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(54) **HINGE AND SHOWER DOOR ASSEMBLY**

(57) A hinge and a shower door assembly are provided. The hinge includes a first body (1), a second body (2), and a hinge part group (3). The first body (1) includes a first panel body (11) and a first convex part (12). The second body (2) includes a second panel body (21) and a second convex part (22). The hinge part group (3) includes a first hinge part (31) and a second hinge part (32). The first hinge part (31) has a first bent section (312), a second bent section (313), and a first connecting section (311). The second hinge part (32) has a third bent section (322), a fourth bent section (323), and a second connecting section (321). The first bent section (312) and the third bent section (322) are hinged in a first concave cavity (13) that is disposed on the first panel body (11) and the first convex part (12). The second bent section (313) and the fourth bent section (323) are hinged in a second concave cavity (23) that is disposed on the second panel body (21) and the second convex part (22). The shower door assembly further includes a first door panel (4) and a second door panel (5) that are connected by using the hinge.

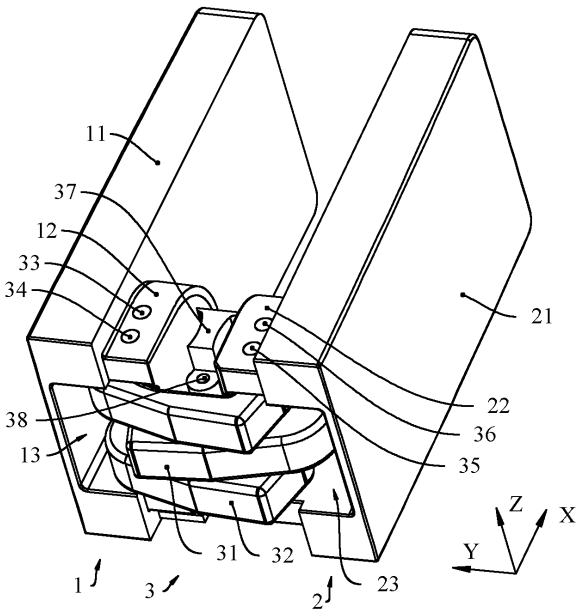

FIG. 1

EP 3 751 080 A1

Description

TECHNICAL FIELD

[0001] The present invention relates to the field of sanitary ware technologies, and in particular, to a hinge and a shower door assembly.

BACKGROUND

[0002] In some existing shower door assemblies, a movable door panel is mounted on a fixed door panel by using a hinge, and the movable door panel is opened or closed by rotating around the hinge.

[0003] An existing hinge generally includes a first body, a second body, and a hinge pin. The first body rotates around the hinge pin relative to the second body. When the first body rotates relative to the second body to an extreme position in which the first body and the second body overlap and approach each other, the first body and the second body abut against each other at ends close to the hinge pin, the first body and the second body have a relatively large gap at ends away from the hinge pin, and there is a specific included angle between the first body and the second body.

[0004] When the existing hinge is mounted in a shower door assembly, in a rotation process in which the movable door panel overlaps and approaches the fixed door panel, the movable door panel and the fixed door panel more easily abut against each other at the ends close to the hinge pin, because the movable door panel and the fixed door panel each have a specific thickness. Consequently, when the movable door panel rotates relative to the fixed door panel to an extreme position in which the movable door panel and the fixed door panel overlap each other, there is a relatively large included angle between the movable door panel and the fixed door panel. In addition, as the movable door panel has a larger width, a larger gap is caused between the movable door panel and the fixed door panel at the ends away from the hinge pin.

TECHNICAL PROBLEM

[0005] When the first body and the second body are located in the extreme position in which they overlap and approach each other, there is a specific included angle between the first body and the second body.

[0006] When the movable door panel rotates relative to the fixed door panel and reaches an extreme position in which the movable door panel and the fixed door panel overlap each other, there is a relatively large included angle between the movable door panel and the fixed door panel. A relatively large gap exists between the movable door panel and the fixed door panel at the ends away from the hinge pin, and the movable door panel occupies relatively large space, which in turn limits a user's range of motion.

TECHNICAL SOLUTION

[0007] A hinge provided in the present invention includes a first body, a second body, and a hinge part group. The hinge part group includes a first hinge part and a second hinge part, one end of the first hinge part is hinged to the first body on a first axis, the other end of the first hinge part is hinged to the second body on a second axis, one end of the second hinge part is hinged to the first body on a third axis, the other end of the second hinge part is hinged to the second body on a fourth axis, the hinge axes are parallel to each other, and the first hinge part and the second hinge part are distributed along an extension direction of the hinge axes; a distance between the first axis and the second axis is equal to a distance between the third axis and the fourth axis, and a distance between the first axis and the third axis is equal to a distance between the second axis and the fourth axis; and in the case of projection along the extension direction of the hinge axes, in a quadrangle with vertices separately located on the first axis, the second axis, the third axis, and the fourth axis, a vertex located on the first axis and a vertex located on the second axis are two end points of a same diagonal.

[0008] In a preferred solution, a first concave cavity is disposed on the first body, the first concave cavity is opened at a first end of the first body along a first direction, a second concave cavity is disposed on the second body, and the second concave cavity is opened at a second end of the second body along a second direction; the extension direction of the hinge axes is perpendicular to the first direction, and the extension direction of the hinge axes is perpendicular to the second direction; and the first hinge part and the second hinge part each are hinged in the first concave cavity, and the first hinge part and the second hinge part each are hinged in the second concave cavity.

[0009] In a further solution, the first hinge part has a first bent section, a second bent section, and a first connecting section, and the first connecting section is connected between the first bent section and the second bent section; the second hinge part has a third bent section, a fourth bent section, and a second connecting section, and the second connecting section is connected between the third bent section and the fourth bent section; the first bent section, the first connecting section, and the second bent section form a C-shaped structure, the third bent section, the second connecting section, and the fourth bent section form a C-shaped structure, and the C-shaped structures of the first hinge part and the second hinge part are opened in a same direction; and the first bent section and the third bent section are hinged in the first concave cavity, and the second bent section and the fourth bent section are hinged in the second concave cavity.

