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(54) **ANTI-THEFT HANGING BOTTLE AND USE METHOD**

(57) The present invention discloses an anti-theft hanging bottle and a use method, which relate to the technical field of daily necessities. The anti-theft hanging bottle includes a bottle body and a bracket assembly, where an outer wall of the bottle body is provided with a recess, the recess including a first recess portion and a second recess portion which are arranged opposite each other; and the bracket assembly includes a housing, a first limiting member, and a second limiting member, the first limiting member and the second limiting member being at least partially located in the recess, the first limiting member being engaged with the first recess portion of the recess, and the second limiting member being engaged with the second recess portion of the recess. In a first direction, the second limiting member has a first movement position in which the second limiting member is engaged with the second recess portion of the recess, and a second movement position in which the second limiting member is disengaged from the second recess portion of the recess. The movement of the second limiting member enables anti-theft protection for and replacement of the bottle body. It is only necessary to form the recess in a side wall of the bottle body, and even if the recess has dimensional deviations, the engagement between the bracket assembly and the bottle body will not be affected.

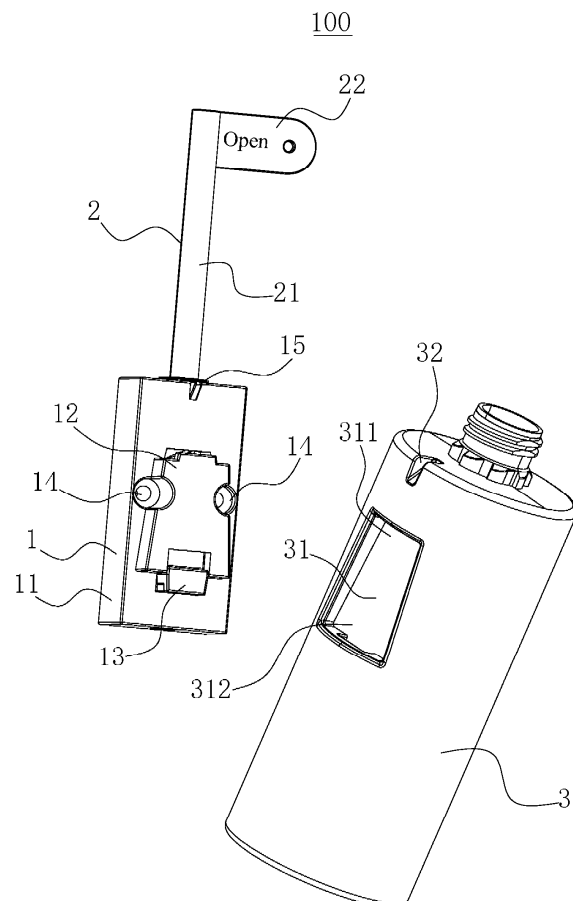


**FIG. 1**

## Description

### Cross Reference to Related Applications

[0001] The present application claims priority and benefit of Chinese Patent Application No. 202311735054.8 filed on November 13, 2024. The entire contents of the foregoing application are hereby incorporated by reference herein in its entirety for all purposes.

### Technical Field

[0002] The present invention relates to the technical field of daily necessities, and in particular an anti-theft hanging bottle and a use method.

### Background Art

[0003] Existing shower products hung in shower rooms are very popular in households, public restrooms and hotels. Hanging bottles used in public areas are different from those for home use. The bottles of shower products used in public areas are required to have an anti-theft design when hung in the shower rooms, that is, the bottles are not easy to be taken away but are easy to install and replace. In the existing designs of bracket assemblies, generally, a bottle body can be easily removed from a bracket assembly by only using a simple tool, such as a screwdriver, significantly compromising anti-theft effectiveness.

[0004] For some designs, it is necessary to change the shape of the bottle body to accommodate the bracket in order to achieve a certain support and firmness. The disadvantage is that the bottle body is deformed and cannot be made into the best shape of the traditional bottle body such as a cylinder. In addition, the existence of protruding and recessed parts often affects the production process, increases the complexity of a mould and reduces the production speed, while making the processing processes such as printing and labelling more difficult and wasteful.

[0005] Therefore, there are no good anti-theft design measures for hanging bottles used in public areas, and the operation of replacing the bottle body is also cumbersome, significantly compromising practicality.

### Summary

[0006] An objective of the present invention is to provide an anti-theft hanging bottle and a use method, in order to remedy the disadvantage that the bottle bodies used in public areas are easily lost, and cannot be quickly replaced.

[0007] Technical solutions for achieving the above objective are as follows.

[0008] An anti-theft hanging bottle, including a bottle body and a bracket assembly, where an outer wall of

the bottle body is provided with a recess, the recess including a first recess portion and a second recess portion which are arranged opposite each other; and the bracket assembly includes a housing, a first limiting member, and a second limiting member, the first limiting member being mounted to the housing, the second limiting member being movably arranged in the housing, the first limiting member being engaged with the first recess portion of the recess, and the second limiting member being engaged with the second recess portion of the recess,

where in a first direction, the second limiting member has a first movement position in which the second limiting member is engaged with the second recess portion of the recess, and a second movement position in which the second limiting member is disengaged from the second recess portion of the recess.

[0009] In some embodiments, the bracket assembly has a driving rod mounted in the housing and rotationally engaged with the housing, the driving rod being configured to extend in the first direction; at least part of the second limiting member is sleeved over an outer wall of the driving rod, and an outer wall of the second limiting member abuts against an inner wall of the housing; and the second limiting member has an internal thread, the driving rod has an external thread, and the second limiting member is threadedly engaged with the driving rod.

[0010] In some embodiments, the anti-theft hanging bottle is provided with a key assembly, a top of the driving rod is provided with a lock groove, and the key assembly is provided with an unlocking head corresponding to the lock groove; and the key assembly is configured to drive the driving rod to bring the second limiting member into the first movement position and the second movement position.

[0011] In some embodiments, the key assembly includes a driver plate and a stick, the driver plate being mounted to a first end of the stick, and a length direction of the driver plate intersecting a length direction of the stick; the unlocking head is mounted to a second end of the stick;

the unlocking head has a plurality of adaptation blocks, the number of lock grooves corresponding to the number of adaptation blocks; and the plurality of adaptation blocks are evenly distributed in a circumferential direction of the unlocking head, and the plurality of lock grooves are evenly distributed in a circumferential direction of the driving rod.

[0012] In some embodiments, the housing has a first limiting groove and a second limiting groove, and a limiting block is provided at a first end of the driving rod, the first limiting groove being U-shaped, the limiting block being rotationally engaged with the first limiting groove, and a second end of the driving rod being located in the second limiting groove and rotationally engaged with the second limiting groove.

[0013] In some embodiments, a positioning block is

provided on a side of the housing close to the bottle body, and the outer wall of the bottle body is provided with a positioning groove engaged with the positioning block.

