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(54) **DROP-DOWN SCREEN**

(57) A drop-down screen (1) comprising a fixed screen (2) having a first frame, (4) with at least one recess (5) in each side piece and a sliding screen (3) with a second frame, (6) with at least one flange (7) in each side piece, where the sliding screen (3) is guided in its movement by the flanges (7) in the recesses (5), and containing a lifting mechanism (8) containing a guide bushing (11) attached to the first frame, (4), a piston (12) with a plunger (13) and a body (14) with a bracket (10) attached in one end, a pulley (9) in the bracket (10) and a pulley cable (15). The plunger is attached to the first frame, (4), the body (14) runs along the guide bushing (11), and the pulley cable (15) is attached to the guide bushing (11), to the second frame (6) and passes through the pulley (9).

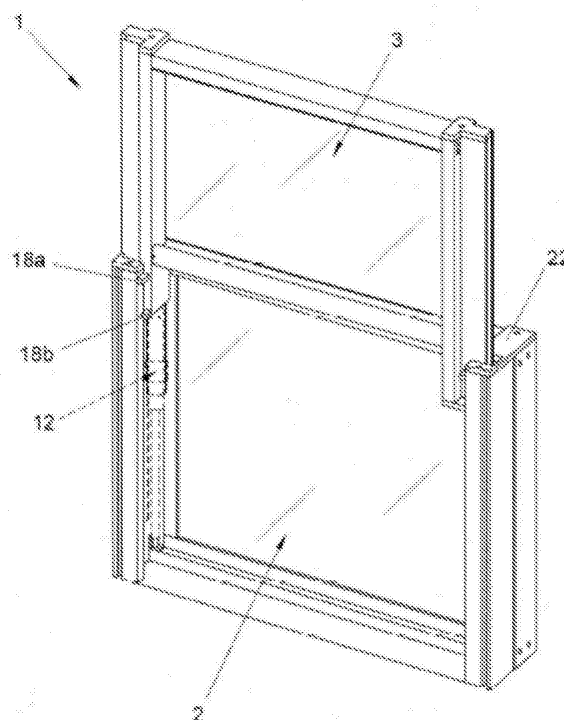


FIG. 1

Description

Object of the invention

[0001] The present invention relates to a drop-down screen incorporating a mechanism for extending the top of the screen concealed in the lower part, which offers better lifting performance than the mechanisms currently on the market. The screen may be used in areas that are to be divided into open areas or to create temporary enclosures in open spaces.

Technical problem to be resolved and background of the invention

[0002] Due to legal restrictions on smoking in the interior of premises, there is an ever greater use in the hospitality industry of outdoor patios, traditionally only used in the summer season, with installations that enable such spaces to be used throughout the year, in such a way that they are considered open spaces and thus users of the patios can smoke on them.

[0003] In order to enclose a patio, a device is used that enables the space to be opened up to the open air when weather conditions permit. Many different devices are currently in use to enclose open patio-type spaces with greater or lesser success. Very frequently, screens are used with a fixed lower part and an upper part which, by means of a raising and lowering mechanism, can be concealed together with the lower part. It is also very common to use awning or curtain-type elements, which roll up into the top or side of the screen, leaving the space open, and which can be rolled out quickly and simply to enclose the open space.

[0004] Said screens can be used either -as mentioned- for enclosing terraces or to create independent spaces by means of separations in large spaces, for example to separate different areas within an office or different reception windows.

[0005] In office environments, it is often necessary because of the nature of the work to separate different people working together. Until now, this has been achieved using screens that can be dismantled. When a change in the office layout is required, these have to be dismantled and reassembled in another site or else the screen has to be removed. The subsequent disadvantage of using screens of the kind currently employed is that they require very long term planning of the office layout and changes are costly and complicated. With a drop-down screen of the kind currently in use, the problem is that because the raising and lowering mechanisms are exposed and are used very infrequently, they tend to get jammed or broken.

[0006] In the screens currently available, there is a mechanism for raising and lowering the top part which comprises a counterweight, balancing the upward/downward movements of the screen, which causes problems throughout the useful service life of the mechanism.

