US012390010B2

(12) **United States Patent**
Xie

(10) **Patent No.: US 12,390,010 B2**
(45) **Date of Patent: Aug. 19, 2025**

(54) **DOOR ASSEMBLY AND STORAGE CABINET**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 388 days.

(21) Appl. No.: **18/001,225**

(22) PCT Filed: **Dec. 29, 2021**

(86) PCT No.: **PCT/CN2021/142518**
§ 371 (c)(1),
(2) Date: **Dec. 8, 2022**

(87) PCT Pub. No.: **WO2022/227667**
PCT Pub. Date: **Nov. 3, 2022**

(65) **Prior Publication Data**

US 2023/0232979 A1 Jul. 27, 2023

(30) **Foreign Application Priority Data**

Apr. 30, 2021 (CN) 202110483758.5

(51) **Int. Cl.**
A47B 95/02 (2006.01)
F25D 23/02 (2006.01)

(52) **U.S. Cl.**
CPC ***A47B 95/02*** (2013.01); ***F25D 23/028*** (2013.01); *A47B 2095/026* (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC . A47B 95/02; A47B 2095/026; F25D 23/028; F25D 2700/02; F25D 2700/04; F25D 2323/02; E05B 13/001
See application file for complete search history.

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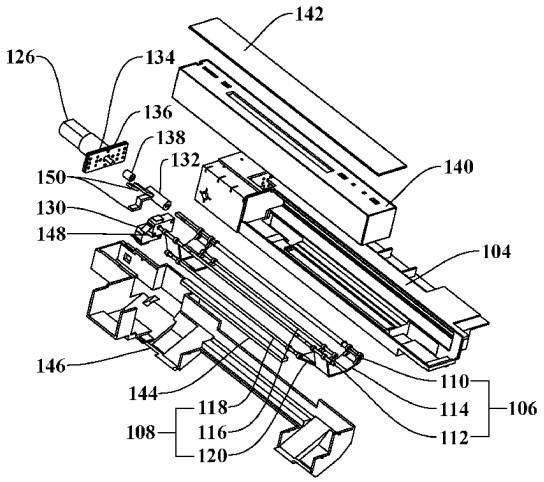
(57) **ABSTRACT**

The present application relates to the field of storage technology, and provides a door assembly and a storage cabinet. The door assembly includes a door body provided with a handle groove; a driving assembly; a rack hinged to the door body and provided with a cover plate assembly; and a first detecting member configured to generate a first detecting signal; where the driving assembly is adapted to drive the rack to switch between a pressing state and a resetting state based on the first detecting signal; and in the pressing state, the cover plate assembly avoids the handle groove, and in the resetting state, the cover plate assembly shields the handle groove.

20 Claims, 12 Drawing Sheets



(52) **U.S. Cl.**
CPC .. *A47B 2220/0077* (2013.01); *F25D 2700/02* (2013.01); *F25D 2700/04* (2013.01)

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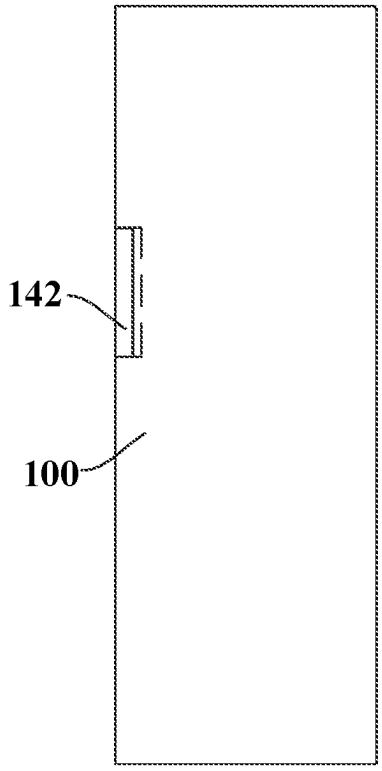

