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(54) DUST COLLECTION PILE, AND AUTOMATIC CLEANING SYSTEM

(57) A dust collection pile (200) and an automatic cleaning system. The dust collection pile (200) comprises: a dust collection pile base (210), wherein a top surface of the dust collection pile base is provided with a dust inlet (211); a dust collection pile body (220), which is provided on the dust collection pile base (210), and comprises a fan cavity (221) and a dust collection compartment (222); a fan (231), which is provided in the fan cavity (221) and is configured to form a negative pressure in the dust collection compartment (220); and a dust bag support (270), which is provided in the dust collection compartment (222), wherein a side wall (271) of the dust bag support (270) is provided with a dust output interface (272), and the dust output interface (272) is in communication with the dust inlet (211) by means of a dust collection channel, and wherein the dust bag support (270) further comprises a sliding baffle plate (273), which can slide on the side wall (271) and is configured to switch between a first position and a second position in such a way that the sliding baffle plate (273) shields the dust output interface (272) in response to the sliding baffle plate (273) being in the first position, and the sliding baffle plate (273) exposes the dust output interface (272) in response to the sliding baffle plate (273) being in the second position.

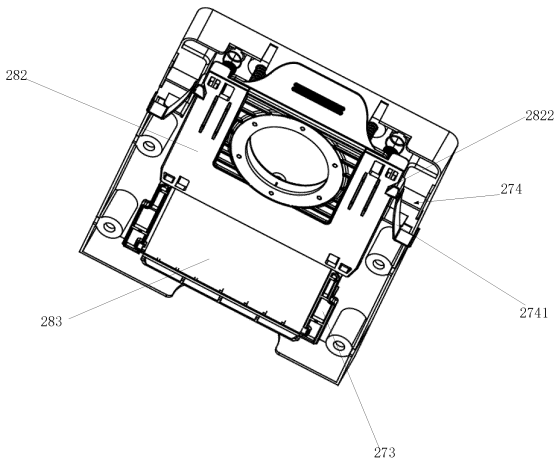

FIG. 13

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Description

[0001] This application claims priority to Chinese Patent Application No. 202111535371.6, filed on December 15, 2021, which is incorporated herein by reference in its entirety.

TECHNICAL FIELD

[0002] The present disclosure relates to the field of automatic cleaning technologies, and more particularly to a dust collecting pile and an automatic cleaning apparatus.

BACKGROUND ART

[0003] With the continuous development of technology, automatic cleaning apparatuses such as ground sweeping robots have been widely adopted by families, and the ground sweeping robots are more time-saving and labor-saving than conventional manual cleaning. It is only needed to clean a dust box in the ground sweeping robot after cleaning is completed. However, since the dust box in the ground sweeping robot has limited capacity and a low position, a user often needs to bend down to clean the dust box, which is not good for the users' body.

SUMMARY OF THE INVENTION

[0004] Some embodiments of the present disclosure provide a dust collecting pile, including:

a dust collecting pile base provided with a dust inlet in a top surface thereof;
a dust collecting pile body disposed on the dust collecting pile base, and including a fan cavity and a dust collecting bin;
a fan disposed in the fan cavity and configured to form a negative pressure in the dust collecting bin; and
a dust bag support disposed in the dust collecting bin, wherein a dust outlet port is provided in a sidewall of the dust bag support, and the dust outlet port is in connection with the dust inlet through a dust collecting channel,
wherein the dust bag support further includes a sliding baffle slidably provided on the sidewall and configured to be switchable between a first position and a second position, wherein in response to the sliding baffle being in the first position, the sliding baffle covers the dust outlet port, and in response to the sliding baffle being in the second position, the sliding baffle exposes the dust outlet port.

[0005] In some embodiments, the dust collecting pile further includes a dust bag including:

a dust bag body;
a clamping plate fixedly connected to the dust bag body, wherein the clamping plate is provided with a clamping plate opening serving as an entrance of the dust bag body; and
a sliding plate slidably connected to the clamping plate and configured to be switchable between a third position and a fourth position, wherein in response to the sliding plate being in the third position, the sliding plate covers the clamping plate opening, and in response to the sliding plate being in the fourth position, the sliding plate exposes the clamping plate opening,
wherein the dust bag is configured to be detachably mounted on the dust bag support, and in response to the dust bag being mounted on the dust bag support, the sliding baffle is in the second position, the sliding plate is in the fourth position, and the clamping plate opening is docked with the dust outlet port.

[0006] In some embodiments, the dust bag support includes a chute, at least a part of the sliding baffle is located in the chute, so that the sliding baffle slides along an extension direction of the chute, and
the clamping plate and the sliding plate are configured to be insertable into the chute to slide along the extension direction of the chute so that the dust bag is mounted to the dust bag support.

[0007] In some embodiments, a buckling portion is provided in the chute, the clamping plate is provided with a clamping slot matching the buckling portion, and in response to the clamping plate sliding to a buckling position along the extension direction of the chute, the clamping plate opening is docked with the dust outlet port, and the buckling portion is engaged with the matching clamping slot, so that the dust bag is fixed on the dust bag support.

[0008] In some embodiments, the sliding plate is provided with an unlocking lug configured to press the buckling portion in a process of pulling the sliding plate out of the clamping slot so that the buckling portion is detached from the clamping slot.

[0009] In some embodiments, the dust bag support is provided with an elastic component connected to the sliding baffle and configured to enable the sliding baffle to tend to be in the first position.

[0010] In some embodiments, the dust collecting pile further includes:
a support rib disposed on an inner wall of the dust collecting bin.

[0011] In some embodiments, in response to the sliding baffle being in the first position, the fan is in a non-operating state; or
an operation state of the fan is unrelated to a position of the sliding baffle.

[0012] In some embodiments, the dust collecting pile further includes:
a pressure relief valve disposed in the dust collecting bin and configured to adjust air pressure in the dust collecting

bin.

[0013] In some embodiments, the fan stops operating in response to opening of the pressure relief valve.

[0014] In some embodiments, the dust collecting pile further includes:

a dust barrel support configured to divide the dust collecting pile body into the fan cavity and the dust collecting bin; and

a pull-up cover configured to be snapped to the dust barrel support to form the dust collecting bin.

[0015] In some embodiments, the dust collecting pile further includes:

an in-position detection device disposed on at least one of the dust barrel support or the pull-up cover and configured to detect a snapped state between the pull-up cover and the dust barrel support.

[0016] In some embodiments, a penetrating hole is provided in a bottom wall of the dust barrel support, and is configured to connect the fan cavity with the dust collecting bin, and the dust collecting pile further includes a protective cover configured to be detachably buckled at the penetrating hole.

[0017] Some embodiments of the present disclosure provide an automatic cleaning system, including:

the dust collecting pile in the foregoing embodiments; and

an automatic cleaning apparatus, including a dust box and a dust outlet,

wherein in response to the dust outlet being docked with the dust inlet and the fan being in an operating state, garbage in the dust box of the automatic cleaning apparatus is collected into the dust collecting bin through the dust inlet.

[0018] Compared with the related art, the foregoing solutions in some embodiments of the present disclosure at least have the following beneficial effects.

[0019] When the dust bag support is not mounted with the dust bag, the sliding baffle of the dust bag support covers the dust outlet port, the dust collecting channel is isolated from the dust collecting bin, and the fan is controlled to be in a non-operating state.

[0020] When the dust bag is not mounted to the dust bag support or is pulled away from the dust bag support, the sliding plate of the dust bag covers the clamping plate opening to avoid garbage leakage.

[0021] The support rib is provided on the inner wall of the dust collecting bin to prevent the dust bag from being sticked to the inner wall of the dust collecting bin to cause poor airflow.

[0022] The pressure relief valve is disposed in the dust collecting bin to adjust air pressure in the dust collecting bin, thereby avoid too low air pressure.

[0023] The in-position detection device detects the snapped state between the pull-up cover and the dust barrel support, thereby preventing air leakage of the dust collecting bin caused by incomplete snapping of the two.

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The accompanying drawings herein, which are incorporated in this description and constitute a part of the description, illustrate embodiments conforming to the present disclosure, and are used to explain the principles of the present disclosure together with the description. Apparently, the accompanying drawings in the following description are only some embodiments of the present disclosure, and those skilled in the art can obtain other drawings from these accompanying drawings without creative efforts. In the accompanying drawings:

FIG. 1 is a schematic structural diagram of an automatic cleaning apparatus provided by some embodiments of the present disclosure;

FIG. 2 is a schematic diagram of a bottom structure of the automatic cleaning apparatus shown in FIG. 1;

FIG. 3 is a schematic structural diagram of a dust collecting pile provided by some embodiments of the present disclosure;

FIG. 4 is a schematic diagram of a scenario after an automatic cleaning apparatus returns to a dust collecting pile according to some embodiments of the present disclosure;

FIG. 5 is a schematic structural diagram of a lower housing of a fan provided by some embodiments of the present disclosure;

FIG. 6 is a structural exploded view of a fan assembly provided by some embodiments of the present disclosure;

FIG. 7 is a schematic assembling diagram of a fan assembly and a dust barrel support provided by some embodiments of the present disclosure;

FIG. 8 is a schematic structural diagram of a dust bag support provided by some embodiments of the present disclosure;

FIG. 9 is a schematic structural diagram of a dust bag support provided by some embodiments of the present disclosure;

FIG. 10 is a schematic structural diagram of a dust bag provided by some embodiments of the present disclosure;

FIG. 11 is a schematic structural diagram of a dust bag provided by some embodiments of the present disclosure;

FIG. 12 is a schematic pre-assembling diagram of a dust bag support and a dust bag provided by some embodiments of the present disclosure;

FIG. 13 is a schematic diagram of an assembled structure of a dust bag support and a dust bag provided by some embodiments of the present disclosure;

FIG. 14 is a schematic structural diagram of a pull-up cover provided by some embodiments of the present

disclosure; and

FIG. 15 is a schematic assembling diagram of a pull-up cover and a dust barrel support provided by some examples of the present disclosure.