[0007] The counterweight of the mechanisms known in the current state of the art creates problems in assembly and transport of the screen, since it requires a space inside the lower part of the screen, thus increasing the dimensions of same.

[0008] Likewise, the counterweight system used in the drop-down screens known in the current state of the art is accessible from the exterior of the screen and has no fairing or other element to prevent access to the system. This causes safety issues, since entanglement may occur during raising and lowering of the system. Moreover, because it is exposed, particles of dust, beach sand and other foreign bodies can enter the counterweight system and this system therefore requires maintenance to prevent deterioration.

Description of the invention

[0009] The present invention relates to a drop-down screen, comprising a fixed screen having a first frame containing two side pieces with at least one recess on each side and a first base, and a sliding screen having a second frame containing two side pieces with at least one flange on each side piece and a second base

[0010] In the drop-down screen according to the present invention, movement of the sliding screen is guided by the position of the flanges inside the recesses and it contains at least one mechanism for raising the sliding screen.

[0011] Each mechanism for raising the drop-down screen according to the present invention contains a guide bushing attached to one side piece of the first frame, a piston containing a plunger and a body, a bracket attached to one end of the body of the piston, a pulley located in the bracket, and a pulley cable.

[0012] In the lifting mechanism, the plunger of the piston is attached to the first base, movement of the body of the piston is guided by the guide bushing, and the pulley cable is attached at one end to the guide bushing and at the other end to the second base and passes through the pulley.

[0013] In the drop-down screen, the plunger of the piston is attached by means of a support to the first base of the first frame of the fixed screen.

[0014] The drop-down screen contains at least one inner cover attached to the interior of the first frame of the fixed screen, which covers the lifting mechanism.

[0015] The drop-down screen has slide seals housed in the recesses of the fixed screen which aid the movement of the sliding screen along the fixed screen.

[0016] The drop-down screen contains a safety locking element that prevents unauthorised manipulation of the drop-down screen.

[0017] In the drop-down screen the fixed screen contains a first buffer and the sliding screen contains a second buffer, such that the sliding screen moves along the fixed screen to a final position where the second buffer of the sliding screen comes into contact with the first buff-

er of the fixed screen, limiting the movement of the sliding screen along the fixed screen.

Description of figures

[0018] To complete the description and in order to allow better understanding of the technical characteristics of the screen according to the present invention, this description is accompanied by a set of drawings showing as follows in indicative, but not limitative terms:

Figure 1 is a perspective view of the screen according to the present invention in open position.

Figure 2 is a perspective view of the screen according to the present invention in closed position

Figure 3 is an exploded perspective view of the screen according to the present invention.

Figure 4 is a plan view of the screen according to the present invention showing the elements of the lifting mechanism incorporated in the screen.

Figure 5 is a cross-sectioned view of the lifting mechanism in closed position.

Figure 6 is a cross-sectioned view of the lifting mechanism in open position.

[0019] The numerical references on the figures refer to the following items:

- 1.- screen,
- 2.- fixed screen,
- 3.- sliding screen,
- 4.- first frame,
- 5.- recess,
- 6.- second frame,
- 7.- flange,
- 8.- lifting mechanism,
- 9.- pulley,
- 10.- bracket,
- 11.- guide bushing,
- 12.- piston,
- 13.- plunger,
- 14.- body,
- 15.- pulley cable,
- 16.- first attachment point,
- 17.- second attachment point,
- 18a.- first buffer,
- 18b.- second buffer,
- 19.- slide seal,
- 20.- first base, and
- 21.- second base,
- 22.- upper cover,
- 23.- inner cover,
- 24.- support,

25.- safety locking element.

Preferred embodiment of the invention

[0020] The drop-down screen (1) according to the present invention contains a fixed screen (2) and a sliding screen (3), with the fixed screen (2) containing a first frame, (4) along which the sliding screen (3) moves. The drop-down screen (1) according to the present invention is positioned on the ground in such a way that, when the drop-down screen (1) according to the present invention is open, the fixed screen (2) is at the bottom and the sliding screen (3) has an upward and downward movement relative to the fixed screen (2). When the drop-down screen (1) according to the present invention is in the closed position, the fixed screen (2) and the sliding screen (3) are located one in front of the other.

