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(54) **SELF-LOCKING STRUCTURE FOR TOILET BUMPER**

(57) The present disclosure discloses a self-locking structure for a toilet bumper, includes a fixed seat and a cover plate, the cover plate is provided with a mounting hole, and the mounting hole is provided with a seat hinge assembly. The seat hinge assembly includes a hinge shaft, the peripheral surface of the hinge shaft is provided with a first accommodation slot. The first accommodation slot is provided with an elastic buckle, and the opening of the mounting hole is provided with an inward protruding annular flange. The elastic buckle includes a base part, an elastic part and an guide part. During assembly, the

guide part of the elastic buckle is guided into the mounting hole from outside to inside along the axis direction of the mounting hole, so that the guide part abuts against the annular flange in the axis direction of the mounting hole, so as to limit the axial movement of the seat hinge assembly. The present disclosure improves the hinge shaft part in the bumper, the elastic buckle is placed in the hinge shaft, which can quickly complete the disassembly and assembly of the bumper. The elastic buckle has the advantages in light weight, small occupied space and little impact on the strength of the hinge shaft.

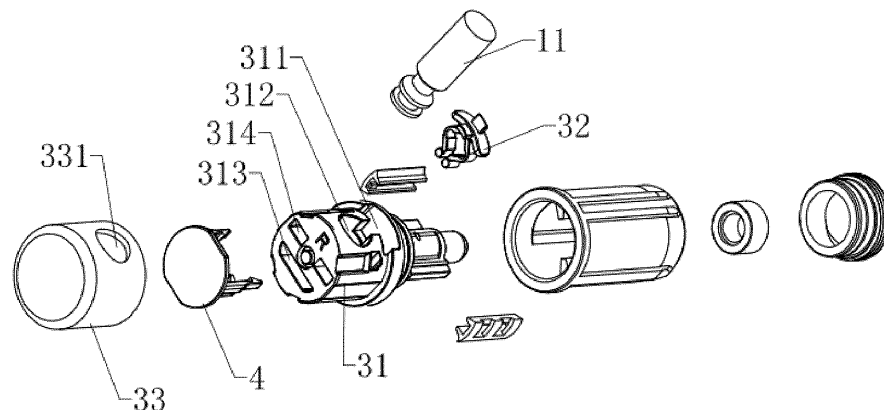


FIG.4

Description

TECHNICAL FIELD

[0001] The present disclosure relates to the technical field of toilet, in particular to a self-locking structure for toilet bumper.

SUMMARY

[0002] At present, after assembling the cover plate, the bumper of toilet seat in the market needs to be fixed by additional assembly of decorative ring, snap ring, snap nails and other parts. Generally, the installation way is to provide corresponding holding slots on the cover plate for the installation of snap nails and decorative rings, or install snap rings between the seat ring and the cover plate, but the structure has the following disadvantages: 1. The gap between the cover plate and the seat ring is too large and the flip stability is poor; 2. It is not only troublesome to assemble, but also increases the operating hours. At the same time, it is difficult to disassemble. The cover plate or seat ring is often scratched, which leads to the scrapping of parts and the increase of production cost.

SUMMARY

[0003] In order to solve the above problems, the present disclosure provides a self-locking structure for a toilet bumper.

[0004] In order to achieve the above object, the present disclosure provides the following technical solution:

A self-locking structure for a toilet bumper, including a fixed seat fixedly arranged on a toilet and a cover plate rotatably arranged on the fixed seat, a mounting hole is arranged on the cover plate, and a seat hinge assembly configured for hinged connection between the fixed seat and the cover plate is installed in the mounting hole, wherein the seat hinge assembly includes a hinge shaft, a first accommodation slot is provided on a peripheral surface of the hinge shaft, an elastic buckle partially protruding out of the first accommodation slot is provided in the first accommodation slot, the mounting hole is provided with an annular flange inwardly protruding at an opening of the mounting hole; the elastic buckle includes a base part, an elastic part and an guide part; one side of the base part is fixedly connected with the elastic part, and the other side of the base part is fixedly connected with the guide part; during assembly, the guide part of the elastic buckle is guided into the mounting hole from outside to inside along an axial direction of the mounting hole, so that the guide part is against the annular flange in the axial direction of the mounting hole, thereby limiting an axial movement of the seat hinge assembly.

[0005] As a further improvement, one side of the guide part is a guide inclined plane .

