

Method of Installing a Safety Line to a Window, and a Window having the Safety Line

Background and Field of the Invention

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The invention relates to a method of installing a safety line to a window, and a window having the safety line.

Summary of the Invention

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In a first aspect of the present invention, there is provided a method of installing a safety line to a window, the window including a window frame and a window panel movable relative to the window frame, the method comprising securing a first end of the safety line to the window frame and a second end of the safety line to the window panel, wherein the safety line has a length which enables the relative movement of the window panel.

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With the use of the safety line, this reduces risk of the window panels falling down of buildings.

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The window panel may be a casement window or a sliding window. Preferably, the safety line includes a flexible cord made of stainless steel, fibre, nylon or monofilament. Such materials provide the required tensile strength to support a typical weight of the window panel and at the same time, provide the necessary flexibility.

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Preferably, the method further comprises securing the first end of the safety line at or near to a corner of the window frame. The method may further comprise securing the second end of the safety line at or near a corner of the window panel. With such an arrangement, only a short length of the safety line is needed.

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Each of the first end and the second end of the safety line may include a bracket, and the method may include fastening the respective brackets to the window frame and the window panel.

- 5 In a second aspect of the invention, there is provided a window comprising a window frame; a window panel movable relative to the window frame; and a safety line having a first end secured to the window frame and a second end secured to the window panel, wherein the safety line has a length which enables the relative movement of the window panel.

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The window panel may be a casement window or a sliding window. Preferably, the safety line may include a flexible cord made of stainless steel, fibre, nylon or monofilament. The first end of the safety line may be secured at or near to a corner of the window frame. The second end of the safety line may be secured
15 at or near a corner of the window panel.

Each of the first end and the second end of the safety line may include a bracket for fastening to the window frame and the window panel. This may make the installation of the safety line easier.

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It should be appreciated that features relevant to one aspect may also be relevant to the other aspects.

25 Brief Description of the Drawings

An exemplary embodiment of the invention will now be described with reference to the accompanying drawings, in which:

30 Figure 1 is a schematic view of a window having a safety line according to a preferred embodiment of the invention;

Figure 2 is a close up view of an area AA of Figure 1 to show the safety line more clearly; and

Figure 3 is a photograph of exemplary safety lines which may be used in Figures 1 and 2.

Detailed Description of Preferred Embodiment

5 Figure 1 is a schematic view of a window 100 according to a preferred embodiment of the invention. The window 100 includes a window frame 102 having a head jamb 102a, side jambs 102b,102c and a bottom jamb 102d. The window frame 102 is mounted to a part of a building (not shown), which may be
10 a residential apartment. The window 100 also comprises at least one window panel and in this embodiment, there are two window panels in the form of first and second casement windows 104,106 hinged to the respective side jambs 102b,102c by hinges 108,110,112,114 to enable opening and closing of the window 100.

15 Each casement window 104,106 is similar to each other and includes a top rail 104a,106a, side rails 104b,104c,106b,106c and a bottom rail 104d,106d. Further, the window 100 includes a first and a second safety line 150,170 which connects the casement windows 104,106 to the window frame 102.

20 Figure 2 is a closed-up enlarged view of portion AA of Figure 1 to illustrate the first safety line 150 of the first casement window 104 more closely. As it can be appreciated, the first safety line 150 includes a length of flexible cord 152 and brackets 154,156 connected to respective ends of the flexible cord 152. In this
25 embodiment, the safety line 150 is arranged near a top right corner 116 of the window frame 102 which is near the hinges 108,110 so that only an optimum length of the flexible cord 152 is needed. Specifically, the first bracket 154 is securely attached to the window frame 102 near the corner 116, and the second bracket 156 is securely attached near to a top corner 118 of the first casement
30 window 104 near to where the top rail 104a and one of the side rails 104b meet. At this location, the safety line 150 does not impede the normal operation of the window 100, in particular when the first casement window 104 swings open or

close. As the length of the safety line 150 is relatively short, the presence of the safety line 150 does not affect the aesthetic look of the window 100.

It should be appreciated that the flexible cord 152 may be made of stranded
5 stainless steel, fibre, nylon or monofilament (fishing line), metal chains or any
suitable material with the strength to withhold the weight of the casement
window 104 in the event the hinges 108,110 fails through wear and tear and/or
corrosion, and the casement window 104 gets detached accidentally from the
window frame 102. This is a serious safety hazard for high-rise buildings, in
10 particular high-rise residential buildings where home owners may not be diligent
to maintain the structural integrity of the window 100. This may be particularly
true for elderly residents. Instead of the casement window 104 falling out of the
sky, having the safety line 150 ensures that the casement window 104 is
prevented from being detached from the window frame 102 and thus, prevents
15 the casement window 104 from falling to the ground and causing injury to others
below the building.

It should be appreciated that connections of a window has moving parts and in
the case of the window 100, the hinges 108,110,112,114 are the moving parts
20 and these parts tend to loosen after a prolonged period of use, and when these
moving parts fail, there may be no prior warning. In contrast, the safety line 150
has no moving parts and likelihood of failure after a period of use is minimised.
Indeed, with the safety line 150, when a user observes that the first casement
window 104 is out of position or the hinges 108,110 are worn out and thus,
25 there is a risk of failure, the safety line 150 provides the user with some buffer
time to arrange for repair or replacement whilst having a peace of mind that the
first casement window 104 would be prevented from falling off.