[0010] In a still further solution, a flexible body is mounted on the first connecting section, the flexible body is located between the first body and the second body, and

the flexible body is located between the first bent section and the second bent section.

[0011] In a further solution, the first body includes a first panel body and a first convex part, the first convex part protrudes from a main surface on one side of the first panel body, the first convex part is located at the first end, the first concave cavity is disposed on the first panel body and the first convex part, and the first direction is perpendicular to a normal direction of the main surface of the first panel body; the second body includes a second panel body and a second convex part, the second convex part protrudes from a main surface on one side of the second panel body, the second convex part is located at the second end, the second concave cavity is disposed on the second panel body and the second convex part, and the second direction is perpendicular to a normal direction of the main surface of the second panel body; and the extension direction of the hinge axes is perpendicular to the normal direction of the main surface of the first panel body, and the extension direction of the hinge axes is perpendicular to the normal direction of the main surface of the second panel body.

[0012] In another preferred solution, the distance between the first axis and the second axis is greater than twice the distance between the first axis and the third axis.

[0013] In still another preferred solution, the first body is hinged to the first hinge part by using a first hinge pin, the first body is hinged to the second hinge part by using a third hinge pin, the second body is hinged to the first hinge part by using a second hinge pin, and the second body is hinged to the second hinge part by using a fourth hinge pin; and the first hinge part abuts against the fourth hinge pin, and the second hinge part abuts against the first hinge pin.

[0014] In yet another preferred solution, a quantity of the first hinge parts is one, a quantity of the second hinge parts is two, and the first hinge part is located between the two second hinge parts; or a quantity of the first hinge parts is at least two, a quantity of the second hinge parts is at least two, and the first hinge parts and the second hinge parts are alternately distributed.

[0015] A shower door assembly provided in the present invention includes a first door panel, a second door panel, and the foregoing hinge, where a first body is fastened to the first door panel, and a second body is fastened to the second door panel.

[0016] In a preferred solution, a flexible spacer is squeezed between the first door panel and the first body, and a flexible spacer is squeezed between the second door panel and the second body.

BENEFICIAL EFFECT

[0017] With a structural design of a hinge in the present invention, due to arrangement of a hinge part group, in a process in which a first body and a second body enter an extreme state in which the first body and the second body overlap and approach each other through rotation, the first body and the second body do not abut against each other at ends close to the hinge part group, because the hinge part group itself has a specific dimension. In this way, the first body can rotate relative to the second body and enter a state in which a first panel body and a second panel body are relatively parallel to each other, or rotate and enter a state in which an included angle between the first panel body and the second panel body is 0°, so that the first body and the second body can overlap and approach each other to the most extent.

[0018] When the hinge in the present invention is mounted in a shower door assembly, with the shower door assembly in a door-opened state, a first door panel and a second door panel can better overlap and approach each other, so as to prevent large external space from being occupied due to an excessively large included angle between the first door panel and the second door panel and affecting use of a user, which is conducive to a compact structure of the shower door assembly.

[0019] A first concave cavity and a second concave cavity are disposed, the hinge part group is hinged to the first body in the first concave cavity, and the hinge part group is hinged to the second body in the second concave cavity. This is conducive to a compact structure of the hinge.

[0020] When the first hinge part extends into the first concave cavity and is hinged to the first body, if the first hinge part is disposed as a straight bar and the second hinge part is disposed as a straight bar, in a process in which the first body rotates relative to the second body and enters a state in which the first body and the second body overlap and approach each other, it is possible that the first hinge part abuts against a cavity wall of the first concave cavity, the first hinge part abuts against a cavity wall of the second concave cavity, the second hinge part abuts against the cavity wall of the first concave cavity, and the second hinge part abuts against the cavity wall of the second concave cavity. Therefore, the first hinge part is disposed to include a first bent section, a second bent section, and a first connecting section, and the first bent section, the second bent section, and the first connecting section form a C-shaped structure. In addition, the second hinge part is disposed to include a third bent section, a fourth bent section, and a second connecting section, and the third bent section, the fourth bent section, and the second connecting section form a C-shaped structure. In this way, in the process in which the first body rotates relative to the second body and enters the state in which the first body and the second body overlap and approach each other, the following phenomena can be avoided: the first hinge part abuts against the cavity wall of the first concave cavity, the first hinge part abuts against the cavity wall of the second concave cavity, the second hinge part abuts against the cavity wall of the first concave cavity, and the second hinge part abuts against the cavity wall of the second concave cavity. This helps the first panel body and the second panel body smoothly overlap and approach each other, to enter a state in which

an included angle is 0°.

[0021] Contact between a flexible body and the first body and contact between the flexible body and the second body do not damage the first body or the second body. In addition, when the hinge is applied to the shower door assembly, arrangement of the flexible body can provide a water-proof function to prevent water in a shower room from being splashed onto the first hinge part and the second hinge part. Moreover, direct contact between the first body and the second body can be further prevented by the flexible body, to prevent the first body and the second body from colliding with each other and being damaged. When the hinge is applied to the shower door assembly, a direct collision between the first door panel and the second door panel can be prevented by the flexible body, to prevent the first door panel and the second door panel from colliding with each other and being damaged.

[0022] The first body is disposed to include the first panel body and a first convex part. On one hand, mounting the first body on the first door panel is more convenient. On the other hand, disposing the first convex part helps increase a dimension of the first concave cavity in a normal direction of the first panel body. Similarly, the second body includes the second panel body and a second convex part, which also helps increase a dimension of the second concave cavity in a normal direction of the second panel body.

[0023] A distance between a first axis and a second axis is set to be greater than twice a distance between the first axis and a third axis, so that the first panel body and the second panel body can enter a fully expanded state through rotation, that is, a state in which an included angle between the first panel body and the second panel body is 180° . When the hinge is applied to the shower door assembly, a state in which the first door panel and the second door panel are expanded to 180° can be implemented.

