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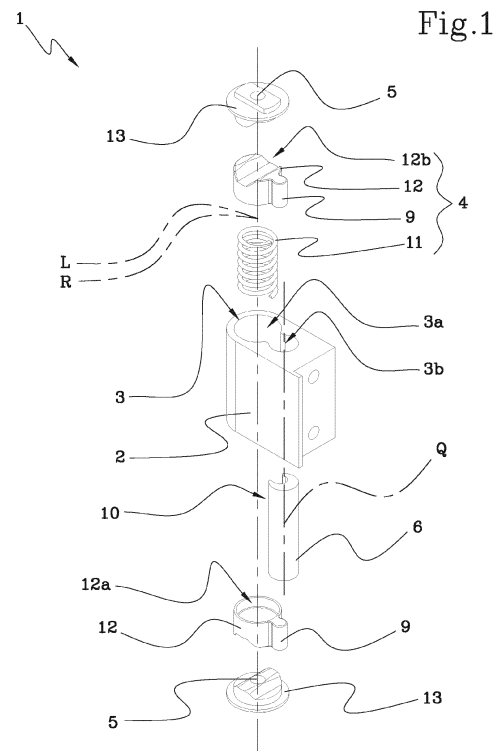
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(54) **A HINGE, PREFERABLY FOR A SHOWER CUBICLE**

(57) A hinge (1), preferably for a shower cubicle, comprises a fixed element (2) having a housing (3), a setting device (4) arranged internally to the housing (3) and movable about its own axis of rotation (R) for abutting in its own operating position so as to perform the setting of a closing position of a door with respect to a support frame and, furthermore, at least one rotating connector (5) interposed between the setting device (4) and the door. The rotating connector (5) is rotatably mounted on the setting device (4) for rotating between an opening position and a closing position of the door defined by the setting device (4). In particular, the hinge (1) also comprises an adjustment element (7,8) for adjusting the operating position of the setting device (4) that is configured to rotate and/or maintain the same setting device (4) in an operating position comprised between its own normal position or its own rotated position.



Description

Technical field

[0001] The present invention is directed to a hinge, preferably for a shower cubicle.

[0002] In particular, the invention refers to a shower cubicle equipped with at least one of said adjustable hinge.

Prior art

[0003] In the furniture sector, in particular in the shower cubicles sector, it is usual to hinge the hinged door, along one of its lateral edges, directly with the wall of the room in which the shower cubicle is installed.

[0004] However, the walls of the houses are not made perfectly perpendicular with respect to the floor.

[0005] Consequently, this implies that the doors hinged to the walls (and, therefore, also the hinged doors of a shower cabin) must be adjusted so that they close properly without leaving passing gaps along their perimeter.

[0006] Therefore, although the floor and the wall to which the hinged door is constrained are not squared only by a few millimetres, it is possible that the final opening gap of the door results in being equal to even a few centimetres.

[0007] Large, hinged doors are particularly subject to this problem which is very evident precisely because of their width. In fact, with the same opening angle of a door, the passing gap that is formed between the movable edge of the door (that is, the one opposite the hinged edge) and the abutment edge on which the door should abut (in a correct closing position) is greater for doors of greater width. In other words, with the same angular opening, the length of a circular arc (i.e. of the passing gap) is directly proportional to the radius of the same circumference (i.e. of the width of the door).

[0008] To obviate this problem, the glass doors of the shower cubicles usually have slots and/or grooves that allow an adjustment of the hinges at the same slots/grooves to adjust the orientation of the hinged door itself so that the latter is perpendicular even if the side wall does not extend orthogonally with respect to the same floor. However, these solutions require further specific processings on the doors, increasing the final cost of the work and, in addition, weakening the structure of the door itself (usually very heavy as it is made of glass).

[0009] In addition, these processings are aesthetically invasive and, therefore, require realizing very large hinges to be able to cover them entirely in order not to make them visible. However, although the slots/grooves are hidden, the structure of the hinge used to cover them remains very evident.

Summary

[0010] In this context, the technical task underlying the present invention is to propose a hinge and a shower cubicle that overcome the drawbacks of the above-mentioned prior art.

[0011] In particular, an object of the present invention is to provide a hinge, preferably for the door of a shower cubicle, which has reduced dimensions in order to have a minimal aesthetic impact and, at the same time, which allows to compensate for any misalignments due to the non-perpendicular wall to which it is constrained.

[0012] Another object of the present invention is to provide a hinge for the door of a shower cubicle that does not require further processing on the door on which it is to be installed. Therefore, in particular, the invention aims to avoid weakening the structure of the door of a shower cubicle as no further processings are required aimed at creating new slots/grooves and/or at increasing the dimensions of those already present.

[0013] A further object of the present invention is to provide a shower cubicle preferably comprising the afore-said hinge.

[0014] The specified technical task and the specified purposes are substantially achieved by a hinge and a door of a shower cubicle, which comprise the technical features set forth in the respective independent claims. The dependent claims correspond to further advantageous aspects of the invention.

[0015] It should be appreciated that this summary introduces a selection of concepts in simplified form, which will be further developed in the detailed description below.

[0016] The invention is directed to a hinge, preferably for a shower cubicle.

[0017] In particular, the hinge comprises a fixed element having a housing extending along its own longitudinal extension axis and, in addition, a setting device arranged internally to the housing and, furthermore, movable about its own axis of rotation substantially parallel to the longitudinal extension axis for abutting in its own operating position so as to perform the setting of a closing position of a door with respect to a support frame.

[0018] In particular, the setting device in the operating position defines a lying plane parallel to the door in its closing position.

[0019] The fixed element can be constrained to a support frame, preferably for a shower cubicle, while the setting device can be constrained to a door, also preferably for a shower cubicle.

[0020] The hinge also comprises at least one rotating connector interposed between the setting device, to which it is connected, and the door, to which it can be constrained.

[0021] In particular, the rotating connector is rotatably mounted on the setting device for rotating between an opening and a closing position of the door, the latter defined by the aforementioned setting device.

[0022] The hinge comprises at least one adjustment element for adjusting the operating position of the setting device that is configured to rotate and/or maintain said setting device in an operating position comprised between a normal position or a rotated position. In the normal position the lying plane is parallel to a longitudinal extension plane of the fixed element, while in the rotated position the lying plane is transverse to the longitudinal extension plane of the fixed element.

[0023] In other words, by adjusting the setting device, the hinge is advantageously configured to compensate for any imperfections of the closure of the door with respect to the support frame.

[0024] For example, in case the wall on which to apply the door (or part of the support frame, for example of a shower cubicle) is not made perpendicularly, the door in the closing position could maintain an opening gap. In other words, the door may not fully abut against the respective jamb and, therefore, not provide a complete and correct closure.