**[0014]** In some embodiments, the first limiting member includes a first engagement block and a first abutment block, the first engagement block being of an integral structure with the first abutment block; the second limiting member includes a second engagement block and a second abutment block, the second engagement block being of an integral structure with the second abutment block; the first abutment block and the second abutment block are both mounted in the housing, and the second abutment block is at least partially sleeved outside the driving rod; the recess has a T-shaped cross-section, and at least parts of the first engagement block and the second engagement block are in form-fit engagement with the recess; the first engagement block is configured to be engaged with the first recess portion, and the second engagement block is configured to be engaged with the second recess portion; an outer wall of the first abutment block fits against the outer wall of the bottle body and an inner wall of the recess; and/or an outer wall of the second abutment block fits against the outer wall of the bottle body and the inner wall of the recess.

**[0015]** In some embodiments, the bracket assembly is further provided with a mounting plate, and the housing has a mounting cavity, a first opening and a second opening, the first opening being arranged opposite to the second opening, the mounting plate being mounted to the first opening of the housing, the first abutment block and the second abutment block being at least partially located in the mounting cavity and at the second opening, and the sum of heights of the first abutment block and the second abutment block being less than a height of the second opening; and the mounting plate has a mounting hole arranged opposite the recess, the mounting hole allowing a fastener to pass through a wall such that the housing is mounted to the wall.

**[0016]** In some embodiments, the mounting plate is provided with a bearing housing, the bearing housing being sleeved outside and rotationally engaged with the driving rod.

**[0017]** The present invention also proposes a use method for an anti-theft hanging bottle, the method including:

a first step of hanging a recess of a bottle body from a first limiting member, to engage the first limiting member with a first recess portion; and a second step of driving a second limiting member to move from a second movement position to a first movement position, to engage the second limiting member with a second recess portion; and driving the second limiting member to move from the second movement position to the first move-

ment position, to remove the bottle body from the first limiting member.

**[0018]** The technical solutions provided by the present invention have the following advantages and effects.

**[0019]** The bracket assembly is mounted to the wall, the recess of the bottle body is configured to be engaged with the bracket assembly, the first limiting member of the bracket assembly is configured to be engaged with the first recess portion of the bottle body, and the second limiting member of the bracket assembly is configured to be engaged with the second recess portion of the bottle body. By moving the second limiting member to a designated position, the bottle body is tightly engaged with the bracket assembly, preventing the bottle body from being stolen. In use, the second limiting member is moved to the first movement position, and the first limiting member and the second limiting member are brought into an engaged state with the recess. When replacement of the bottle body is required, the second limiting member is moved to the second movement position, in which case the second limiting member is disengaged from the second recess portion to facilitate removal of the bottle body. The movement of the second limiting member enables anti-theft protection for and replacement of the bottle body. In addition, the bottle body can be of any shape, as long as a side wall of the bottle body is provided with the recess. There is also a strong compatibility with the dimensions of the recess, and even if the recess has dimensional deviations, the engagement between the first limiting member and the second limiting member of the bracket assembly and the recess will not be affected. Such an anti-theft hanging bottle is more suitable for use in public places, has a simple structure, is easy to produce, and is aesthetically pleasing and environmentally friendly.

#### Brief Description of the Drawings

**[0020]** The accompanying drawings herein show specific examples of the technical solutions of the present invention, form a part of the description with specific implementations, and are intended to explain the technical solutions, principle and effect of the present invention.

**[0021]** Unless otherwise specified or defined, the same reference signs in different accompanying drawings represent the same or similar technical features, and different reference signs may be used to represent the same or similar technical features.

Fig. 1 is a schematic structural perspective view of an embodiment of the present invention;

Fig. 2 is a schematic view of a key assembly and a bracket assembly according to an embodiment of the present invention;

Fig. 3 is a front view of the key assembly and the bracket assembly according to an embodiment of the present invention;

Fig. 4 is a cross-sectional view taken along line A-A in Fig. 3 according to an embodiment of the present invention;

Fig. 5 is a cross-sectional view of the bracket assembly engaged with a bottle body according to an embodiment of the present invention;

Fig. 6 is an enlarged view of part B in Fig. 4 according to an embodiment of the present invention; and

Fig. 7 is a schematic view of the interior of a housing according to an embodiment of the present invention.

List of reference signs:

**[0022]** 100. Anti-theft hanging bottle; 1. Bracket assembly; 11. Housing; 10. Mounting cavity; 111. First limiting groove; 112. Second limiting groove; 12. First limiting member; 121. First engagement block; 122. First abutment block; 13. Second limiting member; 131. Second engagement block; 132. Second abutment block; 14. Mounting hole; 15. Positioning block; 16. Mounting plate; 17. Driving rod; 171. Limiting block; 172. Lock groove; 173. External thread; 18. Gasket; 19. Bearing housing; 2. Key assembly; 21. Stick; 22. Driver plate; 23. Unlocking head; 231. Adaptation block; 3. Bottle body; 31. Recess; 311. First recess portion; 312. Second recess portion; 32. Positioning groove; 33. Chamber.

### Detailed Description of Embodiments

**[0023]** For ease of understanding the present invention, specific embodiments of the present invention will be described in more detail with reference to accompanying drawings of the description.

**[0024]** Unless specifically stated or otherwise defined, the terms "first, second, ..." used herein are merely intended to distinguish names and do not represent the specific number or order.

**[0025]** Unless specifically stated or otherwise defined, the term "and/or" used herein includes any and all combinations of one or more related listed items.

**[0026]** It should be noted that when an element is said to be "fixed to" another element, it may be directly fixed to the other element or an intervening element may be present. When an element is said to be "connected" to another element, it may be directly connected to the other element or an intervening element may be also present. When an element is said to be "mounted on" another element, it may be directly mounted on the other element or an intervening element may be also present. When an element is said to be "arranged at" another element, it may be directly arranged at the other element or an intervening element may be also present.

**[0027]** As shown in Figs. 1 to 7, an anti-theft hanging bottle 100 includes a bottle body 3 and a bracket assembly 1. An outer wall of the bottle body 3 is provided with a recess 31, and the bottle body 3 is internally provided with a chamber 33. The chamber 33 is configured to contain liquids such as body wash, perfume, essential oils, hand wash, shampoos. The recess 31 includes a first recess portion 311 and a second recess portion 312 which are arranged opposite each other. The bracket assembly 1 includes a housing 11, a first limiting member 12, and a second limiting member 13. The first limiting member 12 is mounted to the housing 11, the second limiting member 13 is movably arranged in the housing 11, the first limiting member 12 is engaged with the first recess portion 311 of the recess 31, and the second limiting member 13 is engaged with the second recess portion 312 of the recess 31. In a first direction, the second limiting member 13 has a first movement position in which the second limiting member 13 is engaged with the second recess portion 312 of the recess 31, and a second movement position in which the second limiting member 13 is disengaged from the second recess portion 312 of the recess 31. The bracket assembly 1 is mounted to the wall, the recess 31 of the bottle body 3 is configured to be engaged with the bracket assembly 1, the first limiting member 12 of the bracket assembly 1 is configured to be engaged with the first recess portion 311 of the bottle body 3, and the second limiting member 13 of the bracket assembly 1 is configured to be engaged with the second recess portion 312 of the bottle body 3. By moving the second limiting member 13 to a designated position, the bottle body 3 is tightly engaged with the bracket assembly 1, preventing the bottle body 3 from being stolen.