[0024] The flexible body may be used to prevent contact and a collision between the first body and the second body occurring when the first body and the second body overlap and approach each other. In addition, when the first body and the second body overlap and approach each other to reach a specified angle, the first hinge part may abut against a fourth hinge pin and the second hinge part may abut against a first hinge pin, so as to restrict the first body and the second body from becoming closer, prevent contact and a collision between the first body and the second body, and prevent contact and a collision between the first door panel and the second door panel.

[0025] Two second hinge parts and one first hinge part are used, and the first hinge part is disposed between the two second hinge parts, which is conducive to stable movement of the hinge part group. Similarly, at least two first hinge parts and at least two second hinge parts are alternately distributed, which is more conducive to stable movement of the hinge part group.

[0026] A flexible spacer is disposed between the first body and the first door panel. This is conducive to even force bearing between the first door panel and the first body, and prevents the first door panel or the first body from being damaged due to excessive local force. Similarly, a flexible spacer is disposed between the second body and the second door panel.

BRIEF DESCRIPTION OF DRAWINGS

[0027]

FIG. 1 is a structural diagram of a case in which a first body and a second body overlap and approach each other according to a hinge embodiment of the present invention;

FIG. 2 is a cutaway drawing of a case in which a first body and a second body overlap and approach each other according to a hinge embodiment of the present invention;

FIG. 3 is a structural diagram of a first hinge part according to a hinge embodiment of the present invention;

FIG. 4 is a structural diagram of a second hinge part according to a hinge embodiment of the present invention;

FIG. 5 is an exploded view of a shower door assembly embodiment according to the present invention; and

FIG. 6 is an exploded view of a preferred solution of a shower door assembly embodiment according to the present invention.

[0028] The following further describes the present invention with reference to the accompanying drawings and embodiments.

DESCRIPTION OF EMBODIMENTS

[0029] Embodiments of a hinge and a shower door assembly are as follows.

[0030] Referring to FIG. 1 and FIG. 2, the hinge of the embodiments includes a first body 1, a second body 2, and a hinge part group 3. The first body 1 includes a first panel body 11 and a first convex part 12. The second body 2 includes a second panel body 21 and a second convex part 22. A normal direction of a main surface of the first panel body 11 is along a Y-axis direction. A normal direction of a main surface of the second panel body 21 is along the Y-axis direction. The first panel body 11 and the second panel body 21 are spaced and distributed in the Y-axis direction. The first convex part 12 protrudes from a main surface on one side of the first panel body 11 that is close to the second panel body 21. The second convex part 22 protrudes from a main surface on one side of the second panel body 21 that is close to the first panel body 11. The first convex part 12 is located at an end of the first panel body 11 along a negative X-axis direction. The second convex part 22 is located at an end

of the second panel body 21 along the negative X-axis direction. The first convex part 12 is opposite to the second convex part 22.

[0031] Referring to FIG. 1, a first concave cavity 13 is disposed on the first body 1, the first concave cavity 13 is disposed on the first panel body 11 and the first convex part 12, and the first concave cavity 13 is opened at an end of the first body 1 along the negative X-axis direction.

[0032] Referring to FIG. 1, a second concave cavity 23 is disposed on the second body 2, the second concave cavity 23 is disposed on the second panel body 21 and the second convex part 22, and the second concave cavity 23 is opened at an end of the second body 2 along the negative X-axis direction.

[0033] Referring to FIG. 1, the hinge part group 3 includes one first hinge part 31 and two second hinge parts 32, and the first hinge part 31 is located between the two second hinge parts 32 along a Z-axis direction.

[0034] Referring to FIG. 3, the first hinge part 31 has a first bent section 312, a second bent section 313, and a first connecting section 311, the first connecting section 311 is connected between the first bent section 312 and the second bent section 313, and the first bent section 312, the first connecting section 311, and the second bent section 313 form a C-shaped structure. Referring to FIG. 1 and FIG. 2, the C-shaped structure of the first hinge part 31 is opened in a positive X-axis direction, the first bent section 312 extends into the first concave cavity 13, the first bent section 312 is hinged to the first convex part 12 by using a first hinge pin 34, the second bent section 313 extends into the second concave cavity 23, and the second bent section 313 is hinged to the second convex part 22 by using a second hinge pin 36.

[0035] Referring to FIG. 4, the second hinge part 32 has a third bent section 322, a fourth bent section 323, and a second connecting section 321, the second connecting section 321 is connected between the third bent section 322 and the fourth bent section 323, and the third bent section 322, the second connecting section 321, and the fourth bent section 323 form a C-shaped structure. Referring to FIG. 1 and FIG. 2, the C-shaped structure of the second hinge part 32 is opened in the positive X-axis direction, the third bent section 322 is hinged to the first convex part 12 by using a third hinge pin 33, the fourth bent section 323 extends into the second concave cavity 23, and the fourth bent section 323 is hinged to the second convex part 22 by using a fourth hinge pin 35.

