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(54) **FLOOR WASHING MACHINE**

(57) Provided is a floor washing machine (100). The floor washing machine (100) includes a main body (110), a handle (120) and a scrubber brush assembly (1). The scrubber brush assembly includes a housing (15) having a front end and a rear end; a first roller brush (11) disposed at the front end of the housing; a second roller brush (12) disposed at the rear end of the housing; a motor (13) and two transmission mechanisms. The two transmission mechanisms respectively drive the two roller brushes to operate. The first roller brush has a first rotational speed. The second roller brush has a second rotational speed. The first rotational speed is greater than the second rotational speed.

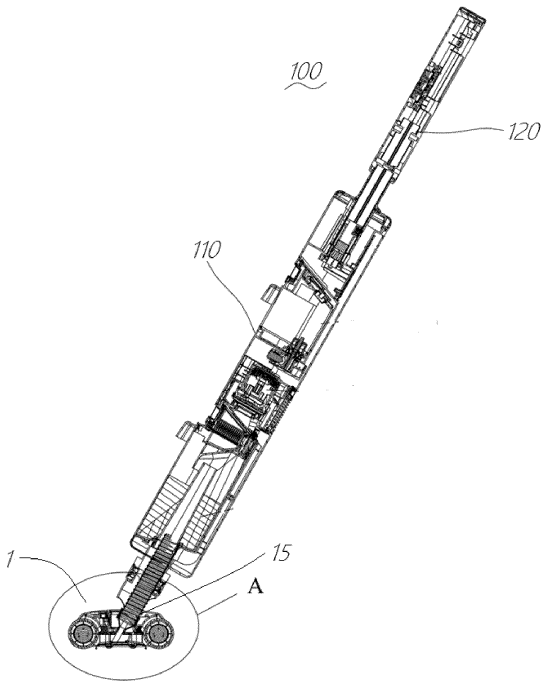


FIG. 1

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## Description

### CROSS-REFERENCE TO RELATED APPLICATIONS

**[0001]** This application is based on and claims priorities to Chinese Patent Application No. 202110469542.3 filed on April 28, 2021 and entitled "SCRUBBER" and Chinese Patent Application No. 202122606565.2 filed on October 27, 2021 and entitled "SCRUBBER", which are incorporated herein by reference in their entireties.

### TECHNICAL FIELD

**[0002]** The present disclosure relates to the technical field of cleaning equipment, and more particularly, to a scrubber.

### BACKFLOOR

**[0003]** A scrubber, as cleaning appliances, are more and more popular among users. Especially a wireless scrubber is favored by users, because it is powered by batteries and is not bound by power cords. With the development of the scrubber products, users are paying more and more attention to the cleaning efficiency of the scrubber products. Since double roller brushes can complete the floor cleaning more quickly and efficiently, it is also more and more popular among users.

**[0004]** Therefore, how to ensure that the user keeps the consistent push feeling when pushing the scrubber forwards and backwards in use, and how to drive the two roller brushes on the front end and the rear end of the scrubber to avoid excessive working voltage, so as to save energy and reduce consumption of this type of scrubber, is very important.

### SUMMARY

**[0005]** The purpose of the present disclosure is to provide a scrubber. The scrubber adopts double roller brushes, and outputs different speeds through the two roller brushes, which can ensure the user's consistent push feeling when pushing the scrubber forwards and backwards while it can satisfy the user's need to use the scrubber to efficiently clean and sanitize the home, and can reduce energy consumption of the scrubber with the double roller brushes.

**[0006]** The purpose of the present disclosure is achieved through the following technical solutions.

**[0007]** A scrubber includes: a main body; a handle located at one end of the main body and configured to be gripped; and a scrubber brush assembly located at another end of the main body. The scrubber brush assembly includes: a housing having a front end and a rear end opposite to the front end; a first roller brush disposed at the front end of the housing; and a second roller brush disposed at the rear end of the housing. The first roller brush has a first rotational speed in operation. The second roller brush has a second rotational speed in operation. The first rotational speed is greater than the second rotational speed.

**[0008]** In an embodiment, the scrubber brush assembly includes a motor, and the motor is located within the housing. The motor is in driving connection with the first roller brush by a first transmission mechanism. The first transmission mechanism is configured to drive the first roller brush to operate. The motor is in driving connection with the second roller brush by a second transmission mechanism. The second transmission mechanism is configured to drive the second roller brush to operate. A reduction ratio of the first transmission mechanism is smaller than a reduction ratio of the second transmission mechanism.

**[0009]** In an embodiment, the scrubber brush assembly further includes an output transmission gear set. The output transmission gear set includes a planetary gear mechanism, a first output gear, and a second output gear. A sun gear of the planetary gear mechanism is connected to an operating terminal of the motor. The first output gear is disposed on a planet carrier of the planetary gear mechanism and is connected to the first transmission mechanism in a transmission manner. The second output gear is engaged with the first output gear and is connected to the second transmission mechanism in a transmission manner.

**[0010]** In an embodiment, the first transmission mechanism includes a first input synchronous pulley, a first synchronous belt, and a first output synchronous pulley. The first input synchronous pulley is connected to the first output gear. The first output synchronous pulley is connected to the first input synchronous pulley by the first synchronous belt in a transmission manner. The first output synchronous pulley is connected to the first roller brush in a transmission manner.

**[0011]** In an embodiment, the second transmission mechanism includes a second input synchronous pulley, a second synchronous belt, and a second output synchronous pulley. The second input synchronous pulley is connected to the second output gear. The second output synchronous pulley is connected to the second input synchronous pulley by the second synchronous belt in a transmission manner. The second output synchronous pulley is connected to the second roller brush in a transmission manner.

**[0012]** In an embodiment, the first roller brush includes a first hollow cavity, or the second roller brush includes a second hollow cavity. The motor is received in the first hollow cavity or the second hollow cavity.

**[0013]** In an embodiment, the motor includes a first motor and a second motor. The first motor is in driving connection with the first roller brush by the first transmission mechanism. The first transmission mechanism is configured to drive the first roller brush to operate. The second motor is in driving connection with the second roller brush by the second transmission mechanism. The second transmission mechanism is configured to drive the sec-

ond roller brush to operate.

**[0014]** In an embodiment, the first roller brush includes a first hollow cavity. The first hollow cavity is for receiving the first motor and the first transmission mechanism. The first motor is in driving connection with the first roller brush by the first transmission mechanism. The second roller brush includes a second hollow cavity. The second hollow cavity is for receiving the second motor and the second transmission mechanism. The second motor is in driving connection with the second roller brush by the second transmission mechanism.

**[0015]** In an embodiment, the first transmission mechanism includes a first-stage reduction assembly and a second-stage reduction assembly. A power output terminal of the first motor is in driving connection with the first-stage reduction assembly. A power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction assembly. A power output terminal of the second-stage reduction assembly is in driving connection with the first roller brush.

**[0016]** In an embodiment, the second transmission mechanism includes a first-stage reduction assembly and a second-stage reduction assembly. A power output terminal of the second motor is in driving connection with the first-stage reduction assembly. A power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction assembly. A power output terminal of the second-stage reduction assembly is in driving connection with the second roller brush.

**[0017]** In an embodiment, in an operating state of the scrubber brush assembly, a rotation direction of the first roller brush is opposite to a rotation direction of the second roller brush.

**[0018]** In an embodiment, the main body extends obliquely upwards and towards the rear end of the housing. A projection of a center of gravity of the main body on a horizontal plane is located at a rear part of a projection of a center of gravity of the second roller brush on the horizontal plane.

**[0019]** In an embodiment, the main body extends obliquely backwards relative to the scrubber brush assembly. A projection of a center of gravity of the scrubber as a whole on a horizontal plane is located behind the scrubber brush assembly.

**[0020]** In an embodiment, the first roller brush in operation has a first traction force. The second roller brush in operation has a second traction force. A product of the first traction force and the first rotational speed is substantially equal to or greater than a product of the second traction force and the second rotational speed.

**[0021]** The purpose of the present disclosure is also achieved through the following technical solutions.

**[0022]** A scrubber includes a scrubber brush assembly. The scrubber brush assembly includes: a first roller brush; a second roller brush opposite to the first roller brush; a motor; and a gearbox. The gearbox includes: an output transmission gear set, a first transmission mechanism and a second transmission mechanism. The first transmission mechanism is configured to drive the first roller brush to operate at a first speed. The second transmission mechanism is configured to drive the second roller brush to operate at a second speed different from the first speed. A power input terminal of the output transmission gear set is connected to an operating terminal of the motor. A power output terminal of the output transmission gear set is connected to the first transmission mechanism and the second transmission mechanism in a transmission manner.

**[0023]** In an embodiment, the output transmission gear set includes a planetary gear mechanism and a second output gear. A sun gear of the planetary gear mechanism is connected to the operating terminal of the motor. Gear teeth are disposed on an outer edge of a planet carrier of the planetary gear mechanism. The planet carrier is connected to the first transmission mechanism in a transmission manner. The second output gear is engaged with the gear teeth. The second output gear is connected to the second transmission mechanism in a transmission manner.

**[0024]** In an embodiment, the first transmission mechanism includes a first input synchronous pulley, a first synchronous belt, and a first output synchronous pulley. The first input synchronous pulley is connected to the planet carrier. The first output synchronous pulley is connected to the first input synchronous pulley by the first synchronous belt in a transmission manner. The first output synchronous pulley is connected to the first roller brush in a transmission manner.

**[0025]** In an embodiment, the second transmission mechanism includes a second input synchronous pulley, a second synchronous belt, and a second output synchronous pulley. The second input synchronous pulley is connected to the second output gear. The second output synchronous pulley is connected to the second input synchronous pulley by the second synchronous belt in a transmission manner. The second output synchronous pulley is connected to the second roller brush in a transmission manner.

