

AUTOMATIC OVERTURNING DEVICE AND CLEANING APPARATUS FOR GARBAGE CAN

TECHNICAL FIELD

5 This application relates to the field of cleaning apparatus technologies, and in particular, to an automatic overturning device and a cleaning apparatus for a garbage can.

BACKGROUND

 A sweeping vehicle usually completes trash dumping manually. For a status in which a large amount of dust and stones remain on the floor of a construction site, repeated cleaning is needed,
10 and is time-consuming, labor intensive, and inefficient.

 In some cleaning apparatuses, hydraulic cylinders are applied to perform dump operating on garbage cans. If a single hydraulic cylinder is applied, a large hydraulic cylinder is needed because the garbage can is relatively large, resulting in an excessive size of a trash dumping mechanism. If two hydraulic cylinders are applied, it is difficult to ensure synchronicity between the hydraulic
15 cylinders, and there are problems of high costs and easy oil leakage from a pipeline in the hydraulic cylinder.

SUMMARY

 According to various embodiments of this application, an automatic overturning device for a garbage can is provided, including: a base; at least two groups of connecting rod mechanisms,
20 where One end of each of the connecting rod mechanisms is rotatably connected to the base, and the other end thereof is rotatably connected to a garbage can; and a driving mechanism, where the driving mechanism includes a driving electric motor and a transmission assembly, which are mounted on the base, the driving electric motor is in synchronous transmission connection with at least two groups of push rod mechanisms by means of the transmission assembly, and one end of
25 each of the push rod mechanisms is rotatably connected to each of the connecting rod mechanisms.

 In some embodiments, the push rod mechanism includes a sliding rail, a rack, and a push rod, where the sliding rail is mounted on the base, the rack is slidably connected to the sliding rail, a power output gear of the transmission assembly is connected to the rack in a transmission way, one end of the push rod is rotatably connected to the rack, and the other end of the push rod is rotatably
30 connected to each of the connecting rod mechanisms.

Specifically, the transmission assembly includes a first transmission shaft that is mounted on the base and a sprocket that is mounted at the middle of the first transmission shaft, the driving electric motor is connected to the sprocket by using a chain, and one power output gear is mounted on both ends of the first transmission shaft.

5 In some optional embodiments, the transmission assembly includes a first transmission shaft and a second transmission shaft, which are mounted on the base in parallel, power output gears that are mounted on both ends of the first transmission shaft, a power input gear that is mounted at the middle of the second transmission shaft, and intermediate transmission gears that are mounted on both ends of the second transmission shaft, where each of the intermediate transmission gears
10 meshes with the corresponding one of the power output gears.

In some embodiments, the connecting rod mechanism includes a first connecting rod, where one end of the first connecting rod is hinged to the base, and the other end of the first connecting rod is configured to be hinged to a garbage can; and a second connecting rod, where one end of the second connecting rod is hinged to the base, and the other end of the second connecting rod is
15 configured to be hinged to the garbage can.

Specifically, the first connecting rod includes a first arm, a second arm, and a plurality of connection parts that are disposed between the first arm and the second arm, where the plurality of connection parts are disposed at evenly intervals along a length direction of the first arm, and the one end of each of the push rod mechanisms is rotatably connected to one of the connection parts.

20 In some optional embodiments, the sliding rail is gradually tilted upward in a direction toward the base.

In some optional embodiments, a limiting structure is disposed on the base, and the limiting structure is configured to limit movement of the rack.

According to various embodiments of this application, a cleaning apparatus is further provided,
25 including a frame, a garbage can, and the automatic overturning device for a garbage can according to any one of the foregoing embodiments of this application, where the automatic overturning device for a garbage can is mounted on the frame, and the automatic overturning device for a garbage can is hinged to the garbage can.

In some embodiments, the garbage can includes a dump outlet that is disposed at the bottom

thereof and a baffle plate capable of being driven to open or close the dump outlet.

Details of one or more embodiments of this application are provided in the following accompanying drawings and descriptions. Other features, objectives, and advantages of this application will become apparent from the specification, the accompanying drawings, and the
5 claims.

