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(54) **CLUTCH DEVICE AND INDUCTION BIN**

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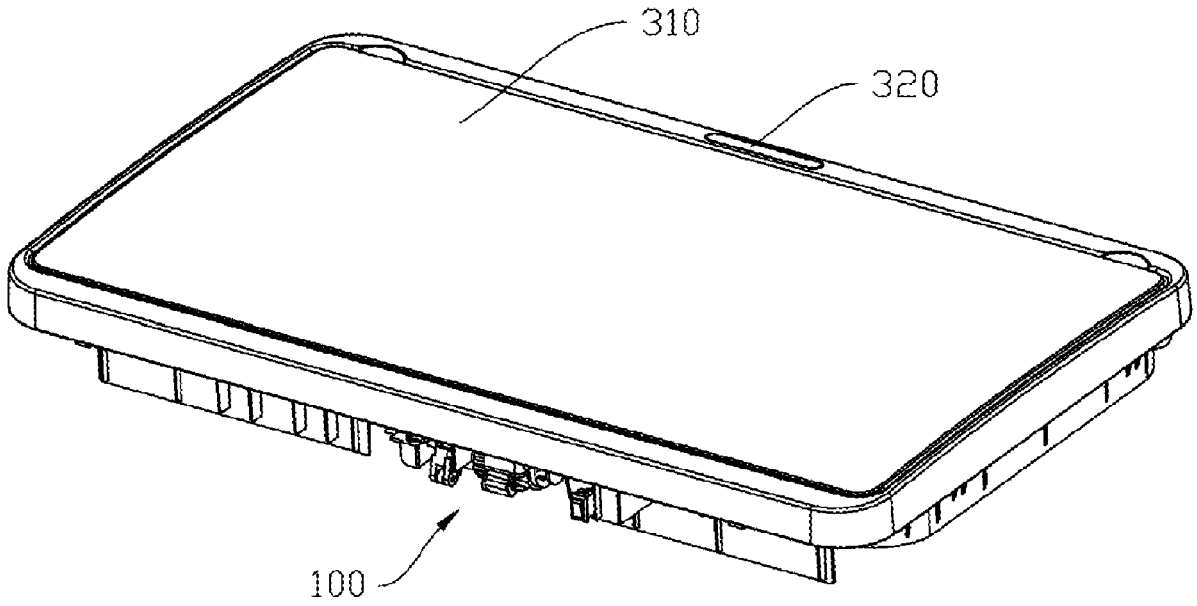
(57) **ABSTRACT**

A clutch device and an induction bin are disclosed. The clutch device includes a transmission assembly and a reset assembly. The transmission assembly includes a first connector and a second connector, the first connector is connected to the second connector, the first connector is provided with a bump on a side of the first connector close to the second connector, the second connector is provided with a groove on a side of the second connector close to the first connector, and the second connector is movable in an axial direction so that the bump is capable of being clamped in or slid out of the groove. The reset assembly includes an elastic element, which is configured to drive the second connector to move towards the first connector.



