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(54) **LOCK FOR SUITCASE/BAG**

(57) The invention public a lock of box/bag, the lock of box/bag is convexly set on the box/bag body, it comprises a lock bolt which is fixed to one side of the box or the bag; a lock body, the lock body comprises a fixed part and a rotating part, the fixed part is fixed to the other side of the box or the bag, the rotating part is pivotally connected to the fixed part, and the rotating part is provided with an opening, and extending inwardly along the

opening an sliding groove is provided, which is to allow the lock bolt to slide therein so as to lock or unlock. The lock of box/bag of the invention is locked and unlocked by rotating, which is different from current snap lock, it is a new lock of box/bag, and it is provided with a lock core that make it is need to use a key to open it, and improve its safety greatly; the shape of the lock is preferably circular, of which the advantage is easy to operate.

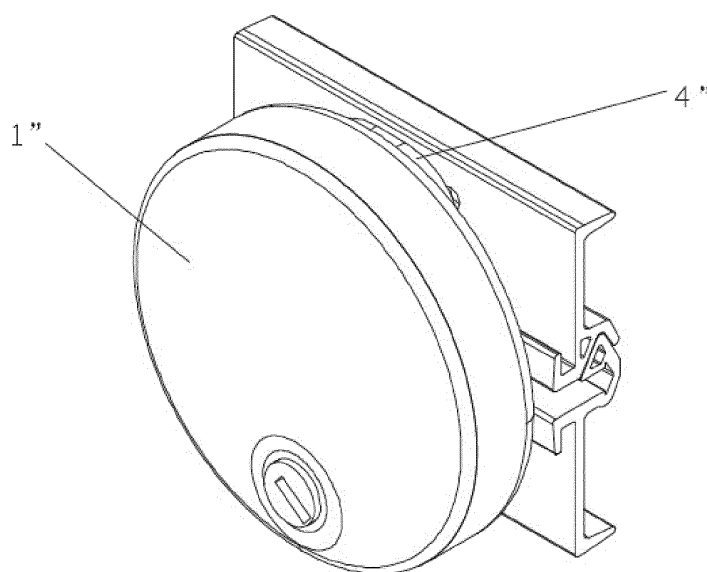


Figure 1

Description**FIELD**

[0001] The invention relates to field of daily items, and specifically to a lock of box/bag.

BACKGROUND

[0002] Generally, the lock of box/bag is referred to the locks with specific function, which were designed to lock a box-shaped products (such as suitcases, luggage, etc.) In order to prevent others to freely open, existing box/bag is generally provided with a lock body on the box body, and the box cover is provided with a lock hook, when the box cover and the box body buckle timely, the lock hook is extended into the lock body and automatically locked up by the lock body to lock the lock hook, if the lock body doesn't been unlocked, the lock hook is unable to release from the lock body, that means the box cover cannot be opened. The current lock of box / bag are mostly rectangular snap lock which is embedded in the box body or bag body, the other shapes such as circular locks are less used, and the shapes and structures are single, but the circular rotation locks structure used in other areas are so simple that anyone can lock and unlock them by manually rotating, which leads to that the safety is too low when directly using them on the box / bag, and although the automatically lock up of existing box/bag is design for the ease of use, but there is a defect that when the box cover accidentally falls, the lock of box/Bag will lock up automatically too, that will bring trouble to the users.

SUMMARY

[0003] This invention provides a lock of box/bag, it is convexly set on the outside of the body, and be locked and unlocked by mode of rotating, and it is provided with lock core, which can be open only by using a key, it is also provided with anti-self-locking mechanism by which to resolve the defect that the shape of existing box / bag lock is single, and the defect of current snap lock that when the lid accidentally falls, the lock of box/Bag will lock up automatically too.

[0004] The technical solution of the invention is as follows:

A lock of box/bag, comprising.

A lock bolt, fixed to one side of the box or the bag;

A lock body, the lock body comprising fixed part and rotating part, the fixed part is fixed to the other side of box or the bag, the rotating part is pivotally connected to the fixed part, the rotating part is provided with an opening, and extending inwardly along the opening an sliding groove is provided, which is to allow the lock bolt to slide therein so as to lock or unlock.

[0005] Preferably, further comprising:

A lock core, the lock core is embedded mounted on the rotating part, and can rotate around the cylinder axis relative to the rotating part, one end of the lock core is provided with a locking block, the fixed part is provide with locking mechanism which is used to cooperate with the locking block, through the cooperating between the locking block and the locking mechanism to accomplish locking or unlocking, the rotating part and the fixed part cannot occur relative rotation when it is locking, and the rotating part and the fixed part can occur relative rotation when it is unlocking.

[0006] Preferably, the rotating part comprising a first shell and a second shell, the connection, the first shell is connected fixedly with the second shell, and the second shell is connected pivotally with the fixed part;

[0007] The lock core is embedded mounted in the first shell, and is passed through the second shell; the second shell is provide with an opening, and extending inwardly along the opening an sliding groove is provided, which is to allow the lock bolt to slide therein so as to lock or unlock, the first shell is provided with an opening groove at the position corresponding to the opening.

[0008] Preferably, the locking mechanism which is set on the fixed part is a storage groove, the locking block which is set on the lock core is a cylinder which is matched with the storage groove, wherein:

Rotating the lock core along positive direction, to make the cylinder be inserted inside the storage groove, so as to prevent the rotating part from rotating relative to the fixed part;

Rotating the lock core along negative direction to make the cylinder be away from the storage groove, so as to make the rotating part can rotate relative to the fixed part.

[0009] Preferably, the outside of the lock core is provided with a lock core sleeve, the lock core is rotatably connected to the inside of the lock core sleeve, the lock core sleeve is embedded mounted on the rotating part; the lock core sleeve is provided with at least one orbital groove, the orbital groove comprises a long end and a short end, the width of the orbital groove is gradually change from the long end to the short end, Correspondingly, the outside of the lock core is provided with at least one bump, the bump is slipping along the orbital groove when the lock core is rotated, so as to make the lock core move inward or outward relate to the lock core sleeve, thereby the cylinder is inserted inside or away from the storage groove.

[0010] Preferably, the locking mechanism which is set on the fixed part is a hook projection, the locking block which is set on the lock core is a half- cylinder, which is

set to extend to the bottom of the hook projection, wherein:

Rotating the lock core along positive direction to make the half-cylinder be located on the vertical plane of the hook projection, so as to prevent the rotating part from rotating relative to the fixed part;
Rotating the lock core along negative direction to make the half-cylinder be located on the horizontal plane of the hook projection, so as to make the rotating part can rotate relative to the fixed part.

[0011] The invention also provides a lock of box/bag, comprising:

A lock bolt, fixed to one side of the box or the bag;

A lock body, the lock body comprising the first shell, the second shell and the third shell that are connected in turn, the first shell and the second shell is fixedly connected to form an integral rotating part, the third shell that is set as fixed part is fixed to the other side of box or the bag, the second shell is pivotally connected to the third shell;

The second shell is provided with opening, and extending inwardly along the opening an sliding groove is provided, which is to allow the lock bolt to slide therein so as to lock or unlock, an opening groove is provided at the position corresponding to the opening of the first shell;

A lock core, the lock core is embedded mounted on the first shell, and can rotate relative to the first shell, one end of the lock core is provided with a locking block, a locking mechanism is provided on the third shell, which is used to cooperate with the locking block, the second shell is provided with a through hole to allow the lock core pass through, through the cooperation between the locking block and the locking mechanism, the locking or unlocking is accomplished, the rotating part and the fixed part cannot occur relative rotation when they were locked, the rotating part and the fixed part can occur relative rotation when they were unlocked.

[0012] Preferably, the locking mechanism which is set on the fixed part is a storage groove, the locking block which is set on the lock core is a cylinder which is matched with the storage groove, wherein

Rotating the lock core along positive direction to make the cylinder be inserted inside the storage groove, so that as to prevent the rotating part from rotating relative to the fixed part;

Rotating the lock core along negative direction to make the cylinder be away from the storage groove, so as to make the rotating part can rotate relative to the fixed part.

[0013] Preferably, the outside of the lock core is provided

with a lock core sleeve, the lock core is rotatably connected to the inside of the lock core sleeve, the lock core sleeve is embedded mounted to the rotating part; the lock core sleeve is provided with at least one orbital groove, the orbital groove comprising a long end and a short end, the width of the orbital groove is gradually change from the long end to the short end, at least one bump is provided at the corresponding position of the outside of the lock core, the bump is slipping along the orbital groove when the lock core is rotated, so as to make the lock core be moved relative to the lock core sleeve.

[0014] Preferably, the locking mechanism which is set on the fixed part is a hook projection, the locking block which is set on the lock core is set to extend to the bottom of the hook projection, wherein

Rotating the lock core along positive direction to make the locking block locate on the vertical plane of the hook projection and prevent the rotating part from rotating relative to the fixed part;

Rotating the lock core along negative direction to make the locking block locate on the horizontal plane of the hook projection, so as to make the rotating part can rotate relative to the fixed part.

[0015] Preferably, the outside of the lock core is provided with a lock core sleeve, the lock core is rotatably connected to the inside of the lock core sleeve, the lock core sleeve is embedded mounted on the rotating part; the lock core and the lock core sleeve is provided with a lock core limited mechanism, the lock core limited mechanism comprising:

One or two bumps, set on the outside of the lock core;

One or two limited grooves, set on the lock core sleeve, and respectively correspond to the one or two bumps, the lock core can rotate relative to the lock core sleeve in the travel of the bumps which limited by the limited grooves.

[0016] Preferably, the first shell of the rotating part and/or the second shell of the rotating part is provided with a storage groove which is matched with the lock core sleeve, the lock core sleeve is set in the storage groove.

[0017] Preferably, the second shell and the third shell is connected by an rotation shaft, the second shell is provided with groove hole on the corresponding position to allow the rotation shaft pass through, the axis of rotation is fixedly connected to the third shell, while it is pivotally connected to the second shell, and one end of the rotation shaft is protruded from the second shell.

[0018] Preferably, the fixation of the axis of rotation and the third shell as follows:

The rotation shaft is provided with at least two columnar projections at its undersurface which is adjacent to the third shell, the third shell is provided with storage holes at the position relative to the co-

lumnar projections, put the columnar projections into the storage holes, as to make the rotation shaft cannot rotate relative to the third shell, thereby be fixedly connected to the third shell.

[0019] Preferably, the rotation shaft is set to be hollow, the third shell is provided with a hollow cylinder at the position relative to the rotation shaft, the hollow cylinder is sleeved within the rotation shaft;

The hollow cylinder is provided with inner thread, and the rotation shaft is further fixedly connected to the third shell by a bolt joint passing through the hollow cylinder.

[0020] Preferably, the rotation shaft is provided with a dummy club to prevent the second shell from moving along axial direction, the dummy club is set in the middle of the rotation shaft.