BRIEF DESCRIPTION OF DRAWINGS

To better describe and illustrate the embodiments and/or examples of those applications disclosed herein, reference may be made to one or more accompanying drawings. Additional details or examples used to describe the accompanying drawings should not be considered as limitations to
10 scope of any of the disclosed applications, the currently described embodiments and/or examples, and the best mode of those applications as currently understood.

FIG. 1 is a schematic diagram of a structure of a cleaning apparatus according to an embodiment of this application;

FIG. 2 is a side view of FIG. 1, and in this case, a garbage can is in an initial position; and

15 FIG. 3 is a side view of FIG. 1, and in this case, a garbage can rises or lowers to a specific position.

Reference numerals:

100. Automatic overturning device for a garbage can, 1. Base, 12. Limiting structure, 14. Sliding rail mounting seat, 2. Driving mechanism, 21. Driving electric motor, 22. Transmission
20 assembly, 221. Power input gear, 222. Power output gear, 223. Intermediate transmission gear, 224. First transmission shaft, 225. Second transmission shaft, 4. Connecting rod mechanism, 41. First connecting rod, 411. First arm, 412. Second arm, 413. Connection part, 414. First hinge point, 42. Second connecting rod, 421. Second hinge point, 5. Push rod mechanism, 51. Sliding rail, 52. Rack, 53. Push rod, 54. Sliding block, 55. Sliding block mounting plate, 200. Garbage can, 201. Baffle
25 plate.

DESCRIPTION OF EMBODIMENTS

The following describes in detail embodiments of this application, examples of the embodiments are shown in the accompanying drawings, and identical or similar reference numerals throughout the descriptions represent identical or similar elements or elements having identical or

similar functions. The following embodiments described with reference to the accompanying drawings are examples and are merely intended to explain this application, but cannot be understood as a limitation on this application.

In the description of this application, it should be understood that the orientation or the position relationship indicated by terms such as "upper", "lower", "top", "bottom", "inner", "outer", "axial direction" is based on the orientation or the position relationship shown in the accompanying drawings, is merely for convenience and simplification of description of this application, and does not indicate or imply that an apparatus or element must have a specific orientation and be constructed or operated in a specific orientation. Therefore, this application should not be understood as a limitation on this application. Therefore, features defining "first" and "second" may explicitly or implicitly include one or more such features. In the description of this application, unless otherwise stated, "a plurality of" means two or more than two.

In the description of this application, it should be noted that, unless otherwise expressly specified and limited, the terms "mount", "joint", and "connect" should be understood in a broad sense, for example, this may be a fixed connection, may be a detachable connection, or may be an integral connection; may be a mechanical connection, or may be an electrical connection; may be a direct connection, or may be an indirect connection through an intermediate medium, or may be communication inside two components. A person of ordinary skill in the art may understand specific meanings of the foregoing terms in this application according to specific situations.

Referring to FIG. 1 to FIG. 3, the following describes an automatic overturning device 100 for a garbage can according to an embodiment of this application.

As shown in FIG. 1, the automatic overturning device 100 for a garbage can in this embodiment of this application includes a base 1, at least two groups of connecting rod mechanisms 4, at least two groups of push rod mechanisms 5, and a driving mechanism 2. One end of the connecting rod mechanism 4 is rotatably connected to the base 1, and the other end of the connecting rod mechanism 4 is rotatably connected to a garbage can 200. The driving mechanism 2 includes a driving electric motor 21 and a transmission assembly 22, which are mounted on the base 1, the driving electric motor 21 is in synchronous transmission connection with the at least two groups of push rod mechanisms 5 by means of the transmission assembly 22, and one end of each

of the push rod mechanisms 5 is rotatably connected to each of the connecting rod mechanisms 4.

It may be understood that, the base 1 serves as a basis for the automatic overturning device 100 for a garbage can, components such as the driving electric motor 21 and the transmission assembly 22 are disposed on the base 1, and operating stability of the automatic overturning device 100 for a garbage can may be improved.

In a general trash dumping apparatus, a traditional cylinder is mostly used as a drive, for example, a garbage can hydraulic rod is embedded in the apparatus, the garbage can hydraulic rod is mounted at the bottom of the garbage can, and trash dumping is completed through a garbage can dumping shaft. This manner has problems of a large overall size and easy oil leakage from an oil pipeline.

