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(54) **CLOSURE DEVICE FOR A PIVOTING DOOR**

(57) This invention is related to a closure device (10) characterised in that it comprises an upper rail (11), a lower rail (12), a pivoting fixed door (3), a cover (4) and a closure element (5). The pivoting fixed door (3) is arranged between the upper rail (11) and the lower rail (12), and comprises an upper profile (31) and a lower profile (32). The cover (4) is fixed to the upper rail (11) and comprises a slot (401). The closure element (5) is fixed to the upper profile (31) of the pivoting fixed door (3) and comprises a first mobile stop (501), such that, in an opening position of the first mobile stop (501), the closure element (5) can pass through the slot (401) of the cover (4) and in a second locking position of the first mobile stop (501), said first mobile stop (501) represents an obstacle to the closure element (5) passing through the cover (4).

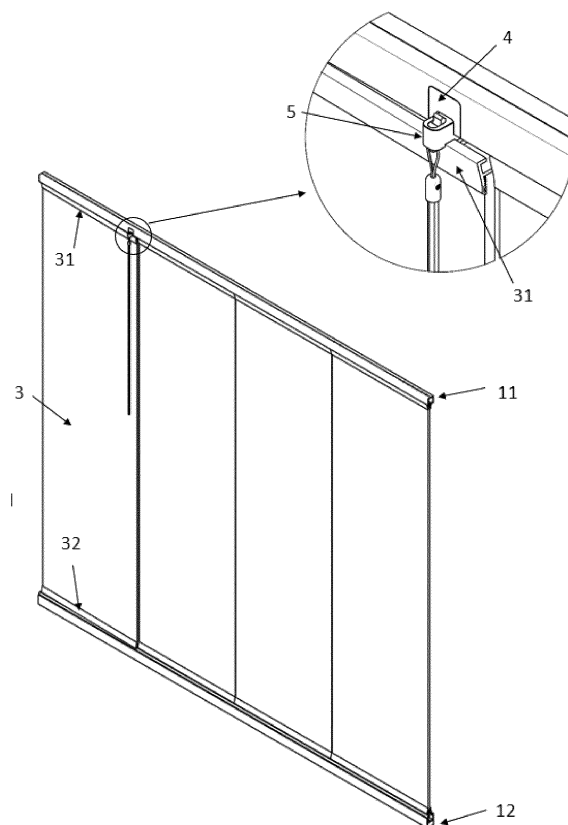


Fig. 8

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Description

APPLICATION FIELD

[0001] This invention belongs to the technical field of glass pivoting panel enclosure systems.

BACKGROUND

[0002] The enclosure systems that use panels made of glass or materials with similar mechanical characteristics mainly tend to be formed by a set of panels that are supported and guided by upper and lower rails that are mounted on the ceiling and the floor of the space in which the enclosure is to be carried out.

[0003] There are several panel enclosure systems on the market that are folded by sliding on rails and are all stored at one end or divided at both ends of said rails after a pivoting operation in the area where the door panel is located. In these systems there is a panel that is referred to as door, which can be opened and closed by rotating on a fixed virtual axis that joins the upper and lower rails.

[0004] There are sliding and pivoting panel enclosure systems on the market that are folded at one of the ends and operate either by sliding (PCT/ES2010/000187 PCT/ES/2011/000210) or by means of rollers (DE 10333612 (A1) and ES 2262013T3). These systems currently require a support point, referred to as arm, to prevent the panels from becoming unhooked when said panels are opened. Said support takes up a space in the transverse direction of the glazing system, this projecting element prevents the installation of elements such as roman or rolling blinds and floor to ceiling curtains, since it is an obstacle to the normal operation thereof.

[0005] The present invention eliminates the need for the closure device to incorporate this projecting arm. It also relieves the upper guide element of its function as a support element for the pivoting at the time the panels are folded at one of the ends.

[0006] Removing the projecting arms also entails a new closure/locking system of the system in the panel referred to as door. This new closure system is also described in the present invention.

DESCRIPTION OF THE INVENTION

[0007] This problem is resolved by means of a closure device according to claim 1. The dependent claims define preferred embodiments of the invention.

[0008] The invention relates to a closure device for a pivoting door, the closure device being characterised in that it comprises:

- an upper rail;
- a lower rail;
- a pivoting fixed door, arranged between the upper rail and the lower rail, the pivoting fixed door com-

prising an upper profile and a lower profile, the pivoting fixed door being adapted to a cover fixed to the upper rail, the cover comprising a slot;

a closure element fixed to the upper profile of the pivoting fixed door, the closure element comprising a first mobile stop, such that, in an opening position of the first mobile stop, the closure element can pass through the slot of the cover and in a second locking position of the first mobile stop, said first mobile stop represents an obstacle to the closure element passing through the cover.

[0009] This closure device enables the opening and closing of the mobile door by means of an innovative closure system that takes up less space and can be more simply and directly actuated. The fact that the cover is fixed to the rail and that the closure element is fixed on the door constitutes a compact and reliable system.

[0010] In a particular embodiment, the first mobile stop comprises an inclined surface, such that it can change from the locking position to the opening position by means of pressure carried out on said inclined surface, as a result, for example, of forcing the first mobile stop against a fixed surface that forms a certain angle with respect to said inclined surface. Furthermore, in particular embodiments, the closure element comprises recovery means that enable the first mobile stop to change from the opening position to the locking position. These recovery means can be springs or similar, but can also be elements that are activated by remote control, locks, etc.

[0011] This closure device enables the door to be closed without the need to actuate the mobile stop from the outside, but rather by simply pushing the pivoting fixed door towards the closed position thereof.

[0012] In a particular embodiment, the first mobile stop can be activated such that it changes from the locking position to the opening position by means of a handle, or by means of a cable or by means of a remote device or any other suitable device.

[0013] This closure device facilitates the opening of the door, acting externally on the mobile stop by means of elements that facilitate this action.

[0014] In a particular embodiment, the closure element comprises a second mobile stop, which is integral to the first mobile stop, such that when the first mobile stop is in the opening position, the second mobile stop is also in the opening position, and when the first mobile stop is in the locking position, the second mobile stop is in the locking position; and that the cover comprises a housing suitable to receive and retain at least a portion of the second mobile stop.

[0015] This closure device enables the pivoting fixed door to be located in several positions with respect to the upper and lower rails, due to the fact that the second mobile stop can be inserted into the housing of the cover, the door thus being locked in a slightly open position,

which is suitable for ventilation, but with the security that the door will not move until the second mobile stop inserted into the housing is released.

[0016] In a particular embodiment, the closure element further comprises a handle adapted to change the position of the first mobile stop and/or the second mobile stop between the opening position and the locking position.

[0017] The handle enables easy actuation of the first and second mobile stops.

[0018] In a particular embodiment, the closure device further comprises

at least one sliding and pivoting panel, each one comprising an upper profile;

a first support piece fixed to the upper rail; and

a second support piece fixed to the upper profile of the at least one pivoting and sliding panel;

wherein the first support piece comprises a first portion intended to project from the upper rail, this first portion of the first support piece comprising at least two converging edges and two stop edges, that form between 80° and 100° with respect to the converging edges;

wherein the second support piece comprises a first portion intended to project from each one of the upper profiles of the at least one sliding and pivoting panel; this first portion of the second support piece comprising at least two converging edges, at least one of the converging edges of the first portion of the second support piece being intended to be supported on one of the converging edges of the first portion of the first support piece; the first portion of the second support piece further comprising two stop edges, which form between 80° and 100° with respect to the converging edges, these stop edges being parallel to the main direction of the upper profile of the pivoting fixed door.

[0019] This closure device advantageously enables the opening and closing of the pivoting fixed door and of the sliding and pivoting panels without having to use an arm that perpendicularly projects from the upper rail. The position of the first support piece, in collaboration with the second support piece placed on the pivoting fixed door, enables the door to be guided during the first pivoting phase, when the likelihood of unhooking is greater. The absence of an arm that projects prevents the inconveniences that this entails when using sun control elements (such as blinds, curtains, etc.), since the arm prevented the normal operation of said sun control elements.

