces of the bottom wall, such as shown in Figs. 4-6.

IN THE CLAIMS

What is claimed:

1. A slam latch adapted for being secured to a panel by an adhesive comprising:
a housing defining a generally elongated bottom wall having a lower surface, said
5 lower surface defining a perimeter and a channel within said lower surface positioned
adjacent to and extending a predetermined distance along said perimeter; and
a catch connected to said housing for movement between a closed position and
an open position, wherein said slam latch further comprises means for biasing said catch
into said closed position.
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2. A slam latch according to claim 1, wherein said perimeter of said bottom wall is
defined by four sides and said channel is defined by a continuously extending inner wall and a
continuously extending outer wall at spaced separation and extending along at least three sides
of said perimeter.
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3. A slam latch according to claim 2, wherein said lower surface of said bottom
wall further includes therein a cavity terminating by an inner cavity surface adjacent to said inner
wall of said channel.
- 20 4. A slam latch according to claim 3, wherein said housing further includes at least
one boss extending from said inner cavity surface of said bottom wall, with said at least one boss
including a cavity within a terminating end thereof defining two walls and a radiused connecting
portion, with said two walls being attached together at a first end and a second end being spaced
at greater than 90° and attached to said radiused connecting portion.
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5. A slam latch according to claim 4, wherein said housing includes four bosses
positioned proximate each of four corners on said inner cavity surface.
6. A slam latch according to claim 1, wherein said catch is one-piece defining a
30 tongue generally elongated along a longitudinal axis terminating by a latching member, a spring
member comprising said biasing means and having a first end connected to said catch and a
second end engaging said housing and a pivot extending from said catch for connecting said



catch to said housing.



7. A latch according to claim 6, wherein said housing further includes a rear wall extending upward from said bottom wall, with said second end of said spring member engaging an inner surface of said rear wall of said housing, wherein the engagement of the spring member with the rear wall of the housing creates a tension upon the spring member in a direction generally away from the rear wall of the housing for rotating the catch into the closed position.

8. A slam latch according to claim 7, wherein said catch further includes a button connected to and extending from a top surface of said catch between said latching member and said first end of said spring member, and button being adapted to rotate said catch about said pivot for raising said latching member from said closed position to said open position, wherein said button includes an outer surface and said button is actuated through application of force upon the outer surface of the button in a direction generally along the longitudinal axis of the catch, wherein upon actuation of said button, said button is rotated in a direction of the rear wall of the housing in opposition to the tension produced by the spring member.

9. A slam latch according to claim 8, wherein the housing further includes a pair of opposing side walls at spaced separation connected with said rear wall and extended upward from said bottom wall, said housing including a top wall at spaced separation from and opposing said bottom wall and connected with said rear and side walls, wherein said bottom, rear, side and top walls define a cavity enveloping said spring member and receiving said button as to button is rotated upon its actuation.

10. A method for securing a slam latch to a surface of a panel by an adhesive, the method comprising the steps of:

providing a slam latch comprising a housing defining a generally elongated bottom wall having a lower surface, said lower surface defining a perimeter and a channel within said lower surface positioned adjacent to and extending a predetermined distance along said perimeter and a catch connected to said housing for movement between a closed position and an open position, wherein said slam latch further comprises means for biasing said catch into said closed position;





applying a suitable amount of an adhesive to at least one of said lower surface of said bottom wall of said housing or said panel surface; and

positioning said slam latch on said panel so that said lower surface of said housing engages said panel surface and said adhesive flows into at least a portion of said channel within said lower surface.

11. In combination, a slam latch and a panel comprising:

a housing defining a generally elongated bottom wall having a lower surface, said lower surface defining a perimeter and a channel within said lower surface positioned adjacent to and extending a predetermined distance along said perimeter;

a catch connected to said housing for movement between a closed position and an open position, wherein said slam latch further comprises means for biasing said catch into said closed position; and

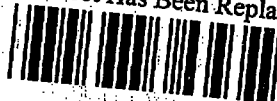
an adhesive between said panel surface and said lower surface of said housing and within at least a portion of said channel for securing said slam latch to said panel.

12. The combination according to claim 11, wherein said perimeter of said bottom wall is defined by four sides and said channel is defined by a continuously extending inner wall and a continuously extending outer wall at spaced separation and extending along at least three sides of said perimeter.

13. The combination according to claim 12, wherein said lower surface of said bottom wall further includes therein a cavity terminating by an inner cavity surface adjacent to said inner wall of said channel.

14. The combination according to claim 13, wherein said housing further includes at least one boss extending from said inner cavity surface of said bottom wall, with said at least one boss including a cavity within a terminating end thereof defining two walls and a radiused connecting portion, with said two walls being attached together at a first end and a second end being spaced at greater than 90° and attached to said radiused connecting portion.

15. The combination according to claim 14, wherein said housing includes four





bosses positioned proximate each of four corners on said inner cavity surface.

16. The combination according to claim 11, wherein said catch is one-piece defining a tongue generally elongated along a longitudinal axis terminating by a latching member, a spring member comprising said biasing means and having a first end connected to said catch and a second end engaging said housing and a pivot extending from said catch for connecting said catch to said housing.

17. The combination according to claim 16, wherein said housing further includes a rear wall extending upward from said bottom wall, with said second end of said spring member engaging an inner surface of said rear wall of said housing, wherein the engagement of the spring member with the rear wall of the housing creates a tension upon the spring member in a direction generally away from the rear wall of the housing for rotating the catch into the closed position.

18. The combination according to claim 17, wherein said catch further includes a button connected to and extending from a top surface of said catch between said latching member and said first end of said spring member, and button being adapted to rotate said catch about said pivot for raising said latching member from said closed position to said open position, wherein said button includes an outer surface and said button is actuated through application of force upon the outer surface of the button in a direction generally along the longitudinal axis of the catch, wherein upon actuation of said button, said button is rotated in a direction of the rear wall of the housing in opposition to the tension produced by the spring member.

19. The combination according to claim 18, wherein the housing further includes a pair of opposing side walls at spaced separation connected with said rear wall and extended upward from said bottom wall, said housing including a top wall at spaced separation from and opposing said bottom wall and connected with said rear and side walls, wherein said bottom, rear, side and top walls define a cavity enveloping said spring member and receiving said button as to button is rotated upon its actuation.

This Sheet Has Been Replaced