DETAILED DESCRIPTION

[0025] To make the objects, technical solutions and advantages of the present disclosure clearer, the present disclosure will be further described in detail below with reference to the accompanying drawings. It is obvious that the described embodiments are only part but not all the embodiments of the present disclosure. Based on the embodiments in the present disclosure, all other embodiments obtained by those skilled in the art without creative efforts are within the protection scope of the present disclosure.

[0026] It should also be noted that the term "include", "comprise" or any other variation thereof is intended to cover a non-exclusive inclusion, such that a commodity or device including a series of elements not only includes those elements, but also includes other elements not clearly listed, or also includes elements that are inherent to the commodity or device. Without more limitations, an element defined by the phrase "including a ..." does not exclude the presence of additional identical elements in the commodity or device including said element.

[0027] The present disclosure provides an automatic cleaning apparatus, such as a dust collecting pile of a ground sweeping robot. The dust collecting pile in the present disclosure may be a dust collecting charging pile. For example, a function of charging the automatic cleaning apparatus is integrated on the dust collecting pile. In this way, when the ground sweeping robot returns to the dust collecting pile after sweeping, the dust collecting pile may recycle garbage in a dust box of the ground sweeping robot. When the dust collecting pile collects dust, a dust outlet of the ground sweeping robot needs to be docked with a dust inlet of the dust collecting pile to prevent dust from leaking to outside and causing secondary pollution. A dust collecting operation of the dust collecting pile and a charging operation of the automatic cleaning apparatus may be performed simultaneously or separately, which are not specifically limited here.

[0028] The present disclosure provides a dust collecting pile, including: a dust collecting pile base provided with a dust inlet in a top surface thereof; a dust collecting pile body disposed on the dust collecting pile base, and including a fan cavity and a dust collecting bin; a fan disposed in the fan cavity and configured to form a negative pressure in the dust collecting bin; and a dust bag support disposed in the dust collecting bin, wherein a dust outlet port is provided in a sidewall of the dust bag support, and the dust outlet port is in connection with the dust inlet through a dust collecting channel, wherein the dust bag support further includes a sliding baffle slidably provided on the sidewall and configured to be switchable between a first position and a second position, wherein in response to the sliding baffle being in the first position, the sliding baffle covers the dust outlet port, and in response to the sliding baffle being in the second position, the sliding baffle exposes the dust outlet port. In the present disclosure, when the dust bag support is not mounted with the dust bag, the sliding baffle of the dust bag support is, for example, in the first position, covers the dust outlet port, and seals garbage in the dust collecting channel, thereby preventing the garbage from entering the dust collecting bin that is not mounted with the dust bag.

[0029] Optional embodiments of the present disclosure are described in detail below with reference to the accompanying drawings.

[0030] FIG. 1 is a schematic structural diagram of an automatic cleaning apparatus provided by some embodiments of the present disclosure. FIG. 2 is a schematic diagram of a bottom structure of the automatic cleaning apparatus shown in FIG. 1.

[0031] As shown in FIG. 1 and FIG. 2, the automatic cleaning apparatus 100, such as a ground sweeping robot, includes a universal wheel 120 and a driving wheel 130. Under the action of the universal wheel 120 and the driving wheel 130, the automatic cleaning apparatus 100 may move on a supporting surface such as ground. Optionally, the automatic cleaning apparatus 100 may move according to a preset route, and under certain circumstances, for example, when the automatic cleaning apparatus 100 itself is insufficient in power, when a dust collecting box of the automatic cleaning apparatus 100 is full of garbage, or when the automatic cleaning apparatus 100 completes cleaning, mopping, etc., the automatic cleaning apparatus 100 may move back to a dust collecting pile to complete charging, unload garbage into the dust collecting pile, wash and dry a mopping assembly, or the like.

[0032] The automatic cleaning apparatus 100 further includes charging electrodes 140 configured to be electrically connected to the dust collecting pile to charge the automatic cleaning apparatus 100 after the automatic cleaning apparatus 100 returns to the dust collecting pile. As shown in FIG. 2, in some embodiments, the charging electrodes 140 are disposed on a bottom surface of the automatic cleaning apparatus 100, and there are two charging electrodes for example, which are respectively disposed on two sides of the universal wheel 120. A person skilled in the art may understand that the foregoing is only an example of the number and location of the charging electrodes, and the present disclosure does not specifically limit the number and location of the charging electrodes 140.

[0033] The automatic cleaning apparatus 100 further includes a cleaning module 110, such as a dry cleaning module. The cleaning module 110 is configured to clean at least a part of the supporting surface, such as the ground, when the automatic cleaning apparatus 100 moves on the supporting surface, such as the ground. In some embodiments, as shown in FIG. 2, the cleaning module 110 is, for example, disposed between two driv-

ing wheels 130. The cleaning module 110 specifically includes a rolling brush cover 112 and a rolling brush 111 disposed in the rolling brush cover 112. A sweeping member 1111 is disposed on a periphery of the rolling brush 111, and may be a bristle brush, a rubber brush or a rubber-bristle mixed brush. A vent 1121 is provided in the rolling brush cover 112. The vent 1121 exposes at least a part of the rolling brush 111.

[0034] When the automatic cleaning apparatus 100 is performing a cleaning operation, the rolling brush 111 rotates, on which the sweeping member 1111 exposed by the rolling brush cover 112 may contact the ground, and at the same time a fan in the automatic cleaning apparatus 100 generates an airflow that enters the rolling brush cover 112 through the vent 1121. Under the action of the sweeping member 1111 and the airflow, garbage will enter the rolling brush cover 112 through the vent 1121 and then be collected into a dust box of the automatic cleaning apparatus 100. The vent 1121 is also used as a circulation port of garbage. That is, when the automatic cleaning apparatus 100 is performing the cleaning operation, the vent 1121 is used as a dust suction inlet of the automatic cleaning apparatus 100; and when collecting dust, the vent 1121 is used as a dust outlet of the automatic cleaning apparatus 100 to discharge garbage in the dust box to a garbage collecting container of the dust collecting pile through the vent 1121. FIG. 3 is a schematic structural diagram of a dust collecting pile provided by some embodiments of the present disclosure. As shown in FIG. 3, the dust collecting pile 200 is configured to provide energy supply and garbage collection for the automatic cleaning apparatus 100. The dust collecting pile 200 includes a dust collecting pile base 210 and a dust collecting pile body 220. The dust collecting pile base 210 is configured to support the automatic cleaning apparatus 100 when the automatic cleaning apparatus 100 returns to the dust collecting pile 200 for charging or dust discharge. A dust inlet 211 is provided on the top surface of the dust collecting pile base. The dust inlet 211 is configured to be docked with, for example, sealingly docked with, a dust outlet of the automatic cleaning apparatus 100 when the automatic cleaning apparatus 100 returns to the dust collecting pile 200 to be supported by the dust collecting pile base 210.

[0035] The dust collecting pile body 220 is disposed on the dust collecting pile base 210, and includes a fan cavity 221 and a dust collecting bin 222 that are positioned away from the dust collecting pile base. The fan cavity 221 is configured to accommodate a fan assembly. The dust collecting bin 222 is in connection with the dust inlet 211 through a dust collecting pipe, and is configured to collect garbage from the automatic cleaning apparatus 100.

[0036] FIG. 4 is a structural exploded view of a fan assembly provided by some embodiments of the present disclosure. As shown in FIG. 3 and FIG. 4, the dust collecting pile 200 further includes a fan assembly 230. The fan assembly 230 is disposed in the fan cavity and provides a suction force for a dust collecting operation of the dust collecting pile. The fan assembly 230 includes a fan 231 and a silencing cotton sleeve 232. The fan 231 includes a motor portion 2311 and an air suction portion 2312 that is adjacent to the motor portion 2311 and driven by the motor portion 2311. The air suction portion 2312 includes for example blades, which are used to rotate under the driving of the motor portion 2311 to generate airflow. The fan 231 is configured to generate an airflow in an operating state to collect garbage into the dust collecting bin 222 through the dust inlet 211. The silencing cotton sleeve 232 is configured to be sheathed on a periphery of the motor portion 2311. In this way, when the fan operates, operating noise of the fan can be reduced, so that the dust collecting pile 200 has lower noise when performing the dust collecting operation.

[0037] FIG. 5 is a schematic structural diagram of a lower housing of a fan provided by some embodiments of the present disclosure. In some embodiments, as shown in FIG. 4 and FIG. 5, the fan assembly 230 further includes a first housing 233 and a second housing 234. The first housing 233 is, for example, the lower housing of the fan, hereinafter also referred to as a fan lower housing 233, and includes a fan mounting position 2331. The fan mounting position 2331 is configured to accommodate the motor portion 2311 sheathed with the silencing cotton sleeve 232. The second housing 234 is, for example, an upper housing of the fan, hereinafter also referred to as a fan upper housing 234, and is configured to be snapped on the fan mounting position 2331 to accommodate the air suction portion 2312 of the fan 231. The fan upper housing 234 may be fixedly connected to the fan mounting position 2331 of the fan lower housing 233 by a connecting part such as a screw, and the two are fastened together to form an accommodating space for accommodating the fan 231. The fan 231 is fixedly accommodated in the accommodating space to prevent its position from shifting in the accommodating space.

[0038] In some embodiments, as shown in FIG. 4, a first opening 2341 is provided in the second housing 234, and is configured to be aligned with an air inlet of the fan 231. A grid structure is provided in the first opening 2341. This can prevent an operator from inserting a finger into the first opening 2341 of the second housing 234 by mistake, causing his finger to touch the blades at the air inlet of the fan 231 and being injured, thereby eliminating potential safety hazards and preventing large particles of garbage from entering into the air suction portion 2312 through the first opening 2341 to destroy the fan, such as blades.