[0025] In this sense, therefore, the hinge is able to perform a correction of the angular closing position of the door so as to cancel the possibility for a passing gap to remain. In fact, an angular adjustment by a few millimetres at the hinge (i.e. the fulcrum) can correspond to an angular correction by a few centimetres at the edge at the opposite end (i.e. where the passing gap is present when the door is open).

[0026] With the same opening angle, in fact, an arc of circumference is the greater the greater the corresponding radius is that connects the arc to the centre of the circumference (the hinge, that is, the fulcrum).

Brief description of the drawings

[0027] Further features and advantages of the present invention will become more apparent from the approximate and thus non-limiting description of a preferred, but nonexclusive, embodiment of a hinge preferably for a shower cubicle, as illustrated in the accompanying drawings, wherein:

- figure 1 illustrates, according to a perspective view, an exploded view of a first embodiment of a hinge in accordance with the invention;
- figure 2 illustrates, according to a perspective view, an exploded view of a second embodiment of the hinge illustrated in figure 1;
- figure 3 illustrates, according to a side view, a section of the hinge illustrated in figure 2;
- figure 4 illustrates, according to a perspective view, a section of the hinge illustrated in figure 2;
- figure 5 illustrates, according to a top view, a cross-section of the hinge illustrated in figure 2;
- figure 6 illustrates, according to a perspective view, a cross-section of the hinge illustrated in figure 2;
- figure 7 illustrates, according to a perspective view, the hinge illustrated in figure 2.

[0028] With reference to the drawings, they serve solely to illustrate embodiments of the invention with the aim of better clarifying, in combination with the description, the inventive principles on which the invention is based.

Detailed description of at least one embodiment

[0029] The present invention is directed to a hinge which, with reference to the figures, has been generically indicated with the number 1.

[0030] Any modifications or variants which, in the light of the description, are evident to the person skilled in the art, must be considered to fall within the scope of protection established by the present invention, according to considerations of technical equivalence.

[0031] Figure 1 shows a hinge 1, preferably for a shower cubicle, comprising a fixed element 2 having a housing 3 extending along its own longitudinal extension axis L and, furthermore, a setting device 4 arranged inside the housing 3 and movable about its own axis of rotation R substantially parallel to the longitudinal extension axis L for abutting in its own operating position so as to perform the setting of a closing position of a door with respect to a support frame. In particular, the setting device 4 in the operating position defines a lying plane parallel to the door in its closing position.

[0032] The fixed element 2 can be constrained to a support frame, preferably for a shower cubicle, while the setting device 4 can be constrained to a door, also preferably for a shower cubicle.

[0033] The hinge 1 also comprises at least one rotating connector 5 interposed between the setting device 4, to which it is connected, and the door, to which it can be constrained.

[0034] In particular, the rotating connector 5 is rotatably mounted on the setting device 4 for rotating between an opening and a closing position of the door, the latter defined by the setting device 4.

[0035] The hinge 1, in addition, comprises at least one adjustment element 7,8 for adjusting the operating position of the setting device 4. Said adjustment element 7, 8 is configured to rotate and/or maintain the setting device 4 in an operating position comprised between a normal position or a rotated position. In the normal position the lying plane is parallel to a longitudinal extension plane of the fixed element, while in the rotated position the lying plane is transverse to the longitudinal extension plane of the fixed element 2.

[0036] In other words, the hinge 1 is composed of a fulcrum (the fixed element 2 constrainable to a wall or a portion of a support frame, for example in the case of a shower cubicle) and of a movable portion rotating with respect to the fulcrum (the setting device 4). A rotating connector 5 (constrainable to a door) is associated with the setting device 4 and is movable by rotation with respect thereto. In still other words, the rotating connector 5 and the setting device 4 are each able to rotate about a respective axis of rotation R, preferably coincident with

each other, but independently of each other.

[0037] In particular, the rotating connector 5 is configured to rotate (with respect to the setting device 4) solidly with the door between a closing and opening position of the same door. The setting device 4, on the other hand, is movable with respect to the fixed element 2 in order to define the correct positioning and orientation in which the rotating connector 5 must abut in order to define the correct lying plane along which the door can be disposed to be in its correct closing position with respect to the support frame.

[0038] Advantageously, the movement of the setting device 4 is obtainable thanks to at least one adjustment element 7,8 configured to act directly and/or indirectly on the setting device 4 for the movement thereof and for the maintenance thereof in the correct operating position able to define the correct closing position of the door.

[0039] Therefore, when the hinge 1 is installed between a door and a support frame, the movable element 2 is solidly constrained with the support frame, the rotating connector 5 is solidly constrained with the movable door between the opening and closing position thereof, while the setting device 4 is movable in an operating position thereof that is useful to define the correct closing position of the door with respect to the support frame, but thanks to the adjustment element 7,8 is solidly constrained with the fixed element 2 during use of the door.

[0040] Preferably, as illustrated in figures 2, 6 and 7, each adjustment element 7, 8 comprises a hole 7 made on the fixed element 2 and in communication with at least the housing 3 and, furthermore, an adjustment screw 8 which can be inserted into the hole 7 and associated with the setting device 4 so as to define the setting of the closing position of the door with respect to the support frame.

[0041] Even more preferably, the hinge 1 comprises a plurality of adjustment elements 7, 8.

[0042] In this way, each adjustment screw 8 is movable, along the respective hole 7, towards and/or away from the setting device 4 so as to abut against it and, therefore, induce the movement thereof in the operating position in which it is able to define the correct closing position of the door with respect to the support frame. In particular, a greater insertion of the adjustment screw 8 into the respective hole 7 corresponds to a greater rotation of the setting device 4.

[0043] Preferably, the holes 7 are made on a side wall of the fixed element 2. In other words, they are obtained perpendicularly with respect to the longitudinal extension axis L along which the housing 3 is obtained.

[0044] Even more preferably, each hole 7 for the respective adjustment screw 8 is obtained only on one side of the fixed element 2 as the doors are usually of the hinged type, i.e. configured to abut against an abutment surface for their closure. If the doors did not rest against this abutment surface, then it would be necessary and useful to intervene on the hinge 1 to perform a setting.

[0045] Otherwise, if a door were of the tilting type (i.e.

with two opening directions) it would be useful to obtain holes 7 on two sides of the fixed element 2 (i.e. on opposite sides) so as to be able to obtain a double adjustment of the operating position of the setting device 4 as a function of the direction towards which the misalignment of the door occurs with respect to the support frame.