[0036] The first bent section 312, the first connecting section 311, and the second bent section 313 form the C-shaped structure, and the third bent section 322, the second connecting section 321, and the fourth bent section 323 form the C-shaped structure. In this way, in a process in which the first body 1 rotates relative to the second body 2 and enters a state in which the first body 1 and the second body 2 overlap and approach each other, the following phenomena can be effectively avoided: the first hinge part 31 abuts against a cavity wall of the first concave cavity 13, the first hinge part 31 abuts against a cavity wall of the second concave cavity 23, the second hinge part 32 abuts against the cavity wall of the first concave cavity 13, and the second hinge part 32 abuts against the cavity wall of the second concave cavity 23. This helps the first panel body 11 and the second panel body 21 smoothly overlap and approach each other and enter a state in which an included angle is 0°

[0037] Referring to FIG. 1 and FIG. 2, an axis of the first hinge pin 34, an axis of the second hinge pin 36, an axis of the third hinge pin 33, and an axis of the fourth hinge pin 35 are all along the Z-axis direction; a distance between the axis of the first hinge pin 34 and the axis of the third hinge pin 33 is equal to a distance between the axis of the second hinge pin 36 and the axis of the fourth hinge pin 35; and a distance between the axis of the first hinge pin 34 and the axis of the second hinge pin 36 is equal to a distance between the axis of the third hinge pin 33 and the axis of the fourth hinge pin 35. Referring to FIG. 2, when the first panel body 11 and the second panel body 21 overlap and approach each other and reach an extreme position, in the case of projection along the Z-axis direction, the axis of the first hinge pin 34, the axis of the third hinge pin 33, the axis of the second hinge pin 36, and the axis of the fourth hinge pin 35 are located on four vertices of a rectangle (which is an isosceles trapezoid when the extreme position has not been reached through rotation), and a vertex located on the first hinge pin 34 and a vertex located on the second hinge pin 36 are two end points of a same diagonal.

[0038] Preferably, the distance between the axis of the first hinge pin 34 and the axis of the second hinge pin 36 is greater than twice the distance between the axis of the first hinge pin 34 and the axis of the third hinge pin 33. In this way, the first panel body 11 and the second panel body 21 can enter a fully expanded state through rotation. In this case, the axis of the first hinge pin 34, the axis of the second hinge pin 36, the axis of the third hinge pin 33, and the axis of the fourth hinge pin 35 are in a state of staying on a same plane.

[0039] Specifically, a first hinge hole and a third hinge hole are disposed on the first convex part 12, and a second hinge hole and a fourth hinge hole are disposed on the second convex part 22. Referring to FIG. 3 and FIG. 4, a fifth hinge hole 315 is disposed on the first bent section 312, a sixth hinge hole 316 is disposed on the second bent section 313, a seventh hinge hole 324 is disposed on the third bent section 322, and an eighth hinge hole 325 is disposed on the fourth bent section 323; and axis directions of the fifth hinge hole 315, the sixth hinge hole 316, the seventh hinge hole 324, and the eighth hinge hole 325 are parallel to each other.

[0040] The first bent section 312 extends into the first concave cavity 13, and the first hinge pin 34 is arranged through the first hinge hole and the fifth hinge hole 315, so that the first body 1 is hinged to the first hinge part 31. The second bent section 313 extends into the second concave cavity 23, and the second hinge pin 36 is arranged through the second hinge hole and the sixth hinge

hole 316, so that the second body 2 is hinged to the first hinge part 31. The third bent section 322 extends into the first concave cavity 13, and the third hinge pin 33 is arranged through the third hinge hole and the seventh hinge hole 324, so that the first body 1 is hinged to the second hinge part 32. The fourth bent section 323 extends into the second concave cavity 23, and the fourth hinge pin 35 is arranged through the fourth hinge hole and the eighth hinge hole 325, so that the second body 2 is hinged to the second hinge part 32.

[0041] Referring to FIG. 2, when the first body 1 and the second body 2 overlap and approach each other until an included angle between the first panel body 11 and the second panel body 21 is 0°, the second bent section 313 abuts against the fourth hinge pin 35, and the third bent section 322 abuts against the first hinge pin 34, so as to restrict the first body 1 and the second body 2 from becoming closer. This prevents contact and a collision between the first body 1 and the second body 2, thereby further preventing contact and a collision between a first door panel 4 and a second door panel 5.

[0042] It should be noted that, when the second bent section 313 abuts against the fourth hinge pin 35, and the third bent section 322 abuts against the first hinge pin 34, the included angle between the first panel body 11 and the second panel body 21 may be specifically specified based on an application circumstance, and is not necessarily 0°, provided that the first panel body 11 does not collide with the second panel body 21, and when the hinge is mounted in the shower door assembly, the second door panel 5 and the first door panel 4 do not collide in a process of overlapping and approaching each other.

[0043] FIG. 5 is an exploded view of the shower door assembly in the embodiments. The shower door assembly includes the first door panel 4, the second door panel 5, and the hinge of the embodiments. In a state shown in FIG. 5, the second door panel 5 is fully expanded relative to the first door panel 4, and the included angle between the second door panel 5 and the first door panel 4 is 180° ; a first notch 41 is disposed on the first door panel 4, the first panel body 11 is attached to the first door panel 4, and the first convex part 12 is fitted into the first notch 41; the second panel body 21 is attached to the second door panel 5, and the second convex part 22 is fitted into a second notch 51; and the first panel body 11 is fastened to the first door panel 4 in an adhesive manner, and the second panel body 21 is fastened to the second door panel 5 in the adhesive manner.

[0044] Optionally, one of the first door panel 4 and the second door panel 5 may be a fixed door panel, and the other may be a movable door panel, or both may be movable door panels.

[0045] Optionally, referring to FIG. 6, the first panel body 11 may be fastened to the first door panel 4 by using a pin 8, and the second panel body 21 may also be fastened to the second door panel 5 by using a pin 9.

[0046] Preferably, referring to FIG. 6, a spacer 7 is squeezed between the first door panel 4 and the first body 1, and a spacer 6 is squeezed between the second door panel 5 and the second body 2. Arrangement of the spacer 7 is conducive to even force bearing between the first door panel 4 and the first body 1, so as to prevent the first door panel 4 or the first body 1 from being damaged due to excessive local force. Similarly, arrangement of the spacer 6 is conducive to even force bearing between the second door panel 5 and the second body 2, so as to prevent the second door panel 5 and the second body 2 from being damaged due to excessive local force between them.

