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(54) STORAGE BOX AND REFRIGERATOR HAVING THE SAME

AUFBEWAHRUNGSBOX UND KÜHLSCHRANK DAMIT

BOÎTE DE STOCKAGE ET RÉFRIGÉRATEUR LE COMPRENANT

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Description

TECHNICAL FIELD

[0001] The present application relates to the technical field of refrigerating devices, and specifically to a storage box and a refrigerator having the same.

BACKGROUND

[0002] A refrigerator is a refrigerating device commonly used in daily life. The refrigerator usually stores many diverse items. To store some items that need to be isolated from other items, storage boxes are disposed in the refrigerator, and are provided with a pull handle to facilitate opening and closing the storage boxes.

[0003] However, the designed pull handles occupy partial space. Since the space available for placing the storage boxes in the refrigerator is certain, when the storage boxes are disposed in the refrigerator, the space available for storing items will be substantially reduced; when the user's hands are dirty, they might pollute the pull handles when the user opens the storage boxes, thereby affecting the overall appearance of the storage boxes, and providing an undesirable experience effect.

[0004] EP2193320A2 relates to a cooling device comprising a storage container that opens controllably by tilting forward. The cooling device comprises a pinion gear that moves in the opposite direction while the storage container is opening and a gear path whereon this pinion gear moves for maintaining controlled motion.

[0005] EP0779484A2 concerns a refrigerator and/or freezer appliance having a drawer to hold the produce or items for refrigeration and/or freezing. When the opening/closing mechanism is operated, the drawer moves out automatically, with a tilting movement. When the drawer is closed, a spring mechanism is placed under tension.

[0006] JPH0659810B2 relates to a subframe is connected with a reinforcing panel by way of a locking mechanism and a damping mechanism. And a container is installed on the reinforcing panel and the container is also installed on the subframe while the container is movable to fit in the subframe. And then a hook pawl of the subframe is hooked on the upper wall arranged in an instrument panel of a body, simultaneously, the lower end section of the subframe is fixed on the rear end section of a housing with fastener.

SUMMARY

[0007] To solve the problems in the prior art, the present application provides a storage box and a refrigerator having the same, to solve the problems in the prior art that the space for storing items is substantially reduced since the handle is provided on the storage box, and the handle is likely to be polluted when the storage box is opened.

[0008] To achieve the above object of the application, an embodiment provides a storage box according to claim 1. The dependent claims set out particular embodiments of the invention.

[0009] To achieve the above object of the application, an embodiment provides a refrigerator according to claim 6.

[0010] As compared with the prior art, the present application has the following advantageous effects: the elastic element is fitted with the locking device so that the storage box body can turn automatically; the storage box needn't be provided with a handle, thereby expanding the space for storing items, and the user needn't manually open the storage box so that his experience can be improved.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011]

FIG. 1 is a side view of a storage box in an embodiment of the present application;
FIG. 2 is a structural schematic diagram of an enclosure in an embodiment of the present application;
FIG. 3 is an enlarged schematic diagram of position A of FIG. 2;
FIG. 4 is an enlarged schematic diagram of position B of FIG. 2;
FIG. 5 is an enlarged schematic diagram of position C of FIG. 2;
FIG. 6 is a structural schematic diagram of a storage box body in an embodiment of the present application;
FIG. 7 is a structural schematic structural view showing that a storage box is disposed on a refrigerator door body in an embodiment of the present application.

DETAILED DESCRIPTION

[0012] The present application will be described in detail below in conjunction with specific embodiments shown in the figures. However, these embodiments are not intended to limit the present application. Variations in structures, methods or functions made by those having ordinary skill in the art according to these embodiments all are included in the extent of protection of the present application.

[0013] In the figures of the present application, some dimensions of structures or parts will be enlarged relative to other structures or parts for the convenience of illustration. Therefore, the figures are only used to illustrate the basic structures of the subject matter of the present application.

[0014] Referring to FIG. 1, the present application provides a storage box 20, comprising an enclosure 21, a storage box body 22, a pivot shaft 23 connected to the enclosure 21 and the storage box body 22, an elastic element, and a locking device.

