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(54) **ROTATING MECHANISM, SUPPORT APPARATUS, AND ELECTRONIC DEVICE**

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H04M 1/02 (2006.01)

(52) **U.S. Cl.**
CPC ***H04M 1/0214*** (2013.01); ***H04M 1/0268*** (2013.01); *H05K 5/0226* (2013.01)

(58) **Field of Classification Search**
CPC .. H05K 5/0226; H05K 5/0017; H05K 5/0217; H04M 1/0214; H04M 1/0268;
(Continued)

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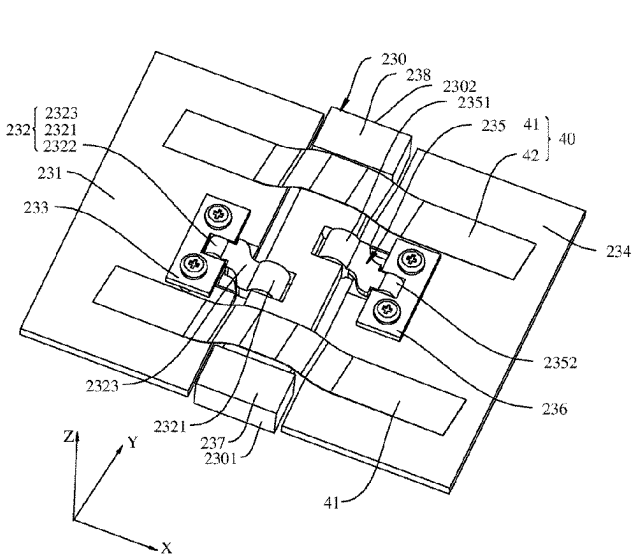
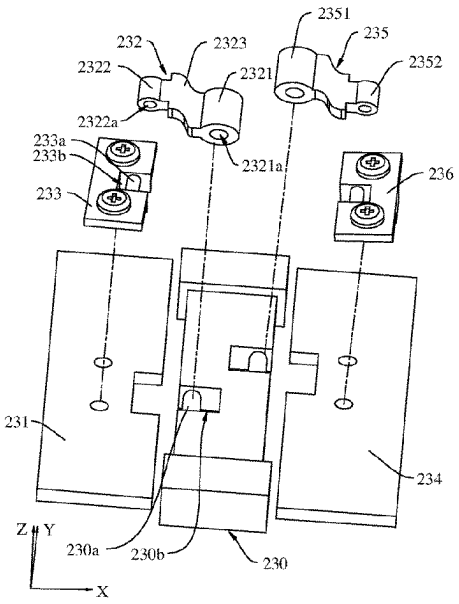
Primary Examiner — Abhishek M Rathod

(57) **ABSTRACT**

A rotating mechanism includes a base, a first door plate, and a first connecting arm. Two axial ends of the base are a first end and a second end. Two ends of an extension direction of the first connecting arm are a first connecting end and a second connecting end. The first connecting end is connected to the base. The second connecting end is connected to the first door plate. The first connecting end and the base, and/or the second connecting end and the first door plate have a rotational degree of freedom therebetween. In a first direction, a distance between a center of the second connecting end and the first end is greater than a distance between a center of the first connecting end and the first end, where the first direction is parallel to a rotating axis of the first door plate.

16 Claims, 15 Drawing Sheets





(58) **Field of Classification Search**
CPC H04M 1/0216; H04M 1/026; H04M 1/022; H04M 1/0247; H04M 1/18; G06F 1/1641; G06F 1/1652; G06F 1/1681; G06F 1/1683; G06F 1/1616; G06F 1/1618
See application file for complete search history.

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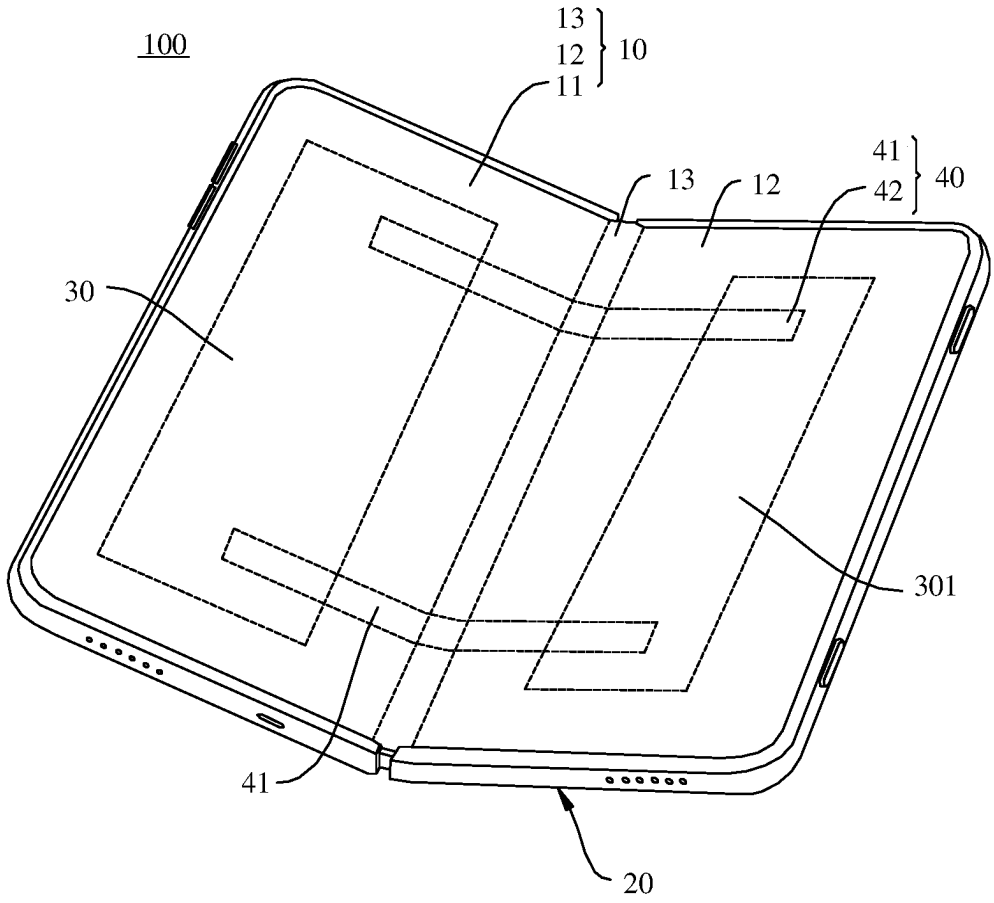


