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(71) Applicant: **Sanitec Corporation**
00101 Helsinki (FI)

(72) Inventor: **Mattsson, Martin**
375 34 MÖRRUM (SE)

(74) Representative: **Ström & Gulliksson AB**
P.O. Box 4188
203 13 Malmö (SE)

(54) Shower door system, and assembly therefor

(57) An assembly (10) for receiving a shower door in a shower compartment is provided. The assembly (10) comprises a door stop structure (11), wherein the door stop structure (11) comprises a stop member (110) being pivotable relative a wall support (13), and wherein the assembly (10) further comprises locking means (112) for locking the angular position of the stop member (110).

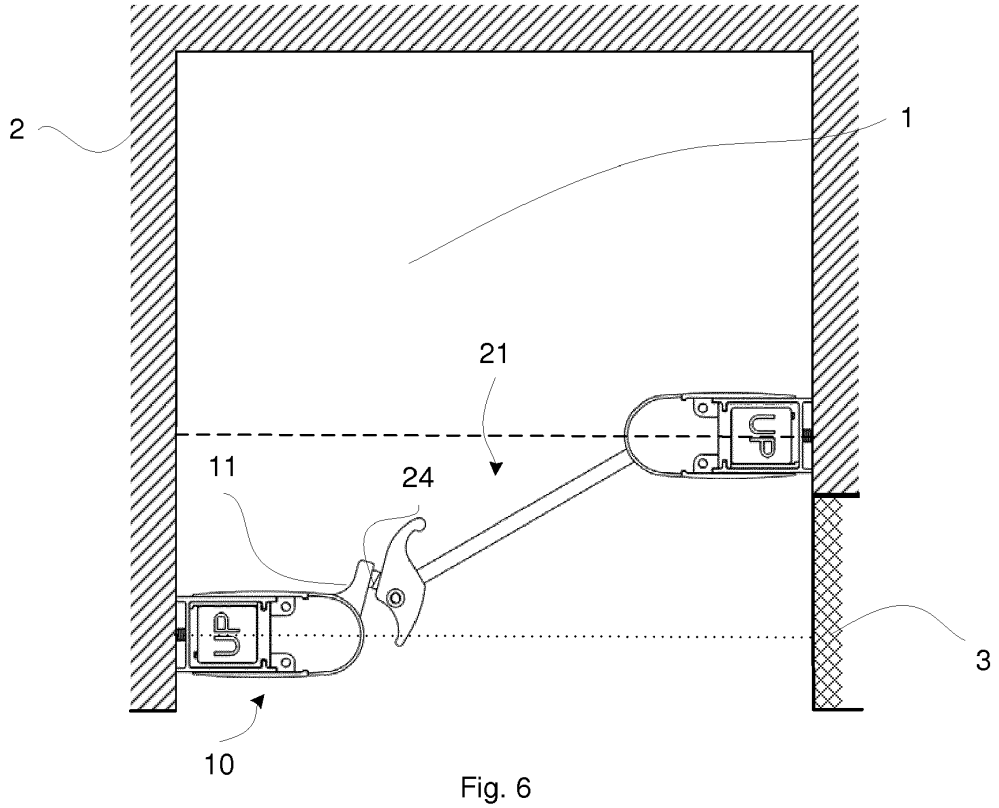

Fig. 6

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Description

TECHNICAL FIELD

[0001] The present invention relates to a shower door system as well as to an assembly for receiving a shower door in a shower compartment.

BACKGROUND

[0002] Shower door panels, such as fixed panels or doors, are normally desired in bathrooms or in other areas where slim panels or door leafs are used to limit the amount of water escaping out from the shower area. Although shower doors are subject to similar requirements as ordinary doors, such as opening and closing by pivoting around a vertical axis, they tend to differ in their attachment to the surrounding structure. While ordinary doors are hinged at a frame structure surrounding an opening in the wall, shower doors are normally attached to the wall by means of a vertical wall support secured to the wall. Hence, the shower door may extend out from the wall thus delimiting the shower area.

[0003] Shower compartments are often arranged in the corner of a room in order to be more space-efficient. Different corner showers are available on the market, for example with square corners, rectangular corners, quadrant corners, pentagonal forms and quarter-round forms. However, all prior art solutions requires obstacle free walls, e.g. no furniture or window, in order to arrange the shower compartment correctly. Hence, prior art solutions are not space-efficient.

[0004] In view of the above, there is a need for a flexible more space-efficient shower assembly.

SUMMARY

[0005] Accordingly, the present invention preferably seeks to mitigate or eliminate one or more of the above-identified deficiencies in the art singly or in any combination and solves at least the above mentioned problems by providing an assembly for receiving a shower door in a shower compartment, wherein the assembly allows for a stepless door adjustment.

[0006] An idea of the present invention is to allow for a flexible shower compartment that could be arranged on a plurality of solid walls in a bathroom, despite any obstacle such as a window or furniture. The present assembly makes it possible to arrange a shower compartment even in cases where the walls or non-perpendicular.

