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(54) COVER BODY MECHANISM AND SEALED CONTAINER

(57) The present application provides a cover body mechanism, wherein the cover body mechanism comprises a first cover body, a handle, a second cover body, a connecting base and a sealing ring, wherein a bottom of the first cover body is provided with a groove; wherein the connecting end is movably accommodated in the groove through the second channel opening and connected with the groove through a second rotating shaft; wherein the connecting ring is sleeved with an upper side of the second cover body, an upper end of the connecting arm is movably accommodated in the groove through the first channel opening and is connected with the connecting end through a first rotating shaft; wherein the sealing ring is capable of deforming outward and expanding with the rise of the second cover body, so as to be sealingly contact to an inner side wall of a storage cavity in the sealed tank body. The present application also provides a sealed container, wherein the sealed container comprises the cover body mechanism according to above-mentioned. The cover body mechanism and sealed container, resolved the problems of the existing handle and the end of the second cover that cannot be disassembled and the cover mechanism cannot be opened and closed with one hand.

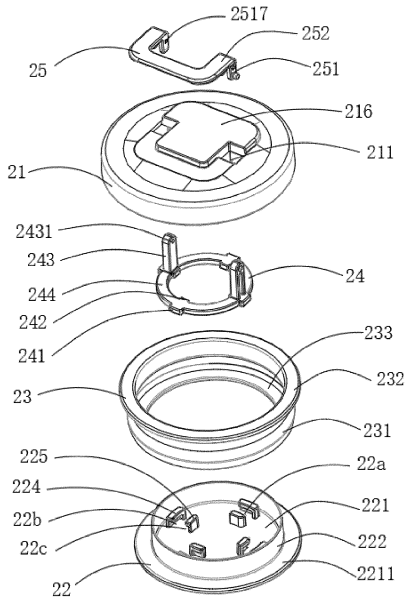

FIG. 3

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Description

FIELD OF TECHNOLOGY

[0001] The present application belongs to the technical field of sealed vessels, and in particular to a cover body mechanism and a sealed container.

BACKGROUND OF TECHNOLOGY

[0002] With the development of technology, various types of insulated sealed tanks are widely used in daily life, and the insulation materials to be treated are sealed and insulated. The insulation cup is used to insulate the insulation materials through the insulation cavity.

[0003] In the prior art, a sealed tank comprises a sealed tank body and a first cover body, the first cover body being connected to the sealed tank body through a threaded structure, and the sealed tank body being sealed and connected through a sealing ring. At this time, the first cover body is connected to a second cover body, the second cover body is located in the sealed tank body, and is lifted relative to the second cover body. At this time, the end of the second cover body is connected to a handle, and the handle and the end of the second cover body are connected through a rotary shaft, And cannot be disassembled. At the same time, when opening and closing such sealed tank bodies, it is necessary to hold the tank body and the first cover body with both hands respectively for rotation to achieve opening and closing, which cannot be achieved with one hand.

SUMMARY OF TECHNOLOGY

[0004] The present application provides a cover body mechanism and a sealed container to solve the problems of the existing handle and the end of the second cover that cannot be disassembled and the cover mechanism cannot be opened and closed with one hand.

[0005] In order to solve the above technical problems, the technical solution adopted by the present invention is as follows:

The present application provides a cover body mechanism, installable on a sealed tank body, wherein the cover body mechanism comprises a first cover body, a handle, a second cover body, a connecting base and a sealing ring, Specifically: a first cover body, arranged on the sealed tank body, wherein a bottom of the first cover body is provided with a groove, the bottom wall of the groove is provided with a first channel opening in a penetration manner, and the first cover body is provided with a second channel opening communicating with the groove; a handle, provided with a connecting end and a holding end connected with the connecting end, wherein the connecting end is movably accommodated in the groove through the second channel opening and connected with the groove through a second rotating shaft, and the holding end is located above the first cover body;a second cover body, arranged below the first cover body; a connecting base, provided with an annular connecting ring and a connecting arm that is convex on an upper side of the connecting ring, wherein the connecting ring is sleeved with an upper side of the second cover body, an upper end of the connecting arm is movably accommodated in the groove through the first channel opening and is connected with the connecting end through a first rotating shaft, the first rotating shaft and the second rotating shaft are dislocated so that the connecting base and the second cover body rise to a sealed state or fall to an open state with the swing of the handle relative to the first cover body; and a sealing ring, arranged between the first cover body and the second cover body, wherein the sealing ring is capable of deforming outward and expanding with the rise of the second cover body, so as to be sealingly contact to an inner side wall of a storage cavity in the sealed tank body.

[0006] Preferably, wherein an inner side wall of the groove is provided with a concave chute communicating with the groove, the chute is horizontally arranged, one end of the second rotating shaft is connected with the connecting end, and the other end extends into the chute and is hinged with the chute and can slide along the chute; and the first rotating shaft is arranged on one side of the second rotating shaft close to the holding end at an interval, the second rotating shaft slides horizontally along the chute and the connecting arm rises or falls along the first channel opening when the handle swings relative to the first cover body.

[0007] Preferably, wherein the connecting end has a first side and a second side which are adjacently arranged, the first side is an end face of the connecting end away from the holding end, and the second side is connected with the first side through an arc surface; the bottom wall of the groove is in contact with the first side when the handle swings to the sealed state, and is in contact with the second side when the handle swings to the open state, and a distance between the first rotating shaft and the first side is greater than the distance between the first rotating shaft and the second side; and the second rotating shaft is arranged on an end away from the holding end on the connecting end and the arc surface is flush with an outer surface of the second rotating shaft, the chute is arranged at the bottom of the inner side wall of the groove, an upper side of the second rotating shaft is capable of being in contact with a top wall of the chute, a lower side of the second rotating shaft is in contact with the bottom wall of the groove.

[0008] Preferably, wherein the connecting end is provided with a connecting groove in a direction from the first side toward the holding end, the two sides of the connecting groove penetrate through the connecting end, the connecting arm is inserted in the connecting groove, the upper end of the connecting arm is provided with a first shaft hole in a penetration manner for the first rotating shaft to pass through, both side walls of the connecting groove are respectively provided with a second

shaft hole in a penetration manner for the first rotating shaft to pass through.

[0009] Preferably, wherein the second rotating shaft protrudes outward from one of the side walls of the connecting groove, and the second rotating shaft corresponding to the chute is arranged on a side wall of the groove, and a side of the groove opposite to the chute is provided with a third channel opening for loading and unloading the first rotating shaft.

[0010] Preferably, wherein the first cover body is provided with a convex structure protruding in a lower side of the first cover body, the convex structure comprises a bottom plate, a first wall plate, a second wall plate and a third wall plate, the first wall plate, the second wall plate and the third wall plate being respectively connected with a lower part of the first cover body; the first wall plate, the second wall plate, the third wall plate and the bottom plate enclose to form the groove of which one side is the third channel opening, the first channel opening is arranged on the bottom plate, the chute is arranged on the third wall plate.

[0011] Preferably, wherein the width and length of the first channel opening are less than the width and length of the groove, the width and length of the second channel opening are less than the width and length of the groove, and a bottom end of the first wall plate, a bottom end of the second wall plate, a bottom end of the third wall plate are respectively connected with a respective side end of the bottom plate.

[0012] Preferably, wherein the first wall plate and the second wall plate are respectively arranged at both ends of the bottom plate in a length direction, the chute is arranged on the third wall plate along the length direction of the bottom plate, one end of the chute is arranged close to the first wall plate, the other end of the chute is arranged close to the second wall plate, and a distance between the chute and the first wall plate is greater than a distance between the chute and the second wall plate.

[0013] Preferably, wherein the second channel opening is arranged on the first cover body along the length direction of the bottom plate, one end of the second channel opening is arranged close to the first wall plate, and the other end of the second channel is arranged close to the second wall plate, and a distance between the second channel opening and the first wall plate is less than a distance between the second channel opening and the second wall plate.

[0014] Preferably, wherein the holding end is arranged to be perpendicular with the connecting end, the first rotating shaft is arranged on one side of the second rotating shaft close to the holding end, the second rotating shaft is arranged on an end of the connecting end away from the holding end, and the holding end is arranged at one end of the connecting end close to the first wall plate when the handle is in the open state.

[0015] Preferably, wherein the holding end of the handle is provided with two connecting parts arranged parallelly at an interval and a holding part having two ends respectively connected to the outer ends of the two connecting parts, there are two connecting ends respectively connected with inner ends of the two connecting parts on the holding end, the connecting base is provided with two connecting arms corresponding to the two connecting ends, the first cover body is provided with two convex structures corresponding to the two connecting ends and the two connecting arms, and two third channel openings are arranged respectively on one side of the convex structures close to an axle center of the first cover body.

