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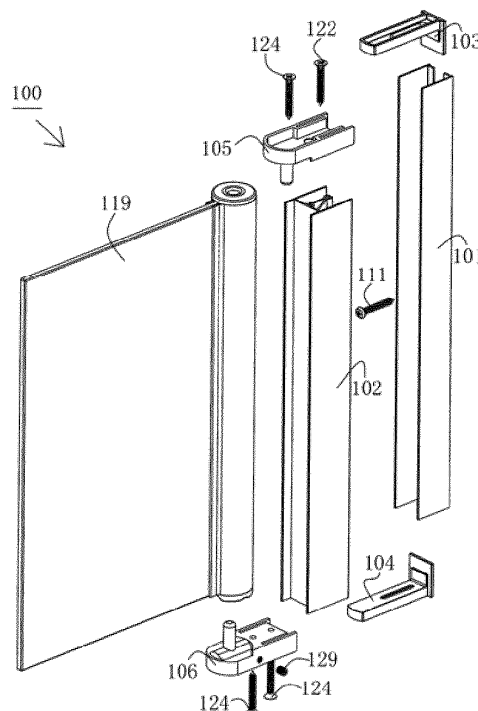
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(54) **Pivot door assembly**

(57) A pivot door assembly is provided comprising a stationary frame, an upper adjusting block located on an upper end of the stationary frame and having a slot, a movable frame having detachable hinge bases including an upper hinge base and a lower hinge base, each of the hinge bases being provided with a hinge shaft for connecting with a pivot door, and a first screw, wherein a

first screw hole is disposed on the upper hinge base, a second screw hole is disposed on an upper end of the movable frame, and when a relative position of the stationary frame and the movable frame is determined, the first screw can pass through the slot and the first screw hole to connect into the second screw hole.



**FIGURE 1**

## Description

### CROSS-REFERENCE TO RELATED DOCUMENT

[0001] This application claims priority benefit from Chinese utility model application No. 201320089405.8 filed on February 27, 2013 and United Kingdom patent application no. 1306826.7 filed on April 15, 2013 in the name of Foshan Ideal Co. Ltd., the disclosures of which are incorporated herein by reference in their entirety.

### FIELD OF THE INVENTION

[0002] The invention relates to a pivot door assembly, and in particular, although not exclusively, to the mounting of the pivot door assembly,

### BACKGROUND OF THE INVENTION

[0003] Conventional pivot doors are normally mounted to a wall surface by drilling the stationary and movable frames and then connecting both frames using fasteners. This procedure is very inconvenient and time-consuming. Furthermore, the drilling operation may cause damage or may score or scratch the frames, which are usually made of aluminium or its alloys, which is not acceptable for users.

### SUMMARY OF THE INVENTION

[0004] It is desirable to provide a pivot door assembly that can be easily assembled without the need for drilling or any other tools.

[0005] According to an aspect of the invention there is provided a pivotable door assembly which comprises a stationary frame, an upper adjusting block located on an upper end of the stationary frame and having a slot, such as an elongate slot, a movable frame having detachable hinge bases including an upper hinge base and a lower hinge base, each of the hinge bases being provided with a hinge shaft for connecting with a pivotable door, and a first screw, wherein a first screw hole is disposed on the upper hinge base and a second screw hole is disposed on an upper end of the movable frame. When a relative position of the stationary frame and the movable frame is determined, the first screw can pass through the slot and the first screw hole to connect into the second screw hole. In other words, when the desired relative position between the stationary frame and the moveable frame is achieved, the first screw can pass through the slot and the first screw hole to connect into the second screw hole.

[0006] In use, the movable frame can first be connected to the pivotable door by the hinge shaft of the hinge base, and then can be moved towards the stationary frame. When the relative position between the stationary frame and the movable frame is achieved or determined, the stationary frame can be connected to the movable frame by the first screw. If it is required to adjust the rel-

ative position between the stationary frame and the movable frame, it is only necessary to release the first screw. As the slot is elongate, the first screw can still pass through the slot to connect the stationary frame and the movable frame after the adjustment.

[0007] The pivot door assembly may further comprise a lower adjusting block fixed on a lower end of the stationary frame. Since it may be difficult to arrange a screw to pass through the lower adjusting block, it may not be possible to connect the lower adjusting block to the lower hinge base in the same way as mentioned above to connect the stationary frame with the movable frame. However, the lower parts of the two frames can still be connected with each other after the upper parts of them are connected, as gravity would act on the lower part of two frames. However, a lower adjusting block may still be preferred.

[0008] Each of the hinge bases may be provided with a groove, a portion of the upper adjusting block may be receivable in the groove of the upper hinge base with an upper surface of the upper adjusting block being flush with an upper surface of the upper hinge base, and a portion of the lower adjusting block is receivable in the groove of the lower hinge base with a lower surface of the lower adjusting block being flush with a lower surface of the lower hinge base.

[0009] The lower hinge base may be fixed to the lower adjusting block by a fastener, such that the lower part of the stationary frame can be firmly connected with that of the movable frame.