[0006] As a further improvement, the elastic buckle in-

cludes a disassembly part fixedly arranged on a side of the base part, an outer circumference of the hinge shaft is fixedly sleeved with a sleeve; and the disassembly part abuts against an inner side wall of the sleeve under an elastic action of the elastic part after assembly.

[0007] As a further improvement, the elastic part is divided into a first elastic part and a second elastic part, and the first elastic part and the second elastic part bend towards each other to form a rhombus shape; and the first elastic part and the second elastic part are separated from each other, so that the elastic part forms a first opening.

[0008] As a further improvement, the fixed seat is fixedly provided with a connection column, the circumference of the hinge shaft is provided with an accommodation hole for an insertion of the connection column, and an end surface of the hinge shaft is provided with a second accommodation slot communicated with the accommodation hole; after the connection column is inserted into the accommodation hole, the connection column is clamped with the hinge shaft through a fastener.

[0009] As a further improvement, the fastener is provided with an annular insertion block inserted into the second accommodation slot, and an insertion end of the annular insertion block is provided with a second opening; an inner side of the annular insertion block close to the second opening is provided with an inwardly protruding rib, a circumference of the connection column is recessed inwardly to form a clamping groove for the insertion of the rib, and the sleeve is provided with a through hole for the connection column to pass through and through hole is opposite to the accommodation hole; one end of the connection column is inserted into the annular insertion block through the through hole and the accommodation hole in sequence, and is clamped with the rib through the clamping groove.

[0010] As a further improvement, strip-shaped insertion blocks are symmetrically arranged on the fastener, a third accommodation slot for the corresponding insertion of the strip-shaped insertion blocks is arranged on an end face of the hinge shaft, and a first hook is arranged at an insertion end of the strip-shaped insertion block; a second hook is arranged in the third accommodation slot, and the strip-shaped insertion block is engaged with the second hook in the third accommodation slot through the first hook.

[0011] The advantageous effects of the present disclosure are shown as following: the present disclosure improves some parts of the hinge shaft in the bumper, and an elastic buckle is placed in the hinge shaft, which can quickly complete the disassembly and assembly of the bumper. The elastic buckle has the advantages in light weight, small occupied space and little impact on the strength of the hinge shaft. The present disclosure can complete the fixed installation of the bumper without using snap nails, snap rings, decorative rings and other parts on the cover plate, further shorten the length of the bumper and increase the distance between the mounting

holes on both sides of the cover plate, so as to improve the swing stability of the whole toilet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012]

FIG. 1 is a structural diagram of the present disclosure.
 FIG. 2 is an exploded view of the present disclosure.
 Figure 3 is the first exploded views of the seat hinge assembly.
 Figure 4 is the second exploded view of the seat hinge assembly.
 FIG. 5 is a front view of the present disclosure.
 FIG. 6 is a cross-sectional view at A-A of FIG. 5.
 FIG. 7 is a side view of the seat hinge assembly.
 FIG. 8 is a cross-sectional view at B-B of FIG. 7.
 FIG. 9 is a cross-sectional view at A-A of FIG. 7.
 FIG. 10 is a structural diagram of an elastic buckle.
 FIG. 11 is a structural diagram of the fastener.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0013] The present disclosure will be further described in detail below in combination with the accompanying drawings and specific embodiments:

As shown in FIG. 1 to FIG. 6 and FIG. 10, a self-locking structure for a toilet bumper includes a fixed seat 1 fixedly arranged on the toilet and a cover plate 2 rotatably arranged on the fixed seat 1, the cover plate 2 is provided with a mounting hole 21, and the mounting hole 21 is provided with a seat hinge assembly 3 for the hinge between the fixed seat 1 and the cover plate 2. The seat hinge assembly 3 includes a hinge shaft 31. The peripheral surface of the hinge shaft 31 is provided with a first accommodation slot 311, and the first accommodation slot 311 contains an elastic buckle 32 which partially extends out of the first accommodation slot 311. The opening of the mounting hole 21 is provided with an inward protruding annular flange 211. The elastic buckle 32 includes a base part 321, an elastic part 322 and a guide part 323. One side of the base part 321 is fixedly connected with the elastic part 322, and the other side of the base part 321 is fixedly connected with the guide part 323. During assembly, the guide part 323 of the elastic buckle 32 is guided into the mounting hole 21 from outside to inside along the axis direction of the mounting hole 21, so that the guide part 323 can be against the annular flange 211 in the axis direction of the mounting hole 21, thereby limiting the axial movement of the seat hinge assembly 3. The present disclosure improves some parts of the hinge shaft 31 in the bumper. The elastic buckle 32 is placed in the hinge shaft 31, which can quickly complete the disassembly and assembly of the bumper. The elastic buckle 32 has the advantages in light weight, small occupied space and little impact on the strength of the hinge shaft 31. The present disclosure

can complete the fixed installation of the bumper without using snap nails, snap rings, decorative rings and other parts on the cover plate 2, further shorten the length of the bumper, and increase the distance between the mounting holes 21 on both sides of the cover plate 2, so as to improve the swing stability of the whole toilet.