[0016] Preferably, wherein the sealing ring is provided with a bending part, the bending part is arranged outside the second cover body, the bending part comprises a first bending section and a second bending section connected to each other, the second bending section is wigglably connected to an upper end of the first bending section, a connection position of the first bending section and the second bending section bends outward and expands when the bending part deforms outward and expands, and an inner side of the first bending section and an inner side of the second bending section are close to each other at the same time, and the second bending section is capable of being sealingly contact to the inner side wall of the storage cavity in the sealed tank body.

[0017] Preferably, wherein the first cover body is provided with a first cover plate, a first side plate extending downward from a rim of the first cover plate, and a first ring plate extending downward from a lower side of the first cover plate; and the first ring plate is coaxially arranged on an inner side of the first side plate, and the first ring plate and the first side plate are arranged at an interval to form a sealing groove; the second cover body is provided with a second cover plate and a second ring plate extending upward from an upper side of the second cover plate, the second ring plate is coaxially arranged in an inner side of the first ring plate, the first ring plate and the second ring plate enclose a rising and falling cavity, the groove and connecting base are arranged in the rising and falling cavity, the second ring plate is shortened or extended relative to the first ring plate when the second cover body rises or falls, and a rim of the second ring plate and the rim of the second cover plate are arranged at an interval to form a supporting edge; and the sealing ring is further provided with a first socket part connected with an upper end of the bending part and a second socket part connected with a lower end of the bending part, the first socket part is sleeved with an outer side of the first ring plate, the second socket part is sleeved with an outer side of the second ring plate, an inner wall of the first socket part is in contact with a top wall of the sealing groove, an outer wall of the second socket part is in contact with a top surface of the supporting edge.

[0018] Preferably, wherein the upper side of the second cover body is provided with a plurality of first bosses in an annular arrangement, the first bosses are respectively provided with first slots, each of the first slots is provided with a first opening, the first opening is arranged

on a side wall of a corresponding one of the first bosses, a plurality of first openings of the first slots are arranged in turn in a counterclockwise or clockwise direction; and the side wall of the connecting ring is provided with first convex blocks corresponding to the first slots, the first convex blocks are capable of clamping to or detaching from the first slots through the first openings as the connecting ring rotates with respect to the second cover body.

[0019] Preferably, wherein the plurality of first openings of the first slots are arranged in turn in the counterclockwise direction; adjacent two of the first bosses are provided therebetween with a first gap, the first convex blocks are in the first gap as the connecting ring extends into the upper side of the second cover body, and are screwed into the first slots along the clockwise direction through the first openings.

[0020] Preferably, wherein the upper side of the second cover body is further provided with a plurality of second bosses in an annular arrangement, an annular groove for the sleeving of the connecting ring is formed between the plurality of the second boss and the plurality of first bosses, the second bosses and the first bosses are respectively arranged on both sides of the annular groove, and the plurality of the first bosses act as an outer ring of the annular groove, the plurality of the second bosses act as an inner ring of the annular groove, and the first slots communicate with the annular groove.

[0021] Preferably, wherein the plurality of second bosses are provided with second slots, each of the second slots is provided with a second opening, the second opening is arranged on a side wall of a corresponding one of the second bosses, the second openings of the plurality of second slots and the first openings of the first slots are arranged in the same direction, the second slots communicate with the annular groove; the side wall of the connecting ring is provided with second convex blocks corresponding to the second slots, the second convex blocks are capable of clamping to or detaching from the second slots through the second openings as the connecting ring rotates with respect to the second cover body; and the second convex blocks and the first convex blocks are arranged on both sides of the connecting ring.

[0022] Preferably, wherein adjacent two of the second bosses are provided therebetween with a second gap, the second convex blocks are in the second gap as the connecting ring extends into the upper side of the second cover body, and are screwed into the second slots along the clockwise direction through the second openings.

[0023] Preferably, wherein the plurality of second bosses are arranged opposite to the plurality of first bosses in one-to-one correspondence, and the plurality of the second convex blocks are arranged to face away from the plurality of first convex blocks in one-to-one correspondence.

[0024] The present application also provides a sealed container, wherein the sealed container comprises a sealed tank body and the cover body mechanism according to above-mentioned, the sealed tank body is provided with a storage cavity and a first opening, the first opening communicates with the storage cavity, the storage cavity is used to store items, the cover body mechanism is detachable installed on the top of the sealed tank body and covers the first opening, an inner side wall of the storage cavity is provided with an inclined plane, the bending part can fit to the inclined plane when the bending part deforms and expands.

[0025] The sealed container provided by the invention, a sealed tank body thereof is provided with a storage cavity and a first opening, the first opening communicates with a storage cavity, the storage cavity is used for storing items to be sealed or insulation items or items to be insulated; a cover body mechanism provided by the present invention is detachable and installed in the sealed tank body, which is convenient to place articles into the storage cavity or take articles from the storage cavity through the first opening; the cover body mechanism comprises a first cover body, a second cover body, a sealing ring, a connecting base and a handle, wherein the second cover body and the first cover body are connected by the handle and the connecting base, and a second rotating shaft connected with the first cover body and the first rotating shaft connected with the connecting base on a connecting end of the handle are dislocated, the sealing ring is provided with a bending part that is capable of deforming outward and expanding with the rise of the second cover body, so as to be sealingly contact to an inner side wall of the storage cavity, so that the second cover body rises to a sealing state in which the bending part is sealed to fit an inner side wall of the storage cavity or falls to an open state in which the bending part is separated from the inner side wall of the storage cavity with the swing of the handle against the first cover body; a connecting ring of the connecting base is sleeved with the second cover body, so that the connecting base is connected to the second cover body in a circumferential direction, while the second cover body is sleeved with the connecting base and is capable of clamping to the connecting base along an annular direction, so as to realize the connection or disconnection of the second cover body relative to the connecting base, and then realize the replacement of the second cover body relative to the handle; in addition, the opening and closing of the cover body mechanism and the sealing tank body can be realized by swinging the handle, which is convenient for single-hand opening and closing operation.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] In order to more clearly illustrate the technical solution in this application, the accompanying drawings required in the description of embodiments will be briefly introduced below. Obviously, the drawings in the following description are only some embodiments of this application. For those skilled in the art, other drawings can

also be obtained from these drawings without any creative work.

[0027] In order to provide a more complete understanding of this application and its beneficial effects, the following will be explained in conjunction with the accompanying drawings. In the following description, the same reference numerals indicate the same part.

FIG. 1 is a structural schematic diagram of a sealed container provided in an embodiment of the present application.

FIG. 2 and FIG. 3 are structural explosion diagrams of the sealed container provided in the embodiment of the present application.

FIG. 4 is a partial structural schematic diagram of the sealed container provided in the embodiment of the present application.

FIG. 5 is a structural schematic diagram of a first cover body of the sealed container provided in the embodiment of the present application.

FIG. 6 is a structural top view of the sealed container provided in the embodiment of the present application.

FIG. 7 shows an A-oriented structural section view in FIG. 6.

FIG. 8 is a first structural section view of the sealed container provided in the embodiment of the present application.

FIG. 9 shows a B-oriented structural section view in FIG. 6.

FIG. 10 is a second structural section view of the sealed container provided in the embodiment of the present application.

DESCRIPTION OF THE EMBODIMENTS

[0028] The following will provide a clear and complete description of the technical solution in the embodiment of this application in conjunction with the accompanying drawings. Obviously, the described embodiments are only a part of the embodiments of this application, not all of them. Based on the embodiments in this application, all other embodiments obtained by those skilled in the art without performing creative work fall within the scope of protection in this application.

[0029] An embodiment of the present application provides a sealed container 100. Because the sealed container 100 is provided with a cover body mechanism 20, it can solve the problem that the existing handle 25 and the end of a second cover body cannot be detached and the cover body mechanism 20 cannot be opened and closed with one hand.

[0030] Refer to FIG. 1 to FIG. 10, the embodiment of the present application provides a sealed container 100 comprising a sealed tank body 10 and a cover body mechanism 20, wherein the cover body mechanism 20 is detachable and installed in the sealed tank body 10.

[0031] The sealed tank body 10 is provided with a storage cavity 10a and a first opening 10b, wherein the first opening 10b communicates with a storage cavity 10a.

[0032] The storage cavity 10a is opened in the inside of the sealed tank body 10. The storage cavity 10a can be just a sealing cavity for storing items to be sealed, or it can be an insulation cavity for insulation items or items to be insulated. Optionally, the storage cavity 10a can realize the insulation of items to be insulated through an internal or external insulation layer, wherein the items to be insulated can be food.

[0033] The cover body mechanism 20 comprises a first cover body 21, a second cover body 22, a sealing ring 23, a connecting base 24 and a handle 25, wherein the first cover body 21 is installed on the top of the sealed tank body 10 and cover the first opening 10b. At this time, the first cover body 21 can directly cover the top of the sealed tank body 10 and cover the first opening 10b. In addition, the first cover body 21 can also be connected to the top of the sealed tank body 10 through a threaded structure, and cover the first opening 10b, which is convenient to seal the storage cavity 10a.