**[0028]** In use, the second limiting member 13 is moved to the first movement position, and the first limiting member 12 and the second limiting member 13 are brought into an engaged state with the recess 31. When replacement of the bottle body 3 is required, the second limiting member 13 is moved to the second movement position, in which case the second limiting member 13 is disengaged from the second recess portion 312 to facilitate removal of the bottle body 3. The movement of the second limiting member 13 enables anti-theft protection for and replacement of the bottle body 3. In addition, the bottle body 3 can be of any shape, as long as a side wall of the bottle body 3 is provided with the recess 31. There is also a strong compatibility with the dimensions of the recess 31, and even if the recess has dimensional deviations, the engagement between the first limiting member 12 and the second limiting member 13 of the bracket assembly 1 and the recess 31 will not be affected. Such an anti-theft hanging bottle 100 is more suitable for use in public places, has a simple structure, is easy to produce, and is aesthetically pleasing and environmentally friendly.

**[0029]** To further achieve the movement of the second limiting member 13, as shown in Figs. 2 to 5, the bracket assembly 1 has a driving rod 17. The driving rod 17 is mounted in the housing 11 and rotationally engaged with the housing 11, and the driving rod 17 is configured to extend in the first direction. The second limiting member 13 is sleeved over an outer wall of the driving rod 17 and is at least partially located in the housing 11, and an outer wall of the second limiting member 13 abuts against an inner wall of the housing 11. The second limiting member 13 has an internal thread, the driving rod 17 has an external thread 173, and the second limiting member 13 is threadedly engaged with the driving rod 17. By rotating the driving rod 17, where the driving rod 17 is threadedly engaged with the second limiting member 13, and at least part of the second limiting member 13 is located in the housing 11 and abuts against the inner wall of the housing 11, the housing 11 prevents the second limiting member 13 from rotating with the driving rod 17, causing the second limiting member 13 to move in the first direction, thereby bringing the second limiting member 13 into the first movement position and the second movement position in the first direction.

**[0030]** The driving rod 17 is of a threaded rod structure and is made of plastic, and the bracket assembly 1 is placed in a shower room or toilet. The driving rod 17 is made of a material that does not rust, thereby increasing the service life of the bracket assembly 1. Furthermore, the driving rod 17 is placed inside the housing 11 to prevent the driving rod 17 from being exposed to the outside, thereby preventing people outside the bracket assembly 1 from rotating the driving rod 17. The housing 11 may be internally provided with a motor, by which the driving rod 17 is rotated clockwise or counterclockwise, to achieve electrically controlled unlocking and replacement of the bottle body 3, so that operation is simpler and use is more intelligent.

**[0031]** In this embodiment, the driving rod 17 made of plastic, which is not susceptible to aging and rust when engaged with the second limiting member 13, is used to push the second limiting member 13, the second limiting member 13 is responsible for fastening the bottle body 3, and the position of the second limiting member 13 can be adjusted with the rotation magnitude of the driving rod 17 to solve the gap issue resulting from the dimensional tolerances of the bottle body 3, so that the bottle body 3 is more stable on the bracket assembly 1.

**[0032]** In this embodiment, the driving rod 17 of the present invention is engaged with the second limiting member 13 to allow the bottle body 3 to adopt a recessed hanging configuration. Since the first limiting member 12 and the second limiting member 13 of the bracket assembly 1 are recessed to the interior of the bottle, the overall shape of the bottle body 3 has no protruding parts, so that the printing, labelling and other processes will not be affected, and the space required

for boxing the bottle body 3 also will not be increased, thereby reducing production costs and transportation costs. In addition, the recessed hanging configuration utilizes the bottle wall to bear the weight, without the need for increasing the wall thickness of a preform of the bottle body 3, thereby reducing the resin consumption of the bottle body 3 and minimizing material waste.

**[0033]** To achieve the unlocking or replacement of the bottle body 3, as shown in Figs. 1 to 4 and 6, the anti-theft hanging bottle 100 is provided with a key 2 assembly, a top of the driving rod 17 is provided with a lock groove 172, and the key assembly 2 is provided with an unlocking head 23 corresponding to the lock groove 172; and the key assembly 2 is configured to drive the driving rod 17 to bring the second limiting member 13 into the first movement position and the second movement position. The unlocking head 23 of the key assembly 2 corresponds to the lock groove 172 of the driving rod 17 and, in actual production, the unlocking head 23 is relatively unique to the driving rod 17. Only when the unlocking head 23 of the key assembly 2 is engaged with the lock groove 172 can the rotation of the driving rod 17 be adjusted, thereby unlocking or replacing the bottle body 3.

**[0034]** To improve the convenience of replacing the bottle body 3, as shown in Figs. 1 to 4 and 6, the key 2 assembly includes a driver plate 22 and a stick 21. The driver plate 22 is mounted to a first end of the stick 21, and a length direction of the driver plate 22 intersects a length direction of the stick 21. The unlocking head 23 is mounted to a second end of the stick 21. The driver plate 22 is held to drive the stick 21 to rotate the driving member 17, the length direction of the driver plate 22 intersecting the length direction of the stick 21, so that a simple lever structure is formed between the driver plate 22 and the stick 21, to reduce the force acting on the driver plate 22, thereby further improving the convenience of replacing the bottle body 3.

**[0035]** To improve the anti-theft performance of the bottle body 3, as shown in Figs. 1 to 4 and 6, the unlocking head 23 has a plurality of adaptation blocks 231, the number of lock grooves 172 corresponding to the number of adaptation blocks 231; and the plurality of adaptation blocks 231 are evenly distributed in a circumferential direction of the unlocking head 23, and the plurality of lock grooves 172 are evenly distributed in a circumferential direction of the driving rod 17. Alternatively, the unlocking head 23 and the lock groove 172 may be matched in a specific pattern, so that the shape of the unlocking head 23 and the shape of the lock groove 172 are unique, thereby improving the anti-theft performance.