[0014] As shown in FIG. 6 and FIG. 10, one side of the guide part 323 is a guide inclined plane 3231, which is convenient for the guide part 323 to be clamped into the mounting hole 21, while the other side of the guide part 323 is configured for butting the annular flange 211, so as to fix the axial direction of the whole seat hinge assembly 3. In addition, the length of the base part 321 is equivalent to the radial width of the first accommodation slot 311 to limit the left and right shaking of the elastic buckle 32, so as to facilitate the smooth up and down compression of the elastic buckle 32.

[0015] As shown in FIG. 4, FIG. 6 and FIG. 10, the elastic buckle 32 includes a disassembly part 324 fixedly arranged on the side of the base part 321, and the outer circumference of the hinge shaft 31 is fixedly sleeved with a sleeve 33. And the disassembly part 324 abuts against the inner side wall of the sleeve 33 under an elastic action of the elastic part 322 after assembly. After the elastic part 322 of the elastic buckle 32 is compressed, the disassembly part 324 abuts against the inner wall of the sleeve 33. The sleeve 33 mainly plays a limiting role to prevent the elastic buckle 32 from falling out, so that the user can complete the fixation of the bumper without adding snap nails, decorative rings, snap rings and other parts. When the connection column 11 is not inserted, the user can press the disassembly part 324 through the through hole 331 of the sleeve 33, so that the guide part 323 is separated from the annular flange 211. At this time, the elastic buckle 32 is separated from the axial fixation, so that the whole seat hinge assembly 3 can be disassembled. The elastic buckle 32 makes the installation and disassembly of the bumper more convenient.

[0016] As shown in FIG. 10, the elastic part 322 is divided into a first elastic part 3221 and a second elastic part 3222. The first elastic part 3221 and the second elastic part 3222 bend towards each other to form a rhombus shape. The first elastic part 3221 and the second elastic part 3222 are separated from each other, so that the elastic part 322 forms a first opening 3223, which facilitates the insertion and elastic deformation of the elastic buckle 32.

[0017] As shown in FIG. 7, FIG. 8 and FIG. 11, the fixed seat 1 is fixedly provided with a connection column 11, the circumference of the hinge shaft 31 is provided with an accommodation hole 312 for the insertion of the connection column 11, and the end surface of the hinge shaft 31 is provided with a second accommodation slot 313 communicated with the accommodation hole 312. After the connection column 11 is inserted into the accommodation hole 312, the connection column 11 is clamped with the hinge shaft 31 through a fastener 4.

The fastener 4 is provided with an annular insertion block 41 inserted into the second accommodation slot 313, and the insertion end of the annular insertion block 41 is provided with a second opening 42. The inner side of the annular insertion block 41 close to the second opening 42 is provided with an inwardly protruding rib 411, and the circumference of the connection column 11 is recessed inwardly to form a clamping groove 111 for the insertion of the rib 411. The sleeve 33 is provided with a through hole 331 for the connection column 11 to pass through and through hole 331 is opposite to the accommodation hole 312. One end of the connection column 11 is inserted into the annular opening of the annular insertion block 41 through the through hole 331 and the accommodation hole 312 in sequence, and is clamped with the rib 411 through the clamping groove 111, so as to reach a clamping action. The annular opening is communicated with the second opening 42 so that the connection column 11 can support the buckle position of the annular insertion block 41 during insertion. During disassembly, the user can forcefully pull out the cover plate 2. At this time, the buckle position of the fastener 4 is extended outward to a certain extent, and then the connection column 11 can be pulled out. In addition, the upper and lower ends of the rib 411 have a certain inclination for the insertion or extraction of the connection column 11, which also improves the deformation difficulty, thus realizing that the connection column 11 can be repeatedly forced to insertion and extract, and still maintain the buckling stability. At the same time, it also eliminates the need for spring assembly, thus effectively improving the assembly efficiency of the assembly.

