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(54) Shower door assembly

(57) A shower door assembly is provided which comprises a stationary frame having a guiding groove, and a movable frame having a first engaging element, wherein the shower door assembly further comprises at least one adjusting slider slidably mounted in the guiding groove, the at least one adjusting slider has a second engaging element for engagement with the first engaging element when the movable frame is moved towards the stationary frame, and the shower door assembly further comprises a filler for being disposed in a space formed between the stationary frame and the movable frame when a relative position between both frames are determined.

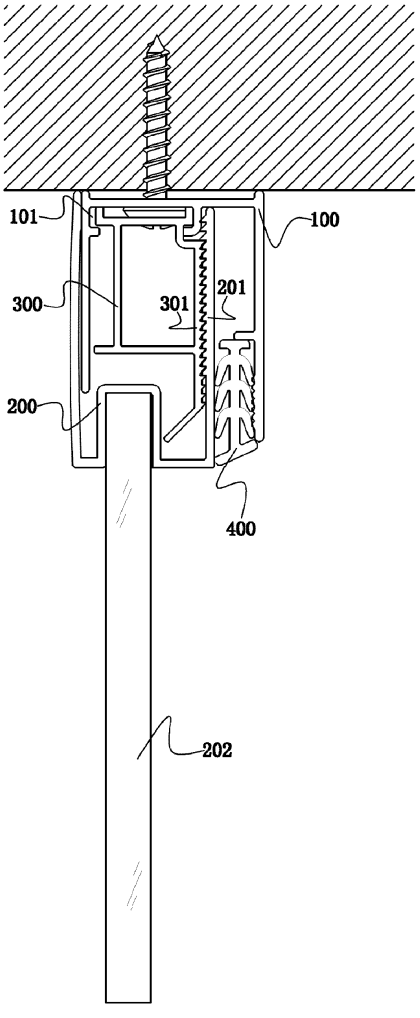

FIG. 6

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to a shower door and, in particular, to a fast mounting structure used for shower doors.

BACKGROUND OF THE INVENTION

[0002] Conventional shower doors comprise a stationary frame for fixing to a wall and a movable frame that is capable of adjusting its position in relative to the stationary frame such that both frames are properly engagement with each other. In order to engage both frames, the frames have to be aligned and drilled and fasteners are used to pass through the drilled holes and fasten the frames together. The assembly method of this kind is inconvenient to operation and quite time consuming. In addition, the drilling operation can possibly make damage to the materials made of the frames, for example aluminum materials. This may affect the appearance and service life of the shower door, or even cause the shower door unusable.

SUMMARY OF THE INVENTION

[0003] An object of the invention is to provide a shower door assembly which has relatively simple structure and is convenient for assembly, and in particular does not need to be drilled.

[0004] Another object of the present invention is to provide a fast assembly method for a shower door which has simplified steps and takes less time.

[0005] To achieve the above objects, a shower door assembly is provided which comprises a stationary frame having a guiding groove, and a movable frame having a first engaging element, wherein the shower door assembly further comprises at least one adjusting slider slidably mounted in the guiding groove, the at least one adjusting slider has a second engaging element for engagement with the first engaging element when the movable frame is moved towards the stationary frame, and the shower door assembly further comprises a filler for being disposed in a space formed between the stationary frame and the movable frame when a relative position between both frames are determined.

[0006] When the shower door is to be assembled, the adjusting slider is placed into the guiding groove and the movable frame is moved towards the stationary frame. When the relative position between the stationary frame and the movable frame is determined, the first and second engaging elements are engaged with each other. At least one filler is then provided to be inserted between the two frames to press against the two frames such that the first and second engaging elements are in close and immovable contact.

[0007] In one embodiment, a through hole is provided on the stationary frame for fixing to a wall or other surfaces by using such as fasteners.

[0008] In another embodiment, a third engaging element is provided on the stationary frame for engaging with the filler, so as to prevent the filler from shifting during long term usage.

[0009] In another embodiment, the shower door assembly comprises two adjusting sliders each disposed at each end of the stationary frame in order to enhance the stability of the shower door. Of course, the number of adjusting slider can be more than 2, for example 3. However, two adjusting sliders are preferable in view of manufacturing costs and stability.

[0010] In another embodiment, the filler has a same length as that of the stationary frame such that the filler can engage with the stationary frame along the whole length of the latter to improve the stability of the shower door.

[0011] In another embodiment, a blocker is provided on the stationary frame for preventing the filler from moving towards the wall. The blocker can limit the inserting depth of the filler such that the filler can possibly be taken out when needed in future.

[0012] In another embodiment, the first and second engaging elements have inverse teeth to enhance the engagement relationship there between.

[0013] In another embodiment, the filler is made from elastic materials and has a larger width than the width of space defined between the stationary frame and the movable frame such that when the filler is inserted into the space it will apply an expanding force against the frames, especially to the engaging elements, so as to ensure the close engagement between the engaging elements.