FIG. 1

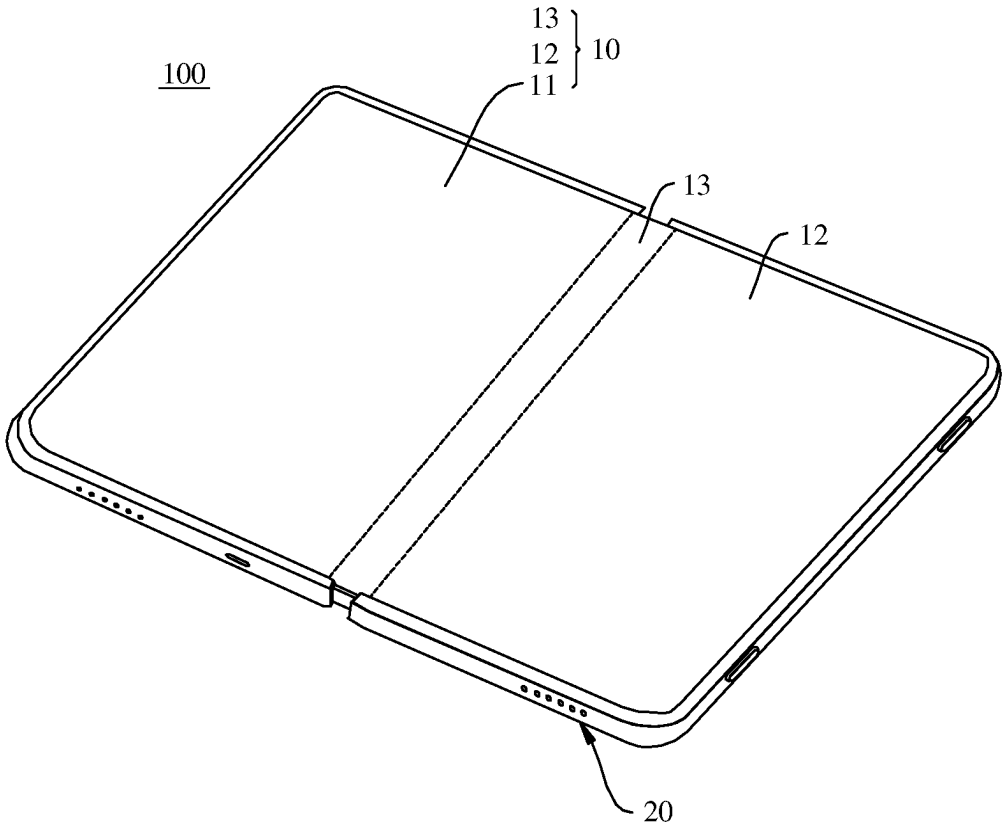


FIG. 2

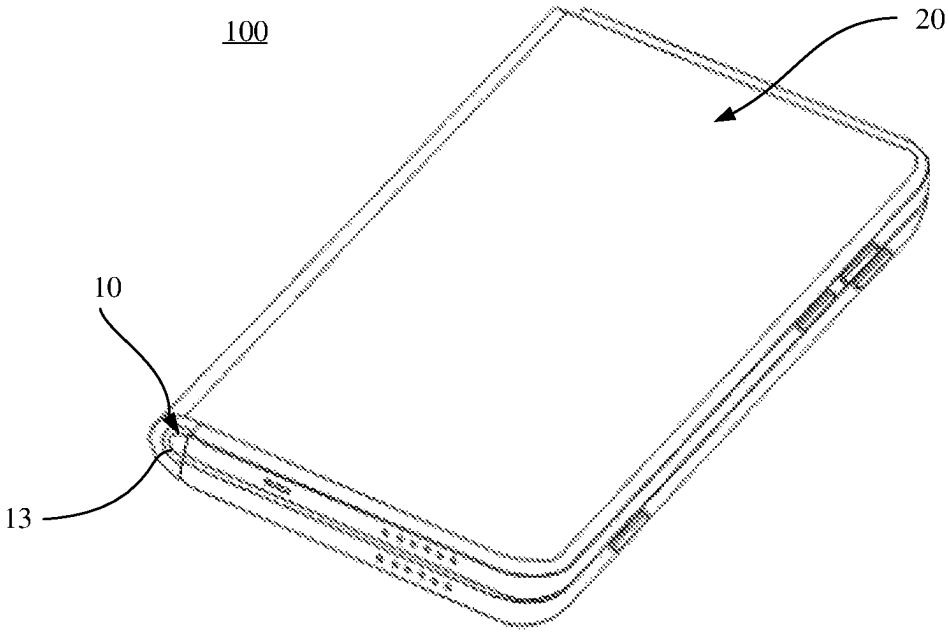


FIG. 3

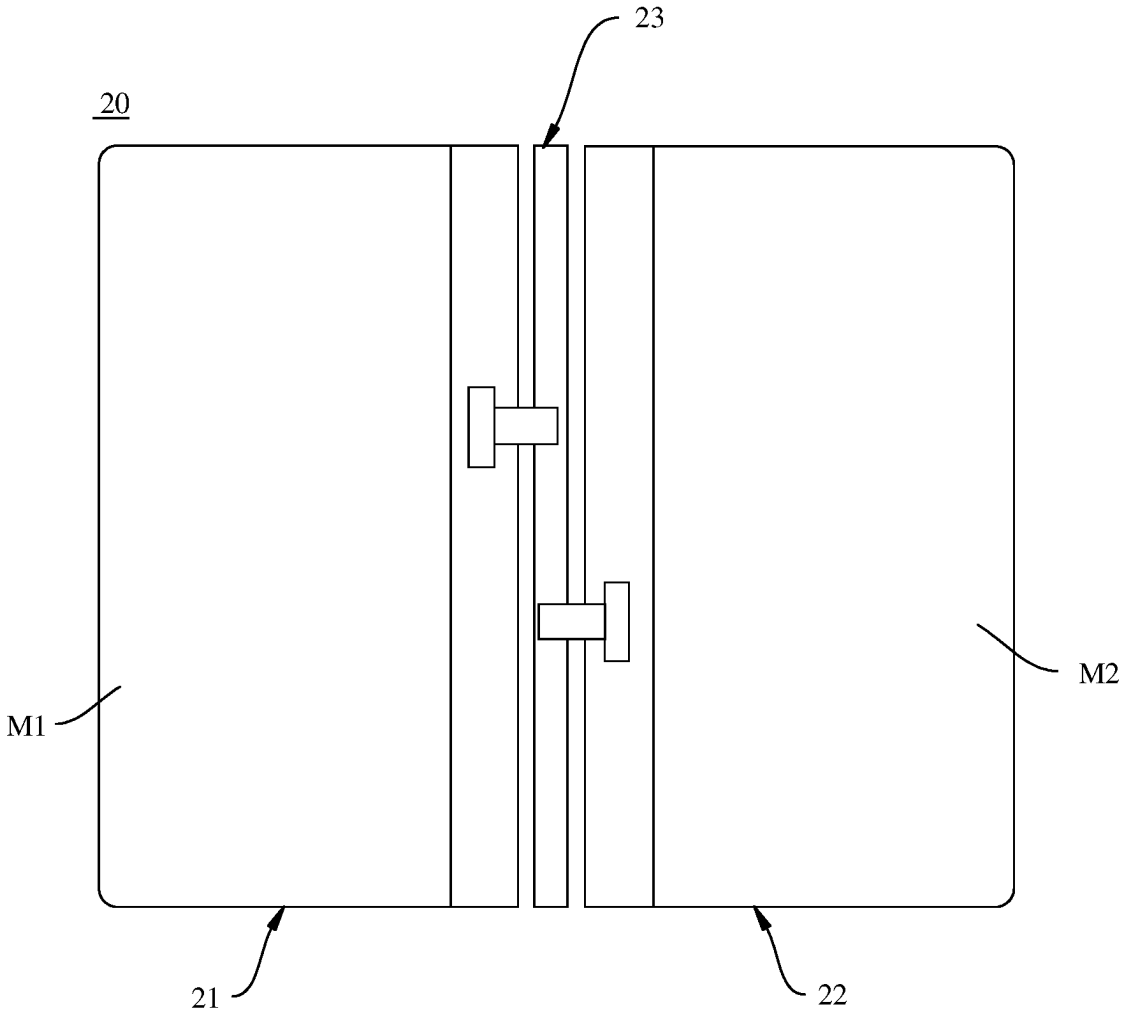


FIG. 4

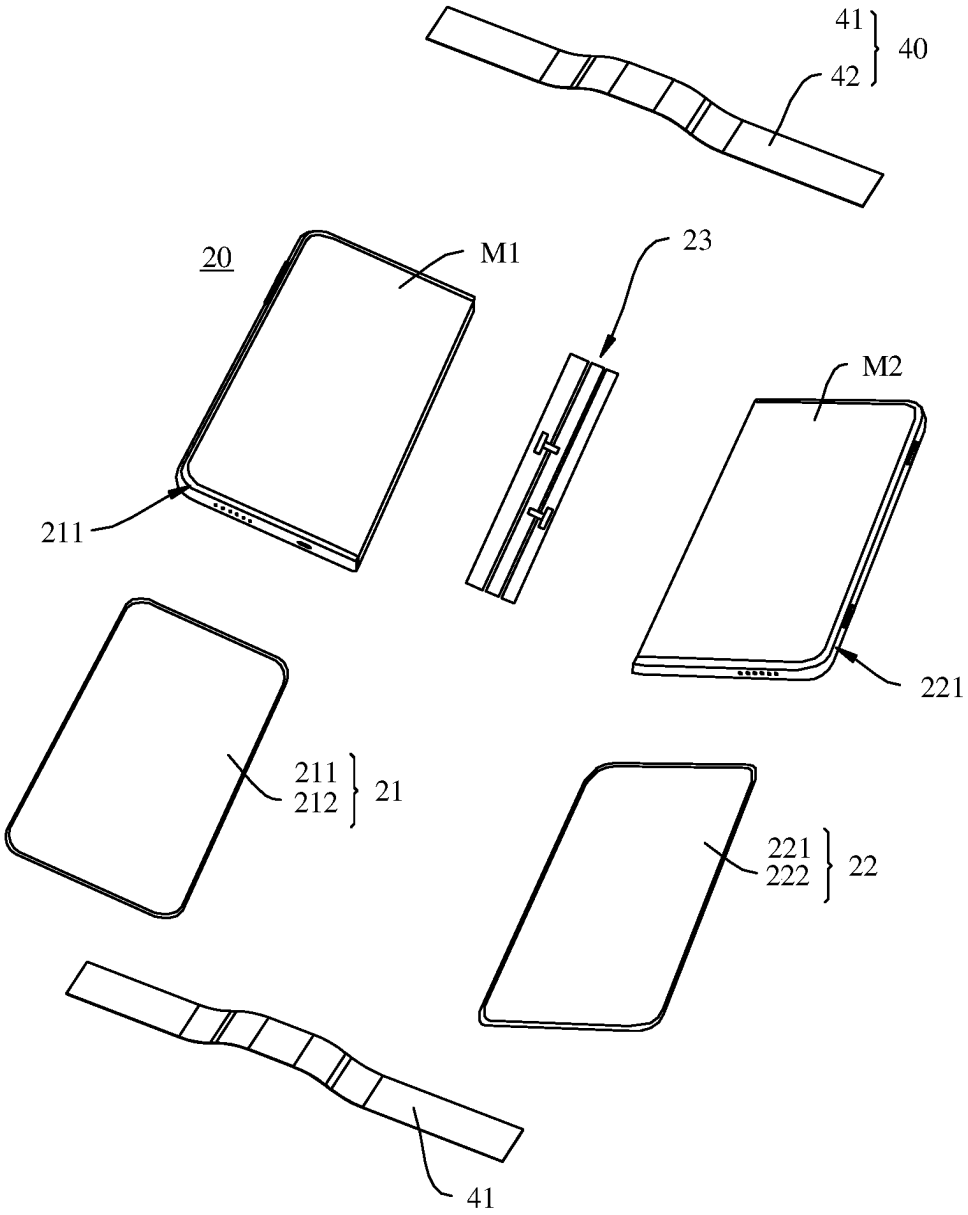


FIG. 5

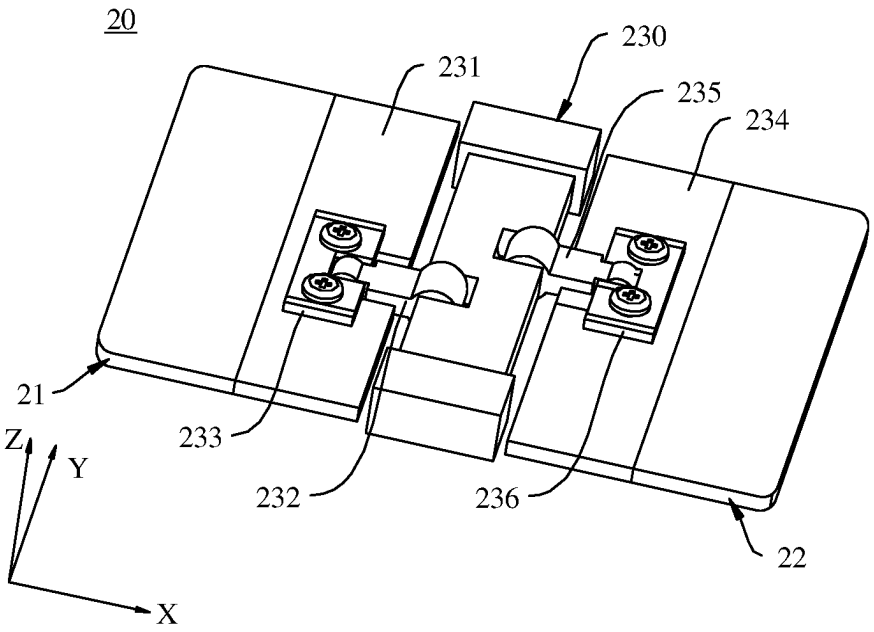
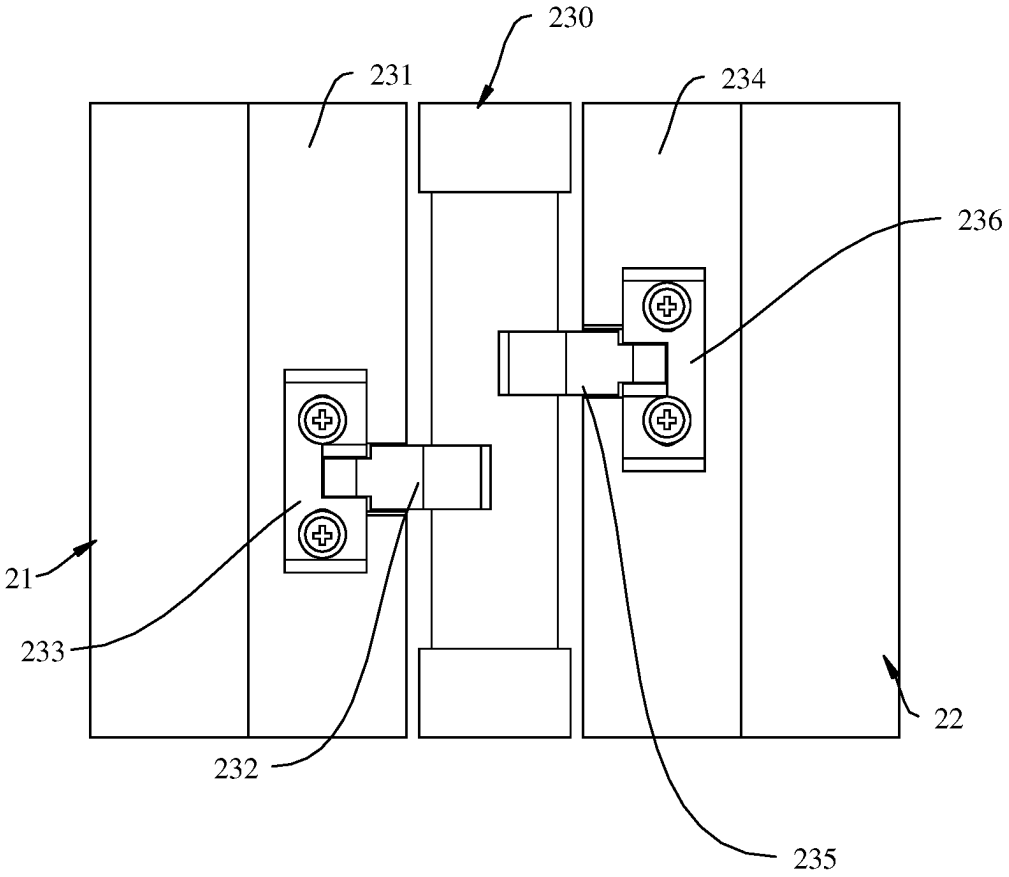


FIG. 6



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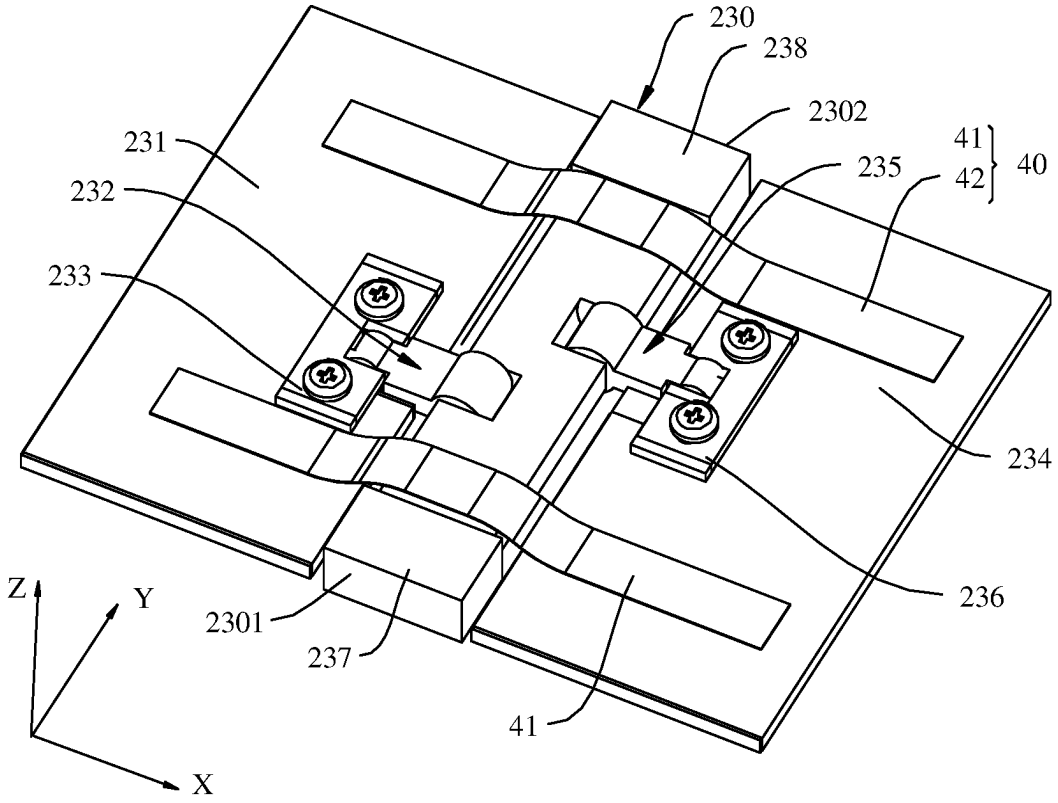

