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Certified English Translation of  
CN Patent Application No.  
202320135456.3 to Zhang et al.



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I declare under penalty of perjury under the laws of the United States of America that the foregoing is true and correct.

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29052\_18518200\_12-08-2023\_PD.FILED.F (1)

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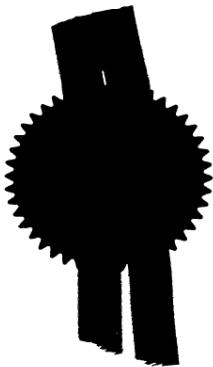
Application type: Utility model Patent

Title of the Utility model: CONNECTION STRUCTURE OF MODULE, STORAGE BOX  
AND STORAGE BOX ASSEMBLY

Filing Date: January 13, 2023

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Commissioner: *SHEN Changyu*

SHEN Changyu

February 10, 2023

## CLAIMS

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1. A connection structure of a module, comprising a first connecting portion (1) located on one surface of the module and a second connecting portion (2) located on another surface of the module;

the first connecting portion (1) comprises a mounting portion (11), a locking portion (12) movable relative to the mounting portion (11), and a first elastic member (13) located between the mounting portion (11) and the locking portion (12), the first elastic member (13) causing the locking portion (12) to automatically remain in a locked state;

the second connecting portion (2) comprises a mating portion (21) locked with the locking portion (12), pressing down the locking portion (12) of one module enabling the locking portion (12) to be automatically locked with the mating portion (21) of another module under an action of the first elastic member (13);

characterized in that, the connection structure further comprises a stopping portion (3), the stopping portion (3) being arranged on the locking portion (12), and one end thereof being rotatably connected to the locking portion (12), wherein when the first connecting portion (1) and the second connecting portion (2) are in a maintained unlocked state, the stopping portion (3) engages with the second connecting portion (2) on a locking path of the locking portion (12).

2. The connection structure of a module according to claim 1, characterized in that, the stopping portion (3) comprises a lock tongue (36) and a second elastic member (33), one end of the lock tongue (36) is rotatably connected to the locking portion (12), the second elastic member (33) causing the lock tongue (36) to automatically remain in a popped-up state; when the lock tongue (36) pops up and abuts against the mating portion (21), the locking portion (12) is unable to automatically lock, and the first connecting portion (1) and the second connecting portion (2) are in the maintained unlocked state.

3. The connection structure of a module according to claim 2, characterized in that, the locking portion (12) is provided with an accommodating slot (123), the accommodating slot (123) has a bottom wall (123a) and two side walls (123b), the two side walls (123b) extend upwardly along two sides of the bottom wall (123a) and are oppositely arranged; the lock tongue (36) is

retractably arranged within the accommodating slot (123), one end of the second elastic member (33) abuts against the lock tongue (36), and another end thereof abuts against the bottom wall (123a); when the second elastic member (33) extends, the lock tongue (36) extends out of the accommodating slot (123), and when the second elastic member (33) is compressed, the lock tongue (36) retracts into the accommodating slot (123).

4. The connection structure of a module according to claim 3, characterized in that, the lock tongue (36) is provided with a stopper block (361) protruding upward; when the first connecting portion (1) and the second connecting portion (2) are in the maintained unlocked state, the stopper block (361) extends out of the accommodating slot (123) and abuts against the mating portion (21).

5. The connection structure of a module according to claim 4, characterized in that, the lock tongue (36) has a first end portion (36a) and a second end portion (36b) opposite to each other, and the second end portion (36b) is closer to a center position of the module than the first end portion (36a); the first end portion (36a) is provided with a shaft hole, the stopping portion (3) further comprises a rotating shaft (37), two ends of the rotating shaft (37) are fixed to the two side walls (123b), the second elastic member (33) is a torsion spring, and the first end portion (36a) and the second elastic member (33) are sleeved on the rotating shaft (37).

6. The connection structure of a module according to claim 4, characterized in that, the lock tongue (36) has a first end portion (36a) and a second end portion (36b) opposite to each other, and the second end portion (36b) is closer to a center position of the module than the first end portion (36a); the first end portion (36a) is rotatably connected to the locking portion (12), two ends of the second elastic member (33) are respectively located between the lock tongue (36) and the bottom wall (123a), and the second elastic member (33) is a retractable spring.

7. The connection structure of a module according to claim 6, characterized in that, two sides of the second end portion (36b) are provided with protruding shafts (362), and the two protruding shafts (362) are respectively inserted into slide rails (123c) of the two side walls (123b).

8. The connection structure of a module according to claim 1, characterized in that, the locking portion (12) is a horizontally movable sliding locking buckle, a pivotally movable flip locking buckle, or a rotatably movable rotary locking buckle.

9. A storage box, comprising a box cover (101) and a box body (102), the box cover (101) being arranged on the box body (102), characterized in that, the storage box is provided with the connection structure of the module according to any one of claims 1 to 8, the first connecting portion (1) is provided on the box cover (101), and the second connecting portion (2) is provided at a bottom portion of the box body (102).

10. A storage box assembly, characterized in that, the storage box assembly comprises a plurality of storage boxes according to claim 9, two adjacent storage boxes can be mutually locked with each other through the first connecting portion (1) and the second connecting portion (2).

## DESCRIPTION

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### CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

#### Technical Field

The present utility model relates to the technical field of article storage, and in particular relates to a connection structure of a module, a storage box, and a storage box assembly.

#### Background Art

Conventional storage boxes are individually placed between each box body; even when they can be stacked one by one, it can only be ensured that they are placed in a flat state. However, for households and professional users who need to purchase multiple boxes, if a locking function between two box bodies is not provided, multiple box bodies stacked in several layers are likely to topple, thereby causing safety hazards. In particular, when multiple box bodies need to be moved simultaneously, due to changes in the overall center of gravity during dragging and vibrations caused by uneven road surfaces, the upper box bodies are more likely to topple.

To avoid the above problems, the conventional solution is to additionally provide accessories such as ropes to assist in fixing multiple box bodies, thereby addressing this issue. However, this solution not only increases additional costs, but also requires the storage boxes to be untied before items inside can be taken out, which brings considerable inconvenience in practical use.