[0010] A through hole may be disposed on a side of the lower hinge base, such that the lower hinge base can be fixed to the lower adjusting block by the fastener passing through the through hole. Because the relative position of the lower adjusting block and the lower hinge base is not fixed, a fastener for acting on one side of the lower adjusting block may be better than a through hole on one side of the lower adjusting block.

[0011] The stationary frame may be attached to a wall surface or arranged to be attached to a wall surface. The stationary frame may comprise a screw hole, such that a screw can pass through it to fix the stationary frame to the wall surface. In other embodiments, the stationary frame can be fixed to the wall surface by other ways, for example, by adhesives.

[0012] Each of the upper and lower ends of the stationary frame may be provided with an opening and a sliding slot, the sliding slot extending along a length direction of the stationary frame, and each of the upper and lower adjusting blocks may be slidably connected with the sliding slot and is provided with a supporting block supportable on the opening.

[0013] The hinge base may be detachably connected with the movable frame in many ways. For example, a third screw hole may be disposed on each of the hinge bases, fourth screw holes may be disposed on corresponding positions of the movable frame, and each of the hinge bases may be connected with the movable

frame by a second screw. The number of third screw holes, fourth screw holes and second screws can vary. For example, there may be one or two.

**[0014]** The stationary frame may have two side edges, and when the relative position between the stationary frame and the movable frame is determined, the two side edges may be inserted into (or disposed within) the movable frame. Each of the hinge bases may be provided with corresponding narrow slots for passing through of the two side edges of the stationary frame.

**[0015]** When the relative position between the stationary frame and the movable frame is achieved or determined, the two side edges may extend beyond the movable frame and narrow slots may not be needed in the hinge bases in such an arrangement.

**[0016]** By using the invention, when the pivot door is assembled, there is no need for drilling or any other particular tools. The position of the pivotable door can be easily adjusted by adjusting the relative position between the stationary frame and the movable frame. Therefore, the assembly of the pivotable door is very convenient and less time-consuming.

#### BRIEF DESCRIPTION OF THE DRAWINGS

**[0017]** Further advantages and details of the 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 shows an exploded view of main parts of a pivot door assembly according to one example of the invention;

Figure 2 shows an enlarged view of a part of an exemplified stationary frame;

Figure 3 shows an enlarged view of a part of an exemplified movable frame;

Figure 4 shows a perspective view of an exemplified upper or lower adjusting block;

Figure 5 shows a perspective view of the upper or lower adjusting block of Figure 4 in another direction;

Figure 6 shows a perspective view of an exemplified upper hinge base;

Figure 7 shows a perspective view of the upper hinge base of Figure 6 in another direction;

Figure 8 shows a perspective view of an exemplified lower hinge base;

Figure 9 shows a perspective view of the lower hinge base of Figure 8 in another direction;

Figure 10 shows the pivot door in an assembling state;

Figure 11 shows the pivot door in an adjusting state;

Figure 12 shows the pivot door in an assembled state;

Figure 13 shows a perspective view of another exemplified lower hinge base; and

Figure 14 shows a perspective view of another exemplified lower adjusting block.

**[0018]** Elements that are irrelevant to the spirit of the 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]** **Figure 1** shows a pivotable door assembly 100 according to one example of the invention which comprises a stationary frame 101, a movable frame 102, adjusting blocks 103, 104 and hinge bases 105, 106. In the present example, there are two adjusting blocks, including an upper adjusting block 103 fixed on the upper end of the stationary frame 101, and a lower adjusting block 104 fixed on the lower end of the stationary frame 101. There are also two hinge bases in the present example, including an upper hinge base 105 disposed on the upper end of the movable frame 102, and a lower hinge base 106 disposed on the lower end of the movable frame 102.

**[0021]** Referring to **Figure 2**, the stationary frame 101 comprises a bottom edge 107 and side edges 108 which together define a sliding slot 110 extending along the longitudinal direction of the stationary frame, with openings 109 disposed on each end (i.e. top and bottom) of the bottom edge 107. The upper and the lower adjusting blocks 103, 104 are slidably connected with the sliding slot 110. In the present example, at least one screw hole (not shown) is provided on the bottom edge 107 of the

stationary frame 101, for passing through of a fastener (for example, a screw 111) to attach the stationary frame 101 to a wall surface.

[0022] Referring to **Figure 3**, the movable frame 102 is provided with two screw holes on each of its two ends, including a second screw hole 112 and a fourth screw hole 113 on its upper end, and two fourth screw holes on its lower end.

[0023] **Figures 4 and 5** show a detailed structure of the adjusting block. In the present example, the upper adjusting block 103 and the lower adjusting block 104 share the same structure, and have an essentially L-shape with a first portion 114 and a second portion 115 which are perpendicular to each other. The first portion 114 is provided with an elongate slot 116, and the second portion 115 is inserted into the sling slot 110 so as to be slidably connected with the sling slot 110. The second portion 115 is provided with a supporting block 117, which is supported on the opening 109.