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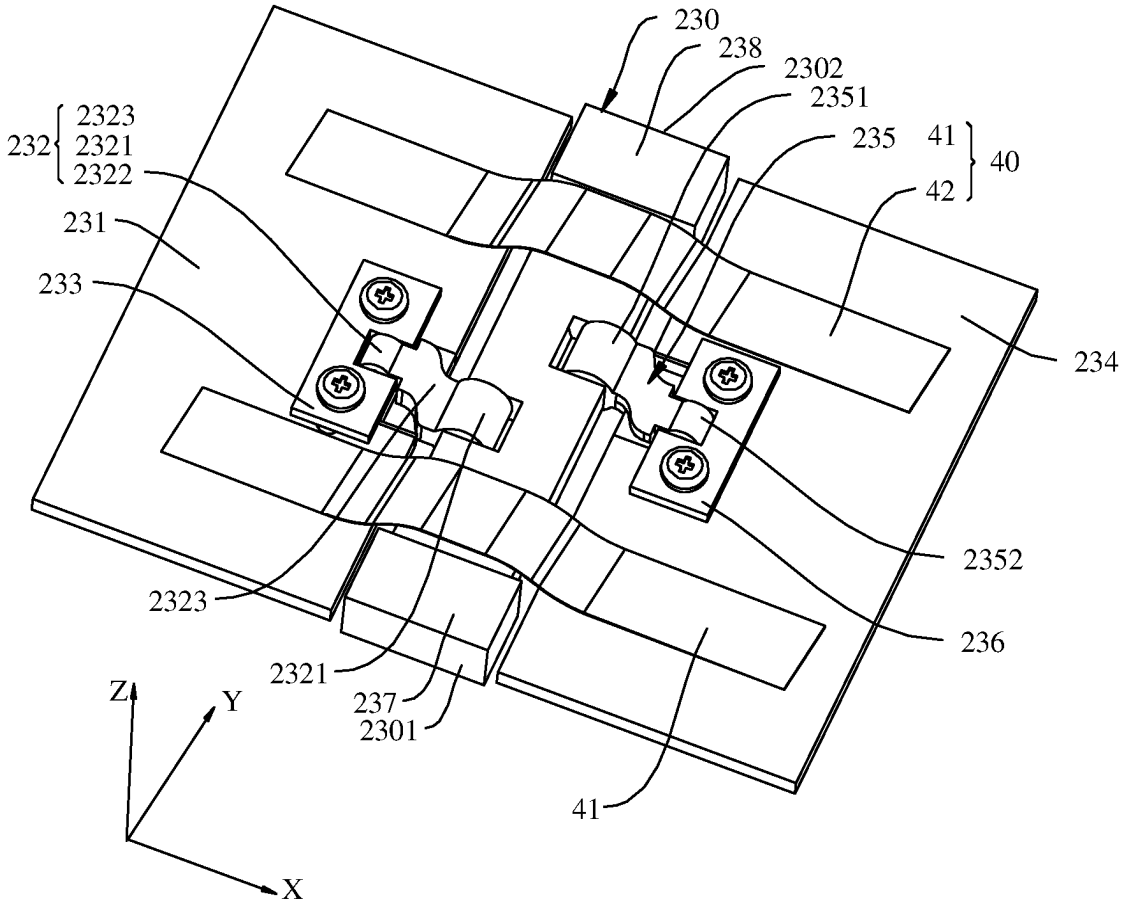
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FIG. 9

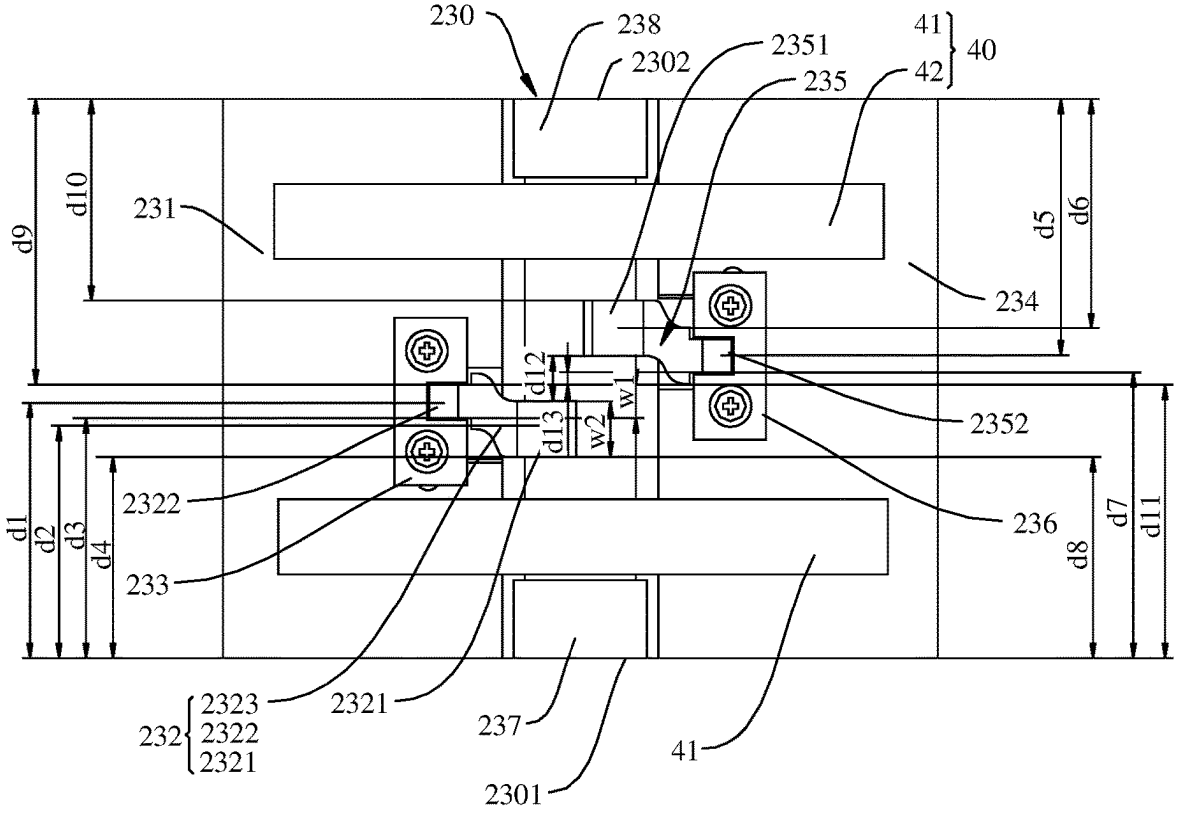
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FIG. 10

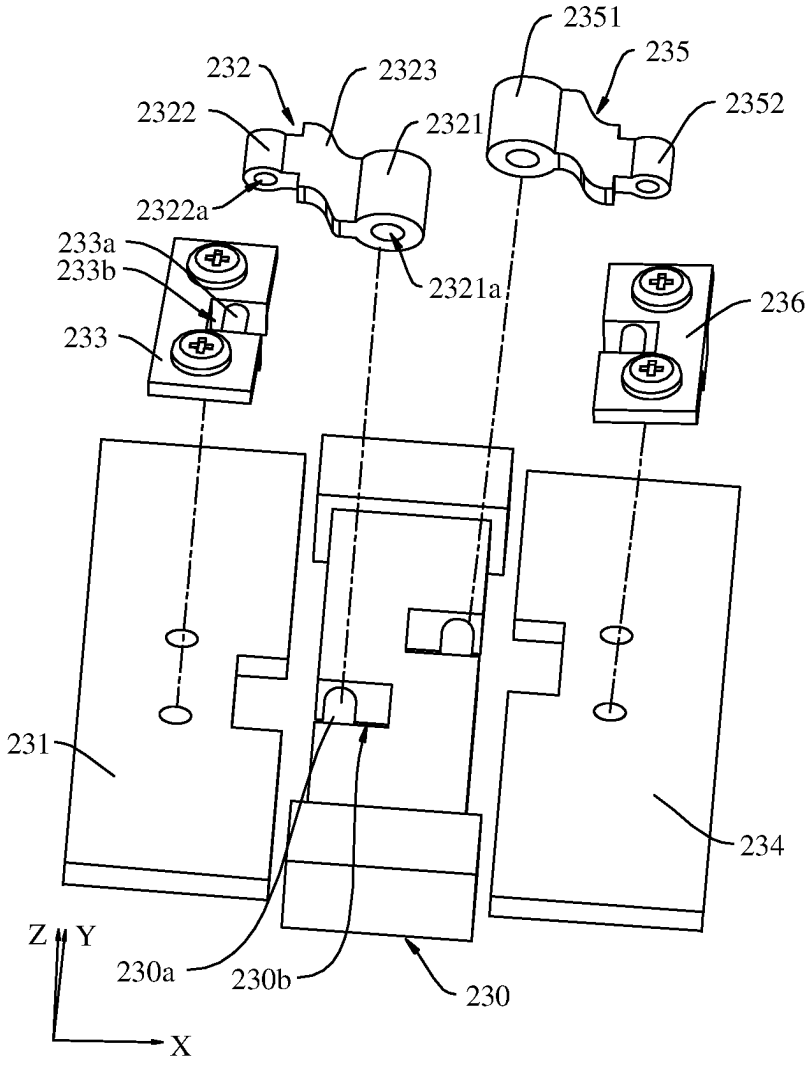
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FIG. 11

