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(54) **BASE STATION AND CLEANING SYSTEM**

(57) Provided are a base station (100) and a cleaning system. The base station (100) comprises: a base station body (110), a washing disk (120) and a dust collection assembly, wherein the washing disk (129) is located at a lower part of the base station body (110), and the washing disk (120) is provided with a sink (121) and a dirt outlet (122); the dust collection assembly is located in the base station body (110), and the dust collection assembly comprises a dust collection box (160), a dust collection pipeline and a first fan (170); and the dirt outlet (122) is in communication with the dust collection box (160) via the dust collection pipeline, and, in a first working mode of the dust collection pipeline, power generated by the first fan (170) delivers dirt in the sink (120) to the dust collection box (160) via the dirt outlet (122) and the dust collection pipeline. By means of application of the technical solution, the sink (121) can be cleaned, and the accumulation of dirt in the sink (121) can be reduced.

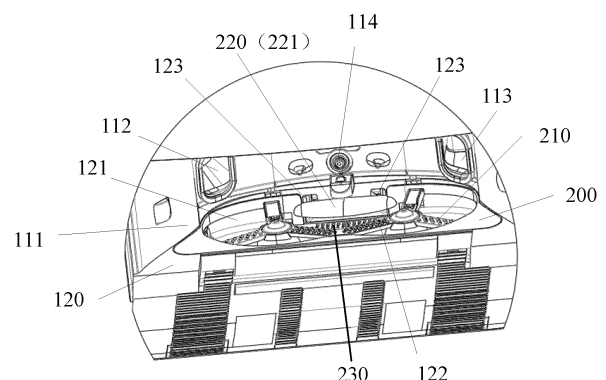


Fig. 4a

Description

[0001] The present disclosure claims the priorities to Chinese Patent Application No. 202222089230.2 filed on Aug. 9, 2022 and titled as "Washing disk, Cleaning Base Station and Cleaning System", Chinese Patent Application No. 202223600140.1 filed on Dec. 30, 2022 and titled as "Base Station and Cleaning System", Chinese Patent Application No. 202223563680.7 filed on Dec. 30, 2022 and titled as "Cleaning Device, Base Station and Cleaning System", and Chinese Patent Application No. 202320163758.1 filed on Feb. 8, 2023 and titled as "Base Station and Cleaning System", the entire contents of which are incorporated herein by reference.

FIELD

[0002] The present disclosure relates to the technical field of cleaning equipment, in particular to a base station and a cleaning system.

BACKGROUND

[0003] With the development of technology, a variety of self-moving devices, such as self-moving cleaning devices, have emerged. When a self-moving cleaning device receives a cleaning command, it can automatically execute the cleaning command and finish the cleaning work, which not only liberates the labor force, but also saves the labor cost.

[0004] In addition, when a self-moving cleaning device finishes the cleaning task or other criteria are met, the self-moving cleaning device will return to a base station for corresponding maintenance operations, such as charging and dust collection.

SUMMARY

[0005] The embodiments of the disclosure provide a base station and a cleaning system.

[0006] According to an embodiment in a first aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk, which is located at a lower part of the base station body, and is provided with a sink and a dirt outlet in communication with the sink, wherein the sink is configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

a dust collection assembly, which is located in the base station body, and comprises a dust collection box, a dust collection pipeline and a first fan, wherein the dirt outlet is in communication with the dust collection box via the dust collection pipeline, and,

in a first working mode of the dust collection pipeline, power generated by the first fan delivers dirt in the sink to the dust collection box via the dirt outlet and the dust collection pipeline.

[0007] In some alternative embodiments, the base station body is provided with a dust collection inlet for connecting with the self-moving cleaning device, and the dust collection inlet is in communication with the dust collection box via the dust collection pipeline, and, in a second working mode of the dust collection pipeline, the power generated by the first fan delivers the dirt in a dust cartridge of the self-moving cleaning device to the dust collection box via the dust collection inlet and the dust collection pipeline.

[0008] In some alternative embodiments, the washing disk is further provided with a drain outlet for draining sewage in the sink.

[0009] In some alternative embodiments, the drain outlet is located below the dirt outlet.

[0010] In some alternative embodiments, the washing disk comprises a first filter disposed between the drain outlet and the dirt outlet.

[0011] In some alternative embodiments, the base station further comprises: a drying assembly configured to provide drying airflow to the sink via a drying port provided on the sink.

[0012] In some alternative embodiments, the washing disk further comprises a fence; at least a part of the drying port is located below the fence.

[0013] In some alternative embodiments, the dirt outlet is located below the fence.

[0014] In some alternative embodiments, an upper surface of the fence away from the dirt outlet is a cambered surface, which protrudes in a direction away from the dirt outlet.

[0015] In some alternative embodiments, the drying port comprises:

a first part;

a second part, wherein the first part and the second part are respectively configured to face two cleaning elements at different positions of the self-moving cleaning device; and a third part, which is located between the first part and the second part, and makes the first part and the second part communicate with each other.

[0016] In some alternative embodiments, the dust collection pipeline further comprises:

a dust collection inlet pipeline; and

a rotary valve connected with the dust collection inlet pipeline, wherein

when the rotary valve is in a first control state, the

rotary valve opens one part of the dust collection inlet pipeline between the dirt outlet and the dust collection box, and the dust collection pipeline is in the first working mode; and

when the rotary valve is in a second control state, the rotary valve opens the other part of the dust collection inlet pipeline between the dust collection inlet and the dust collection box, and the dust collection pipeline is in the second working mode.

[0017] In some alternative embodiments, the dust collection inlet pipeline comprises:

a first pipeline and a second pipeline; the rotary valve is provided with a first inlet, a second inlet and a first outlet, wherein the first inlet is in communication with the dust collection inlet; an outlet of the first pipeline is in communication with the dust collection box, and an inlet of the first pipeline is in communication with the first outlet; an inlet of the second pipeline is in communication with the dirt outlet, and an outlet of the second pipeline is in communication with the second inlet;

in the first control state of the rotary valve, the second inlet is in communication with the first outlet; and

in the second control state of the rotary valve, the first inlet is in communication with the first outlet.

[0018] In some alternative embodiments, the washing disk comprises:

a cleaning member rotatably arranged in the sink; and

a drive mechanism, which is in a drive connection with the cleaning member, and drives the cleaning member to rotate when it is rotated under an acting force.

[0019] In some alternative embodiments, the cleaning member is provided with bristles on the bottom and/or periphery of the cleaning member.

[0020] In some alternative embodiments, the washing disk further comprises:

a cleaning bracket located in the sink; and

a cleaning rib that interferes with the cleaning assembly, wherein the cleaning member is rotatably connected to the cleaning rib (210).

[0021] In some alternative embodiments, the cleaning bracket is removably arranged in the sink.

[0022] In some alternative embodiments, the base station further comprises:

at least one liquid spray port configured to enable a liquid flowing to the sink and/or the cleaning assembly to pass there-through, and push the dirt in the sink into at least one of the following: a preset area adjacent to the dirt outlet and the dirt outlet.

[0023] In some alternative embodiments, the liquid spray port is located on a side wall of the sink, and/or the liquid spray port is located on a side wall of a dock chamber formed by the base station body.

[0024] In some alternative embodiments, the base station further comprises:

at least one air outlet configured to enable an airflow flowing to the sink and/or the cleaning assembly to pass there-through, and push the dirt in the sink into at least one of the following: a preset area adjacent to the dirt outlet and the dirt outlet.

[0025] In some alternative embodiments, the air outlet is located on a side wall of the sink, and/or the air outlet is located on a side wall of a dock chamber formed by the base station body.

[0026] In some alternative embodiments, the height of a bottom wall of the sink gradually decreases from the opposite side of the dirt outlet in a direction to the dirt outlet.

[0027] According to an embodiment in a second aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk, which is located at a lower part of the base station body, and is provided with a sink and a dirt outlet in communication with the sink, wherein the sink is configured to accommodate at least a part of the cleaning assembly of the self-moving cleaning device, and the dirt outlet is configured to enable dirt in the sink or dirt in a dust cartridge of the self-moving cleaning device to pass there-through; and

a pushing assembly configured to push the dirt in the sink into a preset area adjacent to the dirt outlet and/or the dirt outlet.

[0028] In some alternative embodiments, the washing disk further has: a drain outlet for draining the sewage in the sink, wherein the drain outlet is located on an inner wall of the sink; the pushing assembly is further configured to push the dirt in the sink into a preset area adjacent to the drain outlet and/or the drain outlet.

[0029] In some alternative embodiments, the drain outlet and the dirt outlet are two outlets spaced apart from each other; or the drain outlet and the dirt outlet are the same outlet.

[0030] In some alternative embodiments, the pushing assembly comprises:

at least one spray nozzle mounted on the base station body and/or the washing disk.

[0031] In some alternative embodiments, the spray

nozzle sprays in a direction toward the drain outlet and/or the dirt outlet; alternatively, among a plurality of spray nozzles, some spray nozzles spray in a direction at an included angle with respect to the orientation of the drain outlet and/or the dirt outlet.

[0032] In some alternative embodiments, the spray nozzle can be arranged fixedly with respect to the washing disk; alternatively, the spray nozzle can be arranged movably with respect to the washing disk.

[0033] In some alternative embodiments, the pushing assembly comprises:

a first driving assembly and a mechanical arm, wherein the mechanical arm is connected to the first driving assembly, and the first driving assembly is configured to provide a driving force to the mechanical arm; the mechanical arm is configured to push the dirt in the sink under the driving action of the first driving assembly.

[0034] In some alternative embodiments, the pushing assembly comprises:

a second driving assembly, a rotating shaft and a conveyor belt, wherein the rotating shaft is connected to the second driving assembly, the conveyor belt is connected to the rotating shaft, and the second driving assembly can drive the rotating shaft to rotate, which in turn drives the conveyor belt to push the dirt in the sink.

[0035] In some alternative embodiments, the pushing assembly comprises:

a first driving mechanism and a collecting member, wherein a first end of the collecting member is located at a preset position of the sink, and a second end of the collecting member is located in a preset area adjacent to the dirt outlet, or the second end of the collecting member is located in the dirt outlet, and the first driving mechanism is connected to one of the second end and the first end of the collecting member;

the first driving mechanism is configured to drive one end of the collecting member to ascend or descend, so that the second end of the collecting member is lower than the first end, wherein the second end is an end opposite to the first end.

[0036] According to an embodiment in a third aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body having a clearance hole and a dock chamber for accommodating a machine body of a self-moving cleaning device;

a washing disk, which is located at a lower part of the base station body, and is provided with a sink in communication with the dock chamber, wherein the sink is configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

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an extensible pipe, which passes through the clearance hole and is configured to enable dirt in the sink or dirt in a dust cartridge of the self-moving cleaning device to pass there-through; and a free end of the extensible pipe can extend and retract with respect to a fixed end of the extensible pipe, wherein the free end is an end opposite to the fixed end; and

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a second driving mechanism connected to the fixed end of the extensible pipe;

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the second driving mechanism is configured to drive the extensible pipe to switch between a retracted state and an extended state; wherein when the extensible pipe is in the extended state, the free end of the extensible pipe is located at a preset position where the dirt in the sink is accumulated, so as to collect the dirt in the sink; when the extensible pipe is in the retracted state, there is spacing between the free end of the extensible pipe and the preset position, so as to reduce the effect on collecting the dirt in the dust cartridge in the self-moving cleaning device.

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[0037] According to an embodiment in a fourth aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

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a washing disk, which is located at a lower part of the base station body, and is provided with a sink and a drain outlet for the sewage in the sink to pass there-through, wherein the drain outlet is located on an inner wall of the sink, and the sink is configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

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a liquid pipeline system configured to deliver a liquid at least into the sink, wherein

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the liquid pipeline system comprises a sewage inlet pipe and a sewage tank, wherein the sewage inlet pipe makes the drain outlet and the sewage tank communicate with each other, so as to deliver the sewage in the sink into the sewage tank via the drain outlet;

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the inner diameter of the sewage inlet pipe is greater than 40 mm, and the inner diameter of the drain outlet is greater than or equal to that of the sewage inlet pipe.

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[0038] According to an embodiment in a fifth aspect of the present disclosure, a base station is provided. The base station comprises:

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a base station body;

a washing disk, which is located at a lower part of the base station body, and is provided with a sink and a drain outlet for the sewage in the sink to pass there-through, wherein the drain outlet is located on an inner wall of the sink, and the sink is configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

a liquid pipeline system configured to deliver a liquid at least into the sink, wherein

the liquid pipeline system comprises a sewage inlet pipe, a screw and a third driving assembly, wherein the screw is located in the sewage inlet pipe, the third driving assembly is configured to drive the screw to rotate, and the screw is configured to break the dirt entering the sewage inlet pipe via the drain outlet.

[0039] According to an embodiment in a sixth aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk, which is located at a lower part of the base station body, and is provided with a sink configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device;

cutters at least partially located in the sink; and

a fourth driving assembly, which is connected to the cutters and configured to drive the cutters to rotate, and the rotating cutters are configured to break the dirt in the sink.

[0040] In some alternative embodiments, the washing disk further has: a drain outlet for the sewage in the sink to pass there-through, wherein the drain outlet is located on an inner wall of the sink, and the cutters are arranged adjacent to the drain outlet.

[0041] According to an embodiment in a seventh aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk, which is located at a lower part of the base station body and provided with a sink and a drain outlet in communication with the sink, wherein the drain outlet is located on an inner wall of the sink, and the sink is configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

a sewage tank, which is located below the sink, and is in communication with the drain outlet, and the dirt in the sink enters the sewage tank via the drain outlet

under the action of gravity.

[0042] According to an embodiment in an eighth aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk, which is located at a lower part of the base station body, and is provided with a sink configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

a protective sleeve, which is sleeved outside the washing disk and configured to bear the dirt in the sink.

[0043] According to an embodiment in a ninth aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk, which is located at a lower part of the base station body, and is provided with a sink configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device;

a collection box, which is in communication with the sink to receive the dirt in the sink;

a second filter, which is located at that bottom of the collection box to filter the dirt in the collection box;

a sewage box configured to receive the sewage filtered through the second filter, wherein the sewage box is provided with a drain outlet; and

a sewage inlet pipe, which is communication with the drain outlet to deliver the sewage in the sewage box to a sewage tank on the base station body.

[0044] According to an embodiment in a tenth aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk located at a lower part of the base station body,

wherein the washing disk comprises: a base assembly and an expansion base for guiding a self-moving cleaning device into the base assembly, wherein the base assembly is provided with a sink configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

the expansion base is provided with a first comb member for scraping off the dirt on the cleaning assembly.

[0045] In some alternative embodiments, the washing disk further comprises:

a vibrating member, which is mounted on the expansion base and makes the expansion base vibrate to shake off the dirt on the cleaning assembly passing through the expansion base.

[0046] According to an embodiment in an eleventh aspect of the present disclosure, a base station is provided. The base station comprises:

a base station body;

a washing disk located at a lower part of the base station body,

wherein the washing disk comprises: a base assembly and an expansion base for guiding a self-moving cleaning device into the base assembly, wherein the base assembly is provided with a sink configured to accommodate at least a part of a cleaning assembly of the self-moving cleaning device; and

the washing disk further comprises a first air outlet, an air duct structure and an air blast device that are located on the expansion base, wherein the air duct structure is in communication with the first air outlet, and the air blast device provides an airflow to the first air outlet;

an inner wall of the air duct structure is provided with a plurality of second air outlets for the airflow to pass there-through, and the second air outlets blast the airflow toward the cleaning assembly to blow off the dirt on the cleaning assembly.

[0047] According to an embodiment in a twelfth aspect of the present disclosure, a cleaning system is provided. The cleaning system comprises:

the aforesaid base station;

a self-moving cleaning device configured to be able to move to the base station.

[0048] In some alternative embodiments, the self-moving cleaning device is further configured to enable the dirt in the sink to enter the dust cartridge of the self-moving cleaning device through a dust suction port of the self-moving cleaning device.

[0049] In some alternative embodiments, the self-moving cleaning device comprises:

a machine body;

a cleaning assembly mounted at the bottom of the machine body; and

a second comb member, which is mounted on the machine body and interferes with the cleaning assembly to scrape off the dirt on the cleaning assembly.

[0050] By means of application of the technical scheme in the embodiments of the present disclosure, the sink can be cleaned, and the accumulation of dirt in the sink can be reduced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0051] The accompanying drawings, which constitute a part of the present application, are provided to facilitate further understanding the present disclosure; the exemplary embodiments and associated description in the present disclosure are intended to explain the present disclosure, and shall not be deemed as constituting any undue limitation on the present disclosure. In the figures:

Fig. 1a shows a schematic structural diagram of a self-moving cleaning device provided in an alternative embodiment of the present disclosure;

Fig. 1b shows a schematic structural diagram of a base station provided in an alternative embodiment of the present disclosure;

Fig. 1c shows a schematic partial structural diagram of the base station in Fig. 1b;

Fig. 2 shows a schematic partial structural diagram of the base station in Fig. 1c from another perspective;

Fig. 3 shows a first schematic partial structural diagram of the base station in Fig. 1b approximately at part A;

Fig. 4a shows a second schematic partial structural diagram of the base station in Fig. 1b approximately at part A;

Fig. 4b shows a third schematic partial structural diagram of the base station in Fig. 1b approximately at part A;

Fig. 4c shows a schematic partial structural diagram of a base station in the present disclosure, which is different from the base station shown in Fig. 1b;

Fig. 4d shows a schematic structural diagram of the cleaning member in Fig. 4c;

Fig. 5 shows a schematic structural diagram of the limiting member in Fig. 1b;

Fig. 6 shows a fourth schematic partial structural diagram of the base station in Fig. 1b;

Fig. 7 shows a fifth schematic partial structural diagram of the base station in Fig. 1b;

Fig. 8a shows a partial structural diagram of the base station in Fig. 1b from another perspective;

Fig. 8b shows a schematic structural diagram of the base station in Fig. 8a after the limiting member is assembled thereon;

Fig. 8c shows an exploded view of the base station in Fig. 8b;

Fig. 8d shows a schematic structural diagram of the washing disk in Fig. 1b;

Fig. 8e shows a schematic structural diagram of a washing disk different from the washing disk in Fig. 1b;

Fig. 8f shows a cross-sectional view of the washing disk in Fig. 8e;

Fig. 8g shows a schematic structural diagram of another base station that is different from the base station in Fig. 1b;

Fig. 9a shows a first schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9b shows a second schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9c shows a third schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9d shows a fourth schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9e shows a fifth schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9f shows a sixth schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9g shows a seventh schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9h shows an eighth schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 9i shows a structural block diagram of the liquid pipeline system provided in an alternative embodiment of the present disclosure;

Fig. 10a shows a first schematic partial structural diagram of the cleaning system provided in an alternative embodiment of the present disclosure;

Fig. 10b shows a ninth schematic partial structural diagram of the base station provided in an alternative embodiment of the present disclosure;

Fig. 11 shows a second schematic partial structural diagram of the cleaning system provided in an alternative embodiment of the present disclosure;

Fig. 12 shows a third schematic partial structural diagram of the cleaning system provided in an alternative embodiment of the present disclosure;

Fig. 13 shows a fourth schematic partial structural diagram of the cleaning system provided in an alternative embodiment of the present disclosure;

Fig. 14 shows a fifth schematic partial structural diagram of the cleaning system provided in an alternative embodiment of the present disclosure;

Fig. 15 shows a sixth schematic partial structural diagram of the cleaning system provided in an alternative embodiment of the present disclosure; and

Fig. 16 shows a seventh schematic partial structural diagram of the cleaning system provided in an alternative embodiment of the present disclosure;

[0052] The aforesaid accompanying drawings include the following reference numerals:

100 - base station; 110 - base station body; 111 - dock chamber; 112 - dust collection inlet; 113 - dust collection outlet; 114 - liquid outlet; 120 - washing disk; 120a - first base; 120b - second base; 120c - expansion base; 121 - sink; 122 - dirt outlet; 123 - drying port; 123a - first part; 123b - second part; 123c - third part; 124 - drain outlet; 125 - air outlet; 130 - second pipeline; 140 - first pipeline; 150 - rotary valve; 151 - first inlet; 160 - dust collection box; 170 - first fan; 180 - dust collection outlet pipeline; 190 - drying assembly; 191 - second fan;

200 - cleaning bracket; 210 - cleaning rib; 220 - fence; 221 - cambered surface; 230 - first filter;

300 - cleaning member; 310 - bristle; 320 - drive mechanism;

400 - pushing assembly; 400a - fan device; 400b - first driving assembly; 400c - mechanical arm;

401 - second driving assembly; 400d - conveyor belt; 400e - first driving mechanism; 400f - collecting member; 400g - second driving mechanism; 400h - extensible pipe; 402 - liquid spray port;

410 - spray nozzle; 410a - liquid spray port; 420 - mounting bracket; 430 - liquid supply structure;

500 - self-moving cleaning device; 510 - cleaning assembly; 511 - roller brush; 512 - cleaning element;

600 - sewage inlet pipe; 610 - screw; 620 - third driving assembly; 630 - sealing element;

700 - sewage tank; 710 - sewage pump; 720 - sewage pipe;

800 - fourth driving assembly; 810 - fourth driving motor; 820 - first bevel gear; 830 - second bevel gear; 840 - worm; 850 - worm gear;

900 - cutter; 910 - cutter head; 920 - grinding disc;

10 - liquid pipeline system; 11 - liquid pump; 12 - valve; 12a - output end; 20 - liquid supply source; 30 - collection box; 40 - second filter; 50 - sewage box; 60 - air blast device; 61 - first air blast port; 62 - air duct structure; 63 - cavity.

DETAILED DESCRIPTION

[0053] The technical scheme in the embodiments of the present disclosure will be described below clearly and completely with reference to the accompanying drawings in embodiments of the present disclosure. Apparently, the embodiments described herein are only some possible embodiments of the present disclosure rather than all possible embodiments of the present disclosure. In fact, the following description of at least one exemplary embodiment is only illustrative, and shall not be deemed as any limitation on the present disclosure or any application or use of the present disclosure. Those having ordinary skills in the art can obtain other embodiments on the basis of the embodiments described herein without expending any creative labor; however, all such embodiments shall be deemed as falling in the scope of protection of the present disclosure.

[0054] As shown in Figs. 1a and 1b, the cleaning system in an embodiment of the present disclosure comprises a self-moving cleaning device 500 and a base station 100.

[0055] The self-moving cleaning device 500 is a device

that automatically performs cleaning operation in an area to be cleaned without the user's manipulation. When the self-moving cleaning device 500 finishes the cleaning task or stops the cleaning task owing to other reasons, the self-moving cleaning device 500 can return to the base station 100 for charging, and/or replenishing water, and/or cleaning, and/or collecting dust, etc.

[0056] As shown in Fig. 1a, the self-moving cleaning device 500 may comprise a machine body 520, and a sensing system, a control system, a driving system, and a cleaning system, etc., which are arranged on the machine body 520. The sensing system is configured to sense the information on the ambient environment around the self-moving cleaning device 500 and the information on the movement state of the self-moving cleaning device 500, and provide the information to the control system. The control system can plot a real-time map of the environment where the self-moving cleaning device 500 is located according to the information provided by the sensing system, and provide an action strategy for the self-moving cleaning device 500 in connection with the information such as the current movement state of the self-moving cleaning device 500. The driving system drives the self-moving cleaning device to move on the surface to be cleaned according to the instructions from the control system.