**[0036]** When designing the anti-theft performance of the bottle body 3, the production cost of the anti-theft hanging bottle 100 needs to be taken into account. In addition, the body wash, perfume, shampoo, and hand wash in public places are not expensive in themselves. Therefore, by using the plurality of adaptation blocks

231 corresponding to the plurality of lock grooves 172, the anti-theft performance of the bottle body 3 is improved while the production cost thereof is lower relative to an electronic lock or a mechanical lock. For example, the provision of a plurality of lock grooves 172 on the top of the driving rod 17 and the addition provision of a plurality of adaptation blocks 231 on the unlocking head 23 make the production process simpler. Although the anti-theft hanging bottle 100 cannot be compared with the electronic and mechanical locks in terms of the anti-theft performance, it is very suitable for the low-value bottle body 3. Moreover, theft of the bottle body 3 requires an unlocking head 23 adapted to the plurality of lock grooves 172. Although a screwdriver can be inserted into the lock groove 172, the screwdriver cannot be engaged with the lock groove 172, and the anti-theft performance of the bottle body 3 is thus increased by engaging the adaptation block 231 with the lock groove 172.

**[0037]** To improve the stability of the driving rod 17 in the housing 11, as shown in Figs. 4 to 6, the housing 11 has a first limiting groove 111 and a second limiting groove 112, and a limiting block 171 is provided at a first end of the driving rod 17. The first limiting groove 111 is U-shaped, the limiting block 171 is rotationally engaged with the first limiting groove 111, and a second end of the driving rod 17 is located in the second limiting groove 112 and rotationally engaged with the second limiting groove 112. By providing the limiting block 171 at the first end of the driving rod 17, the limiting block 171 is configured to be rotationally engaged with the U-shaped first limiting groove 111, the second end of the driving rod 17 is configured to be rotationally engaged with the second limiting groove 112, and the first limiting groove 111 and the second limiting groove 112 are configured to limit the lateral movement of the driving rod 17, thereby increasing the stability of the driving rod 17 in the housing 11.

**[0038]** In this embodiment, the top of the housing 11 is further provided with a gasket 18. Since during the mounting of the driving rod 17, the top of the housing 11 generally has a relatively large opening or is made of an elastic material, the driving rod 17 can be easily mounted in the housing 11. After the mounting of the driving rod is completed, the gasket 18 is added at the opening of the top of the housing 11, and inner and outer walls of the gasket 18 are configured to abut against the housing 11 and the driving rod 17, respectively, to further improve the stability of the driving rod 17 in the housing 11.

**[0039]** To further improve the convenience of replacing the bottle body 3, as shown in Fig. 1, a positioning block 15 is provided on a side of the housing 11 close to the bottle body 3, and the outer wall of the bottle body 3 is provided with a positioning groove 32 engaged with the positioning block 15. In this embodiment, the protruding positioning block 15 of the bracket assembly 1 is engaged with the positioning groove 32

of the bottle body 3, and when the bottle body 3 is mounted to the bracket assembly 1, the positioning block 15 may be used to align the bottle body 3 with the bracket assembly 1, and the first limiting member 12 and the second limiting member 13 are then introduced into the recess 31 of the bottle body 3. Compared to the other mounting designs without positioning features, which require a user to manually perform visual alignment, the recess 31 of the bottle body 3 in this embodiment will be concealed after the bottle body 3 is mounted, thereby not only improving the aesthetics but also making the mounting of the bottle body 3 easier. By setting the positions of the positioning block 15 and the positioning groove 32, after the positioning block 15 is engaged with the positioning groove 32, the first limiting member 12 corresponds to the recess 31, so that the mounting speed of the bottle body 3 and the bracket assembly 1 is increased, further improving the convenience of replacing the bottle body 3.

**[0040]** To improve the stability of the bracket assembly 1 and the bottle body 3 when engaged, as shown in Fig. 5, the first limiting member 12 includes a first engagement block 121 and a first abutment block 122, the first engagement block 121 being of an integral structure with the first abutment block 122; the second limiting member 13 includes a second engagement block 131 and a second abutment block 132, the second engagement block 131 being of integral structure with the second abutment block 132; the first abutment block 122 and the second abutment block 132 are both mounted in the housing 11, and the second abutment block 132 is at least partially sleeved outside the driving rod 17; the recess 31 has a T-shaped cross-section, the first engagement block 121 is configured to be engaged with the first recess portion 311, and the second engagement block 131 is configured to be engaged with the second recess portion 312; an outer wall of the first abutment block 122 fits against the outer wall of the bottle body 3 and an inner wall of the recess 31; and/or an outer wall of the second abutment block 132 fits against the outer wall of the bottle body 3 and the inner wall of the recess 31. After the first limiting member 12 is engaged with the first recess portion 311, the outer wall of the first abutment block 122 fits against the outer wall of the bottle body 3 and the inner wall of the recess 31, improving the compactness of the connection between the first limiting member 12 and the bottle body 3. After the second limiting member 13 is engaged with the second recess portion 312, the outer wall of the second abutment block 132 fits against the outer wall of the bottle body 3 and the inner wall of the recess 31, improving the compactness of the connection between the second limiting member 13 and the bottle body 3. When the first limiting member 12 and the second limiting member 13 are moved away from each other, i.e., the second limiting member 13 is moved to the first movement position, the first engagement block 121 and the second engagement block 131

abut against the first recess portion 311 and the second recess portion 312 of the recess 31, respectively. Furthermore, the recess 31 has a T-shaped cross-section, and the first engagement block 121 and the second engagement block 131 are in form-fit engagement with the recess 31, and the first engagement block 121 and the second engagement block 131 exert outward-expanding tension on the recess 31. When both the first abutment block 122 and the second abutment block 132 fit against the outer wall of the bottle body 3, the bracket assembly 1 is tightly engaged with the bottle body 3, and even if force is applied to the bottle body 3, the bottle body 3 is less likely to be detached from the bracket assembly 1, thereby improving the stability of the bracket assembly 1 and the bottle body 3 when engaged.

**[0041]** To further improve the anti-theft performance of the anti-theft hanging bottle 100, as shown in Figs. 1 to 3 and 5, the bracket assembly 1 is further provided with a mounting plate 16, and the housing 11 has a mounting cavity 10, a first opening and a second opening. The first opening is arranged opposite to the second opening, the mounting plate 16 is mounted to the first opening of the housing 11, the first abutment block 122 and the second abutment block 132 are at least partially located in the mounting cavity 10 and at the second opening, and the sum of heights of the first abutment block 122 and the second abutment block 132 is less than a height of the second opening. The mounting plate 16 has a mounting hole 14. The mounting hole 14 is arranged opposite the recess 31, and the mounting hole 14 allows a fastener to pass through a wall such that the housing 11 is mounted to the wall. By providing the mounting hole 14 in the mounting plate 16 and arranging the mounting hole 14 opposite the recess 31, the fastener is used to pass through the mounting hole 14 when mounting the bracket assembly 1, to fix the housing 11 to the wall. The fastener is located at the second opening. With such a configuration of the mounting hole 14, after the bottle body 3 is engaged with the bracket assembly 1, since the recess 31 of the bottle body 3 will conceal the position of the second opening while concealing the fastener, when the bottle body 3 is hung from the bracket assembly 1, the fastener is in a hidden state and cannot be removed by an external person using a screwdriver. This prevents the bracket assembly 1 and the bottle body 3 from being stolen, further improving the anti-theft performance of the anti-theft hanging bottle 100. The position of the mounting hole 14 is cleverly arranged, and does not affect the mounting of the bracket assembly 1 and also improves the aesthetics of the bracket assembly 1.