FIG. 1

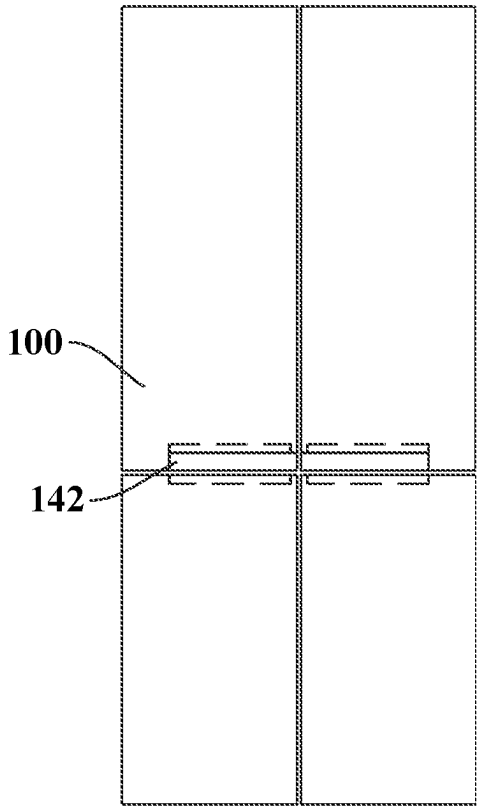

FIG. 2

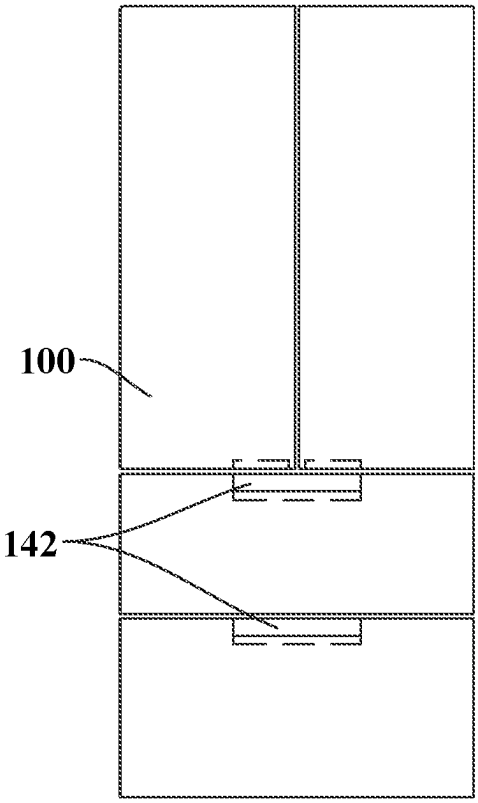

FIG. 3

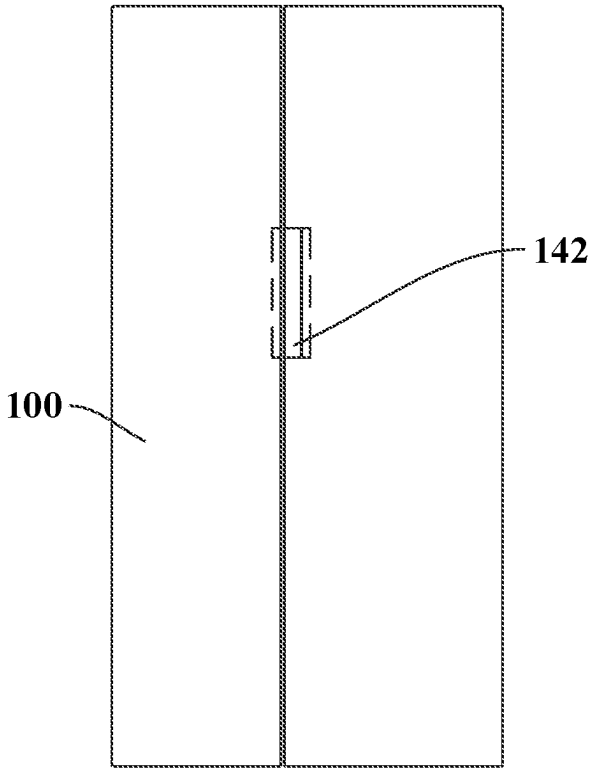

FIG. 4

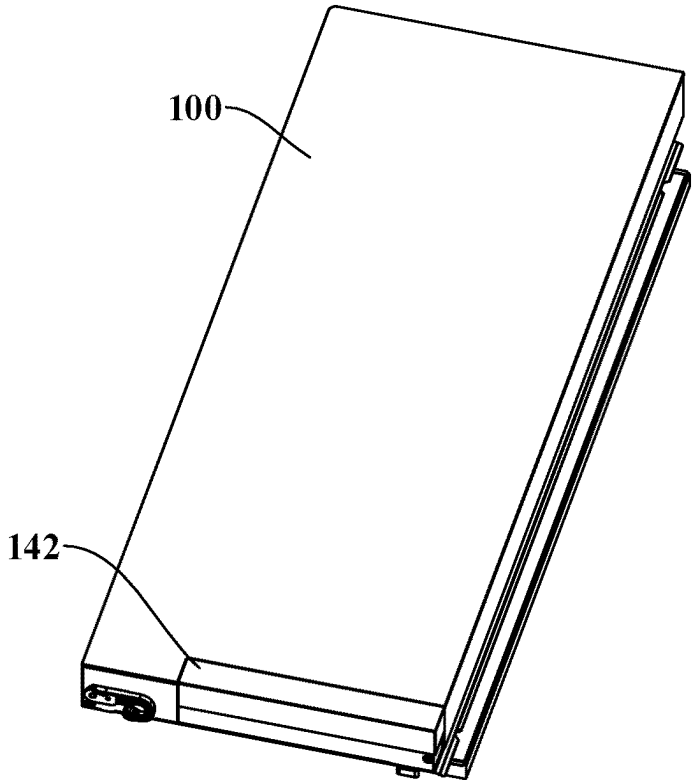

FIG. 5

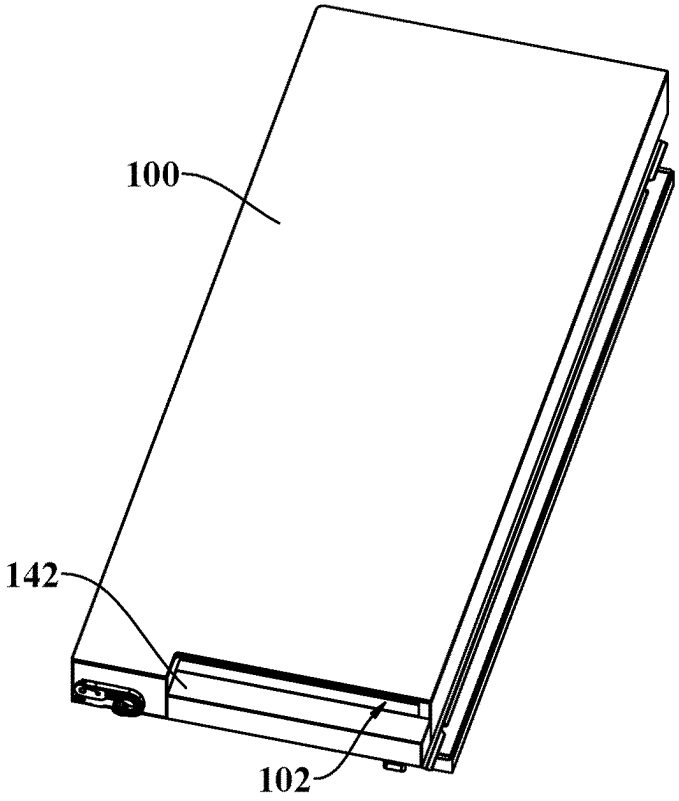

FIG. 6

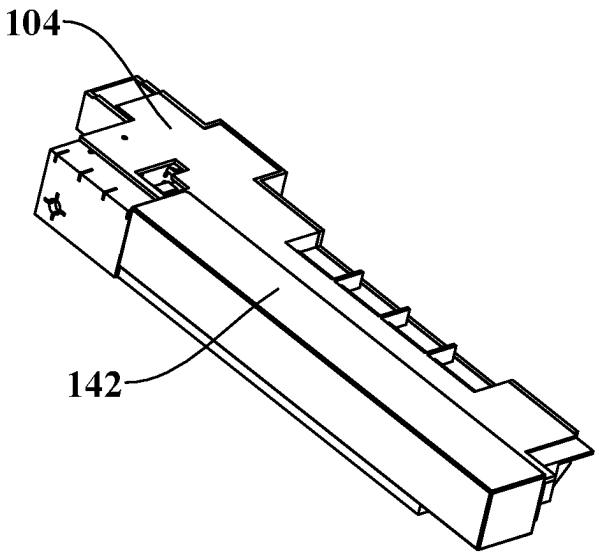

FIG. 7

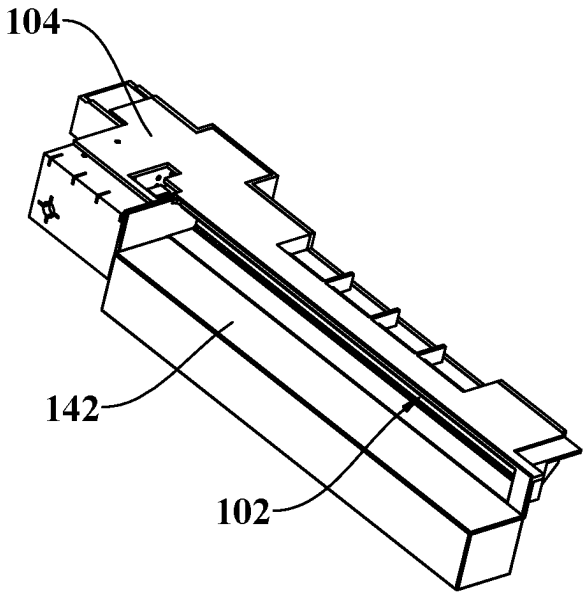

FIG. 8

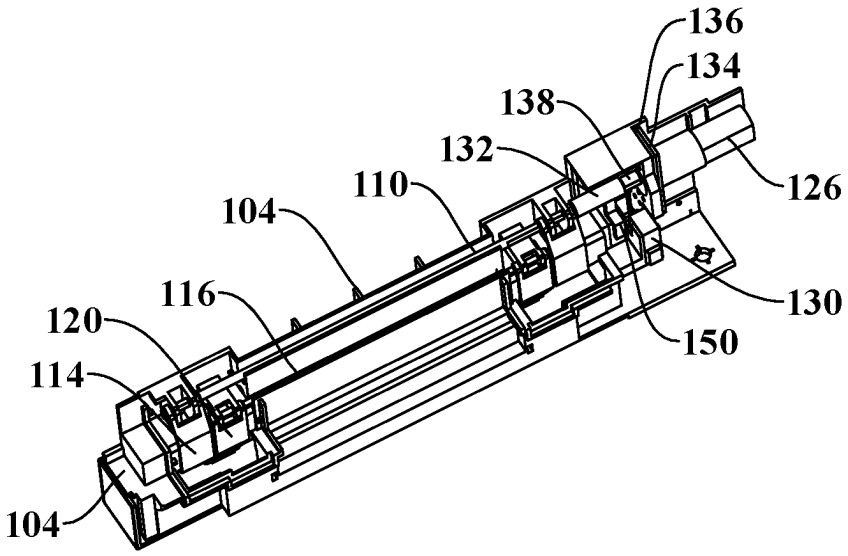
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FIG. 9

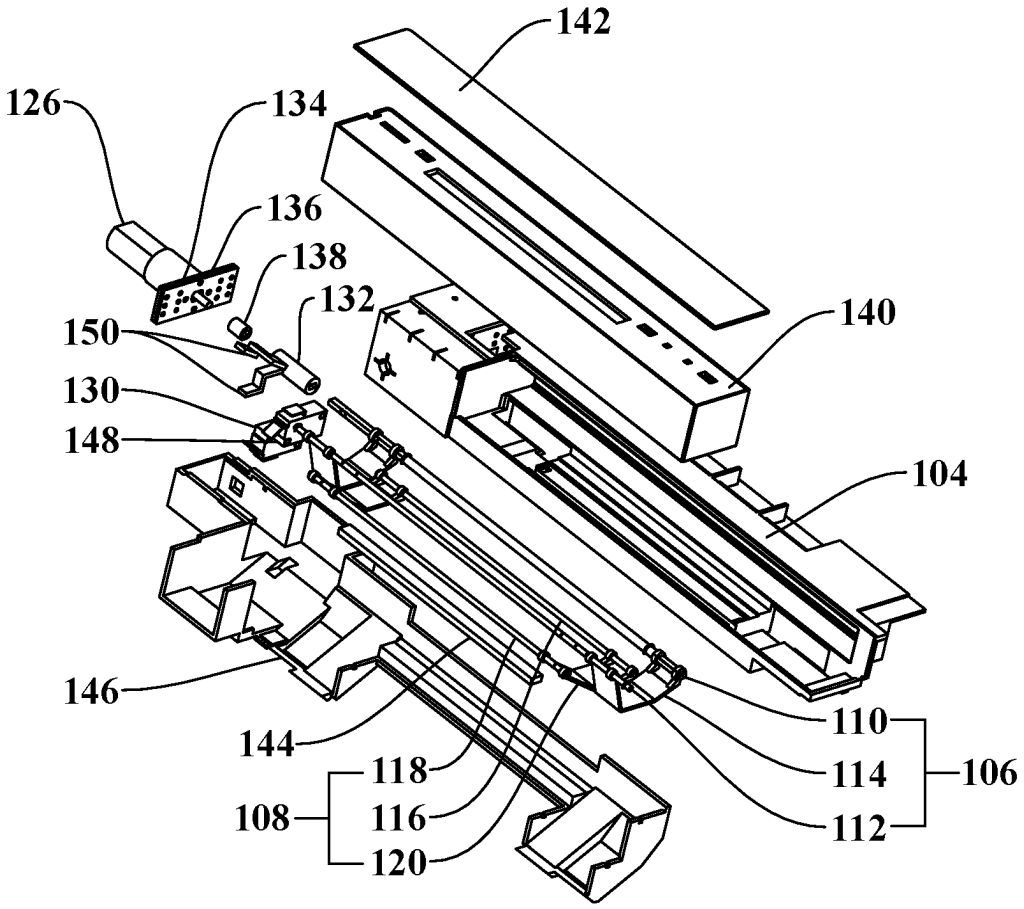
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FIG. 10

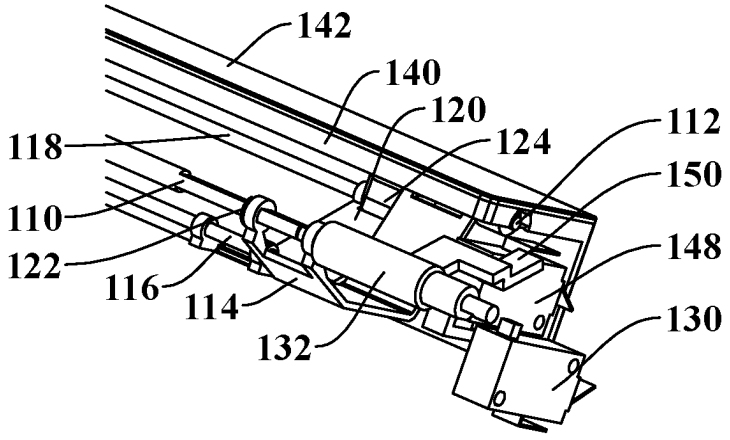


FIG. 11

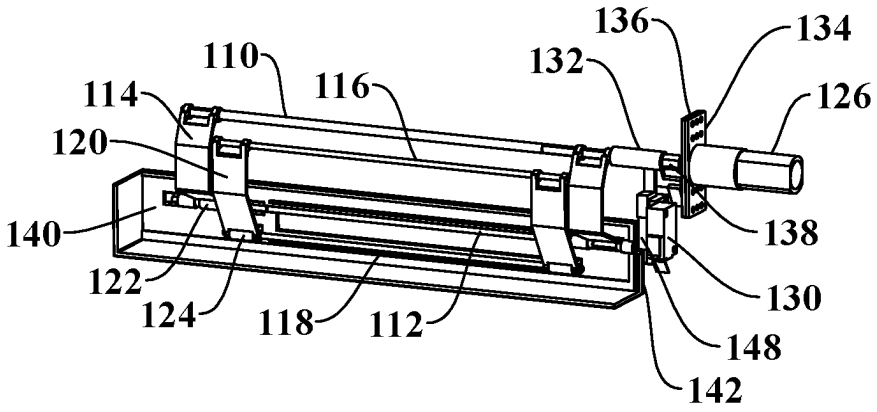


FIG. 12

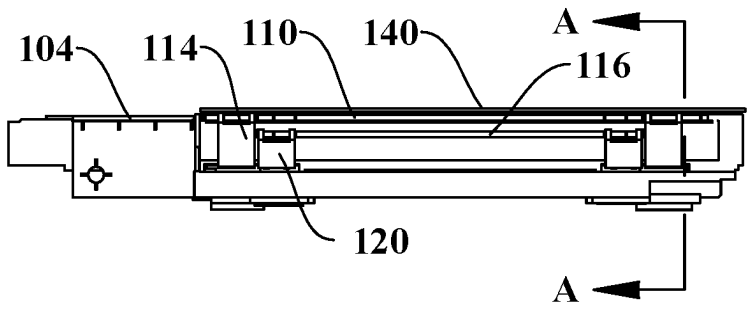


FIG. 13

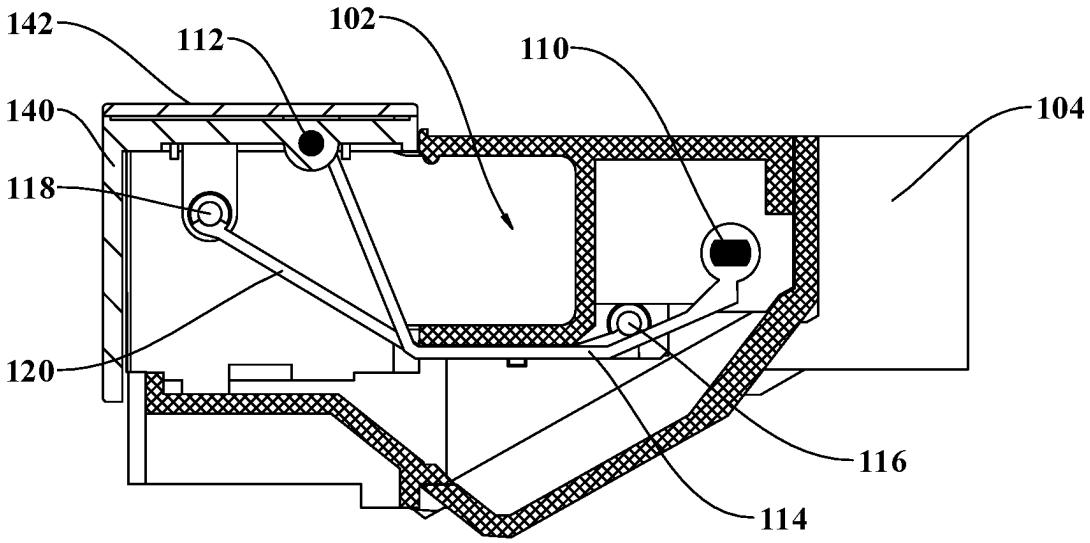
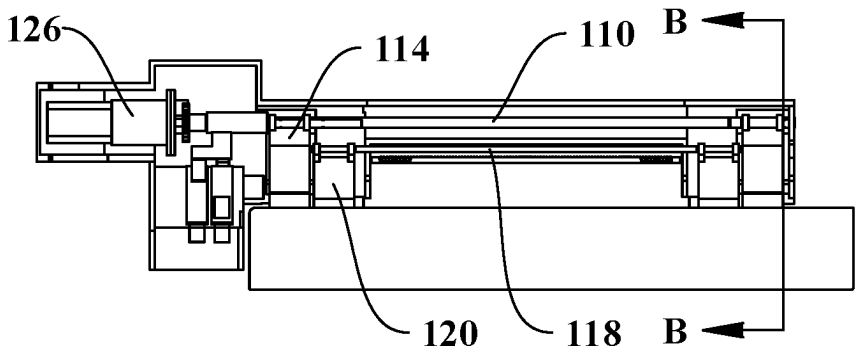