As shown in FIG. 1, in the automatic overturning device 100 for a garbage can in this embodiment of this application, the driving electric motor 21 is applied to provide power for the transmission assembly 22, and the transmission assembly 22 is enabled to transmit power to the connecting rod mechanism 4. This mechanical transmission manner has long service life and zero pollution, and can also resolve the problem of oil leakage.

In some trash dumping devices, two hydraulic cylinders are applied to perform trash dumping. However, it is difficult to ensure synchronicity between the two cylinders, and there is still the problem of high costs in the hydraulic cylinders.

In the automatic overturning device 100 for a garbage can in this embodiment of this application, as shown in FIG. 1 to FIG. 3, the driving electric motor 21 is in synchronous transmission connection with the at least two groups of push rod mechanisms 5 by means of the transmission assembly 22. The at least two groups of push rod mechanisms 5 may separately transmit power to the at least two groups of connecting rod mechanisms 4, to enable the at least two groups of connecting rod mechanisms 4 to be deformed, and to implement lifting of the garbage can 200 in a deformation process, so as to facilitate turning-over of the garbage can 200 and trash dumping. In this way, not only the entire automatic overturning device 100 occupies a small area, but also the automatic overturning device 100 for a garbage can is applicable to a device of a relatively small size, increasing an applicable range of the automatic overturning device 100 for a garbage can. In addition, the apparatus has good synchronicity, to avoid a case that the garbage can

200 cannot accurately return to an initial mounting position due to the unsynchronized push rod mechanism 5. In addition, the apparatus can simplify control, reduce costs, and enable force to be more balanced and stable, improving stability and reliability of the automatic overturning device 100 for a garbage can in an operating process.

5 In the automatic overturning device 100 for a garbage can in this embodiment of this application, the transmission assembly 22 that can be synchronously driven is provided between the driving electric motor 21 and the push rod mechanism 5, so that the entire automatic overturning device 100 is enabled to occupy a small area and has good synchronicity, to avoid a case that the garbage can 200 cannot accurately return to an initial mounting position due to the unsynchronized
10 push rod mechanism 5. The transmission assembly 22 sequentially and synchronously transmits power to the at least two groups of push rod mechanisms 5 and the at least two groups of connecting rod mechanisms 4, to implement rising and lowering of the garbage can 200, so as to facilitate turning-over of the garbage can 200 and trash dumping. Therefore, this not only resolves the problem of easy oil leakage from an oil pipeline in the conventional cylinder, to enable a force
15 of the automatic overturning device 100 to be more balanced and stable, but also reduces costs, so that the automatic overturning device 100 for the garbage can is applicable to devices of different types, to increase an applicable range of the automatic overturning device 100 for the garbage can.

In some embodiments, as shown in FIG. 1, the push rod mechanism 5 includes a sliding rail 51, a rack 52, and a push rod 53. The sliding rail 51 is mounted on the base 1, the rack 52 is slidably
20 connected to the sliding rail 51, a power output gear 222 of the transmission assembly 22 is connected to the rack 52 in a transmission way, one end of the push rod 53 is rotatably connected to the rack 52, and the other end of the push rod 53 is rotatably connected to each of the connecting rod mechanisms 4. It may be understood that, the power output gear 222 may transmit power to the rack 52, enable the rack 52 to slide relative to the sliding rail 51, and drive the push rod 53 to move
25 and rotate. In this way, in a motion process of the push rod 53, the connecting rod mechanism 4 is enabled to be deformed. The meshing transmission form of the gear and the rack 52 is applied herein, the structure is simple, and the transmission is stable, helping improve operating reliability of the push rod mechanism 5.

Specifically, as shown in FIG. 1, the transmission assembly 22 includes a first transmission

shaft 224 and a second transmission shaft 225, which are mounted on the base 1 in parallel, power output gears 222 that are mounted on both ends of the first transmission shaft 224, a power input gear 221 that is mounted at the middle of the second transmission shaft 225, and intermediate transmission gears 223 that are mounted on both ends of the second transmission shaft 225. Each of the intermediate transmission gears 223 meshes with the corresponding one of the power output gears 222. It may be understood that, the driving electric motor 21 drives the power input gear to rotate, so as to enable the second transmission shaft 225 and the intermediate transmission gear 223 to rotate synchronously, and the rotated intermediate transmission gear 223 may transmit power to the power output gear 222. The gear meshing transmission form herein has advantages such as high working stability, high transmission efficiency, and compact structure, helping improve transmission efficiency and working stability of the transmission assembly 22.