[0057] The self-moving cleaning device 500 further comprises a cleaning system, which may include a wet-cleaning system and a dry-cleaning system.

[0058] A dry-cleaning system provided in an embodiment of the present disclosure may comprise a roller brush 511, a dust cartridge, a fan, and an air outlet. The roller brush that interferes with the ground to a certain degree sweeps up the dust on the ground and carries it to the front of a dust suction port between the roller brush and the dust cartridge, and then the dust is sucked by suction gas generated by the fan and passing through the dust cartridge into the dust cartridge. The dry-cleaning system may further comprise an edge brush having a rotating shaft that is at an angle with respect to the ground for moving debris into the area of the roller brush 511 of the cleaning system. The roller brush 511 may be a bristle brush, a rubber brush, or a mixed rubber and bristle brush, etc.

[0059] The wet-cleaning system may comprise a cleaning assembly 510, a water supply mechanism, and a liquid storage tank, etc. the cleaning assembly 510 can be arranged below the liquid storage tank, and the cleaning liquid in the liquid storage tank is delivered to the cleaning assembly 510 via the water supply mechanism, so that the cleaning assembly 510 can perform wet-cleaning on the surface to be cleaned. In other embodiments of the present disclosure, alternatively, the cleaning liquid in the liquid storage tank may be directly sprayed on the surface to be cleaned, and the cleaning assembly may clean the surface by uniformly spreading the cleaning liquid thereon. It can be understood that the self-moving cleaning device 500 is provided with a water

filling nozzle in communication with the liquid storage tank, and the liquid outside the self-moving cleaning device 500 can be replenished into the liquid storage tank via the water filling nozzle, so as to realize water replenishment for the liquid storage tank.

[0060] The cleaning assembly 510 provided in the embodiment of the present disclosure comprises a movement mechanism (not shown in the figure) and a cleaning element 512 arranged on the machine body 520, i.e., the entire cleaning assembly 510 can be mounted on the machine body 520 via the movement mechanism, and the cleaning assembly 510 moves along with the movement of the machine body 520 to realize a floor mopping function. The movement mechanism is used to drive the cleaning element 512 to act. For example, the movement mechanism can drive the cleaning element 512 to ascend and descend, and the movement mechanism can also drive the cleaning element 512 to move in the horizontal direction, such as reciprocation and rotation in the horizontal direction, so as to meet different functional requirements for the cleaning element 512, which is to say, the movement mechanism can realize differentiated handling of the cleaning element 512, improve the cleaning performance of the self-moving cleaning device, and improve the cleaning efficiency and use experience. In the forward direction of the self-moving cleaning device 100, the cleaning element 512 can be located behind the roller brush 511, and the cleaning element 512 is usually made of a soft material having a water absorption capability, such as fabric or sponge, etc.

[0061] When the self-moving cleaning device 500 has operated for a specified cleaning time or has finished the cleaning for specified cleaning area, or the power of the self-moving cleaning device is lower than a threshold, or the dirt in the dust cartridge of the self-moving cleaning device reaches a certain amount, etc., the self-moving cleaning device 500 can return to the base station for corresponding maintenance, such as cleaning, charging, or dust collection, etc.

[0062] As shown in Fig. 1b, in an embodiment of the present disclosure, the base station 100 may comprise a base station body 110 and a washing disk 120 located at a lower part of the base station body 110. After the self-moving cleaning device 500 returns to the base station 100, it is borne on the washing disk 120. As shown in Fig. 4a, the washing disk 120 has a sink 121 for accommodating at least a part of the cleaning assembly 510 of the self-moving cleaning device 500, and a cleaning rib 210 that interferes with the cleaning assembly 510. The component cleaned in the base station 100 may be the roller brush 511 and/or the cleaning element 512 in the cleaning assembly 510.

[0063] The base station 100 may perform dry-cleaning on the cleaning assembly 510. For example, the cleaning assembly 510 is driven by the movement mechanism to rotate or swing, and the cleaning rib 210 can scrape the dirt off the cleaning assembly 510 by means of the inter-

ference with the cleaning assembly 510, and the scraped dirt falls into the sink 121.

[0064] In addition, a cleaning liquid can be introduced into the sink 121 through a liquid outlet 114 of the base station body 110, so that the cleaning assembly 510 can be soaked, and the cleaning assembly 510 can be wet-cleaned with the cleaning liquid. The cleaning rib 210 interferes with the wetted cleaning assembly 510 to scrape off the dirt on the cleaning assembly 510, and the sewage produced in this operation falls into the sink 121. The base station body 110 may be provided with a clean water tank for storing the cleaning liquid, and the cleaning liquid in the clean water tank may be conveyed into the sink 121 or sprayed to the cleaning assembly 510 through a liquid pipeline system. Alternatively, no clean water tank is provided on the base station body 110; instead, a cleaning liquid from a liquid supply source outside the base station 100 can be directly delivered through the liquid pipeline system into the sink 121 or sprayed to the cleaning assembly 510. Alternatively, the cleaning liquid for cleaning the cleaning assembly 510 may come from a liquid storage tank of the self-moving cleaning device 500. The cleaning liquid in the liquid storage tank of the self-moving cleaning device 500 is delivered into the sink 121 through a water supply mechanism, so that the cleaning assembly 510 is soaked. Although the sewage generated during wet-cleaning can be drained out of the sink 121 through a drain outlet 124 in the sink 121, some dirt remains in the sink 121.

[0065] To sum up, no matter whether the cleaning assembly 510 is subjected to dry-cleaning or wet-cleaning, dirt will remain in the sink 121 of the washing disk 120.

[0066] As shown in Figs. 2, 3, 4a, 4b, and 6, the base station 100 in the embodiment of the present disclosure further comprises a dust collection assembly located in the base station body 110. The base station body 110 has a dust collection inlet 112, and the washing disk 120 is further provided with a dirt outlet 122, which may be located on a side wall of the sink 121 or at the bottom of the sink 121. The dust collection assembly comprises a dust collection box 160 and a dust collection pipeline that makes the dirt outlet 122 communicate with the dust collection box 160, and the dust collection pipeline is configured to at least convey the dirt passing through the dirt outlet 122 or the dust collection inlet 112 to the dust collection box 160; the dust collection pipeline has at least a first working mode and a second working mode, and the first working mode is configured as follows: the dust collection pipeline conveys the dirt in the sink 121 to the dust collection box 160 through the dirt outlet 122; the second operating mode is configured as follows: the dust collection pipeline conveys the dirt in the dust cartridge of the self-moving cleaning device 500 to the dust collection box 160 through the dust collection inlet 112.

[0067] In the embodiment of the present disclosure, the dust collection box 160 can not only receive the dirt in the dust cartridge of the self-moving cleaning device 500 to realize the cleaning of the dust cartridge of the self-

moving cleaning device 500, but also receive the dirt in the sink 121 to realize the cleaning of the sink 121, so as to reduce the accumulation of dirt in the sink 121 and reduce the frequency of manual cleaning of the sink 121.

[0068] In some alternative embodiments, the dirt outlet 122 and the drain outlet 124 on the washing disk 120 may be two separate outlets. For example, the dirt outlet 122 and the drain outlet 123 are arranged at different positions on the inner wall of the sink 121 and spaced apart from each other. Fig. 3 exemplarily shows that the drain outlet 124 is located below the dirt outlet 122.

[0069] As shown in Figs. 4a, 8a and 8b, the washing disk 120 comprises a first filter 230 for filtering the sewage in the sink 121. The first filter 230 is located between the dirt outlet 122 and the drain outlet 124, the drain outlet 124 is located below the first filter 230, and the dirt outlet 122 is located above the first filter 230. When the sewage in the sink 121 is drained, the first filter 230 is located at the upstream of the fluid formed by the sewage, and the drain outlet 124 is located at the downstream of the fluid. The sewage is filtered by the first filter 230 and then drained through the drain outlet 124, so that the problem of blockage of the drain outlet 124 can be alleviated; by arranging the dirt outlet 122 above the first filter 230, larger particles that can't be filtered off can be sucked into the dust collection box 160.

[0070] In other embodiments of the present disclosure, the dirt outlet 122 and the drain outlet 124 may be the same outlet. For example, both the sewage and the solid impurities in the sink 121 can be discharged from the sink through the drain outlet 124. In this embodiment, the drain outlet 124 can be in communication with the sewage tank or the dust collection box 160 of the base station 100 respectively, and the dirt in the sink 121 can be discharged into the sewage tank or the dust collection box 160 according to the actual situation. For example, first, the pipeline between the drain outlet 124 and the sewage tank can be opened to discharge the sewage in the sink 121 into the sewage tank; then the pipeline between the drain outlet 124 and the sewage tank can be closed, while the pipeline between the drain outlet 124 and the dust collection box 160 can be opened to discharge the residual solid impurities into the dust collection box 160.

[0071] As shown in Fig. 1c, in some alternative embodiments, the base station further comprises a drying assembly 190 for providing a drying airflow into the sink 121. As shown in Figs. 2, 3, 4a and 4b, the washing disk further has a drying port 123 through which the drying airflow produced by the drying assembly 190 flows into the sink 121 to dry at least the sink 121 itself, the dirt in the sink 121 and the cleaning assembly 510 located in the sink 121.

[0072] For example, the control module of the base station 100 can control the drying module 190 to dry the sink 121 first; when the drying duration reaches a preset duration, or the humidity of the cleaning module 510 decreases to a certain humidity range, or the humidity

in the sink 121 reaches a humidity threshold, the control module controls the dust collection pipeline to activate the first working mode, and the dust collection pipeline conveys the dirt in the sink 121 to the dust collection box 160 through the dirt outlet 122. By drying the dirt first and then collecting the dirt into the dust collection box 160, the problem of blockage caused by the high humidity of the dirt can be alleviated, and the problem of odor of the dirt in the dust collection box 160 can also be alleviated.

[0073] As shown in Fig. 1c, in an alternative embodiment, the drying assembly 190 comprises: a second fan 191 that produces a drying airflow, and a heating element (not shown) that heats up the drying airflow blown by the second fan 191. Compared with the drying port 123, the heating element is located upstream of the drying airflow blown by the second fan 191, and the drying port 123 is located downstream of the drying airflow, so that the airflow blown by the second fan 191 is heated by the heating element and then flows into the sink 121 through the drying port 123, to ensure that the drying airflow flowing into the sink 121 is a heated airflow. The heating element turns the drying airflow into hot airflow, so as to improve the drying effect on the sink 121.

[0074] It can be understood that the drying assembly 190 may not be provided with a heating element.

[0075] For example, the heating element may be a Positive Temperature Coefficient (PTC) heater.

[0076] It can be understood that the base station 100 in the embodiment of the present disclosure may not be provided with a drying assembly.

[0077] As shown in Figs. 2, 4a and 4b, in some alternative embodiments, the washing disk 120 further comprises a fence 220, which may be located above the dirt outlet 122. A fluid diversion effect of the fence 220 can be utilized to increase the pressure of the drying airflow flowing out of the drying port 123, so as to improve the drying effect.

[0078] Optionally, an upper surface of the fence 220 facing away from the dirt outlet 122 is a cambered surface 221, which protrudes in a direction away from the dirt outlet 122. The cambered surface 221 can further improve the diversion effect on the drying fluid and further improve the drying effect.

[0079] In the embodiment shown in Fig. 3, the drying port 123 comprises a first part 123a, a second part 123b and a third part 123c that are in communication with each other, wherein the first part 123a and the second part 123b are respectively configured to face the cleaning elements 512 at two different positions, and the third part 123c is located between the first part 123a and the second part 123b and is in communication with the first part 123a. By utilizing the third part 123c to make the first part 123a and the second part 123b communicate with each other, the area of the drying port 123 can be enlarged, the air output can be increased, thereby the drying efficiency can be further improved.

[0080] As shown in Fig. 4b, the third part 123c of the drying port 123 is located below the fence 220, and the

first part 123a and the second part 123b are located above the fence 220. In that way, the airflow flowing out of the third part 123c is more targeted for drying the sink 121 near the dirt outlet 122, and the first part 123a and the second part 123b will not be blocked; thus, the drying of the cleaning assembly 510 of the self-moving cleaning device 500 is effectively ensured.

[0081] In some alternative embodiments, the drying port 123 may not be provided with the third part 123c; instead, the drying port 123 comprises a first part 123a and a second part 123b that are spaced apart from each other.

[0082] When the dirt in the sink 121 is sucked through the dirt outlet 122, the airflow produced by the dirt suction can enter the dirt outlet 122 under the fence 220, and airflow above the dirt outlet 122 can be guided by the cambered surface 221 of the fence 220 to flow to the dirt outlet 122. According to the Coanda effect, the suction force can be further increased by means of the fence 220, and the pressure at the dirt outlet 122 can be increased, thereby the dirt suction capability can be further improved, and the dust removal effect on the sink 121 can be further improved. Especially, for dirt having a large particle size, the fence 220 can further improve the effect of cleaning the dirt.

[0083] In other alternative embodiments, the fence 220 may not be provided.

[0084] In an embodiment of the present disclosure, usually a dust bag is arranged in the dust collection box 160. After the airflow entering the dust collection box 160 is filtered by the dust bag, the dirt remains in the dust bag, while the airflow that doesn't contain dirt or contains less dirt can be conveyed out of the dust collection box 160 through a dust collection pipeline.

[0085] As shown in Fig. 1c, the dust collection pipeline comprises a dust collection outlet pipeline 180 which is in communication with the dust collection box 160, and is configured to convey the airflow filtered by the dust bag in the dust collection box 160.

[0086] As shown in Figs. 1b, 2 and 3, in an alternative embodiment, the dust collection outlet 113 may be located on the inner wall of the base station body 110, and the dust collection outlet 113 is in communication with the dust collection outlet pipeline 180 to introduce the airflow flowing out of the dust collection outlet pipeline 180 into the sink 121. By adjusting the angle or position of the dust collection outlet 113, the air flowing out of the dust collection outlet 113 can be used to dry the sink 121, so as to further improve the drying effect.

[0087] As shown in Figs. 1c and 2, in some alternative embodiments, the dust collection pipeline further comprises a dust collection inlet pipeline and a rotary valve 150 connected to the dust collection inlet pipeline, wherein when the dust collection pipeline is in a first working mode, the rotary valve 150 is in a first control state to control the dust collection inlet pipeline to convey the dirt in the sink 121 to the dust collection box 160 through the dirt outlet 122; when the dust collection pipeline is in a

second working mode, the rotary valve 150 is in a second control state to control the dust collection inlet pipeline to convey the dirt in the dust cartridge to the dust collection box 160 through the dust collection inlet 112.

[0088] As shown in Fig. 1c, the dirt in the sink 121 and the dirt in the dust cartridge can be collected with one first fan 170 by means of the rotary valve 150, so that the first fan 170 can be fully utilized and the utilization of the internal space of the base station 100 can be improved.

[0089] It can be understood that the dust collection assembly may not be provided with the rotary valve 150. In that case, the dust collection assembly may include two first fans 170, which are utilized to collect the dirt in the sink 121 and the dirt in the dust cartridge of the self-moving cleaning device 500 respectively.

[0090] As shown in Figs. 1c and 2, in an alternative embodiment, the dust collection inlet pipeline comprises a first pipeline 140 and a second pipeline 130, and the rotary valve 150 has a first inlet 151, a second inlet and a first outlet; the first inlet 151 of the rotary valve 150 is in communication with the dust collection inlet 112; the outlet of the first pipeline 140 is in communication with the dust collection box 160, and the inlet of the first pipeline 140 is in communication with the first outlet; the inlet of the second pipeline 130 is in communication with the dirt outlet 122, and the outlet of the second pipeline 130 is in communication with the second inlet.

[0091] When the rotary valve 150 is in the first control state, the first inlet 151 is not in communication with the first outlet, while the second inlet is in communication with the first outlet, so as to realize the communication between the dirt outlet 122 and the dust collection box 160. Under the suction force of the first fan 170, the dirt in the sink 121 can enter the inlet of the second pipeline 130 through the dirt outlet 122, then enter the second inlet of the rotary valve 150 through the outlet of the second pipeline 130, and then enter the first pipeline 140 through the first outlet of the rotary valve 150, and is conveyed through the first pipeline 140 to the dust collection box 160.

[0092] When the rotary valve 150 is in the second control state, the first inlet 151 is in communication with the first outlet, while the second inlet is not in communication with the first outlet. In that state, the first pipeline 140 can make the dust collection inlet 112 and the dust collection box 160 communicate with each other. The dirt in the dust cartridge of the self-moving cleaning device 500 enters the first inlet 151 of the rotary valve 150 through the dust collection inlet 112, then enters the inlet of the first pipeline 140 through the first outlet of the rotary valve 150, and then enters the dust collection box 160 through the outlet of the first pipeline 140.

[0093] In the embodiment shown in Fig. 2, the first inlet 151 of the rotary valve 150 is directly in communication with the dust collection inlet 112. It can be understood that in another embodiment, the first inlet 151 of the rotary valve 150 is not directly in communication with the dust collection inlet 112; instead, a connecting pipeline (not

shown) can be provided, and the two ends of the connecting pipeline are respectively in communication with the first inlet 151 of the rotary valve 150 and the dust collection inlet 112.

[0094] For example, the rotary valve 150 may be a ball valve.

[0095] As shown in Fig. 9a, in some alternative embodiments, the washing disk 120 may not be provided with the dirt outlet 122. In that case, when the dust collection pipeline is in the first working mode, the dust collection inlet 112 is configured to enable the dirt in the sink 121 to pass there-through to the dust collection box 160; when the dust collection pipeline is in the second working mode, the dust collection inlet 112 is configured to enable the dirt in the dust cartridge to pass there-through to the dust collection box 160. In that way, the dust collection inlet pipeline can be simply provided with a passage connecting the dust collection inlet 112 and the dust collection box 160, without the rotary valve 150; thus, the dirt in the sink 121 and the dirt in the dust cartridge of the self-moving cleaning device 500 can be collected through the dust collection inlet 112.

[0096] Without limitation, through adjusting the angle or position of the dust collection inlet 112, the dirt in the sink 121 can enter the dust collection inlet 112 more easily. For example, the dust collection inlet 112 can be adjusted to be closer to the sink 121.

[0097] As shown in Fig. 4c, in an alternative embodiment, the washing disk 120 comprises a base assembly having a sink 121, a cleaning member 300 rotatably disposed in the sink 121, and a drive mechanism 320, wherein the drive mechanism 320 is in a drive-connection with the cleaning member 300. When the drive mechanism 320 is rotated under an acting force, it drives the cleaning member 300 to rotate. The cleaning member 300 can scrape the inner wall of the sink 121 during the rotation, so that it can remove the dirt in the sink 121, thereby decrease the possibility that the dirt remains in the sink 121 and forms stubborn stains.

[0098] As shown in Fig. 4d, optionally, bristles 310 are provided on the bottom and/or the periphery of the cleaning member 300. When the cleaning member 300 rotates, the bristles arranged on the bottom of the cleaning member 300 can scrape the bottom surface of the sink 121, while the bristles 310 arranged on the periphery of the cleaning member 300 can scrape the side surfaces of the sink 121, thereby the dirt remaining on the bottom surface and the side surfaces of the sink 121 can be removed, and the effect of cleaning the sink 121 can be further improved.

[0099] As shown in Figs. 4c and 8b, in some alternative embodiments, the washing disk 120 further comprises a cleaning bracket 200 located in the sink 121 and a cleaning rib 210 that interferes with the cleaning assembly 510. Without limitation, the cleaning member 300 is rotatably connected to the cleaning rib 210.

[0100] Optionally, at least one of the cleaning rib 210, the fence 220 and the first filter 230 that filters the sewage

can be connected to the cleaning bracket 200, and the cleaning bracket 200 can be removably arranged in the sink 121, so as to facilitate the removal of the cleaning rib 210 from the sink 121, thereby facilitate the cleaning of the dirt remaining on the cleaning rib 210, the fence 220, the first filter 230 and the cleaning bracket 200.

[0101] For example, the cleaning member 300 can be removed together with the cleaning bracket 200 when the cleaning bracket 200 is removed from the sink 121; thus, the cleaning member 300 is removably arranged with respect to the sink 121.

[0102] Optionally, the cleaning member 300 is also detachably connected to the cleaning rib 210, so that the cleaning member 300 can be detached from or mounted to the cleaning rib 210.

[0103] After the self-moving cleaning device 500 returns to the base station 100, it moves onto the washing disk 120, so that the cleaning element 512 is accommodated in the sink 121. The cleaning element 512 rotates to scrape off the dirt on the cleaning element 512 by means of the cleaning rib 210, and the cleaning element 512 contacts with the drive mechanism 320 to drive the drive mechanism 320 to rotate, and the rotating drive mechanism 320 in turn drives the cleaning member 300 to rotate. When that cleaning member 300 rotates, the bristles 310 provided on the cleaning member 300 can scrape the bottom surface and the side surfaces of the sink 121 to clean the dirt remaining on the bottom surface and the side surfaces of the sink 121. The sewage produced during the cleaning can be drained through the drain outlet 124 in the sink 121. The dirt remaining in the sink 121 is discharged to the dust collection box 160 through the dirt outlet 122.

[0104] In an embodiment of the present disclosure, as shown in Fig. 5, the first filter 230, the fence 220 and the cleaning rib 210 can be integrally formed with the cleaning bracket 200.

[0105] As shown in Fig. 9h, in some alternative embodiments, the base station 100 further comprises: at least one liquid spray port 402 configured to enable the liquid flowing to the sink 121 and/or the cleaning assembly 510 to pass there-through; the liquid sprayed through the liquid spray port 402 can push the dirt in the sink 121 to at least one of the following positions: a preset area adjacent to the dirt outlet 122, the dirt outlet 122, the area adjacent to the drain outlet 124, and the drain outlet 124.

[0106] The liquid spray port 402 can spray liquid into the sink 121 to wash the deposited and residual dirt in the sink 121, thus realizing automatic cleaning of the sink 121.

[0107] The liquid spray port 402 is located on the base station body 110, and/or the liquid spray port 402 is located on a side wall of the sink 121.

[0108] Fig. 9h illustratively shows that the side wall of a dock chamber 111 formed by the base station body 110 is provided with a plurality of liquid spray ports 402. The dock chamber 111 is used to accommodate the self-moving cleaning device 500. The dock chamber 111 is

in communication with the sink 121; when the self-moving cleaning device 500 moves to the base station 100, the dock chamber 111 can accommodate the machine body 520 of the self-moving cleaning device 500.

[0109] The liquid sprayed from the liquid spray port 402 can be utilized to gather the dirt in the sink 121 in or near the dirt outlet 122, so that the dried dirt can enter the dust collection box 160 through the dirt outlet 122. If the liquid sprayed from the liquid spray port 402 gathers the dirt in the sink 121 in or near the drain outlet 124, as shown in Fig. 11, the dirt can enter the sewage tank 700 through the drain outlet 124. Therefore, by using the liquid spray port 402, the dirt in the sink 121 can be gathered to a specific position, so that the possibility that the dirt is discharged from the dirt outlet 122 is increased, and the accumulation of the dirt in the sink 121 is reduced.

[0110] The liquid spray port 402 may spray liquid in a direction toward the drain outlet 124 and/or the dirt outlet 122.