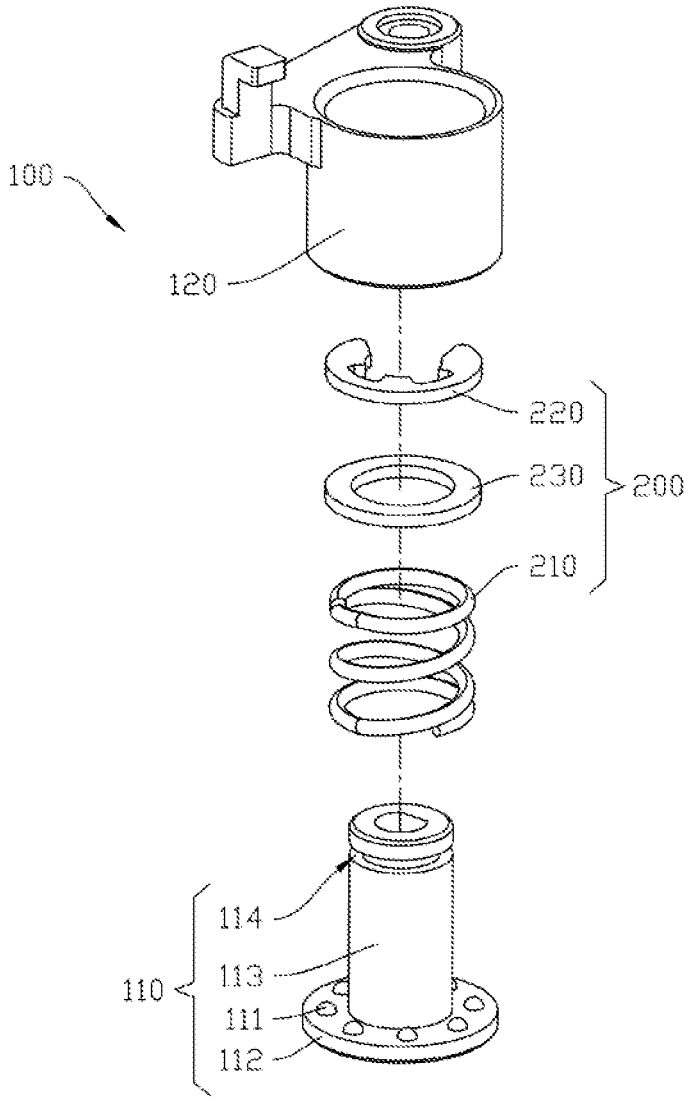


Fig. 1

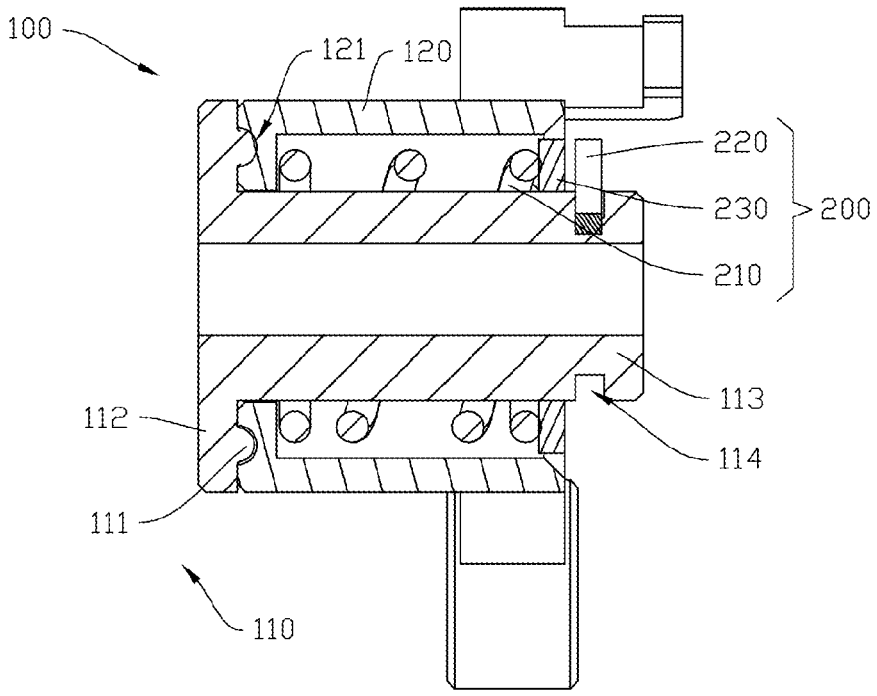


Fig. 2

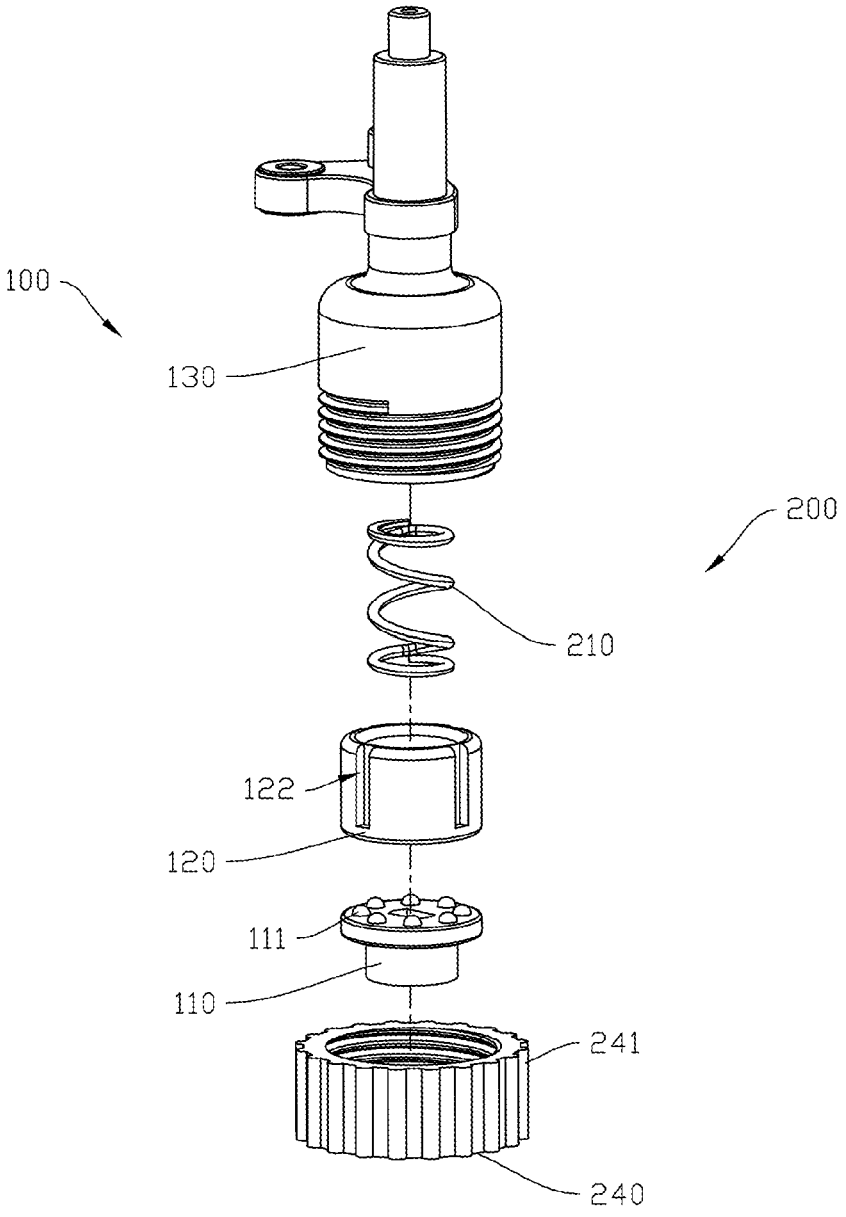


Fig. 3

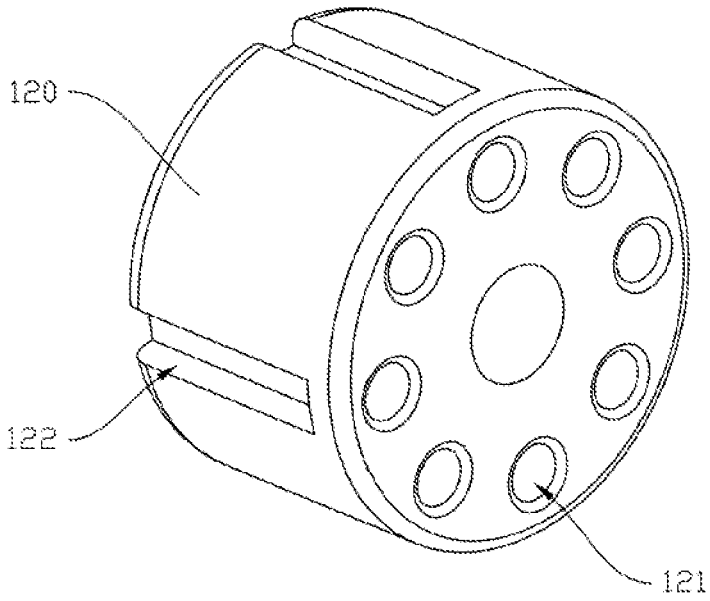


Fig. 4

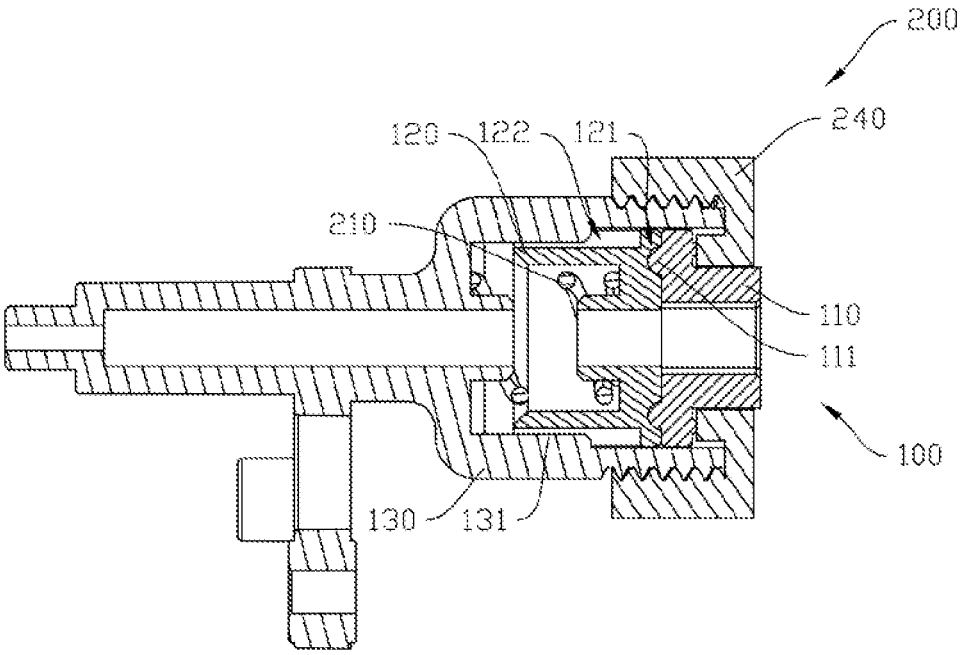


Fig. 5

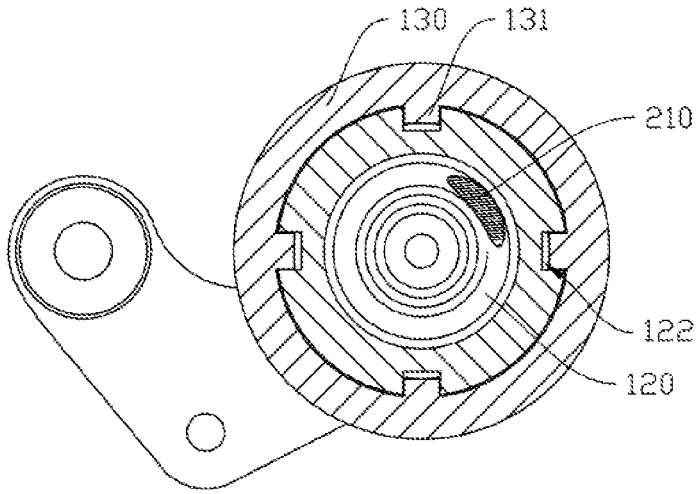


Fig. 6

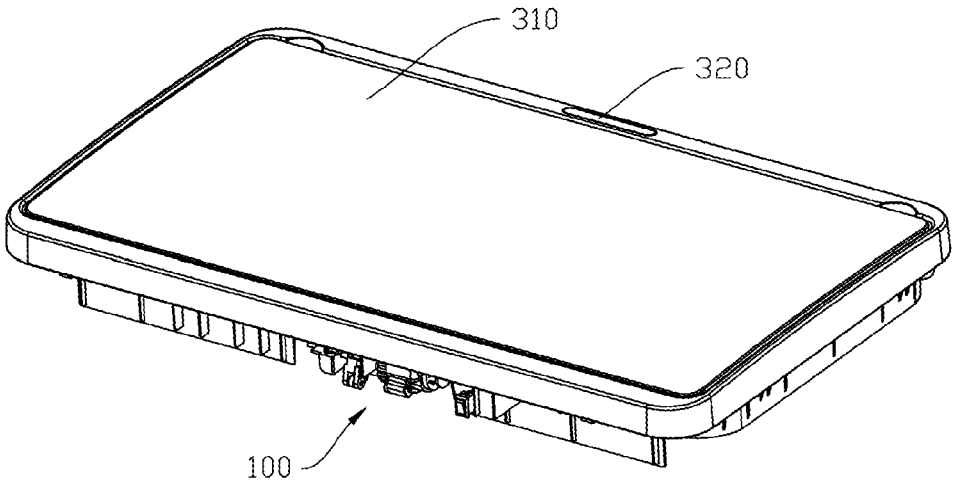


Fig. 7

CLUTCH DEVICE AND INDUCTION BIN

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application is filed on the basis of Chinese patent application No. 2022229178178 filed Nov. 2, 2022, and claims priority of the Chinese patent application, the entire contents of which are incorporated herein by reference.

TECHNICAL FIELD

[0002] The disclosure relates to the technical field of trash bins, in particular to a clutch device and an induction bin.

BACKGROUND

[0003] The existing trash bin is provided with an electric flip mechanism, which can sense the movement of a user, and then drive the lid of the trash bin to open and close automatically by a motor. The existing electric flip mechanism mainly connects an output shaft of the motor directly to the lid. However, the lid of the trash bin is easily unable to be opened and closed when suffering an external force, or the user is prone to force the lid to be opened or closed by mistake, resulting in additional loads on the motor, which makes the motor easily damaged due to overload, and reduces the service life of the trash bin.

SUMMARY

[0004] The disclosure aims to solve one of the technical problems in the related art at least to a certain extent. Therefore, the disclosure provides a clutch device, which can prevent the device from overload rotation and prolong the service life.

[0005] The disclosure further provides an induction bin having the clutch device mentioned above.