[0015] The storage box body 22 is formed with a cavity for storing items, the enclosure 21 has an opening on one side, and the storage box body 22 is turnable outward about the pivot shaft 23 from the opening to open.

[0016] Referring to FIG. 2 through FIG. 6, in the present embodiment, the pivot shaft 23 is fixedly disposed on side walls of the enclosure 21, the side walls of the storage box body 22 are each provided with a pivot hole 221, the pivot shaft 23 is inserted into the pivot holes 221, and the pivot shaft 23 rotates in the pivot holes 221 so that the storage box body 22 pivots relative to the enclosure 21, thereby helping the user to take out the items from the storage box body 22.

[0017] The elastic element is disposed between the pivot shaft 23 and the enclosure 21, and the elastic element always provides a driving force driving the storage box body 22 to turn outwards the enclosure 21 about the pivot shaft 23. When a user needs to take an item, the storage box body 22 can be automatically opened under the action of the elastic element, and the user needn't manually open the storage box body 22, so that the user experience can be improved.

[0018] Specifically, the elastic element is a torsion spring 25. The torsion spring 25 comprises a spring body 251, and a spring arm 252 connected to the spring body 251. The spring body 251 is sleeved on the pivot shaft 23. When the storage box body 22 is in a closed state, the spring body 251 is in a torsional energy-storing state, and the elastic potential energy can be continuously released while the spring body 251 drives the storage box body 22 to open. At the same time, the torsion spring 25 can make the storage box body 22 in an open state, and the user may take items out of the cavity without holding the storage box body.

[0019] Further, the enclosure 21 comprises a fixing portion 213 connected to the side wall of the enclosure 21, the fixing portion 213 is provided with a through hole, the spring arm 252 passes through the through hole, and the through hole catches the spring arm 252, thereby improving the stability of the torsion spring 25.

[0020] The locking device can lock or unlock the enclosure 21 to the storage box body 22. It may be appreciated that when the locking device locks, the elastic element cannot make the storage box body 22 open, so that the closeness of the storage box 20 may be maintained; when the locking device unlocks, the elastic element can make the storage box body 22 open, which is convenient for users to use.

[0021] Specifically, the locking device comprises a locking portion and a fitting portion which is push-fitted with the locking portion. One of the locking portion and the fitting portion is disposed on the enclosure 21, and the other is disposed on the storage box body 22.

[0022] The fitting portion is a lock tongue 222 provided on a rear wall of the storage box body 22, and the locking portion is a push lock 211 provided on a rear wall of the enclosure 21. When the storage box body 22 is in the closed state, the lock tongue 222 extends into the push lock 211; when the storage box body 22 is in the open state, the lock tongue 222 separates from the push lock 211.

[0023] The push lock 211 comprises a first force receiving portion 2111, a second force receiving portion 2113, and a resisting portion 2112. The first force receiving portion 2111 causes the resisting portion 2112 to release the lock tongue 222, and the second force receiving portion 2113 causes the resisting portion 2112 to clamp the lock tongue 222.

[0024] When the storage box body 22 is in the closed state, the user may apply a push elastic force to any position of the front wall of the storage box body 22, and the push elastic force may be transferred to the first force receiving part 2111 to cause the resisting portion 2112 to release the lock tongue 222 to open the storage box body 22. When the storage box body 22 is closed, after the lock tongue 222 contacts the second force receiving portion 2113, the resisting portion 2112 clamps the lock tongue 222.

[0025] Preferably, the resisting portion 2112 is provided with a first protrusion, and the lock tongue 222 is provided with a second protrusion. When the storage box 20 is in the closed state, the first protrusion abuts against the second protrusion so that the second protrusion cannot cross the first protrusion, such that the lock tongue 222 is locked in the push lock 211.

[0026] Further, the storage box 20 further comprises a damping device 24 connected to the enclosure 21 and the storage box body 22, and the damping device 24 provides a resistance against the turn of the storage box body 22 outward the enclosure 21. During the opening process of the storage box body 22, the damping device 24 can reduce a turning speed of the storage box body 22, so that the storage box body 22 can slowly open and the storage box body 22, thereby preventing damages of the storage box body 22 and the enclosure 21 caused by the storage box body 22 violently stroking the enclosure 21 due to an excessive turning speed.