[0034] A handle 25 is provided with connecting ends 251 and a holding end 252 connected with the connecting ends 251. The connecting ends 251 are arranged to be perpendicular with the holding end 252. Optionally, the holding end 252 is provided with two connecting parts arranged parallelly at an interval and a holding part having two ends respectively connected to the outer ends of the two connecting parts, there are two connecting ends 251 respectively connected with the inner ends of the two connecting parts on the holding end 252.

[0035] The connecting base 24 is arranged between the first cover body 21 and the second cover body 22, the connecting base 24 is provided with an annular connecting ring 244 and connecting arms 243 convex on an upper side of the connecting ring 244, the connecting arms 243 corresponds to the connecting ends 251 and there are two connecting arms 243 respectively arranged on opposite sides of the connecting ring 244, which has good stability.

[0036] The bottom of the first cover body 21 is provided with two convex structures protruding from a lower side of the first cover body 21. The two convex structures are respectively provided with a groove 211 for installing the connecting end 251. The convex structure comprises a bottom plate 2113 and a first wall plate 2112, a second wall plate 2115 and a third wall plate 2116, and the first wall plate, the second wall plate and the third wall plate are respectively connected with the lower side of the first cover body 21. Wherein, the first wall plate 2112 is ar-

ranged opposite to the second wall plate 2115 and ends in the same direction are connected with two ends of the third wall plate 2116 respectively. A bottom end of the first wall plate 2112, a bottom end of the second wall plate 2115 and a bottom end of the third wall plate 2116 are connected with each side end of the bottom plate 2113 respectively. The first wall plate 2112, the second wall plate 2115, the third wall plate 2116 and the bottom plate 2113 enclose to form the groove 211 of which the side facing the axle center of the first cover body 21 is a third channel opening 2117, that is, the two third channel openings 2117 are each arranged on one side of the convex structure close to the axle center of the first cover body 21, and the third channel opening 2117 are each arranged on the side opposite to the third wall plate 2116 on the groove 211, and the first rotating shaft 2511 is arranged to be perpendicular with the third channel opening 2117. The connecting end 251 and an upper end of the connecting arm 243 are movably accommodated in the groove 211. The first rotating shaft 2511 is arranged to be perpendicular with the third channel opening 2117 by providing the groove 211 of the third channel opening 2117 for accommodating the connecting end 251 of the install handle on one side of the lower side of the first cover body 21. The first rotating shaft 2511 is arranged to be perpendicular with the third channel opening 2117. The third channel opening 2117 is capable of acting as an installation channel of the first rotating shaft 2511. During installation, a connection between the handle 25 and the connecting arm 243 can be installed and adjusted through the third channel opening 2117, and the first rotating shaft 2511 for the handle 25 and the connecting arm 243 is installed by facilitating the access from the third channel opening 2117. Optionally, the first rotating shaft 2511 may be a connection latch or other connection part.

[0037] The bottom plate 2113 is provided with a first channel opening 2111 in a penetration manner. The first cover body 21 above the groove 211 is provided with a second channel opening 2114 communicating with the groove 211. The first channel opening 2111 is in a lower side of the groove 211 and communicates with the groove 211, and the first channel opening 2111 is used for the connecting arm 243 to pass through, and allows the connecting arm 243 to swing in its space without affecting the rise or fall of the connecting arm 243 with the swing of the handle 25. The second channel opening 2114 is on an upper side of the groove 211 and communicates with the groove 211. The second channel opening 2114 is used for the connecting end 251 to extend into the groove 211 and allow the connecting end 251 to move in its space. The width and length of the first channel opening 2111 are less than the width and length of the groove 211, so as to facilitate limiting the connection end 251 within the groove 211. The width and length of the second channel opening 2114 are less than the width and length of the groove 211, so as to reduce the area of the groove 211 exposed to the outside.

[0038] The second cover body 22 is arranged below the first cover body 21 and is liftable and installed on the first cover body 21, wherein the second cover body 22 and the first cover body 21 are connected through the handle 25 and connecting base 24, the connecting end 251 is movably accommodated in the groove 211 through the second channel opening 2114 and connected with the groove 211 through the second rotating shaft 2512. The holding end 252 is located above the first cover body 21. The upper end of the connecting arm 243 is movably accommodated in the groove 211 through the first channel opening 2111 and is connected to the connecting end 251 of the handle 25 through the first rotating shaft 2511. The sealing ring 23 is arranged between the first cover body 21 and the second cover body 22, and the sealing ring 23 is provided with a bending part 231. The bending part 231 is arranged outside the second cover body 22 and is capable of deforming outward and expanding with the rise of the second cover body 22, so as to be sealingly contact to an inner side wall of the storage cavity 10a. The second rotating shafts 2512 connected with the first cover body 21 and the first rotating shafts 2511 connected with the connecting base 24 on the connecting end 251 of the handle are dislocated, so that the second cover body 22 rises to a sealing state in which the bending part 231 is sealingly contact to the inner side wall of the storage cavity 10a or falls to an open state in which the bending part 231 is separated from the inner side wall of the storage cavity 10a with the swing of the handle 25 against the first cover body 21. The connecting ring 244 of the connecting base 24 is sleeved with the second cover body 22, so that the connecting base 24 is connected with the second cover body 22 along the circumferential direction, and the second cover body 22 the connecting base 24 clamps to the connecting base 24 along an annular direction, so as to realize the connection or disconnection of the second cover body 22 relative to connecting base 24, and then realize the replacement of the second cover body 22 relative to the handle 25. Optionally, the connecting ring 244 is set as a plate structure. A bottom surface of the connecting ring 244 abuts against a top surface of the second cover body 22, which increases a contact area between the second cover body 22 and the connecting base 24 and improves a connection strength between the second cover body 22 and the connecting seat 24. In addition, the opening and closing of the cover body mechanism 20 and the sealing tank body 10 can be realized by swinging the handle 25, which is convenient for single-hand opening and closing operation.

[0039] Refer to FIG. 7 to FIG. 10, an inner side wall of the groove 211 is provided with a concave chute 21161 communicating with the groove 211, and the chute 21161 is arranged on an inner side of the third wall plate 2116 in a horizontal arrangement. The second rotating shaft 2512 protrudes outward from a side wall close to the third wall plate 2116 on the connecting end 251. One end of the second rotating shaft 2512 is connected with the con-

necting end 251, and the other end extends into the chute 21161 and is hinged with the chute 21161 and can slide along the chute 21161. The first rotating shaft 2511 is arranged on one side of the second rotating shaft 2512 close to the holding end 252 at an interval, the second rotating shaft 2512 slides horizontally along the chute 21161 and the connecting arm 243 rises or falls along the first channel opening 2111 when the handle 25 swings relative to the first cover body 21.

[0040] The connecting end 251 has a first side 253 and a second side 254 which are adjacently arranged, the first side 2513 is an end face of the connecting end 251 away from the holding end 252, and the second side 2514 is connected with the first side 2513 through an arc surface 2515. A bottom wall of the groove 211 contacts the first side 2513 when the handle 25 swings to the sealed state and contacts the second side 2514 when the handle 25 swings to the open state, so that the bottom wall of the groove 211 can support and limit the connecting end 251 of the handle during the swing of the handle to maintain the state of the second cover body 22. A distance between the first rotating shaft 2511 and the first side 2513 is greater than a distance between the first rotating shaft 2511 and the second side 2514, so as to support the first rotating shaft 2511 at different heights in the open state and the closed state, and then make the first rotating shaft 2511 drive the connecting arm 243 and the second cover body 22 rise or fall. The arc surface 2515 is used for a transition between the first side 2513 and the second side 2514, so that the bottom wall of the groove 211 and the connecting end 251 of the handle always maintain contact in the swing process of the handle 25.

