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(54) **BUTTON INTEGRATED SEAT HINGE AND ITS APPLICATION**

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Description

Technical Field

[0001] The present disclosure relates to the technical field of toilet seat cover plate assembly, in particular to a button integrated seat hinge and its application.

Background of the Invention

[0002] Generally, the removal of the conventional cover plate needs to press and hold the button all the time, which is not convenient to remove the cover plate. For example, the Chinese patent No. 201911204999.0 discloses an one-key control quick-install hinge seat of cover plate. The technical solution adopted is as follows: a hinged pipe and two supports are included, wherein the hinged pipe includes a clamp fastener, which includes a fixed body arranged in the middle of the clamp fastener, a lock key arranged on the fixed body, two locking members arranged on both sides of the fixed body, and a spring is provided between the fixed body and the locking member to provide elastic force for the resetting of the locking member. A rotary buffer includes a positioning hole for connecting with the clamp fastener and a radial hole cross communicated with the positioning hole, and the support is fixedly connected to the clamp fastener through the radial hole. The holding clamp holds the cylinder to lock the pressing stroke of the locking member, when pressing the one-key locking button, The side sliding inclined planes on both sides push the actuating inclined plane at the same time, the lock hole on the locking member is aligned to the empty space of the bolt to unlock, and the holding clamp has no jamming on the cylinder in the pulling out direction, so that the bolt can be pulled out from the clamp fastener at the same time, which is more convenient and fast, such that the cover plate can be removed from the toilet seat more conveniently. However, the technical solution needs to press and hold the button all the time when unlocking, so the operation is troublesome.

[0003] Another example is the Chinese utility model patent with application No. 201820636193.3, which discloses a fixed seat fixed on the ceramic toilet surface and a seat hinge assembly for connecting the fixed seat and the toilet cover plate. The seat hinge assembly includes a seat hinge housing hinged with the toilet cover plate. Two sides of the seat hinge housing are respectively provided with hinge bodies, and the hinge bodies slide horizontally on the seat hinge housing, and the lock block is arranged thereon. The lock block is also provided with a lock hole and a boss for releasing. The lock block is also provided with a clamp fastener. The hinge body is also provided with a clamping table, and the seat hinge housing is also provided with a button. The button moves longitudinally on the seat hinge housing and pushes the lock block to slide transversely on the hinge body when it moves longitudinally. The lock block is mutually fixed with a buckle

when it slides transversely. The fixed seat is provided with a fixed column which is inserted into the lock hole, and it is performed transverse movement relative to the lock hole when the lock block slides. Although the technical solution can realize the disassembly without pressing and holding the button all the time when unlocking, which is quick to disassemble and easy to use, but it still has the following disadvantages:

1. The button is of integrated design, which has to be replaced as a whole if it is damaged, and the cost is high;
2. The front and rear sides of the button are respectively provided with two resilient latches (four resilient latches in total) symmetrically distributed on the left and right sides. If the assembly gap is small, it requires to be placed smoothly to accurately assemble, otherwise it will be hard to install; if the assembly clearance is large, the button is easy to shake;
3. A spring cavity is arranged in the button, and one end of the reset spring is inserted into the spring cavity and is not fixed, which easily leads to the spring dislocation or falling off, and the mechanical structure stability is poor;
4. The button and the lock block are planar fit, so the machining accuracy and assembly accuracy of the button and lock block are required to be high. If the two fitting surfaces are not in a horizontal plane, the button and lock block cannot be matched.

[0004] Another patent document CN 109 602 317 A discloses a toilet cover plate mounting structure comprising a sleeve, a press button, sliding connecting components, locking components, connecting components and supporting components, wherein the press button, the sliding connecting components, the locking components and the connecting components are sequentially matched inside the sleeve. The sliding connecting components are connected with the press button in a sliding manner so as to achieve axial movement inside the sleeve and movable pressing against the locking components; the connecting components are fixed to the end parts of the sleeve; the locking components form clamping and locking parts and clamping and fixing parts which are inserted into the connecting components; each supporting component comprises a fixing rod; the fixing rods are inserted into the sleeve and the connecting components and are matched with the clamping and locking parts; the clamping and fixing parts form fixing rod passages; the middle parts of the passages are oppositely protruded to form clamping and fixing convex parts so as to movably clamp and fix the fixing rods. Through arrangement of the clamping and fixing convex parts on the locking components for movably clamping and fixing the fixing rods, the self-locking functions of the locking components during detachment of a toilet cover plate are achieved, the unlocking states of the clamping and locking parts are maintained, and the toilet cover plate can be

detached by both hands only by pressing the press button once.

[0005] In addition, the patent document CN210300827U provides a detachable closetool cover plate with a top button structure. The device comprises a panel, a bottom plate, a hinge seat and two fixed columns, the panel is hinged to the bottom plate through the hinge base, mounting holes are formed in the bottoms of the two ends of the hinge base and used for being connected with the fixing columns for mounting, a button is arranged in the middle of the hinge base, and two symmetrical lock catch assemblies are arranged in the two ends of the hinge base and used for being matched and locked with the fixing columns. The lock catch assembly comprises a lock block, a lock block spring and a hinge body; and the lock body is provided with a lock hole which is tightly matched with the fixed column for locking or is loosened for unlocking, and a clamping hook which is matched and buckled with the hinge body. When in use, the lock is unlocked after the button is pressed, the disassembly operation can be carried out without continuous pressing, and the operation is convenient and fast.

Summary of the Invention

[0006] In order to solve the above problems, the present disclosure is to provide a button integrated seat hinge and its application, which can be disassembled or assembled without holding the button all the time, and the operation is simple and convenient.

[0007] To achieve the above objective, the present disclosure provides the following technical solutions:

A button integrated seat hinge, including a hinge tube and a fixed seat, the fixed seat is provided with a seat hinge shaft, the hinge tube is provided with a button assembly, and buffer assemblies are provided at both ends of the button assembly, wherein the button assembly is provided with a driving inclined plane; the buffer assembly includes a hinge body, a transverse locking member and a locking reset spring driving the transverse locking member to reset, the transverse locking member is provided with a base body, a locking piece and an elastic clamp piece arranged on one side of the base body which are able to transversely insert into the hinge body, and a pushing rod provided at the other side of the base body; an end of the pushing rod is provided with a conical pushing surface matched with the driving inclined plane; an end of the elastic clamp piece is provided with a locking protrusion, and the hinge body is provided with a locking slot matching with the locking protrusion; the transverse locking member and the hinge body are positioned circumferentially by a circumferential positioning mechanism; a lower end of the hinge body is provided with a seat hinge shaft hole for inserting the seat hinge shaft; the transverse locking member is driven by the button assembly to move outwards to make the locking protrusion connect with the locking slot in a snap-fit when

the button assembly is pressed, the elastic clamp piece is driven by the seat hinge shaft to elastically deform when the seat hinge shaft is pulled out from the seat hinge shaft hole, so that the locking protrusion is moved out from the locking slot, and the transverse locking member is moved inward to reset under an action of the locking reset spring.

[0008] The hinge body is provided with a base body containing cavity matching with the base body; the circumferential positioning mechanism includes a first positioning surface arranged in the hinge body and a second positioning surface arranged on the base body; a first transverse guide sliding arc surface connected with the first positioning surface is arranged in the hinge body, a second guide sliding arc surface matching with the first transverse guide sliding arc surface is arranged on the base body, and the first positioning surface and the first transverse guide sliding arc surface form an inner wall of the base body containing cavity.

[0009] The seat hinge shaft is arranged with a first boss and a second boss successively from top to bottom, and a seat hinge shaft clamping groove with a diameter smaller than the first boss is formed between the first boss and the second boss, and a through hole is provided on the locking piece for the seat hinge shaft to pass through; an outside of the through hole is provided with a seat hinge shaft clamping opening communicated with the through hole and used for clamping with the seat hinge shaft clamping groove; an upper end of the first boss is provided with an insertion pushing inclined plane.

[0010] The button assembly includes a button cover, a button block assembled on left and right sides of the button cover and a button reset spring for driving the button cover to reset; the driving inclined plane is arranged on the button block, and two ends of the button cover are respectively provided with a button block cavity for holding the button block; and the button block is connected with the button cover in snap-fit.

[0011] The lower end of the second boss is provided with a first pull-out reset inclined plane; the elastic clamp piece is provided with a reset protrusion located at a rear end of the locking protrusion and matched with the second boss, and an upper end of the reset protrusion is provided with a second pull-out reset inclined plane matched with the first pull-out reset inclined plane; when the locking protrusion and the locking slot are in the snap-fit connection state and the seat hinge shaft is pulled out of the hinge shaft hole, the second boss drives the elastic clamp piece to elastic deformation by pushing the reset protrusion, thereby the locking protrusion is withdrawn from the locking slot.

[0012] The locking piece is provided with a limit protrusion for connecting with the hinge body, and the hinge body is provided with a limit slot connected with the limit protrusion; a length of the limit slot is greater than or equal to a moving stroke of the transverse locking member.

[0013] As a preferred embodiment, it is further limited as: front and rear side walls of the button cover are respectively provided with snap slots communicated with

the button block cavity, and the button block is provided with a first elastic snapping portion connected with the snap slots.

[0014] As a preferred embodiment, it is further limited as: two longitudinal reinforcing ribs are arranged longitudinally in the button cover, so that a spring cavity between the two longitudinal reinforcing ribs and the button block cavity provided respectively on both sides of the spring cavity are formed in the button cover; and the spring cavity is provided with a spring fixing portion, and one end of the button reset spring is sleeved on the spring fixing portion.

[0015] As a preferred embodiment, it is further limited as: the front and rear side walls of the button cover are respectively provided with a second elastic snapping portion and a gap on both sides of the second elastic snapping portion and communicated with the spring cavity; the second elastic snapping portion is connected with the hinge tube in snap-fit.

[0016] As a preferred embodiment, it is further limited as: a raised first limit block is arranged in the button block cavity, the button block is provided with a second clamping opening matched with the first limit block, and a transverse reinforcing rib is arranged in the button block, and one side of the longitudinal reinforcing rib facing the button block cavity is provided with a second limit block and a third limit block extending into the button block cavity; after assembly, one end of the transverse reinforcing rib butts against the first limit block, and the other end of the transverse reinforcing rib is located between the second limit block and the third limit block.

[0017] As a preferred embodiment, it is further limited as: a ratio between a distance between the locking protrusion and the reset protrusion and a distance between the reset protrusion and the base body is 0.20-0.35.

[0018] As a preferred embodiment, it is further limited as: the hinge body is provided with a locking piece insertion cavity communicated with the base body containing cavity and used for the transverse insertion of the locking piece; the hinge body is provided with an elastic clamp piece insertion cavity communicated with the base body containing cavity and used for the transverse insertion of the elastic clamp piece, the limit slot is communicated with the locking piece insertion cavity, the seat hinge shaft hole is communicated with the locking piece insertion cavity, the seat hinge shaft hole is communicated with the elastic clamp piece insertion cavity; the hinge body is provided with a spring limit column; the number of the elastic clamp pieces is two and the two elastic clamp pieces are symmetrically arranged at a front side and a rear side of a lower end of the locking piece, respectively; the locking reset spring is located between the locking piece and the elastic clamp piece, one end of the locking reset spring is against the base body, and the other end of the locking reset spring extends into the base body containing cavity and is sleeved on the spring limit column.

[0019] As a preferred embodiment, it is further limited

as: the buffer assembly includes a buffer, and an outer side of the hinge body is matched with an inner keyway of the buffer; the hinge tube and the hinge body are fixedly connected through the clamp fastener.

[0020] A combined cover plate with the button integrated seat hinge as described above, including a panel and a bottom plate, a rear end of the bottom plate is threaded with the hinge tube, and the panel and the bottom plate are movably connected through the buffer assembly.