[0007] According to a first aspect, an assembly for receiving a shower door in a shower compartment is provided. The assembly comprises a door stop structure. The door stop structure is characterized by that the door stop structure comprises a stop member being pivotable relative a wall support, and wherein the assembly further comprises locking means for locking the angular position of the stop member. This provides a step less angle adjustment of the assembly.

[0008] The door stop structure may further comprise a hinge, to which the stop member is attached, and a hinge support. The hinge may extend vertically along the length of the wall support.

[0009] The hinge may comprise at least one support member arranged at the upper and/or lower end of the hinge support, said support member being configured to rotationally support the stop member.

[0010] The stop member may extend along the length of the hinge and comprises a stop surface forming a protrusion extending radially out from the hinge.

[0011] The stop surface may be provided with a magnetic contact for magnetically locking the stop member to a corresponding magnetic stop member of an associated shower door. This allows for easy opening/closing of the shower door.

[0012] The locking means may comprise a through hole and a locking screw. The through hole may be provided in a lower part and/or an upper part of the hinge.

[0013] The assembly may further comprise at least one fixation device for securing said door stop structure to said wall support. The fixation device is preferably configured such that it is possible to adjust the vertical alignment of the door stop structure.

[0014] The fixation device may be configured to receive a bolt of the door stop structure, and to fixate the position of the bolt. One fixation device may be arranged at the respective vertical end of the wall support.

[0015] According to a second aspect, a shower door system is provided. The shower doors system comprises a shower door having a shower door panel being pivotally supported by a wall profile, and an assembly according to the first aspect described above.

[0016] The shower door may comprise means for moving the shower door panel upwards during opening of the shower door, and moving the shower door panel downwards during closing of the door.

[0017] The shower door panel may further comprise adjusting means for setting the lowermost vertical position of the shower door panel at a specific angular position of the shower door panel relative the wall profile.

[0018] The shower door panel may comprise a magnetic member for engagement with a magnetic contact of the door stop structure of the assembly.

BRIEF DESCRIPTION OF DRAWINGS

[0019] Further objects, features and advantages will appear from the following detailed description, with reference being made to the accompanying drawings, in which:

Fig. 1 is an isometric view of an assembly for receiving a shower door according to an embodiment;

Figs. 2a-c are exploded views of an assembly for receiving a shower door comprising a fixation device

according to an embodiment;

Fig. 3a-b are A-A section views of a door stop structure according to an embodiment;

Figs. 4a-b are B-B section views of a door stop structure according to an embodiment;

Fig. 5 is a top view of a shower door system according to an embodiment;

Fig. 6 is a top view of a shower door system according to an embodiment; and

Fig. 7 is a top view of a shower door system according to an embodiment.

DETAILED DESCRIPTION

[0020] Starting with Fig. 1, an assembly 10 for receiving a shower door in a shower compartment is shown. The assembly 10 comprises a door stop structure 11 securely attached to a wall support 13 by at least one fixation device 14. The wall support 13 is securely attached to the wall e.g. by means of screws or similar. The door stop structure 11 comprises a stop member 110, a hinge 120 and a hinge support 130. The hinge 120 is extending vertically along the length of the wall support 13 and the stop member 110 extends along the length of the hinge 120.

[0021] In one embodiment the hinge 120 comprises two support members 121 arranged at the upper and lower end of the hinge support 130, respectively. The support members 121 are arranged to rotationally support the stop member 110.

[0022] A stop surface 111 is provided at an outer end of the stop member 110. The stop surface 111 is in the form of a protrusion extending radially out from the hinge 120; the axial length of the stop surface 111 is preferably the same as the axial extension of the hinge 120 or even slightly larger such that the stop surface 111 extends down to the floor. When the assembly 10 is arranged in a fully installed shower compartment, the stop surface 111 will form a rotational stop of an associated shower door, as will be described more in detail with reference to figures 5-7.

[0023] During installation it is beneficial to be able to rotate the door stop structure 11 relative a bathroom wall in order to angle adjust the assembly 10. This is possible since the stop member 110 is pivotable attached relative the wall support 13. Furthermore, the hinge 120 allows the stop member 110 to pivot around a vertical axis relative the hinge support 130. Hence, an easy angle adjustment of the hinge 120 is provided.

[0024] After the assembly 10 is installed, the angular position of the stop member 110 is locked. In order to unlock and/or lock the angular position of the stop member 110, locking means 112 are provided. This allows for an easy angle adjustment. The locking means 112 will be described more in detail with reference to figure 2b.

[0025] Now turning to figures 2a-c, exploded views of an embodiment of an assembly 10 is shown. In figure 2a a hinge 120 is shown with a stop member 110 and a stop surface 111.At least one of the longitudinal ends of the stop member 110 are arranged with a protrusion 119. The at least one protrusion 119 slidably engages with a corresponding receiving section 122 (see figure 2b) of the support member 121. In one embodiment as shown in figure 2a, each longitudinal end of the stop member 110 is arranged with one protrusion 119 having at least one hole on the stop surface.

