CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application is a continuation of United States Patent Application No. 18/176,907 filed March 1, 2023, the contents of which are incorporated herein by reference.

PRIORITY

[0002] This application claims priority to Chinese Patent Application No. 202210212862.5 filed on March 04, 2022; Chinese Patent Application No. 202320135456.3 filed on January 13, 2023. The contents of all of which are hereby incorporated by reference herein.

TECHNICAL FIELD

[0003] This invention relates generally to modular storage boxes, and more specifically the connection mechanisms for attaching modular storage boxes.

BACKGROUND INFORMATION

[0004] In order to facilitate the user in the case of carrying multiple storage boxes (such as toolboxes) to facilitate the overall movement and use, each storage box is usually stacked together, and each storage box is usually locked together by interlocking, so as to facilitate the user to move and use. A number of ways are known for interlocking storage boxes. Now on the market, there are roughly the following three forms of locking: the first way uses a single plastic latch that can be turned to clasp the lower bottom of the box protrusion

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to achieve the purpose of interlocking; the second way is the conventional use of the front of the two-segment latch moved to the side to lock between the upper and lower boxes; and the third way uses a combination of steel wire and plastic to lock boxes together at the side. However, the above locking methods can only be interlocked for the same length and width of the shape of the box, and cannot be interlocked for different length and width of the size of the shape of the box, with many professional users needing to carry more and more diverse types of tools, there is an urgent need for interlocking between different sizes of the box.

SUMMARY

[0005] The purpose of the present invention is to provide a connection structure of a storage box, aiming to solve the above-mentioned deficiencies of the background technology, and to achieve automatic locking, keeping unlocking and automatic reset functions, so as to facilitate the user's operation and use.

[0006] The present invention provides a connection structure of a module comprising a first connection part located on one surface of said module, a second connection part located on another surface of said module and a stop part.

[0007] said first connection part comprising a mounting portion, a locking part movable relative to said mounting portion and a first resilient member disposed between said mounting portion and said locking portion, said first resilient member causing said locking part to automatically remain in a locked state said

second connection part comprising a mating part interlockable with the locking portion, the locking part of one said module being pressed down so that it is automatically locked with the mating part of the other module by the action of said first resilient member.

[0008] When said stop part is in the locking path of the locking portion, said locking part cannot be automatically locked and said first connection part and said second connection part are in a holding unlocked state.

[0009] Further, said stop part is retractable, said stop part extending when said first connection part and said second connection part are in a hold unlocked state, and said stop part compressing when said first connection part and said second connection part are in a locked state.

[0010] Further, said stop part is provided on said locking part and is movable with said locking portion; when said first connection part and said second connection part are in a holding unlocked state, said stop part and said second connection part snap in the locking path of the locking portion.

[0011] Further, said stop part comprises a holding slot opened in the locking portion, a card block accommodated in said holding slot and a second resilient member disposed between the holding slot and the card block; when said second resilient member is extended, said card block extends out of the holding slot and when said second resilient member is compressed, said card block is compressed in the holding slot.

[0012] Further, said stop part is provided on said second connection part and remains stationary relative to said locking portion; said stop part and said locking part snap together in a locking path of the locking part when said first connection part is in a hold unlocked state with said second connection part.

[0013] Further, said locking part includes a locking clasp and a stop clasp, said locking clasp being provided in correspondence with the mating portion, and said stop clasp being provided in correspondence with the stop part.

[0014] Further, said stop clasp has an extension length in the locking direction greater than the extension length of the locking clasp in the locking direction.

[0015] Further, when said first connection part and said second connection part are in a hold unlocked state, said stop part and said stop buckle are held against each other in a locked path of the locking portion; when said first connection part and said second connection part are in a locked state, said locking buckle and mating part are locked against each other and said stop buckle is held against the stop part in a non-locked path.

[0016] Further, said stop part comprises a holding slot opened in the mating portion, a block to be accommodated in the slot and a second resilient member disposed between the holding slot and the block; when said second resilient member is compressed, said block is held against said stop clasp in a non-locking path, and when said second resilient member is extended, said block is held against said stop clasp in a locking path of the locking portion.

[0017] Further, said stop part further comprises a retaining slot and a retaining block attached to the card block, said second resilient member compressing when said retaining block is located in said retaining slot and said stop part is not located in the locking path of the locking portion.

[0018] Further, said locking part is a sliding latch for horizontal movement, a flipping latch for flipping movement, or a rotating latch for rotating movement.

[0019] The present invention also provides a storage box, said storage box is provided with a connection structure of the module as described in any of the above, said first connection part is provided on the lid of said storage box, said second connection part is provided on the bottom of said storage box body.

[0020] The present invention also provides a storage box assembly comprising a plurality of storage boxes as described above, wherein two adjacent said storage boxes are interlockable with each other by means of a first connection member and a second connection member.

[0021] The connection structure of the locker provided by the present invention, because the locking part can move relative to the mounting part and the first resilient member can drive the locking part to automatically remain in the locked state, when the two lockers are locked, the locking part of one of the lockers can automatically lock with the mating part of the other locker under the action of the first resilient member, thus realizing the automatic locking function of the first connection part and the second connection part; meanwhile, by At the same time, by setting the stopping part, the stopping part can be held in the

locking path of the locking part, so that the first connection part and the second connection part are in the unlocked state, thus eliminating the need to deliberately keep the locking part in the unlocked state by hand, freeing the user's hands; and when the two lockers are unlocked and detached from each other, the locking part can be automatically reset under the drive of the first resilient member, ready for the next locking, simplifying the operation steps when locking. operation steps, convenient for users.

[0022] In yet another embodiment, the purpose of the utility model is to provide a connection structure of a storage box, aiming to solve the above-mentioned deficiencies of the background technology, and to be able to achieve automatic locking, holding unlocking and automatic reset functions, so as to facilitate the user's operation and use.

[0023] The utility model provides a connection structure of a module, comprising a first connection part located on one surface of said module, a second connection part located on another surface of said module.

[0024] said first connection portion comprising a mounting portion, a locking part movable relative to said mounting portion and a first elastic member disposed between said mounting portion and said locking portion, said first elastic member causing said locking part to be automatically maintained in a locked state

[0025] said second connection portion comprising a mating part interlocked with said locking portion, the locking part of one said module being pressed down

so that it is automatically locked with the mating part of the other module by the action of said first resilient member

[0026] further comprising a stop part, said stop part being provided on said locking part and having one end rotatably connected to said locking portion, said stop part and said second connection portion being held in the locking path of the locking part when said first connection portion and said second connection portion are in a holding unlocked state.

[0027] Further, said stop part includes a latch and a second resilient member, one end of said latch being rotatably connected to said locking portion, said second resilient member keeping said latch automatically in the ejected state; when said latch is ejected and held against said mating portion, said locking part is not automatically locked and said first connection portion and said second connection portion are in the hold unlocked state.

[0028] Further, said locking part is provided with a holding slot, said holding slot having a bottom wall and two side walls, two said side walls extending upward and opposite each other along both sides of said bottom wall; said latch is retractably provided in said holding slot, one end of said second resilient member resting on said latch and the other end resting on said bottom wall; when said second resilient member is ejected, said latch extends out of said holding slot, and when when said second elastic member is compressed, said latch is retracted into said holding slot.

[0029] Further, said latch is provided with an upwardly protruding stop; said stop protrudes from said holding slot against said mating part when said first connection partand said second connection partare in a holding unlocked state.

[0030] Further, said latch has opposing first and second ends, the second end being closer to the center of the module than the first end; said first end is provided with a shaft hole, said stop further comprising a rotating shaft, said ends of said rotating shaft being fixed to two said side walls, said second resilient member being a torsion spring, said first end and said second resilient member being snapped to said rotating shaft.

[0031] Further, said latch has opposing first and second ends, the second end being closer to the center of the module than the first end; said first end being pivotally connected to said locking portion, said second resilient member having both ends located between said latch and said bottom wall, said second resilient member being a telescopic spring.

[0032] Further, said second end part is provided with convex shafts on both sides, two said convex shafts are inserted in the slides of two said side walls respectively.

[0033] Further, said locking part is a sliding latch for horizontal movement, a flipping latch for flipping movement or a rotating latch for rotating movement.

[0034] The utility model also provides a storage box, including a lid and a box body, said lid is set on said box body, said storage box is provided with a connection structure of the module as described in either of the above, said first

connection is set on said lid, said second connection is set on the bottom of said box body.

[0035] The utility model also provides a storage box assembly comprising a plurality of storage boxes as described above, and two adjacent said storage boxes are interlockable with each other by said first connecting member and said second connecting member.

[0036] The connection structure of the storage box provided by the utility model has the following beneficial effects.

[0037] 1, the use of the first connecting part and the second connecting part with locking. When the upper locker is placed in place at the same time automatically achieve the function of two boxes locked to each other, do not need the user to put the box after the need to lock the box and then deliberately to operate both sides of the latch, only to open when the two sides of the latch can be pulled open.

[0038] 2, the use of rotatable latch to make the first connection and the second connection in the unlocked state, the movement of the latch deterministic, smooth, greatly improving the convenience of the user.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039] FIG. 1 is a schematic diagram of the three-dimensional structure of the storage box in the first embodiment of the present invention.

[0040] FIG. 2 is a cross-sectional view of FIG. 1.

[0041] FIG. 3 is a schematic diagram of another three-dimensional structure of the storage box in the first embodiment of the present invention.

[0042] FIG. 4 is a schematic diagram of the partially exploded structure of FIG. 3.

[0043] FIG. 5 is a three-dimensional view of a storage box in FIG. 4.

[0044] FIG. 6 is another three-dimensional view of a storage box in FIG. 4.

[0045] FIG. 7 is an exploded schematic diagram of part of the structure in FIG. 6.

[0046] FIG. 8 is a schematic diagram of the three-dimensional structure of the storage box in the second embodiment of the present invention.

[0047] FIG. 9 is a schematic diagram of the partially exploded structure of FIG. 8.

[0048] FIG. 10 is a schematic diagram of the structure of the mating relationship between the suspended and locked portions of FIG. 8.

[0049] FIG. 11 is a schematic diagram of the structure of the first connecting part in FIG. 10.

[0050] FIG. 12 is a schematic diagram of the exploded structure of FIG. 11.

[0051] FIG. 13 is a schematic diagram of the structure of the aborting part of FIG. 10.

[0052] FIG. 14 is a schematic diagram of the exploded structure of FIG. 13.

[0053] Figure 15 is a schematic diagram of the three-dimensional structure of the storage box in the first embodiment of the utility model.

[0054] Figure 16 is a schematic diagram of another three-dimensional structure of the storage box in the first embodiment of the utility model.

[0055] Figure 17 is a schematic diagram of the partial structure of the storage box in the first embodiment of the utility model.

[0056] Figure 18 is a schematic diagram of the structure of another view of Figure 17

[0057] FIG. 19 is a schematic diagram of the partial explosion structure of the storage box in the first embodiment of the utility model.

[0058] FIG. 20 is a schematic diagram of another local structure of the storage box in the first embodiment of the utility model.

[0059] Figure 21 is a schematic diagram of the local structure of the two storage boxes in the locked state.

[0060] FIG. 22 is a cross-sectional view of another view of FIG. 21.

[0061] FIG. 23 is a schematic diagram of the local structure of the two lockers when they are in the hold unlocked state.

[0062] FIG. 24 is a cross-sectional view of another viewpoint of FIG. 23.

[0063] FIG. 25 is a schematic diagram of the local structure of the storage box in the second embodiment of the utility model.

[0064] FIG. 26 is a schematic diagram of the local explosion structure of the storage box in the second embodiment of the utility model.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

[0065] The specific embodiments of the present invention are described in further detail below in conjunction with the accompanying drawings and embodiments. The following embodiments are used to illustrate the invention, but are not intended to limit the scope of the invention.

[0066] The terms "first", "second", "third", "fourth", etc. (if present) in the specification and claims of the present invention are used to distinguish between " etc. (if present) are used to distinguish similar objects and need not be used to describe a particular order or sequence.

[0067] The orientation words such as top, bottom, left, right, front, back, top, bottom, etc. (if present) covered in the specification and claims of the present invention are defined in terms of the position of the structures in the attached drawings located in the drawings and the position of the structures in relation to each other, only for the clarity and convenience of expressing the technical solution. It should be understood that the use of the orientation words should not limit the scope of protection claimed in this application.

[0068] The present invention 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 storage box 50, and two adjacent storage boxes 50 may be matingly locked with each other by the connection structure, thereby facilitating the transportation of multiple storage boxes 50. The storage box 50 can be a tool box, tool basket, transport box, transit box

and other storage devices. Storage box 50 can be any type known to those skilled in the art, which comprises of a four sidewalls protecting from a bottom with a hinged lid 52 for access to an interior thereof. Storage box 50 can have various types of lid latching mechanisms, organizational bins or structures and other features known to those skilled in the art.

First embodiment

[0069] As shown in FIGS. 1 to 7, this embodiment provides a connection structure for a module that can be provided on a storage box. The connection structure includes a first connection part 1, a second connection part 2 and a stopping part 3. The first connection part 1 and the second connection part 2 can be automatically locked with each other; the stopping part 3 can make the first connection part 1 and the second connection part 2 unable to be automatically locked after unlocking, so that the first connection part 1 and the second connection part 2 can be kept in an unlocked state, which is convenient for the first connection part 1 and the second connection part 2 to be unlocked and separated from each other, freeing the user to use with both hands.

[0070] Further, as shown in FIGS. 6 and 7, in this embodiment, the first connecting part 1 is provided on the lid of the storage box, which includes a mounting portion 11, a locking part 12 movable relative to the mounting portion 11 and a first resilient member 13 located between the mounting portion 11 and the locking part 12, and the locking part 12 can be automatically kept in the locked state under the action of the first resilient member 13. In addition, in

order to facilitate the positioning of the first connecting part 1 and the second connecting part 2 when interlocking, a positioning slot 41 may be provided on the lid, and the positioning slot 41 may just accommodate the bottom of the box, and the first connecting part 1 may be provided at the edge of the positioning slot 41. In other embodiments, the positioning slot 41 can be positioned with the projections provided on the bottom of the box body for positioning when the upper and lower storage boxes are stacked.

[0071] Further, as shown in FIG. 7, in this embodiment, the mounting portion 11 is fixedly connected to the box lid. The mounting portion 11 includes a mounting slot 111 in the lid and a mounting body 112 in the mounting slot 111, which can be bolted into the mounting slot 111. In other embodiments, the mounting body 112 may also be integrally formed with the mounting slot 111, or fixedly connected by means such as snap-on.

[0072] Further, as shown in FIG. 7, in this embodiment, the locking part 12 may be housed within the mounting body 112, which may be movable relative to the mounting body 112. The locking part 12 is a sliding latch that moves horizontally relative to the mounting portion 11, thereby allowing the locking part 12 to move horizontally within the mounting slot 111. In other embodiments, the locking part 12 may also be a flip latch that moves in a flip relative to the mounting portion 11, or a rotary latch that moves in a rotational manner relative to the mounting portion 11. The locking part 12 includes a locking body 121 that can be accommodated in the mounting body 112 and a locking buckle 122 located on

the side of the locking body 121 near the center of the storage box; when the locking buckle 122 extends out of the mounting portion 11 (i.e., the locking buckle 122 extends into the positioning slot 41), the first connection part 1 and the second connection part 2 can be interlocked, and when the locking buckle 122 does not extend out of the mounting portion 11 (i.e., the locking buckle 122 does not extend into the positioning slot 41) When the locking buckle 122 does not extend out of the mounting portion 11 (i.e., the locking buckle 122 does not extend into the positioning slot 41), the first connecting part 1 and the second connecting part 2 can be unlocked. Also, to facilitate locking between the locking buckle 122 and the second connection part 2, the locking buckle 122 is provided with a bevel 122a.

[0073] Further, as shown in FIG. 7, in this embodiment, the first resilient member 13 is located between the locking body 121 and the mounting body 112, so that the locking part 12 is automatically kept in the locked state by the action of the first resilient member 13. At the same time, in order to improve the reliability of the movement of the locking part 12, the first resilient member 13 can be provided with two, respectively located at the two ends of the locking body 121. The first resilient member 13 is a compression spring, so that the locking part 12 moves horizontally; in other embodiments, the first resilient member 13 may also be a torsion spring, so that the locking part 12 moves overturned.

[0074] Further, as shown in Figure 5, in this embodiment, the second connection part 2 is provided at the bottom of the box of the storage box, which includes a mating part 21 that can be interlocked with the locking part 12 and a recessed part 22 that can be interlocked with the stopping part 3, and the locking part 12 of one storage box can be automatically locked with the mating part 21 of another storage box under the action of the first resilient member 13 by pressing down. In addition, in order to facilitate the interlocking of the mating part 21 and the locking buckle 122, a projection 42 (here the projection 42 is the bottom of the box) can be provided on the bottom of the box, and the projection 42 can be just accommodated in the positioning slot 41. When the first connection part 1 and the second connection part 2 are in the locked state, the locking buckle 122 interferes with the mating part 21; when the first connection part 1 and the second connection part 2 are in the keep unlocked state, the locking buckle 122 does not interfere with the mating part 21, and the stopping part 3 snaps with the recessed part 22. In other embodiments, when the first connection part 1 and the second connection part 2 are in the unlocked state, the stopping part 3 can be directly held with the mating part 21. In addition, the mating part 21 is a number of slots 211, and the number of slots 211 may correspond to the number of locking buckles 122.

[0075] Further, as shown in FIG. 6 and FIG. 7, in this embodiment, the stopping part 3 is provided on the locking part 12, which can move horizontally with the locking part 12, and when the locking part 12 is in the unlocked state, the

stopping part 3 can be held with the second connection part 2 in the locking path of the locking part 12, and the locking part 12 cannot be automatically locked, so that the first connection part 1 and the second connection part 2 are in the maintained unlocked state. The stopping part 3 includes a holding slot 31 opened on the locking part 12, a card block 32 that can be accommodated in the holding slot 31 and a second resilient member 33 disposed between the holding slot 31 and the card block 32, and the card block 32 can be retracted relative to the holding slot 31 under the action of the second resilient member 33. Holding slot 31 has a bottom wall and two side walls, two said side walls extending upward along both sides of said bottom wall and set opposite each other.

[0076] Specifically, as shown in FIG. 3, when the first connection part 1 and the second connection part 2 are in a holding unlocked state, the second resilient member 33 extends and the card block 32 extends into the holding slot 31; as shown in FIGS. 1 and 2, when the first connection part 1 and the second connection part 2 are in a locked state, the second resilient member 33 compresses and the card block 32 is compressed in the holding slot 31 by the compression of the second connection part 2.

[0077] The working principle of this embodiment is as follows.

[0078] When it is necessary to lock two storage boxes up and down, press down the upper storage box to make it contact with the locking buckle 122 on the lower storage box, the locking buckle 122 on the lower storage box is squeezed

to drive the locking part 12 to move towards the unlocking direction (i.e. away from the center of the storage box), at this time the first resilient member 13 compresses and accumulates force. When the upper locker moves down a certain distance, the locking buckle 122 on the locking part 12 corresponds to the slot 211 on the matching part 21, the locking buckle 122 loses the holding effect of the upper locker, the locking buckle 122 is driven by the first resilient member 13 automatically stuck into the slot 211, so that the first connection part 1 and the second connection part 2 are in a locked state, that is, to achieve the automatic locking function of the upper and lower locker. . At this time, the stopping part 3 is compressed in the holding slot 31 by the compression of the second connection 2.

[0079]When it is necessary to unlock the two storage boxes, pull the locking part 12 of the lower storage box outward so that it moves toward the unlocking direction, and when the locking part 12 moves a certain distance toward the unlocking direction, the locking buckle 122 of the lower storage box is detached from the slot 211 of the upper storage box, so that the locking part 12 is unlocked with the mating part 21. At the same time, continue to pull the locking part 12 in the unlocking direction until the stopping part 3 loses the squeeze of the upper storage box, and the card block 32 automatically extends upward under the action of the second resilient member 33 to hold the holding slot 31 and snap with the recessed part 22, so that the first connection part 1 and the second connection part 2 are in the keep unlocked state, i.e., the keep unlocked

function is realized. At this time, the upper and lower storage boxes can be easily unlocked and separated by simply pulling up the upper storage box. At the same time, at this time, if the user wants to lock again, just press down the card block 32 to make the card block 32 retracted into the holding slot 31. When the upper and lower two lockers separated, the card block 32 in the second resilient member 33 under the action of the extension state, the locking part 12 in the first resilient member 13 driven automatically reset in the locked state, ready for the next lock.

[0080] The advantages of the connection structure of the storage box provided in this embodiment include.

[0081] 1. the connection structure of the locker has an automatic locking function, a hold unlocking function and an automatic reset function: since the locking part 12 can move horizontally relative to the mounting part 11, and the first resilient member 13 can drive the locking part 12 to automatically remain in the locked state. When two lockers are locked, the locking part 12 of one of the lockers can automatically lock with the mating part 21 of the other locker under the action of the first resilient member 13, thus realizing the automatic locking function of the first connection part 1 and the second connection part 2; at the same time, by setting the stopping part 3 and using the stopping part 3 to cooperate with the second connection part 2, the first connection part 1 and the second connection part 2 can be kept in the unlocked state when they are unlocked At the same time, after the two lockers are unlocked and separated,

the locking part 12 can be automatically reset under the drive of the first resilient member 13 to prepare for the next locking, simplifying the operation steps of locking and unlocking (conventional locking and unlocking requires at least four steps, while this embodiment only requires two steps), which is convenient for users.

[0082] 2, through the cooperation of the stop part 3 and the second connection part 2 to keep the unlocking function, when the user wants to re-lock (user miss-operation unlocking), just press the card block 32 downward, without separating the first connection part 1 and the second connection part 2 after re-locking, and does not harm the reliability of the structure.

[0083] Second embodiment

[0084] As shown in FIGS. 8 to 14, this embodiment differs from the first embodiment in that the locking part 12 is a flip latch and the stopping part 3 is provided on the second connection part 2 and remains stationary with respect to the locking part 12. When the first connection part 1 and the second connection part 2 are in the hold unlocked state, the stopping part 3 and the locking part 12 snap in the locking path of the locking part 12.

[0085] Specifically, the locking part 12 includes a locking buckle 122 and a stopper 123, the locking buckle 122 can be locked with the mating part 21 in cooperation with each other, and the stopper 123 is provided in correspondence with the stopping part 3; the stopper 123 can be held with the stopping part 3 in the locking path of the locking part 12, so that the first connecting part 1 and

the second connecting part 2 are in the hold unlocked state. The extension length of the locking buckle 122 in the locking direction is smaller than the extension length of the stopper 123 in the locking direction, so that the angle required to flip when the stopper 123 and the stopping part 3 are unlocked in the locking path is maximum. When the second resilient member 33 is compressed, the locking buckle 122 and the mating part 21 are locked to each other, the card block 32 and the stopper 123 are held up and down in the vertical direction, and the first connecting part 1 and the second connecting part 2 are in the locked state; when the second resilient member 33 is extended, the card block 32 extends into the holding slot 31 and is held in the locked path with the stopper 123, and the first connecting part 1 and the second connecting part 2 are in the hold unlocked state. In other embodiments, the card block 32 and the stopper 123 can also be held in other non-locking paths, for example, the card block 32 and the stopper 123 are held in the left and right direction, and the stopper 123 only needs to hold the card block 32 in the non-locking path to fall within the scope of protection of the present invention.

[0086] Further, as shown in FIG. 9 and FIG. 13, in this embodiment, the stopping part 3 also includes a fixing slot 34 opened on the second connection part 2 and a fixing block 35 located at the end of the card block 32 away from the second resilient member 33, and the fixing block 35 can be slid into the fixing slot 34. When the fixing block 35 is located in the fixing slot 34, the second resilient member 33 compresses so that the stopping part 3 is always fixed

above the stopper 123; such a setting allows the hold unlock function to be selectively opened and closed for the convenience of the user. In other embodiments, it is also possible to open a fixing slot 34 on the first connecting part 1, as long as the stopping part 3 cannot be located in the locking path of the locking part 12 (i.e. the stopping part 3 part cannot be in contact with the stopper 123), that is, it falls within the scope of protection of the present invention.

[0087] The working principle of this embodiment is as follows.

[0088] When the need to lock the two storage boxes up and down, downward pressure on the upper storage box so that it is in contact with the locking buckle 122 on the lower storage box, the locking buckle 122 of the lower storage box is squeezed to drive the locking part 12 towards the unlocking direction (i.e., away from the center of the storage box), when the first resilient member 13 compressed storage force. When the upper locker moves down a certain distance, the locking buckle 122 on the locking part 12 corresponds to the slot 211 on the mating part 21, the locking buckle 122 loses the holding effect of the upper locker, the locking buckle 122 is driven by the first resilient member 13 automatically stuck into the slot 211, so that the first connection part 1 and the second connection part 2 are in a locked state, that is, to achieve the automatic locking function of the upper and lower locker. It should be noted that during this process, the upper storage box is pressed down, the card block 32 is squeezed and compressed by the stopper 123, the second resilient member 33

compresses and accumulates force, and the stopper 123 and the card block 32 are always held against the upper and lower.

[0089]When it is necessary to unlock the two storage boxes, pull the locking part 12 of the lower storage box outward to make it move in the direction of unlocking, and when the locking part 12 moves outward a certain distance, the locking buckle 122 of the lower storage box is detached from the slot 211 of the upper storage box, so that the locking part 12 is unlocked with the mating part 21. At the same time, continue to pull the locking part 12 outward until the stopping part 3 loses the hold of the stopper 123 of the lower storage box, and the card block 32 automatically extends downward under the action of the second resilient member 33 to hold the holding slot 31 and snap with the stopper 123 in the locking path of the locking part 12, so that the first connection part 1 and the second connection part 2 are in the hold unlocked state, that is, to achieve the hold unlocking function. At this time, the upper and lower storage boxes can be easily unlocked and separated by simply pulling up the upper storage box. At the same time, at this time, if the user wants to lock again, just pull up the card block 32 to make the card block 32 and stop the stopper 123 up and down again can be held. When the upper and lower two lockers separated, the card block 32 in the role of the second resilient member 33 to maintain the extended state, the locking part 12 in the first resilient member 13 driven automatically reset in the locked state, ready for the next lock.

[0090] The connection structure of the storage box provided in this embodiment also has automatic locking function, keep unlocking function and automatic reset function, and other structures and functions of this embodiment are the same or similar to the first embodiment, and will not be repeated here.

THIRD EMBODIMENT (FIGS. 15-26)

[0091] As shown in FIGS. 15 to 16, this embodiment provides a connection structure of a module that can be provided on a storage box. The connection structure includes a first connection part 1000, a second connection part 2000 and a stopper 3000. The first connection part 1000 and the second connection part 2000 can be automatically locked with each other; the stopper 3000 can make the first connection part 1000 and the second connection part 2000 unable to be automatically locked after unlocking, so that the first connection part 1000 and the second connection part 2000 can be kept in the unlocked state, which is convenient for the first connection part 1000 and the second connection part 2000 to be unlocked and separated from each other, freeing the user's It is easy for the user to use with both hands.

[0092] In this embodiment, the storage box includes a lid 1101 and a box 1102, and the lid 1101 is set on the box 1102. The lid 1101 can be opened or closed relative to the box 1102. The first connection part 1000 is provided on the lid 1101 of the storage box, and the first connection part 1000 includes a mounting portion 1011, a locking part 1012 that can be moved horizontally relative to the mounting portion 1011 and a first elastic member 1013 located between the

mounting portion 1011 and the locking part 1012, and the locking part 1012 can be automatically kept in the locked state under the action of the first elastic member 1013.

[0093] Further, the mounting portion 1011 is removably connected to the lid 1101. The lid 1101 is provided with a mounting slot 1111, and the mounting portion 1011 is snap-fitted into the mounting slot 1111, thereby facilitating the replacement of the mounting portion 1011. In other embodiments, the first connection part 1000 and the lid 1010 may be integrally formed or otherwise fixed or removably connected. The mounting portion 1011 is provided with a slide 1011a on the side of the mounting portion 1011 away from the lid 1101, and the locking part 1012 is provided in the slide 1011a and can be moved relative to the mounting portion 1011 in the slide 1011a. In this embodiment, the locking part 1012 is a sliding latch that moves horizontally relative to the mounting portion 1011 so that the locking part 1012 moves horizontally within the slide 1011a. In other embodiments, the locking part 1012 may also be a flip latch that moves with respect to the mounting portion 1011, or a rotary latch that moves with respect to the mounting portion 1011.

[0094] Specifically, the locking part 1012 is provided with a locking buckle 1122, with the projection of the locking buckle 1122 directed toward the center side of the storage box. When the locking buckle 1122 is stuck into the second connection part 2000, the first connection part 1000 and the second connection part 2000 can be interlocked, and when the locking buckle 1122 is disengaged

from the second connection part 2000, the first connection part 1000 and the second connection part 2000 can be interlocked. At the same time, in order to facilitate the locking between the locking buckle 1122 and the second connection part 2000, the locking buckle 1122 is provided with a bevel 1122a. The locking part 1012 is provided with a holding slot 1123 on the side face away from the lid 1101, and the holding slot 1123 is located on the side of the locking buckle 1122 near the lid 1101. The holding slot 1123 has a bottom wall 1123a and two side walls 1123b, the two side walls 1123b extend upward along both sides of the bottom wall 1123a and are set opposite each other, and the stopper 3000 is set in the holding slot 1123.

[0095] Further, the first elastic member 1013 is connected between the mounting portion 1011 and the locking part 1012, and one end of the first elastic member 1013 abuts against the mounting portion 1011 and the other end abuts against the locking part 1012, so that the locking part 1012 is automatically kept in the locked state under the action of the first elastic member 1013. In order to improve the reliability of the movement of the locking part 1012, the first elastic member 1013 can be provided with two, respectively located on both sides of the slide 1011a. The first elastic member 1013 is a telescopic spring, so that the locking part 1012 moves horizontally.

[0096] Further, as shown in FIG. 16 and FIG. 20, the second connection part 2000 is provided at the bottom of the box 1102 of the storage box, which includes the mating part 1021 interlocked with the locking buckle 1122 of the

locking part 1012, and the locking part 1012 of one storage box can be automatically locked with the mating part 1021 of another storage box by the action of the first elastic member 1013 by pressing down. The mating part 1021 is a number of slots 1211, the number of slots 1211 can be set corresponding to the number of locking buckle 1122.

[0097] The stopper 3000 is provided on the locking part 1012, and one end of it is rotatably connected with the locking part 1012. The stopper 3000 includes a card block 1036 and a second resilient member 1033, and one end of the card block 1036 is rotatably connected to the locking part 1012, and the second resilient member 1033 keeps the card block 1036 in the ejected state automatically, and when the card block 1036 is ejected and held against the mating part 1021, the locking part 1012 cannot be locked automatically, and the first connection part 1000 and the second connection part 2000 are in the unlocked state. The locking part 1012 can be locked automatically when the stopper 3000 is retracted into the locking part 1012 by pressing down. When the first connection part 1000 and the second connection part 2000 are in the locked state, the locking buckle 1122 interferes with the mating part 1021 and the stopper 3000 retracts into the locking part 1012; when the first connection part 1000 and the second connection part 2000 are in the keep unlocked state, the locking buckle 1122 does not interfere with the mating part 1022 and the stopper 3000 snaps with the mating part 1021 in the locking path of the locking part 1012.

[0098] In this embodiment, the card block 1036 is telescopically provided in the holding slot 1123 of the locking part 1012 and is also horizontally movable with the locking part 1012 relative to the mounting portion 1011, with the length of the card block 1036 extending in the same direction as the moving direction of the locking part 1012. One end of the second resilient member 1033 rests on the card block 1036 and the other end rests on the bottom wall 1123a, and when the second resilient member 1033 is popped out, the card block 1036 extends into the holding slot 1123, and when the second resilient member 1033 is compressed, the card block 1036 is retracted into the said holding slot 1123. Specifically, the card block 1036 is provided with an upwardly protruding stop 1361, which extends out of the holding slot 1123 to be held against the mating part 1021 when the first connecting part 1000 and the second connecting part are in a holding unlocked state, and the stop 1361 is used to be held against the mating part 1021. The card block 1036 has an opposite first end 1036a and a second end 1036b, and the second end 1036b is closer to the center of the storage box than the first end 1036a, and the stop 1361 is provided at the connection of the first end 1036a and the second end 1036b.

[0099] Further, as shown in Figure 19, the stopper 3000 also includes a rotating shaft 1037, the two ends of the rotating shaft 1037 are fixed on the two side walls 1123b; the second resilient member 1033 is a torsion spring, the first end 1036a of the card block 1036 is provided with a shaft hole (not marked in the figure), the first end 1036a of the card block 1036 and the second resilient

member 1033 are set on the rotating shaft 1037, and the two torsion arms of the second resilient member 1033 are against the card block 1036 and the bottom wall 1123a. Further, the first end 1036a has a force surface, the stopper 1361 has a holding surface, and the second end 1036b has a positioning surface, which intersects the holding surface at approximately right angles. The positioning surface cooperates with the holding surface against the side and bottom surfaces of the mating part 1021 to limit the position of the card block 1036 and thus the position of the locking part 1012. The force surface is used to receive compression from the mating part 1021 or for manual pressure by the user. When the first connection part 1000 and the second connection part 2000 are in a holding unlocked state, the second resilient member 1033 extends and the stop 1361 extends upward into the holding slot 1123; when the first connection part 1000 and the second connection part 2000 are in a locked state, the second resilient member 1033 compresses and the stop 1361 is compressed in the holding slot 1123 by the compression of the bottom surface of the mating part 1021.

[00100]In addition, in order to facilitate the positioning of the first connecting part 1000 and the second connecting part 2000 when they are interlocked, a positioning recess 1041 can be provided on the lid 1101, and a projection 1042 can be provided at the bottom of the box 1102, and the positioning recess 1041 can just accommodate the projection 1042, and the first connecting part 1000 can be provided on both sides of the edge of the lid 1101.

[00101]The working principle of this embodiment is as follows.

[00102]As shown in Fig. 21 and Fig. 22, when two storage boxes need to be locked up and down, press down the upper storage box so that the mating part 1021 of the second connection part 2000 contacts the locking buckle 1122 on the lower storage box and squeezes the bevel 1122a, the locking buckle 1122 of the lower storage box is squeezed to drive the locking part 1012 of the first connection part 1000 to move in the direction of unlocking (i.e., away from the center of the storage box), at this time the first elastic member 1013 At this time, the first elastic member 1013 compresses and accumulates force, and the stopper 3000 simultaneously accepts the extrusion of the second connecting part 2000 and then rotates downward and retracts into the holding slot 1123. When the upper storage box moves down a certain distance, the locking buckle 1122 on the locking part 1012 corresponds to the slot 1211 on the matching part 1021, the locking buckle 1122 loses the resistance of the upper storage box, and the locking buckle 1122 automatically snaps into the slot 1211 under the drive of the first elastic member 1013, so that the first connection part 1000 and the second connection part 2000 are in the locked state, i.e., the automatic locking function of the upper and lower storage boxes is realized. At this time, the stopper 3000 is completely retracted into the holding slot 1123.

[00103]As shown in FIGS. 23 and 24, when it is necessary to unlock the two storage boxes, the locking part 1012 of the lower storage box is pulled outward so that it moves in the unlocking direction, and when the locking part 1012

moves a certain distance in the unlocking direction to the unlocking position, the locking buckle 1122 of the lower storage box is detached from the slot 1211 on the mating part 1021 of the upper storage box, thereby unlocking the locking part 1012 and the mating part 1021. At the same time, the stopper 3000 loses the squeeze of the second connection part 2000 of the upper storage box, and the card block 1036 automatically extends upward under the action of the second resilient member 1033 to hold the side of the holding slot 1123 and the mating part 1021, so that the first connection part 1000 and the second connection part 2000 are in the unlocked state, i.e., the unlocking function is achieved. At this time, it is convenient to unlock and separate the upper and lower storage boxes by simply pulling up the upper storage box, while the locking part 1012 is automatically reset in the locked state under the drive of the first elastic member 1013, ready for the next locking.

[00104]Again, if the locking part 1012 is pulled away and then reversed and does not want to unlock the upper and lower lockers, the card block 1036 can be pressed at this time to allow the locking part 1012 to return to the locked position, so that the first connection part 1000 and the second connection part 2000 return to the locked state.

[00105]The advantages of the connection structure of the storage box provided in this embodiment include.

[00106]1000, the use of the first connection part 1000 and the second connection part 2000 with locking. When the upper locker placed in place at the

same time automatically achieve the function of two boxes locked to each other, the user does not need to put the box 1102 after the need to lock the box 1102 and then deliberately to operate both sides of the locking part 1012, just pull open both sides of the locking part 1012 when opened.

[00107]2000, the use of rotatable card block 1036 to make the first connection part 1000 and the second connection part 2000 in the unlocked state, the movement of the card block 1036 deterministic, smooth use, greatly improving the convenience of the user.

FOURTH EMBODIMENT

[00108]As shown in FIGS. 25 to 26, this embodiment differs from the first embodiment in that the rotation shaft 1037 is directly on the card block 1036, which is integrally formed with the card block 1036, and the second resilient member 1033 is a telescopic spring.

[00109]Specifically, the card block 1036 has a first end 1036a and a second end 1036b, and the second end 1036b is closer to the center of the storage box than the first end 1036a. The second end 1036b of the card block 1036 is provided with protruding shafts 1362 on both sides, and the two protruding shafts 1362 are inserted in the slide rails 1123c of the two side walls 1123b, so that the protruding shafts 1362 move back and forth in the slide rails 1123c to provide guidance for the card block 1036. Further, the card block 1036 is provided with a first projection 1363 and a second projection 1231 on the bottom wall 1123a, and the two ends of the second resilient member 1033 are

provided on the first projection 1363 and the second projection 1231, respectively.

[00110]Other structures, working principles and beneficial effects of the first embodiment of this embodiment can achieve the same, here will not repeat.

[00111]The above mentioned is only the specific implementation of the utility model, but the scope of protection of the utility model is not limited to this, any technical person familiar with the art can easily think of changes or replacements within the technical scope disclosed by the utility model, which should be covered by the scope of protection of the utility model. Therefore, the scope of protection of the utility model shall be subject to the scope of protection of the said claims.

CLAIMS

1. A storage box comprising:

a first connection part disposed on one surface of said storage box;

a second connection part disposed on another surface of said storage box;

a stop part, wherein said first connection part comprises a mounting part, a locking part movable with respect to said mounting part, and a first resilient member located between said mounting part and said locking part, wherein said first resilient member keeping said locking part automatically in a locked state;

said second connection part comprises a mating part interlockable with the locking part, the locking part configured for being pressed down so that it is automatically locked with the mating part of another storage box by action of said first resilient member;

when said stop part is in the locking path of the locking part, said locking part is not automatically lockable and said first connection part is in a state of remaining unlocked from said second connection part.

2. The storage box of claim 1, wherein the stop part is retractable, said stop part being extended when said first connection part is in a holding unlocked state with said second connection part, and said stop part being compressed when said first connection part is in a locked state with said second connection part.

3. The storage box of claim 2, wherein said stop part is provided on said locking part and is movable with said locking part; said stop part holds the second connection part outward when said first connection part and said second connection part are in a holding unlocked state.

4. The storage box of claim 3, wherein said stop part comprises a holding slot opened on the locking part, a card block that can be accommodated in said holding slot and a second resilient member; said holding slot has a bottom wall and two side walls, two said side walls extending upward along both sides of said bottom wall and set opposite each other.

5. The storage box of claim 3, wherein the card block is rotatably connected to said locking part and the other end is retractably provided in said holding slot, said second resilient member keeping said card block automatically in an ejected state; when said card block is ejected and held against said mating portion, said locking part cannot be automatically locked and said first connection part and said second connection part in a state of remaining unlocked.

6. The storage box of claim 5, wherein said second resilient member is a telescopic spring with one end against said card block and the other end against said bottom wall; when said second resilient member is popped out, said card

block extends out of said holding slot and when said second resilient member is compressed, said card block is retracted into said holding slot.

7. The storage box of claim 5, wherein said stop section further comprises a rotating shaft rotatably connected to said locking section, said ends of said rotating shaft being fixed to two said side walls; said second resilient member being a torsion spring, one end of said card block and said torsion spring being snapped onto said rotating shaft.

8. The storage box of claim 4, wherein said card block is always located in said holding slot and the other end is retractably provided in said holding slot, said second resilient member keeping said card block automatically in the ejected state; when said card block is ejected and held against said mating part, said locking part cannot be automatically locked and said first connection part and said second connection part in a state of remaining unlocked.

9. The storage box of claim 8, wherein said second resilient member is a telescopic spring with one end against said card block and the other end against said bottom wall; when said second resilient member is extended, said card block extends into the holding slot and when said second resilient member is compressed, said card block is compressed in the holding slot.

10. The storage box of claim 1, wherein said locking part is a sliding latch for horizontal movement, a flipping latch for flipping movement or a rotating latch for rotating movement.

11. The storage box of claim 10, wherein said first connection part is provided on a lid of said storage box and said second connection part is provided on the bottom of said storage box.

12. The storage box of claim 11, wherein two adjacent said storage boxes are interlockable with each other by means of a first connection part and a second connection part.

13. The storage box of claim 1, wherein the stop part comprises of a card block positioned in a slot and biased outward by the second resilient member.

14. The storage box of claim 13, wherein the card block moves perpendicular with respect to a sliding path of the locking part.

15. The storage box of claim 14, wherein the card block moves perpendicularly upward relative to the first connection part.

16. The storage box of claim 14, wherein the card block moves perpendicularly downward relative to the first connection part.

17. The storage box of claim 13, wherein the second resilient member is a torsion spring and the card block rotates upward relative to the first connection part.

18. The storage box of claim 13, wherein the second resilient member is a telescopic spring and the card block rotates upward relative to the first connection part.

ABSTRACT

A mating part in a locking path of a stop part so that the locking part is not automatically lockable and a first connection part is in a state of remaining unlocked from a second connection part.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application # :
Applicants : Hongquan ZHANG, Qiang WANG and Shujun CAI
Filed :
Invention : CONNECTION STRUCTURE OF MODULE, STORGAGE BOX AND STORAGE BOX ASSEMBLY
TC/AU :
Examiner :
Confirm # :
Docket No. : 17157-0101-1
Customer # : 23486
Date : November 22, 2023

INFORMATION DISCLOSURE STATEMENT

The current assignee of the present application is also the assignee of the following pending US patent application(s) directed to related subject matter.

Examiner's Initials	
	CAI, Shujun - U.S. Patent Application No. 17/010,975 filed September 3, 2020 [17157-0095]
	CAI, Shujun – U.S. Patent Application No. 17/956,459 filed September 29, 2022 [17157-0099]

Submitted with this Information Disclosure Statement is a Form PTO/SB/08a citing all the references in the above referenced application(s) that have not already been cited herein.

This Information Disclosure Statement is intended to be in full compliance with the rules, but should the Examiner find any part of its requirement content to have been omitted, prompt notice to that effect is earnestly solicited, along with additional time under 97(f), to enable Applicant to comply fully.

Consideration of the foregoing and attachments plus the return of a copy of the Form PTO/SB/08a with the Examiner's initials in the left column per MPEP 609, **as well**

as a copy of this paper with the above identified application(s) initialed by the Examiner are earnestly solicited.

Respectfully submitted,

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CERTIFICATE OF TRANSMISSION

I certify that this correspondence is being transmitted to the US Patent and Trademark Office by EFS-Web on November 22, 2023

/Jayme M. Hunter/
Jayme M. Hunter

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ☐ United States application or PCT international application number _____ filed on _____.
- ☑ The application associated with Attorney Docket No. 17157-0101 (which attorney docket number is displayed on the cover of the Specification as filed [MPEP 602.08(c)])

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

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LEGAL NAME OF INVENTOR

Inventor: Shujun CAI Date (Optional): 2023. 2. 23

Signature: 蔡书军 Shujun CAI

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	First Named Inventor	Hongquan ZHANG
	Art Unit	
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	Attorney Docket Number	17157-0101-1

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	Attorney Docket Number	17157-0101-1

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	First Named Inventor	Hongquan ZHANG
	Art Unit	
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	Attorney Docket Number	17157-0101-1

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	2	Australian Examination Report dated February 19, 2022 from related Australian Patent Application No. 20220202609 [17157-0094]	☒
	3	Dewalt ToughSystems 2.0 Toolbox, DWST08165, https://www.dewalt.com/product/dwst08165/toughsystemr-20-toolbox?tid=576956, Screen print of webpage printed September 13, 2022 Original date unknown but prior to U.S. filing date	☒
	4	Dewalt ToughSystem 2.0 Full-Size Organizer, DWST08040, https://www.dewalt.com/product/dwst08040/toughsystemr-20-full-size-organizer, Screen print of webpage printed September 13, 2022 Original date unknown but prior to U.S. filing date	☒
	5	Boschtools.com "L-boxx" products, Model #: L-BOXX-1, L-BOXX-2, L-BOXX-3, L-BOXX-4, http://www.boschtools.com/Products/Tools/Pages/Item Results.aspx?catid=1 611, Date unknown but prior to U.S. filing date.	☒
	6	festoolproducts.com "T-Loc" products, Model #: SYS 1, SYS 2, SYS 3, SYS 4, SYS 5, http://www.festoolproducts.com/Systainer-Storage-System-s/75.htm, Date unknown but prior to U.S. filing date	☒

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (**Not for submission under 37 CFR 1.99)**		
	Application Number	
	Filing Date	
	First Named Inventor	Hongquan ZHANG
	Art Unit	
	Examiner Name	
	Attorney Docket Number	17157-0101-1

	7	dewalt.com, "TSTAK" products, Model #: DWST08201, DWST08203, DWST08204, http://www.dewait com/tool-categories/hand-tools-storage-and-work-support-mobile-work-shop-st orage.aspx, Date unknown but prior to U.S. filing date.	☒
	8	dewalt.com, "Tough System" products, Model#: DWST17804, DWST17803, DWST17807, http://www.dewait com/tool-categories/hand-tools-storage-and-work-support-tstak.aspx, Date unknown but prior to U.S. filing date.	☒

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CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

CROSS-REFERENCE TO RELATED APPLICATION

[0001] The present application is a continuation of United States Patent Application No. 18/176,907 filed March 1, 2023, the contents of which are incorporated herein by reference.

PRIORITY

[0002] This application claims priority to Chinese Patent Application No. 202210212862.5 filed on March 04, 2022; Chinese Patent Application No. 202320135456.3 filed on January 13, 2023. The contents of all of which are hereby incorporated by reference herein.

TECHNICAL FIELD

[0003] This invention relates generally to modular storage boxes, and more specifically the connection mechanisms for attaching modular storage boxes.

BACKGROUND INFORMATION

[0004] In order to facilitate the user in the case of carrying multiple storage boxes (such as toolboxes) to facilitate the overall movement and use, each storage box is usually stacked together, and each storage box is usually locked together by interlocking, so as to facilitate the user to move and use. A number of ways are known for interlocking storage boxes. Now on the market, there are roughly the following three forms of locking: the first way uses a single plastic latch that can be turned to clasp the lower bottom of the box protrusion

to achieve the purpose of interlocking; the second way is the conventional use of the front of the two-segment latch moved to the side to lock between the upper and lower boxes; and the third way uses a combination of steel wire and plastic to lock boxes together at the side. However, the above locking methods can only be interlocked for the same length and width of the shape of the box, and cannot be interlocked for different length and width of the size of the shape of the box, with many professional users needing to carry more and more diverse types of tools, there is an urgent need for interlocking between different sizes of the box.

SUMMARY

[0005] The purpose of the present invention is to provide a connection structure of a storage box, aiming to solve the above-mentioned deficiencies of the background technology, and to achieve automatic locking, keeping unlocking and automatic reset functions, so as to facilitate the user's operation and use.

[0006] The present invention provides a connection structure of a module comprising a first connection part located on one surface of said module, a second connection part located on another surface of said module and a stop part.

[0007] said first connection part comprising a mounting portion, a locking part movable relative to said mounting portion and a first resilient member disposed between said mounting portion and said locking portion, said first resilient member causing said locking part to automatically remain in a locked state said

second connection part comprising a mating part interlockable with the locking portion, the locking part of one said module being pressed down so that it is automatically locked with the mating part of the other module by the action of said first resilient member.

[0008] When said stop part is in the locking path of the locking portion, said locking part cannot be automatically locked and said first connection part and said second connection part are in a holding unlocked state.

[0009] Further, said stop part is retractable, said stop part extending when said first connection part and said second connection part are in a hold unlocked state, and said stop part compressing when said first connection part and said second connection part are in a locked state.

[0010] Further, said stop part is provided on said locking part and is movable with said locking portion; when said first connection part and said second connection part are in a holding unlocked state, said stop part and said second connection part snap in the locking path of the locking portion.

[0011] Further, said stop part comprises a holding slot opened in the locking portion, a card block accommodated in said holding slot and a second resilient member disposed between the holding slot and the card block; when said second resilient member is extended, said card block extends out of the holding slot and when said second resilient member is compressed, said card block is compressed in the holding slot.

[0012] Further, said stop part is provided on said second connection part and remains stationary relative to said locking portion; said stop part and said locking part snap together in a locking path of the locking part when said first connection part is in a hold unlocked state with said second connection part.

[0013] Further, said locking part includes a locking clasp and a stop clasp, said locking clasp being provided in correspondence with the mating portion, and said stop clasp being provided in correspondence with the stop part.

[0014] Further, said stop clasp has an extension length in the locking direction greater than the extension length of the locking clasp in the locking direction.

[0015] Further, when said first connection part and said second connection part are in a hold unlocked state, said stop part and said stop buckle are held against each other in a locked path of the locking portion; when said first connection part and said second connection part are in a locked state, said locking buckle and mating part are locked against each other and said stop buckle is held against the stop part in a non-locked path.

[0016] Further, said stop part comprises a holding slot opened in the mating portion, a block to be accommodated in the slot and a second resilient member disposed between the holding slot and the block; when said second resilient member is compressed, said block is held against said stop clasp in a non-locking path, and when said second resilient member is extended, said block is held against said stop clasp in a locking path of the locking portion.

[0017] Further, said stop part further comprises a retaining slot and a retaining block attached to the card block, said second resilient member compressing when said retaining block is located in said retaining slot and said stop part is not located in the locking path of the locking portion.

[0018] Further, said locking part is a sliding latch for horizontal movement, a flipping latch for flipping movement, or a rotating latch for rotating movement.

[0019] The present invention also provides a storage box, said storage box is provided with a connection structure of the module as described in any of the above, said first connection part is provided on the lid of said storage box, said second connection part is provided on the bottom of said storage box body.

[0020] The present invention also provides a storage box assembly comprising a plurality of storage boxes as described above, wherein two adjacent said storage boxes are interlockable with each other by means of a first connection member and a second connection member.

[0021] The connection structure of the locker provided by the present invention, because the locking part can move relative to the mounting part and the first resilient member can drive the locking part to automatically remain in the locked state, when the two lockers are locked, the locking part of one of the lockers can automatically lock with the mating part of the other locker under the action of the first resilient member, thus realizing the automatic locking function of the first connection part and the second connection part; meanwhile, by At the same time, by setting the stopping part, the stopping part can be held in the

locking path of the locking part, so that the first connection part and the second connection part are in the unlocked state, thus eliminating the need to deliberately keep the locking part in the unlocked state by hand, freeing the user's hands; and when the two lockers are unlocked and detached from each other, the locking part can be automatically reset under the drive of the first resilient member, ready for the next locking, simplifying the operation steps when locking. operation steps, convenient for users.

[0022] In yet another embodiment, the purpose of the utility model is to provide a connection structure of a storage box, aiming to solve the above-mentioned deficiencies of the background technology, and to be able to achieve automatic locking, holding unlocking and automatic reset functions, so as to facilitate the user's operation and use.

[0023] The utility model provides a connection structure of a module, comprising a first connection part located on one surface of said module, a second connection part located on another surface of said module.

[0024] said first connection portion comprising a mounting portion, a locking part movable relative to said mounting portion and a first elastic member disposed between said mounting portion and said locking portion, said first elastic member causing said locking part to be automatically maintained in a locked state

[0025] said second connection portion comprising a mating part interlocked with said locking portion, the locking part of one said module being pressed down

so that it is automatically locked with the mating part of the other module by the action of said first resilient member

[0026] further comprising a stop part, said stop part being provided on said locking part and having one end rotatably connected to said locking portion, said stop part and said second connection portion being held in the locking path of the locking part when said first connection portion and said second connection portion are in a holding unlocked state.

[0027] Further, said stop part includes a latch and a second resilient member, one end of said latch being rotatably connected to said locking portion, said second resilient member keeping said latch automatically in the ejected state; when said latch is ejected and held against said mating portion, said locking part is not automatically locked and said first connection portion and said second connection portion are in the hold unlocked state.

[0028] Further, said locking part is provided with a holding slot, said holding slot having a bottom wall and two side walls, two said side walls extending upward and opposite each other along both sides of said bottom wall; said latch is retractably provided in said holding slot, one end of said second resilient member resting on said latch and the other end resting on said bottom wall; when said second resilient member is ejected, said latch extends out of said holding slot, and when when said second elastic member is compressed, said latch is retracted into said holding slot.

[0029] Further, said latch is provided with an upwardly protruding stop; said stop protrudes from said holding slot against said mating part when said first connection partand said second connection partare in a holding unlocked state.

[0030] Further, said latch has opposing first and second ends, the second end being closer to the center of the module than the first end; said first end is provided with a shaft hole, said stop further comprising a rotating shaft, said ends of said rotating shaft being fixed to two said side walls, said second resilient member being a torsion spring, said first end and said second resilient member being snapped to said rotating shaft.

[0031] Further, said latch has opposing first and second ends, the second end being closer to the center of the module than the first end; said first end being pivotally connected to said locking portion, said second resilient member having both ends located between said latch and said bottom wall, said second resilient member being a telescopic spring.

[0032] Further, said second end part is provided with convex shafts on both sides, two said convex shafts are inserted in the slides of two said side walls respectively.

[0033] Further, said locking part is a sliding latch for horizontal movement, a flipping latch for flipping movement or a rotating latch for rotating movement.

[0034] The utility model also provides a storage box, including a lid and a box body, said lid is set on said box body, said storage box is provided with a connection structure of the module as described in either of the above, said first

connection is set on said lid, said second connection is set on the bottom of said box body.

[0035] The utility model also provides a storage box assembly comprising a plurality of storage boxes as described above, and two adjacent said storage boxes are interlockable with each other by said first connecting member and said second connecting member.

[0036] The connection structure of the storage box provided by the utility model has the following beneficial effects.

[0037] 1, the use of the first connecting part and the second connecting part with locking. When the upper locker is placed in place at the same time automatically achieve the function of two boxes locked to each other, do not need the user to put the box after the need to lock the box and then deliberately to operate both sides of the latch, only to open when the two sides of the latch can be pulled open.

[0038] 2, the use of rotatable latch to make the first connection and the second connection in the unlocked state, the movement of the latch deterministic, smooth, greatly improving the convenience of the user.

BRIEF DESCRIPTION OF THE DRAWINGS

[0039] FIG. 1 is a schematic diagram of the three-dimensional structure of the storage box in the first embodiment of the present invention.

[0040] FIG. 2 is a cross-sectional view of FIG. 1.

[0041] FIG. 3 is a schematic diagram of another three-dimensional structure of the storage box in the first embodiment of the present invention.

[0042] FIG. 4 is a schematic diagram of the partially exploded structure of FIG. 3.

[0043] FIG. 5 is a three-dimensional view of a storage box in FIG. 4.

[0044] FIG. 6 is another three-dimensional view of a storage box in FIG. 4.

[0045] FIG. 7 is an exploded schematic diagram of part of the structure in FIG. 6.

[0046] FIG. 8 is a schematic diagram of the three-dimensional structure of the storage box in the second embodiment of the present invention.

[0047] FIG. 9 is a schematic diagram of the partially exploded structure of FIG. 8.

[0048] FIG. 10 is a schematic diagram of the structure of the mating relationship between the suspended and locked portions of FIG. 8.

[0049] FIG. 11 is a schematic diagram of the structure of the first connecting part in FIG. 10.

[0050] FIG. 12 is a schematic diagram of the exploded structure of FIG. 11.

[0051] FIG. 13 is a schematic diagram of the structure of the aborting part of FIG. 10.

[0052] FIG. 14 is a schematic diagram of the exploded structure of FIG. 13.

[0053] Figure 15 is a schematic diagram of the three-dimensional structure of the storage box in the first embodiment of the utility model.

[0054] Figure 16 is a schematic diagram of another three-dimensional structure of the storage box in the first embodiment of the utility model.

[0055] Figure 17 is a schematic diagram of the partial structure of the storage box in the first embodiment of the utility model.

[0056] Figure 18 is a schematic diagram of the structure of another view of Figure 17

[0057] FIG. 19 is a schematic diagram of the partial explosion structure of the storage box in the first embodiment of the utility model.