Optionally, one end of the push rod 53 is rotatably connected to the rack 52 by using a mounting pin. Therefore, this may implement reliable transmission.

Optionally, a sliding block 54 is disposed at the bottom of the rack 52, one side of the sliding block 54 is connected to the rack by using a sliding block mounting plate 55, and the other side of the sliding block 54 is slidably connected to the sliding rail 51. Therefore, connection reliability of the sliding block 54 can be improved, and sliding operating of the rack 52 can be facilitated.

In some optional embodiments, the transmission assembly 22 includes a first transmission shaft 224 that is mounted on the base 1 and a sprocket that is mounted at the middle part of the first transmission shaft 224, the driving electric motor 21 is connected to the sprocket by using a chain, and one power output gear 222 is mounted on both ends of the first transmission shaft 224. It may be understood that the driving electric motor 21 may drive the chain to rotate so that the sprocket, the first transmission shaft 224, and the power output gear 222 rotate synchronously, and thus transmit power to the rack 52. A form of cooperation between the chain and the sprocket herein is used to implement long-distance transmission, and ensures working in environments such as low speed, heavy load, and dust rising, helping increase an applicable range of the transmission assembly 22.

Optionally, the push rod mechanism 5 may include a sliding rail 51, a screw, a nut, and a push rod 53. The bottom of the nut may be slidably connected to the sliding rail 51, the power output

gear 222 is a bevel gear, the bevel gear is overlapped with a rotation axis of the screw, one end of the push rod 53 is rotatably connected to the nut, and the other end of the push rod 53 is rotatably connected to each of the connecting rod mechanisms 4. In this way, the bevel gear and the screw can rotate synchronously, so that the bottom of the nut is enabled to reciprocate on the base 1. A form of cooperation between the screw and the nut herein is used, and motion precision is high, for example, a movement distance of the rack 52 can be accurately controlled by using a quantity of rotation circles of the screw, improving operating precision of the automatic overturning device 100 for a garbage can. A specific form of cooperation between the transmission assembly 22 and the push rod 53 is not limited herein.

In some embodiments, as shown in FIG. 1, the connecting rod mechanism 4 includes a first connecting rod 41 and a second connecting rod 42. One end of the first connecting rod 41 is hinged to the base 1, and the other end of the first connecting rod 41 is configured to be hinged to a garbage can 200. One end of the second connecting rod 42 is hinged to the base 1, and the other end of the second connecting rod 42 is configured to be hinged to the garbage can 200.

It may be understood that, in some trash dumping apparatuses, a turning-over mechanism and a lift mechanism are separately disposed. For example, a four-stage telescopic hydraulic cylinder on a mechanical arm enables, by using a hierarchical telescopic feature, the mechanical arm to clamp the garbage can to lift and lower, and the turning-over mechanism is as follows: When the clamped garbage can reaches a specified position, a stepper motor drives the mechanical arm to clamp the garbage can to perform turning-over. However, the entire set of apparatus is expensive, and there is a problem of oil leakage from an oil pipeline. For another example, a portal frame is provided with a rising and lowering apparatus for a garbage can and an automatic overturning device for dumping of a garbage can, and a turning-over cylinder is connected, by using a transmission arm, to a turning-over arm to complete trash dumping. However, there are problems of a large overall size in the apparatus and oil leakage from an oil pipeline.

In the automatic overturning device 100 for a garbage can in this embodiment of this application, the push rod mechanism 5 may transmit power to the first connecting rod 41. In this way, when the first connecting rod 41 rotates, the garbage can 200 and the second connecting rod 42 are enabled to sequentially rotate, implementing rising and lowering of the garbage can 200, and

simultaneously driving the garbage can 200 to turn over.

