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(54) **STORAGE DEVICE**

(57) A storage device includes a support rod provided with a chute and a limit groove disposed at a side wall of the chute, wherein an extension direction of the chute is the same as that of the limit groove; a storage assembly including a slider, wherein the slider includes a main body part extending into the chute and a limit part extending from the main body part into the limit groove, and the main body part is provided with a first through hole extending along a depth direction of the chute; a knob including a rotating shaft inserted into the first through hole; a lock member disposed between the slider and a bottom surface of the chute and connected with the rotating shaft; and a storage shelf connected to the slider and configured for holding objects; wherein the rotating shaft is rotatable such that the lock member squeezes the bottom surface and squeezing of the lock member on the bottom surface is released. It is convenient and labor-saving to adjust the height of the storage shelf of the storage device.

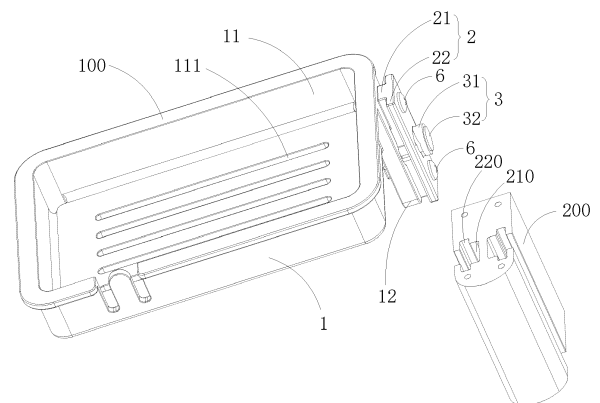


FIG. 2

Description

Technical Field

[0001] The present disclosure relates to a storage device.

Background

[0002] Bathroom is usually provided with a storage shelf for placing some daily necessities, such as soap, shower gel, shampoo and so on.

[0003] The existing liftable storage shelf is usually sleeved on a lift rod, a gap between the storage shelf and the lift rod is small, a friction force between the storage shelf and the lift rod is too large, and the storage shelf is not easy to slide along the lift rod to adjust a height of the storage shelf.

Summary

[0004] The present application provides a storage device, which includes:

a support rod, provided with a chute and a limit groove provided at a side wall of the chute, wherein an extension direction of the chute is the same as an extension direction of the limit groove;

a storage assembly, including:

a slider, including a main body part extending into the chute and a limit part extending from the main body part into the limit groove, wherein the main body part is provided with a first through hole extending along a depth direction of the chute;

a knob, including a rotating shaft inserted into the first through hole;

a lock member, disposed between the slider and a bottom surface of the chute and connected with the rotating shaft; and

a storage shelf, connected with the slider and configured for holding objects;

wherein the rotating shaft is rotatable such that the lock member squeezes the bottom surface and squeezing of the lock member on the bottom surface is released.

[0005] In the technical solution of the present application, the slider is embedded in the chute and the limit groove, the slider and the chute are in clearance fitting therebetween and the slider and the limit groove are in clearance fitting therebetween, and a gap between the

slider and the chute and a gap between the slider and the limit groove can be set to be relatively large, a sliding resistance of the slider is relatively small, and the slider can smoothly slide along the extension direction of the chute. The lock member can squeeze the bottom surface of the chute so that there is enough friction between the lock member and the bottom surface to prevent the slider from sliding, thereby fixing the storage shelf on the support rod; at the same time, the lock member can also release the squeeze to the bottom surface of the chute, so that the slider can freely slide along the chute to adjust the position of the storage shelf.

[0006] Other features and advantages of the present application will be set forth in the description which follows, and in part will be obvious from the description, or may be learned by practice of the present application. The other advantages of the present application can be realized and obtained by the scheme described in the description and drawings.

Brief Description of Drawings

[0007] Accompanying drawings are used to provide understanding of the technical solution of the present application, and constitute a portion of the description. They are used together with the embodiments of the present application to explain the technical solution of the present application, and do not constitute a restriction on the technical solution of the present application.

FIG. 1 is a schematic structural diagram of a storage device according to an embodiment of the present application.

FIG. 2 is a three-dimensional schematic diagram of a storage device in a detached state according to an embodiment of the present application.

FIG. 3 is an exploded schematic diagram of a storage device according to an embodiment of the present application.

FIG. 4 is a full cross-sectional schematic diagram of a storage device according to an embodiment of the present application.

FIG. 5 is a three-dimensional schematic diagram of a support rod according to an embodiment of the present application.

FIG. 6 is a three-dimensional schematic diagram of a slider and a lock member according to an embodiment of the present application.

FIG. 7 is a three-dimensional schematic diagram of a slider according to an embodiment of the present application.

FIG. 8 is a three-dimensional schematic diagram of a storage shelf according to an embodiment of the present application.

FIG. 9 is a three-dimensional schematic diagram of a knob according to an embodiment of the present application.

FIG. 10 is a three-dimensional schematic diagram of a rotating wheel according to an embodiment of the present application.

FIG. 11 is a full cross-sectional schematic diagram of a storage device in an unlocked state according to an embodiment of the present application.

FIG. 12 is a full cross-sectional schematic diagram of a storage device in a locked state according to an embodiment of the present application.

Detailed Description

[0008] As shown in FIG. 1 to FIG. 4, FIG. 1 to FIG. 4 show a structure of a storage device. The storage device includes a support rod 200 and a storage assembly 100. The support rod 200 may be fixed to the ground or to a wall surface of a building. The support rod 200 may extend along a vertical direction or along a horizontal direction. The storage assembly 100 is connected to the support rod 200, and the storage assembly 100 can be fixed at any position on the support rod 200.

[0009] As shown in FIG. 5, the support rod 200 may be configured as a straight rod. The support rod 200 is provided with a chute 210 and a limit groove 220. Each of the chute 210 and the limit groove 220 is provided as a straight strip-shaped groove and extension directions of the chute 210 and the limit groove 220 are both parallel to an extension direction of the support rod 200. The chute 210 may be formed by inwardly recessing from a side surface of the support rod 200. A bottom surface 211 of the chute 210 is planar. Two limit grooves 220 may be provided and the two limit grooves 220 are respectively provided at two side walls of the chute 210. A cross section of each limit groove 220 may be rectangular.

[0010] As shown in FIG. 2 to FIG. 4, the storage assembly 100 includes a storage shelf 1, a slider 2, a knob 4, and a lock member 3. The slider 2 includes a main body part 21 and a limit part 22. The main body part 21 extends into the chute 210. The main body part 21 is configured as a substantially straight strip-shaped structure and the main body part 21 extends along the extension direction of the chute 210. The limit part 22 is disposed on a portion of the main body part 21 extending into the chute 210. The main body part 21 is further provided with a first through hole 20. The first through hole 20 penetrates through the main body part 21 and the first through hole 20 extends from a side of the main body

part 21 facing the bottom surface 211 to a side of the main body part 21 facing away from the bottom surface 211. The first through hole 20 extends along a depth direction of the chute 210, the depth direction of the chute 210 is a direction from an opening of the chute 210 to the bottom surface 211 of the chute 210, and an axis of the first through hole 20 may be perpendicular to the bottom surface 211.

[0011] As shown in FIG. 6 and FIG. 7, two limit parts 22 are provided and the two limit parts 22 are respectively provided on two opposite sides of the main body part 21. The two limit parts 22 respectively extend into the two limit grooves 220. Each limit part 22 may be configured as a straight strip-shaped structure, such as a straight strip plate, and the limit part 22 extends along the extension direction of the limit groove 220 in which the limit part 22 is located. Due to a fit relationship between the limit part 22 and the limit groove 220, it is difficult for the slider 2 to disengage from the chute 210 from the opening of the chute 210, and a sliding connection is formed between the slider 2 and the support rod 200, so that the slider 2 can slide along the chute 210.