[0027] Specifically, the damping device 24 comprises a rotary damper 242, a gear 243, and an arc-shaped rack 241. The rotary damper 242 is fixedly connected to a side wall of the enclosure 21, the gear 243 is fixedly connected to a damping rotation shaft 244 of the rotary damper 242, the arc-shaped rack 241 is fixedly connected to the side wall of the storage box body 22, and the arc-shaped rack 241 meshes with the gear 243.

[0028] During the opening of the storage box body 22, the arc-shaped rack 241 rotates and drives the gear 243 to rotate, then the gear 243 drives the damping rotation shaft 244 to rotate, the damping rotation shaft 244 has a rotational damping force, and the storage box body 22 receives the rotational damping force so that the opening speed of the storage box body 22 is reduced.

[0029] Furthermore, the storage box 20 further comprises a buffer structure. When the storage box body 22 turns inward the enclosure 21 about the pivot shaft 23, the buffer structure can further prevent damages caused by

the storage box body 22 striking the enclosure 21, and reduce the noise generated when the storage box body 22 strikes the enclosure 21.

[0030] Specifically, the buffer structure is a rubber member 212 disposed on the enclosure 21. The rubber member 212 can cooperate with the front wall of the storage box body 22 to prevent the storage box body 22 from violently striking the enclosure 21. In other embodiments, the buffer structure may also be disposed on the storage box body 22, and may also be any of other members functioning to buffer, such as a sponge.

[0031] Referring to FIG. 7, the present application further provides a refrigerator, comprising a door body 10, wherein the storage box 20 is disposed on an inner side of the door body 10.

[0032] The detailed descriptions set forth above are merely specific illustrations of feasible embodiments of the present application, and are not intended to limit the scope of protection of the present application. All equivalent embodiments or modifications that do not depart from the art spirit of the present application should fall within the scope of protection of the present application. gear 243, and an arc-shaped rack 241. The rotary damper 242 is fixedly connected to a side wall of the enclosure 21, the gear 243 is fixedly connected to a damping rotation shaft 244 of the rotary damper 242, the arc-shaped rack 241 is fixedly connected to the side wall of the storage box body 22, and the arc-shaped rack 241 meshes with the gear 243.

[0033] During the opening of the storage box body 22, the arc-shaped rack 241 rotates and drives the gear 243 to rotate, then the gear 243 drives the damping rotation shaft 244 to rotate, the damping rotation shaft 244 has a rotational damping force, and the storage box body 22 receives the rotational damping force so that the opening speed of the storage box body 22 is reduced.

[0034] Furthermore, the storage box 20 further comprises a buffer structure. When the storage box body 22 turns inward the enclosure 21 about the pivot shaft 23, the buffer structure can further prevent damages caused by the storage box body 22 striking the enclosure 21, and reduce the noise generated when the storage box body 22 strikes the enclosure 21.

[0035] Specifically, the buffer structure is a rubber member 212 disposed on the enclosure 21. The rubber member 212 can cooperate with the front wall of the storage box body 22 to prevent the storage box body 22 from violently striking the enclosure 21. In other embodiments, the buffer structure may also be disposed on the storage box body 22, and may also be any of other members functioning to buffer, such as a sponge.

[0036] Referring to FIG. 7, the present application further provides a refrigerator, comprising a door body 10, wherein the storage box 20 is disposed on an inner side of the door body 10.

Claims

1. A storage box (20) , comprising an enclosure (21) , a storage box body (22) , a pivot shaft(23) connected to the enclosure(21) and the storage box body(22), wherein the storage box (20) further comprises:

   an elastic element disposed between the pivot shaft (23) and the enclosure (21) , the elastic element always providing a driving force driving the storage box body (22) to turn outwards the enclosure (21) around the pivot shaft (23) ; the elastic element is a torsion spring (25) , the torsion spring (25) comprises a spring body (251), and a spring arm (252) connected to the spring body (251) ; **characterized in that** the spring body (251) is sleeved on the pivot shaft (23) ;
   and wherein further the storage box is comprising a locking device, the locking device comprising a locking portion and a fitting portion which is push-fitted with the locking portion, where one of the locking portion and the fitting portion is disposed on the enclosure (21) , and the other is disposed on the storage box body (22) ; the fitting portion is a lock tongue (222) provided on a rear wall of the storage box body (22) , and the locking portion is a push lock (211) provided on a rear wall of the enclosure (21); the push lock (211) comprises a first force receiving portion (2111) , a second force receiving portion (2113) , and a resisting portion (2112) , the first force receiving portion (2111) causes the resisting portion (2112) to release the lock tongue (222) , and the second force receiving portion (2113) causes the resisting portion (2112) to clamp the lock tongue (222) ,
   a damping device (24) connected to the enclosure (21) and the storage box body (22), and the damping device (24) provides a resistance against the turn of the storage box body (22) outward the enclosure (21) .

2. The storage box according to claim 1, wherein the enclosure (21) comprises a fixing portion (213) connected to a side wall of the enclosure (21) , the fixing portion (213) is provided with a through hole, and the spring arm (252) passes through the through hole.

3. The storage box according to claim 1, wherein the resisting portion (2112) is provided with a first protrusion, and the lock tongue (222) is provided with a second protrusion.

4. The storage box according to claim 1, wherein the damping device (24) comprises:

   a rotary damper (242) fixedly connected to a

side wall of the enclosure (21) ;
a gear (243) fixedly connected to a damping rotation shaft (244) of the rotary damper (242) ;
an arc-shaped rack (241) fixedly connected to the side wall of the storage box body (22) and meshing with the gear (243) .

5. The storage box according to claim 1, wherein the storage box (20) further comprises a buffer structure which is a rubber member (212) disposed on the enclosure (21) .

6. A refrigerator, comprising a door body, wherein the storage box (20) according to claim 1 is disposed on an inner side of the door body (10).

Patentansprüche

1. Aufbewahrungsbox (20), die eine Umhüllung (21), einen Aufbewahrungsboxkörper (22) und eine Schwenkwelle (23) aufweist, die mit der Umhüllung (21) und dem Aufbewahrungsboxkörper (22) verbunden ist, wobei die Aufbewahrungsbox (20) ferner Folgendes aufweist:

ein elastisches Element, das zwischen der Schwenkwelle (23) und der Umhüllung (21) angeordnet ist, wobei das elastische Element immer eine Antriebskraft bereitstellt, die den Aufbewahrungsbehälterkörper (22) antreibt, um die Umhüllung (21) um die Schwenkwelle (23) nach außen zu drehen; das elastische Element eine Torsionsfeder (25) ist, die Torsionsfeder (25) einen Federkörper (251) und einen mit dem Federkörper (251) verbundenen Federarm (252) aufweist und der Federkörper (251) auf der Schwenkwelle (23) aufgesteckt ist;
und wobei die Aufbewahrungsbox (20) ferner eine Verriegelungsvorrichtung aufweist, die einen Verriegelungsabschnitt und einen mit dem Verriegelungsabschnitt ineinandergreifenden Passabschnitt aufweist, wobei entweder der Verriegelungsabschnitt oder der Passabschnitt an der Umhüllung (21) und der andere an dem Aufbewahrungsbehälterkörper (22) angeordnet ist; der Passabschnitt eine an einer Rückwand des Aufbewahrungsbehälterkörpers (22) vorgesehene Verriegelungszunge (222) ist und der Verriegelungsabschnitt ein Druckverschluss (211) ist, der an einer Rückwand der Umhüllung (21) vorgesehen ist; der Druckverschluss (211) einen ersten Kraftaufnahmeabschnitt (2111), einen zweiten Kraftaufnahmeabschnitt (2113) und einen Widerstandsabschnitt (2112) aufweist, der erste Kraftaufnahmeabschnitt (2111) bewirkt, dass der Widerstandsabschnitt (2112) die Verriegelungszunge (222) freigibt, und der zweite Kraftaufnahmeabschnitt (2113) bewirkt, dass der Widerstandsabschnitt (2112) die Verriegelungszunge (222) festklemmt, und eine Dämpfungsvorrichtung (24), die mit der Umhüllung (21) und dem Aufbewahrungsbehälterkörper (22) verbunden ist, und die Dämpfungsvorrichtung (24) einen Widerstand gegen das Drehen des Aufbewahrungsbehälterkörpers (22) aus der Umhüllung (21) heraus bietet.