[0026] A disc 118 is rigidly arranged onto the top of the protrusion 119 and has a shape corresponding to the top of the protrusion 119 facing the receiving section 120 of the support member 121. Each disc 118 is arranged with at least one through hole corresponding to the holes in the protrusion 119. The discs are preferably constructed by a metal such as aluminum. Although the discs in the embodiment shown in figure 2 each have two holes, any number of through holes is possible.

[0027] Figure 2b shows an exploded view of a hinge support 130 and two support members 121, arranged at each end of the hinge support 130. Each support member 121 comprises a housing 123, a receiving section 122, at least one adjustment screw 114 and locking means 112. The receiving section 122 is inserted into the housing 123 and fixated with an adjustment screw 114 which attaches with the wall structure 13 via the fixation device 14.

[0028] During installation of the assembly 10 the locking means 112 may be unlocked in order to adjust the angular position of the stop member 110. The locking means 112 comprises at least one locking screw 116 and at least one corresponding through hole 117. The at least one through hole 117 is provided in a lower part and/or an upper part of the hinge 120.

[0029] In the embodiment shown in figure 2, two locking means 112 are provided at the longitudinal ends of the hinge 120 and each locking means 112 comprises two locking screws 116 with two corresponding through holes 117; however the exact number of locking means 112, locking screws 116 and through holes 117 may vary depending on the size and construction of the wall support 13 and/or door stop structure 11.

[0030] The locking means 112 is unlocked by simply loosening the locking screws 116, also referred to as stop screws. A step less angle adjustment of the assembly is thereafter achieved by adjusting the stop member 110 in relation to the hinge 120 by simply pushing or pulling the stop member 110 into a desirable position. Once the desirable angle is reached, the locking means 112 is locked by tightening the locking screws 116 in the through holes 117.

[0031] In figure 2c, an isometric view of a wall support 13 comprising at least one fixation device 14 is shown. Fixation of the door stop structure 11 to the wall support 13 is achieved by means of at least one fixation device 14. One fixation device 14 is arranged at the respective vertical end of the wall support 13. The fixation device 14 is configured to receive the attachment screw 114 of the door stop structure 11, and to fixate the position of

the attachment screw 114. In the embodiment shown in figure 2, two fixation devices 14 are provided at each longitudinal ends of the wall support 13; however the exact number of fixation devices 14 may vary depending on the size and construction of the wall support 13 and/or the door stop structure 11. The attachment screw may be a bolt 114.

[0032] The fixation devices 14 are attached to the wall support 13 by inserting them into associated cavities inside the support 13. In one embodiment the longitudinal ends of the support 13 are open so that the fixation devices 14 can be inserted. Ridges or similar structures may be provided inside the hollow support 13 such that the fixation devices 14 will be prevented from moving further into the support 13. Preferably, the fixation devices 14 may only be inserted in a specific orientation. Lids 142 may further be provided for covering the ends of the support 13 once the fixation devices 14 have been inserted. The lids 142 are both providing a cover for the longitudinal end of the wall support 13, but also safety functionality for the fixation device 14.

[0033] Each fixation device 14 has a recess, or bore 141 for receiving a bolt 114 of the door stop structure 11. The bolt 114 is preferably extending through the hinge 120 such that it may be operated from a side of the hinge 120 being opposite the side facing the wall support 13. The fixation device 14 thus allows for a rigid and robust fixation of the door stop structure 11 relative the wall support 13.

[0034] The fixation device 14 is attached to the wall support 13. Upon assembly of the door stop structure 11, i.e. the door stop structure 11 (including the bolt(s) 114) is pressed against the wall support 13 such that the bolt(s) 114 are received in the bore of the fixation device 14. After tightening the bolts 114, which also provides an adjustment of the vertical alignment of the door stop structure 11, the door stop structure 11 is securely attached to the wall support 13, and hence the wall.

[0035] In one embodiment, the fixation device 14, also referred to as a quick lock assembly, has the design and functionality as described by the embodiments in the EP-application with filing no. 14187815.7 filed by the same applicant.

[0036] Figs. 3A-B and 4A-B show cross-sectional top views of the assembly 10. As can be seen, the bolt 114 is accessible only when a through hole of the hinge 120 is aligned correctly, preferably when the stop member 110 is arranged in its end position.

[0037] In Fig. 5 a shower door system 20 is shown comprising a shower door 21 and an assembly 10. The shower door 21 has a shower door panel 22 which is pivotally supported by a wall support 13, preferably being identical with the wall support 13 of the assembly 10. The shower door panel 22 may be a fixed panel or a door. The slim panel or door leaf 22 is preferably being made of a thin body such as glass, plastic, or similar. The shower door 21 further comprises a handle 26 which allows the user of the shower to open and close the shower door 21 with ease. Preferably, the handle is a pull handle arranged at the shower door panel 22.