**[0026]** In an embodiment, the gearbox includes a planetary gearbox and a synchronous belt gearbox. The output transmission gear set is disposed in the planetary gearbox. The first transmission mechanism and the second transmission mechanism are disposed in the synchronous belt gearbox.

**[0027]** In an embodiment, the motor is located within a space between the first roller brush and the second roller brush. The gearbox is located at a side end of the scrubber brush assembly.

**[0028]** Compared with the prior art, the present disclosure has the following beneficial effects. The scrubber provided by the present disclosure, can independently control the respective rotational speeds of the first roller brush located at the front side and the second roller brush located at the rear side. When the scrubber starts up, the scrubber can adjust the respective rotational speeds of

the first roller brush and the second roller brush so that the rotational speed of the first roller brush is greater than the rotational speed of the second roller brush. In this way, the friction forces between the scrubber brush assembly of the scrubber and the floor in the forward direction and in the backward direction are in a balanced state, which can ensure that the user can keep the consistent push feeling when pushing the scrubber forwards and backwards, thereby effectively avoiding that the scrubber brush assembly cannot slide smoothly on the floor during pushing the scrubber forwards and backwards, and improving the user experience of the scrubber. The gearbox is provided, the output transmission gear set drives the first roller brush by the first transmission mechanism to operate and the second roller brush by the second transmission mechanism to operate, respectively. That is, one motor drives two roller brushes to roll, which achieves energy saving and consumption reduction.

**[0029]** The purpose of the present disclosure is also achieved through the following technical solutions.

**[0030]** A scrubber includes: a main body, a handle located at one end of the main body and configured to be gripped, and a scrubber brush assembly located at another end of the main body. The scrubber brush assembly includes: a housing having a front end and a rear end that is opposite to the front end; a first roller brush disposed at the front end of the housing; a second roller brush disposed at the rear end of the housing. The first roller brush has a first rotational speed in operation. The second roller brush has a second rotational speed in operation. The first rotational speed is greater than the second rotational speed.

**[0031]** In an embodiment, the scrubber brush assembly further includes a motor. The motor is located in the housing. The motor is in driving connection with the first roller brush by a first transmission mechanism. The motor is in driving connection with the second roller brush by the second transmission mechanism.

**[0032]** In an embodiment, the first roller brush includes a first hollow cavity, or the second roller brush includes a second hollow cavity. The motor is received in the first hollow cavity or the second hollow cavity.

**[0033]** In an embodiment, the scrubber brush assembly further includes a first motor and a second motor. The first motor is in driving connection with the first roller brush by the first transmission mechanism. The second motor is in driving connection with the second roller brush by the second transmission mechanism.

**[0034]** In an embodiment, the first roller brush includes a first hollow cavity. The first hollow cavity is for receiving the first motor and the first transmission mechanism. The first motor is in driving connection with the first roller brush by the first transmission mechanism. The second roller brush includes a second hollow cavity. The second hollow cavity is for receiving the second motor and the second transmission mechanism. The second motor is in driving connection with the second roller brush by the second transmission mechanism.

**[0035]** In an embodiment, a first reduction motor includes a first-stage reduction assembly and a second-stage reduction assembly. A power output terminal of a first roller brush assembly is in driving connection with the first-stage reduction assembly. A power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction. A power output terminal of the second-stage reduction assembly is in driving connection with the first roller brush.

**[0036]** In an embodiment, a second reduction motor includes a first-stage reduction assembly and a second-stage reduction assembly. A power output terminal of a second roller brush assembly is in driving connection with the first-stage reduction assembly. A power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction assembly. A power output terminal of the second-stage reduction assembly is in driving connection with the second roller brush.

**[0037]** In an embodiment, in an operating state of the scrubber brush assembly, a rotation directions of the first roller brush is opposite to a rotation direction of the second roller brush.

**[0038]** In an embodiment, the main body extends obliquely upwards and towards the rear end of the housing. A projection of a center of gravity of the main body on a horizontal plane is located at a rear part of a projection of a center of gravity of the second roller brush on the horizontal plane.

**[0039]** In an embodiment, the main body extends obliquely backwards relative to the scrubber brush assembly. A projection of a center of gravity of the scrubber as a whole on a horizontal plane is located behind the scrubber brush assembly.

**[0040]** In an embodiment, the first roller brush in operation has a first traction force. The second roller brush in operation has a second traction force. A product of the first traction force and the first rotational speed is substantially equal to or greater than a product of the second traction force and the second rotational speed.

**[0041]** Compared with the prior art, the present disclosure has the following beneficial effects. The scrubber provided by the present disclosure, can independently control the respective rotational speeds of the first roller brush located at the front side and the second roller brush located at the rear side. When the scrubber starts up, the scrubber can adjust the respective rotational speeds of the first roller brush and the second roller brush so that the rotational speed of the first roller brush is greater than the rotational speed of the second roller brush. In this way, the friction forces between the scrubber brush assembly of the scrubber and the floor in the forward direction and the backward direction are in a balanced state, which can ensure that the user can keep the consistent push feeling when pushing the scrubber forwards and backwards, thereby effectively avoiding that the scrubber brush assembly cannot slide smoothly on the floor during pushing the scrubber forwards and backwards, and im-

proving the user experience of the scrubber.

**[0042]** The purpose of the present disclosure is also achieved through the following technical solutions.

**[0043]** A scrubber includes a scrubber brush assembly. The scrubber brush assembly includes: a first roller brush; a second roller brush opposite to the first roller brush; a motor; and a gearbox. The gearbox includes: an output transmission gear set, a first transmission mechanism and a second transmission mechanism. A power input terminal of the output transmission gear set is connected to an operating terminal of the motor. A power output terminal of the output transmission gear set is connected to the first transmission mechanism and the second transmission mechanism in a transmission manner. The first transmission mechanism is configured to drive the first roller brush to operate, and the second transmission mechanism is configured to drive the second roller brush to operate.

**[0044]** In an embodiment, the output transmission gear set includes a planetary gear mechanism, a first output gear and a second output gear. A sun gear of the planetary gear mechanism is connected to an operating terminal of the motor. The first output gear is disposed on a planet carrier of the planetary gear mechanism and is connected to the first transmission mechanism in a transmission manner. The second output gear is engaged with the first output gear. The second output gear is connected to the second transmission mechanism in a transmission manner.

**[0045]** In an embodiment, the first transmission mechanism includes a first input synchronous pulley, a first synchronous belt, and a first output synchronous pulley. The first input synchronous pulley is connected to the first output gear. The first output synchronous pulley is connected to the first input synchronous pulley by the first synchronous belt in a transmission manner. The first output synchronous pulley is connected to the first roller brush in a transmission manner.

**[0046]** In an embodiment, the second transmission mechanism includes a second input synchronous pulley, a second synchronous belt, and a second output synchronous pulley. The second input synchronous pulley is connected to the second output gear. The second output synchronous pulley is connected to the second input synchronous pulley by the second synchronous belt in a transmission manner. The second output synchronous pulley is connected to the second roller brush in a transmission manner.

**[0047]** In an embodiment, the gearbox includes a planetary gearbox and a synchronous belt gearbox. The output transmission gear set is disposed in the planetary gearbox. The first transmission mechanism and the second transmission mechanism are disposed in the synchronous belt gearbox.

**[0048]** In an embodiment, the output transmission gear set includes a planetary gear mechanism and a second output gear. A sun gear of the planetary gear mechanism is connected to the operating terminal of the motor. Gear teeth are disposed on an outer edge of a planet carrier of the planetary gear mechanism. The planet carrier is connected to the first transmission mechanism in a transmission manner. The second output gear is engaged with the gear teeth. The second output gear is connected to the second transmission mechanism in a transmission manner.

**[0049]** In an embodiment, the first transmission mechanism includes a first input synchronous pulley, a first synchronous belt, and a first output synchronous pulley. The first input synchronous pulley is connected to the planet carrier. The first output synchronous pulley is connected to the first input synchronous pulley by the first synchronous belt in a transmission manner. The first output synchronous pulley is connected to the first roller brush in a transmission manner.

**[0050]** In an embodiment, the second transmission mechanism includes a second input synchronous pulley, a second synchronous belt, and a second output synchronous pulley. The second input synchronous pulley is connected to the second output gear. The second output synchronous pulley is connected to the second input synchronous pulley by the second synchronous belt in a transmission manner. The second output synchronous pulley is connected to the second roller brush in a transmission manner.

**[0051]** In an embodiment, the gearbox includes a planetary gearbox and a synchronous belt gearbox. The output transmission gear set is disposed in the planetary gearbox. The first transmission mechanism and the second transmission mechanism are disposed in the synchronous belt gearbox.

**[0052]** In an embodiment, the motor is located within a space between the first roller brush and the second roller brush. The gearbox is located at a side end of the scrubber brush assembly.

**[0053]** Compared with the prior art, the present disclosure has the following beneficial effects.

**[0054]** In the scrubber provided by the present disclosure, the gearbox is provided. The output transmission gear set drives the first roller brush by the first transmission mechanism to operate and the second roller brush by the second transmission mechanism to operate, respectively. That is, one motor drives two roller brushes to roll, which achieves energy saving and consumption reduction.

## BRIEF DESCRIPTION OF DRAWINGS

**[0055]** In order to illustrate the technical solutions in the embodiments of the present disclosure more clearly, the following briefly introduces the drawings that are used in the description of the embodiments. Obviously, the drawings in the following description are only some embodiments of the present disclosure. For those of ordinary skill in the art, other drawings can also be obtained from these drawings without inventive effort.