[0020] In a particular embodiment, the first support piece comprises a second portion intended to be inserted into the upper rail, such that this second portion is isolated from any first portion of any other first support piece.

[0021] This second portion, which is isolated, enables the first support piece to be an individual piece, not a rack, as described in other documents of the state of the art. Having an individual piece provides a number of advantages, since it takes up less space of the insulation mat that tends to be placed between the pivoting fixed door and the upper rail.

[0022] In a particular embodiment, the second support

piece comprises a second portion, joined to the first portion of the second support piece by means of a slot, this second portion of the second support piece being intended to be inserted inside the upper profile of the at least one sliding and pivoting panel, such that the plan cross section of the first portion of the second support piece is larger than the plan cross section of the second portion of the second support piece.

[0023] The fact that the cross section of the first portion is larger than the cross section of the second portion enables a better support of the second coupling piece on the first, ensuring to an even greater extent the opening and closing operation of the pivoting fixed door.

[0024] In a particular embodiment, the pivoting fixed door and the at least one sliding and pivoting panel has a thickness, and the closure device comprises a plurality of first support pieces such that the distance between the first portions of the two first adjacent support pieces is four times larger than the thickness of the pivoting fixed door and of the at least one sliding and pivoting panel.

[0025] The location of the first support pieces every four doors achieves a very clean installation, and enables great flexibility in the installation since the support pieces are distributed throughout the upper rail, thus enabling a greater compensation when the ground is uneven.

[0026] In a particular embodiment, the closure device comprises a number of first support pieces that is the fourth part of the number of sliding and pivoting panels, rounding to the next natural number if the fourth part is not a natural number.

[0027] This closure device is compatible with the presence of several sliding panels, which complement the closure of a space.

[0028] In a particular embodiment, in which each one of the upper profiles of the at least one sliding and pivoting panel comprises a first edge, and which in each one of the sliding panels, the second support piece is at an increasingly small distance from the first edge of the upper profile of the corresponding panel, such that for each pair of consecutive panels, the difference between the distance of the second support piece to the first edge of the upper profile of a panel and the distance of the second support piece to the first edge of the upper profile of the other panel is constant. In particular embodiments, this constant difference is equal to the value of the thickness of the pivoting fixed door and of the at least one sliding and pivoting panel.

[0029] The fact that the second support pieces have this arrangement enables the same first support piece to be used for four sliding and pivoting panels, such that the first support pieces take up even less space in the upper rail. This results in a simpler, inexpensive and insulated installation.

[0030] In some particular embodiments, the first support piece further comprises height-adjustable stops intended to be supported on the upper rail, such that the distance between the converging edges and the upper rail can be adjusted by regulating said adjustable stops.

[0031] These height-adjustable stops enable the installation of the first support piece even when the clearance between the upper rail and the panel is not that which is initially planned, therefore enabling a greater tolerance in the installation process.

[0032] In some particular embodiments, the height-adjustable stops comprise at least one screw adjustable by means of screwing, configured to project an adjustable distance with respect to the second portion.

[0033] These are simple embodiments of the adjustable stops, the screw is accessible from the outside and enables the operator to adjust the height even though the support piece is already inside the upper rail.

[0034] In a particular embodiment, the first support piece and/or second support piece and/or the cover and/or the closure element comprise fixing means by screwing or by an alternative fixing means.

[0035] The fixing means are those suitable in order for the pieces to withstand the operation requirements to which they are subjected.

BRIEF DESCRIPTION OF THE DRAWINGS

[0036] To complete the description, and for the purpose of helping to make the invention more readily understandable, the following set of figures is provided. Said figures are an integral part of the description and illustrate one or several particular examples, which must not be interpreted as limiting the scope of protection of the invention, but simply as an example of how the invention can be carried out. This set comprises the following figures:

Figure 1A shows a first embodiment of a first support piece that belongs to a closure device according to the invention.

Figure 1B shows a second embodiment of a first support piece that belongs to a closure device according to the invention.

Figure 2 shows a second support piece that belongs to a closure device according to the invention.

Figure 3 shows the combination of some elements of a closure device according to the invention.

Figure 4 shows the thickness of the pivoting fixed door and each sliding and pivoting panel.

Figures 5a, 5b and 5c show examples of a closure element that belongs to a closure device according to the invention.

Figures 6a, 6b, 6c, 6d, 6e and 6f show different embodiments of a cover that belongs to a closure device according to the invention.

Figures 7a, 7b and 7c show three different positions between the closure element and the cover of a closure device according to the invention.

Figure 8 shows the combination of some elements of a closure device according to the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0037] Figure 1A shows a first embodiment of a first support piece 1 that belongs to a closure device according to the invention.

[0038] This first support piece 1 comprises a first portion 101 intended to project from an upper rail, this first portion 101 of the first support piece 1 comprising at least two converging edges 102 and two stop edges 103, 103' that form between 80° and 100° with respect to the converging edges 102. Due to the fact that the converging edges 102 are not parallel, one of the stop edges 103' is larger than the other 103.

[0039] The first support piece 1 comprises a second portion 104 intended to be inserted into the upper rail from which the first portion 101 projects, such that this second portion 104 is isolated from any first portion of any other first support piece 1.

[0040] Figure 1B shows a second embodiment of a first support piece that belongs to a closure device according to the invention.

[0041] This second embodiment contains the elements of the first embodiment shown in figure 1A, but additionally contains height-adjustable stops 105, in the form of screws that are adjustable by means of screwing. These adjustable stops are intended to be supported on an upper rail, such that the distance between the first portion 101 and said upper rail on which the first support piece is installed can be adjusted by screwing and unscrewing said screws.

[0042] These height-adjustable stops enable the installation of the first support piece even when the clearance between the upper rail and the panel is not that which is initially planned, therefore enabling a greater tolerance in the installation process, by simply placing the first support piece in the rail and adjusting the distance that the adjustable stops 105 project by screwing. The screws are accessible from the outside even with the support piece already placed on the rail. Once this distance has been adjusted, the first support piece can be fixed to the rail by means of the central screw intended for this purpose.

[0043] Figure 2 shows a second support piece 2 that belongs to a closure device according to the invention.

[0044] This second support piece 2 comprises a first portion 201 intended to project from an upper profile of a sliding and pivoting panel. This first portion 201 of the second support piece 2 comprises at least two converging edges 202, at least one of the converging edges 202 of the first portion 201 of the second support piece 2 being intended to be supported on one of the converging edges 102 of the first portion 101 of a first support piece 1, as shown in figure 1. Moreover, this first portion 201 of the second support piece 2 comprises two stop edges 203, 203' that form between 80° and 100° with respect to the converging edges 202. Due to the fact that the converging edges 202 are not parallel, one of the stop edges 203' is larger than the other 203.

[0045] The second support piece 2 comprises a second portion 204, joined to the first portion of the second support piece 2 by means of a slot 205, this second portion 204 of the second support piece 2 being intended to be inserted inside the upper profile of a sliding and pivoting panel, such that the plan cross section of the first portion 201 of the second support piece 2 is larger than the plan cross section of the second portion 204 of the second support piece 2.

[0046] Figure 3 shows some elements of a closure device 10 according to the invention:

- an upper rail 11;
- a lower rail 12;
- a pivoting fixed door 3, arranged between the upper rail 11 and the lower rail 12, the pivoting fixed door 3 comprising an upper profile 31 and a lower profile 32;
- a plurality of sliding and pivoting panels 33, 34, 35, each one comprising an upper profile 331, 341, 351 and a lower profile 332, 342, 352;
- a first support piece 1 fixed to the upper rail 11;
- a second support piece 2 fixed to the upper profile 331, 341, 351 of each one of the sliding and pivoting panels 33, 34, 35.

[0047] Although in this figure there are three sliding and pivoting panels 33, 34, 35, the invention comprises all the embodiments in which this number of panels is different, since the number can vary greatly depending on the surface area to cover. The invention also works in all these cases.