[0021] The first frame, (4) of the fixed screen (2) contains side pieces having recesses (5) that guide the movement of the sliding screen (3) along the aforesaid first frame (4) and also a first base (20) located in the lowest position of the first frame, (4) in the operating position of the drop-down screen (1). Covering the recesses (5) in the top area of the fixed screen (2) there is an upper cover, (22) restricting access to a lifting mechanism (8) from the top area of the drop-down screen (1).

[0022] The sliding screen (3) has a second frame, (6) with side pieces containing flanges (7) that fit into the recesses (5) in the first frame, (4) of the fixed screen (2), in such a way that the movement of the sliding screen (3) is guided by the position of the flanges (7) inside the recesses (5). The second frame (6) also contains a second base, (21) located in the lowest position of the second frame, (6) in the operating position of the drop-down screen (1).

[0023] The drop-down screen (1) according to the present invention contains slide seals (19) housed in the recesses (5) of the fixed screen (2) which aid movement of the sliding screen (3) along the fixed screen (2). In the preferred embodiment of the invention the slide seals (19) are formed by nylon bushings housed in the recesses (5) of the fixed screen (2).

[0024] The drop-down screen (1) according to the present invention contains a lifting mechanism (8) that governs the movements of raising and lowering the sliding screen (3). This lifting mechanism (8) is situated either in one side piece or in both side pieces of the first frame, (4) of the fixed screen (2); locating it in the two side pieces of the fixed screen (2) offers greater safety since the effort of raising the sliding screen (3) is distributed between the two side pieces of the fixed screen (2).

[0025] The lifting mechanism (8) contains:

- a pulley (9),
- a bracket (10),
- a guide bushing (11),
- a piston (12) containing a plunger (13) and a body (14), and

- a pulley cable (15).

[0026] The plunger (13) of the piston (12) is attached by means of a support (24) to the first base (20) in the lowest area of the first frame (4) of the fixed screen (2). The guide bushing (11) inside which the body (14) of the piston (12) runs is attached to a side piece of the fixed screen (2). The bracket (10) on which the pulley (9) is located in the body (14) of the piston (12), at the opposite end to the plunger (13).

[0027] The power of the piston (12) incorporated in the fixed screen (2) is dependent on the dimensions of the sliding screen (3) and the characteristics of the glass in the sliding screen (3).

[0028] The position and size of the guide bushing (11) in the fixed screen (2) are such as to allow the body (14) of the piston (12) to move inside, and the movement of the body (14) of the piston (12) lifts the sliding screen (3) to its final position.

[0029] The pulley cable (15) is attached at one end to the guide bushing (11) at a first attachment point, (16), and at the other end to the sliding screen (3) at a second attachment point, (17) located in the second base (21) of the aforesaid sliding screen (3), with the pulley cable (15) passing through the pulley (9).

[0030] The sliding screen (3) is raised by the upward movement of the body (14) of the piston (12). By means of the lifting mechanism (8) provided in the drop-down screen (1) according to the present invention, the movement of the sliding screen (3) duplicates the movement of the body (14) of the piston (12), which results in a greater elevation of the sliding screen (3) than that known in the current state of the art.

[0031] In order to prevent the sliding screen (3) from accidentally becoming detached as it slides along the fixed screen (2), to avoid the flanges (7) coming out of the recesses (5), the sliding screen (3) contains at least one second buffer, (18b) which comes into contact with a first buffer, (18a) in the fixed screen (2) such that when the drop-down screen (1) is in the open position, the second buffer, (18b) of the sliding screen (3) comes into contact with the first buffer, (18a) of the fixed screen (2).

[0032] The drop-down screen (1) according to the present invention contains a safety locking element (25) that prevent movement of the sliding screen (3) once it is in the closed position, thus preventing unauthorised manipulation of the drop-down screen (1) according to the present invention.