[0006] In a first aspect, embodiments of the disclosure provide a clutch device, including a transmission assembly and a reset assembly, where the transmission assembly includes a first connector and a second connector, the first connector is connected to the second connector, the first connector is provided with a bump on a side of the first connector close to the second connector, the second connector is provided with a groove on a side of the second connector close to the first connector, and the second connector is movable in an axial direction so that the bump is capable of being clamped in or slid out of the groove; and the reset assembly includes an elastic element, which is configured to drive the second connector to move towards the first connector.

[0007] The clutch device according to the embodiments of the disclosure has at least the beneficial effects as follows. The first connector is connected to the second connector, the second connector is driven by the elastic element to move towards the first connector in the axial direction, so that the bump can be clamped into the groove. In the process of driving the first connector to rotate, when the torque input to the first connector is less than the maximum working torque of the clutch device, the elastic element drives the second connector to abut against the first connector, so that the bump can be stabilized in the groove, and the first connector can drive the second connector to rotate, thereby realizing the transmission of torque. When the torque input to the first connector or the second connector is greater than the maximum working torque of the clutch device, the second connector can compress the elastic element, so that the second connector can move away from the first connector in the axial direction, the bump can slide out of the groove to make the first connector separated from the second connector, realizing no-load rotation of the first connector or the second connector, and avoiding the overload rotation of the clutch device to prevent overload damage, and prolong the service life.