[0024] **Figures 6 and 7** show a detailed structure of the upper hinge base 105. One side of the upper hinge base 105 is provided with a hinge shaft 118 for connecting with a pivotable door 119, while the other side is provided with a groove 120 for receiving the first portion 114 of the upper adjusting block 103. When the first portion 114 of the upper adjusting block 103 is received within the groove 120, the upper surface of the upper adjusting block 103 is flush with the upper surface of the upper hinge base 105. Meanwhile, a first screw hole 121 is disposed on the upper hinge base 105. When the first portion 114 of the upper adjusting block is received in the groove 120, a first screw 122 can pass through the slot 116 and the first screw hole 121 to connect into the second screw hole 112, so as to connect the stationary frame 101 to the movable frame 102.

[0025] Moreover, the upper hinge base 105 is detachably connected to the movable frame 102. A third screw hole 123 is disposed on the upper hinge base 105, such that a second screw 124 can pass through the third screw hole 123 to connect into the fourth screw hole 113, so as to connect the upper hinge base 105 to the movable frame 102. In the present example, the stationary frame 101 has two side edges 108, and when the relative position of the stationary frame 101 and the movable frame 102 is determined, the two side edges 108 are inserted into the movable frame 102. The upper hinge base 105 is provided with narrow slots 125 for passing through of the two side edges 108 of the stationary frame.

[0026] **Figures 8 and 9** show a detailed structure of the lower hinge base 106. In the present example, similar to the structure of the upper hinge base 105, one side of the lower hinge base 106 is provided with a hinge shaft 126 for connecting with the pivotable door 119, while the other side is provided with a groove 127 for receiving the first portion 114 of the lower adjusting block. When the first portion 114 of the lower adjusting block 104 is received within the groove 127, the lower surface of the lower adjusting block 104 is flush with the lower surface

of the lower hinge base 106. The lower hinge base 106 is also provided with narrow slots 128 for passing through of the two side edges 108 of the stationary frame.

[0027] However, it is different from the upper hinge base 105 in that the lower adjusting block 104 cannot be connected with the lower hinge base 106 in the same way as mentioned above to connect the stationary frame 101 with the movable frame 102, since it is hard to arrange a screw to the lower adjusting block. So the lower hinge base 106 is provided with another third screw hole 123 rather than a first screw hole 121. The second screws 124 can pass through the third screw holes 123 to connect into the fourth screw holes in the lower end of the movable frame 102, so as to connect the lower hinge base 106 with the movable frame 102.

[0028] To further enhance the connection of the lower parts of the stationary frame 101 and the movable frame 102, the first screw is replaced by a fastener 129. The lower hinge base 106 is provided with a through hole 130 on its side for passing through of the fastener 129 to act on the side of the lower adjusting block 104 received in the groove 127, so as to fix the lower hinge base 106 to the lower adjusting block 104.

[0029] As shown in **Figures 1 and 10**, to assemble the invention, the stationary frame 101 is first fixed to the wall surface by a screw 111. The pivotable door 119 having a shaft is connected with the movable frame 102 by oppositely arranged hinge shafts 118, 126 and can rotate respectively about them. The upper hinge base 105 and the lower hinge base 106 are respectively connected with the movable frame 102 by a second screw 124. Then the movable frame 102 can be moved towards the stationary frame 101, such that portions of the upper adjusting block 103 and the lower adjusting block 104 are respectively received in the grooves of the upper hinge base 105 and the lower hinge base 106.

[0030] When the desired relative position between the stationary frame 101 and the movable frame 102 is achieved (or determined or arrived at), the first screw 122 can be passed through the slot 116 and the first screw hole 121 to connect into the second screw hole 112, so as to connect the stationary frame 101 with the movable frame 102. Then, the lower hinge base 106 can be fixed to the lower adjusting block 104 by the fastener 129.

[0031] As shown in **Figure 11**, when it is needed to adjust the relative position between the stationary frame 101 and the movable frame 102, it is only necessary to release the first screw 122 and the fastener 129. As shown in **Figure 12**, after the desired relative position is achieved, the stationary frame 101 can be connected with the movable frame 102 again by the first screw 122, followed by the lower hinge base 106 being fixed to the lower adjusting block 104 by the fastener 129.

## Example 2

[0032] The structure of the present example is basically the same as the structure of Example 1. However, as

shown in **Figure 13**, the lower hinge base 106 is provided with through holes 130 on both sides, which makes the fastener 129 capable of acting on one side of the lower adjusting block 104 received in the groove 127 to fix the lower hinge base 106 to the lower adjusting block 104, no matter which through hole 130 the fastener passes through. Alternatively, two fasteners 129 can be arranged to pass through the through holes 130 on both sides, to further improve the firm connection of the lower hinge base 106 and the lower adjusting block 104.

**[0033]** Furthermore, it should be understood that the assembling and the adjusting can also be achieved by simultaneously using the structures in Figures 8, 9 and 13 for both the upper adjusting block 103 and the lower adjusting block 104, with the other components being similar to those in Example 1.

### Example 3

**[0034]** The structure of the present example is basically the same as the structure of Example 1. However, as shown in **Figure 14**, since the first screw is replaced by a fastener 129, there is no need to arrange a slot 116 on the lower adjusting block 104 as it does on the upper adjusting block 103. The other components are similar to those in Example 1.