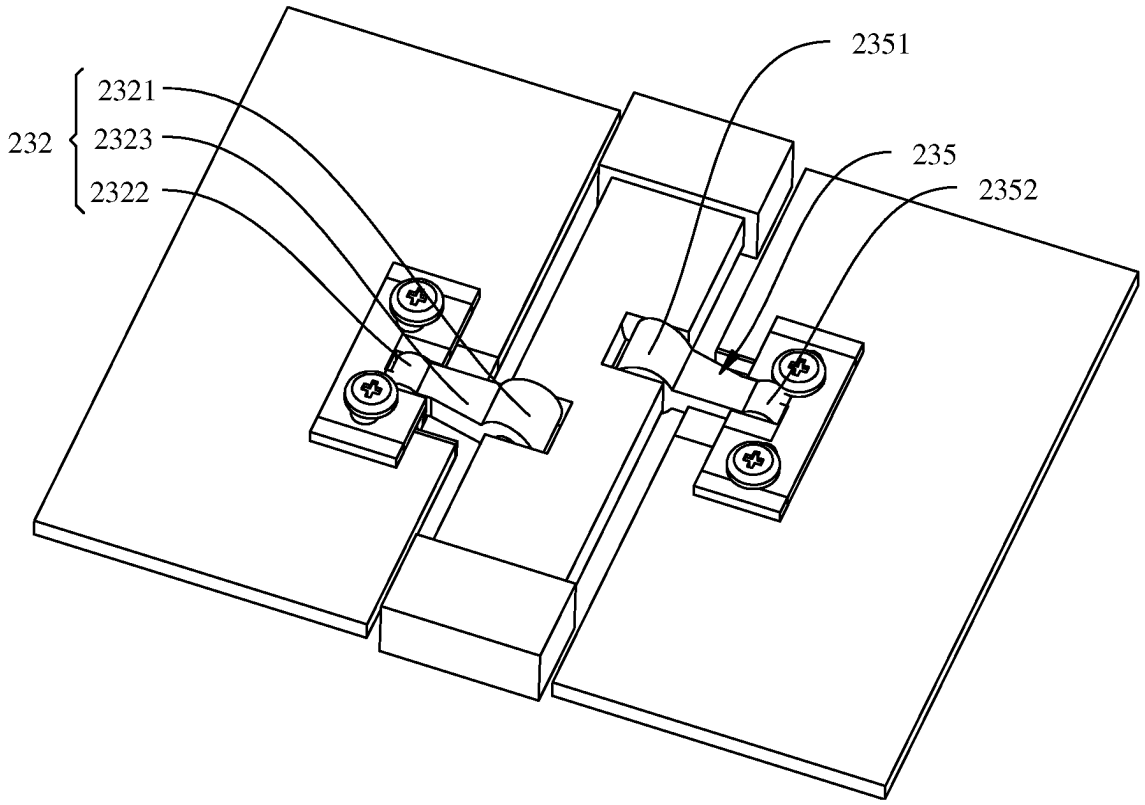

FIG. 12

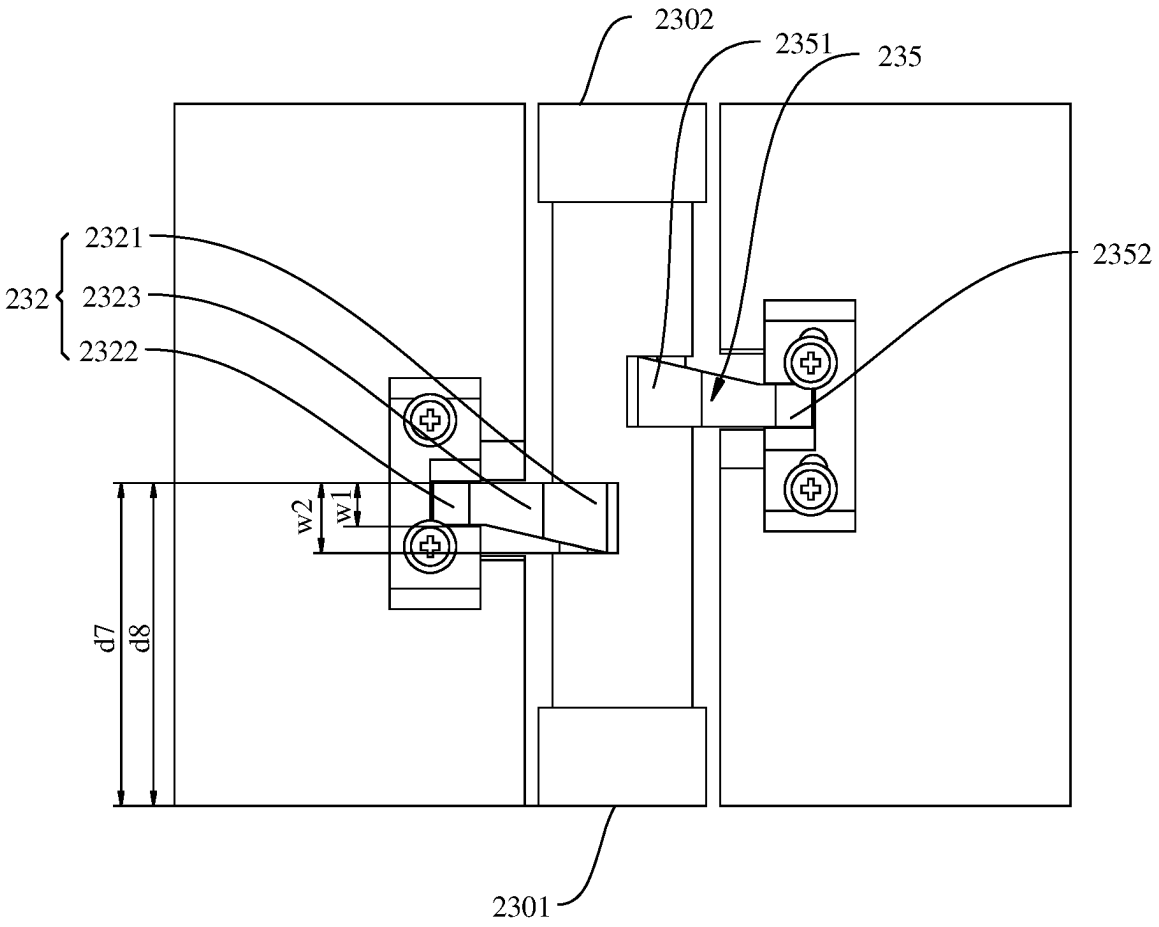

FIG. 13

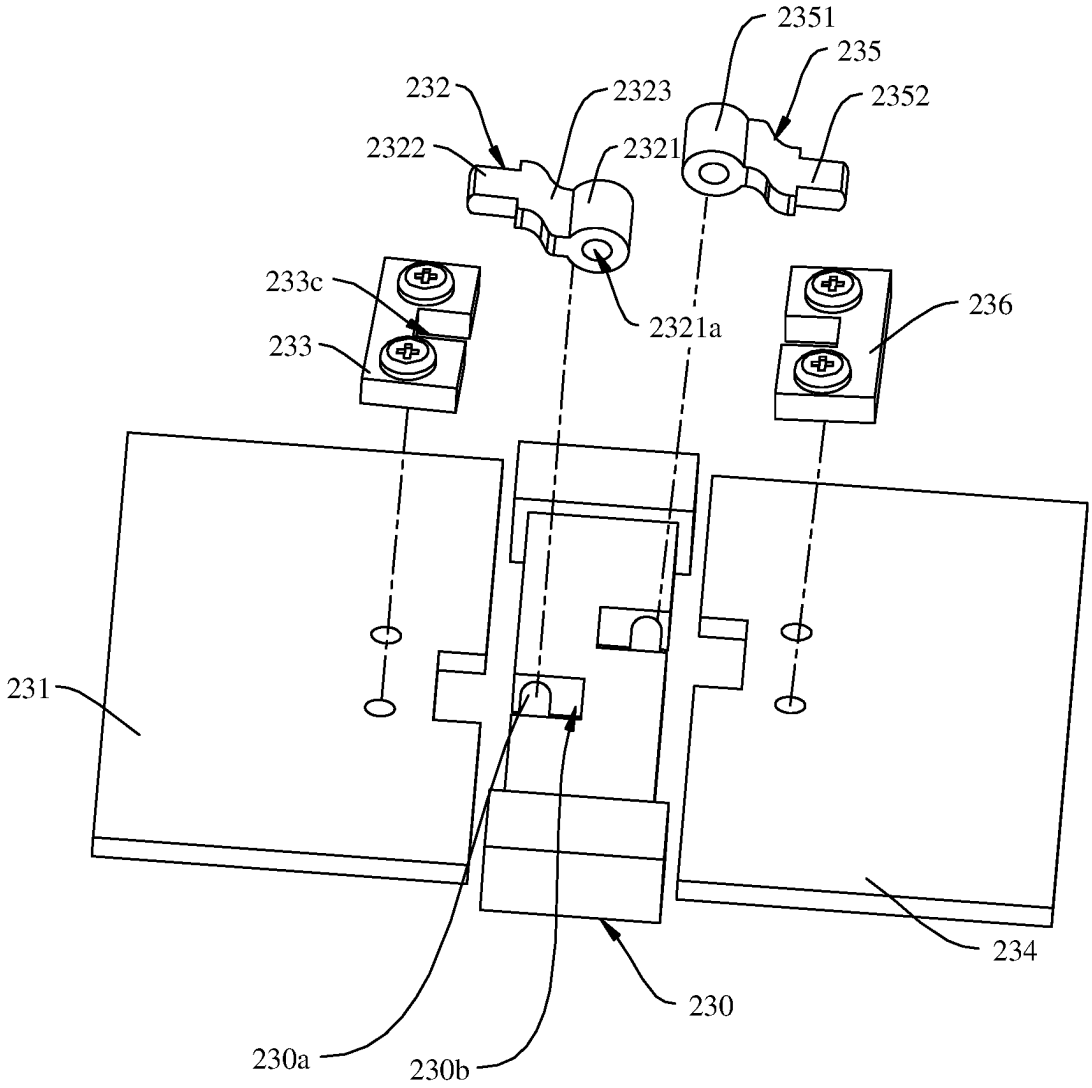
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FIG. 14

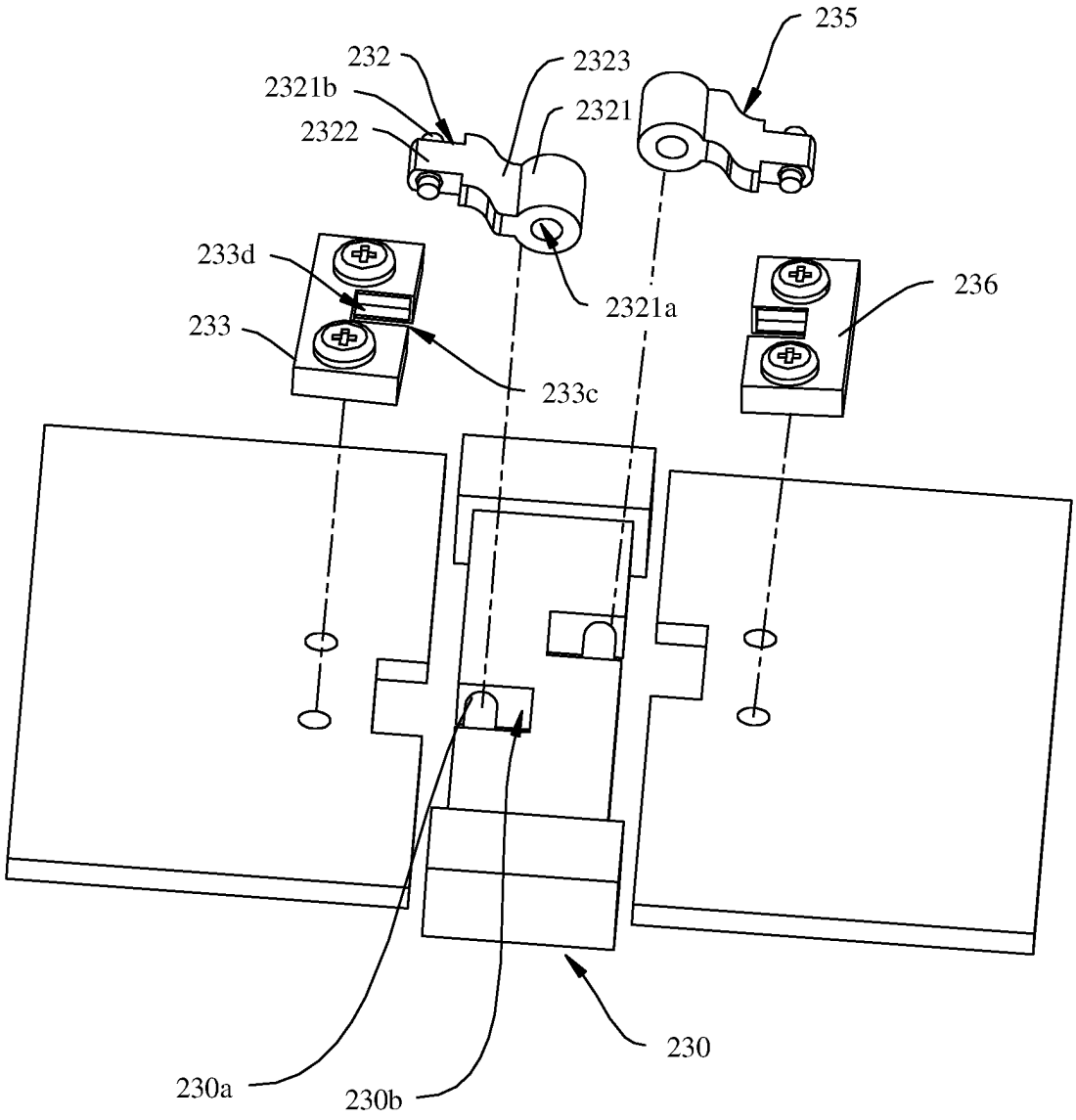
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FIG. 15

ROTATING MECHANISM, SUPPORT APPARATUS, AND ELECTRONIC DEVICE

This application is a national stage of International Application No. PCT/CN2022/116604, filed on Sep. 1, 2022, which claims priority to Chinese Patent Application No. 202122516974.3, filed on Oct. 19, 2021. The disclosures of both of the aforementioned applications are hereby incorporated by reference in their entireties.

TECHNICAL FIELD

This application relates to the technical field of electronic devices, and in particular to, a rotating mechanism, a support apparatus, and an electronic device.

BACKGROUND

Currently, miniaturization of an electronic device can be achieved by folding the electronic device in half for easy carrying by a user. A foldable electronic device includes a first housing and a second housing that can rotate relative to each other. Due to communication and power supply requirements, a large quantity of electrical signals need to be exchanged. Electronic components in the first housing and the second housing are electrically connected by using a connector (such as a flexible circuit board). However, space inside the electronic device is limited, and consequently, a width of the connector is limited.

SUMMARY

This application provides a rotating mechanism, a support apparatus, and an electronic device, so as to improve utilization of space inside the electronic device, and can increase a width of a connector used for electrically connecting a main circuit board and a secondary circuit board in the limited space.

To achieve the foregoing objective, the following technical solutions are used in embodiments of this application:

According to a first aspect, this application provides a rotating mechanism. The rotating mechanism includes a base, a first door plate, and a first connecting arm. Two axial ends of the base are a first end and a second end. Two ends of an extension direction of the first connecting arm are a first connecting end and a second connecting end. The first connecting end is connected to the base. The second connecting end is connected to the first door plate. The first connecting end and the base and/or the second connecting end and the first door plate have a rotational degree of freedom therebetween. In a first direction, a distance between a center of the second connecting end and the first end is greater than a distance between a center of the first connecting end and the first end, where the first direction is parallel to a rotating axis of the first door plate.

According to the rotating mechanism provided in this embodiment of this application, in the first direction, the distance between the center of the second connecting end and the first end is greater than the distance between the center of the first connecting end and the first end. This increases a width of a connector located between the first connecting arm and the first end of the base, improves utilization of space inside the electronic device, and provides a greater wiring width for the connector in the limited space.

In a possible design of the first aspect, in the first direction, a minimum distance between a side wall that is of the second connecting end and that is close to the first end and the first end is greater than a minimum distance between a side wall that is of the first connecting end and that is close to the first end and the first end. Therefore, this further increases the wiring width of the connector.

In a possible design of the first aspect, the first connecting arm further includes a middle connecting section located between the first connecting end and the second connecting end, and in a second direction, the middle connecting section extends in a direction away from the first end, where the second direction is a direction that the base points to the first door plate. Therefore, it is easy to achieve that, in the first direction, the distance between the center of the second connecting end and the first end is greater than the distance between the center of the first connecting end and the first end.

In a possible design of the first aspect, in the second direction, the middle connecting section extends along a curve in the direction away from the first end.

In a possible design of the first aspect, in the second direction, the middle connecting section extends obliquely along a straight line in the direction away from the first end.

In a possible design of the first aspect, a width of the second connecting end is less than a width of the first connecting end. That is, a dimension of the second connecting end in an extension direction of a rotating axis of the first housing or the first door plate is less than a dimension of the first connecting end in the extension direction of the rotating axis of the first housing of the first door plate. This increases a distance between a fastening block and the first end of the base, and then increases the width of the connector disposed between the first fastening block and the first end of the base.