[0008] In some embodiments, the groove is provided in plural, and the plurality of grooves are evenly formed at intervals along a circumferential direction of the second connector.

[0009] In some embodiments, the number of the bumps is equal to the number of the grooves.

[0010] In some embodiments, the bump is of a hemispherical shape.

[0011] In some embodiments, the first connector is provided with a turntable portion and a rotating shaft portion, the turntable portion is connected to the rotating shaft portion, the bump is disposed on the turntable portion, the second connector is arranged around the rotating shaft portion, a clamping slot is formed in the rotating shaft portion at an end away from the turntable portion, the clamping slot is connected with a clamping block, one end of the elastic element abuts against the clamping block, and the other end of the clamping block abuts against the second connector.

[0012] In some embodiments, the reset assembly further includes a connecting piece, which is arranged around the rotating shaft portion, and both sides of the connecting piece abut against the elastic element and the clamping block respectively.

[0013] In some embodiments, the transmission assembly further includes a connecting cylinder, the connecting cylinder includes a guide strip protruding from an inner wall of the connecting cylinder, the second connector and the first connector are sequentially arranged in the connecting cylinder, the second connector includes a chute in an outer wall of the second connector, the guide strip is capable of sliding in the chute, one end of the elastic element abuts against a bottom wall of the connecting cylinder, and the other end of the elastic element abuts against the second connector.