[0048] The second support piece 2 is arranged in the upper profile 331, 341, 351 of each one of the sliding and pivoting panels 33, 34, 35, the stop edges 203, 203' of the first portion 201 of the second support piece 2 being parallel to the main direction of said upper profiles 331, 341, 351, the smaller stop edge 203 specifically being oriented towards the inside of the upper rail 11 and the larger stop edge 203' closest to the side towards which the sliding and pivoting panel 33, 34, 35 is adapted to pivot, therefore being oriented towards the outside of the upper rail 11.

[0049] The first support piece 1 is arranged in the upper rail 11, such that the first portion 101 projects from the upper rail 11, and is located to receive the support of the second support pieces 2 of the sliding and pivoting panels 33, 34, 35 when they pivot. Likewise, the second support piece 2 is arranged in the upper profile 331, 341, 351 of each sliding and pivoting panel 33, 34, 35 such that the first portion 201 of the second support piece 2 projects from said upper profile 331, 341, 351. In the detail view of this figure 3, part of the upper rail 11 has been eliminated in order to make it clearer, which means that it seems as if the entire first support piece 1 is visible. However, the first portion 101 projects from said upper rail 11, while the second portion 104 is inserted into said upper rail 11.

[0050] In this figure it can be seen how at least one of the converging edges 202 of the first portion 201 of the second support piece 2 is intended to be supported on one of the converging edges 102 of the first portion 101 of the first support piece 1. Therefore, the larger stop edge 103' of the first portion 101 of the first support piece 1 is located on the side on the upper rail 11 towards the inside of the first sliding and pivoting panel 33, therefore oriented towards the inside of the upper rail 11, and the smaller stop edge 103 closest to the side towards which the sliding and pivoting panels 33, 34, 35 are adapted to be open, therefore oriented towards the outside of the upper rail 11. In this way, the converging configurations of the first and second support pieces are complementary, so that one converging side 102 of the first support piece 1 is supported on a converging side 202 of the second support piece 2.

[0051] The first support piece 1 is fixed to the upper rail 11 by means of fixing means by screwing. In other embodiments, it alternatively comprises other suitable fixing means.

[0052] The second support piece 2 is fixed to the upper profile 331 of the sliding and pivoting panel 33 by means of fixing means by screwing. In other embodiments, it alternatively comprises other suitable fixing means.

[0053] In figure 4 it can be seen how the pivoting fixed door 3 and each sliding and pivoting panel 33, 34, 35 have a thickness h , the thickness h being measured in the transverse cross section thereof at the height of the upper profile 31, 331, 341, 351.

[0054] Returning to figure 3, the closure device 10 comprises a plurality of first support pieces 1 such that the distance between the first portions 101 of two first adjacent support pieces 1 is four times the thickness h of the pivoting fixed door 3 and the sliding and pivoting panels 33, 34, 35.

[0055] In this figure it can be seen how each one of the sliding doors comprises an upper profile with a first edge, and each one of the sliding panels comprises a second support piece arranged in the upper profile. In each one of the sliding panels, as the sliding panel is further from the pivoting fixed door, the second support piece is at an increasingly smaller distance from the first edge of the upper profile of said sliding panel. Due to the way the panels fold, this distance decreases by a fixed amount equal to the thickness h of the pivoting fixed door and the sliding and pivoting panels, such that for each pair of consecutive panels, the difference between the distance of the second support piece to the first edge of the upper profile of a panel and the distance of the second support piece to the first edge of the upper profile of the other panel is constant and equal to this thickness h . It can be seen how for the first sliding panel 33, the distance of the second support piece to the first edge of the upper profile is x , and for the following sliding panel 34 it is $x-h$. Therefore, the difference between these distances for consecutive panels is h . The same occurs if the second 34 and third 35 panels are taken as a reference. The difference

is still h.

[0056] Figures 5a, 5b and 5c show a closure element 5 that belongs to a closure device 10 according to the invention.

[0057] As may be seen in figures 5a and 5c, this closure element 5 comprises a main body 500 and a first mobile stop 501, which may be configured in a locking position, wherein said first mobile stop 501 projects from the main body of the closure element, and an opening position, wherein said first mobile stop 501 is hidden inside the main body 500. The closure element 5 further comprises a handle 502 adapted to change the position of the first mobile stop 501 between the opening position and the locking position.

[0058] In other embodiments, shown in figures 5b, the closure element 5 further comprises a second mobile stop 503, integral to the first mobile stop 501, which may be configured in a locking position, wherein said second mobile stop 503 projects from the main body of the closure element, and an opening position, wherein said second mobile stop 503 is hidden inside the main body 500. The second mobile stop 503 projects, in the locking position thereof, at a height somewhat greater than what the first mobile stop 501 projects in the locking position thereof.

[0059] The closure element 5 further comprises a handle 502 adapted to change the position of the first mobile stop 501 and the second mobile stop 503 between the opening position and the locking position.

[0060] The first mobile stop 501 and the second mobile stop 503 comprise inclined surfaces 504 that enable the locking position to be changed to the opening position by means of pressure carried out on said inclined surface 504, as a result, for example, of forcing the first mobile stop 501 against a fixed surface that forms a certain angle with respect to said inclined surface.

[0061] The closure element 5 comprises fixing means by screwing. In other embodiments, it alternatively comprises other suitable fixing means.

[0062] Figures 6a, 6b, 6c, 6d, 6e and 6f show different embodiments of a cover 4 that belongs to a closure device 10 according to the invention. In the embodiment of figure 6a, this cover 4 comprises a main body 400 and a slot 401.

[0063] The cover 4 comprises fixing means by screwing, which enable the cover 4 to be fixed to the upper rail 11 of the closure device 10. In other embodiments, it alternatively comprises other suitable fixing means.

[0064] The slot 401 is designed such that in an opening position of the first mobile stop 501, the closure element 5 can pass through said slot 401, and in a locking position of the first mobile stop 501, said first mobile stop 501 represents an obstacle to the closure element 5 passing through the cover 4, since it would touch the main body 400 of the cover 4. However, when the door is open, and the mobile stops are on the other side of the slot 401, the inclined surface 504 of the first and second mobile stops enables them to change from the locking position to the

opening position, by means of a pressure against the main body 400 of the cover 4. These means that a pivoting fixed door can be closed without the need to act on the mobile stops by means of the handle 502 for safety reasons. Due to the fact that the inclined surface 504 is only in one direction, it is not possible for the door to open without actuating the handle 502. In other embodiments, this handle 502 can be substituted for any means that carries out the same function of activating the mobile stops 501, 503 in order to change from the locking position to the opening position. Furthermore, in particular embodiments, the closure element comprises a spring that enables the first mobile stop 501 to change from the opening position to the locking position. In other embodiments, instead of a spring, the closure element includes elements activated by remote control, locks, etc.

[0065] Furthermore, in other particular embodiments, illustrated by figures 6b, 6c, 6d and 6e, it can be seen that the cover 4 further comprises a housing 402 suitable for receiving and retaining at least one portion of the second mobile stop 503 of the closure element 5. This enables the closure element 5 to be fixed with respect to the cover 4 in three different positions, which can be seen in figures 7a, 7b, 7c: a first position, when the pivoting fixed door 3 is closed, wherein both the first mobile stop and the second mobile stop are on one side of the slot, retained by the same; a second ventilation position wherein the second mobile stop is at least partially inserted into the housing 402; a third position wherein the door is open and none of the mobile stops 501, 503 are retained by the slot 401 or the housing 402. Therefore, the second mobile stop 503 enables an opening position referred to as ventilation position, wherein the pivoting fixed door is slightly open and locked, thus enabling the passage of air and therefore the ventilation of the room or space enclosed with the system.

[0066] Figure 8 shows some elements of a closure device 10 according to the invention:

an upper rail 11;
a lower rail 12;
a pivoting fixed door 3 located between the upper rail 11 and the lower rail 12, the pivoting fixed door 3 comprising an upper profile 31 and a lower profile 32;
a cover 4 joined in a fixed manner to the upper rail 11, a closure element 5 joined to the upper profile 31 of the pivoting fixed door 3.