[0039] In some embodiments, as shown in FIG. 3 to FIG. 5, the first housing 233 further includes an air outlet channel 2332. The air outlet channel 2332 is disposed adjacent to the fan mounting position 2331, and is in connection with an internal space of the fan mounting position 2331 through an opening in a sidewall of the fan mounting position 2331. The air outlet channel 2332 is configured to guide the airflow generated by the fan 231

to flow out of the dust collecting pile body 220. The air outlet channel 2332 includes an outlet 23322 provided at an end of the air outlet channel 2332 and aligned with an air outlet 2211 in a sidewall of the fan cavity 221 of the dust collecting pile body 220. An inner sidewall of the air outlet channel 2332 is provided with an airflow silencing structure disposed on an airflow outflow path and used to reduce noise generated when the airflow passes through the air outlet channel 2332.

[0040] In some embodiments, the airflow silencing structure includes a plurality of partitions 23321 disposed at intervals. The partitions 23321 extend from the inner sidewall of the air outlet channel against an air outlet direction in the air outlet channel. The air outlet direction is indicated by an arrow in FIG. 5. The plurality of partitions are inclined relative to the inner sidewall of the air outlet channel where the partitions are located. Specifically, a plurality of spaced partitions 23321 are disposed on two opposite inner sidewalls of the air outlet channel. The plurality of spaced partitions are evenly or not unevenly arranged, and extend in substantially the same direction. That is, the plurality of partitions located on the same inner sidewall are disposed parallel to each other. The plurality of partitions on the two opposite inner sidewalls of the air outlet channel form a serrated airflow silencing structure, which can reduce the noise generated when the airflow passes through the air outlet channel 2332. The partitions 23321 are inclined relative to the inner sidewall of the air outlet channel where the partitions are located, and the angle between the partitions and the inner sidewall of the air outlet channel where the partitions are located is, for example, 30° to 50°, and specifically, for example, 45°.

[0041] In other embodiments, the partitions may be disposed only on one inner sidewall of the air outlet channel, or the partitions may be disposed on a bottom wall of the air outlet channel.

[0042] In some embodiments, the airflow silencing structure may also be provided to form a plurality of openings in a sidewall of the air outlet channel 2332, and place a sound-absorbing material at corresponding openings in an outer sidewall of the air outlet channel 2332; or provide a sound-absorbing material directly on an inner sidewall of the air outlet channel 2332.

[0043] FIG. 6 is a structural exploded view of a fan assembly provided by some embodiments of the present disclosure. As shown in FIG. 3 to FIG. 6, a bottom wall of the first housing 233 is provided with a through hole 2333 configured to allow a power cable of the fan 231 to pass through. The dust collecting pile 200 further includes a wiring harness rubber plug 2334 configured to tightly match the through hole 2333. The wiring harness rubber plug 2334 is provided with a perforation configured to allow the power cable and/or a signal line of the fan 231 to pass through. By inserting the matching wiring harness rubber plug 2334 into the through hole 2333 to tightly fit with the through hole 2333, a gap between the through hole 2333 and the power cable of the fan 231 passing through the through hole can be reduced, thereby preventing the first housing 233 from leaking air at the through hole 2333 and avoiding water vapor, dust, and the like from entering a control board area of the dust collecting pile 200 through the through hole 2333 in the bottom wall of the first housing 233, which will cause damage to precise electronic components on the control board.

[0044] In some embodiments, the dust collecting pile 200 further includes a dust barrel support 240. The dust barrel support 240 is configured to divide the dust collecting pile body 220 into the fan cavity 221 and the dust collecting bin 222. A side of a bottom wall of the dust barrel support facing the fan assembly 230 is provided with an accommodating portion 241 configured to accommodate a part of the second housing 234. The accommodating portion 241 is used to position the fan assembly 230. The dust collecting pile 200 further includes a sealing foam 250 disposed between a top surface of the second housing 234 and a bottom surface of the accommodating portion 241, and is used to seal and fit the fan assembly 230 with the accommodating portion 241 of the dust barrel support 240, so as to avoid air leakage and reduce vibration transmission during the operation of the fan, thereby providing sufficient suction force for the dust collecting pile 200 to perform the dust collecting operation so that garbage enters the dust collecting bin 222.

[0045] FIG. 7 is a schematic assembling diagram of a fan assembly and a dust barrel support 240 provided by some embodiments of the present disclosure. In some embodiments, as shown in FIG. 3 to FIG. 7, the second housing 234 is provided with a first opening 2341 configured to be aligned with the air inlet of the fan 231. A bottom wall of the dust barrel support is provided with a second opening 242 configured to exposes the first opening 2341. That is, the second opening is also aligned with the air inlet of the fan 231. The air inlet of the fan 231 extracts air from the dust collecting bin 222 through the first opening 2341 of the second housing 234 and the second opening 242 in the bottom wall of the dust barrel support 240 to form an airflow, so that the dust collecting bin 222 is in a negative pressure state. Garbage can be sucked into the dust collecting bin 222 from the dust inlet 211 in the dust collecting pile 210 through the dust collecting pipe, and is, for example, collected in a dust collecting bag of the dust collecting bin 222.

[0046] In some embodiments, the dust collecting pile 200 further includes a protective cover 260 configured to be detachably snapped to the second opening 242. The protective cover 260 is, for example, engaged with the second opening 242 from a side of the bottom wall of the dust barrel support away from the fan assembly. The protective cover 260 is buckled at the second opening 242 in the bottom wall of the dust barrel support for example by buckling, so as to facilitate the detachment of the protective cover 260. The protective cover 260 has a grid hollow structure, and when snapped to the second

opening 242, it will not affect the circulation of airflow. The provision of the protective cover 260, on one hand, prevents garbage in the dust collecting bin 222 from entering the air inlet of the fan 231, and on the other hand, protects a user from being scratched by high-speed rotation of the blades, for example, by misplacing a finger into the air inlet of the fan 231.

[0047] In some embodiments, the first housing 233 is snapped to the bottom wall of the dust barrel support 240, and the two are sealingly connected to avoid air leakage. In this way, the fan 231 located in the first housing 233 may provide strong suction force to the dust collecting bin 222, so that a negative pressure is formed in the dust collecting bin 222.

[0048] FIG. 8 is a schematic structural diagram of a dust bag support provided by some embodiments of the present disclosure, wherein a sliding baffle is in a first position. FIG. 9 is a schematic structural diagram of a dust bag support provided by some embodiments of the present disclosure, wherein the sliding baffle is in a second position.

[0049] Refer to FIG. 1 to FIG. 9, in some embodiments the dust collecting pile 200 further includes a dust bag support 270. The dust bag support 270 is disposed in the dust collecting bin 222, for example, is disposed on an inner sidewall of the dust collecting bin 222 through a fixing part such as a screw, or is fixedly adhered to the dust barrel support 240 through a bottom of the dust bag support 270. A sidewall 271 of the dust bag support 270 is provided with a dust outlet port 272. The dust outlet port 272 is in connection with the dust inlet 211 through the dust collecting channel. The dust collecting channel is used to guide garbage into the dust collecting bin, such as a dust bag within the dust collecting bin. The dust outlet port 272 is configured to communicate with the dust bag for collecting garbage into the dust bag.

[0050] The dust bag support 270 further includes a sliding baffle 273 slidably provided on the sidewall 271. The sliding baffle 273 is configured to be switchable between a first position and a second position. In response to the sliding baffle 273 being in the first position, the sliding baffle 273 covers the dust outlet port 272, and in response to the sliding baffle 273 being in the second position, the sliding baffle 273 exposes the dust outlet port 272. Since the dust bag is consumable, it may be detachably mounted on the dust bag support 270. The dust bag support 270 with the above design may enable the dust outlet port to be covered by the sliding baffle when the dust bag support is not mounted with the dust bag, so as to isolate the dust collecting bin and the dust collecting channel and seal garbage in the dust collecting channel, thereby preventing garbage from entering the dust collecting bin 222 that is not mounted with the dust bag.

[0051] FIG. 10 is a schematic structural diagram of a dust bag provided by some embodiments of the present disclosure, wherein a sliding plate is in a third position. FIG. 11 is a schematic structural diagram of a dust bag provided by some embodiments of the present disclosure, wherein a sliding plate is in a fourth position. In some embodiments, as shown in FIG. 1 to FIG. 11, the dust collecting pile further includes a dust bag 280. The dust bag 280 is configured to be detachably mounted on the dust bag support 270 for collecting garbage.

[0052] The dust bag 280 include a dust bag body 281, a clamping plate 282, and a sliding plate 283. The dust bag body is, for example, made of a material that is air-permeable but can filter out fine particles, such as non-woven fabric or paper material. The dust bag body is configured to accommodate the garbage. The clamping plate 282 is fixedly connected to the dust bag body 281. The clamping plate 282 is provided with a clamping plate opening 2821 and the clamping plate opening 2821 serves as an entrance of the dust bag body 281. The sliding plate 283 is slidably connected with the clamping plate 282, and is configured to be switchable between a third position and a fourth position. In response to the sliding plate 283 being in the third position, the sliding plate 283 covers the clamping plate opening 2821, and in response to the sliding plate 283 being in the fourth position, the sliding plate 283 exposes the clamping plate opening 2821.