[0058] FIG. 20 is a schematic diagram of another local structure of the storage box in the first embodiment of the utility model.

[0059] Figure 21 is a schematic diagram of the local structure of the two storage boxes in the locked state.

[0060] FIG. 22 is a cross-sectional view of another view of FIG. 21.

[0061] FIG. 23 is a schematic diagram of the local structure of the two lockers when they are in the hold unlocked state.

[0062] FIG. 24 is a cross-sectional view of another viewpoint of FIG. 23.

[0063] FIG. 25 is a schematic diagram of the local structure of the storage box in the second embodiment of the utility model.

[0064] FIG. 26 is a schematic diagram of the local explosion structure of the storage box in the second embodiment of the utility model.

DETAILED DESCRIPTION OF THE ILLUSTRATED EMBODIMENTS

[0065] The specific embodiments of the present invention are described in further detail below in conjunction with the accompanying drawings and embodiments. The following embodiments are used to illustrate the invention, but are not intended to limit the scope of the invention.

[0066] The terms "first", "second", "third", "fourth", etc. (if present) in the specification and claims of the present invention are used to distinguish between " etc. (if present) are used to distinguish similar objects and need not be used to describe a particular order or sequence.

[0067] The orientation words such as top, bottom, left, right, front, back, top, bottom, etc. (if present) covered in the specification and claims of the present invention are defined in terms of the position of the structures in the attached drawings located in the drawings and the position of the structures in relation to each other, only for the clarity and convenience of expressing the technical solution. It should be understood that the use of the orientation words should not limit the scope of protection claimed in this application.

[0068] The present invention 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 storage box 50, and two adjacent storage boxes 50 may be matingly locked with each other by the connection structure, thereby facilitating the transportation of multiple storage boxes 50. The storage box 50 can be a tool box, tool basket, transport box, transit box

and other storage devices. Storage box 50 can be any type known to those skilled in the art, which comprises of a four sidewalls protecting from a bottom with a hinged lid 52 for access to an interior thereof. Storage box 50 can have various types of lid latching mechanisms, organizational bins or structures and other features known to those skilled in the art.

First embodiment

[0069] As shown in FIGS. 1 to 7, this embodiment provides a connection structure for a module that can be provided on a storage box. The connection structure includes a first connection part 1, a second connection part 2 and a stopping part 3. The first connection part 1 and the second connection part 2 can be automatically locked with each other; the stopping part 3 can make the first connection part 1 and the second connection part 2 unable to be automatically locked after unlocking, so that the first connection part 1 and the second connection part 2 can be kept in an unlocked state, which is convenient for the first connection part 1 and the second connection part 2 to be unlocked and separated from each other, freeing the user to use with both hands.

[0070] Further, as shown in FIGS. 6 and 7, in this embodiment, the first connecting part 1 is provided on the lid of the storage box, which includes a mounting portion 11, a locking part 12 movable relative to the mounting portion 11 and a first resilient member 13 located between the mounting portion 11 and the locking part 12, and the locking part 12 can be automatically kept in the locked state under the action of the first resilient member 13. In addition, in

order to facilitate the positioning of the first connecting part 1 and the second connecting part 2 when interlocking, a positioning slot 41 may be provided on the lid, and the positioning slot 41 may just accommodate the bottom of the box, and the first connecting part 1 may be provided at the edge of the positioning slot 41. In other embodiments, the positioning slot 41 can be positioned with the projections provided on the bottom of the box body for positioning when the upper and lower storage boxes are stacked.

[0071] Further, as shown in FIG. 7, in this embodiment, the mounting portion 11 is fixedly connected to the box lid. The mounting portion 11 includes a mounting slot 111 in the lid and a mounting body 112 in the mounting slot 111, which can be bolted into the mounting slot 111. In other embodiments, the mounting body 112 may also be integrally formed with the mounting slot 111, or fixedly connected by means such as snap-on.

[0072] Further, as shown in FIG. 7, in this embodiment, the locking part 12 may be housed within the mounting body 112, which may be movable relative to the mounting body 112. The locking part 12 is a sliding latch that moves horizontally relative to the mounting portion 11, thereby allowing the locking part 12 to move horizontally within the mounting slot 111. In other embodiments, the locking part 12 may also be a flip latch that moves in a flip relative to the mounting portion 11, or a rotary latch that moves in a rotational manner relative to the mounting portion 11. The locking part 12 includes a locking body 121 that can be accommodated in the mounting body 112 and a locking buckle 122 located on

the side of the locking body 121 near the center of the storage box; when the locking buckle 122 extends out of the mounting portion 11 (i.e., the locking buckle 122 extends into the positioning slot 41), the first connection part 1 and the second connection part 2 can be interlocked, and when the locking buckle 122 does not extend out of the mounting portion 11 (i.e., the locking buckle 122 does not extend into the positioning slot 41) When the locking buckle 122 does not extend out of the mounting portion 11 (i.e., the locking buckle 122 does not extend into the positioning slot 41), the first connecting part 1 and the second connecting part 2 can be unlocked. Also, to facilitate locking between the locking buckle 122 and the second connection part 2, the locking buckle 122 is provided with a bevel 122a.

[0073] Further, as shown in FIG. 7, in this embodiment, the first resilient member 13 is located between the locking body 121 and the mounting body 112, so that the locking part 12 is automatically kept in the locked state by the action of the first resilient member 13. At the same time, in order to improve the reliability of the movement of the locking part 12, the first resilient member 13 can be provided with two, respectively located at the two ends of the locking body 121. The first resilient member 13 is a compression spring, so that the locking part 12 moves horizontally; in other embodiments, the first resilient member 13 may also be a torsion spring, so that the locking part 12 moves overturned.

[0074] Further, as shown in Figure 5, in this embodiment, the second connection part 2 is provided at the bottom of the box of the storage box, which includes a mating part 21 that can be interlocked with the locking part 12 and a recessed part 22 that can be interlocked with the stopping part 3, and the locking part 12 of one storage box can be automatically locked with the mating part 21 of another storage box under the action of the first resilient member 13 by pressing down. In addition, in order to facilitate the interlocking of the mating part 21 and the locking buckle 122, a projection 42 (here the projection 42 is the bottom of the box) can be provided on the bottom of the box, and the projection 42 can be just accommodated in the positioning slot 41. When the first connection part 1 and the second connection part 2 are in the locked state, the locking buckle 122 interferes with the mating part 21; when the first connection part 1 and the second connection part 2 are in the keep unlocked state, the locking buckle 122 does not interfere with the mating part 21, and the stopping part 3 snaps with the recessed part 22. In other embodiments, when the first connection part 1 and the second connection part 2 are in the unlocked state, the stopping part 3 can be directly held with the mating part 21. In addition, the mating part 21 is a number of slots 211, and the number of slots 211 may correspond to the number of locking buckles 122.

[0075] Further, as shown in FIG. 6 and FIG. 7, in this embodiment, the stopping part 3 is provided on the locking part 12, which can move horizontally with the locking part 12, and when the locking part 12 is in the unlocked state, the

stopping part 3 can be held with the second connection part 2 in the locking path of the locking part 12, and the locking part 12 cannot be automatically locked, so that the first connection part 1 and the second connection part 2 are in the maintained unlocked state. The stopping part 3 includes a holding slot 31 opened on the locking part 12, a card block 32 that can be accommodated in the holding slot 31 and a second resilient member 33 disposed between the holding slot 31 and the card block 32, and the card block 32 can be retracted relative to the holding slot 31 under the action of the second resilient member 33. Holding slot 31 has a bottom wall and two side walls, two said side walls extending upward along both sides of said bottom wall and set opposite each other.

[0076] Specifically, as shown in FIG. 3, when the first connection part 1 and the second connection part 2 are in a holding unlocked state, the second resilient member 33 extends and the card block 32 extends into the holding slot 31; as shown in FIGS. 1 and 2, when the first connection part 1 and the second connection part 2 are in a locked state, the second resilient member 33 compresses and the card block 32 is compressed in the holding slot 31 by the compression of the second connection part 2.

[0077] The working principle of this embodiment is as follows.

[0078] When it is necessary to lock two storage boxes up and down, press down the upper storage box to make it contact with the locking buckle 122 on the lower storage box, the locking buckle 122 on the lower storage box is squeezed

to drive the locking part 12 to move towards the unlocking direction (i.e. away from the center of the storage box), at this time the first resilient member 13 compresses and accumulates force. When the upper locker moves down a certain distance, the locking buckle 122 on the locking part 12 corresponds to the slot 211 on the matching part 21, the locking buckle 122 loses the holding effect of the upper locker, the locking buckle 122 is driven by the first resilient member 13 automatically stuck into the slot 211, so that the first connection part 1 and the second connection part 2 are in a locked state, that is, to achieve the automatic locking function of the upper and lower locker. . At this time, the stopping part 3 is compressed in the holding slot 31 by the compression of the second connection 2.

[0079] When it is necessary to unlock the two storage boxes, pull the locking part 12 of the lower storage box outward so that it moves toward the unlocking direction, and when the locking part 12 moves a certain distance toward the unlocking direction, the locking buckle 122 of the lower storage box is detached from the slot 211 of the upper storage box, so that the locking part 12 is unlocked with the mating part 21. At the same time, continue to pull the locking part 12 in the unlocking direction until the stopping part 3 loses the squeeze of the upper storage box, and the card block 32 automatically extends upward under the action of the second resilient member 33 to hold the holding slot 31 and snap with the recessed part 22, so that the first connection part 1 and the second connection part 2 are in the keep unlocked state, i.e., the keep unlocked

function is realized. At this time, the upper and lower storage boxes can be easily unlocked and separated by simply pulling up the upper storage box. At the same time, at this time, if the user wants to lock again, just press down the card block 32 to make the card block 32 retracted into the holding slot 31. When the upper and lower two lockers separated, the card block 32 in the second resilient member 33 under the action of the extension state, the locking part 12 in the first resilient member 13 driven automatically reset in the locked state, ready for the next lock.

[0080] The advantages of the connection structure of the storage box provided in this embodiment include.

[0081] 1. the connection structure of the locker has an automatic locking function, a hold unlocking function and an automatic reset function: since the locking part 12 can move horizontally relative to the mounting part 11, and the first resilient member 13 can drive the locking part 12 to automatically remain in the locked state. When two lockers are locked, the locking part 12 of one of the lockers can automatically lock with the mating part 21 of the other locker under the action of the first resilient member 13, thus realizing the automatic locking function of the first connection part 1 and the second connection part 2; at the same time, by setting the stopping part 3 and using the stopping part 3 to cooperate with the second connection part 2, the first connection part 1 and the second connection part 2 can be kept in the unlocked state when they are unlocked At the same time, after the two lockers are unlocked and separated,

the locking part 12 can be automatically reset under the drive of the first resilient member 13 to prepare for the next locking, simplifying the operation steps of locking and unlocking (conventional locking and unlocking requires at least four steps, while this embodiment only requires two steps), which is convenient for users.

[0082] 2, through the cooperation of the stop part 3 and the second connection part 2 to keep the unlocking function, when the user wants to re-lock (user miss-operation unlocking), just press the card block 32 downward, without separating the first connection part 1 and the second connection part 2 after re-locking, and does not harm the reliability of the structure.

[0083] Second embodiment

[0084] As shown in FIGS. 8 to 14, this embodiment differs from the first embodiment in that the locking part 12 is a flip latch and the stopping part 3 is provided on the second connection part 2 and remains stationary with respect to the locking part 12. When the first connection part 1 and the second connection part 2 are in the hold unlocked state, the stopping part 3 and the locking part 12 snap in the locking path of the locking part 12.

[0085] Specifically, the locking part 12 includes a locking buckle 122 and a stopper 123, the locking buckle 122 can be locked with the mating part 21 in cooperation with each other, and the stopper 123 is provided in correspondence with the stopping part 3; the stopper 123 can be held with the stopping part 3 in the locking path of the locking part 12, so that the first connecting part 1 and

the second connecting part 2 are in the hold unlocked state. The extension length of the locking buckle 122 in the locking direction is smaller than the extension length of the stopper 123 in the locking direction, so that the angle required to flip when the stopper 123 and the stopping part 3 are unlocked in the locking path is maximum. When the second resilient member 33 is compressed, the locking buckle 122 and the mating part 21 are locked to each other, the card block 32 and the stopper 123 are held up and down in the vertical direction, and the first connecting part 1 and the second connecting part 2 are in the locked state; when the second resilient member 33 is extended, the card block 32 extends into the holding slot 31 and is held in the locked path with the stopper 123, and the first connecting part 1 and the second connecting part 2 are in the hold unlocked state. In other embodiments, the card block 32 and the stopper 123 can also be held in other non-locking paths, for example, the card block 32 and the stopper 123 are held in the left and right direction, and the stopper 123 only needs to hold the card block 32 in the non-locking path to fall within the scope of protection of the present invention.

[0086] Further, as shown in FIG. 9 and FIG. 13, in this embodiment, the stopping part 3 also includes a fixing slot 34 opened on the second connection part 2 and a fixing block 35 located at the end of the card block 32 away from the second resilient member 33, and the fixing block 35 can be slid into the fixing slot 34. When the fixing block 35 is located in the fixing slot 34, the second resilient member 33 compresses so that the stopping part 3 is always fixed

above the stopper 123; such a setting allows the hold unlock function to be selectively opened and closed for the convenience of the user. In other embodiments, it is also possible to open a fixing slot 34 on the first connecting part 1, as long as the stopping part 3 cannot be located in the locking path of the locking part 12 (i.e. the stopping part 3 part cannot be in contact with the stopper 123), that is, it falls within the scope of protection of the present invention.

[0087] The working principle of this embodiment is as follows.

[0088] When the need to lock the two storage boxes up and down, downward pressure on the upper storage box so that it is in contact with the locking buckle 122 on the lower storage box, the locking buckle 122 of the lower storage box is squeezed to drive the locking part 12 towards the unlocking direction (i.e., away from the center of the storage box), when the first resilient member 13 compressed storage force. When the upper locker moves down a certain distance, the locking buckle 122 on the locking part 12 corresponds to the slot 211 on the mating part 21, the locking buckle 122 loses the holding effect of the upper locker, the locking buckle 122 is driven by the first resilient member 13 automatically stuck into the slot 211, so that the first connection part 1 and the second connection part 2 are in a locked state, that is, to achieve the automatic locking function of the upper and lower locker. It should be noted that during this process, the upper storage box is pressed down, the card block 32 is squeezed and compressed by the stopper 123, the second resilient member 33

compresses and accumulates force, and the stopper 123 and the card block 32 are always held against the upper and lower.

[0089] When it is necessary to unlock the two storage boxes, pull the locking part 12 of the lower storage box outward to make it move in the direction of unlocking, and when the locking part 12 moves outward a certain distance, the locking buckle 122 of the lower storage box is detached from the slot 211 of the upper storage box, so that the locking part 12 is unlocked with the mating part 21. At the same time, continue to pull the locking part 12 outward until the stopping part 3 loses the hold of the stopper 123 of the lower storage box, and the card block 32 automatically extends downward under the action of the second resilient member 33 to hold the holding slot 31 and snap with the stopper 123 in the locking path of the locking part 12, so that the first connection part 1 and the second connection part 2 are in the hold unlocked state, that is, to achieve the hold unlocking function. At this time, the upper and lower storage boxes can be easily unlocked and separated by simply pulling up the upper storage box. At the same time, at this time, if the user wants to lock again, just pull up the card block 32 to make the card block 32 and stop the stopper 123 up and down again can be held. When the upper and lower two lockers separated, the card block 32 in the role of the second resilient member 33 to maintain the extended state, the locking part 12 in the first resilient member 13 driven automatically reset in the locked state, ready for the next lock.

[0090] The connection structure of the storage box provided in this embodiment also has automatic locking function, keep unlocking function and automatic reset function, and other structures and functions of this embodiment are the same or similar to the first embodiment, and will not be repeated here.

THIRD EMBODIMENT (FIGS. 15-26)

[0091] As shown in FIGS. 15 to 16, this embodiment provides a connection structure of a module that can be provided on a storage box. The connection structure includes a first connection part 1000, a second connection part 2000 and a stopper 3000. The first connection part 1000 and the second connection part 2000 can be automatically locked with each other; the stopper 3000 can make the first connection part 1000 and the second connection part 2000 unable to be automatically locked after unlocking, so that the first connection part 1000 and the second connection part 2000 can be kept in the unlocked state, which is convenient for the first connection part 1000 and the second connection part 2000 to be unlocked and separated from each other, freeing the user's It is easy for the user to use with both hands.

[0092] In this embodiment, the storage box includes a lid 1101 and a box 1102, and the lid 1101 is set on the box 1102. The lid 1101 can be opened or closed relative to the box 1102. The first connection part 1000 is provided on the lid 1101 of the storage box, and the first connection part 1000 includes a mounting portion 1011, a locking part 1012 that can be moved horizontally relative to the mounting portion 1011 and a first elastic member 1013 located between the

mounting portion 1011 and the locking part 1012, and the locking part 1012 can be automatically kept in the locked state under the action of the first elastic member 1013.

[0093] Further, the mounting portion 1011 is removably connected to the lid 1101. The lid 1101 is provided with a mounting slot 1111, and the mounting portion 1011 is snap-fitted into the mounting slot 1111, thereby facilitating the replacement of the mounting portion 1011. In other embodiments, the first connection part 1000 and the lid 1010 may be integrally formed or otherwise fixed or removably connected. The mounting portion 1011 is provided with a slide 1011a on the side of the mounting portion 1011 away from the lid 1101, and the locking part 1012 is provided in the slide 1011a and can be moved relative to the mounting portion 1011 in the slide 1011a. In this embodiment, the locking part 1012 is a sliding latch that moves horizontally relative to the mounting portion 1011 so that the locking part 1012 moves horizontally within the slide 1011a. In other embodiments, the locking part 1012 may also be a flip latch that moves with respect to the mounting portion 1011, or a rotary latch that moves with respect to the mounting portion 1011.

[0094] Specifically, the locking part 1012 is provided with a locking buckle 1122, with the projection of the locking buckle 1122 directed toward the center side of the storage box. When the locking buckle 1122 is stuck into the second connection part 2000, the first connection part 1000 and the second connection part 2000 can be interlocked, and when the locking buckle 1122 is disengaged

from the second connection part 2000, the first connection part 1000 and the second connection part 2000 can be interlocked. At the same time, in order to facilitate the locking between the locking buckle 1122 and the second connection part 2000, the locking buckle 1122 is provided with a bevel 1122a. The locking part 1012 is provided with a holding slot 1123 on the side face away from the lid 1101, and the holding slot 1123 is located on the side of the locking buckle 1122 near the lid 1101. The holding slot 1123 has a bottom wall 1123a and two side walls 1123b, the two side walls 1123b extend upward along both sides of the bottom wall 1123a and are set opposite each other, and the stopper 3000 is set in the holding slot 1123.

[0095] Further, the first elastic member 1013 is connected between the mounting portion 1011 and the locking part 1012, and one end of the first elastic member 1013 abuts against the mounting portion 1011 and the other end abuts against the locking part 1012, so that the locking part 1012 is automatically kept in the locked state under the action of the first elastic member 1013. In order to improve the reliability of the movement of the locking part 1012, the first elastic member 1013 can be provided with two, respectively located on both sides of the slide 1011a. The first elastic member 1013 is a telescopic spring, so that the locking part 1012 moves horizontally.

[0096] Further, as shown in FIG. 16 and FIG. 20, the second connection part 2000 is provided at the bottom of the box 1102 of the storage box, which includes the mating part 1021 interlocked with the locking buckle 1122 of the

locking part 1012, and the locking part 1012 of one storage box can be automatically locked with the mating part 1021 of another storage box by the action of the first elastic member 1013 by pressing down. The mating part 1021 is a number of slots 1211, the number of slots 1211 can be set corresponding to the number of locking buckle 1122.

[0097] The stopper 3000 is provided on the locking part 1012, and one end of it is rotatably connected with the locking part 1012. The stopper 3000 includes a card block 1036 and a second resilient member 1033, and one end of the card block 1036 is rotatably connected to the locking part 1012, and the second resilient member 1033 keeps the card block 1036 in the ejected state automatically, and when the card block 1036 is ejected and held against the mating part 1021, the locking part 1012 cannot be locked automatically, and the first connection part 1000 and the second connection part 2000 are in the unlocked state. The locking part 1012 can be locked automatically when the stopper 3000 is retracted into the locking part 1012 by pressing down. When the first connection part 1000 and the second connection part 2000 are in the locked state, the locking buckle 1122 interferes with the mating part 1021 and the stopper 3000 retracts into the locking part 1012; when the first connection part 1000 and the second connection part 2000 are in the keep unlocked state, the locking buckle 1122 does not interfere with the mating part 1022 and the stopper 3000 snaps with the mating part 1021 in the locking path of the locking part 1012.

[0098] In this embodiment, the card block 1036 is telescopically provided in the holding slot 1123 of the locking part 1012 and is also horizontally movable with the locking part 1012 relative to the mounting portion 1011, with the length of the card block 1036 extending in the same direction as the moving direction of the locking part 1012. One end of the second resilient member 1033 rests on the card block 1036 and the other end rests on the bottom wall 1123a, and when the second resilient member 1033 is popped out, the card block 1036 extends into the holding slot 1123, and when the second resilient member 1033 is compressed, the card block 1036 is retracted into the said holding slot 1123. Specifically, the card block 1036 is provided with an upwardly protruding stop 1361, which extends out of the holding slot 1123 to be held against the mating part 1021 when the first connecting part 1000 and the second connecting part are in a holding unlocked state, and the stop 1361 is used to be held against the mating part 1021. The card block 1036 has an opposite first end 1036a and a second end 1036b, and the second end 1036b is closer to the center of the storage box than the first end 1036a, and the stop 1361 is provided at the connection of the first end 1036a and the second end 1036b.

[0099] Further, as shown in Figure 19, the stopper 3000 also includes a rotating shaft 1037, the two ends of the rotating shaft 1037 are fixed on the two side walls 1123b; the second resilient member 1033 is a torsion spring, the first end 1036a of the card block 1036 is provided with a shaft hole (not marked in the figure), the first end 1036a of the card block 1036 and the second resilient

member 1033 are set on the rotating shaft 1037, and the two torsion arms of the second resilient member 1033 are against the card block 1036 and the bottom wall 1123a. Further, the first end 1036a has a force surface, the stopper 1361 has a holding surface, and the second end 1036b has a positioning surface, which intersects the holding surface at approximately right angles. The positioning surface cooperates with the holding surface against the side and bottom surfaces of the mating part 1021 to limit the position of the card block 1036 and thus the position of the locking part 1012. The force surface is used to receive compression from the mating part 1021 or for manual pressure by the user. When the first connection part 1000 and the second connection part 2000 are in a holding unlocked state, the second resilient member 1033 extends and the stop 1361 extends upward into the holding slot 1123; when the first connection part 1000 and the second connection part 2000 are in a locked state, the second resilient member 1033 compresses and the stop 1361 is compressed in the holding slot 1123 by the compression of the bottom surface of the mating part 1021.

[00100] In addition, in order to facilitate the positioning of the first connecting part 1000 and the second connecting part 2000 when they are interlocked, a positioning recess 1041 can be provided on the lid 1101, and a projection 1042 can be provided at the bottom of the box 1102, and the positioning recess 1041 can just accommodate the projection 1042, and the first connecting part 1000 can be provided on both sides of the edge of the lid 1101.

[00101]The working principle of this embodiment is as follows.

[00102]As shown in Fig. 21 and Fig. 22, when two storage boxes need to be locked up and down, press down the upper storage box so that the mating part 1021 of the second connection part 2000 contacts the locking buckle 1122 on the lower storage box and squeezes the bevel 1122a, the locking buckle 1122 of the lower storage box is squeezed to drive the locking part 1012 of the first connection part 1000 to move in the direction of unlocking (i.e., away from the center of the storage box), at this time the first elastic member 1013 At this time, the first elastic member 1013 compresses and accumulates force, and the stopper 3000 simultaneously accepts the extrusion of the second connecting part 2000 and then rotates downward and retracts into the holding slot 1123. When the upper storage box moves down a certain distance, the locking buckle 1122 on the locking part 1012 corresponds to the slot 1211 on the matching part 1021, the locking buckle 1122 loses the resistance of the upper storage box, and the locking buckle 1122 automatically snaps into the slot 1211 under the drive of the first elastic member 1013, so that the first connection part 1000 and the second connection part 2000 are in the locked state, i.e., the automatic locking function of the upper and lower storage boxes is realized. At this time, the stopper 3000 is completely retracted into the holding slot 1123.

[00103]As shown in FIGS. 23 and 24, when it is necessary to unlock the two storage boxes, the locking part 1012 of the lower storage box is pulled outward so that it moves in the unlocking direction, and when the locking part 1012

moves a certain distance in the unlocking direction to the unlocking position, the locking buckle 1122 of the lower storage box is detached from the slot 1211 on the mating part 1021 of the upper storage box, thereby unlocking the locking part 1012 and the mating part 1021. At the same time, the stopper 3000 loses the squeeze of the second connection part 2000 of the upper storage box, and the card block 1036 automatically extends upward under the action of the second resilient member 1033 to hold the side of the holding slot 1123 and the mating part 1021, so that the first connection part 1000 and the second connection part 2000 are in the unlocked state, i.e., the unlocking function is achieved. At this time, it is convenient to unlock and separate the upper and lower storage boxes by simply pulling up the upper storage box, while the locking part 1012 is automatically reset in the locked state under the drive of the first elastic member 1013, ready for the next locking.

[00104]Again, if the locking part 1012 is pulled away and then reversed and does not want to unlock the upper and lower lockers, the card block 1036 can be pressed at this time to allow the locking part 1012 to return to the locked position, so that the first connection part 1000 and the second connection part 2000 return to the locked state.

[00105]The advantages of the connection structure of the storage box provided in this embodiment include.

[00106]1000, the use of the first connection part 1000 and the second connection part 2000 with locking. When the upper locker placed in place at the

same time automatically achieve the function of two boxes locked to each other, the user does not need to put the box 1102 after the need to lock the box 1102 and then deliberately to operate both sides of the locking part 1012, just pull open both sides of the locking part 1012 when opened.

[00107]2000, the use of rotatable card block 1036 to make the first connection part 1000 and the second connection part 2000 in the unlocked state, the movement of the card block 1036 deterministic, smooth use, greatly improving the convenience of the user.

FOURTH EMBODIMENT

[00108]As shown in FIGS. 25 to 26, this embodiment differs from the first embodiment in that the rotation shaft 1037 is directly on the card block 1036, which is integrally formed with the card block 1036, and the second resilient member 1033 is a telescopic spring.

[00109]Specifically, the card block 1036 has a first end 1036a and a second end 1036b, and the second end 1036b is closer to the center of the storage box than the first end 1036a. The second end 1036b of the card block 1036 is provided with protruding shafts 1362 on both sides, and the two protruding shafts 1362 are inserted in the slide rails 1123c of the two side walls 1123b, so that the protruding shafts 1362 move back and forth in the slide rails 1123c to provide guidance for the card block 1036. Further, the card block 1036 is provided with a first projection 1363 and a second projection 1231 on the bottom wall 1123a, and the two ends of the second resilient member 1033 are

provided on the first projection 1363 and the second projection 1231, respectively.

[00110] Other structures, working principles and beneficial effects of the first embodiment of this embodiment can achieve the same, here will not repeat.

[00111] The above mentioned is only the specific implementation of the utility model, but the scope of protection of the utility model is not limited to this, any technical person familiar with the art can easily think of changes or replacements within the technical scope disclosed by the utility model, which should be covered by the scope of protection of the utility model. Therefore, the scope of protection of the utility model shall be subject to the scope of protection of the said claims.

CLAIMS

1. A storage box comprising:

a first connection part disposed on one surface of said storage box;

a second connection part disposed on another surface of said storage box;

a stop part, wherein said first connection part comprises a mounting part, a locking part movable with respect to said mounting part, and a first resilient member located between said mounting part and said locking part, wherein said first resilient member keeping said locking part automatically in a locked state;

said second connection part comprises a mating part interlockable with the locking part, the locking part configured for being pressed down so that it is automatically locked with the mating part of another storage box by action of said first resilient member;

when said stop part is in the locking path of the locking part, said locking part is not automatically lockable and said first connection part is in a state of remaining unlocked from said second connection part.

2. The storage box of claim 1, wherein the stop part is retractable, said stop part being extended when said first connection part is in a holding unlocked state with said second connection part, and said stop part being compressed when said first connection part is in a locked state with said second connection part.

3. The storage box of claim 2, wherein said stop part is provided on said locking part and is movable with said locking part; said stop part holds the second connection part outward when said first connection part and said second connection part are in a holding unlocked state.

4. The storage box of claim 3, wherein said stop part comprises a holding slot opened on the locking part, a card block that can be accommodated in said holding slot and a second resilient member; said holding slot has a bottom wall and two side walls, two said side walls extending upward along both sides of said bottom wall and set opposite each other.

5. The storage box of claim 3, wherein the card block is rotatably connected to said locking part and the other end is retractably provided in said holding slot, said second resilient member keeping said card block automatically in an ejected state; when said card block is ejected and held against said mating portion, said locking part cannot be automatically locked and said first connection part and said second connection part in a state of remaining unlocked.

6. The storage box of claim 5, wherein said second resilient member is a telescopic spring with one end against said card block and the other end against said bottom wall; when said second resilient member is popped out, said card

block extends out of said holding slot and when said second resilient member is compressed, said card block is retracted into said holding slot.

7. The storage box of claim 5, wherein said stop section further comprises a rotating shaft rotatably connected to said locking section, said ends of said rotating shaft being fixed to two said side walls; said second resilient member being a torsion spring, one end of said card block and said torsion spring being snapped onto said rotating shaft.

8. The storage box of claim 4, wherein said card block is always located in said holding slot and the other end is retractably provided in said holding slot, said second resilient member keeping said card block automatically in the ejected state; when said card block is ejected and held against said mating part, said locking part cannot be automatically locked and said first connection part and said second connection part in a state of remaining unlocked.

9. The storage box of claim 8, wherein said second resilient member is a telescopic spring with one end against said card block and the other end against said bottom wall; when said second resilient member is extended, said card block extends into the holding slot and when said second resilient member is compressed, said card block is compressed in the holding slot.

10. The storage box of claim 1, wherein said locking part is a sliding latch for horizontal movement, a flipping latch for flipping movement or a rotating latch for rotating movement.

11. The storage box of claim 10, wherein said first connection part is provided on a lid of said storage box and said second connection part is provided on the bottom of said storage box.

12. The storage box of claim 11, wherein two adjacent said storage boxes are interlockable with each other by means of a first connection part and a second connection part.

13. The storage box of claim 1, wherein the stop part comprises of a card block positioned in a slot and biased outward by the second resilient member.

14. The storage box of claim 13, wherein the card block moves perpendicular with respect to a sliding path of the locking part.

15. The storage box of claim 14, wherein the card block moves perpendicularly upward relative to the first connection part.

16. The storage box of claim 14, wherein the card block moves perpendicularly downward relative to the first connection part.

17. The storage box of claim 13, wherein the second resilient member is a torsion spring and the card block rotates upward relative to the first connection part.

18. The storage box of claim 13, wherein the second resilient member is a telescopic spring and the card block rotates upward relative to the first connection part.

ABSTRACT

A mating part in a locking path of a stop part so that the locking part is not automatically lockable and a first connection part is in a state of remaining unlocked from a second connection part.

Patents CN 206841966 U

Containing box

Abstract

The utility model provides a kind of containing box, belongs to chest technical field.It solves the problems, such as that existing containing box stacks stability deficiency.This containing box includes casing, case lid and the Button Handle being hinged on casing, it is characterised in that has recessed neck in the bottom sides of the casing, neck is located at the underface of Button Handle ; The limiting plate that can be embedded in neck is connected with the Button Handle.When two containing box stacked on top, groove position in containing box above is relative with the spacing Board position in the containing box of lower section, limiting plate is promoted to be slided relative to Button Handle, i.e. limiting plate moves to the side surface direction close to containing box middle case above, until in limiting plate insertion neck, the lower face of limiting plate mutually relies on or only left tiny gap with the downside of neck, and then can significantly increase containing box and stack stability.

CN206841966U

Claims

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Other languages. Chinese

Inventor: [redacted]

Worldwide applications

2017 CN

Application CN201720695850.3U events

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Info: Legal events, Similar documents, Priority and Related Applications

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Claims (8)

Hide Dependent

1 . a kind of containing box, including casing (1), case lid (2) and the Button Handle (3) being hinged on casing (1), it is characterised in that Institute Stating has recessed neck (1a) in the bottom sides of casing (1), neck (1a) is located at the underface of Button Handle (3) ; The Button Handle (3) limiting plate (4) that can be embedded in neck (1a) is connected with.

2. containing box according to claim 1, it is characterised in that the limiting plate (4) can be slided along Button Handle (3), limit Position plate (4) can be embedded in neck (1a) after being slid laterally relative to Button Handle (3) or be spun off from embedded neck (1a).

3 . containing box according to claim 2, it is characterised in that the limiting plate (4) is arranged on the top surface of Button Handle (3) On, there is two guide pressing plates (5) above limiting plate (4) both ends respectively, guide pressing plate on the top surface of Button Handle (3) (5) guide chute (6), the shape of the end of limiting plate (4) and the shape kissing of guide chute (6) are formed between Button Handle (3) Close.

4 . containing box according to claim 3, it is characterised in that be provided with the bottom surface of the limiting plate (4) in arc shaped Journey groove (4a) is limited, has the limit journey in embedded limit journey groove (4a) raised (3a) on the top surface of Button Handle (3).

5 . containing box according to claim 2, it is characterised in that put forth effort on the top surface of the limiting plate (4) with finger Portion (4b).

6 . containing box according to claim 1, it is characterised in that the company of rotation between the limiting plate (4) and Button Handle (3) Connect, limiting plate (4) can be embedded in neck (1a) after be hinged spot wobble or be spun off from embedded neck (1a).

7 . containing box as claimed in any of claims 1 to 6, it is characterised in that turn on the bottom surface of the casing (1) Move and be connected with multiple rollers (7), rope through (1b) is provided with the downside of neck (1a) in casing (1).

8 . containing box as claimed in any of claims 1 to 6, it is characterised in that neap above and below described two containing boxs When folded, neck (1a) position in containing box above is relative with limiting plate (4) position in the containing box of lower section , Work as limit The lower face of limiting plate (4) and the downside of neck (1a) mutually rely on or only left tiny when the embedded neck (1a) of position plate (4) is interior Gap.

Description

Containing box

Technical field

The utility model belongs to chest technical field, more particularly to a kind of containing box.

Background technology

Containing box is exactly the multifunctional storage container of a simple light.Containing box use is quite extensive, not only in family in terms of daily life, clothing to store season and other items, it is also possible to store food ; It is industrially also a large amount of to use

Containing box mainly includes a casing, a case lid and multiple Button Handles being hinged on casing.Button Handle can be turned over and is buckled in On case lid, case lid is set to be in the lock state with casing.A kind of containing box (the Authorization Notice No. recorded such as Chinese patent literature CN204548837U) Multiple containing box stacked on top can be saved floor occupying area, it is existing in order to improve the stability of stacking The locating slot being adapted with bottom half shape is provided with case lid.Those skilled in the art, which wish to further improve, stacks stablization Property.

The content of the invention

The utility model proposes a kind of containing box, the technical problems to be solved in the utility model is how to improve containing box Stack stability.

Technical problems to be solved of the present utility model can be realized by following technical proposal . This containing box includes case Body, case lid and the Button Handle being hinged on casing, it is characterised in that there is recessed neck in the bottom sides of the casing, block Groove is located at the underface of Button Handle ; The limiting plate that can be embedded in neck is connected with the Button Handle.

When two containing box stacked on top, the groove position in containing box above is with being located in the containing box of lower section Spacing Board position is relative, promotes limiting plate to be slided relative to Button Handle, i.e., limiting plate is to close to containing box middle case above Side surface direction is moved, until in limiting plate insertion neck, the lower face of limiting plate is mutually relied on the downside of neck or only left Tiny gap, and then containing box can be significantly increased and stack stability.

Compared with prior art, this containing box by setting neck on casing and sets limiting plate on Button Handle, effectively Ground improves containing box and stacks stability.

When limiting plate is in retracted state, the lateral surface gentle transition of its lateral surface and Button Handle, and then this receipts is effectively ensured Receive case good appearance.

This containing box, which only needs limiting plate being pushed into neck, just can realize that improving containing box stacks stability, while reversely draw Dynamic limiting plate, which makes limiting plate depart from neck, can release the function of improving containing box stacking stability, thus with easy to operate Advantage.

By controlling the size of neck, finger can be embedded in neck when the people is embraced this containing box, and it is steady to improve force It is qualitative, realize the security for clasping containing box ; And can, which directly pulls limiting plate, makes limiting plate depart from neck.

Brief description of the drawings

Fig. 1 is the dimensional structure diagram of this containing box.

Fig. 2 is the overlooking the structure diagram of Button Handle and limiting plate in this containing box.

Fig. 3 is the cross section structure diagram of A-A in Fig. 2.

Fig. 4 and Fig. 5 is the decomposition texture of Button Handle and limiting plate and to show in this containing box in the stereochemical structures of different visual angles It is intended to

Fig. 6 is the dimensional structure diagram that upper and lower two containing boxs are in stacked state.

Fig. 7 is schematic enlarged-scale view at B in Fig. 6.

In figure, 1, casing ; 1a, neck ; 1b, rope through ; 2nd, case lid ; 3rd, Button Handle ; 3a, limit journey are raised ; 4th, limiting plate ; 4a、 Limit journey groove ; 4b, finger put forth effort portion , 5th, guide pressing plate , 6th, guide chute ; 7th, roller.

Embodiment

It is specific embodiment of the utility model and with reference to accompanying drawing below, the technical solution of the utility model is made further Description, but the utility model is not limited to these embodiments.

Embodiment one

As shown in Figures 1 to 7, this containing box includes casing 1, case lid 2 and the Button Handle 3 being hinged on casing 1 ; Specification is attached The quantity that figure provides Button Handle 3 is two.

In the bottom sides of casing 1 there is recessed neck 1a, neck 1a to be located at the underface of Button Handle 3 ; That is Button Handle 3 and position Neck 1a immediately below the Button Handle 3 is respectively positioned on the same side of casing 1 ; Two containing box heap poststacks up and down are so can guarantee that, Neck 1a in containing box above corresponds with the position of Button Handle 3 in containing box above.

The limiting plate 4 that can be embedded in neck 1a is connected with Button Handle 3 Figure of description provides limiting plate 4 can be along Button Handle 3 Slide laterally, i.e., limiting plate 4 can be embedded in neck 1a after being slid laterally relative to Button Handle 3 or be spun off from embedded neck 1a.

Specifically, limiting plate 4 is arranged on the top surface of Button Handle 3, has two on the top surface of Button Handle 3 respectively positioned at spacing Guide pressing plate 5 above the both sides of plate 4, the i.e. sidepiece of limiting plate 4 are located between guide pressing plate 5 and the top surface of Button Handle 3.Guide pressing plate Guide chute 6 is formed between 5 and Button Handle 3, the shape of the end of limiting plate 4 matches with the shape of guide chute 6, thus spacing Plate 4 can be moved stably along the vertical line direction of guide pressing plate 5.Figure of desoription provides guide pressing plate 5 and is linked as one with Button Handle 3 Body.

The limit journey groove 4a in bar shaped is provided with the bottom surface of limiting plate 4, is had on the top surface of Button Handle 3 in embedded limit journey groove 4a Journey projection 3a is limited, and then is effectively prevented from limiting plate 4 and is come off because sliding stroke is excessive.There is finger on the top surface of limiting plate 4 Put forth effort portion 4b, and then facilitate push-and-pull limiting plate 4.

By controlling neck 1a downside position to ensure that the lower face of limiting plate 4 mutually relies on neck 1a downside Or only leave tiny gap.When two containing box stacked on top, the neck 1a positions in containing box above are with being located at The position of limiting plate 4 in the containing box of lower section is relative, and promotion limiting plate 4 makes the insertion neck of limiting plate 4 1a interior and the lower plate of limiting plate 4 Face and neck 1a downside mutually rely on or only leave tiny gap, and then significantly increase containing box and stack stability.

it is rotatably connected to multiple rollers 7 on the bottom surface of casing 1, rope through 1b is provided with neck 1a downside in casing 1, Drawstring is equipped with rope through 1b, by pulling easy to remove containing box of drawstring.

Embodiment two

The present embodiment is essentially identical with the structure and principle of embodiment one, the no longer burden description of essentially identical part, only retouches Different place is stated, different place is：It is not to use slide construction between limiting plate 4 and Button Handle 3, but limiting plate 4 can be embedded in neck 1a after being swung relative to Button Handle 3 or be detached from embedded neck 1a around be hinged spot wobble, i e. limiting plate 4 Come.

Similar Documents

Publication	Publication Date	Title
US7237660B2	2007-07-03	Transporting wheel structure of storage or luggage container
CN205888128U	2017-03-01	Bed bottom locker
CN204278493U	2015-04-22	A kind of Multifunctional travel draw-bar box
CN107259982A	2017-10-20	A kind of novel water glass
CN206634923U	2017-10-03	One kind is opened flat the flexible wardrobe of gate-type
CN108534084B	2018-04-13	A kind of Tool Cabinet
CN104968813B	2018-05-01	Container
CN201896517U	2011-07-13	Sliding plate zipper lock for suitcase
CN106073185A	2016-11-09	A kind of Art Design multifunctional drawing equipment
CN102156888B	2013-09-04	Bag with drawing structure
CN206109805U	2017-04-19	Washing machine's base and washing machine who has it
CN206109770U	2017-04-19	Washing machine's base and washing machine who has it
CN202542657U	2012-11-21	Cover assembly of full-automatic pulsator washing machine
CN108640063B	2019-01-12	A kind of multifunction wardrobe
CN101773328A	2010-07-14	Luggage with pulling structure
CN206403710U	2017-08-15	The vessel mounted configuration and clean robot of a kind of clean robot
CN204499872U	2015-06-24	A kind of new suitcase
CN205493289U	2016-08-24	Cabinet type folding bed
CN206285065U	2017-06-30	The vessel mounted configuration and clean robot of a kind of clean robot
CN207075745U	2018-03-09	A kind of dresser
CN104218025B	2016-12-28	A kind of refrigerator door body movable storage box
CN205574682U	2016-09-14	Take wooden wine box of picture arrangement
CN102711401A	2012-10-03	Draw-pull rotary drawer combined body for household appliance
CN203482204U	2014-02-12	Refrigerator storage box
CN206079900U	2017-04-12	Yarn storage box

Priority And Related Applications

Priority Applications (1)

Application	Priority date	Filing date	Title
CN201720695350.8U	2017-06-15	2017-06-15	Containing box

Applications Claiming Priority (1)

Application	Filing date	Title
CN201720695350.8U	2017-06-15	Containing box

Legal Events

Date	Code	Title	Description
2018-01-05	GR01	Patent grant	
2018-01-05	GR01	Patent grant	

Concepts

machine-extracted

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Name	Image	Sections	Count	Query match
ropes		claims,description	4	0.000
insertion		abstract,description	3	0.000
chest		abstract,description	2	0.000

Show all concepts from the description section

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(12)实用新型专利

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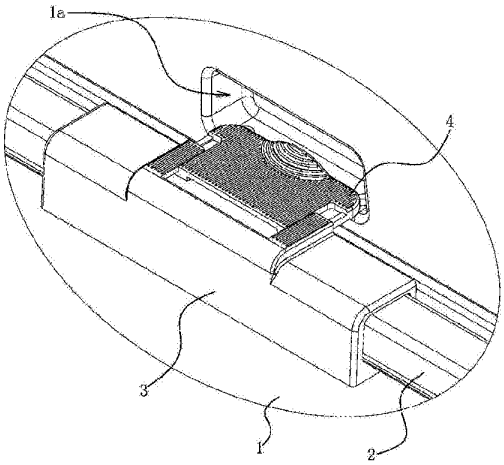
权利要求书1页 说明书2页 附图7页

(54)实用新型名称

收纳箱

(57)摘要

本实用新型提供了一种收纳箱，属于箱子技术领域。它解决了现有的收纳箱堆叠稳定性不足的问题。本收纳箱包括箱体、箱盖和铰接在箱体上的扣柄，其特征在于，所述箱体的底部侧面上具有凹入的卡槽，卡槽位于扣柄的正下方；所述扣柄上连接有能嵌入卡槽内的限位板。当两个收纳箱上下堆叠时，位于上方收纳箱中的卡槽位置与位于下方收纳箱中的限位板位置相对，推动限位板相对于扣柄滑动，即限位板向靠近位于上方收纳箱中箱体的侧面方向移动，直至限位板嵌入卡槽内，限位板的下板面与卡槽的下侧面相依靠或仅留有细小的间隙，进而能显著地提高收纳箱堆叠稳定性。



CN 206841966 U

1.一种收纳箱，包括箱体(1)、箱盖(2)和铰接在箱体(1)上的扣柄(3)，其特征在于，所述箱体(1)的底部侧面上具有凹入的卡槽(1a)，卡槽(1a)位于扣柄(3)的正下方；所述扣柄(3)上连接有能嵌入卡槽(1a)内的限位板(4)。

2.根据权利要求1所述的收纳箱，其特征在于，所述限位板(4)能沿着扣柄(3)滑动，限位板(4)相对于扣柄(3)横向滑动后能嵌入卡槽(1a)内或从嵌入卡槽(1a)脱离出来。

3.根据权利要求2所述的收纳箱，其特征在于，所述限位板(4)设置在扣柄(3)的顶面上，扣柄(3)的顶面上具有两条分别位于限位板(4)两端部上方的导向压板(5)，导向压板(5)和扣柄(3)之间形成导向滑槽(6)，限位板(4)的端部的形状与导向滑槽(6)的形状相吻合。

4.根据权利要求3所述的收纳箱，其特征在于，所述限位板(4)的底面上开有呈条形的限程槽(4a)，扣柄(3)的顶面上具有嵌入限程槽(4a)内的限程凸起(3a)。

5.根据权利要求2所述的收纳箱，其特征在于，所述限位板(4)的顶面上具有手指着力部(4b)。

6.根据权利要求1所述的收纳箱，其特征在于，所述限位板(4)与扣柄(3)之间转动连接，限位板(4)绕着铰接点摆动后能嵌入卡槽(1a)内或从嵌入卡槽(1a)脱离出来。

7.根据权利要求1至6中任意一项所述的收纳箱，其特征在于，所述箱体(1)的底面上转动连接有多个滚轮(7)，箱体(1)中卡槽(1a)的下侧面上开有过绳孔(1b)。

8.根据权利要求1至6中任意一项所述的收纳箱，其特征在于，所述两个收纳箱上下堆叠时，位于上方收纳箱中的卡槽(1a)位置与位于下方收纳箱中的限位板(4)位置相对；当限位板(4)嵌入卡槽(1a)内时限位板(4)的下板面与卡槽(1a)的下侧面相依靠或仅留有细小的间隙。

收纳箱

技术领域

[0001] 本实用新型属于箱子技术领域，特别是涉及一种收纳箱。

背景技术

[0002] 收纳箱就是一个简易轻便的多功能储物容器。收纳箱使用相当广泛，不但在家庭起居方面，用以收纳换季的衣被等物品，也可用来储藏食物；在工业上也大量使用。

[0003] 收纳箱主要包括一个箱体、一个箱盖和多个铰接在箱体上的扣柄。扣柄可翻扣在箱盖上，使箱盖与箱体处于锁定状态。如中国专利文献记载的一种收纳箱(授权公告号CN204548837U)。将多个收纳箱上下堆叠可节约占地面积，为了提高堆叠的稳定性，现有的箱盖上开有与箱体底部形状相适应的定位槽。本领域技术人员希望能进一步提高堆叠稳定性。

发明内容

[0004] 本实用新型提出了一种收纳箱，本实用新型要解决的技术问题是如何提高收纳箱堆叠稳定性。

[0005] 本实用新型的要解决的技术问题可通过下列技术方案来实现：本收纳箱包括箱体、箱盖和铰接在箱体上的扣柄，其特征在于，所述箱体的底部侧面上具有凹入的卡槽，卡槽位于扣柄的正下方；所述扣柄上连接有能嵌入卡槽内的限位板。

[0006] 当两个收纳箱上下堆叠时，位于上方收纳箱中的卡槽位置与位于下方收纳箱中的限位板位置相对，推动限位板相对于扣柄滑动，即限位板向靠近位于上方收纳箱中箱体的侧面方向移动，直至限位板嵌入卡槽内，限位板的下板面与卡槽的下侧面相依靠或仅留有细小的间隙，进而能显著地提高收纳箱堆叠稳定性。

[0007] 与现有技术相比，本收纳箱通过在箱体上设置卡槽和在扣柄上设置限位板，有效地提高了收纳箱堆叠稳定性。

[0008] 限位板处于回缩状态时，其外侧面与扣柄的外侧面平缓过渡，进而有效保证本收纳箱外形美观性。

[0009] 本收纳箱仅需将限位板推入卡槽内便能实现提高收纳箱堆叠稳定性，同时反向拉动限位板使限位板脱离卡槽便可解除提高收纳箱堆叠稳定性的功能，因而具有操纵方便的优点。

[0010] 通过控制卡槽的大小，即能使人们抱住本收纳箱时手指可嵌入卡槽，提高施力稳定性，实现抱持收纳箱的安全性；又能直接扳动限位板使限位板脱离卡槽。

附图说明

[0011] 图1是本收纳箱的立体结构示意图。

[0012] 图2是本收纳箱中扣柄和限位板的俯视结构示意图。

[0013] 图3是图2中A-A的剖视结构示意图。

[0014] 图4和图5是本收纳箱中扣柄和限位板的分解结构且处于不同视角的立体结构示意图。

[0015] 图6是上下两个收纳箱处于堆叠状态的立体结构示意图。

[0016] 图7是图6中B处结构放大图。

[0017] 图中，1、箱体；1a、卡槽；1b、过绳孔；2、箱盖；3、扣柄；3a、限程凸起；4、限位板；4a、限程槽；4b、手指着力部；5、导向压板；6、导向滑槽；7、滚轮。

具体实施方式

[0018] 以下是本实用新型的具体实施例并结合附图，对本实用新型的技术方案作进一步的描述，但本实用新型并不限于这些实施例。

[0019] 实施例一

[0020] 如图1至图7所示，本收纳箱包括箱体1、箱盖2和铰接在箱体1上的扣柄3；说明书附图给出扣柄3的数量为两个。

[0021] 箱体1的底部侧面上具有凹入的卡槽1a，卡槽1a位于扣柄3的正下方；即扣柄3和位于该扣柄3正下方的卡槽1a均位于箱体1同一侧面上；这样能保证上下两个收纳箱堆叠后，位于上方收纳箱中的卡槽1a与位于上方收纳箱中的扣柄3位置一一对应。

[0022] 扣柄3上连接有能嵌入卡槽1a内的限位板4。说明书附图给出限位板4能沿着扣柄3横向滑动，即限位板4相对于扣柄3横向滑动后能嵌入卡槽1a内或从嵌入卡槽1a脱离出来。

[0023] 具体来说，限位板4设置在扣柄3的顶面上，扣柄3的顶面上具有两条分别位于限位板4两侧上方的导向压板5，即限位板4的侧部位于导向压板5与扣柄3的顶面之间。导向压板5和扣柄3之间形成导向滑槽6，限位板4的端部的形状与导向滑槽6的形状相吻合，由此限位板4能稳定地沿着导向压板5的纵向线方向移动。说明书附图给出导向压板5与扣柄3连为一体。

[0024] 限位板4的底面上开有呈条形的限程槽4a，扣柄3的顶面上具有嵌入限程槽4a内的限程凸起3a，进而有效地避免限位板4因滑动行程过大而脱落。限位板4的顶面上具有手指着力部4b，进而方便推拉限位板4。

[0025] 通过控制卡槽1a的下侧面位置可保证限位板4的下板面与卡槽1a的下侧面相依靠或仅留有细小的间隙。当两个收纳箱上下堆叠时，位于上方收纳箱中的卡槽1a位置与位于下方收纳箱中的限位板4位置相对，推动限位板4使限位板4嵌入卡槽1a内且限位板4的下板面与卡槽1a的下侧面相依靠或仅留有细小的间隙，进而显著地提高收纳箱堆叠稳定性。

[0026] 箱体1的底面上转动连接有多个滚轮7，箱体1中卡槽1a的下侧面上开有过绳孔1b，过绳孔1b处穿设有拉绳，通过拉拽拉绳便于移动本收纳箱。

[0027] 实施例二

[0028] 本实施例同实施例一的结构及原理基本相同，基本相同之处不再累赘描述，仅描述不一样的地方，不一样的地方在于：限位板4与扣柄3之间并非采用滑动结构，而是限位板4绕着铰接点摆动，即限位板4相对于扣柄3摆动后能嵌入卡槽1a内或从嵌入卡槽1a脱离出来。