[0067] This figure shows the relative position between these elements: the closure element 5 is suitable for enabling the complete opening or partial ventilation position or closure of the pivoting fixed door 3 with respect to the upper 11 and lower 12 rail.

List of references

[0068]

10 Closure device
 1 First support piece
 101 First portion of the first support piece
 102 Converging edges of the first support piece
 103 Smaller stop edges of the first support piece 5
 103' Larger stop edges of the first support piece
 104 Second portion of the first support piece
 105 Height-adjustable stops
 2 Second support piece
 201 First portion of the second support piece 10
 202 Converging edges of the second support piece
 203 Smaller stop edges of the second support piece
 203' Larger stop edges of the second support piece
 204 Second portion of the second support piece
 205 Slot of the second support piece 15
 3 Pivoting fixed door
 31 Upper profile of the pivoting fixed door
 32 Lower profile of the pivoting fixed door
 33, 34, 35 Pivoting sliding panel
 331, 341, 351 Upper profile of the pivoting sliding panel 20
 4 Cover
 400 Main body of the cover
 401 Slot of the cover
 402 Housing of the cover
 5 Closure element
 500 Main body of the closure element
 501 First mobile stop of the closure element
 502 Handle of the closure element
 503 Second mobile stop of the closure element 30
 504 Inclined surface of the closure element

Claims

1. A closure device (10) **characterised in that** it comprises:

an upper rail (11);
 a lower rail (12);
 a pivoting fixed door (3), arranged between the upper rail (11) and the lower rail (12), the pivoting fixed door (3) comprising an upper profile (31) and a lower profile (32), the pivoting fixed door (3) being adapted to
 a cover (4) fixed to the upper rail (11), the cover (4) comprising a slot (401);
 a closure element (5) fixed to the upper profile (31) of the pivoting fixed door (3), the closure element (5) comprising a first mobile stop (501), such that, in an opening position of the first mobile stop (501), the closure element (5) can pass through the slot (401) of the cover (4) and in a second locking position of the first mobile stop (501), said first mobile stop (501) represents an obstacle to the closure element (5) passing through the cover (4). 50 55

2. Closure device (10) according to claim 1, **characterised in that** the first mobile stop (501) comprises an inclined surface (504), such that it can change from the locking position to the opening position by means of pressure carried out on said inclined surface (504), as a result, for example, of forcing the first mobile stop (501) against a fixed surface that forms a certain angle with respect to said inclined surface.
3. Closure device (10) according to any of the preceding claims, **characterised in that** the first mobile stop (501) can be activated such that it changes from the locking position to the opening position by means of a handle (502), or by means of a cable or by means of a remote device or any other suitable device.
4. Closure device (10) according to any of the preceding claims, **characterised in that** the closure element (5) comprises recovery means that enable the first mobile stop to change from the opening position to the locking position, such as springs, elements that are activated by remote control, locks, or similar.
5. Closure device (10) according to any of the preceding claims, **characterised in that** the closure element (5) comprises a second mobile stop (503), that is integral to the first mobile stop (501), such that when the first mobile stop (501) is in the opening position, the second mobile stop is also in the opening position, and when the first mobile stop (501) is in the locking position, the second mobile stop is also in the locking position; and that the cover comprises a housing (402) suitable to receive and retain at least one portion of the second mobile stop (503). 35 40
6. Closure device (10) according to claim 5, **characterised in that** the closure element (5) further comprises a handle (502) adapted to change the position of the first mobile stop (501) and/or the second mobile stop (503) between the opening position and the locking position.
7. Closure device (10) according to any of the preceding claims, **characterised in that** it further comprises
 at least one sliding and pivoting panel (33, 34, 35), each one comprising an upper profile (331, 341, 351);
 a first support piece (1) fixed to the upper rail (11); and
 a second support piece (2) fixed to the upper profile (331, 341, 351) of the at least one pivoting and sliding panel (33, 34, 35); wherein the first support piece (1) comprises a first portion (101) intended to project from the upper rail (11), this first portion (101) of the first support piece

- (1) comprising at least two converging edges (102) and two stop edges (103, 103') that form between 80° and 100° with respect to the converging edges (102);
 wherein each one of the second support pieces (2) comprises a first portion (201) intended to project from each one of the upper profiles (331, 341, 351) of the at least one sliding and pivoting panel (33, 34, 35); this first portion (201) of the second support piece (2) comprising at least two converging edges (202), at least one of the converging edges (202) of the first portion (201) of the second support piece (2) being intended to be supported on one of the converging edges (102) of the first portion (101) of the first support piece (1); the first portion of the second support piece (2) further comprising two stop edges (203, 203'), which form between 80° and 100° with respect to the converging edges (202), these stop edges being parallel to the main direction of the upper profile (31) of the pivoting fixed door (3).
8. Closure device (10) according to claim 7, **characterised in that** the first support piece (1) comprises a second portion (104) intended to be inserted into the upper rail (11) such that this second portion (104) is isolated from any first portion of any other first support piece (1).
9. Closure device (10) according to any of claims 7 or 8, **characterised in that** the second support piece (2) comprises a second portion (204), joined to the first portion (201) of the second support piece (2) by means of a slot (205), this second portion (204) of the second support piece (2) being intended to be inserted inside the upper profile (331, 341, 351) of the at least one sliding and pivoting panel (33, 34, 35), such that the plan cross section of the first portion (201) of the second support piece (2) is larger than the plan cross section of the second portion (204) of the second support piece (2).
10. Closure device (10) according to any of claims 7 to 9, **characterised in that** the pivoting fixed door (3) and the at least one sliding and pivoting panel (33, 34, 35) has a thickness (h), and the closure device (10) comprises a plurality of first support pieces (1) such that the distance between the first portions (101) of two first adjacent support pieces (1) is four times larger than the thickness of the pivoting fixed door (3) and of the at least one sliding and pivoting panel (33, 34, 35).
11. Closure device (10) according to claim 10, **characterised in that** it comprises a number of first support pieces that is the fourth part of the number of sliding and pivoting panels, rounding to the next natural number if the fourth part is not a natural number.
12. Closure device (10) according to claim 11, **characterised in that** each one of the upper profiles (331, 341, 351) of the at least one sliding and pivoting panel (33, 34, 35) comprises a first edge, and that in each one of the sliding panels, the second support piece is at an increasingly small distance from the first edge of the upper profile of the corresponding panel, such that for each pair of consecutive panels, the difference between the distance of the second support piece to the first edge of the upper profile of a panel and the distance of the second support piece to the first edge of the upper profile of the other panel is constant.
13. Closure device (10) according to any of claims 8 to 12, wherein the first support piece (1) further comprises height-adjustable stops (105) intended to be supported on the upper rail, such that the distance between the converging edges (102) and the upper rail (11) can be adjusted by regulating said adjustable stops.
14. Closure device (10) according to claim 13, wherein the height-adjustable stops comprise at least one screw adjustable by means of screwing, configured to project an adjustable distance with respect to the second portion (104).
15. Closure device (10) according to any of the preceding claims, **characterised in that** the first support piece and/or second support piece and/or cover and/or the closure element comprise fixing means by screwing or by an alternative fixing means.