**[0035]** 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. Specific structural and functional details disclosed herein are merely representative for purposes of describing example embodiments. The 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 pivot door assembly, comprising  
a stationary frame;  
an upper adjusting block located on an upper end of the stationary frame and having a slot;  
a movable frame having detachable hinge bases including an upper hinge base and a lower hinge base, each of the hinge bases being provided with a hinge shaft for connection with a pivot door; and  
a first screw;  
wherein a first screw hole is disposed on the upper hinge base and a second screw hole is disposed on an upper end of the movable frame, and  
wherein when a relative position of the stationary frame and the movable frame is determined, the first screw can pass through the slot and the first screw hole to connect into the second screw hole.
2. The pivot door assembly of claim 1, further comprising a lower adjusting block fixed on a lower end of the stationary frame.
3. The pivot door assembly of claim 2, wherein the lower hinge base is fixed to the lower adjusting block by a fastener.
4. The pivot door assembly of claim 3, wherein a through hole is disposed on a side of the lower hinge base, such that the lower hinge base can be fixed to the lower adjusting block by the fastener passing through the through hole.
5. The pivot door assembly of any of claims 2-4, wherein each of the hinge bases is provided with a groove; and  
wherein a portion of the upper adjusting block is receivable in the groove of the upper hinge base with an upper surface of the upper adjusting block being flush with an upper surface of the upper hinge base, and  
wherein a portion of the lower adjusting block is receivable in the groove of the lower hinge base with a lower surface of the lower adjusting block being flush with a lower surface of the lower hinge base.
6. The pivot door assembly of any of claims 2-5, wherein each of the upper and lower ends of the stationary frame is provided with an opening and a sliding slot, the sliding slot extending along the longitudinal direction of the stationary frame, and  
wherein each of the upper and lower adjusting blocks is slidably connected with the sliding slot and is provided with a supporting block supportable on the opening.
7. The pivot door assembly of any preceding claim, wherein a third screw hole is disposed on each of the hinge bases, fourth screw holes are disposed on corresponding positions of the movable frame, and each of the hinge bases is connected with the movable frame by a second screw.
8. The pivot door assembly of any preceding claim, wherein the stationary frame has two side edges, and when the relative position of the stationary frame and the movable frame is determined, the two side edges is inserted into the movable frame.
9. The pivot door assembly of claim 8, wherein each of the hinge bases is provided with corresponding narrow slots for passing through of the two side edges of the stationary frame.
10. The pivot door assembly of any preceding claim, wherein the stationary frame is attached to or is arranged to be attached to a wall surface.