**[0042]** As shown in Fig. 7, the mounting plate 16 is provided with a bearing housing 19. The bearing housing 19 is sleeved outside the driving rod 17 and is rotationally engaged with the driving rod 17. The bearing housing 19 contains a bearing, and the friction force

between the driving rod 17 and the housing 11 when rotationally engaged is reduced by sleeving the bearing housing 19 outside the driving rod 17, thereby reducing the force required for driving the driving rod 17. Moreover, the bearing housing 19 may also be provided in the first limiting groove 111 or in the second limiting groove 112.

**[0043]** As shown in Figs. 1 to 7, a use method for an anti-theft hanging bottle 100 includes:

a first step of hanging a recess 31 of a bottle body 3 from a first limiting member 12, to engage the first limiting member 12 with a first recess portion 311; and

a second step of driving a second limiting member 13 to move from a second movement position to a first movement position, to engage the second limiting member 13 with a second recess portion 312; and

driving the second limiting member 13 to move from the second movement position to the first movement position, to remove the bottle body 3 from the first limiting member 12.

**[0044]** With the above-described use method, the step of replacing the bottle body 3 is simple, and the bottle body 3 can be fixed or the bottle body 3 can be removed from the bracket assembly 1 by only using the key assembly 2 to drive the driving member 17 to rotate clockwise or counterclockwise, to replace the bottle body with a new bottle body 3 containing body wash.

**[0045]** When the drawing is cited for description, it is intended to explain new features. In order to avoid the description not concise enough caused by repeated citing of the drawing, the drawing will not be cited for the described feature one by one when the description is clear.

**[0046]** The purpose of the above embodiments is to exemplarily reproduce and derive the technical solution of the present invention, and to describe the technical solution, purpose, and effect of the present invention completely. The purpose is to make the public understand the disclosure of the present invention more thoroughly and completely, and the scope of protection of the present invention is not limited herein.

**[0047]** The above embodiments are also not an exhaustive list based on the present invention. In addition, there may also be many other embodiments that are not listed. Any substitution and improvement made without violating the concept of the present invention shall fall within the scope of protection of the present invention.

## Claims

1. An anti-theft hanging bottle, **characterized by** comprising a bottle body and a bracket assembly,

- wherein an outer wall of the bottle body is provided with a recess, the recess comprising a first recess portion and a second recess portion which are arranged opposite each other; and the bracket assembly comprises a housing, a first limiting member, and a second limiting member, the first limiting member being mounted to the housing, the second limiting member being movably arranged in the housing, the first limiting member being engaged with the first recess portion of the recess, and the second limiting member being engaged with the second recess portion of the recess, wherein in a first direction, the second limiting member has a first movement position in which the second limiting member is engaged with the second recess portion of the recess, and a second movement position in which the second limiting member is disengaged from the second recess portion of the recess.
2. The anti-theft hanging bottle of claim 1, **characterized in that** the bracket assembly has a driving rod mounted in the housing and rotationally engaged with the housing, the driving rod being configured to extend in the first direction; at least part of the second limiting member is sleeved over an outer wall of the driving rod, and an outer wall of the second limiting member abuts against an inner wall of the housing; and the second limiting member has an internal thread, the driving rod has an external thread, and the second limiting member is threadedly engaged with the driving rod.
  3. The anti-theft hanging bottle of claim 2, **characterized in that** the anti-theft hanging bottle is provided with a key assembly, a top of the driving rod is provided with a lock groove, and the key assembly is provided with an unlocking head corresponding to the lock groove; and the key assembly is configured to drive the driving rod to bring the second limiting member into the first movement position and the second movement position.
  4. The anti-theft hanging bottle of claim 3, **characterized in that** the key assembly comprises a driver plate and a stick, the driver plate being mounted to a first end of the stick, and a length direction of the driver plate intersecting a length direction of the stick; the unlocking head is mounted to a second end of the stick; the unlocking head has a plurality of adaptation blocks, the number of lock grooves corresponding to the number of adaptation blocks; and the plurality of adaptation blocks are evenly distributed in a circumferential direction of the unlocking head, and the plurality of lock grooves are evenly distributed in a circumferential direction of the driving rod.
  5. The anti-theft hanging bottle of claim 2, **characterized in that** the housing has a first limiting groove and a second limiting groove, and a limiting block is provided at a first end of the driving rod, the first limiting groove being U-shaped, the limiting block being rotationally engaged with the first limiting groove, and a second end of the driving rod being located in the second limiting groove and rotationally engaged with the second limiting groove.
  6. The anti-theft hanging bottle of claim 2, **characterized in that** a positioning block is provided on a side of the housing close to the bottle body, and the outer wall of the bottle body is provided with a positioning groove engaged with the positioning block.
  7. The anti-theft hanging bottle of any one of claims 2 to 6, **characterized in that** the first limiting member comprises a first engagement block and a first abutment block, the first engagement block being of an integral structure with the first abutment block; the second limiting member comprises a second engagement block and a second abutment block, the second engagement block being of an integral structure with the second abutment block; the first abutment block and the second abutment block are both mounted in the housing, and the second abutment block is at least partially sleeved outside the driving rod; the recess has a T-shaped cross-section, and at least parts of the first engagement block and the second engagement block are in form-fit engagement with the recess; the first engagement block is configured to be engaged with the first recess portion, and the second engagement block is configured to be engaged with the second recess portion; an outer wall of the first abutment block fits against the outer wall of the bottle body and an inner wall of the recess; and/or an outer wall of the second abutment block fits against the outer wall of the bottle body and the inner wall of the recess.
  8. The anti-theft hanging bottle of claim 7, **characterized in that** the bracket assembly is further provided with a mounting plate, and the housing has a mounting cavity, a first opening and a second opening, the first opening being arranged opposite to the second opening, the mounting plate being mounted to the first opening of the housing, the first abutment block and the second abutment block being at least partially located in the mounting cavity and at the second opening, and the sum of heights of the first abutment block and the second abutment block being less than a height of the second opening; and the mounting plate has a mounting hole arranged opposite the recess, the mounting hole allowing a

fastener to pass through a wall such that the housing is mounted to the wall.

9. The anti-theft hanging bottle of claim 8, **characterized in that** the mounting plate is provided with a bearing housing, the bearing housing being sleeved outside and rotationally engaged with the driving rod. 5

10. A use method for an anti-theft hanging bottle, **characterized by** comprising: 10

hanging a recess of a bottle body from a first limiting member, to engage the first limiting member with a first recess portion; 15  
driving a second limiting member to move from a second movement position to a first movement position, to engage the second limiting member with a second recess portion; and  
driving the second limiting member to move 20  
from the second movement position to the first movement position, to remove the bottle body from the first limiting member.