2. Aufbewahrungsbox nach Anspruch 1, wobei die Umhüllung (21) einen Befestigungsabschnitt (213) aufweist, der mit einer Seitenwand der Umhüllung (21) verbunden ist, wobei der Befestigungsabschnitt (213) mit einem Durchgangsloch versehen ist und der Federarm (252) durch das Durchgangsloch hindurchgeht.

3. Aufbewahrungsbox nach Anspruch 1, wobei der Widerstandsabschnitt (2112) mit einem ersten Vorsprung versehen ist und die Verriegelungszunge (222) mit einem zweiten Vorsprung versehen ist.

4. Aufbewahrungsbox nach Anspruch 1, wobei die Dämpfungsvorrichtung (24) Folgendes aufweist:

einen Drehdämpfer (242), der fest mit einer Seitenwand der Umhüllung (21) verbunden ist;
ein Zahnrad (243), das fest mit einer Dämpfungsdrehwelle (244) des Drehdämpfers (242) verbunden ist; und
eine bogenförmige Zahnstange (241), die fest mit der Seitenwand des Aufbewahrungsboxkörpers (22) verbunden ist und mit dem Zahnrad (243) in Eingriff steht.

5. Aufbewahrungsbox nach Anspruch 1, wobei die Aufbewahrungsbox (20) ferner eine Pufferstruktur aufweist, die ein Gummielement (212) ist, das an der Umhüllung (21) angeordnet ist.

6. Kühlschrank mit einem Türkörper, wobei die Aufbewahrungsbox (20) nach Anspruch 1 an einer Innenseite des Türkörpers (10) angeordnet ist.

Revendications

1. Boîte de stockage (20), comprenant une enceinte (21), un corps (22) de boîte de stockage, un axe pivot (23) relié à l'enceinte (21) et au corps (22) de boîte de stockage, dans laquelle la boîte de stockage (20) comprend en outre :

un élément élastique disposé entre l'axe pivot (23) et l'enceinte (21), l'élément élastique fournissant en permanence une force d'entraînement amenant le corps (22) de boîte de stoc-

kage à tourner vers l'extérieur de l'enceinte (21) autour de l'axe pivot (23) ; l'élément élastique est un ressort de torsion (25), le ressort de torsion (25) comprend un corps (251) de ressort et un bras (252) de ressort relié au corps (251) de ressort ;
caractérisé en ce que le corps (251) de ressort est enfilé sur l'axe pivot (23) ;
et dans laquelle, en outre, la boîte de stockage comprend un dispositif de verrouillage, le dispositif de verrouillage comprenant une partie de verrouillage et une partie d'ajustement qui est ajustée par pression sur la partie de verrouillage, dans laquelle l'une de la partie de verrouillage et de la partie d'ajustement est disposée sur l'enceinte (21), et l'autre est disposée sur le corps (22) de boîte de stockage ; la partie d'ajustement est une languette de verrouillage (222) fournie sur une paroi arrière du corps (22) de boîte de stockage, et la partie de verrouillage est un verrou-poussoir (211) fourni sur une paroi arrière de l'enceinte (21) ; le verrou-poussoir (211) comprend une première partie de réception de force (2111), une seconde partie de réception de force (2113) et une partie résistante (2112), la première partie de réception de force (2111) amène la partie résistante (2112) à libérer la languette de verrouillage (222), et la seconde partie de réception de force (2113) amène la partie résistante (2112) à serrer la languette de verrouillage (222), un dispositif d'amortissement (24) relié à l'enceinte (21) et au corps (22) de boîte de stockage, et le dispositif d'amortissement (24) fournit une résistance contre la rotation du corps (22) de boîte de stockage vers l'extérieur de l'enceinte (21).

2. Boîte de stockage selon la revendication 1, dans laquelle l'enceinte (21) comprend une partie de fixation (213) reliée à une paroi latérale de l'enceinte (21), la partie de fixation (213) est munie d'un trou traversant, et le bras (252) de ressort passe à travers le trou traversant.

