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(54) SAFETY LATCH

(71) We, YOSHIDA KOGYO K.K., a corporation duly organized under the laws of Japan and existing at No. 1, Kanda Izumicho, Chiyoda-ku, Tokyo, Japan, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to a safety latch for use on a pair of sliding doors or window sashes to supplement existing locking devices.

It is frequently seen to let one of the sliding doors or window sashes open a few inches for ventilation of the interior of a room. The opened door or window sash remains unlocked, and unauthorized entry can easily be gained therethrough.

The present invention seeks to provide a safety latch that permits one of a pair of closure members to open an amount sufficient to allow ventilation of the room, and at the same time can prevent it from opening further.

The invention also seeks to provide a safety latch for supplementing existing closure-locking devices.

The invention further seeks to provide a safety latch which is simple in structure, easy to manufacture, and can be readily installed.

According to the invention, there is provided a safety latch substantially as herein described with reference to the drawings. Preferably the attachment element is a plate from which a pair of spaced brackets extend; a pin extending between the spaced brackets and a locking member having a pair of legs pivotally supported on said pin.

The invention will now be described in greater detail, by way of example, with reference to the drawings, in which:

Figure 1 is front elevational view of a pair of horizontally sliding window sashes to one of which is attached a safety latch provided in accordance with the present invention;

Figure 2 is an enlarged perspective view of a first embodiment of the safety latch;

Figure 3 is a fragmentary front elevational

view, on an enlarged scale, of a portion of the sashes that are fully closed by the safety latch;

Figure 4 is a view similar to Figure 3, but showing a position in which one of the sashes is opened a few inches and is prevented from opening further by the safety latch;

Figure 5 is a vertical cross-sectional view taken along line V—V of Figure 4;

Figure 6 is an enlarged perspective view of a second embodiment of the safety latch;

Figure 7 is a vertical cross-sectional view of the safety latch shown in Figure 6 and attached to one of the window sashes; and

Figures 8 to 10 inclusive are vertical cross-sectional views illustrative of the way in which the latch of second embodiment is operated.

Figure 1 shows a window assembly 10 having an outer frame 11 and a pair of horizontally sliding window sashes 12, 13 movable in parallel, closely spaced planes within the outer frame 11. Each of the sashes 12, 13 includes a pair of stiles 14, 15, a pair of top and bottom rails 16, 17 connecting the stiles 14, 15 together, and a pane of glass 18 enclosed by the stiles 14, 15 and the rails 16, 17. The sashes 12, 13 are locked in fully closed position by a window lock 19 mounted on the meeting stiles 14, 15. A safety latch 20 of the invention is attached to the interior side of the bottom rail 17 of the sash 12 and is located near the meeting stile 15. The latch 20 can, of course, be attached to the top rail 16.

As shown in Figure 2, the safety latch 20 according to a first embodiment comprises an attachment plate 21 including a vertical arm 22, a pair of spaced brackets 23, 24 facing each other and extending perpendicularly from side edges of the arm 22, and a pin 25 extending between the brackets 23, 24. The pin 25 has both ends projecting slightly beyond the brackets 23, 24. A pair of spaced locking members 26, 27 of U-shaped cross-section are pivotally supported on the pin 25. The locking member 26 has a pair of legs 28, 29, fitting over the pin 25, the leg 28 being mounted on one of the pro-

jecting ends of the pin 25. Between the leg 29 and the bracket 23, there is a compression coil spring 30 disposed around the pin 25 and normally urging the leg 29 axially away from the bracket 23 in order to maintain the inner side of the leg 28 in abutment against the outer side of the bracket 23. With the leg 28 normally pressed in slidably contacting relation against the bracket 23, the locking member 26 can be stopped and retained in a selected position in its pivotal movement about the pin 25 against accidental rotational displacement due to shock or vibration.

Likewise, the locking member 27 has a pair of legs 31, 32 over the pin 25, the leg 32 being mounted on the other projecting end of the pin 25. The inner side of the leg 32 is normally biased by a compression coil spring 33 into slidable contact with the outer side of the bracket 24. The spring-biased leg 32 enables the locking member 27 to be held in a selected position in its pivotal movement. The locking members 26 and 27 are pivotable between a first position in which they are held in substantially parallel with the arm 22, as shown by solid lines in Figure 2, and a second position in which they are held substantially at a right angle with respect to the arm with bottom or distal ends 34 of the legs 29, 31 abutting against the front surface of the arm, as shown by imaginary lines in Figure 2.