FIG. 14



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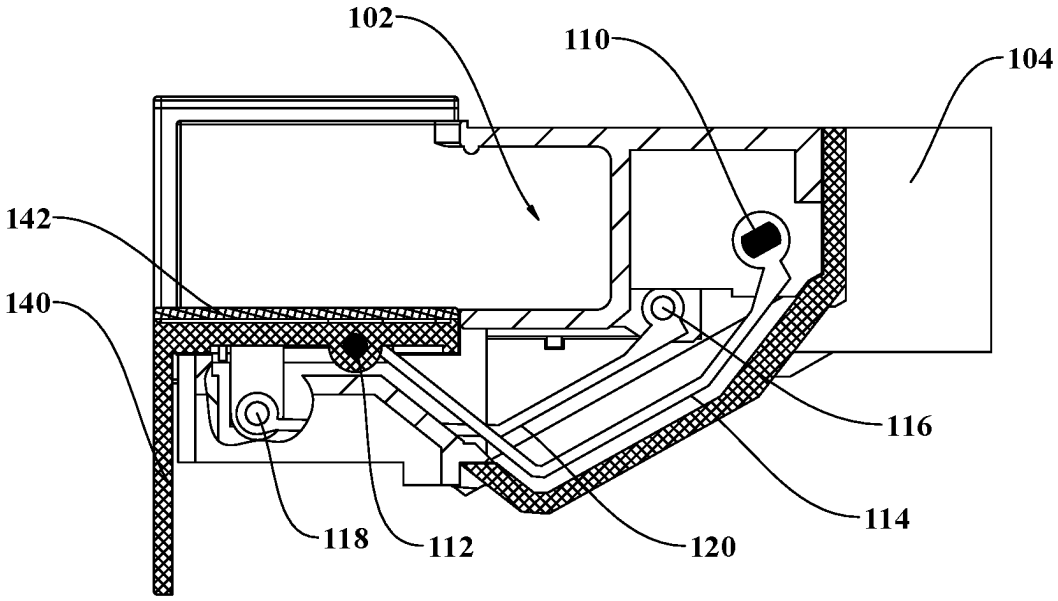
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FIG. 16

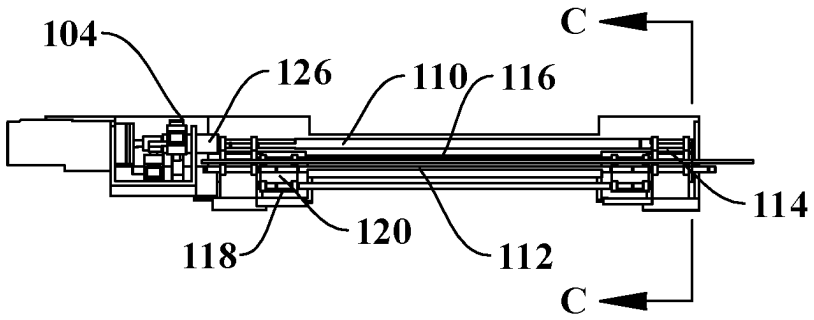
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FIG. 17

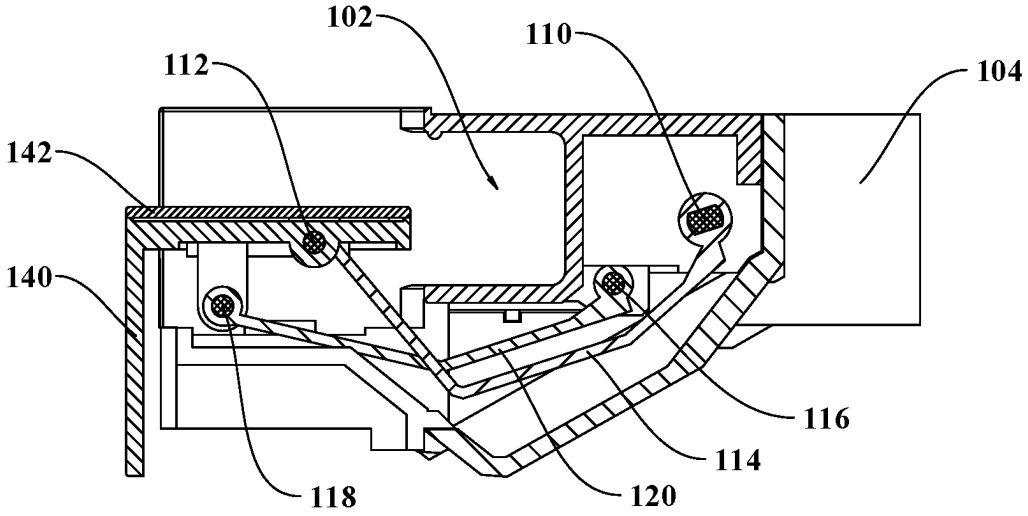


FIG. 18

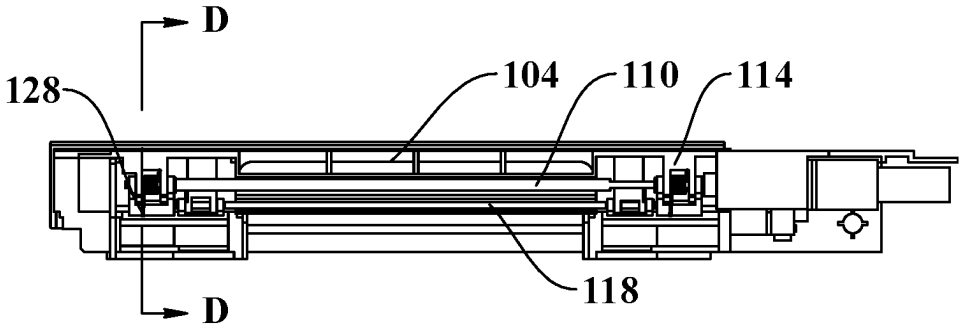
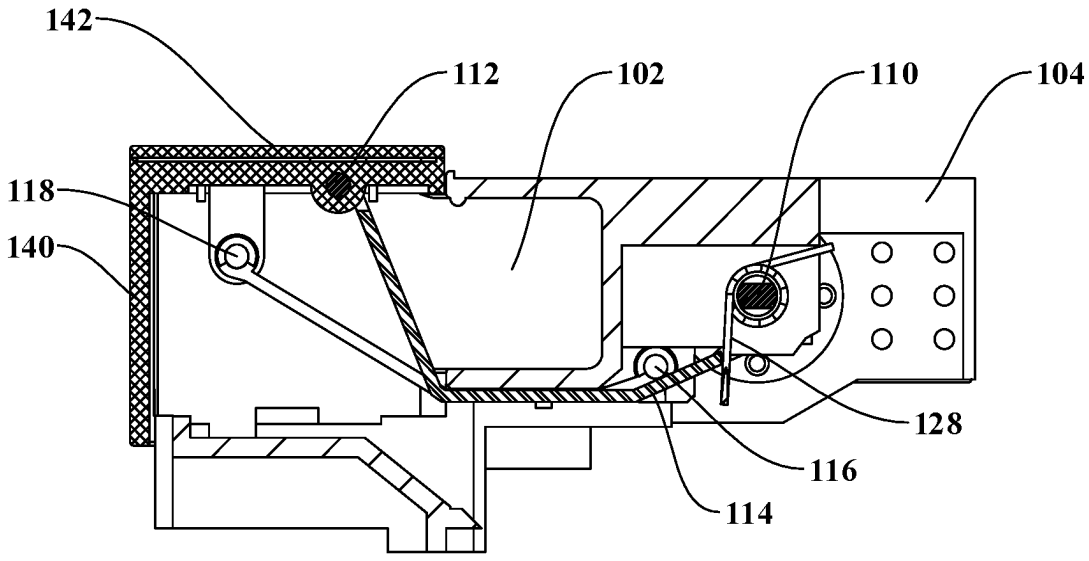


FIG. 19



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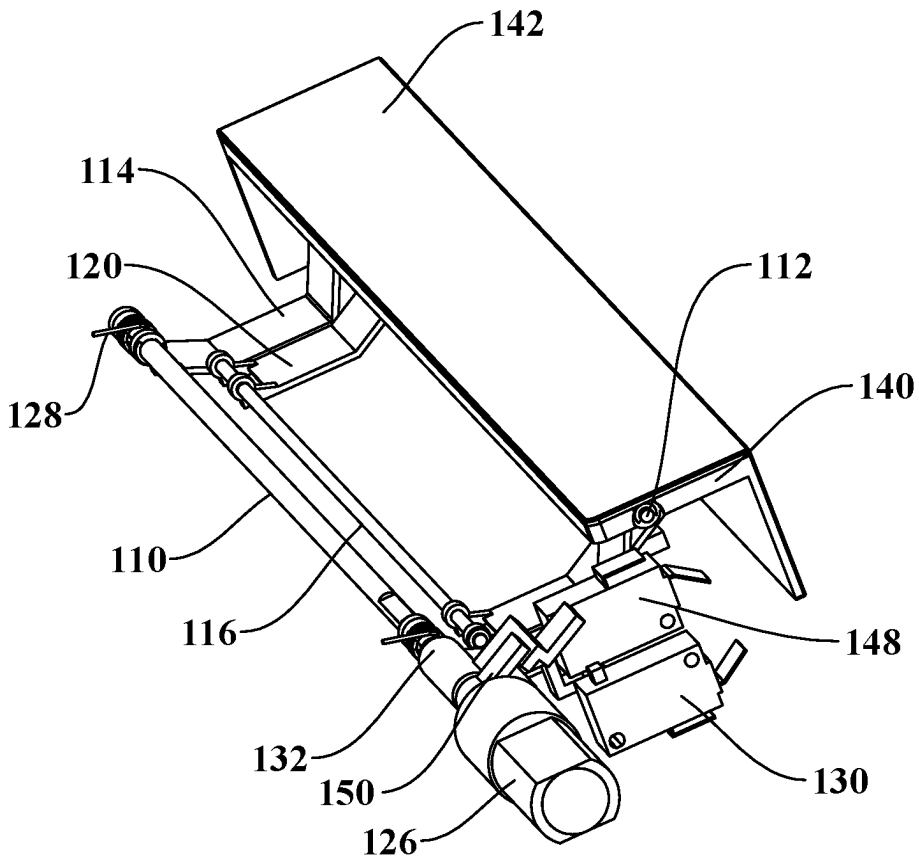
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FIG. 21

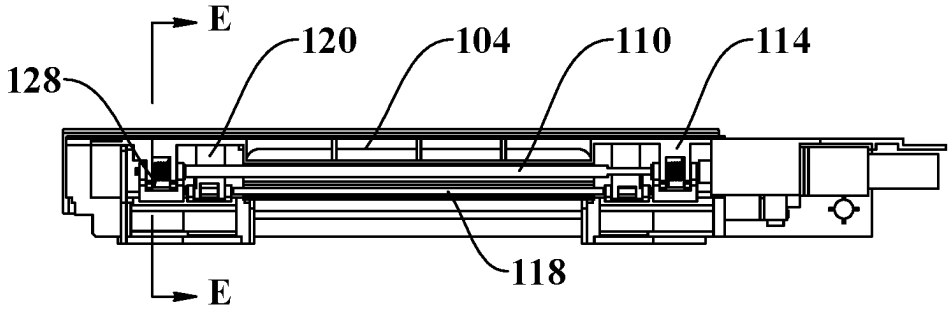
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FIG. 22

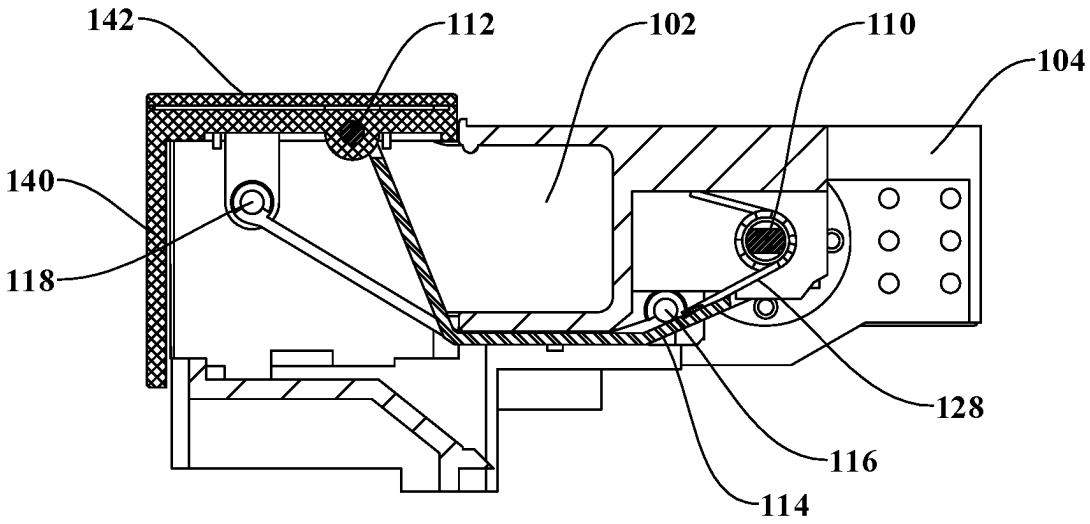
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FIG. 23