[0053] Specifically, as shown in FIG. 10 and 11, the sliding plate 283 is provided with a sliding plate opening 2831. In response to the sliding plate 283 being in the third position, an orthographic projection of the sliding plate opening 2831 onto the clamping plate 282 does not overlap with the clamping plate opening 2821, and the sliding plate 283 covers the clamping plate opening 2821, as shown in FIG. 10. In response to the sliding plate 283 being in the fourth position, the orthographic projection of the sliding plate opening 2831 onto the clamping plate 282 at least partially overlaps with the clamping plate opening 2821, and the sliding plate 283 exposes at least a part of the clamping plate opening 2821 through the sliding plate opening 2831, as shown in FIG. 11. In some embodiments, a size of the sliding plate opening 2831 is, for example, larger than that of the clamping plate opening 2821. In response to the sliding plate 283 being in the third position, the orthographic projection of the sliding plate opening 2831 onto the clamping plate 282 covers the clamping plate opening 2821. In some embodiments, the size of the sliding plate opening 2831 is, for example, smaller than that of the clamping plate opening 2821. In response to the sliding plate 283 being in the third position, the orthographic projection of the sliding plate opening 2831 onto the clamping plate 282 falls in the clamping plate opening 2821. In some embodiments, the size of the sliding plate opening 2831 is, for example, equal to that of the clamping plate opening 2821. In response to the sliding plate 283 being in the third position, the orthographic projection of the sliding plate opening 2831 onto the clamping plate 282 coincides with the clamping plate opening 2821.

[0054] The dust bag 280 is configured to be detachably mounted on the dust bag support 270. In response to the

dust bag 280 being mounted on the dust bag support 270, the sliding baffle 273 is in the second position, the sliding plate is in the fourth position, and the clamping plate opening 2821 is docked with the dust outlet port 272. Based on the foregoing arrangement, when the dust bag support is not mounted with the dust bag, its sliding baffle 273 is in the first position, covers the dust outlet port 272, and seals garbage in the dust collecting channel, thereby preventing garbage from entering the dust collecting bin that is not mounted with the dust bag. When the dust bag is not mounted into the dust bag support, its sliding plate 283 covers the clamping plate opening 2821 of the clamping plate 282, so that when the dust bag is mounted into the dust bag support, through the cooperation of the sliding plate 283 and the clamping plate 282, the sliding baffle 273 can be pushed from the first position to the second position and is fixed at the second position. When the dust bag is pulled away from the dust bag support, its sliding plate covers the clamping plate opening to avoid garbage leaking. After the dust bag is mounted into the dust bag support, the clamping plate opening, that is, an entrance of the dust bag is docked with the dust outlet port. Under the action of the airflow provided by the fan, garbage in the dust box of the automatic cleaning apparatus may sequentially pass through the dust inlet in the dust collecting pile base, the dust collecting channel in the dust collecting pile, the dust outlet port in the dust bag support, and the clamping plate opening in the dust bag before being collected into the dust bag body.

[0055] FIG. 12 is a schematic pre-assembling diagram of a dust bag support and a dust bag provided by some embodiments of the present disclosure. FIG. 13 is a schematic diagram of an assembled structure of a dust bag support and a dust bag provided by some embodiments of the present disclosure. In some embodiments, as shown in FIG. 8 to FIG. 13, the dust bag support 270 includes a chute 274, and at least a part of the sliding baffle 273 is located in the chute 274, so that the sliding baffle 273 may slide along an extension direction X of the chute 274, so as to be switched between the first position and the second position. For example, the number of chutes 274 is, for example, one or more. As shown in FIG. 8 to FIG. 13, the number of chutes 274 is, for example, two, which are respectively disposed at opposite ends of the sidewall 271 of the dust bag support 270. The two chutes 274 respectively accommodate opposite ends of the sliding baffle 273, so that the sliding baffle 273 may slide along the extension direction X of the chute 274.

[0056] As shown in FIG. 8 to FIG. 13, the clamping plate 282 and the sliding plate 283 of the dust bag 280 are configured to be insertable into the chute 274 to slide along the extension direction X of the chute 274, so that the dust bag 280 is mounted onto the dust bag support 270. Specifically, both ends of the clamping plate 282 and the sliding plate 283 of the dust bag 280 may be respectively inserted into the two chutes 274.

[0057] As shown in FIG. 12, in a process of mounting the dust bag 280 onto the dust bag support 270, when the dust bag 280 moves relative to the dust bag support 270 along the extension direction X of the chute 274 to mount the two, the clamping plate 282 and the sliding plate 283 of the dust bag 280 face the sidewall 271 of the dust bag support 270. In a process of inserting the clamping plate 282 and the sliding plate 283 into the chute 274 in the extension direction X of the chute 274, the sliding baffle 273 may be pushed to move from the first position to the second position. FIG. 13 shows a cross-sectional view of an assembled structure of a dust bag support and a dust bag provided by some embodiments of the present disclosure. As shown in FIG. 8 to FIG. 13, a buckling portion 2741, such as an elastic buckle, is provided in the chute 274, and a clamping slot 2822 matching the buckling portion 2741 is provided in the clamping plate 282. In response to the clamping plate 282 sliding to a buckling position along the extension direction X of the chute 274, the clamping plate opening 2821 is docked with the dust outlet port 272, and the buckling portion 2741 is engaged with the matching clamping slot 2822, so that the dust bag 280 is fixed on the dust bag support 270.

[0058] In some embodiments, as shown in FIG. 8 to FIG. 13, an end of the sliding plate 283 is provided with a handle portion 2832 configured to be held by an operator to move the sliding plate 283. The sliding plate is further provided with unlocking lugs 2833, for example, disposed at both ends of the sliding plate 283, and configured to press the buckling portion 2741 in a process of pulling the sliding plate 283 out of the clamping slot 274, so that the buckling portion 2741 is detached from the clamping slot 2822, thereby releasing the fixing of the clamping plate by the buckling portion 2741 to enable the dust bag to be smoothly detached from the dust bag support.

[0059] In some embodiments, as shown in FIG. 8 to FIG. 13, the unlocking lugs 2833 also have a limiting function, which cooperate with a limiting component 2823 on the clamping plate 282 to prevent the sliding plate 283 from detaching from the clamping plate 282.

[0060] In some embodiments, the dust bag support 270 is provided with an elastic component, such as a spring, connected to the sliding baffle 273 and configured to enable the sliding baffle 273 to tend to be in the first position. When the sliding baffle 273 is not subjected to external force, under the action of the elastic component, the sliding baffle 273 is in the first position, so that the sliding baffle 273 covers the dust outlet port 272.

[0061] A process of mounting and detaching the dust bag 280 and the dust bag support 270 will be described below in detail. When the dust bag support 270 is not mounted with the dust bag 280, the sliding baffle 273 on the dust bag support 270 is in the first position and covers the dust outlet port 272, and the sliding plate 283 on the dust bag 280 is in the third position and covers the clamping plate opening 282, which is the state shown in FIG. 10. During a process of mounting the dust bag 280 into the dust bag support 270, the clamping plate 282 and the sliding plate 283 are inserted into the chute 274 along the extension direction X of the chute 274. When a user

holds the handle portion 2832 of the sliding plate 283 to push the dust bag 280 into the chute 274, the sliding plate 283 gradually moves from the third position to the fourth position relative to the clamping plate 282, so that the sliding plate opening 2831 in the sliding plate 283 is aligned with the clamping plate opening 2821 in the clamping plate 282, and at the same time, the clamping plate 282 and the sliding plate 283 push against the sliding baffle 273 to move from the first position to the second position, so that the sliding baffle 273 exposes the dust outlet port 272. When the clamping plate 282 slides to the buckling position along the extension direction X of the chute 274, the clamping plate opening 2821 is docked with the dust outlet port 272, and the buckling portion 2741 is engaged with the matching clamping slot 2822, so that the dust bag 280 is fixed on the dust bag support 270.

[0062] During a process of detaching the dust bag 280 from the dust bag support 270, the operator holds the handle portion 2832 of the sliding plate 283 to gradually pull the sliding plate 283 away from the chute 274 of the dust bag support 270. During this process, the sliding plate 283 gradually moves from the fourth position to the third position relative to the clamping plate 282 to enable the sliding plate 283 to cover the clamping plate opening 2821, and the unlocking lugs 2833 on the sliding plate 283 press the buckling portion 2741 to enable the buckling portion 2741 to be detached from the clamping slot 2822. At the same time, due to the interaction between the unlocking lugs 2833 and the limiting component 2823 on the clamping plate 282, the handle portion 2832 of the sliding plate 283 continues to be pulled to pull the sliding plate 283 and the clamping plate 282 out of the chute 274 of the dust bag support 270, the dust bag 280 is detached from the dust bag support 270, and the sliding baffle 273 returns to the first position under the action of the elastic component, so that the sliding baffle 273 covers the dust outlet port 272.

[0063] FIG. 14 is a schematic structural diagram of a pull-up cover provided by some embodiments of the present disclosure. FIG. 15 is a schematic assembling diagram of a pull-up cover and a dust barrel support provided by some examples of the present disclosure. As shown in FIG. 1 to FIG. 15, in some embodiments, the dust collecting pile 200 further includes a dust barrel support 240 and a pull-up cover 290.

[0064] As discussed above, the dust barrel support 240 is configured to divide the dust collecting pile body 220 into the fan cavity 221 and the dust collecting bin 222. The pull-up cover 290 is configured to be snapped to the dust barrel support 240 to form the dust collecting bin 222. In some embodiments, as shown in FIG. 14, a sealing strip is provided on an inner wall of the pull-up cover 290, which is configured to form a closed dust collecting bin 222 when the pull-up cover 290 is snapped to the dust barrel support 240.

[0065] The dust collecting pile further includes an in-position detection device disposed on at least one of the dust barrel support 240 and the pull-up cover 290 and configured to detect a snapped state of the pull-up cover 290 and the dust barrel support 240. The in-position detection device may be a Hall detection device, a photoelectric detection device, or the like, and is used to send an alarm when detecting that the pull-up cover 290 and the dust barrel support 240 are not completely snapped in place, thereby alerting a user that the pull-up cover 290 is not snapped well with the dust barrel support 240 and there may be a risk of air leakage. The in-position detection device is, for example, the Hall detection device, including a Hall detector and a magnet, which are respectively disposed on the pull-up cover 290 and the dust barrel support 240. When the pull-up cover 290 is completely snapped to the dust barrel support 240, an electrical signal output by the Hall detector, for example, a voltage value exceeding or being equal to a predetermined threshold, indicates that the pull-up cover 290 is well snapped to the dust barrel support 240. When the pull-up cover 290 and the dust barrel support 240 are not snapped in place, the electrical signal output by the Hall detector, for example, the voltage value being less than the predetermined threshold, indicates that the pull-up cover 290 is not snapped well to the dust barrel support 240.