[0111] In some alternative embodiments, if one or a plurality (two or more) of liquid spray ports 402 are provided, through the cooperation among the liquid spray ports 402, the dirt in the sink 121 can be pushed to the vicinity of the drain outlet 124 and/or the dirt outlet 122 in a better way. Optionally, as shown in Fig. 9h, if a plurality of liquid spray ports 402 are provided, some liquid spray ports 402 may spray liquid in a direction at an angle with respect to the orientation of the drain outlet 124 and/or the dirt outlet 122, and the angle may be any angle, such as 90°, 80°, 60°, 30° or 15°, etc.

[0112] As shown in Fig. 9i, the liquid spray port 402 is in communication with the liquid pipeline system 10 of the base station 100, and the liquid pipeline system 10 is further in communication with a liquid supply source 20 to deliver the cleaning liquid in the liquid supply source 20 to the liquid spray port 402.

[0113] In an embodiment of the present disclosure, the liquid supply source 20 may be a clean water tank located on the base station body 110, or the liquid supply source 20 may be an external water source (e.g., tap water) independent of the base station 100.

[0114] The cleaning liquid supplied from the liquid supply source 20 is conveyed to all the liquid spray ports 402 through the liquid pipeline system 10.

[0115] In addition, as shown in Fig. 1b, the liquid outlet 114 of the base station 100 may also be used as a liquid spray port 402 for cleaning the sink 121.

[0116] Without limitation, as shown in Fig. 9i, the liquid circuit system 10 further comprises a liquid pump 11 and a valve 12, and the liquid pump 11 is respectively in communication with the liquid supply source 20 and the valve 12. The valve 12 has at least two output ends 12a, and each liquid spray port 402 is in communication with one output end 12a. The plurality of liquid spray ports can be denoted as liquid spray port 1, liquid spray port 2, ..., liquid spray port n. The liquid pump 11 can regulate the pressure of the liquid sprayed from the plurality of liquid spray ports 402 by regulating the flow rate of the liquid, so as to

meet the washing requirement in different dirt situations and make the automatic cleaning of the sink 121 more intelligent.

[0117] Optionally, the liquid pipeline system 10 may further provide other liquid supply functions. As shown in Fig. 9i, the liquid pipeline system 10 comprises at least one liquid supply structure 430, which is respectively denoted as liquid supply structure 1, liquid supply structure 2, ..., liquid supply structure m. The liquid supply structure 1 can be used to supply cleaning liquid into the sink 121 through the liquid outlet 114, so as to clean the cleaning assembly 510 of the self-moving cleaning device 500. The liquid supply structure 2 can be used to replenish liquid into the clean water tank. The plurality of liquid supply structures 430 can realize different liquid supply functions to meet different liquid supply requirements.

[0118] As shown in Fig. 9b, in some alternative embodiments, the washing disk 120 further has an air outlet 125 in communication with the sink 121, and the air outlet 125 may be located on a side wall of a dock chamber 111 formed by the base station body 110, and/or the air outlet 125 may be located on a side wall of the sink 121. The air outlet 125 is configured to enable the airflow flowing to the sink 121 to pass there-through, and the airflow sprayed from the air outlet 125 can push the dirt in the sink 121 into at least one of the following: a preset area adjacent to the dirt outlet 122, the dirt outlet 122, the area adjacent to the drain outlet 124, and the drain outlet 124.

[0119] One or a plurality of air outlets 125 may be provided. Here, "a plurality" means two or more. If only one air outlet 125 is provided, as shown in Fig. 9b, the air outlet 125 can be arranged to face the dirt outlet 122. The dashed box in the figure shows the approximate movement trajectory of the dirt conveyed from the air outlet 125 to the dirt outlet 122. After the base station 100 performs the cleaning operation on the cleaning assembly 510, most of the remaining dirt is located in an area A1 between two cleaning elements 512 of the self-moving cleaning device 500. Before the first working mode of the dust collection pipeline is activated, the third fan can be driven to operate. The third fan blows air through the air outlet 125 to blow the dirt in the area A1 to an area B1, which is a preset area adjacent to the dirt outlet 122. After the first working mode of the dust collection pipeline is activated, the first fan 170 can operate, and can suck the dirt in an area B into the dust collection box 160 more conveniently, thus reducing the dirt remaining in the sink 121.

[0120] If a plurality of air outlets 125 are provided, at least one air outlet 125 may face the dirt outlet 122, or some air outlets 125 may not face the dirt outlet 122; the plurality of air outlets 125 may be arranged around a preset area or the dirt outlet 122 so as to jointly push the dirt to the dirt outlet 122.

[0121] As shown in Fig. 9b, the base station 100 further comprises a fan device 400a for providing air flow to the air outlet 125, and the air flow generated by the fan device

400a is blasted to the sink 121 from the air outlet 125.

[0122] The fan device 400a may utilize the second fan 191, or it may be a separate fan different from the second fan 191.

[0123] In the embodiment of the present disclosure, as shown in Figs. 9h and 9b, the air outlet 125 and the liquid spray port 402 may be two separate outlets.

[0124] In some alternative embodiments, the air outlet 125 and the liquid spray port 402 may be the same outlet. For example, the liquid spray port 402 may be in communication with the liquid supply source and the fan (may be the second fan 191) respectively. If it is necessary to make the liquid spray port 402 gather the dirt in the sink 121 near the drain outlet 124 and/or the dirt outlet 122 by means of a liquidous fluid, the pipeline between the liquid spray port 402 and the liquid supply source 20 may be opened, and the pipeline between the liquid spray port 402 and the fan may be closed. If it is necessary to make the liquid spray port 402 gather the dirt in the sink 121 near the drain outlet 124 and/or the dirt outlet 122 by means of airflow, the pipeline between the liquid spray port 402 and the fan may be opened, and the pipeline between the liquid spray port 402 and the liquid supply source 20 may be closed.

[0125] As shown in Figs. 7, 8c and 9c, in some alternative embodiments, the base station 100 further comprises: a pushing assembly 400 configured to push the dirt in the sink 121 into at least one of the following: a preset area adjacent to the dirt outlet 122, the dirt outlet 122, an area adjacent to the drain outlet 124, and the drain outlet 124.

[0126] The pushing assembly 400 can push the dirt into the dirt outlet 122 or to the vicinity of the dirt outlet 122, so as to increase the possibility that the dirt is discharged from the dirt outlet 122, reduce the accumulation of the dirt in the sink 121, and further decrease the frequency of manual cleaning of the base station 100.

[0127] Without limitation, the push assembly 400 may be mounted on the washing disk 120, or the push assembly 400 may be mounted on the base station body 110.

[0128] If the dirt in the sink 121 enters the dust collection box 160 through the dust collection inlet 112, the pushing assembly 400 can also push the dirt in the sink 121 to a preset area adjacent to the dust collection inlet 112 or into the dust collection inlet 112.

[0129] Without limitation, the operation of pushing dirt by the pushing assembly 400 can be performed simultaneously with other operations of the base station 100, and/or may be a separate operation and is not performed simultaneously with other operations of the base station 100. Other operations of the base station 100 include at least one of the following: operation of cleaning the cleaning assembly 510 of the self-moving cleaning device 500 performed by the base station 100; and operation of collecting dirt in the sink 121 performed by the base station 100 when the dust collection assembly is in the first working mode.

[0130] As shown in Figs. 6, 7, 8c, 8e to 8g, and 9c, in some alternative embodiments, the pushing assembly 400 comprises a spray nozzle 410, with an outlet in communication with the sink 121, and the spray nozzle 410 is configured to spray the dirt in the sink 121 to at least one of the following by means of a fluid: a preset area adjacent to the dirt outlet 122, the dirt outlet 122, the area adjacent to the drain outlet 124, and the drain outlet 124.

[0131] Moreover, the fluid sprayed by the spray nozzle 410 can also wash away the dirt on the cleaning assembly 510 of the self-moving cleaning device 500, which is also beneficial for improving the cleaning effect of the cleaning assembly.

[0132] Without limitation, the spray nozzle 410 is a structural member capable of spraying a liquid column, a liquid curtain or other forms of liquidous fluid.

[0133] As shown in Fig. 8c, in some alternative embodiments, the position of the spray nozzle 410 is the same as that of the liquid spray port 402. For example, the spray nozzle 410 may be inserted through the liquid spray port 402, and the liquid spray port 402 sprays liquid through the outlet of the spray nozzle 410.

[0134] In some other alternative embodiments, the position of the spray nozzle 410 is different from that of the liquid spray port 402. For example, the spray nozzle 410 and the liquid spray port 402 are spaced apart from each other at different positions on the side wall of the sink 121.

[0135] Alternatively, the liquidous fluid sprayed by the spray nozzle 410 may be a hot fluid heated by a heating mechanism. Compared with an unheated liquid, a hotter liquid can improve the solubility of oil stains, and further improve the removal effect of oily dirt in the sink 121.

[0136] As shown in Figs. 6, 8e and 8f, in some alternative embodiments, if one or a plurality (two or more) of spray nozzles 410 are provided, through the cooperation among the spray nozzles 410, the dirt in the sink 121 can be pushed to the vicinity of the drain outlet 124 and/or the dirt outlet 122 in a better way. Optionally, as shown in Fig. 6, if a plurality of spray nozzles 410 are provided, for example, some spray nozzles 410 may spray liquid in a direction at an angle with respect to the orientation of the drain outlet 124 and/or the dirt outlet 122, and the angle may be any angle, such as 90°, 60°, 30° or 15°, etc.

[0137] As shown in Fig. 6, in the case that a plurality of spray nozzles 410 are provided, the plurality of spray nozzles 410 may be arranged around a preset area or the dirt outlet 122, so as to form a better surrounding effect on the preset area, which is beneficial for improving the dirt collection effect.

[0138] Fig. 9c exemplarily shows one spray nozzle 410, which may be oriented to the dirt outlet 122, and the dashed box shows the approximate movement trajectory of the dirt conveyed from the spray nozzle 410 to the dirt outlet 122. In the process of cleaning the cleaning assemblies 510 of the self-moving cleaning device 500, most of the dirt in the sink 121 will be collected in an area A1 between the two cleaning assemblies 510, and the dirt

in the area A1 can be purged by the fluid sprayed from the spray nozzle 410 to an area B1, which is a preset area adjacent to the dirt outlet 122. After the first working mode of the dust collection pipeline is activated, the first fan 170 can suck the dirt in the area B into the dust collection box 160 more conveniently, thus reducing the dirt remaining in the sink 121 and improving the cleaning effect for the sink 121.

[0139] As shown in Figs. 6 and 8c, in some alternative embodiments, the spray nozzle 410 may be fixedly arranged with respect to the washing disk 120, or may be movably arranged with respect to the washing disk 120.

[0140] As shown in Figs. 8e, 8f and 8g, the spray nozzle 410 may also be configured to be driven to move along a preset trajectory or in a second preset direction with respect to the washing disk 120. Thus, the spray nozzle 410 can expand the spraying range during the movement, so that the sprayed fluid can cover the sink 121 in a better way and the cleaning effect for the sink 121 can be improved.

[0141] The movement of the spray nozzle 410 includes but is not limited to at least one of the following: translation, rotation or swing.

[0142] For example, the movement of the spray nozzle 410 in the second preset direction may be rotation in the horizontal direction, or rotation in the vertical direction perpendicular to the horizontal direction, or rotation in the horizontal direction and the vertical direction.

[0143] As shown in Fig. 8g, in some alternative embodiments, the pushing assembly 400 further comprises a mounting bracket 420 mounted on the base station body 110, and the spray nozzle 410 is rotatably mounted on the mounting bracket 420, and is configured to be driven to rotate with respect to the mounting bracket 420 and spray liquid into the sink 121. In addition, the mounting bracket 420 may also be configured to be driven to move with respect to the base station body 110.

[0144] Fig. 8g exemplarily shows the spray nozzle 410 mounted on the top wall of the dock chamber 111 of the base station body 110. It can be understood that the spray nozzle 410 may be mounted on a side wall of the dock chamber 111 alternatively.

[0145] Alternatively, as shown in Figs. 7, 8c, 8e and 8f, the spray nozzle 410 may be mounted on the washing disk 120.

[0146] As shown in Figs. 7 and 8c, in some alternative embodiments, the base assembly of the washing disk 120 comprises a first base 120a and a second base 120b, wherein the second base 120b is mounted on a first surface of the first base 120a and has a sink 121, a second surface of the first base 120a has a bearing surface, and the base station 100 contacts with a supporting surface such as the ground by means of the bearing surface to realize the placement of the base station 100. The spray nozzle 410 is mounted on the first base 120a and located between the first base 120a and the second base 120b.

[0147] Without limitation, the liquid sprayed by the

spray nozzle 410 may come from the clean water tank in the base station 100, or the spray nozzle 410 may be separately provided with a liquid supply tank or a water supply source such as an external water source.

[0148] Alternatively, the fluid sprayed by the spray nozzle 410 may be an airflow. For example, the inlet of the spray nozzle 410 may be in communication with a third fan to realize an effect of spraying air from the spray nozzle 410. Here, the third fan may employ the second fan 191 in the drying mode, or the third fan is another fan separate from the second fan 191 in the drying mode.

[0149] In some alternative embodiments, the spray nozzle 410 is located at the same position as the air outlet 125. For example, the spray nozzle 410 may be inserted through the air outlet 125, and the air outlet 125 sprays an airflow through the outlet of the spray nozzle 410.

[0150] In some other alternative embodiments, the position of the spray nozzle 410 is different from that of the air outlet 125. For example, the spray nozzle 410 and the air outlet 125 are spaced apart from each other at different positions on the side wall of the sink 121.

[0151] As shown in Figs. 9d and 9e, in some alternative embodiments, the pushing assembly 400 comprises a first driving assembly 400b and a mechanical arm 400c, wherein the mechanical arm 400c is connected to the first driving assembly 400b, and the first driving assembly 400b is configured to provide a driving force to the mechanical arm 400c; the mechanical arm 400c is configured to be driven by the first driving assembly 400b to push the dirt to a preset area adjacent to the dirt outlet 122.

[0152] As shown in Figs. 9d and 9e, after the base station 100 performs the cleaning operation on the cleaning assembly 510, most of the dirt remaining in the sink 121 is located in an area A1 between two cleaning elements 512 of the self-moving cleaning device 500. Before the first working mode of the dust collection pipeline is activated, the first driving assembly 400b can start operation. As shown in Fig. 9d, the first driving assembly 400b drives the mechanical arm 400c to extend into the area A1 and pick up the dirt; then, as shown in Fig. 9e, the mechanical arm 400c transports the picked dirt from the area A1 to an area B1, which is a preset area adjacent to the dirt outlet 122. After the first working mode of the dust collection pipeline is activated, the first fan 170 can operate, and can suck the dirt in an area B into the dust collection box 160 more conveniently, thus reducing the dirt remaining in the sink 121.

[0153] For example, the first driving assembly 400b comprises a first driving motor, or the first driving assembly 400b comprises a first driving motor and a first transmission element, and the power outputted by the first driving motor is transmitted by the first transmission element, and then the first transmission element drives the mechanical arm 400c to move. The first transmission element may be but is not limited to a transmission gear.

[0154] As shown in Fig. 9f, in some alternative embodi-

ments, the pushing assembly 400 comprises a second driving assembly 401, a rotating shaft (not shown) and a conveyor belt 400d, wherein the rotating shaft is connected to the second driving assembly 401, the conveyor belt 400d is connected to the rotating shaft, and the second driving assembly 401 can drive the rotating shaft to rotate, and the rotating shaft can drive the conveyor belt 400d to convey the dirt at a preset position in the sink 121 into the dirt outlet 122 or into a preset area adjacent to the dirt outlet 122.

[0155] The preset position is usually a position in the sink 121 where the dirt may be retained easily. For example, as shown in Fig. 9f, the preset position is an area A1 between two cleaning elements 512 of the self-moving cleaning device 500.

[0156] One end of the conveyor belt 400d may cover the preset position, so that the dirt retained in the sink 121 is directly collected on the conveyor belt. The other end of the conveyor belt 400d may be located in the dirt outlet 122, so that when the second driving assembly 401 drives the conveyor belt 400d to operate, the conveyor belt 400d can directly convey the collected retained dirt into the dirt outlet 122, thereby the dirt can be cleaned more conveniently.

[0157] For example, the conveyor belt 400d may be flush with or slightly higher than the bottom wall of the sink 121, thereby the hinderance on the self-moving cleaning device 500 entering and leaving the dock chamber 111 can be reduced.

[0158] Optionally, as shown in Fig. 9f, if the area where the conveyor belt 400d passes is partially overlapped with the cleaning bracket 200, a part of the conveyor belt 400d may be concealed under the cleaning bracket 200 to further reduce the interference with the self-moving cleaning device 500.

[0159] For example, the second driving assembly 401 comprises a second driving motor, or the second driving assembly 401 comprises a second driving motor and a second transmission element. After the power outputted by the second driving motor is transmitted by the second transmission element, the second transmission element drives the conveyor belt 400d to move. The second transmission element may be but is not limited to a transmission gear.

[0160] As shown in Fig. 9g, in some alternative embodiments, the pushing assembly 400 further comprises a first driving mechanism 400e and a collecting member 400f, wherein a first end of the collecting member 400f is located at a preset position of the sink 121, and a second end of the collecting member 400f is located in a preset area adjacent to the dirt outlet 122, or the second end of the collecting member 400f is located in the dirt outlet 122; the first driving mechanism 400e is connected to one of the second end and the first end of the collecting member 400f, and is configured to drive one end of the collecting member 400f to ascend or descend, so that the second end of the collecting member 400f is lower than the first end, wherein the second end is an end opposite to

the first end.

[0161] As shown in Fig. 9g, in the case that the first driving mechanism 400e is connected to the second end of the collecting member 400f, if it is necessary to push the dirt, the first driving mechanism 400e drives the collecting member 400f to descend, so that the second end of the collecting member 400f is lower than the first end, thereby the dirt on the first end can fall into the dirt outlet 122 by gravity or fall into an area adjacent to the dirt outlet 122.

[0162] For example, the collecting member 400f may comprise a structure such as a plate or a diaphragm.

[0163] Optionally, the first driving mechanism 400e is an air cylinder. Alternatively, the first driving mechanism 400e comprises a motor and a lead screw, and an input end of the lead screw is connected to an output end of the motor.

[0164] It can be understood that in some alternative embodiments, the base station 100 may not comprise the pushing assembly 400.

[0165] As shown in Figs. 10a and 10b, in some alternative embodiments of the present disclosure, the base station 100 further comprises a second driving mechanism 400g and an extensible pipe 400h, the base station body 110 has a clearance hole in communication with the dock chamber 111, the extensible pipe 400h is inserted through the clearance hole, and is respectively in communication with the dock chamber 111 and the sink 121, the second driving mechanism 400g is connected to a fixed end of the extensible pipe 400h, and a free end of the extensible pipe 400h can extend and retract with respect to the fixed end; the free end is the end opposite to the fixed end. The extensible pipe 400h is configured to enable the dirt flowing to the dust collection pipeline to pass there-through; the second driving mechanism 400g is configured to drive the extensible pipe 400h to switch between a retracted state and an extended state; when the dust collection pipeline is in the first working mode, the extensible pipe is in an extended state, and the free end of the extensible pipe is located at a preset position where dirt is accumulated in the sink 121 to collect the dirt in the sink 121; when the dust collection pipeline is in the second working mode, the extensible pipe is in a retracted state, there is spacing between the free end of the extensible pipe and the preset position, so as to reduce the effect on collecting the dirt in the dust cartridge 500 in the self-moving cleaning device.

[0166] Fig. 10a exemplarily shows a schematic partial structural diagram of the base station 100 when the extensible pipe 400h is in the retracted state; and Fig. 10b exemplarily shows a schematic partial structural diagram of the base station 100 when the extensible pipe 400h is in the extended state.

[0167] Compared with the retracted state, when the extensible pipe 400h is in the extended state, the extensible pipe 400h can be closer to the dirt in the sink 121, and the dirt in the sink 121 can be more easily transported to the dust collection box 160 through the extensible pipe

400h, so as to reduce the frequency of manual cleaning of the washing disk 120.

[0168] In the process of cleaning the cleaning assembly 510 of the self-moving cleaning device 500, most of the dirt retained in the sink 121 tends to gather in an area A1 (a preset position) between the two cleaning elements 512. As shown in Fig. 10b, before the first working mode of the dust collection assembly is activated, the extensible pipe 400h can be in the extended state, and the free end of the extensible pipe 400h is located in the area A1. After the first working mode of the dust collection pipeline is activated, as shown in Fig. 10a, the first fan 170 can operate, and can suck the dirt in the area A1 into the dust collection box 160 of the base station 100 more conveniently and reduce the dirt remaining in the sink 121.

[0169] For example, as shown in Fig. 10b, in a vertical projection, the projected free end of the extensible pipe 400h coincides with the preset position, and, at that point, it can be deemed that the free end of the extensible pipe 400h is at the preset position.

[0170] As shown in Fig. 11, the liquid pipeline system in an embodiment of the present disclosure is also used for conveying the dirt in the washing disk 120. The liquid pipeline system comprises a sewage inlet pipe 600 and a sewage tank 700, and a drain outlet 124 is located on the inner wall of the sink 121. The sewage inlet pipe 600 makes the drain outlet 124 and the sewage tank 700 communicate with each other, so as to convey the sewage in the sink 121 to the sewage tank 700 through the drain outlet 124. The inner diameter of the sewage inlet pipe 600 is greater than 40 mm, and the inner diameter of the drain outlet 124 is greater than or equal to that of the sewage inlet pipe 600.

[0171] In an embodiment of the present disclosure, by increasing the inner diameter of the sewage inlet pipe 600, it is possible to reduce the detention of the dirt in the sink 121 due to the fact that the dirt has a large particle size and can't enter the liquid pipeline system. After the cleaning assembly 510 of the self-moving cleaning device 500 is cleaned, more dirt in the sink 121 can enter the sewage tank 700 through the liquid pipeline system. Moreover, a sewage inlet pipe 600 having a larger inner diameter can alleviate the problem of blockage in the process of conveying sewage.

[0172] In some alternative embodiments, the inner diameter of the sewage inlet pipe 600 is 40-50 mm. For example, the inner diameter of the sewage inlet pipe 600 is 40 mm, 42 mm, 43 mm, 45 mm, 48 mm or 50 mm.

[0173] In some alternative embodiments, the liquid pipeline system further comprises a fourth fan, an inlet of the fourth fan is in communication with the sewage tank 700, and the fourth fan is configured to provide driving force for introducing the fluid into the drain outlet 124 and conveying the fluid to the sewage tank 700 through the sewage inlet pipe 600. The fourth fan can suck the air in the sewage tank 700, so that the sewage tank 700 is in a negative pressure state, and then the sewage in the sink 121 can be sucked into the drain outlet 124, then enter the

sewage inlet pipe 600 through the drain outlet 124, and then enter a sewage cavity through the sewage inlet pipe 600.

[0174] The fourth fan may be a waterproof fan. In order to suck dirt having larger particle sizes in a better way, a high-power fan may be selected for the fourth fan.

[0175] By increasing the inner diameter of the sewage inlet pipe 600, dirt having larger particle sizes can pass through the sewage inlet pipe 600, so that the dirt can be conveyed to the sewage tank 700 successfully, the accumulation of the dirt in the sink 121 can be reduced, and the frequency of manual cleaning of the sink 121 can be decreased.