[0014] In some embodiments, the reset assembly further includes a limit block, which is in threaded connection with the connecting cylinder and abuts against the first connector.

[0015] In some embodiments, the limit block includes a plurality of handle portions protruding from an outer wall of the limit block, and the plurality of handle portions are arranged at intervals along a circumferential direction of the limit block.

[0016] In a second aspect, embodiments of the disclosure provide an induction bin, including the clutch device according to the embodiments in the first aspect of the disclosure. By providing the clutch device according to the embodiments in the first aspect of the disclosure on the induction bin, an overload rotation of the lid of the induction bin can be avoided, the risk of damage to the induction bin can be reduced, and the service life can be prolonged.

[0017] Additional aspects and advantages of the disclosure will be set forth in part in the following description, and part will become apparent from the following description, or learned by practice of the disclosure.

BRIEF DESCRIPTION OF DRAWINGS

[0018] The above-mentioned and/or additional aspects and advantages of the disclosure will become apparent and readily understood from the description of the embodiments taken in conjunction with the following drawings, wherein:

[0019] FIG. **1** is an exploded schematic diagram of a clutch device according to an embodiment in a first aspect of the disclosure;

[0020] FIG. **2** is a cross-sectional view of the clutch device according to an embodiment in the first aspect of the disclosure;

[0021] FIG. **3** is an exploded schematic diagram of the clutch device according to another embodiment in the first aspect of the disclosure;

[0022] FIG. **4** is a schematic diagram of a second connector of the clutch device according to another embodiment in the first aspect of the disclosure;

[0023] FIG. **5** is a cross-sectional view of the clutch device according to another embodiment in the first aspect of the disclosure;

[0024] FIG. **6** is another cross-sectional view of the clutch device according to another embodiment in the first aspect of the disclosure;

[0025] FIG. **7** is a schematic diagram of an induction bin according to an embodiment in a second aspect of the disclosure.

REFERENCE NUMERAL LISTING

[0026] Transmission Assembly **100**, First Connector **110**, Bump **111**, Turntable Portion **112**, Rotating Shaft Portion **113**, Clamping Slot **114**, Second Connector **120**, Groove **121**, Chute **122**, Connecting Cylinder **130**, and Guide Strip **131**;

[0027] Reset Assembly **200**, Elastic Element **210**, Clamping Block **220**, Connecting Piece **230**, Limit Block **240**, and Handle Portion **241**;

[0028] Lid **310**, and Induction Part **320**.

DETAILED DESCRIPTION

[0029] Embodiments of the disclosure will be described in detail below. Examples of the embodiments are illustrated in the accompanying drawings, where the same or like reference numerals throughout the figures indicate the same or like elements having the same or like functions. The embodiments described below with reference to the accompanying drawings are exemplary and are intended only to explain the disclosure instead of being construed as limiting the disclosure.

[0030] In the description of the disclosure, it should be understood that, descriptions relating to orientation, for example, orientation or positional relationships indicated by "up", "down", "front", "back", "left", "right", etc. are based on the orientation or positional relationships shown in the accompanying drawings, and are to facilitate the description of the disclosure and simplify the description only, rather than indicating or implying that the device or element referred to must have a specific orientation or be constructed and operated in a specific orientation, and therefore cannot be construed as limiting the disclosure.

[0031] In the description of the disclosure, the meaning of "several" is one or more, the meaning of "a plurality of" is two or more, "greater than", "less than", "more than", etc. are to be understood to exclude the given figure, and "above", "below", "within", etc. are understood to include the given figure. If "first" and "second", etc. are referred to, it is only for the purpose of distinguishing technical features, and shall not be understood as indicating or implying relative importance or implying the number of the indicated technical features or implying the sequence of the indicated technical features.

[0032] In the description of the disclosure, unless otherwise explicitly defined, the words such as "set", "install", and "connect" should be understood in a broad sense, and those skilled in the art can determine the specific meanings of the above words in the disclosure in a rational way in combination with the specific contents of the technical solutions.

[0033] It can be understood that, referring to FIG. **1** and FIG. **2**, a clutch device in a first aspect of the disclosure includes a transmission assembly **100** and a reset assembly **200**, where the transmission assembly **100** includes a first connector **110** and a second connector **120**, the first connector **110** is connected to the second connector **120**, the first connector **110** is provided with a bump **111** on a side of the first connector **110** close to the second connector **120**, the second connector **120** is provided with a groove **121** on a side of the second connector **120** close to the first connector **110**, and the second connector **120** is movable in an axial direction so that the bump **111** can be clamped in or slid out of the groove **121**; and the reset assembly **200** includes an elastic element **210**, which is configured to drive the second connector **120** to move towards the first connector **110**.