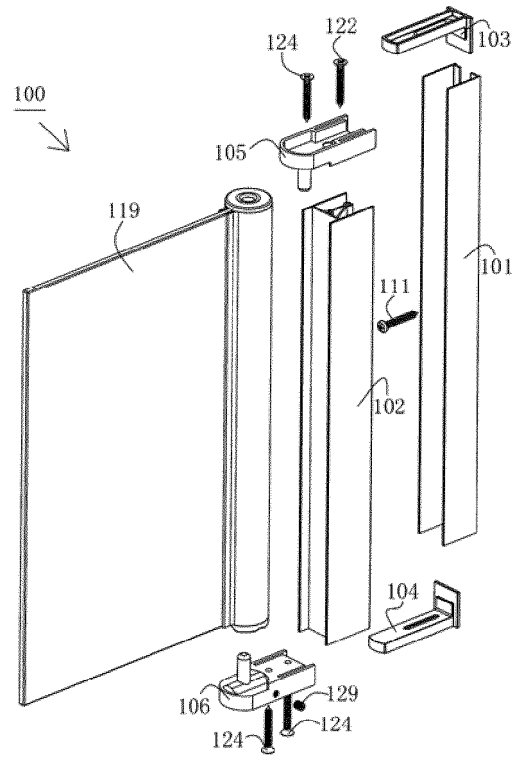


FIGURE 1

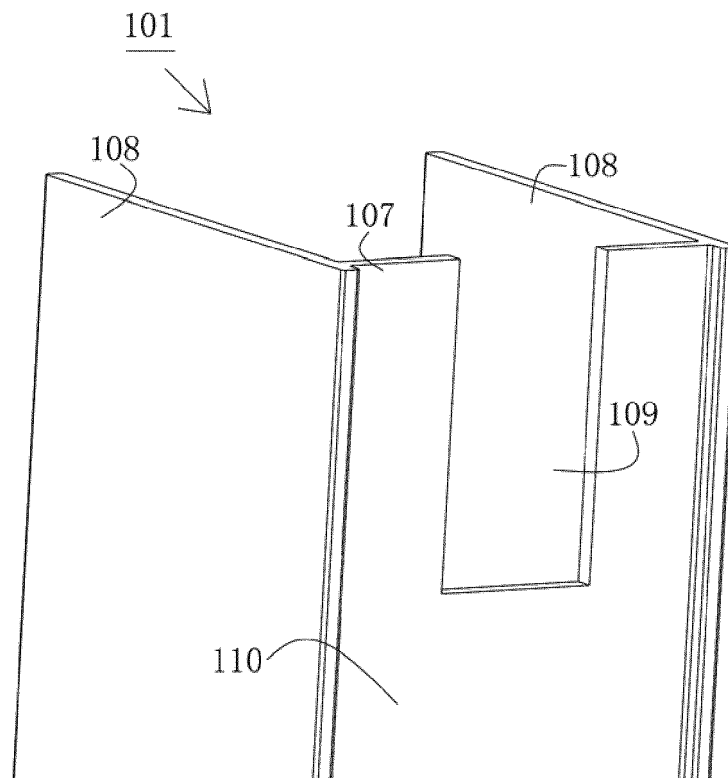


FIGURE 2

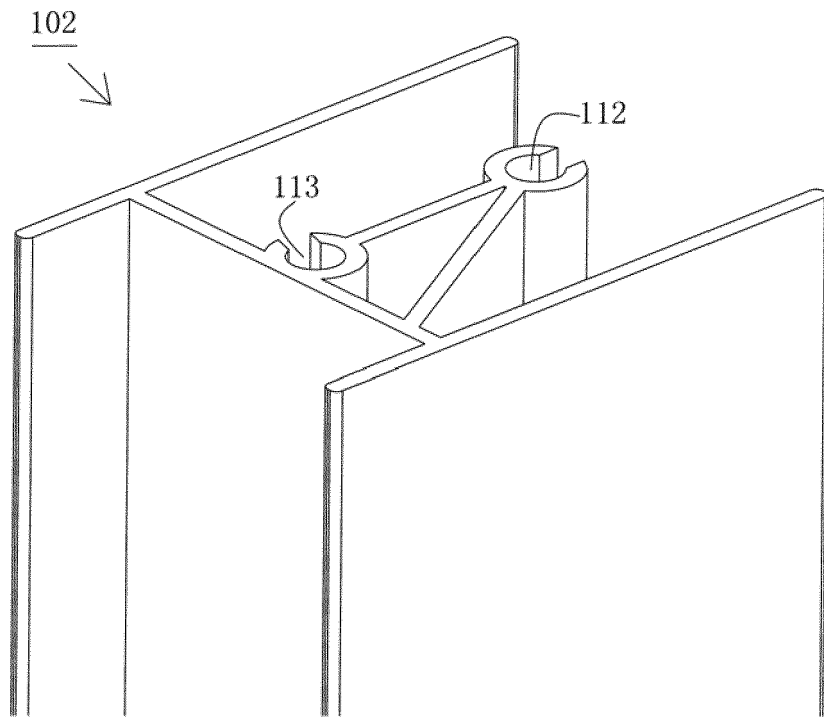


FIGURE 3

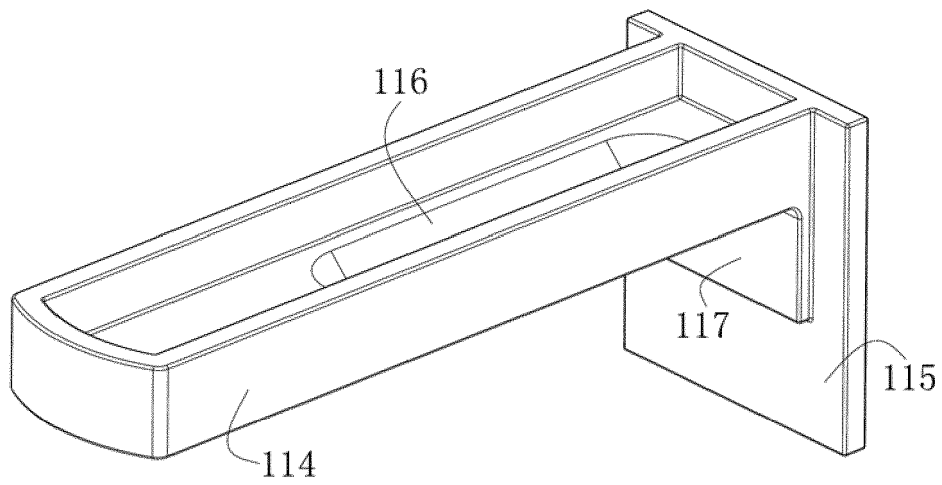


FIGURE 4

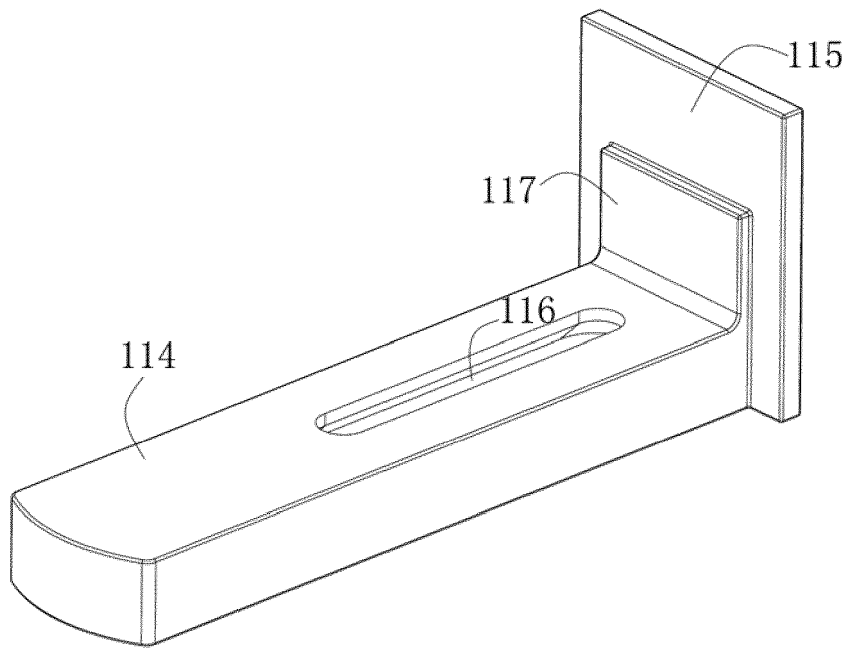