In a possible design of the first aspect, a side wall that is of the first connecting end and that is away from the first end is flush with a side wall that is of the second connecting end and that is away from the first end, and a width of the first connecting end is less than a width of the second connecting end. Therefore, this achieves that, in the first direction, the distance between the center of the second connecting end and the first end is greater than the distance between the center of the first connecting end and the first end: and this also reduces a dimension of the first fastening block in the extension direction of the rotating axis of the first door plate, increases the distance between the first fastening block and the first end of the base, and then increases the width of the connector disposed between the first fastening block and the first end of the base.

In a possible design of the first aspect, in the second direction, a width of the first connecting arm is gradually reduced. The structure is simple, and processing is easy.

In a possible design of the first aspect, in the second direction, a side wall that is of the first connecting arm and that is close to the first end extends in a direction away from the first end, and a side wall that is of the first connecting arm and that is away from the first end is parallel to an end face of the first end. The structure is simple, and processing is easy.

In a possible design of the first aspect, the first connecting end is rotatably connected to the base, and the second connecting end is rotatably and/or slidably connected to the first door plate.

In a possible design of the first aspect, the rotating mechanism further includes a second door plate and a second connecting arm. The second door plate and the first door plate are respectively disposed on two opposite sides of the base. The second door plate is rotatably connected to the base. The second connecting arm and the first connecting

arm are spaced apart in an axial direction of the base, and the second connecting arm is located on a side that is of the first connecting arm and that is away from the first end. Two ends of an extension direction of the second connecting arm are a third connecting end and a fourth connecting end. The third connecting end is connected to the base. The fourth connecting end is connected to the second door plate. The third connecting end and the base and/or the fourth connecting end and the second door plate have a rotational degree of freedom therebetween. In the first direction, a distance between a center of the fourth connecting end and the second end is greater than a distance between a center of the third connecting end and the second end.

Therefore, this increases the width of the connector located between the second connecting arm and the second end of the base, improves the utilization of the space inside the electronic device, and provides a greater wiring width for the connector in the limited space.

In a possible design of the first aspect, in the first direction, a minimum distance between the fourth connecting end and the second end is greater than a minimum distance between a side wall that is of the third connecting end and that is close to the second end and the second end. Therefore, this further increases the wiring width of the connector.

In a possible design of the first aspect, the second connecting arm further includes a middle connecting section located between the third connecting end and the fourth connecting end, and in a third direction, the middle connecting section extends in a direction away from the second end, where the third direction is a direction that the base points to the second door plate. Therefore, this achieves that, in the first direction, the distance between the center of the fourth connecting end and the second end is greater than the distance between the center of the third connecting end and the second end.

In a possible design of the first aspect, a side wall that is of the third connecting end and that is away from the second end is flush with a side wall that is of the fourth connecting end and that is away from the second end, and a width of the third connecting end is less than a width of the fourth connecting end. Therefore, this achieves that, in the first direction, the distance between the center of the fourth connecting end and the second end is greater than the distance between the center of the third connecting end and the second end: and this also reduces a dimension of a second fastening block in the extension direction of the rotating axis of the second door plate, increases the distance between the first fastening block and the second end of the base, and then increases the width of the connector disposed between the first fastening block and the second end of the base.

In a possible design of the first aspect, in the third direction, a width of the second connecting arm is gradually reduced. The structure is simple, and processing is easy.

In a possible design of the first aspect, in the third direction, a side wall that is of the second connecting arm and that is close to the second end extends in a direction away from the second end, and a side wall that is of the second connecting arm and that is away from the second end is parallel to an end face of the second end. The structure is simple, and processing is easy.

In a possible design of the first aspect, the second connecting end is rotatably connected to the base, and the second connecting end is rotatably and/or slidably connected to the second door plate.

In a possible design of the first aspect, in the first direction, a minimum distance between a side wall that is of the fourth connecting end and that is close to the first end and the first end is greater than a minimum distance between a side wall that is of the first connecting end and close to the first end and the first end. In this way, the fourth connecting end or the second fastening block connected to the fourth connecting end can be prevented from causing interference in assembly of a first flexible circuit board, which increases a width of the first flexible circuit board.

In a possible design of the first aspect, in the first direction, a minimum distance between a side wall that is of the second connecting end and that is close to the second end and the second end is greater than the minimum distance between the side wall that is of the third connecting end and that is close to the second end and the second end. That is, in the first direction, the side wall that is of the second connecting end and that is close to the second end is located on a side of the side wall that is of the third connecting end and that is close to the second end, the side being away from the second end.

In a possible design of the first aspect, in the first direction, the minimum distance between the side wall that is of the fourth connecting end and that is close to the first end and the first end is greater than or equal to a minimum distance between the side wall that is of the second connecting end and that is away from the first end and the first end. In this way, the fourth connecting end or the second fastening block can be further prevented from causing interference in assembly of the first flexible circuit board, which increases the width of the first flexible circuit board.

In a possible design of the first aspect, in the first direction, a distance between the side wall that is of the first connecting end and that is away from the first end and a side wall that is of the third connecting end and that is close to the first end is greater than or equal to a distance between the side wall that is of the second connecting end and that is away from the first end and the side wall that is of the fourth connecting end and that is close to the first end. In this way, the distance between the second connecting end and the first end can be increased, which increases the distance between the first fastening block and the first end, and then increases the width of the first flexible circuit board; in addition, the first fastening block can be prevented from affecting assembly of a second flexible circuit board, which increases the width of the second flexible circuit board.

According to a second aspect, this application provides a support apparatus. The support apparatus is configured to support a foldable screen. The support apparatus includes a rotating mechanism, a first housing, and a second housing. The rotating mechanism is the rotating mechanism according to any one of the foregoing technical solutions. The first housing is disposed on one side of the rotating mechanism, and is connected to the first door plate. The second housing is disposed on the other side of the rotating mechanism, and the second housing is rotatably connected to the rotating mechanism.

In a possible design of the second aspect, the first housing and the first door plate are of an integrated structure.

Because the support apparatus provided in this embodiment of this application includes the rotating mechanism according to any one of the foregoing technical solutions, the support apparatus and the rotating mechanism can resolve the same technical problem and achieve the same effect.

According to a third aspect, this application provides an electronic device, including a support apparatus and a fold-

able screen. The support apparatus is the support apparatus according to any one of the foregoing technical solutions. The foldable screen is attached to one side surface of the support apparatus.

Because the electronic device provided in this embodiment of this application includes the support apparatus according to the foregoing technical solution, the two can resolve the same technical problem and achieve the same effect.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a perspective view of an electronic device according to some embodiments of this application:

FIG. **2** is a schematic diagram of a structure of the electronic device shown in FIG. **1** when in an unfolded state:

FIG. **3** is a schematic diagram of a structure of the electronic device shown in FIG. **1** when in a folded state:

FIG. **4** is a top view of a support apparatus in the electronic device shown in FIG. **1**;

FIG. **5** is an exploded view of the support apparatus shown in FIG. **4**:

FIG. **6** is a schematic diagram of an assembly structure of a first housing, a second housing, and a rotating mechanism in a support apparatus according to some embodiments of this application:

FIG. **7** is a top view of the assembly structure shown in FIG. **6**;

FIG. **8** is a schematic diagram of assembly of a connector and the support apparatus shown in FIG. **6**.

FIG. **9** is a perspective view of assembly of a rotating mechanism according to some further embodiments of this application and a connector;

FIG. **10** is a top view of the perspective view of assembly shown in FIG. **9**:

FIG. **11** is an exploded view of the rotating mechanism shown in FIG. **9**:

FIG. **12** is a perspective view of a rotating mechanism according to some further embodiments of this application:

FIG. **13** is a top view of the rotating mechanism shown in FIG. **12**:

FIG. **14** is an exploded view of a rotating mechanism according to some further embodiments of this application: and

FIG. **15** is an exploded view of a rotating mechanism according to some further embodiments of this application.

100. Electronic device:

10. Foldable screen: **11**. First part: **12**. Second part: **13**. Third part:

20. Support apparatus: **21**. First housing: **211**. First middle frame: **212**. First back cover; **22**. Second housing: **221**. Second middle frame: **222**, Second back cover:

23. Rotating mechanism: **230**. Base: **2301**. First end: **2302**. Second end: **230***a*. First pivoting shaft: **230***b*. First mounting groove: **231**. First door plate: **232**. First connecting arm: **2321**. First connecting end: **2321***a*. First pivoting hole: **2321***b*. Third pivoting shaft: **2322**. Second connecting end: **2322***a*. Second pivoting hole: **2323**. Middle connecting section: **233**. First fastening block: **233***a*. Second pivoting shaft: **233***b*. Second mounting groove: **233***c*. First chute: **233***d*. Pivoting groove: **234**. Second door plate: **235**. Second connecting arm; **2351**. Third connecting end: **2352**. Fourth connecting end: **236**. Second fastening block: **237**. First limiting structure: **238**. Second limiting structure:

30. Main circuit board:

40. Connector; **41**. First flexible circuit board; and **42**. Second flexible circuit board.

DESCRIPTION OF EMBODIMENTS

In embodiments of this application, the terms "first", "second", "third" and "fourth" are used for descriptive purposes only, and cannot be construed as indicating or implying relative importance or implicitly indicating a quantity of indicated technical features. Therefore, features defined with "first", "second", "third" and "fourth" may explicitly or implicitly include one or more of the features.

In embodiments of this application, the term "including", "containing" or any other variant thereof is intended to cover non-exclusive inclusion, so that a process, method, article or apparatus including a series of elements includes not only those elements, but also other elements not explicitly listed, or elements inherent to such a process, method, article or apparatus. Without further limitation, the element defined by the sentence "including a . . . " does not exclude that other identical elements are also present in the process, method, article or apparatus including the element.

In embodiments of this application, the term "and/or" is only used to describe an association relationship between associated objects, and indicates that three relationships may exist. For example, A and/or B may indicate the following: Only A exists, both A and B exist, and only B exists. In addition, the symbol "/" in this specification usually indicates an "or" relationship between the associated objects.

This application provides an electronic device. The electronic device is an electronic device with a foldable screen. Specifically, the electronic device includes, but is not limited to, a mobile phone, a tablet personal computer (tablet personal computer), a laptop computer (laptop computer), a personal digital assistant (personal digital assistant, PDA), a personal computer, a notebook computer (notebook), a vehicle-mounted device, and a wearable device (such as a watch).

Referring to FIG. **1**, FIG. **1** is a perspective view of an electronic device **100** according to some embodiments of this application. In this embodiment, the electronic device **100** is a mobile phone with a foldable screen. The electronic device **100** includes a foldable screen **10**, a support apparatus **20**, a main circuit board **30**, a secondary circuit board **301**, and a connector **40**, where the main circuit board **30**, the secondary circuit board **301**, and the connector **40** are located within the electronic device **100**, and therefore outlines are shown by using dash lines.

It may be understood that FIG. **1** shows only some example components included in the electronic device **100**, and actual shapes, actual sizes, actual positions, and actual structures of these components are not limited by FIG. **1**.

The foldable screen **10** is configured to display an image, a video, and the like. The foldable screen **10** may be folded into a first part **11** and a second part **12**. The foldable screen **10** further includes a third part **13** located between the first part **11** and the second part **12**. At least the third part **13** of the foldable screen **10** is made of a flexible material. The first part **11** and the second part **12** may be made of a flexible material, or may be made of a rigid material, or part of the first part and the second part is made of a rigid material, and the other part thereof is made of a flexible material. This is not specifically limited herein.

Specifically, the foldable screen **10** may be an organic light-emitting diode (organic light-emitting diode, OLED) screen, a micro organic light-emitting diode (micro organic light-emitting diode) screen, a quantum dot light emitting

diodes (quantum dot light emitting diodes, QLED) screen, a liquid crystal display (liquid crystal display, LCD), and the like.

The foldable screen **10** can be folded between an unfolded state and a folded state. Referring to FIG. **2**, FIG. **2** is a schematic diagram of a structure of the electronic device **100** shown in FIG. **1** when the foldable screen **10** is in the unfolded state. When the foldable screen **10** is in the unfolded state, the first part **11**, the second part **12**, and the third part **13** are coplanarly disposed and face a same direction. In this state, large-screen display can be implemented, which can provide richer information to a user and improve user experience.

Referring to FIG. **3**, FIG. **3** is a schematic diagram of a structure of the electronic device **100** shown in FIG. **1** when the foldable screen **10** is in the folded state. When the foldable screen **10** is in the folded state, the third part **13** is in a bent state, and the first part **11** (not shown in FIG. **3**) is opposite to the second part **12** (not shown in FIG. **3**). The foldable display **10** is invisible to a user, and the support apparatus **20** is disposed outside the foldable display **10** for protection, to prevent the foldable display **10** from being scratched by hard objects. Such a foldable display phone is a phone with an inward foldable display. In other embodiments, when the foldable display is in the folded state, the first part **11** and the second part **12** may also depart from each other and be exposed. Such a foldable display phone is a phone with an outward foldable display.

The support apparatus **20** is configured to support the foldable display **10** and allow the foldable display **10** to be folded between the unfolded state and the folded state. Referring to FIG. **4**, FIG. **4** is a top view of the support apparatus **20** in the electronic device **100** shown in FIG. **1**. In this embodiment, the support apparatus **20** includes a first housing **21**, a second housing **22**, and a rotating mechanism **23**. It may be understood that FIG. **4** only shows an example of some components included in the support apparatus **20**, and actual shapes, sizes, locations and constructions of these components are not limited by FIG. **4**.