A portion of the arm 22 from which the brackets 23, 24 extend is offset from the rest of the arm 22 and the plate 21 so that the attached safety latch 20, when not in use, is positioned in a space between the sashes 12 and 13 without interference with the movement of the sash 13, as is understood from an inspection of Figure 5.

The safety latch 20 is fixed to the bottom rail 17 with screws 35 (Figures 3 and 4) passing through holes in the attachment plate 21 and into the rail 17. In Figure 3, the locking member 27 of the safety latch 20 is pivoted down to cause the outer side of the leg 32 to come into engagement with an edge of the stile 14 of the sash 13. The safety latch 20 is located in such a position that, when the locking member 27 engages the stile 14, the sash 13 is held in the fully closed position. Thus, the safety latch 20 serves to supplement existing window locks, such as the lock 19 shown in Figure 1.

When it is desired to ventilate the room, the window lock 19 is unlocked and the locking member 27 is pivoted upwardly out of engagement with the stile 14 so as to enable the sash 13 to move a few inches leftward as viewed in Figure 3. At this time, as illustrated in Figures 4 and 5, the locking member 26 is pivoted down into engagement with the edge of the stile 14 to prevent the sash 13 from opening further beyond a distance between the leg 32 of the locking member

27 and the leg 29 of the locking member 26. Thus, unauthorized entry can be avoided, should the sash 13 be opened for ventilation. A distance that the sash 13 can move between the fully closed position and a latched position can be varied by changing a latch locating position. Alternatively, allowable sash movement is available in a variety of distances at a time by providing two or more safety latches at spaced locations along the bottom rail 17 of the sash 12.

According to a second embodiment shown in Figure 6, a safety latch 40 comprises an attachment plate 41 including a pair of offset vertical arms 42, 43 each having a pair of spaced brackets 44, 45 facing each other and extending perpendicularly from side edges of one of the arms 42, 43. A pin 46 extends between the brackets 44, 45 of the arm 43 and has one end projecting slightly beyond the bracket 45. A locking member 47 of substantially U-shaped cross-section is pivotally supported on the pin 46. The locking member 47 has a pair of legs 48, 49, fitting over the pin 46, the leg 49 being mounted on the projecting end of the pin 46. A compression coil spring 50 is disposed around the pin 46 between the bracket 45 and the leg 48 in order to normally urge the outer side of the leg 48 into contact with the inner side of the bracket 44, and normally urge the inner side of the leg 49 into contact with the outer side of the bracket 45. Thus, the locking member 47 is pivotable about the pin 46 in slidably abutting relation to the brackets 44, 45, and can be stopped and held in a selected position in its pivotal movement. Since the bottom or distal end 51 of the leg 48 can be held against the front surface of the arm 43, the locking member 47 is prevented from pivoting further beyond a position in which the locking member 47 is held at a right angle with respect to the arm 43.

Between the brackets 44, 45 of the arm 42, there extends a pin 52 rotatably supporting a locking member 53 of substantially U-shaped cross-section that has a pair of legs 54, 55 disposed between the brackets 44, 45. The legs 54, 55 have a pair of slots 56, 56 formed therethrough adjacent to the distal ends of the legs 54, 55 and are oriented in parallel with the legs 54, 55, the pin 52 extending through the slots 56, 56. The distal ends of the legs 54, 55 are rounded in order that the ends will avoid interference with the front surface of the arm 42 when the locking member 53 is pivoted about the pin 52. A tension coil spring 57 extends between the arm 42 and the locking member 53, and underlies the pin 52 to normally bias the locking member 53 downwardly and rearwardly against the arm 42; that is, into the position shown in Figures 6 and 7.

Each of the slots 56, 56 has a first closed

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80

85

90

95

100

105

110

115

120

125

130

end 58 located closer to the distal end of the leg 54 (55), and a second closed end 59 located remoter from the distal end of the leg 54 (55). When the locking member 53 is at rest, the second end 59 engages the pin 52 under the bias of the spring 57 as illustrated in Figure 7. The rounded end of each of the legs 54, 55 becomes slightly spaced from the front surface of the arm 42 when the locking member 53 is pivoted down against the bias of the spring 57 into a position in which the locking member 53 is held perpendicularly to the arm 42 and in which the first end 58 of the slot 56 engages the pin 52.