[0046] In accordance with an aspect of the invention illustrated in the attached figures, the hinge 1 comprises a compensation element 6 interconnected with the setting device 4. The compensation element 6 is arranged internally to the housing 3 and, furthermore, is movable about its own axis of rotation Q substantially parallel to the longitudinal extension axis L so that a rotation of the compensation element 6 corresponds to a rotation of the setting device 4. In particular, at least one adjustment element 7, 8 is associated with the compensation element 6 for rotating it about its own axis of rotation Q so as to define the setting of the closing position.

[0047] In other words, the compensation element 6 acts as an intermediary between each adjustment element 7, 8 and the setting device 4. The adjustment element is configured to interact directly with the compensation element 6 which, in turn, is configured to interact with the setting device 4.

[0048] Preferably, the compensation element 6 is rotatably interconnected with the setting device 4 so as to generate an articulated or hinged mutual connection.

[0049] In other words, between the compensation element 6 and the setting device 4 there is a fulcrum portion that allows the aforementioned rotation movement about the respective axes of rotation R and Q in an opposed way (i.e. a clockwise rotation of the compensation element 6 corresponds to an anti-clockwise rotation of the setting device 4).

[0050] Even more preferably, the compensation element 6 and the setting device 4 are counter-shaped so as to define a rotatable interconnection, wherein each is rotatable about its own axis of rotation R, Q.

[0051] In accordance with another aspect of the invention visible in figures 1, 2, 5 and 6, the housing 3 comprises a first seat 3a for housing the setting device 4 and, furthermore, a second seat 3b for housing the compensation element 6. In particular, the first seat 3a and the second seat 3b are communicating with each other.

[0052] In other words, the setting device 4 and the compensation element 6 are each stably arranged in a respective seat (respectively, the first seat 3a and the second seat 3b) so as to always result in the correct positioning which, together with the fact that the seats are communicating with each other, guarantees their interconnection for the correct operation of the mutual movement mechanism previously described.

[0053] For example, referring to figure 5, it can be noted that the insertion of the adjustment screw 8 in the respective hole 7 allows the compensation element 6 with which it is interconnected to rotate clockwise. In turn, the latter induces the anti-clockwise rotation of the setting device 4, specifically, from its normal operating position to a ro-

tated operating position. Consequently, the lying plane defined by the setting device 4 is also rotated and, therefore, no longer orthogonal to the support frame and/or to the wall of the room. The rotating connector 5 connected to the setting device 4 will also be rotated with respect to the support frame/wall as it is configured to be arranged with respect to the setting device 4 always with the same orientation and/or alignment when defining the closing position of the door.

[0054] In this way, therefore, the hinge 1 is able to set the correct closing position of the door and, therefore, correct any misalignments between the door itself and the support frame.

[0055] Preferably, the first seat 3a and the second seat 3b each have a respective section transverse to the longitudinal extension axis L having a substantially circular shape.

[0056] In other words, the housing has a section that is transverse with respect to the longitudinal extension axis L in the shape of an "eight".

[0057] In accordance with a further aspect of the invention, the compensation element 6 has a longitudinal groove 10 adapted to receive at least a projecting portion 9 of the setting device 4. Said projecting portion 9 extends projectingly with respect to the axis of rotation R of the setting device 4 so that a rotation of the compensation element 6 corresponds to a counter-rotation of the setting device 4.

[0058] In other words, the setting device 4 and the compensation element are interconnected with each other by a mutually counter-shaped conformation. The groove 10 is preferably slightly flared with respect to the conformation of the projecting portion 9 to avoid a perfect shape coupling and, therefore, allow reciprocal rotary movement between the compensation element 6 and the setting device 4.

[0059] Preferably, the groove 10 of the compensation element 6 extends parallel to its own axis of rotation Q and the longitudinal extension axis L.

[0060] In accordance with an aspect of the invention, the longitudinal extension axis L and at least the axis of rotation R of the setting device 4 are parallel to each other.

[0061] Preferably, the longitudinal extension axis L and the axis of rotation R of the setting device 4 and the axis of rotation Q of the compensation element 6 are parallel to each other.

[0062] In accordance with another aspect of the invention, the housing 3 passes through along the fixed element 2 and, therefore, the rotating connector 5 is arranged at an end of the housing 3. In particular, each rotating connector 5 comprises an edge portion 13 extending transversely to the respective axis of rotation R in order to go beyond with respect the opening of the housing 3 and, therefore, maintain at least the setting device 4 internally to the same housing 3.

[0063] In this way, for example in the case where the fixed element 2 is obtained as a single piece, at least the setting device 4 can be inserted inside the housing 3 from

the outside. Each rotating connector 5 is advantageously arranged at least partly outside the housing 3 so that the edge portion thereof 13 is able to abut against the same fixed element 2 and, therefore, maintain the same setting device 4 inside the housing 3.

[0064] Preferably, in the case where the compensating element 6 is present, each rotating connector 5 comprises an edge portion 13 extending transversely to the respective axis of rotation R for a length such as to overlap with at least part of the compensating element 6 so as to prevent the exit thereof from the housing 3.

[0065] In this way, each rotating connector 5 with the edge portion thereof 13 is advantageously able to stably maintain within the first seat 3a the setting device 4 and also the compensation element 6 in the second seat 3b.

[0066] Conversely, only one of the seats of the housing 3, preferably the first seat 3a, could be made as passing through, while the other seat would be blind. In this way, considering the first seat 3a as passing through, the compensation element 6 could be inserted into the second seat 3b with its passage through the first seat 3a. The setting device 4 would be inserted into the first seat 3a only at a later time, preventing the exit of the compensation element 6.

[0067] Alternatively, the fixed element 2 could be made in several couplable pieces, for example by interlocking, allowing the housing not to pass through in order to stably contain the setting device 4 and, if present, the compensation element 6 therein.

[0068] In accordance with a further aspect of the invention clearly visible in figures 1 and 2, the setting device 4 comprises an elastic element 11, preferably a spring, interposed between a pair of covering elements 12 of the elastic element 11. Preferably, each of the covering elements 12 is connected to a respective rotating connector 5. In particular, each of the covering elements 12 comprises a first concave face 12a and adapted to house at least part of the elastic element 11. Said first face 12a is substantially transverse to the axis of rotation R of the setting device 4.

[0069] Preferably, each of the covering elements 12 comprises a second face 12b opposite the first face 12a and, furthermore, counter-shaped with respect to a respective rotating connector 5 to which it is connected.

[0070] Even more preferably, the second face 12b of the covering element 12 has a concave conformation towards the respective first face 12a and, furthermore, with a trapezoid shaped longitudinal section with respect to the axis of rotation R. In particular, each rotating connector 5 is counter-shaped with respect to the second face 12b of the corresponding covering element 12.