[0021] Preferably, the lock of box/bag is further provided with an anti-self-locking mechanism, the anti-self-locking mechanism comprising:

- An anti-self-locking linkage component, the anti-self-locking linkage component comprises a hollow tube located in its middle part and the first curved edge and the second curved edge extended by the hollow tube, the first shell or the second shell is provided with connection shaft corresponding to the hollow tube, the anti-self-locking linkage components is pivotally connected to the first shell or the second shell by the connection shaft, the first curved edge is connected to the first shell or the second shell by a elastic element which used to push the first curved edge, the second curved edge is a free side;
- A complementary set of bump and runner, the bump is convexly provided on the adjacent side of the third shell and the second shell, the runner is provided on the second shell where is relative to the bump, the bump can slide in the runner along with the rotation between the rotating part and the third shell;
- When the bump slide to one end of the runner, the first curved edge of the anti-self-locking linkage components pole is withstand the bump under the thrust of the elastic element, and to prevent it from sliding to the other end of the runner, and the second curved edge of the anti-self-locking linkage component stand in the above of the opening of the second shell, to prevent the lock bolt from entering the opening, or when the bump slide to one end of the runner, the first curved edge of the anti-self-locking linkage components receive thrust of the elastic element, and impress the thrust upon the second curved edge through the hollow tube of middle part, to make the second curved edge block the bump, so that it cannot slide along the runner.

[0022] Preferably, the first shell or the second shell is further provided with a guide bar which is to limit the trajectory of the first curved edge of the anti-self-locking linkage components.

[0023] Preferably, the second shell and the rotation shaft are provided with mechanism to enhance rotational feel, the mechanism to enhance rotational feel comprising:

A column extending from the rotation shaft, the column is hollow, and its internal is provided with elastic element, outside of the elastic element is provided with circular bead, the second shell is provided with an least two small circular holes on the circumference which relative to the circular bead, rotational feel is generated when the circular bead is passing through the small circular holes.

[0024] Preferably, the elastic element is spring, the circular bead is steel bead.

[0025] Preferably, the second shell and the rotation shaft is provided with mechanism to enhance rotational feel, the mechanism to enhance rotational feel comprising:

A U-shaped torsion elastic element, which has a central part and two ends, the central part is fixed to one end of the rotation shaft which is jutting from the second shell by a annular structure, and of which one end is fixed to the edge of rotation shaft, the other end is contact with the surface of the second shell; the second shell is provided with an least two projections on the circle where is contacted with the U-shaped torsion elastic element; when the second shell rotating relative to the third shell, the end of the U-shaped torsion elastic element contacting with the second shell pass through the projections, so as to generate the rotational feel.

[0026] Preferably, the rotation shaft is provided with two retaining grooves on the side which is adjacent with the head of the bolt, one end of the U-shaped torsion elastic element is fixed to the edge of the rotation shaft by the retaining grooves.

[0027] Compared with the existing technology, the beneficial effect of the invention are as follows:

Firstly, the lock of box/bag of the invention is locked and unlocked by rotating, which is different from current snap lock, thus it is a new lock of box/bag; Secondly, the lock of box/bag of the invention is provided with a lock core, which make you need to use a key to open it, so as to improve its safety greatly; Thirdly, the lock of box/bag of the invention is further provided with an anti-self-locking mechanism, which can effectively prevent the problem that automatic lock up that caused by the upper cover of the box/bag falling down to the nether cover;

Fourthly, the lock of box/bag of the invention is provided with a mechanism to enhance rotational feel, which allows users to control lock on/off more easily and accurately;

Fifthly, the shape of the lock of box/bag of the invention is preferably circular, which is easy to operate.

[0028] Of course, any one of the products implementing the invention does not need to reach all of the advantages described above.

BRIEF DESCRIPTIONS OF THE DRAWINGS

[0029]

Fig. 1 is the structural representation of the invention; Fig. 2 is the exploded structural representation of the lock of box/bag of the first implementation of the invention;

Fig. 3 is the exploded structural representation of the lock of box/bag of the first implementation of the invention, in which the view direction is opposite to fig.2.

Fig. 4A, Fig. 4B are the structural representation of the sleeve shaft and the second shell, the third shell of the first implementation of the invention respectively.

Fig. 5 is the structural representation of lock core of the lock of box/bag of the first implementation of the invention;

Fig. 6 is the exploded structural representation of the lock of box/bag of the second implementation of the invention;

Fig. 7 is the structural representation of lock bolt of the lock of box/bag of the second implementation of the invention;

Fig. 8 is the structural representation of the rotation shaft which connect the second shell and the third shell of the lock box/bag of the second implementation of the invention;

Fig. 9 is the structural representation of lock core of the lock of box/bag of the second implementation of the invention;

Fig. 10 is the structural representation of lock core sleeve of the lock of box/bag of the second implementation of the invention;

Fig. 11 is the structural representation of the third shell of the lock of box/bag of the second implementation of the invention;

Fig. 12 is the structural representation of the anti-self-locking linkage components of the lock of box/bag of the second implementation of the invention;

Fig. 13 is the structural representation of the first shell of the lock of box/bag of the second implementation of the invention;

Fig. 14 is the structural representation of the torsion elastic element of U shape of the lock of box/bag of the second implementation of the invention;

Fig. 15 is the structural representation of the second shell of the lock of box/bag of the second implementation of the invention;

Fig. 16 is the applied representation that unlocking the lock of box/bag of the second implementation of the invention.

DETAILED DESCRIPTION

[0030] The invention provides a lock of box/bag, the lock of box/bag is a new rotational lock, and is provided with lock core, which result in that you need to use key to open it and it is safe to use, further more an anti-self locking mechanism is provided, which can resolve the defect of current snap lock that when the lid accidentally falls, the lock of box/Bag will lock up automatically too.

[0031] Referring to Fig. 1, the lock of box/bag provided by the invention, comprising:

A lock bolt 4", it is fixed to one side of box or bag; A lock body, the lock body comprises fixed part and rotating part 1", the fixed part is fixed to the other side of box or bag, the rotating part 1" is pivotally connected to the fixed part; the rotating part 1" can comprises one part or two parts, when it comprises one part, a better option can be: the part comprises one bottom and one circular profile, the profile is set connectedly with a flat, the flat can parallel with the bottom, and its area is preferably less than the bottom; the flat is provided with an opening, and extending inwardly along the opening an sliding groove is provided, which is to allow the lock bolt to slide therein so as to lock or unlock; for the case of the rotating part 1" comprises two parts, it will be described in detail in the following implementations.

[0032] In a preferred implementation of the invention, the lock of box/bag further comprise a lock core, the lock core is embedded mounted to the rotating part, and it can rotate around the cylinder axis relative to the rotating part, one end of the lock core is provided with a locking block, the fixed part is provide with a locking mechanism which is used to cooperate with the locking block, through the cooperating between the locking block and the locking mechanism to accomplish locking or unlocking, the rotating part and the fixed part cannot occur relative rotation when it is locking, and the rotating part and the fixed part can occur relative rotation when it is unlocking.

[0033] Program of the lock block and the locking mechanism can be:

The locking mechanism which is set on the fixed part is a storage groove, the locking block which is set on the lock core is a cylinder which is matched with the storage groove, wherein: rotating the lock core along positive direction, to make the cylinder be inserted inside the storage groove, so as to prevent the rotating part from rotating relative to the fixed part; rotating the lock core along negative direction to make the cylinder be away from the storage groove, so as to make the rotating part can rotate

relative to the fixed part. The outside of the lock core is provided with a lock core sleeve, the lock core is rotatably connected to the inside of the lock core sleeve, the lock core sleeve is embedded mounted on the rotating part; the lock core sleeve is provided with at least one orbital groove, the orbital groove comprising a long end and a short end, the width of the orbital groove is gradually change from the long end to the short end, Correspondingly, the outside of the lock core is provided with at least one bump, the bump is slipping along the orbital groove when the lock core is rotated, so as to make the lock core move inward or outward relate to the lock core sleeve, thereby the cylinder is inserted inside or away from the storage groove.

[0034] Or

[0035] The locking mechanism which is set on the fixed part is a hook projection, the locking block which is set on the lock core is a half- cylinder, which is set to extend to the bottom of the hook projection, wherein: Rotating the lock core along positive direction to make the half-cylinder be located on the vertical plane of the hook projection, so as to prevent the rotating part from rotating relative to the fixed part; Rotating the lock core along negative direction, let the half- cylinder locate on the horizontal plane of the hook projection, so that let the relative rotation between the rotating part and the fixed part.

[0036] In other implementations of the invention, the lock core and the lock core sleeve also can be provided with a lock core limited mechanism, the lock core limited mechanism comprising:

One or two bumps, set on the outside of the lock core;

One or two limited grooves, set on the lock core sleeve, and respectively correspond to the one or two bumps, the lock core rotate relative to the lock core sleeve in the travel of bump which limited by limited grooves.

[0037] Among which, the way of fixation of the lock core sleeve can be: the rotating part is provided with a storage groove which is matched with the lock core, and the lock core sleeve is fixed to the rotating part by the storage groove. The lock core sleeve is preferably non-circular, so that it is difficult to rotate relative to the rotating part, of course it also can be circular, and it is fixedly connected to the rotating part with adhesive.

[0038] The lock of box/bag of the invention can be used to a box or a bag, the following take using the lock to a box for examples, and further describe the invention combined to the drawings and concretely implementations.

The first implementation

[0039] As show in fig.2 and fig.3, the lock of box/bag of this implementation, is used to a box, it comprises:

A lock bolt 4', the lock bolt comprises a lockup part 41' and a linkage part 42', it can be fixed to the upper cover or the nether cover of the box by the linkage part 42', generally, as customary the lock bolt 4' is fixed to the upper cover of the box, among that two ends of the linkage part 42' are provided with bolt holes, the bolts is passed through the bolt holes and is fixed to the upper cover of the box to make the lock bolt 4' be fixed.

[0040] A lock body, the lock body comprises the first shell 1', the second shell 2' and the third shell 3' that are connected in turn, among them, the second shell 2' and the first shell 1' is fixedly connected to form a rotating part together, specifically, the connection way is fixedly connected by bolts, making the three bolts respectively pass through bolt hole 17', 18', 19' on the first shell 1' and bolt hole 20', 28', 29' on the first shell 2' in turn to fixedly connect the second shell 2' with the first shell 1' together, as show in the fig.2 and fig.3 of this implementation, the second shell 2' is a flat, the first shell 1' comprises one bottom and one circular profile, in other implementations of this invention, it can also be, the first shell is a flat, the second shell comprises one bottom and one circular profile, the drawings of this implementation is just used to illustrate this invention, in which the shape can not be understood as limiting the invention. In fig.2, the third shell 3' is as fixed part, which can be fixed to the upper cover or the nether cover of the box, the third shell 3' is fixed to the nether cover of the box when the lock bolt 4' is fixed to the upper cover of the box, specifically can be, make two bolts pass through the two bolt holes 35', 36' on the third shell 3' so as to fix it; and the third shell 3' is pivotally connected to the rotating part that is consisted by the second shell 2' and the first shell 1', the rotating part can rotate relative to the third shell 3'; wherein,

[0041] The second shell 2' and the third shell 3' is connected by a connection shaft, in this implementation, the connection shaft is sleeve shaft 5', the sleeve shaft 5' is fixedly connected to the third shell 3' and is pivotally connected to the second shell 2', and one end of it protrudes from the second shell 2', the second shell 2' is provided with groove hole on the corresponding position to allow the sleeve shaft 5' pass through, the sleeve shaft 5' is passed through the groove hole and fixed to the third shell 3'; Preferably, the way of the sleeve shaft fixedly connecting to the third shell 3' is specifically be: the sleeve shaft 5' is provided with at least two columnar projections at its undersurface which is adjacent to the third shell, in this implementation the sleeve shaft 5' is provided with two columnar projections 511', 512', as show in fig.4A, of course it can be set three or more projections; the third shell 3' is provided with provided with storage holes 311', 312' at the position relative to the columnar projections 511', 512', as show in fig.4B, put the columnar projections 511', 512' into the storage holes 311', 312' so as to make the sleeve shaft 5' cannot rotate relative

to the third shell 3', but it is fixedly connected to the third shell 3'. In this implementation, sleeve shaft 5' is a hollow cylinder, which is provided with through hole 52', the third shell 3' is convexly provided with a hollow cylinder 37' on the side adjacent to the second shell, as show in fig.2, preferably, the hollow cylinder 37' is sleeved within the through hole 52' of the sleeve shaft 5', so as to fix the sleeve shaft 5' and the third shell 3' preferably; the hollow cylinder 37' is provided with inner thread, the third shell 3' is provided with storage hole 32' at the corresponding position to storage bolt, bolt 6' is fixedly connected to the third shell 3' through the inner thread of the hollow cylinder 37' and the storage hole 32' of the third shell 3', and meanwhile the sleeve shaft 5' is fixed to the third shell 3'; furthermore, the sleeve shaft 5' and the second shell 2' are provided with a mechanism to enhance rotational feel, specifically be: one side of the sleeve shaft 5' extends out of column 53', the column 53' is provided with storage groove on the end contacted with the third shell 3', and steel bead spring positioning assembly is set in the storage groove, correspondingly, the second shell 2' is provided with at least two circular holes 211, 212, which is used to help users locate the locked position and enhanced rotational feel by combining with steel bead spring positioning assembly.