The first housing **21** is disposed on one side of the rotating mechanism **23**, and the first housing **21** is rotatably connected to the rotating mechanism **23**. The first housing **21** is configured to fasten and support the first part **11** of the foldable screen **10** in FIG. **1**. Specifically, the first housing **21** has a lamination surface M**1**, and the first housing **21** is configured to fasten and support the first part **11** of the foldable screen **10** in FIG. **1** by using the lamination surface M**1**.

The second housing **22** is disposed on the other side of the rotating mechanism **23**, and the first housing **21** is rotatably connected to the rotating mechanism **23**. The second housing **22** is configured to fasten and support the second part **12** of the foldable screen **10** in FIG. **1**. Specifically, the second housing **22** has a lamination surface M**2**, and the second housing **22** is configured to fasten and support the second part **12** of the foldable screen **10** in FIG. **1** by using the lamination surface M**2**.

A first accommodating cavity (not shown in the figure) is formed inside the first housing **21**. A second accommodating cavity (not shown in the figure) is formed inside the second housing **22**. The main circuit board **30** and the secondary circuit board **301** of the electronic device **100** are accommodated into the first accommodating cavity and the second accommodating cavity, respectively. Specifically, the main circuit board **30** is accommodated into the first accommodating cavity, and the secondary circuit board **301** is accommodated into the second accommodating cavity. In some further embodiments, the main circuit board **30** may alternatively be accommodated into the second accommodating cavity, and the secondary circuit board **301** is accommodated into the first accommodating cavity.

The first housing **21** may be of an integrated structure, or may be formed by assembling a plurality of parts. Similarly, the second housing **22** may be an integrated mechanical part, or may be formed by assembling a plurality of parts.

In some embodiments, referring to FIG. **5**, FIG. **5** is an exploded view of the support apparatus **20** shown in FIG. **4**. The first housing **21** includes a first middle frame **211** and a first back cover **212**. A lamination surface M**1** is located on the first middle frame **211**. The first back cover **212** is fastened to a side that is of the first middle frame **211** and that is away from the lamination surface M**1**. The first accommodating cavity is formed between the first middle frame **211** and the first back cover **212**.

The second housing **22** includes a second middle frame **221** and a second back cover **222**. The lamination surface M**2** is located on the second middle frame **221**. The second back cover **222** is fastened to a side that is of the second middle frame **221** and that is away from the lamination surface M**2**. The second accommodating cavity is formed between the second middle frame **221** and the second back cover **222**.

The rotating mechanism **23** is configured to support the third part **13** of the foldable screen **10**. In addition, the rotating mechanism **23** is connected between the first housing **21** and the second housing **22**, and the first housing **21** is rotatably connected to the second housing **22** by using the rotating mechanism **23**. In some embodiments, the rotating mechanism **23** is connected between the first middle frame **211** of the first housing **21** and the second middle frame **221** of the second housing **22**. In other embodiments, the rotating mechanism **23** may alternatively be connected between the first back cover **212** of the first housing **21** and the second back cover **222** of the second housing **22**.

Referring to FIG. **6** and FIG. **7**, FIG. **6** is a schematic diagram of an assembly structure of a first housing **21**, a second housing **22**, and a rotating mechanism **23** in a support apparatus **20** according to some embodiments of this application, and FIG. **7** is a top view of the schematic diagram of the assembly structure shown in FIG. **6**. In this embodiment, the rotating mechanism **23** includes a base **230**, a first door plate **231**, a first connecting arm **232**, a first fastening block **233**, a second door plate **234**, a second connecting arm **235**, and a second fastening block **236**. It may be understood that FIG. **6** and FIG. **7** show only some example components included in the rotating mechanism **23**, and actual shapes, actual sizes, actual positions, and actual structures of these components are not limited by FIG. **6** and FIG. **7**.

To facilitate description of each embodiment below, an XYZ coordinate system is established for the base **230**. Specifically, an axial direction of the base **230** is defined as the Y axis direction, that is, an extension direction of a rotating axis of the first housing **21** or the first door plate **231** is the Y axis direction: a thickness direction of the base **230** is the Z axis direction: and a direction perpendicular to the Y axis direction and the Z axis direction is the X axis direction. It may be understood that the coordinate system for the base **230** may be flexibly set based on actual needs. This is not specifically limited herein.

Referring to FIG. **6** and FIG. **7**, the first door plate **231** and the second door plate **234** are disposed on two opposite sides of the base **230**. The first door plate **231** and the second door plate **234** can rotate relative to the base **230**. The first door

plate **231** is connected to the first housing **21**, and the second door plate **234** is connected to the second housing **22**.

Still referring to FIG. **6** and FIG. **7**, rotational connection and motion constraint are implemented between the first door plate **231** and the base **230** by using the first connecting arm **232**. Connection and motion constraint are implemented between the second door plate **234** and the base **230** by using the second connecting arm **235**. Specifically, the first fastening block **233** is fastened on the first door plate **231**, the second fastening block **236** is fastened on the second door plate **234**, and the first connecting arm **232** is connected to the first door plate **231** by using the first fastening block **233**. The second connecting arm **235** is connected to the second door plate **234** by using the second fastening block **236**. This facilitates assembly of the first connecting arm **232** and the first door plate **231**, reduces assembly difficulty, and improves assembly efficiency.

The main circuit board **30** is configured to integrate a control chip, and is electrically connected to electronic components such as a foldable screen **10**, a camera module, or a receiver. The control chip may be, for example, an application processor (application processor, AP), a double data rate synchronous dynamic random access memory (double data rate, DDR) and a universal flash storage (universal flash storage, UFS).

The main circuit board **30** may be a rigid circuit board, may be a flexible circuit (flexible printed circuit, FPC) board, or may be a flexible-rigid circuit board. The main circuit board **30** may be an FR-4 dielectric board, may be a Rogers dielectric board, may be an FR-4+Rogers mixed dielectric board, or the like. Here, FR-4 is a flame-resistant material grade code, and the Rogers dielectric board is a high frequency board.

The secondary circuit board **301** is configured to integrate electronic parts and components such as a radio frequency front end of an antenna (such as a **5**G antenna), a universal serial bus (universal serial bus, USB) device, or an oscillator. The secondary circuit board **301** may be a rigid circuit board, may be a flexible circuit board, or may be a flexible-rigid circuit board. The secondary circuit board **301** may be an FR-4 dielectric board, may be a Rogers dielectric board, may be an FR-4+Rogers mixed dielectric board, or the like.

The secondary circuit board **301** is electrically connected to the main circuit board **30** by using the connector **40**, to implement data and signal transmission between the secondary circuit board **301** and the main circuit board **30**, and then connect signals of related electronic components inside the first housing **21** and the second housing **22**. The connector **40** may be a flexible circuit (flexible printed circuit, FPC) board, and thus can adapt to unfolding and folding of the electronic device **100**.

Referring to FIG. **8**, FIG. **8** is a schematic diagram of assembly of a connector **40** and the support apparatus **20** shown in FIG. **6**. The connector **40** is disposed to span the rotating mechanism **23** in a direction parallel to the X axis, to connect signals of related electronic components inside the first housing **21** and the second housing **22**. In other embodiments, the connector **40** may alternatively be disposed to penetrate into the rotating mechanism **23** in a direction parallel to the X axis.

In some embodiments, referring to FIG. **8**, there are two connectors **40**: a first flexible circuit board **41** and a second flexible circuit board **42**. The first flexible circuit board **41** and the second flexible circuit board **42** are spaced apart in the axial direction of the base **230**.

One axial end of the base **230** is a first end **2301**, and the other axial end of the base **230** is a second end **2302**. The first flexible circuit board **41** is disposed between the first fastening block **233** and the first end **2301** of the base **230**. The second flexible circuit board **42** is disposed between the second fastening block **236** and the second end **2302** of the base **230**. It may be understood that, in other embodiments, there may be one connector **40**. The connector **40** may be disposed between the first fastening block **233** and the first end **2301** of the base **230**, or the connector **40** may be disposed between the second fastening block **236** and the second end **2302** of the base **230**.

In some embodiments, referring to FIG. **8**, the first end **2301** of the base **230** is formed into a first limiting structure **237**, and the first flexible circuit board **41** is located between the first fastening block **233** and the first limiting structure **237**. The second end **2302** of the base **230** is formed into a second limiting structure **238**, and the second flexible circuit board **42** is located between the second fastening block **236** and the second limiting structure **238**. In some further embodiments, the first limiting structure **237** and the second limiting structure **238** may also be structures independent of the base **230**.

In the foregoing embodiments, a width of the first flexible circuit board **41** is limited by a distance between the first fastening block **233** and the first limiting structure **237**, and a width of the second flexible circuit board **42** is limited by a distance between the second fastening block **236** and the second limiting structure **238**. The quantity of wires between the first housing **21** and the second housing **22** is relatively large due to communication requirements, the distance between the first fastening block **233** and the first limiting structure **237** and the distance between the second fastening block **236** and the second limiting structure **238** are extremely limited, and therefore the width of the first flexible circuit board **41** and the width of the second flexible circuit board **42** cannot be increased, which forms a contradiction. To resolve the foregoing contradiction, in a related technology, the connector **40** is configured as a multi-layer wiring structure, or two or more connectors **40** are stacked for wiring. But this has a negative impact on the reliability and costs of the electronic device **100**. In addition, an extremely narrow wiring cross-section will lead to large resistance, which affects the performance of the electronic device **100**.

To resolve the foregoing technical problem, referring to FIG. **9** and FIG. **10**, FIG. **9** is a perspective view of assembly of a rotating mechanism **23** according to some further embodiments of this application and a connector **40**, and FIG. **10** is a top view of the perspective view of assembly shown in FIG. **9**. In this embodiment, the rotating mechanism **23** includes a base **230**, a first connecting arm **232**, a first fastening block **233**, a second door plate **234**, a second connecting arm **235**, and a second fastening block **236**. It may be understood that, in other embodiments, the rotating mechanism **23** may not include the second door plate **234**, the second connecting arm **235**, and the second fastening block **236**.

The first door plate **231** and the second door plate **234** are disposed on two opposite sides of the base **230** in the X axis direction. The first door plate **231** and the second door plate **234** are rotatably connected to the base **230**. The first door plate **231** is connected to the first housing **21**, and the second door plate **234** is connected to the second housing **22**, to implement relative rotation of the first housing **21** and the second housing **22**, so that the electronic device **100** is switched between an unfolded state and a folded state.

Specifically, the first door plate **231** and the first housing **21** are connected through gluing, threaded connection, riv-

eting, welding, or the like: or the first door plate **231** and the first housing **21** are of an integrated structure, that is, the first door plate **231** and the first housing **21** are integrally formed. For example, the first door plate **231** and the first middle frame **211** are integrally formed. Similarly, the second door plate **234** and the second housing **22** are connected through gluing, threaded connection, riveting, welding, or the like: or the second door plate **234** and the second housing **22** are of an integrated structure, that is, the second door plate **234** and the second housing **22** are integrally formed. For example, the second door plate **234** and the second middle frame **221** are integrally formed.

Referring to FIG. **9** and FIG. **10**, the first fastening block **233** is fixedly connected to the first door plate **231**. For example, the first fastening block **233** may be fastened on the first door plate **231** through screwing, gluing, welding, riveting, or the like. Two ends of an extension direction of the first connecting arm **232** are a first connecting end **2321** and a second connecting end **2322**, where "two ends of an extension direction of the first connecting arm **232**" refers to "two ends of a length direction of the first connecting arm **232**".

The first connecting end **2321** is connected to the base **230**, and the second connecting end **2322** is connected to the first fastening block **233**, where the first connecting end **2321** and the base **230**, and/or the second connecting end **2322** and the first fastening block **233** have a rotational degree of freedom therebetween, to ensure consistence of a motion direction of the first connecting arm **232** and a rotation direction of the first housing **21** when the electronic device **100** rotates between the unfolded state and the folded state. Specifically, it may be that only the first connecting end **2321** and the base **230** have a rotational degree of freedom therebetween, may be that the second connecting end **2322** and the first fastening block **233** have a rotational degree of freedom therebetween, or may be that the first connecting end **2321** and the base **230**, and the second connecting end **2322** and the first fastening block **233** have a rotational degree of freedom therebetween.

Still referring to FIG. **9** and FIG. **10**, the second fastening block **236** is fixedly connected to the second door plate **234**. For example, the second fastening block **236** may be fastened to the second door plate **234** through screwing, gluing, welding, riveting, or the like. Two ends of an extension direction of the second connecting arm **235** are a third connecting end **2351** and a fourth connecting end **2352**, that is, two ends of a length direction of the second connecting arm **235** are respectively formed into the third connecting end **2351** and the fourth connecting end **2352**.

The third connecting end **2351** is connected to the base **230**, and the fourth connecting end **2352** is connected to the second fastening block **236**, where the third connecting end **2351** and the base **230**, and/or the fourth connecting end **2352** and the first fastening block **236** have a rotational degree of freedom therebetween, to ensure consistence of a motion direction of the first connecting arm **232** and a rotation direction of the first housing **21** when the electronic device **100** rotates between the unfolded state and the folded state. Specifically, it may be that only the third connecting end **2351** and the base **230** have a rotational degree of freedom therebetween, may be that the fourth connecting end **2352** and the first fastening block **233** have a rotational degree of freedom therebetween, or may be that the third connecting end **2351** and the base **230**, and the fourth connecting end **2352** and the second fastening block **236** have a rotational degree of freedom therebetween.