[0047] Due to arrangement of the hinge part group 3, in the process in which the first body 1 and the second body 2 enter an extreme state in which the first body 1 and the second body 2 overlap and approach each other through rotation, the first body 1 and the second body 2 do not abut against each other at ends close to the hinge part group 3, because the hinge part group 3 itself has a specific dimension. In this way, the first body 1 can rotate relative to the second body 2 and enter a state in which the first panel body 11 and the second panel body 21 are relatively parallel to each other, or rotate and enter a state in which the included angle between the first door panel 4 and the second door panel 5 is 0°, or can even rotate and enter a state in which the first door panel 4 and the second door panel 5 abut against each other at ends away from the hinge part group 3. Therefore, the second door panel 5 can be accommodated near the first door panel 4 when the shower door assembly is in a door-opened state, so as to prevent the second door panel 5 from occupying large external space and affecting use of a user, which is conducive to a compact structure of the shower door assembly.

[0048] Referring to FIG. 2, a connecting body 314 protrudes from the first connecting section 311 towards the opening direction of the C-shaped structure, and the first bent section 312, the first connecting section 311, the connecting body 314, and the second bent section 313 form an E-shaped structure. The connecting body 314 is hinged to a flexible body 37 by using a fifth hinge pin 38, and the flexible body 37 is located between the first body 1 and the second body 2. Referring to FIG. 3, a ninth hinge hole 317 is disposed on the connecting body 314, an axis direction of the ninth hinge hole 317 is parallel to the axis directions of the other hinge holes, and the fifth hinge pin 38 is arranged through the ninth hinge hole 317. Contact between the flexible body 37 and the first body 1 and contact between the flexible body 37 and the second body 2 do not damage the first body 1 or the second body 2. In addition, when the hinge is applied to the shower door assembly, arrangement of the flexible body 37 can provide a water-proof function to prevent water in a shower room from being splashed onto the first hinge part 31 and the second hinge part 32. Moreover, direct contact between the first body 1 and the second body 2 can be further prevented. When the hinge is applied to the shower door assembly, a direct collision

between the first door panel 4 and the second door panel 5 can be prevented.

[0049] Optionally, in the same hinge part group 3, a quantity of first hinge parts 31 and that of second hinge parts 32 may be specifically specified based on an actual circumstance. Two first hinge parts 31 are disposed, and two second hinge parts 32 are disposed, and the first hinge parts 31 and the second hinge parts 32 are alternately distributed along the Z-axis direction. This is conducive to a stable movement state of the hinge part group 3.

[0050] Optionally, a quantity of hinge part groups 3 connected between the first door panel 4 and the second door panel 5 may be specifically specified based on an actual circumstance, for example, two hinge part groups 3 may be connected between the first door panel 4 and the second door panel 5.

[0051] Finally, it should be emphasized that, the foregoing descriptions are merely example embodiments of the present invention, and are not intended to limit the present invention. For a person skilled in the art, the present invention can have various changes and variations. Any modification, equivalent replacement, or improvement made without departing from the spirit and principle of the present invention shall fall within the protection scope of the present invention.

INDUSTRIAL APPLICABILITY

[0052] The hinge provided in the present invention is applied to a shower door assembly. The shower door assembly provided in the present invention is mounted in a bathroom and serves as an important component of a shower room, and the shower room may be an integral shower room with a base. Alternatively, the shower door assembly may be mounted between two adjacent walls having an included angle, so that a movable door panel, a fixed door panel, and the walls form a shower room.

[0053] The shower door assembly in the present invention is applicable to a scenario in which the shower door assembly is assembled in a customer's bathroom on site. With a product of the present invention applied, a movable door panel in a door-opened state can overlap and approach a fixed door panel, and the shower door assembly in the door-opened state occupies little space.

Claims

1. A hinge, comprising a first body and a second body; **characterized in that**:

   the hinge further comprises a hinge part group, wherein the hinge part group comprises a first hinge part and a second hinge part, one end of the first hinge part is hinged to the first body on a first axis, the other end of the first hinge part is hinged to the second body on a second axis, one end of the second hinge part is hinged to the first body on a third axis, the other end of the second hinge part is hinged to the second body on a fourth axis, the hinge axes are parallel to each other, and the first hinge part and the second hinge part are distributed along an extension direction of the hinge axes;
   a distance between the first axis and the second axis is equal to a distance between the third axis and the fourth axis, and a distance between the first axis and the third axis is equal to a distance between the second axis and the fourth axis; and
   in the case of projection along the extension direction of the hinge axes, in a quadrangle with vertices separately located on the first axis, the second axis, the third axis, and the fourth axis, a vertex located on the first axis and a vertex located on the second axis are two end points of a same diagonal.

2. The hinge according to claim 1, wherein
   a first concave cavity is disposed on the first body, the first concave cavity is opened at a first end of the first body along a first direction, a second concave cavity is disposed on the second body, and the second concave cavity is opened at a second end of the second body along a second direction;
   the extension direction of the hinge axes is perpendicular to the first direction, and the extension direction of the hinge axes is perpendicular to the second direction; and
   the first hinge part and the second hinge part each are hinged in the first concave cavity, and the first hinge part and the second hinge part each are hinged in the second concave cavity.

3. The hinge according to claim 2, wherein
   the first hinge part has a first bent section, a second bent section, and a first connecting section, and the first connecting section is connected between the first bent section and the second bent section;
   the second hinge part has a third bent section, a fourth bent section, and a second connecting section, and the second connecting section is connected between the third bent section and the fourth bent section;
   the first bent section, the first connecting section, and the second bent section form a C-shaped structure, the third bent section, the second connecting section, and the fourth bent section form a C-shaped structure, and the C-shaped structures of the first hinge part and the second hinge part are opened in a same direction; and
   the first bent section and the third bent section are hinged in the first concave cavity, and the second bent section and the fourth bent section are hinged in the second concave cavity.

4. The hinge according to claim 3, wherein
a flexible body is mounted on the first connecting section, the flexible body is located between the first body and the second body, and the flexible body is located between the first bent section and the second bent section.