Currently, there is an interlocking structure for stacking boxes on the market, which generally uses a locking buckle with an automatic rebound function to lock and fix an upper box and a lower box. The locking buckle with the automatic rebound function can automatically rebound to a locked position after the upper box is connected with the lower box, and can automatically rebound to prepare for the next locking after the upper box is separated from the lower box, thereby facilitating use by the user. However, when separating the upper box and the lower box, since the locking buckle can automatically rebound, the user needs to keep the

locking buckle in an unlocked position with one hand or both hands in order to separate the upper box from the lower box, which is inconvenient for the user.

In view of the above, there is a need to provide a connection structure of a module, a storage box, and a storage box assembly so as to solve the above problems.

### **Summary of the Utility Model**

An object of the present utility model is to provide a connection structure of a storage box, aiming to solve the deficiencies in the above background art, and capable of realizing automatic locking, maintaining an unlocked state, and automatic reset functions, thereby facilitating user operation and use.

The present utility model provides a connection structure of a module, comprising a first connecting portion located on one surface of the module and a second connecting portion located on another surface of the module;

the first connecting portion comprises a mounting portion, a locking portion movable relative to the mounting portion, and a first elastic member located between the mounting portion and the locking portion, the first elastic member causing the locking portion to automatically remain in a locked state;

the second connecting portion comprises a mating portion locked with the locking portion, pressing down the locking portion of one module enabling the locking portion to be automatically locked with the mating portion of another module under an action of the first elastic member;

the connection structure further comprises a stopping portion, the stopping portion being arranged on the locking portion, and one end thereof being rotatably connected to the locking portion, wherein when the first connecting portion and the second connecting portion are in a maintained unlocked state, the stopping portion engages with the second connecting portion on a locking path of the locking portion.

Further, the stopping portion comprises a lock tongue and a second elastic member, one end of the lock tongue is rotatably connected to the locking portion, the second elastic member causing the lock tongue to automatically remain in a popped-up state; when the lock tongue pops up and abuts against the mating portion, the locking portion is unable to automatically lock, and

the first connecting portion and the second connecting portion are in the maintained unlocked state.

Further, the locking portion is provided with an accommodating slot, the accommodating slot has a bottom wall and two side walls, the two side walls extend upwardly along two sides of the bottom wall and are oppositely arranged; the lock tongue is retractably arranged within the accommodating slot, one end of the second elastic member abuts against the lock tongue, and another end thereof abuts against the bottom wall; when the second elastic member extends, the lock tongue extends out of the accommodating slot, and when the second elastic member is compressed, the lock tongue retracts into the accommodating slot.

Further, the lock tongue is provided with a stopper block protruding upward; when the first connecting portion and the second connecting portion are in the maintained unlocked state, the stopper block extends out of the accommodating slot and abuts against the mating portion.

Further, the lock tongue has a first end portion and a second end portion opposite to each other, and the second end portion is closer to a center position of the module than the first end portion; the first end portion is provided with a shaft hole, the stopping portion further comprises a rotating shaft, two ends of the rotating shaft are fixed to the two side walls, the second elastic member is a torsion spring, and the first end portion and the second elastic member are sleeved on the rotating shaft.

Further, the lock tongue has a first end portion and a second end portion opposite to each other, and the second end portion is closer to a center position of the module than the first end portion; the first end portion is rotatably connected to the locking portion, two ends of the second elastic member are respectively located between the lock tongue and the bottom wall, and the second elastic member is a retractable spring.

Further, two sides of the second end portion are provided with protruding shafts, and the two protruding shafts are respectively inserted into slide rails of the two side walls.

Further, the locking portion is a horizontally movable sliding locking buckle, a pivotally movable flip locking buckle, or a rotatably movable rotary locking buckle.

The present utility model further provides a storage box, comprising a box cover and a box body, the box cover being arranged on the box body, the storage box is provided with the connection structure of the module according to any of the above descriptions, the first

connecting portion is provided on the box cover, and the second connecting portion is provided at a bottom portion of the box body.

The present utility model further provides a storage box assembly, the storage box assembly comprises a plurality of storage boxes as described above, two adjacent storage boxes can be mutually locked with each other through the first connecting portion and the second connecting portion.

The connection structure of the storage box provided by the present utility model has the following beneficial effects:

1. By utilizing cooperation between the first connecting portion and the second connecting portion for locking. When the upper storage box is placed in position, the function of mutual locking of the two boxes is automatically achieved. The user does not need, after placing the boxes, to separately operate the locking buckles on both sides when locking is required; it is only necessary to pull the locking buckles on both sides when opening.

2. By utilizing a rotatable lock tongue, the first connecting portion and the second connecting portion are placed in a maintained unlocked state. The movement of the lock tongue is highly deterministic, and operation is smooth, greatly improving user convenience.

### **Brief Description of the Drawings**

FIG. 1 is a schematic diagram of a three-dimensional structure of a storage box in a first embodiment of the present utility model.

FIG. 2 is another schematic diagram of a three-dimensional structure of the storage box in the first embodiment of the present utility model.

FIG. 3 is a schematic diagram of a partial structure of the storage box in the first embodiment of the present utility model.

FIG. 4 is a schematic structural diagram of FIG. 3 from another viewing angle.

FIG. 5 is a schematic diagram of a partial exploded structure of the storage box in the first embodiment of the present utility model.

FIG. 6 is another schematic diagram of a partial structure of the storage box in the first embodiment of the present utility model.

FIG. 7 is a schematic diagram of a partial structure of two storage boxes in a locked state.

FIG. 8 is a cross-sectional view of FIG. 7 from another viewing angle.

FIG. 9 is a schematic diagram of a partial structure of two storage boxes in a maintained unlocked state.

FIG. 10 is a cross-sectional view of FIG. 9 from another viewing angle.

FIG. 11 is a schematic diagram of a partial structure of a storage box in a second embodiment of the present utility model.

FIG. 12 is a schematic diagram of a partial exploded structure of the storage box in the second embodiment of the present utility model.

### **Description of the Embodiments**

The specific implementations of the present utility model will be further described in detail below in conjunction with the accompanying drawings and embodiments. The following embodiments are used to illustrate the present utility model, but are not intended to limit the scope of the present utility model.

The terms “first”, “second”, “third”, “fourth”, etc. (if any) in the description and claims of the present utility model are used to distinguish similar objects and are not necessarily used to describe a specific order or sequence.