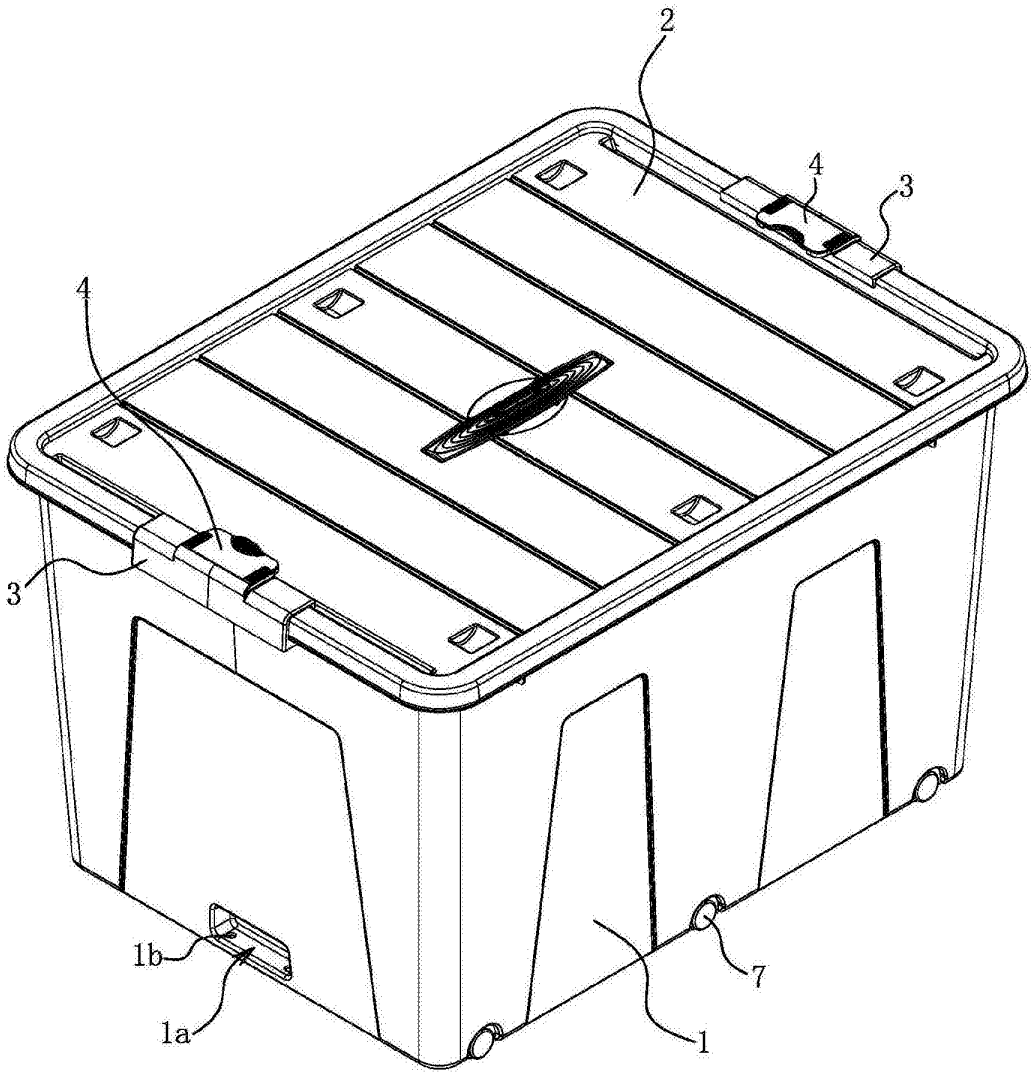


图1

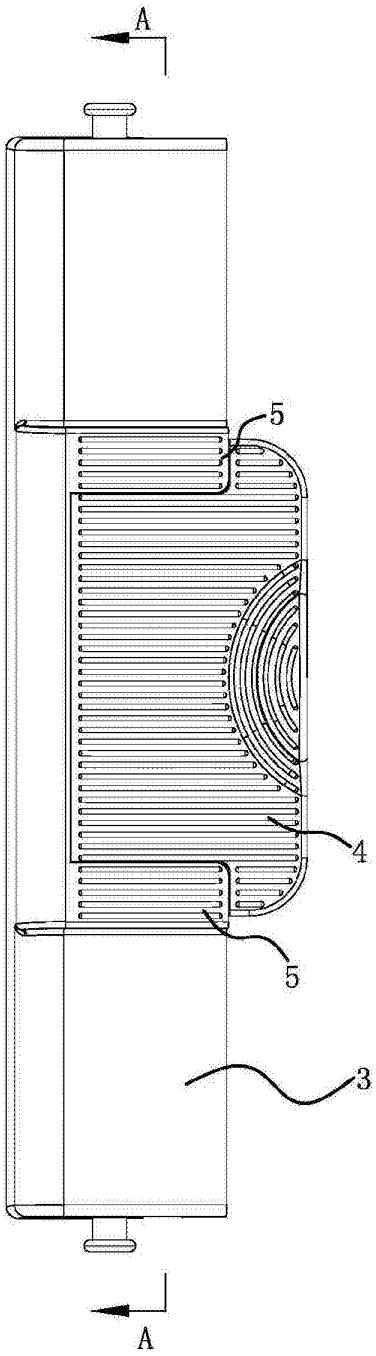


图2

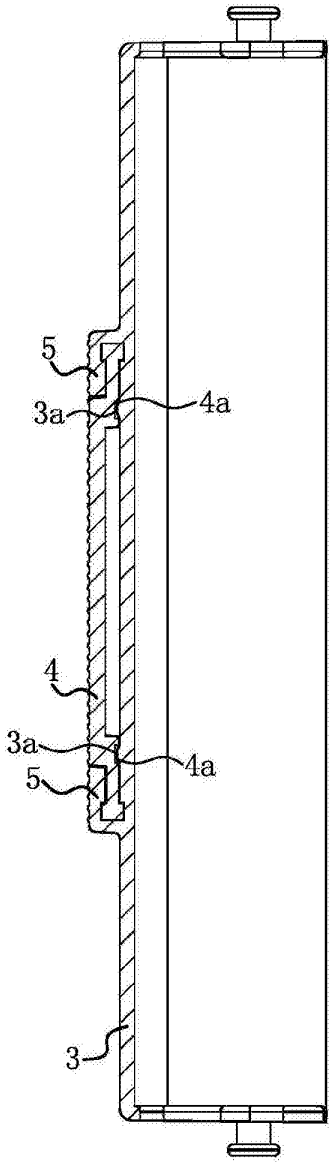


图3

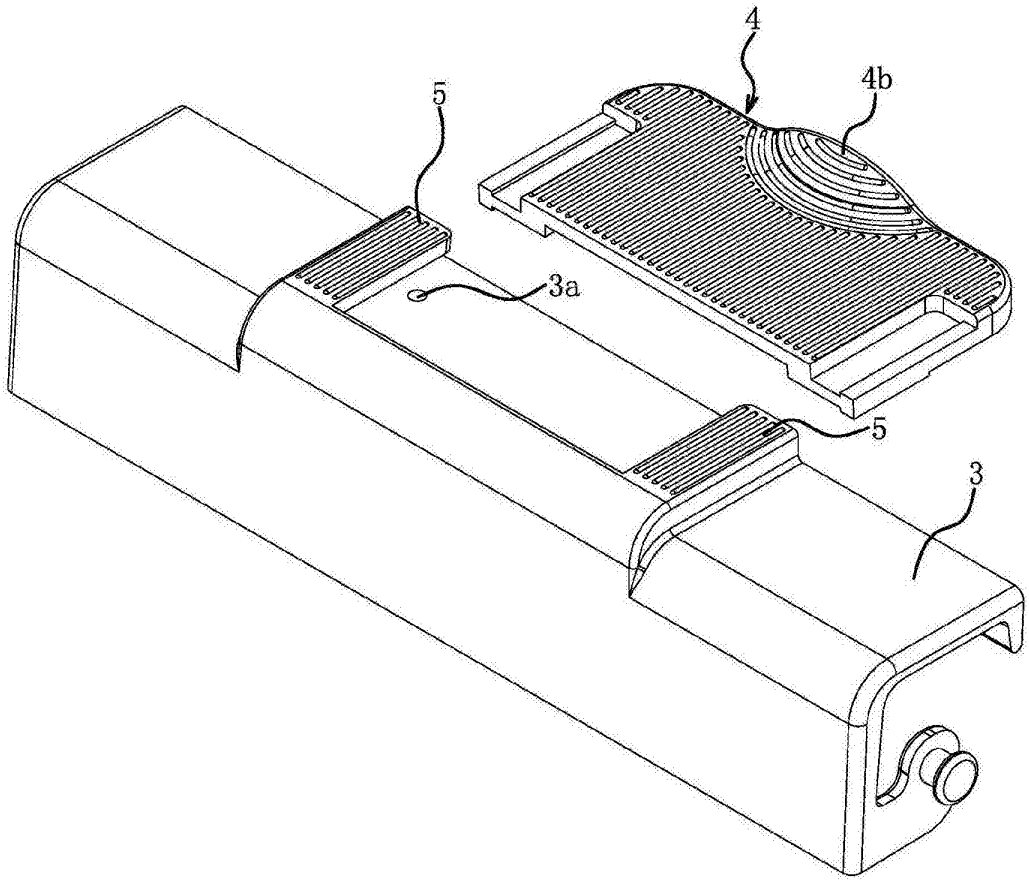


图4

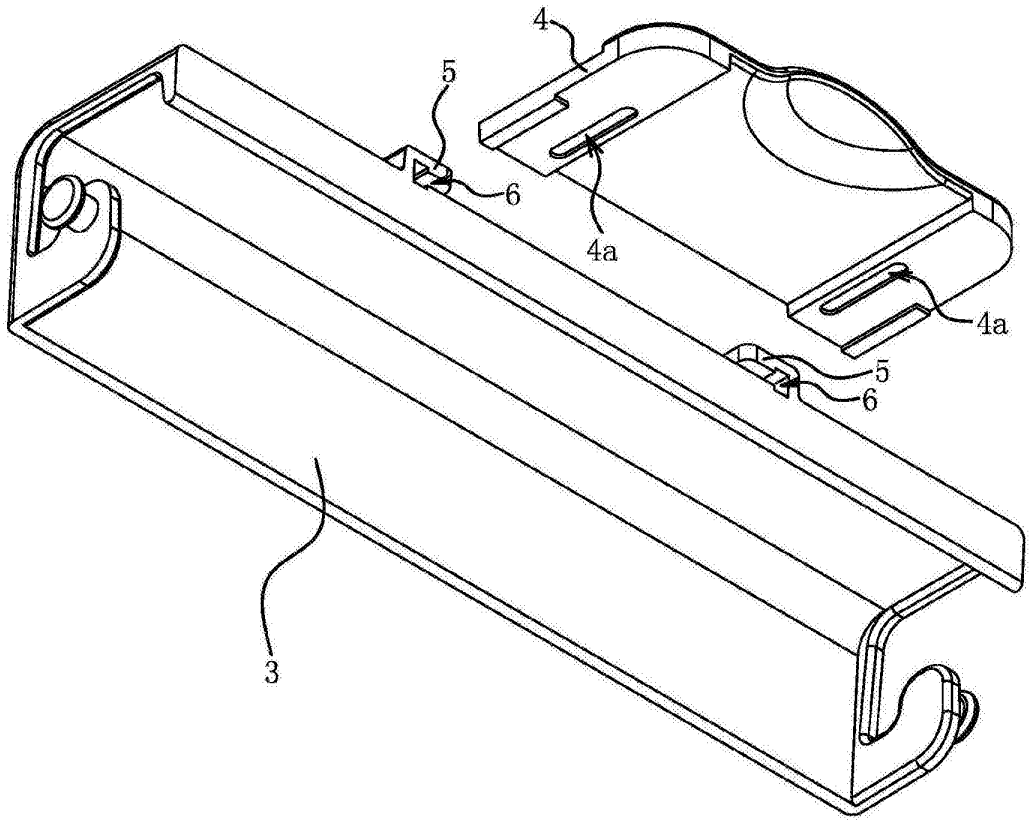


图5

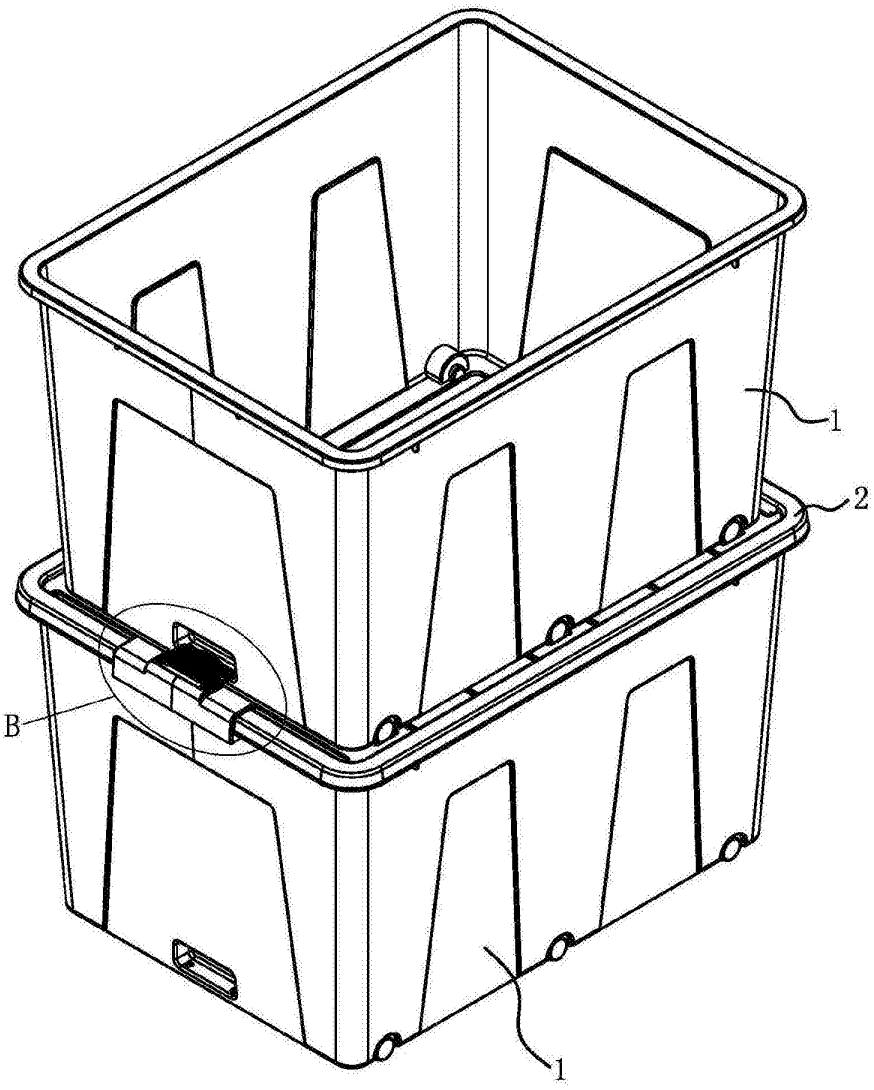


图6

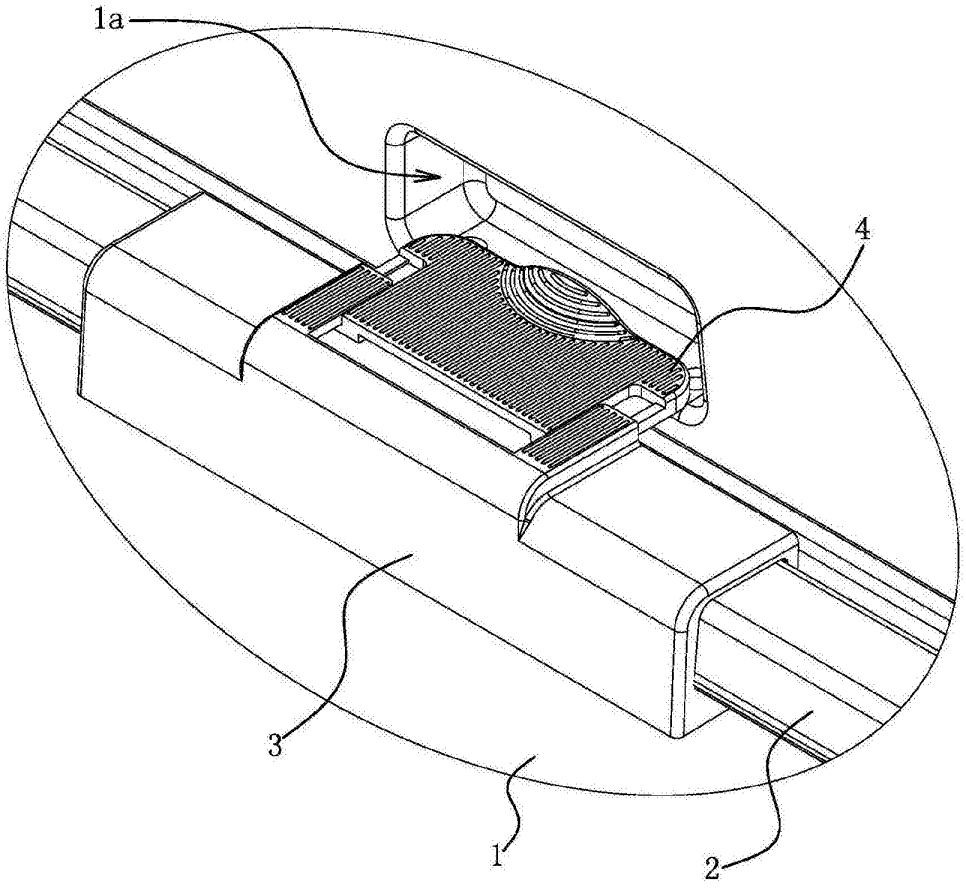


图7

Espacenet

Bibliographic data: WO2019105598 (A1) — 2019-06-06

STACKABLE SYSTEM CONTAINER AND TRANSPORT SYSTEM

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Abstract of WO2019105598 (A1)

The invention relates to a stackable system container (3) and to a corresponding transport system (2). Known system containers or transport systems have the disadvantage that a precise prior adjustment is necessary for the purpose of connecting the same. The aim of the invention is to configure a system container or transport system in such a way that a particularly stable and intuitive mutual fastening is made possible. This aim is achieved in that catwalks (16; 17) of the system container project in the direction of each other, and that at least one upwardly protruding locking nose (20) is provided on the lid part (9).

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DESCRIPTION WO2019105598A1

[0001]

Stackable System Containers and Transport System

[0002]

The invention relates to a stackable system container according to the preamble of claim 1, to a further container according to the preamble of claim 8 and to a transport system according to the preamble of claim 15.

[0003]

DE 10 2013 110 496 discloses a stackable system container having a base part having an upwardly open storage space and a cover part which is pivotably fastened to the base part and upwardly delimits the storage space.

In addition, the system container has two coupling devices which are movably fastened to opposite side walls of the base part and which serve to couple the system container to further system containers and thus enable secure stacking of such system containers.

The coupling devices are designed so as to be movable between a rest position, in which the coupling device is disengaged from the further system container, and a coupling position, in which the coupling devices can be brought into engagement with the further system container, and are designed to interact in a retaining manner with corresponding coupling elements of a similar container arranged underneath, which coupling elements project upwards over an upper side of the system container or of the cover part. The coupling elements are an integral part of the corresponding base part and each comprise at least one latch for latching the coupling device. The coupling elements are also arranged at opposite ends of the upper side of the system container and enable the centering, positioning and stacking of a plurality of such system containers on top of one another. After aligning a plurality of system containers, they can be connected in a dimensionally stable but releasable manner via the coupling devices and the coupling elements.

In order to achieve a simple and rapid connection of the system containers, the coupling devices are pre-tensioned for example via a spring element in each case into a coupling position, so that the coupling devices automatically connect to the coupling elements of the further system container as soon as these are joined together with sufficient pressure. This interlocking and frictional connection makes it possible to comfortably carry a plurality of interconnected system containers in one hand. Furthermore, a distribution box from the house peddinghause is known from the prior art, the lid of which has guide rails lying on the outside for introducing further smaller boxes, wherein the smaller boxes are pushed clampingly into corresponding guide grooves on the lid.

[0004]

US 2009/0236255 A1 shows a stackable system container having a base part and a cover part which can be fastened thereto, wherein the two parts can be connected to one another by means of wings which can be fastened to the base part and these wings are fastened to the base part by means of film hinges.

[0005]

DE 7244356 relates to a container for storing and transporting goods required in hospitals, wherein several similar containers with locking devices are connectable to each other.

WO 2017/001083 shows a stackable storage container having a body and a cover, wherein side walls of the body are provided with latching arms, wherein the body has feet and wherein the cover has latching cams on the upper side.

[0006]

Accessory boxes for storing and transporting small parts are also known from the Hitachi house, wherein the lid of one box has several guide rails into which further boxes lying above it can be inserted.

The guide rails each have a running web which is underengaged by the further container arranged above it during insertion.

The running ridges in this case point away from one another, i.e. each running ridge points toward an opposite outer side of the box. This requires a very precise placing of the two boxes on top of one another in order to enable secure locking. In addition, the running webs projecting in the direction of the outer side of the box are not visible when placing the container to be arranged thereabove, as a result of which the placing and insertion of the box lying thereabove is made difficult. The object of the invention is to provide a stackable system container and a transport system which enables a particularly stable and intuitive mutual fastening of a container on a system container. This object is solved with regard to the stackable system container with the characterizing features of claim 1, with regard to the second container arranged above it, by the characterizing features of claim 8 and with regard to the transport system by the characterizing features of claim 15.

Advantageous embodiments of the invention are described in the respective dependent claims.

[0007]

The stackable system container according to the invention is characterized in that the cover part has two guide rails spaced apart from one another on an upper side.

The guide rails, which are preferably aligned parallel to one another, enable a form-fitting accommodation of a further system container. To connect the system containers, the upper system container is to be pushed into the guide rails of the lower system container, resulting in a particularly stable form-fitting connection. The guide rails can each be formed on the edge of the cover part adjacent to two opposite side walls of the cover part or can also be arranged at a distance therefrom.

[0008]

The guide rails each have a top web, wherein the top webs project towards one another.

The foil webs can be engaged under by a further container. This engagement allows particularly stable mutual attachment.

[0009]

In order to accelerate the insertion of a container into the guide rails of the system container, the flange webs can each have a recess, so that the insertion process does not have to take place over the entire lengths of the guide rails, but can only take place over a part and thus significantly faster.

[0010]

In a preferred embodiment, for the mutual arresting of stacked system containers, it can be provided that at least one arretiemase protruding upward is provided on the cover part.

The arretiemase, which can be arranged between the guide rails or can also be accommodated integrally in one of the guide rails, forms a stop in the inserted locking position, so that the connected system containers do not easily disengage.

[0011]

It can also be provided that at least one further guide rail is arranged on the cover part between the two guide rails, so that a plurality of smaller system containers can be fixed next to one another on the cover part.

For this purpose, the central guide rail can have two flange webs, one of which projects in each case in the direction of the lateral guide rails.

In an embodiment which is favorable in terms of production technology, the guide rails can be formed integrally with the cover part, but it is also possible to form the guide rails separately, so that they can be retrofitted or modified.

[0012]

In a particularly advantageous embodiment, two guide rails can be arranged on the base part, which guide rails are designed in particular complementary to the guide rails on the cover part.

As a result, a plurality of such system containers can be stacked on top of one another in a particularly simple manner and can be detachably connected to one another.

[0013]

In a structurally favourable embodiment, the running rails can be formed by the base plate edges of the base part, which laterally project from opposing side walls of the base part.

[0014]

In order to accelerate the insertion of the further container into the guide rails, the guide rails can each have a recess corresponding to the running webs.

The recesses preferably extend over a distance which is greater than the longitudinal extension of the sections of the running webs delimited by the recesses.

[0015]

In order to ensure stable mutual locking of the system container with the container, at least one of the running rails can have a locking stop corresponding to the locking nose on the cover part.

The form-fitting engagement of the rear engagement between the locking stop and the arretiernase enables particularly stable locking in the inserted position.

[0016]

In an advantageous embodiment, the distance between the upper edge of the running rail and the lower edge of the arresting stop can be greater than the height of the arretiernase.

Thus, for unlocking in the inserted position, the upper system container can be raised in a front section and thus can be tilted about an axis transversely to the direction of extension, so that the locking stop can be raised and moved away over the arretiernase.

In a structurally favourable embodiment, the locking stops can be formed in a side recess of the corresponding side wall of the base part. As a result, the arresting stops are protected from external effects and concealed in an optically attractive manner.

[0017]

In addition, a transport system with a system container and a further container is claimed, wherein the system container has guide rails which are arranged on a cover part and each have a running web which can be engaged behind in a holding manner by complementary guide rails of the container to be arranged thereabove.

[0018]

In an advantageous embodiment, the transport system can comprise a locking device with at least one locking nose and a corresponding locking stop for locking the second system container in an inserted rear locking position.

[0019]

Preferably, in each case one arretiemase can be arranged on the guide rails for guiding the second system container in the extraction direction.

This avoids mutual tilting of the container and of the system container.

[0020]

Further particularities and advantages of the invention result from the following:

[0021]

Description of preferred exemplary embodiments with reference to the drawings.

These show:

[0022]

FIG. 1 shows a perspective view of a transport system with a system container and a further container arranged above it;

[0023]

FIG. 2 shows a perspective view of the transport system of FIG. 1, with

[0024]

A distance between the system container and the further container;

[0025]

FIG. 3 shows a perspective view of a further transport system with two alternative containers or, respectively, spaced apart from one another.

System Retainer;

[0026]

FIG. 4 is a perspective view of an alternative embodiment of the present invention.

[0027]

System container with an additional central walkway; FIG. 1 shows a perspective view of a transport system 1 comprising an upper container 2 and a lower system container 3 detachably connected thereto.

The upper container 2 comprises a base part 4 and a cover part 5 pivotably connected thereto, by means of which a storage space of the container 2 is delimited.

The cover part 5 can be fixed relative to the base part 4 in the illustrated closed position by means of closure tabs 6 in order to prevent an inadvertent opening of the upper container 2.

On the front side, the upper container 2 also has a carrying handle 7, which is pivotably attached to the bottom part 4.

In the same way, the (lower) system container 3 is also formed, which comprises a base part 8 and a cover part 9 pivotably connected thereto, which by means of

[0028]

Locking tabs 10 are mutually fixable in the shown closed position.

In addition, a carrying handle 11 is also pivotably fastened to the front side of the bottom part 8 of the lower system container 3.

The upper container 2 has coupling devices 12 pivotably arranged on opposite side walls of the base part 4 and coupling elements 13 corresponding thereto on the upper side of the cover part 5.

By means of such an embodiment of the upper container 2, a plurality of structurally identical containers can be stacked on top of one another and detachably connected by means of the coupling device and the coupling elements.

For designing the coupling device, reference is made to the disclosure of DE 10 2013 110 496 and DE 10 2016 112 853, the content of which is incorporated into this application.

[0029]

The lower system container 3 likewise has corresponding coupling devices and coupling elements in order to be able to stack and securely connect a plurality of system containers.

[0030]

Both the upper container 2 and the lower system container 3 are mirror-inverted so that the corresponding elements of the containers 2, 3 on the left and right sides are identical, as can be seen from the figures.

Although only one side is always described for the sake of simplification, the description also applies to the opposite mirror-image side of the containers 2, 3.

[0031]

FIG. 2 shows a perspective view of the transport system 1 of FIG. 1 with two containers 2, 3 spaced apart from one another.

As can be seen from the illustration, the cover part 9 of the lower system container 3 has two parallel guide rails 14, 15 which are spaced apart from one another and which are designed for positively receiving the upper container 2.

The guide rails 14, 15 extend over the entire depth of the cover part 9 and are also arranged on the cover part 9 at a distance from the opposing side walls, in particular the corresponding coupling elements formed there.

This ensures that, depending on the requirement, the lower system container 3 can be connected to the somewhat smaller upper container 2 by means of the guide rails 14, 15 or alternatively by means of the coupling elements described in relation to the upper container 2, but identically designed in the case of the lower system container 3, with further structurally identical system containers.

[0032]

The guide rails 14, 15 each have a running web 16, 17, which extend horizontally and thus parallel to the top side of the lid and project in the direction of one another from the guide rails 14, 15.

Corresponding to this, the upper container 2 has, on the opposite side walls of the base part 4, in each case one running rail 18, 19, which are designed to vertically engage behind the running webs 16, 17 of the guide rails 14, 15 in a retaining manner.

[0033]

The containers 2, 3 are connected in such a way that the upper container 2 with the guide rails 18, 19 is pushed into the guide rails 14, 15, so that the guide rails 18, 19 engage under the guide webs 16, 17.

The guide rails 18, 19 are formed by the bottom plate edges of the bottom part 4 of the upper container 2, which extend laterally from the opposite side walls of the bottom part 4. In order to prevent an inadvertent release of the upper container 2 from the lower system container 3, a locking device is provided for locking the upper container 2 in an inserted rear locking position with respect to the lower system container 3, which locking device comprises an arretiemase 20 fastened to the cover part 9 of the

lower system container 3 and a locking stop 21 fastened to the base part 4 of the upper container 2. In the embodiment shown, in each case an arretiemase 20 is arranged on the guide rails 14, 15 and in each case a locking stop 21 is arranged on the guide rails 18, 19, so that the described mirror-image structure of the containers 2, 3 is retained. In the exemplary embodiment shown, the guide rails 14, 15 have a front open end and an opposite rear closed end, so that the insertion of the upper container 2 can only take place from the front.

The arretisms 20 are integrally formed on the open end of the guide rails 14, 15 at the top of the running webs 16, 17 and project vertically upwards. To this end, the locking stops are formed complementarily in a side recess of the corresponding side wall of the bottom part 4, which is shown by way of example on the basis of the locking stop 21 in the side recess 22. The arresting stops project vertically downwards, like the arresting stop 21, in the side recess 22.

[0034]

In order to ensure secure locking of the upper container 2 in the guide rails 14, 15 of the lower system container 3, the locking stops 21 project just so far downward that the distance between the upper edge of the guide rails 18, 19 and the lower edge of the locking stops is greater than the vertical projection and thus the height of the arretisms 20.

Thus, for unlocking in the inserted position, the upper system container 2 can be raised in a front section, for example on the carrying handle 7, and thus can be tilted about an axis transversely to the direction of extension, so that the locking stops 21 can be raised and moved away via the locking lugs 20. For simple insertion and locking of the upper container 2, it can additionally be provided that the arretiemas 20 and/or the locking stops 21 have a flattened area in the insertion direction, which lead to automatic lifting of the upper system container 2 during contact of the arretiemas 20 and locking stops 21 during insertion and thus can be overcome particularly easily by the locking stops 21 during the insertion process.

[0035]

As can be seen further from FIG. 2, the lower system container 3 has no further carrying handle between the guide rails 14, 15, as is provided, for example, in the case of the upper container 2 in the form of the further carrying handle 23.

In an alternative embodiment, however, such a further carrying handle can also be provided between the guide rails 14, 15 in the lower system container 3.

[0036]

FIG. 3 shows a perspective view of a further transport system 1 with two alternative containers 2, 3 spaced apart from one another.

In contrast to the embodiment described above, the running webs 16, 17 of the lower system container 3 each have a recess 24 a, 24 b. The other elements are identical to the previously described embodiment and are given the same reference numerals. As in the first embodiment in FIGS. 1 and 2, the running rails 18, 19 are each interrupted by a recess in which the coupling device is arranged, as can be seen by way of example from the recess 25 on the running rail 18 in which the coupling device 12 is arranged. A particularly rapid fastening of the upper container 2 to the lower system container 3 can be achieved in this case in that the running rails 18, 19 of the upper container 2 do not have to be inserted over the entire length of the running webs 16, 17, but only to a smaller extent. Thus, in this embodiment, the rear sections of the guide rails 18, 19 can be inserted vertically from above through the recesses 24 a, 24 bin the guide rails 14, 15 and subsequently pushed in along the guide rails 14, 15 as far as the arresting position in the pushing-in direction.

Advantageously, the recesses 24 a, 24 bare arranged approximately centrally between the front open end and the rear closed end of the guide rails 14, 15, so that the same holding force can be transmitted via the front and rear portions of the running webs 16, 17. For simple assembly, it is provided that the length of the recesses 24 a, 24 bin the insertion direction corresponds at least to the extension of the rear sections of the running webs 16, 17, which enables vertical insertion. However, it can also be provided that the length of the recesses 24 a, 24 bis shorter than the extension of the rear sections of the running webs 16, 17, so that insertion is possible only at an angle by tilting.

[0037]

In an embodiment which is not shown, provision can additionally be made for the coupling devices 12 to interact with corresponding counter-elements in the guide rails 14, 15 in the inserted locking position, so that an additional or alternative

locking device is thereby formed.

This can be released in a known manner by compressing the coupling devices 12. By means of corresponding oblique sliding surfaces, it can additionally be provided that the coupling devices 12 automatically engage in corresponding counter elements, for example traps, when the upper container is inserted into the rear arresting position. As a result, in addition to the mutual arresting of identical system containers, the already existing coupling devices 12 can also be used intuitively for releasable fixing on the guide rails 14, 15. In addition, in the embodiments shown, guide rails corresponding to the guide rails 14, 15, but only with a smaller mutual distance, can also be arranged on the cover part 5 of the upper container 2, 2, so that a further smaller system container can also be stacked and fastened on the upper container 2, 2. The entire transport system can thus be easily gripped and transported via the further carrying handle 23 of the upper container 2, 2 or the carrying handle of the uppermost container.

[0038]

A further exemplary embodiment of the invention is shown in FIG. 4.

In this exemplary embodiment, a further guide rail 27 is arranged on the cover part 9 of the lower system container 3 between the two guide rails 14 and 15 and parallel to them, said further guide rail likewise being equipped with web webs 28 and 29, which face the web webs 16 and 17 of the outer guide rails 14 and 15, respectively. In this way, a plurality of smaller upper containers can be fastened next to one another on the cover part 9 of the lower system container 3.

[0039]

Number list

[0040]

1 Transportation Transport Transport Transport Transport Transport Transportation Transport Transport Transport Transport Transportation Transport Transport Transport Transport Transport Transportation

[0041]

2 Upper Container

[0042]

3 Lower System Containers

[0043]

4 Bottom part of Upper Container

[0044]

5 Cover part of Upper Container

[0045]

6 Closure flap of the Upper Container

[0046]

7 Support Handle of Upper Container

[0047]

8 Bottom part of Lower System Container

[0048]

9 Cover part of Lower System Container

[0049]

10 Closing flap of the lower system container 11 carrying handle of the lower system container 12 coupling device

[0050]

13 Coupling Element

[0051]

14 First Guide rail

[0052]

15 Second Guide Rail

[0053]

16 First Falling Web

[0054]

17 Second Falling Web

[0055]

18 First Brailer

[0056]

19 Second Spreader

[0057]

20 Arretiemase

[0058]

21 Locking Stop

[0059]

22 its side recess

[0060]

23 Further carrying handle of the upper container

[0061]

24a, 24b Opening

[0062]

25 recess recess recess recess

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CLAIMS WO2019105598A1

1.

claims claims claim claims.

1.

Stackable system container (3) having a base part (8) and a cover part (9) which is pivotably fastened to the base part (8) and which on an upper side two guide rails (14, 15) spaced apart from one another for form-fitting purposes.

Receptacle of a further container (2), wherein the guide rails (14, 15) each have a running web (16, 17) which can be engaged under by a further container (2), characterized in that the running webs (16; 17) project in the direction of one another and in that at least one upwardly projecting arresting lug (20) is provided on the cover part (9).

2.

Stackable system container (3) according to claim 1, characterized in that the guide rails (14; 15) are aligned parallel to each other.

3.

Stackable system container (3) according to one of the preceding claims, characterized in that the running webs (16; 17) each have at least one recess (24a; 24b).

4.

Stackable system container (3) according to one of the preceding claims, characterized in that the arretiemase (20) is arranged directly next to at least one guide rail (14; 15).

5.

Stackable system container (3) according to claim 4, characterized in that the at least one locking lug (20) is integrally received in one of the guide rails (14; 15).

6.

Stackable system container (3) according to one of the preceding claims, characterized in that a further guide rail (27) is arranged between the two guide rails (14; 15) on the cover part (9).

7.

Stackable system container (3) according to one of the preceding claims, characterized in that the guide rails (14; 15; 27) are formed integrally with the cover part (9).

Container for placing on a stackable system container (3) according to one of the preceding claims, characterized in that two running rails (18; 19) are arranged on the base part (8).

9.

Container (2) according to claim 8, characterised in that the guide rails (18; 19) are formed complementary to the guide rails (14; 15; 27).

10.

Container (2) according to one of claims 8 or 9, characterised in that the running rails (18; 19) are formed by the base plate edges of the base part (4) which project laterally from mutually opposite side walls of the base part (4).

11.

Container (2) according to one of claims 8 to 10, characterised in that the running rails (18; 19) each have a recess (25).

12.

Container (2) according to one of claims 8 to 11, characterised in that at least one of the running rails (18; 19) has a locking stop (21).

13.

Container (2) according to claim 12, characterised in that the distance between the upper edge of the running rail (18; 19) and the lower edge of the arresting stop (21) is greater than the height of the arretiemase (20).

14.

Container (2) according to one of claims 12 or 13, characterised in that the locking stops (21) are formed in a side recess (22) of the corresponding side wall of the base part (4).

15.

Transport system (1) comprising at least one system container (3), on the cover part (9) of which guide rails (14; 15; 27) are arranged with in each case one running web (16; 17; 28; 29) which are engaged behind in a holding manner by complementary running rails (18, 19) of a container (2), characterized in that the running webs (16; 17; 28; 29) project in the direction of one another and which is arranged on the cover part (9) at least one upwardly projecting arresting lug (20).

16.

Transport system (1) according to claim 15, characterised by a corresponding arresting stop (21) for arresting the container (2) in an inserted rear arresting position.

17.

Transport system (1) according to Claim 16, characterized in that in each case one arretiemase (20) is arranged on the guide rails (14; 15) for guiding the container (2) in the extraction direction.

18.

Transport system (1) according to Claim 16 or 17, characterized in that in each case one arresting stop (21) is formed on a side wall of the running rails (18; 19).

19.

Transport system (1) according to Claim 17 or 18, characterized in that the distance between the upper edge of the running rails (18; 19) of the container (2) and the lower edge of the locking stops (21) of the container (2) is greater than the height of the locking lugs (20) of the first system container (3).

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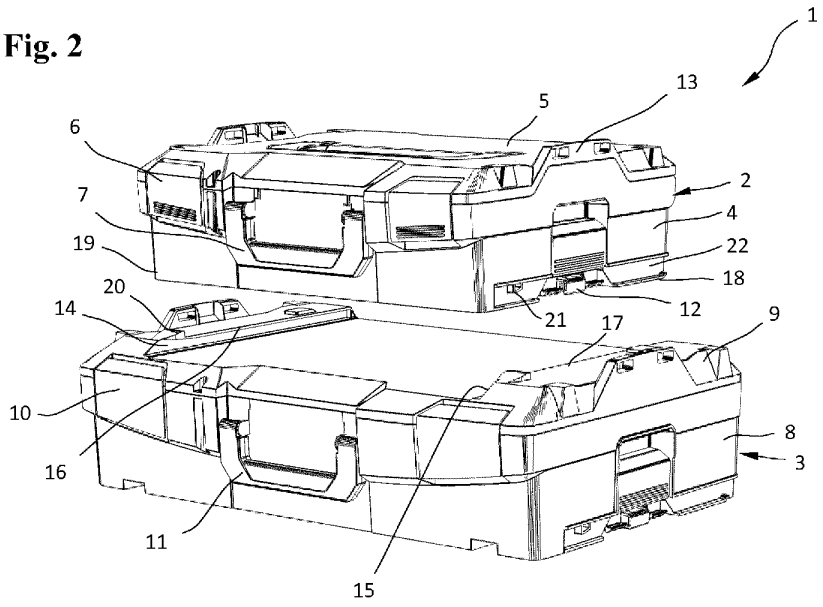
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(54) **Title:** STACKABLE SYSTEM CONTAINER AND TRANSPORT SYSTEM

(54) **Bezeichnung:** STAPELBARER SYSTEMBEHÄLTER UND TRANSPORTSYSTEM

Fig. 2



(57) **Abstract:** The invention relates to a stackable system container (3) and to a corresponding transport system (2). Known system containers or transport systems have the disadvantage that a precise prior adjustment is necessary for the purpose of connecting the same. The aim of the invention is to configure a system container or transport system in such a way that a particularly stable and intuitive mutual fastening is made possible. This aim is achieved in that catwalks (16; 17) of the system container project in the direction of each other, and that at least one upwardly protruding locking nose (20) is provided on the lid part (9).

(57) **Zusammenfassung:** Die Erfindung betrifft einen stapelbaren Systembehälter (3) und ein entsprechendes Transportsystem (2). Bekannte Systembehälter bzw. Transportsysteme weisen den Nachteil auf, dass zum Zwecke Ihrer Verbindung eine genaue vorherige

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Justierung notwendig ist. Die Aufgabe, einen Systembehälter bzw. ein Transportsystem so auszubilden, dass eine besonders stabile und intuitive gegenseitige Befestigung ermöglicht wird, wird dadurch gelöst, dass Laufstege (16; 17) des Systembehälters in Richtung zueinander vorstehen und dass an dem Deckelteil (9) mindestens eine nach oben vorstehende Arretiernase (20) vorgesehen ist.

Stapelbarer Systembehälter und Transportsystem

Die Erfindung betrifft einen stapelbaren Systembehälter nach dem Oberbegriff des Anspruchs 1, einen weiteren Behälter nach dem Oberbegriff des Anspruchs 8 und ein Transportsystem nach dem Oberbegriff des Anspruchs 15.

Aus der DE 10 2013 110 496 ist ein stapelbarer Systembehälter mit einem einen nach oben offenen Stauraum aufweisenden Bodenteil und einem an dem Bodenteil schwenkbar befestigten und den Stauraum nach oben begrenzenden Deckelteil bekannt. Zudem weist der Systembehälter zwei an gegenüberliegenden Seitenwänden des Bodenteils beweglich befestigte Koppelungsvorrichtungen auf, welche zur Koppelung des Systembehälters mit weiteren Systembehältern dienen und damit eine sichere Stapelung derartiger Systembehälter ermöglichen. Die Koppelungsvorrichtungen sind zwischen einer Ruheposition, in welcher die Koppelungsvorrichtung außer Eingriff mit dem weiteren Systembehälter stehen, und einer Koppelungsposition, in welcher die Kopplungsvorrichtungen in Eingriff mit dem weiteren Systembehälter bringbar sind, beweglich ausgebildet und ausgelegt, mit korrespondierenden, nach oben über eine Oberseite des Systembehälters bzw. des Deckelteils hervorstehenden Koppelungselementen eines darunter angeordneten, gleichartigen Behälters haltend zusammenzuwirken. Die Koppelungselemente sind ein integraler Bestandteil des entsprechenden Bodenteils und umfassen jeweils mindestens eine Falle zum Einrasten der Koppelungsvorrichtung. Die Koppelungselemente sind zudem an gegenüberliegenden Enden der Oberseite des Systembehälters angeordnet und ermöglichen das Zentrieren, Positionieren und Stapeln mehrerer derartiger Systembehälter aufeinander. Nach dem Ausrichten von mehreren Systembehältern können diese über die Koppelungsvorrichtungen und die Koppelungselemente formstabil, aber lösbar verbunden werden. Um eine einfache und schnelle Verbindung der Systembehälter zu erreichen, sind die Koppelungsvorrichtungen beispielsweise über ein Federelement jeweils in eine Koppelungsposition vorgespannt, so dass die Koppelungsvorrichtungen sich automatisch mit den Koppelungselementen des weiteren Systembehälters verbinden, sobald diese mit ausreichend Druck zusammengefügt werden. Dieser Form- und Kraftschluss ermöglicht ein komfortables Tragen mehrere miteinander verbundener Systembehälter in einer Hand.

Ferner ist aus dem Stand der Technik eine Vertriebsbox aus dem Hause Peddinghaus bekannt, deren Deckel außen liegende Führungsschienen zum Einführen weiterer, kleinerer Boxen aufweist, wobei die kleineren Boxen klemmend in entsprechende Führungsnuten an dem Deckel geschoben werden.

Die US 2009/0236255 A1 zeigt einen stapelbaren Systembehälter mit einem Bodenteil und einem an diesen befestigbaren Deckelteil, wobei die beiden Teile über an den Bodenteil befestigbare Flügel miteinander verbindbar sind und diese Flügel über Filmscharniere an dem Bodenteil befestigt sind.

Die DE 7244356 hat einen Behälter zum Aufbewahren und Transportieren von in Krankenhäusern benötigten Gütern zum Gegenstand, wobei mehrere gleichartige Behälter mit Verriegelungsvorrichtungen miteinander verbindbar sind.

Die WO 2017/001083 zeigt einen stapelbaren Lagerbehälter mit einem Korpus und einem Deckel, wobei Seitenwände des Korpus mit Rastarmen versehen sind, wobei der Korpus Füße aufweist und wobei der Deckel oberseitig Rastnocken aufweist.

Aus dem Hause Hitachi sind außerdem Zubehör-Boxen zur Aufbewahrung und zum Transport von Kleinteilen bekannt, wobei der Deckel einer Box mehrere Führungsschienen aufweist, in welche weitere darüber liegende Boxen eingeschoben werden können. Die Führungsschienen weisen jeweils einen Laufsteg auf, der von dem darüber angeordneten, weiteren Behälter beim Einschieben untergriffen wird. Die Laufstege zeigen hierbei voneinander weg, also jeder Laufsteg zeigt zu einer gegenüberliegenden Außenseite der Box hin. Dies erfordert ein sehr zielgenaues Aufsetzen der beiden Boxen aufeinander, um eine sichere Verriegelung zu ermöglichen. Außerdem sind die in Richtung der Außenseite der Box hervorstehenden Laufstege beim Aufsetzen des darüber anzuordnenden Behälters nicht sichtbar, wodurch das Aufsetzen und Einschieben der darüber liegenden Box erschwert wird.

Aufgabe der Erfindung ist es, einen stapelbaren Systembehälter sowie ein Transportsystem zu schaffen, welcher eine besonders stabile und intuitive gegenseitige Befestigung eines Behälters auf einem Systembehälter ermöglicht. Gelöst wird diese Aufgabe, was den stapelbaren Systembehälter betrifft, mit den kennzeichnenden Merkmalen des Anspruchs 1, was den darüber angeordneten zweiten Behälter betrifft, durch die kennzeichnenden

Merkmale des Anspruchs 8 und hinsichtlich des Transportsystems durch die kennzeichnenden Merkmale des Anspruchs 15. Vorteilhafte Ausgestaltungen der Erfindung sind den jeweiligen Unteransprüchen entnehmbar.

Der erfindungsgemäße stapelbare Systembehälter zeichnet sich dadurch aus, dass das Deckelteil an einer Oberseite zwei voneinander beabstandete Führungsschienen aufweist. Die Führungsschienen, welche bevorzugt parallel zueinander ausgerichtet sind, ermöglichen eine formschlüssige Aufnahme eines weiteren Systembehälters. Zur Verbindung der Systembehälter ist der obere Systembehälter in die Führungsschienen des unteren Systembehälters einzuschieben, wodurch sich ein besonders stabiler formschlüssiger Verbund ergibt. Die Führungsschienen können jeweils am Rand des Deckelteils benachbart zu zwei gegenüberliegenden Seitenwänden des Deckelteils ausgebildet sein oder auch von diesen beabstandet angeordnet sein.

Die Führungsschienen weisen jeweils einen Laufsteg auf, wobei die Laufstege in Richtung zueinander hervorstehen. Die Laufstege sind von einem weiteren Behälter untergreifbar. Durch diesen Hintergriff wird eine besonders stabile gegenseitige Befestigung ermöglicht.

Um das Einschieben eines Behälters in die Führungsschienen des Systembehälters zu beschleunigen, können die Laufstege jeweils eine Aussparung aufweisen, so dass der Einschubvorgang nicht über die gesamte Länge der Führungsschienen erfolgen muss, sondern lediglich über einen Teil und damit deutlich schneller erfolgen kann.

In einer bevorzugten Ausführungsform kann zur gegenseitigen Arretierung gestapelter Systembehälter vorgesehen sein, dass an dem Deckelteil mindestens eine nach oben vorstehende Arretiernase vorgesehen ist. Die Arretiernase, welche zwischen den Führungsschienen angeordnet oder auch in einer der Führungsschienen integral aufgenommen sein kann, bildet einen Anschlag in der eingeschobenen Arretierposition, so dass sich die verbunden Systembehälter nicht ohne Weiteres lösen.

Es kann zudem vorgesehen sein, dass an dem Deckelteil zwischen den zwei Führungsschienen mindestens eine weitere Führungsschiene angeordnet ist, so dass mehrere kleinere Systembehälter nebeneinander auf dem Deckelteil fixierbar sind. Die mittlere Führungsschiene kann dazu zwei Laufstege aufweisen, von denen jeweils einer in Richtung der seitlichen Führungsschienen vorsteht.

In einer fertigungstechnisch günstigen Ausführungsform können die Führungsschienen dabei integral mit dem Deckelteil ausgebildet sein, es ist jedoch auch möglich, die Führungsschienen separat auszubilden, so dass diese nachgerüstet oder modifiziert werden können.

In einer besonders vorteilhaften Ausführungsform können an dem Bodenteil zwei Laufschienen angeordnet sein, welche insbesondere komplementär zu den Führungsschienen auf dem Deckelteil ausgebildet sind. Hierdurch können mehrere derartige Systembehälter besonders einfach aufeinander gestapelt und lösbar miteinander verbunden werden.

In einer konstruktiv günstigen Ausführungsform können die Laufschienen dabei durch die Bodenplatten-Kanten des Bodenteils gebildet sein, welche seitlich von einander gegenüberliegenden Seitenwänden des Bodenteils abstehen.

Um das Einschieben des weiteren Behälters in die Führungsschienen zu beschleunigen, können die Laufschienen entsprechend den Laufstegen jeweils eine Ausnehmung aufweisen. Die Ausnehmungen erstreckt sich dabei bevorzugt über eine Distanz, welche größer ist als die längliche Erstreckung der durch die Aussparungen begrenzten Abschnitte der Laufstege.

Um eine stabile gegenseitige Arretierung des Systembehälters mit dem Behälter zu gewährleisten, kann mindestens eine der Laufschienen einen Arretieranschlag korrespondierend zur Arretiernase am Deckelteil aufweisen. Durch den formschlüssigen Hintergriff zwischen Arretieranschlag und Arretiernase wird eine besonders stabile Arretierung in der eingeschobenen Position ermöglicht.

In einer vorteilhaften Ausführungsform kann der Abstand zwischen der Oberkante der Laufschiene und der Unterkante des Arretieranschlags größer sein als die Höhe der Arretiernase. Damit kann zum Dearretieren in der eingeschobenen Position der obere Systembehälter in einem vorderen Abschnitt angehoben und damit um eine Achse quer zur Ausziehrichtung verkippt werden, so dass der Arretieranschlag über die Arretiernase angehoben und hinwegbewegt werden kann.

In einer konstruktiv günstigen Ausführungsform können die Arretieranschläge dabei in einer Seitenausnehmung der entsprechenden Seitenwand des Bodenteils ausgebildet sein. Hierdurch sind die Arretieranschläge vor Fremdeinwirkungen geschützt und optisch ansprechend versteckt.

Zudem wird ein Transportsystem mit einem Systembehälter und einem weiteren Behälter beansprucht, wobei der Systembehälter an einem Deckelteil angeordnete Führungsschienen mit jeweils einem Laufsteg aufweist, welche von komplementären Laufschienen des darüber anzuordnenden Behälters haltend hintergriffen werden können.

In einer vorteilhaften Ausführungsform kann dabei das Transportsystem eine Arretiervorrichtung mit mindestens einer Arretiernase und einem korrespondierenden Arretieranschlag zur Arretierung des zweiten Systembehälters in einer eingeschobenen hinteren Arretierposition umfassen.

Bevorzugt kann jeweils eine Arretiernase an den Führungsschienen zur Führung des zweiten Systembehälters in Ausziehrichtung angeordnet sein. Hierdurch wird ein gegenseitiges Verkanten des Behälters und des Systembehälters vermieden.

Weitere Besonderheiten und Vorzüge der Erfindung ergeben sich aus der folgenden Beschreibung bevorzugter Ausführungsbeispiele anhand der Zeichnungen. Es zeigen:

Fig. 1 eine perspektivische Ansicht eines Transportsystems mit einem Systembehälter und einem darüber angeordneten weiteren Behälter;

Fig. 2 eine perspektivische Ansicht des Transportsystems von Figur 1 mit einem Abstand zwischen dem Systembehälter und dem weiteren Behälter;

Fig. 3 eine perspektivische Ansicht eines weiteren Transportsystems mit zwei voneinander beabstandeten alternativen Behältern bzw. Systembehältern;

Fig. 4 eine perspektivische Ansicht einer alternativen Ausführungsform eines Systembehälters mit zusätzlichem mittigen Laufsteg;

Figur 1 zeigt eine perspektivische Ansicht eines Transportsystems 1, umfassend einen oberen Behälter 2 und einen damit lösbar verbundenen unteren Systembehälter 3. Der obere Behälter 2 umfasst ein Bodenteil 4 und ein damit schwenkbar verbundenes Deckelteil 5, durch welche ein Stauraum des Behälters 2 begrenzt wird. Das Deckelteil 5 kann mittels Verschlusslaschen 6 gegenüber dem Bodenteil 4 in der gezeigten Schließstellung fixiert werden, um ein unbeabsichtigtes Öffnen des oberen Behälters 2 zu verhindern. An der Vorderseite weist der obere Behälter 2 zudem einen Tragegriff 7 auf, welcher schwenkbar an dem Bodenteil 4 befestigt ist. Gleichermaßen ist auch der (untere) Systembehälter 3 ausgebildet, welcher ein Bodenteil 8 und ein schwenkbar damit verbundenes Deckelteil 9 umfasst, welche mittels Verschlusslaschen 10 in der gezeigten Schließstellung gegenseitig fixierbar sind. Zudem ist an der Vorderseite des Bodenteils 8 des unteren Systembehälters 3 auch ein Tragegriff 11 schwenkbar befestigt.

Der obere Behälter 2 weist an gegenüberliegenden Seitenwänden des Bodenteils 4 schwenkbar angeordnete Koppelungsvorrichtungen 12 und an der Oberseite des Deckelteils 5 dazu korrespondierende Koppelungselemente 13 auf. Durch eine derartige Ausgestaltung des oberen Behälters 2 können mehrere baugleiche Behälter aufeinander gestapelt und mittels der Koppelungsvorrichtung und der Koppelungselemente lösbar verbunden werden. Zur Ausgestaltung der Koppelungsvorrichtung wird auf die Offenbarung der De 10 2013 110 496 und DE 10 2016 112 853 verwiesen, deren Inhalt in diese Anmeldung aufgenommen wird.

Der untere Systembehälter 3 weist ebenfalls entsprechende Koppelungsvorrichtungen und Koppelungselemente auf, um mehrere -Systembehälter stapeln und sicher verbinden zu können.

Sowohl der obere Behälter 2 als auch der untere Systembehälter 3 sind spiegelbildlich ausgebildet, so dass die entsprechenden Elemente der Behälter 2, 3 auf der linken und rechten Seite identisch vorhanden sind, wie den Figuren zu entnehmen ist. Auch wenn zur Vereinfachung immer nur eine Seite beschrieben wird, so gilt die Beschreibung jedoch auch für die gegenüberliegende spiegelbildliche Seite der Behälter 2, 3.

Figur 2 zeigt eine perspektivische Ansicht des Transportsystems 1 von Figur 1 mit zwei voneinander beabstandeten Behältern 2, 3. Wie aus der Darstellung zu entnehmen ist, weist

das Deckelteil 9 des unteren Systembehälters 3 zwei voneinander beabstandete parallele Führungsschienen 14, 15 auf, welche zur formschlüssigen Aufnahme des oberen Behälters 2 ausgebildet sind. Die Führungsschienen 14, 15 erstrecken sich dabei über die gesamte Tiefe des Deckelteils 9 und sind zudem von den gegenüberliegenden Seitenwänden, insbesondere den dort ausgebildeten entsprechenden Koppelelementen beabstandet auf dem Deckelteil 9 angeordnet. Hierdurch wird gewährleistet, dass der untere Systembehälter 3 je nach Anforderung mit dem etwas kleineren oberen Behälter 2 mittels der Führungsschienen 14, 15 oder alternativ mittels der in Bezug auf den oberen Behälter 2 beschriebenen, jedoch beim unteren Systembehälter 3 identisch ausgebildeten Koppelelementen mit weiteren baugleichen Systembehältern verbindbar ist.

Die Führungsschienen 14, 15 weisen jeweils einen Laufsteg 16, 17 auf, welche sich horizontal und damit parallel zur Deckeloberseite erstrecken und in Richtung zueinander von den Führungsschienen 14, 15 vorstehen. Korrespondierend hierzu weist der obere Behälter 2 an den gegenüberliegenden Seitenwänden des Bodenteils 4 je eine Laufschiene 18, 19 auf, welche ausgebildet sind, die Laufstege 16, 17 der Führungsschienen 14, 15 haltend vertikal zu hintergreifen.

Die Verbindung der Behälter 2, 3 erfolgt dabei derart, dass der obere Behälter 2 mit den Laufschienen 18, 19 in die Führungsschienen 14, 15 eingeschoben wird, so dass die Laufschienen 18, 19 die Laufstege 16, 17 untergreifen. Die Laufschienen 18, 19 sind dabei durch die Bodenplatten-Kanten des Bodenteils 4 des oberen Behälters 2 gebildet, welche seitlich von den einander gegenüberliegenden Seitenwänden des Bodenteils 4 abstehen.

Um ein unbeabsichtigtes Lösen des oberen Behälters 2 von dem unteren Systembehälter 3 zu verhindern, ist eine Arretiervorrichtung zur Arretierung des oberen Behälters 2 in einer eingeschobenen hinteren Arretierposition gegenüber dem unteren Systembehälter 3 vorgesehen, welche eine an dem Deckelteil 9 des unteren Systembehälters 3 befestigte Arretiernase 20 und einen an dem Bodenteil 4 des oberen Behälters 2 befestigten Arretieranschlag 21 umfasst. Bei der gezeigten Ausführungsform ist dabei jeweils eine Arretiernase 20 an den Führungsschienen 14, 15 und jeweils ein Arretieranschlag 21 an den Laufschienen 18, 19 angeordnet, so dass der beschriebene spiegelbildliche Aufbau der Behälter 2, 3 beibehalten ist.

In dem gezeigten Ausführungsbeispiel weisen die Führungsschienen 14, 15 ein vorderes offenes Ende und ein gegenüberliegendes hinteres geschlossenes Ende auf, so dass das Einschieben des oberen Behälters 2 nur von vorne erfolgen kann. Die Arretiernasen 20 sind an dem offenen Ende der Führungsschienen 14, 15 oben an den Laufstegen 16, 17 integral ausgebildet und stehen vertikal nach oben vor. Hierzu komplementär sind die Arretieranschläge in einer Seitenausnehmung der entsprechenden Seitenwand des Bodenteils 4 ausgebildet, was beispielhaft anhand des Arretieranschlags 21 in der Seitenausnehmung 22 gezeigt ist. Die Arretieranschläge stehen dabei wie der Arretieranschlag 21 in der Seitenausnehmung 22 vertikal nach unten vor.

Um eine sichere Arretierung des oberen Behälters 2 in den Führungsschienen 14, 15 des unteren Systembehälters 3 zu gewährleisten, stehen die Arretieranschläge 21 gerade so weit nach unten vor, dass der Abstand zwischen der Oberkante der Laufschienen 18, 19 und der Unterkante der Arretieranschläge größer ist als der vertikale Überstand und damit die Höhe der Arretiernasen 20. Damit kann zum Dearretieren in der eingeschobenen Position der obere Systembehälter 2 in einem vorderen Abschnitt, beispielsweise an dem Tragegriff 7, angehoben und damit um eine Achse quer zur Ausziehrichtung verkippt werden, so dass die Arretieranschläge 21 über die Arretiernasen 20 angehoben und hinwegbewegt werden können. Für ein einfaches Einschieben und Arretieren des oberen Behälters 2 kann zudem vorgesehen sein, dass die Arretiernasen 20 und/oder die Arretieranschläge 21 in Einschubrichtung eine Abflachung aufweisen, welche bei einem Kontakt von Arretiernasen 20 und Arretieranschläge 21 beim Einschieben zu einem automatischen Anheben des oberen Systembehälters 2 führen und damit beim Einschiebevorgang die Arretiernasen 20 besonders leicht von den Arretieranschlägen 21 überwunden werden können.