[0042] The second shell 2' is provided with opening 22', and extending inwardly along the opening 22' an sliding groove 23' is provide, which is to allow the lock bolt 4' to slide therein so as to lock or unlock, an opening groove 12' is provided at the position corresponding to the opening 22' of the first shell;

[0043] Furthermore, the lock of box/bag of this implementation further comprises a lock core 7', the lock core 7' is set on the lock body, and can rotate relative to the lock body, the outside of the lock core 7' is provided with a lock core sleeve 8', the lock core 7' is rotatably connected to the inside of the lock core sleeve 8', the lock core sleeve 8' is fixedly connected to the first shell 1', specifically, the first shell 1' is further provided with storage groove 13' to match with the lock core sleeve 8', the lock core sleeve 8' is set in the storage groove 13'; the second shell 2' is provided with through hole 24' to allow the lock core 7' pass through, the lock core 7' contacts with third shell 3' by passing through the through hole 24'. In this implementation, preferably, the lock core sleeve 8' is non- circular, of which outside a number of projections are set, which can prevent it from rotating relative to the first shell 1'. Of course, the lock core sleeve 8' can also be circular, which is fixed to the first shell 1' by adhesives and other common fixations. Setting the lock core makes it need to use a key to open the lock of box/bag of this implementation, and improves the safety greatly. Locking mechanism of the lock core 7' as follow: the lock core 7' is provided with an least one bump at its outside, in this implementation it is set with one bump 71', as show in fig.5, the lock core sleeve is provided with orbital groove at the corresponding position to the bump 71', as show in fig.3, the orbital groove 71' comprises one

long end and one short end, so that the width of the orbital groove 71' is gradually change from the long end to the short end, preferably, the orbital groove is a trapezoidal groove 81', that is, one end of it is slightly longer than the other, and the transition from the long end to the short end is linear gradual transition, the lock core 7' rotate relative to the lock core sleeve 8' in the travel of bump 71' which limited by limited grooves 81', and move inward or outward relate to the lock core sleeve 8' during rotating. Besides, the lock core 7' is provided with a cylinder on the bottom which is relative to the keyhole surface, preferably it is a small circular cylinder 73', as show in fig.5, the third shell 3' is provided with a first storage groove 33' which is adapted to the lock core 7', the bottom of the storage groove 33' is provided with a second storage groove 331' which is adapted to the small circular cylinder 73', furthermore, one side of storage groove 33' also extends a elongated groove 332', the elongated groove 332' is provided with elongated socket 333' inwardly, as show in fig.2, the bottom of the lock core 7' can slide in the elongated groove 332', and meanwhile the small circular cylinder 73' can slide in the elongated socket 333'. When rotating the lock core 7' to make the bump 71' on it move from the long end to the short end of the lock core sleeve 8', the lock core 7' will move inward, the small circular cylinder 73' on it will stick in the second storage groove 331' of the third shell 3', at this moment, the rotating part composed by the first shell 1' and the second shell 2' can not rotate relative to the third shell 3', then the lock of box is locked; when rotating the lock core 7' to make the bump 71' on it move from the short end to the long end of the lock core sleeve 8', the lock core 7' will move outward, the small circular cylinder 73' on it will leave the second storage groove 331' of the third shell 3', at this moment, the rotating part composed by the first shell 1' and the second shell 2' can rotate relative to the third shell 3', then the lock of box is unlocked. When the rotating part composed by the first shell 1' and the second shell 2' is rotating relative to the third shell 3', the bottom of the lock core 7' is sliding in the elongated groove 332', meanwhile the small circular cylinder 73' is sliding along the elongated socket 333'.

[0044] Furthermore, the lock of box/bag of this implementation is further provided with an anti-self-locking mechanism, the anti-self-locking mechanism comprises:

An anti-self-locking linkage component 9', the anti-self-locking linkage component 9' comprises a hollow tube 91' located in its middle part and two curved edges, the first curved edge 92' and the second curved edge 93', that are extended by the hollow tube 91', the first shell 1' or the second shell 2' is provided with a connection shaft at the corresponding position, the anti-self-locking linkage component 9' is pivotally connected to the first shell 1' or the second shell 2' by the connection shaft; in this implementation, connection shaft 14' is provided for the first shell 1', the anti-self-locking linkage compo-

nent 9' is pivotally connected to the first shell 1' by the connection shaft 14';

A complementary set of bump 34' and runner 25', the bump 34' is convexly provided on one side of the third shell 3' of which is adjacent to the second shell 2', the runner 25' is provided on the second shell 2' where relative to the bump 34', the bump 34' can slide in the runner 25' along with the rotation of the rotating part composed by the first shell 1' and the second shell 2' related to the third shell 3'; and at the locking position, the second curved edge 93' of the anti-self-locking linkage component 9' is standing in sliding direction of the bump 34', so as to make the rotating part composed by the first shell 1' and the second shell 2' cannot rotate relative to the third shell 3', specifically:

When the bump 34' slide to one end of the runner 25', the second curved edge 93' of the anti-self-locking linkage component 9' pole against the side of the bump 34' in sliding direction, so as to prevent it from sliding to the other end of the runner 25';

Among that, the first curved edge 92' of the anti-self-locking linkage component 9' is connected to the first shell 1' by a elastic element, when the bump 34' slide to the above end of the runner 25', the elastic element will push the first curved edge 92' and pass the thrust to the second curved edge 93' by the hollow tube 91', so as to make it pole against one side of the bump 34', thereby to prevent it from sliding to the other side of the runner 25'. The elastic element can be a spring, the connection of a non-limiting example for, outside of the first curved edge 92' of the anti-self-locking linkage component 9' is provided with columnar projection 921', the first shell 1' is provided with fixed groove 15' to fix the elastic element, one end of the elastic element is set on the columnar projection 921', the other end is fixed to the first shell 1' by the fixed groove 15'. In other implementation of the invention, when the anti-self-locking linkage component is connected to second shell, the first curved edge of the anti-self-locking linkage component is connected to the second shell.

[0045] Furthermore, in this implementation, the first shell 1' is further provided with guide bar 16' to define the trajectory of the first curved edge 92' of the anti-self-locking linkage component 9', to limit the first curved edge 92' rotating within a certain range, and achieve the aim of precise control.

[0046] When you need to lock the lock of box of this implementation, put down the upper cover of the box, so that the lockup part 41' of the lock bolt 4' is placed in the cavity combined by the opening 22' of the second 2' and opening groove 12' of the first shell 1', then rotate the

rotating part combined by the first shell 1' and the second shell 2' to make the lockup part 41' of the lock bolt 4' slide along the runner 23' to its bottom, then rotate the lock core 7' along positive direction to make the small circular cylinder 73' on it be inserted inside the second storage groove 331', at this time the first shell 1' and the second shell 2' cannot rotate relative to the third shell 3', the lockup part 41' of the lock bolt 4' cannot slide out the runner 23' on the second shell 2', thus the locking process is completed, at this time the second curved edge 93' of the anti-self-locking linkage component 9' is standing in sliding direction of the bump 34' because of the elasticity of spring on the first curved edge 92'; when you need to open the lock of box/bag, firstly insert the key and rotate the lock core 7' in the opposite direction to make the small circular cylinder 73' on it be away from the second storage groove 331' of the third shell 3', then rotate the second shell 2' and the first shell 1' to make the lockup part 41' of the lock bolt 4' slide along the runner 23' of the second shell 2' to the opening 22', and push the second curved edge 93' of the anti-self-locking linkage component 9' to constrict the elastic element, meanwhile the small circular cylinder 73' of the lock core 7' slides along the elongated socket 333', then the unlocking process is completed. When the lockup part 41' leave the lock body, and the user don't apply rotational force, the elastic element connected on the first curved edge 92' of the anti-self-locking linkage component 9' will generate thrust, so as to make the rotating part combined by the first shell 1' and the second shell 2' rotate relative to the third shell 3', so that the opening 22' on the second shell 2' is not directly below the lockup part 41' of the lock bolt 4', at this time, even if the falling of upper cover causes the lockup part 41' of lock bolt 4' falling, it will not lead to the case that the box / bag is locked automatically.

[0047] In above implementations, the shape of the first shell 1' and the second shell 2' is preferably circular, but the invention is not limited by that, other shapes can achieve the same function as square, star and any other shapes are also within the scope of the invention.

The second implementation

[0048] As show in fig.6, the lock of box/bag of this implementation, which is using on the box, comprises:

A lock bolt 4, the lock bolt comprises a lockup part 41 and a linkage part 42, as show in fig.7, it can be fixed to the upper cover or the nether cover of the box by the linkage part 42, generally, as customary, the lock bolt 4' is fixed to the upper cover of the box, among which two ends of the linkage part 42 are provided with bolt holes, by making bolts pass through the bolt holes and fix to the upper cover of the box, so as to make the lock bolt 4' be fixed.