[0041] The second rotating shaft 2512 is arranged on an end away from the holding end 252 on the connecting end 251 and the arc surface 2515 is flush with an outer surface of the second rotating shaft 2512, the chute 21161 is arranged at the bottom of the inner side wall of the groove 211, an upper side of the second rotating shaft 2512 is capable of being in contact with a top wall of the chute 211, a lower side of the second rotating shaft 2512 is in contact with the bottom wall of the groove 211, so that the second rotating shaft 2512, the first side 2513, the second side 2514 and the arc surface 2515 act together on the bottom wall of the groove 211 to make the connection more stable. The first wall plate 2112 and the second wall plate 2115 are respectively arranged at both ends of the bottom plate 2113 in the length direction. When the handle 25 is in the open state, the holding end 252 is arranged at one end of the connecting end 251 close to the first wall plate 2115. The chute 21161 is arranged on the third wall plate 2116 along a length direction of the bottom plate 2113, one end of the chute 21161 is arranged close to the first wall plate 2112, the other end of the chute is arranged close to the second wall plate 2115, and a distance between the chute 21161 and the first wall plate 2112 is greater than a distance between the chute 21161 and the second wall plate 2115. The second channel opening 2114 is arranged on the first cover body 21 along a length direction of the bottom plate 2113, one end of the second channel opening 2114 is arranged close to the first wall plate 2112, and the other end of the second channel opening is arranged close to the second wall plate 2115, and a distance between the second channel opening 2114 and the first wall plate 2112 is less than a distance between the second channel opening 2114 and the second wall plate 2115. In this embodiment, the handle 25 can be limited in the open state or the closed state while providing sufficient space for the swinging of the connecting end 251 of the handle 25 in the groove 211.

[0042] Refer to FIG. 4, the connecting end 251 is provided with a connecting groove 2516 in a direction from the first side 2513 towards the holding end 252. The connecting arm 243 is inserted into the connecting groove 2516, and both sides of the connecting groove 2516 penetrate through the connecting end 251 to facilitate an internal rotation of the connecting arm 243. The upper end of the connecting arm 243 is provided with a first shaft hole 2431 for the first rotating shaft 2511 to pass through. Second shaft holes 2517 for the first rotating shaft 2511 to pass through are respectively arranged on the two side walls of the connecting groove 2516 in a penetration manner. The first rotating shaft 2511 is arranged in the first shaft hole 2431 and the second shaft hole 2517 in a penetration manner, and the hinge between the connecting end 251 of the handle and the connecting arm 243 of the connecting base 24 is realized. The first rotating shaft 2511 can be loaded or unloaded through the third channel opening 2117 during the installation. The second rotating shaft 2512 is formed while a side wall of the connecting groove 2516 arranged close to the third wall plate 2116 protrudes outward, and the structure is stable and solid. The chute 21161 is arranged on the third wall plate 2116 corresponding to the second rotating shaft 2512.

[0043] An upper side of the first cover body 21 is provided with a cover boss 216. When the handle 25 is in the closed state, an upper surface of the holding end 252 is flush with an upper surface of the cover boss 216.

[0044] Refer to FIG. 7 or FIG. 8, an inner side wall of storage cavity 10a is provided with an inclined plane 10c, which is close to the first opening 10b. At this time, the radius of the cross section of inclined plane 10c gradually decreases along an upward direction. When the bending part 231 is in the closed state, it is sealingly contact to the inclined plane 10c. Specifically, the bending part 231 comprises a first bending section 2311 and a second bending section 2312 connected to each other. The second bending section 2312 is wigglably connected to an upper end of the first bending section 2311, a connection position of the first bending section 2311 and the second bending section 2312 bends outward and expands when the bending part 231 deforms outward and expands, and an inner side of the first bending section 2311 and an inner side of the second bending section 2312 are close to each other at the same time, and an outer side of the

second bending section 2312 is capable of being sealingly contact to the inclined plane 10c so that the bending section 231 clamps to a lower side of the inclined plane 10c.

[0045] The first cover body 21 is provided with a first cover plate 212, a first side plate 213 extending downward from a rim of the first cover plate 212, and a first ring plate 214 extending downward from a lower side of the first cover plate 212; and, the first ring plate 214 is coaxially arranged on an inner side of the first side plate 213, and the first ring plate 214 and the first side plate 213 are arranged at an interval to form a sealing groove 215. The second cover body 22 is provided with a second cover plate 221 and a second ring plate 222 extending upward from an upper side of the second cover plate 221, the second ring plate 222 is coaxially arranged in an inner side of the first ring plate 214, the first ring plate 214 and the second ring plate 222 enclose a rising and falling cavity 223, the groove 211 and connecting base 24 are arranged in the rising and falling cavity 223, the second ring plate 222 is shortened or extended relative to the first ring plate 214 when the second cover body 22 rises or falls, and a rim of the second ring plate 222 and a rim of the second cover plate 221 are arranged at an interval to form a supporting edge 2211. The sealing ring 23 is arranged between the sealing groove 215 and the supporting edge 2211. The sealing ring 23 is also provided with a first socket part 232 connected with an upper end of the bending part 231 and a second socket part 233 connected with a lower end of the bending part 231, the first socket part 232 is sleeved with an outer side of the first ring plate 214, the second socket part 233 is sleeved with an outer side of the second ring plate 222, an inner wall of the first socket part 232 is in contact with a top wall of the sealing groove 215, an outer wall of the second socket part 233 is in contact with a top surface of the supporting edge 2211. The sealing ring 23 is pressed when the second cover body 22 rises so that the bending part 231 extends outwards and bends. A top end of the sealed tank body 10 extends into the sealing groove 215 and abuts against an outer wall of the first socket part 232, so that the top end of the sealed tank body 10 is sealed and clamps between the outer wall of the first socket part 232 and an outer wall of the second bend section 2312.

[0046] Refer to FIG. 3 or FIG. 4, an upper side of the second cover body 22 is provided with a plurality of first bosses 224 in an annular arrangement and a plurality of second bosses 225 in an annular arrangement. An annular groove 22a for the sleeving of the connecting ring 244 is formed between the plurality of second bosses 225 and the plurality of first bosses 224. The connecting ring 244 can be sleeved in the annular groove 22a, and rotate relative to the annular groove 22a. The annular groove 22a is in clearance fit with the connecting ring 244 to facilitate the detachment between the connecting base 24 and the second cover body 22. The second boss 225 and the first boss 224 are arranged on both sides of the annular groove 22a, and the plurality of first bosses 224 act as the outer ring of the annular groove 22a, and the plurality of second bosses 225 act as the inner ring of the annular groove 22a. The plurality of second bosses 225 and the plurality of first bosses 224 form the annular groove 22a with both sides enclosed, which can position the connecting ring 244 so as to facilitate precise docking between the connecting ring 244 and the annular groove 22a. Optionally, the first boss 224 and the second boss 225 are in arc shapes.

[0047] The plurality of first bosses 224 are respectively provided with a first slot 22b. Each first slot 22b communicates with the annular groove 22a, and each first slot 22b is provided with a first opening. The first opening is opened on a side wall of the first boss 224, and first openings of the plurality of first slots 22b are in turn arranged along a counterclockwise direction. In some other embodiments, the first openings of the first slots 22b may also be in turn arranged along a clockwise direction. A side wall of the connecting ring 244 is provided with first convex blocks 241 corresponding to the first slots 22b, and the first slots 22b are used for inserting the first convex blocks 241.

[0048] The plurality of second bosses 225 are respectively provided with second slots 22c. Each second slot 22c communicates with the annular groove 22a, and each second slot 22c is provided with a second opening. The second opening is opened on a side wall of a corresponding one of the second bosses 225, and second openings of the plurality of second slots 22c are in turn arranged along the counterclockwise direction, that is, arranged in the same direction as the first openings of the first slots 22b, so that the second slots 22c and the first slots 22b jointly act on the connecting base 24. In some other embodiments, the first openings of the first slots 22b may also be arranged in turn along the clockwise direction, while the second openings of the second slots 22c may also be arranged in turn along the clockwise direction. The side wall of the connecting ring 244 is provided with second convex blocks 242 corresponding to the second slots 22c, and the second slots 22c are used for inserting the second convex blocks 242.

[0049] The connecting ring 244 is sleeved with the annular groove 22a, the first convex blocks 241 clamp to the first slots 22b, and the second convex blocks 242 clamp to the second slots 22c. Therefore, the first convex blocks 241 and the second convex blocks 242 synchronously clamp to the first slots 22b and the second slots 22c to ensure a connection strength of the connecting base 24 relative to the second cover body 22, and the second cover body 22 is clamped and detached relative to the connecting base 24 by rotation, so as to facilitate assembly of the second cover body 22 relative to the connecting base 24.

[0050] The second convex blocks 242 and the first convex blocks 241 are respectively arranged on the two sides of the connecting ring 244, the second slots 22c and the first slots 22b are respectively arranged on the two sides

of the connecting ring 244, and the plurality of second bosses 225 are arranged opposite to the plurality of first bosses 224 in one-to-one correspondence, so the plurality of second slots 22c are arranged opposite to the plurality of first slots 22b in one-to-one correspondence, and the plurality of second convex blocks 242 are arranged to face away from the plurality of first convex blocks 241 in one-to-one correspondence. The second convex blocks 242 and the first convex blocks 241 are integrated with the connecting ring 244, thus simplifying the structure.