FIG. 1 is a schematic diagram of a scrubber according to an embodiment of the present disclosure.
FIG. 2 is an enlarged schematic view of a cross-sectional structure of part A of a scrubber brush assembly of the scrubber shown in FIG. 1.
FIG. 3 is a schematic structural diagram of a scrubber brush assembly of the scrubber shown in FIG. 1.
FIG. 4 is a schematic cross-sectional structural diagram of a gearbox of the scrubber brush assembly shown in FIG. 3.
FIG. 5 is an exploded schematic diagram of an embodiment of the gearbox shown in FIG. 4.
FIG. 6 is an exploded schematic diagram of the gearbox shown in FIG. 5 from another angle.
FIG. 7 is an exploded schematic diagram of another embodiment of the gearbox of the scrubber brush assembly shown in FIG. 4.
FIG. 8 is an exploded schematic diagram of the gearbox shown in FIG. 7 from another angle.

**[0056]** In the drawings:

100, scrubber; 110, main body; 120, handle;
1, scrubber brush assembly; 11, first roller brush; 12, second roller brush; 13, motor; 14, gearbox; 15, housing; 16, adapter; 111, first hollow cavity; 112, second hollow cavity;
20, sun gear; 21, planetary gear; 22, planet carrier; 221, gear teeth; 23, annular gear; 230, boss; 24, planetary gearbox; 241, planetary gearbox main box; 242, planetary gearbox auxiliary box; 25, first output gear; 26, second output gear;
30, synchronous belt gearbox; 300, mounting base; 301, mounting base main body; 302, mounting base auxiliary body; 31, synchronous belt gearbox cover; 32, second input shaft; 33, second input synchronous pulley; 34, second synchronous belt; 35, second output synchronous pulley; 350, second output shaft; 36, first input shaft; 37, first input synchronous pulley; 38, first synchronous belt; 39, first output synchronous pulley; 390, first output shaft.

## DESCRIPTION OF EMBODIMENTS

**[0057]** Referring to FIGS. 1 and 2, an embodiment of the present disclosure provides a scrubber 100, which includes a handle 120, a main body 110, and a scrubber brush assembly 1.

**[0058]** As shown in FIG. 1, one end of the main body 110 is connected to the handle 120, and another end of the main body 110 is connected to the scrubber brush assembly 1. The handle 120 is used for a user to operate and hold. The user holds the handle 120 to control the scrubber brush assembly 1 to perform cleaning tasks on the floor. In an implementation scenario, the handle 120 is in a non-operation state and can stably stand on the scrubber brush assembly 1, and the scrubber 100 can also be called a vertical scrubber.

**[0059]** In this embodiment, the main body 110 is connected to a top of the scrubber brush assembly 1. The handle 120 is connected to the main body 110. The main body 110, the handle 120 and the scrubber brush assembly 1 are connected as a whole. During the cleaning operation, the user holds the handle 120 to operate the main body 110 and the scrubber brush assembly 1. Specifically, the main body 110 extends longitudinally. The handle 120 is connected to an upper end of the main body 110. The scrubber brush assembly 1 is connected to a lower end of the main body 110. The main body 110 is rotatably connected to the scrubber brush assembly 1 by an adapter 16 (the specific structure of the adapter 16 can refer to FIG. 2), so that the handle 120 and the main body 110 rotate relative to the scrubber brush assembly 1, thereby changing the operating angle and flexibly adjusting the cleaning posture.

**[0060]** Referring to FIGS. 2 to 4, the scrubber brush assembly 1 includes a housing 15. The housing 15 has a front end, and a rear end that is opposite to the front end. A first roller brush 11 is disposed at the front end of the housing 15, and a second roller brush 12 is disposed at the rear end of the housing 15. A first roller brush 11 and a second roller brush 12 are disposed at the front end and the rear end of the housing 15, respectively. When the first roller brush 11 and the second roller brush 12 are driven, they will rotate at a high speed to mop the floor, which can increase the contact area between the scrubber brush assembly 1 and the floor and improve the mopping efficiency. The first roller brush 11 and the second roller brush 12 jointly support the scrubber brush assembly 1 and the scrubber brush assembly 1 is supported on an operating surface. An axial direction of the first roller brush 11 and an axial direction of the second roller brush 12 are substantially perpendicular to a front-rear direction of the housing 15.

**[0061]** After the first roller brush 11 is driven, it rotates at a first rotational speed which is a high speed. After the second roller brush 12 is driven, it rotates at a second rotational speed which is a high speed. So the first roller brush 11 and the second roller brush 12 rotate and operate respectively to mop the floor. The first rotational speed of the first roller brush 11 is greater than the second rotational speed of the second roller brush 12. Since the first rotational speed is greater than the second rotational speed, during the rotation of the first roller brush 11 and the second roller brush 12, a frictional force between the first roller brush 11 and the floor is smaller than a friction force between the second roller brush 12 and the floor. In this way, a resistance force received by the scrubber brush assembly 1 in a front end direction is smaller than a resistance force received at a rear end direction. When the user holds the handle 120 and pushes the scrubber brush assembly 1, no matter when the scrubber brush assembly 1 is pushed forwards or backwards, the user's feeling of holding and pushing the handle 120 is basically the same, so as to ensure that the user pushes the scrubber brush assembly 1 smoothly forwards and backwards

and avoid poor user experience due to inconsistent user feeling.

**[0062]** In an embodiment, as shown in FIG. 3, the scrubber brush assembly 1 includes a motor 13. The motor 13 is disposed in the housing 15 of the scrubber brush assembly 1. The motor 13 is configured to provide a power source for the rotation of the first roller brush 11 and the second roller brush 12. In addition, the scrubber brush assembly 1 also includes an output transmission gear set, a first transmission mechanism and a second transmission mechanism. Both the first transmission mechanism and the second transmission mechanism are disposed in the housing 15 of the scrubber brush assembly 1. A power input terminal of the output transmission gear set is connected to an operating terminal of the motor 13. A power output terminal of the output transmission gear set is respectively connected to the first transmission mechanism and the second transmission mechanism in a transmission manner. The first transmission mechanism is configured to drive the first roller brush 11 to operate, and the second transmission mechanism is configured to drive the second roller brush 12 to operate.

**[0063]** It should be understood that when the motor 13 drives the output transmission gear set, and the output transmission gear set drives the first transmission mechanism and the second transmission mechanism to operate. The first transmission mechanism and the second transmission mechanism are respectively connected to the first roller brush 11 and the second roller brush 12 in a transmission manner. Thus, the first roller brush 11 and the second roller brush 12 can be driven to operate respectively. That is, two roller brushes are driven to operate by one motor 13. In this way, energy is saved and consumption is reduced.

**[0064]** In this embodiment, the output transmission gear set specifically includes a planetary gear mechanism, a first output gear 25 and a second output gear 26. A sun gear 20 of the planetary gear mechanism is connected to an operating terminal of the motor 13. The first output gear 25 is disposed on a planet carrier 22 of the planetary gear mechanism. The planet carrier 22 and the first output gear 25 are connected and assembled through a special-shaped shaft hole. The first output gear 25 is connected to the first transmission mechanism in a transmission manner. The second output gear 26 is engaged with the first output gear 25. The second output gear 26 is connected to the second transmission mechanism in a transmission manner. In this solution, the motor 13 drives the sun gear 20 of the planetary gear mechanism. The sun gear 20 drives the planetary gear 21 of the planetary gear mechanism. The planetary gear 21 rotates around the sun gear 20 along the annular gear 23 of the planetary gear mechanism. The planetary gear 21 is dispose on the planet carrier 22 of the planetary gear mechanism, so the planetary gear 21 can drive the planet carrier 22 and the first output gear 25 to rotate. The first output gear 25 drives the second output gear 26. The first output gear 25 and the second output gear 26 respectively drive the first transmission mechanism and the second transmission mechanism, to drive the first roller brush 11 and the second roller brush 12 to operate respectively. That is, one motor 13 drives two roller brushes to operate, so as to save energy and reduce consumption. That is to say, the planetary gear mechanism includes a sun gear 20, a planetary gear 21, a planet carrier 22 and an annular gear 23. The sun gear 20 is engaged with the planetary gear 21. The planetary gear 21 is engaged with the annular gear 23. The planetary gear 21 is fixedly connected to the planet carrier 22. In this way, the first output gear 25 is driven indirectly.

**[0065]** In this embodiment, the first transmission mechanism includes a first input synchronous pulley 37, a first synchronous belt 38, and a first output synchronous pulley 39. The first input synchronous pulley 37 is connected to the first output gear 25. The first output synchronous pulley 39 is connected to the first input synchronous pulley 37 by the first synchronous belt 38 in a transmission manner. The first output synchronous pulley 39 is connected to the first roller brush 11 in a transmission manner. In this solution, the motor 13 indirectly drives the first output gear 25. The first input synchronous pulley 37 is provided with a first input shaft 36. The first input synchronous pulley 37 is fixedly connected to the first output gear 25 by the first input shaft 36. In this way, the first input synchronous pulley 37 is driven. The first input synchronous pulley 37 drives the first output synchronous pulley 39 by the first synchronous belt 38. The first output synchronous pulley 39 is provided with a first output shaft 390. The first output shaft 390 is connected to the first roller brush 11. The first output synchronous pulley 39 drives the first output shaft 390. The first output shaft 390 drives the first roller brush 11. In this way, the first roller brush 11 is driven to operate.