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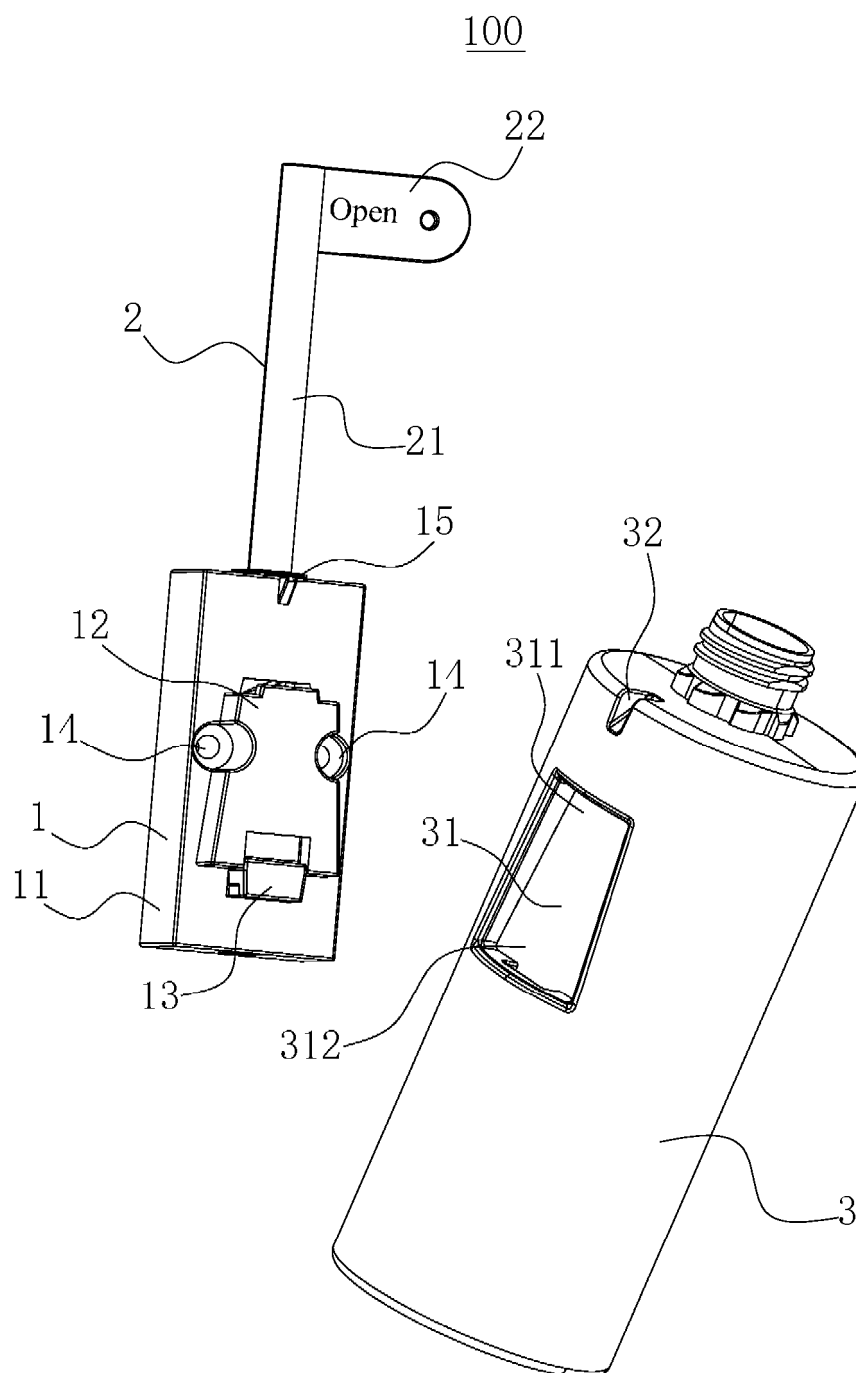