[0038] The shower door panel 21 further comprises adjusting means 23 for setting the lowermost vertical position of the shower door panel 21 at a specific angular position of the shower door panel 21 relative the wall support 13. This may be done by a similar construction as described with respect to the assembly 10, but wherein a cam surface is provided inside the support member of the hinge support 130. The cam surface, or the following surface of the hinge 120, is rotationally fixed, however the other of the cam surface or the following surface may be rotated and secured in a specific angular position for setting a lower most position of the shower door panel 22 at a given angle. This rotate-and-lift functionality is well known, and will not be described further herein.

[0039] An attachment member 24 is arranged at the outer end of the shower door panel 22. The attachment member 24 may be arranged on or adjacent to the handle 26 located on the shower door panel 22. In one embodiment as shown in figures 5-7, the attachment member is a magnetic member 24. The magnetic member 24 is provided for engagement with a magnetic contact 25 with the door stop structure 11 of the assembly 10. Hence, in this embodiment the stop surface 111 of the door stop structure 11 is provided with a magnetic contact for magnetically locking the stop member 111 to the magnetic member 24 of the shower door panel 21.

[0040] In one embodiment the attachment member is a lip seal 24. Here, the lip seal 24 is provided for engagement with a lip seal contact of the door stop structure 11 of the assembly 10. Hence, in this embodiment the stop surface 111 of the door stop structure 11 is provided with a lip seal contact for sealing the stop member 111 to the lip seal 24 of the shower door panel 21.

[0041] In Fig. 5 the assembly 10 and the shower door panel 21 are arranged in a straight manner, i.e. with 0° angle. Hence, in this configuration no angle adjustment of the assembly 10 is required.

[0042] Figs. 6 and 7 show a shower door system 20 having an angle, or distance, between the shower door 21 and the assembly 10. In Figs. 6 and 7 the shower door system 20 is seen in an exemplified bathroom environment, showing a shower area 1, surrounding walls 2 and an obstacle such as a window 3. The walls 2 may either be walls of the bathroom or shower panels.

[0043] If no obstacle was present, the common way would be to arrange the shower door system 20 in a straight manner, as indicated by the dotted line. A prior art solution would thus be to arrange the shower system 20 in a straight manner by limiting the shower area 1, as indicated by the dashed line. The present invention solves this problem by the possibility of angel adjustment of the shower system 20. As shown in Figs. 6 and 7, the arrangement of the shower door system 20 is very space efficient. The shower door 21 is arranged near the obstacle 3 and the assembly 10 is arranged on an opposite wall or wall support. The door stop structure 11 of the

assembly 10 is then adjusted to a favorable angle in order to engage with the attachment member 24 of the shower door 21. It would also be possible to change the relative positions of the assembly 10 and the shower door panel 21, as is shown in Fig. 7.

[0044] Although the present invention has been described above with reference to specific embodiments, it is not intended to be limited to the specific form set forth herein. Rather, the invention is limited only by the accompanying claims and, other embodiments than the specific above are equally possible within the scope of these appended claims.

Claims

1. An assembly (10) for receiving a shower door in a shower compartment, comprising a door stop structure (11), **characterized in that** the door stop structure (11) comprises a stop member (110) being pivotable relative a wall support (13), and wherein the assembly (10) further comprises locking means (112) for locking the angular position of the stop member (110).

2. The assembly according to claim 1, wherein said door stop structure (11) further comprises a hinge (120), to which the stop member (110) is attached, and a hinge support (130).

3. The assembly according to claim 2, wherein the hinge (120) is extending vertically along the length of the wall support (13).

4. The assembly according to claim 2 or 3, wherein the hinge (120) comprises at least one support member (121) arranged at the upper and/or lower end of the hinge support (130), said support member (121) being configured to rotationally support the stop member (110).

5. The assembly according to any one of claims 2-4, wherein the stop member (110) extends along the length of the hinge (120) and comprises a stop surface (111) forming a protrusion extending radially out from the hinge (120).

6. The assembly according to claim 5, wherein the stop surface (111) is provided with a magnetic contact for magnetically locking the stop member (110) to a corresponding magnetic stop member of an associated shower door (21).

7. The assembly according to any one of the preceding claims, wherein said locking means (112) comprises a through hole (117) and a locking screw (116).

8. The assembly according to claim 7, wherein the through hole (117) is provided in a lower part and/or an upper part of the hinge (120).

9. The assembly according to any one of the preceding claims, further comprising at least one fixation device (14) for securing said door stop structure (11) to said wall support (13).

10. The assembly according to any one of the preceding claims, wherein said at least one fixation device (14) is configured to allow for an adjustment of the door stop structure (11) relative a vertical direction.