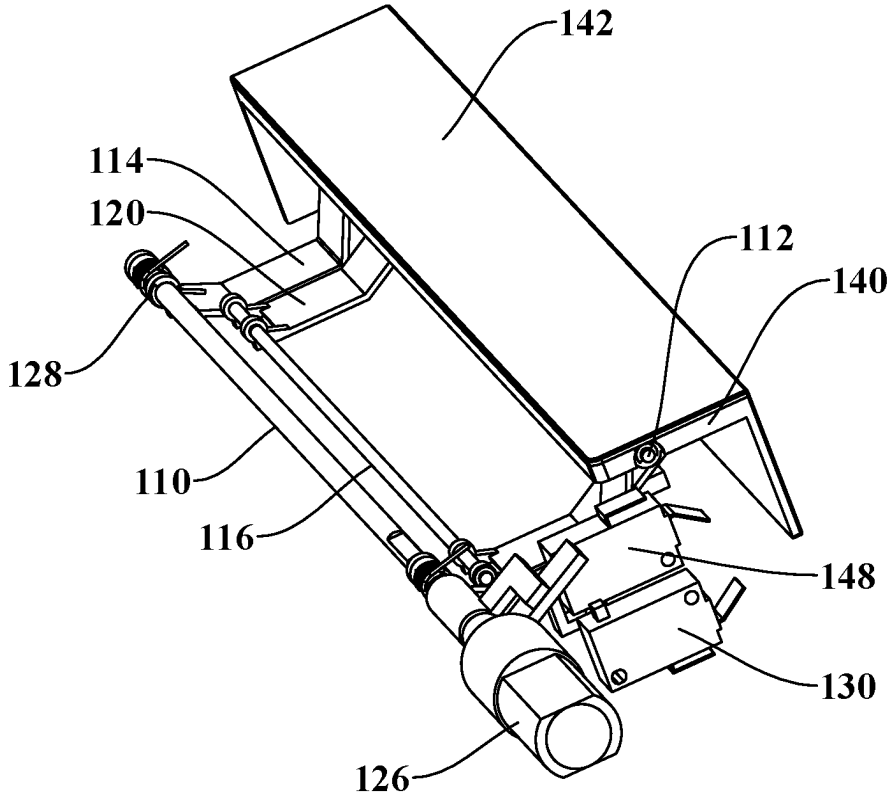
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FIG. 24

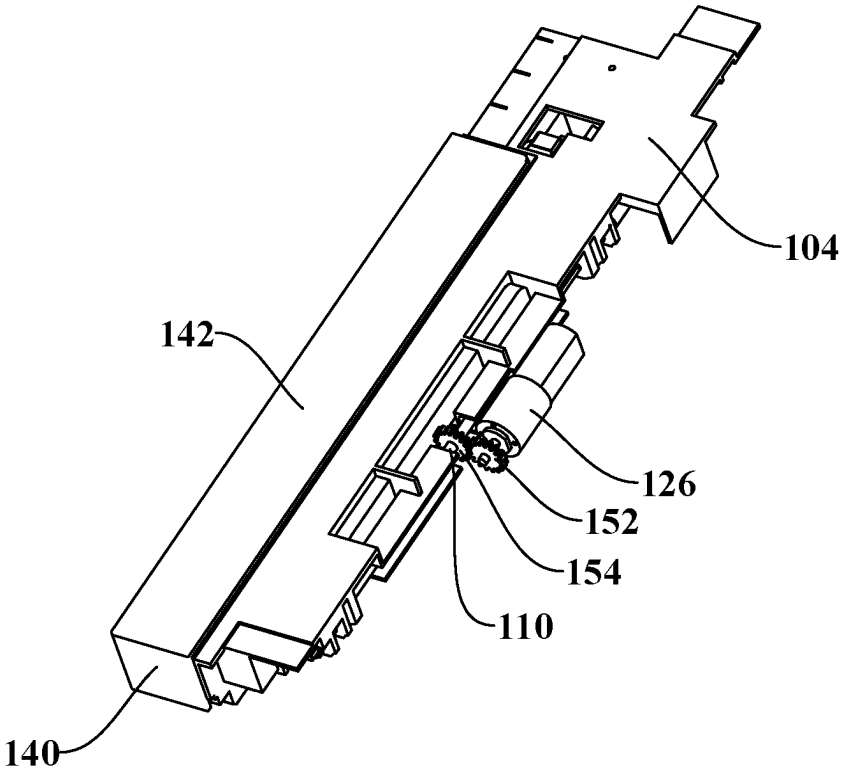

FIG. 25

DOOR ASSEMBLY AND STORAGE CABINET

CROSS-REFERENCE TO RELATED APPLICATION

The present application claims priority to Chinese Patent Application No. 202110483758.5, filed on Apr. 30, 2021, and entitled "Door Assembly and Storage Cabinet", which is hereby incorporated by reference in entire.

FIELD

The present application relates to the field of storage technology, and in particular, to a door assembly and a storage cabinet.

BACKGROUND

In order to facilitate the opening of a door body of a storage cabinet, the door body of the storage cabinet is usually provided with a handle protruding outward. Since the handle protruding on the door body will affect the appearance of the door body, there is a form of providing a handle plate on a side wall of the door body. Although providing the handle plate on the side wall of the door body can ensure the simplicity and flatness of a front of the door body, a deboss for manual operation to open the door needs to be reserved on a side of the door body whether for a single door body or an opposite door body, which will lead to poor integrity of the door body and affect its appearance.

SUMMARY

The present application is intended to solve at least one of the problems existing in the related art. The present application provides a door assembly, which can ensure that the door body is flat and easy to be opened and closed.

The present application further provides a storage cabinet.

The door assembly according to an embodiment of the present application includes:

- a door body, provided with a handle groove;
- a driving assembly;
- a rack, hinged to the door body and provided with a cover plate assembly; and
- a first detecting member, configured to generate a first detecting signal,
- where the driving assembly is adapted to drive the rack to switch between a pressing state and a resetting state based on the first detecting signal; and in the pressing state, the cover plate assembly avoids the handle groove, and in the resetting state, the cover plate assembly shields the handle groove.

According to the door assembly provided by the embodiment of the present application, when a door needs to be opened, the first detecting member can generate a first detecting signal indicating an opening of the door, the driving assembly can drive the rack to switch from the resetting state to the pressing state based on the first detecting signal, and then the handle groove can be exposed on the door body. At this time, the door body can be opened by bucking and pulling the handle groove. In this way, the door body can be opened without providing a handle on the door body or providing a handle plate on a surface of the door body, so as to ensure the flatness of a front of the door body. When an action of closing the door body occurs or the door body is already in a closed state, the first detecting member can generate a first detecting signal indicating an closing of the door, and the driving assembly can drive the cover plate assembly to return to the resetting state and shield the handle groove based on the first detecting signal, and then the door body can recover to a flat and concise state, which not only ensures the flatness and conciseness of the door body, but also is convenient for a user to open and close the door body.

According to an embodiment of the present application, the rack includes:

- a first swiveling rack, where a first end of the first swiveling rack is hinged to the door body, and a second end of the first swiveling rack is hinged to the cover plate assembly; and
- a second swiveling rack, where a first end of the second swiveling rack is hinged to the door body, and a second end of the second swiveling rack is hinged to the cover plate assembly,
- where the driving assembly is adapted to drive the first swiveling rack and/or the second swiveling rack to move the cover plate assembly in a direction perpendicular to the door body.

According to an embodiment of the present application, the first swiveling rack includes:

- a first driving shaft, where two ends of the first driving shaft are hinged to the door body;
- a first driven shaft, where two ends of the first driven shaft are hinged to the cover plate assembly; and
- a first transition connecting member, connected between the first driving shaft and the first driven shaft;
- the second swiveling rack includes:
- a second driving shaft, where two ends of the second driving shaft are hinged to the door body;
- a second driven shaft, where two ends of the second driven shaft are hinged to the cover plate assembly; and
- a second transition connecting member, connected between the second driving shaft and the second driven shaft.

According to an embodiment of the present application, the first transition connecting member is positioned at the first driving shaft and/or the first driven shaft through a first limiting structure; and

- the second transition connecting member is positioned at the second driving shaft and/or the second driven shaft through a second limiting structure.

According to an embodiment of the present application, the driving assembly includes a motor, where the motor is mounted on the door body, and the motor is connected to the first driving shaft and/or the second driving shaft.

According to an embodiment of the present application, the motor is connected to an end of the first driving shaft and/or an end of the second driving shaft through a shaft coupling; or,

- the motor is connected to the first driving shaft and/or the second driving shaft in a transmission manner through a transmission assembly.

According to an embodiment of the present application, the driving assembly includes a motor and an elastic member;

- where the motor is connected to the first driving shaft and/or the second driving shaft;
- the elastic member is sleeved on the first driving shaft, and two ends of the elastic member abut against the door body and the first transition connecting member respectively; and/or,
- the elastic member is sleeved on the second driving shaft, and two ends of the elastic member abut against the door body and the second transition connecting member respectively.

According to an embodiment of the present application, the driving assembly includes a magnetic member, where the magnetic member is mounted on the door body, and the magnetic member is adapted to drive the rack to switch between the pressing state and the resetting state based on the first detecting signal.

According to an embodiment of the present application, the door assembly further includes a second detecting member, where the second detecting member is mounted on the door body, and the second detecting member is adapted to generate a second detecting signal for controlling the motor to stop after detecting that the rack switches to the resetting state.

According to an embodiment of the present application, the first driving shaft and/or the second driving shaft is sleeved with a swing rod, and in the resetting state, the swing rod is adapted to trigger the second detecting member to generate the second detecting signal.

According to an embodiment of the present application, the door body is provided with a mounting plate, the motor is mounted on the mounting plate, and a shock pad is provided between the mounting plate and the motor;

where an output shaft of the motor is connected to the end of the first driving shaft and/or the end of the second driving shaft through the shaft coupling; or,

the output shaft of the motor is connected to the first driving shaft and/or the second driving shaft in a transmission manner through a transmission assembly.

According to an embodiment of the present application, the first transition connecting member and/or the second transition connecting member is limited at the door body through a groove side wall of the handle groove, to prevent the first transition connecting member and/or the second transition connecting member from disengaging from the door body.

According to an embodiment of the present application, the cover plate assembly includes:

a cover plate base, where two ends of the first driven shaft and two ends of the second driven shaft are hinged to the cover plate base respectively; and

a cover plate body, mounted on the cover plate base.

According to an embodiment of the present application, the door assembly further includes a light bar, where the cover plate base is provided with a mounting space for mounting the light bar, and the cover plate body is provided with a light transmission area at a position corresponding to the light bar.

According to an embodiment of the present application, the door body includes a supporting base, and the handle groove is provided on the supporting base; and

the first end of the first swiveling rack and the first end of the second swiveling rack are hinged to the support, and the second end of the first swiveling rack and the second end of the second swiveling rack are hinged to the cover plate assembly.

According to an embodiment of the present application, the door body further includes a mounting base, and the supporting base is mounted on the mounting base.

The storage cabinet according to an embodiment of the present application includes any one of the above-mentioned door assemblies.

According to the storage cabinet provided by the embodiment of the present application, by providing the above-mentioned door assembly, on the premise of ensuring the convenience of opening and closing the door body, the surface of the door body can be kept flat and concise when the door body is in the closed state.

The above-mentioned one or more solutions in the embodiments of the present application have at least one of the following effects.

According to the door assembly provided by the embodiment of the present application, when a door needs to be opened, the first detecting member can generate a first detecting signal indicating an opening of the door, the driving assembly can drive the rack to switch from the resetting state to the pressing state based on the first detecting signal, and then the handle groove can be exposed on the door body. At this time, the door body can be opened by bucking and pulling the handle groove. In this way, the door body can be opened without providing a handle on the door body or providing a handle plate on a surface of the door body, so as to ensure the flatness of a front of the door body. When an action of closing the door body occurs or the door body is already in a closed state, the first detecting member can generate a first detecting signal indicating an closing of the door, and the driving assembly can drive the cover plate assembly to return to the resetting state and shield the handle groove based on the first detecting signal, and then the door body can recover to a flat and concise state, which not only ensures the flatness and conciseness of the door body, but also is convenient for a user to open and close the door body.