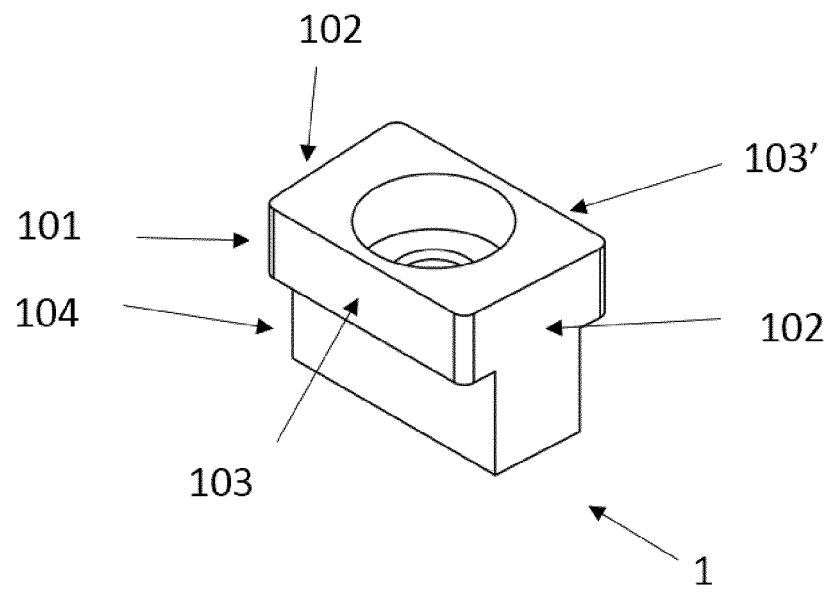


Fig. 1A

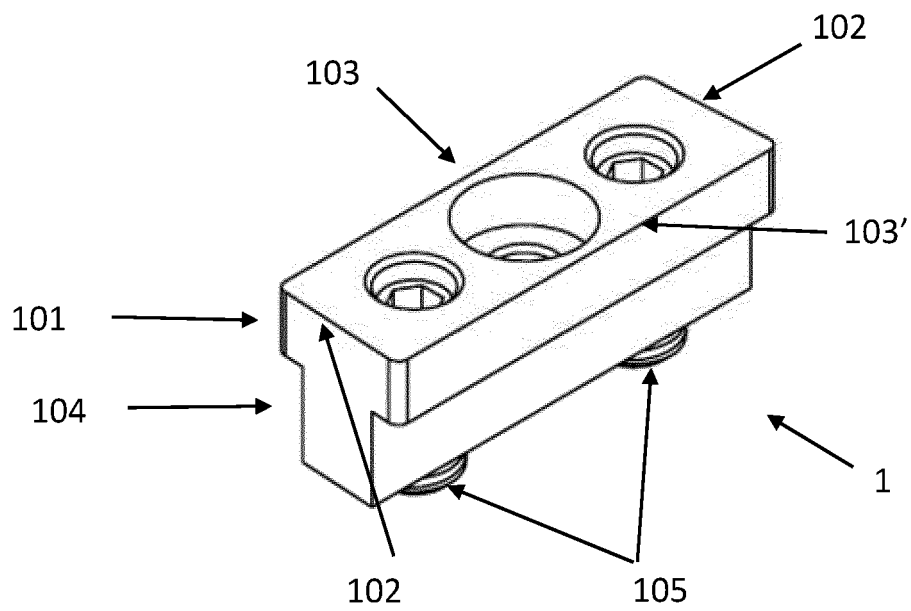


Fig. 1B

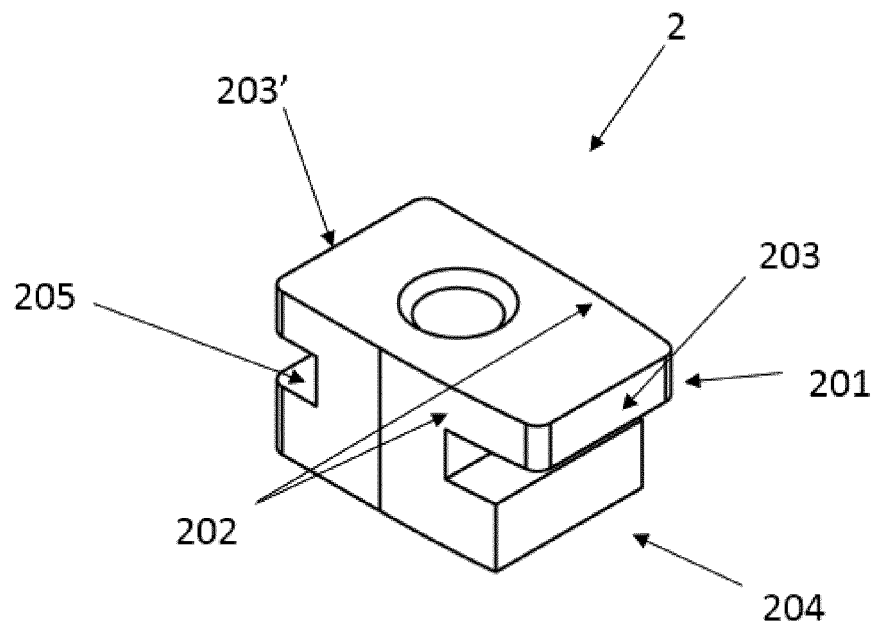


Fig. 2

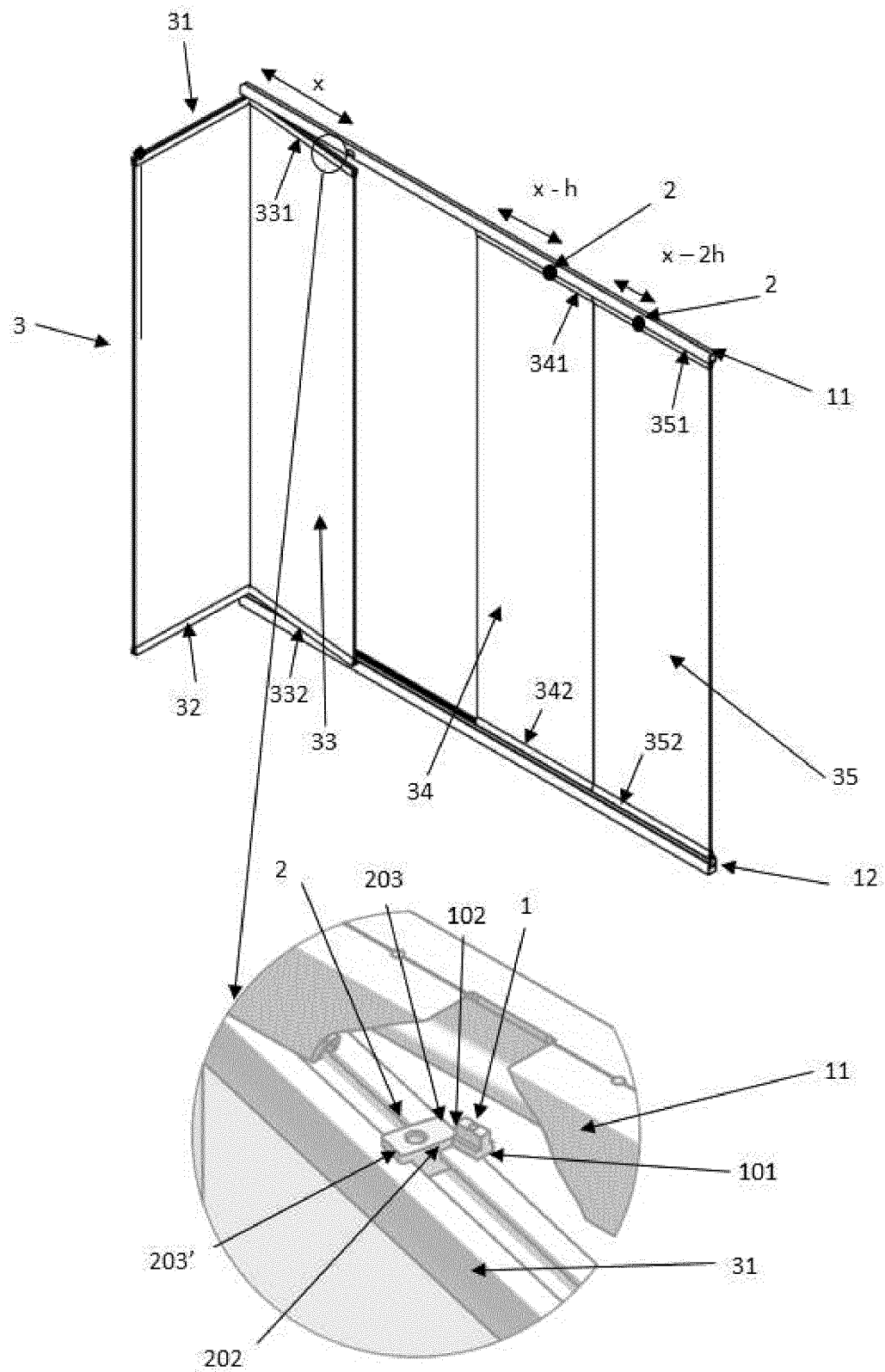


Fig. 3

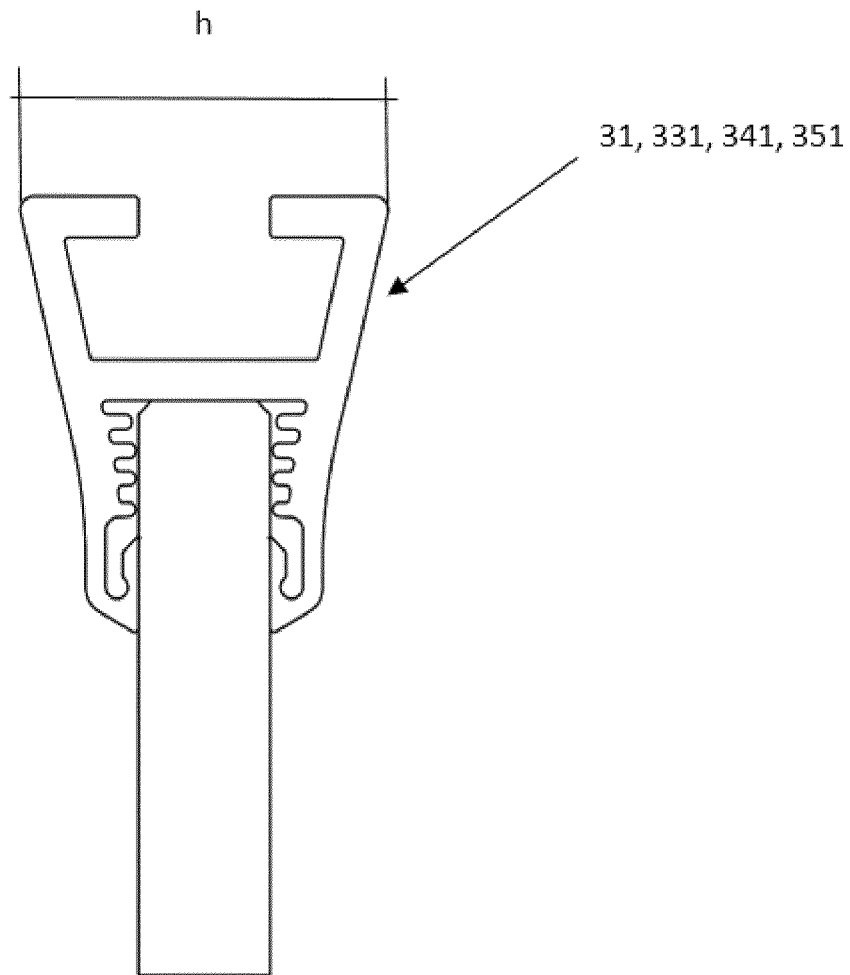


Fig. 4

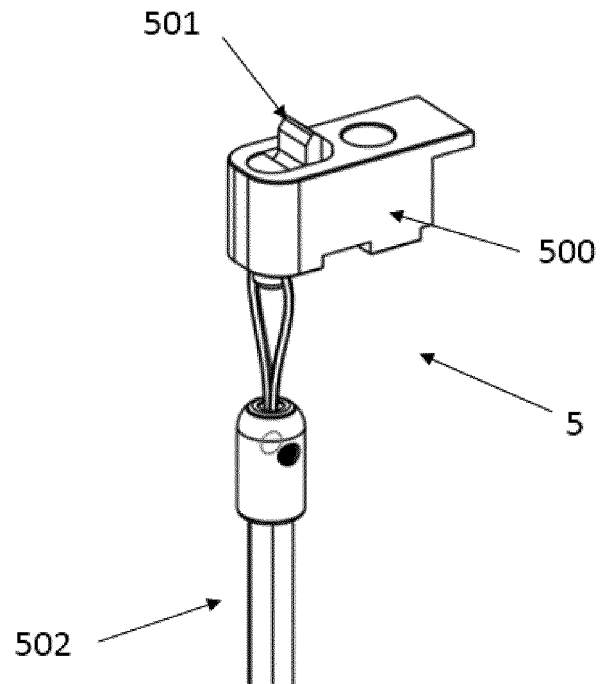


Fig. 5a

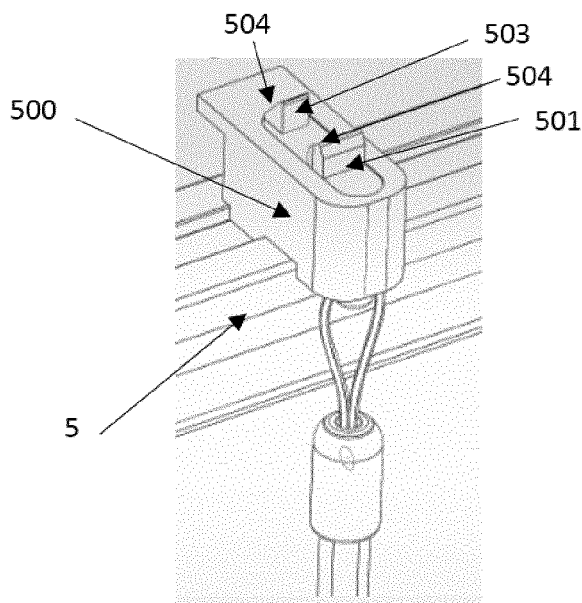


Fig. 5b

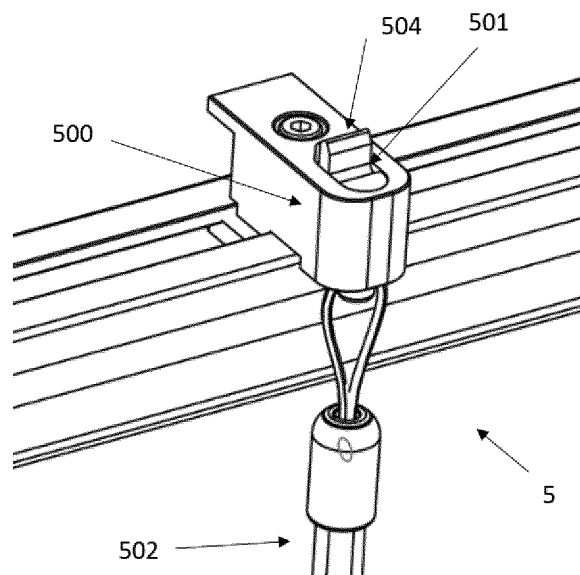


Fig. 5c

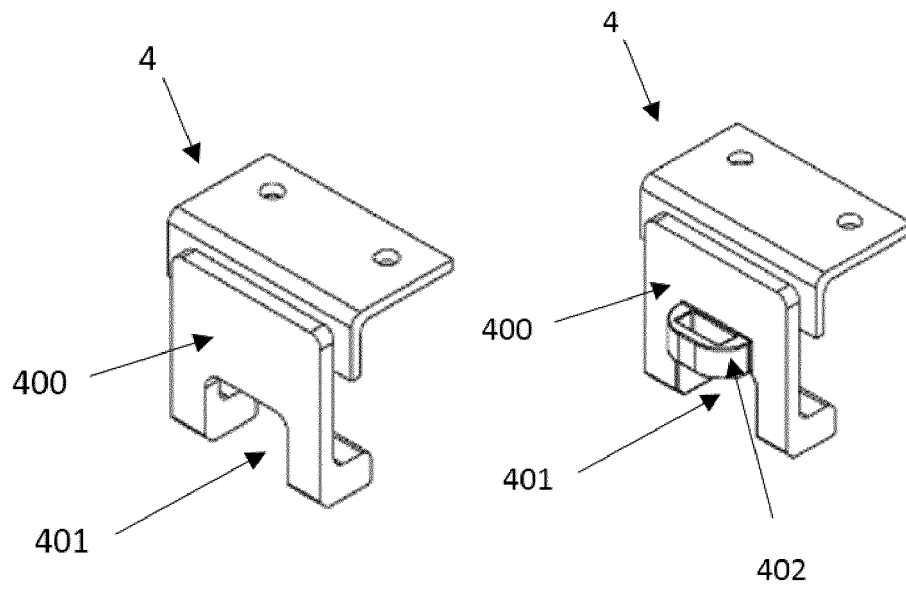


Fig. 6a

Fig. 6b

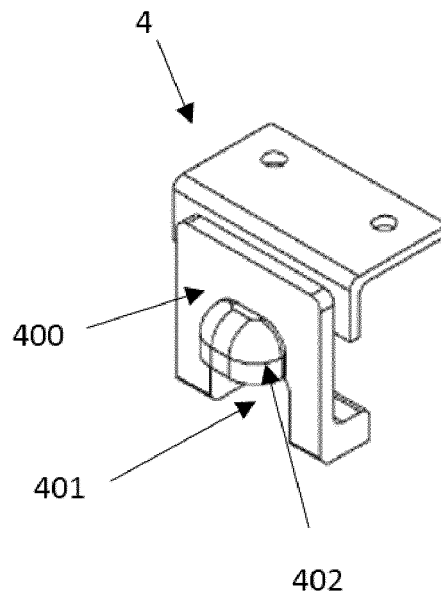


Fig. 6c

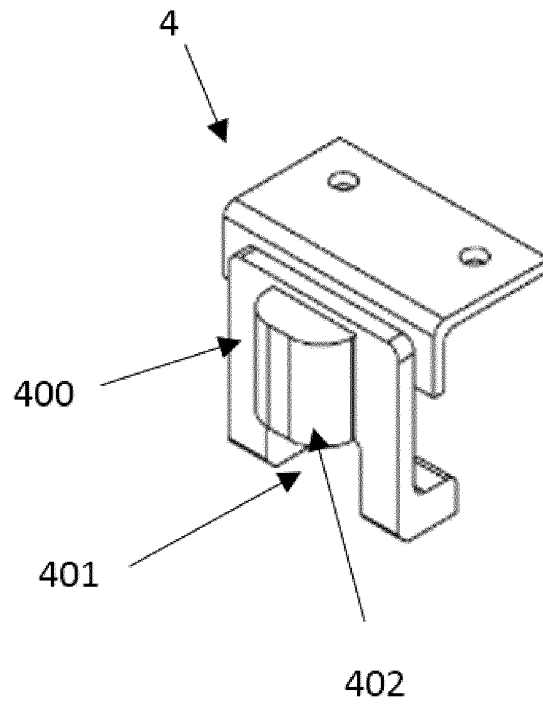


Fig. 6d

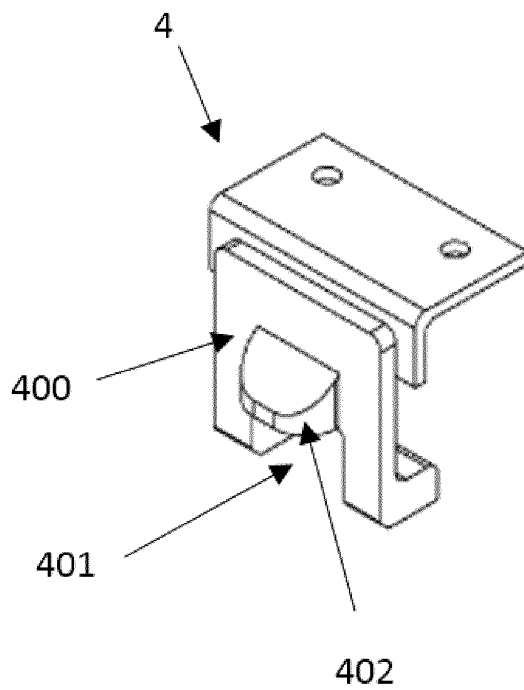


Fig. 6e

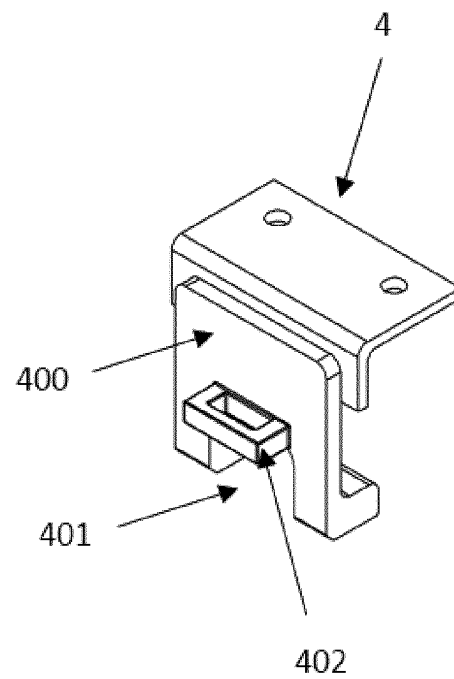


Fig. 6f

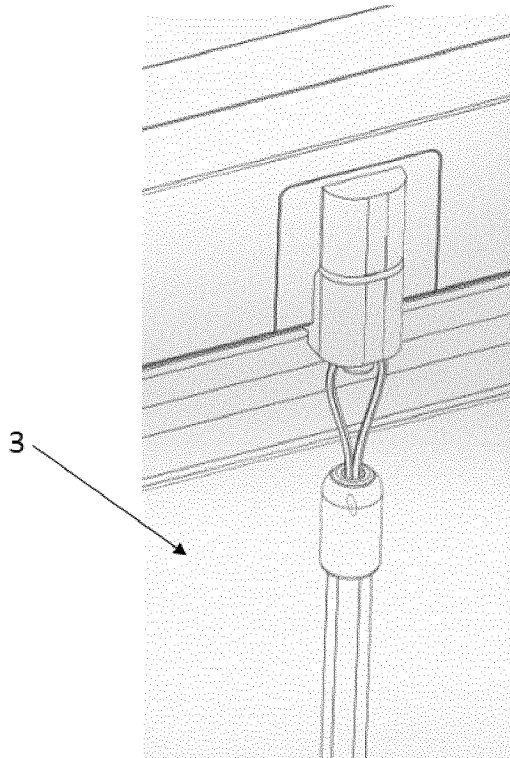


Fig. 7a

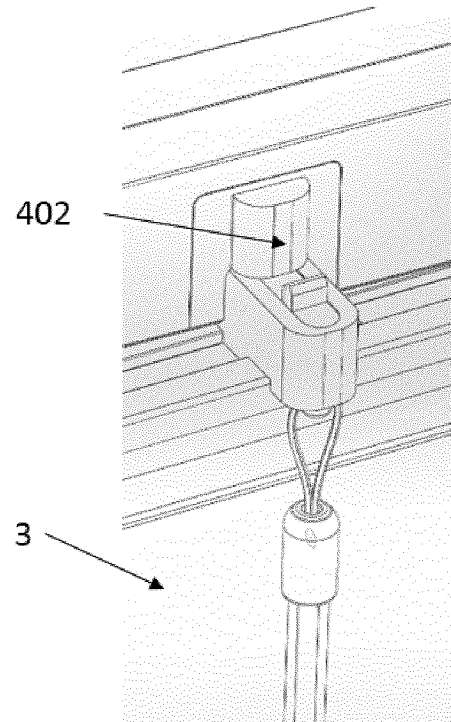


Fig. 7b

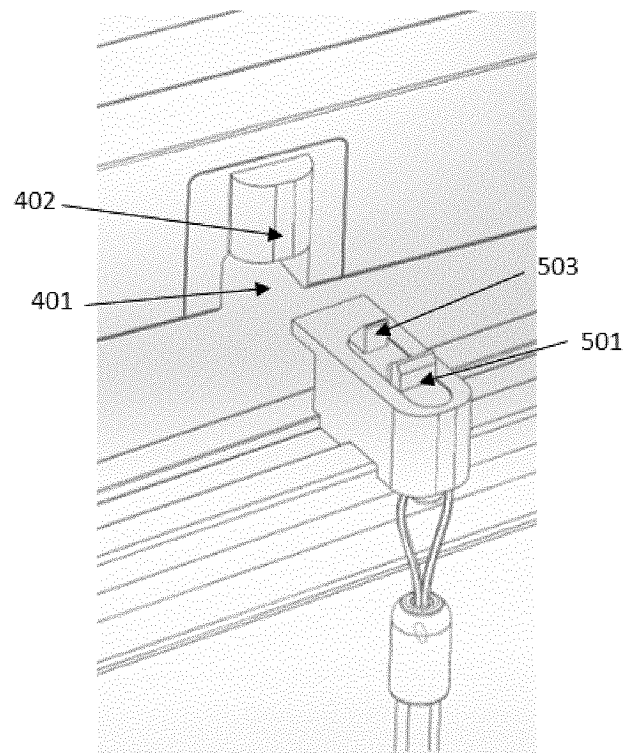


Fig. 7c

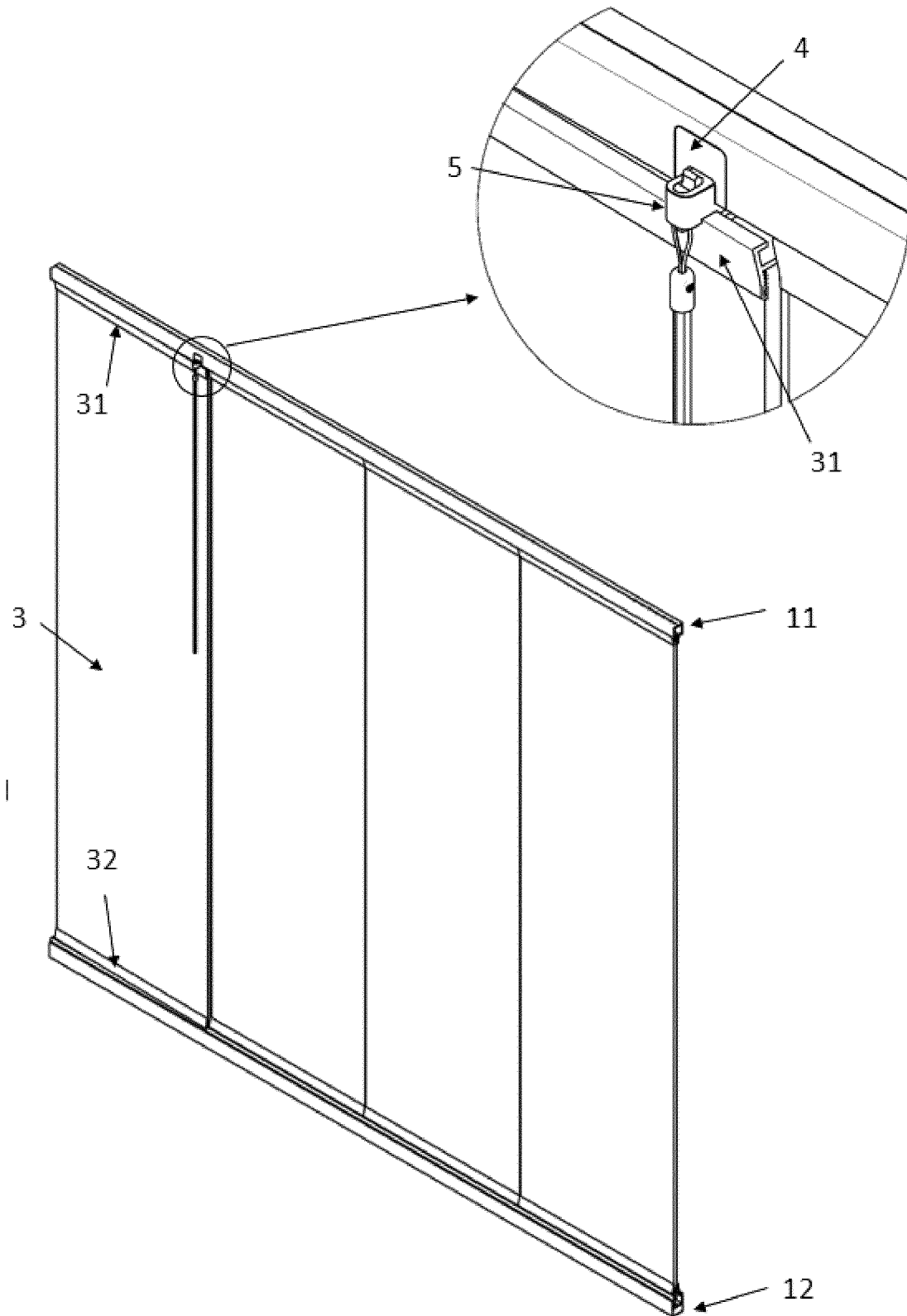


Fig. 8

INTERNATIONAL SEARCH REPORT

International application No
PCT/ES2017/070708

