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(54) MODULE ATTACHABLE TO FACADES OF BUILDINGS FOR EVACUATING PEOPLE

(57) Module attachable to facades of buildings for evacuating people, comprised of an internal part (1) provided with primary hinged linking means (6) so as to link said internal part to the facade (5) of a building; an external part (2) linked to the internal part (1) by second hinged linking means (7); and at least one foldable ladder (3). The module includes a transmission device (8, 9) for the transmission of a swinging motion from the internal part (1) to the external part (2).

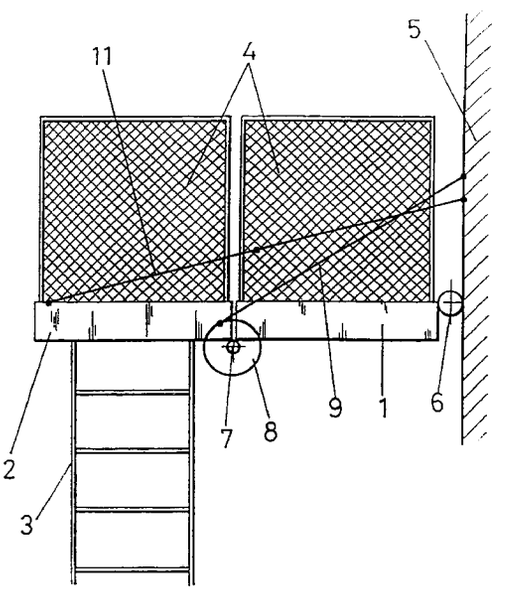

FIG.2

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Description

OBJECT OF THE INVENTION

The present invention refers to a module attachable to facades or suitable places of buildings for evacuating people, with characteristics of those from which functional and even structural advantages are derived from the module in question.

A fundamental object of the invention is that when the module unfolds, the two parts that comprise it, swing simultaneously towards the horizontal position, based on a special transmission element provided for between said two parts.

BACKGROUND OF THE INVENTION

Spanish patent application no. 9201298 claims a module attachable to facades of buildings for evacuating people, a module which is comprised of two parts hinged together, in such a way that one of them is, in turn, hinged, by means of its top edge, to the corresponding facade of the building, in such a way that in a folded position the part hinged or jointed to the facade remains attached to it, while the second part remains attached to the other part and hinged to it, in said folded position, by means of the corresponding bottom edge.

Now then, the constituent parts of the module comprise a series of elements such as a foldable ladder, some handrails, a fastening tie, and other components so that in the folded position people can be evacuated from one flat to another along the outside of the facade, logically through one of the windows or openings made for this purpose, in correspondence with which the module itself will be located.

The part of the module that is hinged to the facade or suitable place, once the anchoring element or device that fastens it in the folded position has been released, by gravity swings and adapts a horizontal position, while for the other part, being hinged to the previous part, it is necessary that an element or cable pulls it to likewise place it in a horizontal position, forming between both parts a horizontal surface whereon is provided a support platform for people and a hollow space or area through which they will have access to the module right below, by means of the ladder that forms part of the module.

DESCRIPTION OF THE INVENTION

The module described in Spanish patent application no. 9201298 referred to in the above section, has been improved in certain aspects thereof, the main improvement consists of the inclusion of a transmission device of the swinging motion from the first part or internal part of the module in the folding of the module, whose transmission of rotation or swinging is done directly on the second part or external part, so that in the unfolding both parts take on themselves a horizontal position without any additional elements.

This improvement prevents the need to use, if one considers it to be convenient, additional means such as motors, hydraulic or pneumatic pressure accumulators, springs, or any other type of harnessing or accumulating of force or energy extrinsic to the force of gravity itself, in order to achieve the swinging of the external part towards the horizontal position in the unfolding of the module.

The invention basically consists of a module attachable to facades of buildings for evacuating people, comprised of:

- an internal part with a proximal end and a distal end, said internal part being provided with first hinged linking means in order to be linked and fastened in a jointed manner to the facade (or to an equivalent structure) of a building, in such a way that said internal part can swing between a first substantially vertical position and a second substantially horizontal position;
- an external part with a proximal end and a distal end, the proximal end of said external part being linked to the distal end of the internal part by means of second hinged linking means, in such a way that the external part may be rotated from a first position in which said external part is substantially folded over said internal part, to a second position in which said external part is unfolded with regard to said internal part, adopting a substantially horizontal position, as an extension of the internal part;
- at least a foldable ladder (and, optionally, other accessories such as safety barriers, etc.), housed between said internal part and said external part when said internal part and said external part are in said first position; and
- a transmission device for the transmission of a swinging motion of the internal part to the external part.