[0071] In accordance with one aspect of the invention, the hinge 1 comprises a first body 15 which can be constrained to the support frame, preferably of a shower cubicle, and a second body 16 which can be constrained to a door, also preferably of a shower cubicle. In particular, the first body 15 is connected to the fixed element 2, while the second body 16 is connected to at least one

rotating connector 5.

[0072] The present invention also refers to a shower cubicle (not illustrated) comprising its own support frame, a door hinged to the support frame and movable between its own opening position and its own closing position and, furthermore, at least one hinge 1 in accordance with what has been described above so as to perform the setting of a closing position of a door with respect to the support frame.

Claims

1. A hinge (1), preferably for a shower cubicle, comprising:

- a fixed element (2) which can be constrained to a support frame, preferably for a shower cubicle, and comprising a housing (3) extending along its own longitudinal extension axis (L);
- a setting device (4) which can be constrained to a door, preferably for a shower cubicle, and arranged internally to said housing (3) and movable about its own axis of rotation (R) substantially aligned to said longitudinal extension axis (L) for abutting in its own operating position so as to perform the setting of a closing position of a door with respect to a support frame, said setting device (4) in said operating position defining a lying plane parallel to the door in the closing position;
- at least one rotating connector (5) interposed between said setting device (4), to which it is connected, and the door, to which it can be constrained, said rotating connector (5) being rotatably mounted on said setting device (4) for rotating between an opening position of the door and a closing position of the door defined by said setting device (4);
- at least one adjustment element (7,8) for adjusting the operating position of said setting device (4) and configured to rotate and/or maintain said setting device (4) in an operating position comprised between a normal position, in which said lying plane is parallel to a longitudinal extension plane of the fixed element (2), or a rotated position, in which said lying plane is transverse to said longitudinal extension plane of the fixed element (2), wherein said at least one adjustment element (7,8) comprises:

- a hole (7) made on said fixed element (2) and in communication with said housing (3);
- an adjustment screw (8) which can be inserted into said hole (7) and associated with said setting device (4) so as to define said setting of the closing position of the door with respect to the support frame;

- a compensation element (6) rotatably interconnected with said setting device (4) and arranged internally to said housing (3) and movable about its own axis of rotation (Q) substantially parallel to said longitudinal extension axis (L) so that a rotation of said compensation element (6) corresponds to a rotation of said setting device (4),

wherein said at least one adjustment element (7,8) is associated with said compensation element (6) for rotating it about its own axis of rotation (Q) so as to define said setting of the closing position.

2. The hinge (1) according to claim 1, comprising a plurality of adjustment elements (7,8).
3. The hinge (1) according to claim 1 or 2, wherein said housing (3) comprises a first seat (3a) for the housing (3) of said setting device (4) and a second seat (3b) for the housing (3) of said compensation element (6), said first seat (3a) and said second seat (3b) communicating with each other.
4. The hinge (1) according to claim 3, wherein said first seat (3a) and said second seat (3b) each have a respective section transverse to said longitudinal extension axis (L) having a substantially circular shape.
5. The hinge (1) according to any preceding claim, wherein said compensation element (6) has a longitudinal groove (10) adapted to receive at least a projecting portion (9) of said setting device (4) extending projectingly with respect to said axis of rotation (R) of the setting device (4) so that a rotation of said compensation element (6) corresponds to a counter-rotation of said setting device (4).
6. The hinge (1) according to claim 5, wherein said groove (10) of said compensation element (6) extends parallel to said axis of rotation (R) and to said longitudinal extension axis (L).
7. The hinge (1) according to any preceding claim, wherein said longitudinal extension axis (L) and at least said axis of rotation (R) of said setting device (4) are aligned with each other.
8. The hinge (1) according to any preceding claim, wherein said housing (3) passes through along said fixed element (2) and, furthermore, said rotating connector (5) is arranged at one end of said housing (3), said at least one rotating connector (5) comprising an edge portion (13) extending transversally to the respective axis of rotation (R) for a length such as to overlap with at least part of said compensation element (6) so as to prevent the exit thereof from

said housing (3).

9. The hinge (1) according to any preceding claim, wherein said setting device (4) comprises an elastic element (11), preferably a spring, interposed between a pair of covering elements (12) of said elastic element (11), each of said covering elements (12) being connected to a respective rotating connector (5), wherein each of said covering elements (12) comprises a first face (12a) being concave and adapted to house at least part of said elastic element (11), said first face (12a) being substantially transverse to the axis of rotation (R) of the setting device (4).
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10. The hinge (1) according to claim 9, wherein each of said covering elements (12) comprises a second face (12b) opposite the first face (12a) and counter-shaped with respect to a respective rotating connector (5) to which it is connected.
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11. The hinge (1) according to claim 10, wherein said second face (12b) of the covering element (12) has a concave conformation towards the respective first face (12a) and, furthermore, with a trapezoid shaped longitudinal section with respect to said axis of rotation (R), each rotating connector (5) being counter-shaped with respect to the second face (12b) of the corresponding covering element (12).
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12. The hinge (1) according to any preceding claim, comprising a first body (15) which can be constrained to the support frame and a second body (16) which can be constrained to a door, wherein said first body (15) is connected to said fixed element (2) and said second body (16) is connected to said at least one rotating connector (5).
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13. A shower cubicle comprising:
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 - a support frame;
 - a door hinged to said support frame and movable between an opening position thereof and a closing position thereof;
 - at least one hinge (1) according to any one of claims 1 to 12 so as to perform the setting of a closing position of a door with respect to said support frame.
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Fig.1