Wie der Figur 2 weiter zu entnehmen ist, weist der untere Systembehälter 3 zwischen den Führungsschienen 14, 15 keinen weiteren Tragegriff auf, wie er beispielsweise beim oberen Behälter 2 in Form des weiteren Tragegriffs 23 vorgesehen ist. In einer alternativen Ausführungsform kann jedoch auch beim unteren Systembehälter 3 zwischen den Führungsschienen 14, 15 ein derartiger weiterer Tragegriff vorgesehen sein.

Figur 3 zeigt eine perspektivische Ansicht eines weiteren Transportsystems 1 mit zwei voneinander beabstandeten alternativen Behältern 2, 3. Im Unterschied zur zuvor beschriebenen Ausführungsform weisen hierbei die Laufstege 16, 17 des unteren

Systembehälters 3 jeweils eine Aussparung 24a, 24b auf. Die übrigen Elemente sind identisch zu der zuvor beschriebenen Ausführungsform ausgebildet und mit denselben Bezugszeichen versehen.

Wie auch bei der ersten Ausführungsform in den Figuren 1 und 2 sind die Laufschienen 18, 19 jeweils von einer Ausnehmung unterbrochen, in welcher die Koppelungsvorrichtung angeordnet ist, wie dies exemplarisch der Ausnehmung 25 an der Laufschiene 18 zu entnehmen ist, in welcher die Koppelungsvorrichtung 12 angeordnet ist.

Eine besonders schnelle Befestigung des oberen Behälters 2 an dem unteren Systembehälter 3 kann hierbei dadurch erfolgen, dass die Laufschienen 18, 19 des oberen Behälters 2 nicht über die gesamte Länge der Laufstege 16, 17 eingeschoben werden müssen, sondern nur zu einem kleineren Teil. So können bei dieser Ausführungsform die hinteren Abschnitte der Laufschienen 18, 19 vertikal von oben durch die Aussparungen 24a, 24b in die Führungsschienen 14, 15 eingesetzt werden und anschließend bis zur Arretierposition in Einschubrichtung entlang der Führungsschienen 14, 15 eingeschoben werden. Vorteilhaft sind dabei die Aussparungen 24a, 24b etwa mittig zwischen dem vorderen offenen Ende und dem hinteren geschlossenen Ende der Führungsschienen 14, 15 angeordnet, so dass über die vorderen und hinteren Abschnitte der Laufstege 16, 17 gleichermaßen Haltekraft übertragbar ist. Für eine einfache Montage ist vorgesehen, dass die Länge der Aussparungen 24a, 24b in Einschubrichtung mindestens der Erstreckung der hinteren Abschnitte der Laufstege 16, 17 entspricht, was ein vertikales Einsetzen ermöglicht. Es kann jedoch auch vorgesehen sein, dass die Länge der Aussparungen 24a, 24b geringer ist als die Erstreckung der hinteren Abschnitte der Laufstege 16, 17, so dass ein Einsetzen nur unter einem Winkel durch Verkippen möglich ist.

In einer nicht gezeigten Ausführungsform kann zudem vorgesehen sein, dass die Koppelungsvorrichtungen 12 in der eingeschobenen Arretierposition mit entsprechenden Gegenelementen in den Führungsschienen 14, 15 zusammenwirken, so dass hierdurch eine zusätzliche oder alternative Arretiervorrichtung gebildet wird. Diese kann in bekannter Weise durch Zusammendrücken der Koppelungsvorrichtungen 12 gelöst werden. Durch entsprechende schräge Gleitflächen kann zudem vorgesehen sein, dass die Koppelungsvorrichtungen 12 automatisch in entsprechende Gegenelemente, beispielsweise Fallen, eingreifen, wenn der obere Behälter in die hintere Arretierposition eingeschoben ist.

Hierdurch können die bereits vorhandenen Koppelungsvorrichtungen 12 neben der gegenseitigen Arretierung gleichartiger Systembehälter intuitiv auch zur lösbaren Fixierung an den Führungsschienen 14, 15 verwendet werden.

Zusätzlich können bei den gezeigten Ausführungsformen auch an dem Deckelteil 5 des oberen Behälters 2,2 ebenfalls Führungsschienen entsprechend den Führungsschienen 14, 15, jedoch lediglich mit geringerem gegenseitigem Abstand, angeordnet sein, so dass auch auf dem oberen Behälter 2, 2 ein weiterer kleinerer Systembehälter stapelbar und befestigbar ist. Über den weiteren Tragegriff 23 des oberen Behälters 2, 2 bzw. den Tragegriff des obersten Behälters kann damit das gesamte Transportsystem einfach gegriffen und transportiert werden.

Ein weiteres Ausführungsbeispiel der Erfindung zeigt die Figur 4. Bei diesem Ausführungsbeispiel ist an dem Deckelteil 9 des unteren Systembehälters 3 eine weitere Führungsschiene 27 zwischen den beiden Führungsschienen 14 und 15 und parallel zu diesen angeordnet, welche ebenfalls mit Laufstegen 28 und 29 ausgestattet ist, die den Laufstegen 16 bzw. 17 der äußeren Führungsschienen 14 bzw. 15 gegenüberstehen. Auf diese Weise lassen sich mehrere, kleinere obere Behälter nebeneinander auf dem Deckelteil 9 des unteren Systembehälters 3 befestigen.

Bezugszeichenliste

1	Transportsystem
2	Oberer Behälter
3	Unterer Systembehälter
4	Bodenteil des oberen Behälters
5	Deckelteil des oberen Behälters
6	Verschlusslasche des oberen Behälters
7	Tragegriff des oberen Behälters
8	Bodenteil des unteren Systembehälters
9	Deckelteil des unteren Systembehälters
10	Verschlusslasche des unteren Systembehälters
11	Tragegriff des unteren Systembehälters
12	Koppelungsvorrichtung
13	Koppelungselement
14	Erste Führungsschiene
15	Zweite Führungsschiene
16	Erster Laufsteg
17	Zweiter Laufsteg
18	Erste Laufschiene
19	Zweite Laufschiene
20	Arretiernase
21	Arretieranschlag
22	Seitenausnehmung
23	Weiterer Tragegriff des oberen Behälters
24a, 24b	Aussparung
25	Ausnehmung

Ansprüche

1. Stapelbarer Systembehälter (3) mit einem Bodenteil (8) und einem an dem Bodenteil (8) schwenkbar befestigten Deckelteil (9), welches an einer Oberseite zwei voneinander beabstandete Führungsschienen (14, 15) zur formschlüssigen Aufnahme eines weiteren Behälters (2) aufweist, wobei die Führungsschienen (14, 15) jeweils einen Laufsteg (16, 17) aufweisen, der von einem weiteren Behälter (2) untergreifbar ist, **dadurch gekennzeichnet**, dass die Laufstege (16; 17) in Richtung zueinander vorstehen und dass an dem Deckelteil (9) mindestens eine nach oben vorstehende Arretiernase (20) vorgesehen ist.

2. Stapelbarer Systembehälter (3) nach Anspruch 1, **dadurch gekennzeichnet**, dass die Führungsschienen (14; 15) parallel zueinander ausgerichtet sind.

3. Stapelbarer Systembehälter (3) nach einem der voranstehenden Ansprüche, **dadurch gekennzeichnet**, dass die Laufstege (16; 17) jeweils mindestens eine Aussparung (24a; 24b) aufweisen.

4. Stapelbarer Systembehälter (3) nach einem der voranstehenden Ansprüche, **dadurch gekennzeichnet**, dass die Arretiernase (20) unmittelbar neben mindestens einer Führungsschiene (14; 15) angeordnet ist.

5. Stapelbarer Systembehälter (3) nach Anspruch 4, **dadurch gekennzeichnet**, dass die mindestens eine Arretiernase (20) in einer der Führungsschienen (14; 15) integral aufgenommen ist.

6. Stapelbarer Systembehälter (3) nach einem der voranstehenden Ansprüche, **dadurch gekennzeichnet**, dass an dem Deckelteil (9) eine weitere

Führungsschiene (27) zwischen den zwei Führungsschienen (14; 15) angeordnet ist.

7. Stapelbarer Systembehälter (3) nach einem der voranstehenden Ansprüche, **dadurch gekennzeichnet**, dass die Führungsschienen (14; 15; 27) integral mit dem Deckelteil (9) ausgebildet sind.

8. Behälter zum Aufsetzen auf einen stapelbarer Systembehälter (3) nach einem der voranstehenden Ansprüche, **dadurch gekennzeichnet**, dass an dem Bodenteil (8) zwei Laufschienen (18; 19) angeordnet sind.

9. Behälter (2) nach Anspruch 8**, dadurch gekennzeichnet**, dass die Laufschienen (18; 19) komplementär zu den Führungsschienen (14; 15; 27) ausgebildet sind.

10. Behälter (2) nach einem der Ansprüche 8 oder 9**, dadurch gekennzeichnet**, dass die Laufschienen (18; 19) durch die Bodenplatten-Kanten des Bodenteils (4) gebildet sind, welche seitlich von einander gegenüberliegenden Seitenwänden des Bodenteils (4) abstehen.

11. Behälter (2) nach einem der Ansprüche 8 bis 10, **dadurch gekennzeichnet**, dass die Laufschienen (18; 19) jeweils eine Ausnehmung (25) aufweisen.

12. Behälter (2) nach einem der Ansprüche 8 bis 11**, dadurch gekennzeichnet**, dass mindestens eine der Laufschienen (18; 19) einen Arretieranschlag (21) aufweist.

13. Behälter (2) nach Anspruch 12**, dadurch gekennzeichnet**, dass der Abstand zwischen der Oberkante der Laufschiene (18; 19) und der Unterkante des Arretieranschlags (21) größer ist als die Höhe der Arretiernase (20).

14. Behälter (2) nach einem der Ansprüche 12 oder 13**, dadurch gekennzeichnet**, dass die Arretieranschläge (21) in einer Seitenausnehmung (22) der entsprechenden Seitenwand des Bodenteils (4) ausgebildet sind.

15. Transportsystem (1), umfassend mindestens einen Systembehälter (3) an dessen Deckelteil (9) Führungsschienen (14; 15; 27) mit jeweils einem Laufsteg (16; 17; 28; 29) angeordnet sind, welche von komplementären Laufschienen (18, 19) eines Behälters (2) haltend hintergriffen werden, **dadurch gekennzeichnet**, dass die Laufstege (16; 17; 28; 29) in Richtung zueinander vorstehen und das an dem Deckelteil (9) mindestens eine nach oben vorstehende Arretiernase (20) angeordnet ist.

16. Transportsystem (1) nach Anspruch 15, **gekennzeichnet durch** eine einen korrespondierenden Arretieranschlag (21) zur Arretierung des Behälters (2) in einer eingeschobenen hinteren Arretierposition.

17. Transportsystem (1) nach Anspruch 16, **dadurch gekennzeichnet**, dass jeweils eine Arretiernase (20) an den Führungsschienen (14; 15) zur Führung des Behälters (2) in Ausziehrichtung angeordnet ist.

18. Transportsystem (1) nach Anspruch 16 oder 17, **dadurch gekennzeichnet**, dass jeweils ein Arretieranschlag (21) an einer Seitenwand der Laufschienen (18; 19) ausgebildet ist.

19. Transportsystem (1) nach Anspruch 17 oder 18, **dadurch gekennzeichnet**, dass der Abstand zwischen der Oberkante der Laufschienen (18; 19) des Behälters (2) und der Unterkante der Arretieranschläge (21) des Behälters (2) größer ist als die Höhe der Arretiernasen (20) des ersten Systembehälters (3).

Fig. 1

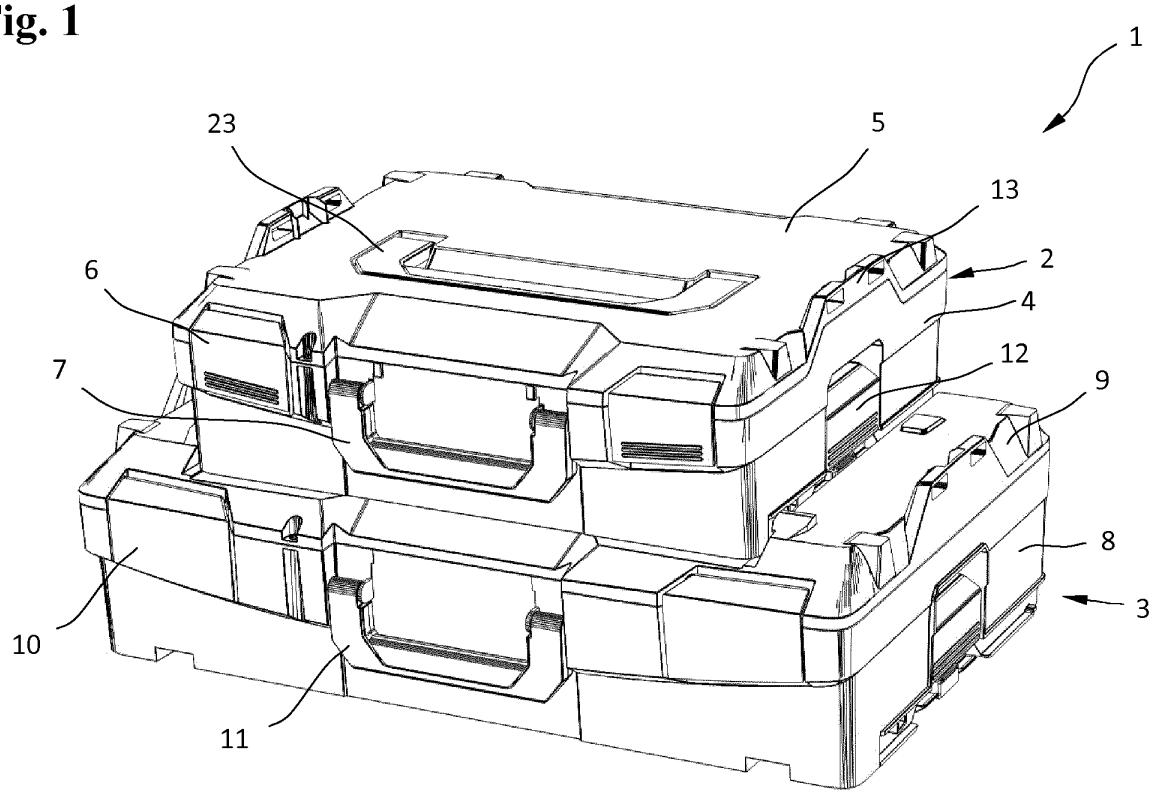

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Fig. 2

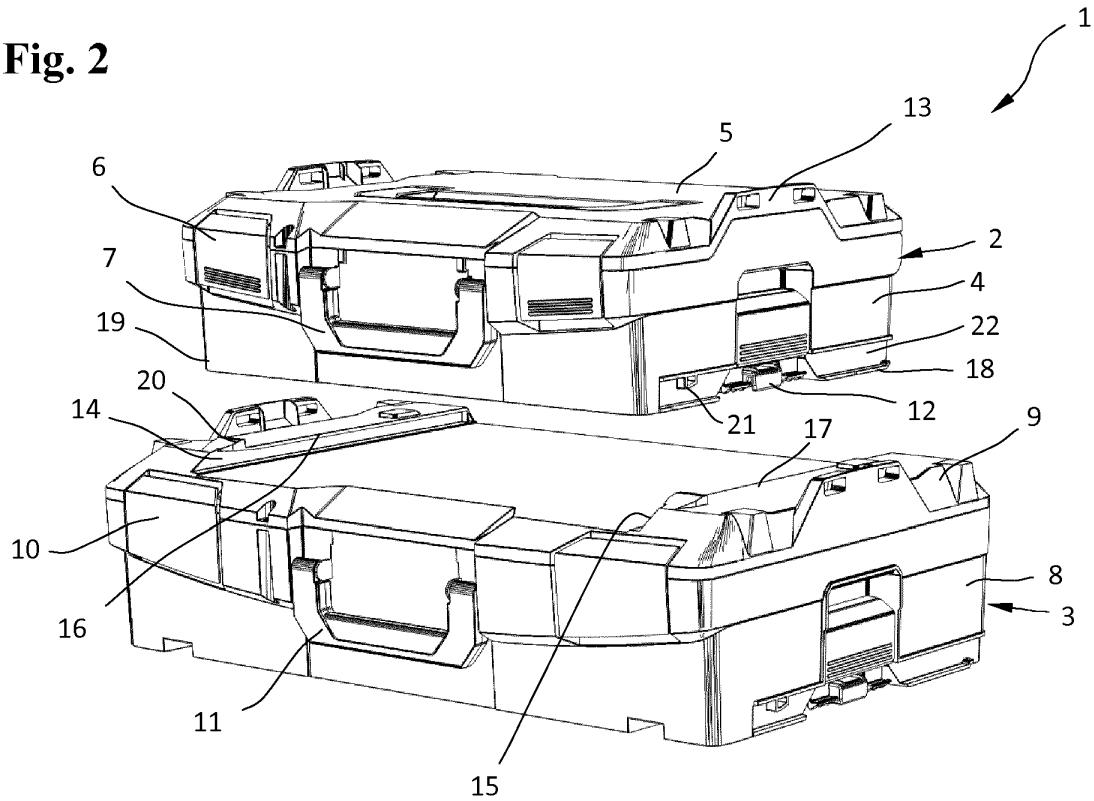

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Fig. 3

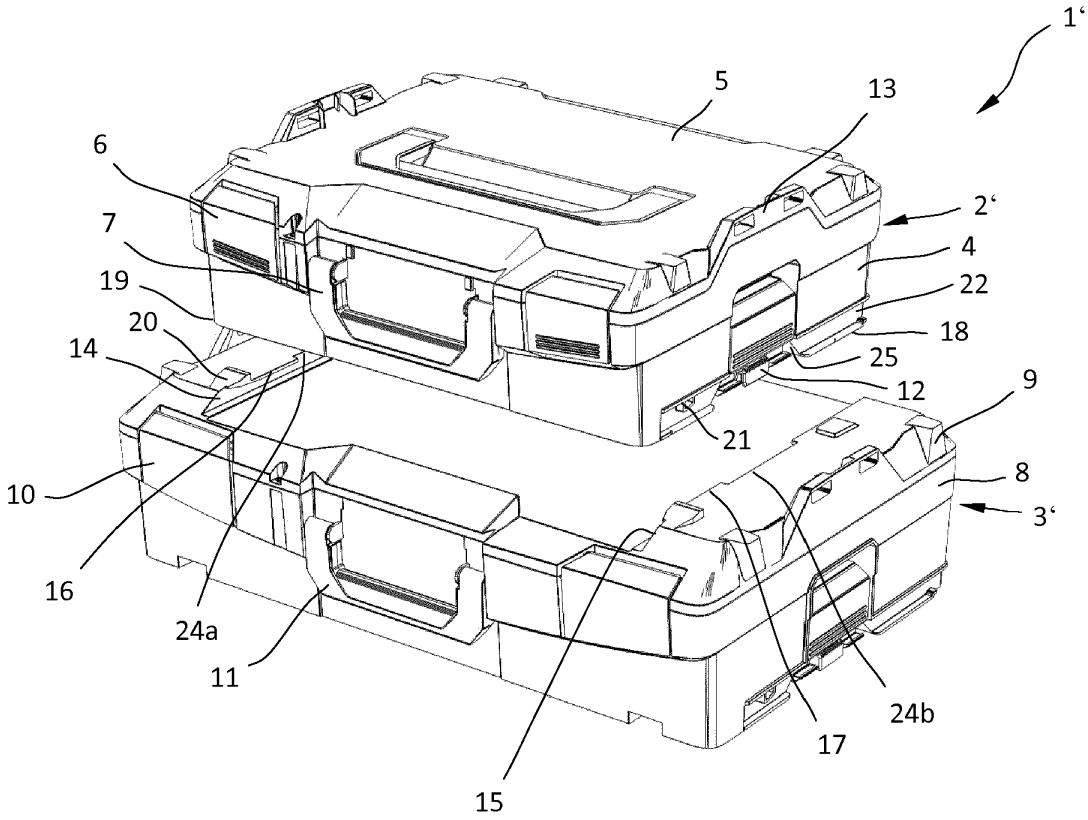
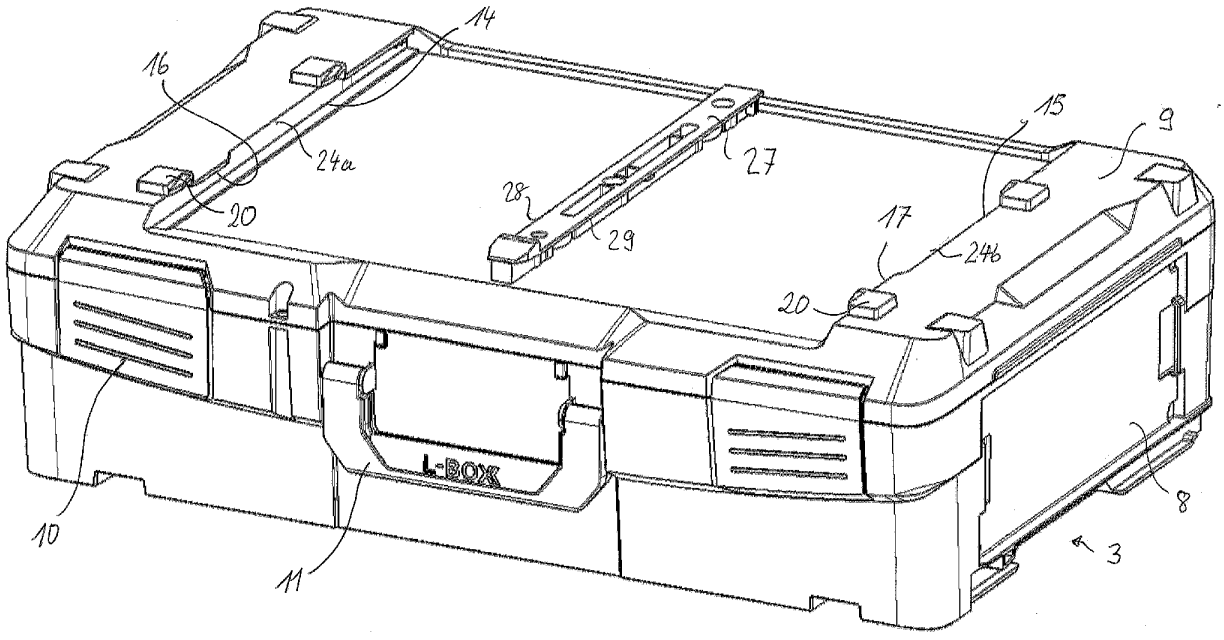

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Fig. 4


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24b
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INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2018/064742

A. CLASSIFICATION OF SUBJECT MATTER
INV. B65D21/02
ADD. A45C5/00 A45C13/00

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)
A45C B25H B65D

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)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 41 07 267 A1 (BRUEDER MANNESMANN GMBH & CO K [DE]) 10 September 1992 (1992-09-10) abstract column 2, line 36 - column 7, line 49 figures -----	1,2,4, 7-12, 14-16,18
X	US 5 890 613 A (WILLIAMS WARREN BRET [US]) 6 April 1999 (1999-04-06) abstract figures column 2, line 38 - column 4, line 17 ----- -/--	1,2,8,9, 15,16

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

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"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

"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

"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

"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

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
26 June 2018	09/07/2018

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Zetzsche, Brigitta

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2018/064742

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 20 2015 005752 U1 (PLASTON AG [CH]; ROTHENBERGER AG [DE]) 21 November 2016 (2016-11-21) abstract paragraph [0045] - paragraph [0075] figures	1,2,8,9, 15,16
X	WO 2016/091570 A1 (ADOLF WÜRTH GMBH & CO KG [DE]) 16 June 2016 (2016-06-16) abstract figures	1,8,15
X	DE 20 2012 102760 U1 (FUCHS KARL HEINZ [DE]) 5 December 2012 (2012-12-05) abstract figures	1,8,15
X	WO 02/11955 A1 (ATLAS COPCO ELECTRIC TOOLS [DE]; MEIER SVEN [DE]; MUELLER CHORUS VITUS) 14 February 2002 (2002-02-14) abstract figures	1,8,15

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/EP2018/064742

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
DE 4107267 A1	10-09-1992	DE 4107267 A1	10-09-1992
		DE 9102718 U1	23-05-1991
US 5890613 A	06-04-1999	NONE	
DE 202015005752 U1	21-11-2016	AU 2016309923 A1	22-02-2018
		DE 112016003733 A5	09-05-2018
		DE 202015005752 U1	21-11-2016
		EP 3337645 A1	27-06-2018
		WO 2017028845 A1	23-02-2017
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		CA 2970579 A1	16-06-2016
		CN 107249378 A	13-10-2017
		DE 102014118452 A1	16-06-2016
		EP 3229641 A1	18-10-2017
		TW 201632420 A	16-09-2016
		US 2017318927 A1	09-11-2017
		WO 2016091570 A1	16-06-2016
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		AU 7407800 A	18-02-2002
		EP 1305145 A1	02-05-2003
		US 2003094392 A1	22-05-2003
		WO 0211955 A1	14-02-2002

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/EP2018/064742

A. KLASSIFIZIERUNG DES ANMELDUNGSGEGENSTANDES
INV. B65D21/02
ADD. A45C5/00 A45C13/00

Nach der Internationalen Patentklassifikation (IPC) oder nach der nationalen Klassifikation und der IPC

B. RECHERCHIERTE GEBIETE

Recherchierter Mindestprüfstoff (Klassifikationssystem und Klassifikationssymbole)
A45C B25H B65D

Recherchierte, aber nicht zum Mindestprüfstoff gehörende Veröffentlichungen, soweit diese unter die recherchierten Gebiete fallen

Während der internationalen Recherche konsultierte elektronische Datenbank (Name der Datenbank und evtl. verwendete Suchbegriffe)
EPO-Internal

C. ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	DE 41 07 267 A1 (BRUEDER MANNESMANN GMBH & CO K [DE]) 10. September 1992 (1992-09-10) Zusammenfassung Spalte 2, Zeile 36 - Spalte 7, Zeile 49 Abbildungen	1,2,4, 7-12, 14-16,18
X	US 5 890 613 A (WILLIAMS WARREN BRET [US]) 6. April 1999 (1999-04-06) Zusammenfassung Abbildungen Spalte 2, Zeile 38 - Spalte 4, Zeile 17	1,2,8,9, 15,16

-/--

[X] Weitere Veröffentlichungen sind der Fortsetzung von Feld C zu entnehmen [X] Siehe Anhang Patentfamilie

* Besondere Kategorien von angegebenen Veröffentlichungen :
"A" Veröffentlichung, die den allgemeinen Stand der Technik definiert, aber nicht als besonders bedeutsam anzusehen ist
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"&" Veröffentlichung, die Mitglied derselben Patentfamilie ist

Datum des Abschlusses der internationalen Recherche	Absendedatum des internationalen Recherchenberichts
26. Juni 2018	09/07/2018

Name und Postanschrift der Internationalen Recherchenbehörde	Bevollmächtigter Bediensteter
Europäisches Patentamt, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Zetzsche, Brigitta

INTERNATIONALER RECHERCHENBERICHT

Internationales Aktenzeichen
PCT/EP2018/064742

C. (Fortsetzung) ALS WESENTLICH ANGESEHENE UNTERLAGEN

Kategorie*	Bezeichnung der Veröffentlichung, soweit erforderlich unter Angabe der in Betracht kommenden Teile	Betr. Anspruch Nr.
X	DE 20 2015 005752 U1 (PLASTON AG [CH]; ROTHENBERGER AG [DE]) 21. November 2016 (2016-11-21) Zusammenfassung Absatz [0045] - Absatz [0075] Abbildungen	1,2,8,9, 15,16
X	WO 2016/091570 A1 (ADOLF WÜRTH GMBH & CO KG [DE]) 16. Juni 2016 (2016-06-16) Zusammenfassung Abbildungen	1,8,15
X	DE 20 2012 102760 U1 (FUCHS KARL HEINZ [DE]) 5. Dezember 2012 (2012-12-05) Zusammenfassung Abbildungen	1,8,15
X	WO 02/11955 A1 (ATLAS COPCO ELECTRIC TOOLS [DE]; MEIER SVEN [DE]; MUELLER CHORUS VITUS) 14. Februar 2002 (2002-02-14) Zusammenfassung Abbildungen	1,8,15

INTERNATIONALER RECHERCHENBERICHT

Angaben zu Veröffentlichungen, die zur selben Patentfamilie gehören

Internationales Aktenzeichen
PCT/EP2018/064742

Im Recherchenbericht angeführtes Patentdokument	Datum der Veröffentlichung	Mitglied(er) der Patentfamilie	Datum der Veröffentlichung
DE 4107267 A1	10-09-1992	DE 4107267 A1	10-09-1992
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US 5890613 A	06-04-1999	KEINE	
DE 202015005752 U1	21-11-2016	AU 2016309923 A1	22-02-2018
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		EP 3337645 A1	27-06-2018
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		CA 2970579 A1	16-06-2016
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		TW 201632420 A	16-09-2016
		US 2017318927 A1	09-11-2017
		WO 2016091570 A1	16-06-2016
DE 202012102760 U1	05-12-2012	KEINE	
WO 0211955 A1	14-02-2002	AT 410271 T	15-10-2008
		AU 7407800 A	18-02-2002
		EP 1305145 A1	02-05-2003
		US 2003094392 A1	22-05-2003
		WO 0211955 A1	14-02-2002

DECLARATION (37 CFR 1.63) FOR UTILITY OR DESIGN APPLICATION USING AN APPLICATION DATA SHEET (37 CFR 1.76)

Title of Invention	CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

As the below named inventor, I hereby declare that:

This declaration is directed to:

- ☐ The attached application, or
- ☐ United States application or PCT international application number _____ filed on _____.
- ☑ The application associated with Attorney Docket No. 17157-0101 (which attorney docket number is displayed on the cover of the Specification as filed [MPEP 602.08(c)])

The above-identified application was made or authorized to be made by me.

I believe that I am the original inventor or an original joint inventor of a claimed invention in the application.

I hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both.

WARNING:

Petitioner/applicant is cautioned to avoid submitting personal information in documents filed in a patent application that may contribute to identity theft. Personal information such as social security numbers, bank account numbers, or credit card numbers (other than a check or credit card authorization form PTO-2038 submitted for payment purposes) is never required by the USPTO to support a petition or an application. If this type of personal information is included in documents submitted to the USPTO, petitioners/applicants should consider redacting such personal information from the documents before submitting them to the USPTO. Petitioner/applicant is advised that the record of a patent application is available to the public after publication of the application (unless a non-publication request in compliance with 37 CFR 1.213(a) is made in the application) or issuance of a patent. Furthermore, the record from an abandoned application may also be available to the public if the application is referenced in a published application or an issued patent (see 37 CFR 1.14). Checks and credit card authorization forms PTO-2038 submitted for payment purposes are not retained in the application file and therefore are not publicly available.

LEGAL NAME OF INVENTOR

Inventor: Hongquan ZHANG Date (Optional): 2021. 2. 23

Signature: 张红全 Hongquan ZHANG

PTO/AIA/96 (08-12)
Approved for use through 01/31/2013. OMB 0651-0031
U.S. Patent and Trademark Office; U.S. DEPARTMENT OF COMMERCE
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STATEMENT UNDER 37 CFR 3.73(c)

Applicant/Patent Owner: Hongquan ZHANG, Qiang WANG and Shujun CAI

Application No./Patent No.: _____ Filed/Issue Date: _____

Titled: CONNECTION STRUCTURE OF MODULE, STORAGE BOX AND STORAGE BOX ASSEMBLY

Meridian International Co., Ltd., a corporation

(Name of Assignee) (Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that, for the patent application/patent identified above, it is (choose **one** of options 1, 2, 3 or 4 below):

1. ☑ The assignee of the entire right, title, and interest.

2. ☐ An assignee of less than the entire right, title, and interest (check applicable box):

   ☐ The extent (by percentage) of its ownership interest is _____%. Additional Statement(s) by the owners holding the balance of the interest must be submitted to account for 100% of the ownership interest.

   ☐ There are unspecified percentages of ownership. The other parties, including inventors, who together own the entire right, title and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

3. ☐ The assignee of an undivided interest in the entirety (a complete assignment from one of the joint inventors was made). The other parties, including inventors, who together own the entire right, title, and interest are:

   Additional Statement(s) by the owner(s) holding the balance of the interest must be submitted to account for the entire right, title, and interest.

4. ☐ The recipient, via a court proceeding or the like (*e.g.*, bankruptcy, probate), of an undivided interest in the entirety (a complete transfer of ownership interest was made). The certified document(s) showing the transfer is attached.

The interest identified in option 1, 2 or 3 above (not option 4) is evidenced by either (choose **one** of options A or B below):

A. ☑ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel _____, Frame _____, or for which a copy thereof is attached.

B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

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This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☑ As required by 37 CFR 3.73(c)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Jason R. Sytsma/	November 21, 2023
Signature	Date
Jason R. Sytsma	62262
Printed or Typed Name	Title or Registration Number

NONPROVISIONAL PATENT ASSIGNMENT

Assignee Reference No.	*17157-0101*

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证　明

本证明之附件是向本局提交的下列专利申请文件副本。

申　　请　　号：202320135456.3

申　请　类　型：实用新型专利

发明 创造 名称：模块的连接结构、储物箱及储物箱组件

申　　请　　日：2023年01月13日

申　　请　　人：上海美瑞实业有限公司

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局长

申长雨

2023 年 02 月 10 日

权 利 要 求 书

1、一种模块的连接结构，包括位于所述模块一表面上的第一连接部（1）、位于所述模块另一表面上的第二连接部（2）；

所述第一连接部（1）包括安装部（11）、可相对于所述安装部（11）移动的锁定部（12）及位于所述安装部（11）与所述锁定部（12）之间的第一弹性件（13），所述第一弹性件（13）使所述锁定部（12）自动保持在锁定状态；

所述第二连接部（2）包括与所述锁定部（12）相互锁定的配合部（21），下压一所述模块的锁定部（12）可使其与另一模块的配合部（21）在第一弹性件（13）的作用下自动锁定；

其特征在于，还包括止动部（3），所述止动部（3）设置在所述锁定部（12）上，且其一端与所述锁定部（12）转动连接，当所述第一连接部（1）与所述第二连接部（2）处于保持解锁状态时，所述止动部（3）与所述第二连接部（2）在锁定部（12）的锁定路径上卡持。

2、根据权利要求 1 所述的模块的连接结构，其特征在于，所述止动部（3）包括锁舌（36）和第二弹性件（33），所述锁舌（36）的一端转动连接于所述锁定部（12），所述第二弹性件（33）使所述锁舌（36）自动保持在弹出状态；当所述锁舌（36）弹出并抵持在所述配合部（21）上时，所述锁定部（12）无法自动锁定，所述第一连接部（1）与所述第二连接部（2）处于保持解锁状态。

3、根据权利要求 2 所述的模块的连接结构，其特征在于，所述锁定部（12）上设有容纳槽（123），所述容纳槽（123）具有底壁（123a）和两个侧壁（123b），两个所述侧壁（123b）沿所述底壁（123a）的两侧向上延伸且相对设置；所述锁舌（36）可伸缩地设置在所述容纳槽（123）内，所述第二弹性件（33）的一端抵靠在所述锁舌（36）上，另一端抵靠在所述底壁（123a）上；当所述第二弹性件（33）弹出时，所述锁舌（36）伸出所述容纳槽（123），

当所述第二弹性件（33）压缩时，所述锁舌（36）缩回至所述容纳槽（123）内。

4、根据权利要求3所述的模块的连接结构，其特征在于，所述锁舌（36）上设有向上突起的挡块（361）；当第一连接部（1）与第二连接部（2）处于保持解锁状态时，所述挡块（361）伸出所述容纳槽（123）与所述配合部（21）抵持。

5、根据权利要求4所述的模块的连接结构，其特征在于，所述锁舌（36）具有相对的第一端部（36a）和第二端部（36b），第二端部（36b）相较第一端部（36a）更靠近模块的中心位置；所述第一端部（36a）设有轴孔，所述止动部（3）还包括旋转轴（37），所述旋转轴（37）的两端固定在两个所述侧壁（123b）上，所述第二弹性件（33）为扭簧，所述第一端部（36a）和所述第二弹性件（33）套设在所述旋转轴（37）上。

6、根据权利要求4所述的模块的连接结构，其特征在于，所述锁舌（36）具有相对的第一端部（36a）和第二端部（36b），第二端部（36b）相较第一端部（36a）更靠近模块的中心位置；所述第一端部（36a）与所述锁定部（12）转动连接，所述第二弹性件（33）的两端分别位于所述锁舌（36）与所述底壁（123a）之间，所述第二弹性件（33）为伸缩弹簧。

7、根据权利要求6所述的模块的连接结构，其特征在于，所述第二端部（36b）的两侧设有凸轴（362），两个所述凸轴（362）分别插设在两个所述侧壁（123b）的滑轨（123c）内。

8、根据权利要求1所述的模块的连接结构，其特征在于，所述锁定部（12）为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

9、一种储物箱，包括箱盖（101）和箱体（102），所述箱盖（101）设置在所述箱体（102）上，其特征在于，所述储物箱上设置有如权利要求1~8任一项所述的模块的连接结构，所述第一连接部（1）设置于所述箱盖（101）

上，所述第二连接部（2）设置于所述箱体（102）的底部。

10、一种储物箱组件，其特征在于，包括多个如权利要求 9 所述的储物箱，相邻两个所述储物箱之间可通过所述第一连接件（1）与所述第二连接件（2）相互锁定。

说 明 书

模块的连接结构、储物箱及储物箱组件

技术领域

本实用新型涉及物品存储技术领域，尤其是涉及一种模块的连接结构、储物箱及储物箱组件。

背景技术

常规储物箱的各个箱体之间都是单独放置的，即使能一个一个堆放上去也只能保证放平即可。但对于需要买多个箱子的家庭及专业用户来讲，如果未设置两个箱体之间的互锁功能，那么多个箱体放置几层后很容易会翻倒，从而带来安全隐患。尤其是在需要同时移动多个箱体的时候，由于在拖行过程中整体重心改变及路面不平整产生震动，更加容易导致上方的箱体翻倒。

要避免以上问题，目前常规的解决方法是：额外增加一些如绳索等配件来协助固定多个箱体，以此来解决此问题。但是，采用此解决方法不仅增加了额外的成本，而且储物箱必须先解开绳索才能取出里面的物品，这给实际的使用带来诸多不便。

目前市面上有一种用于堆叠箱体的互锁结构，一般采用带有自动回弹功能的锁扣将上下两个箱体锁止固定，这种带有自动回弹功能的锁扣在上箱体与下箱体连接后能够自动回弹锁止，且在上箱体与下箱体分离后能够自动回弹为下一次锁止做好准备，从而方便用户使用。但是，在将上下两个箱体分开时，由于锁扣能够自动回弹，故用户需要用一只手或两只手将锁扣保持在解锁位，才能将上箱体与下箱体分离，从而不方便用户使用。

有鉴于此，确有必要提供一种模块的连接结构、储物箱及储物箱组件，以此来解决此问题。

实用新型内容

本实用新型的目的是提供一种储物箱的连接结构，旨在解决上述背景技术存在的不足，能够实现自动锁定、保持解锁及自动复位功能，从而方便用户操作使用。

本实用新型提供了一种模块的连接结构，包括位于所述模块一表面上的第一连接部、位于所述模块另一表面上的第二连接部；

所述第一连接部包括安装部、可相对于所述安装部移动的锁定部及位于所述安装部与所述锁定部之间的第一弹性件，所述第一弹性件使所述锁定部自动保持在锁定状态；

所述第二连接部包括与所述锁定部相互锁定的配合部，下压一所述模块的锁定部可使其与另一模块的配合部在第一弹性件的作用下自动锁定；

还包括止动部，所述止动部设置在所述锁定部上，且其一端与所述锁定部转动连接，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述第二连接部在锁定部的锁定路径上卡持。

进一步地，所述止动部包括锁舌和第二弹性件，所述锁舌的一端转动连接于所述锁定部，所述第二弹性件使所述锁舌自动保持在弹出状态；当所述锁舌弹出并抵持在所述配合部上时，所述锁定部无法自动锁定，所述第一连接部与所述第二连接部处于保持解锁状态。

进一步地，所述锁定部设有容纳槽，所述容纳槽具有底壁和两个侧壁，两个所述侧壁沿所述底壁的两侧向上延伸且相对设置；所述锁舌可伸缩地设置在所述容纳槽内，所述第二弹性件的一端抵靠在所述锁舌上，另一端抵靠在所述底壁上；当所述第二弹性件弹出时，所述锁舌伸出所述容纳槽，当所述第二弹性件压缩时，所述锁舌缩回至所述容纳槽内。

进一步地，所述锁舌上设有向上突起的挡块；当第一连接部与第二连接部处于保持解锁状态时，所述挡块伸出所述容纳槽与所述配合部抵持。

进一步地，所述锁舌具有相对的第一端部和第二端部，第二端部相较第一端部更靠近模块的中心位置；所述第一端部设有轴孔，所述止动部还包括

旋转轴，所述旋转轴的两端固定在两个所述侧壁上，所述第二弹性件为扭簧，所述第一端部和所述第二弹性件套设在所述旋转轴上。

进一步地，所述锁舌具有相对的第一端部和第二端部，第二端部相较第一端部更靠近模块的中心位置；所述第一端部与所述锁定部转动连接，所述第二弹性件的两端分别位于所述锁舌与所述底壁之间，所述第二弹性件为伸缩弹簧。

进一步地，所述第二端部的两侧设有凸轴，两个所述凸轴分别插设在两个所述侧壁的滑轨内。

进一步地，所述锁定部为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

本实用新型还提供了一种储物箱，包括箱盖和箱体，所述箱盖设置在所述箱体上，所述储物箱上设置有如上任一项所述的模块的连接结构，所述第一连接部设置于所述箱盖上，所述第二连接部设置于所述箱体的底部。

本实用新型还提供了一种储物箱组件，包括多个如上所述的储物箱，相邻两个所述储物箱之间可通过所述第一连接件与所述第二连接件相互锁定。

本实用新型提供的储物箱的连接结构具有如下有益效果：

1、利用第一连接部与第二连接部配合锁定。当上方储物箱放置到位的同时自动实现两箱互相锁定的功能，不需要用户在放好箱体后因需锁定箱体时再特意去分别操作两侧的锁扣，只需在打开时拉开两侧锁扣即可。

2、利用可转动的锁舌使第一连接部与第二连接部处于保持解锁状态，锁舌的运动确定性强，使用顺畅，极大的改善了用户使用的便利性。

附图说明

图 1 为本实用新型第一实施例中储物箱的立体结构示意图。

图 2 为本实用新型第一实施例中储物箱的另一立体结构示意图。

图 3 为本实用新型第一实施例中储物箱的局部结构示意图。

图 4 为图 3 的另一视角的结构示意图

图 5 为本实用新型第一实施例中储物箱的局部爆炸结构示意图。

图 6 为本实用新型第一实施例中储物箱的另一局部结构示意图。

图 7 为两个储物箱处于锁定状态时的局部结构示意图。

图 8 是图 7 的另一视角的剖面图。

图 9 为两个储物箱处于保持解锁状态时的局部结构示意图。

图 10 是图 9 的另一视角的剖面图。

图 11 为本实用新型第二实施例中储物箱的局部结构示意图。

图 12 为本实用新型第二实施例中储物箱的局部爆炸结构示意图。

具体实施方式

下面结合附图和实施例，对本实用新型的具体实施方式作进一步详细描述。以下实施例用于说明本实用新型，但不用来限制本实用新型的范围。

本实用新型的说明书和权利要求书中的术语“第一”、“第二”、“第三”、“第四”等（如果存在）是用于区别类似的对象，而不必用于描述特定的顺序或先后次序。

本实用新型的说明书和权利要求书中所涉及的上、下、左、右、前、后、顶、底等（如果存在）方位词是以附图中的结构位于图中的位置以及结构相互之间的位置来定义的，只是为了表达技术方案的清楚及方便。应当理解，方位词的使用不应限制本申请请求保护的范围。

本实用新型提供了一种模块的连接结构、具有该连接结构的储物箱及储物箱组件。该连接结构可设置在储物箱上，相邻两个储物箱之间可通过该连接结构进行配合锁定，从而便于多个储物箱的运输。该储物箱可以是工具箱、工具篮、运输箱、中转箱等储物装置。

第一实施例

如图 1 至图 6 所示，本实施例提供了一种模块的连接结构，该连接结构

可设置在储物箱上。该连接结构包括第一连接部1、第二连接部2及止动部3，第一连接部1与第二连接部2可相互配合自动锁定；止动部3可使第一连接部1与第二连接部2在解锁后无法自动锁定，从而使第一连接部1与第二连接部2保持在解锁状态，便于第一连接部1与第二连接部2相互解锁并分离，解放用户双手、便于用户使用。

本实施例中，储物箱包括箱盖101和箱体102，箱盖101设置在箱体102上。箱盖101可相对箱体102打开或盖合。第一连接部1设置在储物箱的箱盖101上，第一连接部1包括安装部11、可相对于安装部11水平移动的锁定部12及位于安装部11与锁定部12之间的第一弹性件13，锁定部12可在第一弹性件13的作用下自动保持在锁定状态。

进一步地，安装部11与箱盖101可拆卸地连接。箱盖101上设有安装槽111，安装部11卡接在安装槽111内，从而便于安装部11的更换。在其它实施例中，安装部1与箱盖101可一体成型，或通过其它方式固定或可拆卸连接。安装部11远离箱盖101的一侧面上设有滑槽11a，锁定部12设置在滑槽11a内并可在滑槽11a内相对于安装部11移动。本实施例中，锁定部12为相对于安装部11水平移动的滑动锁扣，从而使锁定部12在滑槽11a内水平移动。在其它实施例中，锁定部12也可为相对于安装部11翻转移动的翻转锁扣，或为相对于安装部11旋转移动的旋转锁扣。

具体地，锁定部12上设有锁定扣122，锁定扣122的凸出方向朝向储物箱中心一侧。当锁定扣122卡入第二连接部2时，第一连接部1与第二连接部2可相互锁定，当锁定扣122从第二连接部2脱离时，第一连接部1与第二连接部2可相互解锁。同时，为了便于锁定扣122与第二连接部2之间的锁定，锁定扣122上设有斜面122a。锁定部12远离箱盖101的一侧面上设有容纳槽123，容纳槽123位于锁定扣122靠近箱盖101的一侧。容纳槽123具有底壁123a和两个侧壁123b，两个侧壁123b沿底壁123a的两侧向上延伸且相对设置，止动部3设置在容纳槽123中。

进一步地，第一弹性件13连接在安装部11与锁定部12之间，第一弹性件13的一端与安装部11抵靠，另一端与锁定部12抵靠，从而使锁定部12在第一弹性件13的作用下自动保持在锁定状态。为了提高锁定部12移动的可靠性，第一弹性件13可以设置两个，分别位于滑槽11a的两侧。第一弹性件13为伸缩弹簧，从而使锁定部12作水平移动。

进一步地，如图2和图6所示，第二连接部2设置在储物箱的箱体102的底部，其包括与锁定部12的锁定扣122相互锁定的配合部21，下压一储物箱的锁定部12可使其与另一储物箱的配合部21在第一弹性件13的作用下自动锁定。配合部21为若干卡槽211，卡槽211的数量可与锁定扣122的数量对应设置。

止动部3设置在锁定部12上，且其一端与锁定部12转动连接。止动部3包括锁舌36和第二弹性件33，锁舌36的一端转动连接于锁定部12上，第二弹性件33使锁舌36自动保持在弹出状态，当锁舌36弹出并抵持在配合部21上时，锁定部12无法自动锁定，第一连接部1与第二连接部2处于保持解锁状态。下压止动部3使其缩回至锁定部12内时，锁定部12可自动锁定。当第一连接部1与第二连接部2处于锁定状态时，锁定扣122与配合部21干涉，止动部3缩回至锁定部12内；当第一连接部1与第二连接部2处于保持解锁状态时，锁定扣122不与配合部22干涉，止动部3与配合部21在锁定部12的锁定路径上卡持。

在本实施例中，锁舌36伸缩地设置在锁定部12的容纳槽123内，且还可随锁定部12相对于安装部11水平移动，锁舌36的长度延伸方向与锁定部12的移动方向一致。第二弹性件33的一端抵靠在锁舌36上、另一端抵靠在底壁123a上，当第二弹性件33弹出时，锁舌36伸出容纳槽123，当第二弹性件33压缩时，锁舌36缩回至所述容纳槽123内。具体地，锁舌36上设有向上突起的挡块361，当第一连接部1与第二连接部处于保持解锁状态时，挡块361伸出容纳槽123与配合部21抵持，挡块361用于与配合部21抵持。

锁舌 36 具有相对的第一端部 36a 和第二端部 36b，第二端部 36b 相较第一端部 36a 更靠近储物箱的中心位置，挡块 361 设置在第一端部 36a 和第二端部 36b 的连接处。

进一步地，如图 5 所示，止动部 3 还包括旋转轴 37，旋转轴 37 的两端固定在两个侧壁 123b 上；第二弹性件 33 为扭簧，锁舌 36 的第一端部 36a 设有轴孔（图未标注），锁舌 36 的第一端部 36a 和第二弹性件 33 套设在旋转轴 37 上，第二弹性件 33 的两个扭转臂分别抵靠在锁舌 36 和底壁 123a 上。进一步地，第一端部 36a 具有受力面，挡块 361 具有抵持面，第二端部 36b 具有定位面，定位面与抵持面大致呈直角相交。定位面与抵持面配合抵靠在配合部 21 的侧面和底面上以限制锁舌 36 的位置进而限制锁定部 12 的位置。受力面用于接受配合部 21 的挤压或供使用者手动按压。当第一连接部 1 与第二连接部 2 处于保持解锁状态时，第二弹性件 33 伸展，挡块 361 向上伸出容纳槽 123；当第一连接部 1 与第二连接部 2 处于锁定状态时，第二弹性件 33 压缩，挡块 361 受到配合部 21 的底面的挤压压缩在容纳槽 123 内。

此外，为了便于第一连接部 1 与第二连接部 2 互锁时的定位，可在箱盖 101 上设置定位凹槽 41，在箱体 102 的底部设置凸起部 42，定位凹槽 41 可恰好容纳凸起部 42，第一连接部 1 可设置在箱盖 101 的边缘两侧。

本实施例的工作原理为：

如图 7 和图 8 所示，当需要上下锁定两个储物箱时，下压上方储物箱使其第二连接部 2 的配合部 21 与下方储物箱上的锁定扣 122 相接触并挤压斜面 122a，下方储物箱的锁定扣 122 受到挤压驱使第一连接部 1 的锁定部 12 朝向解锁方向（即远离储物箱中心）移动，此时第一弹性件 13 压缩蓄力，止动部 3 同时接受第二连接部 2 的挤压后向下旋转缩回至容纳槽 123 内。当上方储物箱下移一定距离后，锁定部 12 上的锁定扣 122 与配合部 21 上的卡槽 211 相对应时，锁定扣 122 失去上方储物箱的抵持，锁定扣 122 在第一弹性件 13 的驱动下自动卡入卡槽 211 内，从而使第一连接部 1 与第二连接部 2 处于锁

定状态，即实现上下储物箱的自动锁定功能；此时，止动部 3 完全缩回至容纳槽 123 内。

如图 9 和图 10 所示，当需要上下解锁两个储物箱时，向外拉动下方储物箱的锁定部 12 使其朝向解锁方向移动，当锁定部 12 向解锁方向移动一定距离至解锁位置后，下方储物箱的锁定扣 122 与上方储物箱的配合部 21 上的卡槽 211 脱离卡合，从而使锁定部 12 与配合部 21 解锁。同时，止动部 3 失去上方储物箱的第二连接部 2 的挤压，锁舌 36 在第二弹性件 33 的作用下自动向上伸出容纳槽 123 与配合部 21 的侧面相抵持，从而使第一连接部 1 与第二连接部 2 处于保持解锁状态，即实现保持解锁功能。此时，只需向上拉起上方储物箱，便可方便地将上下两个储物箱解锁并分离，而锁定部 12 在第一弹性件 13 的驱动下自动复位处在锁定状态，为下一次锁定做好准备。

再有，如果拉开锁定部 12 后，又反悔，不想解锁上下储物箱，此时可以按下锁舌 36，让锁定部 12 重新回到锁定位置，使第一连接部 1 与第二连接部 2 返回锁定状态。

本实施例提供的储物箱的连接结构的优点包括：

1、利用第一连接部 1 与第二连接部 2 配合锁定。当上方储物箱放置到位的同时自动实现两箱互相锁定的功能，不需要用户在放好箱体 102 后因需锁定箱体 102 时再特意去分别操作两侧的锁定部 12，只需在打开时拉开两侧锁定部 12 即可。

2、利用可转动的锁舌 36 使第一连接部 1 与第二连接部 2 处于保持解锁状态，锁舌 36 的运动确定性强，使用顺畅，极大的改善了用户使用的便利性。

第二实施例

如图 11 至图 12 所示，本实施例与第一实施例的不同点在于：转动轴 37 直接做到了锁舌 36 上，其与锁舌 36 一体成型，第二弹性件 33 为伸缩弹簧。

具体地，锁舌 36 具有相对的第一端部 36a 和第二端部 36b，第二端部 36b

相较第一端部 36a 更靠近储物箱的中心位置。锁舌 36 的第二端部 36b 的两侧设有凸轴 362，两个凸轴 362 分别插设在两个侧壁 123b 的滑轨 123c 内，从而使凸轴 362 在滑轨 123c 内来回移动，为锁舌 36 提供导向作用。进一步地，锁舌 36 上还设有第一凸柱 363，底壁 123a 上设有第二凸柱 1231，第二弹性件 33 的两端分别套设的第一凸柱 363 和第二凸柱 1231 上。

本实施例的其它结构、工作原理及所能达到的有益效果第一实施例相同，在此不再赘述。

以上所述，仅为本实用新型的具体实施方式，但本实用新型的保护范围并不局限于此，任何熟悉本技术领域的技术人员在本实用新型揭露的技术范围内，可轻易想到变化或替换，都应涵盖在本实用新型的保护范围之内。因此，本实用新型的保护范围应以所述权利要求的保护范围为准。