**[0066]** In this embodiment, the second transmission mechanism includes a second input synchronous pulley 33, a second synchronous belt 34, and a second output synchronous pulley 35. The second input synchronous pulley 33 is connected to the second output gear 26. The second output synchronous pulley 35 is connected to the second input synchronous pulley 33 by the second synchronous belt 34 in a transmission manner. The second output synchronous pulley 35 is connected to the second roller brush 12 in a transmission manner. In this solution, the motor 13 indirectly drives the second output gear 26. The second input synchronous pulley 33 is provided with a second input shaft 32. The second output gear 26 is connected to the second input shaft 32. In this way, the second input synchronous pulley 33 is driven. The second input synchronous pulley 33 drives the second output synchronous pulley 35 by the second synchronous belt 34. The second output synchronous pulley 35 is provided with a second output shaft 350. The second output shaft 350 is connected to the second roller brush 12. The second output synchronous pulley 35 drives the second output shaft 350. The second output shaft 350 drives the second roller brush 12. In this way, the second roller

brush 12 is driven to operate.

**[0067]** Further, the first transmission mechanism and the second transmission mechanism have different reduction ratios. Specifically, the reduction ratio of the first transmission mechanism is smaller than the reduction ratio of the second transmission mechanism, so that the first rotational speed of the first roller brush 11 driven by the first transmission mechanism is greater than the second rotational speed of the second roller brush 12 driven by the second transmission mechanism. In addition, the reduction ratio of the first transmission mechanism and the reduction ratio of the second transmission mechanism can be adjusted freely, but the reduction ratio of the first transmission mechanism must always be smaller than the reduction ratio of the second transmission mechanism, which can ensure that the multi-stage rotaional speed adjustment of the first roller brush 11 and the second roller brush 12 is achieved, on the premise of the first rotational speed being greater than the second rotational speed.

**[0068]** In an embodiment, the first roller brush 11 may include a first hollow cavity 111, or the second roller brush 12 may include a second hollow cavity 112. The first hollow cavity 111 may be located in a central axis region of the first roller brush 11. The second hollow cavity 112 may be located in a central axis region of the second roller brush 12. The motor 13 can be received in the first hollow cavity 111 or the second hollow cavity 112, so that there is no need to provide another space area inside the housing 15 of the scrubber brush assembly 1 for receiving the motor 13, and the installation integration of the motor 13 in the scrubber brush assembly 1 can also be increased. In this way, the utilization efficiency of the internal space of the scrubber brush assembly 1 is maximized. It can be understood that the motor 13 can be, but is not limited to, a stepping motor 13, a servo motor 13, or the like. The first transmission mechanism and the second transmission mechanism may be, but are not limited to, gear-driven reduction mechanisms.

**[0069]** In one embodiment, the scrubber brush assembly 1 may include a first motor 13 and a second motor 13. The first motor 13 is configured to provide a power source for the rotation of the first roller brush 11. The second motor 13 is configured to provide a power source for the rotation of the second roller brush 12. The first motor 13 and the second motor 13 work independently of each other, so as to output the same or different driving forces. In addition, the scrubber brush assembly 1 further includes a first transmission mechanism and a second transmission mechanism. Both the first transmission mechanism and the second transmission mechanism are disposed in the housing 15 of the scrubber brush assembly 1. It can be understood that the first motor 13 is in driving connection with the first roller brush 11 by the first transmission mechanism, to drive the first roller brush 11 to rotate. The second motor 13 is in driving connection with the second roller brush 12 by the second transmission mechanism, to drive the second roller brush 12 to rotate. The driving force output by the first motor 13 drives the first roller brush 11 to rotate after being decelerated by the first transmission mechanism. The driving force output by the second motor 13 drives the second roller brush 12 to rotate after being decelerated by the second transmission mechanism. The driving force output by the first motor 13 and the driving force output by the second motor 13 may be the same or different, and the reduction ratio of the first transmission mechanism and the reduction ratio of the second transmission mechanism may be the same or different, as long as the first rotational speed of the first roller brush 11 is greater than the second rotational speed of the second roller brush 12, which will not be repeated here.

**[0070]** In an embodiment, the first roller brush 11 may include a first hollow cavity 111. The second roller brush 12 may include a second hollow cavity 112. The first hollow cavity 111 may be located in the central axis region of the first roller brush 11. The second hollow cavity 112 may be located in the central axis region of the second roller brush 12. Both the first motor 13 and the first transmission mechanism can be received in the first hollow cavity 111. Both the second motor 13 and the second transmission mechanism can be received in the second hollow cavity 112. In this way, there is no need to provide additional space area inside the housing 15 of the scrubber brush assembly 1 for receiving the first motor 13, the first transmission mechanism, the second motor 13, and the second transmission mechanism, thereby maximizing the utilization efficiency of the interior space of the scrubber brush assembly 1. It can be understood that the first motor 13 and the second motor 13 may be, but not limited to, a stepping motor 13, a servo motor 13 or the like. The first transmission mechanism and the second transmission mechanism may be, but are not limited to, gear-driven reduction mechanisms.

**[0071]** In some implementation scenarios of the above embodiments, the first transmission mechanism may include a first-stage reduction assembly and a second-stage reduction assembly, so that the first transmission mechanism acts as a multi-stage reduction mechanism to reduce the power output by the first motor 13. It can be understood that a power output terminal of the first motor 13 is in driving connection with the first-stage reduction assembly. A power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction assembly. A power output terminal of the second-stage reduction assembly is in driving connection with the first roller brush 11. The driving force output by the first motor 13 is sequentially decelerated by the first-stage reduction assembly and the second-stage reduction assembly, thereby ensuring the stability of driving the first roller brush 11 and ensuring obtaining a large reduction ratio while the power of the first motor 13 is fixed. It can be understood that the first-stage reduction assembly and the second-stage reduction assembly may be reduction gear assemblies having the same or different reduction ratios.

**[0072]** In some implementation scenarios of the above embodiments, the second transmission mechanism may include a first-stage reduction assembly and a second-stage reduction assembly, so that the second transmission mechanism acts as a multi-stage reduction mechanism to reduce the power output by the second motor 13. It can be understood that a power output terminal of the second motor 13 is in driving connection with the first-stage reduction assembly. A power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction assembly. A power output terminal of the second-stage reduction assembly is in driving connection with the second roller brush 12. The driving force output by the second motor 13 is sequentially decelerated by the first-stage reduction assembly and the second-stage reduction assembly, thereby ensuring the stability of driving the second roller brush 12 and effectively avoiding the situation where the rotational speed of the second roller brush 12 changes from side to side. It can be understood that the first-stage reduction assembly and the second-stage reduction assembly may be reduction gear assemblies having the same or different reduction ratios.

**[0073]** In an embodiment, in an operating state of the scrubber brush assembly 1, a rotation direction of the first roller brush 11 is opposite to a rotation direction of the second roller brush 12. It can be understood that by applying driving forces in opposite directions to the first roller brush 11 and the second roller brush 12 respectively, the rotation directions of the first roller brush 11 and the second roller brush 12 can be ensured to be opposite. Specifically, when the scrubber brush assembly 1 is in the operating state, the first roller brush 11 rotates in a counterclockwise direction and the second roller brush 12 rotates in a clockwise direction. When the rotation directions of the first roller brush 11 and the second roller brush 12 are opposite, it can further ensure that the user maintains a consistent hand feeling when using the scrubber to push forwards and backwards.

**[0074]** In an embodiment, the user mops the floor by holding the handle 120 and pushing the scrubber 100 to slide on the floor as a whole. There will inevitably be a large frictional force between the scrubber 100 and the floor due to user's hands pushing down the scrubber 100, so that the entire scrubber 100 cannot slide smoothly on the floor. In order to solve the above problem, the main body 110 of the scrubber 100 extends obliquely upwards and towards the rear end of the housing 15, and a projection of a center of gravity of the main body 110 on a horizontal plane is located at a rear part of a projection of a center of gravity of the second roller brush 12 on the horizontal plane. In this way, it is ensured that the rear end of the main body 110 can extend obliquely upwards, to avoid the whole scrubber 100 from tilting downwards under the action of the user's hands and to reduce the friction between the scrubber brush assembly 1 and the floor. At the same time, the projection of the center of gravity of the main body 110 on the horizontal plane is located at the rear part of the projection of the center of gravity of the second roller brush 12 on the horizontal plane, which can ensure that the second roller brush 12 is always in contact with the floor. Thus, it can effectively prevent the second roller brush 12 from separating from the floor when the scrubber 100 is used to mop the floor.

**[0075]** In an embodiment, the user mops the floor by holding the handle 120 and pushing the scrubber 100 to slide on the floor as a whole. The user's hands usually hold the handle 120 in a backward inclined posture, which may easily cause the scrubber 100 rolls over backwards as a whole. In order to solve the above problem, the main body 110 extend obliquely backwards relative to the scrubber brush assembly 1, and the projection of the center of gravity of the scrubber 100 as a whole on the horizontal plane is located at behind the scrubber brush assembly 1. In this way, it can ensure that the center of gravity of the scrubber 100 is inclined backwards under natural conditions. Even under the action of the user's hands, the scrubber 100 can be guaranteed to stand stably on the floor. Thus, the scrubber 100 can always firmly be in contact with the floor during the scrubber mopping the floor by sliding on the floor.