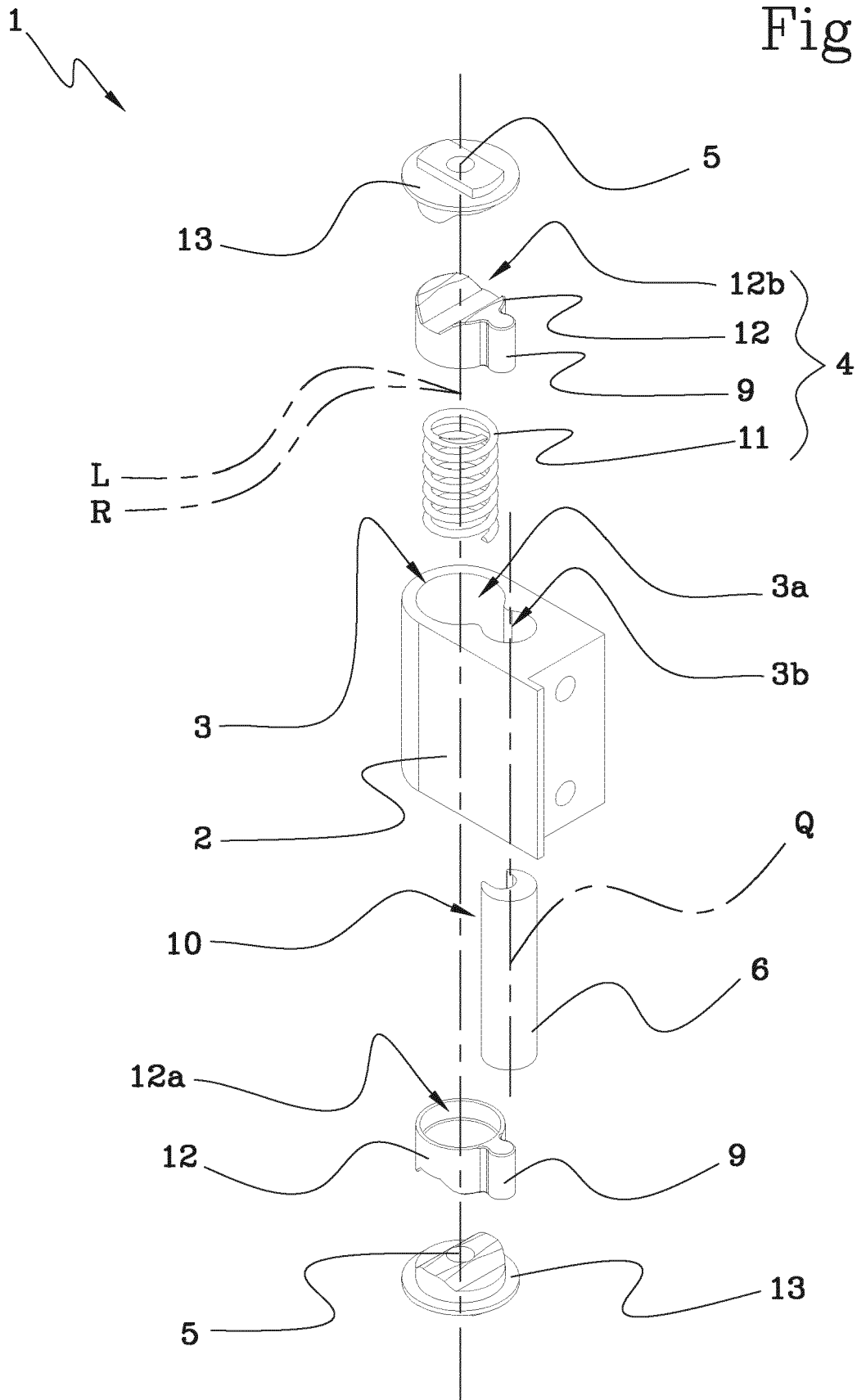


Fig.2

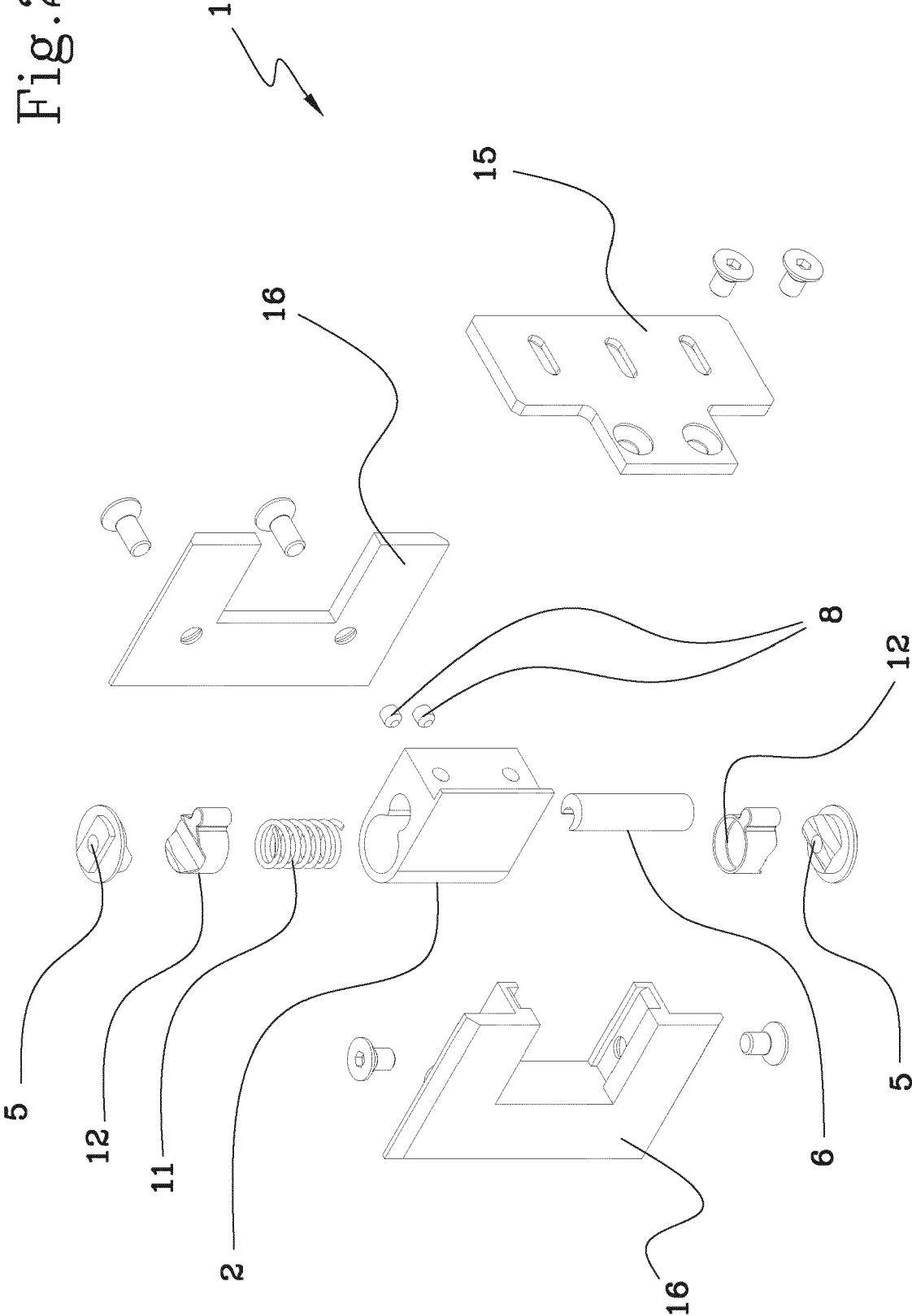