说　明　书　附　图

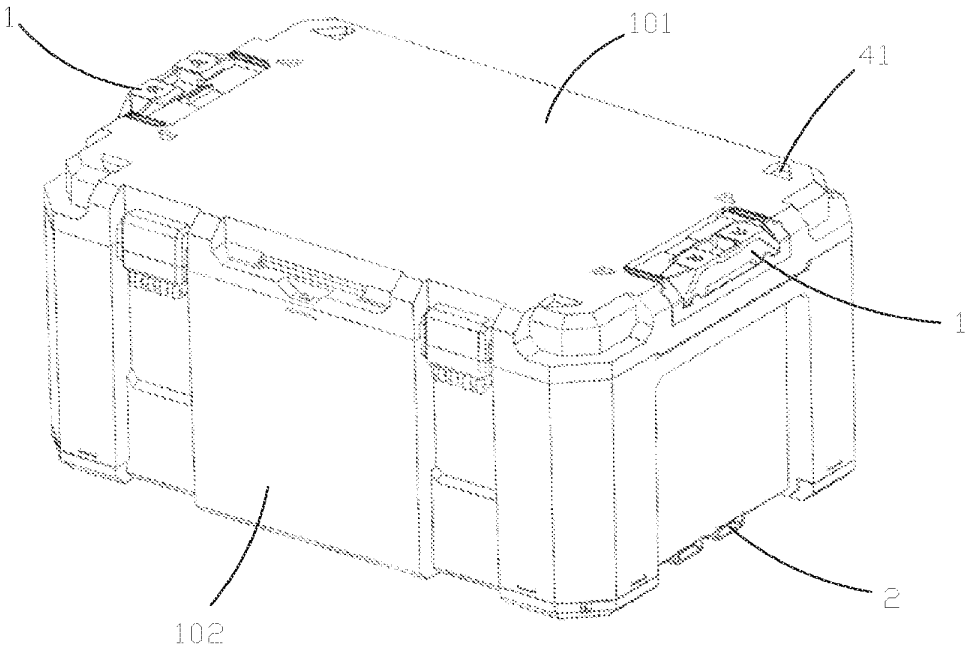


图 1

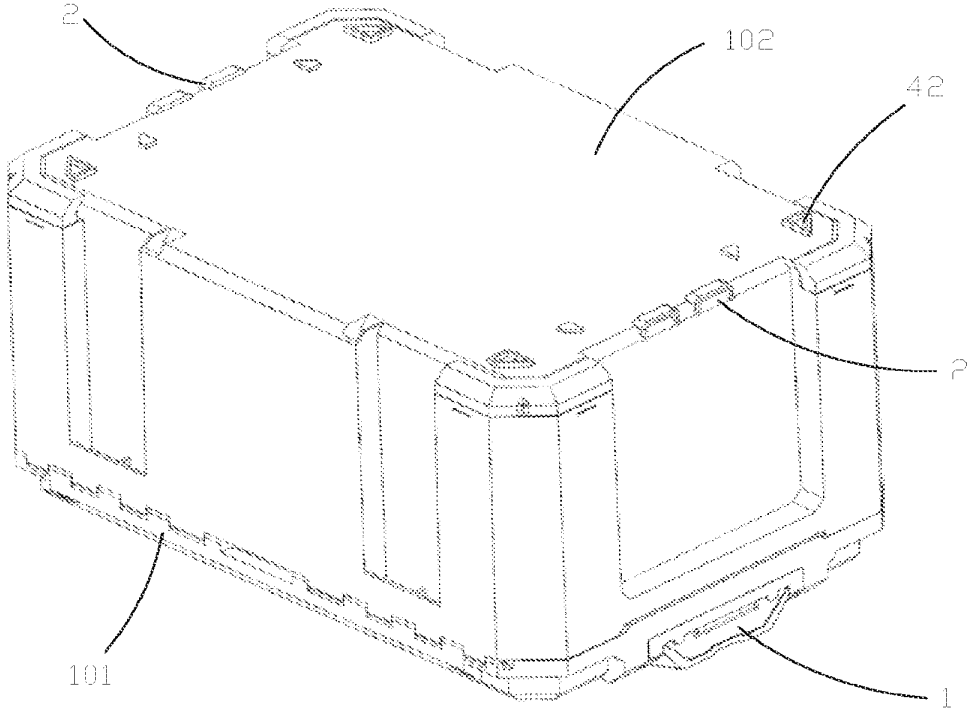


图 2

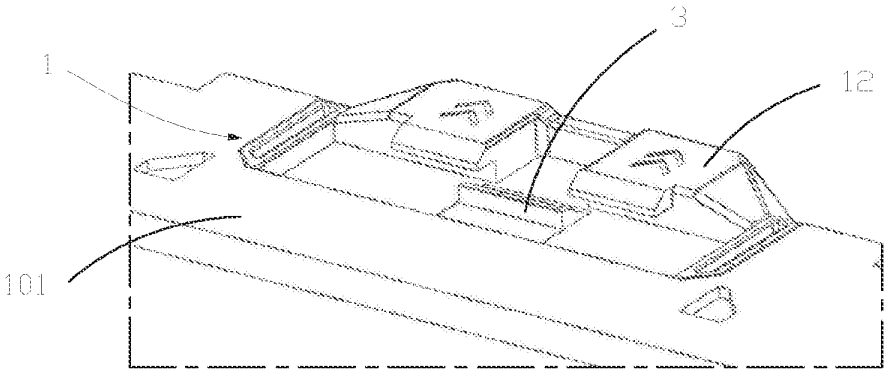


图 3

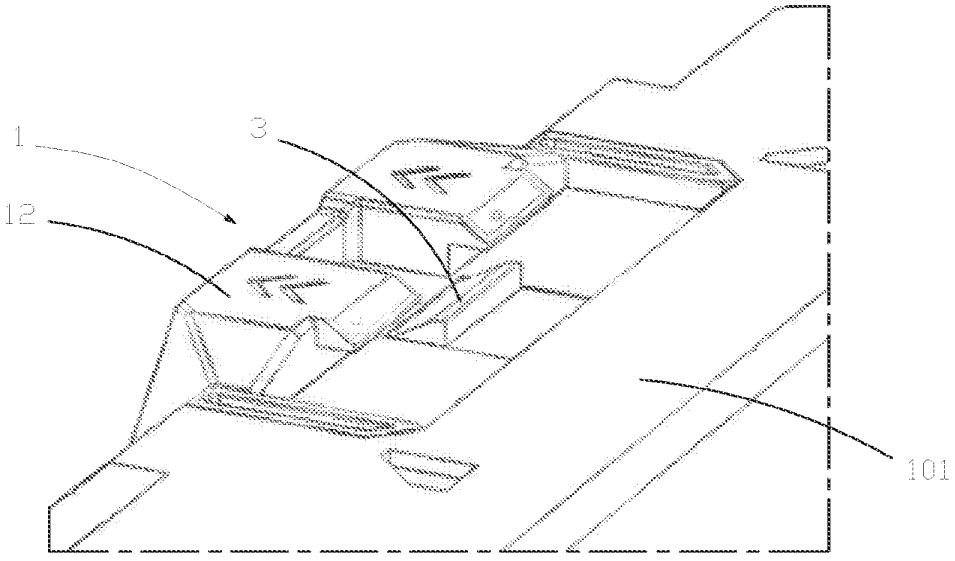


图 4

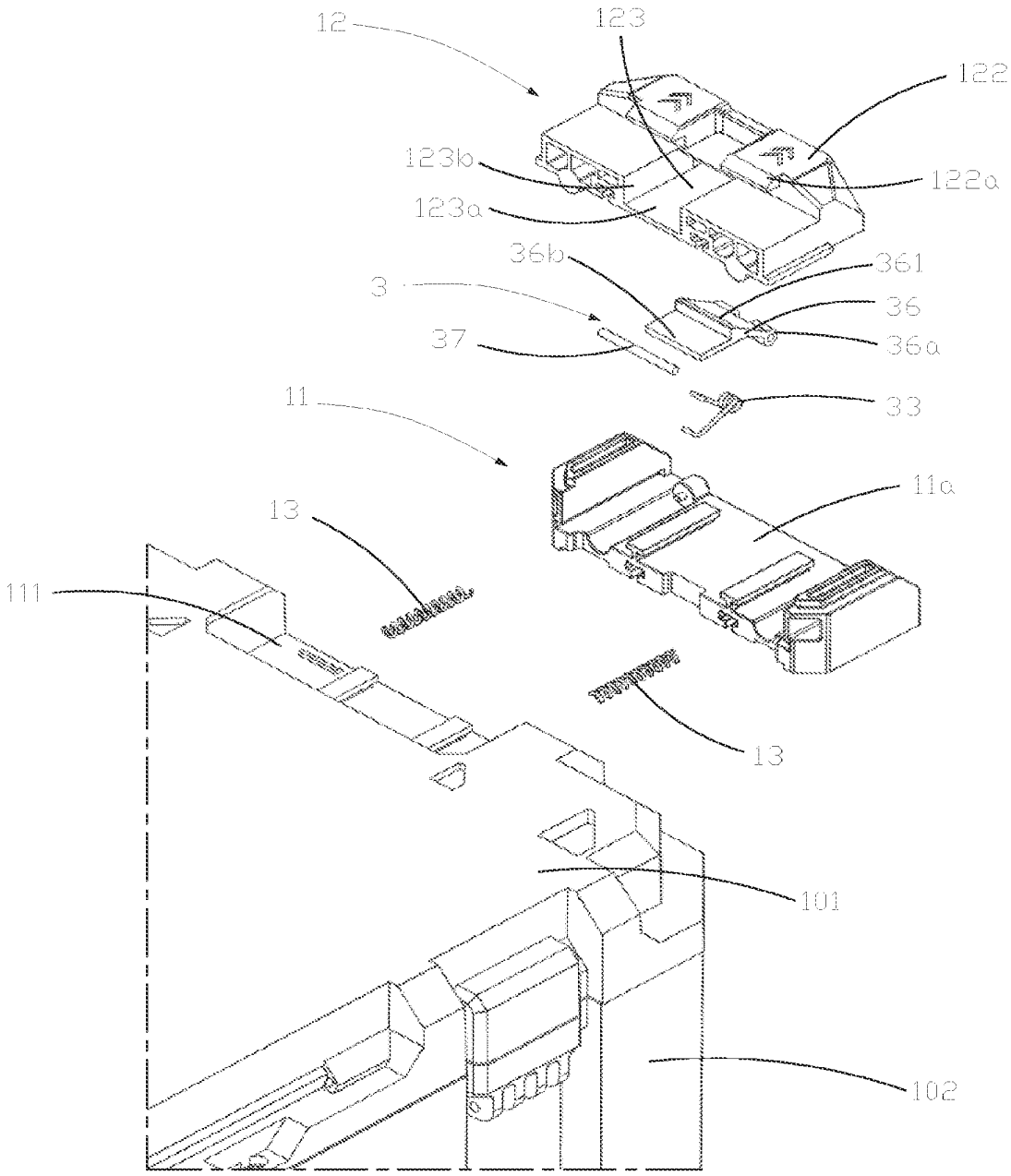

12
123
122
123b
122a
123a
36b
361
3
36
37
36a
11
33
11a
13
111
13
101
102

图 5

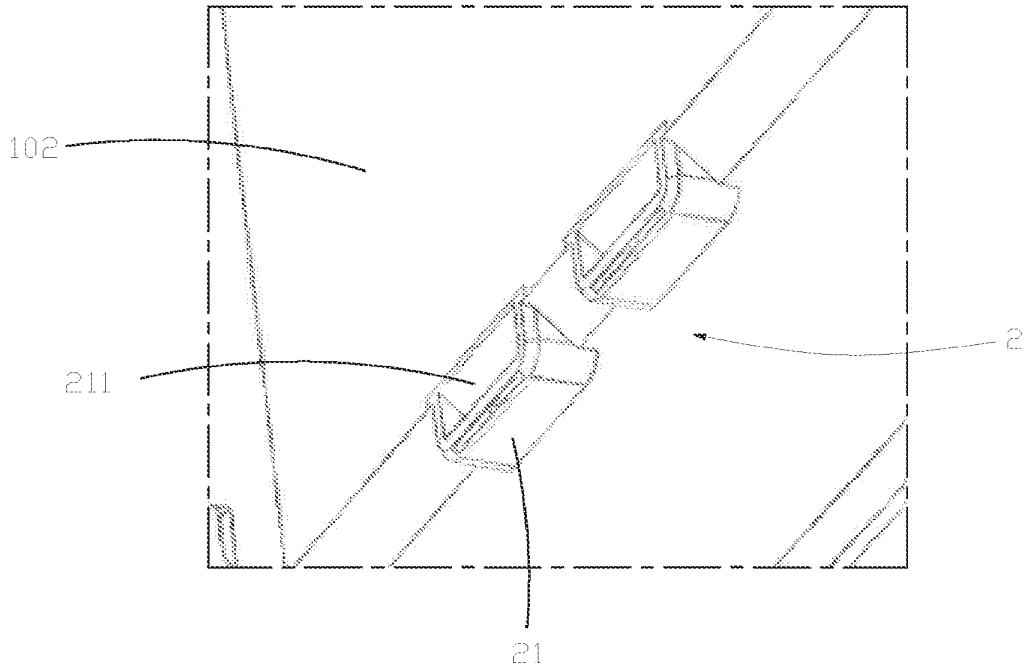


图 6

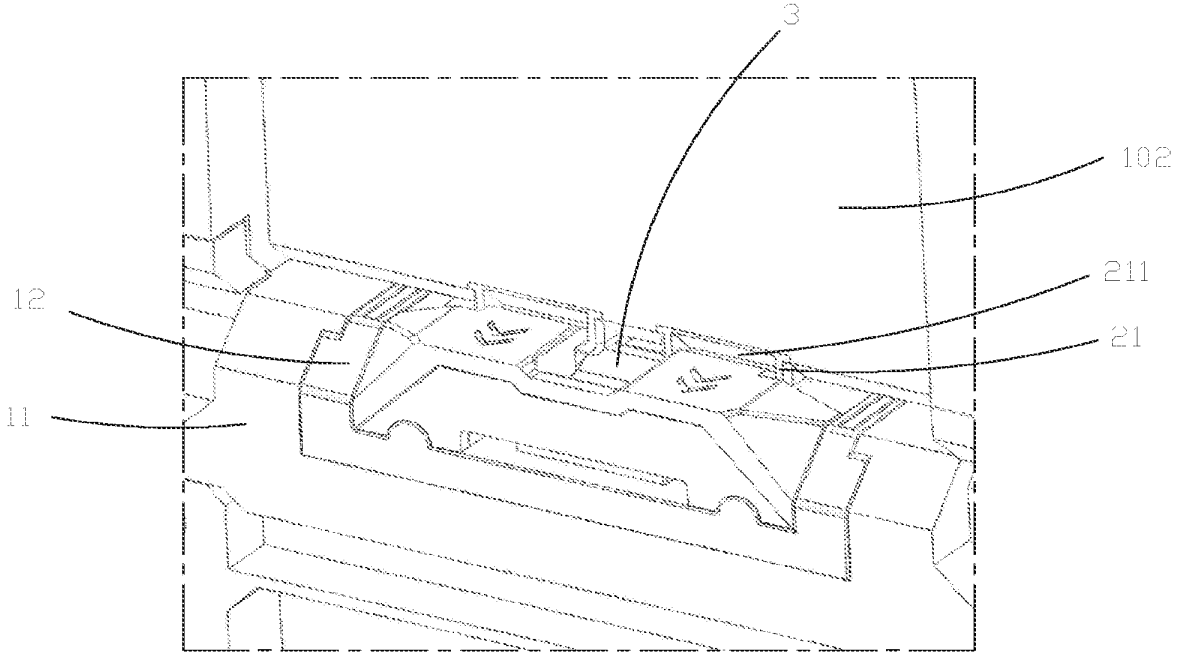


图 7

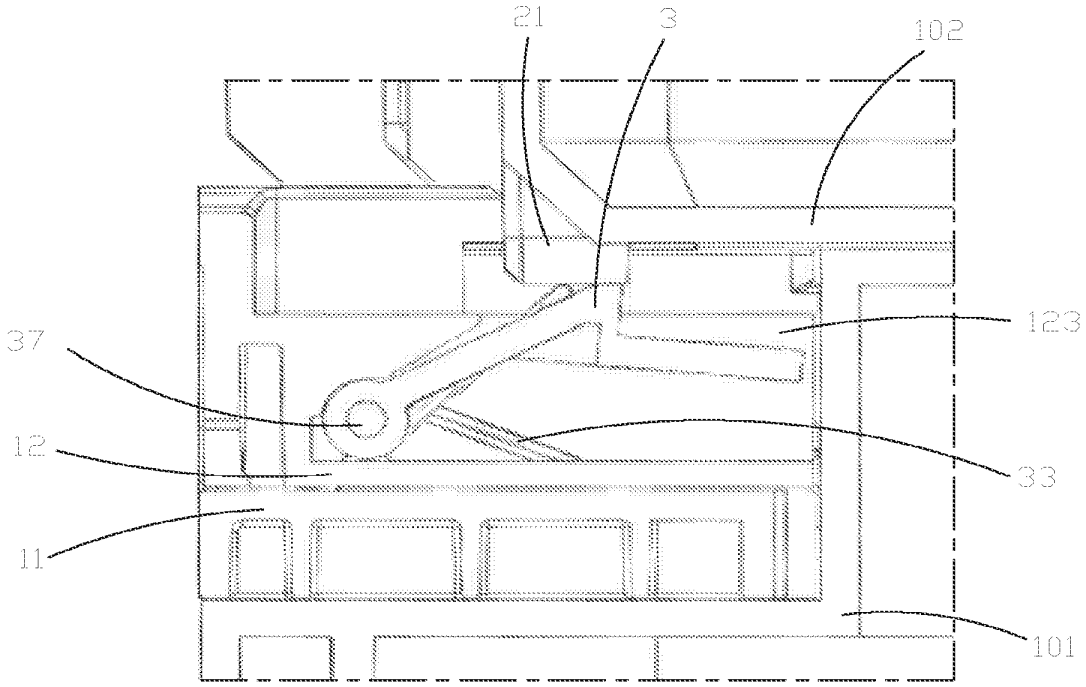


图 8

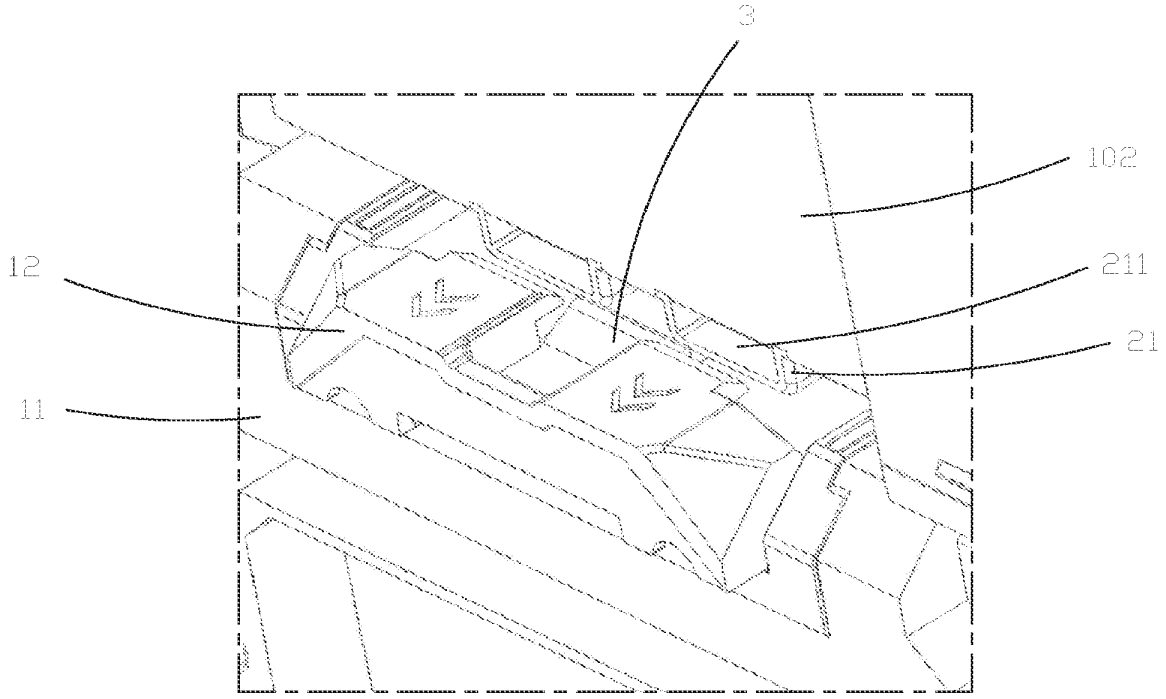


图 9

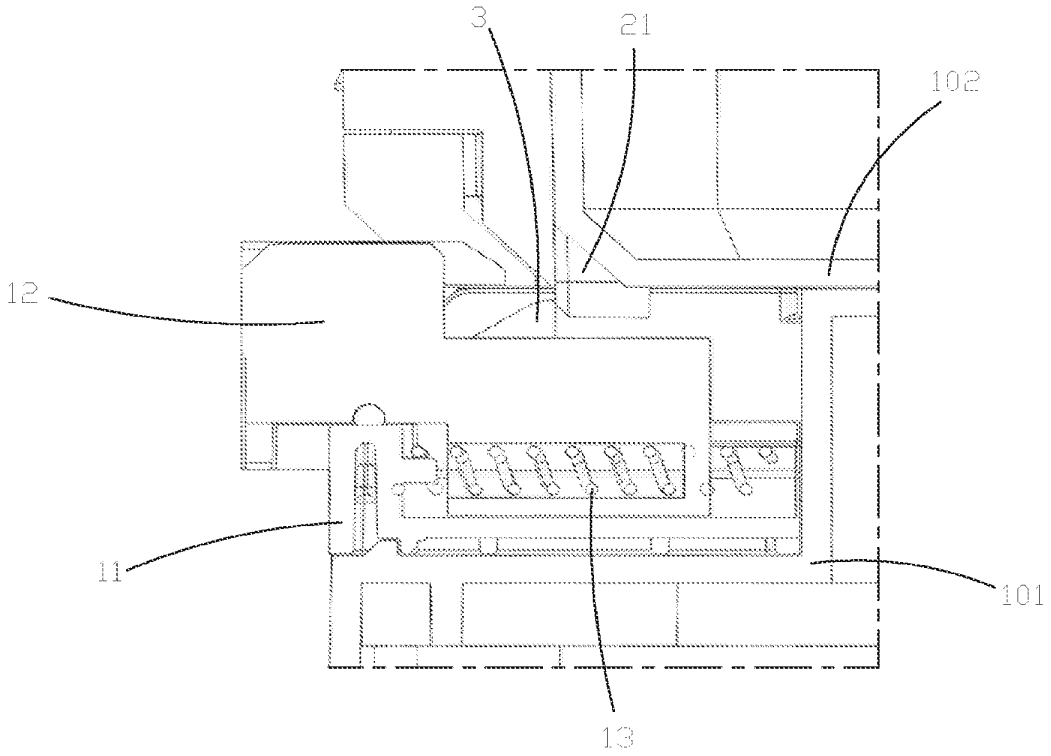


图 10

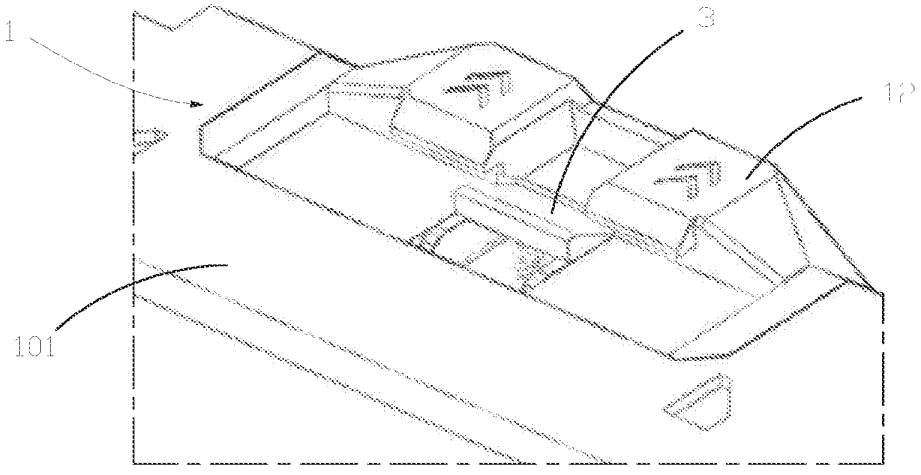


图 11

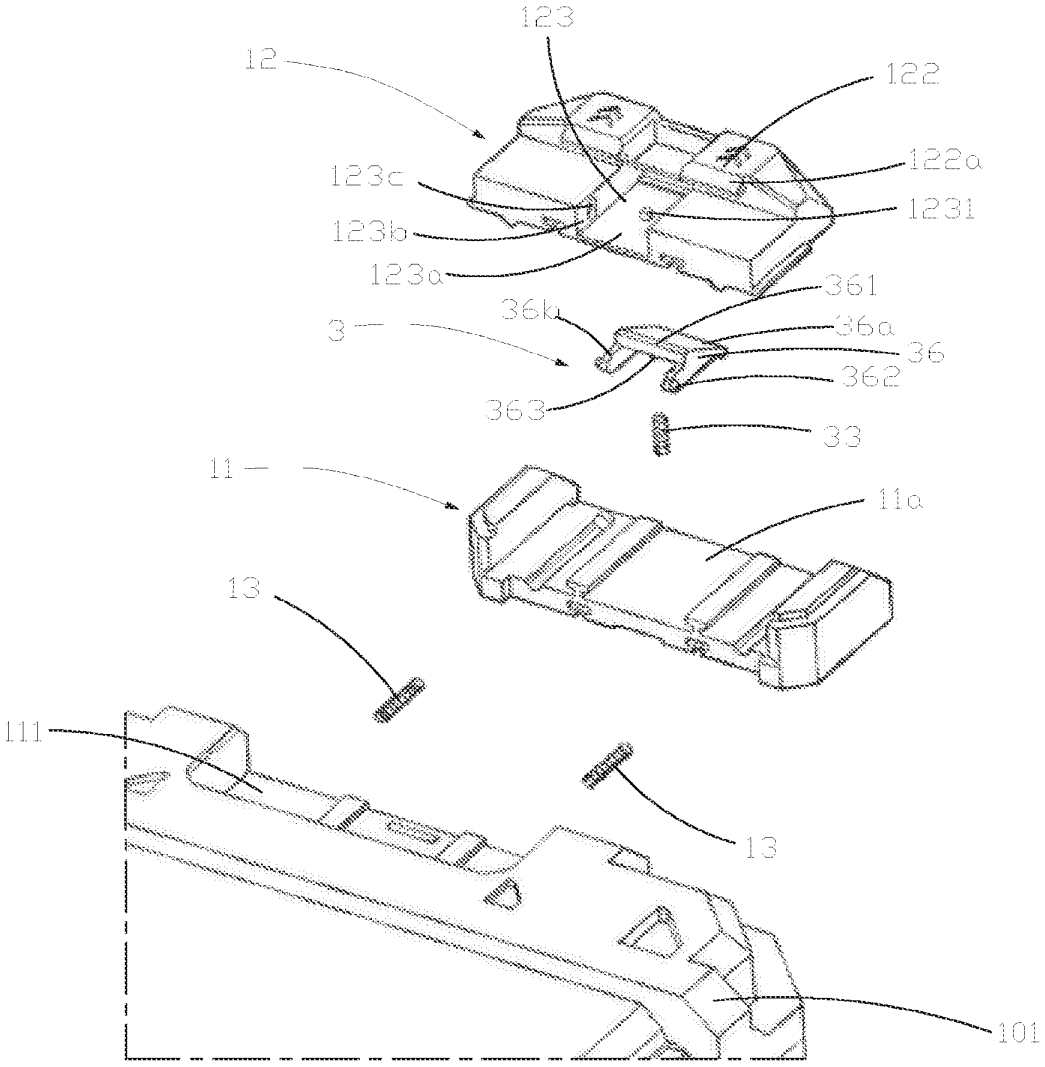

123
12
122
122a
123c
1231
123b
123a
361
36b
3
36a
36
362
363
33
11
11a
13
111
13
101

图 12

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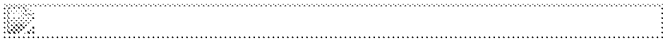
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ABSTRACT DE102015013053A1

Case arrangement with at least two stackable cases (1, 1'), each case (1, 1') consisting of a box-shaped lower part (3) which is connected to a pivotable cover (2) via a horizontal pivot axis (33), wherein a first connecting device between the suitcases (1, 1') is formed from a hanging strap (12) arranged parallel to the pivot axis (33) on the top wall (7) of the lid, into which bottom-side, rearwardly directed hanging hooks (27') of the above arranged suitcase (1') engage and a second manually operated connecting device is arranged next to the front side of the suitcase (1, 1') for positive coupling between associated surfaces of the suitcases (1, 1') stacked one above the other, wherein on the front wall (8) of the lower part (3) about a horizontal pivot axis (22) pivotable folding handle (21) is arranged, which engages over a front wall recess (25, 26), in the area of a manually operable, heavy movable pressure plate (23; 23a, 23b) on which locking hooks (24) are formed, which can be brought into engagement with a hanging strap (14) on the top wall on the opposite suitcase (1, 1').



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DESCRIPTION DE102015013053A1

[0001]

The invention relates to a stackable suitcase with connecting device according to the preamble of claim 1.

[0002]

Such a stackable suitcase has become known, for example, from EP 2 313 321 B1.

The known case consists of a box-shaped lower part and a lid closing the lower part, which lid is pivotally connected to the lower part in a horizontal pivot axis, and a foldable handle is arranged on the upper side of the lid.

[0003]

On the front side of the cover a pivotable bolt is arranged which is pivotable about a horizontal axis.

[0004]

The stacking of cases stacked on top of one another takes place in such a way that supporting stand feet are arranged on the bottom side of the upper case, which engage in associated recesses arranged on the lid side of the lower case in a form-fitting manner, that is to say without play.

[0005]

Further supporting feet are provided, which are referred to as engaging supporting feet, which are arranged at a distance from the first-mentioned supporting feet and have rearwardly directed projections which engage in groove-shaped, recessed recesses in the cover of the case lying thereunder.

[0006]

Accordingly, while the front stand-off feet produce a positive-locking and play-free positional securing between the cover of the lower case and the bottom side of the upper case, the engagement stand-off feet arranged at a distance therefrom engage behind a groove-shaped recess in the cover of the lower case in order to produce a connection which is secured against lifting.

[0007]

A disadvantage of this arrangement is that it is necessary to precisely assign the positions of the front stand-off feet to the recesses on the lid side of the lower case which engage positively therein.

If, however, these depressions are no longer accessible due to soiling or due to the deposition of parts or are only slightly soiled, the mutual locking between the cases stacked on top of one another fails.

[0008]

A further disadvantage of the arrangement is that the locking between the upper and the lower case is effected by a double-armed pivot lever which is arranged on the front side and which engages with its one pivot arm over a pin arranged on the front side of the lower part and at the same time engages with its other pivot arm over a pin which projects on the front side of the upper case on the lower part there.

[0009]

The locking lever on the front side of the one case therefore serves both for locking the cover on the lower part and for establishing a connection with the case lying above it.

[0010]

This has the disadvantage, however, that a form-fitting and precisely aligned connection has to be established between the upper and the lower case, since if the upper case is arranged only slightly offset from the lower case, the locking with the double-armed pivot lever no longer succeeds.

The small-sized pins must be positioned precisely in alignment with one another in the pivoting region of the locking lever.

[0011]

Accordingly, this is a stiff locking connection which can only be produced with a high manual manual rotational force, because with such a manual force both the locking with the protruding pin on the front side of the lower part of the lower case and with the protruding pin on the front side of the lower part of the upper case must be produced simultaneously and in alignment with one another.

[0012]

The two spaced pins should be aligned and coplanar.

If there is only a slight offset between the cases in the vertical or horizontal plane, the mutual locking of the cases no longer succeeds or it becomes so stiff that it can no longer be actuated.

The small-sized pins can be damaged or even broken off in such a locking test.

Moreover, they are not protected against damage due to impact of foreign objects because they are arranged freely accessible on the respective front side of the case.

[0013]

The engagement of the rear, bottom-side and hook-shaped engagement feet on the case with an undercut groove or edge on the rear side of the cover of the case lying thereunder has the disadvantage that there is the risk that the groove is likewise added by the deposition of dirt or foreign bodies, as a result of which the engagement of the hook-shaped groove is no longer possible.

The groove cannot be kept free from dirt because it is shaped as an upwardly open recess in the cover which is otherwise closed on all sides.

[0014]

The front recesses, which serve for the form fit and are equipped with centering surfaces, can just as little be protected against dirt deposits.

The mentioned centering recesses are accordingly likewise not protected against contamination or wear.

[0015]

The subject matter of EP 2 346 741 B1 has disclosed a further stackable suitcase in which the locking takes place in the similar manner.

At the bottom side of the respective suitcase there are rearwardly directed hook-shaped lugs which are to be locked with associated recesses recessed in the lid side of the underlying suitcase.

Here too, there is the disadvantage that the recessed, cup-shaped recesses are not protected against contamination.

Two hooks each spaced apart from one another are present on one plane, so that pivoting of a base part of an upper case in the correct position into a cover part of a lower case is made difficult, because one case can only be locked with the other case without canting.

[0016]

Another problem is that the hooks have large dimensions and project from the floor surface, that a storage of a suitcase with its floor surface on a floor-side contact surface is not readily possible.

There is then the danger that the hooks projecting from the floor surface are damaged or contaminated with dirt or other foreign bodies.

As a result, the functionality of the hook-in connection is endangered and the straight and non-edgeted parking of the suitcase on a flat contact surface on the floor is made more difficult.

[0017]

The protruding hooks thus simultaneously form the standing feet, and after the hooks are provided with undercut grooves, there is a risk of soiling of the undercut grooves when the suitcase has been placed on a soiled surface.

[0018]

The invention is therefore based on the object, proceeding from EP 2 313 321 B1, of further developing a stackable suitcase of the type mentioned at the outset in such a way that the stacking of the suitcases can take place in a simpler and more reliable manner, so that the stacking device and the mutual allocation of positions of the suitcases to be stacked are protected against contamination and damage.

Furthermore, cases of different dimensions should also be easily stacked on top of one another and connected to one another.

[0019]

To achieve the object set, the invention is characterized by the technical teaching of claim 1.

[0020]

The feature of the invention is that the front side of the first case is designed as an operating side which is characterized in that a spring-loaded pivotable pressure plate is arranged in the pass-through region for a folding handle, on which pressure plate the locking hooks for locking with the upper case are arranged.

[0021]

A further feature of the invention is that the mutual locking of the cases is substantially formed by a central receiving opening, which is arranged in the rear region of the case, for the engagement of bottom-side, rearwardly projecting suspension hooks on the opposite case, and that, in the vicinity of the front or operating side, a suspension tab is integrally formed on the top wall of the cover, which has at least two receiving openings arranged next to one another.

[0022]

With the given technical teaching, the advantage is obtained that a central positional allocation of the cases to be stacked on top of one another is effected by a hanging tab arranged centrally on the lid side, which hanging tab is preferably arranged in the rear region, namely in the vicinity of the pivot axis of the lid and furthermore by a hanging tab arranged on the front side of the lid and likewise arranged centrally, which hanging tab forms at least two receiving openings spaced apart from one another for the engagement of locking hooks which are arranged on the front, free pivotable end of the springs.

[0023]

This results in a particularly simple mechanical locking of cases to be stacked on top of one another, because the upper case is guided with its bottom surface and the suspension hooks projecting rearward from the bottom surface against the rear suspension tab arranged on the pivot axis of the lower case, and the suspension hooks on the bottom side of the upper case are suspended there, which can also take place with lateral play.

[0024]

It is advantageous that the rear hook-in hooks on the bottom side are arranged in a wall depression and do not project beyond the plane of the bottom surface, so that the bottom surface of the suitcase is designed as a flat rest surface.

[0025]

Due to the arrangement of the bottom-side rear suspension hooks in a wall recess of the rear wall, they are optimally protected against damage and contamination, especially since this wall recess is open downward.

[0026]

Accordingly, there is no need for an exact position assignment of the upper and lower suitcases when the rear suspension connection is suspended, so that no special requirements are necessary for the mutual displacement or the position-correct assignment of the suitcases with respect to the rear suspension connection.

[0027]

The lateral centering of the bottom-side hook-in hooks of the lower case with the cover-side stop surfaces on the hook-in tabs in the rear region of the lower case therefore does not take place until the cases are placed on top of one another and aligned flush with one another.

The side surfaces of the wall recess act as guide surfaces for the hanging tab to be inserted there.

[0028]

It is also important that the locking hooks arranged on the spring-mounted pressure plate can likewise be hooked into receiving openings on the front hanging lugs, wherein the hanging takes place automatically during the stacking of the cases.

[0029]

The locking hooks themselves are not bendable and formed on the front free end of the non-bendable part of the pressure plate.

They are therefore not designed as spring hooks and have suitable insertion slopes, so that when the spring-loaded pivotable pressure plate is placed on, the entire pressure plate is automatically pivoted rearwards counter to the force of a pressure spring or of another force accumulator, and the locking hooks are thus brought into alignment with the receiving openings in the front suspension tab and then pivoted into these receiving openings automatically and without further adjustment movement.

[0030]

This is therefore an automated latching process which can also be referred to as "Click & Go".

[0031]

Due to the fact that the spring-loaded pressure plate, which can pivot on one side, is arranged in the engagement region of the folding handle, it is optimally protected against damage, just like the locking hooks formed on the underside.

[0032]

An assignment in the correct position, as occurred in the case of positively locking recesses assigned to one another in EP 2 313 321 B1, is no longer important in the present invention.

[0033]

A rough positional assignment of the bottom surface of the lower case to the top wall in the lid of the lower case is effected in that a number of outwardly open, relatively large-sized rectangular recesses are arranged in the top wall in the lid of the lower case, which recesses are open to the side.

As a result, dirt deposited there is removed to the respective open side and does not remain enclosed in the recess, as is the case in the prior art.

[0034]

Corresponding to this, a number of spacers are arranged on the bottom side of the underlying suitcase, which spacers project only slightly above the bottom surface and which are likewise rectangularly profiled, but which engage with great play in the lid-side recesses in the top wall of the lid of the upper suitcase.

These sheet-like spacers thus form the ground-side contact surface of the case on a storage plane and prevent tilting or tilting of the case during storage, as had to be accepted in the prior art.

[0035]

Instead of bottom-side hooks which protrude beyond the bottom surface in an unfavorable manner, as is known in the prior art and which hinder a storage of the suitcase on a bottom-side storage surface, the invention uses rectangular or square, for example plate-shaped spacers which project only slightly beyond the bottom surface and permit a planar storage of the suitcase on a bottom-side storage surface.

A dirt pick-up to be avoided is not to be feared with the smooth spacers.

[0036]

This is intended to allow only a coarse allocation of positions when stacking the cases one on top of the other, and in addition the spacers which are arranged in the bottom wall of the upper case and which engage with play in the recesses in the top wall of the lower case serve as scratch protection.

[0037]

That is, they should project vertically only a small amount beyond the recess in the top wall of the lower case in order to avoid the bottom wall of the upper case sitting directly on the top wall of the lid of the lower case.

These are therefore only spacers which ensure scratch protection of the surfaces adjacent to one another because it is achieved that the adjacent surfaces of the upper and lower case do not lie directly on one another, but rather occupy a small vertical distance from one another, so that particles enclosed there do not lead to scratching of the surfaces.

[0038]

Accordingly, it is important in the invention that the locking elements of the suitcases which are associated with one another are protected from the front side of the respective suitcase by the folding handle and are accessible through the latter and are particularly easy to actuate because with the gripping of the folding handle the pressure plate arranged directly behind the folding handle can also be actuated simultaneously with the fingers of the same hand, on the underside of which the locking hooks for locking with the other suitcase are arranged.

[0039]

It is also important in the invention that it is sufficient to form the locking elements consisting of the rear hanging tab and the front hanging tab arranged at a distance therefrom in such a way that they are arranged only in the central region of the case.

There is therefore no need for attachment tabs which are offset laterally with respect to one another, as are customary in the prior art.

This results in particularly low production costs and easy operation.

[0040]

This also results at the same time in the advantage that longer and shorter cases can be stacked on top of one another, since it is only assumed that the respective front and rear attachment tabs of the cases are arranged complementary to one another.

As a result, cases of different lengths can also be stacked one above the other.

This is also due to the fact that the recesses in the lid side, which serve only for the position securing and the spacing, are open laterally outwards in order to ensure that the spacers arranged on the bottom side of the opposite case can also protrude far out of the lid-side recesses if, for example, a short case with a long case is stacked.

[0041]

As a closure element between the lower part of the case and its cover, any closure elements can be used which are designed, for example, as folding hooks or closure flap.

Any manually operated releasable locking between the cover and the lower part of the respective case can thus be used.

The invention therefore does not rely on a particular type of locking.

[0042]

Incidentally, the invention is not limited to a case having a lid.

If the lid is omitted, the rear and front attachment tabs on the lid side can instead be arranged directly on the peripheral edge of the lower part of the case, which otherwise does not result in any further modifications for the implementation of the present invention in the case of an upwardly open container.

[0043]

As a result, the invention is not limited to a stackable case, but may also relate to lid-free, stackable and latchable containers.

[0044]

There are then the same advantages as described with the aid of the case according to the invention, namely a central suspension connection which is not susceptible to dirt and furthermore a front central operating side with a folding handle, to which a particularly pressure plate in the manner of a single-hand operation which is particularly easy to operate and is protected by the folding handle against damage and unwanted actuation is assigned.

[0045]

The subject matter of the present invention results not only from the subject matter of the individual patent claims, but also from the combination of the individual patent claims with one another.

[0046]

All the details and features disclosed in the documents, including the abstract, in particular the spatial configuration shown in the drawings, are claimed as essential to the invention insofar as they are novel individually or in combination with respect to the prior art.

If individual objects are referred to as "essentially to the invention" or "importantly", this does not mean that these objects necessarily have to form the subject matter of an independent claim.

This is determined solely by the respectively applicable version of the independent patent claim.

[0047]

In the following, the invention is explained in more detail on the basis of drawings representing several execution paths.

In this connection, the drawings and their description reveal further features and advantages of the invention which are essential to the invention.

[0048]

These show:

[0049]

FIG. 1 : perspective front view of a suitcase according to the invention

[0050]

FIG. 2 shows the case according to FIG. 1 with pivoted-away folding handle,

[0051]

FIG. 3 : an oblique view of the bottom side of the case according to FIGS. 1 and 2 with pivoted-out folding handle

[0052]

FIG. 4 : shows the same illustration as FIG. 3 with pivoted-in folding handle,

[0053]

FIG. 5 shows a rear view on the bottom side of the case,

[0054]

FIG. 6 schematically shows the hanging-in of two cases in a first method step;

[0055]

FIG. 7 shows the stacking of the two cases shown in FIG. 6 shortly before the production of the latching connection with the pressure plate;

[0056]

FIG. 8 shows the same representation as FIG. 7 with further details.

[0057]

FIG. 9 is a sectional view of the ready-made stack connection between the cases;

[0058]

FIG. 10 schematically shows the operating principle of the pressure plate;

[0059]

FIG. 11 shows an exemplary embodiment modified from FIG. 10.

[0060]

FIG. 12 shows a second exemplary embodiment modified from FIGS. 10 and 11.

[0061]

FIG. 13 shows a further exemplary embodiment in which the pressure plate is respectively fastened on the front and rear side to the lower part of a case or a container.

[0062]

FIG. 14 : shows the illustration of a stackable container with the lock and suspension connection according to the invention,

[0063]

The stackable case 1 according to FIG. 1 essentially comprises a cover 2 which is mounted on the rear wall 11 of a lower part 3 such that it can pivot on one side in a horizontal pivot axis 33.

[0064]

The cover 2 has a front wall 4 which merges into two side walls 5 parallel to one another and the two side walls 5 merge into a common rear wall 6.

The upper side of the cover 2 is formed by a cover wall 7.

[0065]

The invention is not limited to the continuous design of the cover wall 7.

It can also have openings, openings or the like.

[0066]

The lower part 3 has in the same way a front wall 8 which merges into two adjoining side walls 9.

The two side walls 9 are closed toward the rear by a rear wall 11.

Furthermore, the lower part 3 also has a bottom wall 10.

[0067]

According to the invention, according to FIG. 1, in the rear region of the cover 2 a rear hanging tab 12 is formed which essentially comprises an approximately U-shaped profiled part which has a central continuous hanging opening.

The tongues which can be seen in the drawing are merely reinforcing ribs for stiffening the closed rear wall, which can also be omitted.

[0068]

This receiving opening 13 accordingly extends over the entire width of the hanging tab 12.

[0069]

In the front region of the cover 2, opposite the pivot axis 33, a further hanging tab 14 is formed, which approximately corresponds in shape and dimension to the rear hanging tab 12.

[0070]

It has two receiving openings 15 which are separated from one another and which are separated from one another by a continuous central part 16.

[0071]

Of course, the invention is not limited to the formation of two receiving openings 15 which lie next to one another and are separated from one another.

There can also be only one receiving opening 15 or more than two receiving openings 15.

In these receiving openings 15, the locking hooks 24 of a pivotally mounted pressure plate 23 to be described later engage and accordingly it can be provided that only a single locking hook 24 or more than two locking hooks 24 are arranged on the pressure plate 23.

[0072]

Provided on the top wall 7 of the lid 2 are a number of outwardly open recesses 17 which are provided for the engagement with play of bottom-side spacers 18, which are arranged on the bottom wall 10 of a case lying above it.

[0073]

The connection between the cover 2 and the lower part 3 takes place by closure tabs 19 of any desired design, which in the exemplary embodiment shown are arranged recessed in recesses 20 on the front wall 8 of the lower part 3.

[0074]

In the exemplary embodiment shown, the closure tabs 19 are pivotably accommodated in the recess 20 in the front wall 8 of the lower part 3.

[0075]

With associated hook parts, they engage in an associated recess in the region of the front wall 4 of the cover 2 or also in the region of the cover wall 7.

[0076]

On the operating side of the case 1 (that is, the front wall 8 of the lower part 3) there is arranged a folding handle 21, which is pivotably mounted in a pivot axis 22 in a first recessed recess 25.

[0077]

In another embodiment, not shown in the drawing, it can also be provided that the first recessed recess 25 for recessed reception of the folding handle 21 is omitted and the folding handle 21 is arranged in front of the front wall 8.

In this case, there is then only the second recess 26 for the recessed accommodation of the pressure plate 23.

[0078]

In the first embodiment, however, the recess 25 for the concealed (recessed) reception of the folding handle 21 continues into a recess 26 of smaller dimension lying behind it, in which recess the pressure plate 23 according to the invention is pivotably mounted and which has at its front side two forwardly directed locking hooks 24 (see FIG. 2).

The recesses 25, 26 are open towards the bottom wall 10.

The locking hooks 24 are therefore accessible from below through the downwardly open recess 26 for retracting the hanging tab 14 arranged on the other case on the lid side.

[0079]

FIG. 2 also shows that the depressions 17 with large side play 30 arranged on the lid side receive the bottom-side spacers 18 on the bottom wall 10 of the case lying thereabove.

In addition to the side play 30, there is also a longitudinal play 31 so that it can be seen that this arrangement merely serves to keep the distance between the top wall 7 of the lower case 1 and the bottom wall 10 of the upper case in order to avoid the bottom wall 10 of the upper case not scratching or otherwise damaging the top wall 7 of the lower case.

[0080]

FIG. 3 shows the view on the bottom side of the case 1, where it can be seen that at the bottom side of the rear wall 11 in a wall recess 46 protectively arranged and rearwardly projecting suspension hooks 27 are provided, which serve for engagement in the relatively large-sized receiving opening 13 of the suspension tab 12 of a case lying thereunder.

The wall recess 46 is therefore opened downwardly in order to enable the engagement tab 12 with play.

[0081]

FIG. 3 also shows that the width 28 of the spacers 18 protruding on the base side is substantially smaller than the width of the recesses 17 present on the cover side, so that the lateral and longitudinal play 30, 31 shown in FIG. 2 is obtained.

[0082]

FIG. 4 shows the folding handle 21, folded upward, behind which the pressure plate 23 is visible.

When pressure is exerted on the pressure plate 23, the forwardly directed locking hooks 24 are thus disengaged from the associated receiving openings 15 in the front hanging tab 14 of the suitcase underneath.

[0083]

The pivot axis 32 of the pressure plate 23 is shown only schematically.

[0084]

FIG. 5 shows the rear side of the case 1 on the bottom side, where it can be seen that the suspension hooks 27 on the bottom side and arranged in the rear wall 11 are designed with engagement bevels in order to allow easier suspension of the suspension hooks 27 into the suspension tab 12 on the rear wall side.

[0085]

In the exemplary embodiment shown in FIG. 5, the hanging tab 12 is closed toward the rear.

The invention is not limited to this.

It can also be perforated so that the receiving opening 13 is opened to the rear.

[0086]

FIG. 6 shows a first method step during the stacking of two suitcases which are associated with each other, wherein the upper suitcase and the associated parts are each designated by an upright line, while the same parts of the lower suitcase are designated by a line.

The same explanations thus apply for the same parts.

[0087]

First, the upper case 1' is placed obliquely inclined on the lid 2 of the lower case 1 in order to ensure that the suspension hooks 27' arranged on the rear side of the upper case 1' come into engagement with the receiving opening 13 of the rear suspension tab 12 on the lower case 1.

[0088]

For this purpose, the suspension hooks 27' are provided with an insertion slope.

[0089]

As can be seen from FIG. 6, the bottom-side raised spacers 18' of the upper suitcase 1 thus come in a position opposite the lid-side recesses 17 of the lower suitcase 1, wherein the width 29 of the recess is selected to be substantially greater than the width 28 of the bottom-side spacers 18, so that only a spacing between the bottom wall 10' of the upper suitcase 1' and the opposite top wall 7 of the lower suitcase 1 takes place.

[0090]

After the upper case 1' has been inserted into the hanging tab 12 of the lower case 1 according to FIG. 6, the further parts of the locking can be described.

[0091]

It can be seen that when the upper case 1' is pivoted off in the direction of the arrow 34, the hanging tab 14 arranged on the lid side on the lower case 1 enters into an associated recess 36' on the front side of the pressure plate 23' and, on account of the insertion slope of the locking hook 24', the pressure plate 23 is automatically pivoted backwards about its pivot axis 32' counter to the force of a pressure spring 35'.

[0092]

It is also important that the hook bottom 39' of the locking hook 24' has a short distance above a stop edge 37' so that the hook bottom 39' is supported downwards by the bottom wall 10'.

It therefore does not transmit a load which would load its pivot bearing.

[0093]

The locking hook 24' slides with its insertion slope along an associated stop edge 38 in the region of the hanging tab 14 of the lower case 1 and is pivoted against the compression spring 35.

[0094]

FIG. 7 shows the progressive state of the latching at the transition from FIG. 6 to FIG. 7.

[0095]

It can be seen there that the locking hook 24', with its insertion slope, runs straight past the stop edge 38 and is pressed back counter to the force of the spring 35' and is located in the region of the hanging tab 14 shortly before latching with the two receiving openings 15.

[0096]

FIG. 8 shows the same illustration as FIG. 7, where it can be seen that this takes place counter to the force of the compression spring 35.

[0097]

It goes without saying that the compression spring 35' can also be designed as a differently designed energy accumulator.

It can be designed as an elastomer spring, as a helical compression spring, as a leg spring, plate spring or spiral spring or the like.

It is likewise possible to form the pressure plate 23 as a whole without a compression spring 35, so that the pressure plate 23 itself is formed as a bendable spring part and acts as a bendable, resilient plate.

[0098]

FIG. 9 shows the completely engaged state, where it can be seen that the locking hook 24' is now pivoted automatically and completely into the receiving openings 15 of the lower hanging tab 14.

[0099]

The two cases 1, 1' are now locked to one another in the correct position, the load transmission taking place essentially only via the two suspension lugs 12, 14, but not by other elements which are arranged between the cases 1, 1'.

[0100]

FIG. 10 schematically shows the principle of the pressure plate 23 with the locking hooks 24.

It can be seen that the pressure plate 23 is designed as a lever which can be pivoted on one side and is mounted in the pivot axis 32 and can be pivoted in the arrow directions 41.

[0101]

When pressure is exerted in the actuating direction 40, the only lever part is thus pressed against the compression spring 35 and the spring is thus prestressed.

[0102]

The hook bottom 39 shown forms a slight distance above the bottom wall, so that it is ensured that no load transmission takes place between the pivot axis 32 and the locking hook 24, which loads the locking hook 24 with a compressive force.

[0103]

FIG. 11 shows an exemplary embodiment modified from FIG. 10, in which the pressure plate 23 is designed as a two-armed lever.

In this case, the upper part 42 of a lever continues into a lower part 43 of a second lever, which is a two-armed lever, the locking hooks 24 being integrally formed on the lower part 43.

[0104]

Thus, in order to actuate such a pressure plate 23 a, an actuating force has to be applied in actuating direction 40, so that pressure plate 23 ahas to be pulled in this direction in order then to latch automatically behind hanging tab 14.

[0105]

FIG. 12 shows a modified exemplary embodiment which manages without a compression spring or without another force store.

[0106]

The pressure plate 23 bis designed as a two-armed lever and the open position of the pressure plate 23 bis achieved in that a pressure force is applied in the direction of the arrow 44 b, as a result of which the locking hook 24 is pivoted rearwards in the

direction of the arrow 41 via a bottom-side latching projection 45, which deforms elastically and thus keeps the locking hook 24 in its position pivoted back in the direction of the arrow 41.

[0107]

If, on the other hand, the upper part 42 is pressed in the actuating direction 44 b, the locking hook 24 is moved out of engagement with the elastically deformable latching projection 45 and pivoted into its latching position illustrated in FIG. 12.

[0108]

These pivot positions can then also be spring-supported if necessary.

[0109]

As a modification example of the aforementioned embodiments, FIG. 13 shows that it is also possible to arrange a pressure plate 23 a, 23 bon the opposite sides of the lower part 3.

Instead of the rear hanging tab 12, a further pressure plate 23b would then be arranged in the rear region of the lid 2, so that the rear hanging tab 12 is omitted and instead a rear hanging tab 14b is present on the rear side of the lid 2, while a front hanging tab 14a is present on the front side of the lid.

[0110]

It is thus clear that the mutual locking of cases stacked on top of one another is also possible by two pressure plates 23a, 23b which are to be actuated in opposite directions and which can each be hooked by their locking hooks 24a, 24b into associated, lid-side projecting suspension brackets 14a, 14b in the case lying underneath.

[0111]

As a further modification example, FIG. 14 shows that the arrangement of a lid 2 on the lower part 3 is not important and that the entire invention can also be transferred with an upwardly open container which consists only of a lower part 3.

[0112]

All the same parts have been given the same reference numerals and it will be appreciated that upwardly open containers may be stacked and locked together in the same manner as illustrated and described in the foregoing embodiments.

Number list

[]

1 Case 1' 2 lid 3 bottom part 4 front wall (of 2) 5 side wall (of 2) 6 rear wall (of 2) 7 top wall (of 2) 8 front wall (3) 9 side wall 10 bottom wall 11 rear wall 12 penetration tab (rear) 13 receiving opening 14 hanging tab (front) 15 receiving opening 16 middle part 17 recess 18 spacer 19 closing tab 20 recess 21 folding handle 22 pivot axis 23 pressure plate a, b 24 locking hook 25 recess (for 21) 26 recess (for 23) 27 hanging hook 28 width (of 18) 29 width (of 17) 30 side play 31 longitudinal play 32 pivot axis (of 23) 33 pivot axis (2) 34 arrow direction 35 compression spring 36 recess 37 stop edge 38 stop edge 39 hook bottom (of 24) 40 actuation direction 41 arrow direction 42 upper part (of 23 a) 43 lower part 44 actuation point a, b 45 locking projection 46 wall recess (in 11)

DETAILED DESCRIPTION

[0113]

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The list is not part of the German patent or German patent.

Utility Model Application.

The DPMA does not provide any adhesion to any defects or omissions.

The Patent Literatures

[0114]

EP 2313321 B1

EP 2346741 B1

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CLAIMS DE102015013053A1

1.

A suitcase arrangement comprising at least two stackable suitcases (1, 1'), each suitcase (1, 1'), 1') consists of a box-shaped lower part (3) connected via a horizontal pivot (33) to a hinged lid (2), a first connecting device between the suitcases (1, 1, 1') is formed by a pull-in tab (12), which is arranged parallel to the pivot axis (33) on the top wall (7) of the lid and into which pull-in hooks (27') of the suitcase (1') arranged thereabove engage on the bottom side and directed rearward, and a second manually operated connecting device next to the front side of the suitcases (1, 1, 1') for interlocking coupling between mutually associated surfaces of the cases (1, 1') stacked one above the other, characterized in that, in that arranged on the front wall (8) of the lower part (3) is a folding handle (21) which can be pivoted about a horizontal pivot axis (22) and which engages over at least one recess (25, 26) on the front wall side, in the region thereof a manually actuable, spring-loaded pivotable pressure plate (23); 23a, 23b), on which locking hooks (24) are integrally formed, which can be brought into engagement with a hanging tab (14) on the opposite case (1, 1') on the top wall side.

2.

A suitcase arrangement according to claim 1, characterized in that the front and rear hanging tabs (12, 14) are arranged in alignment with each other in the transverse central axis of the lid (2).

3.

A suitcase arrangement according to claim 1 or 2, characterized in that the hanging tab (14) arranged above the folding handle (21) on the lid (2) has at least two receiving openings (15) spaced apart from each other and that the at least two locking hooks are rigidly formed on the pivotable part of the pressure plate (23).

4.

Case arrangement according to one of Claims 1 to 3, characterized in that the pressure plate (23, 23a, 23b) is designed as a plate which can be pivoted on one side and is prestressed against an energy store.

5.

A suitcase arrangement according to any one of claims 1 to 4, characterized in that the pressure plate (23, 23a, 23b) of one suitcase (1') engages automatically in the hanging tab (14) of the other suitcase (1).

6.

Case arrangement according to one of Claims 1 to 5, characterized in that arranged on the bottom wall (10') of the one case (1') are a plurality of spacers (18') which are distributed and project over the surface of the bottom wall (10') and engage with lateral and longitudinal play (30, 31) into associated depressions (17) which are arranged recessed in the cover-side top wall (7).

7.

A suitcase arrangement according to claim 6, characterised in that the recesses (17) recessed in the cover wall (7) are opened towards the respective side wall (5) of the cover (2).

8.

Case arrangement according to one of Claims 1 to 7, characterized in that the pressure plate (23, 23a, 23b) arranged directly behind the case handle (21) can also be actuated by gripping the case handle (21).

9.

Case arrangement according to one of claims 1 to 8, characterised in that the stackable cases (1, 1') are designed without lids (2) and only their lower parts (3, 3') can be stacked.

10.

A suitcase arrangement according to any one of claims 1 to 8, characterized in that the folding handle (21) is arranged in a first recessed recess (25) on the front wall (8) of the base (3) and that behind the first recess (25) a second recessed recess (26) is arranged in which pivotable part of the pressure plate (23, 23a, 23b) is arranged.

11.