11. The assembly according to claim 9 or 10, wherein said fixation device (14) is configured to receive a bolt (114) of the door stop structure (11), and to fixate the position of the bolt (114).

12. The assembly according to claim 11, wherein one fixation device (14) is arranged at the respective vertical end of the wall support (13).

13. A shower door system, comprising a shower door (21) having a shower door panel (22) being pivotally supported by a wall support (13), and an assembly (10) according to any one of the preceding claims.

14. The shower door system according to claim 13, wherein the shower door (21) comprises means for moving the shower door panel (22) upwards during opening of the shower door (21), and moving the shower door panel (22) downwards during closing of the door (21).

15. The shower door system according to claim 14, wherein the shower door panel (22) further comprising adjusting means (23) for setting the lowermost vertical position of the shower door panel (22) at a specific angular position of the shower door panel (22) relative the wall support (13).

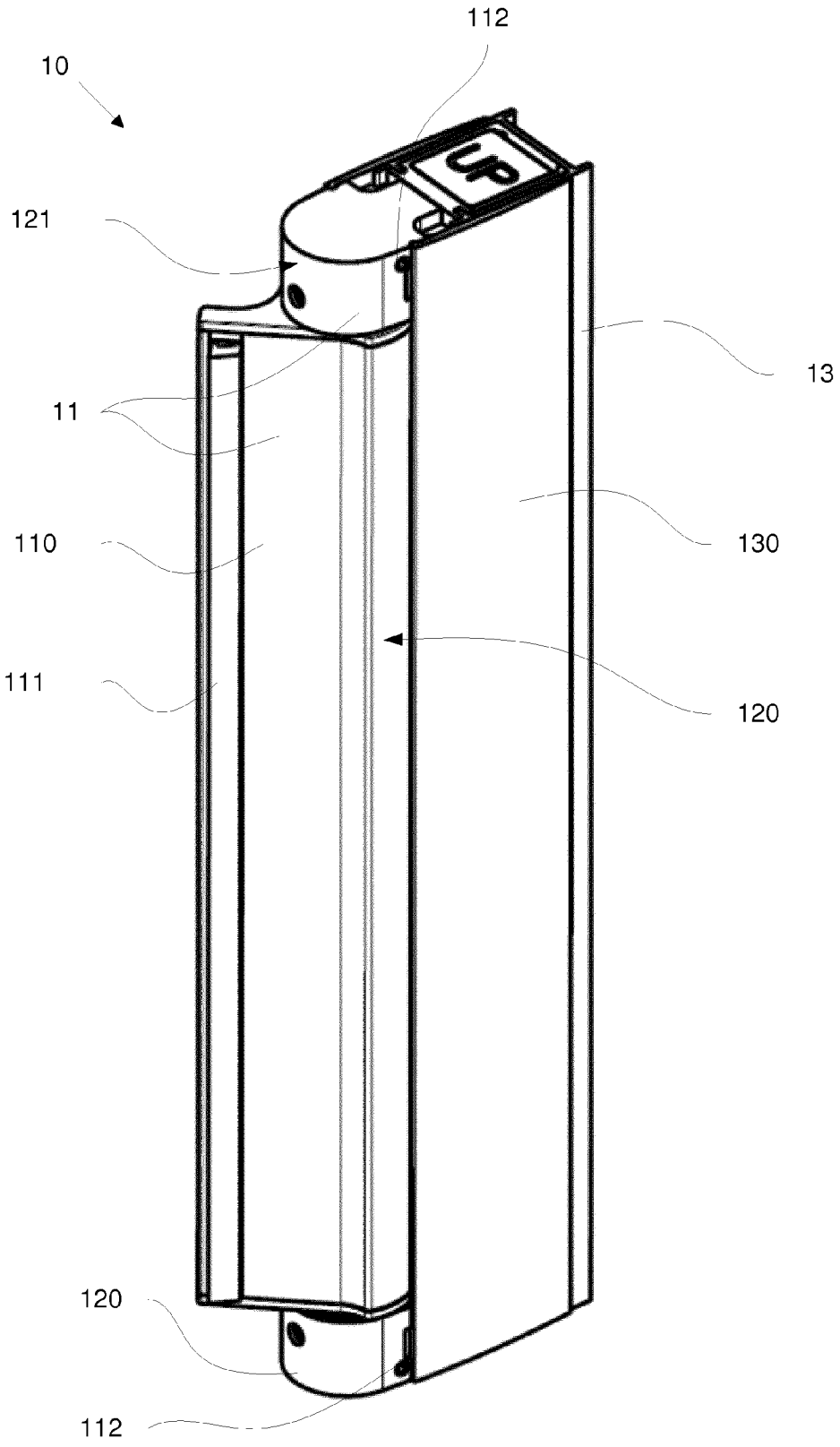


Fig. 1

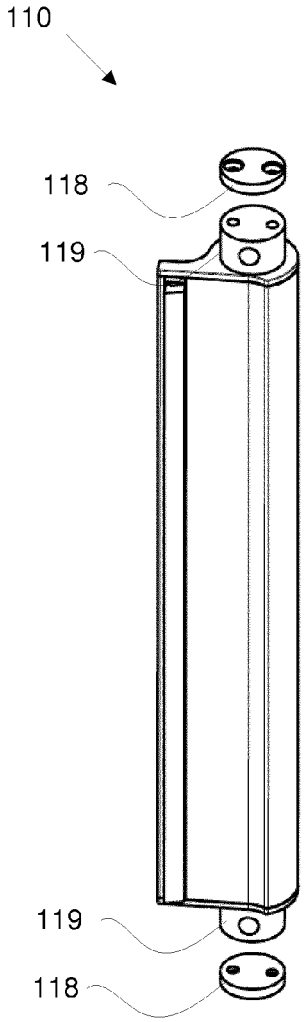


Fig. 2a

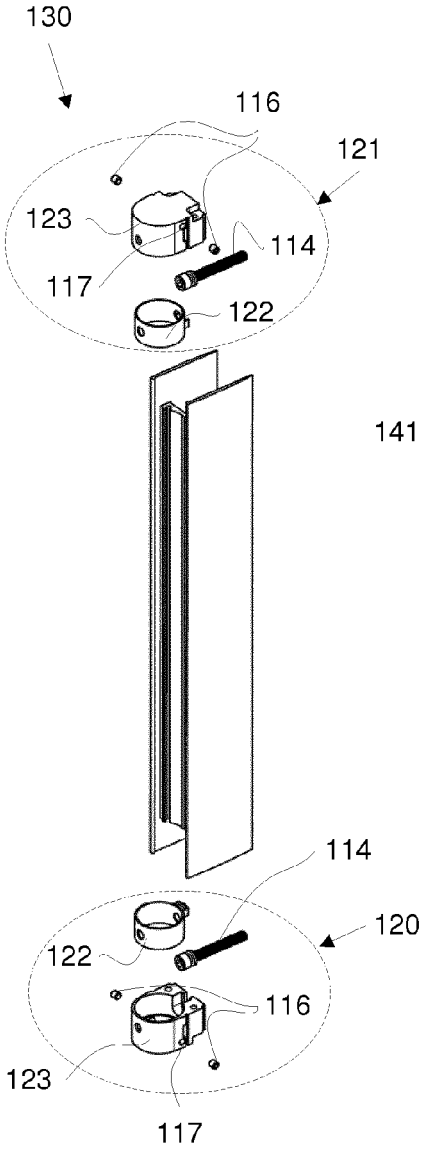


Fig. 2b

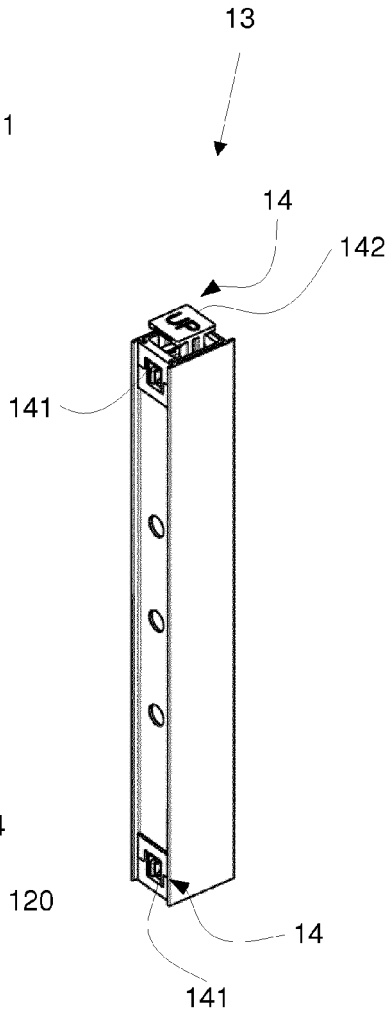


Fig. 2c

SECTION A-A

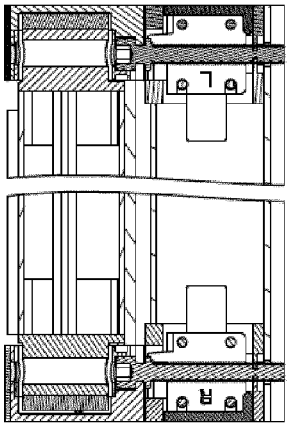


Fig. 3a

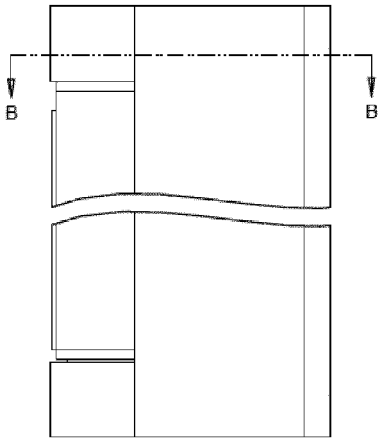


Fig. 4a

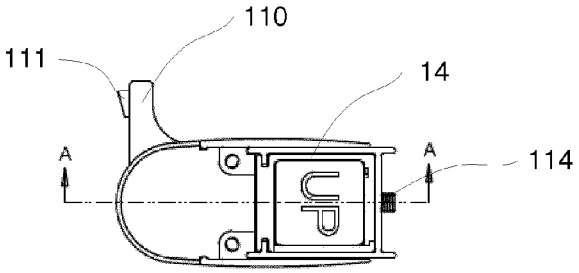
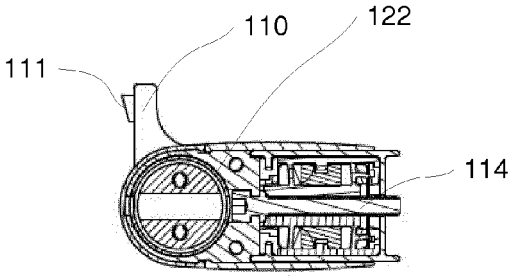