[0066] In some embodiments, the in-position detection device is disposed on at least one of the dust bag support 270 and the pull-up cover 290 to detect whether the pull-up cover 290 is mounted in place, which will not be repeated here.

[0067] In some embodiments, a bottom wall of the dust barrel support 240 is provided with a penetrating hole, that is, the second opening 242 in the foregoing embodiments, which is configured to communicate the fan cavity with the dust collecting bin. The dust collecting pile further includes a protective cover 260 configured to be detachably buckled at the penetrating hole, thereby preventing garbage in the dust collecting bin from entering the fan cavity.

[0068] In some embodiments, as shown in FIG. 7, as discussed above, the closed dust collecting bin 222 is formed when the pull-up cover 290 is snapped to the dust barrel support 240. The bottom wall of the dust barrel support 240 may be used as a bottom wall of the dust collecting bin 222, and a sidewall of the dust barrel support 240 may be used as a part of the sidewall of the dust collecting bin 222. The dust collecting pile 200 further includes support ribs 2221. As shown in FIG. 7, the support ribs 2221 may be disposed on an inner wall of the dust collecting bin 222, for example, on the bottom wall and/or the sidewall of the dust collecting bin 222. With such an arrangement, the dust bag can be prevented from being sticked to the inner wall of the dust collecting bin to cause a poor airflow.

[0069] In some embodiments, as shown in FIG. 7, the dust collecting pile 200 further includes a pressure relief valve 2222. The pressure relief valve 2222 is disposed in the dust collecting bin 222, and is configured to adjust air

pressure in the dust collecting bin to avoid too low air pressure in the dust collecting bin. When the dust collecting pile 200 is collecting dust, the fan drives the airflow to flow, so that a negative pressure is formed in the dust collecting bin. If the air pressure in the dust collecting bin is lower than a preset threshold, the pressure relief valve is opened to communicate the dust collecting bin with external environment, to ensure that the dust collecting pile 200 is in a normal operating state.

[0070] In some embodiments, when the dust bag 280 is mounted on the dust bag support 270, at this time, when the sliding baffle 273 is in the second position, the fan 231 may be normally started, and the entire system operates normally. When the dust bag 280 is full to a certain extent, the airflow in the entire system is not smooth, and the air pressure in the dust collecting bin 222 will be lower and lower. When it is low enough, the pressure relief valve will open to balance unbalanced air pressure. In some embodiments, in response to the opening of the pressure relief valve, the fan stops operating, which can protect the fan and remind the user to clean the dust bag.

[0071] In some embodiments, when the dust bag 280 is not mounted on the dust bag support 270, the sliding baffle is in the first position and blocks the communication between the dust collecting channel and the dust collecting bin 222. In this case, it may be controlled that the fan cannot be started, so as to prevent the fan from operating without mounting the dust bag. In other embodiments, when the dust bag 280 is not mounted on the dust bag support 270, the fan may also be started normally. At this time, since the dust collecting bin 222 and the dust collecting channel are isolated by the sliding baffle 273, the suction force generated by the fan only acts in the dust collecting bin 222, which will cause the pressure in the dust collecting bin 222 to drop to a startup threshold of the pressure relief valve. When the fan continues to operate, the pressure relief valve starts pressure relief to balance the pressure in the dust collecting bin 222.

[0072] In some embodiments, the pressure relief valve may be replaced by a pressure sensor. When detecting that the pressure is abnormal, the fan may be controlled to stop operating or a pressure relief operation of the dust collecting bin 222 may be started.

[0073] In some embodiments, a dust collecting time of the fan may be fixed or may be determined according to control conditions. When the automatic cleaning apparatus automatically returns to the pile for collecting dust, operating time of the fan may be, for example, set to 10-15 seconds, and when the user manually presses a dust collecting button on the pile or manually starts dust collection through an APP, the operating time may be, for example, 20-30 seconds. In some embodiments, when the apparatus returns to the pile to automatically collect dust, the dust collecting time may be determined based on the operating time of the apparatus, or the dust collecting time may be determined based on, for example, a dust sensor in the dust box of the apparatus.

[0074] In some embodiments, in response to the in-position detection device detecting that the pull-up cover 290 is not well snapped or not mounted to the dust barrel support 240, the fan may be controlled to be in a non-operating state to avoiding starting the fan in this case.

[0075] Some embodiments of the present disclosure provide an automatic cleaning system, including: the dust collecting pile 200 in the foregoing embodiments and the automatic cleaning apparatus 100 in the foregoing embodiments. The automatic cleaning apparatus includes, for example, a dust box and a dust outlet. When the automatic cleaning apparatus 100 completes washing and cleaning operations and returns to the dust collecting pile 200 to perform the dust collecting operation, the dust outlet of the automatic cleaning apparatus 100 is docked with the dust inlet 211 on the top surface of the dust collecting pile base 210, the fan 231 in the dust collecting pile is in an operating state, garbage in the dust box of the automatic cleaning apparatus 100 is collected into the dust collecting bag of the dust collecting bin 222 or a garbage separation mechanism through the dust inlet 211. The garbage separation mechanism may be, for example, a cyclone garbage classifier.

[0076] Finally, it should be noted that various embodiments in the description are described in a progressive manner, each embodiment focuses on the differences from other embodiments, and the same or similar parts among the various embodiments may be referred to one another. As for the system or device disclosed in the embodiments, since it corresponds to the method disclosed in the embodiments, the description is relatively simple, and the relevant parts may refer to the description of the method part.

[0077] The above embodiments are only used to illustrate the technical solutions of the present disclosure, rather than to limit them. Although the present disclosure has been described in detail with reference to the foregoing embodiments, those skilled in the art should understand that, they may still modify the technical solutions described in the foregoing embodiments or perform equivalent replacements for some of the technical features; and these modifications or replacements do not make the essence of the corresponding technical solutions deviate from the spirit and scope of the technical solutions of the various embodiments of the present disclosure.

Claims

1. A dust collecting pile, **characterized by** comprising:

   a dust collecting pile base provided with a dust inlet in a top surface of the dust collecting pile base;

   a dust collecting pile body disposed on the dust collecting pile base, and comprising a fan cavity and a dust collecting bin;

   a fan disposed in the fan cavity and configured to

form a negative pressure in the dust collecting bin; and

a dust bag support disposed in the dust collecting bin, wherein a dust outlet port is provided in a sidewall of the dust bag support, and the dust outlet port is in connection with the dust inlet through a dust collecting channel,

wherein the dust bag support further comprises a sliding baffle slidably provided on the sidewall and configured to be switchable between a first position and a second position, wherein in response to the sliding baffle being in the first position, the sliding baffle covers the dust outlet port, and in response to the sliding baffle being in the second position, the sliding baffle exposes the dust outlet port.

2. The dust collecting pile according to claim 1, wherein the dust collecting pile further comprises a dust bag comprising:

a dust bag body;

a clamping plate fixedly connected to the dust bag body, wherein the clamping plate is provided with a clamping plate opening serving as an entrance of the dust bag body; and

a sliding plate slidably connected to the clamping plate and configured to be switchable between a third position and a fourth position, wherein in response to the sliding plate being in the third position, the sliding plate covers the clamping plate opening, and in response to the sliding plate being in the fourth position, the sliding plate exposes the clamping plate opening,

wherein the dust bag is configured to be detachably mounted on the dust bag support, and in response to the dust bag being mounted on the dust bag support, the sliding baffle is in the second position, the sliding plate is in the fourth position, and the clamping plate opening is docked with the dust outlet port.

3. The dust collecting pile according to claim 2, wherein the dust bag support comprises a chute, at least a part of the sliding baffle is located in the chute, so that the sliding baffle slides along an extension direction of the chute, and

the clamping plate and the sliding plate are configured to be insertable into the chute to slide in the extension direction of the chute, so that the dust bag is mounted to the dust bag support.

4. The dust collecting pile according to claim 3, wherein a buckling portion is provided in the chute, the clamping plate is provided with a clamping slot matching the buckling portion, and in response to the clamping plate sliding to a buckling position along the extension direction of the chute, the clamping plate opening is docked with the dust outlet port, and the buckling portion is engaged with the matching clamping slot, so that the dust bag is fixed on the dust bag support.

5. The dust collecting pile according to claim 4, wherein the sliding plate is provided with an unlocking lug configured to press the buckling portion in a process of pulling the sliding plate out of the clamping slot, so that the buckling portion is detached from the clamping slot.

6. The dust collecting pile according to any one of claims 1 to 5, wherein the dust bag support is provided with an elastic component, and the elastic component is connected to the sliding baffle and configured to enable the sliding baffle to tend to be in the first position.

7. The dust collecting pile according to any one of claims 1 to 5, wherein in response to the sliding baffle being in the first position, the fan is in a non-operating state; or

an operation state of the fan is unrelated to a position of the sliding baffle.

8. The dust collecting pile according to any one of claims 1 to 5, wherein the dust collecting pile further comprises:

a pressure relief valve disposed in the dust collecting bin and configured to adjust air pressure in the dust collecting bin.

9. The dust collecting pile according to claim 8, wherein the fan is configured to stop operating in response to opening of the pressure relief valve.