**[0076]** In an embodiment, when the first roller brush 11 is in operation, its rotation action forms a first traction force along a first direction on the scrubber brush assembly 1, and correspondingly, when the second roller brush 12 is in operation, its rotation action forms a second traction force along a second direction on the scrubber brush assembly 1. The first direction is opposite to the second direction. The first rotational speed and the first traction force of the first roller brush 11 in operation together form a corresponding first momentum, the second rotational speed and the second traction force of the second roller brush 12 in operation together form a corresponding second momentum. The magnitudes of the first momentum and the second momentum directly determine an inertial motion direction of the scrubber 100 when sliding on the floor. If the first momentum is smaller than the second momentum, the scrubber 100 forms a backward inertial motion direction. Both of the above two situations affect the user's hand feeling when pushing the scrubber 100 forwards and backwards. In order to solve the above problems, a product of the first traction force and the first rotational speed is substantially equal to or greater than a product of the second traction force and the second rotational speed, which can maximize the balance of the scrubber 100 when it is pushed forwards and backwards on the floor. Thus, the user experience is improved.

**[0077]** Referring to FIGS. 1 to 3 and 5 to 8, an embodiment of the present disclosure provides a scrubber 100. The scrubber 100 includes a scrubber brush assembly 1. The scrubber brush assembly 1 includes a first roller brush 11, a second roller brush 12 that is opposite to the first roller brush 11, a motor 13 and a gearbox 14. The motor 13 is located within a space between the first roller brush 11 and the second roller brush 12. The gearbox 14 is located at a side end of the scrubber brush assembly

1. The gearbox 14 is provided with an output transmission gear set, a first transmission mechanism and a second transmission mechanism. A power output terminal of the output transmission gear set is connected to an operating terminal of the motor 13. A power output terminal of the output transmission gear set is respectively connected to the first transmission mechanism and the second transmission mechanism in a transmission manner. The first transmission mechanism is configured to drive the first roller brush 11 to operate, and the second transmission mechanism is configured to drive the second roller brush 12 to operate. A reduction ratio of the first transmission mechanism is smaller than a reduction ratio of the second transmission mechanism. The first rotational speed of the first roller brush 11 driven by the first transmission mechanism is greater than the second rotational speed of the second roller brush 12 driven by the second transmission mechanism.

**[0078]** It should be understood that the motor 13 drives the output transmission gear set, and the output transmission gear set drives the first transmission mechanism and the second transmission mechanism to operate. The first transmission mechanism and the second transmission mechanism are respectively connected to the first roller brush 11 and the second roller brush 12 in a transmission way. Thus, the first roller brush 11 and the second roller brush 12 can be driven to operate respectively. That is, two roller brushes are driven to operate by one motor 13. In this way, energy is saved and consumption is reduced.

**[0079]** In this embodiment, the output transmission gear set includes a planetary gear mechanism and a second output gear 26. A sun gear 20 of the planetary gear mechanism is connected to an operating terminal of the motor 13. Gear teeth 221 are disposed on an outer edge of the planet carrier 22 of the planetary gear mechanism. The planet carrier 22 is connected to the first transmission mechanism in a transmission manner. The second output gear 26 is engaged with the gear tooth 221. The second output gear 26 is connected to the second transmission mechanism in a transmission manner.

**[0080]** In the embodiment, the gear teeth 221 are disposed on the outer edge of the planet carrier 22 of the planetary gear mechanism. The planet carrier 22 with the gear teeth 221 is used as the first output gear 25. Thus, the gear transmission structure is optimized. At this time, the planet carrier 22 has multiple functions. The first function is to act as the planet carrier 22 of the planetary gear mechanism. The second function is to act as the first output gear 25 to drive the second output gear 26. The third function is to act as the first output gear 25 to drive the first transmission mechanism.

**[0081]** The specific process is as follows. The motor 13 drives the sun gear 20 of the planetary gear mechanism. The sun gear 20 drives the planetary gear 21 of the planetary gear mechanism. The planetary gear 21 rotates around the sun gear 20 along the annular gear 23 in the planetary gear mechanism. Since the planetary gear 21 is disposed on the planet carrier 22, the planetary gear 21 drives the planet carrier 22. The planet carrier 22 drives the second output gear 26. The planet carrier 22 and the second output gear 26 respectively drive the first transmission mechanism and the second transmission mechanism, to drive the first roller brush 11 and the second roller brush 12 to operate respectively. That is, one motor 13 drives two roller brushes to operate, so as to save energy and reduce consumption. That is to say, the planetary gear mechanism includes a sun gear 20, a planetary gear 21, a planet carrier 22 and an annular gear 23. The sun gear 20 is engaged with the planetary gear 21. The planetary gear 21 is engaged with the annular gear 23. The planetary gear 21 is fixedly connected to the planet carrier 22. In this way, the second output gear 26 is driven indirectly.

**[0082]** In this embodiment, the first transmission mechanism includes a first input synchronous pulley 37, a first synchronous belt 38, and a first output synchronous pulley 39. The first input synchronous pulley 37 is connected to the first output gear 25. The first output synchronous pulley 39 is connected to the first input synchronous pulley 37 by the first synchronous belt 38 in a transmission manner. The first output synchronous pulley 39 is connected to the first roller brush 11 in a transmission manner. In this solution, the motor 13 indirectly drives the first output gear 25. The first input synchronous pulley 37 is provided with a first input shaft 36. The first output gear 25 is connected to the first input shaft 36. In this way, the first input synchronous pulley 37 is driven. The first input synchronous pulley 37 drives the first output synchronous pulley 39 by the first synchronous belt 38. The first output synchronous pulley 39 is provided with a first output shaft 390. The first output shaft 390 is connected to the first roller brush 11. The first output synchronous pulley 39 drives the first output shaft 390. The first output shaft 390 drives the first roller brush 11. In this way, the first roller brush 11 is driven to operate.

**[0083]** In this embodiment, the second transmission mechanism includes a second input synchronous pulley 33, a second synchronous belt 34, and a second output synchronous pulley 35. The second input synchronous pulley 33 is connected to the second output gear 26. The second output synchronous pulley 35 is connected to the second input synchronous pulley 33 by the second synchronous belt 34 in a transmission manner. The second output synchronous pulley 35 is connected to the second roller brush 12 in a transmission manner. In this solution, the motor 13 indirectly drives the second output gear 26. The second input synchronous pulley 33 is provided with a second input shaft 32. The second output gear 26 is connected to the second input shaft 32. In this way, the second input synchronous pulley 33 is driven. The second input synchronous pulley 33 drives the second output synchronous pulley 35 by the second synchronous belt 34. The second output synchronous pulley 35 is provided with a second output shaft 350. The second output shaft 350 is connected to the second roller brush 12. The sec-

ond output synchronous pulley 35 drives the second output shaft 350. The second output shaft 350 drives the second roller brush 12. In this way, the second roller brush 12 is driven to operate.

**[0084]** In this embodiment, the gearbox 14 includes a planetary gearbox 24 and a synchronous belt gearbox 30. The output transmission gear set is disposed in the planetary gearbox 24. The first transmission mechanism and the second transmission mechanism are disposed in the synchronous belt gearbox 30. In this solution, the planetary gearbox 24 includes a planetary gearbox main box 241 and a planetary gearbox auxiliary box 242. The planetary gear mechanism is installed in the planetary gearbox main box 241. The synchronous belt gearbox 30 includes a synchronous belt gearbox body and a synchronous belt gearbox cover 31. The synchronous belt gearbox body and the synchronous belt gearbox cover 31 are fitted and installed. A side of the synchronous belt gearbox body facing away from the synchronous belt gearbox cover 31 is provided with a mounting base 300. The mounting base 300 includes a mounting base body 301 and a mounting base auxiliary body 302. The mounting base main body 301 and the planetary gearbox main box 241 are fitted and installed to receive the first output gear 25. The mounting base auxiliary body 302 and the planetary gearbox auxiliary box 242 are fitted and installed to receive the second output gear 26. In some embodiments, an outer ring of the annular gear 23 is provided with a boss 230. An inner side of the planetary gearbox main box 241 is provided with a groove (not shown in the figure) which is fitted with the boss 230. The boss 230 is embedded in the groove, and thus the annular gear 23 is fixed.

**[0085]** The above is only a specific embodiment of the present disclosure, and any improvement made under the premise of other ideas based on the present disclosure is regarded as the protection scope of the present disclosure.

## Claims

**1.** A scrubber, comprising:

a main body;
a handle located at one end of the main body and configured to be gripped; and
a scrubber brush assembly located at another end of the main body and comprising:

a housing having a front end and a rear end opposite to the front end;
a first roller brush disposed at the front end of the housing; and
a second roller brush disposed at the rear end of the housing,
wherein the first roller brush has a first rotational speed in operation, and wherein the second roller brush has a second rotational speed in operation, the first rotational speed being greater than the second rotational speed.

**2.** The scrubber according to claim 1, wherein:

the scrubber brush assembly comprises a motor located within the housing;
the motor is in driving connection with the first roller brush by a first transmission mechanism, the first transmission mechanism being configured to drive the first roller brush to operate; and
the motor is in driving connection with the second roller brush by a second transmission mechanism, the second transmission mechanism being configured to drive the second roller brush to operate; and
a reduction ratio of the first transmission mechanism is smaller than a reduction ratio of the second transmission mechanism.

**3.** The scrubber according to claim 2, wherein the scrubber brush assembly further comprises:

the first transmission mechanism in driving connection with the first roller brush;
the second transmission mechanism in driving connection with the second roller brush; and
an output transmission gear set, comprising:

a planetary gear mechanism comprising a sun gear connected to an operating terminal of the motor;
a first output gear disposed on a planet carrier of the planetary gear mechanism and connected to the first transmission mechanism in a transmission manner; and
a second output gear engaged with the first output gear and connected to the second transmission mechanism in a transmission manner.

**4.** The scrubber according to claim 3, wherein the first transmission mechanism comprises:

a first input synchronous pulley connected to the first output gear;
a first synchronous belt; and
a first output synchronous pulley connected to the first input synchronous pulley by the first synchronous belt in a transmission manner and connected to the first roller brush in a transmission manner.