[0034] The first connector **110** is connected to the second connector **120**; the second connector **120** is driven by the elastic element **210** to move towards the first connector **110** to enable the second connector **120** to move in the axial direction and enable the second connector **120** to abut against the first connector **110**, so that the bump **111** can be clamped into the groove **121**. In the process of driving the first connector **110** to rotate, when the torque input to the first connector **110** is less than the maximum working torque of the clutch device, the elastic element **210** can drive the second connector **120** to be tightly pressed on the first connector **110**, so that the bump **111** can be stabilized in the groove **121** to enable the first connector **110** to transmit torque to the groove **121** via the bump **111**, and enable the first connector **110** to drive the second connector **120** to rotate, thereby realizing the transmission of torque; and when the torque input to the first connector **110** or the second connector **120** is greater than the maximum working torque of the clutch device, the first connector **110** can drive the second connector **120** via the bump **111** to perform an axial movement in a direction away from the first connector **110**, and the second connector **120** compresses the elastic element **210**, so that the bump **111** can slide out of the groove **121** to make the first connector **110** separated from the second connector **120**, realizing no-load rotation of the first connector **110** or the second connector **120**, and avoiding overload rotation of the clutch device to prevent the overload damage and prolong the service life.

[0035] It should be noted that the first connector **110** can be connected to a driving part such as a motor, a rotary cylinder or a hydraulic motor, and the second connector **120** can be connected to a lid **310** of an induction bin. By clamping or sliding the bump into or out of the groove **121**, the overload rotation of the driving part can be prevented, and the service life of the driving part can be prolonged.

[0036] The maximum working torque of the clutch device can be set according to the elastic force of the elastic element **210**. The greater the elastic force of the elastic element **210**, the greater the force of the second connector **120** pressed on the first connector **110**, and the greater the maximum working torque of the clutch device; and the smaller the elastic force of the elastic element **210**, the smaller the force of the second connector **120** pressed on the first connector **110**, and the smaller the maximum working torque of the clutch device. In addition, the elastic element **210** can be an ordinary compression spring, or an elastic element such as a rubber pad.

[0037] It can be understood that, referring to FIG. **1** and FIG. **2**, a plurality of grooves **121** are formed and are evenly formed at intervals along a circumferential direction of the second connector **120**. By forming the plurality of grooves **121**, when the first connector **110** rotates, the elastic element **210** can drive the second connector **120** to approach the first connector **110**, so that the bumps **111** can be quickly clamped into the grooves **121**, which reduces the idle time of the first connector **110**, accelerates the connection between the first connector **110** and the second connector **120**, and improves the performance of the clutch device.

[0038] In addition, the plurality of grooves **121** are evenly formed along a circumferential direction of the second connector **120**, so that the mass of the second connector **120** is evenly distributed, the shaking caused when the second connector **120** rotates is reduced, and the movement stability of the second connector **120** is improved.

[0039] Specifically, referring to FIG. **1** and FIG. **2**, the number of the bumps **111** is equal to the number of the grooves **121**. By providing a plurality of bumps **111** with the number equal to that of the grooves **121**, the mass of the first connector **110** is evenly distributed, and the shaking caused when the first connector **110** rotates is reduced, so that the first connector **110** can move stably. In addition, by providing a plurality of bumps **111**, the force between a single bump **111** and a groove **121** can be reduced, the bearing capacity of the first connector **110** and the second connector **120** can be improved, and the overload failure of the bumps **111** and the grooves **121** can be prevented, thereby reducing the wear of the bumps **111**, and prolonging the service life of the bumps **111** and the grooves **121**.

[0040] In addition, by setting that the number of the bumps **111** is equal to the number of the grooves **121**, one bump **111** can correspond to one groove **121**, the plurality of bumps **111** can enter the plurality of grooves **121** respectively, and the bumps **111** and the grooves **121** can be worn evenly, so that the service life of the first connector **110** and the second connector **120** can be prolonged, and the reliability of the clutch device can be improved.

[0041] It can be understood that, referring to FIG. **1** and FIG. **2**, the bumps **111** are of hemispherical shapes. By setting the shape of the bumps **111** to be hemispherical, the contact area between the bumps **111** and the grooves **121** can be expanded, so that the friction between the bumps **111** and the grooves **121** can be increased, and the bumps **111** and the grooves **121** can be stably connected. In addition, by setting the shape of the bumps **111** to be hemispherical, the surfaces of the bumps **111** are round and smooth, so that when the bumps **111** are clamped or slide into the grooves **121**, the contact area between the bumps **111** and the grooves **121** can be reduced, the wear of the bumps **111** and the grooves **121** can be reduced, stress concentration can be avoided, and the service life of the first connector **110** and the second connector **120** can be prolonged. The grooves **121** may be of hemispherical shapes.

[0042] It can be understood that, referring to FIG. **1** and FIG. **2**, the first connector **110** is provided with a turntable portion **112** and a rotating shaft portion **113**, the turntable portion **112** is connected to the rotating shaft portion **113**, the bumps **111** are disposed on the turntable portion **112**, the second connector **120** is arranged around the rotating shaft portion **113**, a clamping slot **114** is formed in the rotating shaft portion **113** at an end away from the turntable portion **112**, the clamping slot **114** is connected with a clamping block **220**, one end of the elastic element **210** abuts against the clamping block **220**, and the other end of the clamping block **220** abuts against the second connector **120**. The second connector **120** is arranged around the rotating shaft portion **113**, the clamping block **220** is disposed in the clamping slot **114**, one end of the elastic element **210** abuts against the clamping block **220**, and the other end abuts against the second connector **120**, so that the second connector **120** can be driven by the elastic element **210** to move in the axial direction of the rotating shaft portion **113**, so as to enable the bumps **111** to be clamped into or to slide out of the grooves **121**. By providing the rotating shaft portion **113**, the second connector **120** can be positioned on the first connector **110**, so that the second connector **120** can slide smoothly on the first connector **110**.