In an embodiment, according to the storage cabinet provided by the embodiment of the present application, by providing the above-mentioned door assembly, on the premise of ensuring the convenience of opening and closing the door body, the surface of the door body can be kept flat and concise when the door body is in the closed state.

Additional aspects and advantages of the present application will be given in part in the following description, and the part will become clear from the following description, or will be learned by practice of the present application.

BRIEF DESCRIPTION OF DRAWINGS

In order to more clearly illustrate the solutions according to the present application or the related art, the accompanying drawings used in the description of the embodiments of the present application or the related art will be briefly introduced below. It should be noted that the drawings in the following description are only part embodiments of the present application. For those of ordinary skill in the art, other drawings can also be obtained according to these drawings without creative efforts.

FIG. **1** is a schematic structural diagram of a first door body according to an embodiment of the present application;

FIG. **2** is a schematic structural diagram of a second door body according to an embodiment of the present application;

FIG. **3** is a schematic structural diagram of a third door body according to an embodiment of the present application;

FIG. **4** is a schematic structural diagram of a fourth door body according to an embodiment of the present application;

FIG. **5** is a schematic structural diagram of a door assembly with a handle groove being shielded according to an embodiment of the present application;

FIG. **6** is a schematic structural diagram of a door assembly with a handle groove being opened according to an embodiment of the present application;

FIG. **7** is a schematic structural diagram of a cover plate assembly shielding a handle groove according to an embodiment of the present application;

FIG. **8** is a schematic structural diagram of a cover plate assembly avoiding a handle groove according to an embodiment of the present application;

FIG. **9** is a schematic structural diagram of a supporting base, a first swiveling rack, and a second swiveling rack according to an embodiment of the present application;

FIG. **10** is a schematic exploded view of a supporting base, a first swiveling rack, and a second swiveling rack according to an embodiment of the present application;

FIG. **11** is a schematic structural diagram of a first swiveling rack, a second swiveling rack and a cover plate assembly at an angle according to an embodiment of the present application;

FIG. **12** is a schematic structural diagram of a first swiveling rack, a second swiveling rack and a cover plate assembly at another angle according to an embodiment of the present application;

FIG. **13** is a schematic front view of a cover plate assembly shielding a handle groove according to an embodiment of the present application;

FIG. **14** is a schematic cross-sectional view of FIG. **13** in an A-A direction;

FIG. **15** is a schematic front view of a cover plate assembly avoiding a handle groove according to an embodiment of the present application;

FIG. **16** is a schematic cross-sectional view of FIG. **15** in a B-B direction;

FIG. **17** is a schematic front view of a cover plate assembly in a middle position of shielding a handle groove and avoiding a handle groove according to an embodiment of the present application;

FIG. **18** is a schematic cross-sectional view of FIG. **17** in a C-C direction;

FIG. **19** is a schematic structural diagram of a driving assembly connecting to a rack according to an embodiment of the present application;

FIG. **20** is a schematic cross-sectional view of FIG. **19** in a D-D direction;

FIG. **21** is a schematic stereoscopic diagram corresponding to FIG. **19**;

FIG. **22** is a schematic front view of another driving assembly connecting to a rack according to an embodiment of the present application;

FIG. **23** is a schematic cross-sectional view of FIG. **22** in an E-E direction;

FIG. **24** is a schematic stereoscopic diagram corresponding to FIG. **22**; and

FIG. **25** is a schematic structural diagram of yet another driving assembly connecting to a rack according to an embodiment of the present application.

Reference numerals: **100**—door body; **102**—handle groove; **104**—supporting base; **106**—first swiveling rack; **108**—second swiveling rack; **110**—first driving shaft; **112**—first driven shaft; **114**—first transition connecting member; **116**—second driving shaft; **118**—second driven shaft; **120**—second transition connecting member; **122**—first limiting structure; **124**—second limiting structure; **126**—motor; **128**—elastic member; **130**—second detecting member; **132**—swing rod; **134**—mounting plate; **136**—shock pad; **138**—shaft coupling; **140**—cover plate base; **142**—cover plate body; **144**—light bar; **146**—mounting base; **148**—third detecting member; **150**—swing arm; **152**—driving gear; **154**—driven gear.

DETAILED DESCRIPTION OF THE EMBODIMENTS

The embodiments of the present application will be described in further detail below with reference to the drawings and embodiments. The following embodiments are intended to illustrate the present application, but not to limit the scope of the present application.

In the description of the embodiments of the present application, it should be noted that, the orientation or positional relations indicated by terms such as "center", "longitudinal", "transverse", "upper", "lower", "front", "rear", "left", "right", "vertical", "horizontal", "top", "bottom", "inner", "outer" and the like are based on the orientation or positional relations shown in the drawings, which are merely convenience of description of the embodiments of the present application and to simplify description, but does not indicate or imply that the stated device or element must have the particular orientation, or be constructed and operated in a particular orientation, and thus it is not to be construed as limiting the embodiments of the present application. Furthermore, the terms "first", "second" and "third" are used for descriptive purposes only and should not be construed as indicating or implying a relative importance.

In the description of the present application, it should be noted that unless explicitly specified and defined otherwise, the terms "connected to" and "connected" shall be understood broadly, for example, it may be either fixedly connected or detachably connected, or can be integrated; it may be either mechanically connected, or electrically connected; it may be either directly connected, or indirectly connected through an intermediate medium. The specific meanings of the terms above in the present application can be understood by a person skilled in the art in accordance with specific conditions.

In the embodiments of the present application, unless otherwise expressly specified and defined, a first feature is "on" or "under" a second feature can refer to that the first feature is directly contacted with the second feature, or the first feature is indirectly contacted with the second feature through an intermediate medium. And further, the first feature is "on", "above" and "over" the second feature can refer to that the first feature is directly above or obliquely above the second feature, or simply refer to that the level height of the first feature is higher than that of the second feature. The first feature is "under", "below" and "beneath" the second feature can refer to that the first feature is directly below or obliquely below the second feature, or simply refer to that the level height of the first feature is lower than that of the second feature.

In the description of this specification, description with reference to the terms "one embodiment", "some embodiments", "an example", "specific example", "some examples" and the like, refers to that specific features, structures, materials or characteristics described in combination with an embodiment or an example are included in at least one embodiment or example according to the embodiments of the present application. In this specification, schematic representations of the above terms are not necessarily directed to a same embodiment or example. Furthermore, the particular features, structures, materials or characteristics described can be combined in any suitable manner in any one or more embodiments or examples. In addition, those skilled in the art can combine the different embodiments or examples described in this specification, as well as the features of the different embodiments or examples, without conflicting each other.

As shown in FIG. **1** to FIG. **25**, a door assembly according to an embodiment of the present application mainly includes a door body **100**, a driving assembly, a rack and a first detecting member (not shown in the figures). The door body **100** is provided with a handle groove **102**; the rack is hinged to the door body **100** and provided with a cover plate

assembly; the first detecting member is configured to generate a first detecting signal; the driving assembly is adapted to drive the rack to switch between a pressing state and a resetting state based on the first detecting signal; and in the pressing state, the cover plate assembly avoids the handle groove **102**, and in the resetting state, the cover plate assembly shields the handle groove **102**.

According to the door assembly provided by the embodiment of the present application, when a door needs to be opened, the first detecting member can generate a first detecting signal indicating an opening of the door, the driving assembly can drive the rack to switch from the resetting state to the pressing state based on the first detecting signal, and then the handle groove **102** can be exposed on the door body **100**. At this time, the door body **100** can be opened by bucking and pulling the handle groove **102**. In this way, the door body **100** can be opened without providing a handle on the door body **100** or providing a handle plate on a surface of the door body **100**, so as to ensure the flatness of a front of the door body **100**. When an action of closing the door body **100** occurs or the door body **100** is already in a closed state, the first detecting member can generate a first detecting signal indicating an closing of the door, and the driving assembly can drive the cover plate assembly to return to the resetting state and shield the handle groove **102** based on the first detecting signal, and then the door body **100** can recover to a flat and concise state, which not only ensures the flatness and conciseness of the door body **100**, but also is convenient for a user to open and close the door body **100**.

The door assembly provided by the embodiments of the present application applying to a refrigerator will be taken as an example in the following. In the embodiments of the present application, the number of the door body **100** can be one or more. In other words, the door assembly provided by the embodiments of the present application can be applied to a single door refrigerator or an opposite door refrigerator.

The door body **100** is provided with a handle groove **102** that can be buckled by a user. When the handle groove **102** is exposed outside, the user can hold the handle groove **102** to open the door body **100**.

It should be noted that, referring to FIG. **1** to FIG. **4** and FIG. **6**, the position of the door assembly provided by the embodiments of the present application on the door body **100** is not limited.

As shown in FIG. **1** and FIG. **6**, when the number of the door body **100** is one, the handle groove **102** can be provided near an edge of the door body **100**, for example, the handle groove **102** can be provided at the area shown by the dotted line in FIG. **1**. After the driving assembly drives the cover plate assembly to switch to the pressing state, the handle groove **102** provided on the door body **100** can be exposed.

As shown in FIG. **2** to FIG. **4** and FIG. **6**, when the number of the door bodies **100** is multiple, the handle groove **102** can be provided at an edge of any door body **100**, and it can also be provided at a non-edge position of the door body **100** as required. Therefore, when the user intends to open the door body **100**, the driving assembly can drive the cover plate assembly on the door body **100**, and then the handle groove **102** on the door body **100** can be exposed, so that the user can hold the handle groove **102** to open the door body **100**.

Alternatively, the driving assembly is configured to drive the cover plate assembly on the door body **100** to expose the handle groove **102** on the adjacent door body **100**, and then the user can open the adjacent door body **100**. In other words, the user can flexibly choose to open the corresponding door body **100** according to an actual demand.

The areas shown by the dotted line in FIG. **2** to FIG. **4** are the areas of providing the handle groove **102**, for example, when the number of door bodies **100** is multiple, multiple handle grooves **102** can be provided on two adjacent door bodies **100** respectively, which can facilitate the user to open the door bodies **100**.

In an embodiment of the present application, the door assembly further includes a supporting base **104** mounting on the door body **100**, and the above-mentioned handle groove **102** is provided on the supporting base **104**. For example, the supporting base **104** can be mounted in a foaming layer of the door body **100**.

According to an embodiment of the present application, the door assembly further includes a mounting base **146**, where the mounting base **146** is provided on the door body **100**, and the supporting base **104** is mounted on the mounting base **146**. The shape of the mounting base **146** is adapted to the shape of the supporting base **104**. The mounting base **146** can be provided in the foaming layer of the door body **100**. By providing the mounting base **146** in the foaming layer of the door body **100**, the foaming material in the foaming layer can be prevented from entering the supporting base **104**, thereby preventing the foaming material from affecting the components such as the supporting base **104**, the rack and the cover plate assembly.

A first end of the rack is hinged to the supporting base **104**, a second end of the rack is provided with a cover plate assembly, and the rack is adapted to switch between the pressing state and the resetting state. In the pressing state, the cover plate assembly avoids the handle groove **102**; and in the resetting state, the cover plate assembly shields the handle groove **102**.

As mentioned above, when the rack is in the pressing state, the cover plate assembly mounted on the rack can avoid the handle groove **102**, so that the handle groove **102** is exposed outside, and then the user can hold the handle groove **102** to open the door body **100**. When the rack is in the resetting state, the cover plate assembly mounted on the rack can shield the handle groove **102**, so that the door body **100** is in a flat and concise state. The pressing state mentioned here refers to that when the driving assembly drives the rack to move the cover plate assembly toward the position retracted to the door body **100**, the cover plate assembly exposes the handle groove **102** to the outside, and at this time, the rack is in the pressing state. The resetting state refers to that the rack is driven to switch the cover plate assembly from the state of being retracted to the door body **100** to the state of being flush with an outer surface of the door body **100**, and at this time, the rack is in the resetting state.

In an embodiment of the present application, the driving assembly can be mounted in the supporting base **104**, where the driving assembly is mainly configured to control the rack to switch between the pressing state and the resetting state.

According to an embodiment of the present application, the rack includes a first swiveling rack **106** and a second swiveling rack **108**. A first end of the first swiveling rack **106** is hinged to the supporting base **104**, and a second end of the first swiveling rack **106** is hinged to the cover plate assembly. A first end of the second swiveling rack **108** is hinged to the supporting base **104**, and a second end of the swiveling rack **108** is hinged to the cover plate assembly. The driving assembly is adapted to drive the first swiveling rack

106 and/or the second swiveling rack 108, to move the cover plate assembly in a direction perpendicular to the door body 100.