This transmissions device includes a rotating part fixedly hinged to the external part, and a first winding and unwinding tie, the rotating part and the first tie being arranged in such a way that when the internal part swings from the first position towards the second position, the first tie produces a rotation of said rotating part giving rise to a swinging of the external part around the second hinged linking means. In this way, when the internal part swings from its first substantially vertical position towards it second substantially horizontal position, the external part is swung from first substantially vertical position towards its second substantially horizontal position.

Preferably, the second hinged linking means are connected to the bottom edges of the corresponding ends of the external and internal parts. The rotating part is preferably connected to the area of the second hinged

linking means, for example, with the bottom edge of the proximal end of the external part.

The first tie may include means so that it may be coupled to a facade of a building or to a fixed point connected to said facade.

The rotating part may be formed by a body with at least one curved portion, for example, by a pulley or toothed wheel, On the other hand, the first tie may be or may include a belt or a chain.

Hereinafter, to provide a better understanding of this specification and forming an integral part of the same, some figures wherein the object of the invention has been represented in an illustrative and non-restrictive manner, are attached hereto.

BRIEF DESCRIPTION OF THE FIGURES

Figure 1 shows a side raised schematic view of the module in accordance with the invention, which is provided with, in the area corresponding to the joint between both parts of the module, a device that transmits the rotary force of the internal part from the module to the external part, in order to achieve in the unfolding of the module the simultaneous horizontality of both parts.

Figure 2 shows a side raised view of the module in its unfolded position, remaining placed horizontally and where one can see the ladder as well as the handrail or guardrail that form part of the module.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS OF THE INVENTION

In view of figures 1 and 2, one can see how the module of the invention provided for to be attachable to facades or suitable places of buildings for evacuating people, is comprised of two parts (1, 2), one internal part (1) and another external part (2), which in a folded position as represented in figure 1, house a series of accessories necessary for safe and effective evacuation, such as a ladder (3), some guardrails, handrails or side safety barriers (4), as represented in the unfolded position of figure 2, or other accessories.

In any case, the internal part (1) of the module is linked to the corresponding facade (5) or suitable place of the building by means of a first hinged linking means (6) that allows the internal part (1) to be attached to the facade or suitable place as shown in figure 1, in the folded position, or else swing and remain in the horizontal position, as shown in figure 2.

As one can see, the internal part (1) is linked to the facade (5) or suitable place by means of the top edge of the proximal end thereof (1'), as clearly shown in the figures, while the second hinged linking means (7) between the external part (2) and the internal part (1) is mounted in correspondence with the bottom edge (1a) of the distal end (1'') of the internal part (1) and with the bottom edge (2a) of the proximal end (2') of the external part (2). In the unfolded position, represented in figure 2, the second hinged linking means (7) remains between said external (2) and internal (1) parts, but in correspondence with the bottom area, for the purpose of preventing that in that unfolded position the external part (2) can swing upward with regard to the internal part (1).

Now then, a rotating piece or part (8) integral to the external part (2), in correspondence with the hinging area of the second hinged linking means (7), in such a way that this rotating part (8) is connected by means of a first tie (9) to a fixed point (10), that may be of the facade itself or of any fixed element foreign to three module itself. This first tie (9) is partially wound over the rotating part (8), in the folded position, as shown in figure 1, while when the unfolding takes place, at the moment when the internal part (1) begins to swing outward, the first tie (9) will pull the rotating part (8) making it turn and therefore making the external part (2) swing in the opposite direction. That is to say, that while in the unfolding the internal part (1) turns counterclockwise, according to the arrow provided around the first hinged linking means (6), the external part (2), as it is pulled by the rotating part (8), turns clockwise, as also shown by the arrow represented on the top part of the rotating part (8).

Obviously, this rotating part (8) when the internal part (1) begins to unfold makes the external part (2) start the corresponding swing so that both parts (1, 2) lay simultaneously horizontally, with the particularity, that maintaining the horizontality is achieved by means of a second tie (11) or other suitable means anchored between a point close to the distal end (2'') of the external part (2) and a point of the facade (5). As can be seen in figure 2, the first tie (9) becomes longer as a result of its unwinding with regard to the rotating part (8), winding over it in the folded position of the module, just as it is shown in figure 1.