[0021] A toilet with the button integrated seat hinge as described above, including a panel, a bottom plate and a toilet body; a rear end of the bottom plate is threaded with the hinge tube, and the panel and the bottom plate are movably connected through the buffer assembly; the toilet body is provided with two of the fixed seat, wherein the fixed seat is movably connected with the buffer assembly.

Brief description of the Drawings

[0022]

Fig. 1 is a perspective view of the present disclosure; Fig. 2 is an exploded view of the present disclosure; Fig. 3 is a partial exploded view of the present disclosure;

Fig. 4 is a structural schematic diagram of the seat hinge;

Fig. 5 is a structural schematic diagram of a button assembly;

Fig. 6 is an exploded view of the button assembly;

Fig. 7 is a structural schematic diagram of a button cover;

Fig. 8 is a structural diagram of a button block;

Fig. 9 is the first structural diagrams of the hinge body;

Fig. 10 is the second schematic diagram of the hinge body;

Fig. 11 is a structural schematic diagram of a transverse locking member;

Fig. 12 is an assembly structure diagram of the hinged tube and the bottom plate;

Fig. 13 is an exploded view of the buffer assembly;

Fig. 14 is an assembly structure diagram of the buffer assembly and the hinged tube;

FIG. 15 is a sectional view of the present disclosure;

FIG. 16 is a partial sectional view of the present disclosure;

Fig. 17 is a structural sectional view showing the button assembly drives the transverse locking member to move;

Fig. 18 is a structural schematic diagram of the latch connection between the transverse locking member and the hinge body;

Fig. 19 is an assembly structure diagram of the transverse locking member and the seat hinge;

Fig. 20 is a structural diagram showing the seat hinge

before it is inserted into the transverse locking member.

Detailed Description of Embodiments

[0023] The present disclosure is further described in detail in combination with the attached drawings and specific embodiments.

[0024] As shown in Fig.1 to Fig.20, a button integrated seat hinge, including a hinge tube 1 and a fixed seat 2. The number of the fixed seat 2 is two, and the fixed seat 2 is provided with a seat hinge shaft 21. The hinge tube 1 is provided with a button assembly 3 and buffer assemblies 4 provided at both ends of the button assembly 3. The number of the buffer assemblies 4 is two, which corresponds to the seat hinges 2, and the buffer assemblies 4 is symmetrical arranged. The button assembly 3 is provided with a driving inclined plane 320, and the buffer assembly 4 includes a hinge body 41, a transverse locking member 42 and a locking reset spring 43 for driving the transverse locking member 42 to reset. The transverse locking member 42 is provided with a base body 420, a locking piece 421 and an elastic clamp piece 422 arranged on one side of the base body 420 which are able to transversely insert into the hinge body 41, and a pushing rod 423 provided at the other side of the base body 420. The end of the pushing rod 423 is provided with a conical pushing surface 4230 matched with the driving inclined plane 320, and the conical pushing surface 4230 can be matched with the driving inclined plane 320 at any angle, which can greatly reduce the requirements of machining accuracy and assembly accuracy, and improve the smoothness of mechanical matching. The end of the elastic clamp piece 422 is provided with a locking protrusion 4221, and the hinge body 41 is provided with a locking slot 412 matching with the locking protrusion 4221. The transverse locking member 42 and the hinge body 41 are positioned circumferentially by a circumferential positioning mechanism, which can effectively avoid the dislocation between the transverse locking member 42 and the hinge body 41, such that the mechanical structure stability is enhanced. The lower end of the hinge body 41 is provided with a seat hinge shaft hole 411 for inserting the seat hinge shaft 21. The transverse locking member 42 is driven by the button assembly 3 to move outwards to make the locking protrusion 4221 connect with the locking slot 412 in a snap-fit when the button assembly 3 is pressed; and the elastic clamp piece 422 is driven by the seat hinge shaft 21 to perform elastic deformation when the seat hinge shaft 21 is pulled out from the seat hinge shaft hole 411, so that the locking protrusion 4221 is moved out from the locking slot 412, and the transverse locking member 42 is moved inward to reset under the action of the locking reset spring 43, such that it can be disassembled without pressing the button assembly 3 all the time, the operation is simple and convenient, and the design is ingenious.

[0025] As shown in Fig.9 to Fig. 11, the hinge body 41 is

provided with a base body containing cavity 410 matching with the base body 420, wherein the base body 420 is generally cylindrical. The circumferential positioning mechanism includes a first positioning surface 4101 arranged in the hinge body 41 and a second positioning surface 4201 arranged on the base body 420. A first transverse guide sliding arc surface 4102 connected with the first positioning surface 4101 is arranged in the hinge body 41, a second guide sliding arc surface 4202 matching with the first transverse guide sliding arc surface 4102 is arranged on the base body 420, and the first positioning surface 4101 and the first transverse guide sliding arc surface 4102 form the inner wall of the base body containing cavity 410. Through the cooperation of the second positioning surface 4201 and the first positioning surface 4101, the hinge body 41 and the transverse locking member 42 can be fixed in the circumferential direction, and the force can be better carried out through the base body 420, so as to prevent the locking piece 421 and elastic clamp piece 422 from breaking under the force.

[0026] The seat hinge shaft 21 is arranged with a first boss 211 and a second boss 212 successively from top to bottom, and a seat hinge shaft clamping groove 213 with a diameter smaller than the first boss 211 is formed between the first boss 211 and the second boss 212. A through hole 4210 is provided on the locking piece 421 for the seat hinge shaft 21 to pass through, and the outside of the through hole 4210 is provided with a seat hinge shaft clamping opening 4211 communicated with the through hole and used for clamping with the seat hinge shaft clamping groove 213. And the upper end of the first boss 211 is provided with an insertion pushing inclined plane 216. When assembling, when the seat hinge shaft 21 is inserted into the hinge shaft hole 411 without pressing the button assembly 3, the transverse locking member 42 can be pushed to move outward by the insertion pushing inclined plane 216, but the moving distance of the transverse locking member 42 is not enough to make the locking protrusion 4221 and the locking slot 412 snap with each other. Therefore, when the first boss 211 passes through the through hole 4210, the locking reset spring 43 will drive the transverse locking member 42 to reset, which is a clever design.

[0027] As shown in Fig.5 to Fig.8, the button assembly 3 includes a button cover 31, a button block 32 assembled on the left and right sides of the button cover 31 and a button reset spring 33 for driving the button cover 31 to reset, and the driving inclined plane 320 is arranged on the button block 32. The button assembly uses the combined design, the corresponding parts can be replaced if it is damaged, which can effectively reduce the maintenance cost of the user. The two ends of the button cover 31 are respectively provided with a button block cavity 310 for holding the button block 32, and the button block 32 is connected with the button cover 31 in snap-fit. Further, the front and rear side walls of the button cover 31 are respectively provided with snap slots 311 communicated with the button block cavity 310, and the

button block 32 is provided with a first elastic snapping portion 321 connected with the snap slots 311 in snap-fit, the assembly is simple and convenient, and damaged parts can be replaced easily, reducing maintenance costs. In order to meet the requirements for matching with the pushing transverse locking member 42 or the pushing rod 423 with different sizes, a plurality of the snap slots 311 can be provided in longitudinal direction, and the assembly height of the first elastic snapping portion 321 can be adjusted according to the requirements of different sizes by properly extending the first elastic snapping portion 321, so as to meet the matching requirements with the pushing transverse locking member 42 or the pushing rod 423 with different sizes.

[0028] In order to enhance the strength of the structure, two longitudinal reinforcing ribs 312 are arranged longitudinally in the button cover 31, so that a spring cavity 313 between the two longitudinal reinforcing ribs 312 and the button block cavity 310 provided respectively on both sides of the spring cavity 313 are formed in the button cover 31. And the spring cavity 313 is provided with a spring fixing portion 314, and one end of the button reset spring 33 is sleeved on the spring fixing portion 314. The spring fixing portion 314 is cruciform structure or cross shaped, so as to make the assembly of the button reset spring 33 firmly, which can effectively prevent the dislocation of the button reset spring and improve the assembly accuracy.

[0029] In the present embodiment, the front and rear side walls of the button cover 31 are respectively provided with a second elastic snapping portion 315 and a gap 316 on both sides of the second elastic snapping portion 315 and communicated with the spring cavity 313. The second elastic snapping portion 315 is connected with the hinge tube 1 in snap-fit, which can increase the assemble efficiency and the assembly qualification rate.

[0030] In the present embodiment, a raised first limit block 317 is arranged in the button block cavity 310, the button block 32 is provided with a second clamping opening 322 matched with the first limit block 317, and a transverse reinforcing rib 323 is also arranged in the button block 32, and one side of the longitudinal reinforcing rib 312 facing the block cavity 310 is provided with a second limit block 318 and a third limit block 319 extending into the button block cavity 310. After assembly, one end of the transverse reinforcing rib 323 butts against the first limit block 317, and the other end of the transverse reinforcing rib 323 is located between the second limit block 318 and the third limit block 319, which can effectively enhance the structure strength.

[0031] In the present embodiment, the upper end of the second boss 212 is provided with a inclined plane 214. During assembly, if the seat hinge shaft 21 is inserted too deep or too hard for assembly, the inclined plane 214 can provide a certain buffer effect to prevent the transverse locking member 42 from being crushed. The lower end of the second boss 212 is provided with a first pull-out reset

inclined plane 215, the elastic clamp piece 422 is provided with a reset protrusion 4222 located at the rear end of the locking protrusion 4221 and matched with the second boss 212, and the upper end of the reset protrusion 4222 is provided with a second pull-out reset inclined plane 4223 matched with the first pull-out reset inclined plane 215. When the locking protrusion 4221 and the locking slot 412 are in the snap-fit connection state and the seat hinge shaft 21 is pulled out of the hinge shaft hole 411, the first pull-out reset inclined plane 215 contacts with the second pull-out reset inclined plane 4223, the second boss 212 pushes the reset protrusion 4222 to drive the elastic clamp piece 422 to perform elastic deformation, thereby the locking protrusion 4221 is withdrawn from the locking slot 412. Through the coordination of the inclined plane and the inclined plane, it is more conducive to the matching of the second boss 212 and the pushing reset protrusion 4222. In order to achieve better elastic deformation effect of elastic clamp piece 422, the ratio between the distance between the locking protrusion 4221 and the reset protrusion 4222 and the distance between the reset protrusion 4222 and the base body 420 is 0.20-0.35, and the optimum ratio is 0.25.

[0032] The locking piece 421 is provided with a limit protrusion 4212 for connecting with the hinge body 41 in snap-fit, and the hinge body 41 is further provided with a limit slot 413 connected with the limit protrusion 4212 in snap-fit. The length of the limit slot 413 is greater than or equal to the moving stroke of the transverse locking member 42. The limit protrusion 4212 and the limit slot 413 can limit the moving stroke of the transverse locking member 42. During assembly, the limit protrusion 4212 can be snapped into the limit slot 413, which can effectively prevent the transverse locking member 42 from falling off or pulling out.

[0033] In the present embodiment, the hinge body 41 is provided with a locking piece insertion cavity 414 communicated with the base body containing cavity 410 and used for the transverse insertion of the locking piece 421, and the hinge body 41 is provided with an elastic clamp piece insertion cavity 415 communicated with the base body containing cavity 410 and used for the transverse insertion of the elastic clamp piece 422, the limit slot 413 is communicated with the locking piece insertion cavity 414, the seat hinge shaft hole 411 is communicated with the locking piece insertion cavity 414, the seat hinge shaft hole 411 is communicated with the elastic clamp piece insertion cavity 415. The matching degree can be enhanced to a certain extent by matching different cavities and components, so that the locking piece 421 and elastic clamp piece 422 can be protected to prevent breakage. The hinge body 41 is provided with a spring limit column 416. In order to make the transverse locking member 42 and the hinge body 41 more firmly assembled, and the transverse locking member 42 has uniform force and stable movement, the number of the elastic clamp pieces 422 is two and the two elastic clamp pieces are symmetrically arranged at the front side and

the rear side of a lower end of the locking piece 421, respectively. The locking reset spring 43 is located between the locking piece 421 and the elastic clamp piece 422, which can effectively save the space occupied by parts and reduce the product size, and reasonable use of the space between the locking piece 421 and the elastic clamp piece 422 will make the design more ingenious. One end of the locking reset spring 43 is against the base body 420, and the other end of the locking reset spring 43 extends into the base body containing cavity 410 and is sleeved on the spring limit column 416, the structure is simple.