[0012] A first lock surface 23 and a first inclined surface 24 are provided at a side of the slider 2 facing the bottom surface 211. Both the first lock surface 23 and the first inclined surface 24 are provided around the first through hole 20. The first lock surface 23 is configured to be planar. The first lock surface 23 is perpendicular to an axial direction of the first through hole 20 and parallel to the bottom surface 211. The first inclined surface 24 is configured as a strip-shaped inclined surface. The first lock surface 23 is located at an end of the first inclined surface 24, and the first inclined surface 24 circumferentially extends from the first lock surface 23 along the first through hole 20, and an extension direction of the first inclined surface 24 is a first circumferential direction of the first through hole 20. The first circumferential direction is clockwise or counterclockwise. In the first circumferential direction, a distance between the first inclined surface 24 and the bottom surface 211 gradually increases. The first lock surface 23 is connected to an end of the first inclined surface 24 with a minimum distance from the bottom surface 211.

[0013] As shown in FIG. 2 and FIG. 8, the storage shelf 1 is used for holding objects, such as soap, shampoo or shower gel. The storage shelf 1 is disposed at a side of the slider 2 facing away from the support rod 200. The storage shelf 1 is connected to the slider 2, and the storage shelf 1 moves with the slider 2. The storage shelf 1 and the slider 2 may be screwed, welded or adhered to each other.

[0014] As shown in FIG. 4 and FIG. 9, the knob 4 includes a rotating shaft 42 and a handle 41. The rotating shaft 42 is configured to be cylindrical. An end of the rotating shaft 42 is inserted into the first through hole 20 of the slider 2. The rotating shaft 42 is disposed coaxially with the first through hole 20. There is a clearance fit between the rotating shaft 42 and the first through hole

20, and the rotating shaft 42 can rotate about its own axis. An end of the rotating shaft 42 faces the bottom surface 211, and the other end of the rotating shaft 42 faces away from the bottom surface 211. The end of the rotating shaft 42 facing away from the bottom surface 211 extends out of the first through hole 20, and the handle 41 is disposed at the end of the rotating shaft 42 facing away from the bottom surface 211. The handle 41 extends from the end of the rotating shaft 42 along a radial direction of the rotating shaft 42. A user can rotate the rotating shaft 42 by rotating the handle 41.

[0015] As shown in FIG. 2, FIG. 4, FIG. 6, and FIG. 10, the lock member 3 is disposed between the main body part 21 of the slider 2 and the bottom surface 211 of the support rod 200. The lock member 3 includes a rotating wheel 31 and a friction block 32. The rotating wheel 31 includes a connection cylinder 311 and a convex ring 312. The connection cylinder 311 is configured as a cylindrical structure. An end of the connection cylinder 311 is connected to one end of the rotating shaft 42. The connection cylinder 311 is disposed coaxially with the rotating shaft 42. The connection between the connection cylinder 311 and the rotating shaft 42 may be a profile connection, a key connection, a thread connection, or a screw connection. The convex ring 312 is disposed at one end of the connection cylinder 311 facing the bottom surface 211. An outer diameter of the convex ring 312 is larger than that of the connection cylinder 311, the convex ring 312 is coaxially disposed with the connection cylinder 311, and an inner edge of the convex ring 312 is connected to the connection cylinder 311.

[0016] As shown in FIG. 6 and FIG. 10, a second lock surface 314 and a second inclined surface 313 are provided at a side of the convex ring 312 facing away from the bottom surface 211. Both the second lock surface 314 and the second inclined surface 313 are provided around the connection cylinder 311. The second lock surface 314 is configured to be planar. The second lock surface 314 is perpendicular to an axial direction of the connection cylinder 311 and the rotating shaft 42, and is parallel to the bottom surface 211. The second inclined surface 313 is configured as a strip-shaped inclined surface. The second lock surface 314 is located at an end of the second inclined surface 313, and the second inclined surface 313 extends from the second lock surface 314 around the connection cylinder 311, that is, around the axis of the rotating shaft 42, and an extension direction of the second inclined surface 313 is a second circumferential direction, which is opposite to the first circumferential direction. For example, the first circumferential direction is clockwise and the second circumferential direction is counterclockwise; alternatively, the first circumferential direction is counterclockwise and the second circumferential direction is clockwise. In the second circumferential direction, a distance between the second inclined surface 313 and the bottom surface 211 is gradually reduced, and the second lock surface 314 is connected to an end of the second inclined surface 313 with

a maximum distance from the bottom surface 211. A distance from the first inclined surface 24 to the axis of the first through hole 20 is equal to a distance from the second inclined surface 313 to the axis of the rotating shaft 42, and a width of the first inclined surface 24 is greater than or equal to a width of the second inclined surface 313.

[0017] The friction block 32 may be configured in a round disc shape. The friction block 32 is fixed at a side of the convex ring 312 facing the bottom surface 211. The friction block 32 may be disposed coaxially with the convex ring 312. A surface of the friction block 32 may be provided as a rough surface. When the first lock surface 23 and the second lock surface 314 do not abut against each other, a distance between an end face of the friction block 32 facing the bottom surface 211 and the first lock surface 23 is smaller than a distance between the second lock surface 314 and the bottom surface 211.

[0018] The user can rotate the rotating shaft 42 by rotating the handle 41, and when the rotating shaft 42 rotates, the lock member 3 is rotated. The lock member 3 can be rotated to a position where the first lock surface 23 and the second lock surface 314 abut against each other or the first inclined surface 24 and the second inclined surface 313 abut against each other.

[0019] As shown in FIG. 11, when the lock member 3 is rotated to a position where the first inclined surface 24 and the second inclined surface 313 abut against each other, the first lock surface 23 and the second lock surface 314 are staggered from each other, and there is no friction between the lock member 3 and the bottom surface 211 of the support rod 200, and there is no friction between the support rod 200 and the slider 2, and the slider 2 can smoothly slide on the support rod 200 along the chute 210, so that the storage shelf 1 can be moved to any position on the support rod 200.

[0020] Since the distance between the end face of the friction block 32 facing the bottom surface 211 and the first lock surface 23 is smaller than the distance between the second lock surface 314 and the bottom surface 211, as shown in FIG. 12, when the lock member 3 is rotated to the position where the first lock surface 23 and the second lock surface 314 abut against each other, the lock member 3 is squeezed by the first lock surface 23 and the bottom surface 211, so that the friction block 32 of the lock member 3 tightly abuts against the bottom surface 211, and simultaneously a side wall of the limit groove 220 is pressed against the limit part 22. In this way, there is a relatively large friction force between the friction block 32 of the lock member 3 and the bottom surface 211 of the support rod 200, and there is also a relatively large friction force between the side wall of the limit groove 220 and the limit part 22, so that the slider 2 cannot slide relative to the support rod 200, whereby the storage shelf 1 is fixed to the support rod 200, and the storage shelf 1 can carry objects with considerable weight.

[0021] In particular, the slider 2 and the chute 210 are

in clearance fitting therebetween and the slider 2 and the limit groove 220 are in clearance fitting therebetween, and the gap between the slider 2 and the chute 210 and the gap between the slider 2 and the limit groove 220 can be set to be relatively large, so that a sliding resistance of the slider 2 is relatively small, and the slider 2 can smoothly slide along the extension direction of the chute 210.