FIG. 1

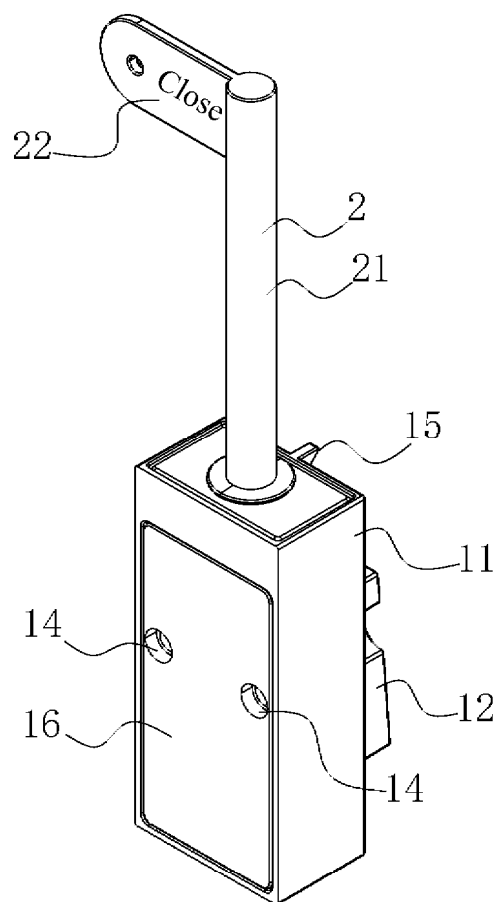


*FIG. 2*

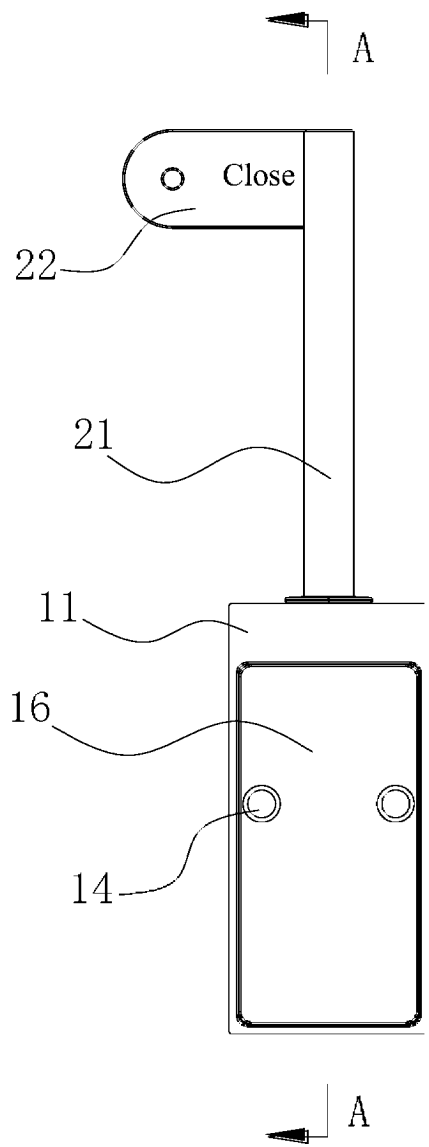


FIG. 3

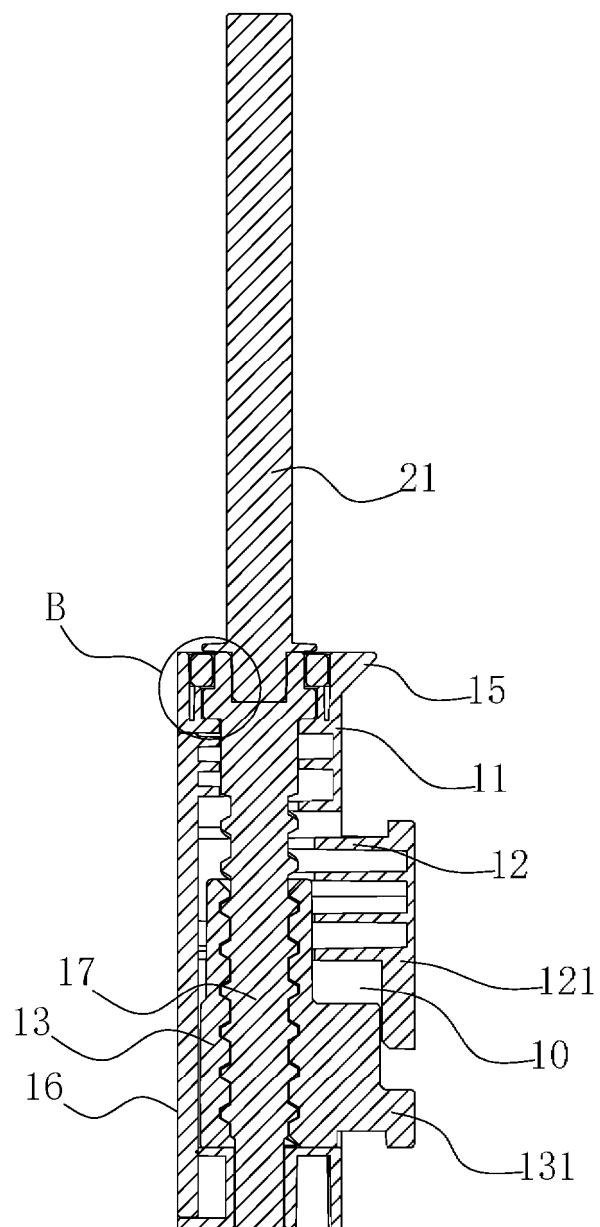


FIG. 4

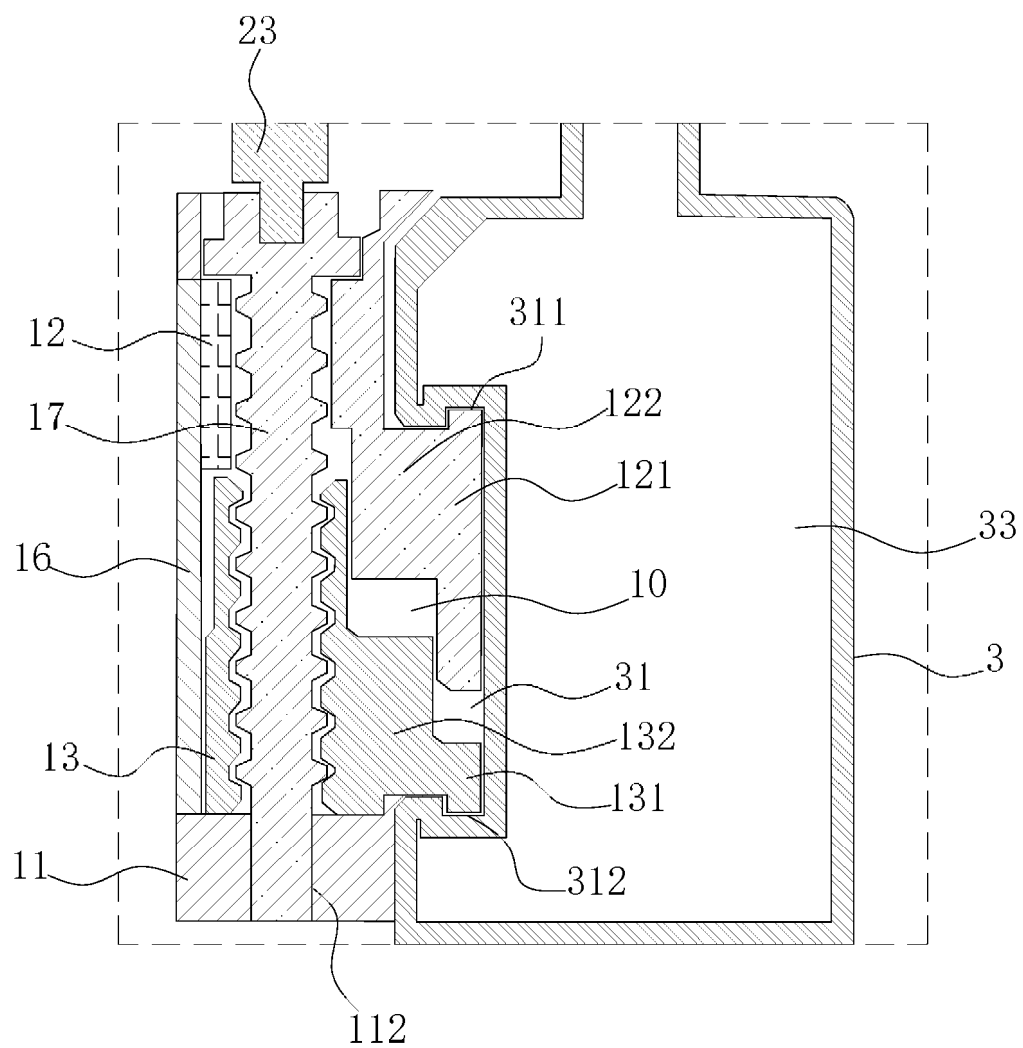


FIG. 5

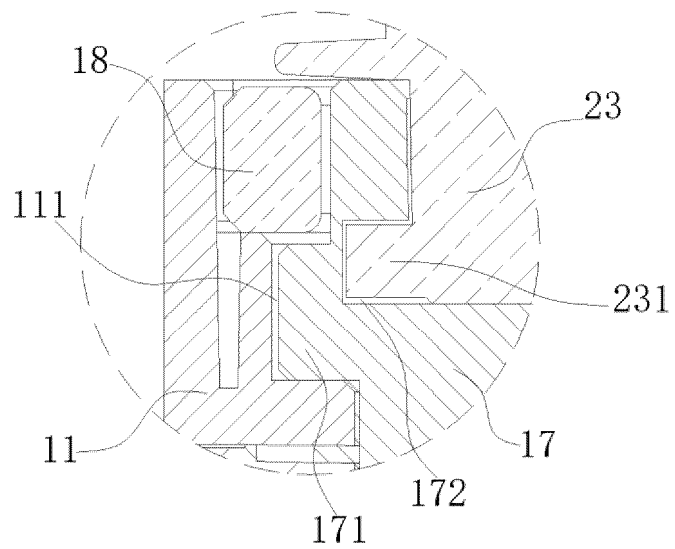


FIG. 6

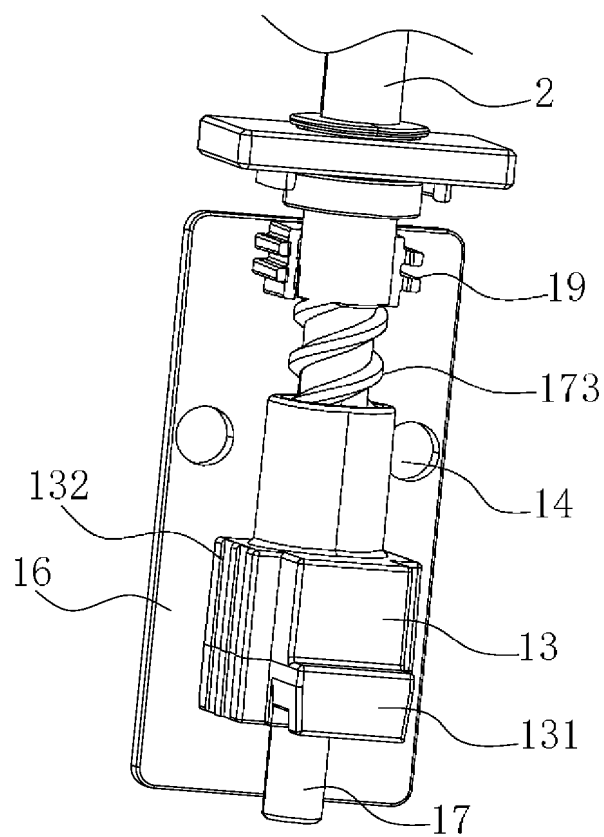


FIG. 7

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2024/137698

**A. CLASSIFICATION OF SUBJECT MATTER**

A47K5/12(2006.01)i; A47G29/093(2006.01)i

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

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

IPC: A47K5/-; A47G29/-; F16M

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

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

CNTXT, ENTXTC, WPABSC, ENTXT, WPABS, CNKI: 防盗 盗窃 瓶 替换 更换 挂 槽 限位 位置 移动 配合 适配 分离 杆 螺纹 钥匙 锁 theft+ bottle dispenser replac+ hang+ groove slot trough position limit+ mov+ match+ separat+ rod pole staff screw key lock+

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages                                                           | Relevant to claim No. |
|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| PX        | CN 117502950 A (LIDA ADVERTISING PRODUCTS CO., LTD.) 06 February 2024 (2024-02-06)<br>the claims, and description, paragraphs [0007]-[0025]  | 1-10                  |
| PX        | CN 221690761 U (LIDA ADVERTISING PRODUCTS CO., LTD.) 13 September 2024 (2024-09-13)<br>the claims, and description, paragraphs [0007]-[0021] | 1-10                  |
| A         | CN 219515924 U (GUANGDONG LONGTAI INDUSTRY CO., LTD.) 15 August 2023 (2023-08-15)<br>description, paragraphs [0040]-[0051], and figures 1-6  | 1-10                  |
| A         | CN 219940460 U (ANHO INDUSTRY GROUP (GUANGDONG) CO., LTD.) 03 November 2023 (2023-11-03)<br>entire document                                  | 1-10                  |
| A         | CN 219962711 U (OU MELJIAN et al.) 07 November 2023 (2023-11-07)<br>entire document                                                          | 1-10                  |

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

|                                                                                                                                                                         |                                                                                                                                                                                                                                                  |
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|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------|
| Date of the actual completion of the international search<br><b>07 February 2025</b>                                                                                                       | Date of mailing of the international search report<br><b>12 February 2025</b> |
| Name and mailing address of the ISA/CN<br><b>China National Intellectual Property Administration (ISA/CN)<br/>China No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088</b> | Authorized officer<br><br><br>Telephone No.                                   |

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INTERNATIONAL SEARCH REPORT

International application No.  