[0034] In the present embodiment, the buffer assembly 4 includes a buffer 44 and an anti-loose piece 45, and the outer side of the hinge body 41 is matched with the inner keyway of the buffer 44, the structure is simple. The anti-loose piece 45 is covered on the outer side of hinge body 41 and the buffer 44 to effectively prevent loose assembly between the hinge body 41 and the buffer 44, so as to make assembly more firm. The buffer 44 is a common technical means in the art, which plays the role of shock absorption and damping, prevents the panel 5 from falling suddenly and enables the panel 5 to slowly drop down. In addition, the hinge tube 1 and the hinge body 41 are fixedly connected through the clamp fastener 7. The clamp fastener 7 is a common technical means in the art, and will not be described in detail for brevity.

[0035] A combined cover plate with the button integrated seat hinge as described above, which includes a panel 5 and a bottom plate 6. As shown in Fig. 10, the rear end of the bottom plate 6 is threaded with the hinge tube 1, and the panel 5 and the bottom plate 6 are movably connected through the buffer assembly 4. A person skilled in the art can sell the button integrated seat hinge of the present disclosure by selling the cover plate assembly in a combined way, so as to facilitate the consumer to replace the cover plate assembly.

[0036] A toilet with the button integrated seat hinge as described above, which includes a panel 5, a bottom plate 6 and a toilet body. As shown in Fig. 1 and Fig. 2, the rear end of the bottom plate 6 is threaded with the hinge tube 1, and the panel 5 and the bottom plate 6 are movably connected through the buffer assembly 4. The toilet body is provided with two fixed seat 2, wherein the fixed seat 2 is movably connected with the buffer assembly 4. A person skilled in the art can sell the button integrated seat hinge and cover plate assembly of the present disclosure into a complete set of products in a combination way by selling the toilet.

[0037] The assembly process of the combined cover plate is as follows:

1. As shown in Fig. 12, the hinge tube 1 and the bottom plate 6 are connected by screws;
2. Then, the hinge body 41, the transverse locking member 42, the locking reset spring 43, the buffer 44 and the anti-loose piece 45 are assembled together to form a buffer assembly 4, and the buffer assembly

4 is assembled in the hinge tube 1 as shown in Fig. 14;

3. The seat hinge 2 is assembled on the toilet body;

4. The seat hinge shaft 21 is inserted into the buffer assembly 4 to complete the installation.

[0038] The replacement process of the combined cover plate provided by the present disclosure is as follows:

1. As shown in Fig. 17, pressing the button assembly 3, so that the button assembly 3 pushes the two transverse locking members 42 to move to both sides. As shown in Fig. 18, the locking protrusion 4221 is snapped into the locking slot 412 to complete the snap connection between the hinge body 41 and the transverse locking member 42;

2. Lifting up the combined cover plate and pulling it out to complete the disassembly;

3. As shown in Fig. 20, the installation can be completed by inserting the new combined cover plate into the hinge shaft 21 and the buffer assembly 4. The operation is simple and convenient.

Claims

1. A button integrated seat hinge for toilets,

comprising a hinge tube (1) and a fixed seat (2), the fixed seat (2) is provided with a seat hinge shaft (21), the hinge tube (1) is provided with a button assembly (3), and buffer assemblies (4) are provided at both ends of the button assembly (3), the button assembly (3) is provided with a driving inclined plane (320); the buffer assembly (4) comprises a hinge body (41), a transverse locking member (42) and a locking reset spring driving the transverse locking member (42) to reset, the transverse locking member (42) is provided with a base body (420), a locking piece (421) and an elastic clamp piece (422) arranged on one side of the base body (420) which are able to transversely insert into the hinge body (41), and a pushing rod (423) provided at the other side of the base body (420); an end of the pushing rod (423) is provided with a conical pushing surface (4230) matched with the driving inclined plane (320); an end of the elastic clamp piece (422) is provided with a locking protrusion (4221), and the hinge body (41) is provided with a locking slot (412) matching with the locking protrusion (4221); the transverse locking member (42) and the hinge body (41) are positioned circumferentially by a circumferential positioning mechanism; a lower end of the hinge body (41) is provided with a seat hinge shaft hole (411) for inserting the seat hinge shaft (21); the transverse locking member (42) is driven by the but-

ton assembly (3) to move outwards to make the locking protrusion (4221) connect with the locking slot (412) in a snap-fit when the button assembly (3) is pressed, the elastic clamp piece (422) is driven by the seat hinge shaft (21) to elastically deform when the seat hinge shaft (21) is pulled out from the seat hinge shaft hole (411), so that the locking protrusion (4221) is moved out from the locking slot (412), and the transverse locking member (42) is moved inward to reset under an action of the locking reset spring (43);

the hinge body (41) is provided with a base body containing cavity (410) matching with the base body (420); the circumferential positioning mechanism comprises a first positioning surface (4101) arranged in the hinge body (41) and a second positioning surface (4201) arranged on the base body (420); a first transverse guide sliding arc surface (4102) connected with the first positioning surface (4101) is arranged in the hinge body (41), a second guide sliding arc surface (4202) matching with the first transverse guide sliding arc surface (4102) is arranged on the base body (420), and the first positioning surface (4101) and the first transverse guide sliding arc surface (4102) form an inner wall of the base body containing cavity (410);

the seat hinge shaft (21) is arranged with a first boss (211) and a second boss (212) successively from top to bottom, and a seat hinge shaft clamping groove (213) with a diameter smaller than the first boss (211) is formed between the first boss (211) and the second boss (212), and a through hole (4210) is provided on the locking piece (421) for the seat hinge shaft (21) to pass through; an outside of the through hole (4210) is provided with a seat hinge shaft clamping opening (4211) communicated with the through hole (4210) and used for clamping with the seat hinge shaft clamping groove (213); an upper end of the first boss (211) is provided with an insertion pushing inclined plane (216);

the lower end of the second boss (212) is provided with a first pull-out reset inclined plane (215); the elastic clamp piece (422) is provided with a reset protrusion (4222) located at a rear end of the locking protrusion (4221) and matched with the second boss (212), and an upper end of the reset protrusion (4222) is provided with a second pull-out reset inclined plane (4223) matched with the first pull-out reset inclined plane (215); when the locking protrusion (4221) and the locking slot (412) are in the snap-fit connection state and the seat hinge shaft (21) is pulled out of the hinge shaft hole (411), the second boss (212) drives the elastic clamp piece (422) to elastic deformation by pushing the reset

protrusion (4222), thereby the locking protrusion (4221) is withdrawn from the locking slot (412); and **characterized in that**

the button assembly (3) comprises a button cover (31), a button block (32) assembled on left and right sides of the button cover (31) and a button reset spring (33) for driving the button cover (31) to reset; the driving inclined plane (320) is arranged on the button block (32), and two ends of the button cover (31) are respectively provided with a button block cavity (310) for holding the button block (32); and the button block (32) is connected with the button cover (31) in snap-fit;

the locking piece (421) is provided with a limit protrusion (4212) for connecting with the hinge body (41), and the hinge body (41) is provided with a limit slot (413) connected with the limit protrusion (4212); a length of the limit slot (413) is greater than or equal to a moving stroke of the transverse locking member (42).

2. The button integrated seat hinge according to claim 1, **characterized in that** front and rear side walls of the button cover (31) are respectively provided with snap slots (311) communicated with the button block cavity (310), and the button block (32) is provided with a first elastic snapping portion (321) connected with the snap slots (311).
3. The button integrated seat hinge according to claim 2, **characterized in that** two longitudinal reinforcing ribs (312) are arranged longitudinally in the button cover (31), so that a spring cavity (313) between the two longitudinal reinforcing ribs (312) and the button block cavity (310) provided respectively on both sides of the spring cavity (313) are formed in the button cover (31); and the spring cavity (313) is provided with a spring fixing portion (314), and one end of the button reset spring (33) is sleeved on the spring fixing portion (314).
4. The button integrated seat hinge according to claim 3, **characterized in that** the front and rear side walls of the button cover (31) are respectively provided with a second elastic snapping portion (315) and a gap (316) on both sides of the second elastic snapping portion (315) and communicated with the spring cavity (313); the second elastic snapping portion (315) is connected with the hinge tube (1) in snap-fit.
5. The button integrated seat hinge according to claim 3, **characterized in that** a raised first limit block (317) is arranged in the button block cavity (310), the button block (32) is provided with a second clamping opening (322) matched with the first limit block (317), and a transverse reinforcing rib (323) is arranged in the button block (32), and one side of the

longitudinal reinforcing rib (312) facing the button block cavity (310) is provided with a second limit block (318) and a third limit block (319) extending into the button block cavity (310); after assembly, one end of the transverse reinforcing rib (323) butts against the first limit block (317), and the other end of the transverse reinforcing rib (323) is located between the second limit block (318) and the third limit block (319).

6. The button integrated seat hinge according to claim 1, **characterized in that** a ratio between a distance between the locking protrusion (4221) and the reset protrusion (4222) and a distance between the reset protrusion (4222) and the base body (420) is 0.20-0.35.

7. The button integrated seat hinge according to claim 1, **characterized in that** the hinge body (41) is provided with a locking piece insertion cavity (414) communicated with the base body containing cavity (410) and used for the transverse insertion of the locking piece (421); the hinge body (41) is provided with an elastic clamp piece insertion cavity (415) communicated with the base body containing cavity (410) and used for the transverse insertion of the elastic clamp piece (422), the limit slot (413) is communicated with the locking piece insertion cavity (414), the seat hinge shaft hole (411) is communicated with the locking piece insertion cavity (414), the seat hinge shaft hole (411) is communicated with the elastic clamp piece insertion cavity (415); the hinge body (41) is provided with a spring limit column (416); the number of the elastic clamp pieces (422) is two and the two elastic clamp pieces are symmetrically arranged at a front side and a rear side of a lower end of the locking piece (421), respectively; the locking reset spring (43) is located between the locking piece (421) and the elastic clamp piece (422), one end of the locking reset spring (43) is against the base body (420), and the other end of the locking reset spring (43) extends into the base body containing cavity (410) and is sleeved on the spring limit column (416).

8. The button integrated seat hinge according to claim 1, **characterized in that** the buffer assembly (4) comprises a buffer (44), and an outer side of the hinge body (41) is matched with an inner keyway of the buffer (44); the hinge tube (1) and the hinge body (41) are fixedly connected through the clamp fastener (7).

9. A combined cover plate with the button integrated seat hinge according to any one of claims 1-8, **characterized in that**, comprising a panel (5) and a bottom plate (6), a rear end of the bottom plate (6) is threaded with the hinge tube (1), and the panel (5)

and the bottom plate (6) are movably connected through the buffer assembly (4).

10. A toilet with the button integrated seat hinge according to any one of claims 1-8, **characterized in that**, comprising a panel (5), a bottom plate (6) and a toilet body; a rear end of the bottom plate (6) is threaded with the hinge tube (1), and the panel (5) and the bottom plate (6) are movably connected through the buffer assembly (4); the toilet body is provided with two of the fixed seat (2), wherein the fixed seat (2) is movably connected with the buffer assembly (4).