It may be understood that, in other embodiments, the second connecting end **2322** of the first connecting arm **232** can also be fixedly connected to the first fastening block **233**; and the first connecting end **2321** and the base **230**, and/or the first door plate **231** and the first fastening block **233** have a rotational degree of freedom therebetween, provided that consistence of the motion direction of the first connecting arm **232** and the rotation direction of the first housing **21** can be ensured when the electronic device **100** rotates between the unfolded state and the folded state.

Similarly, the fourth connecting end **2352** of the second connecting arm **235** can also be fixedly connected to the second fastening block **236**; and the third connecting end **2351** and the base **230**, and/or the second door plate **234** and the second fastening block **236** have a rotational degree of freedom therebetween, provided that consistence of a motion direction of the second connecting arm **235** and a rotation direction of the second housing **22** can be ensured when the electronic device **100** rotates between the unfolded state and the folded state.

In some embodiments, referring to FIG. **11**, FIG. **11** is an exploded view of the rotating mechanism **23** shown in FIG. **9**. The first connecting end **2321** is rotatably connected to the base **230**, and the second connecting end **2322** is rotatably connected to the first fastening block **233**. The first connecting end **2321** is provided with a first pivoting hole **2321***a*, and an extension direction of a central axis of the first pivoting hole **2321***a* is parallel to the Y axis direction. A first pivoting shaft **230***a* is disposed on the base **230**, and a length direction of the first pivoting shaft **230***a* is parallel to the Y axis direction. Specifically, a first mounting groove **230***b* is disposed on the base **230**. The first mounting groove **230***b* is provided with a first inner side wall and a second inner side wall that are opposite to each other in the Y axis direction, and two axial directions of the first pivoting shaft **230***a* are respectively disposed on the first inner side wall and the second inner side wall. Therefore, rotatable connection between the first connecting end **2321** and the base **230** can be easily implemented, and the structure is simple and processing is easy.

The second connecting end **2322** is provided with a second pivoting hole **2322***a*, and an extension direction of a central axis of the second pivoting hole **2322***a* is parallel to the Y axis direction. A second pivoting shaft **233***a* is disposed on the first fastening block **233**, and a length direction of the second pivoting shaft **233***a* is parallel to the Y axis direction. Specifically, a second mounting groove **233***b* is disposed on the first fastening block **233**. The second mounting groove **233***b* is provided with a third inner side wall and a fourth inner side wall that are opposite to each other in the Y axis direction, and two axial directions of the second pivoting shaft **233***a* are respectively disposed on the third inner side wall and the fourth inner side wall. Therefore, rotatable connection between the second connecting end **2322** and the first fastening block **233** can be easily implemented, and the structure is simple and processing is easy.

The second connecting arm **235** is connected to the second door plate **234** in the same way that the first connecting arm **232** is connected to the first door plate **231**, and the second connecting arm **235** is connected to the base **230** in the same way that the first connecting arm is connected to the base **230**, which is not repeated here.

Referring back to FIG. **10**, in the first direction, a distance d**1** between a center of the second connecting end **2322** and the first end **2301** is greater than a distance d**2** between a center of the first connecting end **2321** and the first end **2301**.

The first direction is parallel to a rotating axis of the first door plate. In other words, in the X axis direction, the center of the second connecting end **2322** is offset from the center of the first connecting end **2321** in a direction away from the first end **2301**.

The center of the first connecting end **2321** may be a centroid, center of mass, or center of gravity of the first connecting end **2321**: and correspondingly, the center of the second connecting end **2322** may be a centroid, center of mass, or center of gravity of the second connecting end **2322**.

Because the second connecting end **2322** is connected to the first door plate **231** by using a first fastening block **233**, in the first direction (that is in the Y axis direction), the distance between the center of the second connecting end **2322** and the first end **2301** is set to be greater than the distance d**2** between the center of the first connecting end **2311** and the first end **2301**, and the position of the first fastening block **233** may be moved in a direction away from the first end **2301**. Therefore, the distance between the first fastening block **233** and the first end **2301** of the base **230** can be increased without changing the dimensions of the second connecting end **2322** and the first fastening block **233** in the Y axis direction, so that a width of the connector **40** (that is the foregoing first flexible circuit board **41**) disposed between the first fastening block **233** and the first end **2301** of the base **230** can be increased, utilization of space inside the electronic device **100** is improved, and a greater wiring width for the connector **40** is provided in the limited space.

In the rotating mechanism **23** provided in this embodiment of this application, in the first direction, the distance between the center of the second connecting end **2322** and the first end **2301** is set to be greater than the distance d**2** between the center of the first connecting end **2311** and the first end **2301**, which increases the width of the connector **40** disposed between the first fastening block **233** and the first end **2301** of the base **230**, the utilization of the space inside the electronic device **100** is improved, a greater wiring width for the connector **40** is provided in the limited space, the problems of high cost and high impedance caused by insufficient wiring space are resolved, and electrical connection design of the electronic device **100** is optimized.

On this basis, to further increase the distance between the first fastening block **233** and the first end **2301** of the base **230**, referring to FIG. **10**, in the first direction, a minimum distance d**3** between a side wall that is of the second connecting end **2322** and that is close to the first end **2301** and the first end **2301** is greater than a minimum distance d**4** between a side wall that is of the first connecting end **2321** and that is close to the first end **2301** and the first end **2301**, that is, d**3** is greater than d**4**.

Specifically, the first connecting arm **232** further includes a middle connecting section **2323** located between the first connecting end **2321** and the second connecting end **2322**. Referring to FIG. **10**, two ends of an extension direction of the middle connecting section **2323** are respectively connected to the first connecting end **2321** and the second connecting end **2322**. That is, two ends of a length direction of the middle connecting section **2323** are respectively connected to the first connecting end **2321** and the second connecting end **2322**. In some embodiments, in a second direction, the middle connecting section **2323** extends in a direction away from the first end **2301**, where the second direction refers to a direction that the base **230** points to the first door plate **231**. Referring to FIG. **9** and FIG. **10**, in the second direction, the first connecting arm **232** extends along a curve in the direction away from the first end **2301**. It may be understood that, in other embodiments, in the second direction, the middle connecting section **2323** may also extend obliquely along a straight line in the direction away from the first end **2301**, Therefore, it is easy to achieve that, in the first direction, the distance between the center of the second connecting end **2322** and the first end **2301** is greater than the distance between the center of the first connecting end **2321** and the first end **2301**.

In some embodiments, referring to FIG. **10**, a width w**1** of the second connecting end **2322** is less than a width w**2** of the first connecting end **2321**. The width w**1** of the second connecting end **2322** refers to the dimension of the second connecting end **2322** in the Y axis direction, similarly, the width w**2** of the first connecting end **2321** refers to the dimension of the first connecting end **2321** in the Y axis direction. Therefore, this reduces the dimension of the first fastening block **233** in the Y axis direction, increases the distance between the fastening block **233** and the first end **2301** of the base **230**, and then increases the width of the connector **40** disposed between the first fastening block **233** and the first end **2301** of the base **230**.

On the basis of the foregoing embodiments, still referring to FIG. **9** and FIG. **10**, in the first direction, a distance d**5** between a center of the fourth connecting end **2352** and the second end **2302** is greater than a distance d**6** between a center of the third connecting end **2351** and the second end **2302**. That is, in the X axis direction, the center of the fourth connecting end **2352** is offset from the center of the third connecting end **2351** in a direction away from the second end **2302**. The center of the third connecting end **2351** may be a centroid, center of mass, or center of gravity of the third connecting end **2351**: and correspondingly, the center of the fourth connecting end **2352** may be a centroid, center of mass, or center of gravity of the fourth connecting end **2352**.

Because the fourth connecting end **2352** is connected to the second door plate **234** by using the second fastening block **236**, in the first direction, the distance d**5** between the center of the fourth connecting end **2352** and the second end **2302** is set to be greater than the distance d**6** between the center of the third connecting end **2351** and the second end **2302**, and the position of the second fastening block **236** may be moved in a direction away from the second end **2302**. Therefore, the distance between the second fastening block **236** and the second end **2302** can be increased without changing the dimensions of the fourth connecting end **2352** and the second fastening block **236** in the Y axis direction, that is, the distance between the second fastening block **236** and the second end **2302** of the base **230** can be increased, so that the width of the connector **40** disposed between the second fastening block **236** and the second end **2302** of the base **230** can be increased, the utilization of the space inside the electronic device **100** is further improved, a greater wiring width for the connector **40** is provided in the limited space, the problems of high cost and high impedance caused by insufficient wiring space are resolved, and the electrical connection design of the electronic device **100** is optimized.

A specific structure of the second connecting arm **235** may be the same as the structure of the first connecting arm **232**, or may be different from that of the first connecting arm **232**, provided that the distance d**5** between the center of the fourth connecting end **2352** and the second end **2302** is greater than the distance d**6** between the center of the third connecting end **2351** and the second end **2302**. This is not specifically limited in this application.

In some embodiments, referring to FIG. **9** and FIG. **10**, the first connecting arm **232** and the second connecting arm **235**

are spaced apart in the axial direction of the base **230**, and the second connecting arm **235** is located on a side that is of the first connecting arm **232** and that is away from the first end **2301**. In this way, interference between the first connecting arm **232** and the second connecting arm **235** can be avoided during assembly: in addition, compared with the technical solution that the first connecting arm **232** and the second connecting arm **235** are disposed opposite to each other, this solution can prevent the width of some regions on the base **230** from being too small, which is conducive to improving the entire structural strength of the base **230**.

On the basis of the foregoing embodiments, referring to FIG. **10**, in the first direction, a minimum distance d**7** between a side wall that is of the fourth connecting end **2352** and that is close to the first end **2301** and the first end **2301** is greater than a minimum distance d**8** between a side wall that is of the first connecting end **2321** and that is close to the first end **2301** and the first end **2301**. That is, in the first direction, the side wall that is of the fourth connecting end **2352** and that is close to the first end **2301** is located on a side of the side wall that is of the first connecting end **2321** and that is close to the first end **2301**, the side being away from the first end **2301**. In this way, the fourth connecting end **2352** or the second fastening block **236** connected to the fourth connecting end **2352** can be prevented from causing interference in assembly of the first flexible circuit board **41**, which increases the width of the first flexible circuit board **41**.

To prevent the second connecting end **2322** or the first fastening block **233** connected to the second connecting end **2322** from causing interference in assembly of the second flexible circuit board **42**, referring to FIG. **10**, a minimum distance d**9** between a side wall that is of the second connecting end **2322** and that is close to the second end **2302** and the second end **2302** is greater than a minimum distance d**10** between a side wall that is of the third connecting end **2351** and that is close to the second end **2302** and the second end **2302**. That is, in the first direction, the side wall that is of the second connecting end **2322** and that is close to the second end **2302** is located on a side of the side wall that is of the third connecting end **2351** and that is close to the second end **2302**, where the side is away from the second end **2302**.

Further, in some embodiments, still referring to FIG. **10**, in the first direction, the minimum distance d**7** between the side wall that is of the fourth connecting end **2352** and that is close to the first end **2301** and the first end **2301** is greater than a minimum distance d**11** between a side wall that is of the second connecting end **2322** and that is away from the first end **2301** and the first end **2301**. That is, the entire fourth connecting end **2352** is located on a side that is of the second connecting end **2322** and that is away from the first end **2301**. In this way, the fourth connecting end **2352** or the second fastening block **236** can be further prevented from causing interference in the assembly of the first flexible circuit board **41**, which increases the width of the first flexible circuit board **41**.

It may be understood that, in other embodiments, in the first direction, the minimum distance d**7** between the side wall that is of the fourth connecting end **2352** and that is close to the first end **2301** and the first end **2301** may also be equal to the minimum distance d**11** between the side wall that is of the second connecting end **2322** and that is away from the first end **2301** and the first end **2301**. In this case, the side wall that is of the fourth connecting end **2352** and that is close to the first end **2301** may be flush with the side wall that is of the second connecting end **2322** and that is away from the first end **2301**.

On the basis of the foregoing embodiments, referring to FIG. **10**, in the first direction, a distance d**12** between a side wall that is of the first connecting end **2321** and that is away from the first end **2301** and a side wall that is of the third connecting end **2351** and that is close to the first end **2301** is greater than a distance d**13** between the side wall that is of the second connecting end **2322** and that is away from the first end **2301** and the side wall that is of the fourth connecting end **2352** and that is close to the first end **2301**. In this way, a distance between the second connecting end **2322** and the first end **2301** can be increased, which increases the distance between the first fastening block **233** and the first end **2301**, and then increases the width of the first flexible circuit board **41**: in addition, the first fastening block **233** can be prevented from affecting assembly of the second flexible circuit board **42**, which increases the width of the second flexible circuit board **42**.

In other embodiments, in the first direction, the distance d**12** between the side wall that is of the first connecting end **2321** and that is away from the first end **2301** and the side wall that is of the third connecting end **2351** and that is close to the first end **2301** may alternatively be equal to the distance d**13** between the side wall that is of the second connecting end **2322** and that is away from the first end **2301** and the side wall that is of the fourth connecting end **2352** and that is close to the first end **2301**. In this way, the distance between the second connecting end **2322** and the first end **2301** can also be increased, which increases the distance between the first fastening block **233** and the first end **2301**, and then increases the width of the first flexible circuit board **41**: and the first fastening block **233** is prevented from affecting assembly of the second flexible circuit board **42**, which increases the width of the second flexible circuit board **42**.