Specifically, the first connecting rod is provided with a first hinge point 414 that is configured to hinge the garbage can 200, and the second connecting rod is provided with a second hinge point 421 that is configured to hinge the garbage can 200. In this way, when the driving electric motor 21 rotates, the driving electric motor 21 can transmit power to the push rod mechanism 5 by means of the transmission assembly 22, to drive the connecting rod mechanism 4 to be deformed, so that both heights and relative positions of the first hinge point 414 and the second hinge point 421 change, driving the garbage can 200 to rise and lower, and simultaneously driving the garbage can 200 to turn over.

It should be noted that the connecting rod mechanism 4 including the first connecting rod 41 and the second connecting rod 42 is disposed between the garbage can 200 and the base 1, and the first connecting rod 41, and the garbage can 200, the second connecting rod 42, and the base 1 are enabled to form a four-connecting rod structure, to help improve transmission stability and reliability. In addition, the second connecting rod 42 may also play a role in preventing a case that swing generated along a length direction of the garbage can 200 causes that the garbage can 200 cannot return.

Further, as shown in FIG. 1, the first connecting rod 41 includes a first arm 411, a second arm 412, and a plurality of connection parts 413 that are disposed between the first arm 411 and the second arm 412. The plurality of connection parts 413 are disposed at evenly intervals along a length direction of the first arm 411, and the one end of each of the push rod mechanisms 5 is rotatably connected to one of the connection parts 413. It may be understood that the first arm 411 and the second arm 412 are disposed to improve structural strength of the first connecting rod 41, helping increase service life of the first connecting rod 41. The plurality of connection parts 413 may be disposed to connect the first arm 411 and the second arm 412, to improve connection reliability and motion synchronicity between the first arm 411 and the second arm 412, to provide a mounting position for the push rod mechanism 5, and to help facilitate flexible layout of the automatic overturning device 100 for a garbage can. For example, the push rod mechanism 5 can be selectively connected to the connection parts 413 in different positions according to the actual situation. If the garbage can 200 needs to have a higher raising or lowering height, the push rod

mechanism 5 may be selectively connected to a connection part 413 away from the garbage can 200. If the rising or lowering height of the garbage can 200 needs to be reduced, the push rod mechanism 5 may be selectively connected to a connection part 413 of the garbage can 200. A specific connection position of the push rod mechanism 5 is not limited herein.

5 Optionally, the connection part 413 may be a shaft part, or may be a sleeve part, and a form of the connection part is not specifically limited herein.

10 In some optional embodiments, as shown in FIG. 1, the sliding rail 51 is gradually tilted upward in a direction toward the base 1. It may be understood that the sliding rail 51 may be disposed to guide the sliding of the rack 52, to improve movement precision of the rack 52 and reduce motion offset. The sliding rail 51 herein is gradually tilted upward in a direction toward the garbage can 200. Not only the rising or lowering height of the garbage can 200 is increased, but also the layout of the automatic overturning device 100 for a garbage can is more compact, helping the automatic overturning device 100 to be miniaturized.

15 Optionally, the base 1 is further provided with a sliding rail mounting seat 14, and the sliding rail 51 is connected to the base 1 by using the sliding rail mounting seat 14. Therefore, connection stability and reliability of the sliding rail 51 can be improved.

20 In some embodiments, as shown in FIG. 1, a limiting structure 12 is disposed on the base 1, and the limiting structure 12 is configured to limit movement of the rack 52. Therefore, the automatic overturning device 100 for a garbage can is capable of implementing double limiting of mechanical and electronic control, and ensure higher safety.

 Optionally, the limiting structure 12 may be a limiting block located at an end of a guide rail, so as to play a good mechanical limiting function. Certainly, in some other embodiments, the limiting structure 12 may be a limiting rod, a limiting ring, or the like. A specific form of the limiting structure 12 is not limited herein.

25 Referring to FIG. 1 to FIG. 3, the following describes an automatic overturning device 100 for a garbage can in a specific embodiment of this application.

 The automatic overturning device 100 for a garbage can in this embodiment of this application includes a base 1, at least two groups of connecting rod mechanisms 4, at least two groups of push rod mechanisms 5, and a driving mechanism 2.

A limiting structure 12 is disposed on the base 1, and the limiting structure 12 is configured to limit movement of a rack 52.