The directional terms such as “upper”, “lower”, “left”, “right”, “front”, “rear”, “top”, and “bottom” (if any) in the description and claims of the present utility model are defined based on the positions of structures shown in the accompanying drawings and the relative positions among the structures, and are only used for clarity and convenience in expressing the technical solution. It should be understood that the use of directional terms should not limit the scope of the present application.

The present utility model provides a connection structure of a module, a storage box having the connection structure, and a storage box assembly. The connection structure may be provided on a storage box, and two adjacent storage boxes may be engaged and locked through the connection structure, thereby facilitating transportation of a plurality of storage boxes. The storage box may be a storage device such as a tool box, a tool basket, a transport box, or a transfer box.

#### **First Embodiment**

As shown in FIGS. 1 to 6, this embodiment provides a connection structure of a module, and the connection structure may be provided on a storage box. The connection structure

includes a first connecting portion 1, a second connecting portion 2, and a stopping portion 3. The first connecting portion 1 and the second connecting portion 2 may cooperate with each other to be automatically locked. The stopping portion 3 may prevent the first connecting portion 1 and the second connecting portion 2 from being automatically locked after being unlocked, thereby keeping the first connecting portion 1 and the second connecting portion 2 in an unlocked state, facilitating the first connecting portion 1 and the second connecting portion 2 to be unlocked and separated from each other, freeing the user's hands and facilitating user use.

In the present embodiment, the storage box includes a box cover 101 and a box body 102, and the box cover 101 is arranged on the box body 102. The box cover 101 can be opened or closed relative to the box body 102. The first connecting portion 1 is arranged on the box cover 101 of the storage box. The first connecting portion 1 includes a mounting portion 11, a locking portion 12 that is movable horizontally relative to the mounting portion 11, and a first elastic member 13 located between the mounting portion 11 and the locking portion 12, wherein the locking portion 12 can automatically remain in a locked state under the action of the first elastic member 13.

Further, the mounting portion 11 is detachably connected to the box cover 101. The box cover 101 is provided with a mounting slot 111, and the mounting portion 11 is engaged in the mounting slot 111, thereby facilitating replacement of the mounting portion 11. In other embodiments, the mounting portion 11 may be integrally formed with the box cover 101, or fixedly or detachably connected by other means. A sliding groove 11a is provided on a side surface of the mounting portion 11 away from the box cover 101, and the locking portion 12 is arranged in the sliding groove 11a and is movable relative to the mounting portion 11 within the sliding groove 11a. In the present embodiment, the locking portion 12 is a sliding locking buckle that moves horizontally relative to the mounting portion 11, such that the locking portion 12 moves horizontally within the sliding groove 11a. In other embodiments, the locking portion 12 may also be a pivotally movable flip locking buckle relative to the mounting portion 11, or a rotatably movable rotary locking buckle relative to the mounting portion 11.

Specifically, a locking buckle 122 is provided on the locking portion 12, and a protruding direction of the locking buckle 122 faces toward a central side of the storage box. When the locking buckle 122 engages with the second connecting portion 2, the first connecting portion 1 and the second connecting portion 2 can be mutually locked; when the locking buckle 122

disengages from the second connecting portion 2, the first connecting portion 1 and the second connecting portion 2 can be mutually unlocked. Meanwhile, in order to facilitate locking between the locking buckle 122 and the second connecting portion 2, an inclined surface 122a is provided on the locking buckle 122. An accommodating slot 123 is provided on a side surface of the locking portion 12 away from the box cover 101, and the accommodating slot 123 is located on a side of the locking buckle 122 close to the box cover 101. The accommodating slot 123 has a bottom wall 123a and two side walls 123b, wherein the two side walls 123b extend upward along both sides of the bottom wall 123a and are arranged opposite to each other, and the stopping portion 3 is arranged in the accommodating slot 123.

Further, the first elastic member 13 is connected between the mounting portion 11 and the locking portion 12, wherein one end of the first elastic member 13 abuts against the mounting portion 11 and the other end abuts against the locking portion 12, so that the locking portion 12 is automatically maintained in a locked state under the action of the first elastic member 13. In order to improve the reliability of movement of the locking portion 12, two first elastic members 13 may be provided, respectively located on both sides of the sliding groove 11a. The first elastic member 13 is a retractable spring, so that the locking portion 12 performs horizontal movement.

Further, as shown in FIG. 2 and FIG. 6, the second connecting portion 2 is arranged at the bottom portion of the box body 102 of the storage box, and includes a mating portion 21 that is mutually locked with the locking buckle 122 of the locking portion 12. Pressing down the locking portion 12 of one storage box enables it to be automatically locked with the mating portion 21 of another storage box under the action of the first elastic member 13. The mating portion 21 is a plurality of locking slots 211, and the number of the locking slots 211 may correspond to the number of the locking buckles 122.

The stopping portion 3 is arranged on the locking portion 12, and one end thereof is rotatably connected to the locking portion 12. The stopping portion 3 includes a lock tongue 36 and a second elastic member 33. One end of the lock tongue 36 is rotatably connected to the locking portion 12, and the second elastic member 33 enables the lock tongue 36 to be automatically maintained in a popped-up state. When the lock tongue 36 is popped up and abuts against the mating portion 21, the locking portion 12 cannot be automatically locked, and the first connecting portion 1 and the second connecting portion 2 are in a maintained unlocked state. When the stopping portion 3 is pressed down so as to retract into the locking portion 12, the

locking portion 12 can be automatically locked. When the first connecting portion 1 and the second connecting portion 2 are in a locked state, the locking buckle 122 interferes with the mating portion 21, and the stopping portion 3 is retracted into the locking portion 12; when the first connecting portion 1 and the second connecting portion 2 are in a maintained unlocked state, the locking buckle 122 does not interfere with the mating portion 22, and the stopping portion 3 engages with the mating portion 21 on the locking path of the locking portion 12.