Fig.3

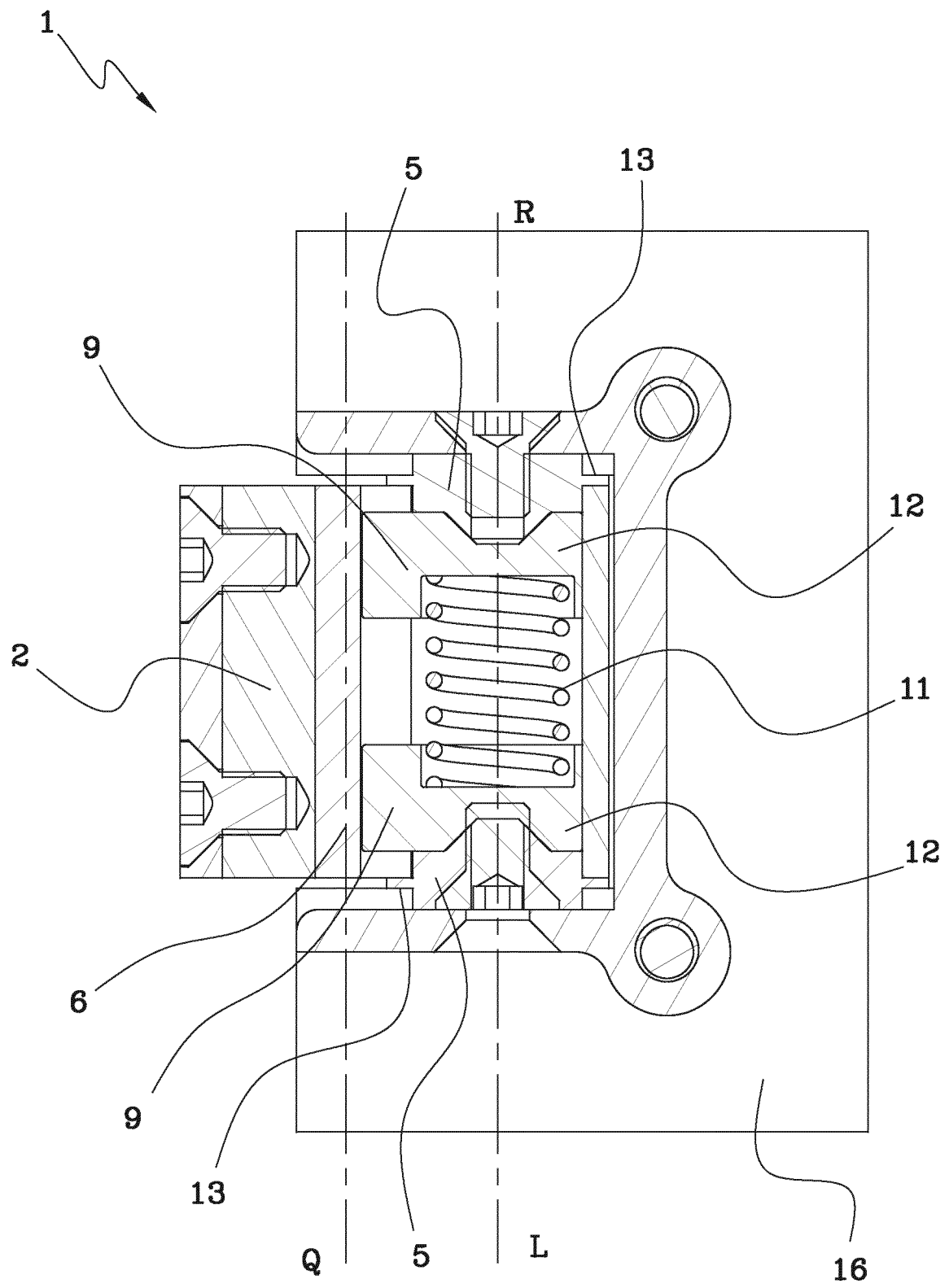


Fig.4