[0022] A user can unlock the slider 2 by rotating the handle 41, move the slider 2 to move the storage shelf 1 to a designated position on the support rod 200, then rotate the handle 41 to lock the slider 2, so that the storage shelf 1 is fixed at the designated position, thereby the height of the storage shelf 1 can be freely adjusted.

[0023] In an exemplary embodiment, as shown in FIG. 7, two first inclined surfaces 24 are provided, and the two first inclined surfaces 24 are disposed symmetrically with respect to the axis of the first through hole 20. Two first lock surfaces 23 are provided, and the two first lock surfaces 23 are respectively connected to ends of the two first inclined surfaces 24 with a minimum distance from the bottom surface 211.

[0024] Two second inclined surfaces 313 are provided, and the two second inclined surfaces 313 are provided symmetrically with respect to the axis of the rotating shaft 42. Two second lock surfaces 314 are provided, and the two second lock surfaces 314 are respectively connected to ends of the two second inclined surfaces 313 with a maximum distance from the bottom surface 211.

[0025] When the slider 2 and the lock member 3 are squeezed up against each other, the two first inclined surfaces 24 respectively squeeze against the two second inclined surfaces 313 or the two first lock surfaces 23 respectively squeeze the two second lock surfaces 314, so that the force on the lock member 3 is more balanced.

[0026] In an illustrative embodiment, a cross-section of an internal channel of an end of the connection cylinder 311 facing the rotating shaft 42 is configured as a non-circular structure and the cross-section may be a regular hexagon.

[0027] An end of the rotating shaft 42 facing the connection cylinder 311 is provided with a boss 43. The boss 43 is inserted into the internal channel of the end of the connection cylinder 311 facing the rotating shaft 42. A cross-sectional shape of an outer profile of the boss 43 is matched with a cross-sectional shape of the internal channel of the end of the connection cylinder 311 facing the rotating shaft 42, and the cross-sectional shape of the outer profile of the boss 43 may be a regular hexagon.

[0028] In this way, the connection between the lock member 3 and the knob 4 is a profile connection, and a relatively large torque can be transmitted between the knob 4 and the lock member 3.

[0029] In an illustrative embodiment, the rotating wheel 31 further includes a connection ring 315. The connection ring 315 is disposed on an inner wall of the connection cylinder 311 and is coaxially disposed with the connection cylinder 311. The connection ring 315 protrudes ra-

dially inward from the inner wall of the connection cylinder 311.

[0030] The knob 4 is further provided with a first screw hole 44. The first screw hole 44 extends from the top end of the boss 43 into the rotating shaft 42. The first screw hole 44 is coaxially disposed with the connection ring 315.

[0031] The storage assembly 100 further includes a first screw 5. The first screw 5 is screwed through the connection ring 315 into the first screw hole 44 of the knob 4.

[0032] Thus, the first screw 5 connects the knob 4 with the rotating wheel 31 and prevents the boss 43 from disengaging from the connection cylinder 311.

[0033] In an illustrative embodiment, the storage shelf 1 includes a storage box 11 and a connection post 12. The storage box 11 is configured as a box-shaped structure, and an upper end of the storage box 11 is provided with an opening. Objects can be held in the storage box 11. A plurality of drain openings 111 are provided on a bottom wall of the storage box 11, each of the drain openings 111 may be provided in a straight strip shape, and water can be drained out of the storage box 11 from the drain openings 111 to prevent water accumulation in the storage box 11. One end of the connection post 12 is connected to an outer side wall of the storage box 11, and the other end of the connection post 12 extends towards the underneath of the storage box 11.

[0034] A side of the connection post 12 facing away from the storage box 11 abuts against the side of the main body part 21 facing away from the bottom surface 211, and the connection post 12 is connected to the main body part 21.

[0035] The connection post 12 is further provided with a second through hole 121. The second through hole 121 is disposed coaxially with the first through hole 20 in the main body part 21. The rotating shaft 42 of the knob 4 also penetrates through the second through hole 121 and the handle 41 of the knob 4 is disposed at a side of the connection post 12 facing away from the main body part 21.

[0036] In an illustrative embodiment, the storage assembly 100 further includes a second screw 6. A plurality of second screws 6 may be provided. The main body part 21 is further provided with a plurality of third through holes 25. The connection post 12 is further provided with a plurality of second screw holes 122. Numbers of the third through holes 25, the second screw holes 122 and the second screws 6 are equal. The plurality of second screw holes 122 are respectively aligned with the plurality of third through holes 25. The plurality of second screws 6 respectively penetrate through the plurality of third through holes 25 and are screwed into the second screw holes 122, and nuts of the second screws 6 are within the chute 210.

[0037] Thus, the connection post 12 is connected to the main body part 21 by the second screws 6, and the nuts of the second screws 6 are concealed in the chute 210, thereby making the storage device more aestheti-

cally pleasing.

[0038] In an illustrative embodiment, the chute 210 and the limit groove 220 each extend to the end of the support rod 200. The main body part 21 and the limit part 22 of the slider 2 can be mounted into the chute 210 and the limit groove 220 respectively from the end of the support rod 200, thereby completing the assembling of the storage assembly 100 and the support rod 200. When the slider 2 is connected with the support rod 200, the slider 2 can also be slid to the end of the support rod 200 and out of the chute 210 and the limit groove 220 from the end, thereby achieving detachment of the storage assembly 100 from the support rod 200.

[0039] A plurality of embodiments are described herein, but the description is exemplary but not restrictive, and it will be apparent to those of ordinary skills in the art that more embodiments and implementations may be included within the scope of the embodiments described herein. Although many possible combinations of features are shown in the drawings and discussed in the specific embodiments, many other combinations of the disclosed features are also possible. Unless purposely limited, any feature or element of any embodiment may be used in conjunction with or in place of any other feature or element of any other embodiment.

[0040] The present application includes and contemplates combinations of features and elements known to those of ordinary skills in the art. The embodiments, features and elements already disclosed in the present application may also be combined with any conventional feature or element to form a unique inventive scheme defined by the claims. Any feature or element of any embodiment may also be combined with features or elements from other inventive solutions to form another unique inventive solution defined by the claims. Accordingly, it should be understood that any of the features shown and/or discussed in the present application may be implemented alone or in any suitable combination. Thus, the embodiments are not subject to limitations other than those made in accordance with the appended claims and their equivalent substitutions. In addition, various modifications and changes may be made within the protection scope of the appended claims.

[0041] Further, when describing representative embodiments, the description may have presented the method and/or process as a particular sequence of steps. However, to the extent that the method or process does not depend on the particular sequence of steps described herein, the method or process should not be limited to the particular sequence of steps. As will be understood by those of ordinary skills in the art, other sequences of steps are also possible. Accordingly, the particular sequence of steps set forth in the description should not be construed as limitation on the claims. Furthermore, the claims for the method and/or process should not be limited to the steps being performed in the written sequence, and it is readily understood by those skilled in the art that the sequence can vary and still remain within the scope

of the embodiments of the present application.

Claims

1. A storage device, comprising:

a support rod (200) provided with a chute (210) and a limit groove (220) provided at a side wall of the chute (210), wherein an extension direction of the chute (210) is the same as an extension direction of the limit groove (220);
a storage assembly (100), comprising:

a slider comprising a main body part (21) extending into the chute (210) and a limit part (22) extending from the main body part (21) into the limit groove (220), wherein the main body part (21) is provided with a first through hole (20) extending along a depth direction of the chute (210);

a knob (4) comprising a rotating shaft (42) inserted into the first through hole (20);

a lock member (3) disposed between the slider (2) and a bottom surface (211) of the chute (210) and connected with the rotating shaft (42); and

a storage shelf (1) connected with the slider (2) and configured for holding objects;

wherein the rotating shaft (42) is rotatable such that the lock member (3) squeezes the bottom surface (211) and squeezing of the lock member (3) on the bottom surface (211) is released.