Referring to FIG. 10, for example, the first swiveling rack 106 and the second swiveling rack 108 together constitute the rack in the embodiments of the present application. The first end of the first swiveling rack 106 and the first end of the second swiveling rack 108 are respectively hinged to the supporting base 104, and the second end of the first swiveling rack 106 and the second end of the second swiveling rack 108 are respectively hinged to the cover plate assembly. In this way, the cover plate assembly can move relative to the supporting base 104 under the hinged action of the first swiveling rack 106 and the second swiveling rack 108.

In an embodiment, the driving assembly can be connected to the first swiveling rack 106 or the second swiveling rack 108 respectively, or the driving assembly can be connected to the first swiveling rack 106 and the second swiveling rack 108 respectively. Through the driving of the driving assembly, the first swiveling rack 106 and/or the second swiveling rack 108 can be led to swivel, so as to move the cover plate assembly relative to the supporting base 104. In an embodiment of the present application, the first swiveling rack 106 and the second swiveling rack 108 can be drive to move the cover plate assembly in a direction perpendicular to the door body 100. For example, the cover plate assembly can move in a direction perpendicular to the door body 100 relative to the door body 100.

According to an embodiment of the present application, the first swiveling rack 106 includes a first driving shaft 110, a first driven shaft 112 and a first transition connecting member 114. The second swiveling rack 108 includes a second driving shaft 116, a second driven shaft 118 and a second transition connecting member 120. Two ends of the first driving shaft 110 are hinged to the supporting base 104, two ends of the first driven shaft 112 are hinged to the cover plate assembly, and the first transition connecting member 114 is connected between the first driving shaft 110 and the first driven shaft 112. Two ends of the second driving shaft 116 are hinged to the supporting base 104, two ends of the second driven shaft 118 are hinged to the cover plate assembly, and the second transition connecting member 120 is connected between the second driving shaft 116 and the second driven shaft 118.

For example, referring to FIG. 9 to FIG. 12, two ends of the first driving shaft 110 and two ends of the second driving shaft 116 are hinged to the supporting base 104 respectively, and the two ends of the first driven shaft 112 and the two ends of the second driven shaft 118 are hinged to the cover plate assembly respectively. In order to improve the connection stability between the first driving shaft 110 and the first driven shaft 112, the first transition connecting member 114 is connected between the first driving shaft 110 and the first driven shaft 112. Correspondingly, a second transition connecting member 120 is connected between the second driving shaft 116 and the second driven shaft 118.

It should be noted that when the driving assembly is only connected to the first driving shaft 110 of the first swiveling rack 106, the first driven shaft 112, the second driving shaft 116 and the second driven shaft 118 can be set to be disconnected in the middle, and it is only needed to set a length of the first driving shaft 110 to be equal to a width of the supporting base 104.

Referring to FIG. 14, FIG. 16 and FIG. 18, these figures show a hinge point of the first driving shaft 110 and the supporting base 104, a hinge point of the second driving shaft 116 and the supporting base 104, a hinge point of the first driven shaft 112 and the cover plate assembly, and a hinge point of the second driven shaft 118 and the cover plate assembly. A parallelogram can be formed by connecting these four hinge points in sequence. Since the hinge point of the first driving shaft 110 and the supporting base 104 and the hinge point of the second driving shaft 116 and the supporting base 104 are fixed points, a relative distance between the two hinge points and an inclination angle of the connecting line of the two hinge points is also fixed. Therefore, a distance between the hinge point of the first driven shaft 112 and the cover plate assembly and the hinge point of the second driven shaft 118 and the cover plate assembly is equal to the distance between the hinge point of the first driving shaft 110 and the supporting base 104 and the hinge point of the second driving shaft 116 and the supporting base 104. The connecting line between the hinge point of the first driven shaft 112 and the cover plate assembly and the hinge point of the second driven shaft 118 and the cover plate assembly is parallel to the connecting line between the hinge point of the first driving shaft 110 and the supporting base 104 and the hinge point of the second driving shaft 116 and the supporting base 104, and then as shown in FIG. 14, FIG. 16 or FIG. 18, the cover plate assembly can perform vertical translational motion along the direction perpendicular to the door body 100.

In an embodiment, as shown in FIG. 18, during the cover plate assembly moving from the position of shielding the handle groove 102 to the position of avoiding the handle groove 102, the cover plate assembly first translates to a left side as shown in FIG. 18 for a distance about 1 mm to 3 mm, and then translates to a right side as shown in FIG. 18 for a distance about 1 mm to 3 mm, and finally moves to the position of avoiding the handle groove 102 as shown in FIG. 16. Similarly, during the cover plate assembly moving from the position of avoiding the handle groove 102 to the position of shielding the handle groove 102, the cover plate assembly first translates to the left side as shown in FIG. 18 for a distance about 1 mm to 3 mm, and then translates to the right side as shown in FIG. 18 for a distance about 1 mm to 3 mm, and finally moves to the position of shielding the handle groove 102 as shown in FIG. 14.

According to an embodiment of the present application, the first transition connecting member 114 is adapted to be positioned at the first driving shaft 110 and/or the first driven shaft 112 through a first limiting structure 122; and the second transition connecting member 120 is adapted to be positioned at the second driving shaft 116 and/or the second driven shaft 118 through a second limiting structure 124.

In an embodiment of the present application, in order to prevent the first transition connecting member 114 from performing axial movement relative to the first driving shaft 110 and/or the first driven shaft 112, the first driving shaft 110 and the first driven shaft 112 can be provided with two first positioning blocks respectively, and a first end of the first transition connecting member 114 can be connected between the two first positioning blocks on the first driving shaft 110, and a second end of the first transition connecting member 114 can be connected between the two first positioning blocks on the first driven shaft 112. In other embodiments, two first positioning blocks may be only provided on the first driving shaft 110 or the first driven shaft 112, and then the first transition connecting member 114 may be connected between the two first positioning blocks. In this way, the objective of preventing the first transition connecting member 114 from performing axial movement relative to the first driving shaft 110 or the first driven shaft 112 can also be achieved.

Similarly, the second driving shaft **116** and the second driven shaft **118** can be provided with two second positioning blocks respectively. A first end of the second transition connecting member **120** can be connected between the two second positioning blocks on the second driving shaft **116**, and a second end of the second transition connecting member **120** can be connected between the two second positioning blocks on the second driven shaft **118**. In other embodiments, two second positioning blocks may be only provided on the second driving shaft **116** or the second driven shaft **118**, and then the second transition connecting member **120** may be connected between the two second positioning blocks. In this way, the objective of preventing the second transition connecting member **120** from performing axial movement relative to the second driving shaft **116** or the second driven shaft **118** can also be achieved.

In other embodiments, the positions of the first transition connecting member **114** and the second transition connecting member **120** can be limited in other forms. For example, the first driving shaft **110** and/or the second driving shaft **116** are provided with positioning pins, positioning bosses, etc.

Referring to FIG. **14**, FIG. **16** and FIG. **18**, for the consideration of space layout, both of the first transition connecting member **114** and the second transition connecting member **120** can have a shape of bending toward an inner surface of the door body **100**. Correspondingly, the supporting base **104** is provided with an accommodation space for accommodating a bent portion of the first transition connecting member **114** and a bent portion of the second transition connecting member **120**. In an embodiment, as long as the first transition connecting member **114** can be connected to the first driving shaft **110** and the second driving shaft **116**, a width of the first transition connecting member **114** does not need to be set to equal with the length of the first driving shaft **110**, and as long as the second transition connecting member **120** can be connected to the second driving shaft **116** and the second driven shaft **118**, a width of the second transition connecting member **120** does not need to be set to equal with the length of the second driving shaft **116**. In addition, in some embodiments of the present application, the positions of the first transition connecting member **114** and the second transition connecting member **120** are staggered in a spatial width direction, to avoid an interference between the first transition connecting member **114** and the second transition connecting member **120** during rotation.

In order to prevent the first transition connecting member **114** and/or the second transition connecting member **120** from disengaging from the supporting base **104**, the first transition connecting member **114** and/or the second transition connecting member **120** is adapted to be limited at the supporting base **104** through a groove side wall of the handle groove **102**.

Referring to FIG. **14**, the handle groove **102** is a groove-like structure formed on an edge of the supporting base **104**. Therefore, as shown in FIG. **10**, the groove side wall located below of the handle groove **102** can be used as a limiting structure for preventing the first transition connecting member **114** and the second transition connecting member **120** from disengaging from the supporting base **104**. In other words, as shown in FIG. **14**, when the rack is switched to the resetting state, a side of the first transition connecting member **114** facing an outer side surface of the door body **100** and a side of the second transition connecting member **120** facing the outer side surface of the door body **100** can abut against on the groove side wall located below of the handle groove **102**, so that the first transition connecting member **114** and the second transition connecting member **120** can be prevented from disengaging from the supporting base **104**, and correspondingly, the first swiveling rack **106** and the second swiveling rack **108** are prevented from disengaging from the supporting base **104**. It should be noted that the term "disengaging" here means that the connection position of the first transition connecting member **114** and the first driven shaft **112** and/or the connection position of the second transition connecting member **120** and the second driven shaft **118** protrudes from the outer surface of the door body **100**.

According to an embodiment of the present application, the cover plate assembly includes a cover plate base **140** and a cover plate body **142**. Two ends of the first driven shaft **112** and two ends of the second driven shaft **118** are hinged to the cover plate base **140** respectively. The cover plate body **142** is mounted on the cover plate base **140**.

Referring to FIG. **9** to FIG. **12**, two ends of the first driven shaft **112** and two ends of the second driven shaft **118** are hinged to the cover plate base **140** respectively, and a cover plate body **142** is mounted on the cover plate base **140**. The cover plate body **142** can be fixed with the cover plate base **140** by means of bonding, clamping, or the like. In other words, when the driving assembly drives the first swiveling rack **106** and/or the second swiveling rack **108** to operate, the first swiveling rack **106** and/or the second swiveling rack **108** can be driven to switch the cover plate base **140** and the cover plate body **142** between the position of avoiding the handle groove **102** and the position of shielding the handle groove **102**. In an embodiment, the cover plate body **142** can be made of the same material as the outer surface of the door body **100**, which can further improve the appearance consistency of the outer surface of the door body **100**.

In an embodiment of the present application, as shown in FIG. **10**, the door assembly further includes a light bar **144**. In an embodiment, the cover plate base **140** is provided with a mounting space for mounting the light bar **144**, and the cover plate body **142** is provided with a light transmission area at a position corresponding to the light bar **144**. In other embodiments, the light bar **144** can be directly mounted under the cover plate body **142** and can act synchronously with the cover plate body **142**.

By providing the mounting space for mounting the light bar **144** on the cover plate base **140** and providing a corresponding light transmission area on the cover plate body **142**, when a human body approaches the door body **100**, the first detecting member can detect the human body and generate a corresponding control signal. The light bar **144** can be automatically lit up after receiving the control signal, so that the user can recognize the position of the cover plate body **142**. When the door body **100** is closed, the light bar **144** can be automatically turned off.

In an embodiment of the present application, the first detecting member is configured to detect the opening and closing states of the door body **100** or whether the user has leaved in addition to detect whether the human body is approaching. When the above situation is detected by the first detecting member, the first detecting member can generate a first detecting signal for controlling the driving assembly.

In an embodiment, when the first detecting member detects that a human body is approaching, which generally means that the user has a need to open the door, and the first detecting member is configured to generate the first detecting signal indicating that the door will be opened. After receiving the first detecting signal, the driving assembly can

drive the first swiveling rack **106** and/or the second swiveling rack **108** to switch from the resetting state to the pressing state.

When the door body **100** is switched from the opening state to the closing state, the first detecting member can detect the action of the door body **100** to generate a first detecting signal indicating that the door body **100** is closed; or, when the user has left, the first detecting member can detect that the human body has left a nearby area of the door body **100** and generate a first detecting signal indicating that the door body **100** can be closed. After receiving the first detecting signal, the driving assembly can drive the first swiveling rack **106** and/or the second swiveling rack **108** to switch from the pressing state to the resetting state.

It should be noted that, in addition to sensors (such as infrared sensors and laser sensors) for detecting the distance of the human body, a sensor for detecting human biometric features (such as face recognition devices, voice recognition devices, etc.) can be selected as the first detecting member, and a pressure sensor and other sensors can also be selected as the first detecting member. For example, when the user touches a certain area of the door body, the first detecting signal is generated. That is, the present application does not have specific limitation on types and excitation methods of the first detecting member, as long as the opening and closing needs of the user can be determined.