Patentansprüche

1. Tastenintegriertes Sitzscharnier für Toiletten,

umfassend ein Scharnierrohr (1) und einen befestigten Sitz (2),

wobei der befestigte Sitz (2) mit einer Sitzscharnierwelle (21) ausgestattet ist, das Scharnierrohr (1) mit einer Tastenanordnung (3) versehen ist und Pufferanordnungen (4) an beiden Enden der Tastenanordnung (3) bereitgestellt sind, die Tastenanordnung (3) mit einer geeigneten Antriebsebene (320) versehen ist, die Pufferanordnung (4) einen Scharnierkörper (41), ein Querverriegelungselement (42) und eine Verriegelungsrückstellfeder umfasst, die das Querverriegelungselement (42) so steuert, dass es zurückgestellt wird, das Querverriegelungselement (42) mit einem Grundkörper (420), einem Verriegelungsstück (421) und einem auf einer Seite des Grundkörpers (420) angeordneten elastischen Klemmstück (422) versehen ist, die in der Lage sind, quer in den Scharnierkörper (41) eingeführt zu werden, und einer Schubstange (423), die auf der anderen Seite des Grundkörpers (420) bereitgestellt ist, wobei ein Ende der Schubstange (423) mit einer konischen Schuboberfläche (4230) versehen ist, die passend zur geeigneten Antriebsebene (320) ausgebildet ist, ein Ende des elastischen Klemmstücks (422) mit einem Verriegelungsvorsprung (4221) versehen ist und der Scharnierkörper (41) mit einem Verriegelungsschlitz (412) versehen ist, der passend zum Verriegelungsvorsprung (4221) ausgebildet ist, das Querverriegelungselement (42) und der Scharnierkörper (41) umfangseitig durch einen umfangseitigen Positionierungsmechanismus positioniert werden, ein unteres Ende des Scharnierkörpers (41) mit einem Sitzscharnierwellenloch (411) zum Einführen der Sitzscharnierwelle (21) ausgestattet ist, das Querverriegelungselement (42) von der Tastenanordnung (3) angetrieben wird, um sich nach außen zu bewegen,

um den Verriegelungsvorsprung (4221) mit dem Verriegelungsschlitz (412) in einer Schnappbefestigung zu verbinden, wenn die Tastenanordnung (3) gedrückt wird, das elastische Klemmstück (422) von der Sitzscharnierwelle (21) angetrieben wird, um sich elastisch zu verformen, wenn die Sitzscharnierwelle (21) aus dem Scharnierwellenloch (411) herausgezogen wird, sodass der Verriegelungsvorsprung (4221) aus dem Verriegelungsschlitz (412) heraus bewegt wird und das Querverriegelungselement (42) nach innen bewegt wird, um es unter der Wirkung der Verriegelungsrückstellfeder (43) zurückzustellen,

wobei der Scharnierkörper (41) mit einem den Grundkörper enthaltenden Hohlraum (410) versehen ist, der passend zum Grundkörper (420) ausgebildet ist, der umfangeitige Positionierungsmechanismus eine erste Positionierungsoberfläche (4101), die im Scharnierkörper (41) angeordnet ist, und eine zweite Positionierungsoberfläche (4201), die auf dem Grundkörper (420) angeordnet ist, umfasst, eine erste Querverführungsgleitbogenoberfläche (4102), die mit der ersten Positionierungsoberfläche (4101) verbunden ist, im Scharnierkörper (41) angeordnet ist, eine zweite Querverführungsgleitbogenoberfläche (4202), die passend zur ersten Querverführungsgleitbogenoberfläche (4102) ausgebildet ist, auf dem Grundkörper (420) angeordnet ist und die erste Positionierungsoberfläche (4101) und die erste Querverführungsgleitbogenoberfläche (4102) eine Innenwand des den Grundkörpers enthaltenden Hohlraums (410) bilden,

wobei die Sitzscharnierwelle (21) mit einer ersten Nabe (211) und einer zweiten Nabe (212) nacheinander von oben nach unten angeordnet ist und eine Sitzscharnierwellen-Klemmnut (213) mit einem kleineren Durchmesser als die erste Nabe (211) zwischen der ersten Nabe (211) und der zweiten Nabe (212) gebildet ist und ein Durchgangsloch (4210) auf dem Verriegelungsstück (421) bereitgestellt ist, damit die Sitzscharnierwelle (21) hindurchgeführt wird, eine Außenseite des Durchgangslochs (4210) mit einer Sitzscharnierwellen-Klemmöffnung (4211) versehen ist, die mit dem Durchgangsloch (4210) in Kommunikation gesetzt ist und zum Klemmen mit der Sitzscharnierwellen-Klemmnut (213) verwendet wird, ein oberes Ende der ersten Nabe (211) mit einer geneigten Einführschubebene (216) versehen ist, wobei das untere Ende der zweiten Nabe (212) mit einer ersten geneigten Ausziehrückstellebene (215) versehen ist, das elastische Klemmstück (422) mit einem Rückstellvorsprung (4222) versehen ist, der sich an einem hinteren

Ende des Verriegelungsvorsprungs (4221) befindet und passend zur zweiten Nabe (212) ausgebildet ist, und ein oberes Ende des Rückstellvorsprungs (4222) mit einer zweiten geneigten Ausziehrückstellebene (4223) versehen ist, die passend zur ersten geneigten Ausziehrückstellebene (215) ausgebildet ist, die zweite Nabe (212) durch Schieben des Rückstellvorsprungs (4222) die elastische Verformung des elastischen Klemmstücks (422) bewirkt, wenn sich der Verriegelungsvorsprung (4221) und der Verriegelungsschlitz (412) im Schnappbefestigungsverbundszustand befinden und die Sitzscharnierwelle (21) aus dem Scharnierwellenloch (411) herausgezogen wird, wodurch der Verriegelungsvorsprung (4221) aus dem Verriegelungsschlitz (412) zurückgezogen wird, und **dadurch gekennzeichnet, dass** die Tastenanordnung (3) eine Tastenabdeckung (31), einen Tastenblock (32), der auf der linken und rechten Seite der Tastenabdeckung (31) montiert ist, und eine Tastenrückstellfeder (33) umfasst, um das Rückstellen der Tastenabdeckung (31) zu bewirken, die geneigte Antriebs-ebene (320) auf dem Tastenblock (32) angeordnet ist und zwei Enden der Tastenabdeckung (31) jeweils mit einem Tastenblockhohlraum (310) zum Halten des Tastenblocks (32) versehen sind und der Tastenblock (32) mit der Tastenabdeckung (31) in einer Schnappbefestigung verbunden ist, das Verriegelungsstück (421) mit einem Begrenzungsvorsprung (4212) zur Verbindung mit dem Scharnierkörper (41) versehen ist und der Scharnierkörper (41) mit einem Begrenzungsschlitz (413) versehen, der mit dem Begrenzungsvorsprung (4212) verbunden ist, wobei eine Länge des Begrenzungsschlitzes (413) größer oder gleich einem Bewegungshub des Querverriegelungselements (42) ist.

2. Tastenintegriertes Sitzscharnier nach Anspruch 1, **dadurch gekennzeichnet, dass** die vorderen und hinteren Seitenwände der Tastenabdeckung (31) jeweils mit Schnappschlitzen (311) versehen sind, die mit dem Tastenblockhohlraum (310) in Kommunikation gesetzt sind, und der Tastenblock (32) mit einem ersten elastischen Schnappabschnitt (321) versehen ist, der mit den Schnappschlitzen (311) verbunden ist.
3. Tastenintegriertes Sitzscharnier nach Anspruch 2, **dadurch gekennzeichnet, dass** zwei Längsverstärkungsrippen (312) längs in der Tastenabdeckung (31) angeordnet sind, sodass ein Federhohlraum (313) zwischen den beiden Längsverstärkungsrippen (312) und dem Tastenblockhohlraum (310), der jeweils auf beiden Seiten des Federhohlraums (313)

bereitgestellt ist, in der Tastenabdeckung (31) gebildet werden, und dass der Federhohlraum (313) mit einem Federbefestigungsabschnitt (314) versehen ist und ein Ende der Tastenrückstellfeder (33) auf dem Federbefestigungsteil (314) ummantelt ist.

4. Tastenintegriertes Sitzscharnier nach Anspruch 3, **dadurch gekennzeichnet, dass** die vorderen und hinteren Seitenwände der Tastenabdeckung (31) jeweils mit einem zweiten elastischen Schnappabschnitt (315) und einem Spalt (316) auf beiden Seiten des zweiten elastischen Schnappabschnitts (315) versehen sind und mit dem Federhohlraum (313) in Kommunikation gesetzt sind, wobei der zweite elastische Schnappabschnitt (315) mit dem Scharnierrohr (1) in Schnappbefestigung verbunden ist.
5. Tastenintegriertes Sitzscharnier nach Anspruch 3, **dadurch gekennzeichnet, dass** ein erhabener erster Begrenzungsblock (317) im Tastenblockhohlraum (310) angeordnet ist, der Tastenblock (32) mit einer zweiten Klemmöffnung (322) versehen ist, die passend zum ersten Begrenzungsblock (317) ausgebildet ist, und im Tastenblock (32) eine Querverstärkungsrippe (323) angeordnet ist und eine Seite der Längsverstärkungsrippe (312), die dem Tastenblockhohlraum (310) zugewandt ist, mit einem zweiten Begrenzungsblock (318) und einem dritten Begrenzungsblock (319) versehen ist, der sich in den Tastenblockhohlraum (310) erstreckt, wobei ein Ende der Querverstärkungsrippe (323) gegen den ersten Begrenzungsblock (317) anschlägt und das andere Ende der Querverstärkungsrippe (323) sich zwischen dem zweiten Begrenzungsblock (318) und dem dritten Begrenzungsblock (319) befindet.
6. Tastenintegriertes Sitzscharnier nach Anspruch 1, **dadurch gekennzeichnet, dass** ein Verhältnis zwischen einem Abstand zwischen dem Verriegelungsvorsprung (4221) und dem Rückstellvorsprung (4222) und einem Abstand zwischen dem Rückstellvorsprung (4222) und dem Grundkörper (420) 0,20-0,35 beträgt.
7. Tastenintegriertes Sitzscharnier nach Anspruch 1, **dadurch gekennzeichnet, dass** der Scharnierkörper (41) mit einem Verriegelungsstück-Einführhohlraum (414) versehen ist, der mit dem den Grundkörper enthaltenden Hohlraum (410) in Kommunikation gesetzt ist und für das Quereinführen des Verriegelungsstücks (421) verwendet wird, der Scharnierkörper (41) mit einem elastischen Klemmstück-Einführhohlraum (415) versehen ist, der mit dem den Grundkörper enthaltenden Hohlraum (410) in Kommunikation gesetzt ist und für das Quereinführen des elastischen Klemmstücks (422) verwen-

det wird, der Begrenzungsschlitz (413) mit dem Verriegelungsstück-Einführhohlraum (414) in Kommunikation gesetzt ist, das Sitzscharnierwellenloch (411) mit dem Verriegelungsstück-Einführhohlraum (414) in Kommunikation gesetzt ist, das Sitzscharnierwellenloch (411) mit dem elastischen Klemmstück-Einführhohlraum (415) in Kommunikation gesetzt ist, der Scharnierkörper (41) mit einer Federbegrenzungssäule (416) versehen ist, die Anzahl der elastischen Klemmstücke (422) zwei ist und die beiden elastischen Klemmstücke jeweils symmetrisch an einer Vorderseite und einer Rückseite eines unteren Endes des Verriegelungsstücks (421) angeordnet sind, wobei sich die Verriegelungsrückstellfeder (43) zwischen dem Verriegelungsstück (421) und dem elastischen Klemmstück (422) befindet, ein Ende der Verriegelungsrückstellfeder (43) gegen den Grundkörper (420) angeordnet ist und sich das andere Ende der Verriegelungsrückstellfeder (43) in den den Grundkörper enthaltenden Hohlraum (410) erstreckt und auf der Federbegrenzungssäule (416) ummantelt ist.