In the present embodiment, the lock tongue 36 is retractably arranged in the accommodating slot 123 of the locking portion 12, and is also movable horizontally together with the locking portion 12 relative to the mounting portion 11, wherein the extending direction of the length of the lock tongue 36 is consistent with the moving direction of the locking portion 12. One end of the second elastic member 33 abuts against the lock tongue 36, and the other end abuts against the bottom wall 123a. When the second elastic member 33 is in an extended state, the lock tongue 36 extends out of the accommodating slot 123; when the second elastic member 33 is compressed, the lock tongue 36 retracts into the accommodating slot 123. Specifically, a stopper block 361 protruding upward is provided on the lock tongue 36. When the first connecting portion 1 and the second connecting portion are in a maintained unlocked state, the stopper block 361 extends out of the accommodating slot 123 and abuts against the mating portion 21, and the stopper block 361 is used for abutting against the mating portion 21. The lock tongue 36 has a first end portion 36a and a second end portion 36b opposite to each other, wherein the second end portion 36b is closer to a central position of the storage box than the first end portion 36a, and the stopper block 361 is arranged at a junction of the first end portion 36a and the second end portion 36b.

Further, as shown in FIG. 5, the stopping portion 3 further includes a rotating shaft 37, and both ends of the rotating shaft 37 are fixed to the two side walls 123b. The second elastic member 33 is a torsion spring, and the first end portion 36a of the lock tongue 36 is provided with a shaft hole (not shown in the figures). The first end portion 36a of the lock tongue 36 and the second elastic member 33 are sleeved on the rotating shaft 37, and two torsion arms of the second elastic member 33 respectively abut against the lock tongue 36 and the bottom wall 123a. Further, the first end portion 36a has a force-bearing surface, the stopper block 361 has a abutting surface, and the second end portion 36b has a positioning surface, wherein the positioning surface and the abutting surface substantially intersect at a right angle. The

positioning surface and the abutting surface cooperate to abut against a side surface and a bottom surface of the mating portion 21 so as to limit the position of the lock tongue 36 and thereby limit the position of the locking portion 12. The force-bearing surface is used for receiving compression from the mating portion 21 or for manual pressing by a user. When the first connecting portion 1 and the second connecting portion 2 are in a maintained unlocked state, the second elastic member 33 is in an extended state, and the stopper block 361 extends upward out of the accommodating slot 123; when the first connecting portion 1 and the second connecting portion 2 are in a locked state, the second elastic member 33 is compressed, and the stopper block 361 is pressed by a bottom surface of the mating portion 21 and is compressed within the accommodating slot 123.

In addition, in order to facilitate positioning during mutual locking between the first connecting portion 1 and the second connecting portion 2, a positioning recess 41 may be provided on the box cover 101, and a protruding portion 42 may be provided at the bottom of the box body 102. The positioning recess 41 can accommodate the protruding portion 42 exactly, and the first connecting portion 1 may be arranged on both sides of the edge of the box cover 101.

The working principle of the present embodiment is as follows:

As shown in FIG. 7 and FIG. 8, when two storage boxes are to be locked vertically, the upper storage box is pressed downward so that the mating portion 21 of the second connecting portion 2 comes into contact with the locking buckle 122 on the lower storage box and presses the inclined surface 122a. The locking buckle 122 of the lower storage box is pressed, thereby driving the locking portion 12 of the first connecting portion 1 to move toward an unlocking direction (i.e., away from the center of the storage box). At this time, the first elastic member 13 is compressed to store energy, and the stopping portion 3 is simultaneously pressed by the second connecting portion 2 and rotates downward to retract into the accommodating slot 123. When the upper storage box moves downward by a certain distance, and the locking buckle 122 on the locking portion 12 corresponds to the locking slot 211 on the mating portion 21, the locking buckle 122 loses the abutment from the upper storage box, and is automatically driven by the first elastic member 13 to engage into the locking slot 211, so that the first connecting portion 1 and the second connecting portion 2 are in a locked state, thereby realizing automatic locking of the upper and lower storage boxes; at this time, the stopping portion 3 is completely retracted into the accommodating slot 123.

As shown in FIG. 9 and FIG. 10, when the two storage boxes are to be unlocked vertically, the locking portion 12 of the lower storage box is pulled outward so as to move toward the unlocking direction. When the locking portion 12 moves a certain distance toward the unlocking direction to an unlocking position, the locking buckle 122 of the lower storage box disengages from the locking slot 211 on the mating portion 21 of the upper storage box, thereby unlocking the locking portion 12 and the mating portion 21. Meanwhile, the stopping portion 3 is no longer pressed by the second connecting portion 2 of the upper storage box, and the lock tongue 36 automatically extends upward out of the accommodating slot 123 under the action of the second elastic member 33 and abuts against a side surface of the mating portion 21, so that the first connecting portion 1 and the second connecting portion 2 are in a maintained unlocked state, thereby realizing a maintained unlocking function. At this time, the upper storage box can be easily lifted upward to conveniently unlock and separate the upper and lower storage boxes, and the locking portion 12 is automatically reset under the driving force of the first elastic member 13 to the locked state, preparing for the next locking operation.

Furthermore, if after pulling the locking portion 12 outward the user changes their mind and does not wish to unlock the upper and lower storage boxes, the lock tongue 36 may be pressed down so that the locking portion 12 returns to the locking position again, thereby enabling the first connecting portion 1 and the second connecting portion 2 to return to the locked state.

The advantages of the connection structure of the storage box provided in the present embodiment include:

1. The first connecting portion 1 is utilized in cooperation with the second connecting portion 2 for locking. When the upper storage box is placed in position, mutual locking of the two boxes is automatically achieved. The user does not need, after placing the box body 102, to separately operate the locking portions 12 on both sides when locking is required; it is only necessary to pull the locking portions 12 on both sides when opening.

2. The rotatable lock tongue 36 is utilized to keep the first connecting portion 1 and the second connecting portion 2 in a maintained unlocked state. The movement of the lock tongue 36 is highly deterministic and smooth in operation, greatly improving user convenience.

## **Second Embodiment**

As shown in FIG. 11 to FIG. 12, the difference between the present embodiment and the first embodiment lies in that the rotating shaft 37 is directly provided on the lock tongue 36 and is integrally formed with the lock tongue 36, and the second elastic member 33 is a retractable spring.

Specifically, the lock tongue 36 has a first end portion 36a and a second end portion 36b opposite to each other, wherein the second end portion 36b is closer to a central position of the storage box than the first end portion 36a. Protruding shafts 362 are provided on both sides of the second end portion 36b of the lock tongue 36, and the two protruding shafts 362 are respectively inserted into slide rails 123c of the two side walls 123b, so that the protruding shafts 362 move back and forth within the slide rails 123c, thereby providing a guiding function for the lock tongue 36. Further, a first protruding column 363 is also provided on the lock tongue 36, and a second protruding column 1231 is provided on the bottom wall 123a, wherein both ends of the second elastic member 33 are respectively sleeved on the first protruding column 363 and the second protruding column 1231.