[0018] As shown in FIG. 7, FIG. 9 and FIG. 11, strip-shaped insertion blocks 43 are symmetrically arranged on the fastener 4, a third accommodation slot 314 for the corresponding insertion of the strip-shaped insertion block 43 is arranged on the end face of the hinge shaft 31. A first hook 431 is arranged at the insertion end of the strip-shaped insertion block 43, and a second hook 3141 is arranged in the third accommodation slot 314. The strip-shaped insertion block 43 is engaged with the second hook 3141 in the third accommodation slot 314 through the first hook 431, and is clamped in a snap way to facilitate assembly and fixation.

Claims

1. A self-locking structure for a toilet bumper, comprising a fixed seat (1) fixedly arranged on a toilet and a cover plate (2) rotatably arranged on the fixed seat (1), a mounting hole (21) is arranged on the cover plate (2), and a seat hinge assembly (3) configured for hinged connection between the fixed seat (1) and the cover plate (2) is installed in the mounting hole (21), **characterized in that** the seat hinge assembly (3) comprises a hinge shaft (31), a first accommodation slot (311) is provided on a peripheral surface

of the hinge shaft (31), an elastic buckle (32) partially protruding out of the first accommodation slot (311) is provided in the first accommodation slot (311), the mounting hole (21) is provided with an annular flange (211) inwardly protruding at an opening of the mounting hole (21); the elastic buckle (32) comprises a base part (321), an elastic part (322) and a guide part (323); one side of the base part (321) is fixedly connected with the elastic part (322), and the other side of the base part (321) is fixedly connected with the guide part (323); during assembly, the guide part (323) of the elastic buckle (32) is guided into the mounting hole (21) from outside to inside along an axial direction of the mounting hole (21), so that the guide part (323) is against the annular flange (211) in the axial direction of the mounting hole (21), thereby limiting an axial movement of the seat hinge assembly (3), wherein one side of the guide part (323) is a guide inclined plane (3231).

2. The self-locking structure of the toilet bumper according to claim 1, **characterized in that** the elastic buckle (32) comprises a disassembly part (324) fixedly arranged on a side of the base part (321), an outer circumference of the hinge shaft (31) is fixedly sleeved with a sleeve (33); and the disassembly part (324) abuts against an inner side wall of the sleeve (33) under an elastic action of the elastic part (322) after assembly.
3. The self-locking structure of the toilet bumper according to claim 1, **characterized in that** the elastic part (322) is divided into a first elastic part (3221) and a second elastic part (3222), and the first elastic part (3221) and the second elastic part (3222) bend towards each other to form a rhombus shape; and the first elastic part (3221) and the second elastic part (3222) are separated from each other, so that the elastic part (322) forms a first opening (3223).
4. The self-locking structure of the toilet bumper according to claim 3, **characterized in that** the fixed seat (1) is fixedly provided with a connection column (11), the circumference of the hinge shaft (31) is provided with an accommodation hole (312) for an insertion of the connection column (11), and an end surface of the hinge shaft (31) is provided with a second accommodation slot (313) communicated with the accommodation hole (312); after the connection column (11) is inserted into the accommodation hole (312), the connection column (11) is clamped with the hinge shaft (31) through a fastener (4).
5. The self-locking structure of the toilet bumper according to claim 4, **characterized in that** the fastener (4) is provided with an annular insertion block (41) inserted into the second accommodation slot (313), and an insertion end of the annular insertion block

(41) is provided with a second opening (42); an inner side of the annular insertion block (41) close to the second opening (42) is provided with an inwardly protruding rib (411), a circumference of the connection column (11) is recessed inwardly to form a clamping groove (111) for an insertion of the rib (411), and the sleeve (33) is provided with a through hole (331) for the connection column (11) to pass through and through hole (331) is opposite to the accommodation hole (312); one end of the connection column (11) is inserted into the annular insertion block (41) through the through hole (331) and the accommodation hole (312) in sequence, and is clamped with the rib (411) through the clamping groove (111).

6. The self-locking structure of the toilet bumper according to claim 5, **characterized in that** strip-shaped insertion blocks (43) are symmetrically arranged on the fastener (4), a third accommodation slot (314) for the corresponding insertion of the strip-shaped insertion blocks (43) is arranged on an end face of the hinge shaft (31), and a first hook (431) is arranged at an insertion end of the strip-shaped insertion block (43); a second hook (3141) is arranged in the third accommodation slot (314), and the strip-shaped insertion block (43) is engaged with the second hook (3141) in the third accommodation slot (314) through the first hook (431).