**PCT/CN2024/137698**

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| C. DOCUMENTS CONSIDERED TO BE RELEVANT |                                                                                                             |                       |
|----------------------------------------|-------------------------------------------------------------------------------------------------------------|-----------------------|
| Category*                              | Citation of document, with indication, where appropriate, of the relevant passages                          | Relevant to claim No. |
| A                                      | CN 213371663 U (LUO SHANWEL) 08 June 2021 (2021-06-08)<br>entire document                                   | 1-10                  |
| A                                      | CN 219249999 U (LCCOL DAILY NECESSITIES (DONG GUAN) CO., LTD.) 27 June 2023 (2023-06-27)<br>entire document | 1-10                  |
| A                                      | US 2011101196 A1 (SPORTS SOLUTIONS, INC.) 05 May 2011 (2011-05-05)<br>entire document                       | 1-10                  |
| A                                      | WO 2019063173 A1 (ADA COSMETIC GMBH) 04 April 2019 (2019-04-04)<br>entire document                          | 1-10                  |

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

**PCT/CN2024/137698**

| Patent document cited in search report |            |    | Publication date (day/month/year) | Patent family member(s) |              |    | Publication date (day/month/year) |
|----------------------------------------|------------|----|-----------------------------------|-------------------------|--------------|----|-----------------------------------|
| CN                                     | 117502950  | A  | 06 February 2024                  | None                    |              |    |                                   |
| CN                                     | 221690761  | U  | 13 September 2024                 | None                    |              |    |                                   |
| CN                                     | 219515924  | U  | 15 August 2023                    | None                    |              |    |                                   |
| CN                                     | 219940460  | U  | 03 November 2023                  | None                    |              |    |                                   |
| CN                                     | 219962711  | U  | 07 November 2023                  | None                    |              |    |                                   |
| CN                                     | 213371663  | U  | 08 June 2021                      | None                    |              |    |                                   |
| CN                                     | 219249999  | U  | 27 June 2023                      | None                    |              |    |                                   |
| US                                     | 2011101196 | A1 | 05 May 2011                       | US                      | 8272611      | B2 | 25 September 2012                 |
| WO                                     | 2019063173 | A1 | 04 April 2019                     | DE                      | 102017122729 | A1 | 04 April 2019                     |

**REFERENCES CITED IN THE DESCRIPTION**

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- CN 202311735054 [0001]