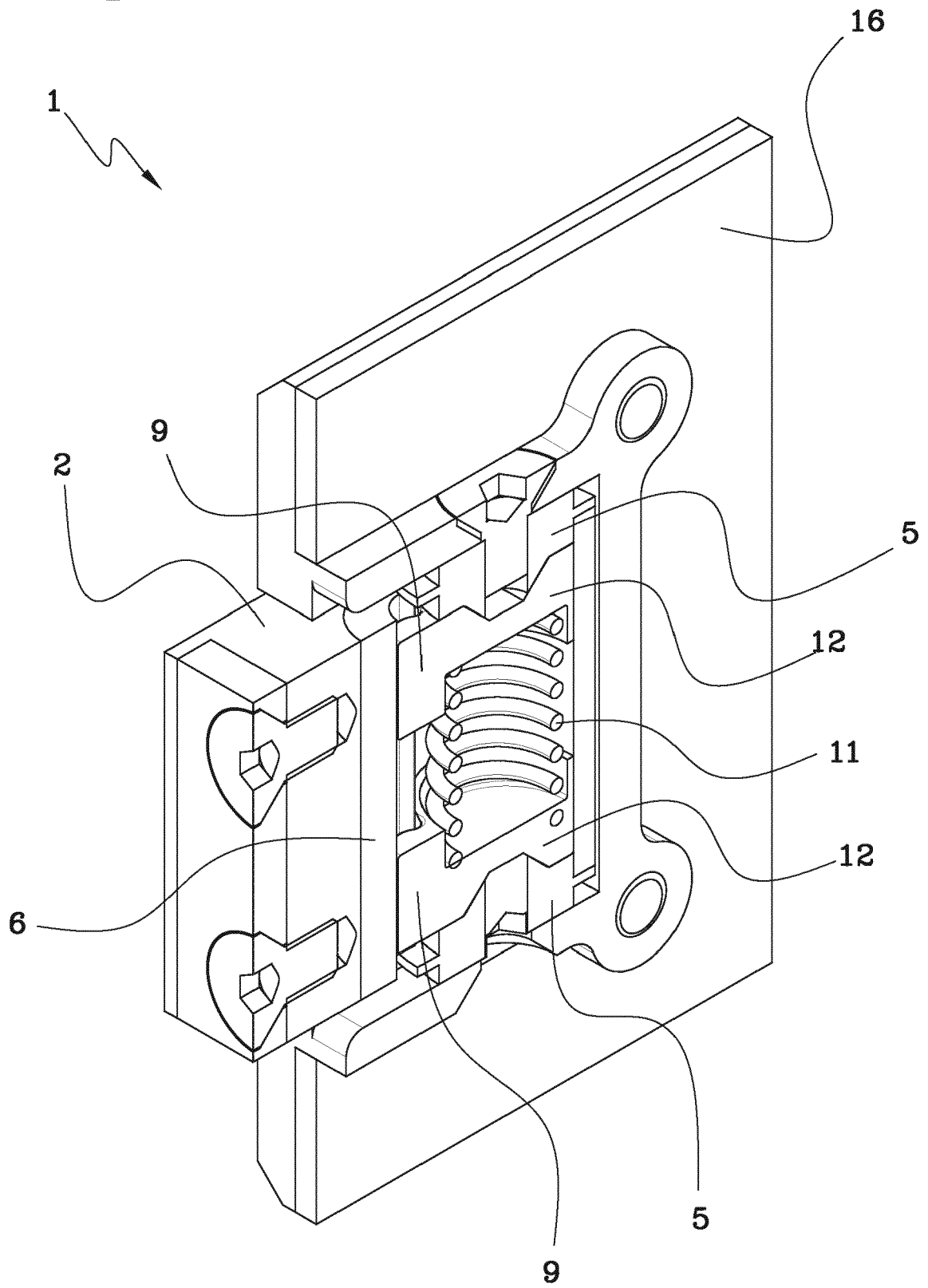
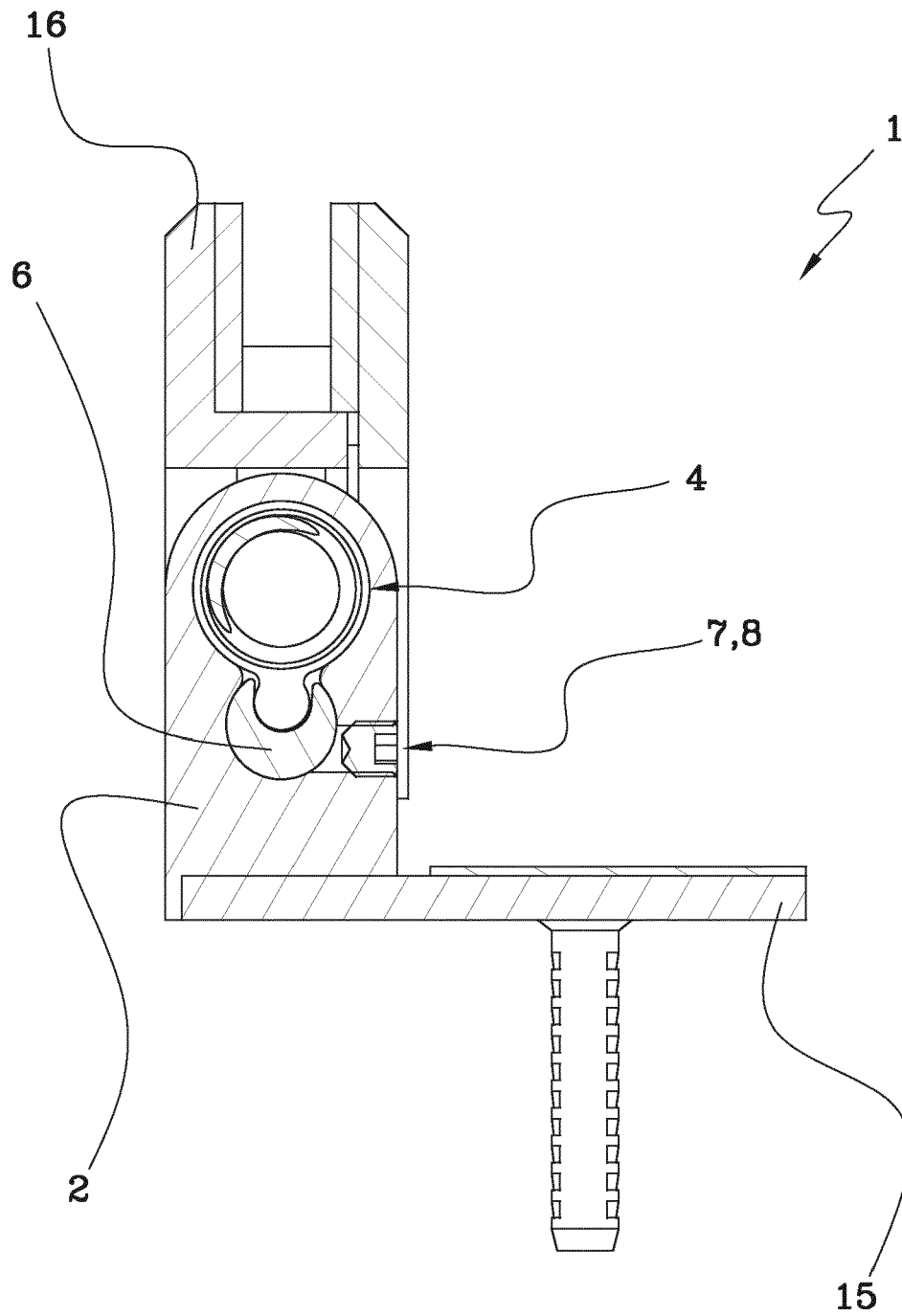