[0049] A lock body, the lock body comprises the first shell 1, the second shell 2 and the third shell 3 that are

connected in turn, among them the second shell 2 is fixed to the first shell 1 and to be rotating part together, specifically, the way of connection is fixed connected by bolts, which make three bolts respectively pass through bolt hole 17, 18, 19 on the first shell 1 and bolt hole 20, 28, 29 on the second shell 2' in turn to fixedly connect the second shell 2' with the first shell 1 together, in the figure of this implementation, the second shell 2 is a flat, the first shell 1 comprises one bottom and one circular profile, in other implementations, it can be, the first shell is a flat, the second shell comprises one bottom and one circular profile, the drawings of this implementation is just used to illustrate, in which the shapes can not be understood as to limit the invention. In fig.6, the third shell 3 is as fixed part, which can be fixed to the upper cover or the nether cover of the box, when the lock bolt 4 is fixed to the upper cover of the box, the third shell 3 is fixed to the nether cover of the box, it is specifically can be, making two bolts pass through two bolt holes 35, 36 on the third shell 3 to fix it; and the third shell 3 is pivotally connected to the rotating part consisted by the second shell 2 and the first shell 1, the rotating part consisted by the second shell 2 and the first shell 1 can rotate relative to the third shell 3; wherein,

[0050] The second shell 2 and the third shell 3 is connected by a rotation shaft 5, the rotation shaft 5 is fixedly connected to the third shell 3 and is pivotally connected to the second shell 2, and of which one end protrudes from the second shell 2, the second shell 2 is provided with groove hole 21 at the corresponding position to allow the rotation shaft 5 pass through, the rotation shaft 5 is fixedly connected to the third shell 3, of which the concrete structures is as: the rotation shaft 5 is provided with at least two columnar projections at its undersurface which is adjacent to the third shell 3, in this implementation, the rotation shaft 5 is provided with two columnar projections 511, 512, as show in fig.8, of course it also can set three or more projections; the third shell 3 is provided with provided with storage holes 311, 312 at the positions relative to the columnar projections 511, 512, put the columnar projections 511, 512 into the storage holes 311, 312 thereby the rotation shaft 5 cannot rotate relative to the third shell 3, so as to make it be fixedly connected to the third shell 3. In this implementation, the rotation shaft 5 is a hollow cylinder, which is provided with through hole 52, the third shell 3 is convexly provided with a hollow cylinder 37 on the side adjacent to the second shell 2, as show in fig. 11, preferably, the hollow cylinder 37 is provided with inner thread, the hollow cylinder 37 can be set in the through hole 52 of the rotation shaft 5, in order to fix the rotation shaft 5 to the third shell 3 better; the third shell 3 is provided with storage hole 32 at the corresponding position to storage bolt, bolt 6 is fixedly connected to the third shell 3 by passing through the inner thread of the hollow cylinder 37 and the storage hole 32 of the third shell 3; in addition, the rotation shaft 5 is provided with dummy club 53 in the middle, which is used to limit the second shell 2 to make it cannot move

in axial direction.

[0051] The second shell 2 is provided with opening 22, and extending inwardly along the opening 22 an sliding groove 23 is provide, which allows the lock bolt 4 to slide therein so as to lock or unlock, the first shell 1 is provided with opening groove 12 at the position corresponding to the opening 22;

[0052] Furthermore, the lock of box/bag of this implementation further comprises a lock core 7, the lock core 7 is set on the lock body, and can rotate relative to the lock body, outside of the lock core 7 is provided with a lock core sleeve 8, the lock core 7 is rotatably connected to the inside of the lock core sleeve 8, the lock core sleeve 8 is fixedly connected to the first shell 1, specially, the first shell 1 is provided with storage groove 13 matched with the lock core sleeve 8, the lock core sleeve 8 is fixedly set in the storage groove 13. In this implementation, the lock core sleeve 8 is non-circular, outside of which a number of projections are set, so as to prevent it from rotating relative to the first shell 1. Of course, the lock core sleeve 8 can also be circular, and fixed by adhesive. Setting the lock core leads to use a key to open the lock of box/bag of this implementation, which improve the safety greatly. The lock core 7 and the lock core sleeve 8 are provided with lock core limited mechanism, specially comprising: two bumps 71, 72 are set on corresponding position of the outside of the lock core, as show in fig.9, two limited grooves 81, 82 are set on the lock core sleeve 8, and respectively correspond to the two bumps 71, 72, as show in fig.10, the bump 71, 72 and the limited groove 81, 82 form the lock core limited mechanism, the lock core 7 can rotate relative to the lock core sleeve in the travel of the bump 71, 72 which is limited by the limited groove 81, 82, so that the motion control of the lock core 7 is precision. Furthermore, the bump set on the lock core and the limited groove set on the lock core sleeve can also be one respectively.

[0053] One end of the lock core 7 is provided with locking block 73, the other end is provided with keyhole 74, as show in fig.9, meanwhile the third shell 3 is provided with locking mechanism 33 which is used to match with the locking block 73, as show in fig. 11, the second shell 2 is provided with through hole 24 to allow the lock core 7 pass through, the locking block 73 pass through the through hole 24 to work on the locking mechanism 33, specially, the locking block 73 is a half- cylinder which is provided convexly, the locking mechanism 33 is a hook projection, the hook projection is located on the side of the third shell 3 which is adjacent to the second shell 2; when rotate the lock core 7 along positive direction to make the projections 26, 27 on it rotate from one end to the other end along the retaining grooves 54, 55 of the lock core sleeve 8, so as to make the locking block 73 locate on the vertical plane of the locking mechanism 33, thus the locking block 73 cannot rotate because of the blocking of the locking mechanism 33, so that the lock core 7 cannot rotate, which further prevents the rotating part combined by the first shell 1 and the second shell 2

from rotating relative to the third shell 3, at this time if rotate the lock core 7 along negative direction, the locking block 73 will be located on the horizontal plane of the locking mechanism 33, at this time the lock core can rotate, so as to make the rotating part combined by the first shell 1 and the second shell 2 rotate relative to the third shell 3.

[0054] Furthermore, the lock of box/bag of this implementation is further provided with an anti-self-locking mechanism, the anti-self-locking mechanism comprises:

An anti-self-locking linkage component 9, the anti-self-locking linkage component 9 comprises a hollow tube 91 located in its middle part and two curved edges, the first curved edge 92 and the second curved edge 93, that are extended outside by the hollow tube 91, as show in fig. 12, among them the second curved edge 93 can move above the opening 22 of the second shell 2 after mounting; the first shell 1 or the second shell 2 is provided with a connection shaft in corresponding position, the anti-self-locking linkage component 9 is pivotally connected to first shell 1 or the second shell 2 by the connection shaft; in this implementation, specially, the first shell 1 is provided with connection shaft 14, the anti-self-locking linkage component 9 is pivotally connected to first shell 1 by the connection shaft 14, as show in fig. 13;

A complementary set of bump 34 and runner 25, the bump 34 is convexly provided at one side of the third shell 3 which is adjacent to the second shell 2, the runner 25 is provided on the second shell 2 where is relative to the bump 34, the bump 34 can slide in the runner 25 along with the rotation of the first shell 1 and the second shell 2 relative to the third shell 3, and at the locking position the first curved edge 92 of the anti-self-locking linkage component 9 is lower than the bump 34, so that the rotating part composed by the first shell 1 and the second shell 2 cannot rotate relative to the third shell 3, specifically:

When the bump 34 slides to one end of the runner 25, the first curved edge 92 of the anti-self-locking linkage component 9 poles against the bump 34 to prevent it from sliding to the other end of the runner 25, so as to prevent the rotating part composed by the first shell 1 and the second shell 2 from rotating relative to the third shell 3, and the second curved edge 93 of the anti-self-locking linkage component 9 is located above the opening 22 of the second shell 2, so that it cannot completely fall into the opening 22 when the lock bolt 4 falls down,;

Among that, the first curved edge 92 of the anti-self-locking linkage component 9 is connected to the first shell 1 by a elastic element, such as a spring, when the bump 34 slides to the above end of the runner 25, the elastic element will

push the first curved edge 92 to pole against one side of the bump 34 to prevent it from sliding to the other side of the runner 25, so as to prevent the rotating part composed by the first shell 1 and the second shell 2 from rotating relative to the third shell 3, and the second curved edge 93 of the anti-self-locking linkage component 9 is located above the opening 22 of the second shell 2, thereby it cannot completely fall into the opening 22 when the lock bolt 4 falls down. The elastic element can be spring, the connection of a non-limiting example for, outside of the first curved edge 92 of the anti-self-locking linkage component 9 is provided with columnar projection 921, the first shell 1 is provided with fixed groove 15 of the elastic element, as show in fig. 12 and fig. 13, one end of the elastic element is set on the columnar projection 921, the other end is fixed to the first shell 1 by the fixed groove 15. In other implementations, when the anti-self-locking linkage component is connected to second shell, the first curved edge of the anti-self-locking linkage component is connected to the second shell.

[0055] Furthermore, in this implementation, the first shell 1 is further provided with guide bar 16 to define the trajectory of the first curved edge 92 of the anti-self-locking linkage component 9, as show in fig. 13, to limit the first curved edge 92 rotating within a certain range, so as to achieve the aim of precise control.

[0056] In this implementation, the second shell 2 is further provided with a mechanism to enhance rotational feel, which comprises: a U-shaped torsion elastic element, preferably, it can be U-shaped torsion spring 10 which comprises a annular structure 101 in the middle part and two ends 102, 103, as show in fig. 4, the annular structure 101 in the middle is sleeved set on the part of a bolt 6 where is between the head 61 of the bolt and the rotation shaft 5, of which one end 102 is fixed to one side of the rotation shaft 5, specially, the rotation shaft 5 is provided with two retaining grooves 54, 55 on the side that is adjacent with the head 61 of the bolt, as show in fig.8, one end 102 of the U-shaped torsion spring 10 is fixed to the rotation shaft 5 by engaging into the retaining grooves 54, 55, the other end 103 is contacted with the surface of the second shell 2; the second shell 2 is provided with an least two projections on the contact points where contact with the U-shaped torsion spring 10, and they are the two projections 26, 27 in this implementation, as show in fig.11; when the second shell 2 is rotating relative to the third shell 3, one end 103 of the U-shaped torsion spring 10 passes through the projections 26, 27 of the second shell 2, so that generating rotational feel because of the resistance produced by the projections 26, 27.

[0057] When there is a need to lock the lock of box of this implementation, put down the upper cover of the box,

so that the lockup part of the lock bolt 4 is placed in the cavity composed by the opening 22 of the second 2 and opening groove 12 of the first shell 1, then check the position of the lock core 7 firstly, if the half-cylindrical locking block 73 of the lock core 7 is located in the lock position where the locking mechanism 33 of hook projections of the third shell 3 is locked, then insert the key and rotate the lock core 7 along positive direction to make the projections 26, 27 on it rotate from one end to the other end along the retaining grooves 54, 55 of the lock core sleeve 8, thereby the locking block 73 is unlocked by the locking mechanism 33 of the third shell 3, so as to make sure the first shell 1 and the second shell 2 can rotate relative to the third shell 3; then rotate the rotating part combined by the first shell 1 and the second shell 2 to make the lockup part 41 of the lock bolt 4 slide along the runner 23 to its bottom, then rotate the lock core 7 to make the locking block 73 on it be locked by the locking mechanism 33 of the third shell 3, at this time the rotating part combined by the first shell 1 and the second shell 2 cannot rotate relative to the third shell 3, and the lockup part 41 of the lock bolt 4 cannot slide out the runner 23 on the second shell 2, thus the locking process is completed; when there is a need to open the lock of box/bag, firstly insert the key and rotate the lock core 7 in the opposite direction to make the locking block 73 on it be away from the arc of locking mechanism 33 of the third shell 3, at this time the locking mechanism 33 of the third shell 3 unlocks the locking block 73, then rotate the rotation part combined by the second shell 2 and the first shell 1 to make the lockup part 41 of the lock bolt 4 slide along the runner 23 of the second shell 2 to the opening 22, then the unlocking process is completed, as show in fig.16. When the lockup part 41 is sliding to the opening 22, the elastic element connected to the first curved edge 92 of the anti-self-locking linkage component 9 generate a thrust, so as to push the first curved edge 92 to one end of the bump 34, thereby to prevent it from rotating in the runner 25, so as to prevent the rotating part combined by the first shell 1 and the second shell 2 from rotating relative to the third shell 3, and the second curved edge 93 of the anti-self-locking linkage component 9 is located above the opening 22 of the second shell 2, so that the lock bolt 4 cannot completely fall into the opening 22 when it falls down, at this time, even if the the falling of upper cover causes the lockup part 41 of lock bolt 4 falling, it will not lead to the case that the box / bag is locked automatically.