[0051] Adjacent two of the first bosses 224 are provided therebetween with a first gap, the first convex block 241 is in the first gap as the connecting ring 244 extends into the upper side of the second cover body 22, and is screwed into the first slot 22b along the clockwise direction through the first opening. Adjacent two pf the second bosses 225 are provided therebetween with a second gap, the second convex block 242 is in the second gap as the connecting ring 244 extends into the upper side of the second cover body 22, and is screwed into the second slot 22c along the clockwise direction through the second opening. The first gap serves as a loading and unloading channel of the first convex block 241, and the second gap serves as a loading and unloading channel of the second convex block 242. When it is necessary to connect the second cover body 22 to the connecting base 24, the connecting base 24 is extended into the upper side of the second cover body 22 and the connecting base 24 is rotated in the clockwise direction or the second cover body 22 is rotated in the counterclockwise direction under a man-made force. The first convex blocks 241 are clamped to the first slots 22b through the first gaps and the first openings in turn with the rotation of the connecting ring 244 relative to the second cover body 22, while the second convex blocks 242 are clamped to the second slots 22c through the second gaps and the second openings in turn with the rotation of the connecting ring 244 relative to the second cover body 22, so that the second cover body 22 is clamped to the connecting base 24. When it is necessary to detach the second cover body 22 from the connecting base 24, the connection base 24 can be rotated in the counterclockwise direction or the second cover body 22 can be rotated in the clockwise direction under a man-made force. The first convex blocks 241 are detached from the first slots 22b through the first openings and the first gaps in turn with the rotation of the connecting ring 244 relative to the second cover body 22, while the second convex blocks 242 are detached from the second slots 22c through the second openings and the second gaps in turn with the rotation of the connecting ring 244 relative to the second cover body 22, so that the second cover body 22 is detached from the connecting base 24. Furthermore, a detachable connection of the second cover body 22 and the connecting base 24 is realized. Compared with the way of a thread connection between the second cover body and connecting base in the prior art, the detachable connection structure of the second cover body 22 and the connecting base 24 is simplified in this embodiment, thus reducing a processing cost of the second cover body 22 and the connecting base 24. Therefore, an overall cost of the cover body component 20 is reduced.

[0052] The first convex blocks 241 are clamped to or detached from the first slots 22b with the rotation of the connection ring 244 relative to the annular groove 22a, and the second convex blocks 242 are clamped to or detached from the second slots 22c with the rotation of the connection ring 244 relative to the annular groove 22a, so that the second cover body 22 can be detachable relative to the connecting base 24 and the handle 25, which is convenient to replace the sealing ring 23.

[0053] In the above embodiments, the description of each embodiment has its own emphasis. For the parts not detailed in one embodiment, please refer to the relevant descriptions of other embodiments.

[0054] In the description of this application, the terms "first" and "second" are used only for descriptive purposes and cannot be understood as indicating or implying relative importance or implying the number of technical features indicated. Therefore, a feature defined as "first" or "second" may explicitly or implicitly include one or more features.

[0055] The embodiments of the present invention have been described in detail above in conjunction with the accompanying drawings, but the present invention is not limited to the described embodiments. For those skilled in the art, making various changes, modifications, substitutions, and modifications to these embodiments without departing from the principles and spirit of the invention still falls within the scope of protection of the invention.

Claims

1. A cover body mechanism, installable on a sealed tank body, wherein the cover body mechanism comprises:

   a first cover body, arranged on the sealed tank body, wherein a bottom of the first cover body is provided with a groove, the bottom wall of the groove is provided with a first channel opening in a penetration manner, and the first cover body is provided with a second channel opening communicating with the groove;
   a handle, provided with a connecting end and a holding end connected with the connecting end, wherein the connecting end is movably accommodated in the groove through the second channel opening and connected with the groove through a second rotating shaft, and the holding end is located above the first cover body;
   a second cover body, arranged below the first cover body;
   a connecting base, provided with an annular

connecting ring and a connecting arm that is convex on an upper side of the connecting ring, wherein the connecting ring is sleeved with an upper side of the second cover body, an upper end of the connecting arm is movably accommodated in the groove through the first channel opening and is connected with the connecting end through a first rotating shaft, the first rotating shaft and the second rotating shaft are dislocated so that the connecting base and the second cover body rise to a sealed state or fall to an open state with the swing of the handle relative to the first cover body; and

a sealing ring, arranged between the first cover body and the second cover body, wherein the sealing ring is capable of deforming outward and expanding with the rise of the second cover body, so as to be sealingly contact to an inner side wall of a storage cavity in the sealed tank body.

2. The cover body mechanism according to claim 1, wherein an inner side wall of the groove is provided with a concave chute communicating with the groove, the chute is horizontally arranged, one end of the second rotating shaft is connected with the connecting end, and the other end extends into the chute and is hinged with the chute and can slide along the chute; and

the first rotating shaft is arranged on one side of the second rotating shaft close to the holding end at an interval, the second rotating shaft slides horizontally along the chute and the connecting arm rises or falls along the first channel opening when the handle swings relative to the first cover body.

3. The cover body mechanism according to claim 2, wherein the connecting end has a first side and a second side which are adjacently arranged, the first side is an end face of the connecting end away from the holding end, and the second side is connected with the first side through an arc surface;

the bottom wall of the groove is in contact with the first side when the handle swings to the sealed state, and is in contact with the second side when the handle swings to the open state, and a distance between the first rotating shaft and the first side is greater than the distance between the first rotating shaft and the second side; and

the second rotating shaft is arranged on an end away from the holding end on the connecting end and the arc surface is flush with an outer surface of the second rotating shaft, the chute is arranged at the bottom of the inner side wall of the groove, an upper side of the second rotating shaft is capable of being in contact with a top wall of the chute, a lower side of the second rotating shaft is in contact with the bottom wall of the groove.

4. The cover body mechanism according to claim 3, wherein the connecting end is provided with a connecting groove in a direction from the first side toward the holding end, the two sides of the connecting groove penetrate through the connecting end, the connecting arm is inserted in the connecting groove, the upper end of the connecting arm is provided with a first shaft hole in a penetration manner for the first rotating shaft to pass through, both side walls of the connecting groove are respectively provided with a second shaft hole in a penetration manner for the first rotating shaft to pass through.

5. The cover body mechanism according to claim 4, wherein the second rotating shaft protrudes outward from one of the side walls of the connecting groove, and the second rotating shaft corresponding to the chute is arranged on a side wall of the groove, and a side of the groove opposite to the chute is provided with a third channel opening for loading and unloading the first rotating shaft;

wherein the first wall plate and the second wall plate are respectively arranged at both ends of the bottom plate in a length direction, the chute is arranged on the third wall plate along the length direction of the bottom plate, one end of the chute is arranged close to the first wall plate, the other end of the chute is arranged close to the second wall plate, and a distance between the chute and the first wall plate is greater than a distance between the chute and the second wall plate.

6. The cover body mechanism according to claim 5, wherein the first cover body is provided with a convex structure protruding in a lower side of the first cover body, the convex structure comprises a bottom plate, a first wall plate, a second wall plate and a third wall plate, the first wall plate, the second wall plate and the third wall plate being respectively connected with a lower part of the first cover body; the first wall plate, the second wall plate, the third wall plate and the bottom plate enclose to form the groove of which one side is the third channel opening, the first channel opening is arranged on the bottom plate, the chute is arranged on the third wall plate.

wherein the second channel opening is arranged on the first cover body along the length direction of the bottom plate, one end of the second channel opening is arranged close to the first wall plate, and the other end of the second channel is arranged close to the second wall plate, and a distance between the second channel opening and the first wall plate is less than a distance between the second channel opening and the second wall plate.

7. The cover body mechanism according to claim 6 wherein the holding end is arranged to be perpendicular with the connecting end, the first rotating shaft is arranged on one side of the second rotating shaft close to the holding end, the second rotating shaft is arranged on an end of the connecting end away from the holding end, and the holding end is arranged at one end of the connecting end close to the first wall plate when the handle is in the open state.

8. The cover body mechanism according to claim1, wherein the sealing ring is provided with a bending part, the bending part is arranged outside the second cover body, the bending part comprises a first bending section and a second bending section connected to each other, the second bending section is wigglably connected to an upper end of the first bending section, a connection position of the first bending section and the second bending section bends outward and expands when the bending part deforms outward and expands, and an inner side of the first bending section and an inner side of the second bending section are close to each other at the same time, and the second bending section is capable of being sealingly contact to the inner side wall of the storage cavity in the sealed tank body.