The connecting rod mechanism 4 includes a first connecting rod 41 and a second connecting rod 42. One end of the first connecting rod 41 is hinged to the base 1, and the other end of the first connecting rod 41 is configured to be hinged to a garbage can 200. The first connecting rod 41 includes a first arm 411, a second arm 412, and connection parts 413 that are disposed between the first arm 411 and the second arm 412. A plurality of connection parts 413 are disposed at intervals along a length direction of the first arm 411. One end of the second connecting rod 42 is hinged to the base 1, and the other end of the second connecting rod 42 is configured to be hinged to the garbage can 200.

The push rod mechanism 5 includes a sliding rail 51, the rack 52, and a push rod 53. The sliding rail 51 is gradually tilted upward in a direction toward the base 1. The rack 52 is slidably connected to the sliding rail 51. One end of the push rod 53 is rotatably connected to the rack 52, and the other end of the push rod 53 is rotatably connected to one of the connection parts 413.

The driving mechanism 2 includes a driving electric motor 21 and a transmission assembly 22, which are mounted on the base 1. The driving electric motor 21 is disposed on the base 1, and the driving electric motor 21 is in synchronous transmission connection with the at least two groups of push rod mechanisms 5 by means of the transmission assembly 22. The transmission assembly 22 includes a first transmission shaft 224 and a second transmission shaft 225, which are mounted on the base 1 in parallel, power output gears 222 that are mounted on both ends of the first transmission shaft 224, a power input gear 221 that is mounted at the middle of the second transmission shaft 225, and intermediate transmission gears 223 that are mounted on both ends of the second transmission shaft 225. Each of the intermediate transmission gears 223 meshes with the corresponding one of the power output gears 222. The power output gear is connected to the rack 52 in a transmission way.

The following describes a cleaning apparatus in an embodiment of this application with reference to the accompanying drawings.

The cleaning apparatus in this embodiment of this application includes a frame, a garbage can, and the automatic overturning device 100 for a garbage can according to any one of the foregoing

embodiments of this application. The automatic overturning device 100 for a garbage can is mounted on the frame, and the automatic overturning device 100 for a garbage can is hinged to a garbage can 200.

The cleaning apparatus in this embodiment of this application is provided with the transmission assembly 22 that can be synchronously driven and that is located between the driving electric motor 21 and the push rod mechanism 5, so that the entire cleaning apparatus is enabled to occupy a small area and has good synchronicity, to avoid a case that the garbage can 200 cannot accurately return to an initial mounting position due to the unsynchronized push rod mechanism 5. The transmission assembly 22 sequentially and synchronously transmits power to the at least two groups of push rod mechanisms 5 and the at least two groups of connecting rod mechanisms 4, to implement rising and lowering of the garbage can 200, so as to facilitate turning-over of the garbage can 200 and trash dumping. Therefore, this not only resolves a problem of easy oil leakage from an oil pipeline in the conventional cylinder, to enable a force of the cleaning apparatus to be more balanced and stable, but also reduces costs, to increase an applicable range of the cleaning apparatus.

In some embodiments, as shown in FIG. 2 and FIG. 3, the garbage can 200 includes a dump outlet that is disposed at the bottom thereof and a baffle plate 201 capable of being driven to open or close the dump outlet. It may be understood that, when the baffle plate 201 is driven to open the dump outlet, the trash may be dumped out from the garbage can 200, improving cleanliness of the garbage can 200, and reducing occurrence of a case in which the trash remains in the garbage can 200. When trash dumping is completed, the baffle plate 201 may be driven to close the dump outlet, so that the garbage can 200 can be repeatedly used for a plurality of times, to improve reliability of loading the trash.

Other parts of the cleaning apparatus according to this embodiment of this application such as a control apparatus and an operation are known to a person of ordinary skill in the art, and are not described in detail herein.

In the descriptions of this specification, the descriptions of the reference terms "embodiment", "example", or the like indicate that specific features, structures, materials, or characteristics described with reference to this embodiment or example are included in at least one embodiment or

example of this application. In this specification, illustrative expressions of the foregoing terms do not necessarily refer to same embodiments or examples. In addition, the described specific features, structures, materials, or characteristics may be combined in an appropriate manner in any one or more embodiments or examples.