**5.** The scrubber according to claim 3, wherein the second transmission mechanism comprises:

a second input synchronous pulley connected to the second output gear;
a second synchronous belt; and
a second output synchronous pulley connected to the second input synchronous pulley by the second synchronous belt in a transmission manner and connected to the second roller brush in a transmission manner.

**6.** The scrubber according to claim 2, wherein:

the first roller brush has a first hollow cavity, or the second roller brush has a second hollow cavity; and
the motor is received in the first hollow cavity or the second hollow cavity.

**7.** The scrubber according to claim 2, wherein the motor comprises:

a first motor in driving connection with the first roller brush by the first transmission mechanism, the first transmission mechanism being configured to drive the first roller brush to operate; and
a second motor in driving connection with the second roller brush by the second transmission mechanism, the second transmission mechanism being configured to drive the second roller brush to operate.

**8.** The scrubber according to claim 7, wherein:

the first roller brush has a first hollow cavity for receiving the first motor and the first transmission mechanism, the first motor being in driving connection with the first roller brush by the first transmission mechanism; and
the second roller brush has a second hollow cavity configured for receiving the second motor and the second transmission mechanism, the second motor being in driving connection with the second roller brush by the second transmission mechanism.

**9.** The scrubber according to claim 8, wherein the first transmission mechanism comprises:

a first-stage reduction assembly, wherein a power output terminal of the first motor is in driving connection with the first-stage reduction assembly; and
a second-stage reduction assembly having a power output terminal in driving connection with the first roller brush, wherein a power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction assembly.

**10.** The scrubber according to claim 8, wherein the second transmission mechanism comprises:

a first-stage reduction assembly, wherein a power output terminal of the second motor is in driving connection with the first-stage reduction assembly; and
a second-stage reduction assembly having a power output terminal in driving connection with the second roller brush, wherein a power output terminal of the first-stage reduction assembly is in driving connection with the second-stage reduction assembly.

**11.** The scrubber according to claim 1, wherein:
in an operating state of the scrubber brush assembly, a rotation direction of the first roller brush is opposite to a rotation direction of the second roller brush.

**12.** The scrubber according to claim 1, wherein:

the main body extends obliquely upwards and towards the rear end of the housing; and
a projection of a center of gravity of the main body on a horizontal plane is located at a rear part of a projection of a center of gravity of the second roller brush on the horizontal plane.

**13.** The scrubber according to claim 1, wherein:

the main body extends obliquely backwards relative to the scrubber brush assembly; and
a projection of a center of gravity of the scrubber as a whole on a horizontal plane is located behind the scrubber brush assembly.

**14.** The scrubber according to claim 13, wherein:

the first roller brush in operation has a first traction force;
the second roller brush in operation has a second traction force; and
a product of the first traction force and the first rotational speed is substantially equal to or greater than a product of the second traction force and the second rotational speed.

**15.** A scrubber, comprising a scrubber brush assembly, the scrubber brush assembly comprising:

a first roller brush;
a second roller brush opposite to the first roller brush;
a motor; and
a gearbox, comprising:

a first transmission mechanism configured to drive the first roller brush to operate at a

first speed;
a second transmission mechanism configured to drive the second roller brush to operate at a second speed different from the first speed; and
an output transmission gear set having a power input terminal connected to an operating terminal of the motor and a power output terminal connected to each of the first transmission mechanism and the second transmission mechanism in a transmission manner.

**16.** The scrubber according to claim 15, wherein the output transmission gear set comprises:

a planetary gear mechanism comprising a sun gear connected to the operating terminal of the motor, wherein gear teeth are disposed on an outer edge of a planet carrier of the planetary gear mechanism, and wherein the planet carrier is connected to the first transmission mechanism in a transmission manner; and
a second output gear engaged with the gear teeth and connected to the second transmission mechanism in a transmission manner.

**17.** The scrubber according to claim 16, wherein the first transmission mechanism comprises:

a first input synchronous pulley connected to the planet carrier;
a first synchronous belt; and
a first output synchronous pulley connected to the first input synchronous pulley by the first synchronous belt in a transmission manner, and connected to the first roller brush in a transmission manner.

**18.** The scrubber according to claim 16, wherein the second transmission mechanism comprises:

a second input synchronous pulley connected to the second output gear;
a second synchronous belt; and
a second output synchronous pulley connected to the second input synchronous pulley by the second synchronous belt in a transmission manner and connected to the second roller brush in a transmission manner.

**19.** The scrubber according to claim 16, wherein the gearbox comprises a planetary gearbox and a synchronous belt gearbox, the output transmission gear set being disposed in the planetary gearbox, and the first transmission mechanism and the second transmission mechanism being disposed in the synchronous belt gearbox.

**20.** The scrubber according to claim 16, wherein:

the motor is located within a space between the first roller brush and the second roller brush; and
the gearbox is located at a side end of the scrubber brush assembly.