9. The cover body mechanism according to claim 8, wherein the first cover body is provided with a first cover plate, a first side plate extending downward from a rim of the first cover plate, and a first ring plate extending downward from a lower side of the first cover plate; and the first ring plate is coaxially arranged on an inner side of the first side plate, and the first ring plate and the first side plate are arranged at an interval to form a sealing groove;

the second cover body is provided with a second cover plate and a second ring plate extending upward from an upper side of the second cover plate, the second ring plate is coaxially arranged in an inner side of the first ring plate, the first ring plate and the second ring plate enclose a rising and falling cavity, the groove and connecting base are arranged in the rising and falling cavity, the second ring plate is shortened or extended relative to the first ring plate when the second cover body rises or falls, and a rim of the second ring plate and the rim of the second cover plate are arranged at an interval to form a supporting edge; and

the sealing ring is further provided with a first socket part connected with an upper end of the bending part and a second socket part connected with a lower end of the bending part, the first socket part is sleeved with an outer side of the first ring plate, the second socket part is sleeved with an outer side of the second ring plate, an inner wall of the first socket part is in contact with a top wall of the sealing groove, an outer wall of the second socket part is in contact with a top surface of the supporting edge.

10. The cover body mechanism according to any one of claims 1-9, wherein the upper side of the second cover body is provided with a plurality of first bosses in an annular arrangement, the first bosses are respectively provided with first slots, each of the first slots is provided with a first opening, the first opening is arranged on a side wall of a corresponding one of the first bosses, a plurality of first openings of the first slots are arranged in turn in a counterclockwise or clockwise direction; and

the side wall of the connecting ring is provided with first convex blocks corresponding to the first slots, the first convex blocks are capable of clamping to or detaching from the first slots through the first openings as the connecting ring rotates with respect to the second cover body.

11. The cover body mechanism according to claim 10, wherein the plurality of first openings of the first slots are arranged in turn in the counterclockwise direction; adjacent two of the first bosses are provided therebetween with a first gap, the first convex blocks are in the first gap as the connecting ring extends into the upper side of the second cover body, and are screwed into the first slots along the clockwise direction through the first openings;

wherein the upper side of the second cover body is further provided with a plurality of second bosses in an annular arrangement, an annular groove for the sleeving of the connecting ring is formed between the plurality of the second boss and the plurality of first bosses, the second bosses and the first bosses are respectively arranged on both sides of the annular groove, and the plurality of the first bosses act as an outer ring of the annular groove, the plurality of the second bosses act as an inner ring of the annular groove, and the first slots communicate with the annular groove.

12. The cover body mechanism according to claim 11, wherein the plurality of second bosses are provided with second slots, each of the second slots is provided with a second opening, the second opening is arranged on a side wall of a corresponding one of the second bosses, the second openings of the plurality of second slots and the first openings of the first slots are arranged in the same direction, the second slots communicate with the annular groove;

the side wall of the connecting ring is provided with second convex blocks corresponding to the second slots, the second convex blocks are capable of clamping to or detaching from the sec-

ond slots through the second openings as the connecting ring rotates with respect to the second cover body; and the second convex blocks and the first convex blocks are arranged on both sides of the connecting ring;
wherein adjacent two of the second bosses are provided therebetween with a second gap, the second convex blocks are in the second gap as the connecting ring extends into the upper side of the second cover body, and are screwed into the second slots along the clockwise direction through the second openings;
wherein the plurality of second bosses are arranged opposite to the plurality of first bosses in one-to-one correspondence, and the plurality of the second convex blocks are arranged to face away from the plurality of first convex blocks in one-to-one correspondence.

13. A sealed container, wherein the sealed container comprises a sealed tank body and the cover body mechanism according to any one of claims 1-12, the sealed tank body is provided with a storage cavity and a first opening, the first opening communicates with the storage cavity, the storage cavity is used to store items, the cover body mechanism is detachable installed on the top of the sealed tank body and covers the first opening, an inner side wall of the storage cavity is provided with an inclined plane, the bending part can fit to the inclined plane when the bending part deforms and expands.

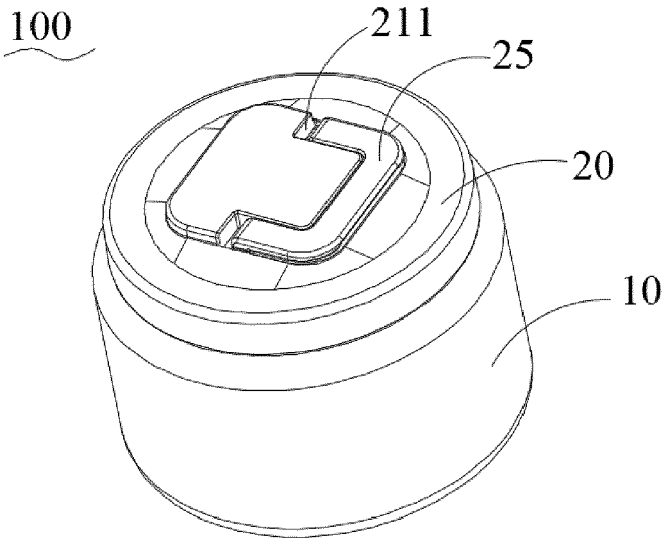


FIG. 1

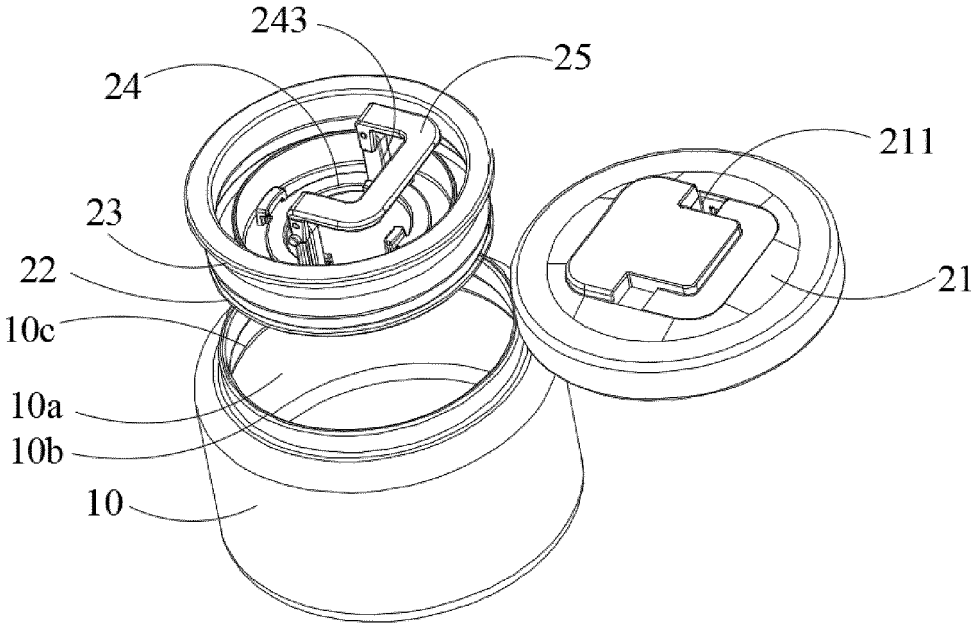
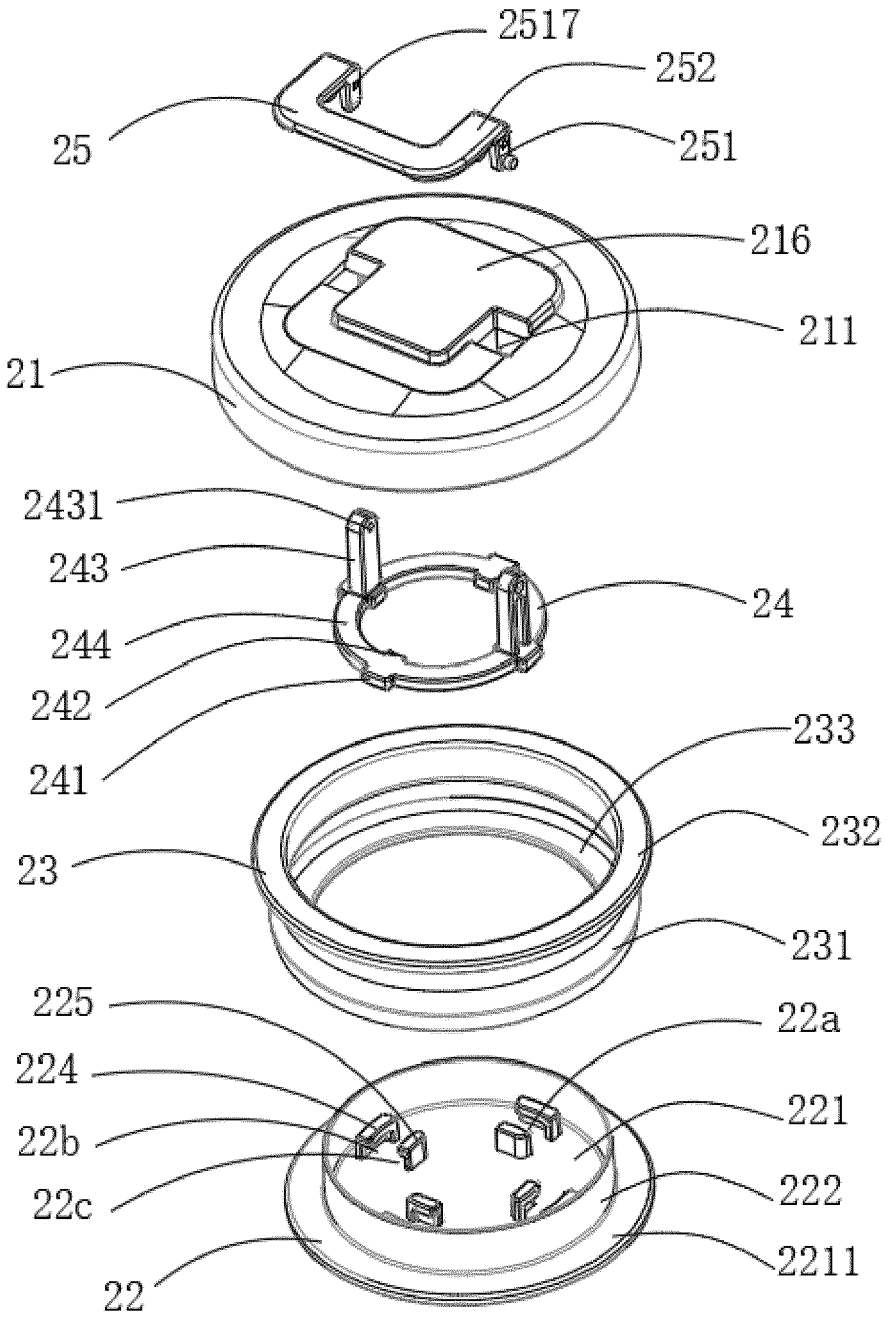


