Door or window having a fixed frame (1) disposed in correspondence with an aperture of a building, and a door or window element (2), mobile with respect to the fixed frame (1) from a first closed position of the aperture to a second open position. A protective parapet (3) is integrated into the door or window, and selectively occupies, at least partly, the aperture determined by the opening of the mobile element (2). The parapet (3) has a first operating protective position that is automatically activated by the opening of the mobile element (2), and a second inactive position that is automatically activated by the closing of the mobile element of the door or window.
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"DOOR OR WINDOW FRAME"

FIELD OF THE INVENTION

The present invention concerns a door or window frame of the type comprising at least an element that slides between an open position and a closed position.

In particular, the invention concerns a door or window of the type overlooking an external environment, in which the opening of the sliding element of the door or window determines the automatic positioning in an operating position of a parapet to protect against falls, whereas the closing of the sliding element determines the automatic repositioning of the parapet in the inactive position, in a position advantageously retracted inside the elements of the door or window or associated with the door or window.

BACKGROUND OF THE INVENTION

It is known that in the field of door and windows, contemporary architecture increasingly prefers the solution of the overlooking door or window rather than the traditional balcony, since the former enjoys all the benefits of a much more advantageous air-illumination ratio compared with a different window, and at the same time avoids the expensive heat insulation devices required by the solution of the traditional balcony.

However, safety regulations require that for each door or window of the type overlooking an external environment, in particular in a multi-storey building, a relative safety parapet must be provided, to protect against falls.

Artisan and emergency solutions, in particular in the presence of children, may provide that the user, after opening the window or door of the overlooking type, places an obstacle to prevent easy access to the aperture defined by the open door or window. Obviously, such solutions are partial and do not solve the problem; moreover, they are quite fortuitous and do not guarantee any automated device to open the door or window and to activate the parapet.

The presence of a barrier on the door or window preventing entry or exit of persons or animals is also useful when the aperture on which the door or window is mounted is on the ground floor. In this case for example, it would be possible to leave the door or window of a house open, thus allowing the air to circulate but
at the same time protecting the house from burglary.

Purpose of the invention is therefore to achieve a door or window of the type described above, provided with a safety parapet that is selectively able to be activated, which also has minimum aesthetic impact, in particular when the door or window is closed.

Another purpose is to achieve a door or window in which the parapet is always in a protective position when the door or window is open, without requiring specific operations by the user so that, even in the case of children or elderly people, or simply in the event of forgetfulness or distraction, the parapet is always activated automatically by the opening of the mobile element of the door or window.

The Applicants have devised, tested and embodied the present invention to obtain these and other purposes and advantages as shown hereafter.

SUMMARY OF THE INVENTION

The present invention is set forth and characterized in the main claim, while the dependent claims describe variants and characteristics of the main inventive idea.

In accordance with said purposes, a door or window according to the invention includes at least a fixed frame disposed in correspondence with an aperture of a building, and at least a door or window element, mobile at least with respect to said fixed frame, from a first closed position closing said aperture to a second at least partly open position.

According to the invention, a protective parapet is also integrated into the door or window, and is able to selectively occupy, at least partly, the aperture determined by the opening of the mobile element; the parapet has a first protective operating position that is activated automatically by the opening of the mobile element, and a second inactive position that is activated automatically by the closing of the mobile element of the door or window.

In a preferential form of embodiment, the second inactive position of the parapet is a position in which it is substantially retracted inside at least one element of the door or window.

In another preferential form of embodiment, the second inactive position of the parapet is a position in which it is substantially retracted inside at least an
element of the fixed frame on which the door or window is mounted.

In another preferential form of embodiment, the second inactive position of the parapet is a position in which it is substantially retracted inside at least an auxiliary profile associated with the mobile element of the door or window and/or the fixed frame.

In a first solution of the invention, the protective parapet consists of a plurality of cables, ropes, belts or other similar or comparable elements, which are arranged to partly cover the aperture determined when the mobile element is opened. In the case of a window of a multi-story building, the parapet is disposed in the operating position, that is, with the mobile element of the door or window open, to cover at least the lower part of the aperture thus obtained, as high as a safety height that can be set, and possibly adjusted, even at a later time, when the door or window is made.

According to a variant, the parapet consists of a continuous shutter element, movable from an operating position assumed automatically when the element of the door or window is opened, to an inactive position, assumed automatically when the mobile element is closed.