[0033] In one embodiment, this safety locking element (25) is formed by a pin situated in the upper cover of the fixed screen (2) and when the sliding screen (3) is in the closed position it fits into the top of the sliding screen (3) preventing any movement of this sliding screen (3).

[0034] To protect the lifting mechanism (8), there is an inner cover (23) in the interior of the first frame (4) of the fixed screen (2), which covers the gap in which the lifting mechanism is located (8), preventing dirt from getting into the lifting mechanism (8). It also offers greater safety

by preventing access to the lifting mechanism (8), and therefore preventing unauthorised manipulation of the drop-down screen (1).

[0035] The invention should not be limited to the particular embodiment described herein. Experts in the field may develop other embodiments in light of the description provided here. Accordingly, the scope of the invention is defined by the following claims.

Claims

1. Drop-down screen (1), comprising:

- a fixed screen (2) having a first frame, (4) containing two side pieces with at least one recess (5) on each side piece and a first base (20), and
- a sliding screen (3) having a second frame, (6) containing two side pieces with at least one flange (7) on each side piece and a second base, (21),

such that the movement of the sliding screen (3) is guided by the position of the flanges (7) within the recesses (5), and containing at least one mechanism for raising (8) the sliding screen (3),

characterised in that each lifting mechanism (8) contains:

- a guide bushing (11), attached to one side piece of the first frame, (4),
- a piston (12) containing a plunger (13) and a body (14),
- a bracket (10) attached in one end of the body (14) of the piston (12),
- a pulley (9), located in the bracket (10), and
- a pulley cable (15),

where the plunger (13) of the piston (12) is attached to the first base (20), the body (14) of the piston (12) has a displacement guided by the guide bushing (11), and the pulley cable (15) is attached at one end to the guide bushing (11) and at the other end to the second base (21) and passes through the pulley (9).

2. Drop-down screen (1) according to Claim 1 **characterised in that** the plunger (13) of the piston (12) is attached by means of a support (24) to the first base (20) of the first frame (4) of the fixed screen (2).

3. Drop-down screen (1) according to any of the above claims **characterised in that** it contains at least one inner cover, (23) attached in the interior of the first frame, (4) of the fixed screen (2), that covers the lifting mechanism (8).

4. Drop-down screen (1) according to any of the above claims, **characterised in that** it contains slide seals

(19) housed in the recesses (5) of the fixed screen (2) which aid movement of the sliding screen (3) along the fixed screen (2).

5. Drop-down screen (1), according to the above claims **characterised in that** it contains a safety locking element (25) which prevents unauthorised manipulation of the drop-down screen (1). 5

6. Drop-down screen (1) according to any of the above claims **characterised in that:** 10

- the fixed screen (2) contains a first buffer (18a),
- the sliding screen (3) contains a second buffer (18b), 15

such that the sliding screen (3) runs along the fixed screen (2) to a final position at which the second buffer, (18b) of the sliding screen (3) comes into contact with the first buffer (18a) of the fixed screen (2) 20 limiting the movement of the sliding screen (3) along the fixed screen (2).