To bring the locking member 53 into a locked position, the locking member 53 is pulled upwardly from the position of Figure 7 to engage the first ends 58 of the slots 56 with the pin 52. Then, the locking member 53 is pivoted down forwardly about the pin 52 through the position of Figure 8 into the position of Figure 9, when the locking member 53 is inclined downwardly and the second ends 59 of the slots 56 are held against the pin 52 under the force of the spring 57 with the rounded distal ends of the legs 54, 55 forcibly engaging the front surface of the arm 42 to prevent the locking member 53 from springing back upwardly. Thus, the locking member 53 is locked securely in the position of Figure 9.

When the locking member 53 is to be unlocked, the locking member 53 is pulled in the inclined downward direction, as shown by the straight arrow in Figure 10, to release the rounded ends of the legs 54, 55 out of engagement with the front surface of the arm 42, until the first ends 58 of the slots 56 engage the pin 52 against the force of the spring 57. At this time, the locking member 53 is urged to pivot under the resiliency of the spring 57 back to the resting position shown in Figure 7. With the second embodiment, the locking member 47 is used to supplement existing window locks, and the locking member 53 serves to lock the window sash 13 within a partly opened position.

Although not shown, the pins 46 and 52 may be replaced by a longer single pin that

can extend between the bracket 44 of the arm 42 and the bracket 45 of the arm 43. Furthermore, one having the same structure as the locking member 53 may be used in place of the locking member 47.

WHAT WE CLAIM IS:—

1. A latch arrangement for a pair of closure members slidable adjacent each other along parallel paths comprising an attachment element for mounting the latch arrangement on one of the closure members, two locking members carried by the attachment element and each pivotable between a first position in which the locking member is retracted away from the path of the other closure member and a second position in which the locking member projects into the path of the other closure member and spring means for individually maintaining the locking members in the second position.

2. A latch arrangement as claimed in claim 1, wherein the attachment element is a plate from which a pair of spaced brackets extend, a pin extends between the spaced brackets; and the two locking members each have a pair of legs pivotally supported on the pin.

3. A latch arrangement as claimed in claim 2, wherein the legs are fitted over the pin, the spring means being a compression coil spring disposed around the pin to normally bias at least one of the legs to be pressed against at least one of the brackets.

4. A latch arrangement as claimed in claim 2, in which said legs have slots formed therethrough and oriented in parallel therewith, the pin extending through the slots, the spring means being a tension coil spring extending between said attachment plate and the locking members to normally bias the locking members against the attachment plate.

5. A safety latch substantially as herein described with reference to the drawings.

For the Applicants:
J. F. WILLIAMS & CO.,
Chartered Patent Agents,
113 Kingsway,
London, WC2B 6QP.



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can extend between the bracket 44 of the arm 42 and the bracket 45 of the arm 43. Furthermore, one having the same structure as the locking member 53 may be used in place of the locking member 47.

WHAT WE CLAIM IS:—

1. A latch arrangement for a pair of closure members slidable adjacent each other along parallel paths comprising an attachment element for mounting the latch arrangement on one of the closure members, two locking members carried by the attachment element and each pivotable between a first position in which the locking member is retracted away from the path of the other closure member and a second position in which the locking member projects into the path of the other closure member and spring means for individually maintaining the locking members in the second position.

2. A latch arrangement as claimed in claim 1, wherein the attachment element is a plate from which a pair of spaced brackets extend, a pin extends between the spaced brackets; and the two locking members each have a pair of legs pivotally supported on the pin.

3. A latch arrangement as claimed in claim 2, wherein the legs are fitted over the pin, the spring means being a compression coil spring disposed around the pin to normally bias at least one of the legs to be pressed against at least one of the brackets.

4. A latch arrangement as claimed in claim 2, in which said legs have slots formed therethrough and oriented in parallel therewith, the pin extending through the slots, the spring means being a tension coil spring extending between said attachment plate and the locking members to normally bias the locking members against the attachment plate.

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