5 Although embodiments of this application have been shown and described, a person of ordinary skill in the art may understand that, various changes, modifications, replacements, and variations may be made to these embodiments without departing from the principle and intention of this application, and the scope of this application is limited by claims and equivalents thereof.

CLAIMS

1. An automatic overturning device (100) for a garbage can, comprising:

a base (1);

at least two groups of connecting rod mechanisms (4), wherein one end of each of the
 5 connecting rod mechanisms (4) is rotatably connected to the base (1), and the other end of each of
 the connecting rod mechanisms (4) is rotatably connected to a garbage can; and

a driving mechanism (2), wherein the driving mechanism (2) comprises a driving electric
 motor (21) and a transmission assembly (22), which are mounted on the base (1), the driving
 electric motor (21) is in synchronous transmission connection with at least two groups of push rod
 10 mechanisms (5) by means of the transmission assembly (22), and one end of each of the push rod
 mechanisms (5) is rotatably connected to each of the connecting rod mechanisms (4).

2. The automatic overturning device (100) for a garbage can according to claim 1, wherein the
 push rod mechanism (5) comprises a sliding rail (51), a rack (52), and a push rod (53), wherein the
 sliding rail (51) is mounted on the base (1), the rack (52) is slidably connected to the sliding rail
 15 (51), a power output gear (222) of the transmission assembly (22) is connected to the rack (52) in a
 transmission way, one end of the push rod (53) is rotatably connected to the rack (52), and the other
 end of the push rod (53) is rotatably connected to each of the connecting rod mechanisms (4).

3. The automatic overturning device (100) for a garbage can according to claim 2, wherein the
 transmission assembly (22) comprises a first transmission shaft (224) that is mounted on the base (1)
 20 and a sprocket that is mounted at the middle of the first transmission shaft (224), the driving electric
 motor (21) is connected to the sprocket by using a chain, and one power output gear (222) is
 mounted on both ends of the first transmission shaft (224).

4. The automatic overturning device (100) for a garbage can according to claim 2, wherein the
 transmission assembly (22) comprises a first transmission shaft (224) and a second transmission
 25 shaft (225), which are mounted on the base (1) in parallel, power output gears (222) that are
 mounted on both ends of the first transmission shaft (224), a power input gear (221) that is mounted
 at the middle of the second transmission shaft (225), and intermediate transmission gears (223) that

are mounted on both ends of the second transmission shaft (225), wherein each of the intermediate transmission gears (223) meshes with the corresponding one of the power output gears (222).

5. The automatic overturning device (100) for a garbage can according to claim 1, wherein the connecting rod mechanism (4) comprises:

5 a first connecting rod (41), wherein one end of the first connecting rod (41) is hinged to the base (1), and the other end of the first connecting rod (41) is configured to be hinged to a garbage can (200); and

10 a second connecting rod (42), wherein one end of the second connecting rod (42) is hinged to the base (1), and the other end of the second connecting rod (42) is configured to be hinged to the garbage can (200).

6. The automatic overturning device (100) for a garbage can according to claim 5, wherein the first connecting rod (41) comprises a first arm (411), a second arm (412), and a plurality of connection parts (413) that are disposed between the first arm (411) and the second arm (412), wherein the plurality of connection parts (413) are disposed at evenly intervals along a length
15 direction of the first arm (411), and the one end of each of the push rod mechanisms (5) is rotatably connected to one of the connection parts (413).

7. The automatic overturning device (100) for a garbage can according to claim 2, wherein the sliding rail (51) is gradually tilted upward in a direction toward the base (1).

20 8. The automatic overturning device (100) for a garbage can according to claim 2, wherein a limiting structure (12) is disposed on the base (1), and the limiting structure (12) is configured to limit movement of the rack (52).

9. A cleaning apparatus, comprising a frame, a garbage can (200), and the automatic overturning device (100) for a garbage can according to any one of claims 1 to 8, wherein the automatic overturning device (100) for a garbage can is mounted on the frame, and the automatic
25 overturning device (100) for a garbage can is hinged to the garbage can (200).

10. The cleaning apparatus according to claim 9, wherein the garbage can (200) comprises a dump outlet that is disposed at the bottom thereof and a baffle plate (201) capable of being driven to open or close the dump outlet.