[0176] As shown in Fig. 12, in some alternative embodiments, the liquid pipeline system further comprises a screw 610 and a third driving assembly 620, wherein the screw 610 is located in the sewage inlet pipe 600, and the screw 610 is configured to break the dirt in the sewage inlet pipe 600, and the third driving assembly 620 is configured to drive the screw 610 to rotate, so as to break the dirt entering the sewage inlet pipe 600 from the drain outlet 124. For example, if the fluid entering the sewage inlet pipe 600 contains solid dirt having larger particle sizes, larger dirt particles can be broken into smaller dirt particles by the rotating screw 610.

[0177] Therefore, the base station 100 in this embodiment can alleviate the problem of blockage of dirt in the sewage inlet pipe 600, thereby the sewage inlet pipe 600 can be used to pick more dirt in the sink 121, thus reducing the retention of the dirt in the sink 121, which is beneficial for decreasing the frequency of manual cleaning of the washing disk 120.

[0178] The rotating screw 610 not only has a function of breaking the dirt, but also can provide a driving force for the transportation of the dirt. Thus, the dirt in the sink 121 can be sucked into the sewage inlet pipe 600 by means of the screw 610, and no additional driving device is needed to suck the dirt from the sink 121. That is to say, if the base station 100 comprises the screw 610 and the third driving assembly 620, the aforesaid fourth fan may be omitted.

[0179] For example, the third driving assembly 620 comprises a third driving motor (not shown), or the third driving assembly 620 comprises a third driving motor and a third transmission element (not shown), the power outputted by the third driving motor is transmitted via the third transmission element, and the third transmission element drives the screw 610 to rotate. The third transmission element may be but is not limited to a transmission gear.

[0180] For example, as shown in Fig. 12, the screw 610 may be coaxial with the sewage inlet pipe 600.

[0181] Optionally, as shown in Fig. 12, the liquid pipeline system of the base station 100 further comprises: a sealing element 630, which is located between the third driving assembly 620 and the sewage inlet pipe 600, and is configured to realize a sealed connection between the third driving assembly 620 and the sewage inlet pipe 600, so as to prevent leakage of the dirt in the sewage inlet

pipe 600.

[0182] As shown in Fig. 13, in some alternative embodiments, the base station 100 further comprises a sewage pipe 720 for draining the sewage in the sewage tank 700 and a sewage pump 710 for providing power for drainage, wherein an inlet of the sewage pipe 720 is in communication with the sewage tank 700, and an outlet of the sewage pipe 720 can be connected to a floor drain.

[0183] A filter may also be provided in the sewage tank 700 to filter the fluid entering the sewage tank 700, and the filtered fluid is drained into the floor drain through the sewage pipe 720.

[0184] As shown in Figs. 13 and 14, in some alternative embodiments, the base station 100 further comprises cutters 900 and a fourth driving assembly 800 for driving the cutters 900 to rotate, wherein the cutters 900 are at least partially located in the sink 121, and are configured to break the dirt in the sink 121. For example, if there is solid dirt having large particle sizes in the sink 121, larger dirt particles can be broken into smaller dirt particles by means of the rotating cutters 900, and then the dirt can be discharged from the drain outlet 124 and/or the dirt outlet 122 more easily, thus reducing the retention of the dirt in the sink 121.

[0185] The cutters 900 may be distributed adjacent to the drain outlet 124, so that the broken dirt is less likely to flow into the drain outlet 124 due to dispersion, and the retention of the dirt in the sink 121 can be reduced.

[0186] For example, the cutter 900 comprises a cutter head 910 or grinding disc 920. The cutter head 910 usually has a holder and at least one blade mounted on the holder.

[0187] As shown in Figs. 13 and 14, the cutters 900 are located between the drain outlet 124 and the cleaning bracket 200.

[0188] As shown in Figs. 13 and 14, in some alternative embodiments, the height of the bottom wall 121a of the sink 121 gradually decreases in a direction from the side opposite to the dirt outlet 122 toward the dirt outlet 122, so that the dirt in the area where the cleaning bracket 200 is located can move to the dirt outlet 122 along the bottom wall 121a of the sink 121 under the action of gravity, thereby the dirt can be discharged more conveniently.

[0189] For example, as shown in Figs. 13 and 14, the cutters 900 are arranged adjacent to the dirt outlet 122, and the dirt can move to the area where the cutters 900 are located along the bottom wall 121a of the sink 121 under the action of gravity, so that more dirt can be pushed to the cutters 900, and the cutters 900 can break more dirt.

[0190] As shown in Figs. 13 and 14, in some alternative embodiments, the sink 121 comprises a primary tank and a secondary tank that are in communication with each other, wherein the primary tank is configured to accommodate the cleaning assembly 510 of the self-moving cleaning device 500, the secondary tank is configured to accommodate the cutters 900, and the bottom wall of the secondary tank is located below the bottom wall of the

primary tank, and both the drain outlet 124 and the dirt outlet 122 can be located on a side wall of the secondary tank. Generally speaking, a side wall is adjacent to the bottom wall, and is perpendicular or approximately perpendicular to the bottom wall. In such a structure of the sink 121, the dirt in the primary tank can flow into the secondary tank at a lower position more easily, and the cutters 900 break the dirt in the secondary tank and further reduce the spreading of the broken dirt, so that more broken dirt can enter the drain outlet 124.

[0191] For example, the fourth driving assembly 800 comprises a fourth driving motor 810 and a fourth transmission element, wherein the fourth driving motor 810 drives the fourth transmission element to rotate, and the rotating fourth transmission element drives the cutters 900 to rotate. The fourth transmission element may be a transmission gear as shown in Fig. 13 or a worm 840 and a worm gear 850 as shown in Fig. 14.

[0192] In some alternative embodiments, the fourth driving assembly 800 may be located in a cavity inside the washing disk 120 (not in communication with the sink 121) or in a mounting slot outside the side wall of the washing disk 120, so as to limit the communication between the fourth driving assembly 800 and the sink 121 and reduce the effect of the dirt on the fourth driving assembly 800.

[0193] The fourth driving motor 810 and the cutters 900 can be distributed vertically or approximately vertically, so that the fourth driving motor 810 can be adapted to the washing disk 120 having a smaller height, thereby the space of the washing disk 120 can be fully utilized.

[0194] As shown in Fig. 13, in some alternative embodiments, the fourth transmission element comprises a first bevel gear 820 and a second bevel gear 830, wherein the first bevel gear 820 is connected to an output end of the fourth driving motor 810, the second bevel gear 830 is meshed with the first bevel gear 820, and the second bevel gear 830 is connected to the cutters 900, and the axis of the first bevel gear 820 is perpendicular or approximately perpendicular to the axis of the second bevel gear 830. The fourth driving motor 810 drives the first bevel gear 820 to rotate, the first bevel gear 820 drives the second bevel gear 830 to rotate, and then the second bevel gear 830 drives the cutters 900 to break the dirt.

[0195] As shown in Fig. 14, in some alternative embodiments, the fourth transmission element comprises a worm gear 850 and a worm 840, wherein the worm 840 is connected to the output end of the fourth driving motor 810, and the worm gear 850 is meshed with the worm 840, connected to the cutters 900, and perpendicular or approximately perpendicular to the worm 840. The fourth driving motor 810 drives the worm 840 to rotate, the worm 840 drives the worm gear 850 to rotate, and then the worm gear 850 drives the cutters 900 to rotate to break the dirt.

[0196] For example, as shown in Figs. 12 to 14, the sewage tank 700 may be located above the washing disk 120.

[0197] In some alternative embodiments, the sewage tank 700 may be located below the sink 121, and is in communication with the drain outlet 124; the dirt in the sink 121 enters the sewage tank 700 through the drain outlet 124 under the action of gravity. The base station 100 having such a structure doesn't require the sewage inlet pipe 600, the fourth fan and the screw 610.

[0198] In some alternative embodiments, the base station 100 may not comprise a liquid pipeline system; instead, the drain outlet 124 of the sink 121 is oriented to a floor drain, and the sewage in the sink 121 can be directly drained into the floor drain in the external environment through the drain outlet 124, so as to reduce the retention of the dirt in the sink 121.

[0199] In some alternative embodiments, the base station 100 further comprises a protective sleeve, which is sleeved outside the washing disk 120 and configured to bear the dirt in the sink 121. If there is dirt in the sink 121, the dirt will be detained on the protective sleeve, and the washing disk 120 can be cleaned by replacing the protective sleeve regularly.

[0200] As shown in Fig. 15, in some alternative embodiments, the base station 100 further comprises: a collection box 30 for collecting the dirt, a second filter 40 and a sewage box 50, wherein the collection box 30 is in communication with the sink 121 to receive the dirt in the sink 121, the second filter 40 is located at the bottom of the collection box 30 to filter the dirt in the collection box 30, and the sewage box 50 is configured to receive the sewage filtered by the second filter 40, the inner wall of the sewage box 50 is provided with a drain outlet 124, and the sewage inlet pipe 600 is in communication with the drain outlet 124 to transport the sewage in the sewage box 50 to the sewage tank 700.

[0201] The dirt in the sink 121 can flow to the collection box 30 and be filtered by the second filter 40, thereby larger particles that can't be filtered off remain in the collection box 30, while smaller particles can flow to the sewage box 50. The sewage pump 710 and the fourth fan can be turned on to suck the sewage in the sewage box 50 into the sewage inlet pipe 600, and then the sewage is conveyed to the sewage tank 700 through the sewage inlet pipe 600. By collecting the dirt with the collection box 30, the retention of the dirt in the sink 121 can be reduced, and the problem of blockage of the sewage inlet pipe by larger dirt particles entering the sewage inlet pipe 600 can be alleviated.

[0202] Without limitation, as shown in Fig. 15, the drying port 123 is located above the collection box 30, so that the drying airflow passing through the drying port 123 can dry the dirt in the collection box 30. The drying airflow can be used to dry the cleaning assembly 510 of the self-moving cleaning device 500 and dry the dirt in the collection box 30 as well, thereby reduce the odor of the dirt in the collection box 30 and prolong the storage time of the dirt in the collection box 30.

[0203] For example, the collection box 30 is detachably mounted on the washing disk 120. When it is detected

that the dirt in the collection box 30 reaches a certain amount, or the number of sewage drainage cycles reaches a preset value, or the cleaning assembly 510 is cleaned in the base station 100 for a preset time, or the cleaning assembly 510 is cleaned in the base station 100 for a specific number of times, the control module of the base station 100 can remind the user to remove the collection box 30, so as to clean the dirt in the collection box 30 and improve the use experience.

[0204] For example, as shown in Fig. 15, the height of the bottom wall of the sink 121 gradually decreases in a direction from the end away from the drain outlet 124 to the end close to the drain outlet 124. Such a gradient setting also enables the dirt in the sink 121 to flow into the collection box 30 by gravity, thereby the retention of the dirt in the sink 121 can be further reduced.

[0205] Alternatively, as shown in Fig. 15, the height of the bottom wall of the collection box 30 and/or the height of the bottom wall of the sewage box 50 gradually decreases in a direction from the end away from the drain outlet 112 to the end close to the drain outlet 124. Such a gradient setting is also beneficial to the flow of the sewage towards the drain outlet 124, thereby the sewage cleaning effect can be improved.

[0206] As shown in Fig. 8d, in some alternative embodiments, the washing disk 120 further comprises an expansion base 120c for guiding the self-moving cleaning device 500 into of the base assembly, the base assembly has a sink 121 for accommodating the cleaning assembly 510, and the liquid pipeline system is at least used for conveying the dirt in the sink 121 to the sewage tank 700 or a floor drain; the expansion base 120c is provided with a first comb member (not shown) for scraping off the dirt on the cleaning assembly 510 of the self-moving cleaning device 500.

[0207] When the self-moving cleaning device 500 moves toward the sink 121 via the expansion base 120c, the first comb member can remove at least a part of the dirt on the cleaning assembly 510, reduce the dirt entering the sink 121, thereby reduce the retention of the dirt in the sink 121.

[0208] In some alternative embodiments, the washing disk 120 further comprises a vibrating member (not shown) mounted on the expansion base 120c, and the vibrating member causes the expansion base 120c to vibrate to shake off the dirt on the cleaning assembly 510 of the self-moving cleaning device 500 passing through the expansion base 120c, so as to reduce the dirt entering the sink 121.

[0209] As shown in Figs. 6, 7 and 8d, the gradient of the upper surface of the expansion base 120c that bears the self-moving cleaning device 500 gradually increases in a direction from the end away from the base assembly to the other end close to the base assembly. Such a slope setting can also make the end of the expansion base 120c away from the base assembly join to a supporting surface such as the ground, so as to effectively ensure that the self-moving cleaning device 500 can be guided

into the base station 100 smoothly and safely.

[0210] As shown in Fig. 16, in some alternative embodiments, the washing disk 120 further comprises a first air outlet 61, an air duct structure 62 and an air blast device 60, which are located on the expansion base 120c, wherein the air duct structure 62 is in communication with the first air outlet 61, and the air blast device 60 provides an airflow to the first air outlet 61; the inner wall of the air duct structure 62 has a plurality of second air outlets for the airflow to pass there-through, and the second air outlets spray the airflow toward the cleaning assembly 510 of the self-moving equipment to blow off the dirt on the cleaning assembly 510.

[0211] Alternatively, as shown in Fig. 16, the air duct structure 61 may be located outside the sink 121; in the traveling direction of the self-moving cleaning device 500 to the base station 100, the sink 121 is located at the downstream, and the air duct structure is located at the upstream; thus, the air duct structure 61 can blow the dirt on the cleaning assembly out of the sink 121, thereby reduce the dirt entering the sink 121.

[0212] The air blast device 60 may be but is not limited to a fan.

[0213] As shown in Fig. 16, in some alternative embodiments, the washing disk 120 further has a cavity 63 for containing dirt, the air duct structure 62 can be located in the cavity 63, and the dirt blown off through the second air outlet of the air duct structure 62 can fall into the cavity 63; and the dirt in the cavity can be cleaned after the dirt is stored to a certain amount.

[0214] By arranging the air duct structure 62 outside the sink 121, the dirt blown off by means of the second air blast port on the air duct structure 62 will not be wetted by the cleaning liquid in the sink 121, the dirt falling in the cavity 63 is dry, and off-odor can be reduced.

[0215] Without limitation, the air duct structure 62 may be located in the sink 121 alternatively.

[0216] As shown in Fig. 10a, a cleaning system is provided in an embodiment of the present disclosure. The cleaning system comprises a base station 100 and a self-moving cleaning device 500, wherein the base station 100 comprises the base station 100 described in any of the above embodiments.

[0217] In an alternative embodiment, after the base station 100 performs the drying operation on the cleaning assembly 510 of the self-moving cleaning device 500, the machine body 520 of the self-moving cleaning device 500 enters a dust suction mode in response to a cleaning instruction and starts the dust suction operation, thereby the dirt in the sink 121 enters the dust cartridge through the dust suction port on the machine body 520. Thus, by collecting the dirt in the sink 121 with the self-moving cleaning device 500, the cleaning effect of the sink 121 can be improved.

[0218] The cleaning assembly 510 of the self-moving cleaning device 500 comprises a roller brush 511 and a cleaning element 512, wherein the scraping range of the roller brush 511 is greater than or equal to that of the

cleaning element 512. Owing to the differences between the roller brush 511 and the cleaning element 512 in terms of position, structure and material, dirt may be accumulated more easily on the cleaning element 512, when compared with the roller brush 511. By expanding the scraping range of the roller brush 511, the accumulation of dirt on the cleaning element 512 can be reduced, which is beneficial to reduce the dirt in the sink 121.

[0219] The scraping range of the roller brush 511 can be extended in a variety of ways, including, but not limited to: increasing the length of the roller brush, or reducing the outside diameter of the mop.

[0220] In some alternative embodiments, the self-moving cleaning device 500 further comprises a second comb member (not shown) for scraping the cleaning assembly 510. Without limitation, the second comb member may be mounted on the machine body 520 and disposed adjacent to the cleaning assembly 510. The second comb member interferes with the cleaning assembly 510 to remove at least a part of the dirt on the cleaning assembly 510 and reduce the dirt brought into the sink 121 by the cleaning assembly 510, thereby reduce the retention of the dirt in the sink 121.

[0221] Different embodiments or different technical features of the present disclosure can be combined freely to form new embodiments, provided that there is no conflict among them.

[0222] It may be noted that the terms used herein are only used to describe specific embodiments, but are not intended to limit exemplary embodiments according to the present application. As used herein, singular forms are also intended to encompass plural forms, unless otherwise clearly indicated in the context. Furthermore, it may also be understood that the terms "comprise" and/or "include" and their variants as used herein indicate the presence of features, steps, operations, devices, components and/or combinations thereof.

[0223] Unless otherwise specified, the relative arrangements, numerical expressions and values of the components and steps described in those embodiments don't constitute any limitation on the scope of the present disclosure. Besides, it may be understood that the dimensions of various parts shown in the drawings are not drawn to scale, for the convenience of description. Techniques, methods and apparatuses existing to those having ordinary skills in the art may not be discussed in detail, but, where appropriate, those techniques, methods and apparatuses shall be considered as a part of the specification. In all examples shown and discussed herein, any specific value shall be interpreted as being exemplary rather than limitative. Therefore, other examples of exemplary embodiments may have different values. It may be noted that similar numbers and letters represent similar items in the following drawings. Therefore, once an item is defined in one of the drawings, it is not necessary to discuss it further in the follow-up drawings.

[0224] In the description of the present disclosure, it may be understood that the orientational or positional

relationships indicated by orientational words such as "front", "rear", "upper", "lower", "left", "right", "horizontal", "vertical", "top" and "bottom", etc. are usually based on the orientational or positional relationships shown in the accompanying drawings, and are used for the convenience of describing the present disclosure and simplifying the description. Unless otherwise stated, these orientational words do not indicate or imply that the devices or elements may have specific orientations or be constructed and operated in specific orientations; therefore, they shall not be understood as limiting the scope of protection of the present disclosure; orientational words "inside" and "outside" usually refer to inside and outside with respect to the outlines of the components.

[0225] For the convenience of description, spatially relative terms such as "on top of", "above", "on" and "over", etc. can be used herein to describe the spatial positional relationship between a device or feature and other devices or features as shown in the figures. It may be understood that the spatially relative terms are intended to include different orientations of the components in use or operation in addition to the orientations depicted in the drawings. For example, a device described as being "above" or "on top of" other devices or structures in the drawings will be positioned "below" or "under" other devices or structures when the devices are inverted. Thus, the illustrative term "above" can include orientations of "above" and "below". The device may also be positioned in other different ways (e.g., rotated by 90 degrees or in other orientations), and the spatial relative description used herein may be explained accordingly.

[0226] In addition, it may be noted that the words "first" and "second", etc. are used to define parts only for the convenience of distinguishing corresponding parts. Unless otherwise stated, the above words have no special meaning, so they may not be understood as limiting the scope of protection of the present disclosure.

[0227] While some preferred embodiments of the present disclosure are described above, those embodiments are not intended to limit the present disclosure in any way. Those skilled in the art can readily understand that various variations and modifications can be made to the present disclosure. Any modification, equivalent replacement, or improvement made to the embodiments without departing from the spirit and the principle of the present disclosure shall be deemed as falling in the scope of protection of the present disclosure.

Claims

1. A base station (100), comprising:

a base station body (110);
a washing disk (120), which is located at a lower part of the base station body (110), and is provided with a sink (121) and a dirt outlet (122) in communication with the sink (121), wherein the

sink (121) is configured to accommodate at least a part of a cleaning assembly (510) of a self-moving cleaning device (500); and
a dust collection assembly, which is located in the base station body (110), and comprises a dust collection box (160), a dust collection pipeline and a first fan (170), wherein the dirt outlet (122) is in communication with the dust collection box (160) via the dust collection pipeline, and, in a first working mode of the dust collection pipeline, power generated by the first fan (170) delivers dirt in the sink (121) to the dust collection box (160) via the dirt outlet (122) and the dust collection pipeline.

2. The base station of claim 1, wherein the base station body (110) is provided with a dust collection inlet (112) for connecting with the self-moving cleaning device (500), and the dust collection inlet (112) is in communication with the dust collection box (160) via the dust collection pipeline, and, in a second working mode of the dust collection pipeline, the power generated by the first fan (170) delivers the dirt in a dust cartridge of the self-moving cleaning device (500) to the dust collection box (160) via the dust collection inlet (112) and the dust collection pipeline.
3. The base station of claim 2, wherein the washing disk (120) is further provided with a drain outlet (124) for draining sewage in the sink (121).
4. The base station of claim 3, wherein the drain outlet (124) is located below the dirt outlet (122).
5. The base station of claim 4, wherein the washing disk (120) comprises a first filter (230) disposed between the drain outlet (124) and the dirt outlet (122).
6. The base station (100) of any of claims 1 to 5, further comprising:
a drying assembly (190) configured to provide drying airflow to the sink (121) via a drying port (123) provided on the sink (121).
7. The base station of claim 6, wherein the washing disk (120) further comprises a fence (220); and at least a part of the drying port (123) is located below the fence (220).
8. The base station of claim 7, wherein the dirt outlet (122) is located below the fence (220).
9. The base station of claim 8, wherein an upper surface of the fence (220) away from the dirt outlet (122) is a cambered surface (221), which protrudes in a direction away from the dirt outlet (122).
10. The base station of claim 6, wherein the drying port

(123) comprises:

a first part (123a);
 a second part (123b), wherein the first part (123a) and the second part (123b) are respectively configured to face two cleaning elements (512) at different positions of the self-moving cleaning device (500); and
 a third part (123c), which is located between the first part (123a) and the second part (123b) and makes the first part (123a) and the second part (123b) communicate with each other.

11. The base station of any of claims 2 to 10, wherein the dust collection pipeline further comprises:

a dust collection inlet pipeline; and
 a rotary valve (150) connected with the dust collection inlet pipeline, wherein
 when the rotary valve (150) is in a first control state, the rotary valve (150) opens one part of the dust collection inlet pipeline between the dirt outlet (122) and the dust collection box (160), and the dust collection pipeline is in the first working mode; and
 when the rotary valve (150) is in a second control state, the rotary valve (150) opens the other part of the dust collection inlet pipeline between the dust collection inlet (112) and the dust collection box (160), and the dust collection pipeline is in the second working mode.

12. The base station of claim 11, wherein the dust collection inlet pipeline comprises:

a first pipeline (140) and a second pipeline (130); the rotary valve (150) is provided with a first inlet (151), a second inlet and a first outlet, wherein the first inlet (151) is in communication with the dust collection inlet (112); an outlet of the first pipeline (140) is in communication with the dust collection box (160), and an inlet of the first pipeline (140) is in communication with the first outlet; an inlet of the second pipeline (130) is in communication with the dirt outlet (122), and an outlet of the second pipeline (130) is in communication with the second inlet;
 in the first control state of the rotary valve (150), the second inlet is in communication with the first outlet; and
 in the second control state of the rotary valve 150, the first inlet (151) is in communication with the first outlet.

13. The base station of any of claims 1 to 12, wherein the washing disk (120) comprises:

a cleaning member (300) rotatably arranged in

the sink (121); and

a drive mechanism (320), which is in a drive connection with the cleaning member (300), and drives the cleaning member (300) to rotate when it is rotated under an acting force.

14. The base station of claim 13, wherein the cleaning member (300) is provided with bristles (310) on the bottom and/or periphery of the cleaning member (300).