10. The dust collecting pile according to any one of claims 1 to 5, wherein the dust collecting pile further comprises:

a dust barrel support configured to divide the dust collecting pile body into the fan cavity and the dust collecting bin; and

a pull-up cover configured to be snapped to the dust barrel support to form the dust collecting bin.

11. The dust collecting pile according to claim 10, wherein the dust collecting pile further comprises:

an in-position detection device disposed on at least one of the dust barrel support or the pull-up cover and configured to detect a snapped state between the pull-up cover and the dust barrel support.

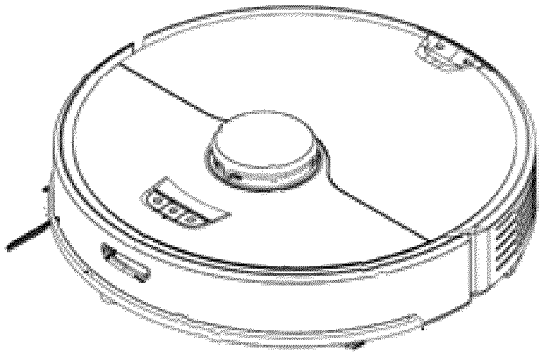
12. The dust collecting pile according to claim 10, wherein a penetrating hole is provided in a bottom wall of

the dust barrel support, the penetrating hole is configured to connect the fan cavity with the dust collecting bin, and the dust collecting pile further comprises a protective cover configured to be detachably buckled at the penetrating hole.

13. The dust collecting pile according to any one of claims 1 to 5, wherein the dust collecting pile further comprises:
a support rib disposed on an inner wall of the dust collecting bin.

14. An automatic cleaning system, **characterized by** comprising:

the dust collecting pile according to any one of claims 1 to 13; and
an automatic cleaning apparatus, comprising a dust box and a dust outlet,
wherein in response to the dust outlet being docked with the dust inlet and the fan being in an operating state, garbage in the dust box of the automatic cleaning apparatus is collected into the dust collecting bin through the dust inlet.



100

FIG. 1

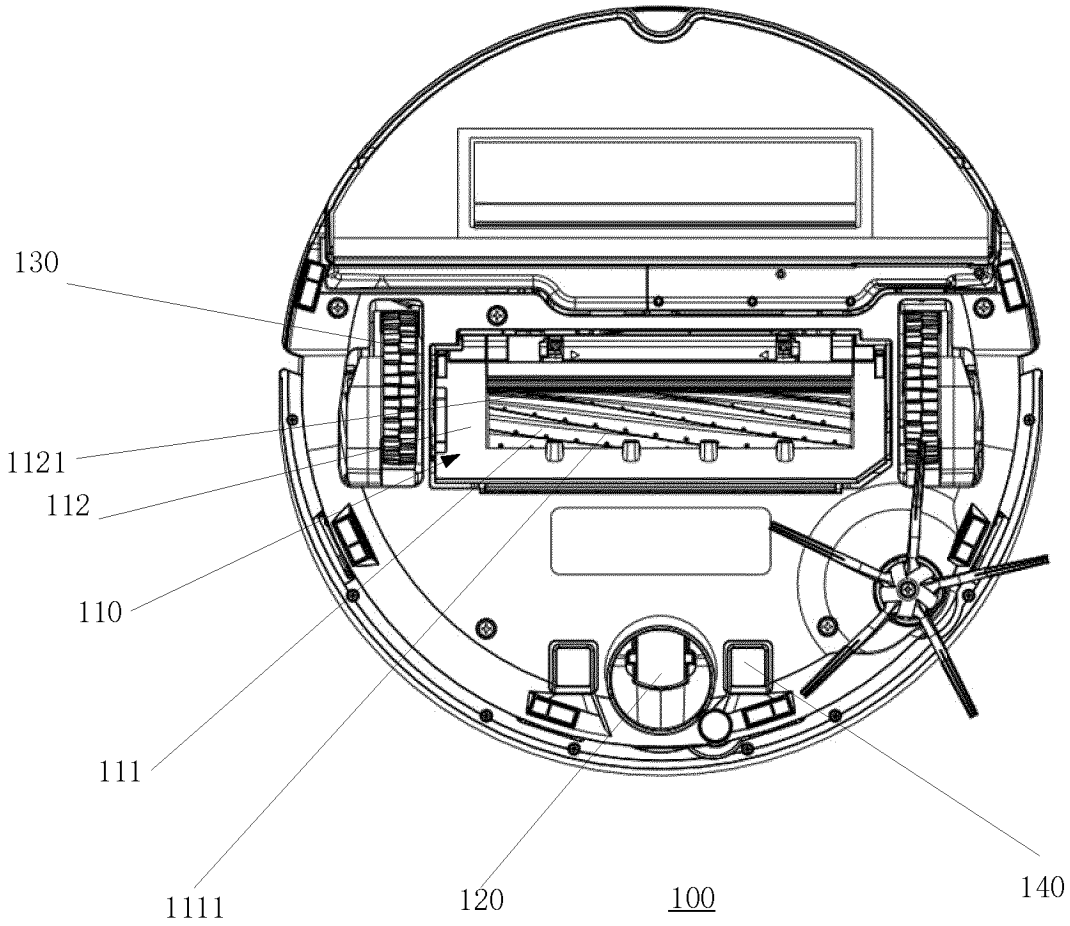
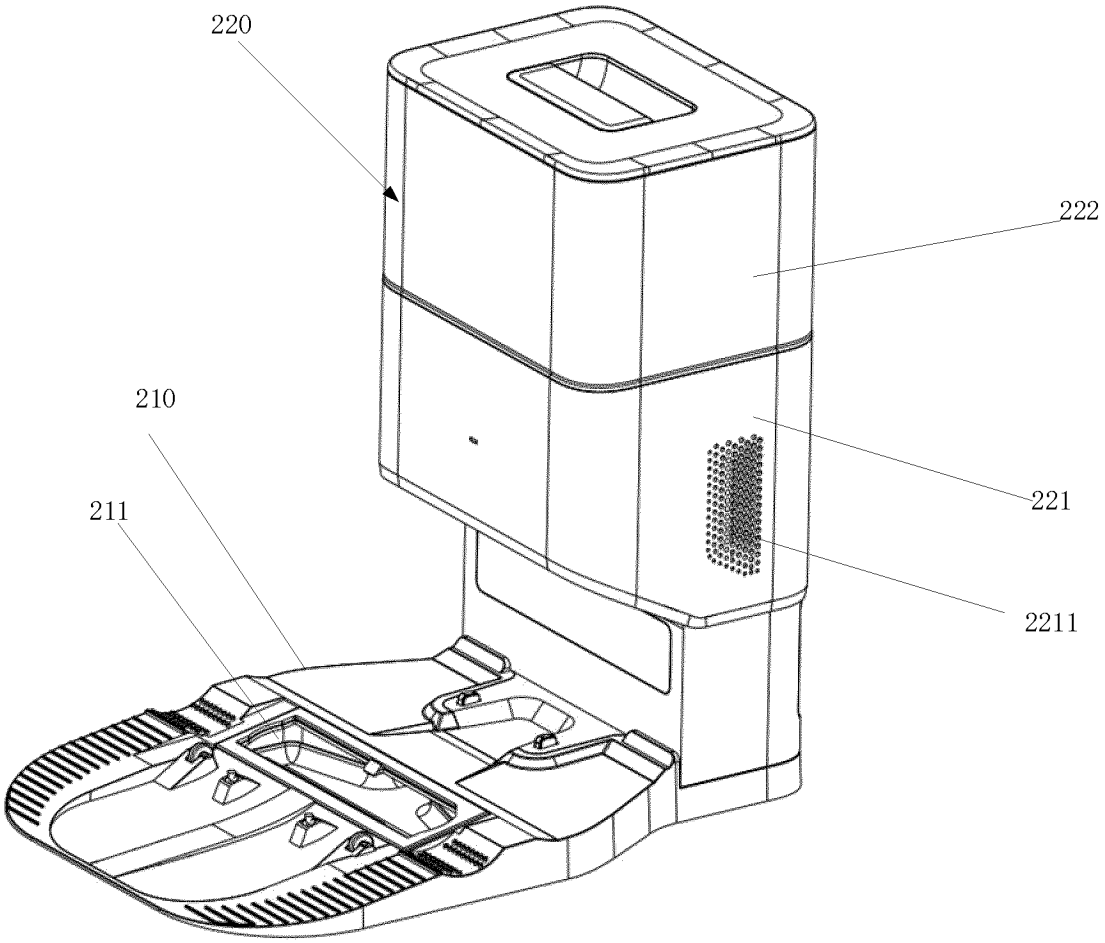