8. Tastenintegriertes Sitzscharnier nach Anspruch 1, **dadurch gekennzeichnet, dass** die Pufferanordnung (4) einen Puffer (44) umfasst und eine Außenseite des Scharnierkörpers (41) passend zu einer inneren Keilnut des Puffers (44) ausgebildet ist, wobei das Scharnierrohr (1) und der Scharnierkörper (41) durch die Klemmbefestigung (7) fest verbunden sind.
9. Kombinierte Abdeckplatte mit dem tastenintegrierten Sitzscharnier nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** sie eine Platte (5) und eine Bodenplatte (6) umfasst, ein hinteres Ende der Bodenplatte (6) mit einem Gewinde mit dem Scharnierrohr (1) versehen ist und die Platte (5) und die Bodenplatte (6) durch die Pufferanordnung (4) beweglich verbunden sind.
10. Toilette mit dem tastenintegrierten Sitzscharnier nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet, dass** sie eine Platte (5), eine Bodenplatte (6) und einen Toilettenkörper umfasst, ein hinteres Ende der Bodenplatte (6) mit einem Gewinde mit dem Scharnierrohr (1) versehen ist und die Platte (5) und die Bodenplatte (6) durch die Pufferanordnung (4) beweglich verbunden sind, wobei der Toilettenkörper mit zwei der befestigten Sitze (2) versehen ist, wobei der befestigte Sitz (2) beweglich mit der Pufferanordnung (4) verbunden ist.

Revendications

1. Charnière de siège intégrée à bouton pour toilettes,

comprenant un tube de charnière (1) et un siège fixe (2),
 le siège fixe (2) est pourvu d'un arbre de charnière de siège (21), le tube de charnière (1) est pourvu d'un ensemble bouton (3), et des ensembles tampons (4) sont prévus des deux extrémités de l'ensemble bouton (3), l'ensemble bouton (3) est pourvu d'un plan incliné d'entraînement (320) ; l'ensemble tampon (4) comprend un corps de charnière (41), un organe de verrouillage transversal (42) et un ressort de réinitialisation de verrouillage réinitialisant l'organe de verrouillage transversal (42), l'organe de verrouillage transversal (42) est pourvu d'un corps de base (420), une pièce de verrouillage (421) et une pièce de serrage élastique (422) disposées d'un côté du corps de base (420) qui peuvent s'insérer transversalement dans le corps de charnière (41), et une tige de poussée (423) prévue de l'autre côté du corps de base (420) ; une extrémité de la tige de poussée (423) est pourvue d'une surface de poussée conique (4230) adaptée au plan incliné d'entraînement (320) ; une extrémité de la pièce de serrage élastique (422) est pourvue d'une saillie de verrouillage (4221), et le corps de charnière (41) est pourvu d'une fente de verrouillage (412) adaptée à la saillie de verrouillage (4221) ; l'organe de verrouillage transversal (42) et le corps de charnière (41) sont positionnés circonférentiellement par un mécanisme de positionnement circonférentiel ; une extrémité inférieure du corps de charnière (41) est pourvue d'un trou d'arbre de charnière de siège (411) pour insérer l'arbre de charnière de siège (21) ; l'organe de verrouillage transversal (42) est entraîné par l'ensemble bouton (3) pour se déplacer vers l'extérieur pour amener la saillie de verrouillage (4221) se raccordent à la fente de verrouillage (412) par encliquetage lorsque l'ensemble bouton (3) est pressé, la pièce de serrage élastique (422) est déformée élastiquement par l'arbre de charnière de siège (21) lorsque l'arbre de charnière de siège (21) est retiré du trou d'arbre de charnière de siège (411), de sorte que la saillie de verrouillage (4221) est déplacée hors de la fente de verrouillage (412), et l'organe de verrouillage transversal (42) est déplacé vers l'intérieur pour se réinitialiser sous une action du ressort de réinitialisation de verrouillage (43) ;
 le corps de charnière (41) est pourvu d'une cavité contenant un corps de base (410) adaptée au corps de base (420) ; le mécanisme de positionnement circonférentiel comprend une première surface de positionnement (4101) disposée dans le corps de charnière (41) et une deuxième surface de positionnement (4201) disposée sur le corps de base (420) ; une pre-

mière surface arquée coulissante de guidage transversal (4102) reliée à la première surface de positionnement (4101) est disposée dans le corps de charnière (41), une deuxième surface arquée coulissante de guidage (4202) adaptée à la première surface arquée coulissante de guidage transversal (4102) est disposée sur le corps de base (420), et la première surface de positionnement (4101) et la première surface arquée coulissante de guidage transversal (4102) forment une paroi interne de la cavité contenant le corps de base (410) ;
 l'arbre de charnière de siège (21) est disposé avec un premier bossage (211) et un deuxième bossage (212) successivement de haut vers le bas, et une rainure de serrage d'arbre de charnière de siège (213) avec un diamètre plus petit que le premier bossage (211) est formée entre le premier bossage (211) et le deuxième bossage (212), et un trou traversant (4210) est prévu sur la pièce de verrouillage (421) pour que l'arbre de charnière de siège (21) passe à travers ; un extérieur du trou traversant (4210) est pourvu d'une ouverture de serrage d'arbre de charnière de siège (4211) en communication avec le trou traversant (4210) et utilisé pour le serrage avec la rainure de serrage d'arbre de charnière de siège (213) ; une extrémité supérieure du premier bossage (211) est pourvue d'un plan incliné de poussée d'insertion (216) ;
 l'extrémité inférieure du deuxième bossage (212) est pourvue d'un premier plan incliné de réinitialisation d'extraction (215) ; la pièce de serrage élastique (422) est pourvue d'une saillie de réinitialisation (4222) située à une extrémité arrière de la saillie de verrouillage (4221) et adaptée au deuxième bossage (212), et une extrémité supérieure de la saillie de réinitialisation (4222) est pourvue d'un deuxième plan incliné de réinitialisation d'extraction (4223) adapté au premier plan incliné de réinitialisation d'extraction (215) ; lorsque la saillie de verrouillage (4221) et la fente de verrouillage (412) sont reliées par encliquetage et l'arbre de charnière de siège (21) est tiré hors du trou d'arbre de charnière de siège (411), le deuxième bossage (212) déforme la pièce de serrage élastique (422) élastiquement en poussant la saillie de réinitialisation (4222), la saillie de verrouillage (4221) étant ainsi retirée de la fente de verrouillage (412) ; **et caractérisée en ce que**
 l'ensemble bouton (3) comprend un couvercle de bouton (31), un bloc de bouton (32) assemblé des côtés gauche et droit du couvercle de bouton (31) et un ressort de réinitialisation de bouton (33) pour réinitialiser le couvercle de bouton (31) ; le plan incliné d'entraînement (320) est disposé sur le bloc de bouton (32), et deux

- extrémités du couvercle de bouton (31) sont respectivement pourvues d'une cavité de bloc de bouton (310) pour maintenir le bloc de bouton (32) ; et le bloc de bouton (32) est relié au couvercle de bouton (31) par encliquetage ; la pièce de verrouillage (421) est pourvue d'une saillie de limite (4212) destinée à être reliée au corps de charnière (41), et le corps de charnière (41) est pourvu d'une fente de limite (413) reliée à la saillie de limite (4212) ; une longueur de la fente de limite (413) est supérieure ou égale à une course de déplacement de l'organe de verrouillage transversal (42).
2. Charnière de siège intégrée à bouton selon la revendication 1, **caractérisée en ce que** les parois latérales avant et arrière du couvercle de bouton (31) sont respectivement pourvues de fentes d'encliquetage (311) en communication avec la cavité de bloc de bouton (310), et le bloc de bouton (32) est pourvu d'une première partie d'encliquetage élastique (321) reliée aux fentes d'encliquetage (311).
 3. Charnière de siège intégrée à bouton selon la revendication 2, **caractérisée en ce que** deux nervures de renfort longitudinales (312) sont disposées longitudinalement dans le couvercle de bouton (31), de sorte qu'une cavité de ressort (313) entre les deux nervures de renfort longitudinales (312) et la cavité de bloc de bouton (310) prévues respectivement des deux côtés de la cavité de ressort (313) sont formées dans le couvercle de bouton (31) ; et la cavité de ressort (313) est pourvue d'une partie de fixation de ressort (314), et une extrémité du ressort de réinitialisation de bouton (33) est emmanchée sur la partie de fixation de ressort (314).
 4. Charnière de siège intégrée à bouton selon la revendication 3, **caractérisée en ce que** les parois latérales avant et arrière du couvercle de bouton (31) sont respectivement pourvues d'une deuxième partie d'encliquetage élastique (315) et d'un espace (316) des deux côtés de la deuxième partie d'encliquetage élastique (315) et communiquant avec la cavité de ressort (313) ; la deuxième partie d'encliquetage élastique (315) est reliée au tube de charnière (1) par encliquetage.
 5. Charnière de siège intégrée à bouton selon la revendication 3, **caractérisée en ce qu'un** premier bloc de limite (317) surélevé est disposé dans la cavité de bloc de bouton (310), le bloc de bouton (32) est pourvu d'une deuxième ouverture de serrage (322) adaptée au premier bloc de limite (317), et une nervure de renfort transversale (323) est disposée dans le bloc de bouton (32), et un côté de la nervure de renfort longitudinale (312) faisant face à la cavité de bloc de bouton (310) est pourvu d'un deuxième bloc de limite (318) et d'un troisième bloc de limite (319) s'étendant dans la cavité de bloc de bouton (310) ; après l'assemblage, une extrémité de la nervure de renfort transversale (323) bute contre le premier bloc de limite (317), et l'autre extrémité de la nervure de renfort transversale (323) est située entre le deuxième bloc de limite (318) et le troisième bloc de limite (319).
 6. Charnière de siège intégrée à bouton selon la revendication 1, **caractérisée en ce qu'un** rapport entre une distance entre la saillie de verrouillage (4221) et la saillie de réinitialisation (4222) et une distance entre la saillie de réinitialisation (4222) et le corps de base (420) est de 0,20-0,35.
 7. Charnière de siège intégrée à bouton selon la revendication 1, **caractérisée en ce que** le corps de charnière (41) est pourvu d'une cavité d'insertion de pièce de verrouillage (414) en communication avec la cavité contenant le corps de base (410) et utilisée pour l'insertion transversale de la pièce de verrouillage (421) ; le corps de charnière (41) est pourvu d'une cavité d'insertion de pièce de serrage élastique (415) en communication avec la cavité contenant le corps de base (410) et utilisée pour l'insertion transversale de la pièce de serrage élastique (422), la fente de limite (413) est en communication avec la cavité d'insertion de pièce de verrouillage (414), le trou d'arbre de charnière de siège (411) est en communication avec la cavité d'insertion de pièce de verrouillage (414), le trou d'arbre de charnière de siège (411) est en communication avec la cavité d'insertion de pièce de serrage élastique (415) ; le corps de charnière (41) est pourvu d'une colonne de limite de ressort (416) ; le nombre de pièces de serrage élastiques (422) est de deux et les deux pièces de serrage élastiques sont disposées symétriquement d'un côté avant et d'un côté arrière d'une extrémité inférieure de la pièce de verrouillage (421), respectivement ; le ressort de réinitialisation de verrouillage (43) est situé entre la pièce de verrouillage (421) et la pièce de serrage élastique (422), une extrémité du ressort de réinitialisation de verrouillage (43) est contre le corps de base (420), et l'autre extrémité du ressort de réinitialisation de verrouillage (43) s'étend dans la cavité contenant le corps de base (410) et est emmanchée sur la colonne de limite de ressort (416).
 8. Charnière de siège intégrée à bouton selon la revendication 1, **caractérisée en ce que** l'ensemble tampon (4) comprend un tampon (44), et un côté externe du corps de charnière (41) est adapté à une rainure de clavette interne du tampon (44) ; le tube de charnière (1) et le corps de charnière (41) sont reliés de manière fixe à travers l'attache de serrage (7).