15. The base station of claim 13 or 14, wherein the washing disk (120) further comprises:

a cleaning bracket (200) located in the sink (121); and
 a cleaning rib (210) that interferes with the cleaning assembly (510), wherein the cleaning member (300) is rotatably connected to the cleaning rib (210).

16. The base station of claim 15, wherein the cleaning bracket (200) is removably arranged in the sink (121).

17. The base station (100) of any of claims 1 to 16, further comprising:

at least one liquid spray port (402) through which a liquid is supplied to the sink (121) and/or the cleaning assembly (510), and pushes the dirt in the sink (121) into at least one of the following: a preset area adjacent to the dirt outlet (122) and the dirt outlet (122).

18. The base station of claim 17, wherein the liquid spray port (402) is located on a side wall of the sink (121), and/or the liquid spray port (402) is located on a side wall of a dock chamber (111) formed by the base station body (110).

19. The base station (100) of any of claims 1 to 18, further comprising:

at least one air outlet (125) through which airflow flowing is supplied to the sink (121) and/or the cleaning assembly (510) and pushes the dirt in the sink (121) into at least one of the following: a preset area adjacent to the dirt outlet (122) and the dirt outlet (122).

20. The base station of claim 19, wherein the air outlet (125) is located on a side wall of the sink (121), and/or the air outlet (125) is located on a side wall of the dock chamber (111) formed by the base station body (110).

21. The base station of claim 1, wherein the height of a bottom wall (121a) of the sink (121) gradually decreases from the opposite side of the dirt outlet (122)

in a direction to the dirt outlet (122).

22. A base station (100), comprising:

a base station body (110);
 a washing disk (120), which is located at a lower
 part of the base station body (110), and is pro-
 vided with a sink (121) and a dirt outlet (122) in
 communication with the sink (121), wherein the
 sink (121) is configured to accommodate at least
 a part of the cleaning assembly (510) of the self-
 moving cleaning device (500), and the dirt outlet
 (122) is configured to allow dirt in the sink (121)
 or dirt in a dust cartridge of the self-moving
 cleaning device (500) to pass there-through;
 and
 a pushing assembly (400) configured to push
 the dirt in the sink (121) into a preset area
 adjacent to the dirt outlet (122) and/or the dirt
 outlet (122).

23. The base station of claim 22, wherein the washing
 disk (120) is further provided with a drain outlet (124)
 for draining sewage in the sink (121), wherein the
 drain outlet (124) is located on an inner wall of the
 sink (121); the pushing assembly (400) is further
 configured to push the dirt in the sink (121) into a
 preset area adjacent to the drain outlet (124) and/or
 the drain outlet (124).

24. The base station of claim 23, wherein the drain outlet
 (124) and the dirt outlet (122) are two outlets spaced
 apart from each other; or the drain outlet (124) and
 the dirt outlet (122) are the same outlet.

25. The base station of claim 23 or 24, wherein the
 pushing assembly (400) comprises:
 at least one spray nozzle (410) mounted on the base
 station body (110) and/or the washing disk (120).

26. The base station of claim 25, wherein the spray
 nozzle (410) sprays in a direction toward the drain
 outlet (124) and/or the dirt outlet (122); or, some of
 the spray nozzles (410) spray in a direction at an
 included angle with respect to the orientation of the
 drain outlet (124) and/or the dirt outlet (122).

27. The base station of claim 25 or 26, wherein the spray
 nozzle (410) is arranged fixedly with respect to the
 washing disk (120); or, the spray nozzle (410) is
 arranged movably with respect to the washing disk
 (120).

28. The base station of any of claims 22 to 24, wherein
 the pushing assembly (400) comprises:
 a first driving assembly (400b) and a mechanical arm
 (400c), wherein the mechanical arm (400c) is con-
 nected to the first driving assembly (400b), and the

first driving assembly (400b) is configured to provide
 a driving force to the mechanical arm (400c); the
 mechanical arm (400c) is configured to push the dirt
 in the sink (121) under the driving action of the first
 driving assembly (400b).

29. The base station of any of claims 22 to 24, wherein
 the pushing assembly (400) comprises:
 a second driving assembly (401), a rotating shaft and
 a conveyor belt (400d), wherein the rotating shaft is
 connected to the second driving assembly (401), the
 conveyor belt (400d) is connected to the rotating
 shaft, and the second driving assembly (401) drives
 the rotating shaft to rotate, which in turn drives the
 conveyor belt (400d) to push the dirt in the sink (121).

30. The base station of any of claims 22 to 24, wherein
 the pushing assembly (400) comprises:

a first driving mechanism (400e) and a collecting
 member (400f), wherein a first end of the collect-
 ing member (400f) is located at a preset position
 of the sink (121), and a second end of the
 collecting member (400f) is located in a preset
 area adjacent to the dirt outlet (122), or the
 second end of the collecting member (400f) is
 located in the dirt outlet (122), and the first driv-
 ing mechanism (400e) is connected to one of the
 second end and the first end of the collecting
 member (400f);
 the first driving mechanism (400e) is configured
 to drive one end of the collecting member (400f)
 to ascend or descend, so that the second end of
 the collecting member (400f) is lower than the
 first end, wherein the second end is an end
 opposite to the first end.

31. A base station (100), comprising:

a base station body (110) having a clearance
 hole and a dock chamber (111) for accommodat-
 ing a machine body (520) of a self-moving clean-
 ing device (500);
 a washing disk (120), which is located at a lower
 part of the base station body (110), and is pro-
 vided with a sink (121) in communication with the
 dock chamber (111), wherein the sink (121) is
 configured to accommodate at least a part of a
 cleaning assembly (510) of the self-moving
 cleaning device (500);
 an extensible pipe (400h), which passes
 through the clearance hole and is configured
 to allow dirt in the sink (121) or dirt in a dust
 cartridge of the self-moving cleaning device
 (500) to pass there-through; and a free end of
 the extensible pipe (400h) extends and retracts
 with respect to a fixed end of the extensible pipe
 (400h), wherein the free end is an end opposite

to the fixed end; and
 a second driving mechanism (400g) connected to the fixed end of the extensible pipe (400h); the second driving mechanism (400g) is configured to drive the extensible pipe (400h) to switch between a retracted state and an extended state; wherein when the extensible pipe (400h) is in the extended state, the free end of the extensible pipe (400h) is located at a preset position where the dirt in the sink (121) is accumulated, so as to collect the dirt in the sink (121); when the extensible pipe (400h) is in the retracted state, there is spacing between the free end of the extensible pipe (400h) and the preset position, so as to reduce the effect on collecting the dirt in the dust cartridge in the self-moving cleaning device (500).

32. A base station (100), comprising:

a base station body (110);
 a washing disk (120), which is located at a lower part of the base station body (110), and is provided with a sink (121) and a drain outlet (124) for sewage in the sink (121) to pass there-through; the drain outlet (124) is located on an inner wall of the sink (121), and the sink (121) is configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500); and
 a liquid pipeline system configured to deliver a liquid at least into the sink (121), wherein the liquid pipeline system comprises a sewage inlet pipe (600) and a sewage tank (700), wherein the sewage inlet pipe (600) makes the drain outlet (124) and the sewage tank (700) communicate with each other, so as to deliver the sewage in the sink (121) into the sewage tank (700) via the drain outlet (124);
 the inner diameter of the sewage inlet pipe (600) is greater than 40 mm, and the inner diameter of the drain outlet (124) is greater than or equal to that of the sewage inlet pipe (600).

33. A base station (100), comprising:

a base station body (110);
 a washing disk (120), which is located at a lower part of the base station body (110), and is provided with a sink (121) and a drain outlet (124) for sewage in the sink (121) to pass there-through; the drain outlet (124) is located on an inner wall of the sink (121), and the sink (121) is configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500); and
 a liquid pipeline system configured to deliver a liquid at least into the sink (121), wherein

the liquid pipeline system comprises a sewage inlet pipe (600), a screw (610) and a third driving assembly (620), wherein the screw (610) is located in the sewage inlet pipe (600), the third driving assembly (620) is configured to drive the screw (610) to rotate, and the screw (610) is configured to break the dirt entering the sewage inlet pipe (600) via the drain outlet (124).

34. A base station (100), comprising:

a base station body (110);
 a washing disk (120), which is located at a lower part of the base station body (110), and is provided with a sink (121) configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500); cutters (900) at least partially located in the sink (121); and
 a fourth driving assembly (800), which is connected to the cutters (900) and configured to drive the cutters (900) to rotate, and the rotating cutters (900) are configured to break the dirt in the sink (121).

35. The base station of claim 34, wherein the washing disk (120) further has a drain outlet (124) for the sewage in the sink (121) to pass there-through, wherein the drain outlet (124) is located on an inner wall of the sink (121), and the cutters (900) are arranged adjacent to the drain outlet (124).

36. A base station (100), comprising:

a base station body (110);
 a washing disk (120), which is located at a lower part of the base station body (110) and provided with a sink (121) and a drain outlet (124) in communication with the sink (121), wherein the drain outlet (124) is located on an inner wall of the sink (121), and the sink (121) is configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500); and
 a sewage tank (700), which is located below the sink (121), and is in communication with the drain outlet (124), and the dirt in the sink (121) enters the sewage tank (700) via the drain outlet (124) under the action of gravity.

37. A base station (100), comprising:

a base station body (110);
 a washing disk (120), which is located at a lower part of the base station body (110), and is provided with a sink (121) configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500); and

a protective sleeve, which is sleeved outside the washing disk (120) and configured to bear the dirt in the sink (121).

38. A base station (100), comprising:

a base station body (110);
 a washing disk (120), which is located at a lower part of the base station body (110), and is provided with a sink (121) configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500);
 a collection box (30), which is in communication with the sink (121) to receive the dirt in the sink (121);
 a second filter (40), which is located at that bottom of the collection box (30) to filter the dirt in the collection box (30);
 a sewage box (50) configured to receive the sewage filtered through the second filter (40), wherein the sewage box (50) is provided with a drain outlet (124); and
 a sewage inlet pipe (600), which is communication with the drain outlet (124) to deliver the sewage in the sewage box (50) to a sewage tank (700) on the base station body (110).

39. A base station (100), comprising:

a base station body (110); and
 a washing disk (120) located at a lower part of the base station body (110),
 wherein the washing disk (120) comprises: a base assembly and an expansion base (120c) for guiding a self-moving cleaning device (500) into the base assembly, wherein the base assembly is provided with a sink (121) configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500);
 the expansion base (120c) is provided with a first comb member for scraping off the dirt on the cleaning assembly (510).

40. The base station of claim 37, wherein the washing disk (120) further comprises:
 a vibrating member, which is mounted on the expansion base (120c) and makes the expansion base (120c) vibrate to shake off the dirt on the cleaning assembly (510) passing through the expansion base (120c).

41. A base station (100), comprising:

a base station body (110); and
 a washing disk (120) located at a lower part of the base station body (110),
 wherein the washing disk (120) comprises: a

base assembly and an expansion base (120c) for guiding a self-moving cleaning device (500) into the base assembly, wherein the base assembly is provided with a sink (121) configured to accommodate at least a part of a cleaning assembly (510) of the self-moving cleaning device (500);

the washing disk (120) further comprises a first air outlet (61), an air duct structure (61) and an air blast device (60) that are located on the expansion base (120c), wherein the air duct structure (61) is in communication with the first air outlet (61), and the air blast device (60) provides an airflow to the first air outlet (61);
 an inner wall of the air duct structure (61) is provided with a plurality of second air outlets for the airflow to pass there-through, and the second air outlets blast the airflow toward the cleaning assembly (510) to blow off the dirt on the cleaning assembly (510).

42. A cleaning system, comprising:

the base station (100) of any of claims 1 to 41 and a self-moving cleaning device (500).

43. The cleaning system of claim 42, wherein the self-moving cleaning device (500) is configured to enable the dirt in the sink (121) to enter the dust cartridge of the self-moving cleaning device (500) through a dust suction port of the self-moving cleaning device (500).

44. The cleaning system of claim 42 or 43, wherein the self-moving cleaning device (500) comprises:

a machine body (520);
 a cleaning assembly (510) mounted at the bottom of the machine body (520); and
 a second comb member, which is mounted on the machine body (520) and interferes with the cleaning assembly (510) to scrape off the dirt on the cleaning assembly (510).