FIG. 2



200

FIG. 3

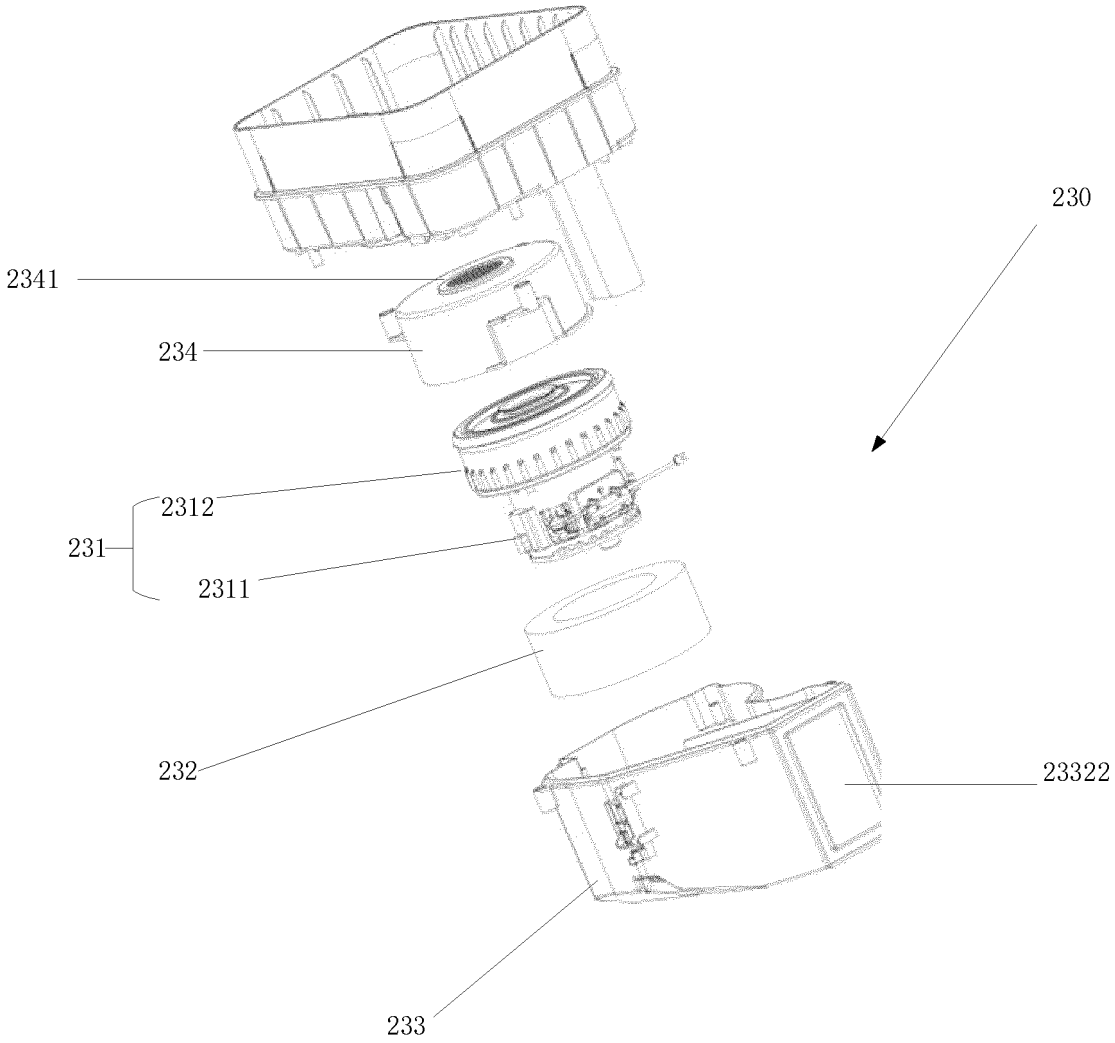


FIG. 4

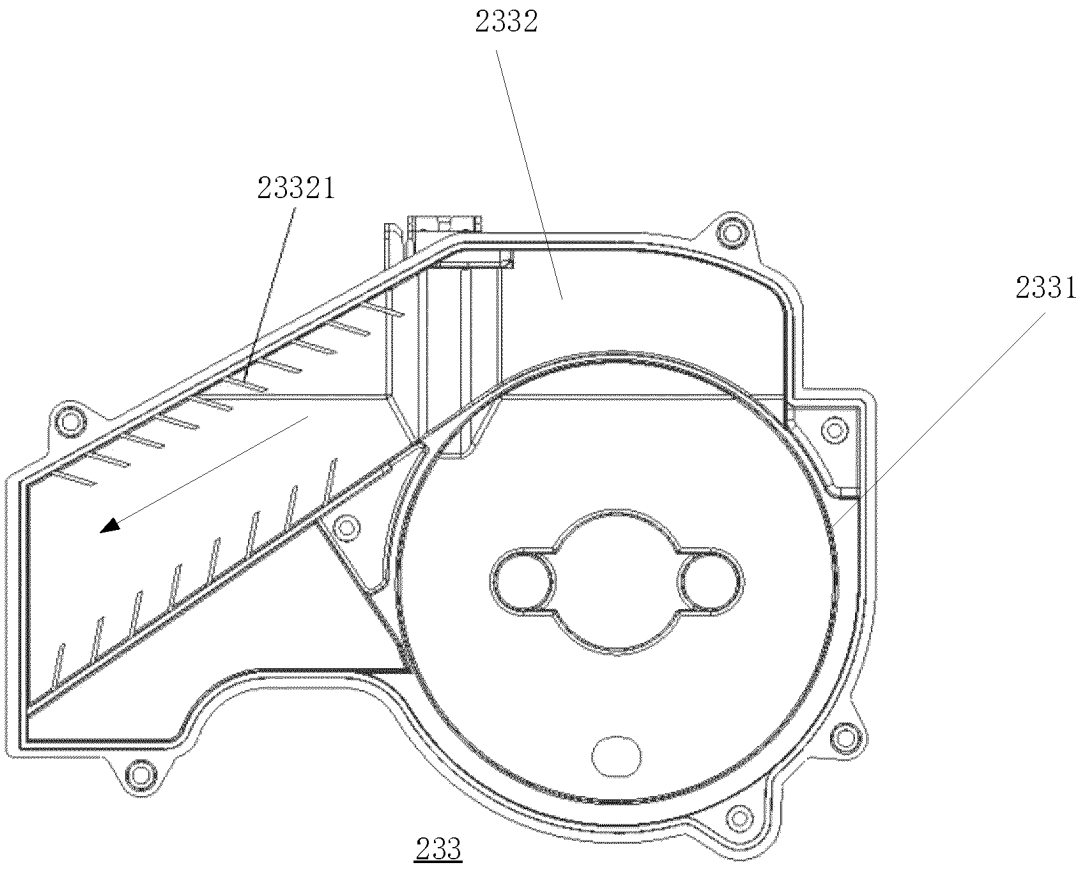


FIG. 5

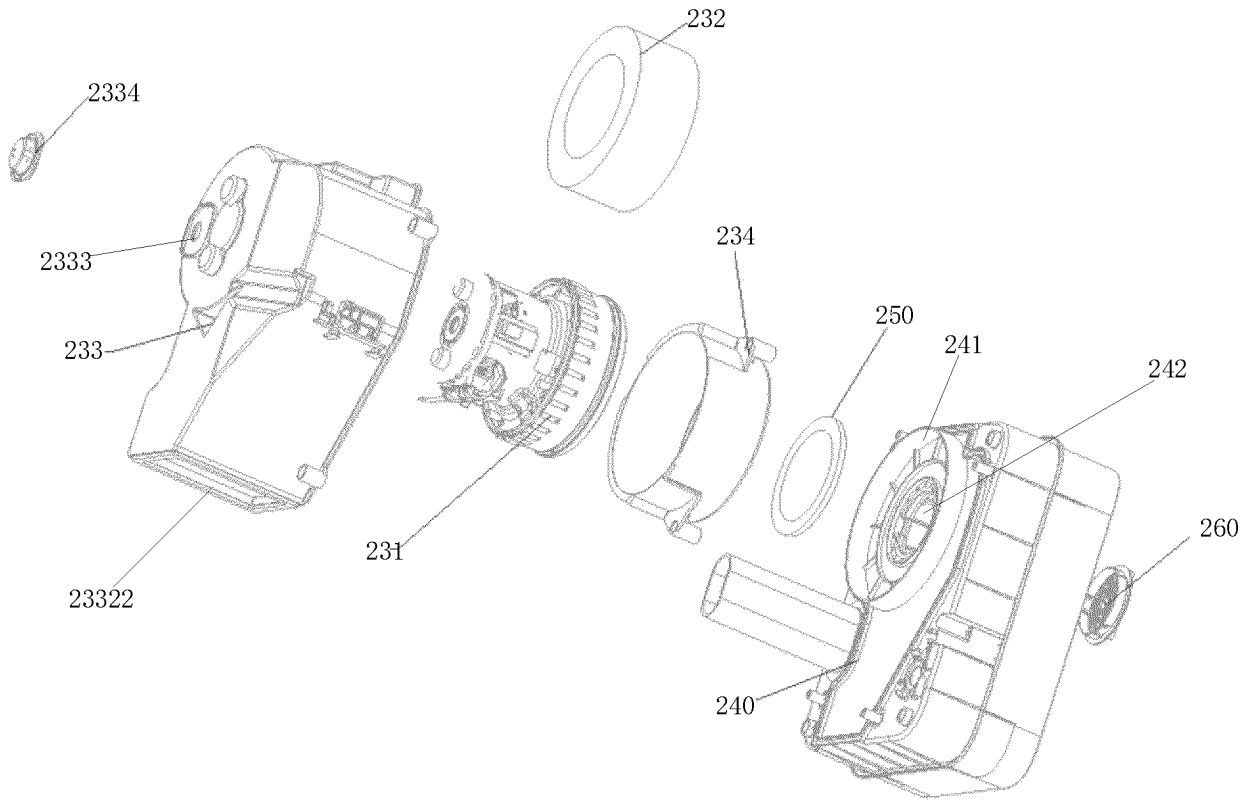