FIG. 2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22a
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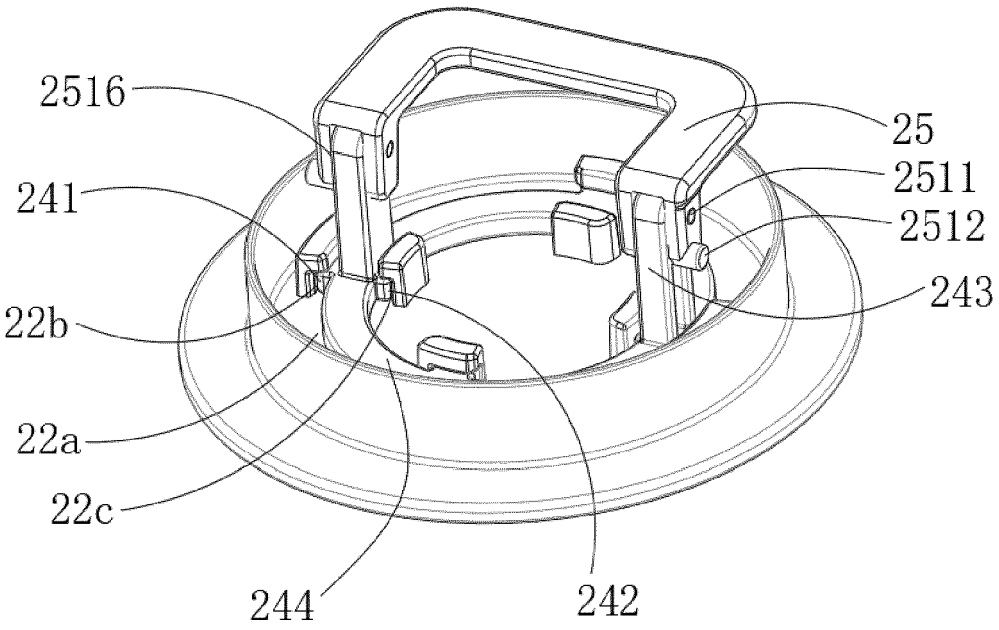
22b
22c
222
2211
22

FIG. 3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22c
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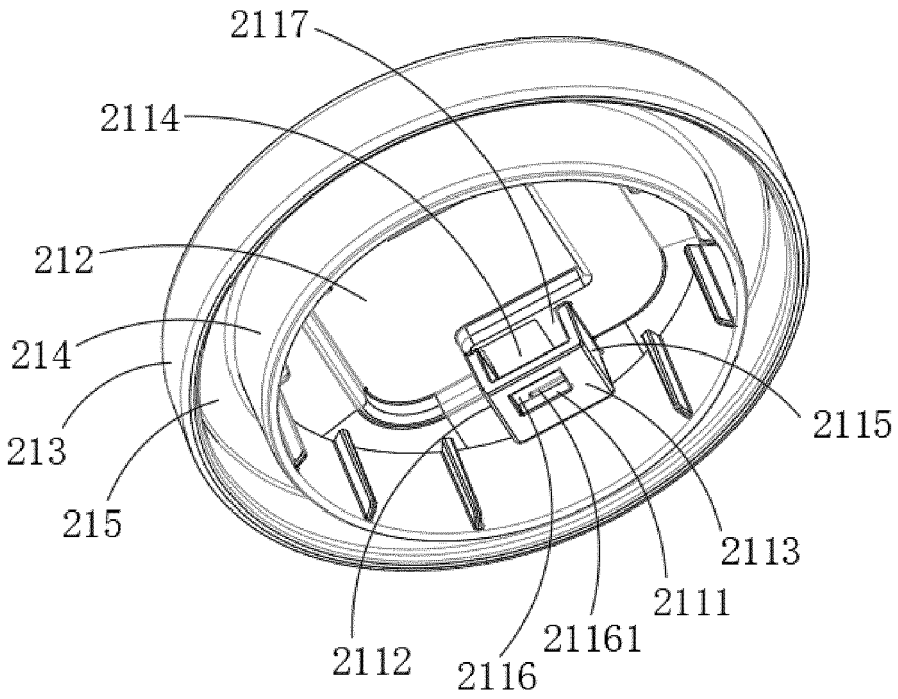
FIG.4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213
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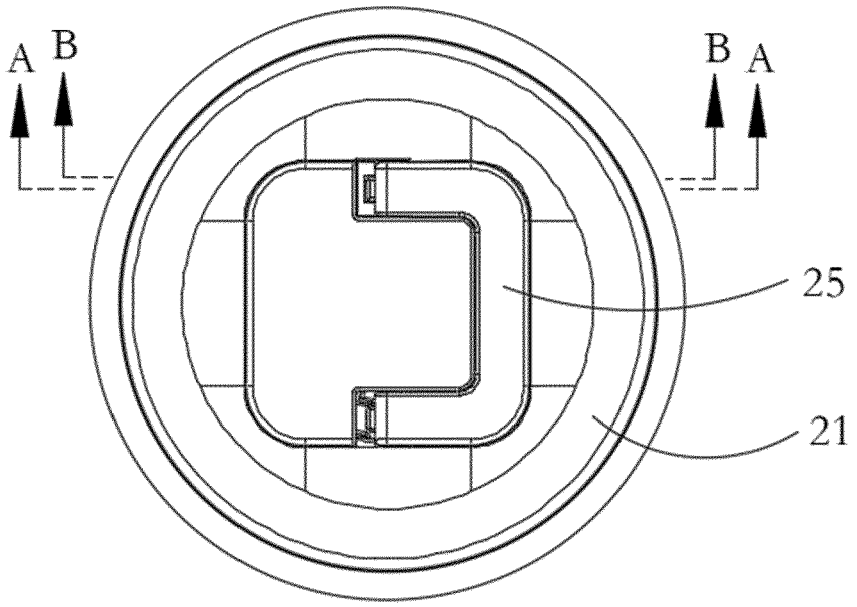
FIG.5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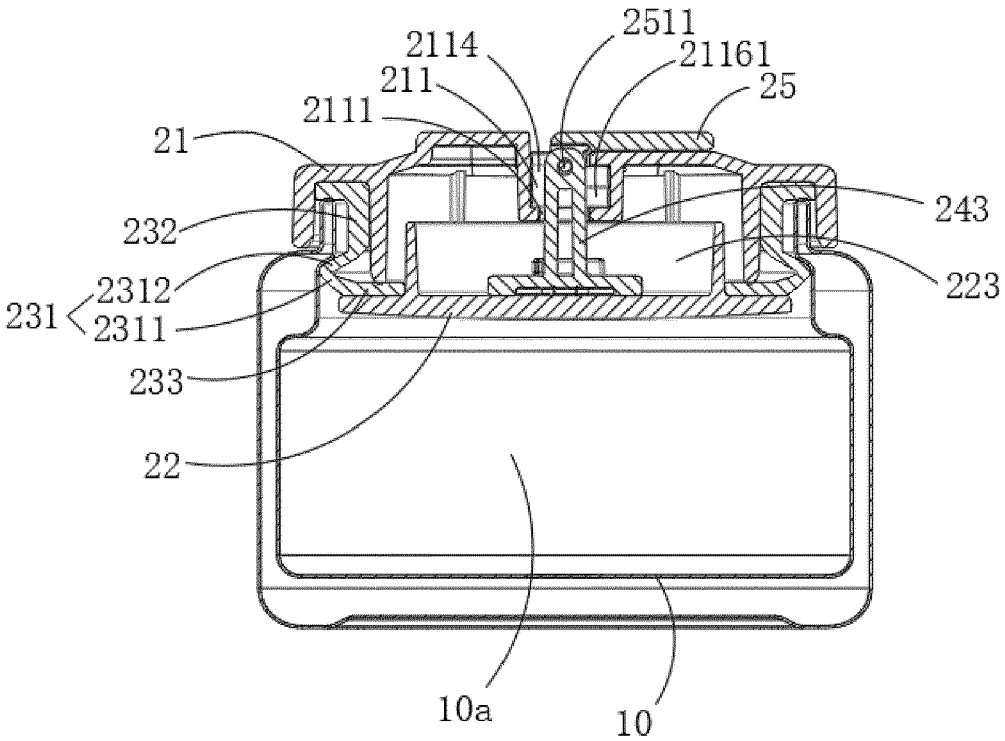
B
B
A
25
21