A. CLASSIFICATION OF SUBJECT MATTER
INV. E05D15/58
ADD.

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 E05B

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)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 2 837 764 A1 (SUNFLEX ALUMINIUMSYSTEME GMBH [DE]) 18 February 2015 (2015-02-18) paragraph [0013] - paragraph [0019]; figures 3a,3b,4	1,5,6,15
Y		7-14
A		2-4
X	W0 2010/098688 A1 (MARKOVIC MILJENKO [RS]) 2 September 2010 (2010-09-02) page 2, line 78 - page 3, line 118; figures 1,7,8	1,3,4,15
Y		2
A		5,6
X	DE 20 2010 004097 U1 (SOLARLUX ALUMINIUM SYS GMBH [DE]) 17 June 2010 (2010-06-17) paragraph [0014] - paragraph [0018]; figures 1-3	1,15
A		2-6
	----- -/-	

☒ 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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

16 March 2018

Date of mailing of the international search report

23/03/2018

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Berote, Marc

INTERNATIONAL SEARCH REPORT

International application No

PCT/ES2017/070708

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	W0 2011/052740 A1 (NIFCO INC [JP]; TADOKORO TOMOKI [JP]) 5 May 2011 (2011-05-05)	2
A	abstract; figure 10 -----	1
Y	EP 1 889 996 A1 (LUMON OY [FI]) 20 February 2008 (2008-02-20)	7-14
A	paragraph [0017] - paragraph [0019]; figures 4-6 -----	1-6,15
A	EP 2 639 391 A1 (SUNFLEX ALUMINIUMSYSTEME GMBH [DE]) 18 September 2013 (2013-09-18) paragraph [0023]; figures 1,2 -----	1,7-14

Form PCT/ISA/210 (continuation of second sheet) (April 2005)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ES2017/070708**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☒ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☒ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No

PCT/ES2017/070708

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
EP 2837764 A1	18-02-2015	DK 2837764 T3 EP 2837764 A1 ES 2544558 T3 PT 2837764 E	17-08-2015 18-02-2015 01-09-2015 14-08-2015
WO 2010098688 A1	02-09-2010	RS 20090091 A WO 2010098688 A1	30-04-2011 02-09-2010
DE 202010004097 U1	17-06-2010	NONE	
WO 2011052740 A1	05-05-2011	CN 102597397 A JP 5295074 B2 JP 2011094440 A KR 20120074301 A WO 2011052740 A1	18-07-2012 18-09-2013 12-05-2011 05-07-2012 05-05-2011
EP 1889996 A1	20-02-2008	CA 2597242 A1 EP 1889996 A1 FI 20065517 A	16-02-2008 20-02-2008 17-02-2008
EP 2639391 A1	18-09-2013	EP 2639391 A1 ES 2445796 T3	18-09-2013 05-03-2014

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-6, 15

a closure device comprising a pivoting fixed door with a closure element to keep the pivoting fixed door in an open and locked position.

2. claims: 7-14

a closure device with a sliding and pivoting panel comprising a first and second support pieces to guide the pivoting panel into the closed position.

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- ES 2010000187 W [0004]
- ES 2011000210 W [0004]
- DE 10333612 A1 [0004]
- ES 2262013 T3 [0004]