It should be appreciated that the description above regarding the first casement
30 window 104 and the first safety line 150 also applies to the second casement
window 106 and the second safety line 170.

It should be appreciated that the safety lines 150,170 may be pre-mounted to the window 100 before the window 100 is installed on site. Also, it is possible that the safety lines 150,170 may be installed after installing the window 100. Indeed, it is envisaged that the safety lines 150,170 may be installed or retrofitted to existing windows to improve safety of the public.

To elaborate, and using the example of the first safety line 150, and assuming that the window 100 is an existing window which did not come with the safety line 150, the user would first select a suitable location to attach the first safety line 150. In view of the connection of the first casement window 104 to the window frame 102 (being via the hinges 108,110), a suitable location would be near the top corners 116,118 of the window frame 102 and the first casement window 104. The user then first mount the first bracket 154 to the corner 116 of the window frame 102 and the second bracket 156 to the corner 118 of the first casement window 104 with the length of the cord 152 allowing the first casement window 104 to swing open and close normally. It should be appreciated that the second bracket 156 may be attached first and then the first bracket 154. The attachment of the brackets 154,156 to the window frame 102 and the first casement window 104 needs to be secure and rivets may be used to achieve the secure connections.

Figure 3 is a photograph illustrating two exemplary types of safety lines 150,170 with the top one 180 showing a flexible cord 152 in the form of a chain-type cord 182 attached to U-shaped brackets 184,186 having eyelets 188,189 for mounting the safety line 180 to the window 100. The bottom safety line 190 comprises a flexible cord 152 in the form of a stainless steel wire 192 attached to respective brackets 194,196 which are similar in structure to the brackets 184,186 of the top safety line 180.

The described embodiments should not be construed as limitative. Other types of safety lines 150,170 may be used and also other ways of fastening the cord 152 may be used, for example, instead of the brackets 154,156,184,186,194,196, cleats or gadgets for easy and secure installation of

the safety line may be used. Further, the location of the safety line 150,170 may vary depending on the window type and instead of at the head jamb 102a and the top rail 104a,106a, the safety line 150,170 may be mounted at other locations or at the bottom jamb 102d and the bottom rails 104d,106d.

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Also, although the described embodiment uses casement windows 104,106 as examples of window panels, the safety line 150,170 may also be used for other types of windows, such as sliding windows which also have risks of being detached and falling down. Further, although the described embodiment illustrates the window 100 having hinges 108,110,112,114, it should be appreciated that the window 100 may use other types of pivotal connections. Although the description shows the window 100 as having the window frame 102 as being a separate part of the building, it should be appreciated that the window frame 102 may form part of or be integrally formed as part of the building having the window 100. Similarly, although the window 100 is described with the casement windows 104,106 as having the rails 104a,104b,104c,104d,106a,106b,106c,106d, it is possible that the windows may be "frameless" or perhaps with only a side rail and the safety line 150,170 may then be directly attached to the glass or to the side rail. Likewise, the location of the safety rail 150,170 may vary depending on application and in particular the type of windows 100 etc.

Having now fully described the invention, it should be apparent to one of ordinary skill in the art that many modifications can be made hereto without departing from the scope as claimed.

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CLAIMS

1. A method of installing a safety line to a window, the window including a window frame and a window panel movable relative to the window frame, the method comprising:
5 securing a first end of the safety line to the window frame and a second end of the safety line to the window panel, wherein the safety line has a length which enables the relative movement of the window panel.
- 10 2. A method according to claim 1, wherein the window panel is a casement window or a sliding window.
3. A method according to claim 1 or 2, wherein the safety line includes a flexible cord made of stainless steel, fibre, nylon or monofilament.
- 15 4. A method according to any preceding claim, further comprising securing the first end of the safety line at or near to a corner of the window frame.
5. A method according to any preceding claim, further comprising securing
20 the second end of the safety line at or near a corner of the window panel.
6. A method according to any preceding claim, wherein each of the first end and the second end of the safety line includes a bracket, and the method includes fastening the respective brackets to the window frame and the
25 window panel.
7. A window comprising
a window frame;
a window panel movable relative to the window frame; and
30 a safety line having a first end secured to the window frame and a second end secured to the window panel, wherein the safety line has a length which enables the relative movement of the window panel.

8. A window according to claim 7, wherein the window panel is a casement window or a sliding window.
- 5 9. A window according to claim 7 or 8, wherein the safety line includes a flexible cord made of stainless steel, fibre, nylon or monofilament.
10. A window according to any of claims 7 to 9, wherein the first end of the safety line is secured at or near to a corner of the window frame.
- 10 11. A window according to any of claims 7 to 10, wherein the second end of the safety line is secured at or near a corner of the window panel.
- 15 12. A window according to any of claims 7 to 11, wherein each of the first end and the second end of the safety line includes a bracket for fastening to the window frame and the window panel.