Fig.5



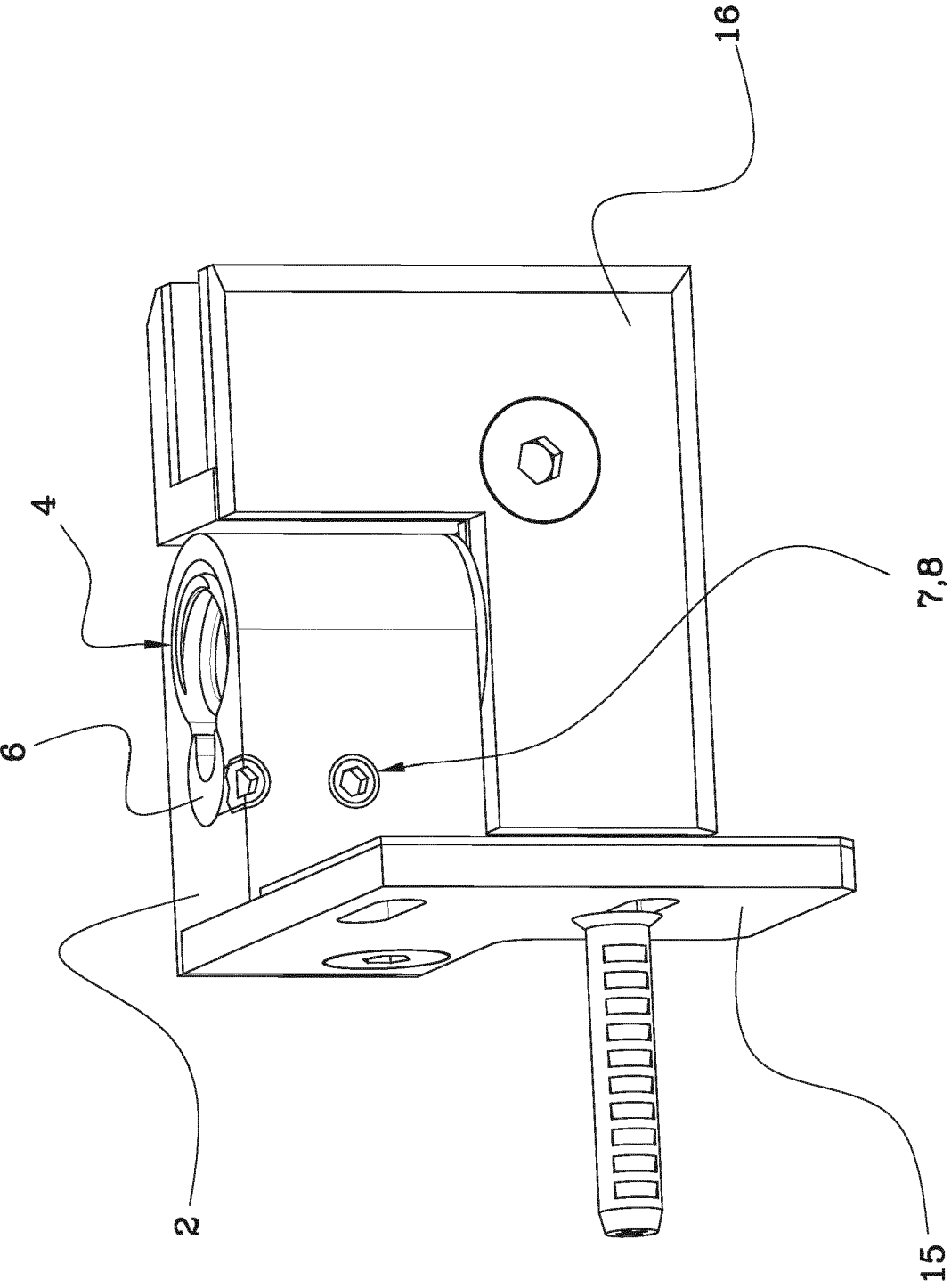
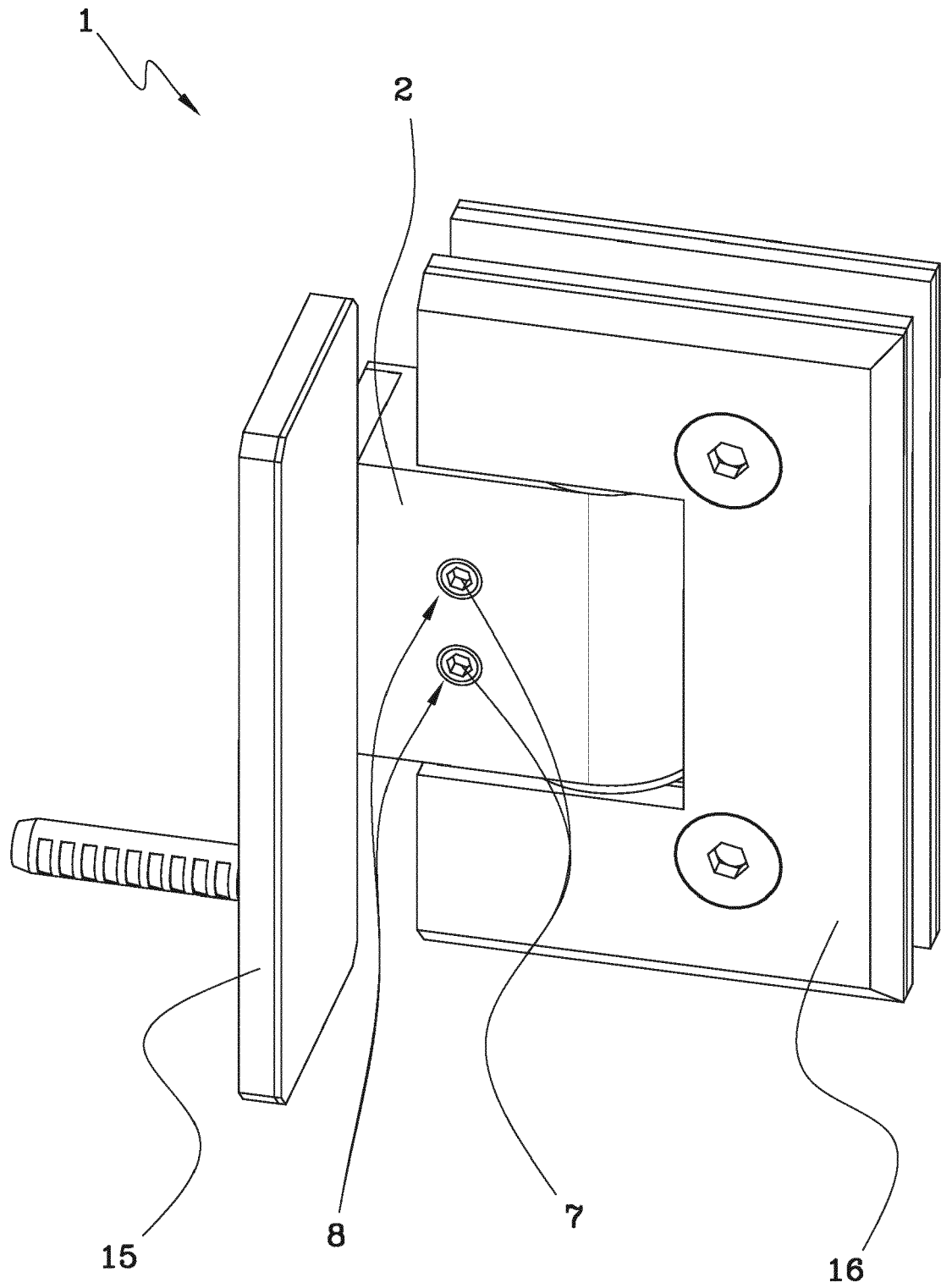


Fig. 6

Fig.7





EUROPEAN SEARCH REPORT

Application Number

EP 23 18 2040

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EPO FORM 1503 03.82 (P04C01)

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	EP 3 626 924 A1 (TIF GMBH [IT]) 25 March 2020 (2020-03-25) * paragraph [0028] - paragraph [0040] * * figures 1-12 * -----	1-13	INV. E05D3/02 E05D11/10
A	EP 2 942 463 A1 (TIF GMBH [IT]) 11 November 2015 (2015-11-11) * paragraph [0016] - paragraph [0020] * * figures 1-4 * -----	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			E05D
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 16 November 2023	Examiner Prieto, Daniel
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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