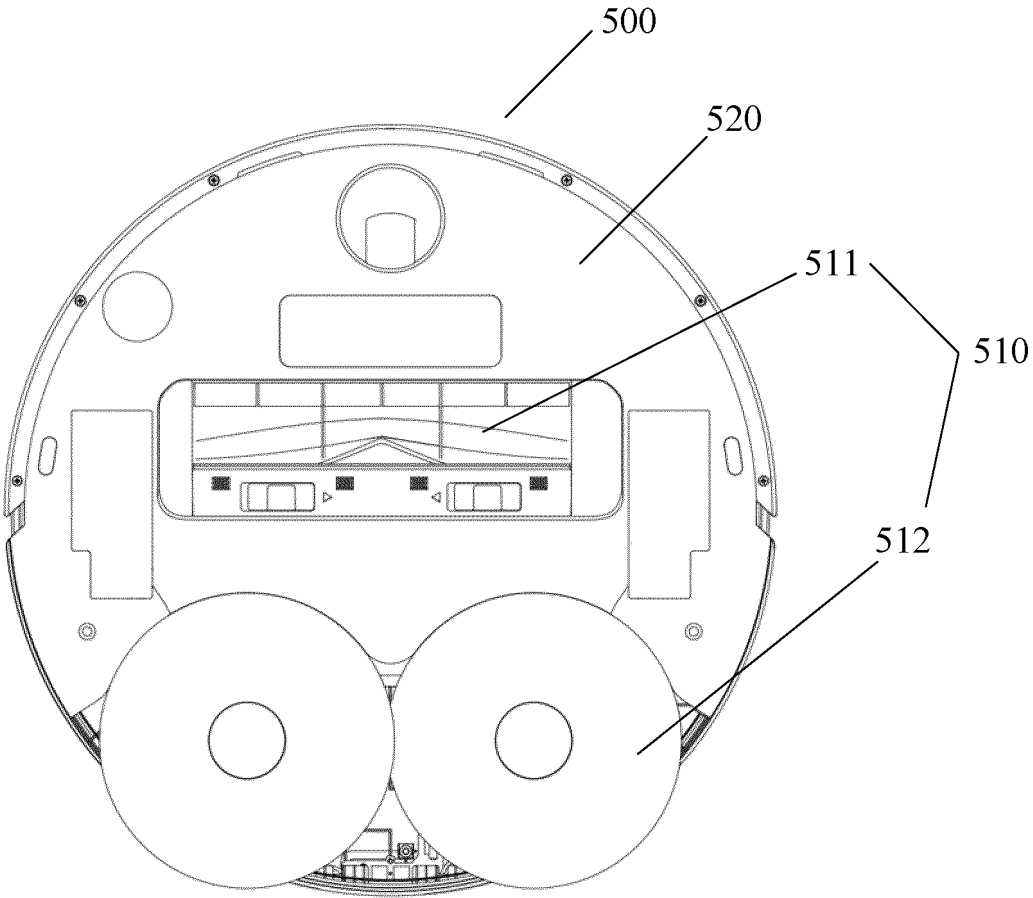


Fig. 1a

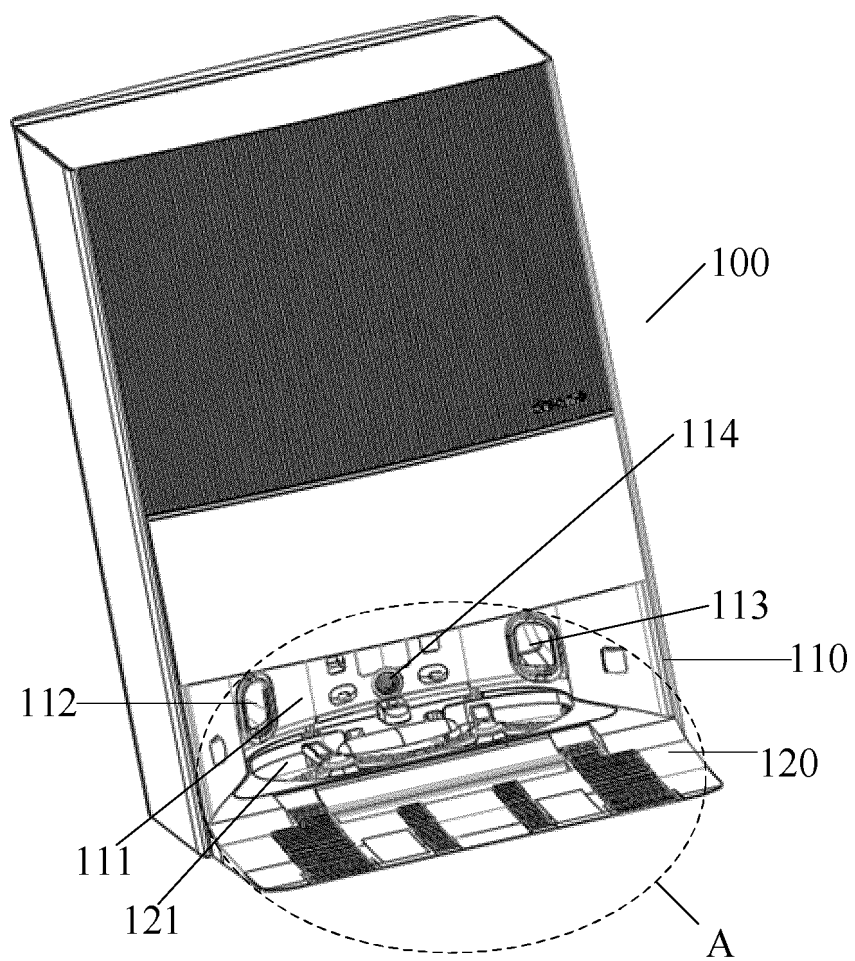


Fig. 1b

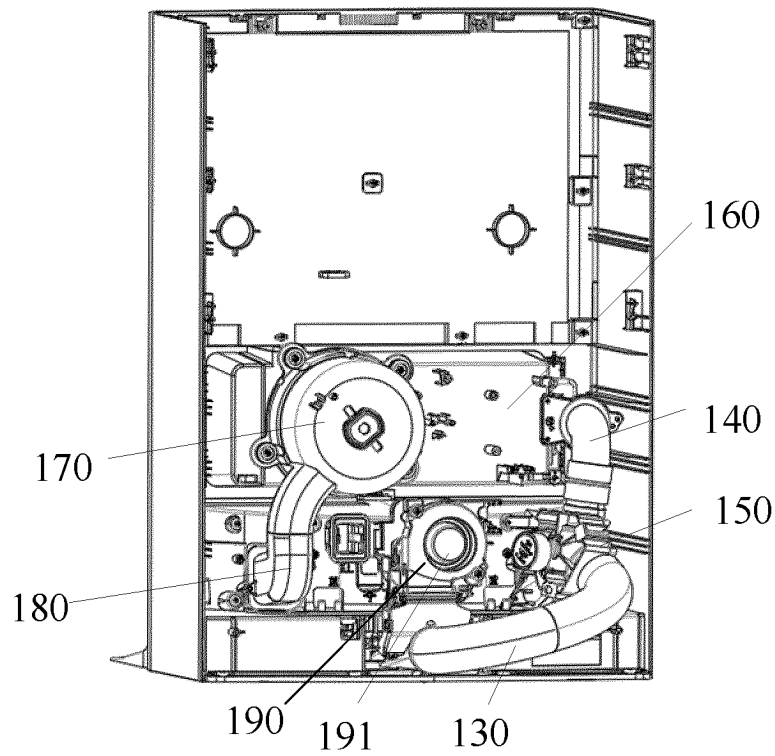


Fig. 1c

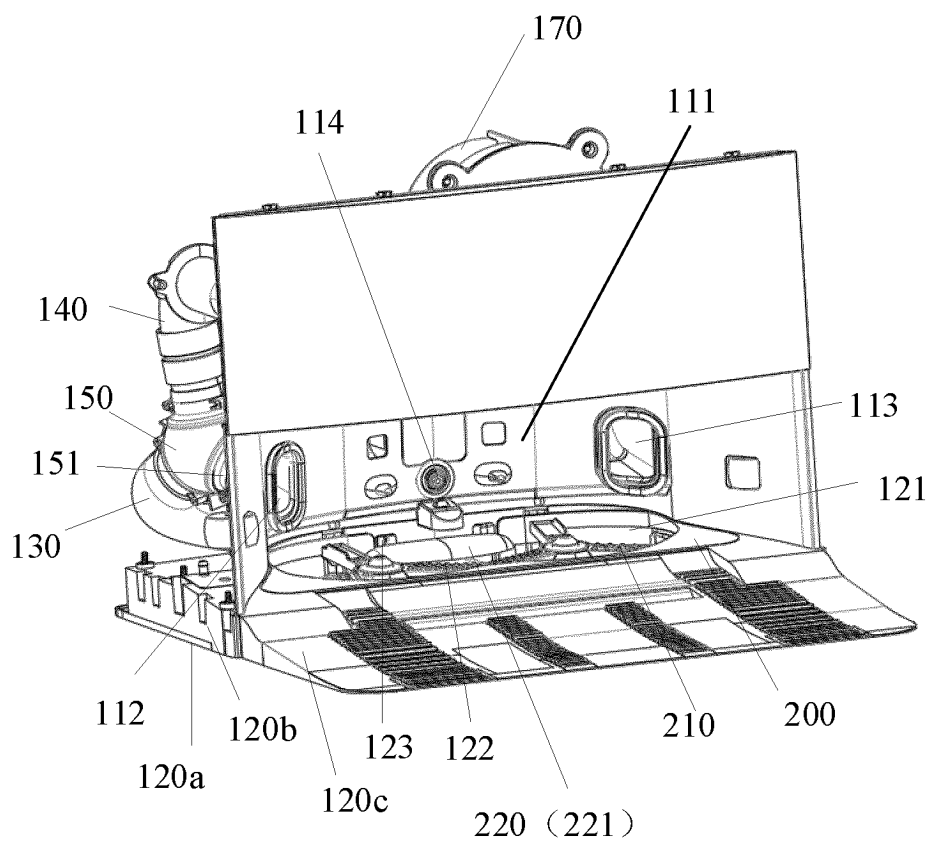


Fig. 2

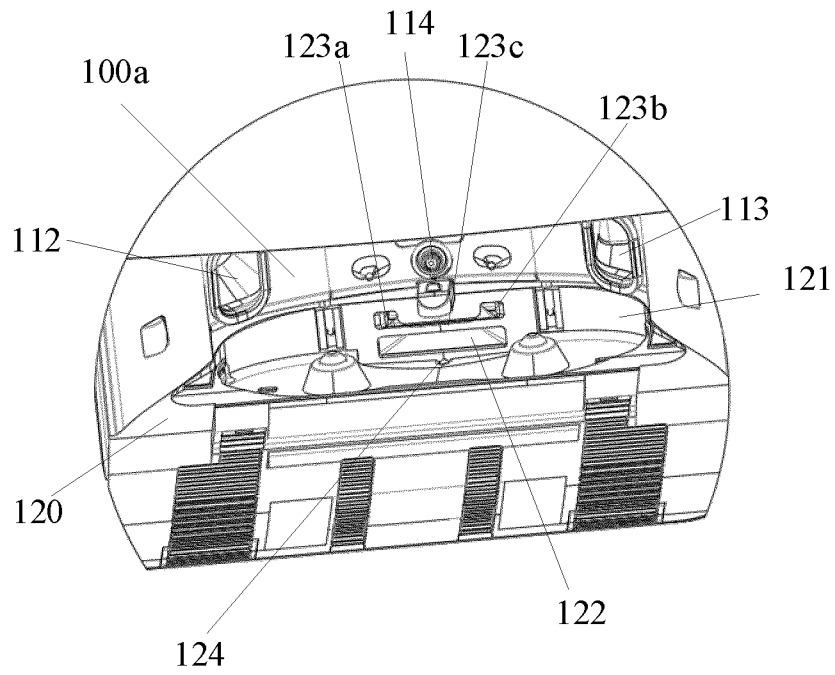


Fig. 3

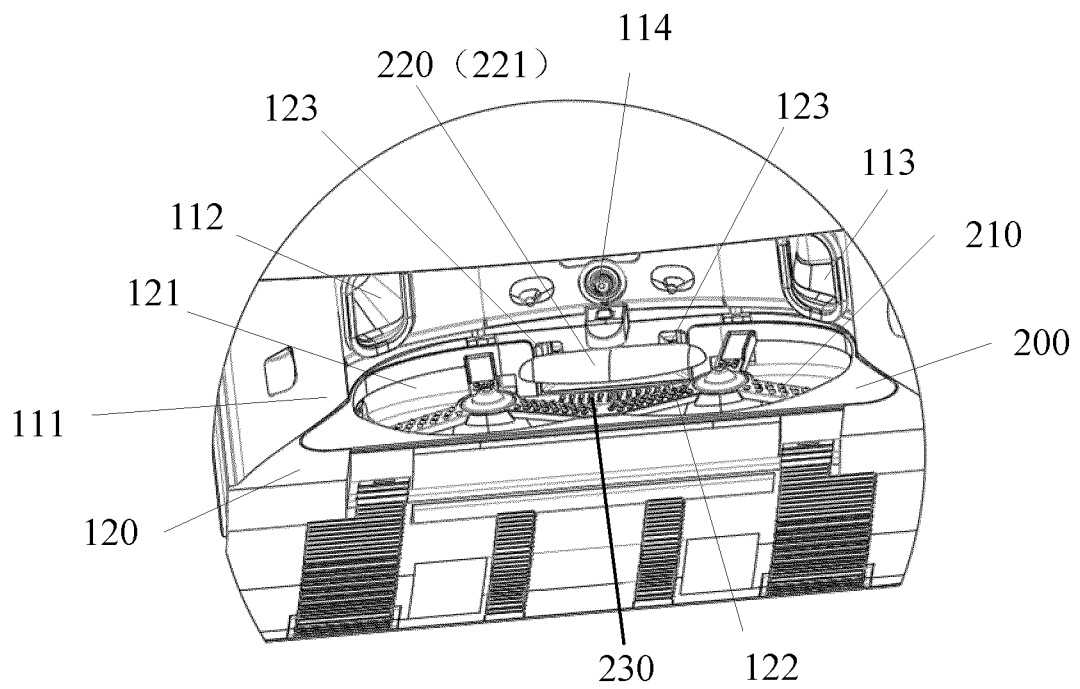


Fig. 4a

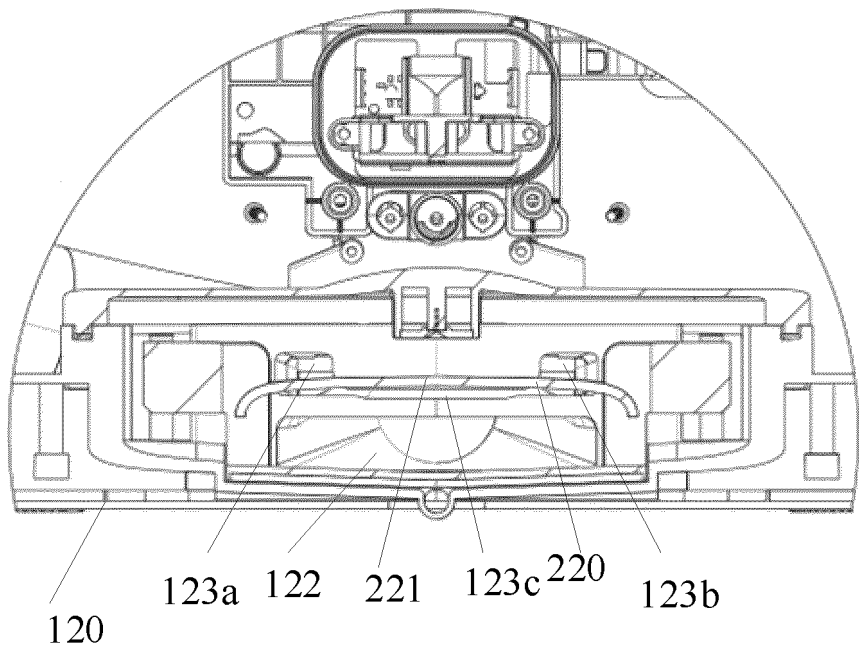


Fig. 4b

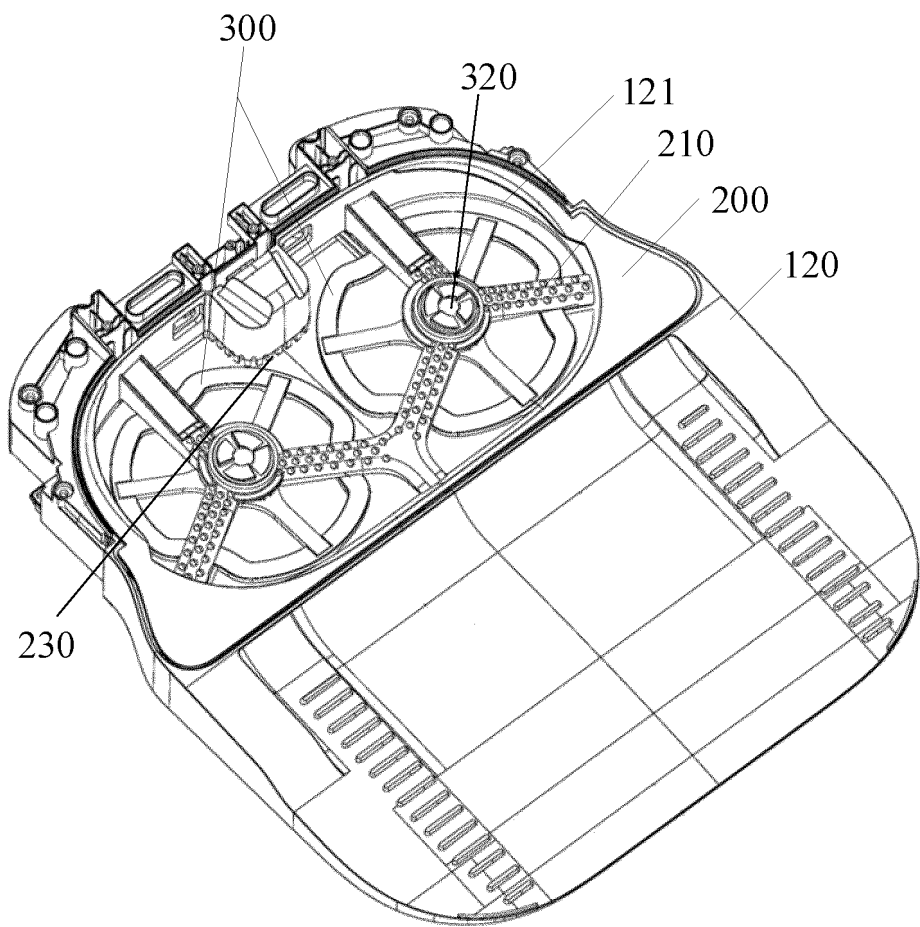


Fig. 4c

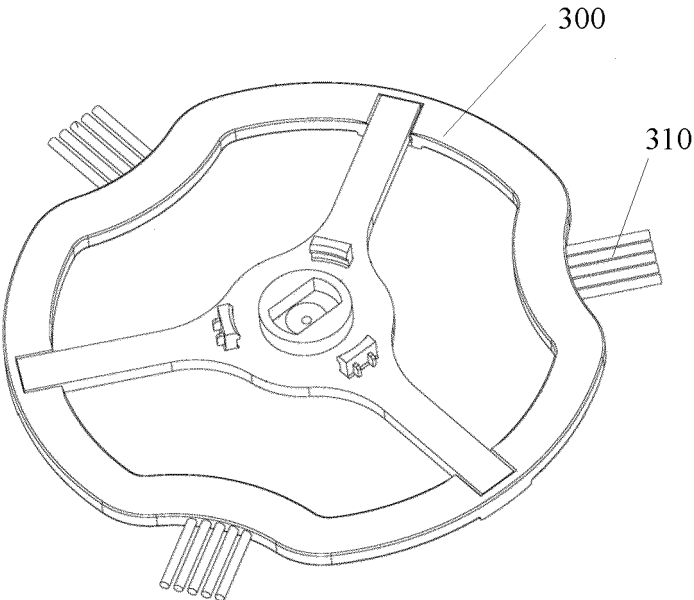


Fig. 4d

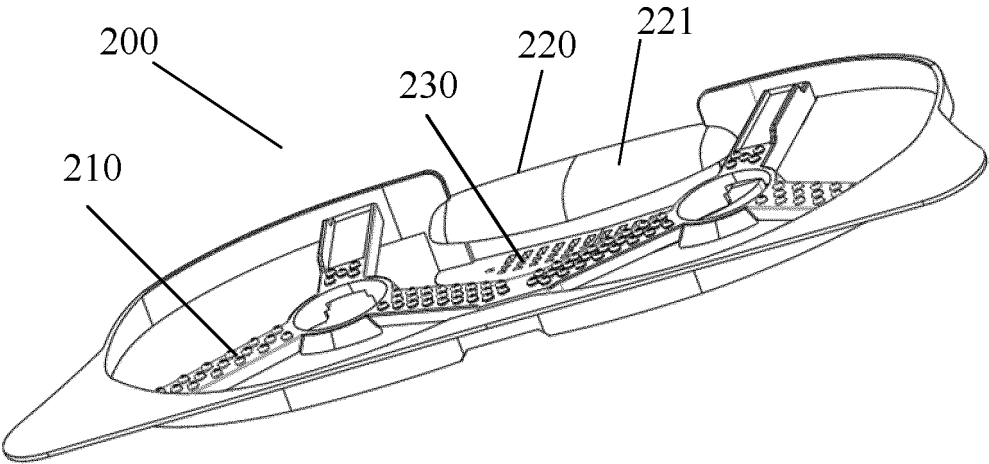


Fig. 5

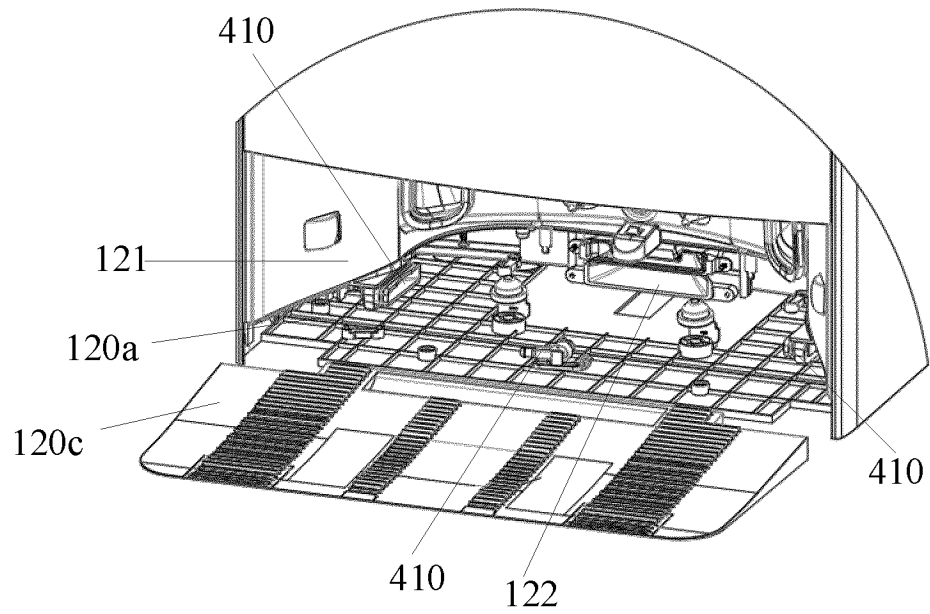


Fig. 6

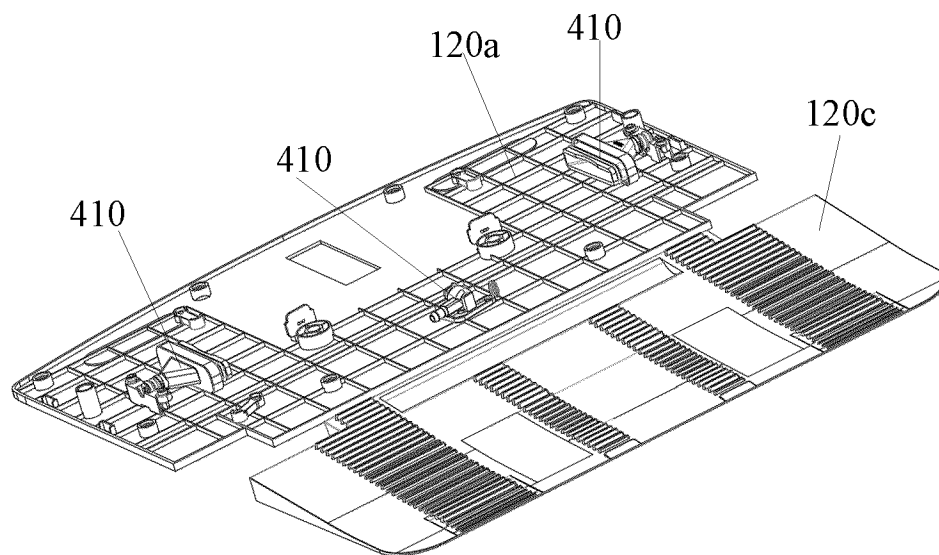


Fig. 7

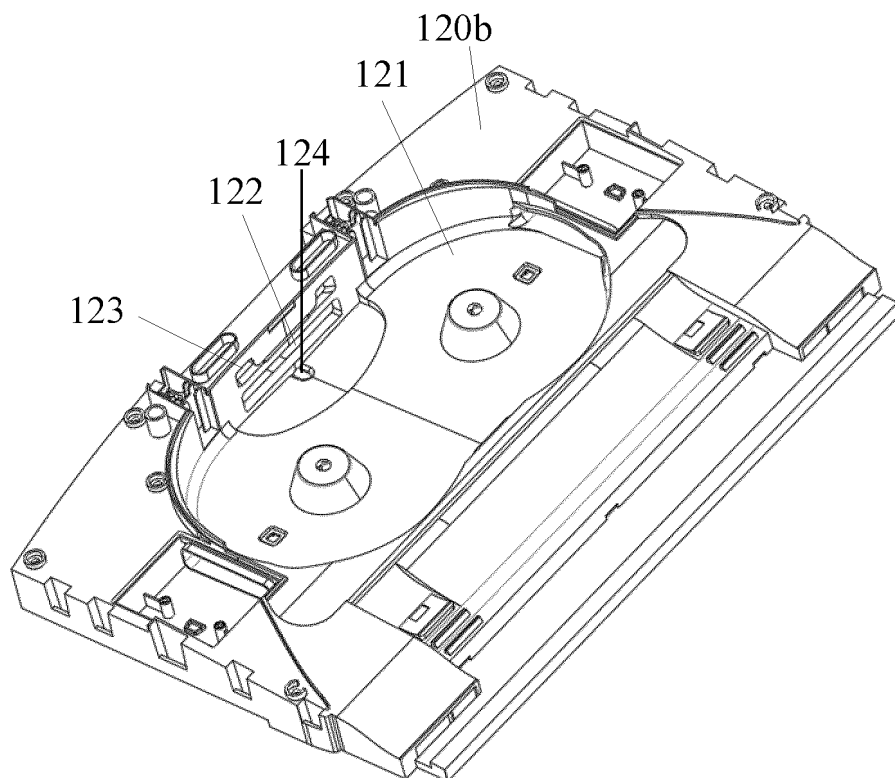


Fig. 8a

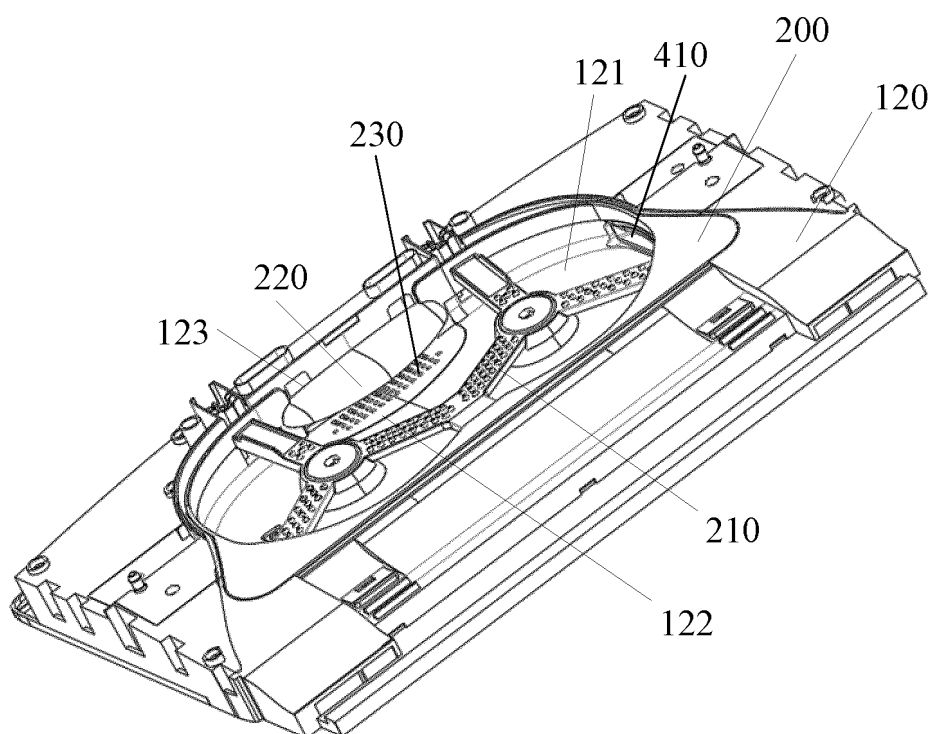


Fig. 8b

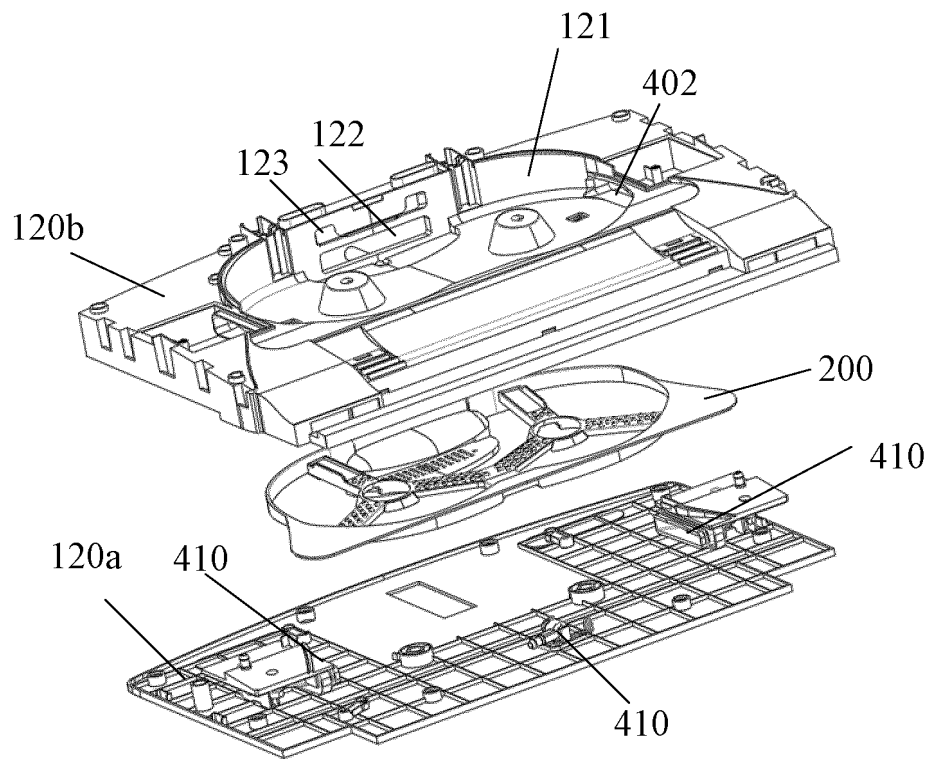


Fig. 8c

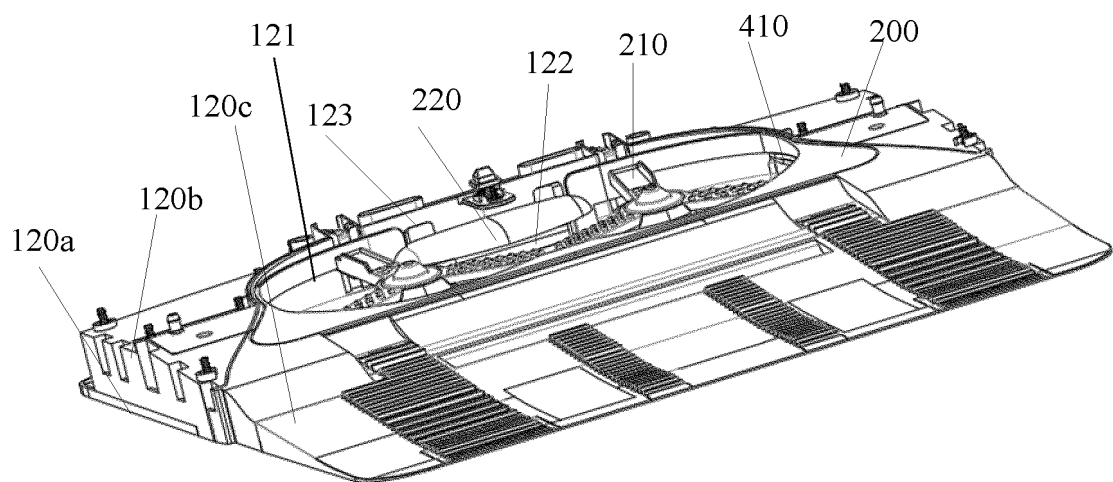


Fig. 8d

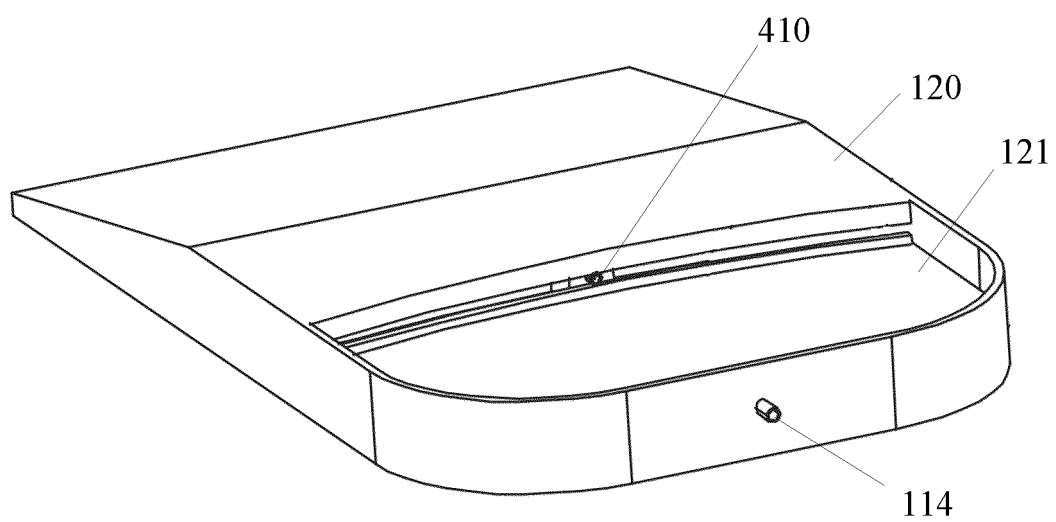


Fig. 8e

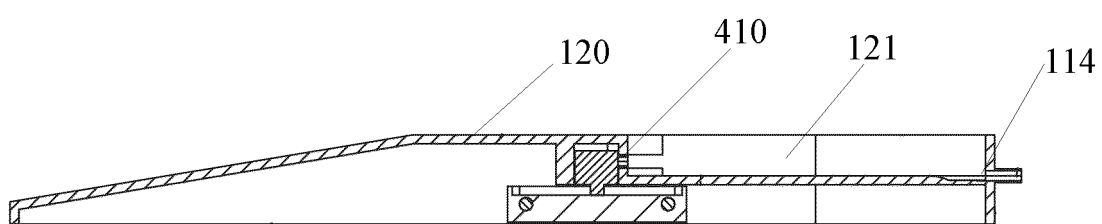


Fig. 8f

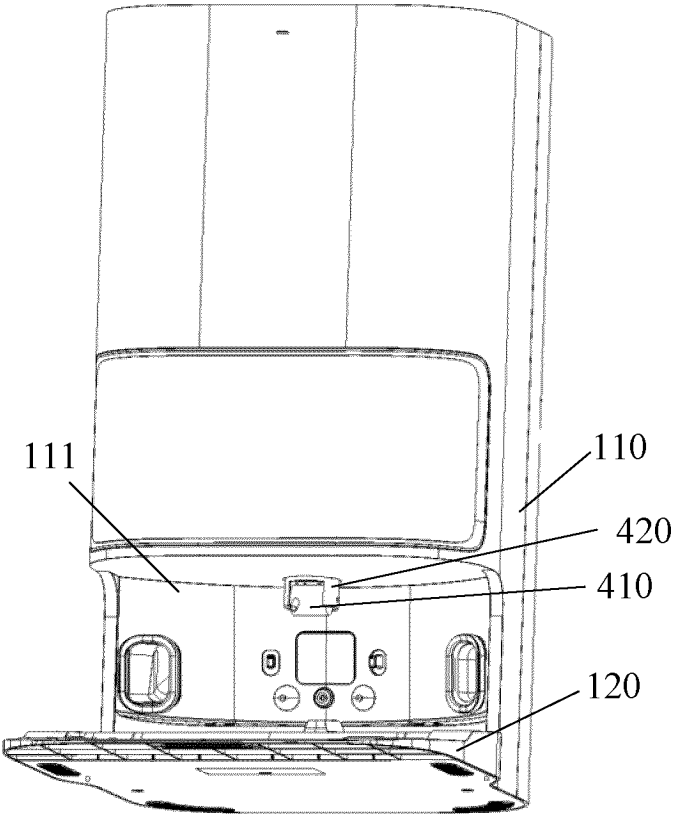


Fig. 8g

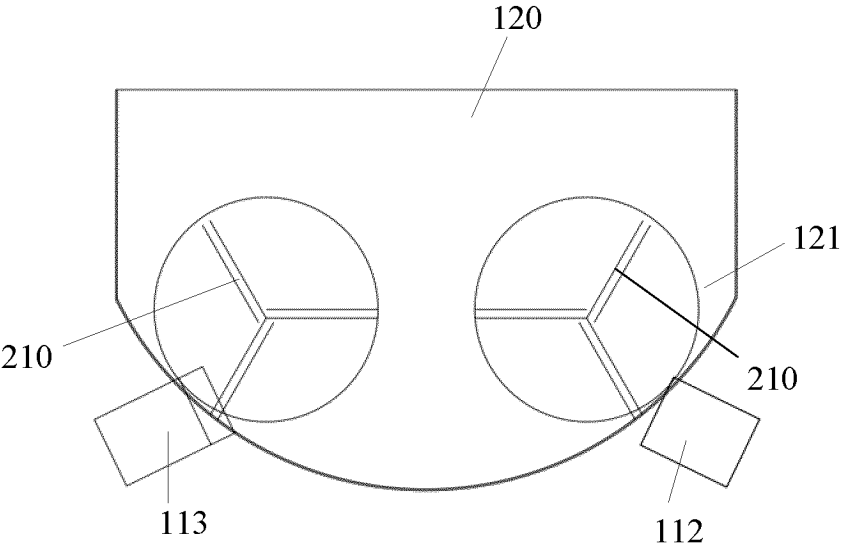


Fig. 9a

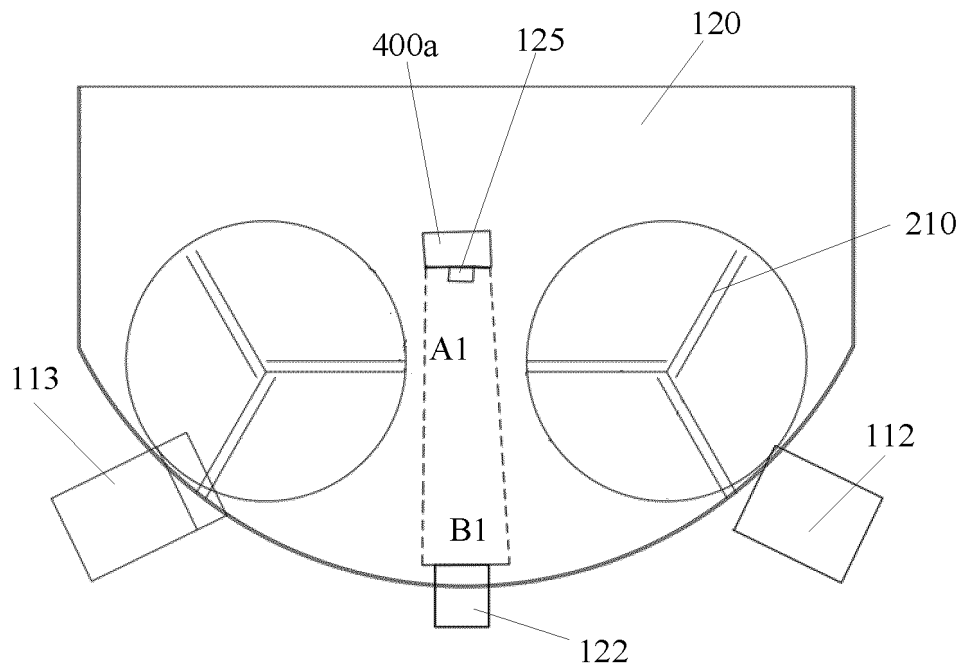


Fig. 9b

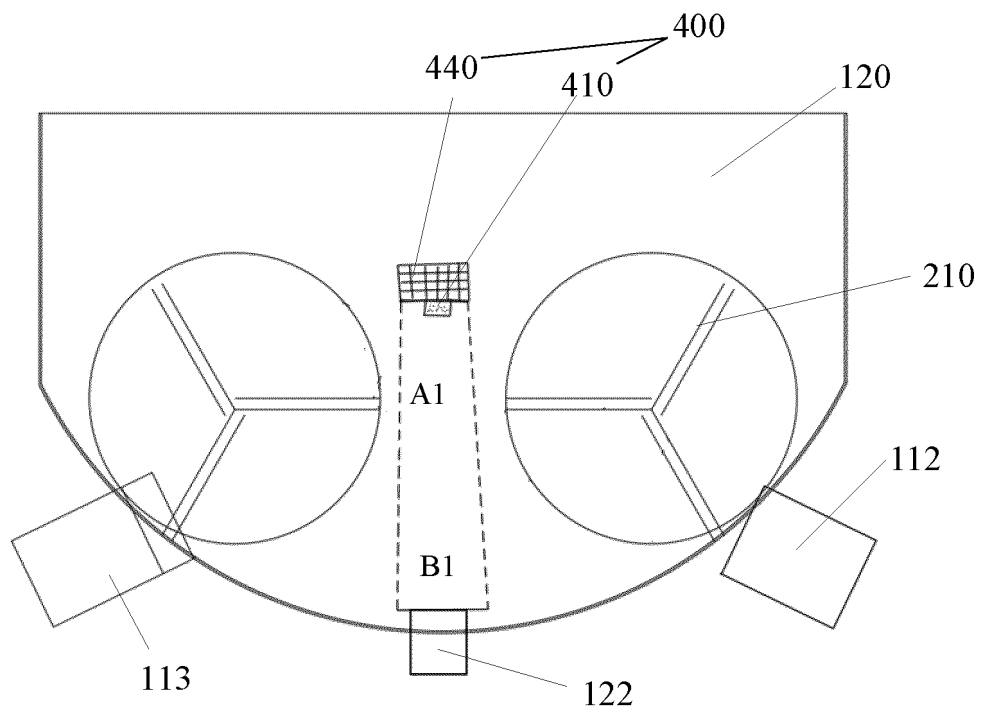


Fig. 9c

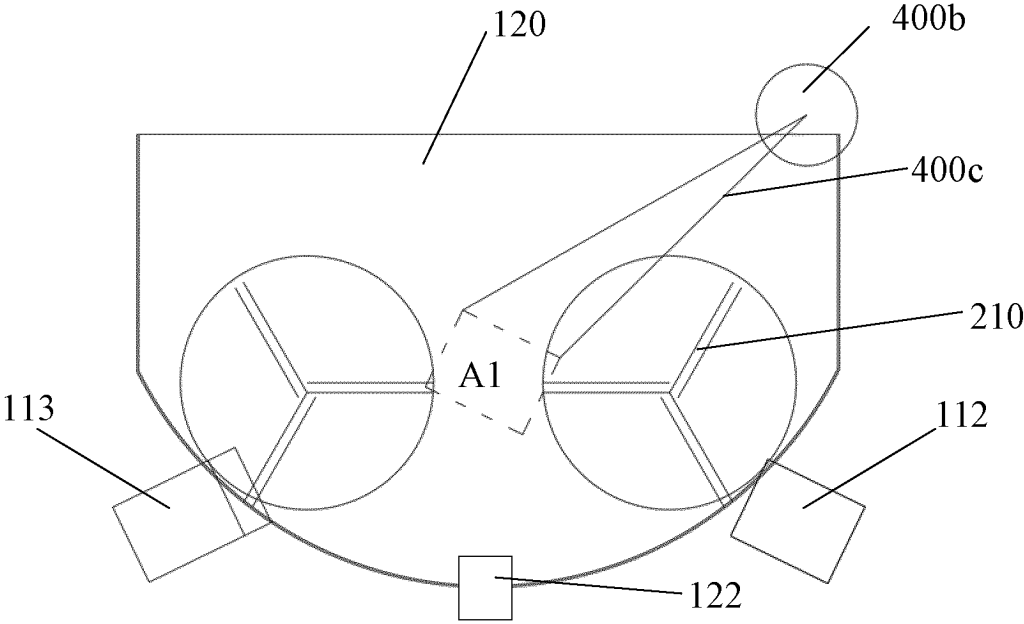


Fig. 9d

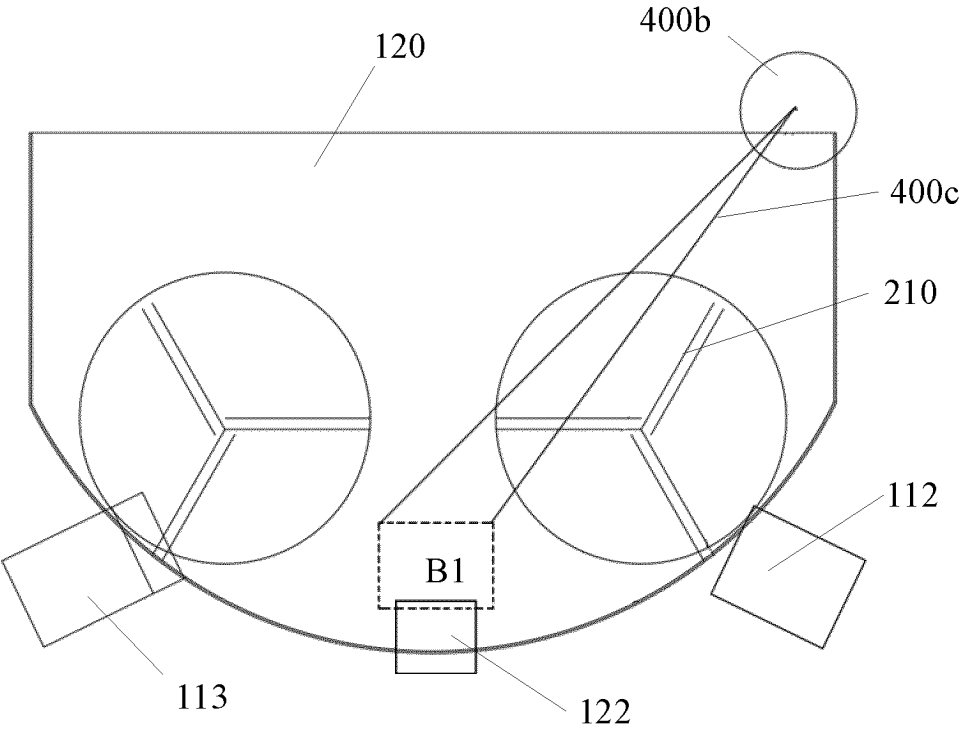


Fig. 9e

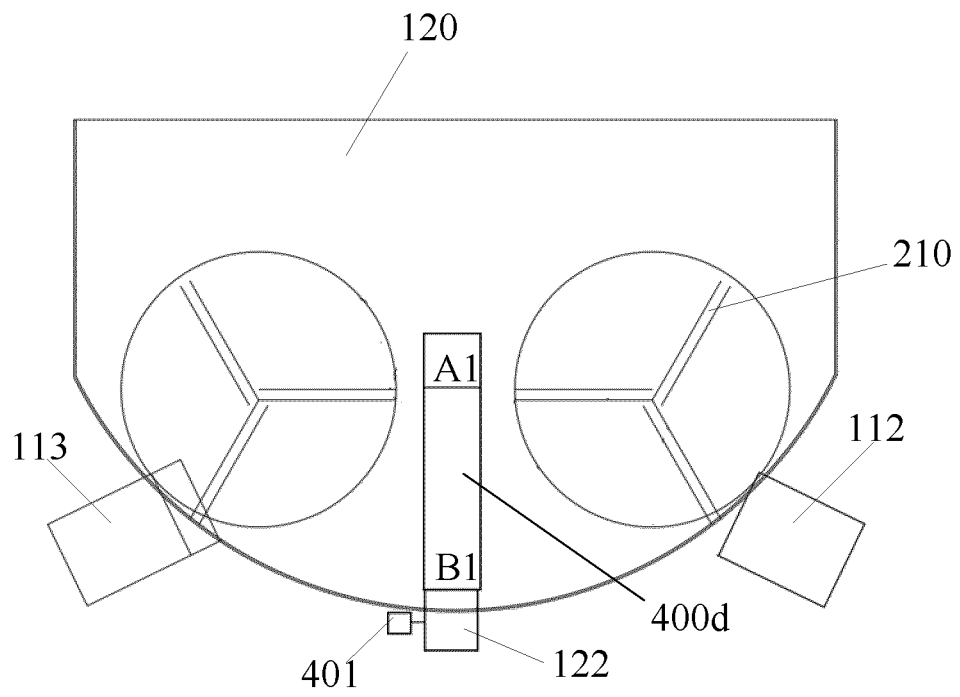


Fig. 9f

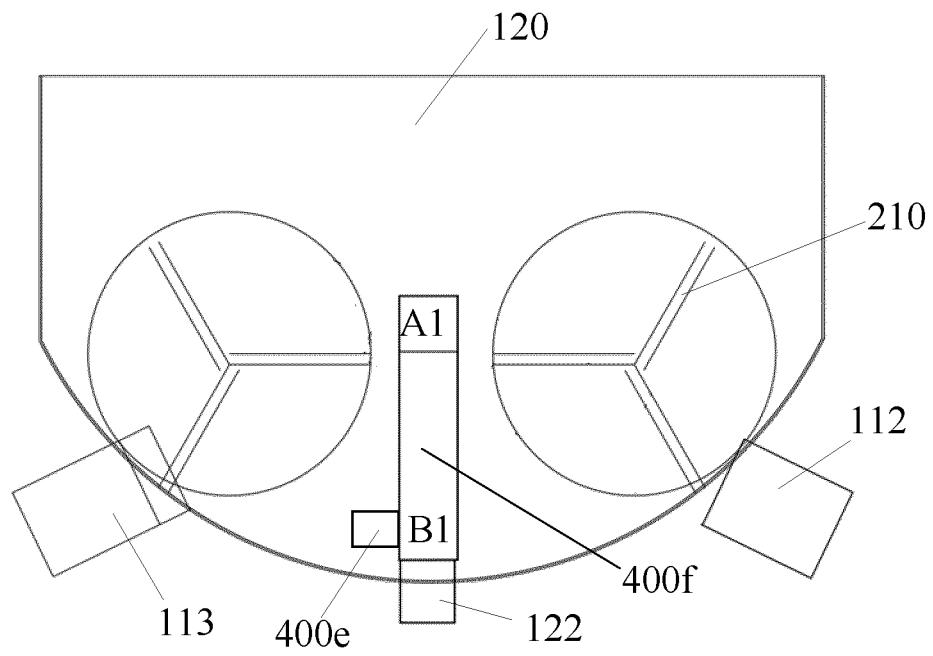


Fig. 9g

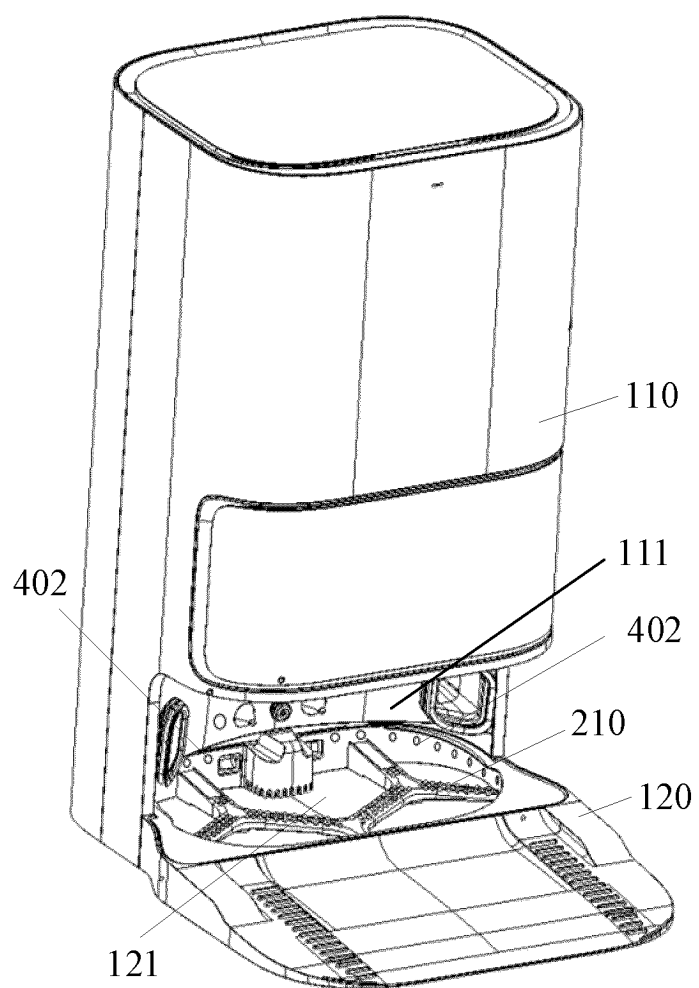


Fig. 9h

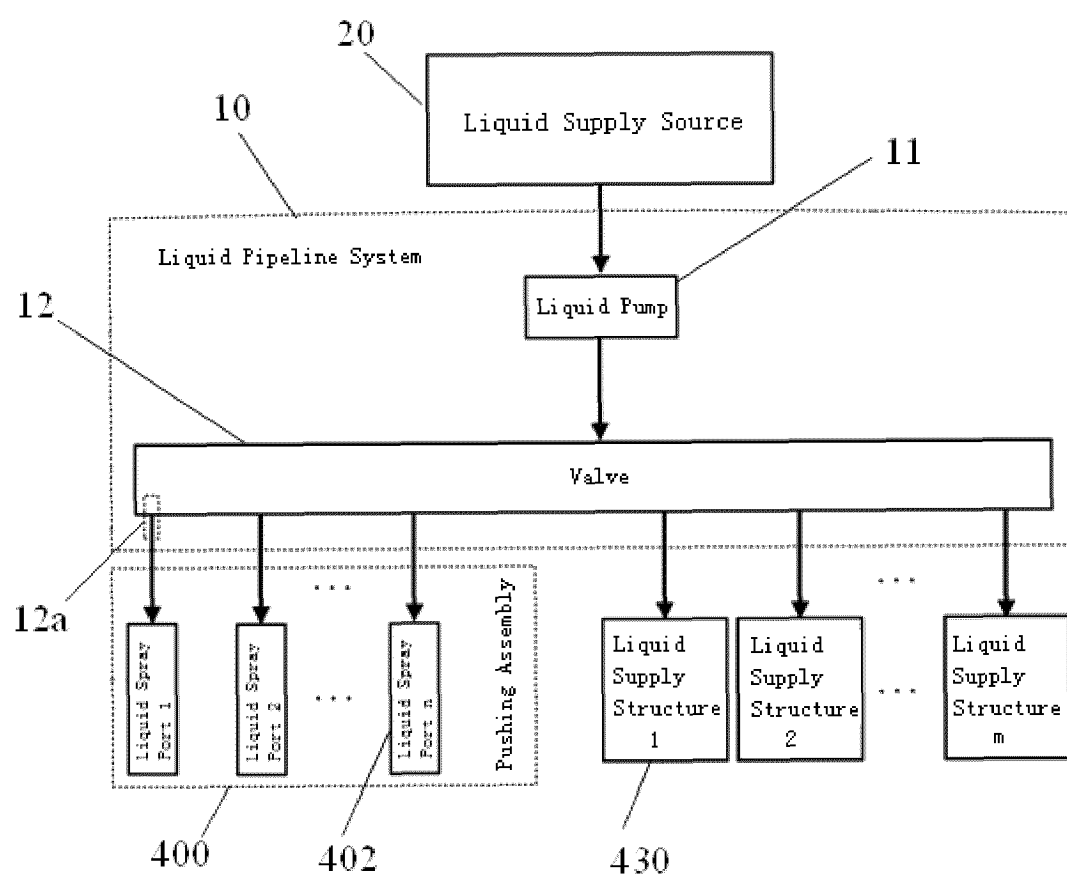


Fig. 9i

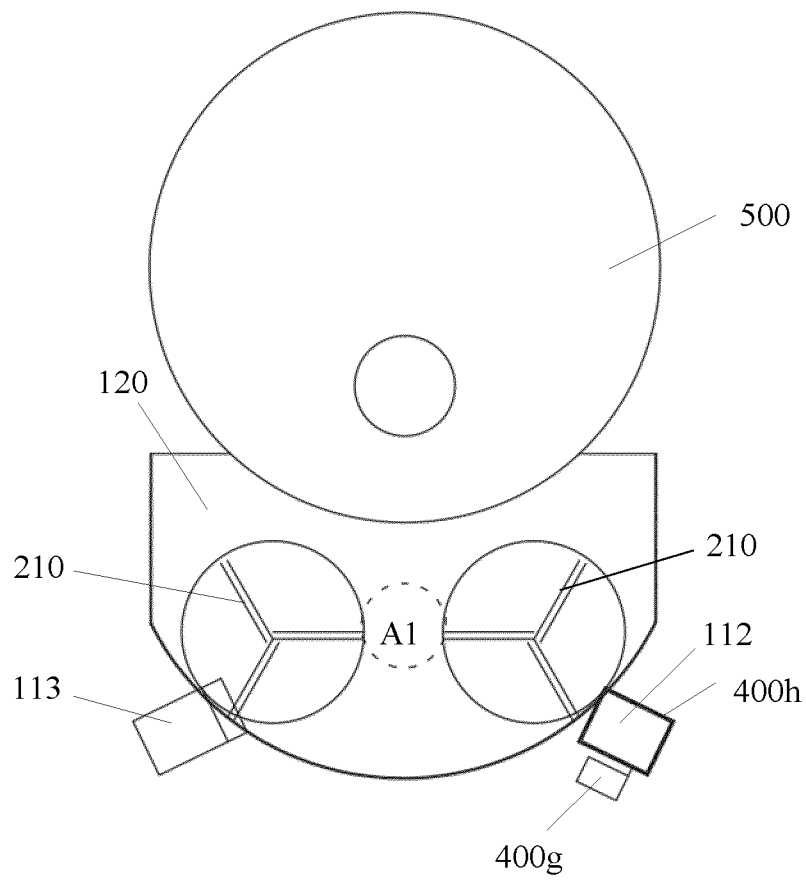


Fig. 10a

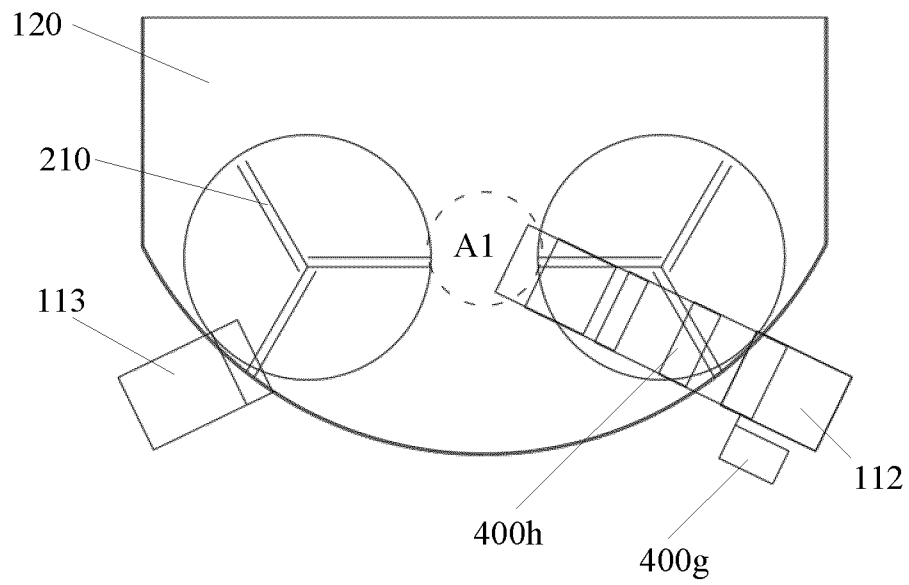


Fig. 10b

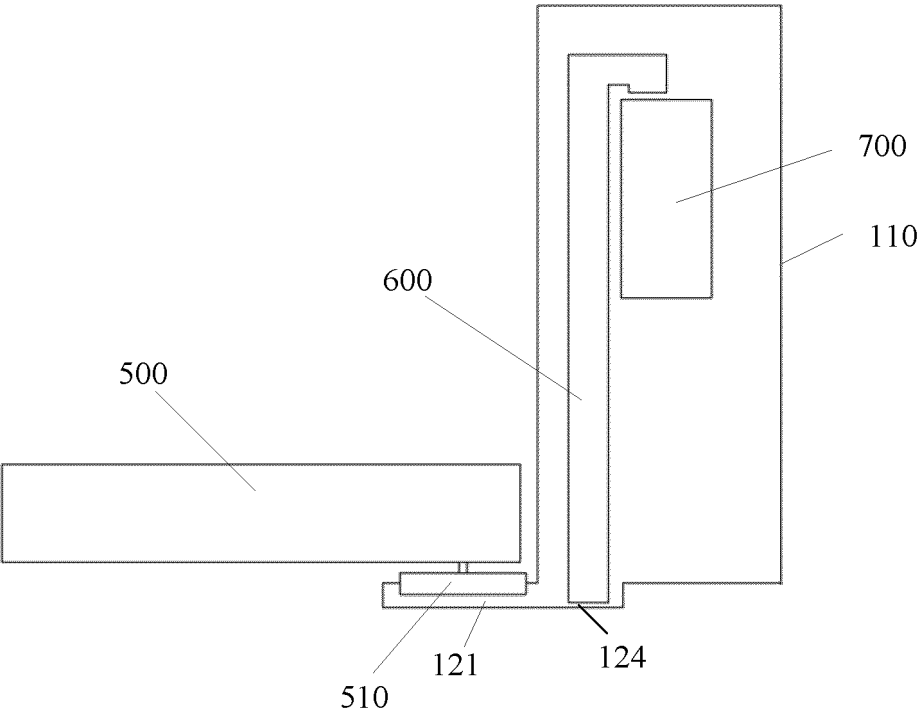


Fig. 11

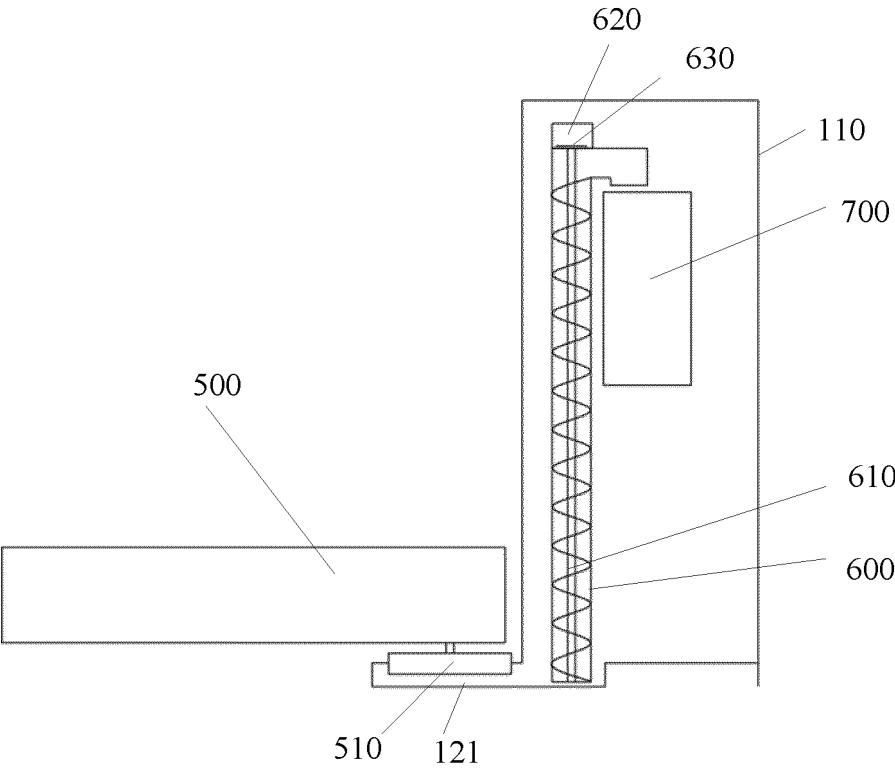


Fig. 12

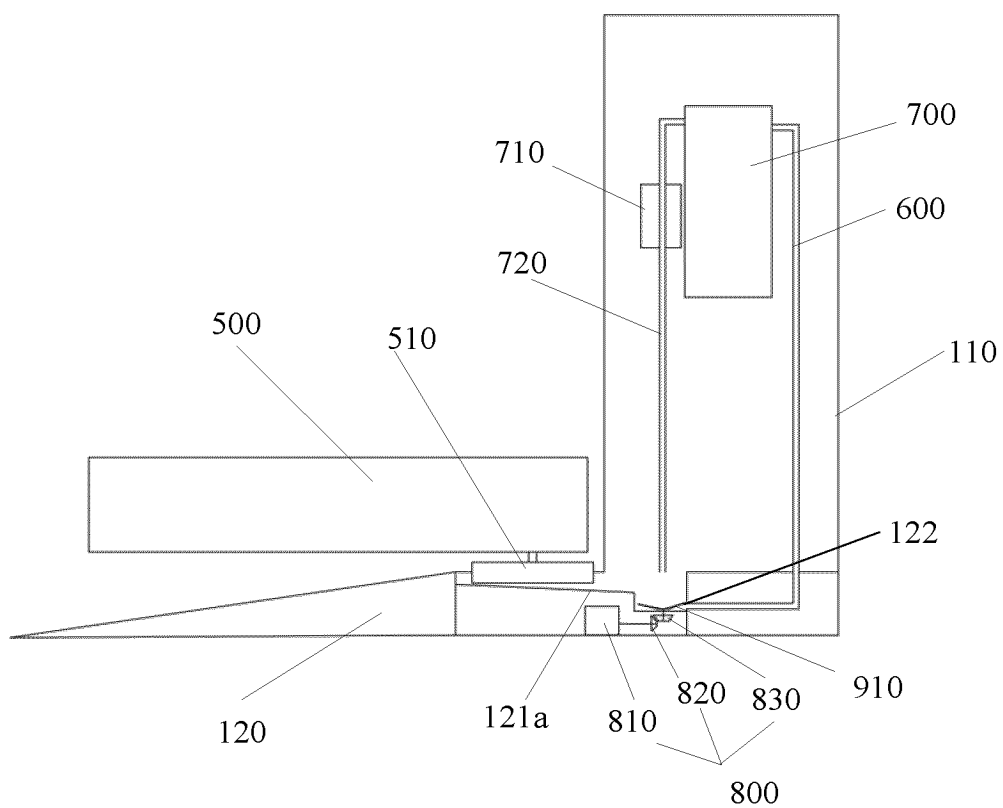


Fig. 13

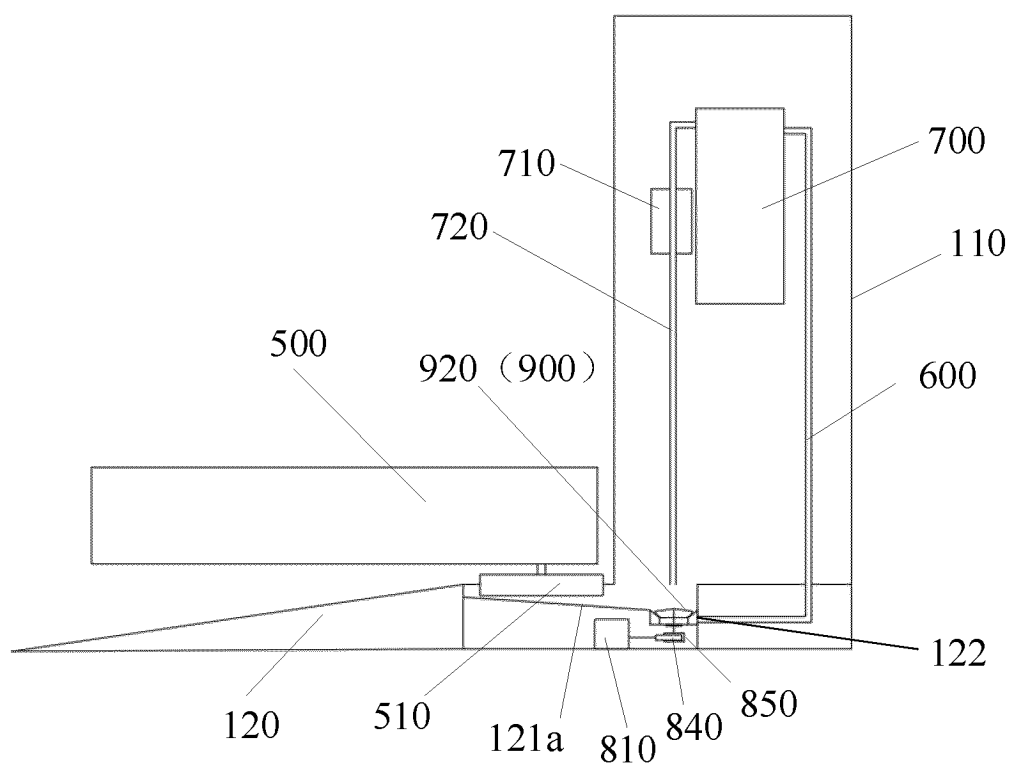


Fig. 14

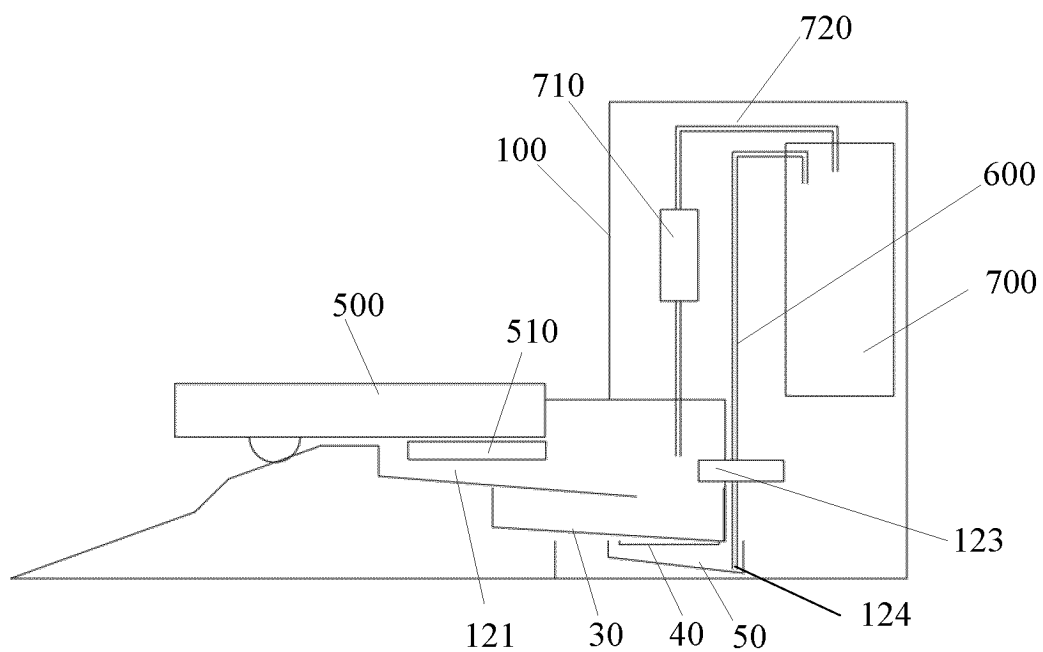


Fig. 15

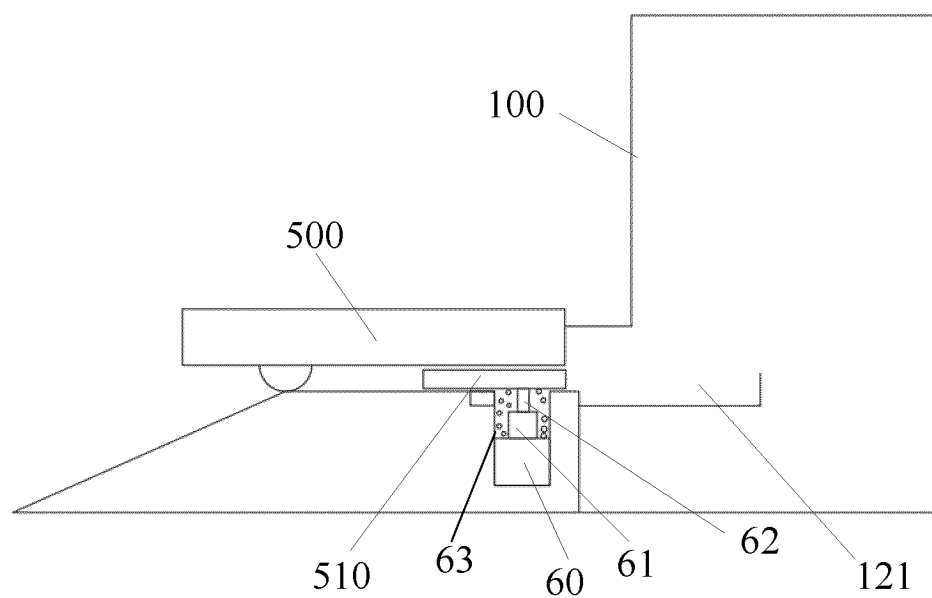


Fig. 16

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/112046

A. CLASSIFICATION OF SUBJECT MATTER

A47L11/40(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)

IPC: A47L11

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)

CNXTX, ENTXT, ENTXTC: 保护膜, 保护套, 擦, 冲刷, 冲洗, 冲洗槽, 抽, 吹, 吹落, 刀, 风, 风机, 刮, 管, 烘干, 集尘, 洁净, 裂, 螺杆, 喷头, 喷洗, 喷嘴, 破, 破碎, 清洁, 清洁槽, 清理, 清扫, 清污, 清洗槽, 清洗池, 清洗腔, 伸缩, 梳齿件, 刷洗, 水洗槽, 碎, 推动, 推送, 推向, 污, 污染, 污渍, 吸, 吸尘, 洗刷, 斜面, 叶片, 脏, 脏污, 脏物, 震动, 振动, 自洁, 自净, 自清洁, 自清洗, blade, dust, pool, tank, vane, clean+, collect+, wash+, blew, blow, dry, spray, break, telescope, push, dirty, waste