[0058] In above implementations, the shape of the first shell 1 and the second shell 2 is preferably circular, but the invention is not limited, other shapes can achieve the same function as square, star and any other shapes are also within the scope of the invention.

[0059] The above preferred implementations are only used to illustrate the invention. The preferred embodiment does not describe all of the details, nor does it limit the specific embodiments of the invention was only referred to. Obviously, under the teaching of the invention,

simple substitutions and modifications made by persons skilled in the art are within the protection range of the invention. The invention is only to be limited by the claim and all of its scope and equivalents.

Claims

1. A lock of box/bag, comprising:

a lock bolt, fixed to one side of the box or the bag; a lock body, wherein the lock body comprising a fixed part and a rotating part, the fixed part is fixed to the other side of the box or the bag, and the rotating part is pivotally connected to the fixed part; the rotating part is provided with an opening, and an sliding groove is provided extending inwardly along the opening, and the sliding groove is to allow the lock bolt to slide therein so as to lock or unlock.

2. The lock of box/bag of claim 1, further comprising:

a lock core, wherein the lock core is embedded mounted on the rotating part, and could rotate around its axis relative to the rotating part; one end of the lock core is provided with a locking block, and the fixed part is provide with a locking mechanism which is used to cooperate with the locking block; through the cooperating between the locking block and the locking mechanism, locking or unlocking is accomplished, wherein the rotating part and the fixed part I forbidden to rotate relative to each other when it is locking, and the rotating part and the fixed part is allowed to rotate relative to each other when it is unlocking.

3. The lock of box/bag of claim 2, wherein the rotating part comprising a first shell and a second shell, wherein the first shell is connected fixedly with the second shell, and the second shell is connected pivotally with the fixed part;

the lock core is embedded mounted in the first shell, and is passed through the second shell; the second shell is provide with an opening, and an sliding groove is provided extending inwardly along the opening, wherein the sliding groove is to allow the lock bolt to slide therein so as to lock or unlock; meantime, the first shell is provided with an opening groove at the position corresponding to the opening.

4. The lock of box/bag of claim 2 or 3, wherein the locking mechanism set on the fixed part is a storage groove, and the locking block set on the lock core is a cylinder that is matched with the storage groove, wherein

rotating the lock core along positive direction makes

the cylinder to be inserted into the storage groove, so as to prevent the rotating part from rotating relative to the fixed part;

rotating the lock core along negative direction makes the cylinder to be away from the storage groove, so as to make the rotating part to be allowed to rotate relative to the fixed part.

5. The lock of box/bag of claim 4, wherein the outside of the lock core is provided with a lock core sleeve, wherein the lock core is rotatably connected to the inside of the lock core sleeve, and the lock core sleeve is embedded mounted on the rotating part; the lock core sleeve is provided with at least one orbital groove, the orbital groove comprises a long end and a short end, the width of the orbital groove is gradually change from the long end to the short end; correspondingly, the outside of the lock core is provided with at least one bump, wherein the bump is slipping along the orbital groove when the lock core is rotated, so as to make the lock core move inward or outward relative to the lock core sleeve, thereby the cylinder is inserted inside or away from the storage groove.

6. The lock of box/bag of claim 2 or 3, wherein the locking mechanism set on the fixed part is a hook projection, and the locking block set on the lock core is a half-cylinder, and which is set extend to the bottom of the hook projection, wherein rotating the lock core along positive direction makes the half- cylinder to be located on the vertical plane of the hook projection, so as to prevent the rotating part from rotating relative to the fixed part; rotating the lock core along negative direction makes the half- cylinder to be located on the horizontal plane of the hook projection, so as to make the rotating part to be possible to rotate relative to the fixed part.

7. A lock of box/bag, comprising:

a lock bolt, fixed to one side of the box or the bag;
a lock body, wherein the lock body comprising a first shell, a second shell and a third shell that are connected in turn, and the first shell and the second shell is fixedly connected to form a integral rotating part, the third shell is set as fixed part and is fixed to the other side of the box or the bag, and the second shell is pivotally connected to the third shell;
the second shell is provided with an opening, and an sliding groove is provided extending inwardly along the opening, wherein the sliding groove is to allow the lock bolt to slide therein so as to lock or unlock; an opening groove is provided at the position of the first shell corresponding to the opening;
a lock core, wherein the lock core is embedded

mounted on the first shell, and could rotate relative to the first shell; one end of the lock core is provided with a locking block, and the third shell is provided with a locking mechanism which is used to cooperate with the locking block, and the second shell is provided with a through hole to allow the lock core pass through, wherein through the cooperation between the locking block and the locking mechanism, the locking or unlocking is accomplished; the rotating part and the fixed part is forbidden to rotate relative to each other when it is locking, and the rotating part and the fixed part is allowed to rotate relative to each other when it is unlocking,.

8. The lock of box/bag of claim 7, wherein the locking mechanism set on the fixed part is a storage groove, and the locking block set on the lock core is a cylinder which is matched with the storage groove, wherein rotating the lock core along positive direction makes the cylinder to be inserted into the storage groove, so as to prevent the rotating part from rotating relative to the fixed part;
rotating the lock core along negative direction makes the cylinder to be away from the storage groove, so as to make the rotating part to be allowed to rotate relative to the fixed part.

9. The lock of box/bag of claim 8, wherein the outside of the lock core is provided with a lock core sleeve, wherein the lock core is rotatably connected to the inside of the lock core sleeve, and the lock core sleeve is embedded mounted to the rotating part; the lock core sleeve is provided with at least one orbital groove, wherein the orbital groove comprising a long end and a short end, and the width of the orbital groove is gradually change from the long end to the short end; correspondingly, at least one bump is provided at the outside of the lock core, wherein the bump is slipping along the orbital groove when the lock core is rotated, so as to make the lock core to be moved relative to the lock core sleeve.

10. The lock of box/bag of claim 7, wherein the locking mechanism set on the fixed part is a hook projection, and the locking block set on the lock core is set to extend to the bottom of the hook projection, wherein rotating the lock core along positive direction makes the locking block locate on the vertical plane of the hook projection and prevent the rotating part from rotating relative to the fixed part;
rotating the lock core along negative direction makes the locking block locate on the horizontal plane of the hook projection, so as to make the rotating part to be allowed to rotate relative to the fixed part.

11. The lock of box/bag of claim 10, wherein the outside of the lock core is provided with a lock core sleeve,

and the lock core is rotatably connected to the inside of the lock core sleeve, wherein the lock core sleeve is embedded mounted on the rotating part; the lock core and the lock core sleeve are provided with a lock core limited mechanism, wherein the lock core limited mechanism comprising:

one or two bumps, set on the outside of the lock core;
one or two limited grooves, set on the lock core sleeve, and respectively correspond to the one or two bumps, wherein the lock core rotate relative to the lock core sleeve in the travel of the bumps which limited by the limited grooves.

12. The lock of box/bag of claim 9 or 11, wherein the first shell and/or the second shell of the rotating part is provided with a storage groove which is matched with the lock core sleeve, and the lock core sleeve is set in the storage groove.

13. The lock of box/bag of claim 7, wherein the second shell and the third shell is connected by an rotation shaft, wherein the second shell is provided with a groove hole at the corresponding position to allow the rotation shaft pass through, and the rotation shaft is fixedly connected to the third shell, while it is pivotally connected to the second shell, and one end of the rotation shaft is protruded from the second shell.

14. The lock of box/bag of claim 13, wherein the fixation of the rotation shaft and the third shell is as follows:

the rotation shaft is provided with at least two columnar projections at its undersurface which is adjacent to the third shell, and the third shell is provided with storage holes at the position corresponding to the columnar projections, and the columnar projections are put into the storage holes, so as to make the rotation shaft is forbidden to rotate relative to the third shell, thereby the rotation shaft be fixedly connected to the third shell.

15. The lock of box/bag of claim 14, wherein the rotation shaft is set to be hollow, and the third shell is provided with a hollow cylinder at the position corresponding to the rotation shaft, wherein the hollow cylinder is sleeved within the rotation shaft; the hollow cylinder is provided with inner thread, and the rotation shaft is further fixedly connected to the third shell by a bolt joint passing through the hollow cylinder.

16. The system of box/bag of claim 13, wherein the rotation shaft is provided with a dummy club to prevent the second shell from moving along axial direction, wherein the dummy club is set in the middle of the

rotation shaft.

17. The lock of box/bag of claim 7, wherein the lock of box/bag is further provided with an anti-self-locking mechanism, wherein the anti-self-locking mechanism comprising:

- an anti-self-locking linkage component, wherein the anti-self-locking linkage component comprises a hollow tube located in its middle part and the first curved edge and the second curved edge extended from the hollow tube, and the first shell or the second shell is provided with a connection shaft corresponding to the hollow tube, wherein the anti-self-locking linkage component is pivotally connected to the first shell or the second shell by the connection shaft, and the first curved edge is connected to the first shell or the second shell by a elastic element which used to push the first curved edge, and the second curved edge is a free side;

- a complementary set of bump and runner, wherein the bump is convexly provided on the side of the third shell that is adjacent to the second shell, and the runner is provided on the second shell where is corresponding to the bump, wherein the bump is able to slide in the runner along with the rotation of the rotating part that relative to the third shell;

- when the bump slides to one end of the runner, the first curved edge of the anti-self-locking linkage component is withstand the bump under the thrust of the elastic element, to prevent it from sliding to the other end of the runner, and the second curved edge of the anti-self-locking linkage component stands in the top of the opening of the second shell, to prevent the lock bolt from entering the opening, or when the bump slides to one end of the runner, the first curved edge of the anti-self-locking linkage component receive thrust of the elastic element, and impress the thrust upon the second curved edge through the hollow tube of the middle part, to make the second curved edge block the bump, so that it cannot slide along the runner.

18. The lock of box/bag of claim 17, wherein the first shell or the second shell is further provided with a guide bar which is to limit the trajectory of the first curved edge of the anti-self-locking linkage component.

19. The lock of box/bag of claim 13, wherein the second shell and the rotation shaft are provided with a mechanism to enhance rotational feel, wherein the mechanism to enhance rotational feel comprising:

a column extending from the rotation shaft,

wherein the column is hollow, and its internal is provided with a elastic element, and outside of the elastic element is provided with circular bead, and the second shell is provided with an least two small circular holes on the circumference which corresponding to the circular bead, wherein rotational feel is generated when the circular bead is passing through the small circular holes.

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20. The lock of box/bag of claim 19, wherein the elastic element is a spring, and the circular bead is steel bead.

21. The lock of box/bag of claim 15, wherein the second shell and the rotation shaft is provided with a mechanism to enhance rotational feel, wherein the mechanism to enhance rotational feel comprising:

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a U-shaped torsion elastic element, which has a central part and two ends, wherein the central part is fixed to one end of the rotation shaft which is protruded from the second shell by a annular structure, wherein one end of which is fixed to the edge of the rotation shaft, and the other end is contact with the surface of the second shell; the second shell is provided with an least two projections on the circle where is contacted with the U-shaped torsion elastic element; when the second shell rotates relative to the third shell, the end of the U-shaped torsion elastic element contacting with the second shell pass through the projections, so as to generate the rotational feel.