Other structures, working principles, and beneficial effects of the present embodiment are the same as those of the first embodiment, and will not be repeated herein.

The above description is only a specific embodiment of the present utility model, and the scope of protection of the present utility model is not limited thereto. Any variations or substitutions that can be readily conceived by a person skilled in the art within the technical scope disclosed by the present utility model shall fall within the scope of protection of the present utility model. Therefore, the scope of protection of the present utility model shall be determined by the scope of the claims.

# DRAWINGS

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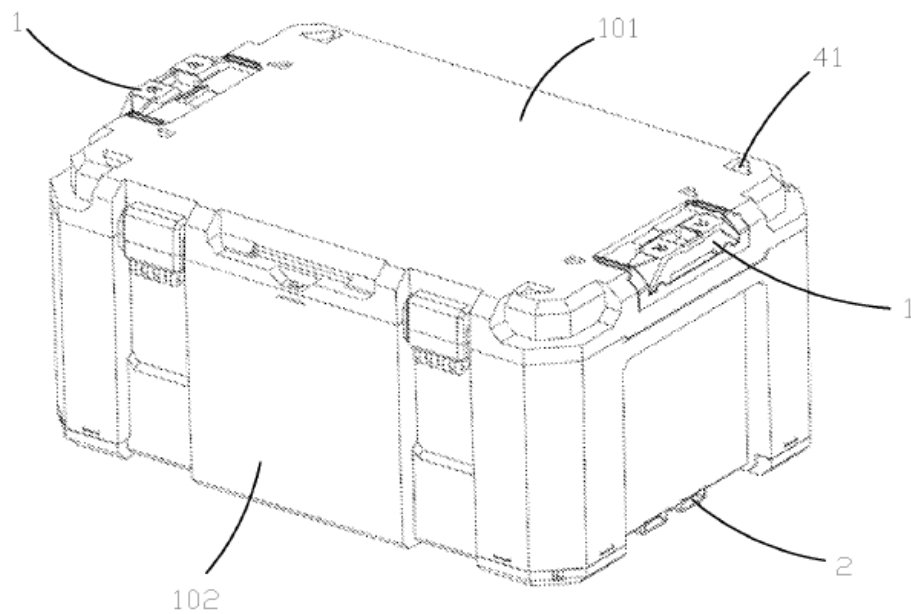