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 111938526 A (HANGZHOU JOLOG ROBOT TECHNOLOGY CO., LTD.) 17 November 2020 (2020-11-17) description, paragraphs 71-146, and figures 2-8 and 21-22	1-5, 11-16, 21, 32, 37-40, 42-44
Y	CN 111938526 A (HANGZHOU JOLOG ROBOT TECHNOLOGY CO., LTD.) 17 November 2020 (2020-11-17) description, paragraphs 71-146, and figures 2-8 and 21-22	6-10, 17-20, 22-29, 33-35, 41
Y	CN 215838722 U (HANGZHOU JOLOG ROBOT TECHNOLOGY CO., LTD.) 18 February 2022 (2022-02-18) description, paragraphs 80-146, and figures 2-10	6-10
PY	CN 217852794 U (DREAME INNOVATION TECHNOLOGY (SUZHOU) CO., LTD.) 22 November 2022 (2022-11-22) description, paragraphs 80-146, and figures 1-3	17-20, 22-29

☒ 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

“D” document cited by the applicant in the international application

“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

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

17 November 2023

Date of mailing of the international search report

20 November 2023

Name and mailing address of the ISA/CN

China National Intellectual Property Administration (ISA/
CN)
China No. 6, Xitucheng Road, Jimenqiao, Haidian District,
Beijing 100088

Authorized officer

Telephone No.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/112046

C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 114766968 A (XIAOWO INTELLIGENT (BEIJING) TECHNOLOGY CO., LTD.) 22 July 2022 (2022-07-22) description, paragraphs 46-63, and figures 1-5	33-35
PY	CN 115316883 A (SHARKNINJA (CHINA) TECHNOLOGY CO., LTD.) 11 November 2022 (2022-11-11) description, paragraphs 34-58, and figures 1-3	41
X	CN 111759240 A (SHENZHEN SILVER STAR INTELLIGENT TECHNOLOGY CO., LTD.) 13 October 2020 (2020-10-13) description, paragraphs 60-120, and figures 1-13	36, 42-44
PX	CN 219483683 U (DREAME INNOVATION TECHNOLOGY (SUZHOU) CO., LTD.) 08 August 2023 (2023-08-08) description, paragraphs 53-97, and figures 1-9	22-27, 42-44
PY	CN 115067834 A (MEIZHI ZONGHENG TECHNOLOGY CO., LTD.) 20 September 2022 (2022-09-20) description, paragraphs 69-186, and figures 1-3	17-20, 22-27