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22. The lock of box/bag of claim 21, wherein the rotation shaft is provided with two retaining grooves on the side which is adjacent with the head of the bolt and one end of the U-shaped torsion elastic element is fixed to the edge of the rotation shaft by the retaining grooves.

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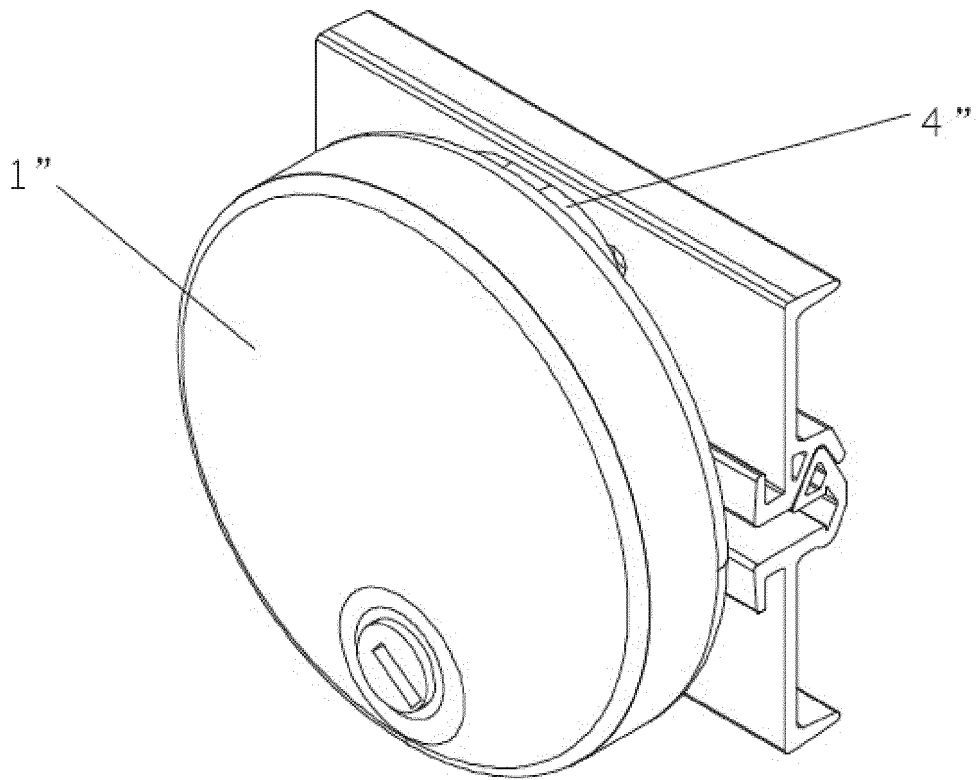