**BRIEF DESCRIPTION OF THE DRAWINGS**

Other characteristics and advantages of the present invention will become apparent from the following description of a preferential form of embodiment of the door or window according to the invention, given as a non-restrictive example in the attached drawings wherein:

- fig. 1 shows a perspective view of the door or window and the relative integrated parapet in the operating position;
- fig. 2 shows a front view of the door or window in fig. 1;
- fig. 3 shows a lateral view of the sliding door or window and the parapet;
- fig. 4 shows a perspective view of a detail of the mechanism that activates the parapet;
- fig. 5 shows a perspective view of another detail of the mechanism that activates the parapet;
- fig. 6 shows a variant of fig. 5;
- fig. 7 shows another form of embodiment of the present invention.

**DETAILED DESCRIPTION OF A PREFERENTIAL FORM OF**
EMBODIMENT

With reference to the attached drawings, and in particular figs. 1 and 2, the door or window according to the invention comprises a mobile element, in this case a sliding window 2 which, passing from the closed position to the open position, is superimposed above a fixed window 20. The sliding window 2 moves to the left when opening and to the right when closing, as shown by the arrows in figs. 1 and 2, thus defining a right abutment upright 2.2 and an opposite left, non-abutment upright 2.1.

The two windows, sliding 2 and fixed 20, are mounted in a fixed frame 1, consisting in the case shown here of four profiles, two disposed horizontally, respectively lower cross piece 1.2 and upper cross piece 1.3, and two disposed vertically, respectively right upright 1.1 and left upright 1.4.

The right upright 1.1 functions as an abutment or closing upright, in cooperation with the abutment upright 2.2 of the sliding window 2.

The profiles of the frame 1 are wide enough to allow to house the sliding window 2 positioned above the fixed window 20 when the former is in the at least partly open position.

The sliding window 2 also integrates a protective parapet to prevent falls, which in this case is formed by a plurality of cables 3, advantageously of the non-extendible type.

The cables 3 are divided into two groups, a first group (in this case consisting of five cables 3) associated with the upper part of the frame 1 and the sliding window 2, the other (also consisting of five cables 3) associated with the lower part of the frame 1 and the sliding window 2.

It is understood that the overall number of cables 3 (in this case ten), and also their reciprocal vertical distance (pitch), can be defined and possibly varied, according to the overall height that the parapet is to have in the operating condition, for example in relation to the specific legislative requirements in force where the door or window is used.

The fact that the upper and lower groups have the same number of cables 3 is also purely an example and not restrictive.

Each of the cables 3 has a respective first end anchored to the left non-abutment upright 2.1 of the sliding window 2.
The cables 3 then run horizontally, those of the upper group below the upper cross piece 1.3 of the frame 1, and those of the lower group above the lower cross piece 1.2 of the frame 1. Then they enter the non-abutment upright 1.4 by means of holes made for the purpose therein.

The cables 3 of each group then run from the non-abutment side of the door or window on a group of three rollers 4.2, 4.3, 4.4 with a substantially horizontal axis (see the detail in fig. 4), positioned one above the other in proximity with each corner (in this case on the left side) formed by the lower 1.2 and upper 1.3 cross pieces with the non-abutment upright 1.4 of the frame 1.

The function of the rollers 4.2, 4.3, 4.4 is substantially to make the cables 3 pass from a position outside the respective cross pieces 1.2 and 1.3 to a position inside them, after having inverted their direction.

Each of the cables 3 then runs inside the respective cross pieces, upper 1.3 and lower 1.2, for the whole of their length, as far as the corner defined by the latter with the abutment upright 1.1 of the frame 1.

In the corner position, there is a respective roller 4.5, upper and lower, around which the cables 3 rotate so as to be inserted inside the abutment upright 1.1.

Along the lower part of the abutment upright 1.1 there are respective rollers 4.1, positioned at the different heights that define the heights at which it is desired to position the cables 3 so as to form the parapet.

Each of the cables 3 is then made to rotate around its own specific roller 4.1 to rotate its direction of advance by 90°, so as then to exit through respective holes made in the upright 1.1 and anchor with its second end to the abutment upright 2.2 of the sliding window 2.

The rollers 4.1 are advantageously vertically equidistant with respect to each other, and define in their entirety the overall height of the parapet.

Each cable 3 of the upper group finishes all its movements inside a vertical plane that coincides with the plane of a cable 3 of the lower series. Consequently the cables 3 that exit from the abutment upright 1.1 of the frame 1 are not perfectly overlapping each other, but form two inclined planes shaped like a horizontal V.

When the sliding window 2 is opened, its leftward movement causes the cables 3 to be recalled, and running on the rollers 4.2, 4.3, 4.4 they are drawn
outside the abutment upright 1.1 of the frame 1 forming the parapet.