The rotating part (8) is formed by a body with a totally or partially curved, toothed or untoothed, profile which may be comprised of a pulley, a toothed wheel, etc., while the first tie (9) will be a totally or partially flexible element, and will be comprised of or include a cable, belt, chain, etc., logically depending on the constitution of the rotating part (8) and in any case with the necessary rigid parts, if there were any, as well as the necessary elements of adjustment, anchorage and transmission of movements.

This rotating part (8) makes it possible not to have to use additional means for unfolding and to achieve the horizontality of the external part (2), although it is not excluded that in certain cases, due to the needs of assembly or characteristics of the building, additional elements such as motors, hydraulic or pneumatic pressure accumulators, elastic elements or any other device for harnessing or accumulating force or energy extrinsic to the force of gravity itself, be required.

Claims

1. Module attachable to facades of building for evacuating people, comprised of:

   an internal part (1) with a proximal end (1') and a distal end (1"), said internal part (1) being provided with first hinged linking means (6) to be linked to the facade (5) of a building, in such a way that said internal part (1) can swing between a first substantially vertical position and a second substantially horizontal position;
   an external part (2) with a proximal end (2') and a distal end (2"), the proximal end (2') of said external part (2) linked to the distal end (1") of the internal part (1) by means of second hinged linking means (7), in such-a way that the external part may be rotated from a first substantially vertical position, in which said external part (2) is substantially folded over said internal part (1), until a second position in which said external part is unfolded with regard to said internal part, adopting a substantially vertical position, as an extension of the internal part (1);
   at least one foldable ladder (3), housed between said internal part (1) and said external part (2) when said internal part and said external part are in said first position;
   characterized in that
   it includes a transmission device (8, 9) for the transmission of a swinging motion from the internal part (1) to the external part (2), this transmission device (8, 9) including a rotating part (8), fixedly joined to the external part (2) in the proximal end of said external part (2), and a first winding and unwinding tie (9), said rotating part (8) and said first tie (9) being placed in such a way that when the internal part (1) swings from the first position towards the second position, said first tie (9) producing a rotation of said rotating part (8) giving rise to a swinging of the external part (2) around the second hinged linking means (7), in such a way that when the internal part (1) swings from its first substantially vertical position towards it second substantially horizontal position, the external part (2) is swung from its first substantially vertical position, towards its second substantially horizontal position.

2. Module, according to claim 1, in which the distal end of the internal part (1) and the proximal end of the external part (2) each have a bottom edge (1a, 2a), the second hinged linking means (7) being connected to said bottom edges (1a, 2a).

3. Module, according to claim 2, in which the rotating part (8) is connected to the bottom edge (2a) of the proximal end (2') of the external part (2).

4. Module, according to claim 1, in which the first tie (9) includes means for its coupling to a fixed point (10) connected to a facade (5) or to a necessary support structure.

5. Module, according to claim 1, which also includes a second tie (11) joined to a point close to the distal end (2") of the external part (2) and means for coupling thereof to a facade of a building or fixed point connected to said facade or to a necessary support structure, this second tie (11) serving to maintain the module assembly in the horizontal position once the assembly is unfolded.