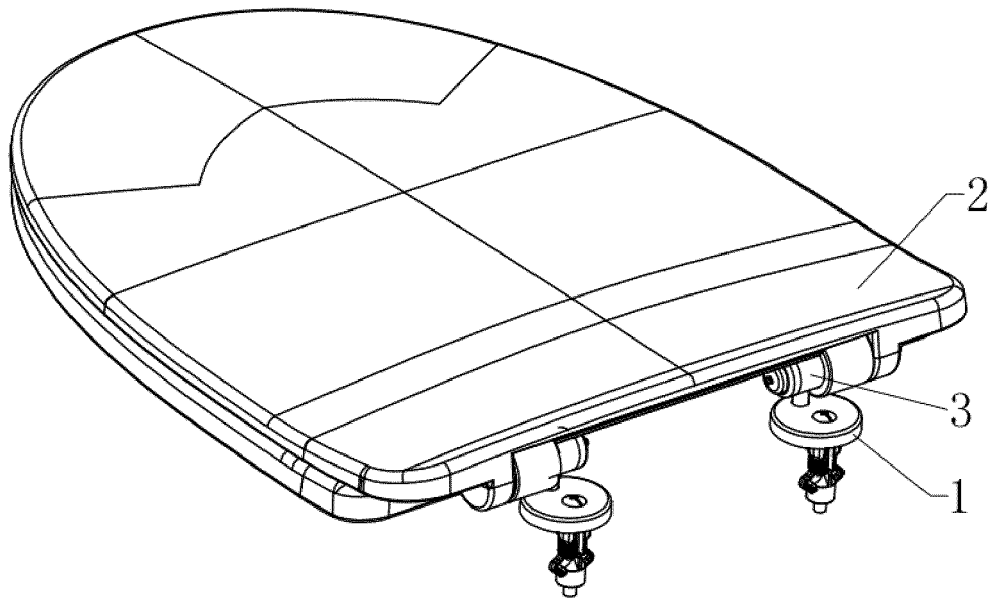


FIG. 1

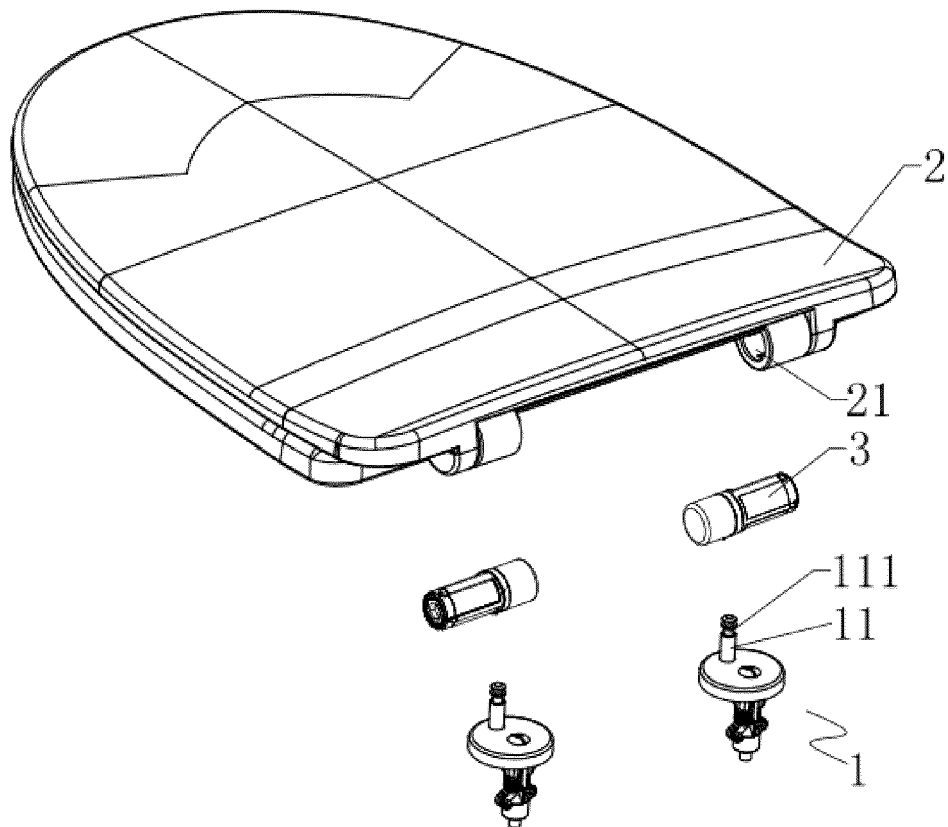


FIG. 2

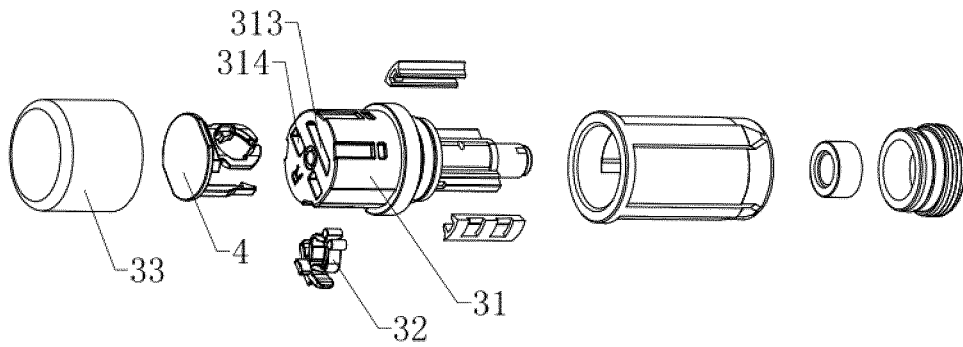


FIG.3

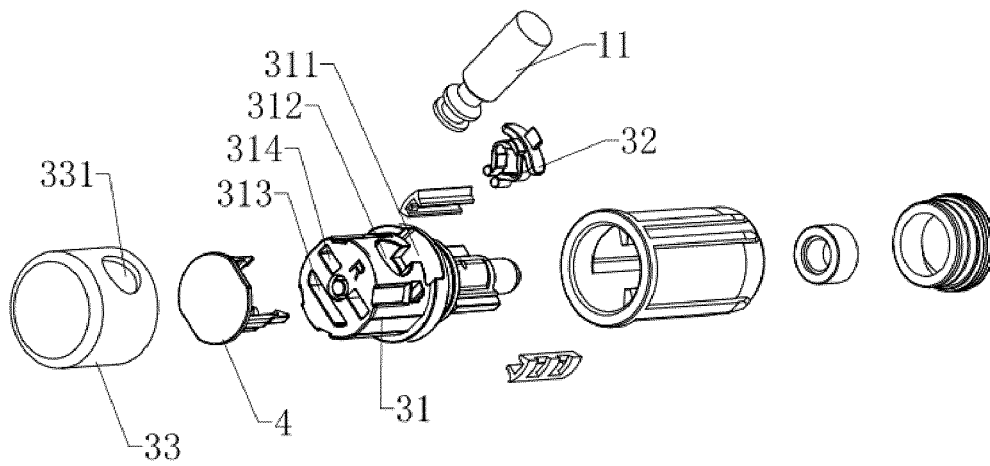


FIG.4

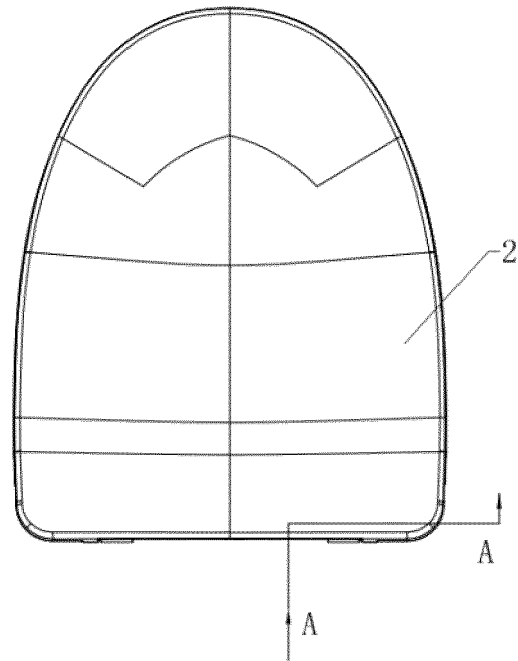


FIG. 5

A-A

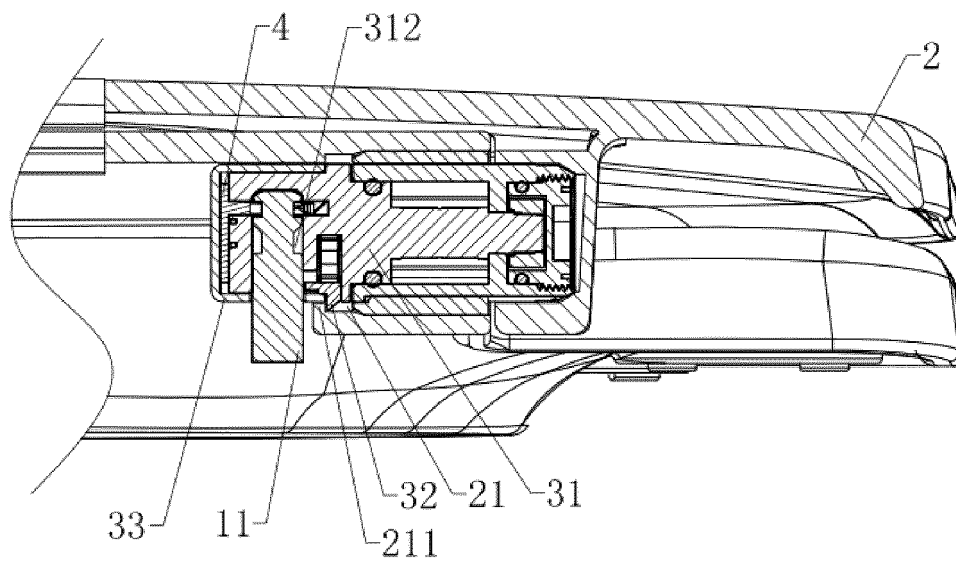


FIG. 6

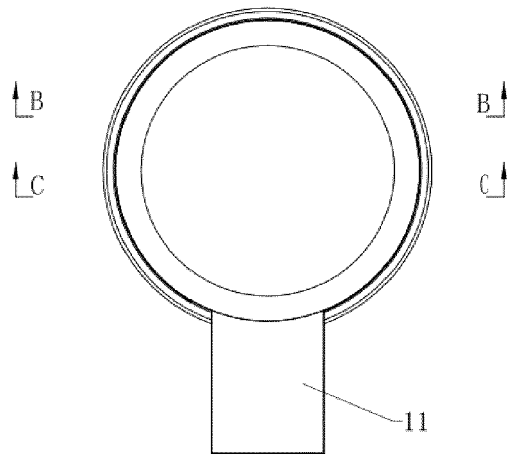