[0014] In another embodiment, the guiding groove is disposed at middle of the width of the stationary frame and spaced from either side of the stationary frame. In this case, two fillers are preferably provided at each space defined by the stationary and movable frames. The guiding groove can also be otherwise located. For example, it can share a sidewall with one sidewall of the stationary frame.

[0015] In operation, the stationary frame is firstly fastened to a wall or other surface by using fasteners or adhesives and then at least one adjusting slider is placed in the guiding groove. To engage the two frames, the movable frame is moved towards the stationary frame and when a relative position between both frames is determined, the first and second engaging elements are engaged with each other. The filler is finally inserted between the space defined by the movable frame and the stationary frame to enhance the engagement relationship between the engaging elements.

[0016] The present invention has relatively simple structure and is convenient for assembly. In particular, it does not need to be drilled such that the risk of damage is minimized. In addition, a fast assembling method can thus be obtained that has simplified steps and takes less time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0017] Further advantages and details of the present invention emerge from the example embodiments described below, which do not limit the invention in any way, and from the drawings, in which

Figure 1 is an exploded view of part of a shower door according to one example of the present invention;
Figure 2 is a partial view of the stationary frame shown in Figure 1;
Figure 3 is a partial view of the movable frame shown in Figure 1;
Figure 4 is a schematic view of the adjusting slider shown in Figure 1;
Figure 5 is a partial view of the filler shown in Figure 1;
Figure 6 shows a shower door in part in assembly state according to example 1 of the invention;
Figure 7 shows a shower door in part in assembly state according to example 2 of the invention;
Figure 8 shows a shower door in part in assembly state according to example 3 of the invention; and
Figure 9 shows a shower door in part in assembly state according to example 4 of the invention.

[0018] Elements that are irrelevant to the spirit of the present invention are omitted for clarity.

DETAILED DESCRIPTION OF THE INVENTION

[0019] The terminology used herein is for the purpose of describing particular embodiments only and is not intended to be limiting of example embodiments of the invention. As used herein, the singular forms "a," "an," and "the," are intended to include the plural forms as well, unless the context clearly indicates otherwise. As used herein, the terms "and/or" include any and all combinations of one or more of the associated listed items. It will be further understood that the terms "comprises" "comprising" "includes" and/or "including" when used herein, specify the presence of stated features, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, integers, steps, operations, elements, components, and/or groups thereof.

EXAMPLE 1

[0020] Referring to figures 1 to 5, a shower door assembly is shown in part which comprises a stationary frame 100 having a guiding groove 101 and a movable frame 200 having a first engaging element 201. The stationary frame 100 has a through hole 102 through which the stationary frame 100 is fixed to a surface of a wall by using such as fasteners 103. The movable frame 200 is provided with a piece of glass 202. In the guiding groove 101, at least one adjusting slider 300 is placed which is able to slide along the groove. Each of the adjusting slider 300 has a second engaging element 301. When the movable frame 200 is moved towards the stationary frame 100 and the relative position between the movable frame 200 and the stationary frame 100 is determined, the first engaging element 201 and the second engaging element 301 are engaged with each other. In the present example, two adjusting sliders 300 are provided. The shower door assembly further comprises a filler 400 disposed in a space defined by the stationary frame 100 and the movable frame 200 when the relative position between them is determined.

[0021] As shown in figure 2, a blocker 104 is provided to the stationary frame 100 for preventing the filler from moving towards the surface of the wall. The blocker 104 can limit the inserting depth of the filler 400 such that the filler can possibly be taken out when needed in future.

[0022] The stationary frame 100 is further provided with a third engaging element 105 for engagement with the filler 400 so as to prevent the filler 400 from shifting during long term usage.

[0023] As shown in figures 3 to 4, the first and second engaging elements 201, 301 have inverse teeth to enhance the engagement relationship there between. Of course, the first and second engaging elements 201, 301 can also be in other forms as along as the stationary and movable frames do not displace in relative to each other when the engaging elements are engaged.

[0024] As shown in figure 5, the filler 400 extends the whole length of the stationary frame 100, i.e., the filler 400 has a same length as that of the stationary frame 100, such that it applies forces onto the frames from top to bottom.

[0025] The filler 400 is made from elastic materials and has a larger width than the width of space defined between the stationary frame 100 and the movable frame 200 such that when the filler 400 is inserted into the space it will apply an expanding force against the frames 100, 200, especially to the engaging elements 201, 301, so as to ensure the close engagement between the engaging elements 201, 301.

[0026] In particular, the filler 400 has a plurality of fins 401 capable of engaging with the third engaging element 105 of the stationary frame 100. The fins 401 is elastic while rigid enough to be inserted into the space defined by the frames 100, 200 and support there between to make sure the frames immobile with respect to each other.