3. Boîte de stockage selon la revendication 1, dans laquelle la partie résistante (2112) est munie d'une première saillie, et la languette de verrouillage (222) est munie d'une seconde saillie.

4. Boîte de stockage selon la revendication 1, dans laquelle le dispositif d'amortissement (24) comprend : un amortisseur rotatif (242) relié à demeure à une paroi latérale de l'enceinte (21) ;

une roue dentée (243) reliée à demeure à un arbre rotatif d'amortissement (244) de l'amortisseur rotatif (242) ;
une crémaillère arquée (241) reliée à demeure à la paroi latérale du corps (22) de boîte de stockage et s'engrenant avec la roue dentée (243).

5. Boîte de stockage selon la revendication 1, dans laquelle la boîte de stockage (20) comprend en outre une structure antichoc qui est un élément en caoutchouc (212) disposé sur l'enceinte (21).

6. Réfrigérateur, comprenant un corps de porte, dans lequel la boîte de stockage (20) selon la revendication 1 est disposée sur un côté intérieur du corps (10) de porte.

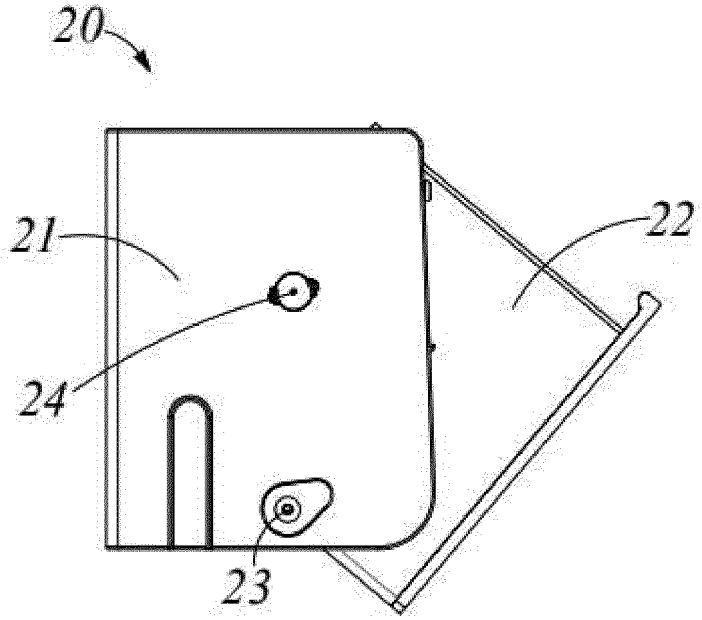

Fig. 1

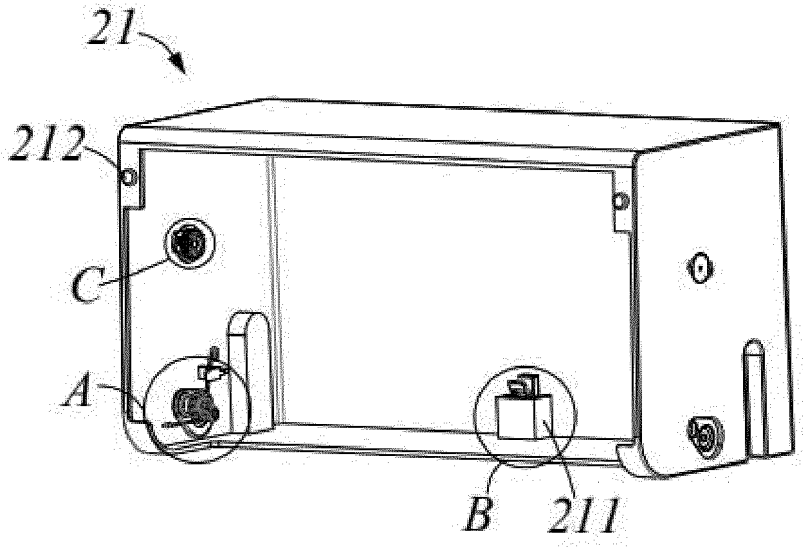

Fig. 2

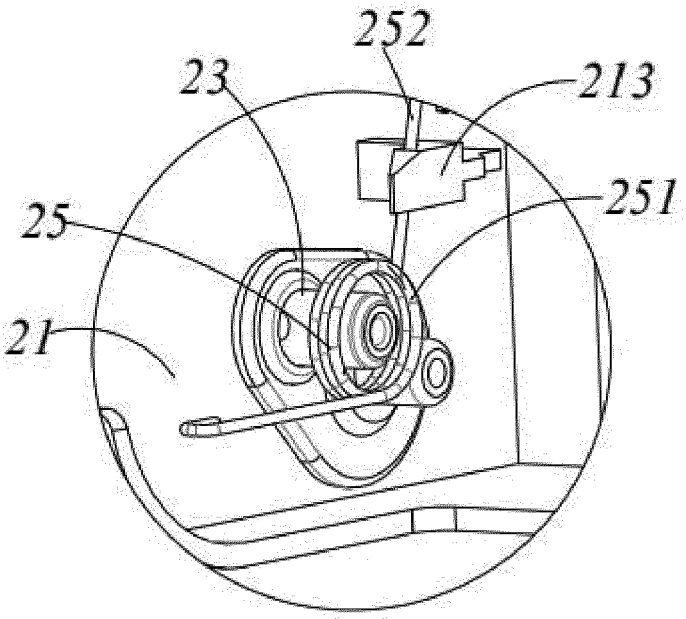

Fig. 3

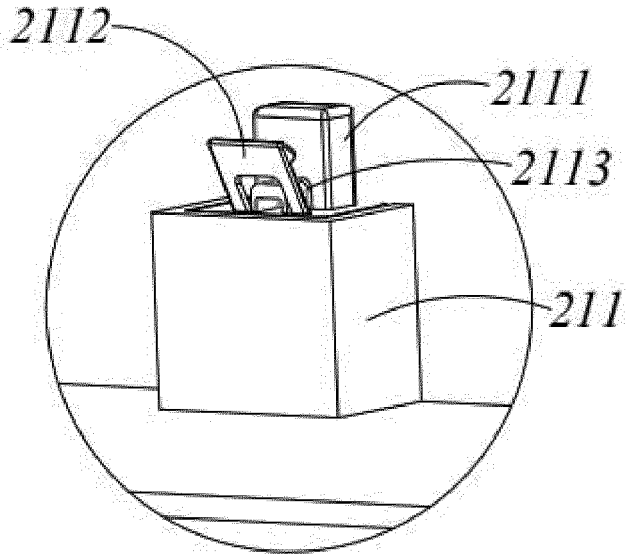

Fig. 4

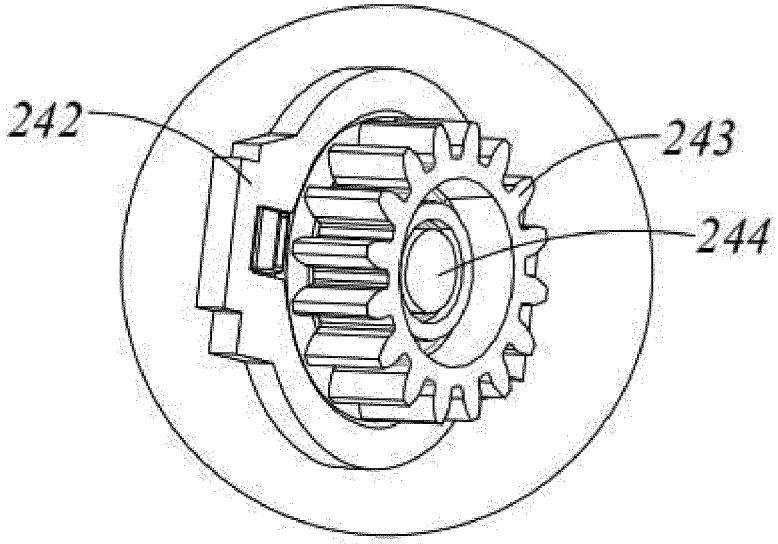

Fig. 5

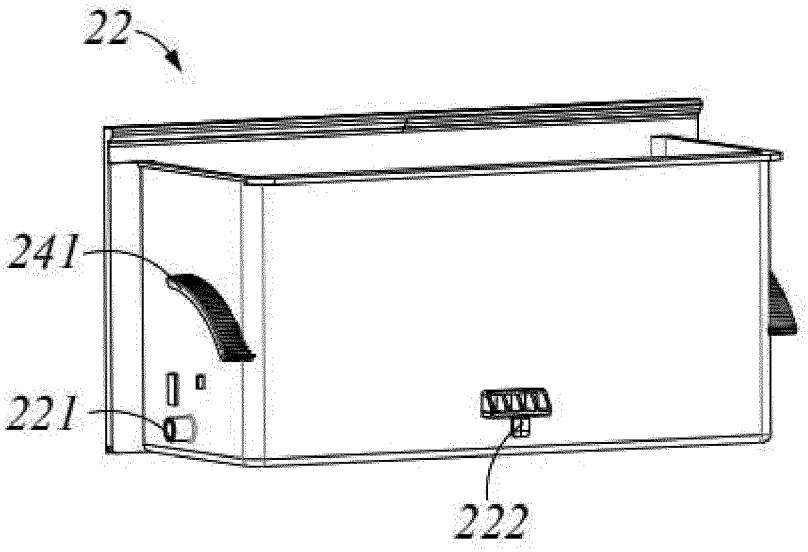

Fig. 6

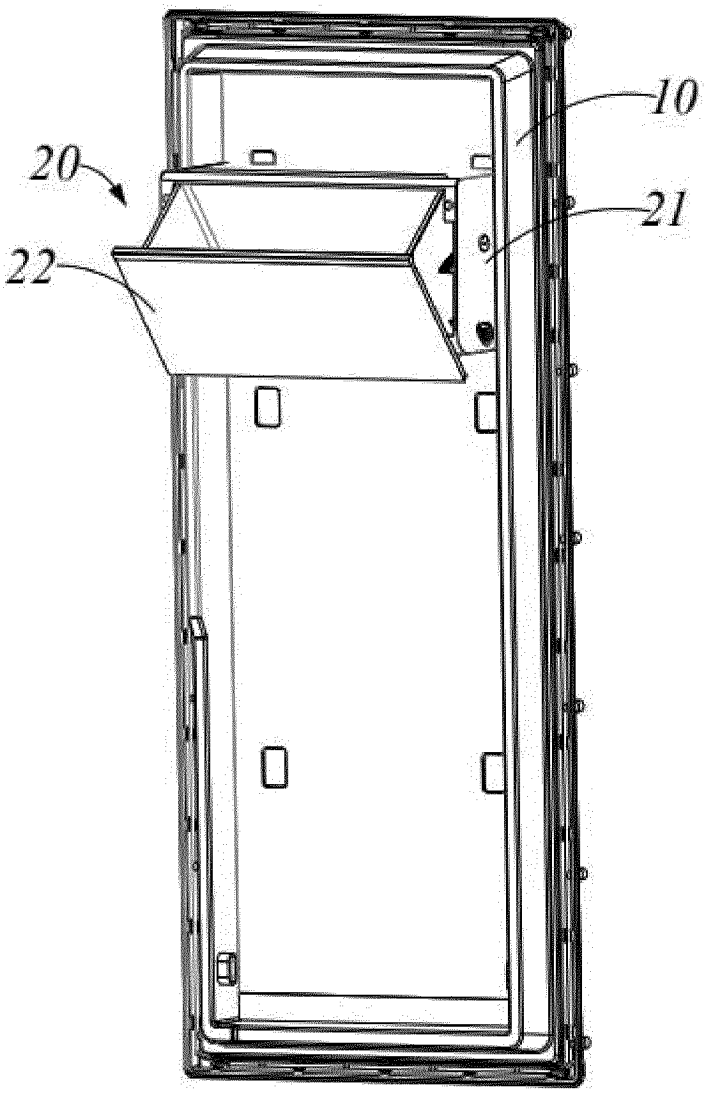

Fig. 7

REFERENCES CITED IN THE DESCRIPTION

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