5. The hinge according to claim 2, wherein
the first body comprises a first panel body and a first convex part, the first convex part protrudes from a main surface on one side of the first panel body, the first convex part is located at the first end, the first concave cavity is disposed on the first panel body and the first convex part, and the first direction is perpendicular to a normal direction of the main surface of the first panel body;
the second body comprises a second panel body and a second convex part, the second convex part protrudes from a main surface on one side of the second panel body, the second convex part is located at the second end, the second concave cavity is disposed on the second panel body and the second convex part, and the second direction is perpendicular to a normal direction of the main surface of the second panel body; and
the extension direction of the hinge axes is perpendicular to the normal direction of the main surface of the first panel body, and the extension direction of the hinge axes is perpendicular to the normal direction of the main surface of the second panel body.

6. The hinge according to claim 1, wherein
the distance between the first axis and the second axis is greater than twice the distance between the first axis and the third axis.

7. The hinge according to claim 1, wherein
the first body is hinged to the first hinge part by using a first hinge pin, the first body is hinged to the second hinge part by using a third hinge pin, the second body is hinged to the first hinge part by using a second hinge pin, and the second body is hinged to the second hinge part by using a fourth hinge pin; and
the first hinge part abuts against the fourth hinge pin, and the second hinge part abuts against the first hinge pin.

8. The hinge according to claim 1, wherein
a quantity of the first hinge parts is one, a quantity of the second hinge parts is two, and the first hinge part is located between the two second hinge parts; or
a quantity of the first hinge parts is at least two, a quantity of the second hinge parts is at least two, and the first hinge parts and the second hinge parts are alternately distributed.

9. A shower door assembly, comprising a first door panel and a second door panel, **characterized in that** the shower door assembly further comprises the hinge according to any one of claims 1 to 8, wherein the first body is fastened to the first door panel, and the second body is fastened to the second door panel.

10. The shower door assembly according to claim 9, wherein
a flexible spacer is squeezed between the first door panel and the first body, and a flexible spacer is squeezed between the second door panel and the second body.

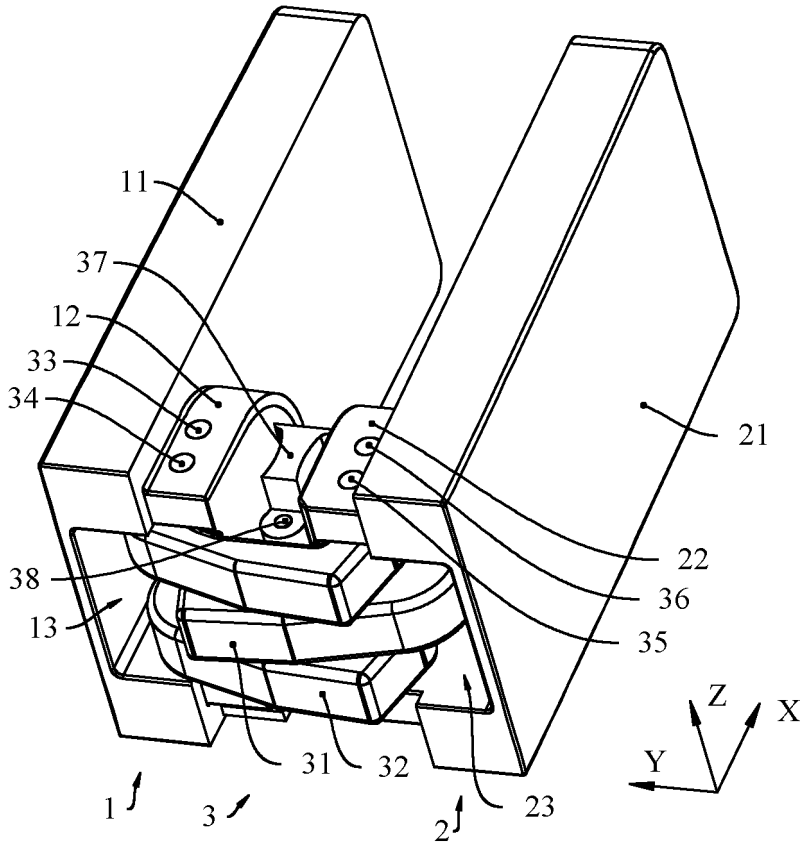

FIG. 1

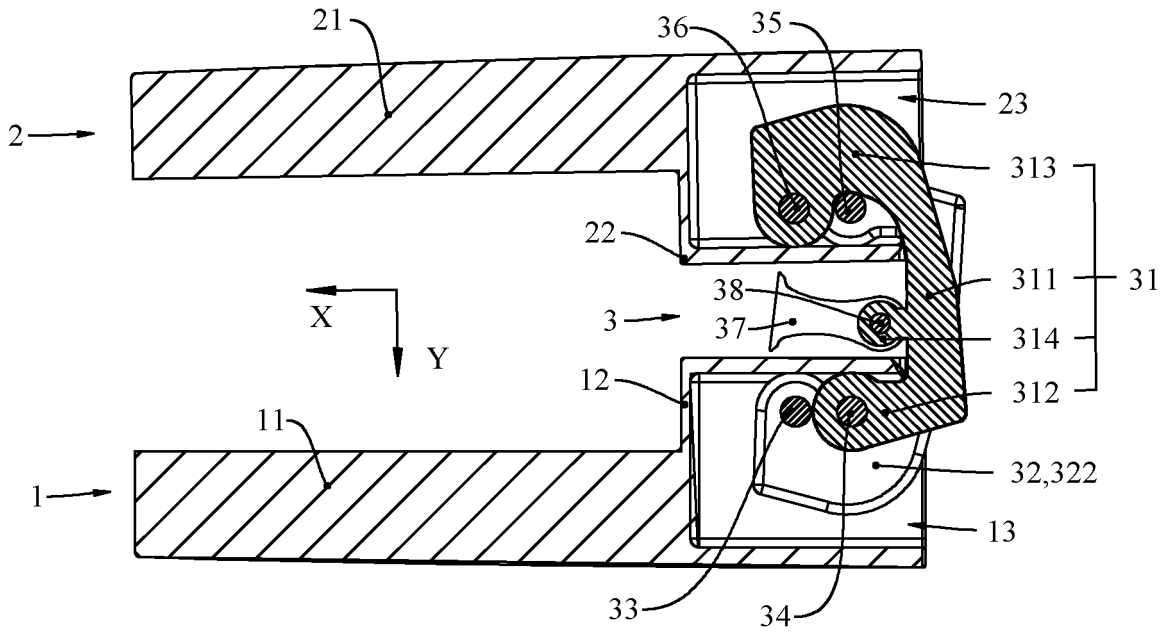
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FIG. 2