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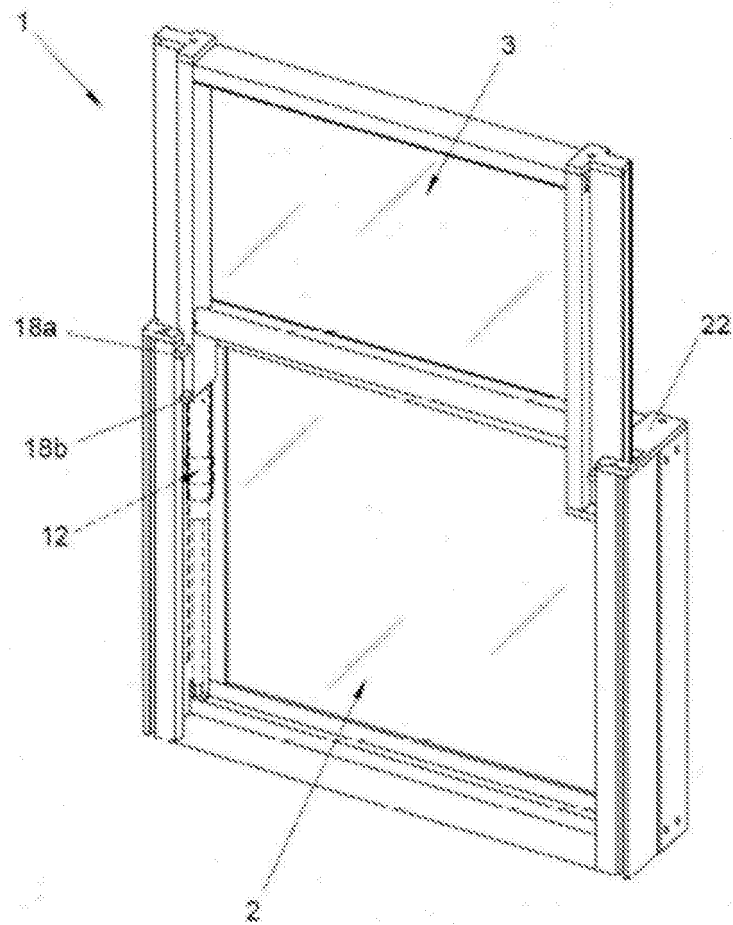