[0027] As shown in figures 1 and 6, during use, the stationary frame 100 is firstly fastened to the wall or other surface by using fasteners or adhesives and then at least one adjusting slider 300 is placed in the guiding groove 101. To engage the two frames, the movable frame 200 is moved towards the stationary frame 100 and when a relative position between both frames is determined, the first and second engaging elements 201, 301 are engaged with each other. The filler 400 is finally inserted between the space defined by the movable frame 200 and the stationary frame 100 to enhance the engagement

relationship between the engaging elements.

EXAMPLE 2

[0028] As shown in figure 7, the present example is substantively equal to example 1 except that the guiding groove 101 is disposed at middle of the stationary frame and spaced from either side of the stationary frame 100.

EXAMPLE 3

[0029] As shown in figure 8, the present example is substantively equal to example 2 except that the movable frame 200 is sandwiched between sidewalls of the stationary frame 100.

EXAMPLE 4

[0030] As shown in figure 9, the present example is substantively equal to example 3 except that the movable frame 200 is spaced from the stationary frame 100 at both sides. In this example, two fillers 400 are provided and located between each space defined by the sidewalls of the stationary and movable frames 100, 200.

[0031] It should be understood that various example embodiments have been described with reference to the accompanying drawings in which only some example embodiments are shown. The present invention, however, may be embodied in many alternate forms and should not be construed as limited to only the example embodiments set forth herein.

Claims

1. A shower door assembly, comprising
a stationary frame having a guiding groove, and
a movable frame having a first engaging element, wherein
the shower door assembly further comprises at least one adjusting slider slidably mounted in the guiding groove,
wherein the at least one adjusting slider has a second engaging element for engagement with the first engaging element when the movable frame is moved towards the stationary frame, and
wherein the shower door assembly further comprises a filler for being disposed in a space defined by the stationary frame and the movable frame when a relative position between both frames are determined.

2. The shower door assembly of claim 1, wherein the stationary frame has a through hole for fixing to a wall through fasteners.

3. The shower door assembly of claim 1, wherein the stationary frame is provided with a third engaging element for engagement with the filler.

4. The shower door assembly of claim 1, comprising two adjusting sliders disposed at each end of the stationary frame.

5. The shower door assembly of claim 1, wherein the filler extends the whole length of the stationary frame.

6. The shower door assembly of claim 2, wherein a blocker is provided on the stationary frame for preventing the filler from moving towards the wall.

7. The shower door assembly of claim 1, wherein the first and second engaging elements have inverse teeth.

8. The shower door assembly of claim 3, wherein the filler has a plurality of fins for engagement with the third engaging element.

9. The shower door assembly of claim 1, wherein the guiding groove is disposed at middle of the stationary frame in width direction and spaced from either sidewalls of the stationary frame.

10. The shower door assembly of claim 1, wherein the shower door assembly comprises two fillers located at both sides of the movable frame.