Several ways of providing the driving assembly according to the embodiments of the present application will be described in the following.

Way I

The driving assembly includes a motor **126** mounted on the supporting base **104**, and the motor **126** is connected to the first driving shaft **110** and/or the second driving shaft **116**.

For example, in the way I, the motor **126** can be connected to the first driving shaft **110**, so that when the door body **100** is in a closed state, if the first detecting member detects that a human body is approaching, which generally means that the user has a need to open the door, the first detecting member is configured to generate the first detecting signal indicating that the door will be opened. The motor **126** drives the first driving shaft **110** to move, so that the first swiveling rack **106** is switched from the resetting state to the pressing state, then the user can hold the handle groove **102** to open the door body **100**. After the user leaves or the user closes the door body **100**, the first detecting member can generate the first detecting signal indicating that the door body **100** is closed, and the motor **126** drives the first driving shaft **110** to swivel based on the first detecting signal, thereby switching the first swiveling rack **106** from the pressing state to the resetting state. Meanwhile, the second swiveling rack **108** is simultaneously switched from the pressing state to the resetting state under the leading of the first swiveling rack **106**.

In an embodiment, the motor **126** can be connected to the second driving shaft **116**, so that the second driving shaft **116** can be driven by the motor **126**, so that the second swiveling rack **108** can be switched from the pressing state to the resetting state.

In an embodiment, the number of the motors **126** can be two. For example, the two motors **126** are connected to the first driving shaft **110** and the second driving shaft **116** respectively. One of the two motors **126** is configured to drive the first driving shaft **110**, so that the first swiveling rack **106** can be switched from the pressing state to the resetting state; and another motor **126** is configured to drive the second driving shaft **116**, so that the second swiveling rack **108** can be switched from the resetting state to the pressing state.

Way II

The driving assembly includes a motor **126** and an elastic member **128**; the motor **126** is connected to the first driving shaft **110** and/or the second driving shaft **116**; and the elastic member **128** is sleeved on the first driving shaft **110** and two ends of the elastic member **128** abut against the supporting base **104** and the first transition connecting member **114** respectively, and/or the elastic member **128** is sleeved on the second driving shaft **116** and two ends of the elastic member **128** abut against the supporting base **104** and the second transition connecting member **120** respectively.

In way II, referring to FIG. **19** to FIG. **24**, the motor **126** being connected to the first driving shaft **110** and the elastic member **128** being sleeved on the first driving shaft **110** are taken as an example.

The motor **126** is connected to the first driving shaft **110** in a transmission manner and the elastic member **128** can be a torsion spring. The torsion spring is sleeved on the first driving shaft **110**, and two ends of the torsion spring abut against the supporting base **104** and a side of the first transition connecting member **114** facing the inner surface of the door body **100** respectively.

In this way, when the door body **100** is in a closed state and the user approaches the door body **100**, the first detecting member can control the motor **126** to operate, and then the motor **126** can be driven to swivel the first driving shaft **110**, so that the rack is switched from the resetting state to the pressing state, and then the user can hold the handle groove **102** to open the door body **100**, and at this time the torsion spring is tightened. After the user leaves or the user closes the door body **100**, the torsion spring drives the first driving shaft **110** to swivel reversely under the action of torsional restoring force of the torsion spring, thereby switching the first swiveling rack **106** from the pressing state to the resetting state, and then the second swiveling rack **108** is synchronously switched from the pressing state to the resetting state under the leading of the first swiveling rack **106**.

Alternatively, the motor **126** is connected to the first driving shaft **110**, the torsion spring is sleeved on the first driving shaft **110**, and two ends of the torsion spring abut against the supporting base **104** and a side of the first transition connecting member **114** facing the outer surface of the door body **100** respectively.

In this way, when the door body **100** is in the closed state, the torsion spring is in a tightened state, the motor **126** stops operating and is balanced with the torsional restoring force of the torsion spring. When the user approaches the door body **100**, the first detecting member can control the motor **126** to operate to loosen the torsion spring, and then the torsion spring swivels the first driving shaft **110** under the action of its own torsional restoring force, so that the first swiveling rack **106** can be switched from the resetting state to the pressing state, and then the user can hold the handle groove **102** to open the door body **100**. After the user leaves or the user closes the door body **100**, the motor **126** operates reversely and swivels the first driving shaft **110** to overcome the torsional restoring force exerted by the torsion spring on the first transition connecting member **114**, thereby switching the first swiveling rack **106** from the pressing state to the resetting state, and then the second swiveling rack **108** is simultaneously switched from the pressing state to the resetting state under the leading of the first swiveling rack **106**. It should be noted that, during the rack switches from

the resetting state to the pressing state, a smooth movement of the cover plate body **142** can be achieved by controlling a operation speed of the first swiveling rack **106** by controlling a rotational speed of the motor **126**. Similarly, during the rack switches from the pressing state to the resetting state, the smooth movement of the cover plate body **142** can also be achieved by controlling the rotational speed of the motor **126**.

In other words, in way II, the motor **126** can drive the rack to switch from the resetting state to the pressing state, and the torsion spring can drive the rack to switch from the pressing state to the resetting state; or the motor **126** drives the rack to switch from the pressing state to the resetting state, and the torsion spring drives the rack to switch from the resetting state to the pressing state.

In an embodiment, in way II, the motor **126** can be connected to the first driving shaft **110**, the torsion spring is sleeved on the second driving shaft **116**, and two ends of the torsion spring abut against the supporting base **104** and a side of the second transition connecting member **120** facing the inner surface of the door body **100** respectively. In this way, the first swiveling rack **106** can be driven by the motor **126** to switch from the resetting state to the pressing state, and the second swiveling rack **108** can be driven by the torsion spring to switch from the pressing state to the resetting state.

Alternatively, the motor **126** is connected to the first driving shaft **110**, the torsion spring is sleeved on the second driving shaft **116**, and two ends of the torsion spring abut against the supporting base **104** and a side of the second transition connecting member **120** facing the outer surface of the door body **100** respectively. In this way, the first swiveling rack **106** can be driven by the motor **126** to switch from the pressing state to the resetting state, and the second swiveling rack **108** can be driven by the torsion spring to switch from the resetting state to the pressing state.

Alternatively, the motor **126** is connected to the second driving shaft **116**, the torsion spring is sleeved on the first driving shaft **110**, and two ends of the torsion spring abut against the supporting base **104** and a side of the first transition connecting member **114** facing the inner surface of the door body **100** respectively. In this way, the second swiveling rack **108** can be driven by the motor **126** to switch from the resetting state to the pressing state, and the first swiveling rack **106** can be driven by the torsion spring to switch from the pressing state to the resetting state.

Alternatively, the motor **126** is connected to the second driving shaft **116**, the torsion spring is sleeved on the first driving shaft **110**, and two ends of the torsion spring abut against the supporting base **104** and a side of the first transition connecting member **114** facing the outer surface of the door body **100** respectively. In this way, the first swiveling rack **106** can be driven by the motor **126** to switch from the resetting state to the pressing state, and the second swiveling rack **108** can be driven by the torsion spring to switch from the resetting state to the pressing state.

Alternatively, the motor **126** is connected to the second driving shaft **116**, the torsion spring is sleeved on the second driving shaft **116**, and two ends of the torsion spring abut against the supporting base **104** and a side of the second transition connecting member **120** facing the inner surface of the door body **100** respectively. In this way, the second swiveling rack **108** can be driven by the motor **126** to switch from the resetting state to the pressing state, and the second swiveling rack **108** can be driven by the torsion spring to switch from the pressing state to the resetting state.

Alternatively, the motor **126** is connected to the second driving shaft **116**, the torsion spring is sleeved on the second driving shaft **116**, and two ends of the torsion spring abut against the supporting base **104** and a side of the second transition connecting member **120** facing the outer surface of the door body **100** respectively. In this way, the second swiveling rack **108** can be driven by the motor **126** to switch from the pressing state to the resetting state, and the second swiveling rack **108** can be driven by the torsion spring to switch from the resetting state to the pressing state.

Alternatively, the motor **126** is connected to the first driving shaft **110** and the second driving shaft **116**, and both the first driving shaft **110** and the second driving shaft **116** are provided with a torsion spring. The motor **126** is configured to simultaneously drive the first driving shaft **110** and the second driving shaft **116** to switch from the resetting state to the pressing state. Correspondingly, the torsion springs simultaneously drive the first driving shaft **110** and the second driving shaft **116** to switch from the pressing state to the resetting state. Alternatively, the motor **126** is configured to simultaneously drive the first driving shaft **110** and the second driving shaft **116** to switch from the pressing state to the resetting state, and correspondingly, the torsion springs simultaneously drive the first driving shaft **110** and the second driving shaft **116** to switch from the resetting state to the pressing state.

It should be noted that, when the power is off, if the rack is in the resetting state, the user can manually press the cover plate assembly to switch the cover plate assembly from the resetting state to the pressing state, thereby the use can hold the handle groove **102** to open the door.

Way III

The driving assembly includes a magnetic member, where the magnetic member is mounted on the supporting base **104**, and the magnetic member is adapted to drive the rack to switch between the pressing state and the resetting state based on the first detecting signal.

In way III, the magnetic member can be an electromagnet, and the number of the electromagnets can be two, where one of the two electromagnets is configured to drive the rack to switch from the resetting state to the pressing state, and another electromagnet is configured to drive the rack to switch from the pressing state to the resetting state.

In this way, when the door body **100** is in the closed state, after one of the two electromagnets receives the first detecting signal indicating that the door will be opened, the electromagnet is powered up and generates a magnetic force on the first swiveling rack **106** and/or the second swiveling rack **108**, thereby driving the rack to switch from the resetting state to the pressing state, and then the user can hold the handle groove **102** to open the door body **100**. After the user leaves or the user closes the door **100**, this electromagnet is powered off, and another electromagnet is powered up and generates a magnetic force on the first swiveling rack **106** and/or the second swiveling rack **108**, to switch the first swiveling rack **106** and/or the second swiveling rack **108** from the pressing state to the resetting state.

Way IV

The driving assembly includes a magnetic member and an elastic member **128**, where the magnetic member is mounted on the supporting base **104**, the elastic member is adapted to drive the rack to switch from the resetting state to the pressing state, and the magnetic member is adapted to drive the rack to switch from the pressing state to the resetting state.

Alternatively, the magnetic member is adapted to drive the rack to switch from the resetting state to the pressing

state, and the elastic member is adapted to drive the rack to switch from the pressing state to the resetting state.

For the above-mentioned way I and way II, the supporting base **104** is further provided with a mounting plate **134** for mounting the motor **126**, where the mounting plate **134** is provided with a shock pad **136**, the motor **126** is mounted on the mounting plate **134** and an output shaft of the motor **126** is adapted to be connected to an end of the first driving shaft **110** and/or an end of the second driving shaft **116** through a shaft coupling **138**.

Alternatively, as shown in FIG. **25**, the motor **126** can drive the first driving shaft **110** through the meshing transmission of a driving gear **152** and a driven gear **154**. In other words, in this way, the motor **126** can be mounted at a middle position of the first driving shaft **110**, which can save the mounting space of the motor **126** and reduce the space occupation of the driving assembly.

Referring to FIG. **10**, by providing the shock pad **136**, the vibration of the motor **126** during operation can be reduced, and the movement stability of the first swiveling rack **106** and/or the second swiveling rack **108** during swiveling can be improved. A shaft coupling **138** is provided between the output shaft of the motor **126** and the first driving shaft **110** and/or the second driving shaft **116**. For example, the output shaft of the motor **126**, the first driving shaft **110** and the second driving shaft **116** can be flat shafts, and correspondingly, a shaft hole on the shaft coupling **138** can be flat hole. In this way, the objective of swiveling the first driving shaft **110** and/or the second driving shaft **116** by the motor **126** can be achieved.

According to an embodiment of the present application, the door assembly further includes a second detecting member **130**, where the second detecting member **130** is mounted on the supporting base **104**, and the second detecting member **130** is adapted to generate a second detecting signal for controlling the motor **126** to stop after detecting that the rack switches to the resetting state.

For the above-mentioned way I and way II, the supporting base **104** is further provided with a second detecting member **130**. The second detecting member **130** can be a micro switch or a proximity switch, etc. By providing the second detecting member **130**, after the rack switches from the pressing state to the resetting state, the second detecting member **130** can detect the position of the rack and generate a second detecting signal. In the above-mentioned way I and way III, when the motor **126** is configured to drive the rack to switch from the pressing state to the resetting state, the motor **126** can be stopped based on the second detecting signal.