9. Plaque de recouvrement combinée avec la charnière de siège intégrée à bouton selon l'une quelconque des revendications 1-8, **caractérisée en ce que**, comprenant un panneau (5) et une plaque inférieure (6), une extrémité arrière de la plaque inférieure (6) est filetée avec le tube de charnière (1), et le panneau (5) et la plaque inférieure (6) sont reliés de manière mobile à travers l'ensemble tampon (4). 5
10. Toilettes avec la charnière de siège intégrée à bouton selon l'une quelconque des revendications 1-8, **caractérisées en ce que**, comprenant un panneau (5), une plaque inférieure (6) et un corps de toilettes ; une extrémité arrière de la plaque inférieure (6) est filetée avec le tube de charnière (1), et le panneau (5) et la plaque inférieure (6) sont reliés de manière mobile à travers l'ensemble tampon (4) ; le corps de toilettes est pourvu de deux sièges fixes (2), dans lesquelles le siège fixe (2) est relié de manière 10
- 15
- 20
- 25
- 30
- 35
- 40
- 45
- 50
- 55

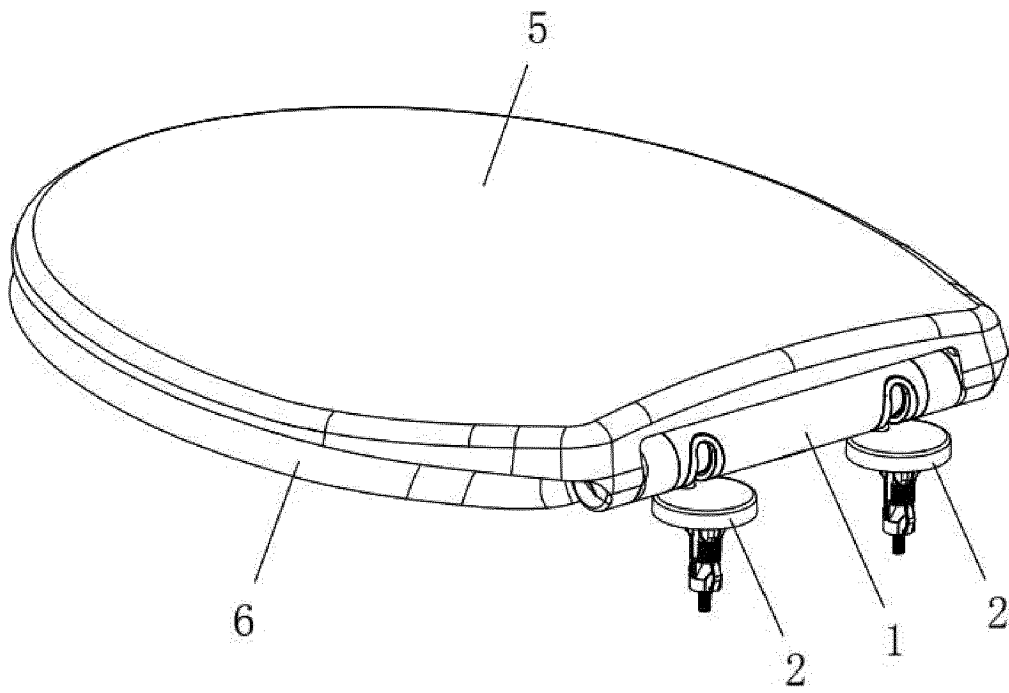


FIG. 1

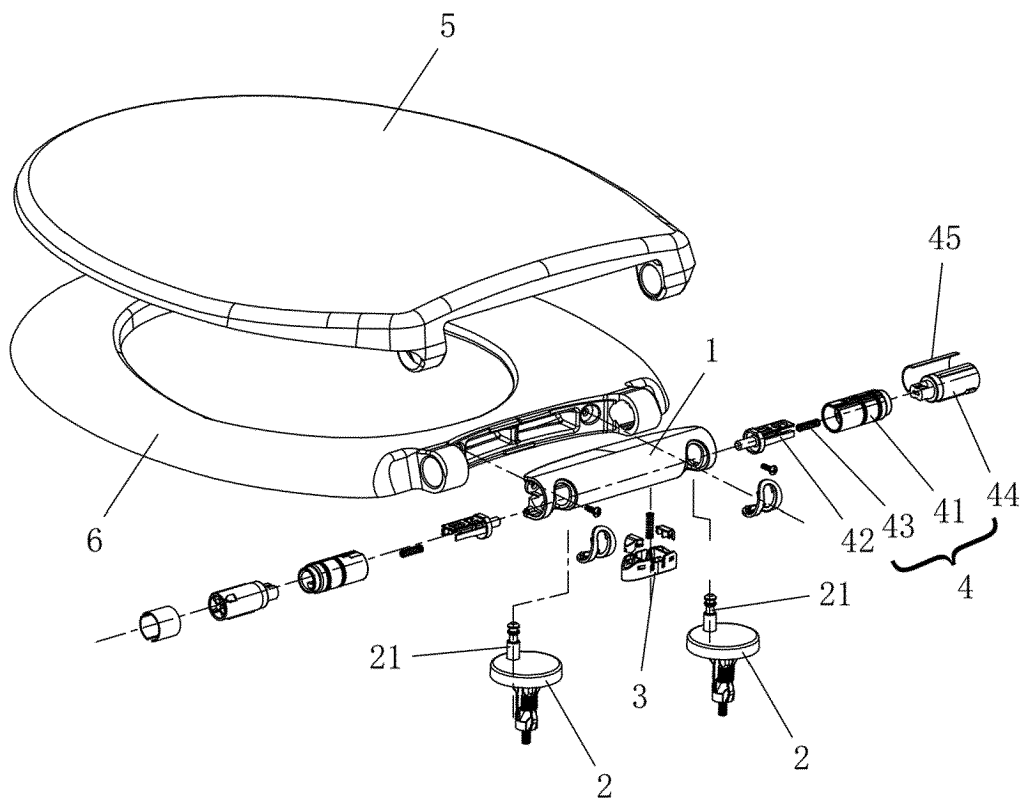


FIG. 2

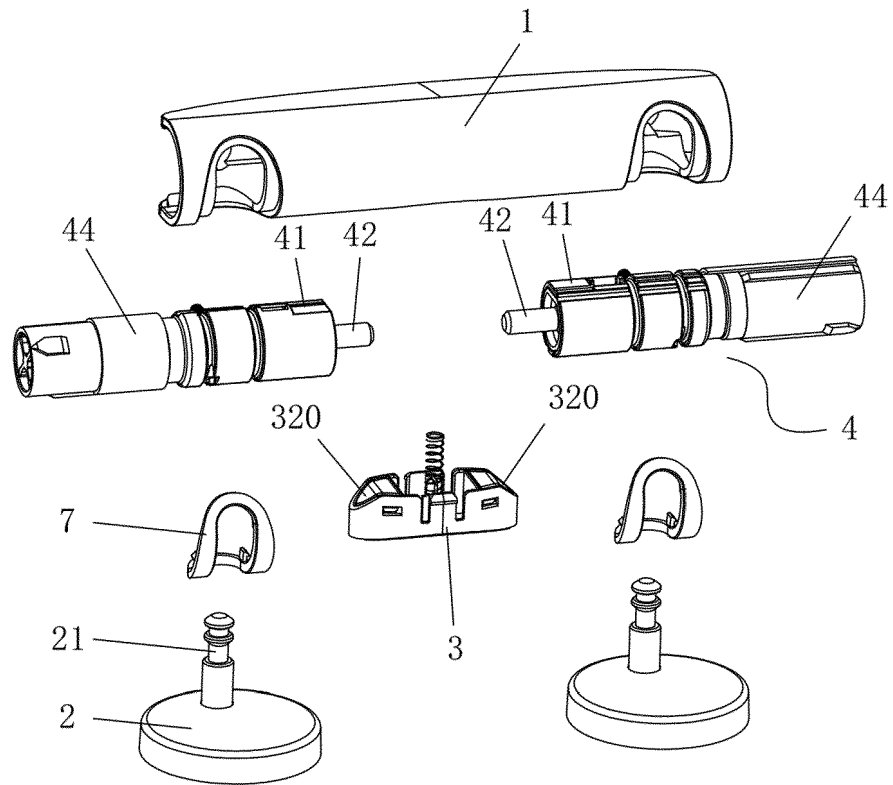


FIG. 3

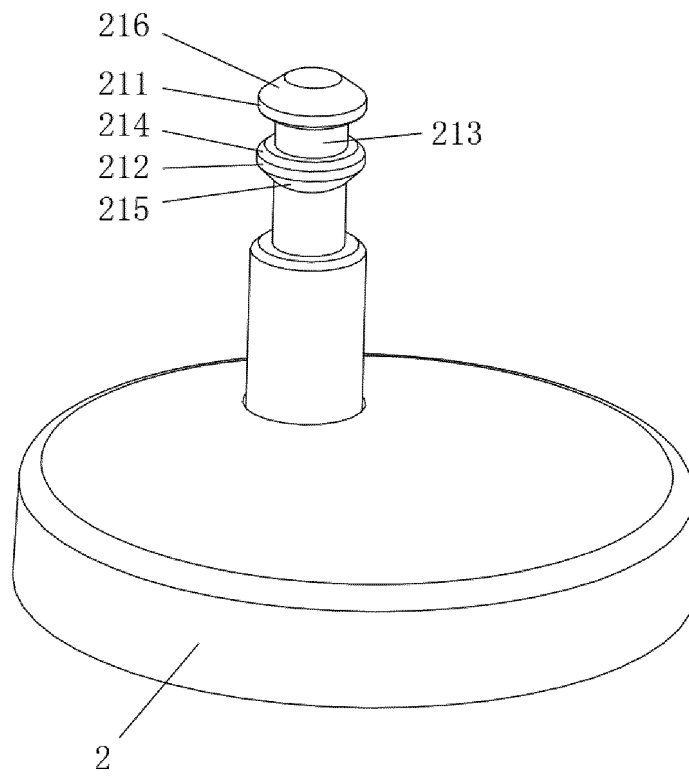


FIG. 4

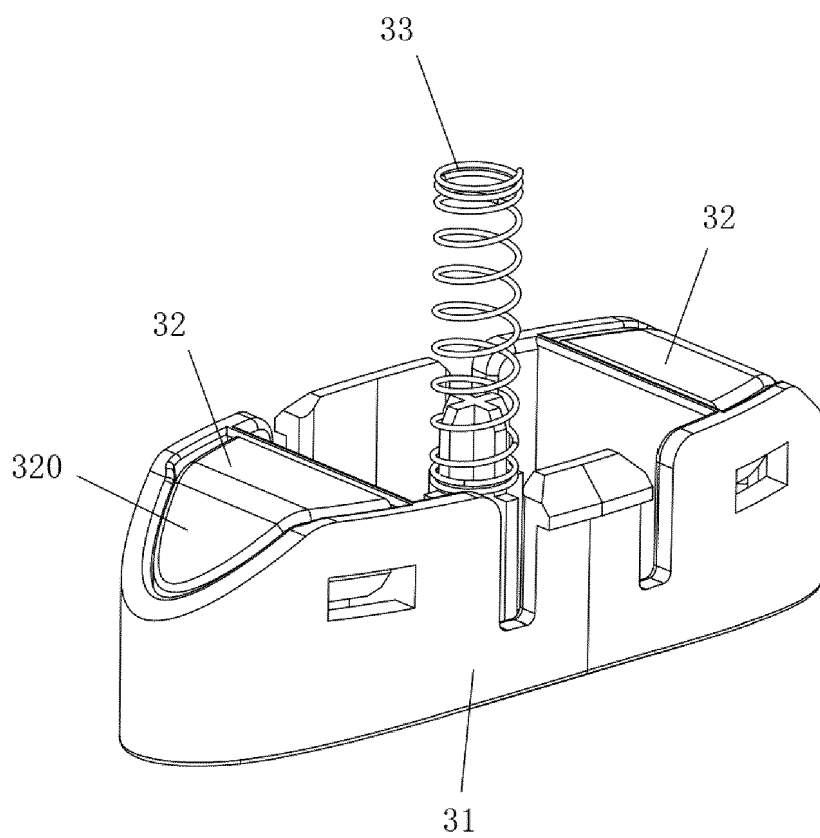


FIG. 5

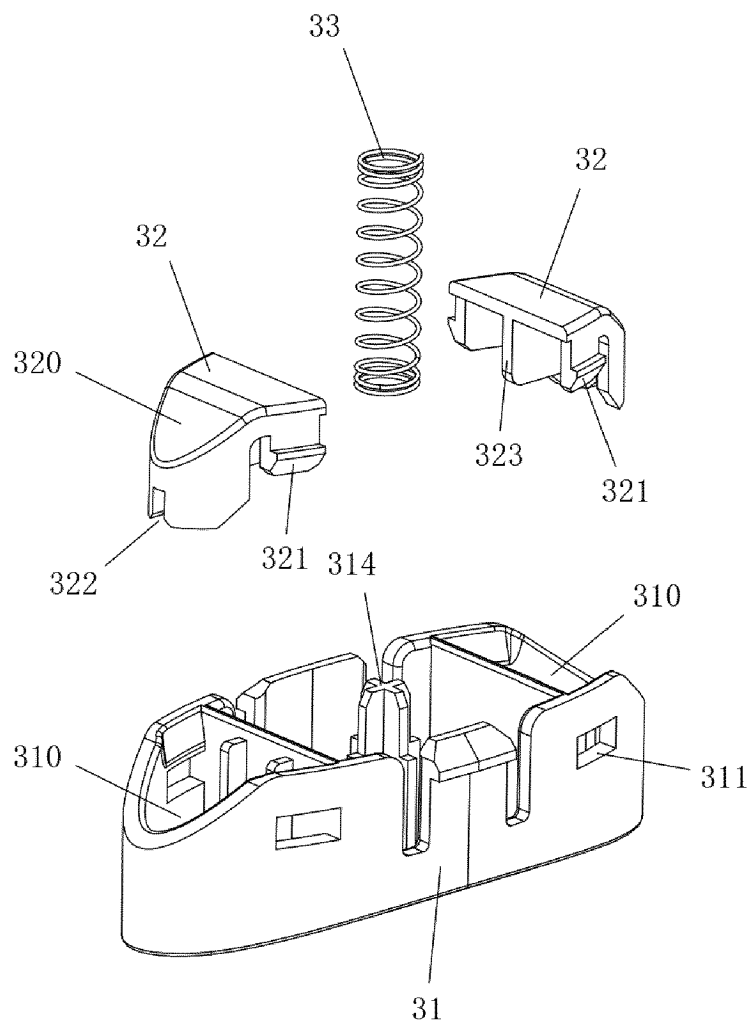


FIG. 6

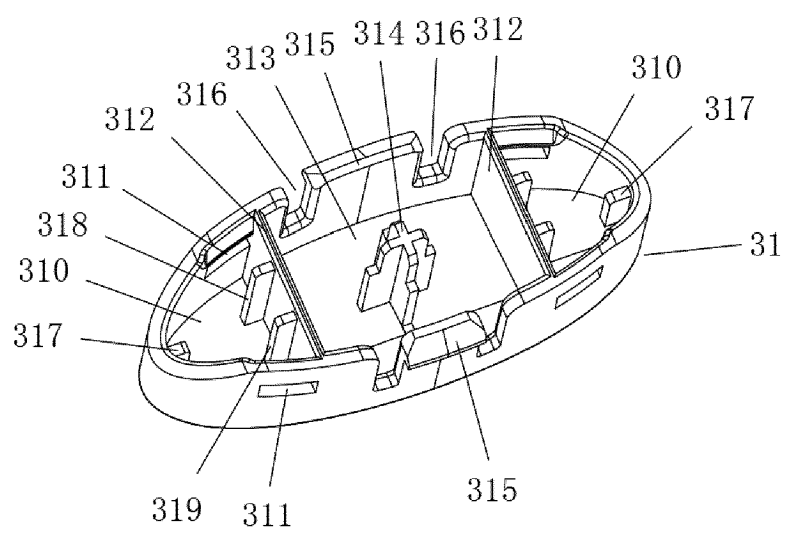


FIG. 7

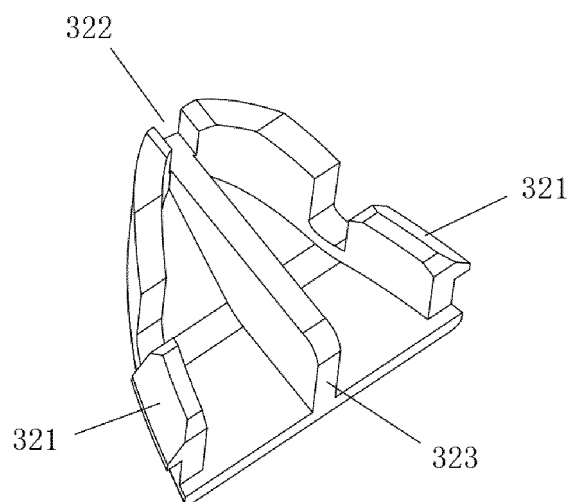


FIG. 8