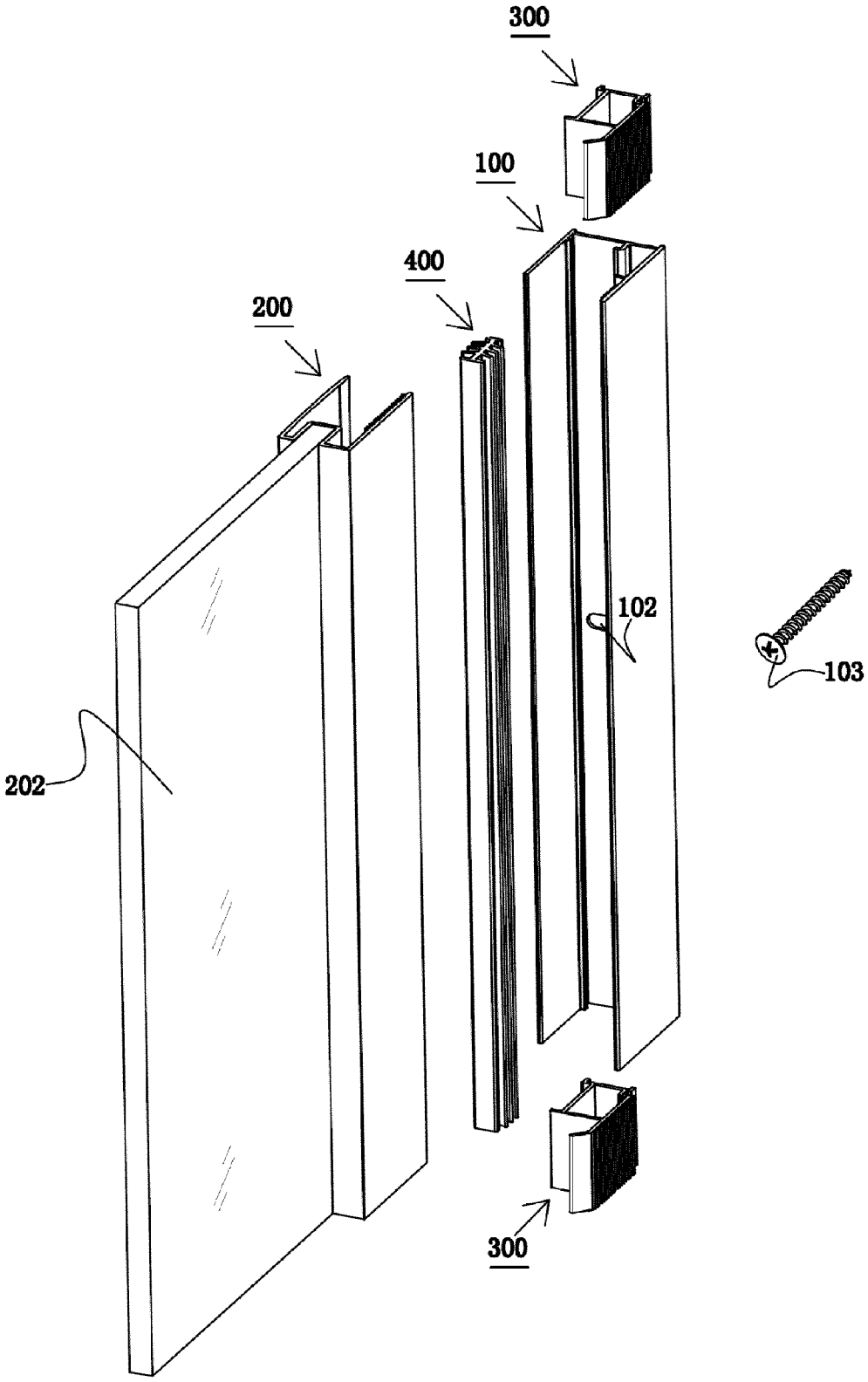

FIG. 1

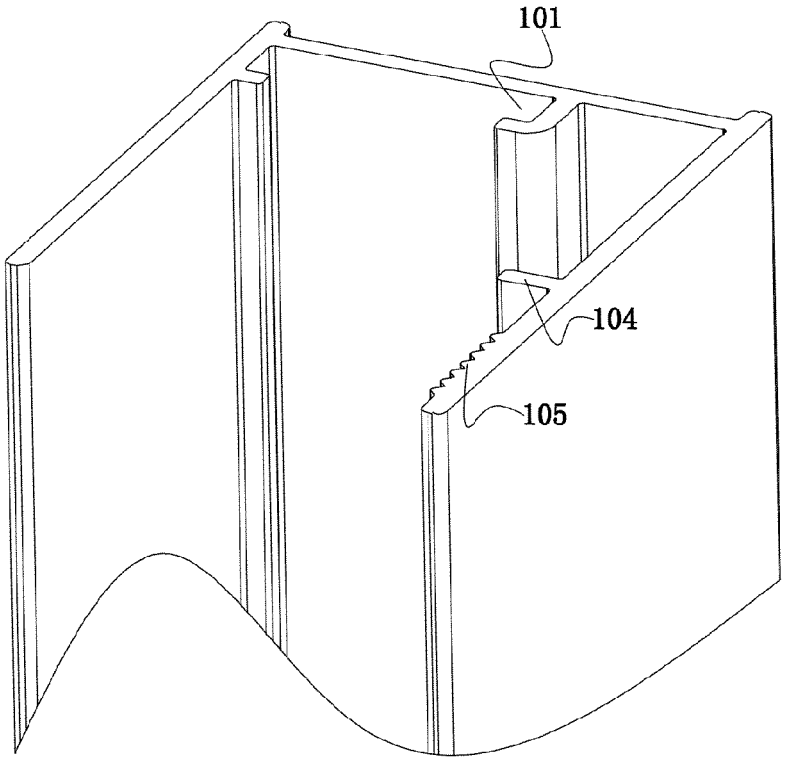

FIG. 2

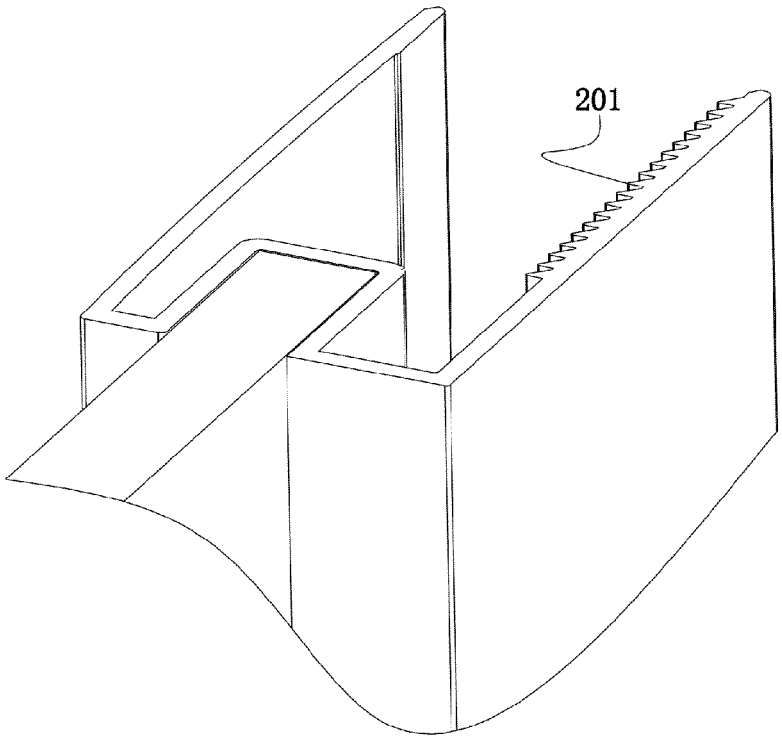

FIG. 3

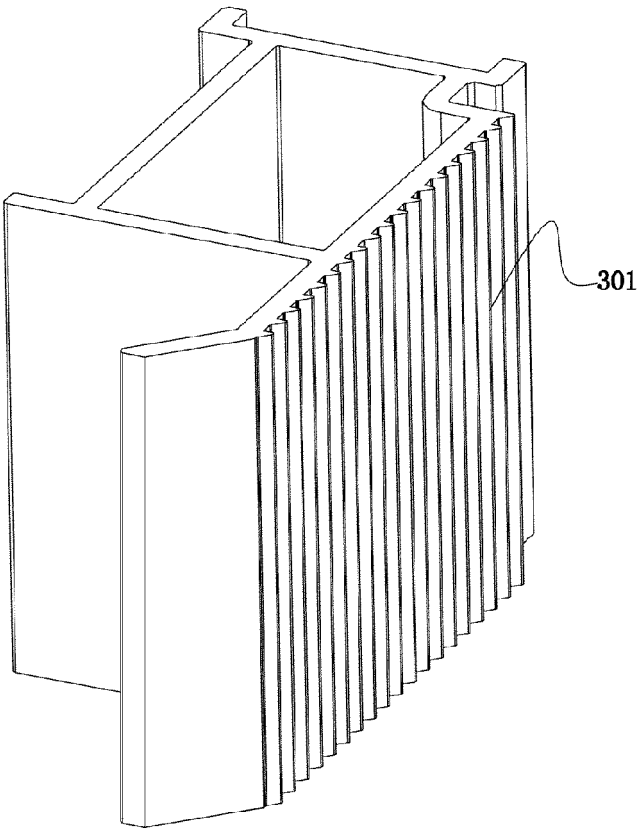

FIG. 4

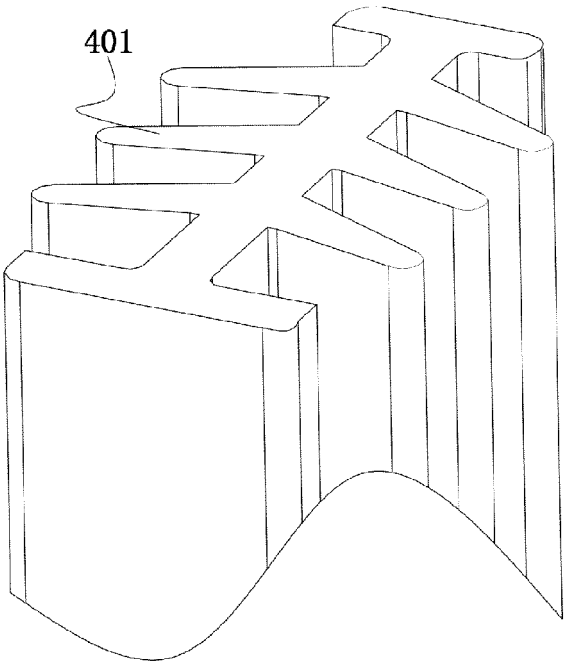

FIG. 5

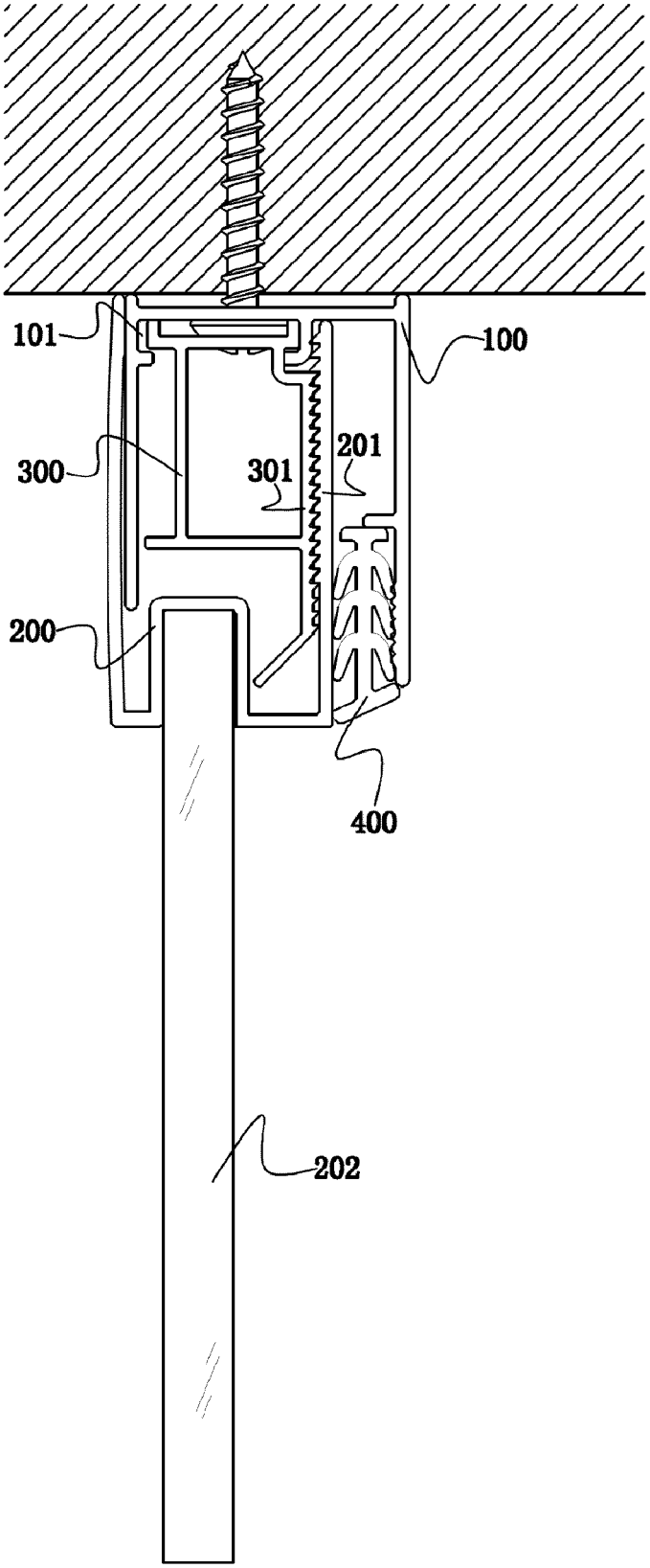

FIG. 6