In some further embodiments, referring to FIG. **12** and FIG. **13**, FIG. **12** is a perspective view of a rotating mechanism **23** according to some further embodiments of this application, and FIG. **13** is a top view of the perspective view in FIG. **12**. The rotating mechanism **23** in this embodiment differs from the rotating mechanism **23** shown in FIG. **9** in that: In this embodiment, the side wall that is of the first connecting end **2321** and that is away from the first end **2301** is flush with the side wall that is of the second connecting end **2322** and that is away from the first end **2301**, and the width of the second connecting end **2321** is less than the width of the first connecting end **2322**. It should be noted that "the side wall that is of the first connecting end **2321** and that is away from the first end **2301** is flush with the side wall that is of the second connecting end **2322** and that is away from the first end **2301**" means that, in the axial direction of the base **230**, the distance d**7** between the side wall that is of the first connecting end **2321** and that is away from the first end **2301** and the first end **2301** is equal to the distance d**8** between the side wall that is of the second connecting end **2322** and that is away from the first end **2301** and the first end **2301**.

Therefore, this achieves that, in the first direction, the distance between the center of the second connecting end **2322** and the first end **2301** is greater than the distance between the center of the first connecting end **2321** and the first end **2301**, so that in the X axis direction, the center of the second connecting end **2322** is offset from the center of the first connecting end **2321** in a direction away from the first end **2301**: and this reduces the dimension of the first fastening block **233** in the Y axis direction, increases the

distance between the first fastening block **233** and the first end **2301** of the base **230**, and then increases the width of the connector **40** disposed between the first fastening block **233** and the first end **2301** of the base **230**.

For example, referring to FIG. **13**, in the second direction, the middle connecting section **2323** extends along a straight line, and a width of the middle connecting section **2323** is gradually reduced. Specifically, in the second direction, a side wall that is of the first connecting arm **232** and that is close to the first end **2301** extends obliquely in a direction away from the first end **2301**, and a side wall that is of the first connecting arm **232** and that is away from the first end **2301** is parallel to an end face of the first end **2301**. The structure is simple, and processing is easy.

It should be noted that "a width of the first connecting arm **232**" in this application refers to the dimension of the first connecting arm **232** in the Y axis direction, that is, the dimension of the first connecting arm **232** in an extension direction of a rotating axis of the first housing **21** or the first door plate **231**.

In some further embodiments, referring to FIG. **14**, FIG. **14** is an exploded view of a rotating mechanism **23** according to some further embodiments of this application. The rotating mechanism **23** in this embodiment differs from the rotating mechanism **23** shown in FIG. **11** in that: In this embodiment, the second connecting end **2322** of the first connecting arm **232** is slidably connected to the first fastening block **233**. Specifically, the first fastening block **233** is provided with a first chute **233***c*, and the first connecting end **2321** is formed into a slider shape. When the first door plate **231** rotates relative to the base **230**, the first connecting end **2321** can slide in the first chute **233***c*. In this way, connection and motion constraint can also be implemented between the first door plate **231** and the base **230** by using the first connecting arm **232**.

It should be noted that a manner in which the second connecting arm **235** is connected to the second door plate **234** is the same as the manner in which the first connecting arm **232** is connected to the first door plate **231**, and a manner in which the second connecting arm **235** is connected to the base **230** is the same as the manner in which the first connecting arm **232** is connected to the base **230**. Details are not described herein again.

In some further embodiments, referring to FIG. **15**, FIG. **15** is an exploded view of a rotating mechanism **23** according to some further embodiments of this application. The rotating mechanism **23** in this embodiment differs from the rotating mechanism **23** shown in FIG. **14** in that: In this embodiment, the second connecting end **2322** of the first connecting arm **232** is slidably and rotatably connected to the first fastening block **233**. In this embodiment, the first connecting end **2321** of the first connecting arm **232** is formed into a slider shape, and a third pivoting shaft **2321***b* is further disposed on the first connecting end **2321**. In addition, in this embodiment, in addition to the first chute **233***c* in the embodiment shown in FIG. **14**, the first fastening block **233** is further provided with a pivoting groove **233***d*.

Specifically, referring to FIG. **15**, the first connecting end **2321** is provided with a first outer surface and a second outer surface that are opposite to each other in the Y axis, and two axial ends of the third pivoting shaft **2321***b* respectively protrude from the first outer surface and the second outer surface. The first chute **233***c* is provided with a first chute wall and a second chute wall that are opposite to each other in the Y axis, and a pivoting grooves **233***d* is formed in each of the first chute arm and the second chute wall. Two axial directions of the third pivoting shaft **2321***b* respectively extend into the pivoting groove **233***d* in the first chute wall and the pivoting groove **233***d* in the second chute wall, to implement pivoting cooperation. In this way, connection and motion constraint can also be implemented between the first door plate **231** and the base **230** by using the first connecting arm **232**.

It should be noted that a manner in which the second connecting arm **235** is connected to the second door plate **234** in the same as the manner in which the first connecting arm **232** is connected to the first door plate **231**, and a manner in which the second connecting arm **235** is connected to the base **230** is the same as the manner in which the first connecting arm **232** is connected to the base **230**. Details are not described herein again.

In addition, in other embodiments, the second connecting end **2322** of the first connecting arm **232** may be rotatably connected to the first fastening block **233**, and the first connecting end **2321** of the first connecting arm **232** can be slidably connected to the base **230**, or the second connecting end **2322** of the first connecting arm **232** is rotatably connected to the first fastening block **233**, and the first connecting end **2321** of the first connecting arm **232** is slidably connected to the base **230**; or the second connecting end **2322** of the first connecting arm **232** is rotatably and slidably connected to the first fastening block **233**, and the first connecting end **2321** of the first connecting arm **232** is slidably connected to the base **230**. Provided that connection and motion constraint between the first fastening block **233** and the first door plate **231** can be implemented by using the first connecting arm **232**, this application does not specifically limit the degree of freedom of motion between the first connecting arm **232** and the base **230** and the degree of freedom of motion between the first connecting arm **232** and the first door plate **231**.

In the description of the specification, specific features, structures, materials or characteristics may be combined in any suitable manner in one or more embodiments or examples.

Finally, it should be noted that the foregoing embodiments are only used to illustrate the technical solutions of this application, but are not used to limit this application. Although this application has been described in detail with reference to the foregoing embodiments, it should be understood by a person of ordinary skill in the art that the technical solutions described in the foregoing embodiments may still be modified, or some technical features thereof are equivalently replaced. These modifications or replacements do not make the essence of the corresponding technical solutions depart from the scope of the technical solutions of embodiments of this application.

What is claimed is:

1. A rotating mechanism, comprising:

a base, wherein two axial ends of the base are a first end and a second end;

a first door plate; and

a first connecting arm, wherein two ends of an extension direction of the first connecting arm are a first connecting end and a second connecting end, the first connecting end is connected to the base, the second connecting end is connected to the first door plate, and the first connecting end and the base have a rotational degree of freedom therebetween;

wherein in a first direction, a distance between a center of the second connecting end and the first end is greater than a distance between a center of the first connecting end and the first end, wherein the first direction is parallel to a rotating axis of the first door plate;

wherein in the first direction, a first distance is greater than a second distance; wherein the first distance is a minimum distance between the first end and a side wall of the second connecting end and facing to the first end, and the second distance is a minimum distance between the first end and a side wall of the first connecting end facing to the first end.

2. The rotating mechanism of claim **1**, wherein the first connecting arm further comprises a middle connecting section located between the first connecting end and the second connecting end; wherein in a second direction, the middle connecting section extends in a direction away from the first end, and wherein the second end is a direction that the base points to the first door plate.

3. The rotating mechanism of claim **2**, wherein in the second direction, the middle connecting section extends along a curve in the direction away from the first end.

4. The rotating mechanism of claim **2**, wherein in the second direction, the middle connecting section extends obliquely along a straight line in the direction away from the first end.

5. The rotating mechanism of claim **1**, wherein a first side wall of the first connecting end is flush with a second side wall of the second connecting end, the first side wall is away from the first end and the second side wall is away from the first end, and a width of the first connecting end is less than a width of the second connecting end.

6. The rotating mechanism of claim **1**, further comprising:

a second door plate, wherein the second door plate and the first door plate are respectively disposed on two opposite sides of the base; and

a second connecting arm, wherein the second connecting arm and the first connecting arm are spaced apart in an axial direction of the base, the second connecting arm is located on a side that is of the first connecting arm and that is away from the first end, two ends of an extension direction of the second connecting arm are a third connecting end and a fourth connecting end, the third connecting end is connected to the base, the fourth connecting end is connected to the second door plate, and the third connecting end and the base and/or the fourth connecting end and the second door plate have a rotational degree of freedom therebetween; and

in the first direction, a distance between a center of the fourth connecting end and the second end is greater than a distance between a center of the third connecting end and the second end.

7. The rotating mechanism of claim **6**, wherein in the first direction, a third distance is greater than a forth distance; wherein the third distance is a minimum distance between the first end and a side wall of the fourth connecting end and facing to the first end, and the forth distance is a minimum distance between the first end and a side wall of the first connecting end facing to the first end.

8. The rotating mechanism of claim **6**, wherein in the first direction, a fifth distance is greater than or equal to a sixth distance, wherein the fifth distance is a minimum distance between the first end and a side wall of the fourth connecting end and facing to the first end, and the sixth distance is a minimum distance between the first end and a side wall of the second connecting end facing away from the first end and the first end.

9. The rotating mechanism of claim **8**, wherein in the first direction, a seventh distance is greater than or equal to a eighth distance; wherein the seventh distance is a distance between a side wall that is of the first connecting end and that is away from the first end and a side wall that is of the third connecting end and that faces to the first end, and the eighth distance is a distance between the side wall that is of the second connecting end and that is away from the first end and the side wall that is of the fourth connecting end and that faces to the first end.

10. A support apparatus, wherein the support apparatus is configured to support a foldable screen, and the support apparatus comprises:

a rotating mechanism;

a first housing, wherein the first housing is disposed on one side of the rotating mechanism, and is connected to a first door plate of the rotation mechanism; and

a second housing, wherein the second housing is disposed on the other side of the rotating mechanism, and the second housing being rotatably connected to the rotating mechanism;

wherein the rotating mechanism, comprising:

a base, wherein two axial ends of the base are a first end and a second end;

the first door plate; and

a first connecting arm, wherein two ends of an extension direction of the first connecting arm are a first connecting end and a second connecting end, the first connecting end is connected to the base, the second connecting end is connected to the first door plate, and the first connecting end and the base have a rotational degree of freedom therebetween;

wherein in a first direction, a distance between a center of the second connecting end and the first end is greater than a distance between a center of the first connecting end and the first end, wherein the first direction is parallel to a rotating axis of the first door plate;

wherein in the first direction, a first distance is greater than a second distance; wherein the first distance is a minimum distance between the first end and a side wall of the second connecting end and facing to the first end, and the second distance is a minimum distance between the first end and a side wall of the first connecting end facing to the first end.

11. The support apparatus of claim **10**, wherein the first connecting arm further comprises a middle connecting section located between the first connecting end and the second connecting end; wherein in a second direction, the middle connecting section extends in a direction away from the first end, and wherein the second end is a direction that the base points to the first door plate.

12. The support apparatus of claim **11**, wherein in the second direction, the middle connecting section extends along a curve in the direction away from the first end.

13. The support apparatus of claim **11**, wherein in the second direction, the middle connecting section extends obliquely along a straight line in the direction away from the first end.

14. The support apparatus of claim **10**, wherein a first side wall of the first connecting end is flush with a second side wall of the second connecting end, the first side wall is away from the first end and the second side wall is away from the first end, and a width of the first connecting end is less than a width of the second connecting end.

15. The support apparatus of claim **10**, wherein the first housing and the first door plate are of an integrated structure.

16. An electronic device, comprising:

a support apparatus; and

a foldable screen, wherein the foldable screen is attached to one side surface of the support apparatus;

wherein the support apparatus comprises:

a rotating mechanism;

a first housing, wherein the first housing is disposed on one side of the rotating mechanism, and is connected to a first door plate of the rotation mechanism; and

a second housing, wherein the second housing is disposed on the other side of the rotating mechanism, and the second housing being rotatably connected to the rotating mechanism;

wherein the rotating mechanism, comprising:

a base, wherein two axial ends of the base are a first end and a second end;

the first door plate; and

a first connecting arm, wherein two ends of an extension direction of the first connecting arm are a first connecting end and a second connecting end, the first connecting end is connected to the base, the second connecting end is connected to the first door plate, and the first connecting end and the base have a rotational degree of freedom therebetween;

wherein in a first direction, a distance between a center of the second connecting end and the first end is greater than a distance between a center of the first connecting end and the first end, wherein the first direction is parallel to a rotating axis of the first door plate, wherein in the first direction, a first distance is greater than a second distance;

wherein the first distance is a minimum distance between the first end and a side wall of the second connecting end and facing to the first end, and the second distance is a minimum distance between the first end and a side wall of the first connecting end facing to the first end.

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