[0043] Specifically, referring to FIG. **1** and FIG. **2**, the reset assembly **200** further includes a connecting piece **230**, which is arranged around the rotating shaft portion **113**, and both sides of the connecting piece **230** abut against the elastic element **210** and the clamping block **220** respectively. One end of the connecting piece **230** abuts against the elastic element **210**, the other end abuts against the clamping block **220**, and the connecting piece **230** is arranged around the rotating shaft portion **113**, so that the connecting piece **230** can slide in the axial direction of the rotating shaft portion **113**. The elastic element **210** drives the connecting piece **230** to move towards the clamping block **220**, so that the connecting piece **230** abuts against the clamping block **220**, thereby making the clamping block **220** uniformly stressed, preventing the clamping block **220** from falling off from the clamping slot **114**, and improving the position stability of the clamping block **220**.

[0044] It can be understood that, referring to FIG. **3** to FIG. **6**, the transmission assembly **100** further includes a connecting cylinder **130**, which includes a guide strip **131** protruding from an inner wall of the connecting cylinder **130**, the second connector **120** and the first connector **110** are sequentially arranged in the connecting cylinder **130**, the second connector **120** includes a chute **122** formed in an outer wall of the second connector **120**, the guide strip **131** can slide in the chute **122**, one end of the elastic element **210** abuts against a bottom wall of the connecting cylinder **120**, and the other end of the elastic element **210** abuts against the second connector **120**. By forming the guide strip **131** on the inner wall of the connecting cylinder **130**, the second connector **120** can slide in the axial direction of the connecting cylinder **130** through the chute **122**, therefore, the positioning accuracy of the second connector **120** can be improved, and the second connector **120** can slide smoothly in the axial direction of the connecting cylinder **130**, facilitating the clamping or sliding of the bumps **111** into or out of the grooves **121**.

[0045] When the torque input to the first connector **110** is smaller than the maximum working torque of the clutch device, the second connector **120** is driven by the elastic element **210** to move towards the first connector **110**, so that the bumps **111** can be clamped into the grooves **121**, the first connector **110** can drive the second connector **120** to rotate, and the second connector **120** can be clamped in the guide block through the chute **122** to make the guide strip **131** abut against the side wall of the chute **122**, thereby driving the connecting cylinder **130** to rotate.

[0046] When the torque input to the first connector **110** or the second connector **120** is greater than the maximum working torque of the clutch device, the bumps **111** are separated from the grooves **121**, and the second connector **120** slides in the length direction of the guide strip **131**, so that the second connector **120** slides in the axial direction of the connecting cylinder **130** away from the first connector **110**, the second connector **120** compresses the elastic element **210**, and the first connector **110** is separated from the second connector **120**, thereby achieving no-load rotation of the first connector **110** or the second connector **120**, avoiding overload rotation of the clutch device, and improving the structural stability of the clutch device.

[0047] In addition, by making the guide strip **131** clamped in the chute **122**, a rotation gap between the connecting cylinder **130** and the second connector **120** can be reduced, a synchronous rotation of the second connector **120** and the connecting cylinder **130** can be realized, and the transmission accuracy of the clutch device can be improved. Specifically, referring to FIG. **5**, the reset assembly **200** further includes a limit block **240**, which is in threaded connection with the connecting cylinder **130** and abuts against the first connector **110**. The limit block **240** is in threaded connection with the connecting cylinder **130** to drive the limit block **240** to rotate, which enables the limit block **240** to be quickly mounted on the connecting cylinder **130**, so that the first connector **110** can be quickly positioned on the limit block **240**, thereby reducing the assembly time of the clutch device and improving the processing efficiency of the clutch device.

[0048] Specifically, referring to FIG. **3**, the limit block **240** includes a plurality of handle portions **241** protruding from an outer wall of the limit block **240**, the plurality of handle portions **241** are arranged at intervals along a circumferential direction of the limit block **240**. By providing the plurality of handle portions **241** protruding from the outer wall of the limit block **240**, it is convenient for a user to grasp the limit block **240** to drive the limit block **240** to rotate, accelerating the assembly of the clutch device, shortening the assembly time of the clutch device, and reducing the production cost.

[0049] It can be understood that, referring to FIG. **7**, an induction bin in a second aspect of the disclosure includes the clutch device in the first aspect of the disclosure. As having all the technical features of the clutch device according to the embodiments in the first aspect of the disclosure, the induction bin also has the beneficial effects of all the above-mentioned embodiments, which will not be repeated herein.

[0050] It can be understood that, referring to FIG. **1** and FIG. **7**, the induction bin includes a lid **310** and a body (not shown in the drawings), a driving part and an induction part **320**, where the lid **310** is hinged with the body, the induction part **320** is electrically connected to the driving part, the driving part is connected to the clutch device, and the induction part **320** is used for sensing the movement of a user. The driving part drives the first connector **110** to rotate, and then the first connector **110** drives the second connector **120** to rotate, and the second connector **120** drives the lid **310** to rotate on the body, so that the automatic opening or closing of the induction bin is realized. By providing the clutch device according to the embodiments in the first aspect of the disclosure, the lid **310** can be connected to or separated from the driving part, the overload rotation of the driving part can be avoided when the lid **310** is blocked, and the overload damage of the driving part can be prevented, and the lid **310** can be prevented from driving the driving part to rotate when being forced to open or close, thereby prolonging the service life of the induction bin. The induction part **320** can be a photoelectric sensor or an ultrasonic sensor.