2. The storage device according to claim 1, wherein two limit grooves (220) are provided, and the two limit grooves (220) are respectively disposed on two opposite side walls of the chute (210); and two limit parts (22) are provided, and the two limit parts (22) are respectively disposed on two opposite sides of the main body part (21) and extend into the two limit grooves (220) respectively.

3. The storage device according to claim 1 or 2, wherein a first inclined surface (24) extending around the first through hole (20) along a first circumferential direction and a first lock surface (23) perpendicular to an axial direction of the first through hole (20) are provided at a side of the slider (2) facing the bottom surface (211), a distance between the first inclined surface (24) and the bottom surface (211) gradually increases in the first circumferential direction, and the first lock surface (23) is connected to an end of the first inclined surface (24) with a minimum distance from the bottom surface (211); a second lock surface (314) perpendicular to an axial direction of the rotating shaft (42) and a second in-

clined surface (313) extending from the second lock surface (314) along a second circumferential direction around an axis of the rotating shaft (42) are provided at a side of the lock member (3) facing away from the bottom surface (211), a distance between the second inclined surface (313) and the bottom surface (211) gradually decreases in the second circumferential direction, the second circumferential direction is opposite to the first circumferential direction, and the second lock surface (314) is connected to an end of the second inclined surface (313) with a maximum distance from the bottom surface (211).

4. The storage device according to claim 3, wherein the lock member (3) is able to be rotated to a position where the first lock surface (23) and the second lock surface (314) abut against each other and a position where the first inclined surface (24) and the second inclined surface (313) abut against each other.

5. The storage device according to claim 3, wherein a plurality of first inclined surfaces (24) are provided, and the plurality of first inclined surfaces (24) are arranged sequentially along a circumferential direction of an axis of the first through hole (20);

a plurality of first lock surfaces (23) are provided, and the plurality of first lock surfaces (23) are respectively provided in one-to-one correspondence with the plurality of first inclined surfaces (24), and each first lock surface (23) is connected with an end of a corresponding first inclined surface (24) with a minimum distance from the bottom surface (211);

a plurality of second inclined surfaces (313) are provided, and the plurality of second inclined surfaces (313) are sequentially arranged along a circumferential direction of the axis of the rotating shaft (42); and

a plurality of second lock surfaces (314) are provided, and the plurality of second lock surfaces (314) are respectively provided in one-to-one correspondence with the plurality of second inclined surfaces (313), and each of the plurality of second lock surfaces (314) is connected to an end of a corresponding second inclined surface (313) with a maximum distance from the bottom surface (211).

6. The storage device according to claim 3, wherein the lock member (3) comprises a rotating wheel (31) connected to the rotating shaft (42) and a friction block (32) disposed at a side of the rotating wheel (31) facing the bottom surface (211); wherein a surface of the friction block (32) is rough, and both the second lock surface (314) and the second inclined surface (313) are disposed at a side of the rotating wheel (31) facing away from the bottom

surface (211).

7. The storage device according to claim 6, wherein the rotating wheel (31) comprises a connection cylinder (311) connected to the rotating shaft (42) and a convex ring (312) disposed at the other end of the connection cylinder (311);

an outer diameter of the convex ring (312) is larger than that of the connection cylinder (311), and both the second lock surface (314) and the second inclined surface (313) are disposed at a side of the convex ring (312) facing away from the bottom surface (211).

8. The storage device according to claim 7, wherein connection between the connection cylinder (311) and the rotating shaft (42) is a profile connection, a key connection, a thread connection or a screw connection.

9. The storage device according to claim 1 or 2, wherein the storage shelf (1) comprises a storage box (11) and a connection post (12) connected to the storage box (11);

a side of the connection post (12) abuts against a side of the main body part (21) facing away from the bottom surface (211), and the connection post (12) is connected to the main body part (21); and

the connection post (12) is further provided with a second through hole (121), and the rotating shaft (42) penetrates through the second through hole (121).

10. The storage device according to claim 9, wherein the knob (4) further comprises a handle (41) extending radially outward from an end of the rotating shaft (42) facing away from the bottom surface (211).

11. The storage device according to claim 6, wherein a distance between an end face of the friction block (32) facing the bottom surface (211) and the first lock surface (23) is less than a distance between the second lock surface (314) and the bottom surface (211).