FIG. 7

B-B

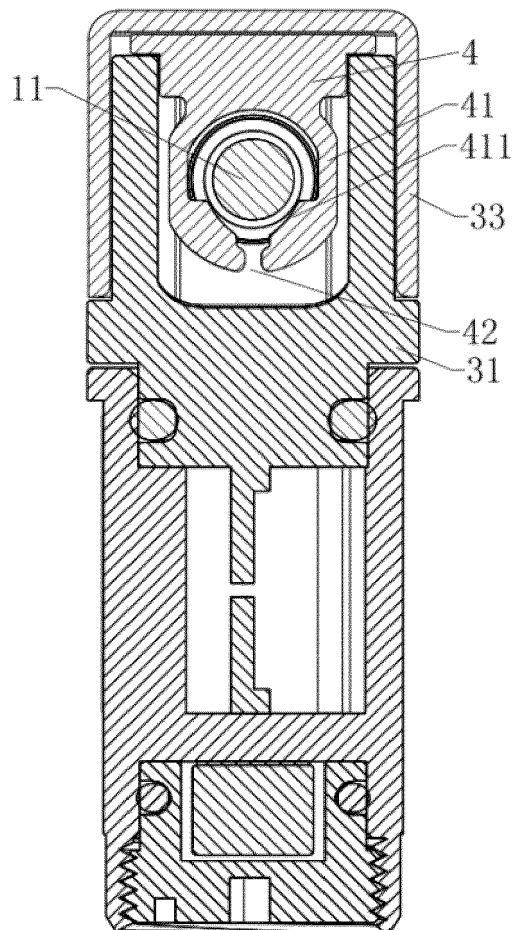


FIG. 8

C-C

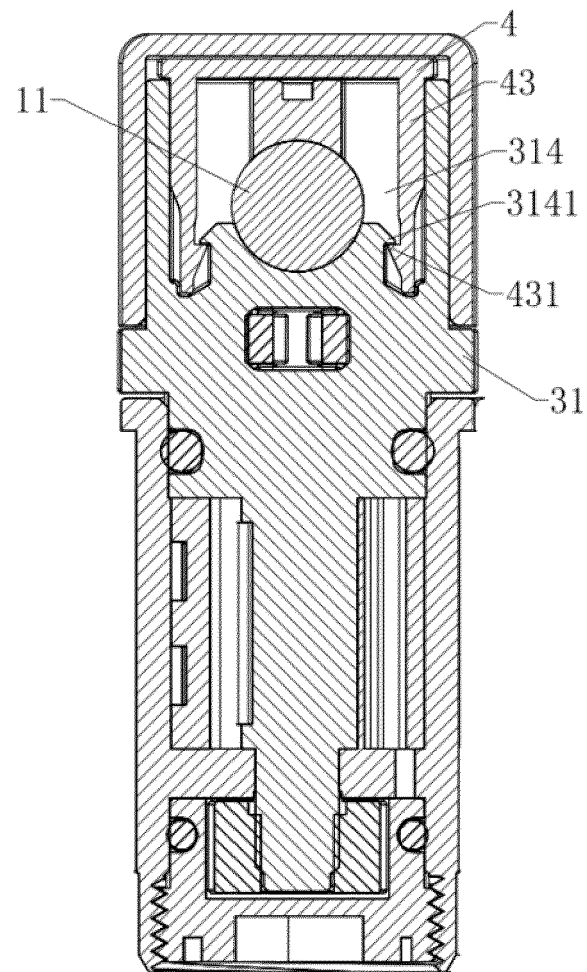


FIG.9

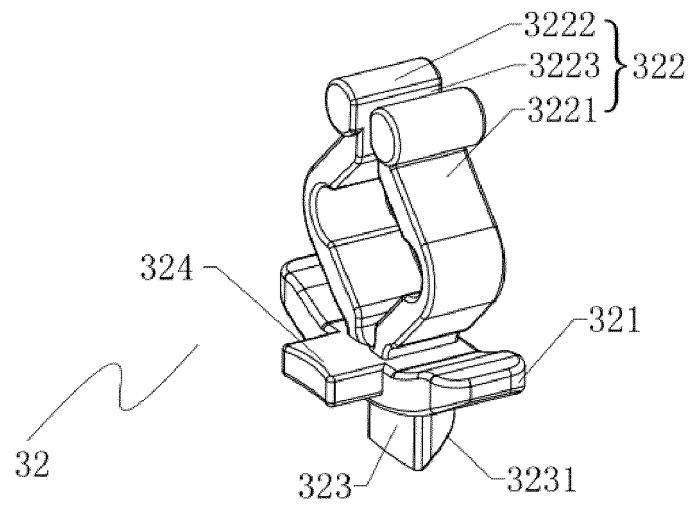


FIG. 10

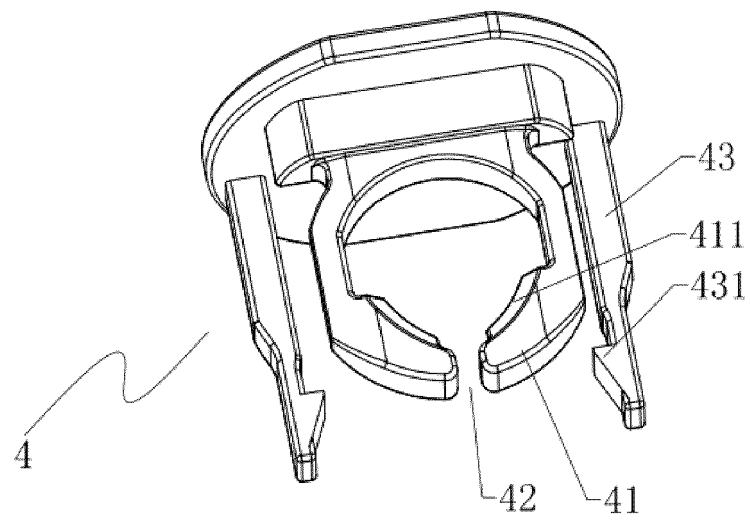


FIG. 11



EUROPEAN SEARCH REPORT

Application Number

EP 22 16 4468

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	CN 107 348 892 A (BESTTER XIAMEN TECH INC) 17 November 2017 (2017-11-17) * figure 2 * -----	1-6	INV. A47K13/12 A47K13/24 A47K13/26
			TECHNICAL FIELDS SEARCHED (IPC)
			A47K
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
The Hague		26 August 2022	Zuurveld, Gerben
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.

EP 22 16 4468

5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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26-08-2022

10	Patent document cited in search report	Publication date	Patent family member(s)	Publication date
15	CN 107348892	A	17-11-2017	NONE
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