6. Module, according to claim 1, in which the rotating part (8) is formed by a body of, at least, one curved portion.

7. Module, according to claim 6, in which the rotating part (8) is a pulley.

8. Module, according to claim 6, in which the rotating part (8) is a toothed wheel.

9. Module, according to claim 6, in which the first tie (9) includes a flexible part.

10. Module, according to claim 6, in which the first tie (9) includes a rigid part.

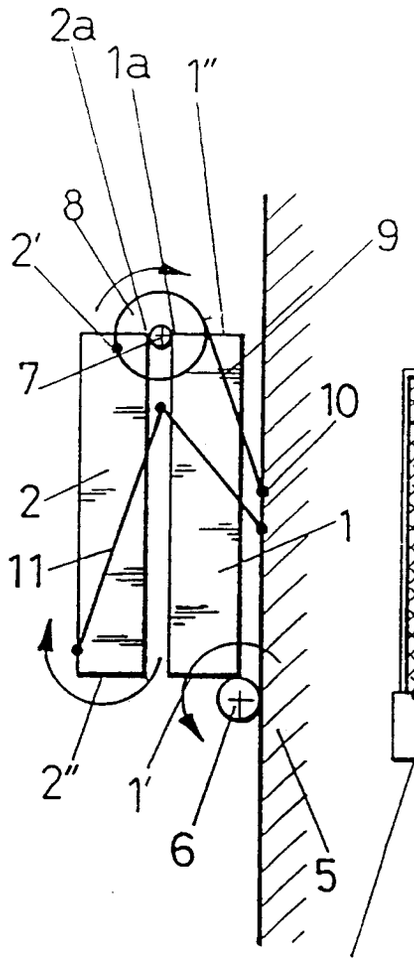

FIG.1

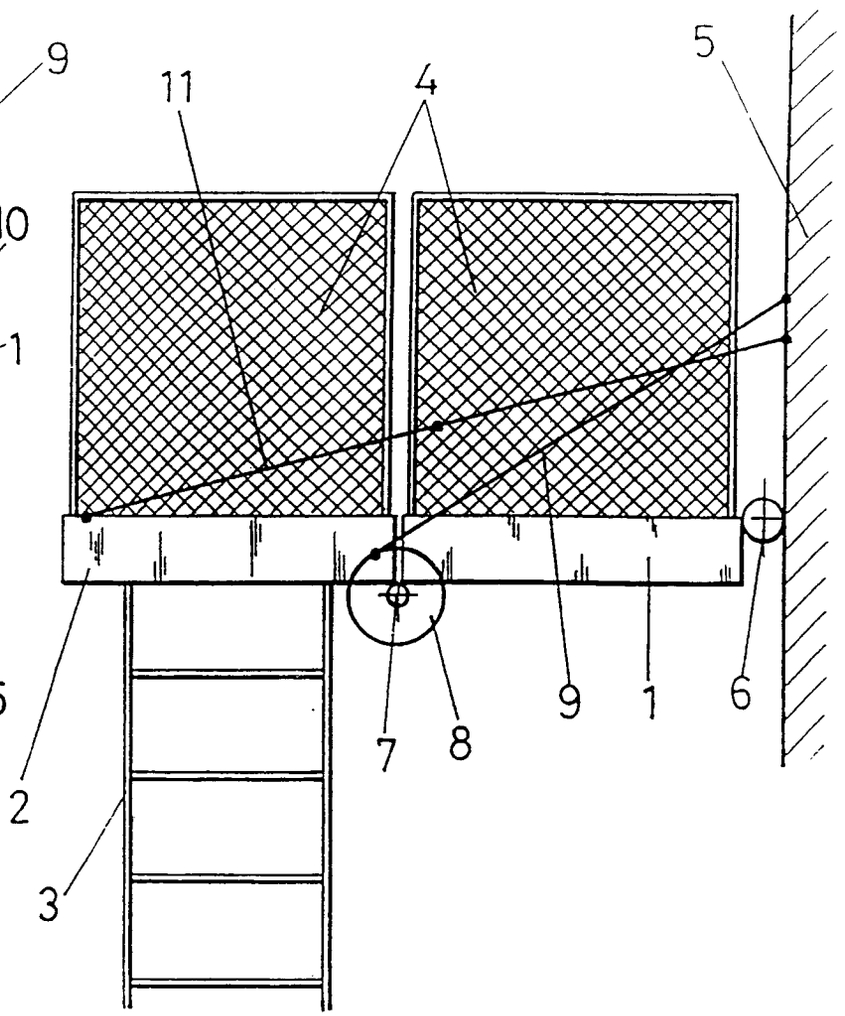

FIG.2

INTERNATIONAL SEARCH REPORT

International application No
PCT/ES 97/00043

A. CLASSIFICATION OF SUBJECT MATTER

IPC[6]: E06C9/06, E06C9/10

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)

IPC[6]: E06C9/06, E06C9/08, E06C9/14, E06C1/393, E06C1/39, E06C9/10

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 practicable, search terms used)

EPODOC, WPI, CIBEPAT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	US-3363722-A (RIMI) 16 January 1968 (16.01.68) whole document	1
A	ES-2068091-A (LORENTE ALBARRACIN) 1 April 1995 (01.04.95) whole document	1,2,5
A	ES-2013954-A (HISTI DEVELOPMENT) 1 June 1990 (01.06.90) column 2, line 54-column3, line 36; figures	1,4
A	US-5303799-A (TSAI) 19 April 1994 (19.04.94) column 2, line 1-column 4, line 2; figures	1,4,5,8,9
A	GB-2049778-A (CHENG) 31 December 1980 (31.12.80) whole document	1,2,4
A	US-3847246-A (BANNER) 12 November 1974 (12.11.74)	

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
12 June 1997 (12.06.97)	24 June 1997 (24.06.97)
Name and mailing address of the ISA/ S.P.T.O. Facsimile No.	Authorized officer Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)