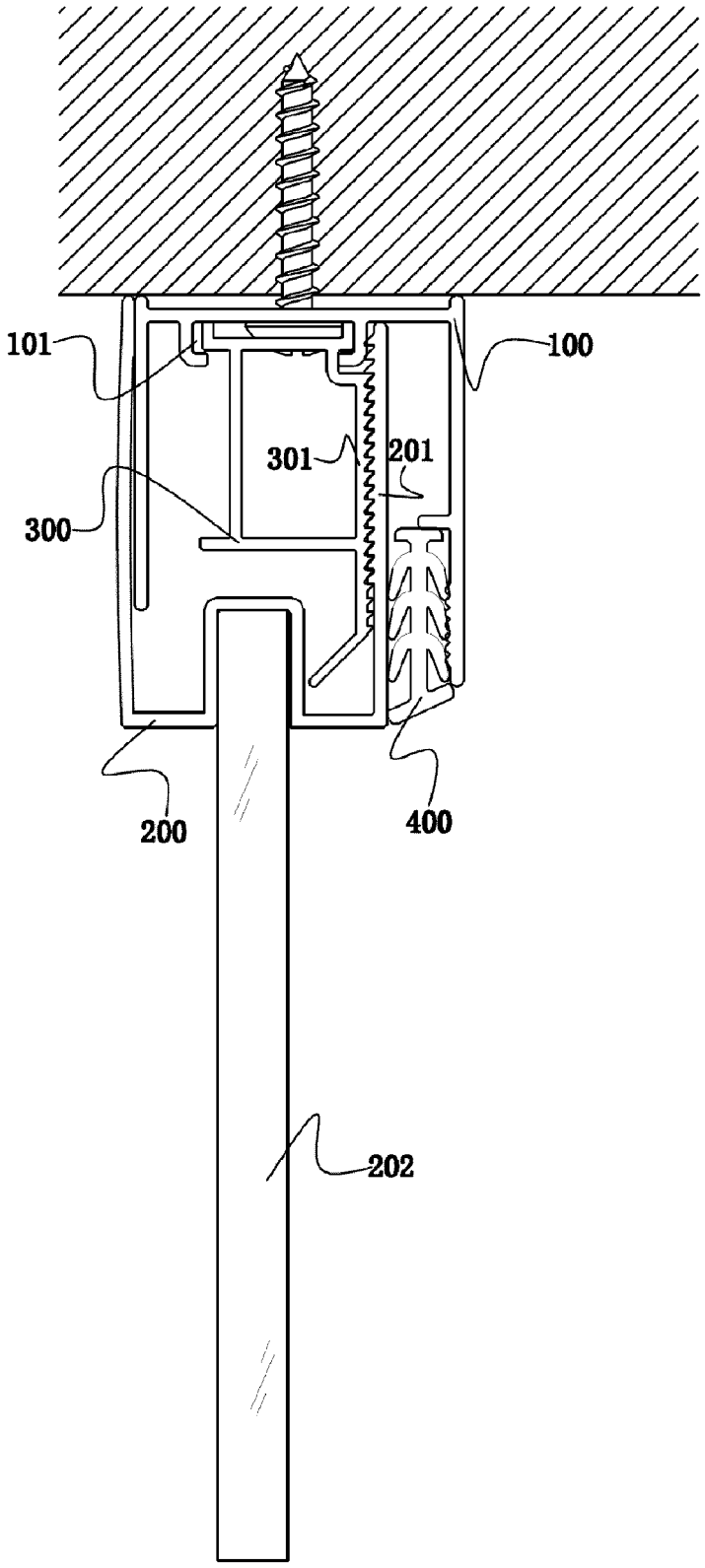

FIG. 7

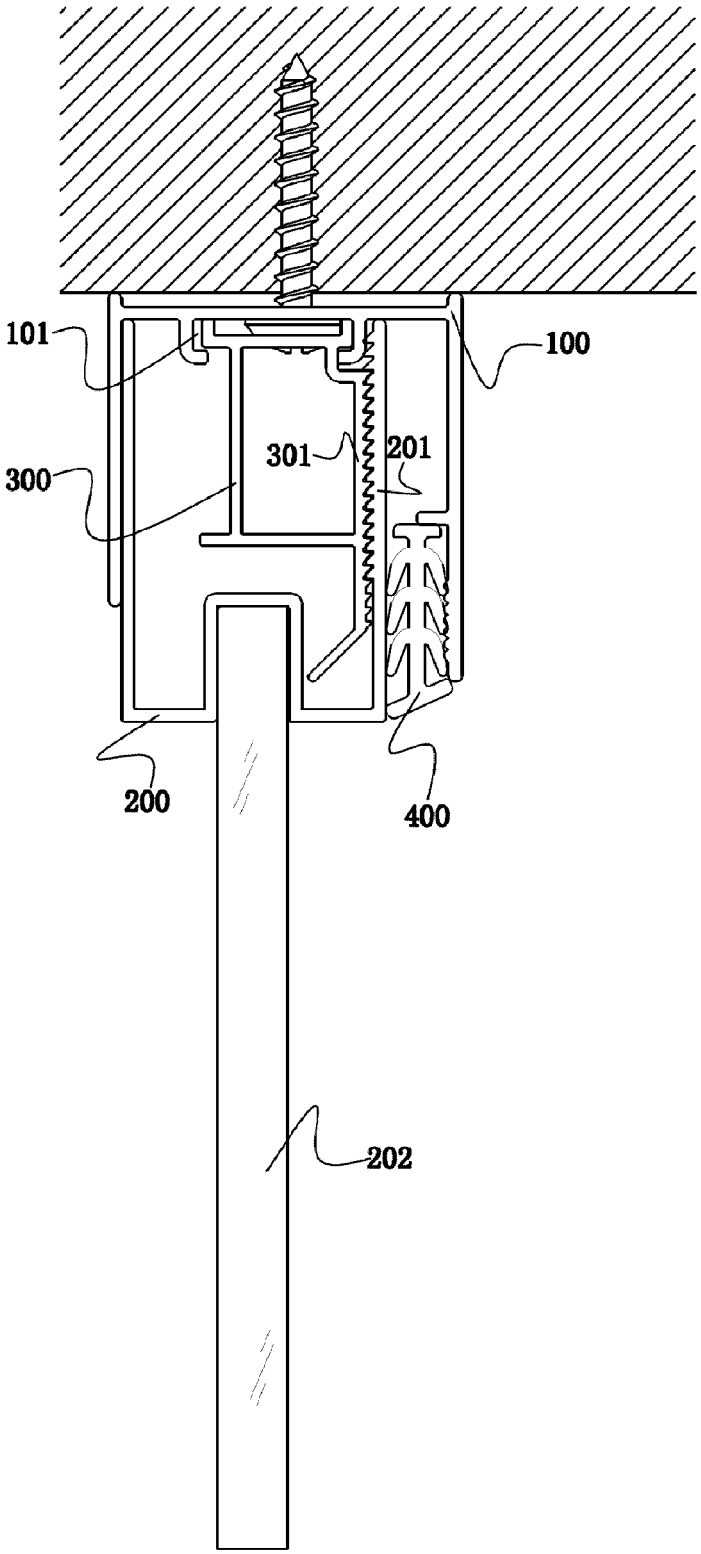

FIG. 8

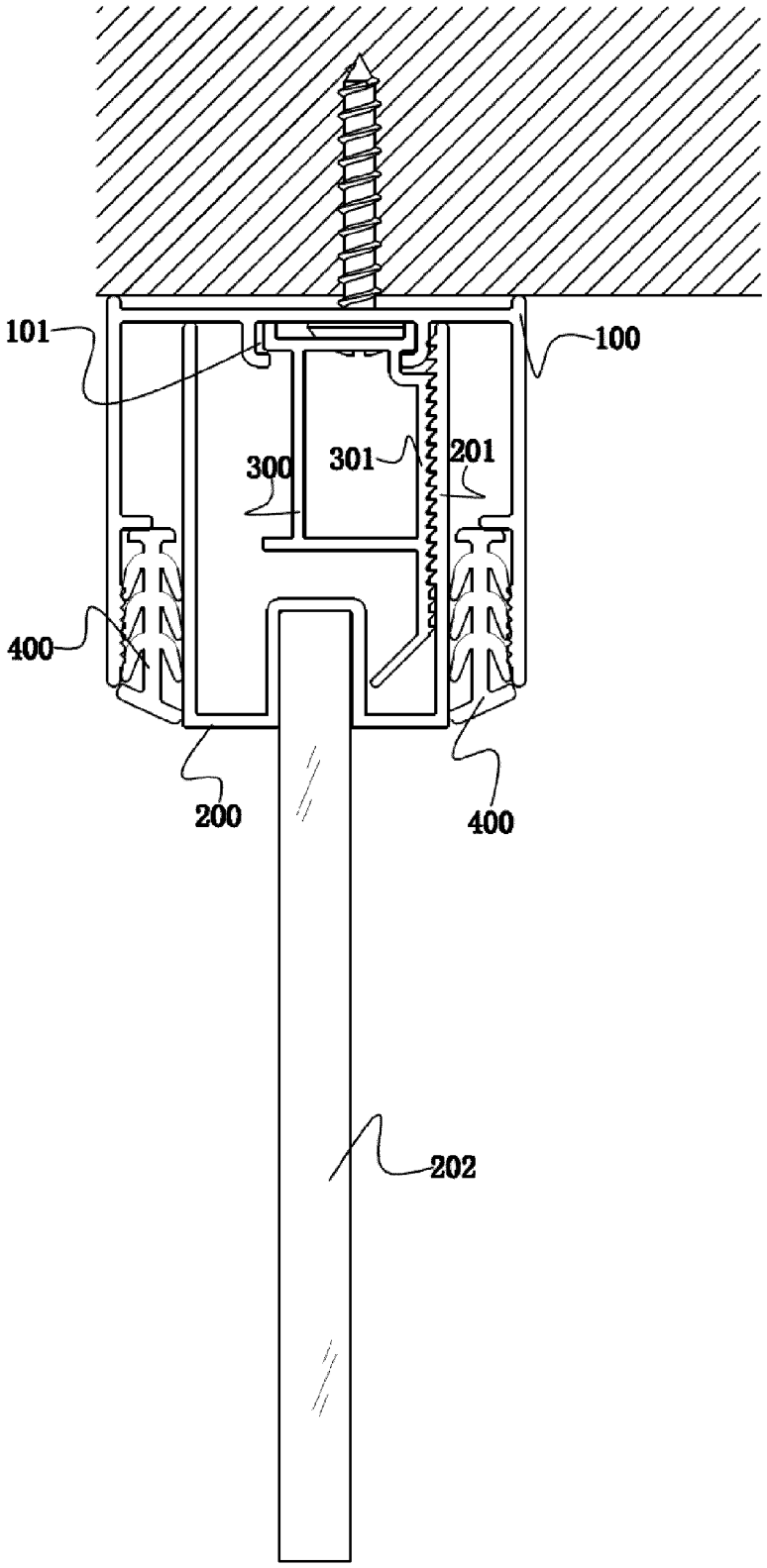

FIG. 9

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EUROPEAN SEARCH REPORT

Application Number
EP 13 15 0030

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	GB 2 440 605 A (DARYL INDUSTRIES LIMITED) 6 February 2008 (2008-02-06) * page 1, lines 3-5 * * page 2, lines 29-30 * * page 4, lines 13-28 * * page 5, lines 4-8 * * page 5, lines 13-17 * * claims 1,2,4 * * figures 1-4 *	1-10	INV. A47K3/30
A	DE 20 2007 017721 U1 (HUEPPE GMBH & CO KG [DE]) 28 February 2008 (2008-02-28) * paragraphs [0001], [0026] * * paragraphs [0027] - [0030] * * paragraphs [0032], [0034], [0035] * * claims 1-6, 10, 12, 15, 18 * * figures 3,4 *	1,3,5,6,8	
A	DE 100 16 354 A1 (DORMA GMBH & CO KG) 11 October 2001 (2001-10-11) * paragraphs [0001], [0016], [0017] * * paragraphs [0018], [0024], [0029] * * claims 1, 10 * * figures 1-4 *	1,2,5,6,8,10	TECHNICAL FIELDS SEARCHED (IPC) A47K

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	11 February 2014	Boyer, Olivier

CATEGORY OF CITED DOCUMENTS

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 13 15 0030

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