FIGURE 5

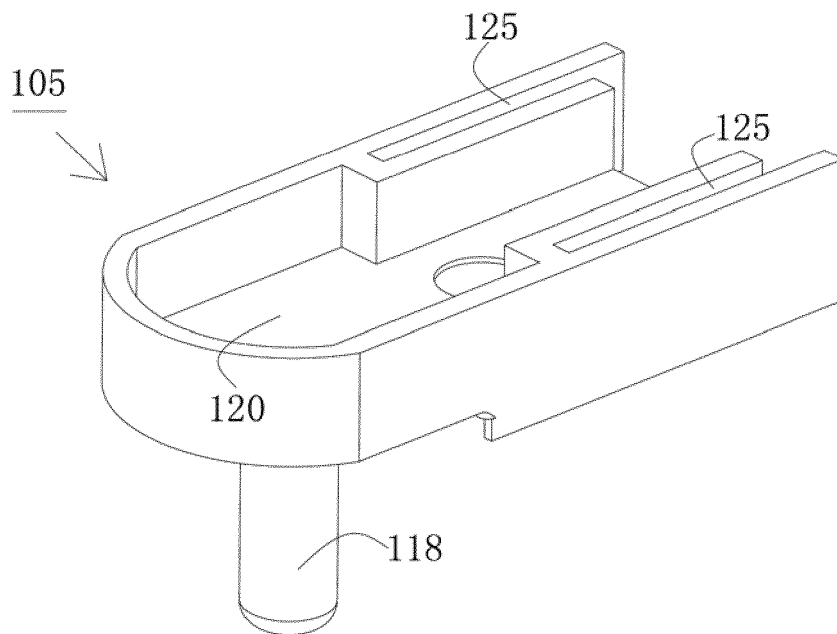


FIGURE 6

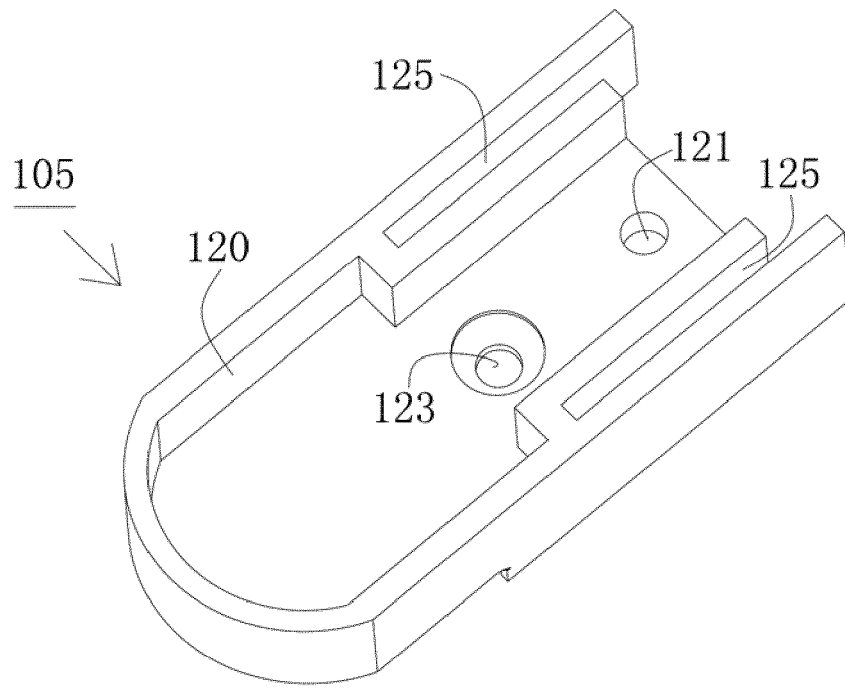


FIGURE 7

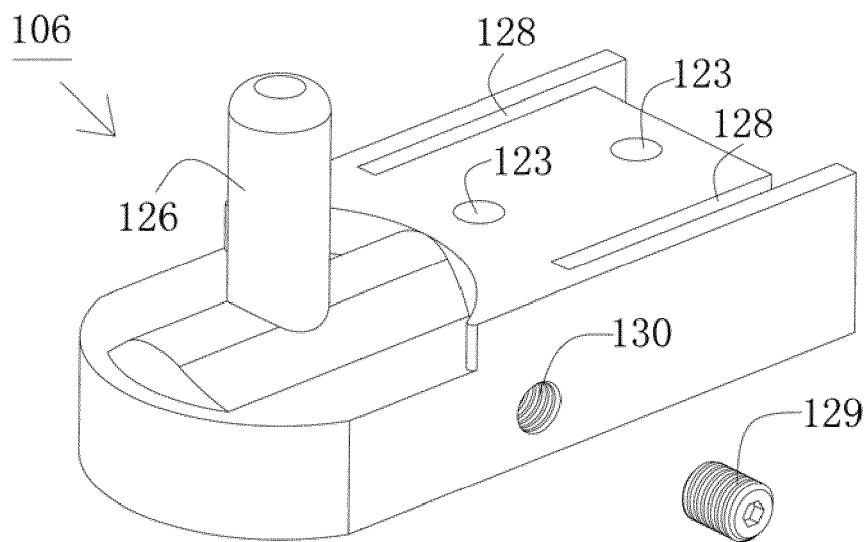


FIGURE 8

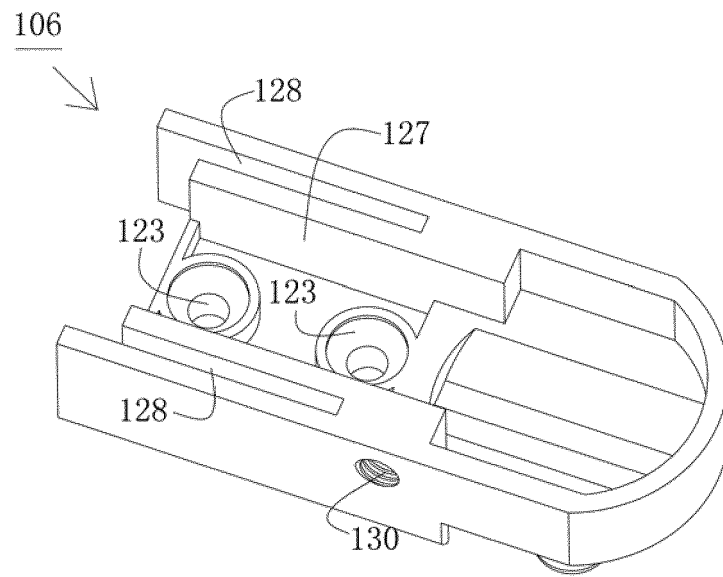