Container arrangement with at least two stackable containers (1, 1'), wherein each container (1, 1') consists of a box-shaped lower part (3), wherein a first connecting device between the containers (1, 1') is formed by a hanging tab (12) arranged parallel to the pivot axis (33) on the circumferential edge of the container, into which hanging hooks (27') of the container (1') arranged above them, directed rearward, engage at the bottom, and a second manually actuated connecting device is arranged next to the front side of the containers (1, 1') for positive coupling between mutually associated surfaces of the containers (1, 1'), which are stacked one above the other, characterized in that a folding handle (21) is arranged on the front wall (8) of the lower part (3) which can be pivoted about a horizontal pivot axis (22) and engages over at least one recess (25, 26) on the front wall, in the region of which a manually actuable, spring-loaded pivotable pressure plate (23) is arranged; 23a, 23b) on which locking hooks (24) are integrally formed which can be brought into engagement with a hanging tab (14) on the opposite container (1, 1') on the top wall side.

12.

Container arrangement according to claim 11, characterised in that two opposing pressure plates (23a, 23b) with locking hooks (24) are provided on the container for locking with associated fastening tabs (14) on the container side.

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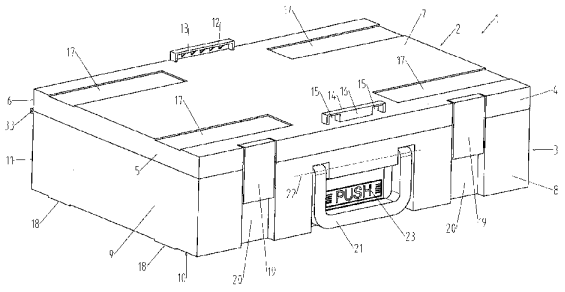
Rechercheantrag gemäß § 43 Abs. 1 Satz 1 PatG ist gestellt.

Prüfungsantrag gemäß § 44 PatG ist gestellt.

Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen

(54) Bezeichnung: **Stapelbarer Koffer mit Verbindungsvorrichtung**

(57) Zusammenfassung: Kofferanordnung mit mindestens zwei stapelbaren Koffern (1, 1'), wobei jeder Koffer (1, 1') aus einem kastenförmigen Unterteil (3) besteht, das über eine horizontale Schwenkachse (33) mit einem schwenkbaren Deckel (2) verbunden ist, wobei eine erste Verbindungsvorrichtung zwischen den Koffern (1, 1') aus einer parallel zur Schwenkachse (33) auf der Deckwand (7) des Deckels angeordneten Einhängelasche (12) gebildet ist, in welche bodenseitige, nach hinten gerichtete Einhängehaken (27') des darüber angeordneten Koffers (1') eingreifen und eine zweite handbetätigte Verbindungsvorrichtung nächst der Vorderseite der Koffer (1, 1') zur formschlüssigen Koppelung zwischen einander zugeordneten Flächen der übereinander gestapelten Koffer (1, 1') angeordnet ist, wobei an der Vorderwand (8) des Unterteils (3) ein um eine horizontale Schwenkachse (22) schwenkbarer Klappgriff (21) angeordnet ist, der eine vorderwandseitige Ausnehmung (25, 26) übergreift, in deren Bereich eine handbetätigbare, schwenkbare Druckplatte (23; 23a, 23b) angeordnet ist, an der Verriegelungshaken (24) angeformt sind, die in Eingriff mit einer deckwandseitigen Einhängelasche (14) am gegenüber liegenden Koffer (1, 1') bringbar sind.



Beschreibung

[0001] Die Erfindung betrifft einen stapelbaren Koffer mit Verbindungsvorrichtung nach dem Oberbegriff des Patentanspruches 1.

[0002] Ein solcher stapelbarer Koffer ist beispielsweise mit dem Gegenstand der EP 2 313 321 B1 bekannt geworden. Der bekannte Koffer besteht aus einem kastenförmigen Unterteil und einem das Unterteil verschließenden Deckel, der schwenkbar in einer horizontalen Schwenkachse mit dem Unterteil verbunden ist, an der Oberseite des Deckels ist ein abklappbarer Handgriff angeordnet.

[0003] An der Vorderseite des Deckels ist ein schwenkbarer Riegel angeordnet, der um eine horizontale Achse schwenkbar ist.

[0004] Die Aufstapelung von übereinander gestapelten Koffer erfolgt dergestalt, dass an der Bodenseite des oberen Koffers Abstützstandfüße angeordnet sind, die in zugeordnete, an der Deckelseite des unteren Koffers angeordnete Ausnehmungen formschlüssig, das heißt spielfrei, eingreifen.

[0005] Ferner sind weitere Standfüße vorhanden, die als Eingreifstandfüße bezeichnet sind, die im Abstand von den erst genannten Standfüßen angeordnet sind und nach hinten gerichtete Vorsprünge aufweisen, die in rillenförmige, vertiefte Ausnehmungen im Deckel des darunter liegenden Koffers eingreifen.

[0006] Während demnach die vorderen Abstandsstandfüße eine formschlüssige und spielfreie Lagensicherung zwischen dem Deckel des unteren Koffers und der Bodenseite des oberen Koffers herstellen, hintergreifen die im Abstand dazu angeordneten Eingreifstandfüße eine rillenförmige Vertiefung im Deckel des unteren Koffers, um eine gegen Ausheben gesicherte Verbindung herstellen.

[0007] Nachteil dieser Anordnung ist, dass eine präzise Lagenzuordnung der vorderen Abstandsstandfüße zu den darin formschlüssig eingreifenden Ausnehmungen an der Deckelseite des unteren Koffers notwendig ist. Wenn jedoch diese Vertiefungen durch Verschmutzungen oder durch Ablagerung von Teilen nicht mehr zugänglich sind oder auch nur geringfügig verschmutzt sind, misslingt die gegenseitige Verriegelung zwischen den aufeinander gestapelten Koffern.

[0008] Weiterer Nachteil der Anordnung ist, dass die Verriegelung zwischen dem oberen und dem unteren Koffer durch einen frontseitig angeordneten doppelarmigen Schwenkhebel erfolgt, der mit seinem einen Schwenkarm einen an der Vorderseite des Unterteils angeordneten Zapfen übergreift und gleichzeitig mit seinem anderen Schwenkarm einen an der Vorderseite des oberen Koffers am dortigen Unterteil vorstehenden Zapfen übergreift.

[0009] Der Verriegelungshebel an der Vorderseite des einen Koffers dient demnach sowohl zum Verriegeln des Deckels am Unterteil als auch zur Herstellung einer Verbindung mit dem darüber liegenden Koffer.

[0010] Damit ist aber der Nachteil verbunden, dass eine formschlüssige und genau fluchtende Verbindung zwischen dem oberen und dem unteren Koffer hergestellt werden muss, denn wenn der obere Koffer nur leicht versetzt zu dem unteren Koffer angeordnet ist, gelingt die Verriegelung mit dem doppelarmigen Schwenkhebel nicht mehr. Die klein dimensionierten Zapfen müssen genau zueinander fluchtend im Schwenkbereich des Verriegelungshebels positioniert sein.

[0011] Es handelt sich demnach um eine schwergängige Arretierverbindung, die nur mit hoher manuelle Handdrehkraft herzustellen ist, denn es muss mit einer solchen Handkraft sowohl die Verriegelung mit dem vorstehenden Zapfen an der Vorderseite des Unterteils des unteren Koffers als auch mit dem vorstehenden Zapfen an der Vorderseite des Unterteils des oberen Koffers gleichzeitig und zueinander fluchtend hergestellt werden.

[0012] Die beiden von einander beabstandeten Zapfen sollten fluchtend und in gleicher Ebene übereinander liegen. Kommt es nur zu einem geringfügigen Versatz zwischen den Koffern in vertikaler oder horizontaler Ebene, gelingt die gegenseitige Verriegelung der Koffer nicht mehr oder sie wird so schwergängig, dass sie nicht mehr betätigt werden kann. Die klein dimensionierten Zapfen können bei einem solchen Verriegelungsversuch beschädigt werden oder sogar abbrechen. Sie sind außerdem nicht gegen Beschädigung durch Anstoß von Fremdgegenständen geschützt, weil sie frei zugänglich an der jeweiligen Frontseite des Koffers angeordnet sind.

[0013] Das Hintergreifen der hinteren, bodenseitigen und hakenförmigen Eingreifstandfüße am einen Koffer in eine hinterschnittene Nut oder Kante an der hinteren Seite des Deckels des darunter liegenden Koffers hat den Nachteil, dass die Gefahr besteht, dass sich die Nut ebenfalls durch Ablagerung von Schmutz oder Fremdkörpern zusetzt, wodurch das Hintergreifen der hakenförmigen Nut nicht mehr möglich ist. Die Nut kann nicht von Verschmutzungen freigehalten werden, weil sie als nach oben offene Ausnehmung im Deckel ausgeformt ist, die ansonsten allseitig geschlossen ist.

[0014] Die vorderen, dem Formschluss dienenden und mit Zentrierflächen ausgerüsteten, vorderen Ausnehmungen können ebenso wenig gegen

Schmutzablagerungen geschützt werden. Die genannten Zentrierausnehmungen sind demnach ebenfalls nicht gegen Verschmutzung oder Verschleiß geschützt.

[0015] Mit dem Gegenstand der EP 2 346 741 B1 ist ein weiterer stapelbarer Koffer bekannt geworden, bei dem die Verriegelung in der ähnlichen Weise erfolgt. Es sind an der Bodenseite des jeweiligen Koffers nach hinten gerichtete hakenförmige Ansätze vorhanden, die mit zugeordneten, vertieft in der Deckelseite des darunter liegenden Koffers angeordneten Ausnehmungen verriegelt werden sollen. Auch hier besteht der Nachteil, dass die vertieft ausgebildeten, napfförmigen Ausnehmungen nicht gegen Verschmutzung geschützt sind. Es sind auf einer Ebene jeweils zwei voneinander beabstandete Haken vorhanden, so dass das lagenrichtige Einschwenken eines Bodenteils eines oberen Koffers in einen Deckelteil eines unteren Koffers erschwert ist, weil der eine Koffer nur ohne Verkantung mit dem anderen Koffer verriegelt werden kann.

[0016] Weiteres Problem ist, dass die Haken groß dimensioniert sind und von der Bodenfläche hervorstehen, dass eine Ablage eines Koffers mit seiner Bodenfläche auf einer bodenseitigen Aufstandsfläche nicht ohne Weiteres möglich ist. Es besteht dann die Gefahr, dass die von der Bodenfläche abstehenden Haken beschädigt werden oder mit Schmutz oder mit anderen Fremdkörpern verunreinigt werden. Dadurch ist die Funktionsfähigkeit der Einhängeverbindung gefährdet und das gerade und unverkantete Abstellen des Koffers auf einer ebenen, bodenseitigen Aufstandsfläche ist erschwert.

[0017] Die vorstehenden Haken bilden demnach gleichzeitig die Standfüße, und nachdem die Haken mit hinterschnittenen Nuten versehen sind, besteht die Gefahr der Verschmutzung der hinterschnittener Nuten, wenn der Koffer auf einer verschmutzten Oberfläche abgestellt wurde.

[0018] Der Erfindung liegt deshalb die Aufgabe zugrunde, ausgehend von der EP 2 313 321 B1 einen stapelbaren Koffer der eingangs genannten Art so weiterzubilden, dass die Aufstapelung der Koffer einfacher und betriebsicherer geschehen kann, so dass die Stapelvorrichtung und die gegenseitige Lagenzuordnung der aufzustapelnden Koffer gegen Verschmutzung und Beschädigung geschützt ist. Ferner sollen auch unterschiedlich dimensionierte Koffer leicht aufeinander gestapelt und miteinander verbunden werden können.

[0019] Zur Lösung der gestellten Aufgabe ist die Erfindung durch die technische Lehre des Anspruches 1 gekennzeichnet.

[0020] Merkmal der Erfindung ist, dass die Vorderseite des ersten Koffers als Bedienseite ausgebildet ist, die sich dadurch auszeichnet ist, dass im Durchgriffsbereich für einen Klappgriff eine federbelastet schwenkbare Druckplatte angeordnet ist, an der die Verriegelungshaken für die Verriegelung mit dem oberen Koffer angeordnet sind.

[0021] Weiteres Merkmal der Erfindung ist, dass die gegenseitige Verriegelung der Koffers im Wesentlichen aus einer mittigen, im hinteren Bereich des Koffers angeordneten Aufnahmeöffnung für den Eingriff von bodenseitigen, nach hinten vorstehenden Einhängehaken am gegenüberliegenden Koffer ausgebildet ist und dass in der Nähe der Front- oder Bedienseite an der Deckwand des Deckels eine Einhängelasche angeformt ist, die mindestens zwei nebeneinander angeordnete Aufnahmeöffnungen aufweist.

[0022] Mit der gegebenen technischen Lehre ergibt sich der Vorteil, dass eine mittige Lagenzuordnung der aufeinander zu stapelnden Koffer durch eine an der Deckelseite mittig angeordnete Einhängelasche erfolgt, die bevorzugt im hinteren Bereich, nämlich in der Nähe der Schwenkachse des Deckels angeordnet ist und ferner durch eine an der Vorderseite des Deckels angeordnete, ebenfalls mittig angeordnete Einhängelasche, die mindestens zwei voneinander beabstandete Aufnahmeöffnungen für den Eingriff von Verriegelungshaken bildet, die am vorderen, freien schwenkbaren Ende der Federn schwenkbaren Druckplatte angeordnet sind.

[0023] Damit ergibt sich eine besonders einfache mechanische Verriegelung von aufeinander zu stapelnden Koffern, denn der obere Koffer wird mit seiner Bodenfläche und den von der Bodenfläche nach hinten abstehenden Einhängehaken gegen die an der Schwenkachse des unteren Koffers angeordnete hintere, deckelseitige Einhängelasche geführt, und die bodenseitigen Einhängehaken des oberen Koffers werden dort eingehängt, was auch mit seitlichem Spiel erfolgen kann.

[0024] Vorteilhaft ist, dass die bodenseitigen, hinteren Einhängehaken in einer Wandvertiefung angeordnet sind und nicht über die Ebene der Bodenfläche hinaus stehen, sodass die Bodenfläche des Koffers als ebene Abstellfläche ausgebildet ist.

[0025] Durch die Anordnung der bodenseitigen, hinteren Einhängehaken in einer Wandvertiefung der Rückwand sind diese optimal gegen Beschädigung und Verschmutzung geschützt, zumal diese Wandvertiefung nach unten hin offen ist.

[0026] Es kommt demnach nicht auf eine genaue Lagenzuordnung des oberen und des unteren Koffers beim Einhängen der hinteren Einhängeverbindung an, so dass keine besonderen Anforderungen

an die gegenseitige Verschiebung oder die lagenrichtige Zuordnung der Koffer im Hinblick auf die hintere Einhängeverbindung notwendig sind.

[0027] Die seitliche Zentrierung der bodenseitigen Einhängehaken des unteren Koffers mit den deckelseitigen Anschlagflächen an den Einhängelaschen im hinteren Bereich des unteren Koffers erfolgt also erst dann, wenn die Koffer aufeinander gestellt sind und fluchtend zueinander ausgerichtet sind. Die Seitenflächen der Wandvertiefung wirken als Führungsflächen für die dort einzuführend Einhängelasche.

[0028] Ferner ist wichtig, dass die an der federnd gelagerten Druckplatte angeordneten Verriegelungshaken ebenfalls in Aufnahmeöffnungen an den vorderen Einhängelaschen einhängbar sind, wobei das Einhängen automatisch während des Aufstapelns der Koffer erfolgt.

[0029] Die Verriegelungshaken selbst sind nicht biegbar und am vorderen freien Ende des nicht biegbaren Teils der Druckplatte angeformt. Sie sind deshalb nicht als Federhaken ausgebildet und haben geeignete Einführschrägen, so dass beim Aufsetzen der federbelastet schwenkbaren Druckplatte die gesamte Druckplatte automatisch nach hinten gegen die Kraft einer Druckfeder oder eines anderen Kraftspeichers verschwenkt und die Verriegelungshaken somit in Gegenüberstellung zu den Aufnahmeöffnungen in der vorderen Einhängelasche gebracht werden und dann automatisch und ohne weitere Einstellbewegung in diese Aufnahmeöffnungen einschwenken.

[0030] Es handelt sich also um einen automatisierten Rastvorgang, der auch mit der Bezeichnung „Click & Go" bezeichnet werden kann.

[0031] Dadurch, dass die einseitig schwenkbare, federbelastete Druckplatte im Durchgriffsbereich des Klappgriffs angeordnet ist, ist sie optimal gegen Beschädigung geschützt, genauso wie die an der Unterseite angeformten Verriegelungshaken.

[0032] Auf eine lagenrichtige Zuordnung, wie es bei formschlüssigen einander zugeordneten Ausnehmungen in der EP 2 313 321 B1 ankam, kommt es bei der vorliegenden Erfindung nicht mehr an.

[0033] Eine grobe Lagenzuordnung der Bodenfläche des unteren Koffers zu der Deckwand im Deckel des unteren Koffers erfolgt dadurch, dass in der Deckwand im Deckel des unteren Koffers eine Anzahl von nach außen geöffneten, relativ groß dimensionierten, rechteckförmigen Vertiefungen angeordnet sind, die zur Seite hin geöffnet sind. Damit wird ein sich dort ablagernder Schmutz zur jeweils offenen Seite abgeführt und bleibt nicht in der Vertiefung eingeschlossen, wie es beim Stand der Technik der Fall ist.

[0034] Korrespondierend hierzu sind an der Bodenseite des darunter liegenden Koffers eine Anzahl von Abstandshalter angeordnet, die nur wenig über die Bodenfläche hervor stehen und die ebenfalls rechteckförmig profiliert sind, die aber mit großem Spiel in die deckelseitigen Vertiefungen in der Deckwand des Deckels des oberen Koffers eingreifen. Diese flächenförmigen Abstandshalter bilden somit die bodenseitige Aufstandsfläche des Koffers auf einer Ablageebene und vermeiden ein Verkippen oder Verkanten des Koffers beim Abstellen, wie es beim Stand der Technik in Kauf genommen werden musste.

[0035] Statt bodenseitiger Haken, die über die Bodenfläche in ungünstiger Weise vorstehen, wie es beim Stand der Technik bekannt ist und welche eine Ablage des Koffers auf einer bodenseitigen Ablagefläche erschweren, verwendet die Erfindung rechteckförmige oder quadratische, etwa plattenförmige Abstandshalter, die nur geringfügig über die Bodenfläche heraus stehen und eine ebene Ablage des Koffers auf einer bodenseitigen Ablagefläche gestatten. Eine zu vermeidende Schmutzaufnahme ist mit den glatten Abstandshaltern nicht zu befürchten.

[0036] Damit soll lediglich eine grobe Lagenzuordnung beim Aufeinanderstapeln der Koffer ermöglicht werden, und außerdem dienen die Abstandshalter, die in der Bodenwand des oberen Koffers angeordnet sind und die mit Spiel in die Vertiefungen in der Deckwand des unteren Koffers eingreifen, als Kratzschutz.

[0037] Das heißt, sie sollen über die Vertiefung in der Deckwand des unteren Koffers nur um ein geringes Maß vertikal überstehen, um zu vermeiden, dass die Bodenwand des oberen Koffers direkt auf der Deckwand des Deckels des unteren Koffers aufsitzt. Es handelt sich deshalb lediglich um Abstandshalter, die einen Kratzschutz der einander benachbarten Flächen gewährleisten, weil dadurch erreicht wird, dass die benachbarten Flächen vom oberen und unteren Koffer nicht direkt aufeinander liegen, sondern einen geringen vertikalen Abstand zueinander einnehmen, sodass dort eingeschlossene Partikel nicht zu einer Verkratzung der Flächen zu führen.

[0038] Wichtig bei der Erfindung ist demnach, dass die Verriegelungselemente der einander zugeordneten Koffer von der Frontseite des jeweiligen Koffers durch den Klappgriff geschützt und durch diesen hindurch zugänglich sind und besonders einfach zu betätigen sind, weil mit dem Ergreifen des Klappgriffes auch gleichzeitig mit den Fingern der gleichen Hand die direkt hinter dem Klappgriff angeordnete Druckplatte betätigt werden kann, an deren Unterseite die

Verriegelungshaken für die Verriegelung mit dem anderen Koffern angeordnet sind.

[0039] Ebenso ist bei der Erfindung wichtig, dass es ausreicht, die Verriegelungselemente, bestehend aus der hinteren Einhängelasche und der im Abstand davon angeordneten vorderen Einhängelasche so auszubilden, dass sie nur im Mittenbereich des Koffers angeordnet sind. Es bedarf also nicht seitlich zueinander versetzter Einhängelaschen, wie sie beim Stand der Technik üblich sind. Dadurch ergeben sich ein besonders geringer Herstellungsaufwand und eine leichte Bedienung.

[0040] Damit ergibt sich auch gleichzeitig der Vorteil, dass längere und kürzere Koffer aufeinander gestapelt werden können, denn es ist nur vorausgesetzt, dass die jeweiligen vorderen und hinteren Einhängelaschen der Koffer komplementär zueinander angeordnet sind. Dadurch können unterschiedlich lange Koffer auch übereinander gestapelt werden. Dies liegt auch daran, dass die lediglich der Lagensicherung und der Abstandshaltung dienenden Vertiefungen in der Deckelseite seitlich nach außen hin geöffnet sind, um zu gewährleisten, dass die auf der Bodenseite des gegenüberliegenden Koffers angeordneten Abstandshalter auch weit aus den deckelseitigen Vertiefungen herausragen können, wenn beispielsweise ein kurzer Koffer mit einem langen Koffer gestapelt wird.

[0041] Als Verschlusselement zwischen dem Unterteil des Koffers und dessen Deckel können beliebige Verschlusselemente verwendet werden, die beispielsweise als Klapphaken oder Verschlusslasche ausgebildet sind. Es kann also jede beliebige handbetätigte lösbare Verriegelung zwischen dem Deckel und dem Unterteil des jeweiligen Koffers verwendet werden. Die Erfindung ist deshalb auf eine besondere Art der Verriegelung nicht angewiesen.

[0042] Die Erfindung ist im Übrigen nicht auf einen Koffer beschränkt, der einen Deckel aufweist. Bei Weglassung des Deckels können stattdessen die deckelseitigen hinteren und vorderen Einhänglaschen direkt am umlaufenden Rand des Unterteils des Koffers angeordnet werden, wodurch sich ansonsten keine weiteren Veränderungen für die Verwirklichung der vorliegenden Erfindung bei einem nach oben offenen Behälter ergeben.

[0043] Hieraus ergibt sich, dass die Erfindung nicht auf einen stapelbaren Koffer beschränkt ist, sondern sie kann auch deckellose, stapelbare und miteinander verriegelbare Behälter betreffen.

[0044] Es bestehen dann die gleichen Vorteile, wie sie anhand des erfindungsgemäßen Koffers geschildert wurden, nämlich eine zentrische Einhängeverbindung, die gegen Schmutz unanfällig ist und ferner eine vordere zentrische Bedienungsseite mit einem Klappgriff, dem eine besonderes einfach zu bedienende und durch den Klappgriff gegen Beschädigung und ungewollte Betätigung geschützte Druckplatte in der Art einer Einhandbedienung zugeordnet ist.

[0045] Der Erfindungsgegenstand der vorliegenden Erfindung ergibt sich nicht nur aus dem Gegenstand der einzelnen Patentansprüche, sondern auch aus der Kombination der einzelnen Patentansprüche untereinander.

[0046] Alle in den Unterlagen, einschließlich der Zusammenfassung offenbarten Angaben und Merkmale, insbesondere die in den Zeichnungen dargestellte räumliche Ausbildung, werden als erfindungswesentlich beansprucht, soweit sie einzeln oder in Kombination gegenüber dem Stand der Technik neu sind. Soweit einzelne Gegenstände als „erfindungswesentlich" oder „wichtig" bezeichnet sind, bedeutet dies nicht, dass diese Gegenstände notwendigerweise den Gegenstand eines unabhängigen Anspruches bilden müssen. Dies wird allein durch die jeweils geltende Fassung des unabhängigen Patentanspruches bestimmt.

[0047] Im Folgenden wird die Erfindung anhand von mehreren Ausführungswegen darstellenden Zeichnungen näher erläutert. Hierbei gehen aus den Zeichnungen und ihrer Beschreibung weitere erfindungswesentliche Merkmale und Vorteile der Erfindung hervor.

[0048] Es zeigen:

[0049] **Fig.** 1: perspektivische Vorderansicht eines Koffers nach der Erfindung

[0050] **Fig.** 2: der Koffer nach **Fig.** 1 mit abgeschwenktem Klappgriff

[0051] **Fig.** 3: eine Schrägansicht auf die Bodenseite des Koffers nach **Fig.** 1 und **Fig.** 2 mit ausgeschwenktem Klappgriff

[0052] **Fig.** 4: die gleiche Darstellung wie **Fig.** 3 mit eingeschwenktem Klappgriff

[0053] **Fig.** 5: eine Rückansicht auf die Bodenseite des Koffers

[0054] **Fig.** 6: schematisiert das Einhängen von zwei Koffern in einem ersten Verfahrensschritt

[0055] **Fig.** 7: die Aufstapelung der beiden in **Fig.** 6 dargestellten Koffer kurz vor der Herstellung der Rastverbindung mit der Druckplatte

[0056] **Fig.** 8: die gleiche Darstellung wie **Fig.** 7 mit Darstellung weiterer Einzelheiten

[0057] **Fig.** 9: die fertig hergestellte Stapelverbindung zwischen den Koffern im Schnitt

[0058] **Fig.** 10: schematisiert das Funktionsprinzip der Druckplatte

[0059] **Fig.** 11: ein gegenüber **Fig.** 10 abgewandeltes Ausführungsbeispiel

[0060] **Fig.** 12: ein zweites gegenüber **Fig.** 10 und **Fig.** 11 abgewandeltes Ausführungsbeispiel

[0061] **Fig.** 13: ein weiteres Ausführungsbeispiel, bei dem die Druckplatte jeweils vorder- und rückseitig am Unterteil eines Koffers oder eines Behälters befestigt ist

[0062] **Fig.** 14: die Darstellung eines stapelbaren Behälters mit der erfindungsgemäßen Verriegelung und Einhängeverbindung

[0063] Der stapelbare Koffer **1** nach **Fig.** 1 besteht im Wesentlichen aus einem Deckel **2**, der in einer horizontalen Schwenkachse **33** einseitig schwenkbar an der Rückwand **11** eines Unterteils **3** gelagert ist.

[0064] Der Deckel **2** weist eine Vorderwand **4** auf, die in zwei zueinander parallele Seitenwände **5** übergeht und die beiden Seitenwände **5** gehen in eine gemeinsame Rückwand **6** über. Die Oberseite des Deckels **2** wird durch eine Deckwand **7** gebildet.

[0065] Die Erfindung ist nicht darauf beschränkt, die Deckwand **7** durchgehend auszugestalten. Sie kann auch Durchbrechungen, Öffnungen oder dergleichen aufweisen.

[0066] Das Unterteil **3** weist in der gleichen Weise eine Vorderwand **8** auf, die in zwei sich daran anschließende Seitenwände **9** übergeht. Die beiden Seitenwände **9** sind nach hinten durch eine Rückwand **11** abgeschlossen. Ferner weist das Unterteil **3** noch eine Bodenwand **10** auf.

[0067] Erfindungsgemäß ist gemäß **Fig.** 1 im hinteren Bereich des Deckels **2** eine hintere Einhängelasche **12** angeformt, die im Wesentlichen aus einem etwa U-förmig profilierten Teil besteht, welches eine mittige durchgehende Einhängeöffnung aufweist. Die auf der Zeichnung erkennbaren Zungen sind lediglich Verstärkungsrippen zur Versteifung der geschlossenen Hinterwand, die auch entfallen können.

[0068] Diese Aufnahmeöffnung **13** erstreckt sich demnach über die gesamte Breite der Einhängelasche **12**.

[0069] Im vorderen Bereich des Deckels **2**, gegenüberliegend zur Schwenkachse **33**, ist eine weitere Einhängelasche **14** angeformt, die in ihrer Formgebung und Dimension etwa mit der hinteren Einhängelasche **12** übereinstimmt.

[0070] Sie weist zwei voneinander getrennte Aufnahmeöffnungen **15** auf, die durch ein durchgehendes Mittelteil **16** voneinander abgetrennt sind.

[0071] Selbstverständlich ist die Erfindung nicht auf die Ausbildung von zwei nebeneinander liegenden und voneinander getrennten Aufnahmeöffnungen **15** beschränkt. Es kann auch nur eine einzige Aufnahmeöffnung **15** vorhanden sein oder mehr als zwei Aufnahmeöffnungen **15**. In diesen Aufnahmeöffnungen **15** greifen die Verriegelungshaken **24** einer noch später zu beschreibenden schwenkbar gelagerten Druckplatte **23** ein und dementsprechend kann es vorgesehen sein, dass an der Druckplatte **23** lediglich ein einziger Verriegelungshaken **24** oder mehr als zwei Verriegelungshaken **24** angeordnet sind.

[0072] An der Deckwand **7** des Deckels **2** sind eine Anzahl von nach außen geöffneten Vertiefungen **17** vorgesehen, die zum spielbehafteten Eingriff von bodenseitigen Abstandshaltern **18** vorgesehen sind, die an der Bodenwand **10** eines darüber liegenden Koffers angeordnet sind.

[0073] Die Verbindung zwischen dem Deckel **2** und dem Unterteil **3** erfolgt durch beliebig ausgebildete Verschlusslaschen **19**, die im gezeigten Ausführungsbeispiel vertieft in Ausnehmungen **20** an der Vorderwand **8** des Unterteils **3** angeordnet sind.

[0074] Im gezeigten Ausführungsbeispiel sind die Verschlusslaschen **19** schwenkbar in der Ausnehmung **20** in der Vorderwand **8** des Unterteils **3** aufgenommen.

[0075] Sie greifen mit zugeordneten Hakenteilen in eine zugeordnete Ausnehmung im Bereich der Vorderwand **4** des Deckels **2** oder auch im Bereich der Deckwand **7** ein.

[0076] An der Bedienseite des Koffers **1** (das ist die Vorderwand **8** des Unterteils **3**) ist ein Klappgriff **21** angeordnet, der in einer Schwenkachse **22** schwenkbar in einer ersten vertieften Ausnehmung **25** gelagert ist.

[0077] In einer anderen, nicht zeichnerisch dargestellten Ausführung kann es auch vorgesehen sein, dass die erste vertiefte Ausnehmung **25** für die vertiefte Aufnahme des Klappgriffs **21** entfällt und der Klappgriff **21** vor der Vorderwand **8** angeordnet ist. In diesem Fall ist dann nur noch die zweite Ausnehmung **26** für die vertiefte Aufnahme der Druckplatte **23** vorhanden.

[0078] In der ersten Ausführung setzt sich jedoch die Ausnehmung **25** für die verdeckte (vertiefte) Auf-

nahme des Klappgriffs **21** in eine dahinter liegende Ausnehmung **26** kleinere Abmessung fort, in der die erfindungsgemäße Druckplatte **23** schwenkbar gelagert ist und die an ihrer vorderen Seite zwei nach vorne gerichtete Verriegelungshaken **24** aufweist (siehe **Fig.** 2). Die Ausnehmungen **25**, **26** sind zur Bodenwand **10** hin geöffnet. Die Verriegelungshaken **24** sind deshalb von unten her durch die nach unten hin geöffnete Ausnehmung **26** für das Einfahren der deckelseitig am anderen Koffer angeordnete Einhängelasche **14** zugänglich.

[0079] Die **Fig.** 2 zeigt auch, dass die deckelseitig angeordneten Vertiefungen **17** mit großem Seitenspiel **30** die bodenseitigen Abstandhalter **18** an der Bodenwand **10** des darüber liegenden Koffers aufnehmen. Neben dem Seitenspiel **30** gibt es auch noch ein Längsspiel **31**, so dass erkennbar ist, dass diese Anordnung lediglich der Abstandshaltung zwischen der Deckwand **7** des unteren Koffers **1** und der Bodenwand **10** des oberen Koffers dient, um zu vermeiden, dass die Bodenwand **10** des oberen Koffers nicht die Deckwand **7** des unteren Koffers verkratzt oder in anderer Weise beschädigt.

[0080] Die **Fig.** 3 zeigt die Ansicht auf die Bodenseite des Koffers **1**, wo erkennbar ist, dass an der Unterseite der Rückwand **11** in einer Wandvertiefung **46** geschützt angeordnete und nach hinten vorstehende Einhängehaken **27** vorgesehen sind, die zum Eingriff in die relativ groß dimensionierte Aufnahmeöffnung **13** der Einhängelasche **12** eines darunter liegenden Koffers dienen. Die Wandvertiefung **46** ist deshalb nach unten hin geöffnet, um das spielbehaftete Einfahren der Einhängelasche **12** zu ermöglichen.

[0081] Die **Fig.** 3 zeigt auch, dass die Breite **28** der bodenseitig vorstehenden Abstandshalter **18** wesentlich kleiner ist als die Breite der deckelseitig vorhandenen Vertiefungen **17**, so dass sich das in **Fig.** 2 dargestellte Seiten- und Längsspiel **30**, **31** ergibt.

[0082] Die **Fig.** 4 zeigt den nach oben abgeklappten Klappgriff **21**, hinter dem die Druckplatte **23** sichtbar ist. Bei Druck auf die Druckplatte **23** werden somit die nach vorne gerichteten Verriegelungshaken **24** außer Eingriff mit den zugeordneten Aufnahmeöffnungen **15** in der vorderen Einhängelasche **14** des darunter liegenden Koffers gebracht.

[0083] Die Schwenkachse **32** der Druckplatte **23** ist lediglich schematisiert dargestellt.

[0084] Die **Fig.** 5 zeigt die bodenseitige Rückseite des Koffers **1**, wo erkennbar ist, dass die bodenseitigen und in der Rückwand **11** angeordneten Einhängehaken **27** mit Eingriffsschrägen ausgebildet sind, um ein erleichtertes Einhängen der Einhängehaken **27** in die rückwandseitige Einhängelasche **12** zu ermöglichen.

[0085] Im gezeigten Ausführungsbeispiel nach **Fig.** 5 ist die Einhängelasche **12** nach hinten geschlossen. Hierauf ist die Erfindung nicht beschränkt. Sie kann auch durchbrochen sein, so dass die Aufnahmeöffnung **13** nach hinten geöffnet ist.

[0086] Die **Fig.** 6 zeigt einen ersten Verfahrensschritt beim Aufstapeln von zwei einander zugeordneten Koffern, wobei der obere Koffer und die dazugehörenden Teile jeweils mit einem hochgestellten Strich bezeichnet sind, während die gleichen Teile des unteren Koffers ohne Strich bezeichnet werden. Für die gleichen Teile gelten somit die gleichen Erläuterungen.

[0087] Zunächst wird der obere Koffer **1'** schräg geneigt auf den Deckel **2** des unteren Koffers **1** aufgesetzt, um zu gewährleisten, dass die an der Rückseite des oberen Koffers **1'** angeordneten Einhängehaken **27'** in Eingriff mit der Aufnahmeöffnung **13** der hinteren Einhängelasche **12** am unteren Koffer **1** kommen.

[0088] Zu diesem Zweck sind die Einhängehaken **27'** mit einer Einführschräge versehen.

[0089] Wie aus **Fig.** 6 erkennbar, gelangen damit die bodenseitigen, erhöhten Abstandshalter **18'** des oberen Koffers **1** in Gegenüberstellung zu den deckelseitigen Vertiefungen **17** des unteren Koffers **1**, wobei die Breite **29** der Vertiefung wesentlich größer gewählt ist als die Breite **28** der bodenseitigen Abstandshalter **18**, so dass lediglich eine Abstandshaltung zwischen der Bodenwand **10'** des oberen Koffers **1'** und der gegenüberliegenden Deckwand **7** des unteren Koffers **1** erfolgt.

[0090] Nachdem der obere Koffer **1'** in die Einhängelasche **12** des unteren Koffers **1** gemäß **Fig.** 6 eingeführt wurde, können die weiteren Teile der Verriegelung beschrieben werden.

[0091] Es ist erkennbar, dass beim Abschwenken des oberen Koffers **1'** in Pfeilrichtung **34** die deckelseitig am unteren Koffer **1** angeordnete Einhängelasche **14** in eine zugeordnete Ausnehmung **36'** an der Vorderseite der Druckplatte **23'** einfährt und aufgrund der Einführschräge der Verriegelungshaken **24'** wird die Druckplatte **23** entgegen der Kraft einer Druckfeder **35'** selbsttätig nach hinten um seine Schwenkachse **32'** verschwenkt.

[0092] Wichtig ist auch noch, dass der Hakenboden **39'** des Verriegelungshakens **24'** einen kurzen Abstand oberhalb einer Anschlagkante **37'** hat, so dass der Hakenboden **39'** nach unten von der Bodenwand **10'** abgestützt ist. Er überträgt damit keine Last, die sein Schwenklager belasten würde.

[0093] Der Verriegelungshaken **24'** gleitet mit seiner Einführschräge an einer zugeordneten Anschlagkan-

te **38** im Bereich der Einhängelasche **14** des unteren Koffers **1** entlang und wird gegen die Druckfeder **35** verschwenkt.

[0094] Die **Fig.** 7 zeigt den fortschreitenden Zustand der Verrastung beim Übergang von **Fig.** 6 auf **Fig.** 7.

[0095] Dort ist erkennbar, dass der Verriegelungshaken **24'** mit seiner Einführschräge gerade an der Anschlagkante **38** vorbeiläuft, und entgegen der Kraft der Feder **35'** zurückgedrückt wird und kurz vor dem Verrasten mit den beiden Aufnahmeöffnungen **15** im Bereich der Einhängelasche **14** steht.

[0096] Die **Fig.** 8 zeigt die gleiche Darstellung wie **Fig.** 7, wo erkennbar ist, dass dies entgegen der Kraft der Druckfeder **35** erfolgt.

[0097] Es versteht sich von selbst, dass die Druckfeder **35'** auch als anders ausgebildeter Kraftspeicher ausgebildet sein kann. Sie kann als Elastomerfeder, als Schraubendruckfeder, als Schenkel-, Teller- oder Spiralfeder oder dergleichen ausgebildet sein. Ebenso ist es möglich, insgesamt die Druckplatte **23** ohne Druckfeder **35** auszubilden, so dass die Druckplatte **23** selbst als biegbares Federteil ausgebildet ist und als biegbare, federnde Platte wirkt.

[0098] Die **Fig.** 9 zeigt den fertig eingerasteten Zustand, wo erkennbar ist, dass der Verriegelungshaken **24'** nun selbsttätig und vollständig in die Aufnahmeöffnungen **15** der unteren Einhängelasche **14** eingeschwenkt ist.

[0099] Die beiden Koffer **1**, **1'** sind nun lagenrichtig zueinander verriegelt, wobei die Lastübertragung im Wesentlichen nur über die beiden Einhängelaschen **12**, **14** erfolgt, nicht aber durch andere Elemente, die zwischen den Koffern **1**, **1'** angeordnet sind.

[0100] Die **Fig.** 10 zeigt das Prinzip der Druckplatte **23** mit den Verriegelungshaken **24** schematisiert. Es ist erkennbar, dass die Druckplatte **23** als einseitig schwenkbarer, in der Schwenkachse **32** gelagerter Hebel ausgebildet ist, der in den Pfeilrichtungen **41** verschwenkbar ist.

[0101] Bei Druck in Betätigungsrichtung **40** wird somit der einzige Hebelteil gegen die Druckfeder **35** gepresst und die Feder wird damit vorgespannt.

[0102] Der gezeigte Hakenboden **39** bildet einen geringfügigen Abstand über der Bodenwand, so dass sichergestellt ist, dass keine Lastübertragung zwischen der Schwenkachse **32** und dem Verriegelungshaken **24** stattfindet, die den Verriegelungshaken **24** mit einer Stauchkraft belastet.

[0103] Die **Fig.** 11 zeigt ein gegenüber **Fig.** 10 abgewandeltes Ausführungsbeispiel, bei der die Druckplatte **23** als zweiarmiger Hebel ausgebildet ist. In diesem Fall setzt sich der obere Teil **42** eines Hebels in ein unteres Teil **43** eines zweiten Hebels fort, so dass es sich um einen zweiarmigen Hebel handelt, wobei am unteren Teil **43** die Verriegelungshaken **24** angeformt sind.

[0104] Somit muss zur Betätigung einer solchen Druckplatte **23a** eine Betätigungskraft in Betätigungsrichtung **40** aufgebracht werden, so dass die Druckplatte **23a** in dieser Richtung gezogen werden muss, um dann selbsttätig hinter die Einhängelasche **14** einzurasten.

[0105] Die **Fig.** 12 zeigt ein abgewandeltes Ausführungsbeispiel, welches ohne Druckfeder oder ohne einem anderen Kraftspeichers auskommt.

[0106] Die Druckplatte **23b** ist als zweiarmiger Hebel ausgebildet und die Offenstellung der Druckplatte **23b** wird dadurch erreicht, dass eine Druckkraft in Pfeilrichtung **44b** aufgebracht wird, wodurch der Verriegelungshaken **24** in Pfeilrichtung **41** nach hinten über einen bodenseitigen Rastvorsprung **45** verschwenkt wird, der sich elastisch verformt und somit den Verriegelungshaken **24** in seiner in Pfeilrichtung **41** zurück geschwenkten Lage hält.

[0107] Wird hingegen in Betätigungsrichtung **44b** auf den oberen Teil **42** gedrückt, wird der Verriegelungshaken **24** außer Eingriff mit dem elastisch verformbaren Rastvorsprung **45** gebracht und verschwenkt in seine in **Fig.** 12 dargestellte Raststellung.

[0108] Auch diese Schwenklagen können dann gegebenenfalls federunterstützt sein.

[0109] Die **Fig.** 13 zeigt als Abwandlungsbeispiel zu den vorgenannten Ausführungsformen, dass es auch möglich ist, jeweils eine Druckplatte **23a**, **23b** an den gegenüber liegenden Seiten des Unterteils **3** anzuordnen. Anstatt der hinteren Einhängelasche **12** wäre dann im hinteren Bereich des Deckels **2** eine weitere Druckplatte **23b** angeordnet, so dass die hintere Einhängelasche **12** entfällt und stattdessen an der hinteren Seite des Deckels **2** eine hintere Einhängelasche **14b** vorhanden ist, während an der vorderen Seite des Deckels eine vordere Einhängelasche **14a** vorhanden ist.

[0110] Somit ist klar, dass auch die gegenseitige Verriegelung von aufeinander gestapelten Koffern durch zwei entgegengesetzt zu betätigende Druckplatten **23a**, **23b** möglich ist, die jeweils mit ihren Verriegelungshaken **24a**, **24b** in zugeordnete, deckelseitige vorstehende Einhängelaschen **14a**, **14b** im darunter liegenden Koffer einhängbar sind.

[0111] Die **Fig.** 14 zeigt als weiteres Abwandlungsbeispiel, dass es nicht auf die Anordnung eines Deckels **2** auf dem Unterteil **3** ankommt und dass die gesamte Erfindung auch bei einem nach oben offenen Behälter übertragen werden kann, der nur aus einem Unterteil **3** besteht.

[0112] Alle gleichen Teile wurden mit den gleichen Bezugszeichen versehen, und es ist erkennbar, dass nach oben offene Behälter in der gleichen Weise übereinander gestapelt und verriegelt werden können, wie es anhand der vorstehenden Ausführungsbeispiele dargestellt und beschrieben wurde.

Bezugszeichenliste

1 Koffer **1'**
2 Deckel
3 Unterteil
4 Vorderwand (von **2**)
5 Seitenwand (von **2**)
6 Rückwand (von **2**)
7 Deckwand (von **2**)
8 Vorderwand (**3**)
9 Seitenwand
10 Bodenwand
11 Rückwand
12 Eindringlasche (hinten)
13 Aufnahmeöffnung
14 Einhängelasche (vorn)
15 Aufnahmeöffnung
16 Mittelteil
17 Vertiefung
18 Abstandshalter
19 Verschlusslasche
20 Ausnehmung
21 Klappgriff
22 Schwenkachse
23 Druckplatte a, b
24 Verriegelungshaken
25 Ausnehmung (für **21**)
26 Ausnehmung (für **23**)
27 Einhängehaken
28 Breite (von **18**)
29 Breite (von **17**)
30 Seitenspiel
31 Längsspiel
32 Schwenkachse (von **23**)
33 Schwenkachse (**2**)
34 Pfeilrichtung
35 Druckfeder
36 Ausnehmung
37 Anschlagkante
38 Anschlagkante
39 Hakenboden (von **24**)
40 Betätigungsrichtung
41 Pfeilrichtung
42 oberes Teil (von **23a**)
43 unteres Teil
44 Betätigungspunkt a, b
45 Rastvorsprung
46 Wandvertiefung (in **11**)

ZITATE ENTHALTEN IN DER BESCHREIBUNG

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Zitierte Patentliteratur

- **E**P 2313321 B1 [0002, 0018, 0032]
- **E**P 2346741 B1 [0015]

Patentansprüche

1. Kofferanordnung mit mindestens zwei stapelbaren Koffern (**1**, **1'**), wobei jeder Koffer (**1**, **1'**) aus einem kastenförmigen Unterteil (**3**) besteht, das über eine horizontale Schwenkachse (**33**) mit einem schwenkbaren Deckel (**2**) verbunden ist, wobei eine erste Verbindungsvorrichtung zwischen den Koffern (**1**, **1'**) aus einer parallel zur Schwenkachse (**33**) auf der Deckwand (**7**) des Deckels angeordneten Einhängelasche (**12**) gebildet ist, in welche bodenseitige, nach hinten gerichtete Einhängehaken (**27'**) des darüber angeordneten Koffers (**1'**) eingreifen und eine zweite handbetätigte Verbindungsvorrichtung nächst der Vorderseite der Koffer (**1**, **1'**) zur formschlüssigen Koppelung zwischen einander zugeordneten Flächen der übereinander gestapelten Koffer (**1**, **1'**) angeordnet ist, **dadurch gekennzeichnet,** dass an der Vorderwand (**8**) des Unterteils (**3**) ein um eine horizontale Schwenkachse (**22**) schwenkbarer Klappgriff (**21**) angeordnet ist, der mindestens eine vorderwandseitige Ausnehmung (**25**, **26**) übergreift, in deren Bereich eine handbetätigbare, federbelastet schwenkbare Druckplatte (**23**; **23a**, **23b**) angeordnet ist, an der Verriegelungshaken (**24**) angeformt sind, die in Eingriff mit einer deckwandseitigen Einhängelasche (**14**) am gegenüber liegenden Koffer (**1**, **1'**) bringbar sind.

2. Kofferanordnung nach Anspruch 1, **dadurch gekennzeichnet,** dass die vorderen und hinteren Einhängelaschen (**12**, **14**) zueinander fluchtend in der Mittenquerachse des Deckels (**2**) angeordnet sind.

3. Kofferanordnung nach Anspruch 1 oder 2, **dadurch gekennzeichnet,** dass die oberhalb des Klappgriffes (**21**) am Deckel (**2**) angeordnete Einhängelasche (**14**) mindestens zwei voneinander beabstandete Aufnahmeöffnungen (**15**) aufweist und dass am schwenkbaren Teil der Druckplatte (**23**) die mindestens zwei Verriegelungshaken starr angeformt sind.

4. Kofferanordnung nach einem der Ansprüche 1 bis 3, **dadurch gekennzeichnet,** dass die Druckplatte (**23**, **23a**, **23b**) als einseitig schwenkbare Platte ausgebildet ist, die gegen einen Kraftspeicher vorgespannt ist.

5. Kofferanordnung nach einem der Ansprüche 1 bis 4, **dadurch gekennzeichnet,** dass die Druckplatte (**23**, **23a**, **23b**) des einen Koffers (**1'**) selbsttätig in die Einhängelasche (**14**) des anderen Koffers (**1**) einrastet.

6. Kofferanordnung nach einem der Ansprüche 1 bis 5, **dadurch gekennzeichnet,** dass auf der Bodenwand (**10'**) des einen Koffers (**1'**) mehrere über die Fläche der Bodenwand (**10'**) verteilte und vorstehende Abstandshalter (**18'**) angeordnet sind, die mit Seiten- und Längsspiel (**30**, **31**) in zugeordnete, in der deckelseitigen Deckwand (**7**) vertieft angeordnete Vertiefungen (**17**) eingreifen.

7. Kofferanordnung nach Anspruch 6, **dadurch gekennzeichnet,** dass die deckelseitig in der Deckwand (**7**) vertieft angeordnete Vertiefungen (**17**) zur jeweiligen Seitenwand (**5**) des Deckels (**2**) hin geöffnet sind.

8. Kofferanordnung nach einem der Ansprüche 1 bis 7, **dadurch gekennzeichnet,** dass mit dem Ergreifen des Klappgriffes (**21**) auch die direkt hinter dem Klappgriff (**21**) angeordnete Druckplatte (**23**, **23a**, **23b**) betätigbar ist.

9. Kofferanordnung nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet,** dass die stapelbaren Koffer (**1**, **1'**) ohne Deckel (**2**) ausgebildet sind und lediglich deren Unterteile (**3**, **3'**) stapelbar sind.

10. Kofferanordnung nach einem der Ansprüche 1 bis 8, **dadurch gekennzeichnet,** dass der Klappgriff (**21**) in einer ersten vertieften Ausnehmung (**25**) an der Vorderwand (**8**) des Unterteils (**3**) angeordnet ist und dass hinter der ersten Ausnehmung (**25**) eine zweite vertiefte Ausnehmung (**26**) angeordnet ist, in der schwenkbare Teil der Druckplatte (**23**, **23a**, **23b**) angeordnet ist.

11. Behälteranordnung mit mindestens zwei stapelbaren Behältern (**1**, **1'**), wobei jeder Behälter (**1**, **1'**) aus einem kastenförmigen Unterteil (**3**) besteht, wobei eine erste Verbindungsvorrichtung zwischen den Behältern (**1**, **1'**) aus einer parallel zur Schwenkachse (**33**) auf dem umlaufenden Rand des Behälters angeordneten Einhängelasche (**12**) gebildet ist, in welche bodenseitige, nach hinten gerichtete Einhängehaken (**27'**) des darüber angeordneten Behälters (**1'**) eingreifen und eine zweite handbetätigte Verbindungsvorrichtung nächst der Vorderseite der Behälter (**1**, **1'**) zur formschlüssigen Koppelung zwischen einander zugeordneten Flächen der übereinander gestapelten Behälter (**1**, **1'**) angeordnet ist, **dadurch gekennzeichnet,** dass an der Vorderwand (**8**) des Unterteils (**3**) ein um eine horizontale Schwenkachse (**22**) schwenkbarer Klappgriff (**21**) angeordnet ist, der mindestens eine vorderwandseitige Ausnehmung (**25**, **26**) übergreift, in deren Bereich eine handbetätigbare, federbelastet schwenkbare Druckplatte (**23**; **23a**, **23b**) angeordnet ist, an der Verriegelungshaken (**24**) angeformt sind, die in Eingriff mit einer deckwandseitigen Einhängelasche (**14**) am gegenüber liegenden Behälter (**1**, **1'**) bringbar sind.

12. Behälteranordnung nach Anspruch 11, **dadurch gekennzeichnet,** dass am Behälter jeweils zwei einander gegenüberliegende Druckplatten (**23a**, **23b**) mit Verriegelungshaken (**24**) zur Verriegelung

mit zugeordneten behälterseitigen Einhängelaschen (**14**) vorgesehen sind.