FIG. 1

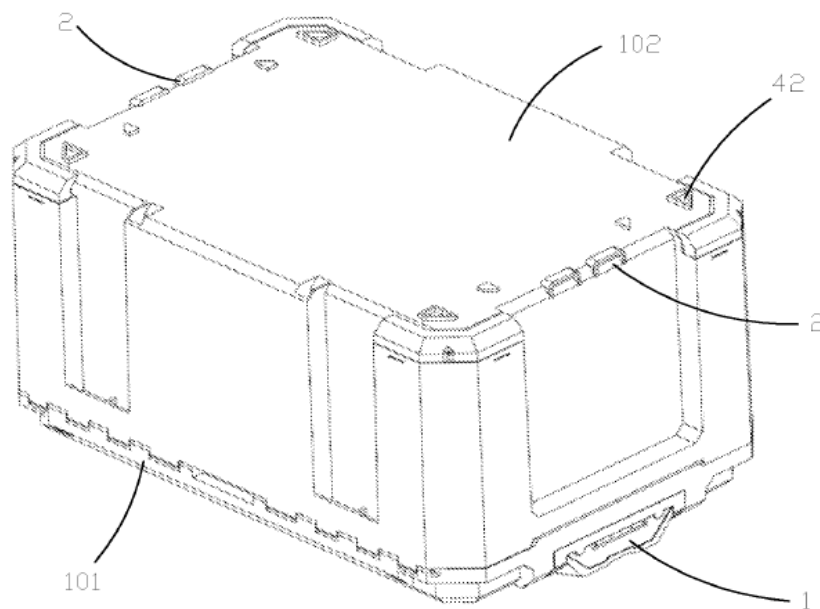


FIG. 2

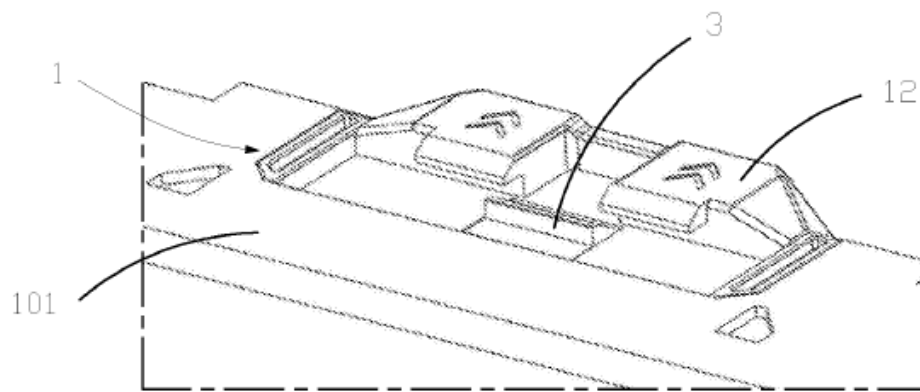


FIG. 3

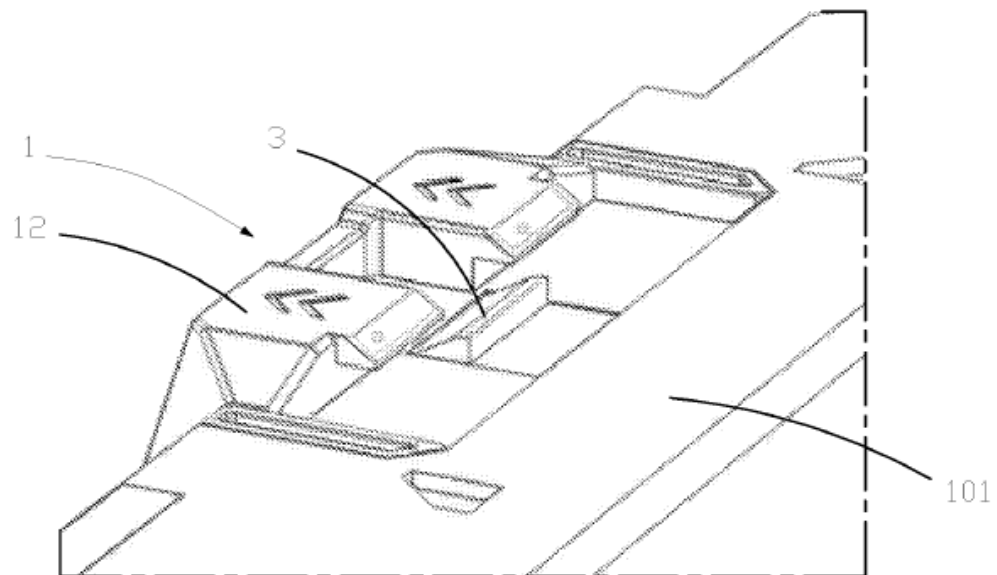


FIG. 4

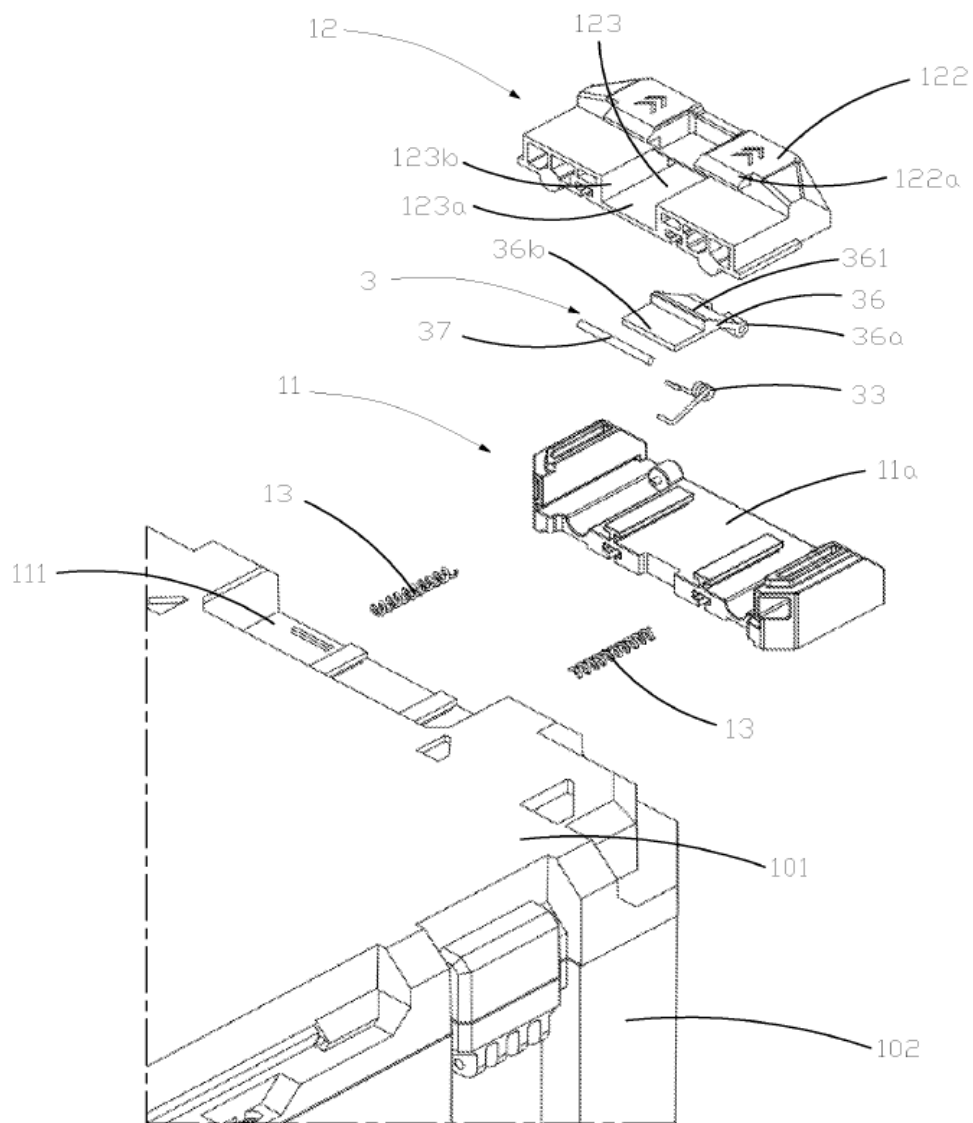