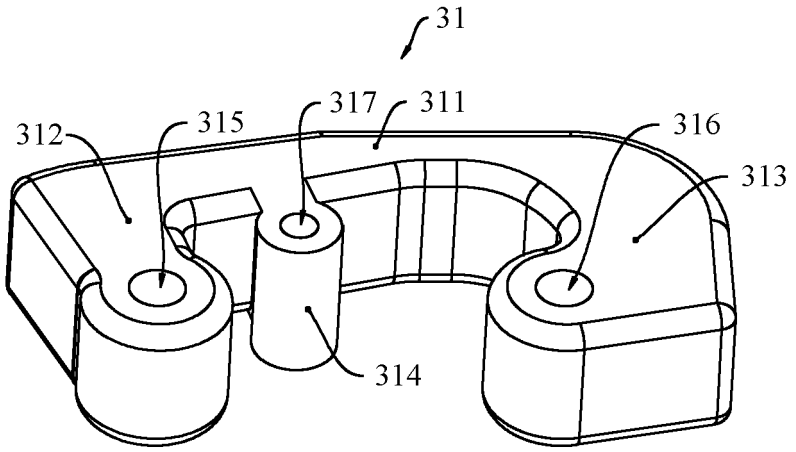
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FIG. 3

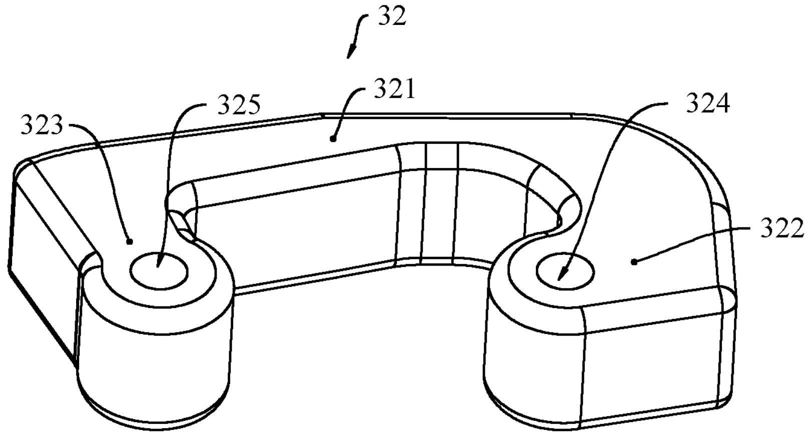
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FIG. 4

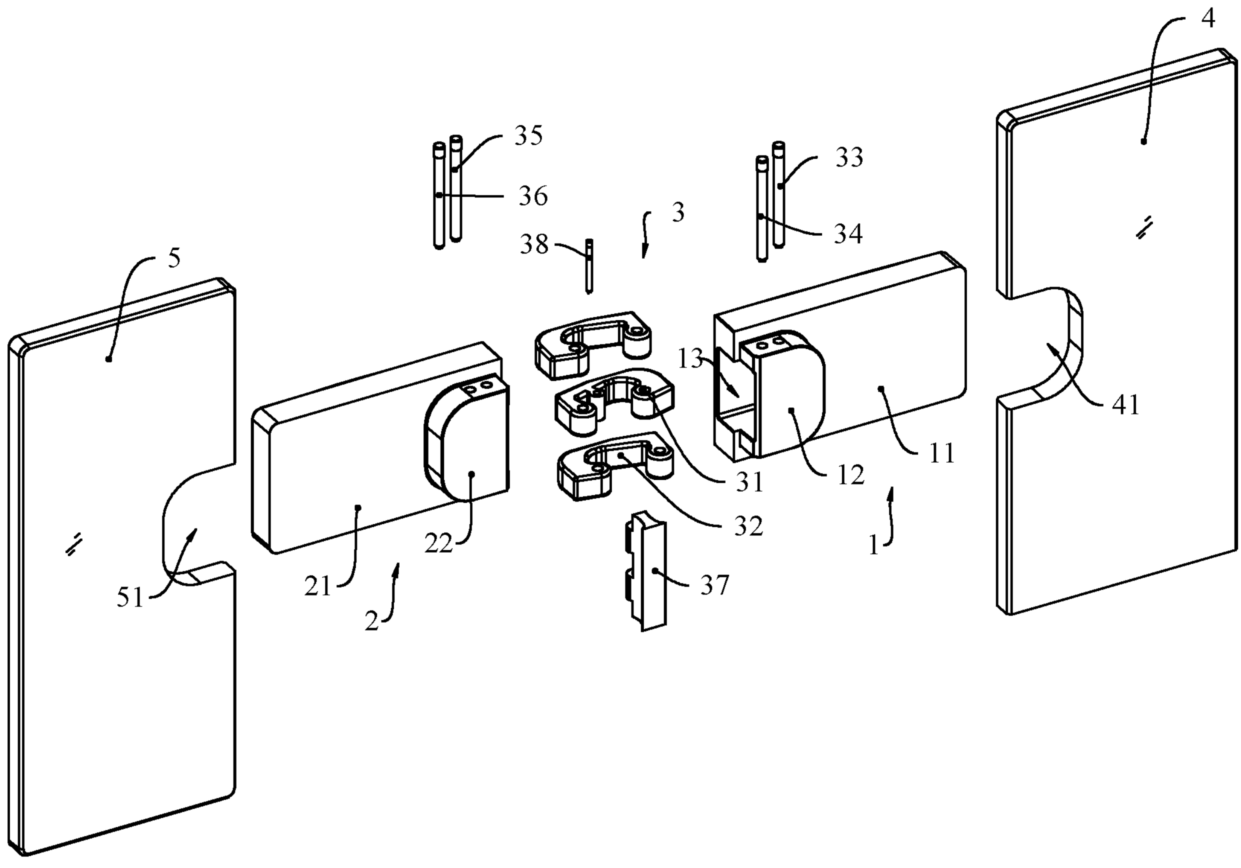
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FIG. 5