In other words, after the motor **126** drives the rack to switch from the pressing state to the resetting state, the second detecting member **130** is triggered and generates a second detecting signal, and then the motor **126** can be stopped after receiving the second detecting signal, so that the rack can stay in the resetting state.

Referring to FIG. **6** and FIG. **7**, the first driving shaft **110** and/or the second driving shaft **116** is sleeved with a swing rod **132**. In the resetting state, the swing rod **132** is adapted to trigger the second detecting member **130** to generate the second detecting signal.

In an embodiment, the swing rod **132** is connected to the first driving shaft **110**, and the swing rod **132** is provided with a swing arm **150**. For example, the swing rod **132** is provided with a flat hole, and the swing rod **132** is sleeved on the first driving shaft **110** through the flat hole. The swing arm **150** includes a first swing arm and a second swing arm. After the motor **126** drives the first driving shaft **110** to swivel and switches the first swiveling rack **106** from the pressing state to the resetting state, the first swing arm on the swing rod **132** can trigger the second detecting member **130** to generate the second detecting signal, then the motor **126** stops after receiving the second detecting signal, and then the rack can be kept in the resetting state.

As shown in FIG. **10** to FIG. **12**, in an embodiment of the present application, the door assembly is further provided with a third detecting member **148**. The third detecting member **148** can be mounted on the supporting base **104**, and the third detecting member **148** can be a micro switch or a proximity switch, etc. By providing the third detecting member **148**, after the rack switches from the resetting state to the pressing state, the third detecting member **148** can detect the position of the rack and generate a third detecting signal. In the above-mentioned way I and way III, when the motor **126** is configured to drive the rack to switch from the resetting state to the pressing state, the motor **126** can be stopped based on the third detecting signal.

Similarly, in the pressing state, the swing rod **132** is adapted to trigger the third detecting member **148** to generate a third detecting signal. In an embodiment, the swing rod **132** is connected to the first driving shaft **110**. For example, the swing rod **132** is provided with a flat hole, and the swing rod **132** is sleeved on the first driving shaft **110** through the flat hole. After the motor **126** swivels the first driving shaft **110** and drives the first swiveling rack **106** to switch from the resetting state to the pressing state, the second swing arm on the swing rod **132** can trigger the third detecting member **148** to generate a third detecting signal, then the motor **126** stops after receiving the third detecting signal, and then the rack can be kept in the pressing state.

It should be noted that, in the case where the third detecting member **148** is provided, the first swing arm and the second swing arm on the swing rod **132** are provided at a certain angle. That is, with the swivel of the first driving shaft **110**, the first swing arm and the second swing arm on the swing rod **132** can trigger the second detecting member **130** and the third detecting member **148** respectively to control the motor **126** to stop.

In an embodiment of the present application, the second detecting member **130** and the third detecting member **148** may not be provided, and the controlling mode of the motor **126** for the first swiveling rack **106** and/or the second swiveling rack **108** can be adjusted only by setting the running duration of the motor **126**.

For example, the motor **126** can be set to automatically stop after a running duration of 2 seconds. For example, when the motor **126** is stuck by foreign object when the motor **126** drives the first swiveling rack **106** to switch from the resetting state to the pressing state, the motor **126** stops after running 2 seconds. After the foreign object is taken out, the cover plate body **142** can be manually pressed to switch the rack to the pressing state, which can effectively prevent the motor **126** from being damaged due to a larger torque on the motor **126**. The above-mentioned 2 seconds is only an illustrative example, and the running duration of the motor **126** can be selected within the range of 1 to 5 seconds.

By setting the running duration of the motor **126** as a preset duration, the motor **126** can automatically stop after the running duration reaches the preset duration, so that the second detecting member **130** and the third detecting member **148** are not needed to be provided, which will further reduce the costs of design and manufacturing. In addition, the rack can be kept in the pressing state according to user's actual usage needs, so as to facilitate the user to open the

door body **100** at any time. Correspondingly, the objective of keeping the rack in the pressing state can be achieved by controlling the motor **126**.

A storage cabinet according to an embodiment of the present application includes the above-mentioned door assembly.

According to the storage cabinet of the embodiment of the present application, by providing the above-mentioned door assembly, on the premise of ensuring the convenience of opening and closing the door body **100**, the surface of the door body **100** can be kept flat and concise when the door body **100** is in the closed state.

In an embodiment of the present application, the storage cabinet can be a refrigerator, a freezer, a wine cabinet, or the like.

Finally, it should be noted that the above embodiments are only used to illustrate the solutions of the present application, but not to limit them; although the present application has been described in detail with reference to the foregoing embodiments, those of ordinary skill in the art should understand that they can still modify the solutions recorded in the aforementioned embodiments, or equivalent replace some of the features; however, these modifications or substitutions do not make the essence of the corresponding solutions separate from the scope of the solutions of the embodiments of the present application.

The above embodiments are only used to illustrate the present application, but not to limit the present application. Although the present application has been described in detail with reference to the embodiments, those of ordinary skill in the art should understand that various combinations, modifications or equivalent replacements to the solutions of the present application will not depart from the scope of the solutions of the present application, and should cover within the scope of the claims of this application.

What is claimed is:

1. A door assembly, comprising:

a door body, provided with a handle groove;

a driving assembly;

a rack, hinged to the door body and provided with a cover plate assembly; and

a first detecting member, configured to generate a first detecting signal,

wherein the driving assembly is configured to drive the rack to switch between a pressing state and a resetting state based on the first detecting signal, in the pressing state, the cover plate assembly offset from the handle groove, and in the resetting state, the cover plate assembly shielding the handle groove; and

wherein the rack includes a swiveling rack, the swiveling rack including:

a driving shaft hinged to the door body;

a first driven shaft hinged to the cover plate assembly; and

a first transition connecting member, connected between the driving shaft and the driven shaft; and

wherein the driving assembly includes a motor mounted on the door body and connected to the driving shaft.

2. The door assembly of claim **1**, wherein the swiveling rack comprises:

a first swiveling rack, wherein a first end of the first swiveling rack is hinged to the door body, and a second end of the first swiveling rack is hinged to the cover plate assembly; and

a second swiveling rack, wherein a first end of the second swiveling rack is hinged to the door body, and a second end of the second swiveling rack is hinged to the cover plate assembly,

wherein the driving assembly is configured to drive one or more of the first swiveling rack or the second swiveling rack, to move the cover plate assembly in a direction perpendicular to the door body.

3. The door assembly of claim **2**, wherein the first swiveling rack comprises:

a first driving shaft, wherein two ends of the first driving shaft are hinged to the door body;

a first driven shaft, wherein two ends of the first driven shaft are hinged to the cover plate assembly; and

a first transition connecting member, connected between the first driving shaft and the first driven shaft; and

the second swiveling rack comprises:

a second driving shaft, wherein two ends of the second driving shaft are hinged to the door body;

a second driven shaft, wherein two ends of the second driven shaft are hinged to the cover plate assembly; and

a second transition connecting member, connected between the second driving shaft and the second driven shaft.

4. The door assembly of claim **3**, wherein the first transition connecting member is positioned at one or more of the first driving shaft or the first driven shaft through a first limiting structure; and

the second transition connecting member is positioned at one or more of the second driving shaft or the second driven shaft through a second limiting structure.

5. The door assembly of claim **3**, wherein the motor of the driving assembly is connected to one or more of the first driving shaft or the second driving shaft.

6. The door assembly of claim **5**, wherein the motor is connected to one or more of an end of the first driving shaft or an end of the second driving shaft through a shaft coupling; or

the motor is connected to one or more of the first driving shaft or the second driving shaft in a transmission manner through a transmission assembly.

7. The door assembly of claim **3**, wherein the driving assembly comprises the motor and an elastic member;

wherein the motor is connected to one or more of the first driving shaft or the second driving shaft; and

the elastic member is sleeved on the first driving shaft, and two ends of the elastic member abut against the door body and the first transition connecting member respectively; or

the elastic member is sleeved on the second driving shaft, and two ends of the elastic member abut against the door body and the second transition connecting member respectively.

8. The door assembly of claim **3**, wherein the driving assembly comprises a magnetic member, wherein the magnetic member is mounted on the door body, and the magnetic member is configured to drive the rack to switch between the pressing state and the resetting state based on the first detecting signal.

9. The door assembly of claim **1**, further comprising a second detecting member, wherein the second detecting member is mounted on the door body, and the second detecting member is configured to generate a second detecting signal for controlling the motor to stop after detecting that the rack switches to the resetting state.

10. The door assembly of claim **9**, wherein the driving shaft is sleeved with a swing rod, and in the resetting state,

the swing rod is configured to trigger the second detecting member to generate the second detecting signal.

11. The door assembly of claim **9**, wherein the door body is provided with a mounting plate, the motor is mounted on the mounting plate, and a shock pad is provided between the mounting plate and the motor;

wherein an output shaft of the motor is connected to an end of the driving shaft through a shaft coupling; or

the output shaft of the motor is connected to the first driving shaft in a transmission manner through a transmission assembly.

12. The door assembly of claim **3**, wherein one or more of the first transition connecting member or the second transition connecting member is limited at the door body through a groove side wall of the handle groove, to prevent the one or more of the first transition connecting member or the second transition connecting member from disengaging from the door body.

13. The door assembly of claim **3**, wherein the cover plate assembly comprises:

a cover plate base, wherein two ends of the first driven shaft and two ends of the second driven shaft are hinged to the cover plate base respectively; and

a cover plate body, mounted on the cover plate base.

14. The door assembly of claim **13**, further comprising a light bar, wherein the cover plate base is provided with a mounting space for mounting the light bar, and the cover plate body is provided with a light transmission area at a position corresponding to the light bar.

15. The door assembly of claim **3**, wherein the door body comprises a supporting base, and the handle groove is provided on the supporting base; and

the first end of the first swiveling rack and the first end of the second swiveling rack are hinged to the supporting base, and the second end of the first swiveling rack and the second end of the second swiveling rack are hinged to the cover plate assembly.

16. The door assembly of claim **15**, wherein the door body further comprises a mounting base, and the supporting base is mounted on the mounting base.

17. A storage cabinet, comprising a body and a door assembly coupled to the body, the door assembly including:

a door body, provided with a handle groove;

a driving assembly;

a rack, hinged to the door body and provided with a cover plate assembly; and

a first detecting member, configured to generate a first detecting signal,

wherein the driving assembly is configured to drive the rack to switch between a pressing state and a resetting state based on the first detecting signal, in the pressing state, the cover plate assembly offset from the handle groove, and in the resetting state, the cover plate assembly shielding the handle groove;

wherein the rack includes a swiveling rack, the swiveling rack including:

a driving shaft hinged to the door body:

a first driven shaft hinged to the cover plate assembly; and

a first transition connecting member, connected between the driving shaft and the driven shaft; and

wherein the driving assembly comprises a motor and an elastic member, the motor being connected to the driving shaft, the elastic member being sleeved on the driving shaft, and two ends of the elastic member abutting against the door body and the first transition connecting member respectively.

18. The storage cabinet of claim **17**, wherein the swiveling rack comprises:

a first swiveling rack, wherein a first end of the first swiveling rack is hinged to the door body, and a second end of the first swiveling rack is hinged to the cover plate assembly; and

a second swiveling rack, wherein a first end of the second swiveling rack is hinged to the door body, and a second end of the second swiveling rack is hinged to the cover plate assembly,

wherein the driving assembly is configured to drive one or more of the first swiveling rack or the second swiveling rack, to move the cover plate assembly in a direction perpendicular to the door body.

19. The storage cabinet of claim **18**, wherein the first swiveling rack comprises:

a first driving shaft, wherein two ends of the first driving shaft are hinged to the door body;

a first driven shaft, wherein two ends of the first driven shaft are hinged to the cover plate assembly; and

a first transition connecting member, connected between the first driving shaft and the first driven shaft; and

the second swiveling rack comprises:

a second driving shaft, wherein two ends of the second driving shaft are hinged to the door body;

a second driven shaft, wherein two ends of the second driven shaft are hinged to the cover plate assembly; and

a second transition connecting member, connected between the second driving shaft and the second driven shaft.

20. The storage cabinet of claim **19**, wherein the first transition connecting member is positioned at one or more of the first driving shaft or the first driven shaft through a first limiting structure; and

the second transition connecting member is positioned at one or more of the second driving shaft or the second driven shaft through a second limiting structure.

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