Es folgen 11 Seiten Zeichnungen

Anhängende Zeichnungen

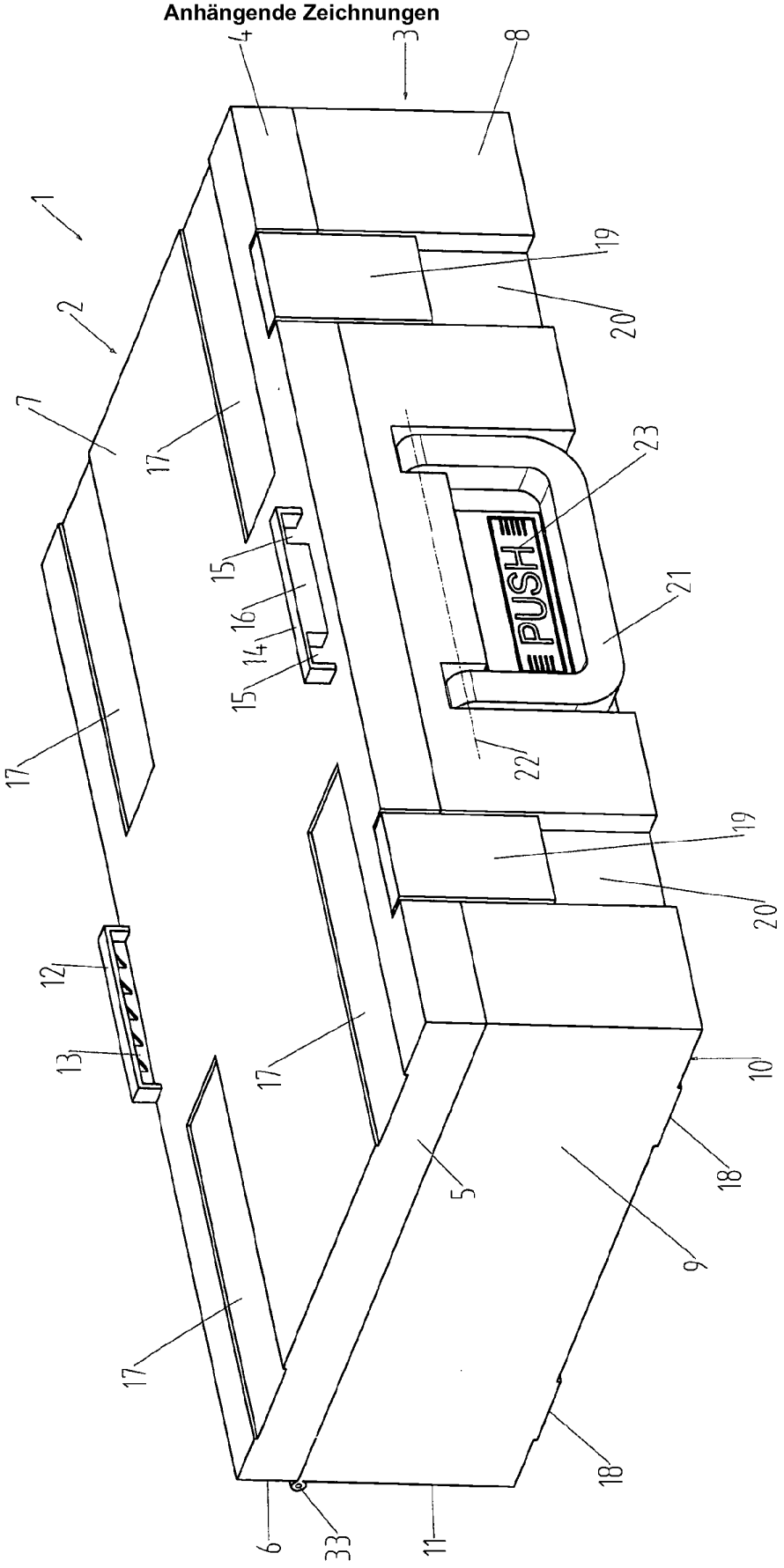


Fig. 1

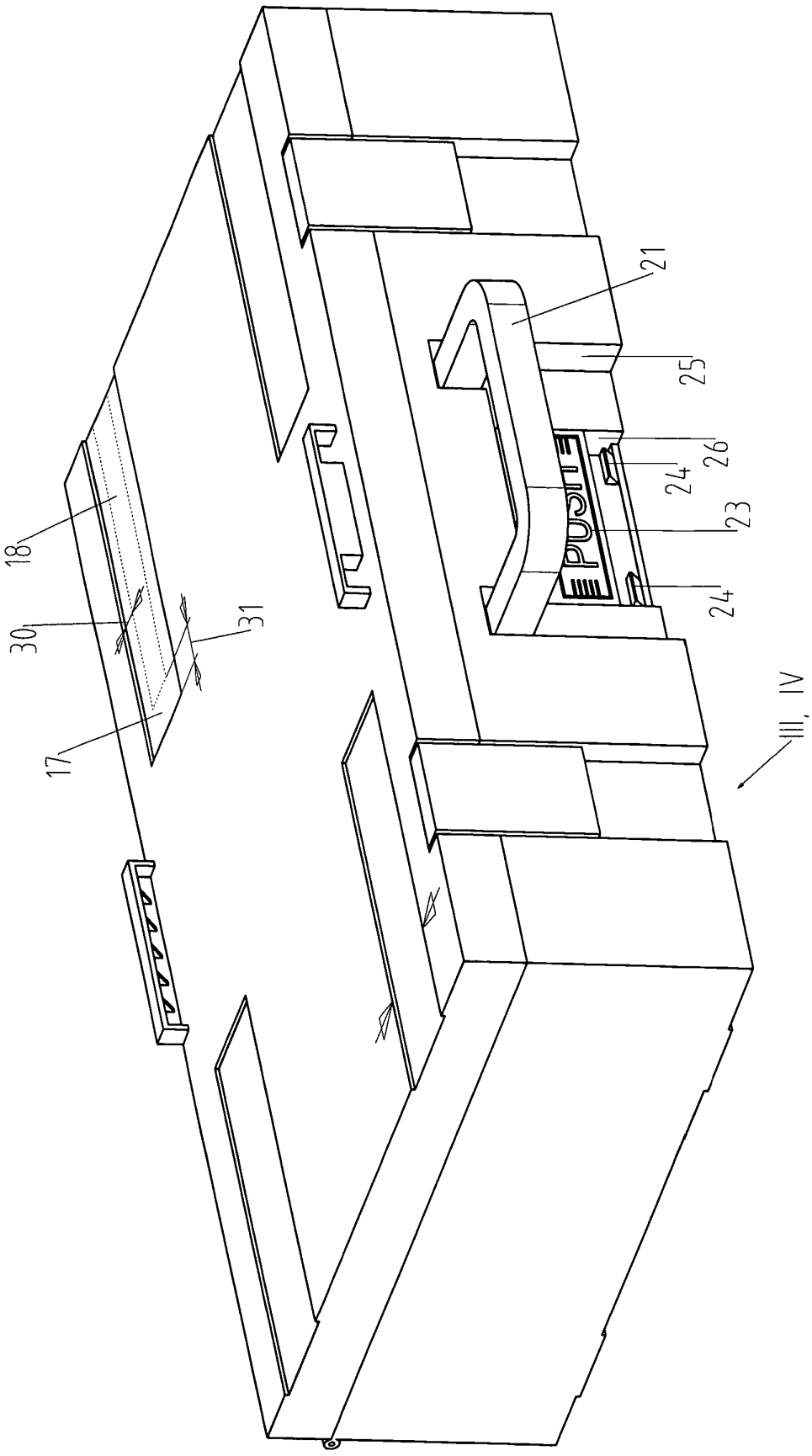


Fig. 2

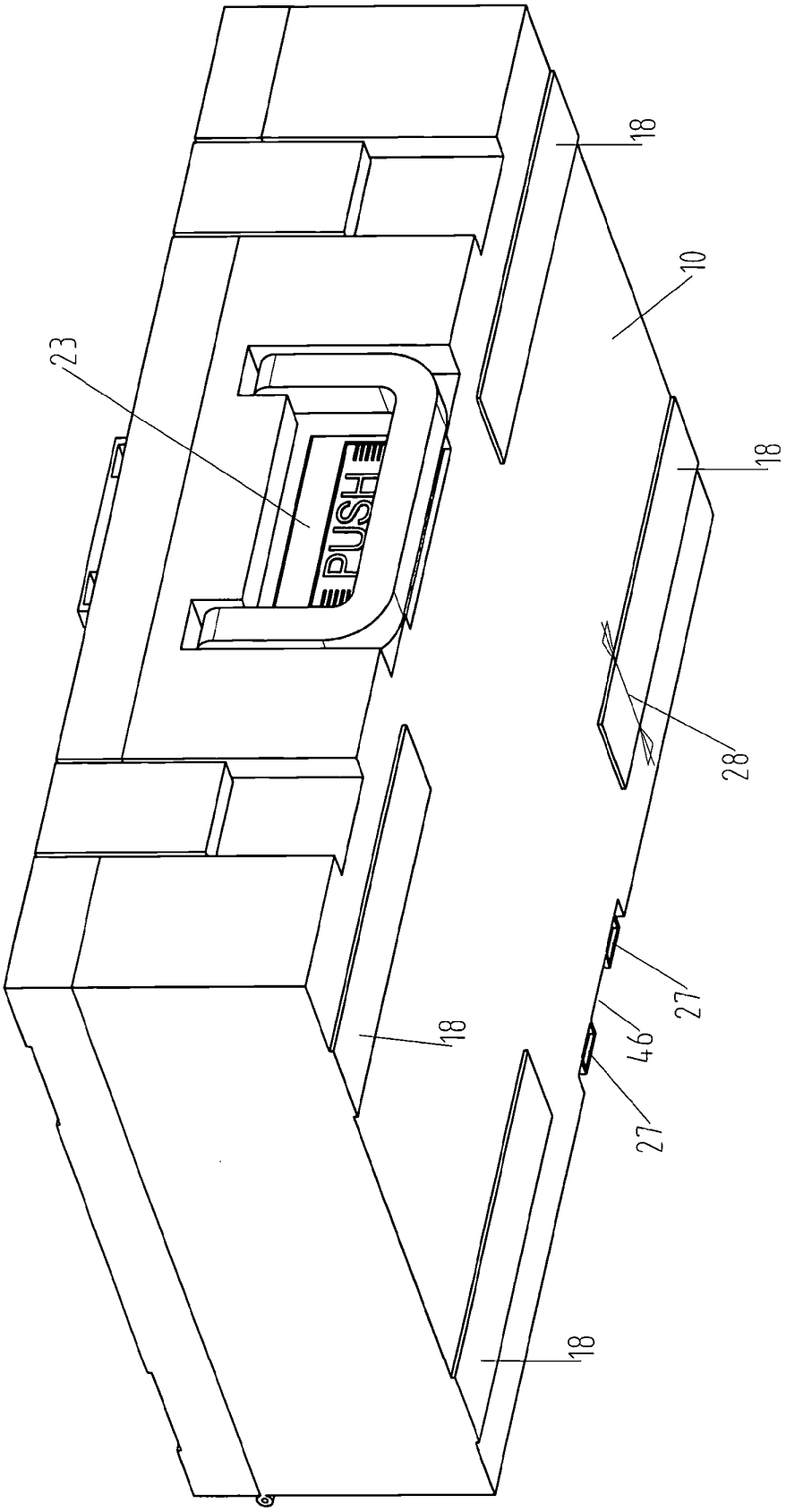


Fig. 3

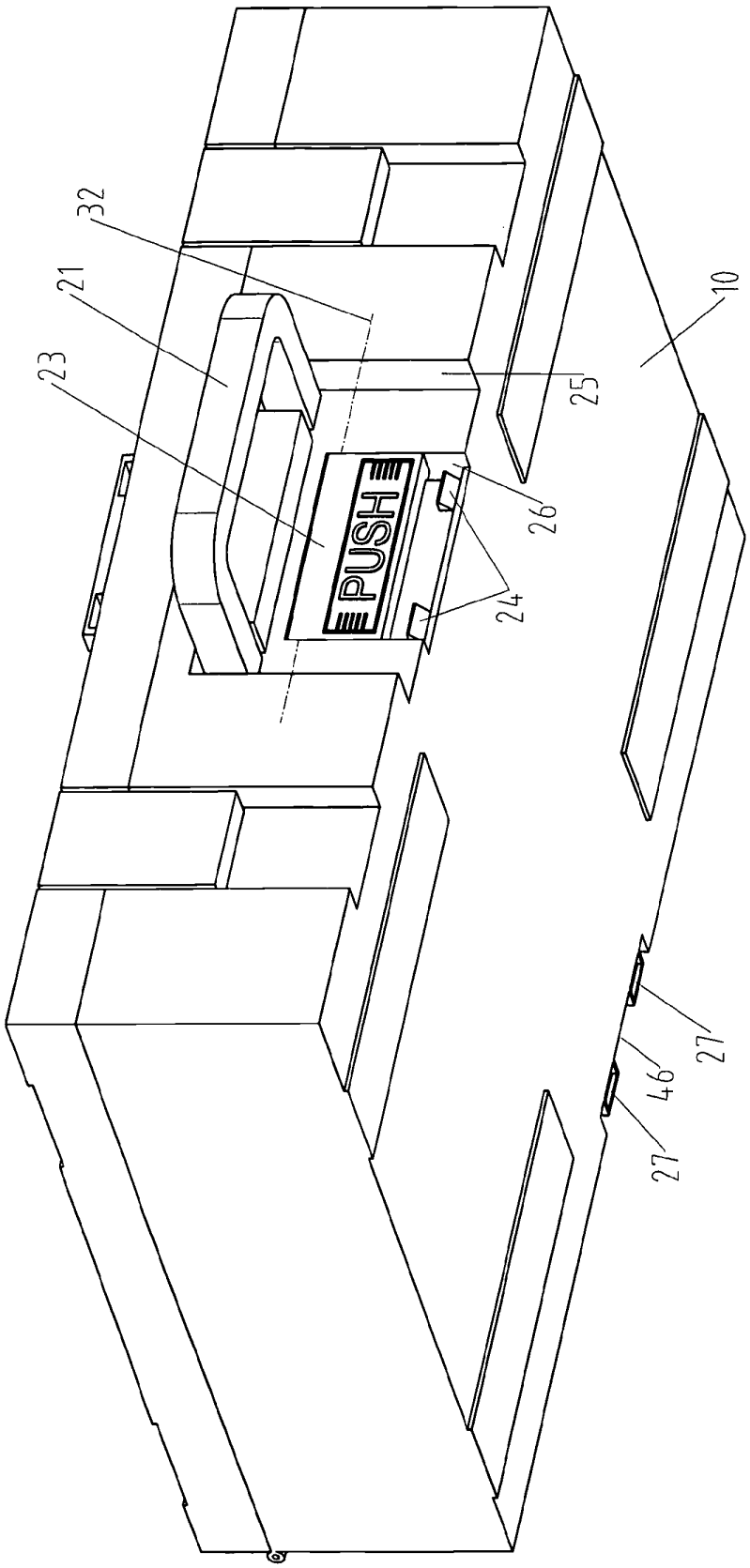


Fig. 4

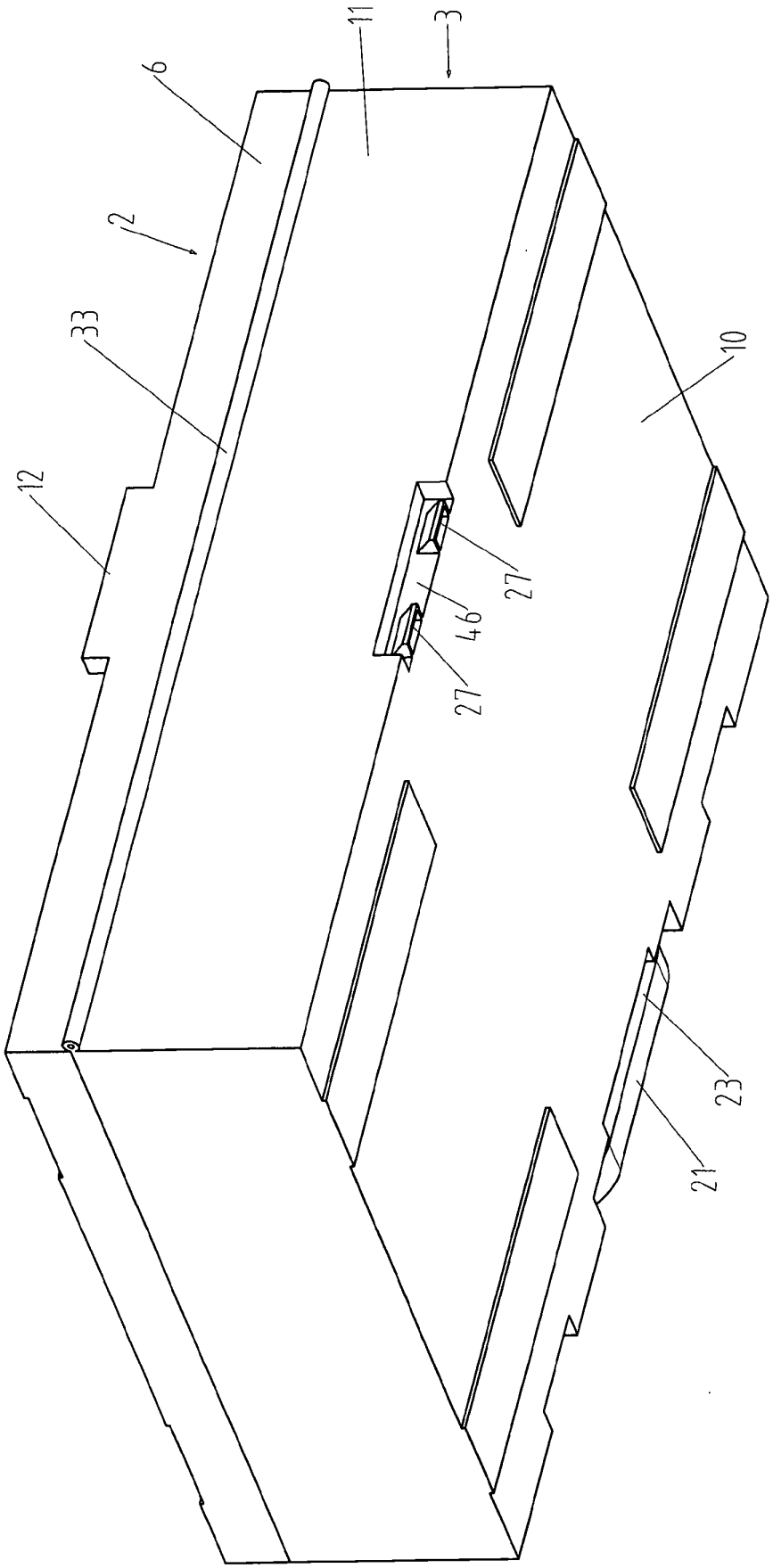


Fig. 5

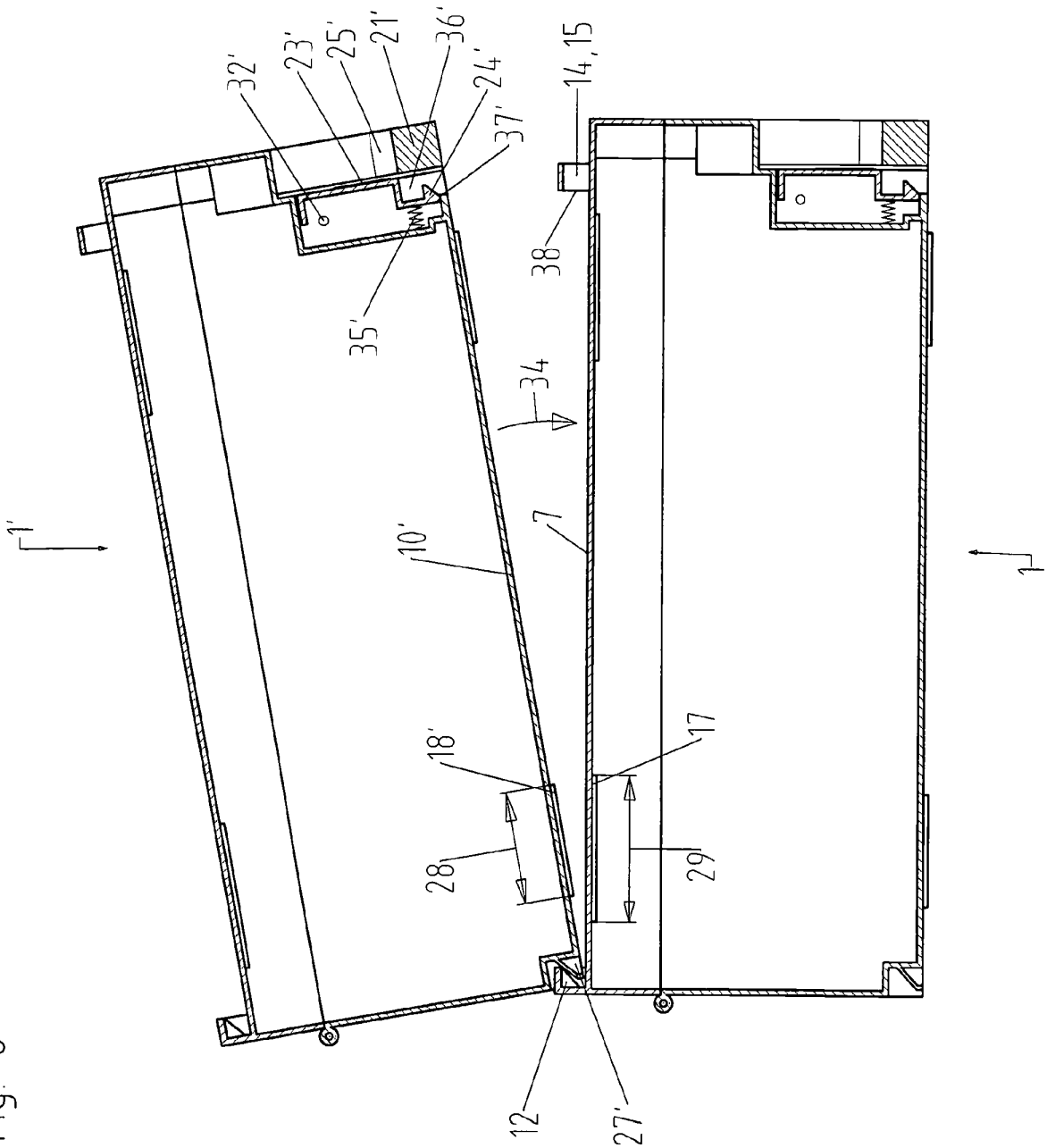


Fig. 6

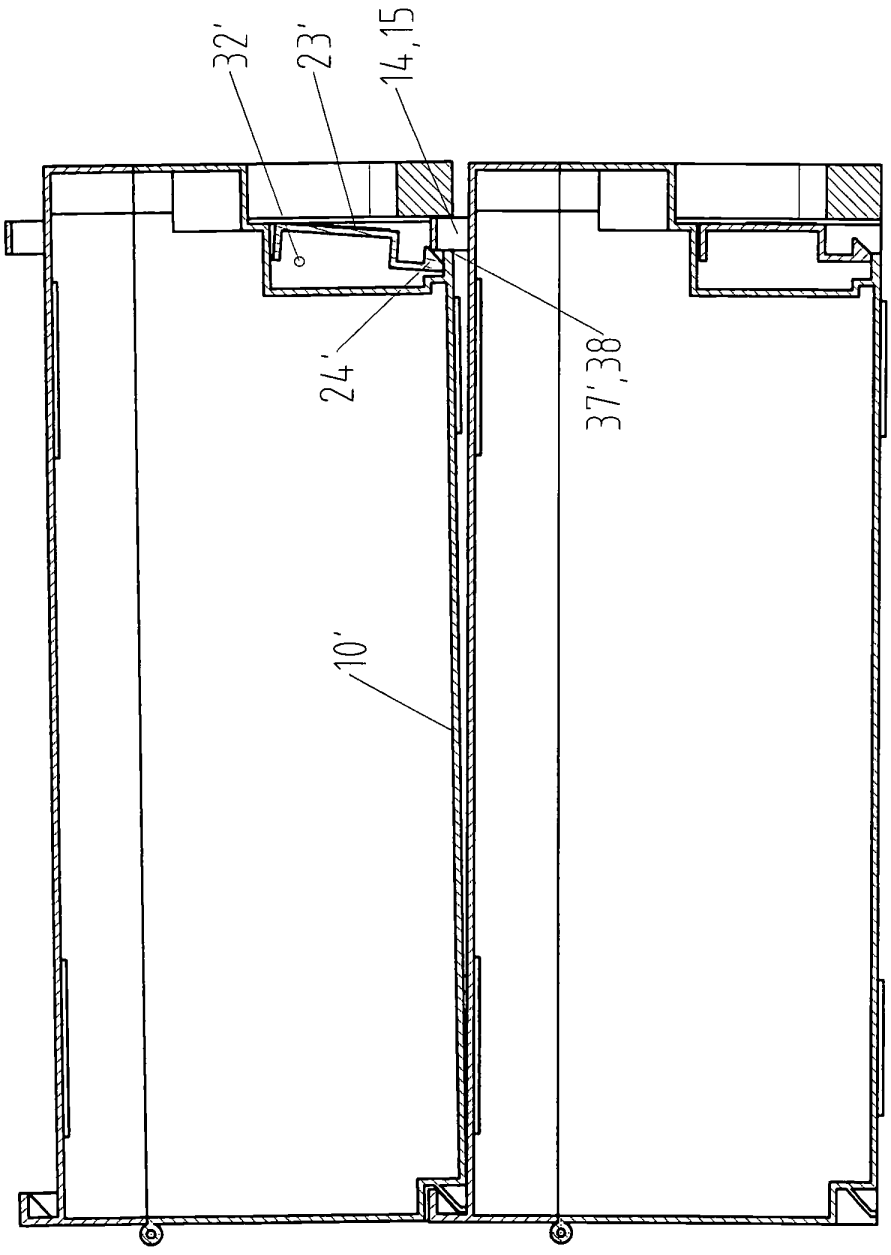


Fig. 7

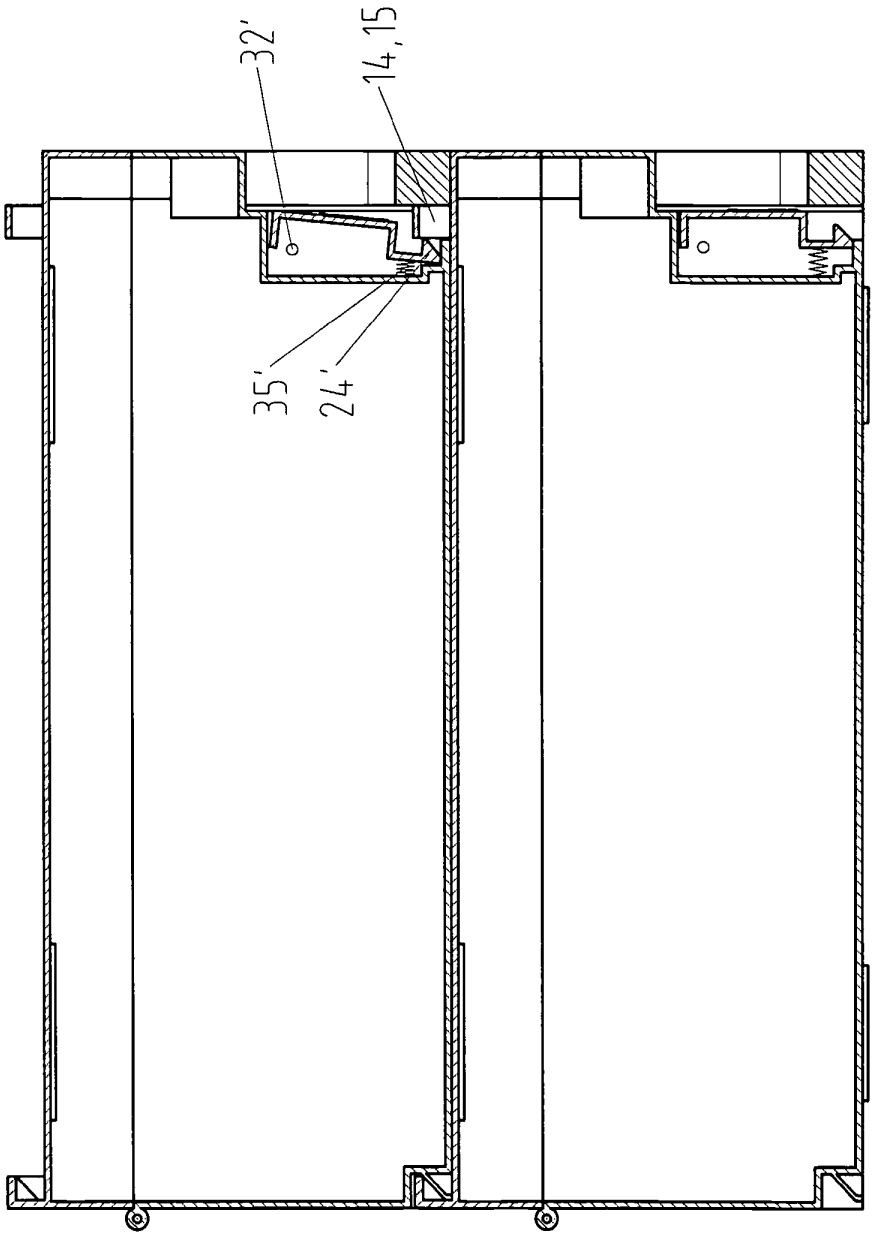


Fig. 8

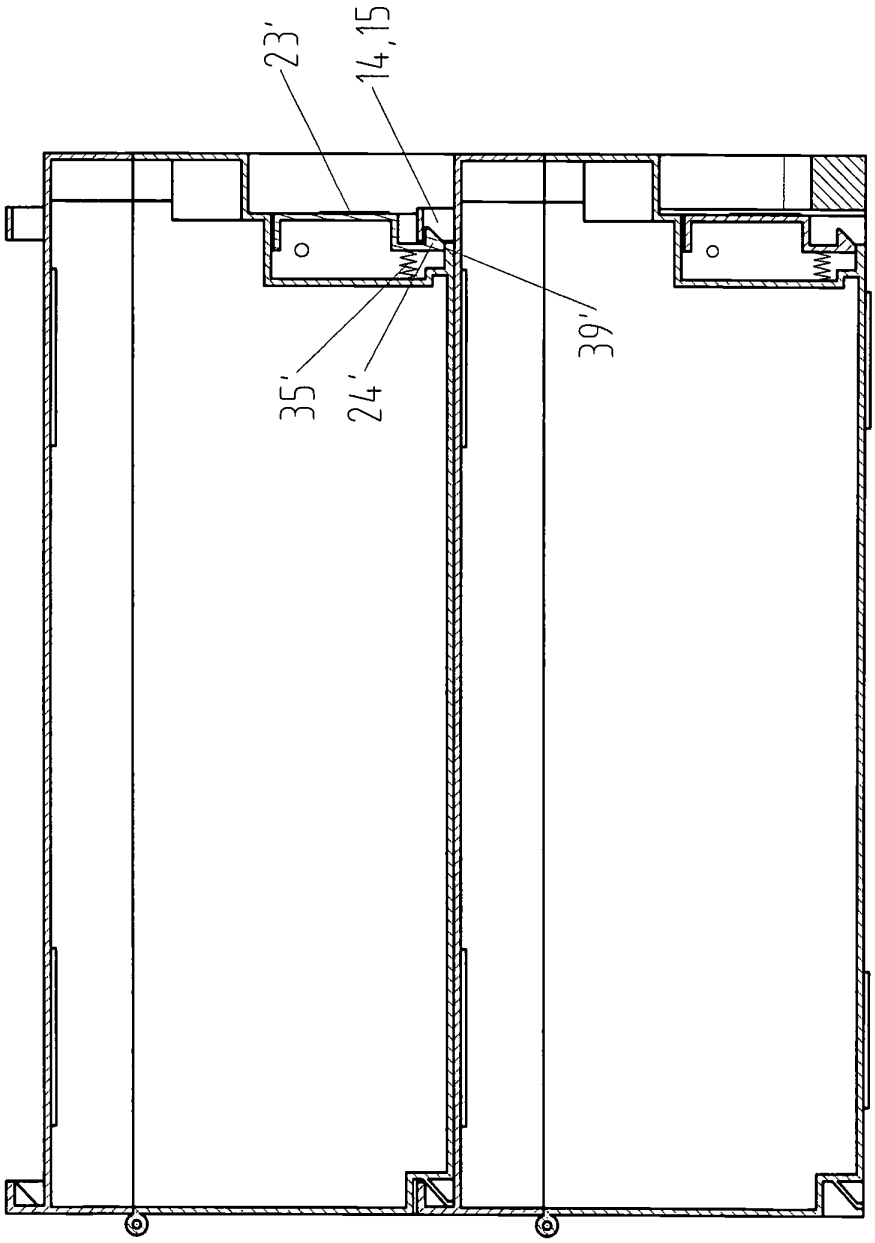


Fig. 9

Fig. 10

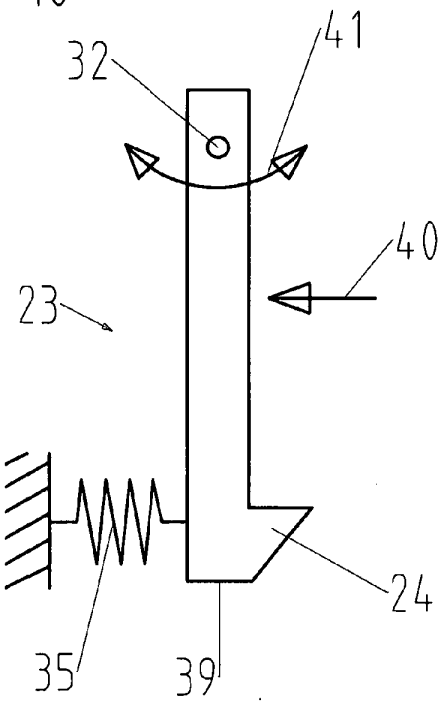


Fig. 11

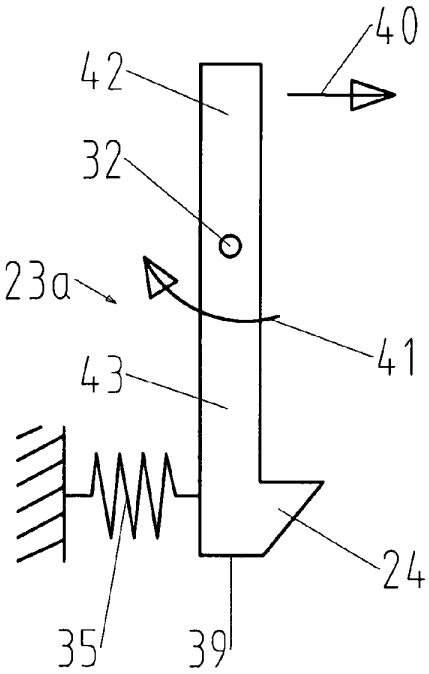


Fig. 12

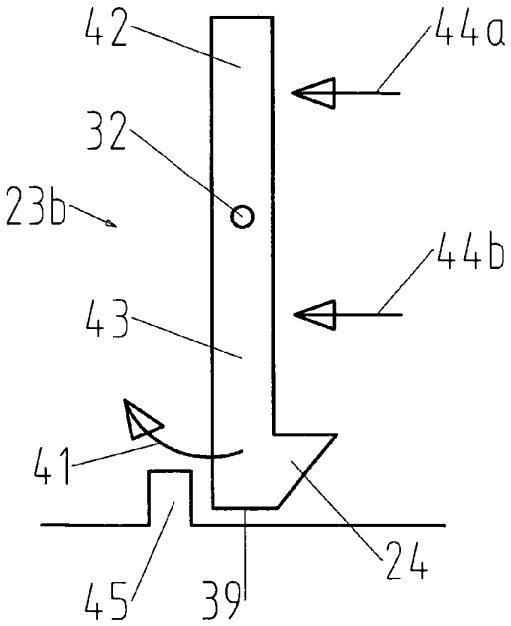


Fig. 13

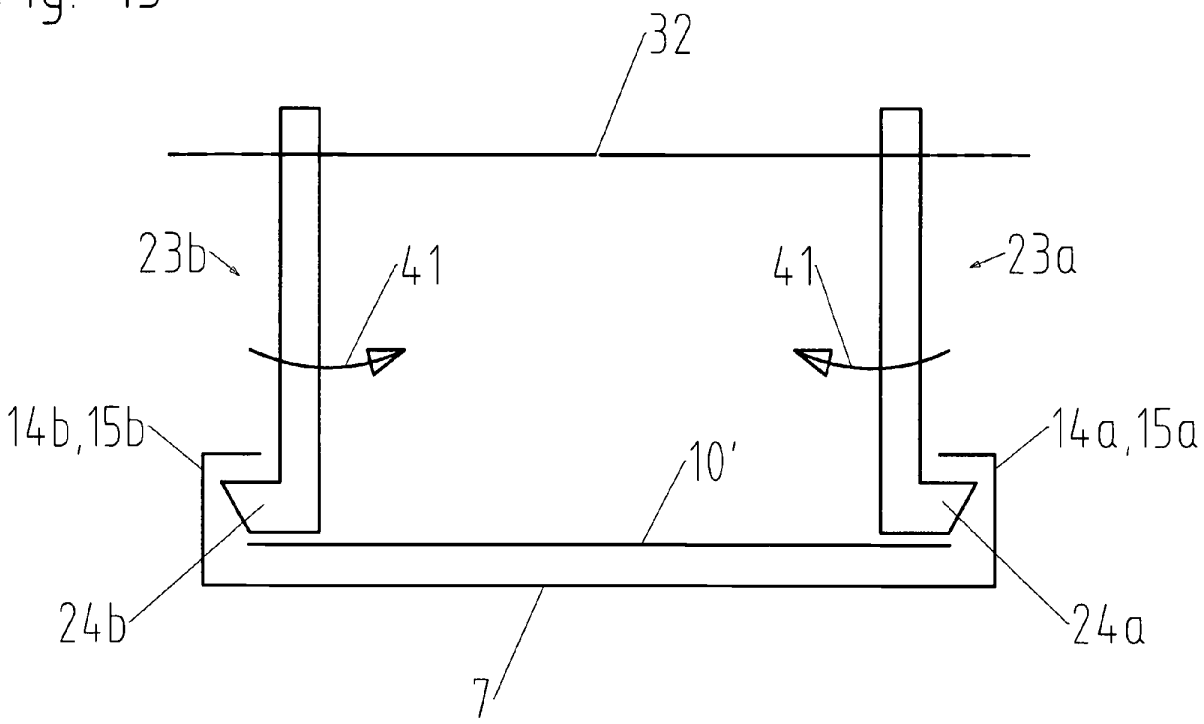
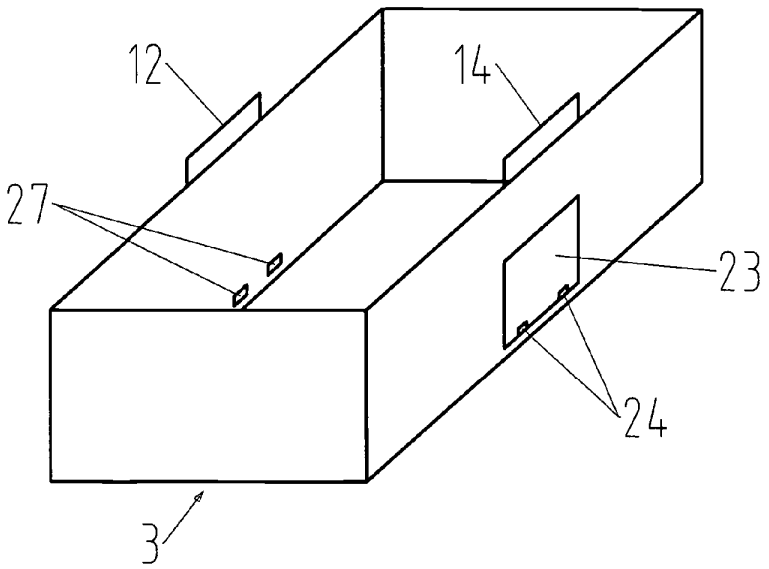


Fig. 14



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证　明

本证明之附件是向本局提交的下列专利申请文件副本。

申　　请　　号：202210212862.5

申　请　类　型：发明专利

发明 创造 名称：模块的连接结构、储物箱及储物箱组件

申　　请　　日：2022年03月04日

申　　请　　人：上海美瑞实业有限公司

发明人或设计人：张红泉、蔡书军

局长

申长雨

2023 年 02 月 16 日

2022102128625

权 利 要 求 书

1、一种模块的连接结构，其特征在于，包括位于所述模块一表面上的第一连接部、位于所述模块另一表面上的第二连接部及止动部；

所述第一连接部包括安装部、可相对于所述安装部移动的锁定部及位于所述安装部与所述锁定部之间的第一弹性件，所述第一弹性件使所述锁定部自动保持在锁定状态；

所述第二连接部包括与锁定部可相互锁定的配合部，下压一所述模块的锁定部可使其与另一模块的配合部在第一弹性件的作用下自动锁定；

当所述止动部位于锁定部的锁定路径上时，所述锁定部无法自动锁定，所述第一连接部与所述第二连接部处于保持解锁状态。

2、根据权利要求 1 所述的模块的连接结构，其特征在于，所述止动部可伸缩，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部伸展；当所述第一连接部与所述第二连接部处于锁定状态时，所述止动部压缩。

3、根据权利要求 2 所述的模块的连接结构，其特征在于，所述止动部设置在所述锁定部上且可随所述锁定部移动；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述第二连接部在锁定部的锁定路径上卡持。

4、根据权利要求 3 所述的模块的连接结构，其特征在于，所述止动部包括开设在锁定部上的容纳槽、可容纳在所述容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件伸展时，所述卡块伸展出容纳槽，当所述第二弹性件压缩时，所述卡块压缩在容纳槽内。

5、根据权利要求 2 所述的模块的连接结构，其特征在于，所述止动部设置在第二连接部上且相对于所述锁定部保持静止；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述锁定部在锁定部的锁定路径上卡持。

6、根据权利要求 5 所述的模块的连接结构，其特征在于，所述锁定部包括锁定扣和止位扣，所述锁定扣与配合部对应设置，所述止位扣与止动部对应设置。

7、根据权利要求 6 所述的模块的连接结构，其特征在于，所述止位扣在锁定方向上的延伸长度大于锁定扣在锁定方向上的延伸长度。

8、根据权利要求 6 所述的模块的连接结构，其特征在于，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述止位扣在锁定部的锁定路径上卡持；当所述第一连接部与所述第二连接部处于锁定状态时，所述锁定扣与配合部相互锁定，且所述止位扣在非锁定路径上与止动部抵持。

9、根据权利要求 8 所述的模块的连接结构，其特征在于，所述止动部包括开设在配合部上的容纳槽、可容纳在容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件压缩时，所述卡块与所述止位扣在非锁定路径上抵持，当所述第二弹性件伸展时，所述卡块与所述止位扣在锁定部的锁定路径上卡持。

10、根据权利要求 4 或 9 所述的模块的连接结构，其特征在于，所述止动部还包括固定槽及与卡块连接的固定块，当所述固定块位于所述固定槽内时，所述第二弹性件压缩，且所述止动部不位于锁定部的锁定路径上。

11、根据权利要求 1 所述的模块的连接结构，其特征在于，所述锁定部为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

12、一种储物箱，其特征在于，所述储物箱上设置有如权利要求 1~11 任一项所述的模块的连接结构，所述第一连接部设置于所述储物箱的箱盖上，所述第二连接部设置于所述储物箱箱体的底部。

13、一种储物箱组件，其特征在于，包括多个如权利要求 12 所述的储物箱，相邻两个所述储物箱之间可通过第一连接件与第二连接件相互锁定。

2022102128625

说 明 书

模块的连接结构、储物箱及储物箱组件

技术领域

本发明涉及物品存储技术领域，尤其是涉及一种模块的连接结构、储物箱及储物箱组件。

背景技术

常规储物箱的各个箱体之间都是单独放置的，即使能一个一个堆放上去也只能保证放平即可。但对于需要买多个箱子的家庭及专业用户来讲，如果未设置两个箱体之间的互锁功能，那么多个箱体放置几层后很容易会翻倒，从而带来安全隐患。尤其是在需要同时移动多个箱体的时候，由于在拖行过程中整体重心改变及路面不平整产生震动，更加容易导致上方的箱体翻倒。

要避免以上问题，目前常规的解决方法是：额外增加一些如绳索等配件来协助固定多个箱体，以此来解决此问题。但是，采用此解决方法不仅增加了额外的成本，而且储物箱必须先解开绳索才能取出里面的物品，这给实际的使用带来诸多不便。

有鉴于此，确有必要提供一种模块的连接结构、储物箱及储物箱组件，以此来解决此问题。

发明内容

本发明的目的是提供一种储物箱的连接结构，旨在解决上述背景技术存在的不足，能够实现自动锁定、保持解锁及自动复位功能，从而方便用户操作使用。

本发明提供了一种模块的连接结构，包括位于所述模块一表面上的第一连接部、位于所述模块另一表面上的第二连接部及止动部；

所述第一连接部包括安装部、可相对于所述安装部移动的锁定部及位于

所述安装部与所述锁定部之间的第一弹性件，所述第一弹性件使所述锁定部自动保持在锁定状态；

所述第二连接部包括与锁定部可相互锁定的配合部，下压一所述模块的锁定部可使其与另一模块的配合部在第一弹性件的作用下自动锁定；

当所述止动部位于锁定部的锁定路径上时，所述锁定部无法自动锁定，所述第一连接部与所述第二连接部处于保持解锁状态。

进一步地，所述止动部可伸缩，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部伸展；当所述第一连接部与所述第二连接部处于锁定状态时，所述止动部压缩。

进一步地，所述止动部设置在所述锁定部上且可随所述锁定部移动；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述第二连接部在锁定部的锁定路径上卡持。

进一步地，所述止动部包括开设在锁定部上的容纳槽、可容纳在所述容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件伸展时，所述卡块伸展出容纳槽，当所述第二弹性件压缩时，所述卡块压缩在容纳槽内。

进一步地，所述止动部设置在第二连接部上且相对于所述锁定部保持静止；当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述锁定部在锁定部的锁定路径上卡持。

进一步地，所述锁定部包括锁定扣和止位扣，所述锁定扣与配合部对应设置，所述止位扣与止动部对应设置。

进一步地，所述止位扣在锁定方向上的延伸长度大于锁定扣在锁定方向上的延伸长度。

进一步地，当所述第一连接部与所述第二连接部处于保持解锁状态时，所述止动部与所述止位扣在锁定部的锁定路径上卡持；当所述第一连接部与所述第二连接部处于锁定状态时，所述锁定扣与配合部相互锁定，且所述止

位扣在非锁定路径上与止动部抵持。

进一步地，所述止动部包括开设在配合部上的容纳槽、可容纳在容纳槽内的卡块及位于容纳槽与卡块之间的第二弹性件；当所述第二弹性件压缩时，所述卡块与所述止位扣在非锁定路径上抵持，当所述第二弹性件伸展时，所述卡块与所述止位扣在锁定部的锁定路径上卡持。

进一步地，所述止动部还包括固定槽及与卡块连接的固定块，当所述固定块位于所述固定槽内时，所述第二弹性件压缩，且所述止动部不位于锁定部的锁定路径上。

进一步地，所述锁定部为水平移动的滑动锁扣、翻转移动的翻转锁扣或旋转移动的旋转锁扣。

本发明还提供了一种储物箱，所述储物箱上设置有如上任一项所述的模块的连接结构，所述第一连接部设置于所述储物箱的箱盖上，所述第二连接部设置于所述储物箱箱体的底部。

本发明还提供了一种储物箱组件，包括多个如上所述的储物箱，相邻两个所述储物箱之间可通过第一连接件与第二连接件相互锁定。

本发明提供的储物箱的连接结构，由于锁定部能够相对于安装部移动，且第一弹性件能够驱动锁定部自动保持在锁定状态，当两个储物箱在锁定时，其中一储物箱的锁定部能够与另一储物箱的配合部在第一弹性件的作用下自动锁定，从而实现第一连接部和第二连接部的自动锁定功能；同时，通过设置止动部，利用止动部可在锁定部的锁定路径上卡持，使第一连接部和第二连接部处于保持解锁状态，从而无需用手刻意将锁定部保持在解锁状态，解放用户双手；且当该两个储物箱在解锁并相互脱离后，锁定部能够在第一弹性件的驱动下自动复位，为下一次锁定做好准备，简化了锁定时的操作步骤，方便用户使用。

附图说明

图 1 为本发明第一实施例中储物箱的立体结构示意图。

图 2 为图 1 的剖视图。

图 3 为本发明第一实施例中储物箱的另一立体结构示意图。

图 4 为图 3 的局部爆炸结构示意图。

图 5 为图 4 中一储物箱的立体图。

图 6 为图 4 中一储物箱的另一立体图。

图 7 为图 6 中部分结构的爆炸示意图。

图 8 为本发明第二实施例中储物箱的立体结构示意图。

图 9 为图 8 的局部爆炸结构示意图。

图 10 为图 8 中止动部与锁定部配合关系的结构示意图。

图 11 为图 10 中第一连接部的结构示意图。

图 12 为图 11 的爆炸结构示意图。

图 13 为图 10 中止动部的结构示意图。

图 14 为图 13 的爆炸结构示意图。

具体实施方式

下面结合附图和实施例，对本发明的具体实施方式作进一步详细描述。以下实施例用于说明本发明，但不用来限制本发明的范围。

本发明的说明书和权利要求书中的术语“第一”、“第二”、“第三”、“第四”等（如果存在）是用于区别类似的对象，而不必用于描述特定的顺序或先后次序。

本发明的说明书和权利要求书中所涉及的上、下、左、右、前、后、顶、底等（如果存在）方位词是以附图中的结构位于图中的位置以及结构相互之间的位置来定义的，只是为了表达技术方案的清楚及方便。应当理解，方位词的使用不应限制本申请请求保护的范围。

本发明提供了一种模块的连接结构、具有该连接结构的储物箱及储物箱

组件。该连接结构可设置在储物箱上，相邻两个储物箱之间可通过该连接结构进行配合锁定，从而便于多个储物箱的运输。该储物箱可以是工具箱、工具篮、运输箱、中转箱等储物装置。

第一实施例

如图 1 至图 7 所示，本实施例提供了一种模块的连接结构，该连接结构可设置在储物箱上。该连接结构包括第一连接部 1、第二连接部 2 及止动部 3，第一连接部 1 与第二连接部 2 可相互配合自动锁定；止动部 3 可使第一连接部 1 与第二连接部 2 在解锁后无法自动锁定，从而使第一连接部 1 与第二连接部 2 保持在解锁状态，便于第一连接部 1 与第二连接部 2 相互解锁并分离，解放用户双手、便于用户使用。

进一步地，如图 6 及图 7 所示，在本实施例中，第一连接部 1 设置在储物箱的箱盖上，其包括安装部 11、可相对于安装部 11 移动的锁定部 12 及位于安装部 11 与锁定部 12 之间的第一弹性件 13，锁定部 12 可在第一弹性件 13 的作用下自动保持在锁定状态。此外，为了便于第一连接部 1 与第二连接部 2 互锁时的定位，可在箱盖上设置定位槽 41，定位槽 41 可恰好容纳箱体底部，第一连接部 1 可设置在定位槽 41 的边缘。在其它实施例中，定位槽 41 可与箱体底部上设置的凸起部进行上下储物箱堆叠时的定位。

进一步地，如图 7 所示，在本实施例中，安装部 11 与箱盖固定连接。安装部 11 包括开设在箱盖上的安装槽 111 及位于安装槽 111 内的安装本体 112，安装本体 112 可用螺栓固定在安装槽 111 内。在其它实施例中，安装本体 112 也可与安装槽 111 一体成型，或通过卡接等方式固定连接。

进一步地，如图 7 所示，在本实施例中，锁定部 12 可容纳在安装本体 112 内，其可相对于安装本体 112 移动。锁定部 12 为相对于安装部 11 水平移动的滑动锁扣，从而使锁定部 12 在安装槽 111 内水平移动。在其它实施例中，锁定部 12 也可为相对于安装部 11 翻转移动的翻转锁扣，或为相对于安装部 11 旋转移动的旋转锁扣。锁定部 12 包括可容纳在安装本体 112 内的锁定本体

121 及位于锁定本体 121 靠近储物箱中心一侧的锁定扣 122；当锁定扣 122 伸出安装部 11（即锁定扣 122 伸入定位槽 41 内）时，第一连接部 1 与第二连接部 2 可相互锁定，当锁定扣 122 未伸出安装部 11（即锁定扣 122 未伸入定位槽 41 内）时，第一连接部 1 与第二连接部 2 可相互解锁。同时，为了便于锁定扣 122 与第二连接部 2 之间的锁定，锁定扣 122 上设有斜面 122a。

进一步地，如图 7 所示，在本实施例中，第一弹性件 13 位于锁定本体 121 与安装本体 112 之间，从而使锁定部 12 在第一弹性件 13 的作用下自动保持在锁定状态。同时，为了提高锁定部 12 移动的可靠性，第一弹性件 13 可以设置两个，分别位于锁定本体 121 的两端。第一弹性件 13 为压缩弹簧，从而使锁定部 12 作水平移动；在其它实施例中，第一弹性件 13 也可为扭力弹簧，从而使锁定部 12 作翻转移动。

进一步地，如图 5 所示，在本实施例中，第二连接部 2 设置在储物箱的箱体底部，其包括与锁定部 12 可相互锁定的配合部 21 及可与止动部 3 相互卡持的凹陷部 22，下压一储物箱的锁定部 12 可使其与另一储物箱的配合部 21 在第一弹性件 13 的作用下自动锁定。此外，为了便于配合部 21 与锁定扣 122 的相互锁定，可在箱体底部上设置凸起部 42（此处的凸起部 42 为箱体底部），凸起部 42 可恰好容纳在定位槽 41 内。当第一连接部 1 与第二连接部 2 处于锁定状态时，锁定扣 122 与配合部 21 干涉；当第一连接部 1 与第二连接部 2 处于保持解锁状态时，锁定扣 122 不与配合部 21 干涉，止动部 3 与凹陷部 22 卡持。在其它实施例中，当第一连接部 1 与第二连接部 2 处于保持解锁状态时，止动部 3 可直接与配合部 21 卡持。此外，配合部 21 为若干卡槽 211，卡槽 211 的数量可与锁定扣 122 的数量对应设置。

进一步地，如图 6 及图 7 所示，在本实施例中，止动部 3 设置在锁定部 12 上，其可随锁定部 12 水平移动，当锁定部 12 处于解锁状态时，止动部 3 可在锁定部 12 的锁定路径上与第二连接部 2 卡持，锁定部 12 无法自动锁定，使第一连接部 1 与第二连接部 2 处于保持解锁状态。止动部 3 包括开设在锁

定部 12 上的容纳槽 31、可容纳在容纳槽 31 内的卡块 32 及位于容纳槽 31 与卡块 32 之间的第二弹性件 33，卡块 32 可在第二弹性件 33 的作用下相对于容纳槽 31 伸缩。具体地，如图 3 所示，当第一连接部 1 与第二连接部 2 处于保持解锁状态时，第二弹性件 33 伸展，卡块 32 伸展出容纳槽 31；如图 1 及图 2 所示，当第一连接部 1 与第二连接部 2 处于锁定状态时，第二弹性件 33 压缩，卡块 32 受到第二连接部 2 的挤压压缩在容纳槽 31 内。

本实施例的工作原理为：

当需要上下锁定两个储物箱时，下压上方储物箱使其与下方储物箱上的锁定扣 122 相接触，下方储物箱的锁定扣 122 受到挤压驱使锁定部 12 朝向解锁方向（即远离储物箱中心）移动，此时第一弹性件 13 压缩蓄力。当上方储物箱下移一定距离后，锁定部 12 上的锁定扣 122 与配合部 21 上的卡槽 211 相对应，锁定扣 122 失去上方储物箱的抵持作用，锁定扣 122 在第一弹性件 13 的驱动下自动卡入卡槽 211 内，从而使第一连接部 1 与第二连接部 2 处于锁定状态，即实现上下储物箱的自动锁定功能。此时，止动部 3 受到第二连接 2 的挤压压缩在容纳槽 31 内。

当需要上下解锁两个储物箱时，向外拉动下方储物箱的锁定部 12 使其朝向解锁方向移动，当锁定部 12 向解锁方向移动一定距离后，下方储物箱的锁定扣 122 与上方储物箱的卡槽 211 脱离卡合，从而使锁定部 12 与配合部 21 解锁。同时，继续向解锁方向拉动锁定部 12，直至止动部 3 失去上方储物箱的挤压，卡块 31 在第二弹性件 32 的作用下自动向上伸出容纳槽 31 并与凹陷部 22 卡持，从而使第一连接部 1 与第二连接部 2 处于保持解锁状态，即实现保持解锁功能。此时，只需向上拉起上方储物箱，便可方便地将上下两个储物箱解锁并分离。同时，此时若用户想重新锁定，只需向下按动卡块 31 使卡块 31 缩回至容纳槽 31 内即可。当上下两个储物箱分离后，卡块 31 在第二弹性件 32 的作用下保持伸展状态，锁定部 12 在第一弹性件 13 的驱动下自动复位处在锁定状态，为下一次锁定做好准备。

本实施例提供的储物箱的连接结构的优点包括：

1、该储物箱的连接结构具有自动锁定功能、保持解锁功能和自动复位功能：由于锁定部12能够相对于安装部11水平移动，且第一弹性件13能够驱动锁定部12自动保持在锁定状态。当两个储物箱锁定时，其中一储物箱的锁定部12能够与另一储物箱的配合部21在第一弹性件13的作用下自动锁定，从而实现第一连接部1和第二连接部2的自动锁定功能；同时，通过设置止动部3，利用止动部3与第二连接部2相配合，使第一连接部1和第二连接部2在解锁时能够保持解锁状态，而无需用手刻意将锁定部12保持在解锁状态，从而解放用户双手；同时，在两个储物箱解锁并分离后，锁定部12能够在第一弹性件13的驱动下自动复位，为下一次锁定做好准备，简化了锁定和解锁时的操作步骤（常规的锁定和解锁至少需要四个步骤，而本实施例只需要两个步骤），方便用户使用。

2、通过止动部3与第二连接部2的配合实现保持解锁功能，当用户想要重新锁定时（用户误操作解锁），只需向下按动卡块31即可，无需将第一连接部1和第二连接部2分离后重新锁定，且不伤害结构的可靠性。

第二实施例

如图8至图14所示，本实施例与第一实施例的不同点在于：锁定部12为翻转锁扣，止动部3设置在第二连接部2上且相对于锁定部12保持静止。当第一连接部1与第二连接部2处于保持解锁状态时，止动部3与锁定部12在锁定部12的锁定路径上卡持。

具体地，锁定部12包括锁定扣122和止位扣123，锁定扣122可与配合部21相互配合锁定，止位扣123与止动部3对应设置；止位扣123可与止动部3在锁定部12的锁定路径上卡持，从而使第一连接部1与第二连接部2处于保持解锁状态。锁定扣122在锁定方向上的延伸长度小于止位扣123在锁定方向上的延伸长度，从而使止位扣123与止动部3在锁定路径上解除卡持时所需翻转的角度为最大。当第二弹性件33压缩时，锁定扣122与配合部

21 相互锁定，卡块 32 与止位扣 123 在垂直方向上上下抵持，第一连接部 1 与第二连接部 2 处于锁定状态；当第二弹性件 33 伸展时，卡块 32 伸展出容纳槽 31 并与止位扣 123 在锁定路径上卡持，第一连接部 1 与第二连接部 2 处于保持解锁状态。在其它实施例中，卡块 32 与止位扣 123 也可在其它非锁定路径上抵持，例如卡块 32 与止位扣 123 在左右方向上抵持，止位扣 123 只需将卡块 32 抵持在非锁定路径上即属于本发明保护的范围。

进一步地，如图 9 及图 13 所示，在本实施例中，止动部 3 还包括开设在第二连接部 2 上的固定槽 34 及位于卡块 32 远离第二弹性件 33 一端的固定块 35，固定块 35 可滑动卡入固定槽 34 内。当固定块 35 位于固定槽 34 内时，第二弹性件 33 压缩，使止动部 3 始终固定在止位扣 123 的上方；如此设置，可使保持解锁功能可选择性的开闭，便于用户使用。在其它实施例中，也可在第一连接部 1 上开设固定槽 34，只要使止动部 3 不能位于锁定部 12 的锁定路径上（即止动部 3 部不能与止位扣 123 接触），即属于本发明保护的范围。

本实施例的工作原理为：

当需要上下锁定两个储物箱时，下压上方储物箱使其与下方储物箱上的锁定扣 122 相接触，下方储物箱的锁定扣 122 受到挤压驱使锁定部 12 朝向解锁方向（即远离储物箱中心）移动，此时第一弹性件 13 压缩蓄力。当上方储物箱下移一定距离后，锁定部 12 上的锁定扣 122 与配合部 21 上的卡槽 211 相对应，锁定扣 122 失去上方储物箱的抵持作用，锁定扣 122 在第一弹性件 13 的驱动下自动卡入卡槽 211 内，从而使第一连接部 1 与第二连接部 2 处于锁定状态，即实现上下储物箱的自动锁定功能。需要说明的是，在此过程中，下压上方储物箱，卡块 32 受到止位扣 123 的挤压压缩，第二弹簧 33 压缩蓄力，止位扣 123 与卡块 32 始终保持上下抵持。

当需要上下解锁两个储物箱时，向外拉动下方储物箱的锁定部 12 使其朝向解锁方向移动，当锁定部 12 向外移动一定距离后，下方储物箱的锁定

扣 122 与上方储物箱的卡槽 211 脱离卡合，从而使锁定部 12 与配合部 21 解锁。同时，继续向外拉动锁定部 12，直至止动部 3 失去下方储物箱止位扣 123 的抵持，卡块 31 在第二弹性件 32 的作用下自动向下伸出容纳槽 31 并与止位扣 123 在锁定部 12 的锁定路径上卡持，从而使第一连接部 1 与第二连接部 2 处于保持解锁状态，即实现保持解锁功能。此时，只需向上拉起上方储物箱，便可方便地将上下两个储物箱解锁并分离。同时，此时若用户想重新锁定，只需向上拔动卡块 31 使卡块 31 重新与止位扣 123 上下抵持即可。当上下两个储物箱分离后，卡块 31 在第二弹性件 32 的作用下保持伸展状态，锁定部 12 在第一弹性件 13 的驱动下自动复位处在锁定状态，为下一次锁定做好准备。