FIG. 5

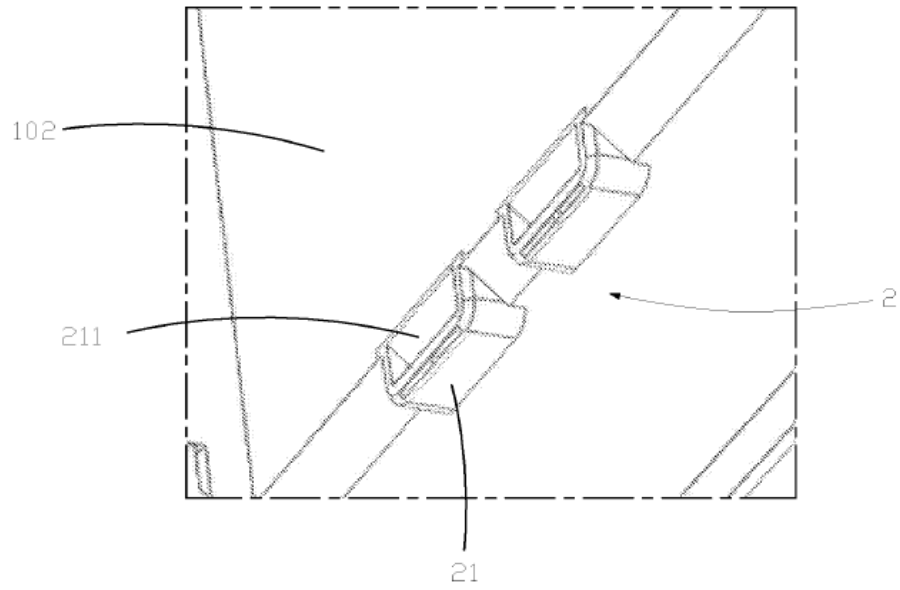


FIG. 6

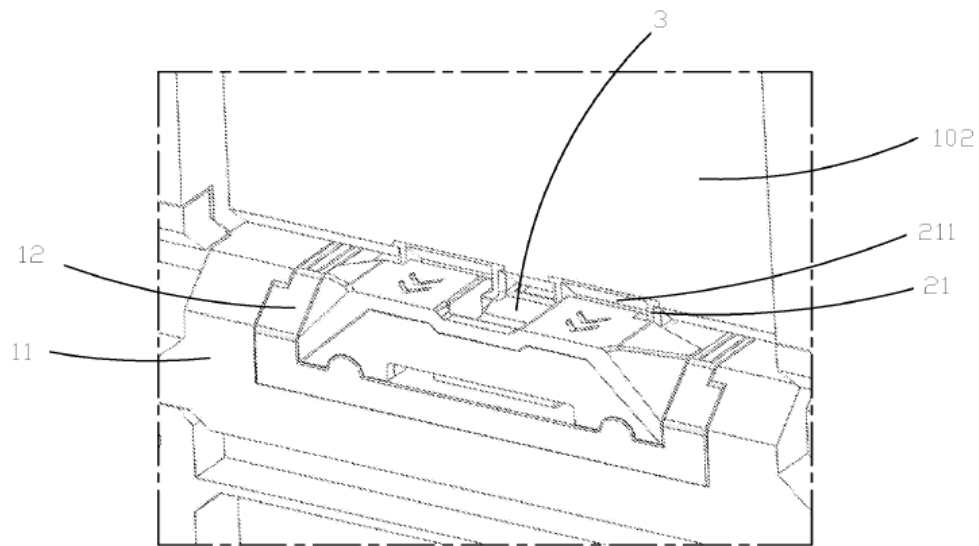


FIG. 7

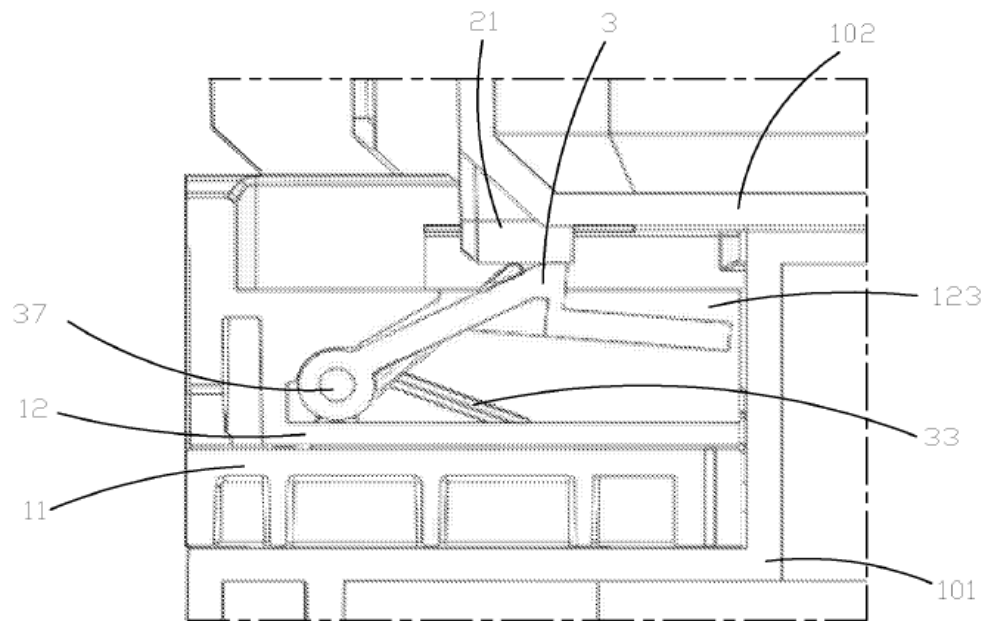


FIG. 8