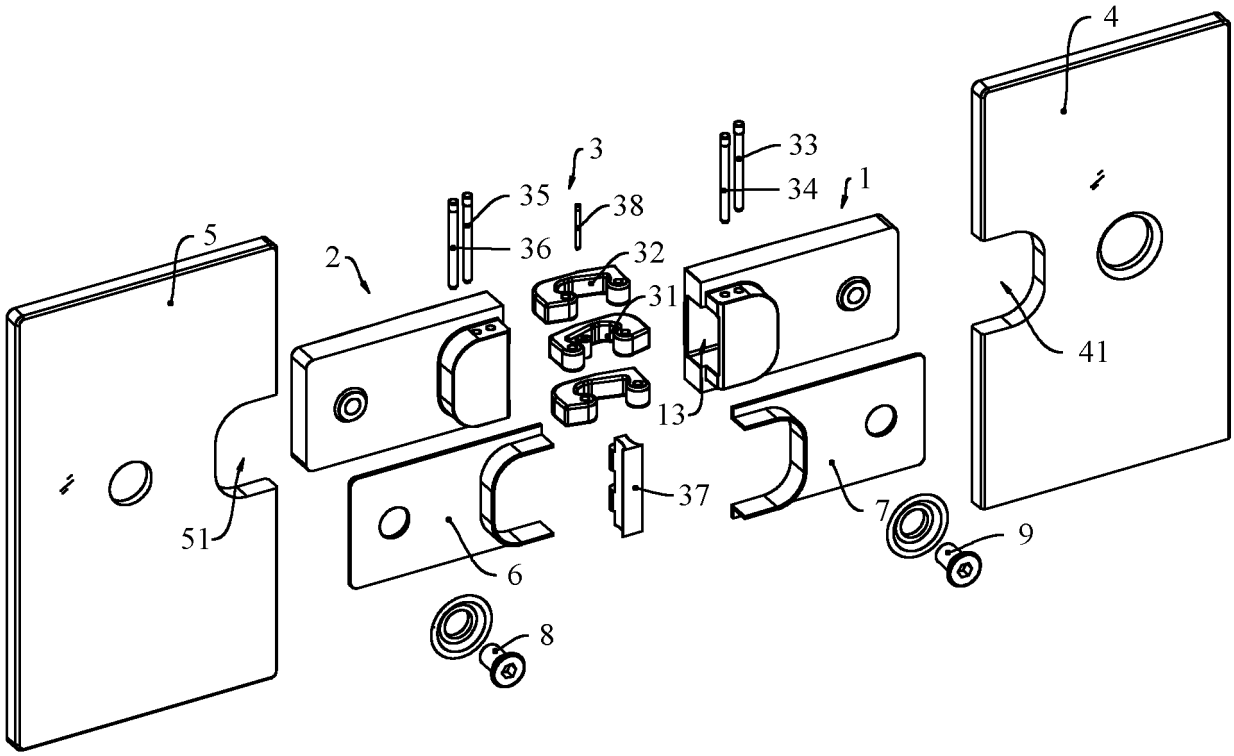

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/084718

A. CLASSIFICATION OF SUBJECT MATTER

E05D 3/06(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

E05D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNABS, CNKI, VEN: 爱迪尔, 危五祥, 铰链, 铰接件, 合页, 合叶, 和页, 铰链组, 铰件组, 4轴, 四轴, 多轴, 多片, 弯折段, 弯曲段, 连接段, 跨接, 桥接, 弓形, 轴线平行, 平行轴线, 大开度, 无夹角, hinge+, cluster, group, parallel+, axial, axis, shaft, widespread, full, door?, gate, window?, sash

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 103498607 A (CAO, Guoji) 08 January 2014 (2014-01-08) description, paragraphs 16-25, and figures 1-7	1-10
X	CN 203626453 U (CAO, Guoji) 04 June 2014 (2014-06-04) description, paragraphs 22-31, and figures 1-7	1-10
E	CN 110199076 A (FOSHAN IDEAL CO., LTD.) 03 September 2019 (2019-09-03) claims 1-10	1-10
A	CN 106050035 A (WANLI SECURITY PRODUCT CO., LTD.) 26 October 2016 (2016-10-26) entire document	1-10
A	CN 108412890 A (COMPAL ELECTRONICS, INC.) 17 August 2018 (2018-08-17) entire document	1-10
A	CN 206319751 U (ZHEJIANG WONLY DOOR IND CO., LTD.) 11 July 2017 (2017-07-11) entire document	1-10
A	CN 108369435 A (INTEL CORPORATION) 03 August 2018 (2018-08-03) entire document	1-10

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
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"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
24 December 2019	**07 January 2020**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088** **China**	Authorized officer
Facsimile No. **(86-10)62019451**	Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2019/084718

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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A	GB 741593 A (WILLIAM, G.) 07 December 1955 (1955-12-07) entire document	1-10

Form PCT/ISA/210 (second sheet) (January 2015)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2019/084718

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CN 203626453 U	04 June 2014	None	
CN 110199076 A	03 September 2019	None	
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		WO 2017111817 A1	29 June 2017
		DE 112015007237 T5	18 October 2018
CN 206829865 U	02 January 2018	None	
GB 741593 A	07 December 1955	None	

Form PCT/ISA/210 (patent family annex) (January 2015)