FIGURE 9

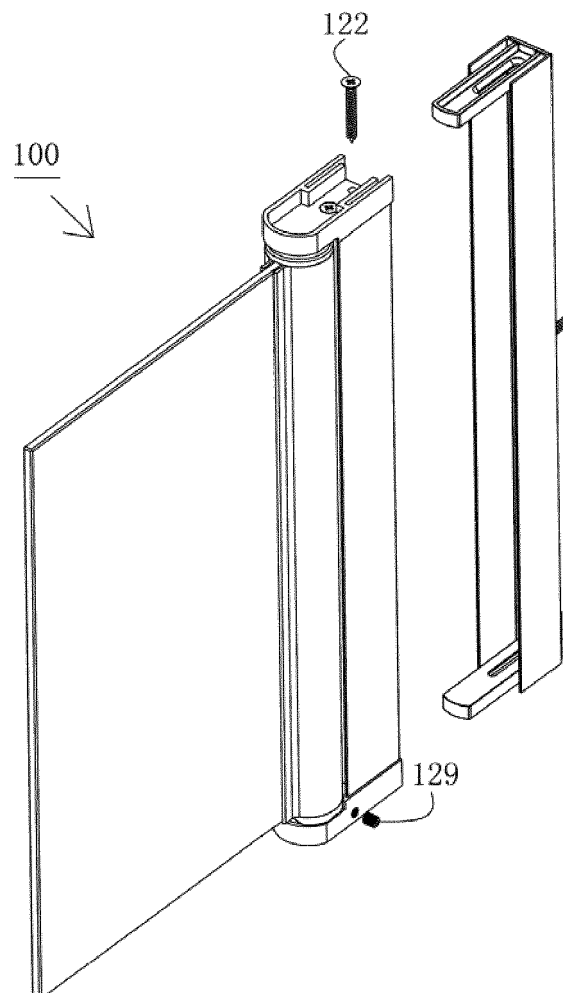


FIGURE 10

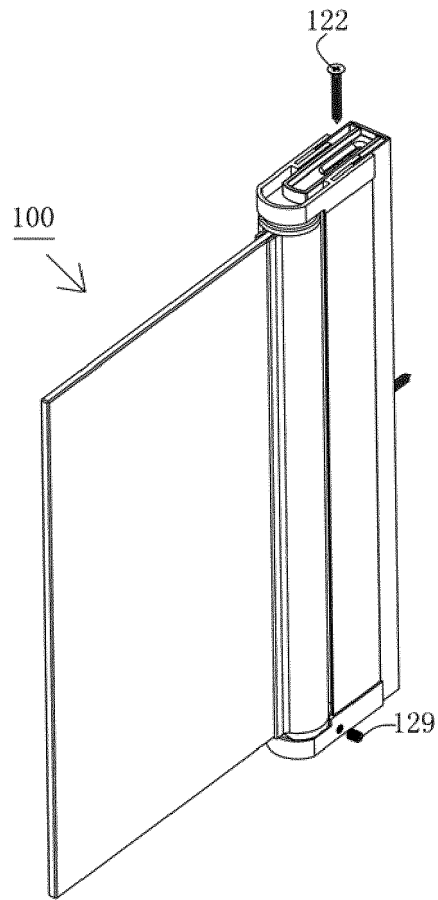


FIGURE 11

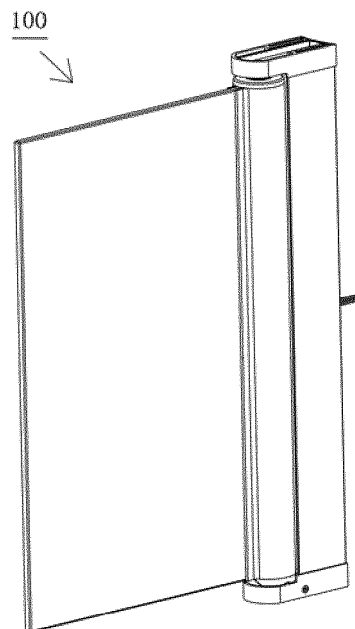


FIGURE 12

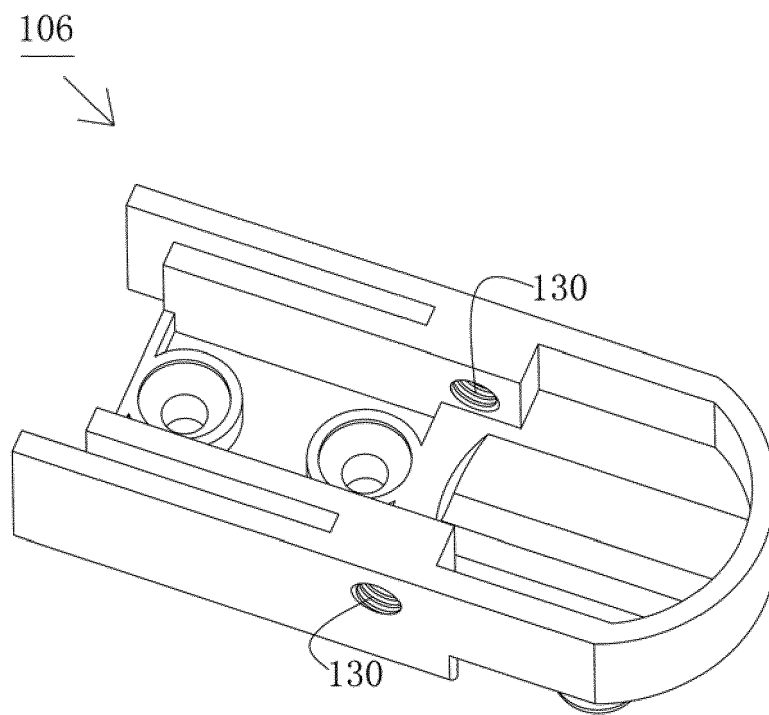


FIGURE 13