X	CN 106618392 A (YUNYI INTELLIGENT TECHNOLOGY (DONGGUAN) CO., LTD.) 10 May 2017 (2017-05-10) description, paragraph 210, and figure 55	36, 42-44
Y	CN 213993469 U (SHENZHEN 3IROBOTIX CO., LTD.) 20 August 2021 (2021-08-20) description, paragraphs 55-86, and figures 1-5	34-35
PA	CN 115462717 A (NARWEL INTELLIGENT TECHNOLOGY (DONGGUAN) CO., LTD. et al.) 13 December 2022 (2022-12-13) entire document	28
PA	CN 217524943 U (SHARKNINJA (CHINA) TECHNOLOGY CO., LTD.) 04 October 2022 (2022-10-04) entire document	31
A	CN 214048676 U (SHENZHEN SILVER STAR INTELLIGENT TECHNOLOGY CO., LTD.) 27 August 2021 (2021-08-27) entire document	39, 40
A	WO 2022114500 A1 (SAMSUNG ELECTRONICS CO., LTD.) 02 June 2022 (2022-06-02) entire document	1-44

Form PCT/ISA/210 (second sheet) (July 2022)

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2023/112046

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1-21 relate to a base station comprising a dust collection assembly. Claims 22-30 relate to a base station comprising a push assembly. Claims 31, 32, 33, 34-35, 36, 37, 38, 39-40 and 41 relate to base stations defining different features, respectively.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

- Remark on Protest**
- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
 - ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
 - ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2023/112046

Patent document cited in search report			Publication date (day/month/year)		Patent family member(s)		Publication date (day/month/year)	
CN	111938526	A	17 November 2020		None			
CN	215838722	U	18 February 2022		None			
CN	217852794	U	22 November 2022		None			
CN	114766968	A	22 July 2022		None			
CN	115316883	A	11 November 2022		None			
CN	111759240	A	13 October 2020		None			
CN	219483683	U	08 August 2023		None			
CN	115067834	A	20 September 2022		None			
CN	106618392	A	10 May 2017	WO	2018108144	A1	21 June 2018	
CN	213993469	U	20 August 2021		None			
CN	115462717	A	13 December 2022		None			
CN	217524943	U	04 October 2022		None			
CN	214048676	U	27 August 2021		None			
WO	2022114500	A1	02 June 2022		None			

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

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- CN 202223563680 [0001]
- CN 202320163758 [0001]