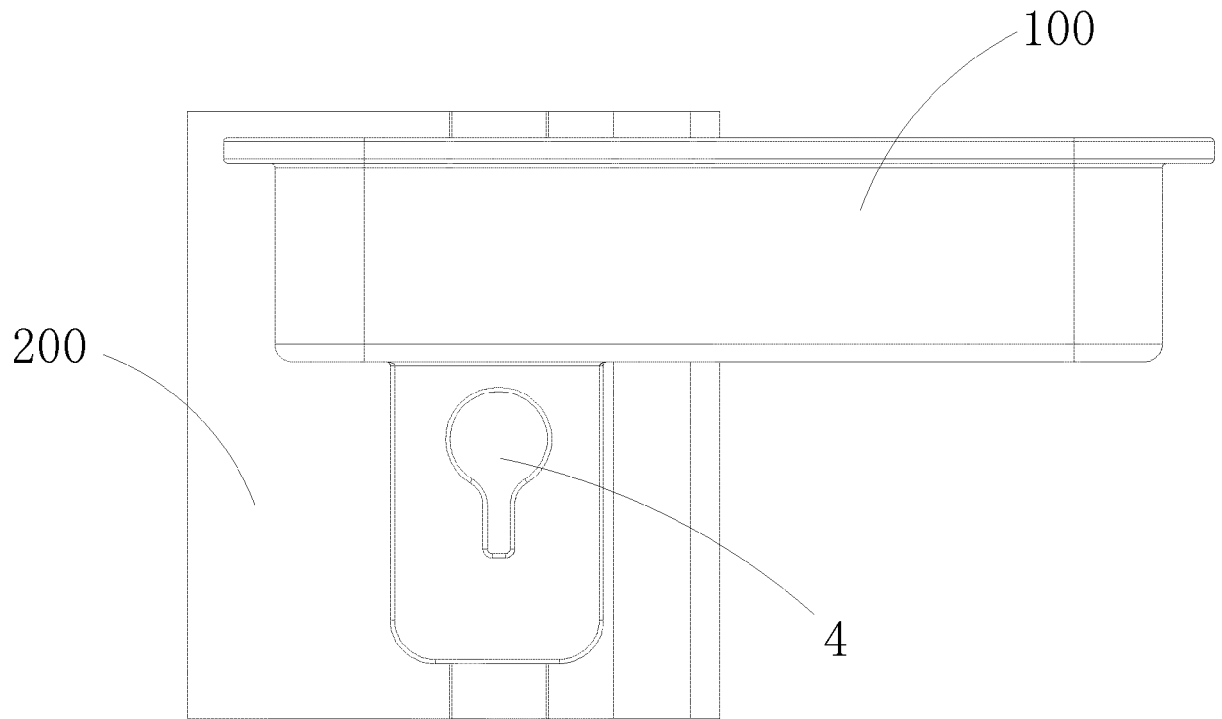


FIG. 1

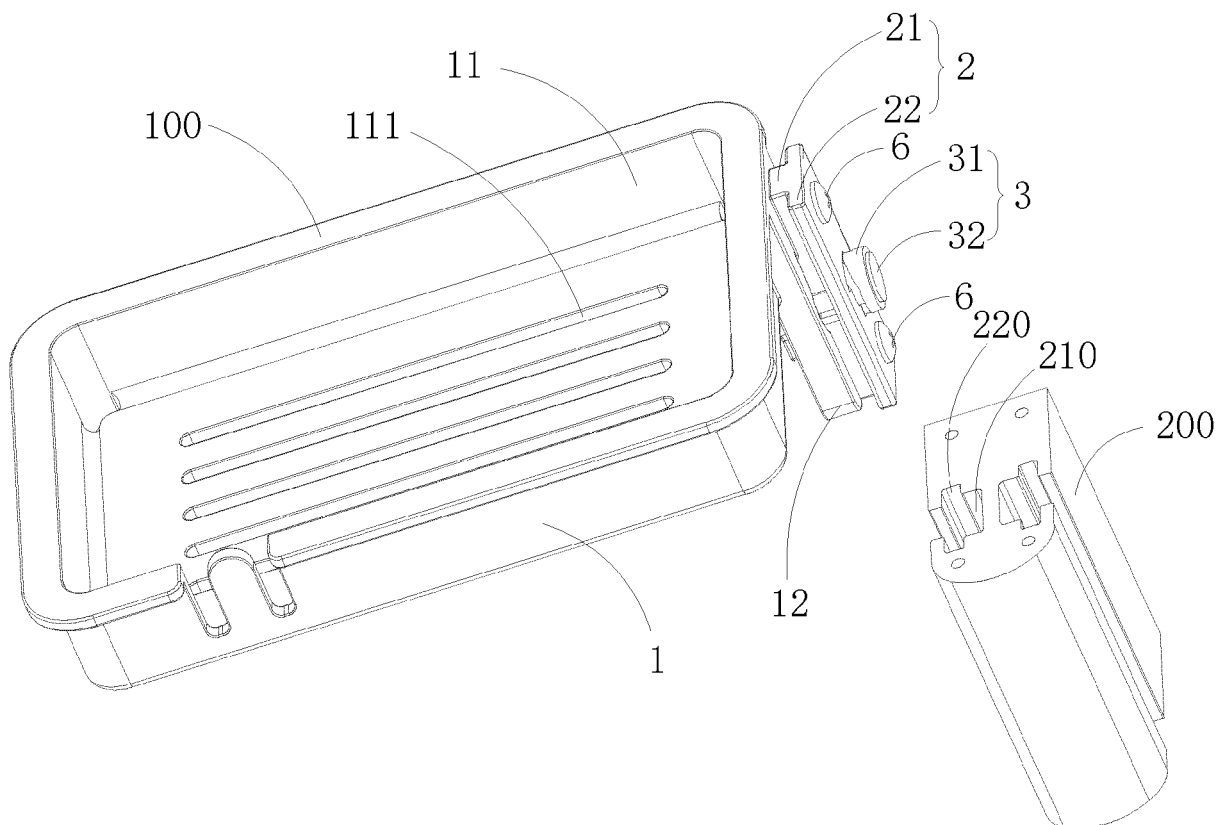


FIG. 2

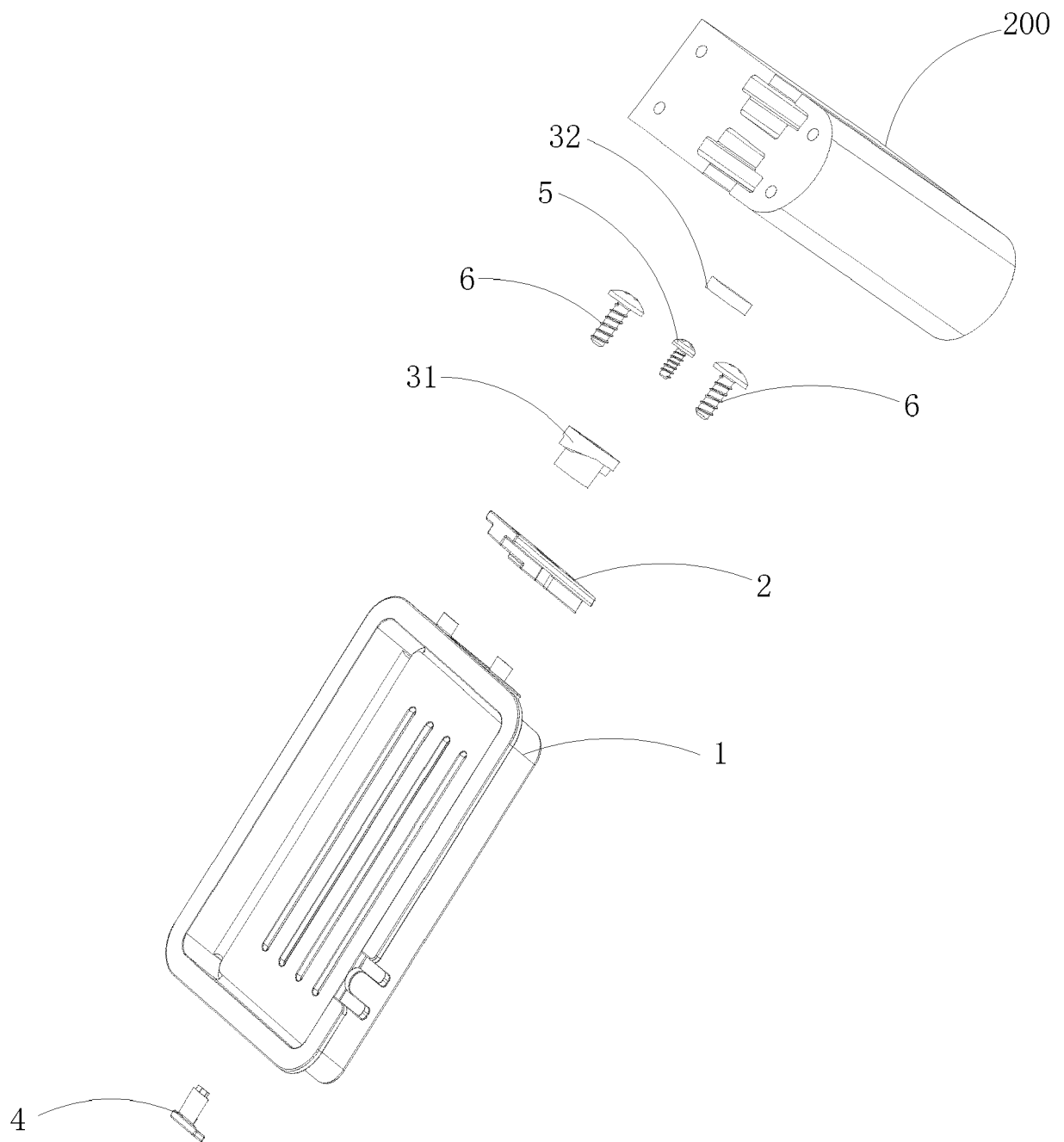


FIG. 3

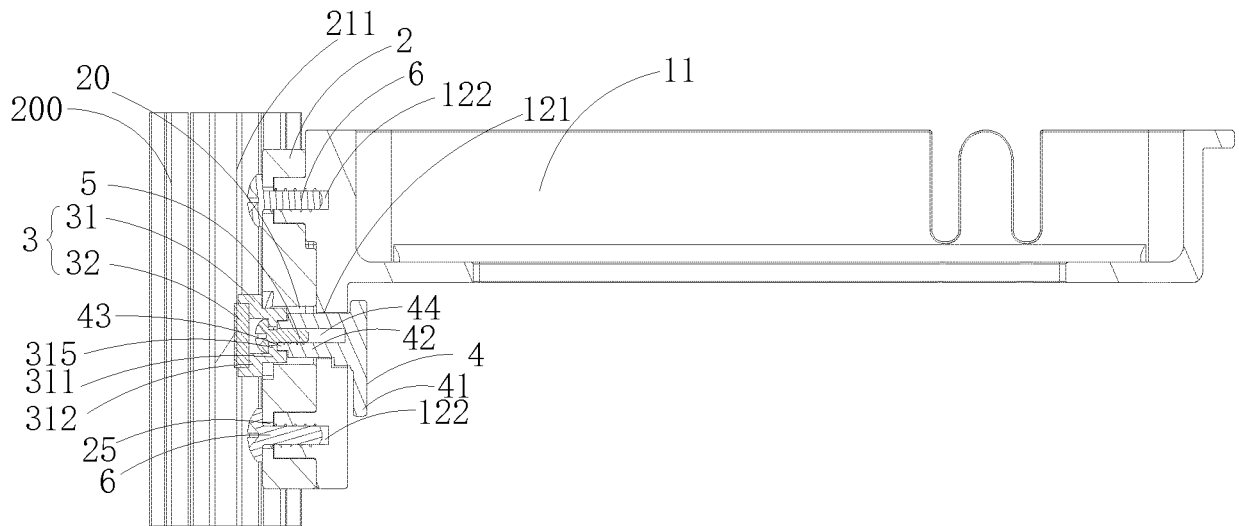


FIG. 4

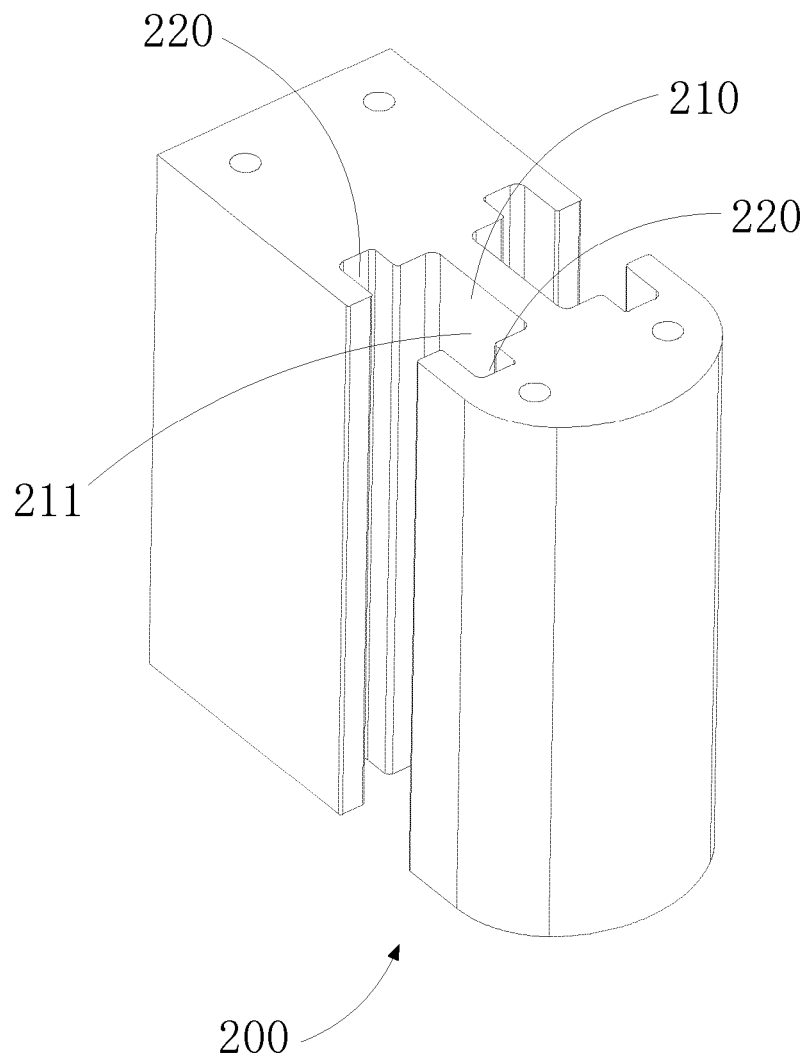


FIG. 5

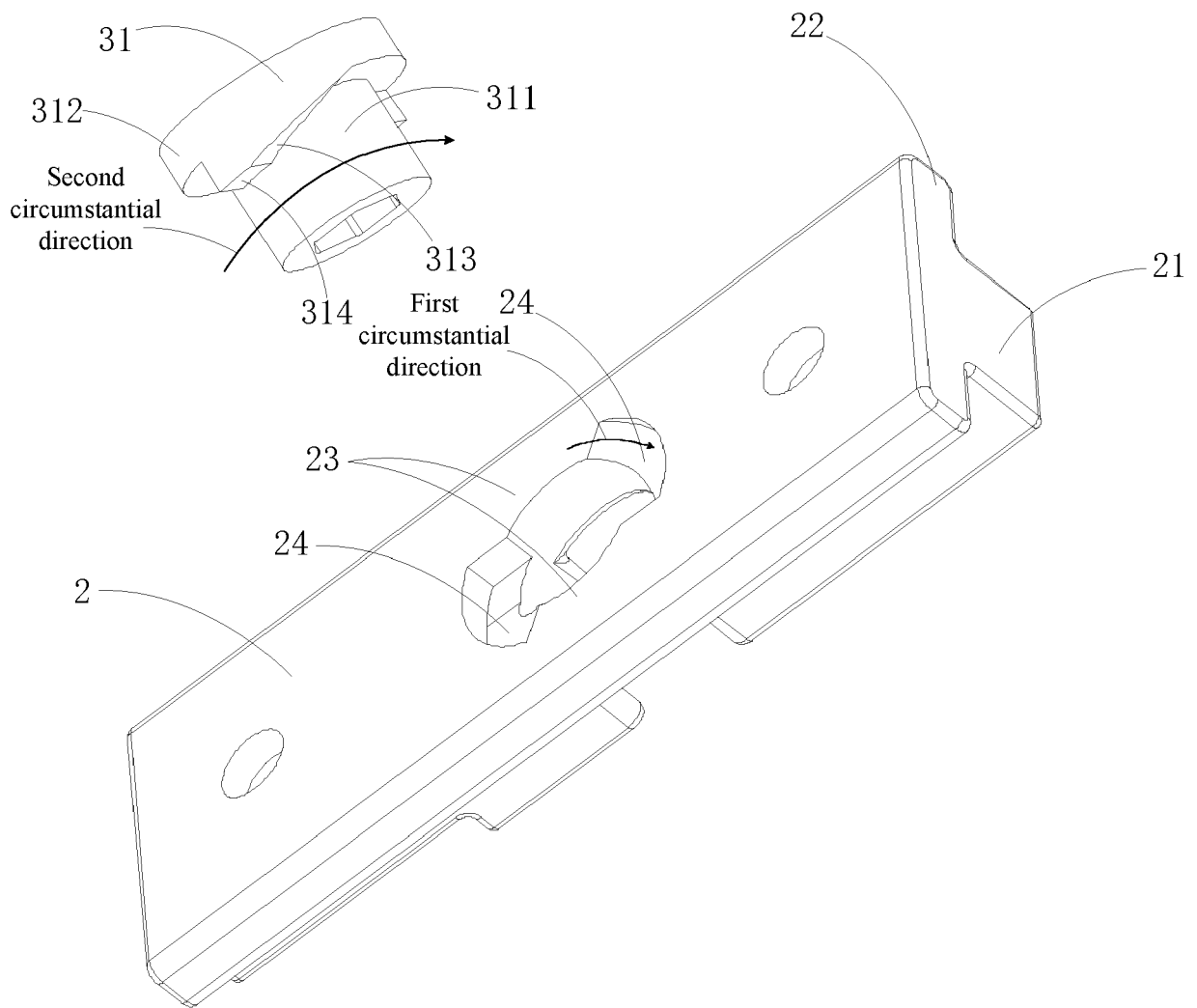