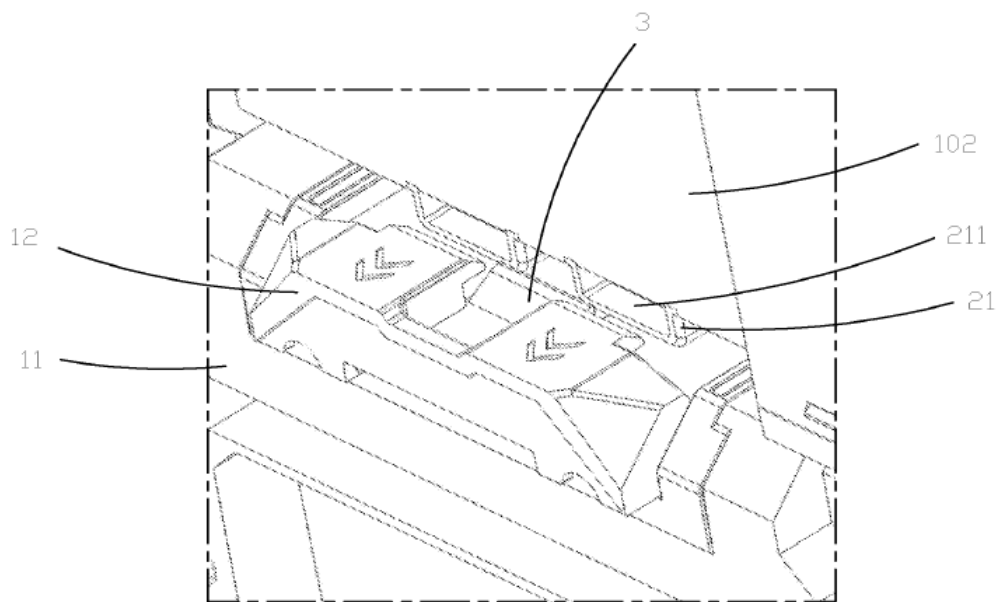


FIG. 9

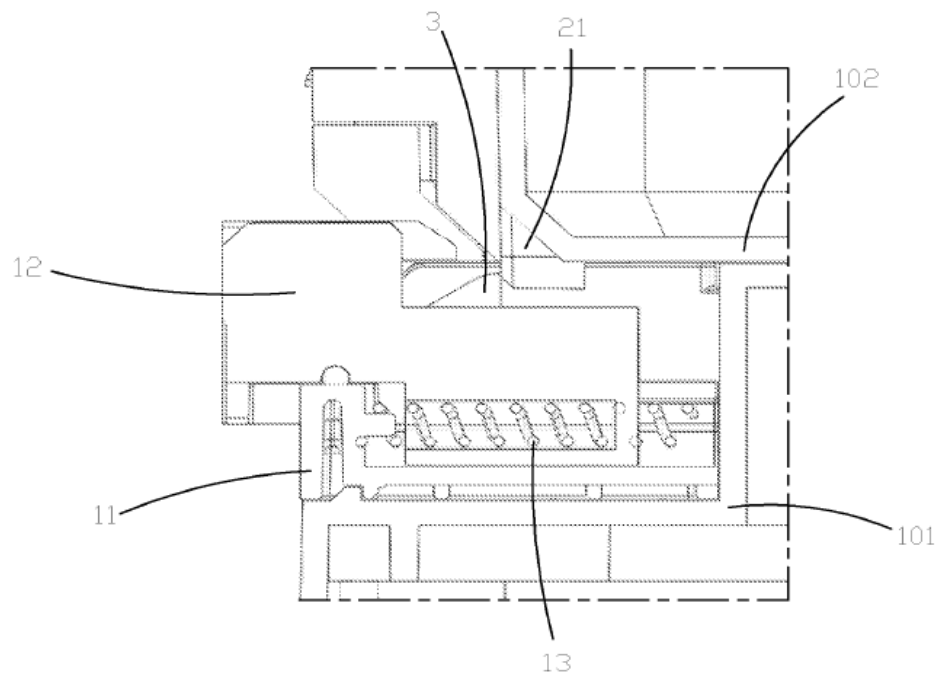


FIG. 10

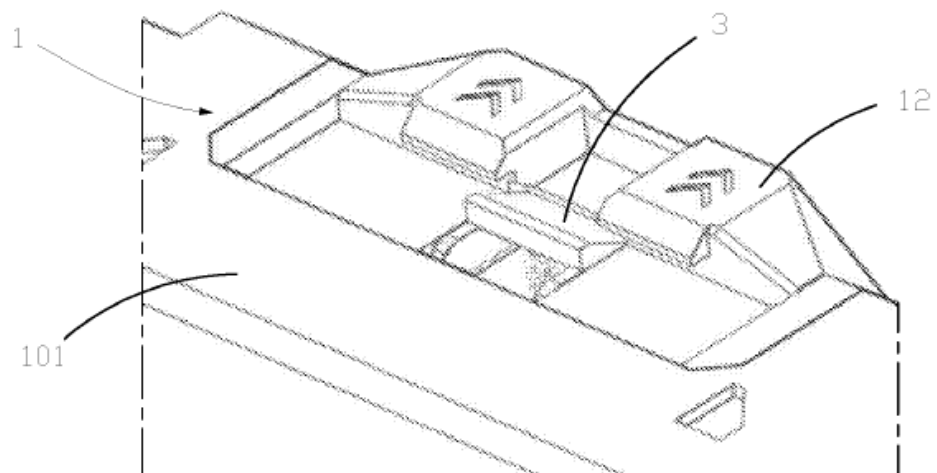


FIG. 11

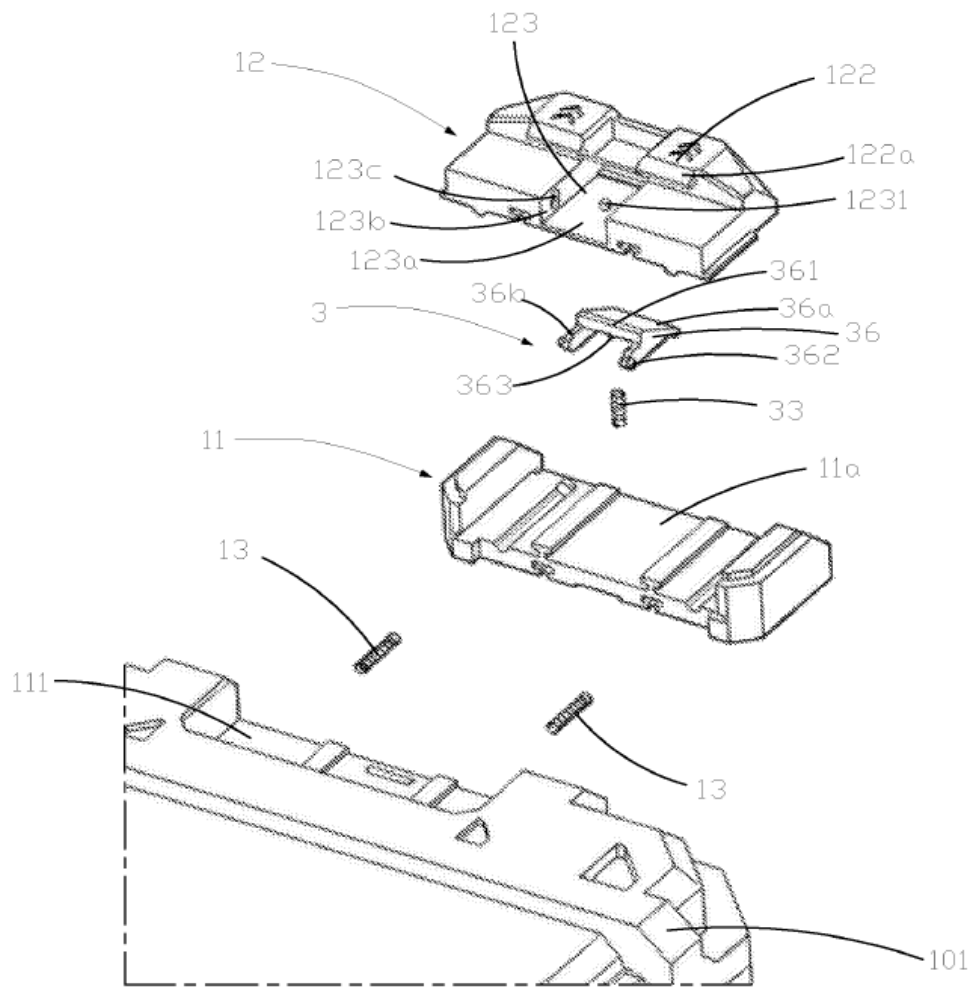


FIG. 12