Figure 1

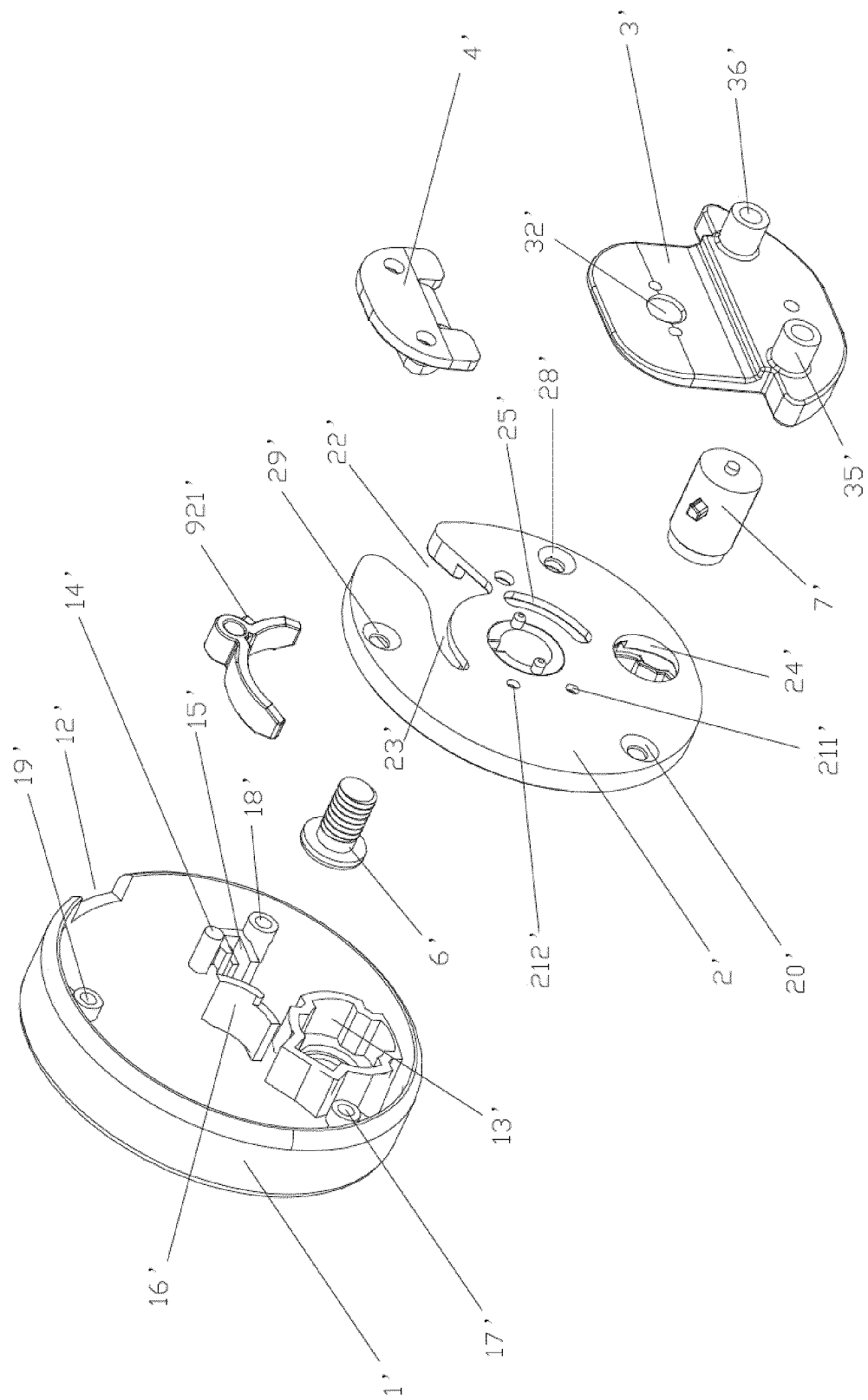


Figure 2

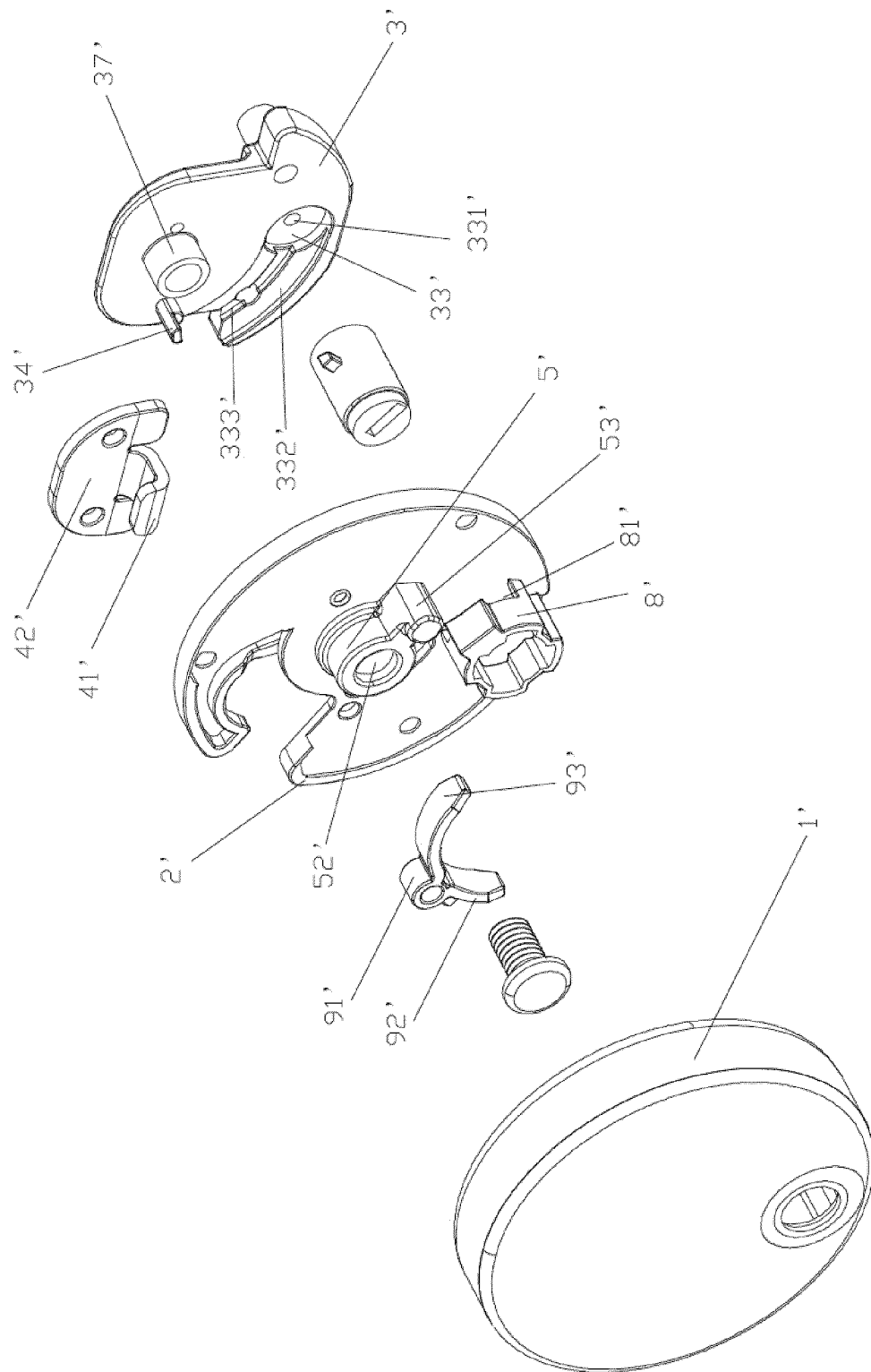


Figure 3

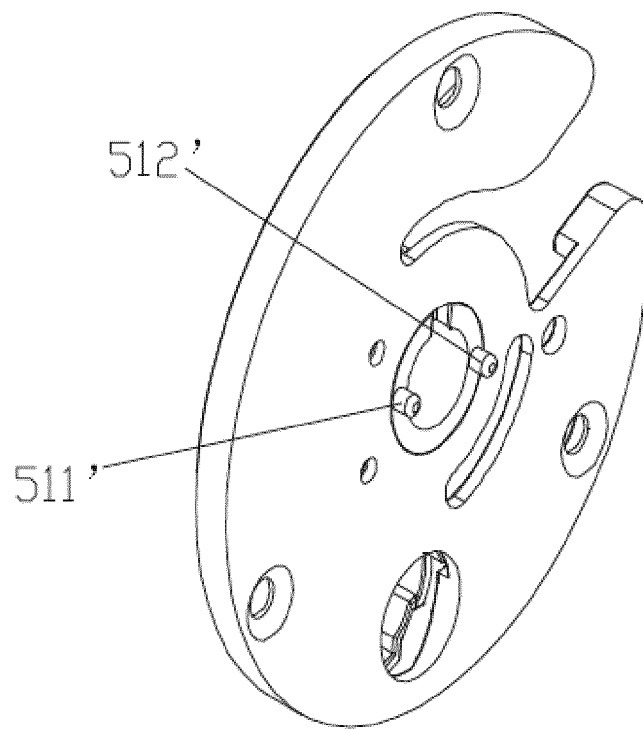


Figure 4A

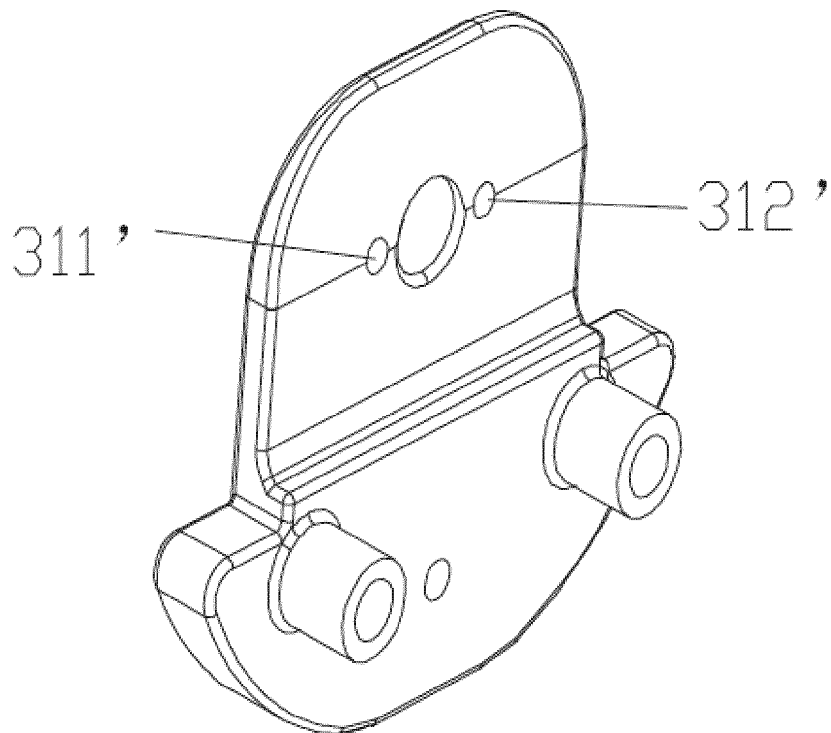


Figure 4B

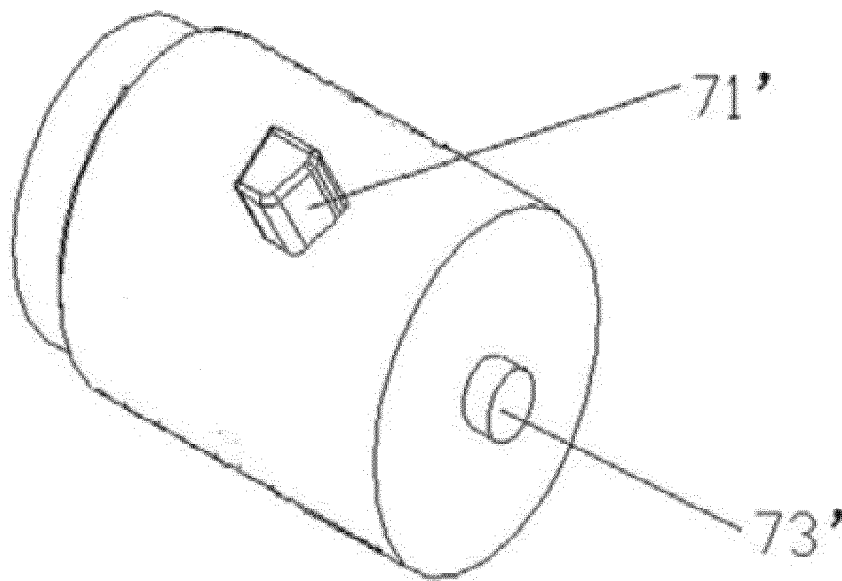


Figure 5

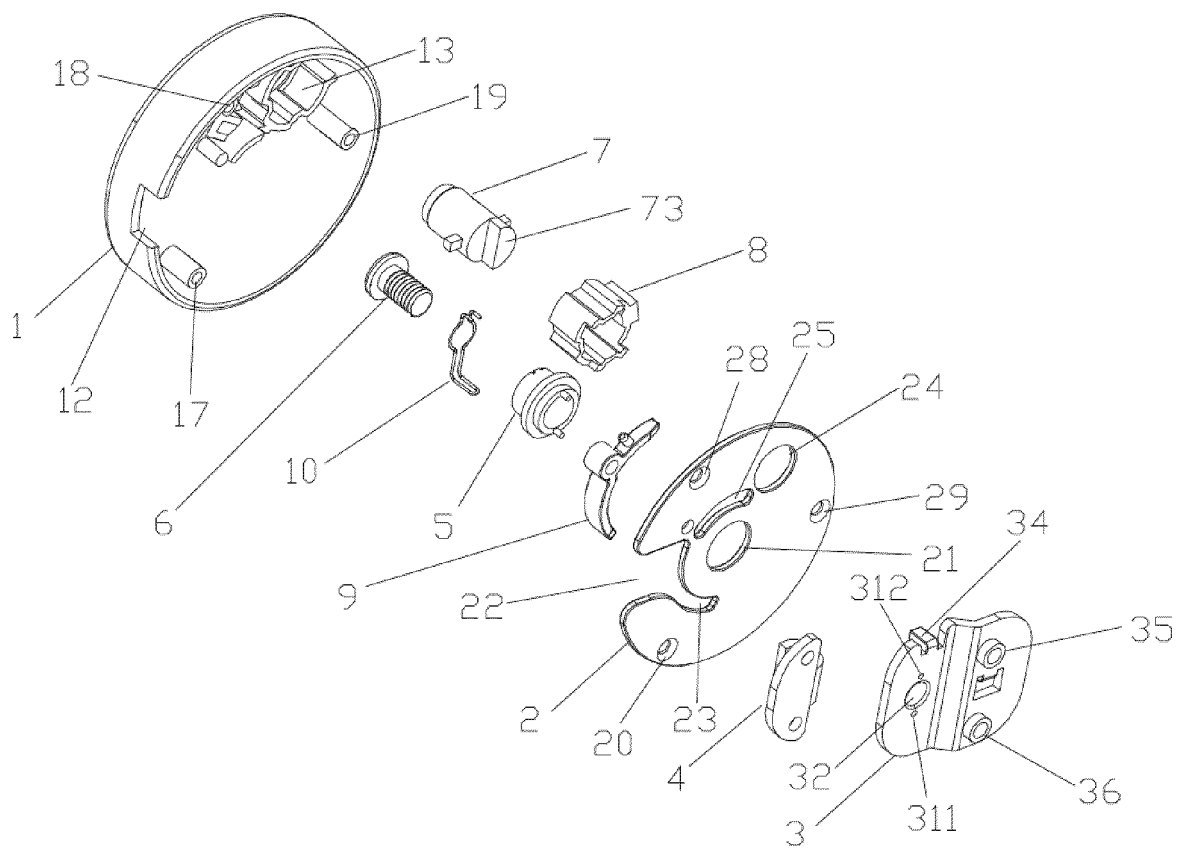


Figure 6

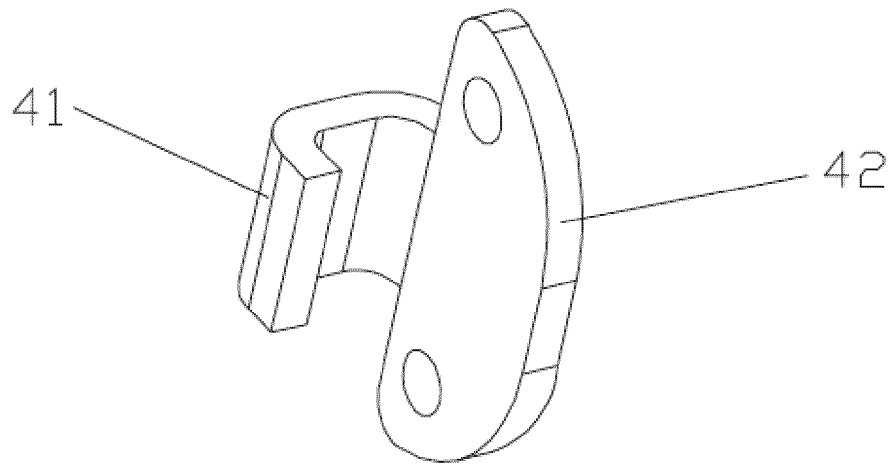


Figure 7

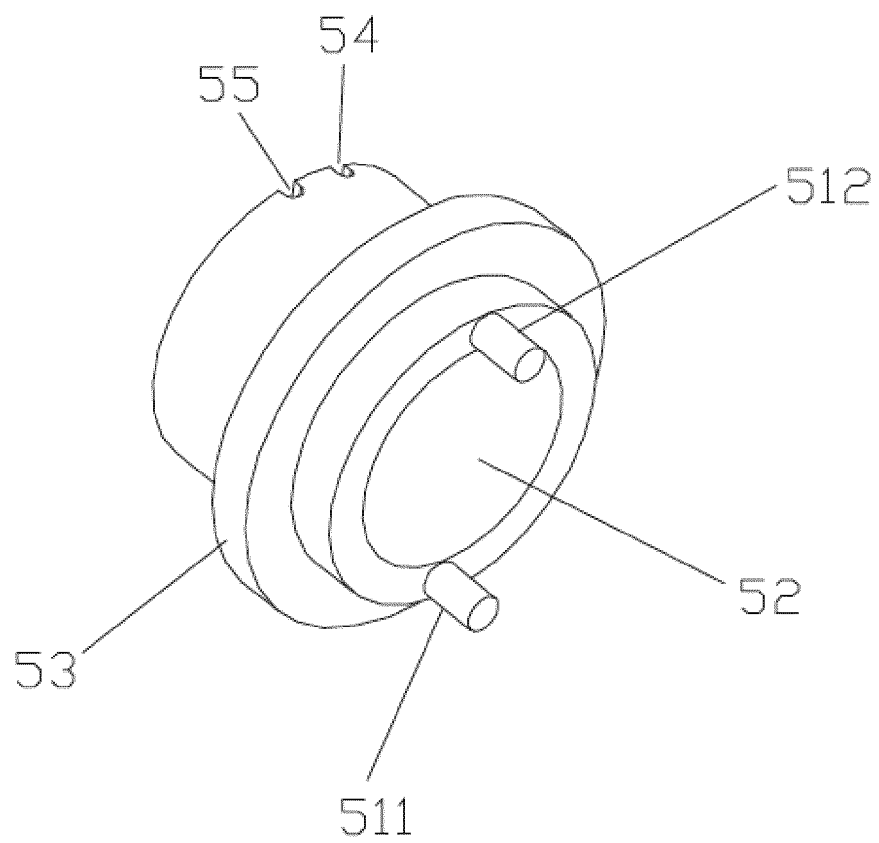


Figure 8

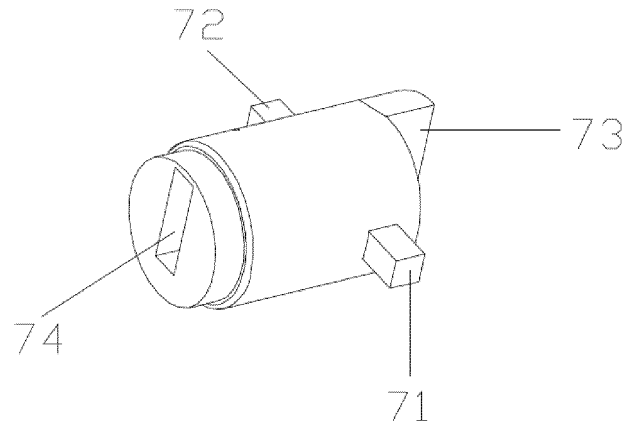


Figure 9

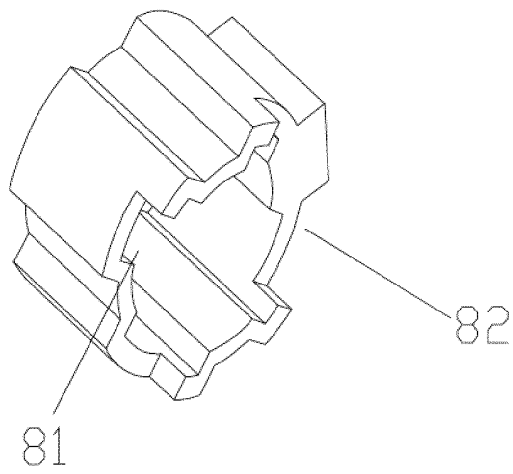


Figure 10

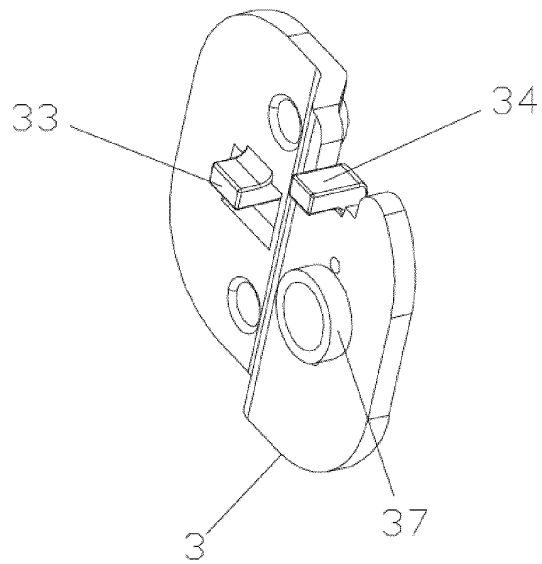


Figure 11

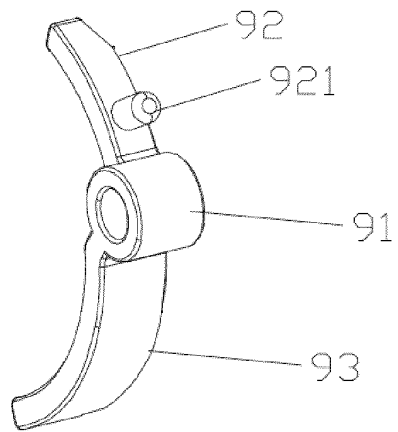


Figure 12

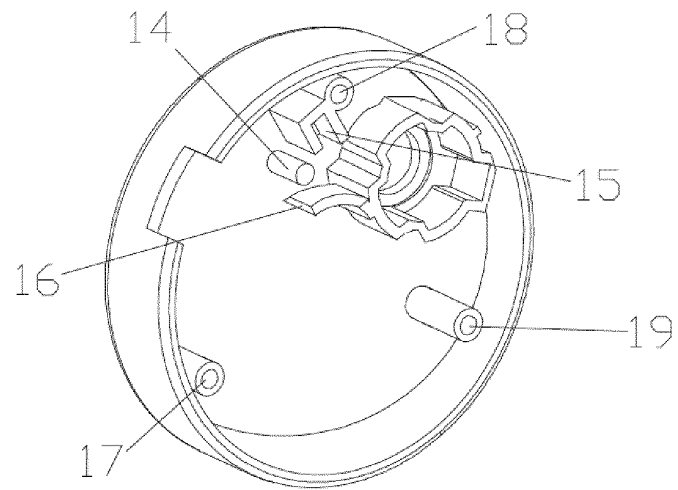


Figure 13

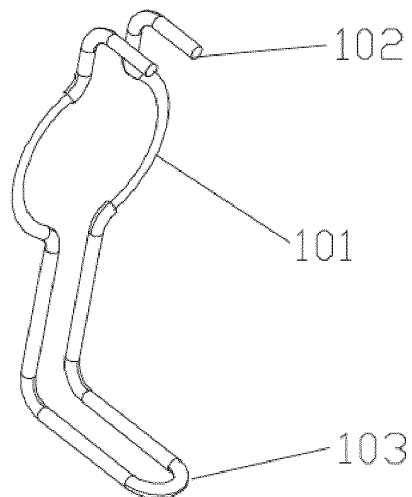


Figure 14

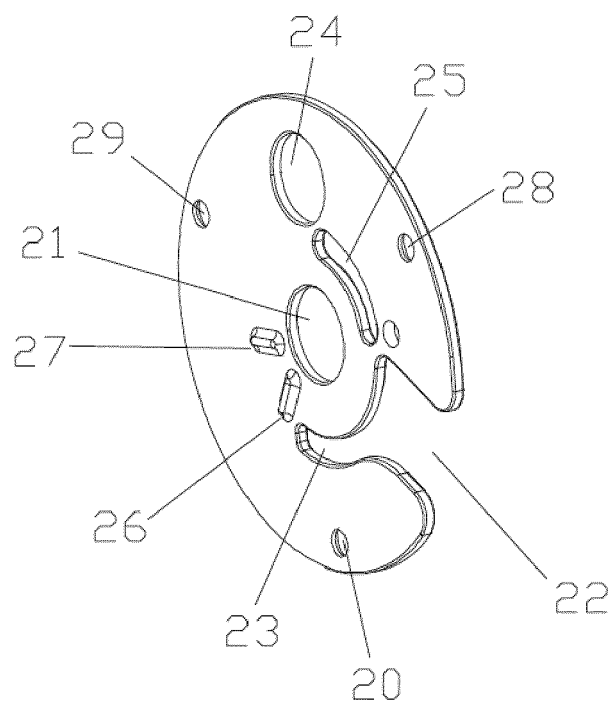


Figure 15

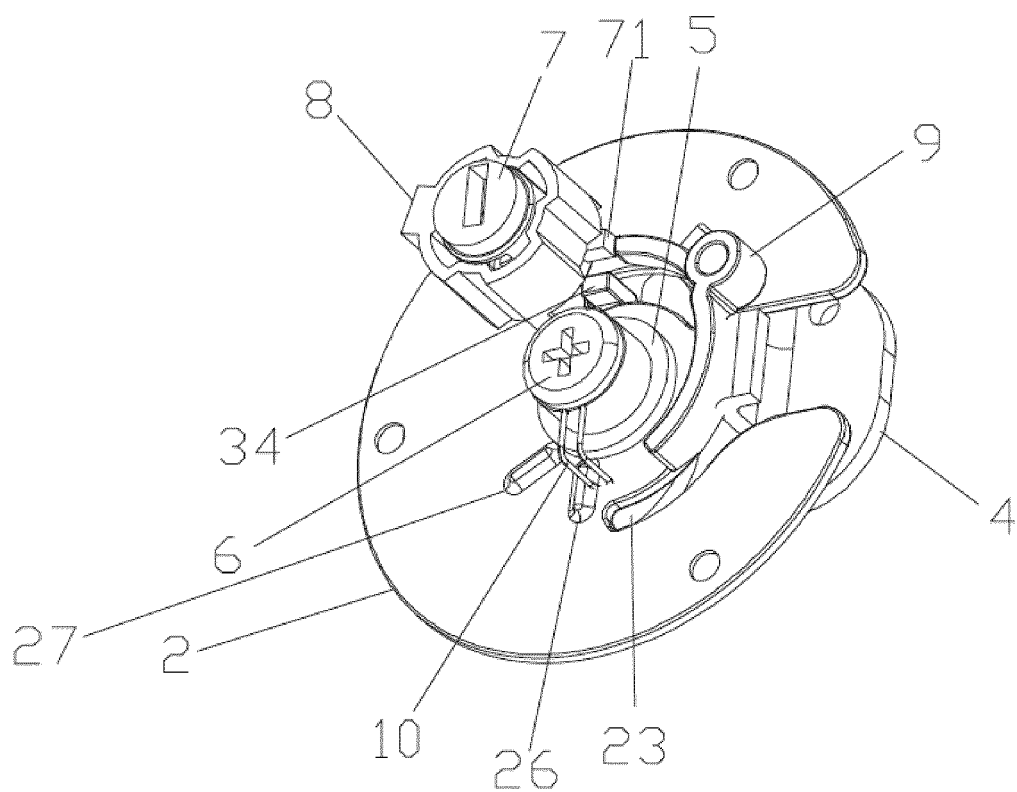


Figure 16

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2012/085366

A. CLASSIFICATION OF SUBJECT MATTER

E05B 65/52 (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: E05B; A45C13

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) CNPAT, CNKI, WPI, EPODOC: rotat+, turn+, hook, clasp, claw, catch, buckle, core, cylinder, cylindric+, slid+, slipping, motion, mov+, groov+, slot?, opening, cover?, case?, chest?, bag?, house?, box??. shell, lid?, key, lock

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 201343933 Y (QIAN, Dayou) 11 November 2009 (11.11.2009) description, page 2, line 13 to page 3, line 6 and figures 1 and 2	1