FIG. 6

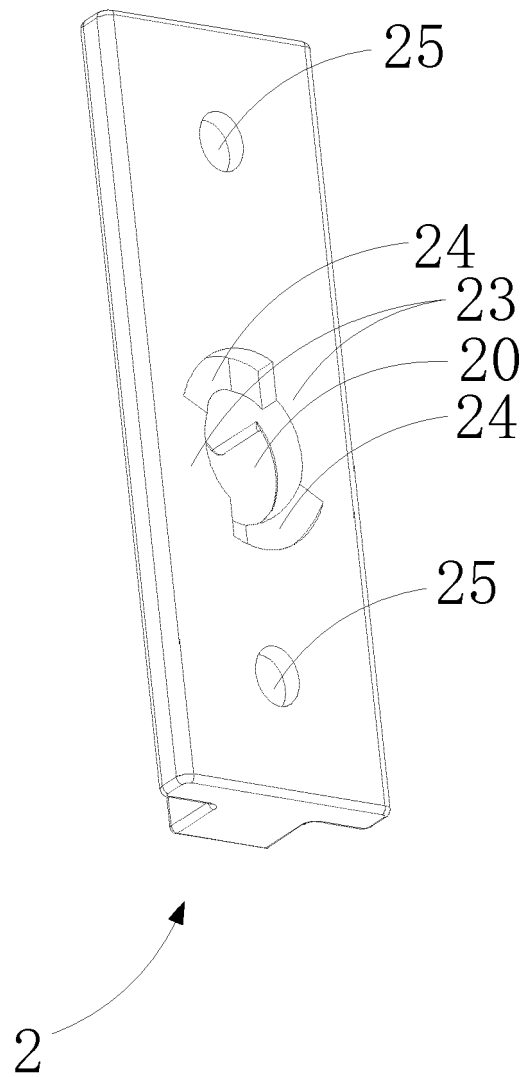


FIG. 7

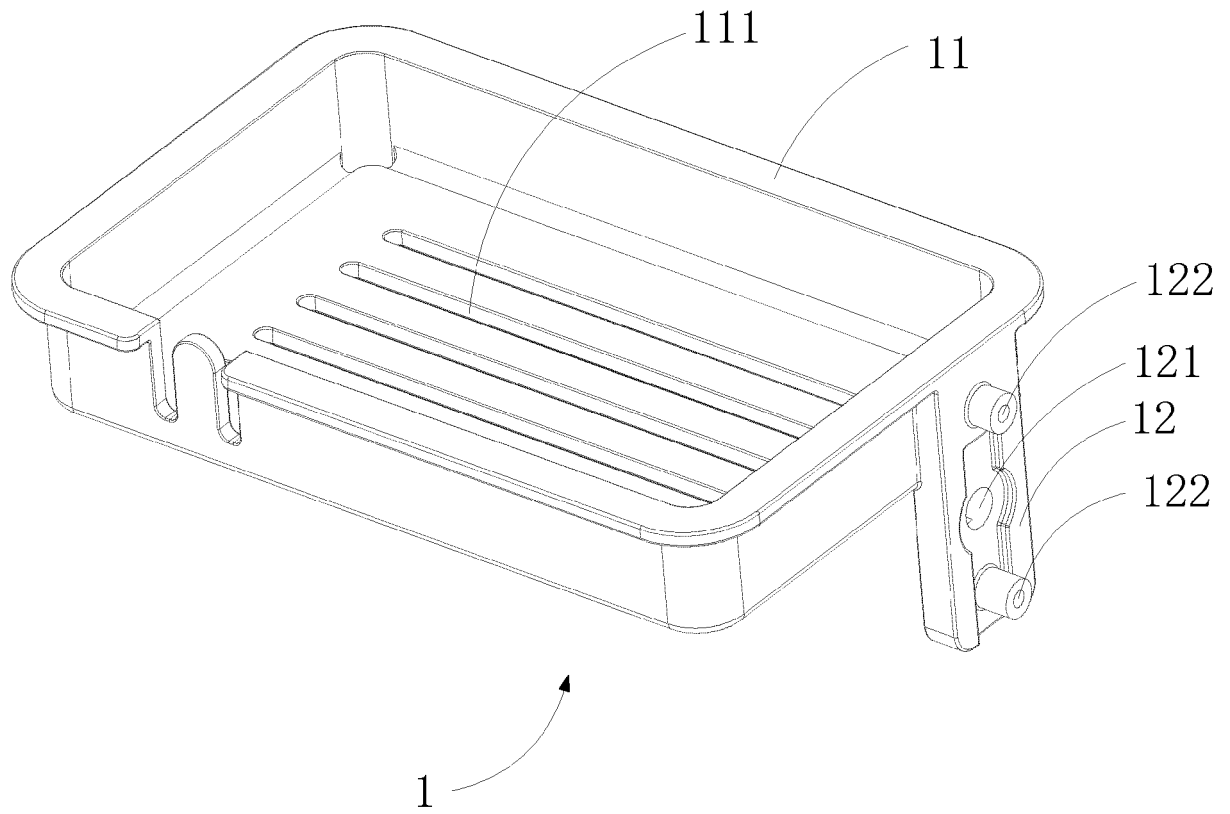


FIG. 8

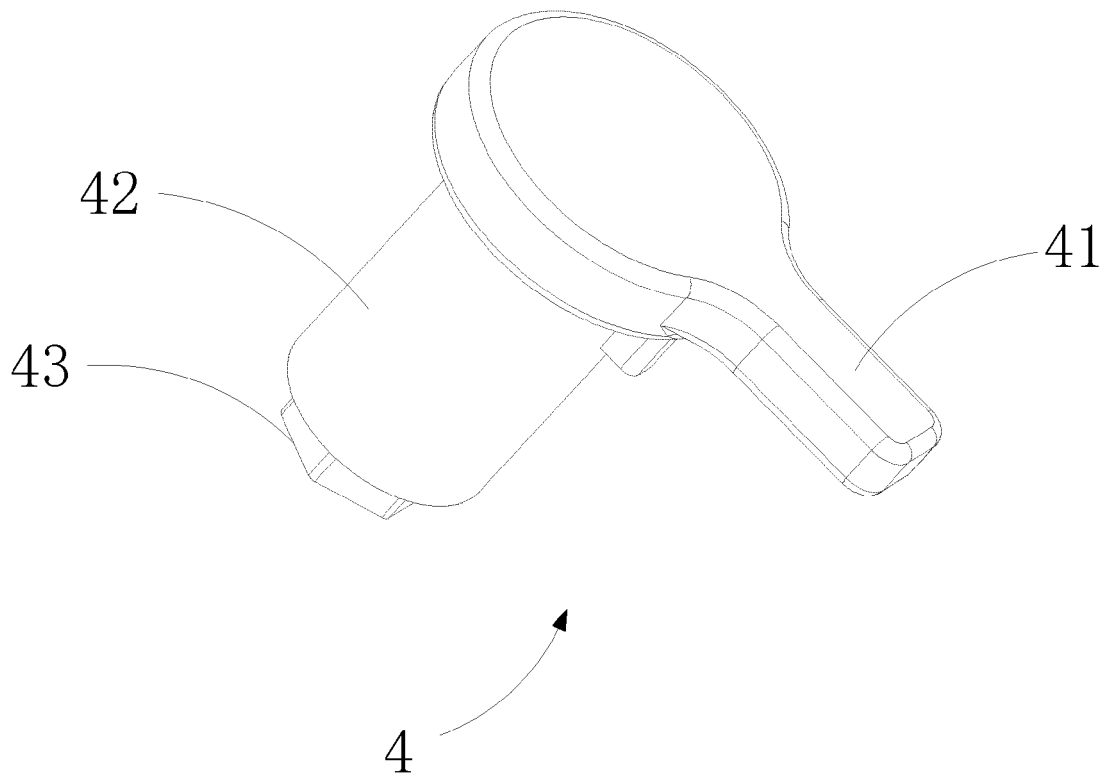


FIG. 9

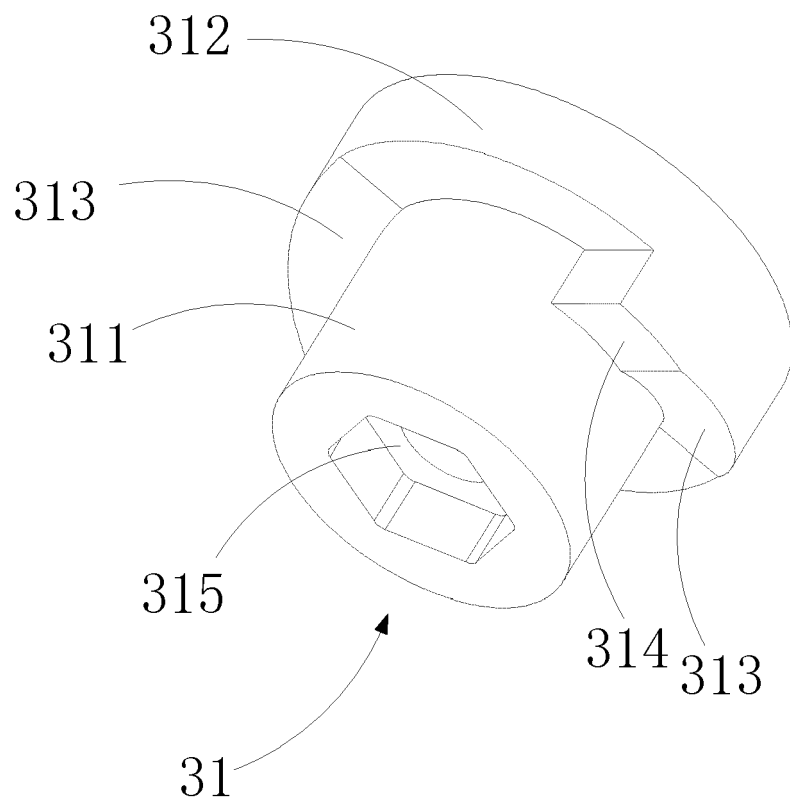


FIG. 10

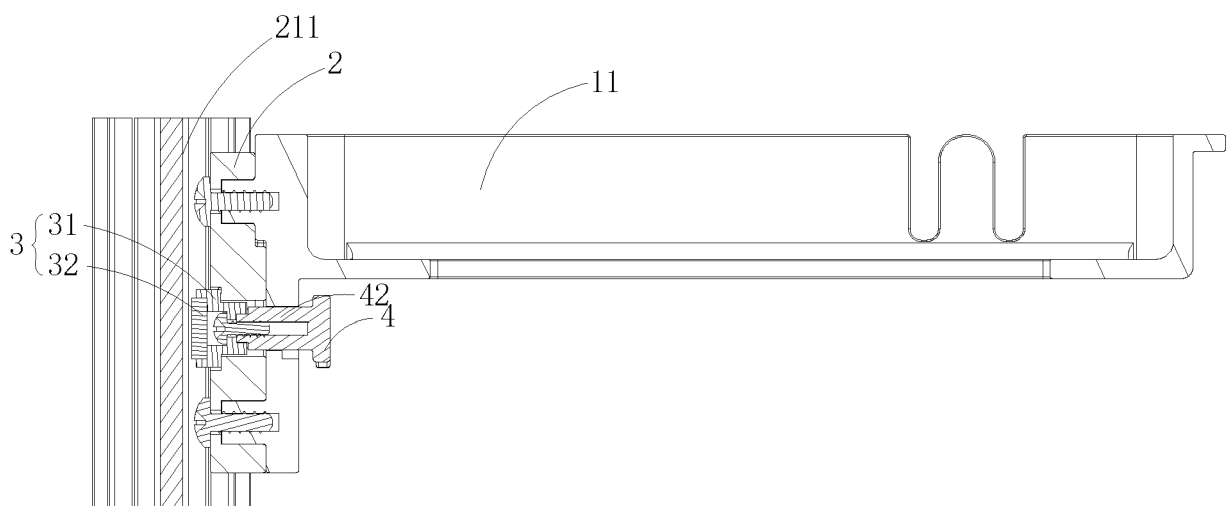


FIG. 11