Fig. 3b



SECTION B-B

Fig. 4b

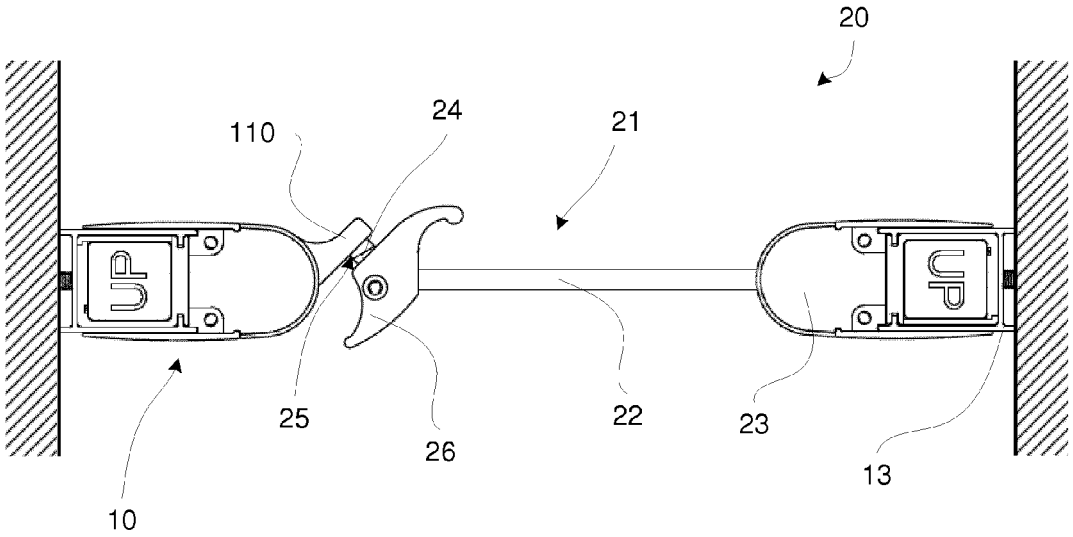


Fig. 5

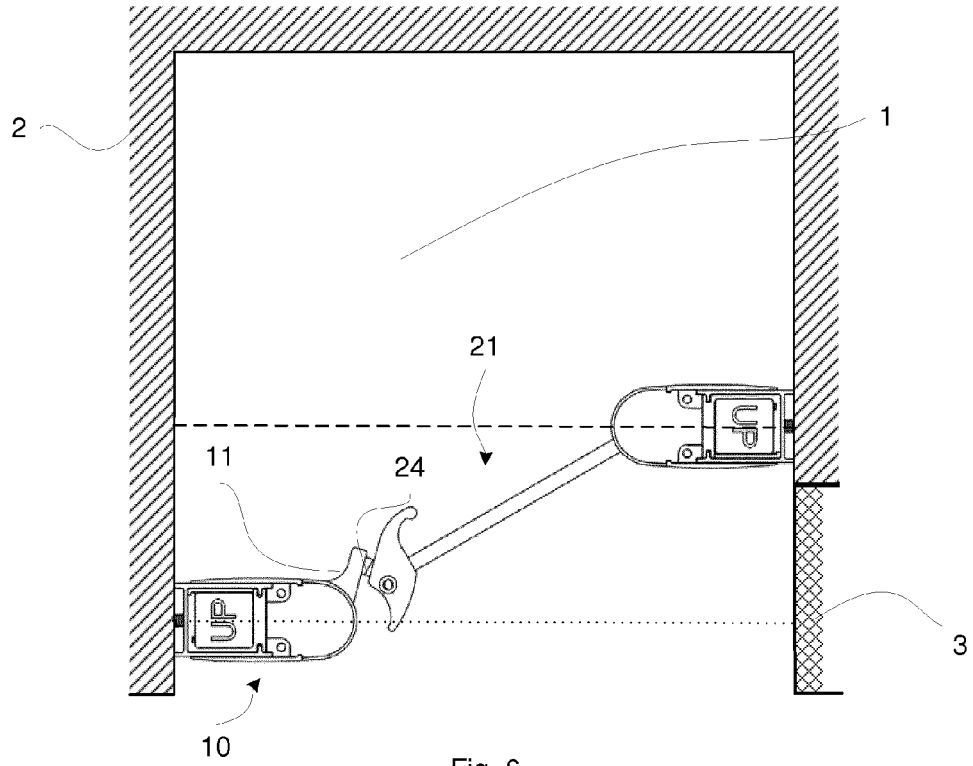


Fig. 6

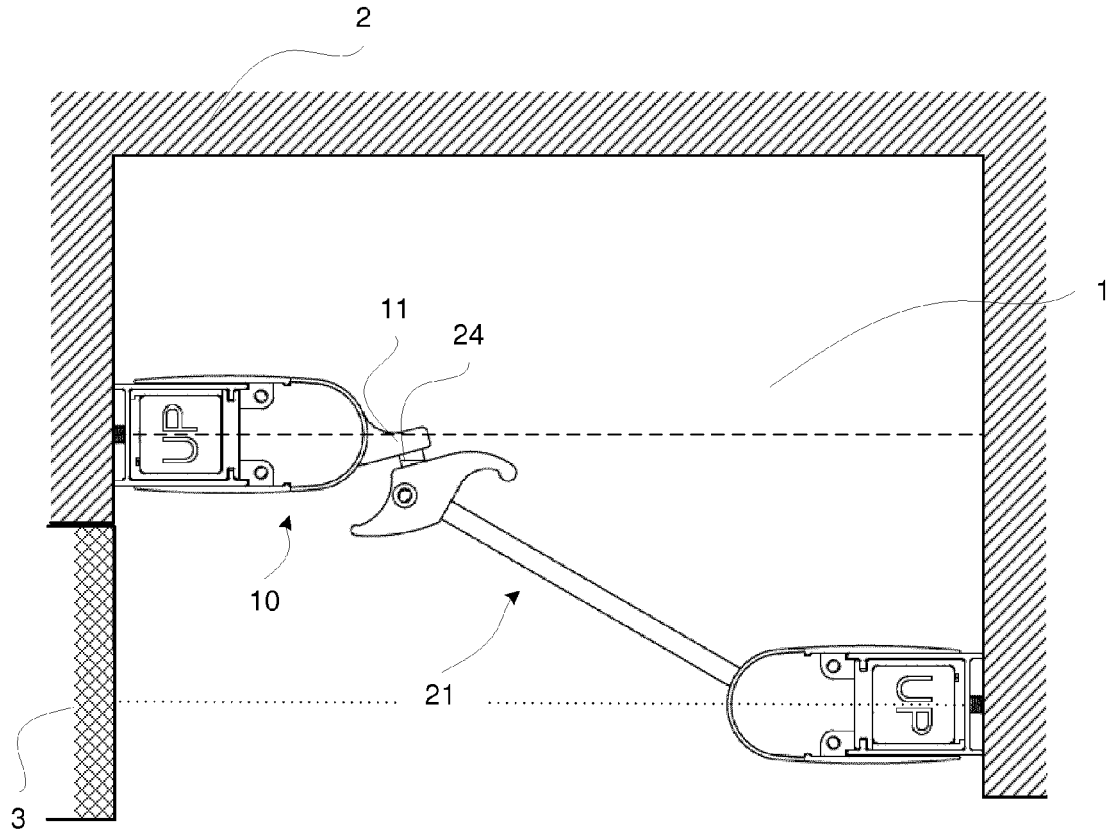


Fig. 7

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EUROPEAN SEARCH REPORT

Application Number
EP 15 15 8247

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 19 32 154 A1 (SIMON FA KARL) 7 January 1971 (1971-01-07)	1	INV. E05F5/02
A	* page 18, line 6 - line 27; figures 4-6 * * page 19, line 23 - page 20, line 9 *	2-15	
X	US 5 480 199 A (HUSTING THOMAS J [US]) 2 January 1996 (1996-01-02)	1	
A	* figures 6,7 *	2-15	
A	US 3 553 891 A (CASEBOLT RALPH T ET AL) 12 January 1971 (1971-01-12) * column 3, line 10 - line 57; figures 1,2 *	1-15	

TECHNICAL FIELDS SEARCHED (IPC)

E05F
A47K
E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	8 September 2015	Berote, Marc

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 15 15 8247

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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08-09-2015

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 1932154 A1	07-01-1971	NONE	
US 5480199 A	02-01-1996	NONE	
US 3553891 A	12-01-1971	NONE	

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82