FIG.6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10a
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FIG.7

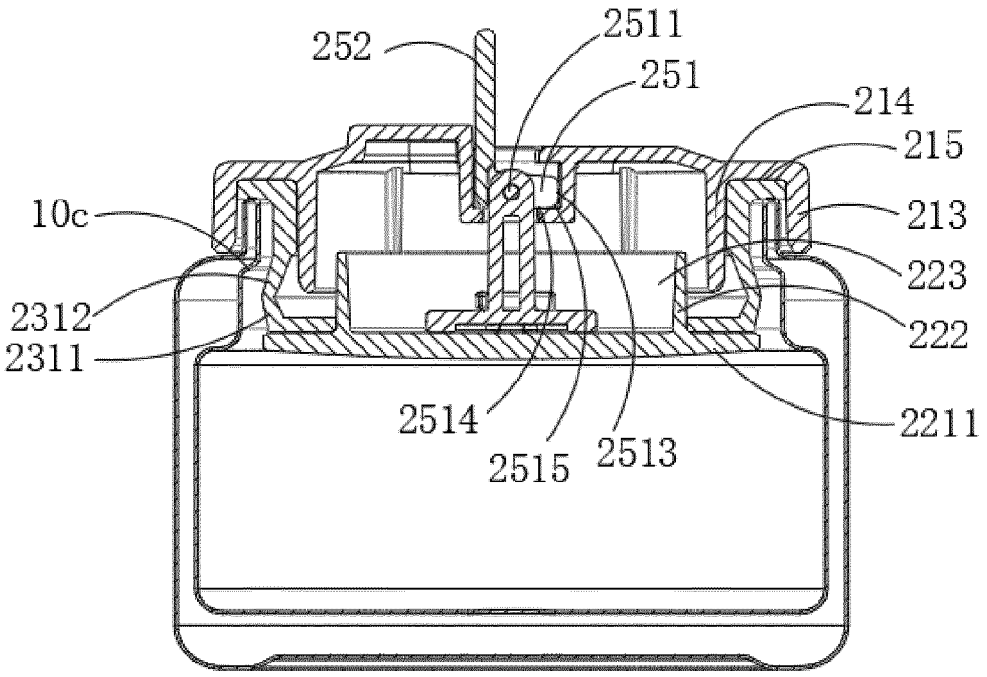
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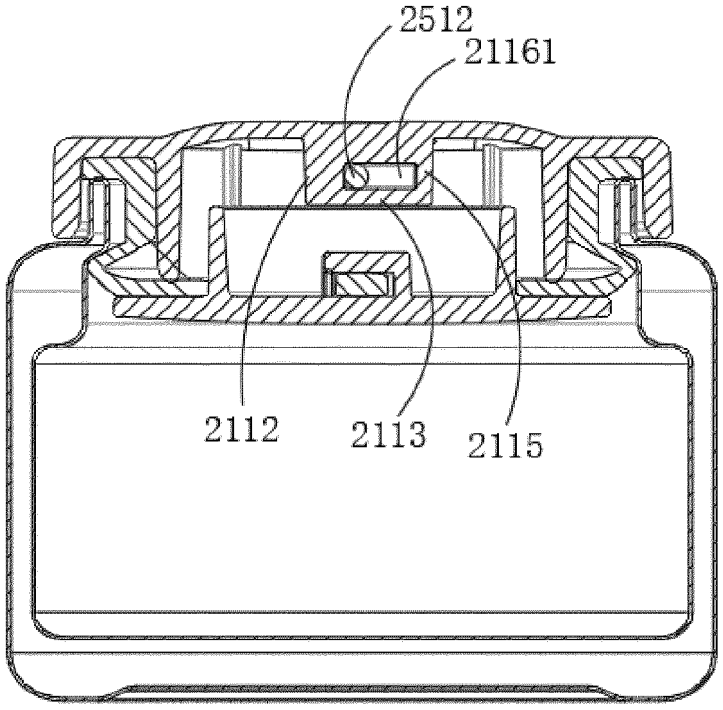
FIG.8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2115

FIG.9

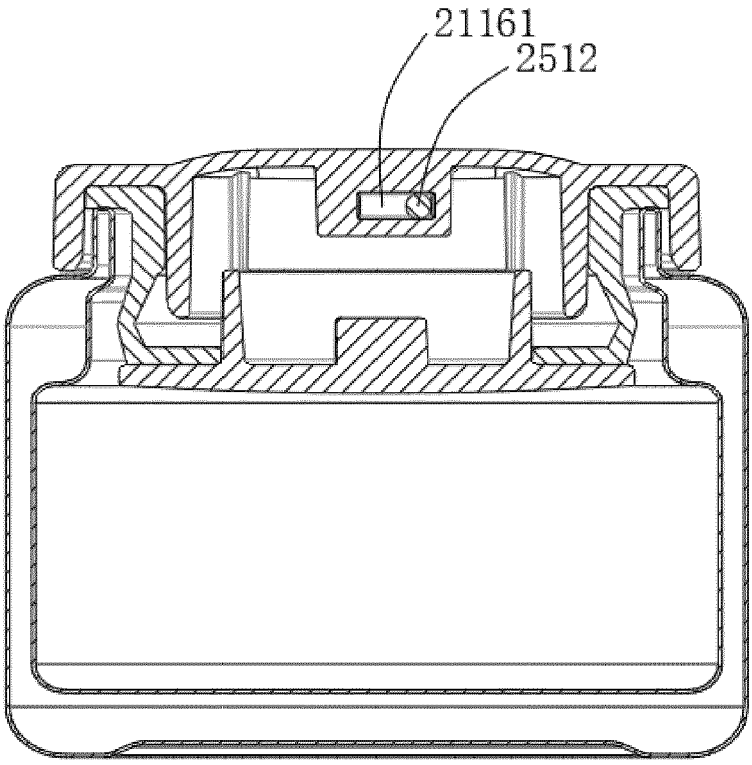

FIG.10

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EUROPEAN SEARCH REPORT

Application Number
EP 23 19 2537

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	WO 2020/039336 A1 (MASTER PLANS LLC [US]; WONG SIU WAH [US]) 27 February 2020 (2020-02-27) * figures 1-6 *	1-13	INV. A47G19/22 B65D45/02
A	US 2020/247598 A1 (LIU SHENG-YU [TW]) 6 August 2020 (2020-08-06) * figures 1-5 *	1-13	
A	US 2010/084365 A1 (LIU SHENG-YU [TW]) 8 April 2010 (2010-04-08) * figures 1-12 *	1-13	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47G B65D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	7 December 2023	Sacepe, Nicolas

CATEGORY OF CITED DOCUMENTS

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D : document cited in the application
L : document cited for other reasons

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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 23 19 2537

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07-12-2023

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2020039336 A1	27-02-2020	CN 112888637 A	01-06-2021
		TW 202014351 A	16-04-2020
		WO 2020039336 A1	27-02-2020
US 2020247598 A1	06-08-2020	DE 102019122997 A1	06-08-2020
		GB 2581224 A	12-08-2020
		US 2020247598 A1	06-08-2020
US 2010084365 A1	08-04-2010	AT E533701 T1	15-12-2011
		CA 2668230 A1	07-04-2010
		EP 2174882 A1	14-04-2010
		JP 3155966 U	10-12-2009
		KR 20100039228 A	15-04-2010
		TW 201014776 A	16-04-2010
		US RE48332 E	01-12-2020
		US 2010084365 A1	08-04-2010

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