本实施例提供的储物箱的连接结构同样具有自动锁定功能、保持解锁功能和自动复位功能，本实施例的其它结构及功能与第一实施例相同或类似，在此不赘述。

以上所述，仅为本发明的具体实施方式，但本发明的保护范围并不局限于此，任何熟悉本技术领域的技术人员在本发明揭露的技术范围内，可轻易想到变化或替换，都应涵盖在本发明的保护范围之内。因此，本发明的保护范围应以所述权利要求的保护范围为准。

说　明　书　附　图

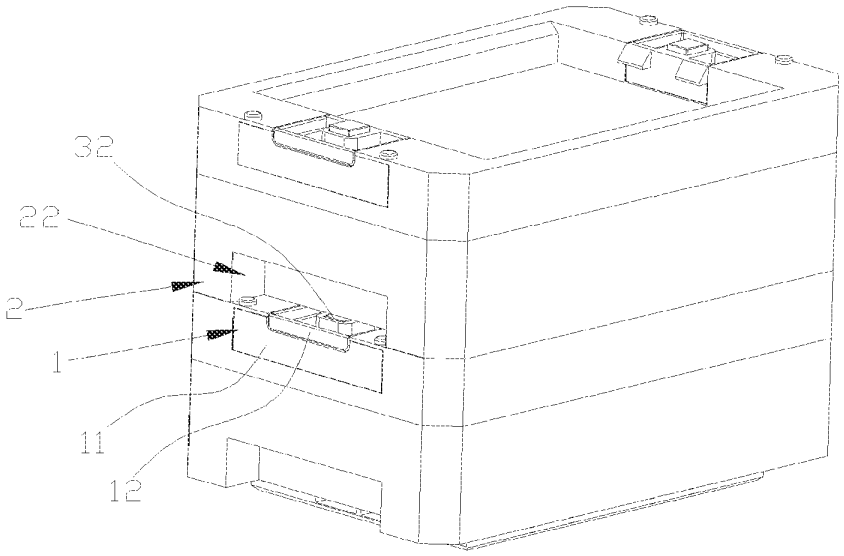


图1

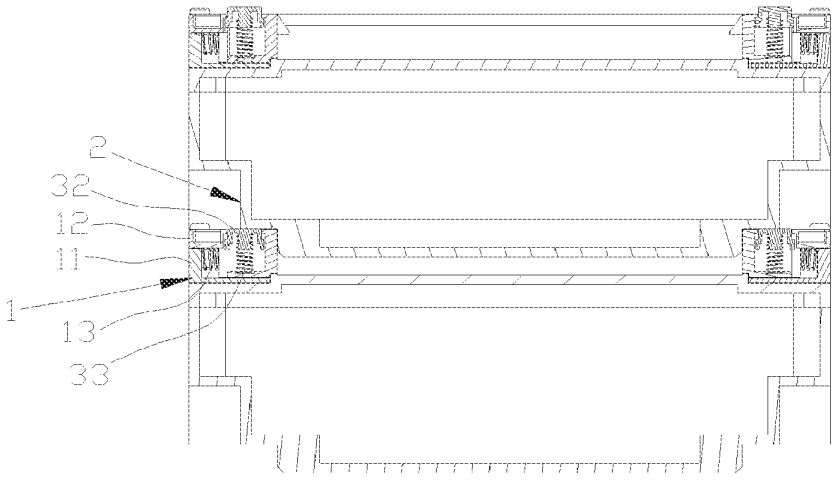


图2

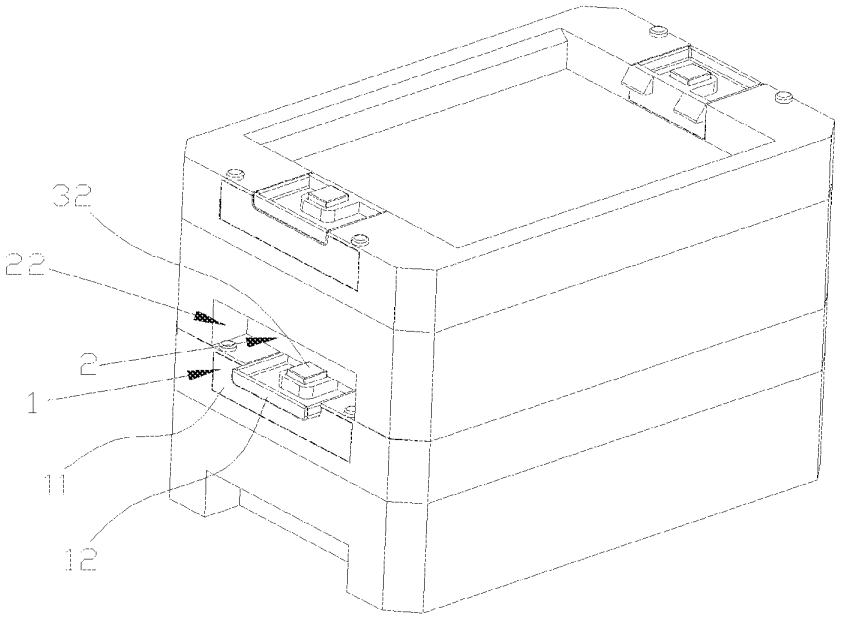


图3

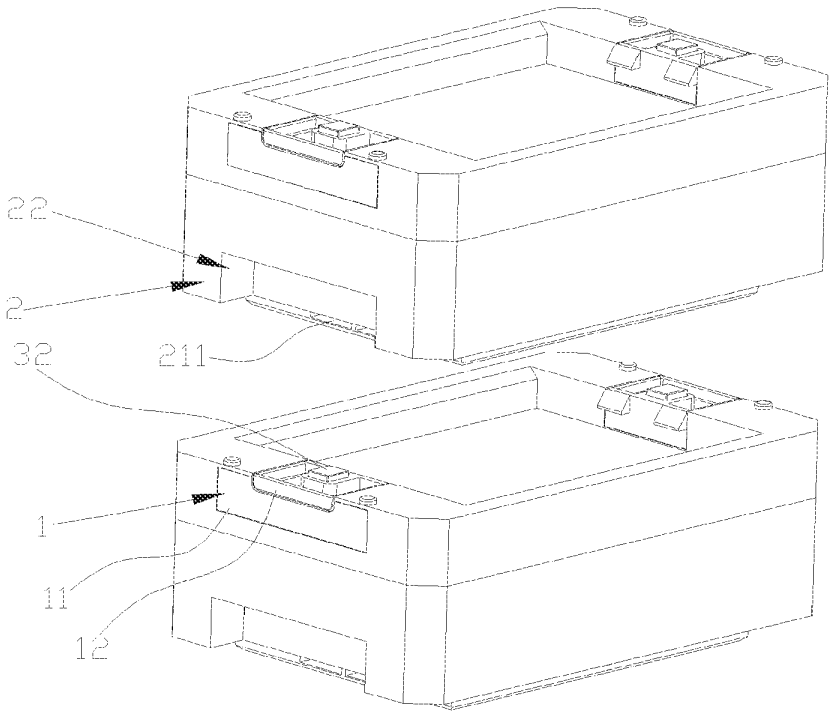


图4

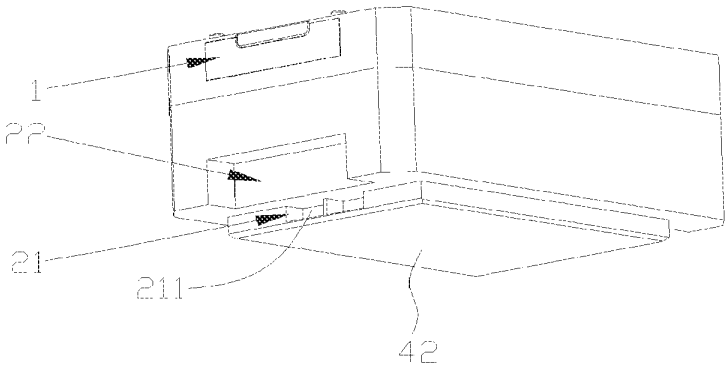


图5

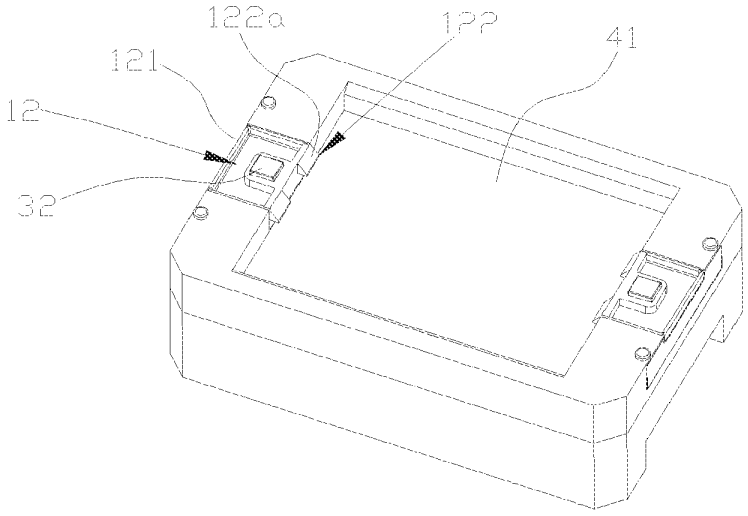


图6

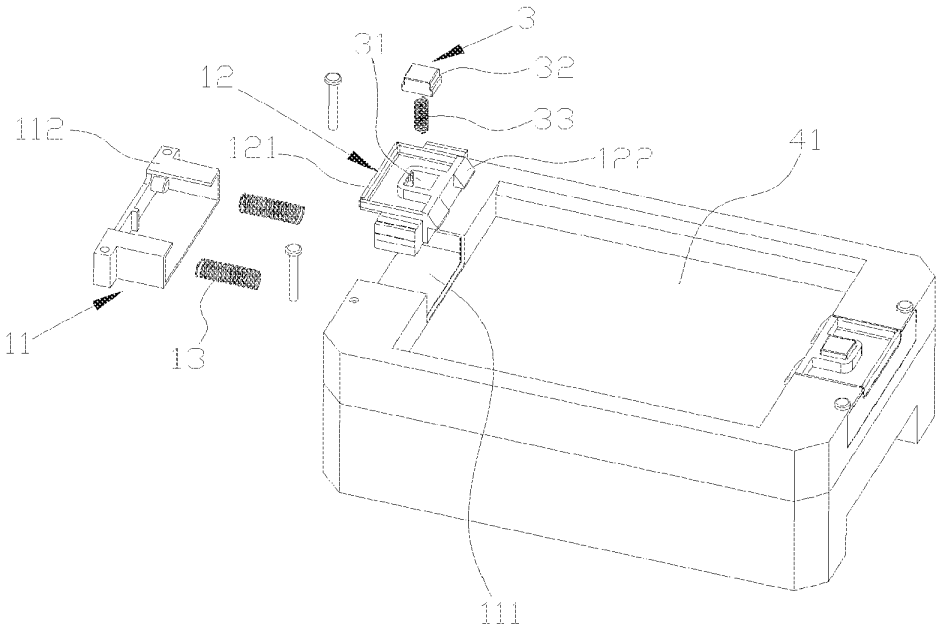


图7

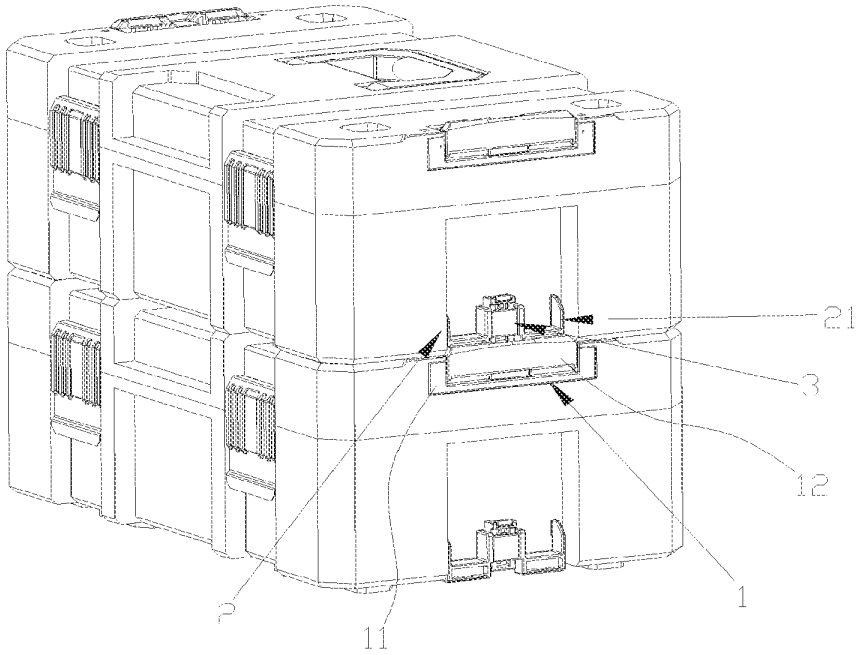


图8

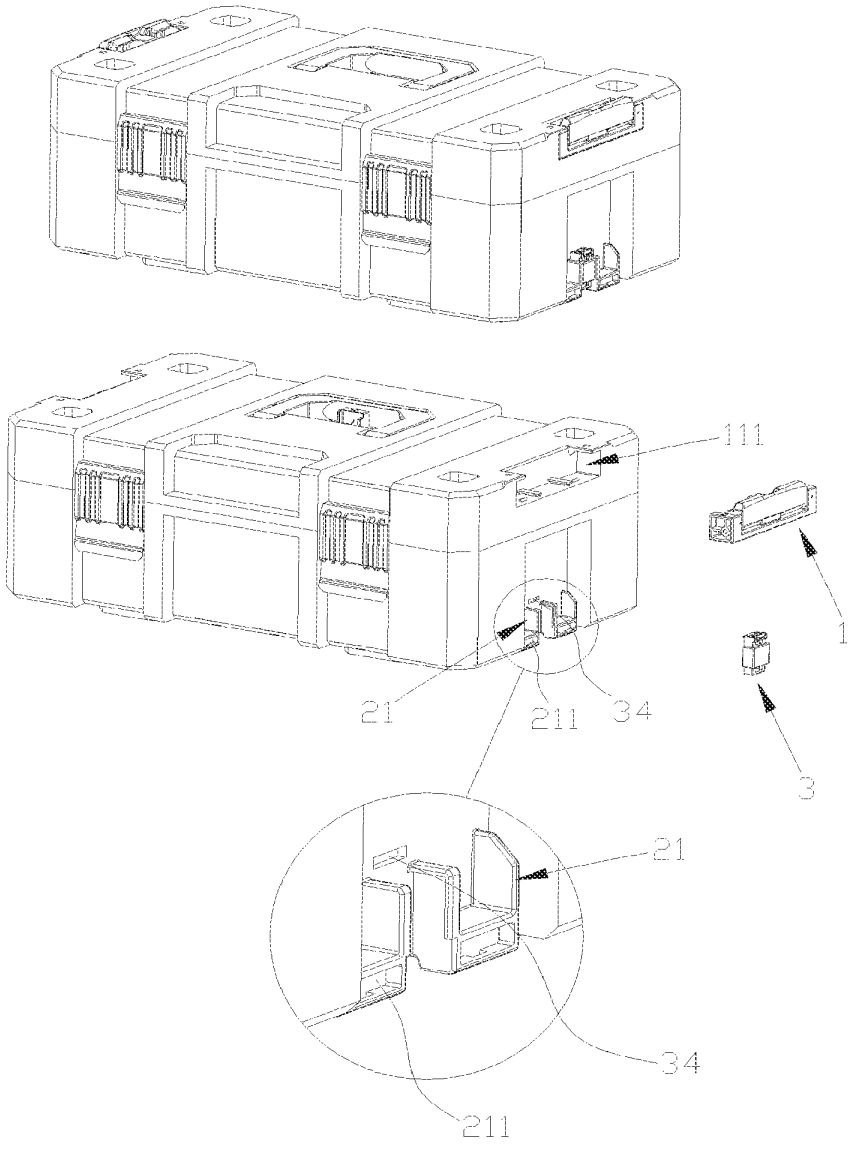


图9

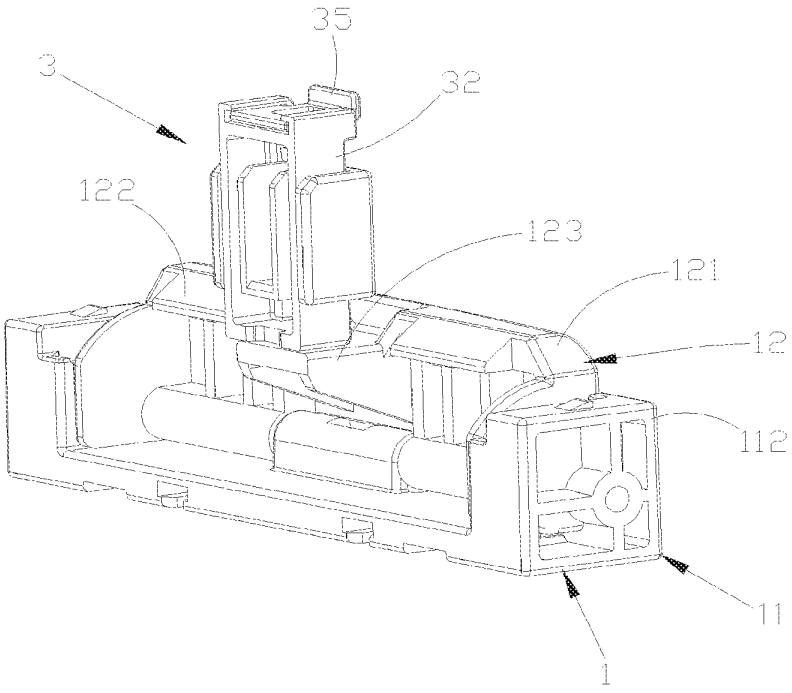


图10

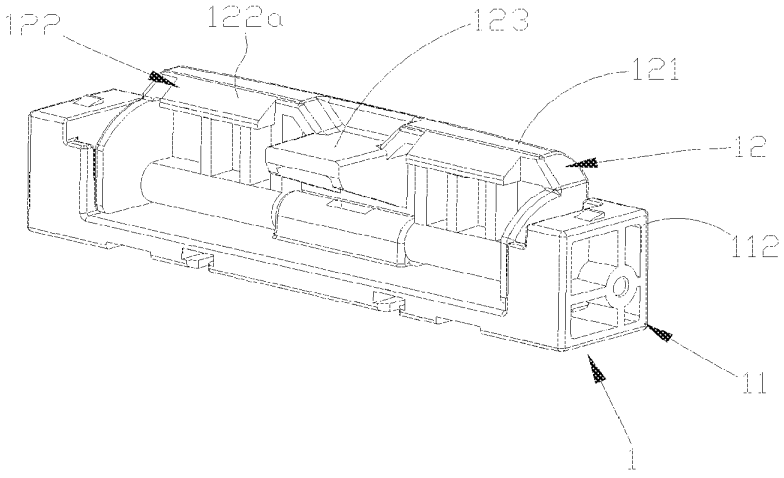


图11

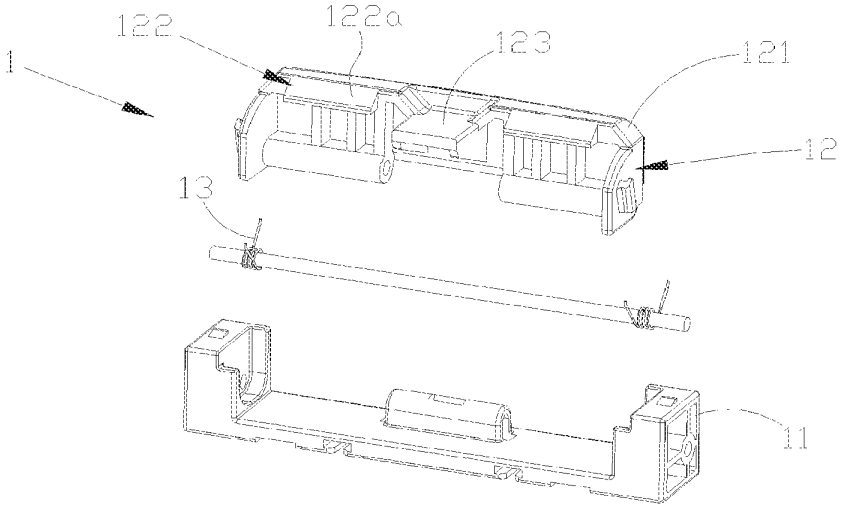


图12

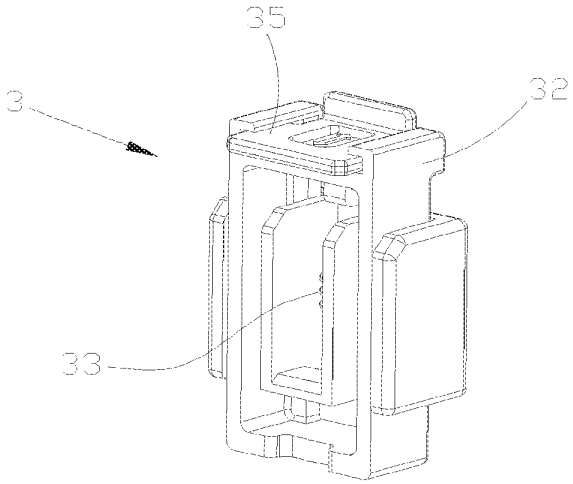


图13

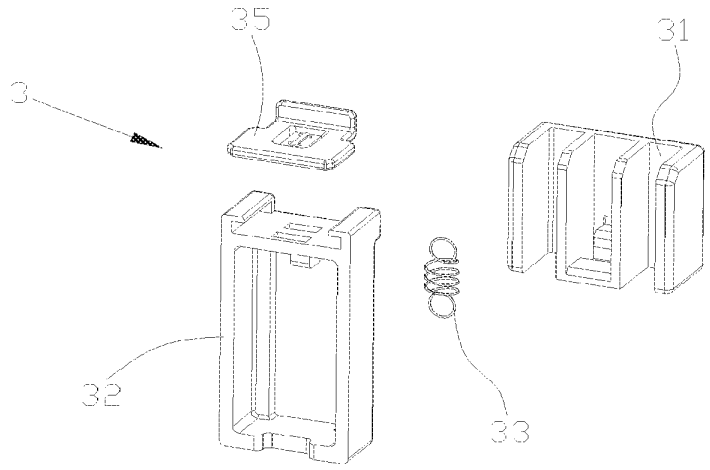


图14

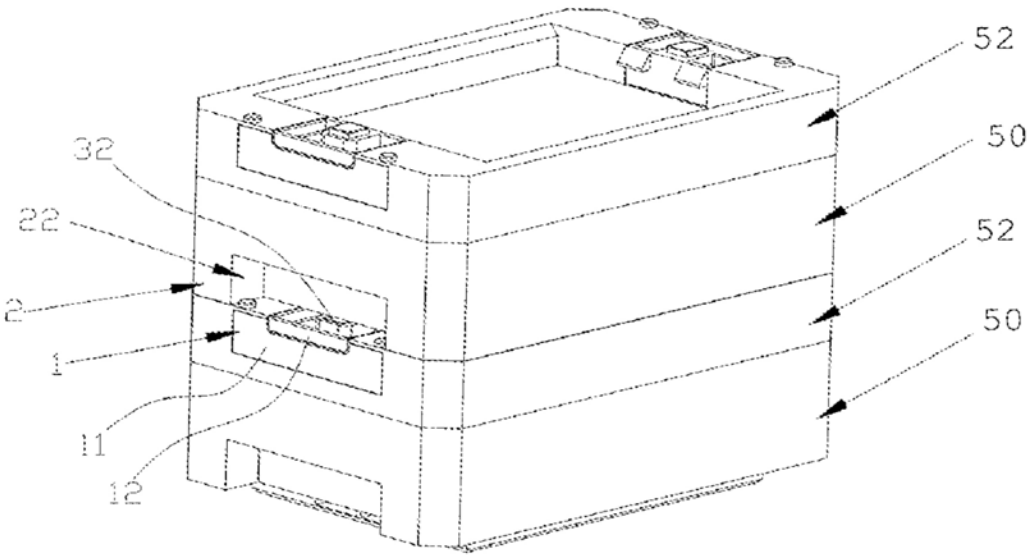


FIG. 1

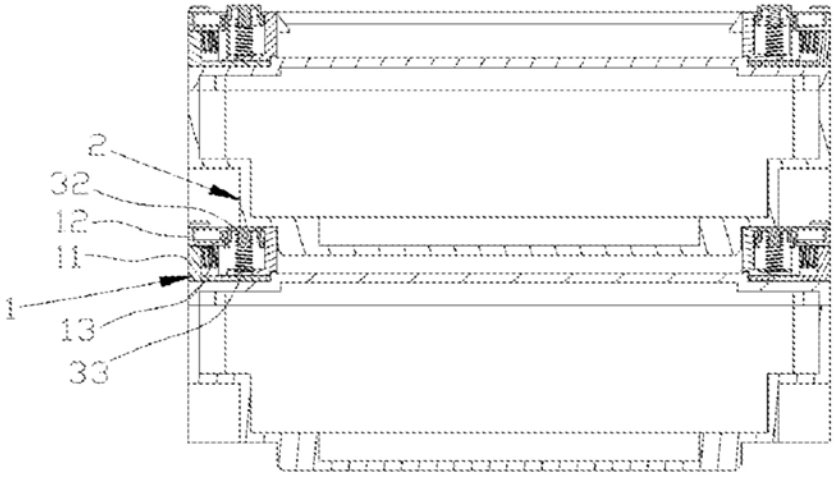


FIG. 2

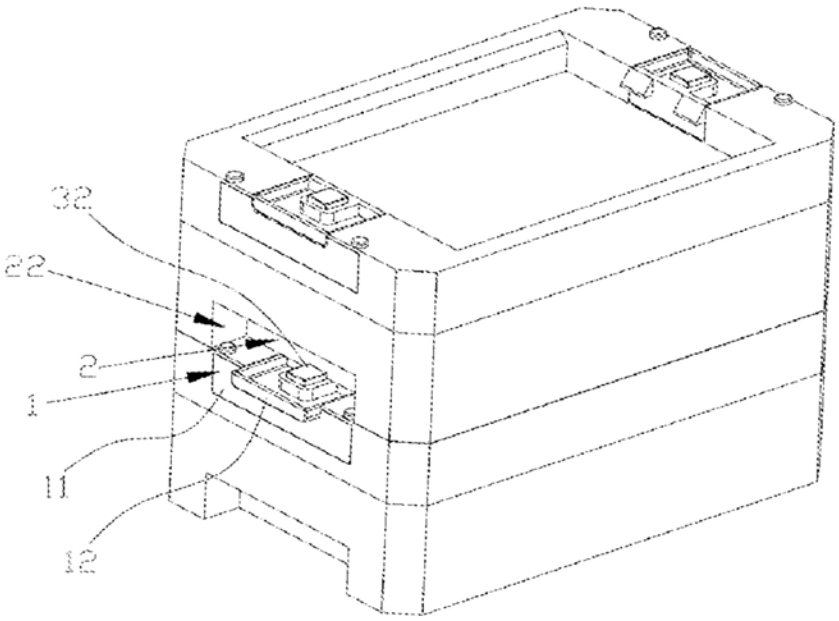


FIG. 3

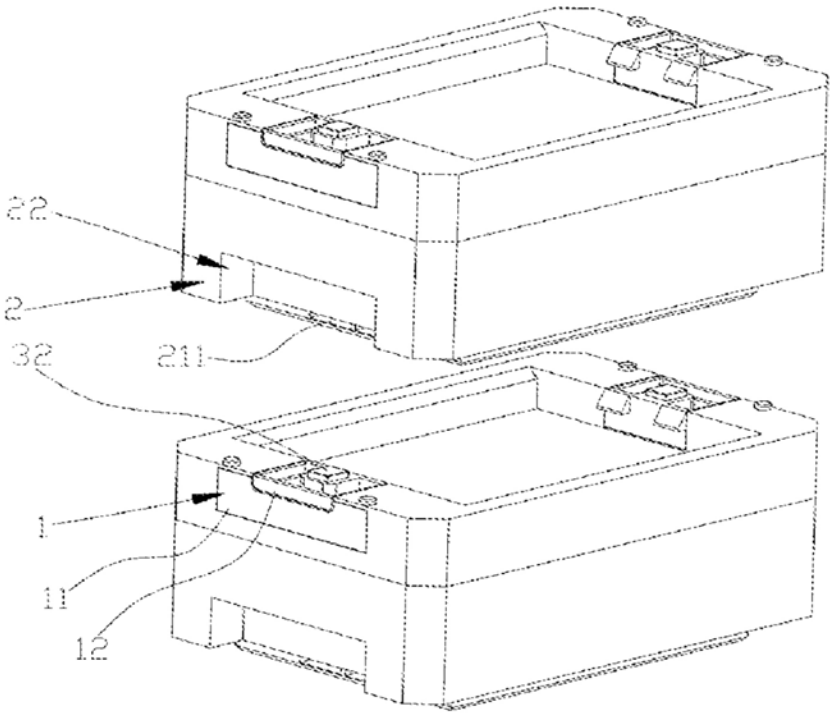


FIG. 4

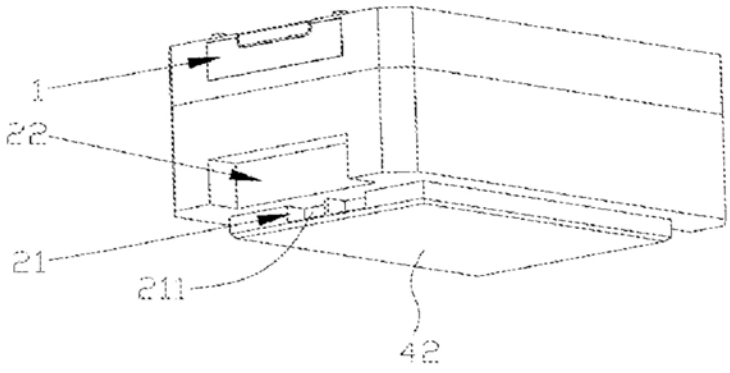


FIG. 5

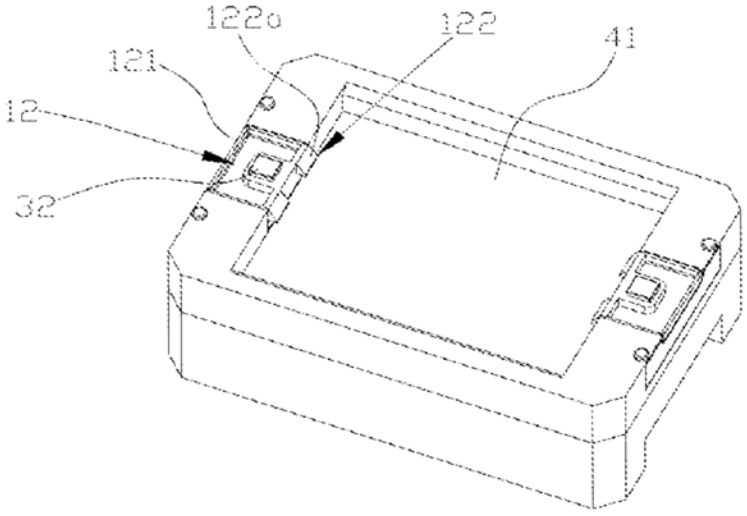


FIG. 6

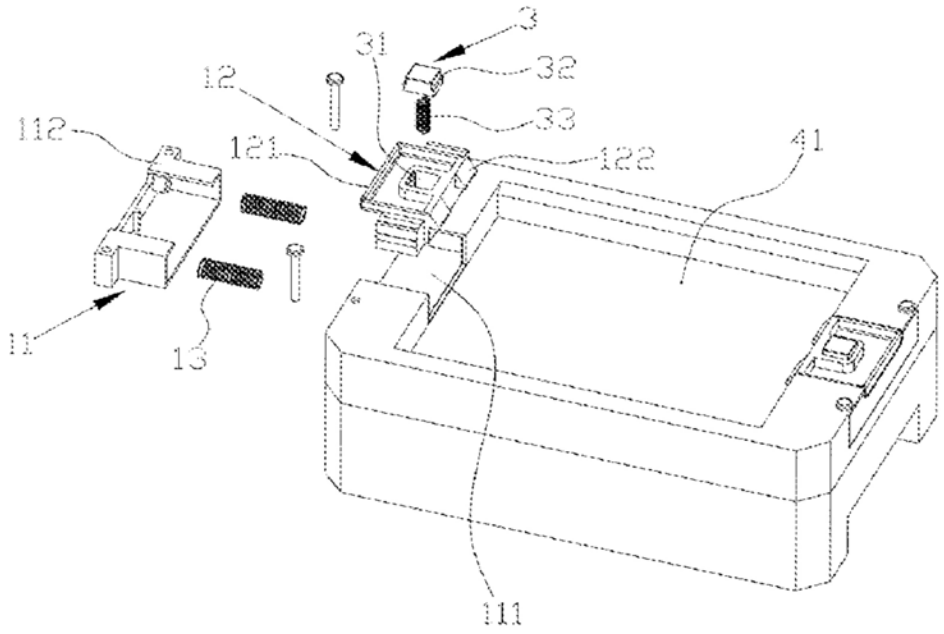


FIG. 7

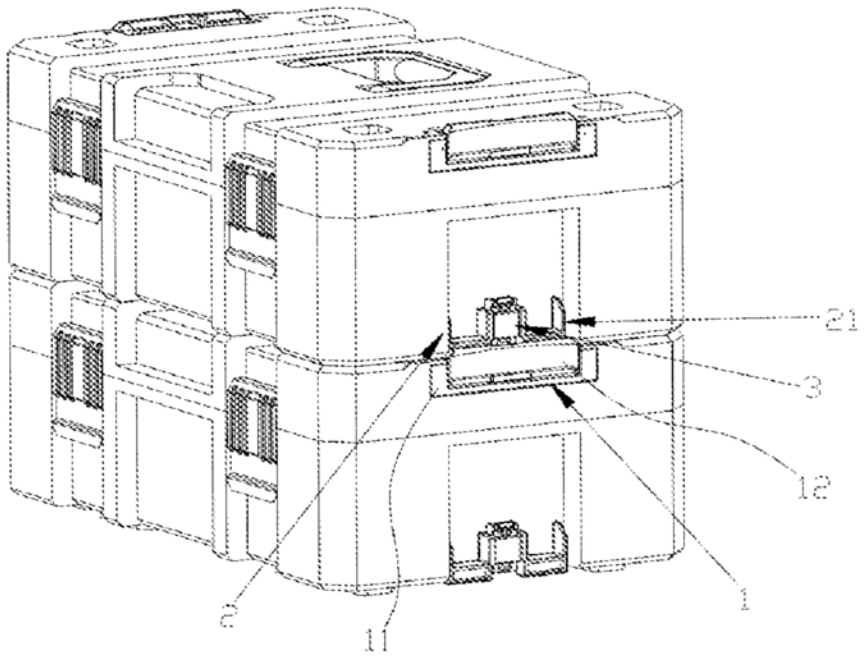


FIG. 8

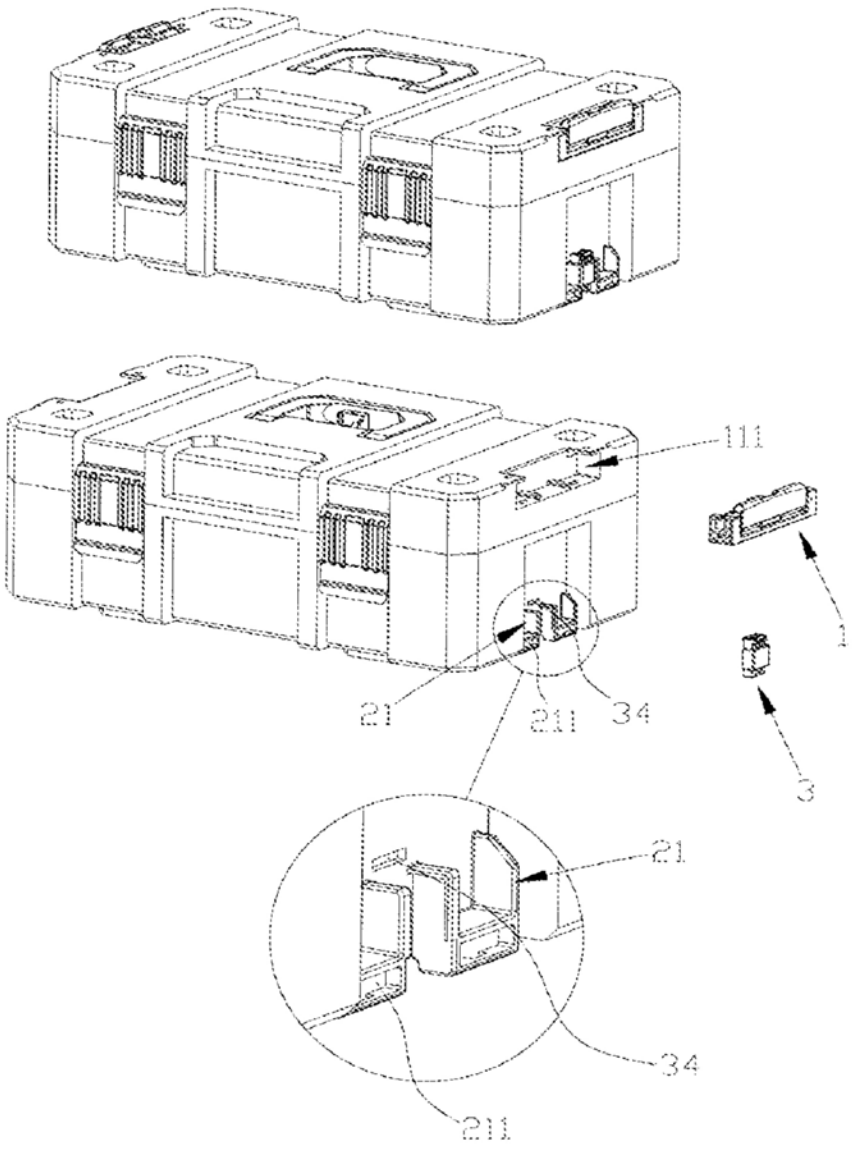


FIG. 9

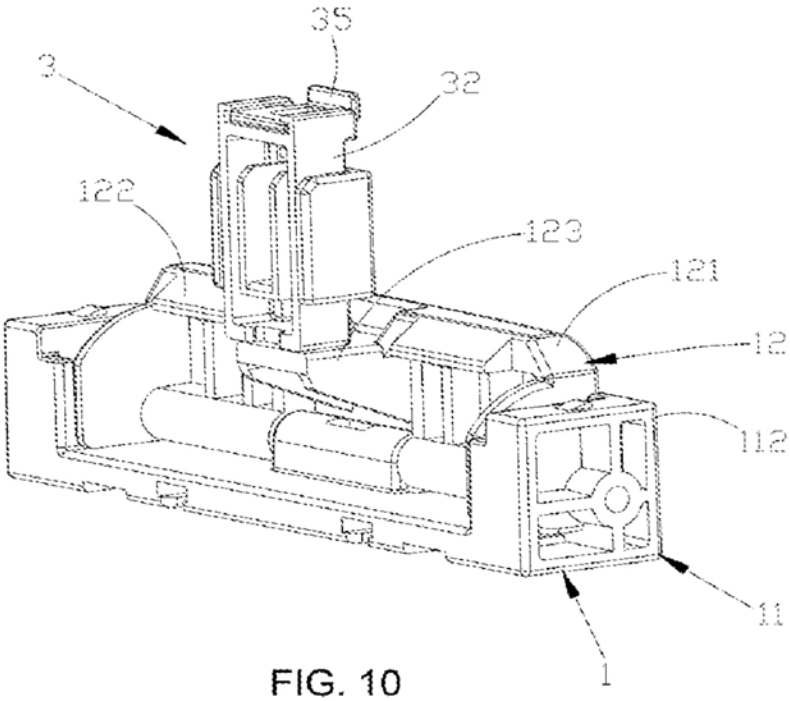


FIG. 10

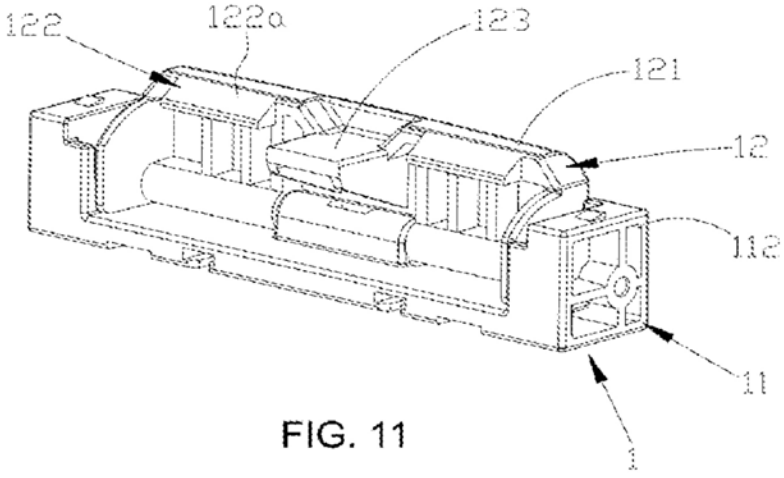


FIG. 11

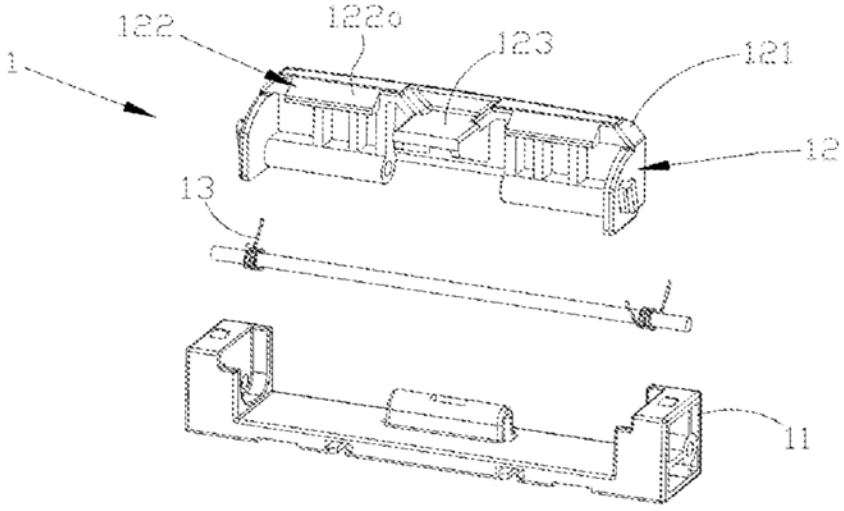


FIG. 12

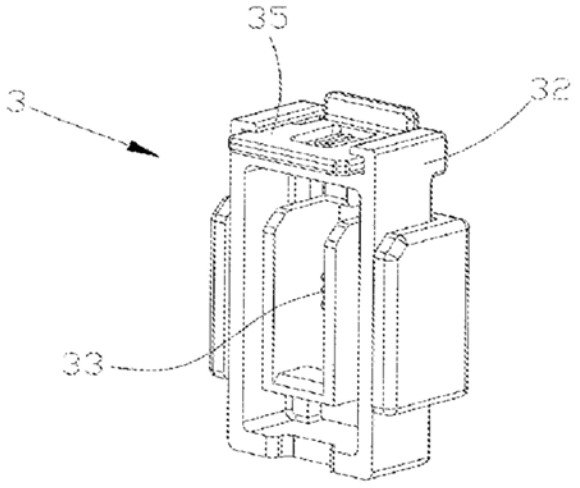


FIG. 13

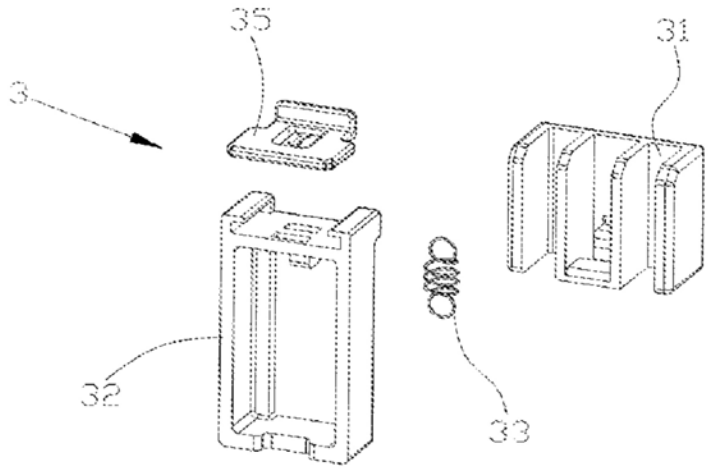


FIG. 14

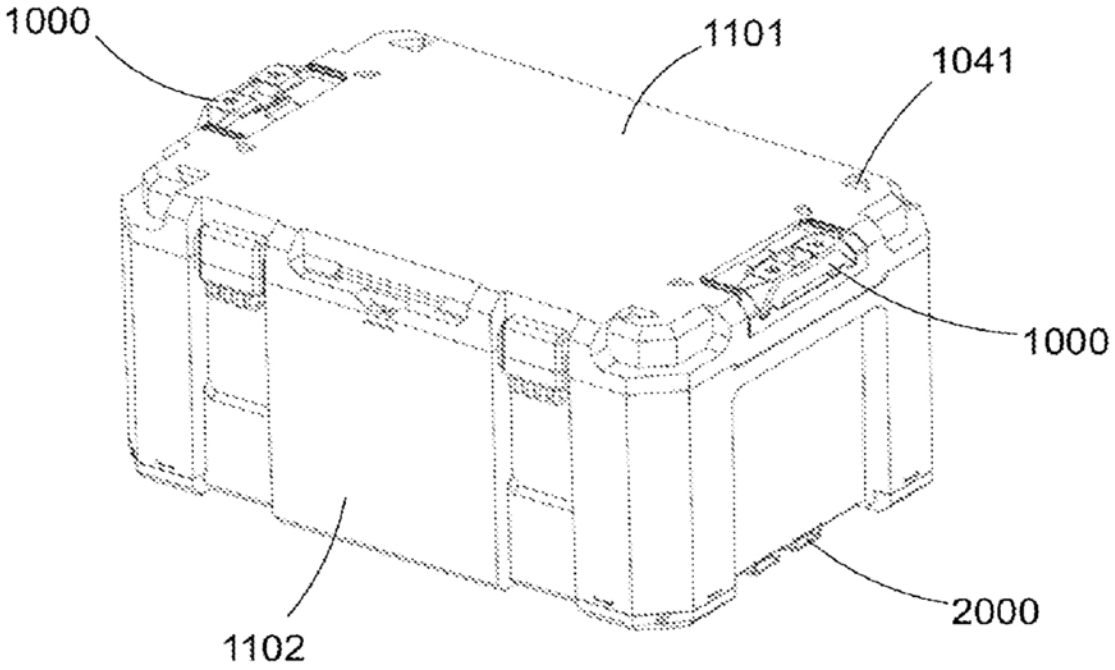


FIG. 15

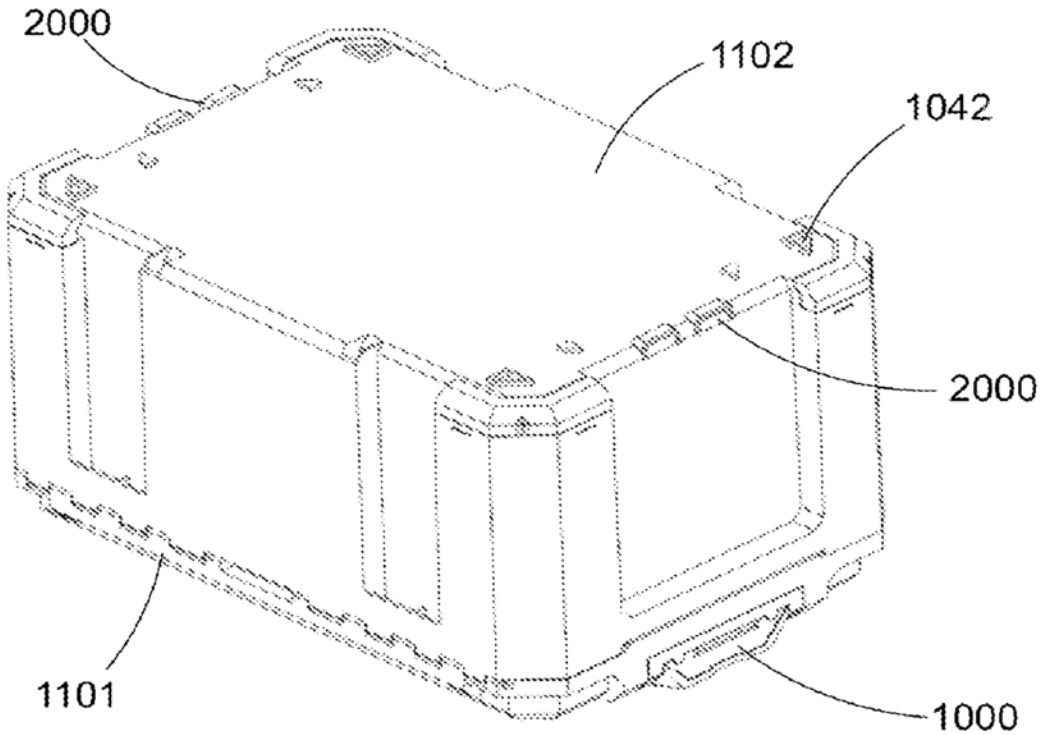


FIG. 16

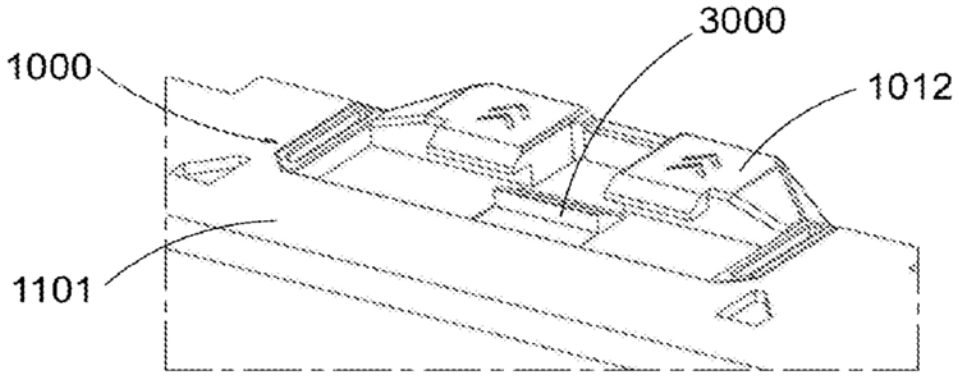


FIG. 17

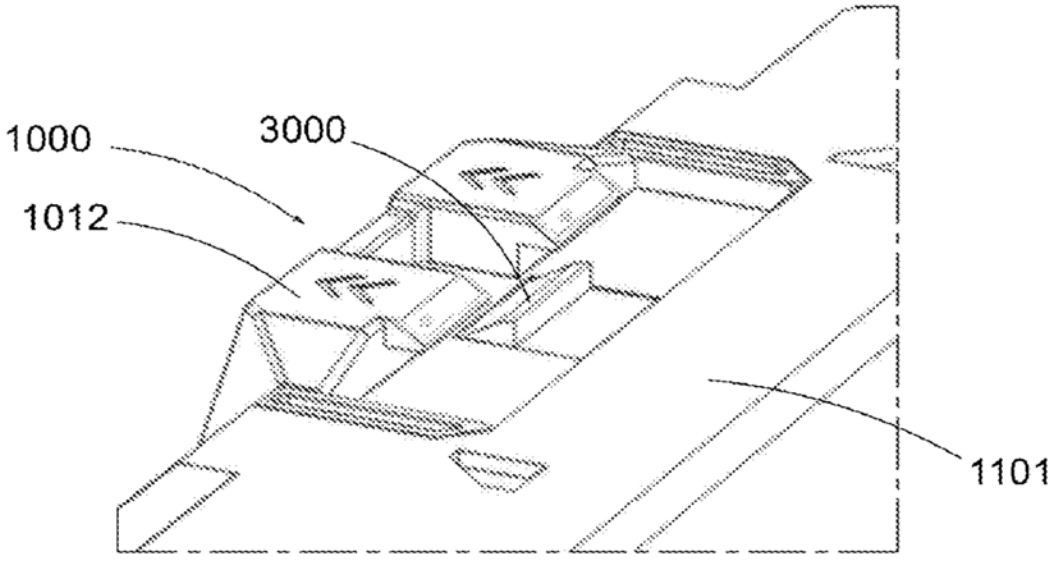


FIG. 18

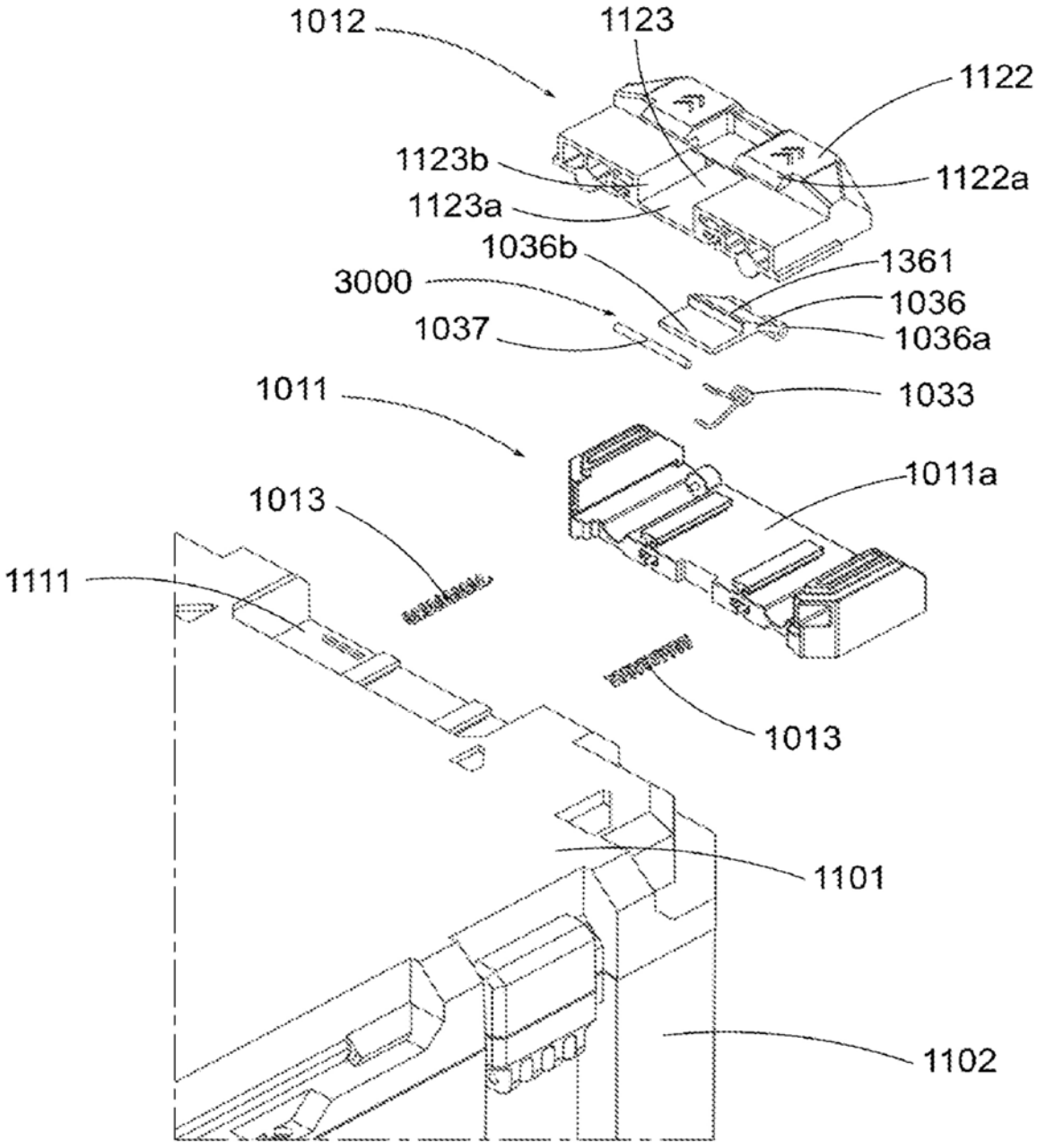

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1123a
1036b
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1037
1036a
1011
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1011a
1013
1111
1013
1101
1102

FIG. 19