A	CN 101040092 A (SUGATSUNE KOGYO KK) 19 September 2007 (19.09.2007) the whole document	1-22
A	CN 202450892 U (LAI, Weihong) 26 September 2012 (26.09.2012) the whole document	1-22
A	CN 2767591 Y (XIE, Jinghan) 29 March 2006 (29.03.2006) the whole document	1-22
A	US 2006248930 A1 (SAMSONITE CORP.) 09 November 2006 (09.11.2006) the whole document	1-22
A	US 4545225 A (CONTINENTAL IND INC.) 08 October 1985 (08.10.1985) the whole document	1-22

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

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier application or patent but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search 03 August 2013 (03.08.2013)	Date of mailing of the international search report 29 August 2013 (29.08.2013)
Name and mailing address of the ISA State Intellectual Property Office of the P. R. China No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088, China Facsimile No. (86-10) 62019451	Authorized officer ZHENG, Shihua Telephone No. (86-10) 62084084

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2012/085366

Patent Documents referred in the Report	Publication Date	Patent Family	Publication Date
CN 201343933 Y	11.11.2009	None	
CN 101040092 A	19.09.2007	WO 2006046451A1	04.05.2006
		JP 2006124974 A	18.05.2006
		JP 4580212 B2	10.11.2010
		CN 101040092 B	31.08.2011
CN 202450892 U	26.09.2012	None	
CN 2767591 Y	29.03.2006	None	
US 2006248930 A1	09.11.2006	US 7380427 B2	03.06.2008
US 4545225 A	08.10.1985	None	