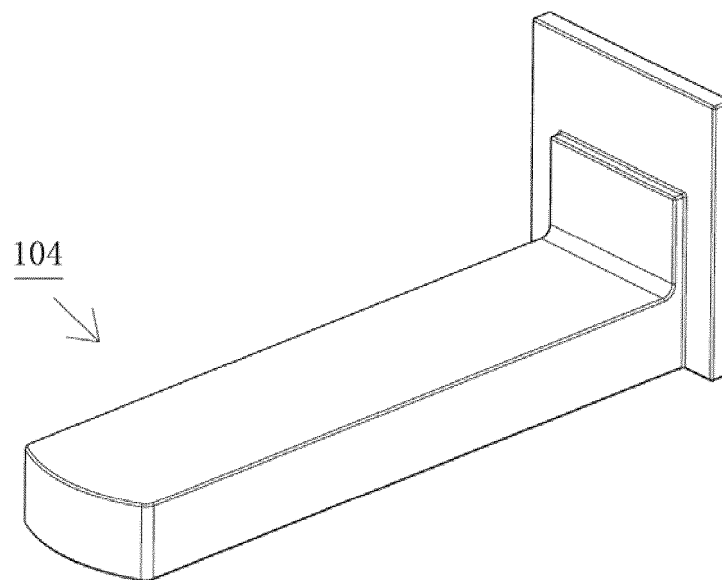


FIGURE 14

**REFERENCES CITED IN THE DESCRIPTION**

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**Patent documents cited in the description**

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