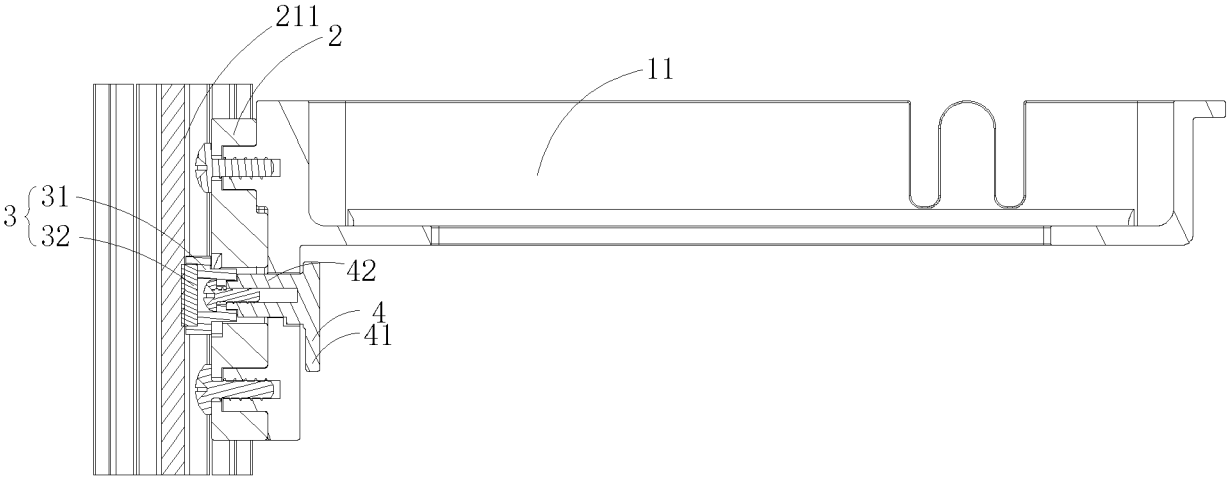


FIG. 12



EUROPEAN SEARCH REPORT

Application Number

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EPO FORM 1503 03:82 (P04C01)

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Place of search The Hague		Date of completion of the search 27 June 2023	Examiner Zuurveld, Gerben
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document	

**ANNEX TO THE EUROPEAN SEARCH REPORT
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The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

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