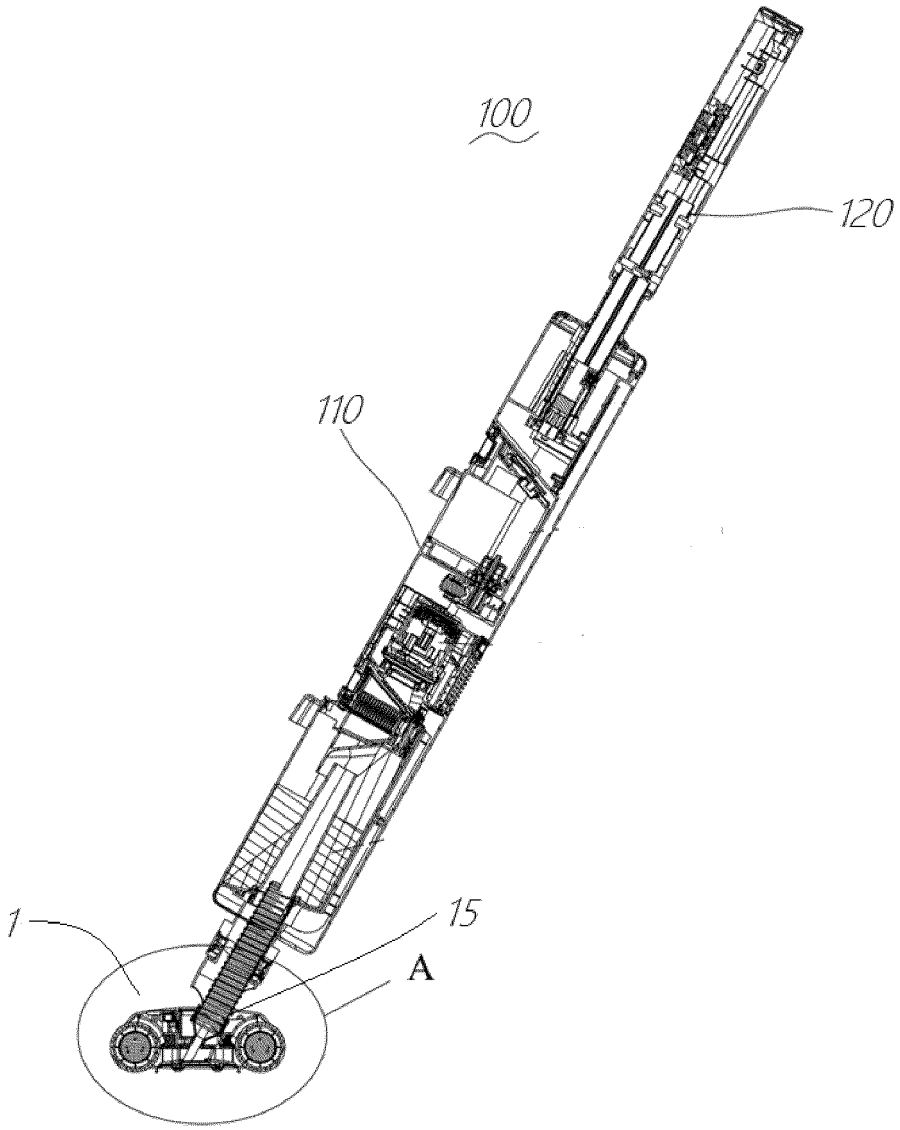


FIG. 1

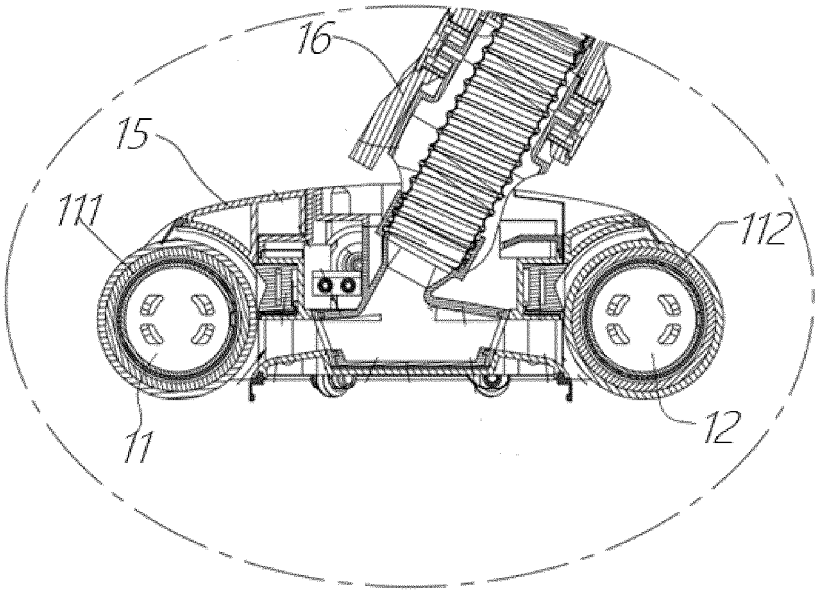


FIG. 2

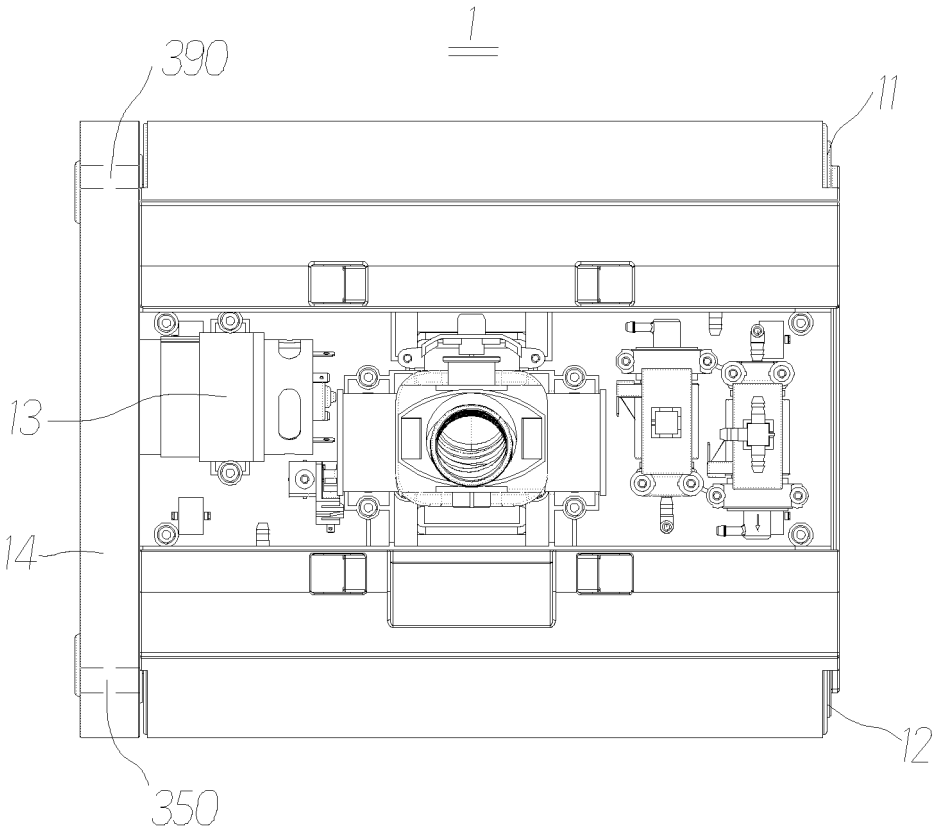


FIG. 3

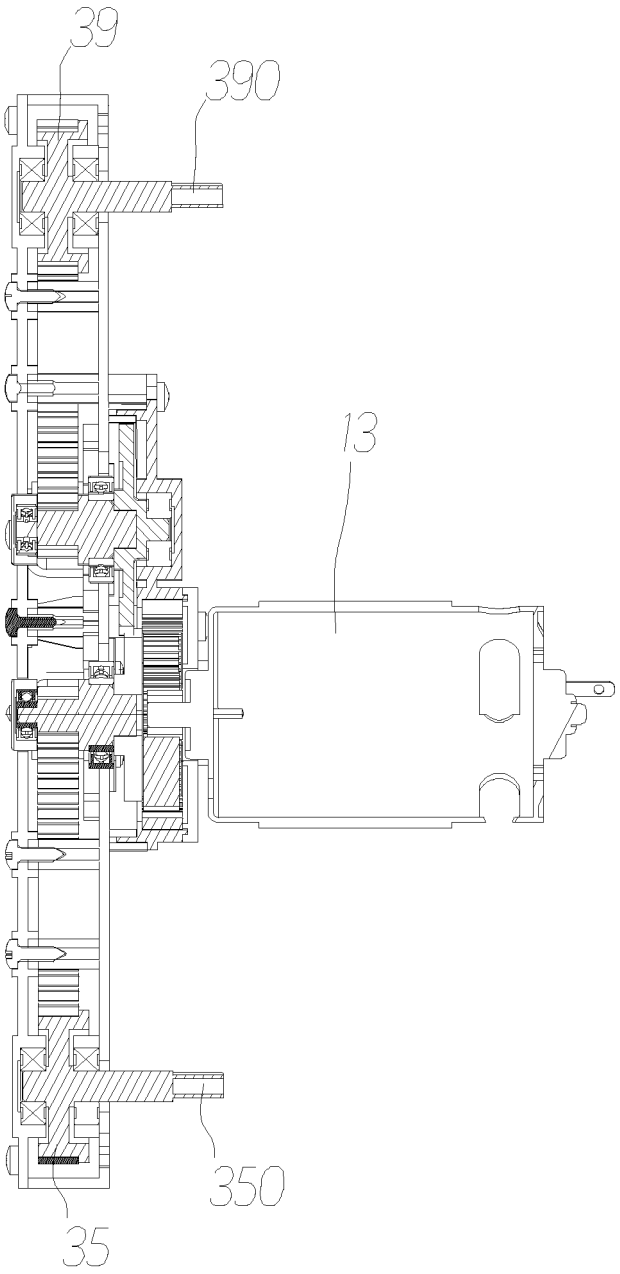


FIG. 4

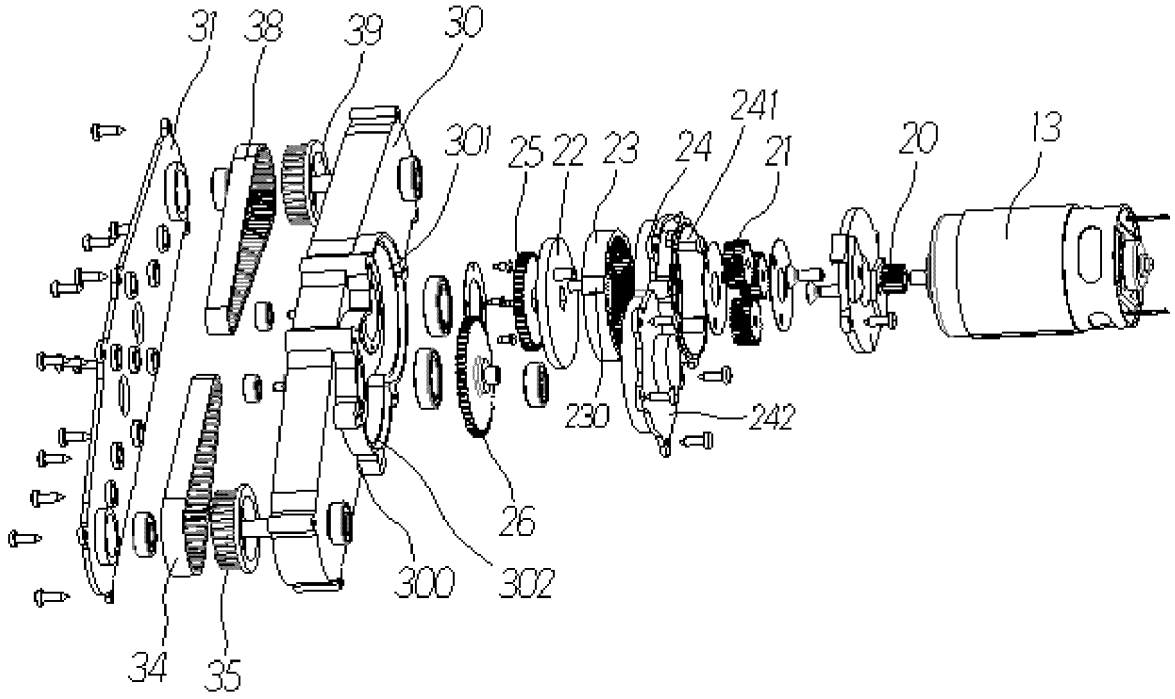
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FIG. 5

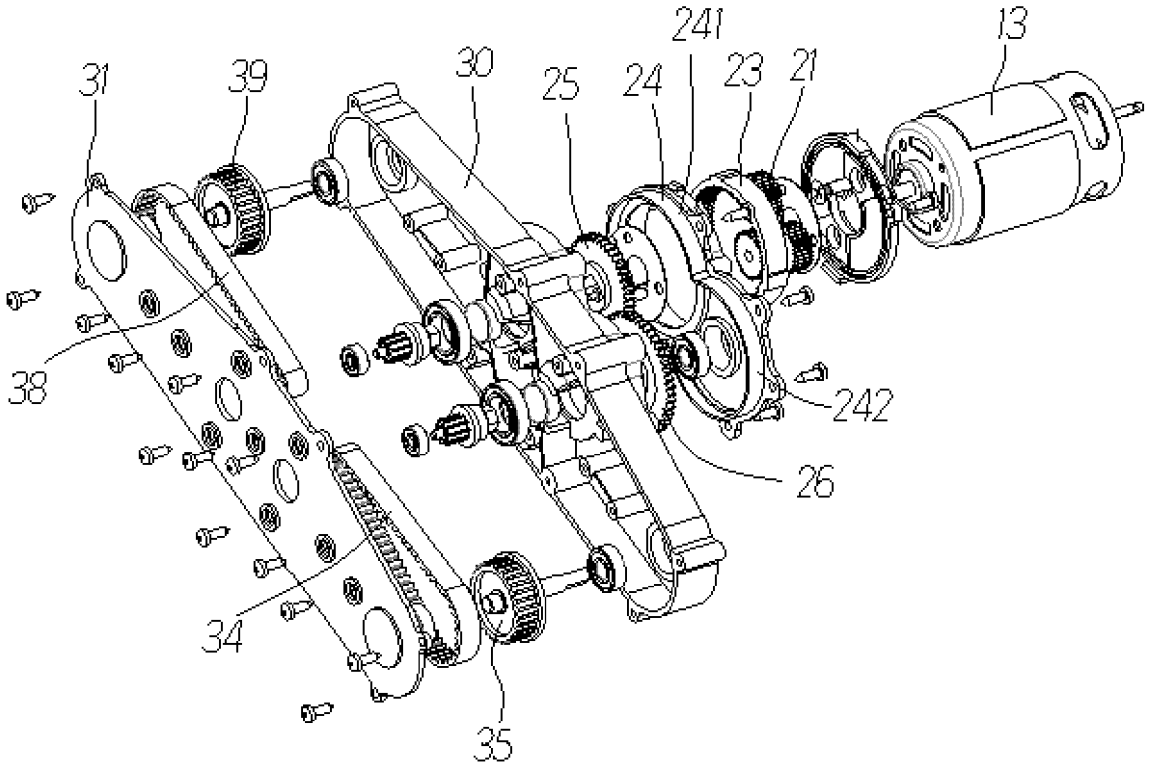
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FIG. 6