FIG. 1

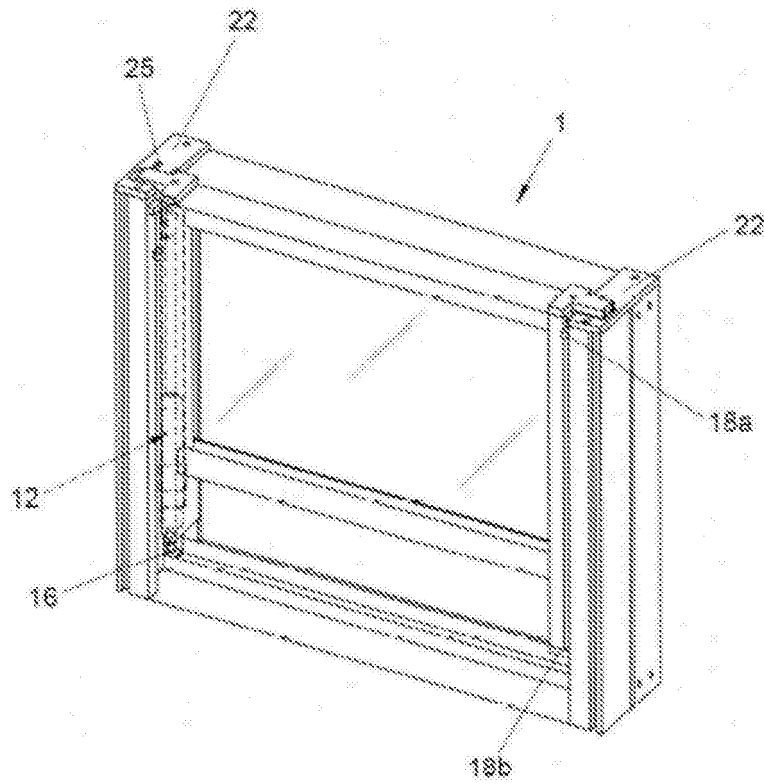


FIG. 2

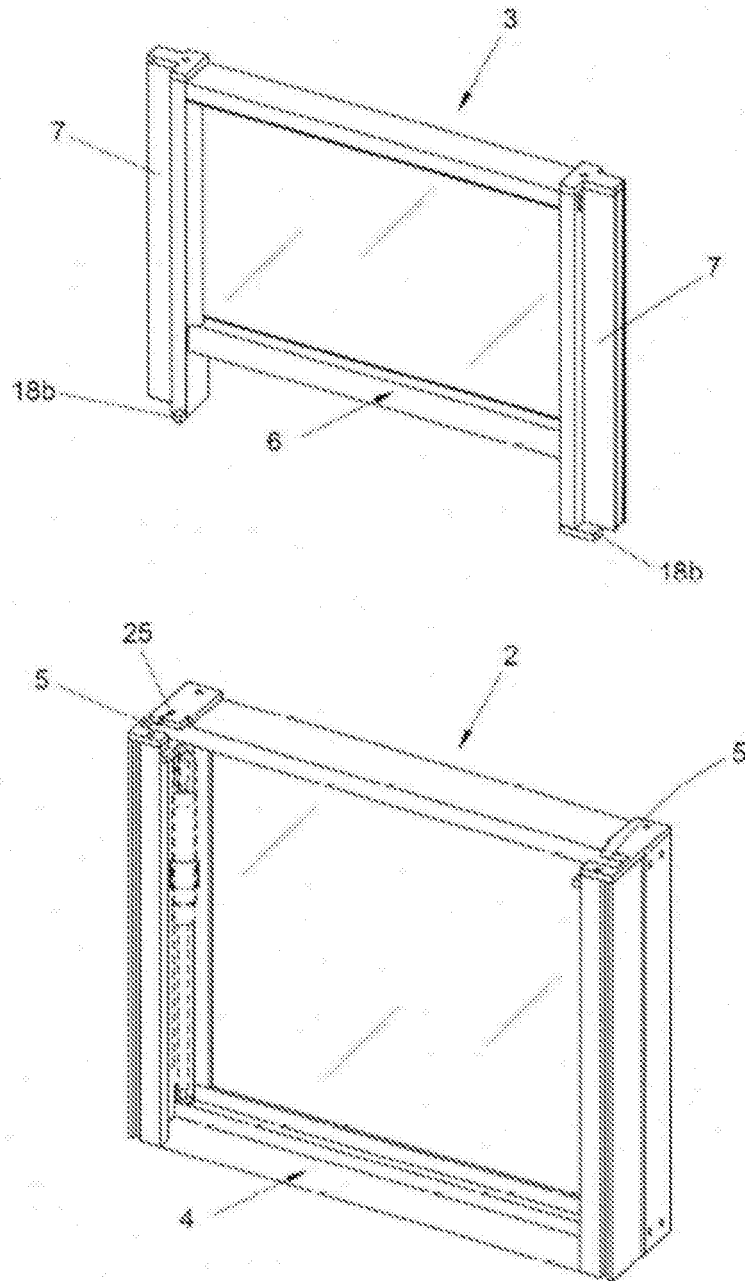


FIG. 3

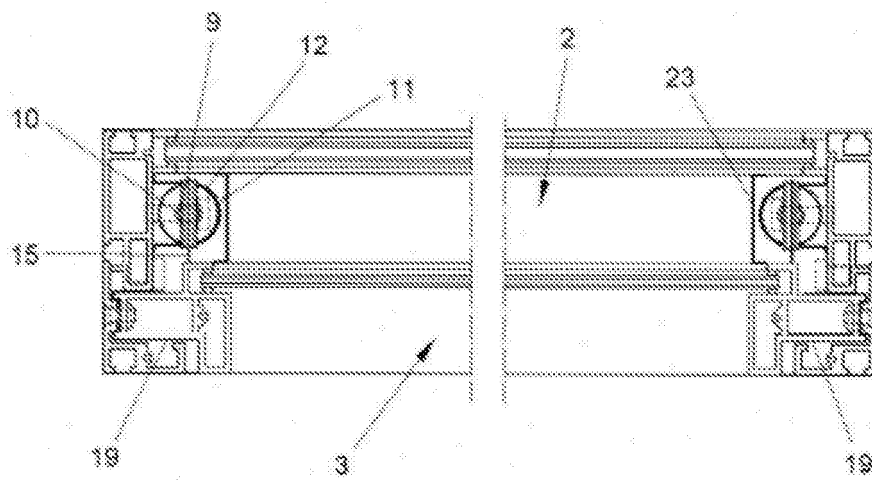


FIG. 4

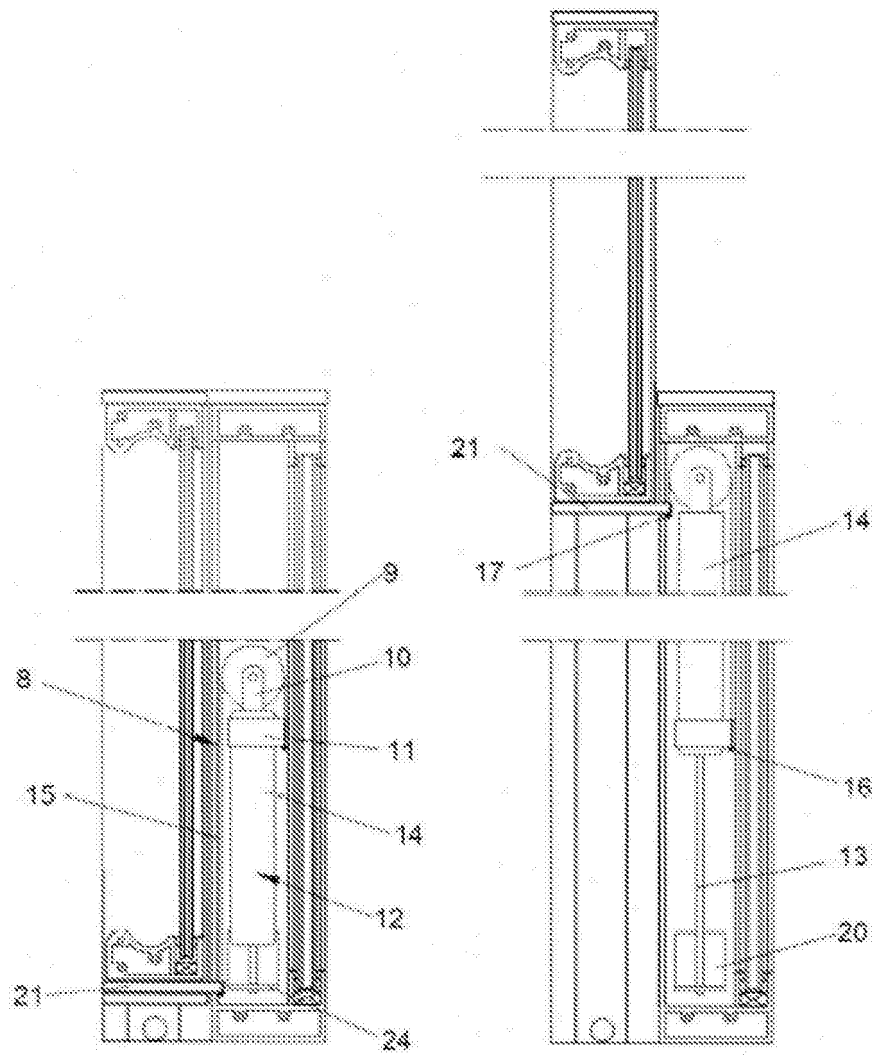


FIG. 5

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2015/070124

A. CLASSIFICATION OF SUBJECT MATTER

E05D13/00 (2006.01)*E05F15/57* (2015.01)

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)

E05D, E05F

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, INVENES

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2184430 A1 (CAIMI EXP S P A) 12/05/2010, abstract, figures 1-3.	1-6
A	FR 2968344 A1 (PERRIER SA) 08/06/2012, page 4, line 27- page 7, line 7; figures 1-5	1
A	DE 4431205 A1 (SORPETALER FENSTERBAU GMBH) 13/04/1995, column 3, line 19- column 4, line 47; figures 1 and 2.	1

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

* Special categories of cited documents:

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Date of the actual completion of the international search
25/05/2015Date of mailing of the international search report
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Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2015/070124

Information on patent family members

Patent document cited in the search report	Publication date	Patent family member(s)	Publication date
EP2184430 A1	12.05.2010	ITMI20082001 A1	12.05.2010
DE4431205 A1	13.04.1995	DE9315127U U1	25.08.1994
FR2968344 A1	08.06.2012	NONE	

Form PCT/ISA/210 (patent family annex) (July 2009)