[0051] The embodiments of the disclosure have been described in detail above in conjunction with the accompanying drawings, but the disclosure is not limited to the above-mentioned embodiments. Within the scope of knowledge of those of ordinary skill in the art, various changes can also be made without departing from the purpose of the disclosure.

What is claimed is:

1. A clutch device, comprising:

a transmission assembly, wherein the transmission assembly comprises a first connector and a second connector, the first connector is connected to the second connector, the first connector is provided with a bump on a side of the first connector close to the second connector, the second connector is provided with a groove on a side of the second connector close to the first connector, and the second connector is movable in an axial direction so that the bump is capable of being clamped in or slid out of the groove; and

a reset assembly, wherein the reset assembly comprises an elastic element, which is configured to drive the second connector to move towards the first connector.

2. The clutch device according to claim **1**, wherein the groove is provided in plural, and the plurality of grooves are evenly formed at intervals along a circumferential direction of the second connector.

3. The clutch device according to claim **2**, wherein the number of the bumps is equal to the number of the grooves.

4. The clutch device according to claim **1**, wherein the bump is of a hemispherical shape.

5. The clutch device according claim **1**, wherein the first connector is provided with a turntable portion and a rotating shaft portion, the turntable portion is connected to the rotating shaft portion, the bump is disposed on the turntable portion, the second connector is arranged around the rotating shaft portion, a clamping slot is formed in the rotating shaft portion at an end away from the turntable portion, the clamping slot is connected with a clamping block, one end of the elastic element abuts against the clamping block, and the other end of the clamping block abuts against the second connector.

6. The clutch device according to claim **5**, wherein the reset assembly further comprises a connecting piece, which is arranged around the rotating shaft portion, and both sides of the connecting piece abut against the elastic element and the clamping block respectively.

7. The clutch device according to claim **1**, wherein the transmission assembly further comprises a connecting cyl-

inder, the connecting cylinder comprises a guide strip protruding from an inner wall of the connecting cylinder, the second connector and the first connector are sequentially arranged in the connecting cylinder, the second connector comprises a chute in an outer wall of the second connector, the guide strip is capable of sliding in the chute, one end of the elastic element abuts against a bottom wall of the connecting cylinder, and the other end of the elastic element abuts against the second connector.

8. The clutch device according to claim **7**, wherein the reset assembly further comprises a limit block, which is in threaded connection with the connecting cylinder and abuts against the first connector.

9. The clutch device according to claim **8**, wherein the limit block comprises a plurality of handle portions protruding from an outer wall of the limit block, and the plurality of handle portions are arranged at intervals along a circumferential direction of the limit block.

10. An induction bin, comprising a clutch device comprising:

a transmission assembly, wherein the transmission assembly comprises a first connector and a second connector, the first connector is connected to the second connector, the first connector is provided with a bump on a side of the first connector close to the second connector, the second connector is provided with a groove on a side of the second connector close to the first connector, and the second connector is movable in an axial direction so that the bump is capable of being clamped in or slid out of the groove; and

a reset assembly, wherein the reset assembly comprises an elastic element, which is configured to drive the second connector to move towards the first connector.

11. The induction bin according to claim **10**, wherein the groove is provided in plural, and the plurality of grooves are evenly formed at intervals along a circumferential direction of the second connector.

12. The induction bin according to claim **11**, wherein the number of the bumps is equal to the number of the grooves.

13. The induction bin according to claim **10**, wherein the bump is of a hemispherical shape.

14. The induction bin according claim **10**, wherein the first connector is provided with a turntable portion and a rotating shaft portion, the turntable portion is connected to the rotating shaft portion, the bump is disposed on the turntable portion, the second connector is arranged around the rotating shaft portion, a clamping slot is formed in the rotating shaft portion at an end away from the turntable portion, the clamping slot is connected with a clamping block, one end of the elastic element abuts against the clamping block, and the other end of the clamping block abuts against the second connector.

15. The induction bin according to claim **14**, wherein the reset assembly further comprises a connecting piece, which is arranged around the rotating shaft portion, and both sides of the connecting piece abut against the elastic element and the clamping block respectively.

16. The induction bin according to claim **10**, wherein the transmission assembly further comprises a connecting cylinder, the connecting cylinder comprises a guide strip protruding from an inner wall of the connecting cylinder, the second connector and the first connector are sequentially arranged in the connecting cylinder, the second connector comprises a chute in an outer wall of the second connector, the guide strip is capable of sliding in the chute, one end of the elastic element abuts against a bottom wall of the connecting cylinder, and the other end of the elastic element abuts against the second connector.

17. The induction bin according to claim **16**, wherein the reset assembly further comprises a limit block, which is in threaded connection with the connecting cylinder and abuts against the first connector.

18. The induction bin according to claim **17**, wherein the limit block comprises a plurality of handle portions protruding from an outer wall of the limit block, and the plurality of handle portions are arranged at intervals along a circumferential direction of the limit block.

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