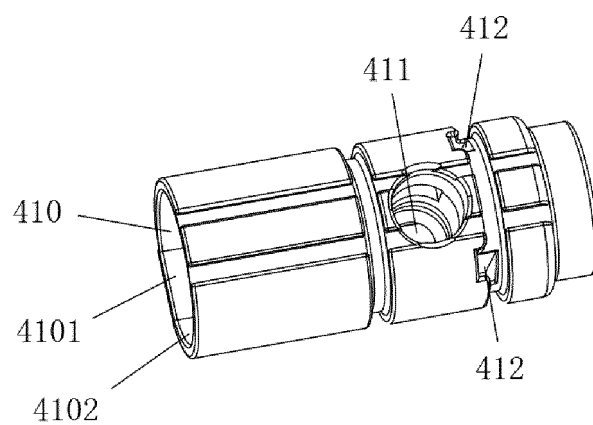


FIG. 9

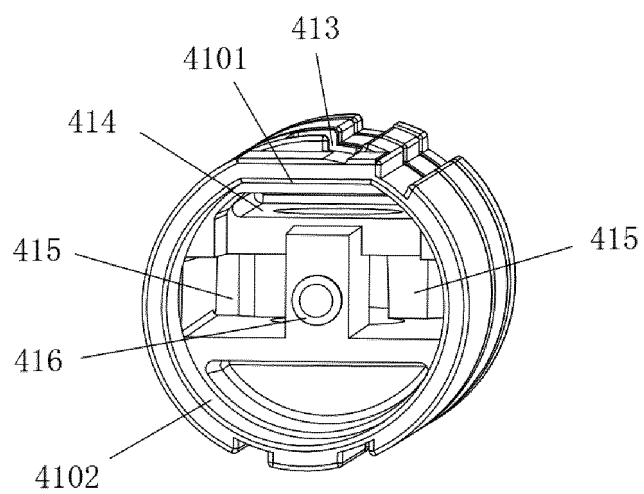


FIG. 10

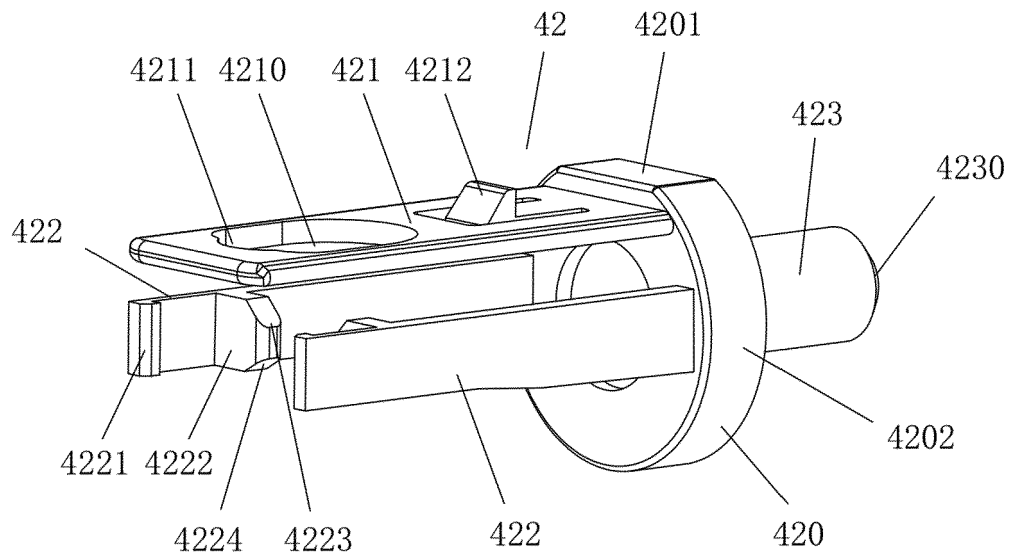


FIG. 11

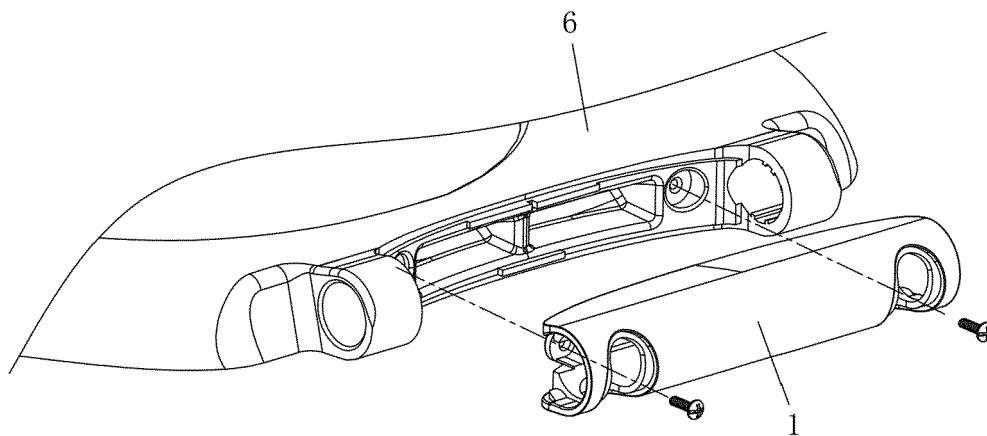


FIG. 12

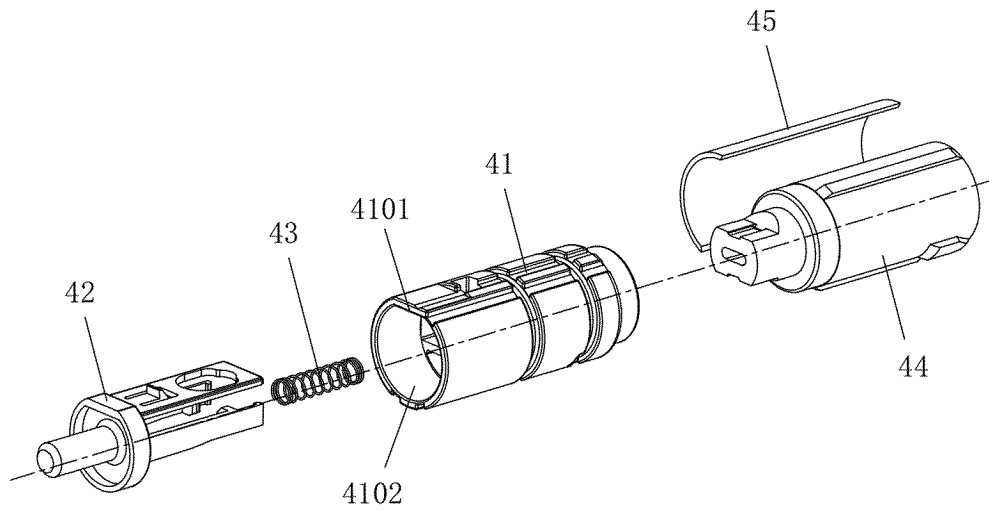


FIG. 13

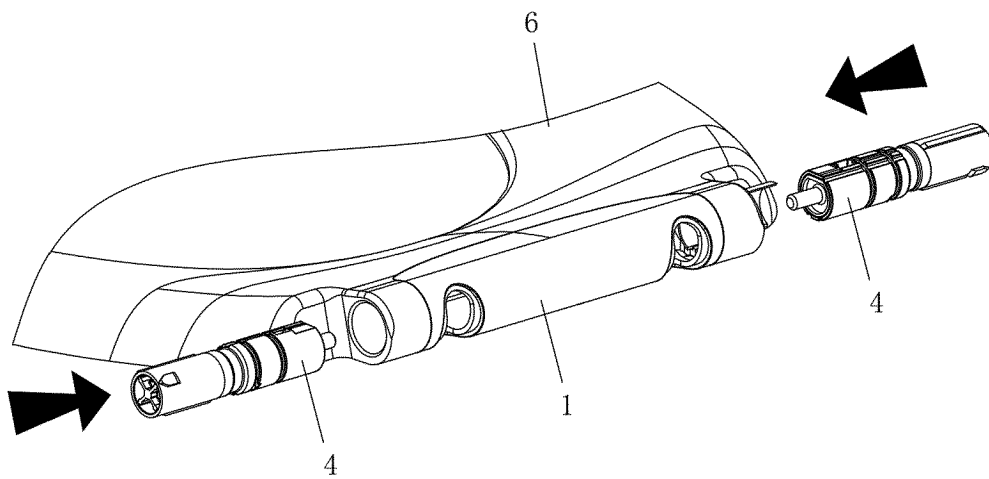


FIG. 14

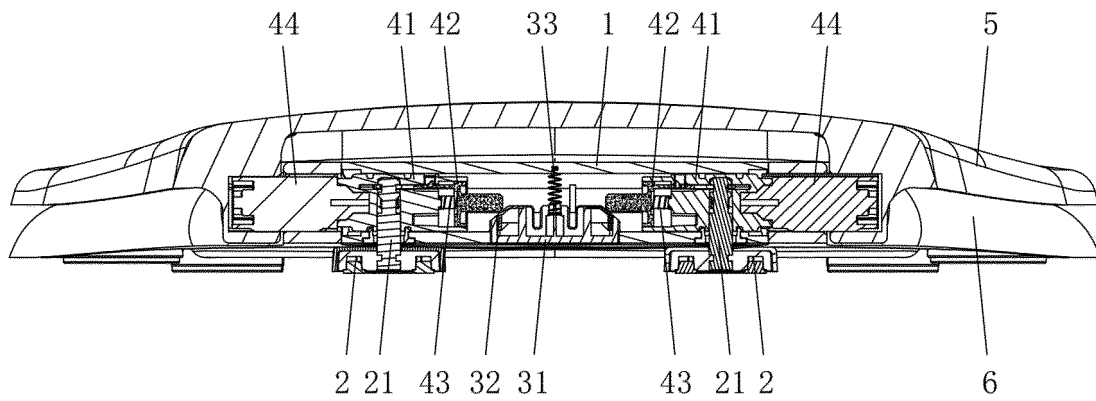


FIG. 15

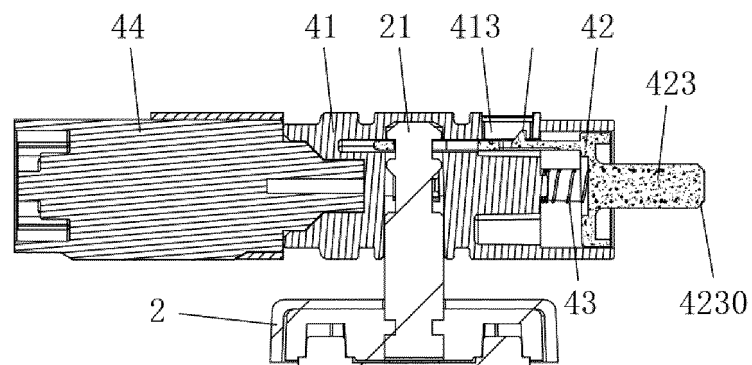


FIG. 16

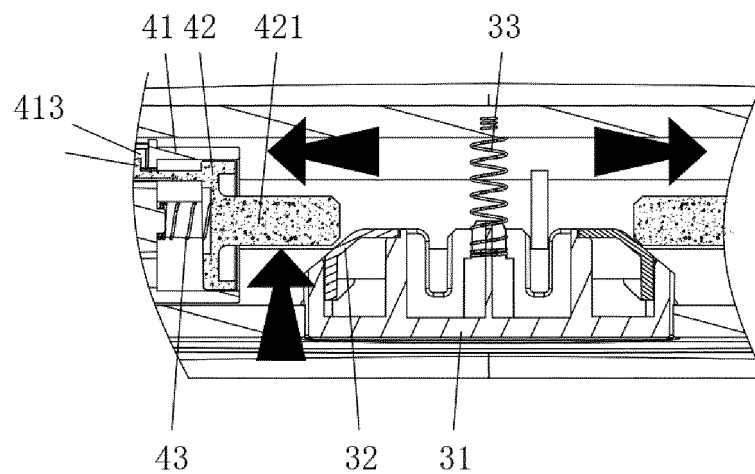


FIG. 17

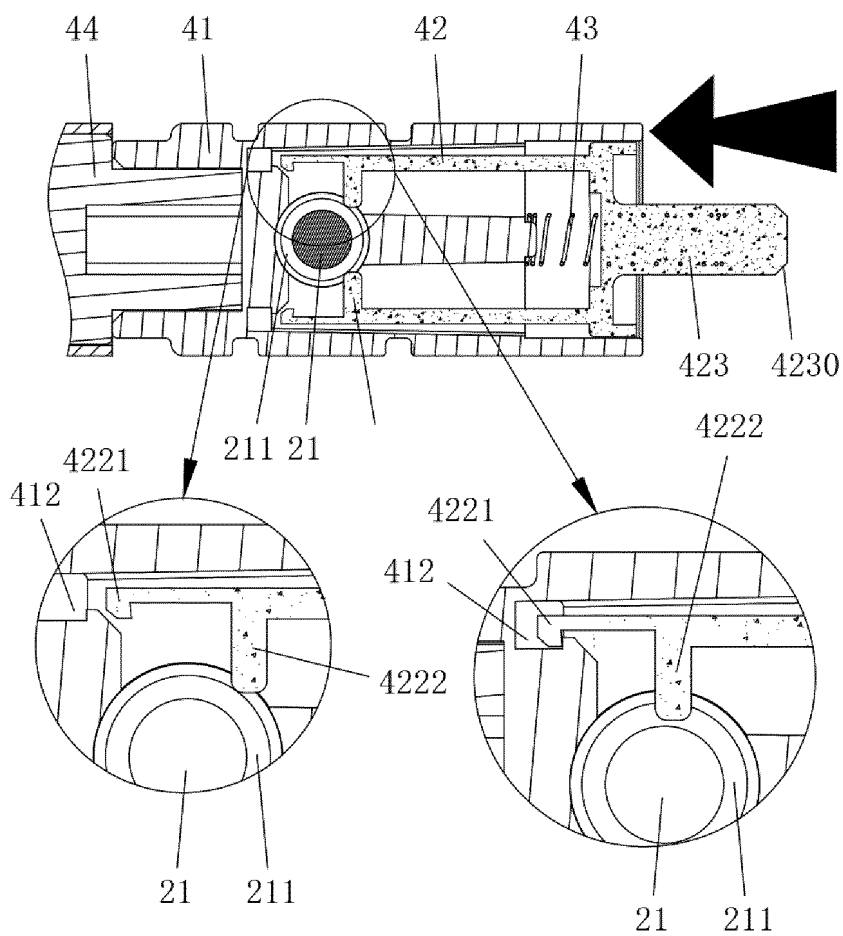


FIG. 18

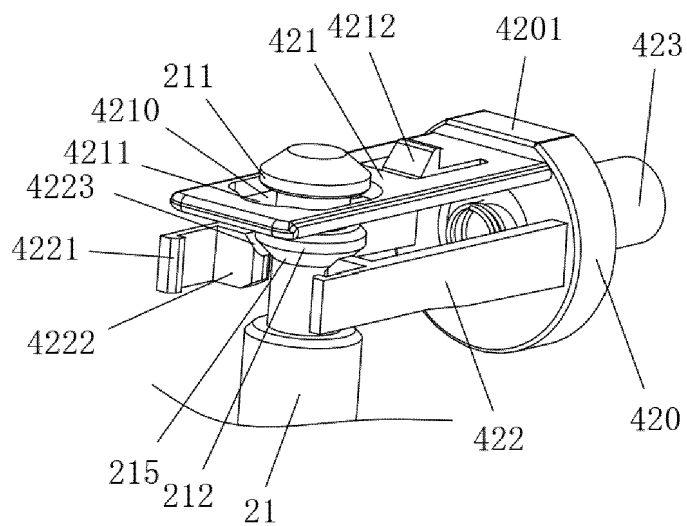


FIG. 19

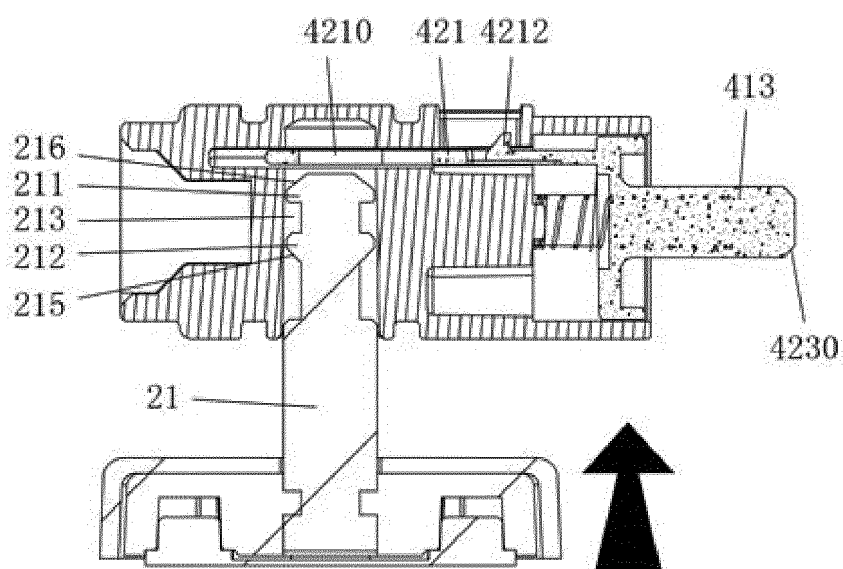


FIG. 20

REFERENCES CITED IN THE DESCRIPTION

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