In the embodiment shown in fig. 7, which has the same reference numbers for parts equal or equivalent to those shown in the other drawings already described, there is an auxiliary profile 5, attached to the sliding window 2, in this case on its inside with respect to the room where it is installed. The auxiliary profile 5 has a height correlated to the height to be obtained for the protective parapet, and on it, on both sides on the relative opposite uprights, the opposite ends of the ten cables 3 are attached.

Thanks to the auxiliary profile 5, the cables 3 can be made to run through the relative profiles of the frame 1, as already described in the previous embodiment. However, they are not attached to the uprights of the sliding window 2, but follow a path (indicated by a line of dashes) around the frame 1, starting from the (right) abutment upright of the auxiliary profile 5, and then anchor on the non-abutment upright (in this case left) of the profile 5, passing through a box 6 that hides them from sight.

In this case too, there are various rollers (not shown), like the rollers 4 described above, which determine the path of the cables 3 through the frame 1 and the auxiliary profile 5.

With this solution, no intervention is necessary to make holes and/or any other type of attachment to the sliding window 2.

Other equivalent variants and solutions are possible, however, without departing from the field of the present invention as defined in the attached claims.

For example, instead of the cables 3 shown in the present description, any type of filiform element could be used, such a chain, a cord, a belt or suchlike, or even not filiform, for example a compactable shutter type element which opens, as it is gradually removed by the opening movement of the sliding window 2, to define a substantially continuous protection surface, and is then re-compacted with the inverse movement determined by the closing of the sliding window 2.

Furthermore, according to another variant (not shown), the cables 3 and the relative rollers 4.1-4.5 could be associated with vertical rotary profiles disposed laterally on one side and the other of the frame of the uprights 1.1 and 1.4 of the fixed frame 1; in this case, the opposite ends of the cables 3 can be attached to
the opposite uprights of the sliding window 2, or the auxiliary profile 5, but run outside the profiles of the frame 1, being unwound and rewound on the rollers 4.1-4.5 in relation to the opening/closing movement of the sliding Avindow 2.
CLAIMS

1. Door or window, having at least a fixed frame (1) disposed in correspondence with an aperture of a building, and at least a door or window element (2), mobile at least with respect to said fixed frame (1), from a first closed position of said aperture to a second at least partly open position, characterized in that a protective parapet (3) is also integrated into the door or window, and is able to selectively occupy, at least partly, the aperture determined by the opening of the mobile element (2), said parapet (3) having a first operating protective position that is automatically activated by the opening of the mobile element (2), and a second inactive position that is automatically activated by the closing of the mobile element of the door or window.

2. Door or window as in claim 1, characterized in that the second inactive position of the parapet (3) is a position of substantial retraction inside at least one mobile element (2) of the door or window.

3. Door or window as in claim 1, characterized in that the second inactive position of the parapet (3) is a position of substantial retraction inside at least one element of the fixed frame (1) on which the door or window is mounted.

4. Door or window as in claim 1, characterized in that the second inactive position of the parapet (3) is a position of substantial retraction inside at least one auxiliary profile (5) associated with at least one element (1, 2) of the door or window.

5. Door or window as in any claim hereinbefore, characterized in that the protective parapet consists of a plurality of cables (3), cords, belts or other similar or comparable elements, able to be disposed to partly cover the aperture that is determined when said mobile element (2) is opened.

6. Door or window as in claim 5, characterized in that said cables (3), cords or belts have an operating position, that is, with the mobile element (2) of the door or window open, to cover at least the lower part of the aperture thus obtained.

7. Door or window as in claim 5, wherein said mobile element (2) has an abutment upright (2.2) and an opposite non-abutment upright (2.1), characterized in that said cables (3), cords or belts have a first end anchored to the non-abutment upright (2.1) of the mobile element (2), run through a substantial part of the frame (1) on which said mobile element (2) is mounted, and have their other
end anchored to the abutment upright (2.2) of the mobile element (2).

8. Door or window as in any claim from 1 to 6, characterized in that it comprises at least an auxiliary profile (5) associated with the mobile element (2), on opposite vertical sides of which the opposite ends of said cables (3), cords or belts are anchored.

9. Door or window as in any claim hereinbefore, characterized in that said parapet has an adjustable safety height.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER
INV. E06B3/46 E06B9/01

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED
Minimum documentation searched (classification system followed by classification symbols)
E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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X Further documents are listed in the continuation of Box C

See patent family annex

* Special categories of cited documents
A' document defining the general state of the art which is not considered to be of particular relevance
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X' document of particular relevance, the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
Y' document of particular relevance, the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
&' member of the same patent family

Date of the actual completion of the international search: 5 February 2010

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Authorized officer: Bl Ancquaert, Kathleen
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