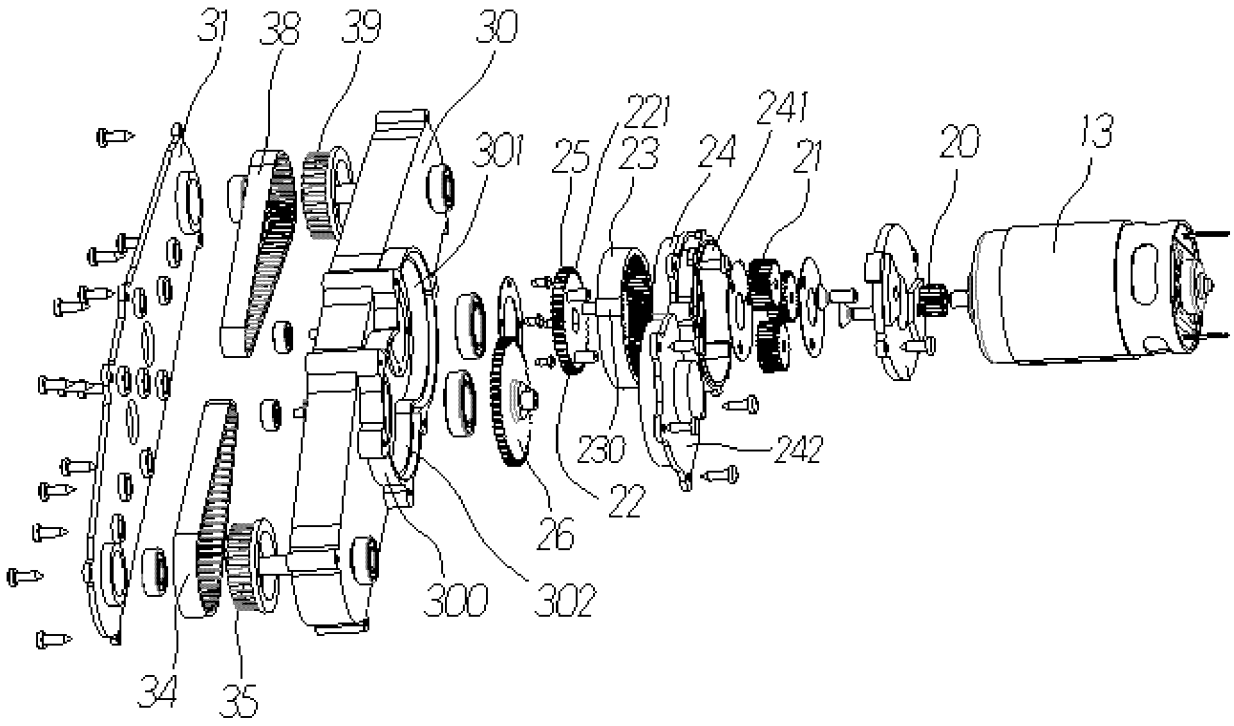
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FIG. 7

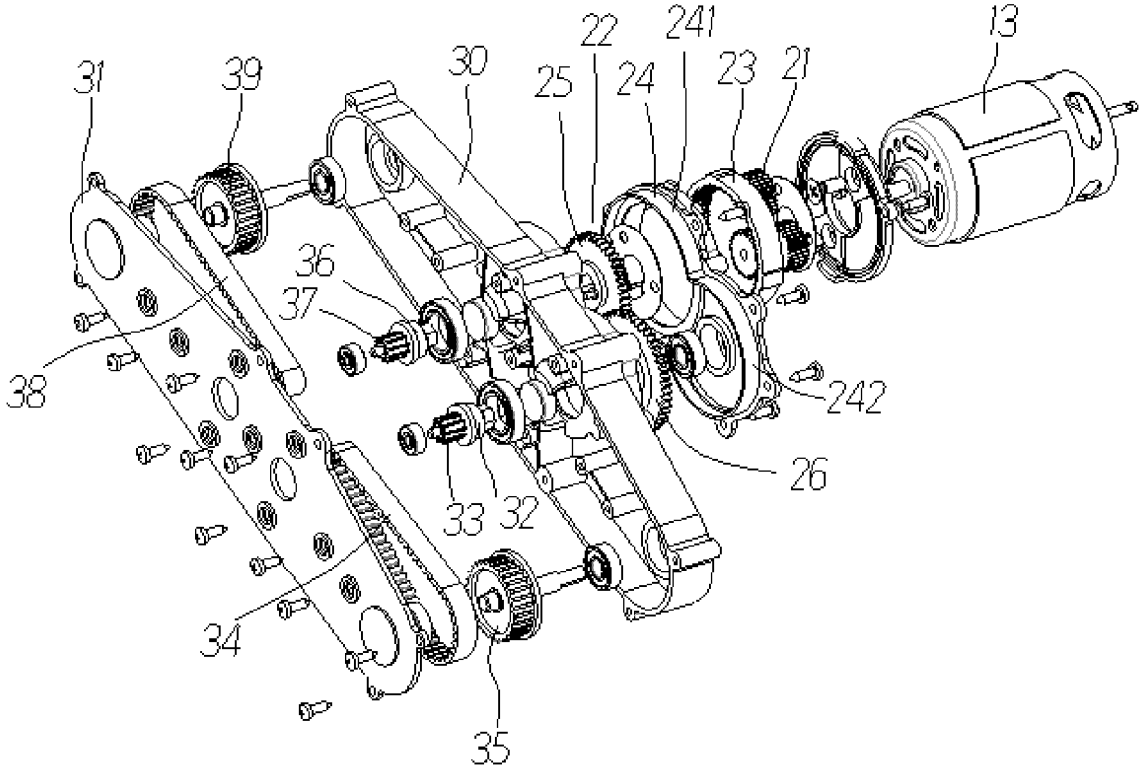
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FIG. 8

## INTERNATIONAL SEARCH REPORT

International application No.
**PCT/CN2022/087193**

**A. CLASSIFICATION OF SUBJECT MATTER**

A47L 11/282(2006.01)i; A47L 11/40(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)

A47L

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNTXT; WPABS; ENTXTC; ENTXT; VEN: 刷地, 洗地, 清洁辊, 清洗辊, 清洗刷, 清洁刷, 滚刷, 辊刷, 刷子, 二, 两, 多, 前, 后, 转速, 速度, 相同, 不同, 差异, 大于, 高于, 低于, 小于, 齿轮, roll+, brush+, scrub+, two, second, front, rear, speed, rate, different, same, less than, more than, greater than, smaller than, gear+

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| PX | CN 113208519 A (SHENZHEN 3IROBOTIX CO., LTD.) 06 August 2021 (2021-08-06) description, paragraphs 33-47, and figures 1-2 | 1-14 |
| X | CN 113208519 A (SHENZHEN 3IROBOTIX CO., LTD.) 06 August 2021 (2021-08-06) description, paragraphs 33-47, and figures 1-2 | 15-20 |
| PX | CN 113208518 A (SHENZHEN 3IROBOTIX CO., LTD.) 06 August 2021 (2021-08-06) description, paragraphs 49-77, and figures 1-2 | 1-14 |
| X | CN 113208518 A (SHENZHEN 3IROBOTIX CO., LTD.) 06 August 2021 (2021-08-06) description, paragraphs 49-77, and figures 1-2 | 15-20 |
| PX | CN 113749573 A (SHENZHEN 3IROBOTIX CO., LTD.) 07 December 2021 (2021-12-07) description, paragraphs 53-76, and figures 1-7 | 1-20 |
| PX | CN 114224224 A (SUZHOU JIANDANYOUWEI TECHNOLOGY CO., LTD.) 25 March 2022 (2022-03-25) description, paragraphs 29-50, and figures 1-15 | 1-20 |
| PX | CN 213850510 U (NINGBO SWDK ELECTRONIC TECHNOLOGY CO., LTD.) 03 August 2021 (2021-08-03) description, paragraphs 22-25, and figures 1-4 | 1-14 |

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
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| **24 June 2022** | **05 July 2022** |
| Name and mailing address of the ISA/CN<br>**China National Intellectual Property Administration (ISA/CN)**<br>**No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China**<br>Facsimile No. **(86-10)62019451** | Authorized officer<br><br>Telephone No. |

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INTERNATIONAL SEARCH REPORT

International application No.
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