FIG. 6

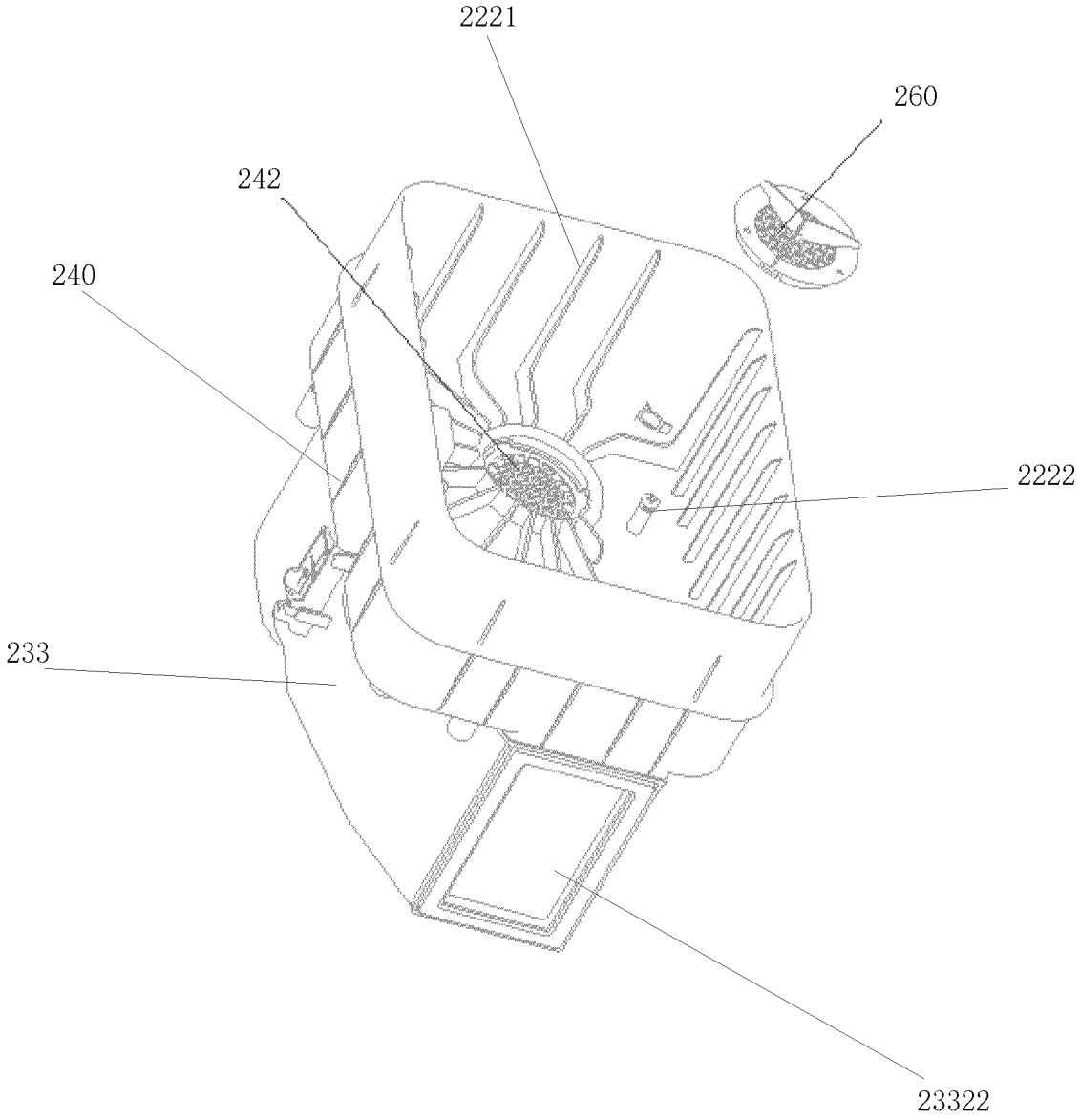
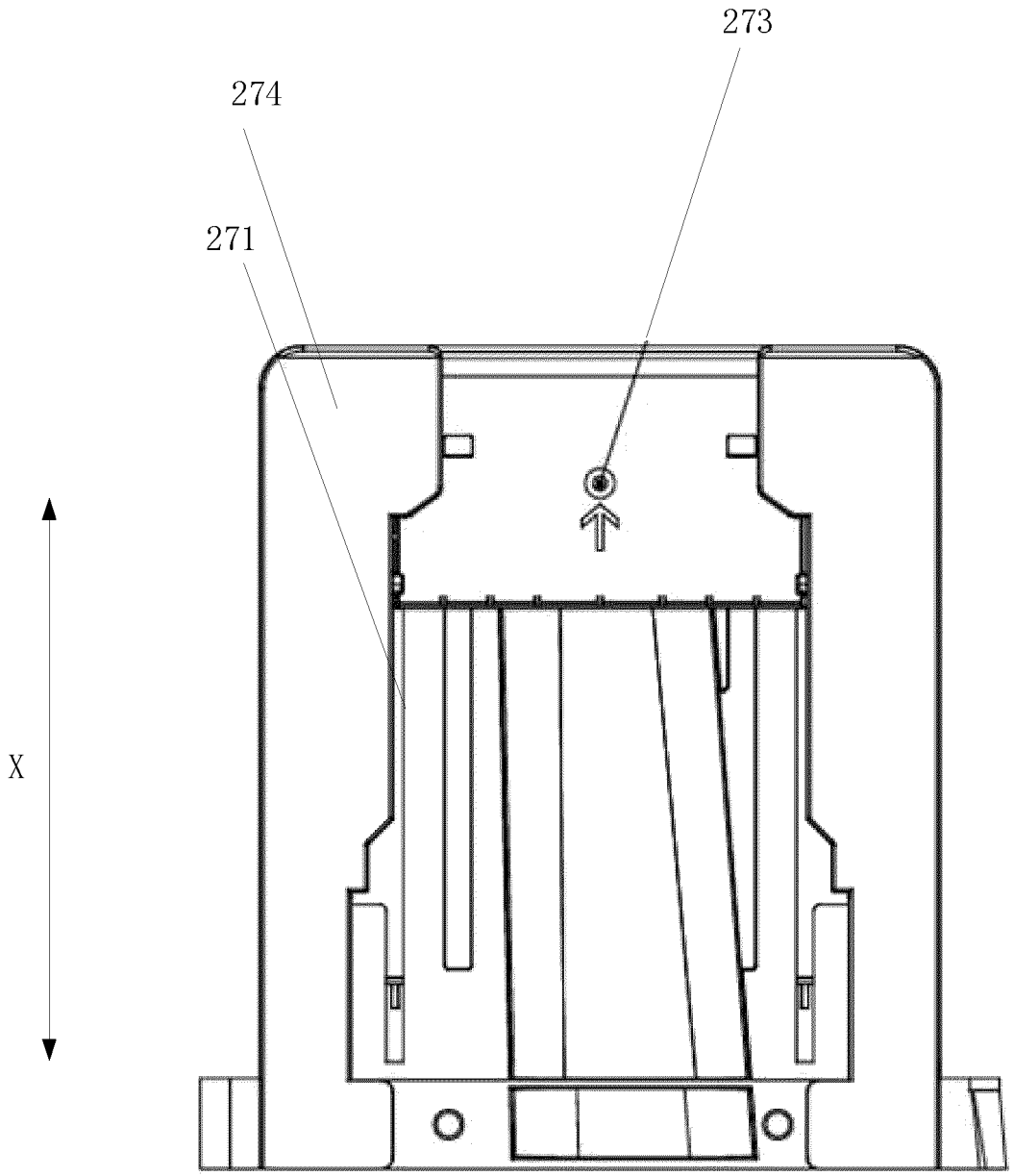
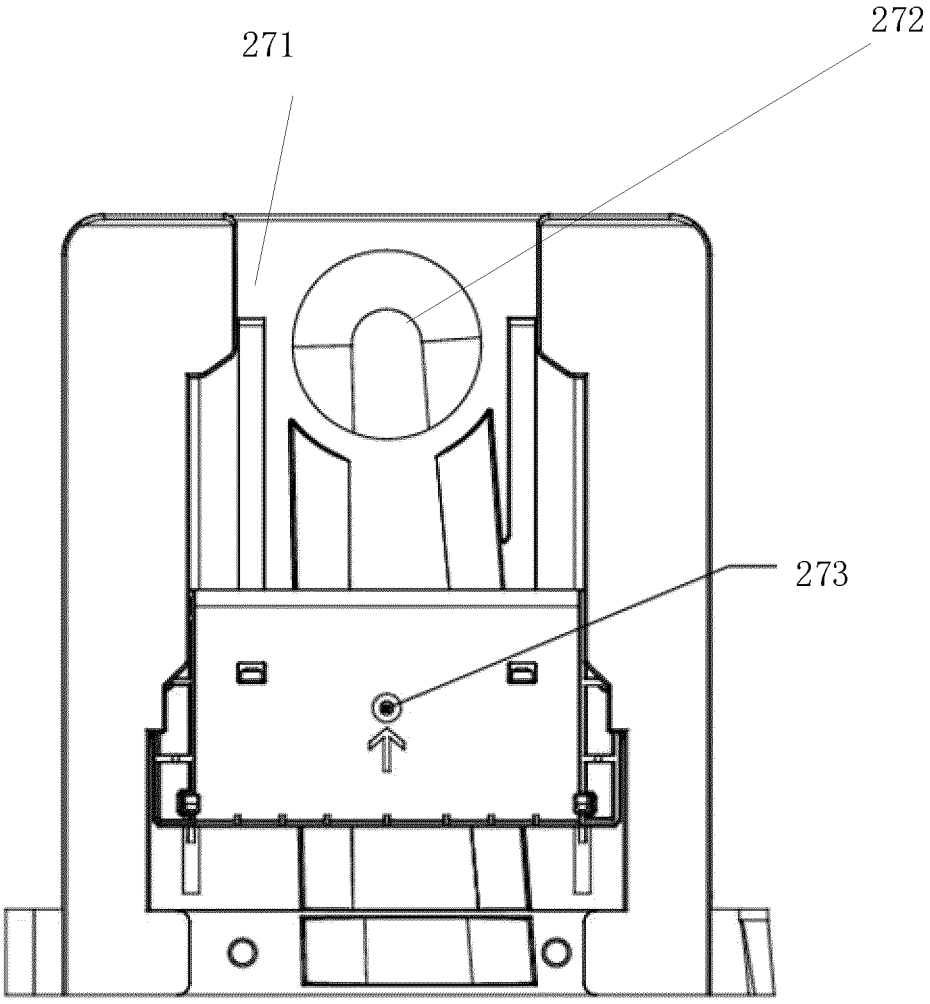


FIG. 7



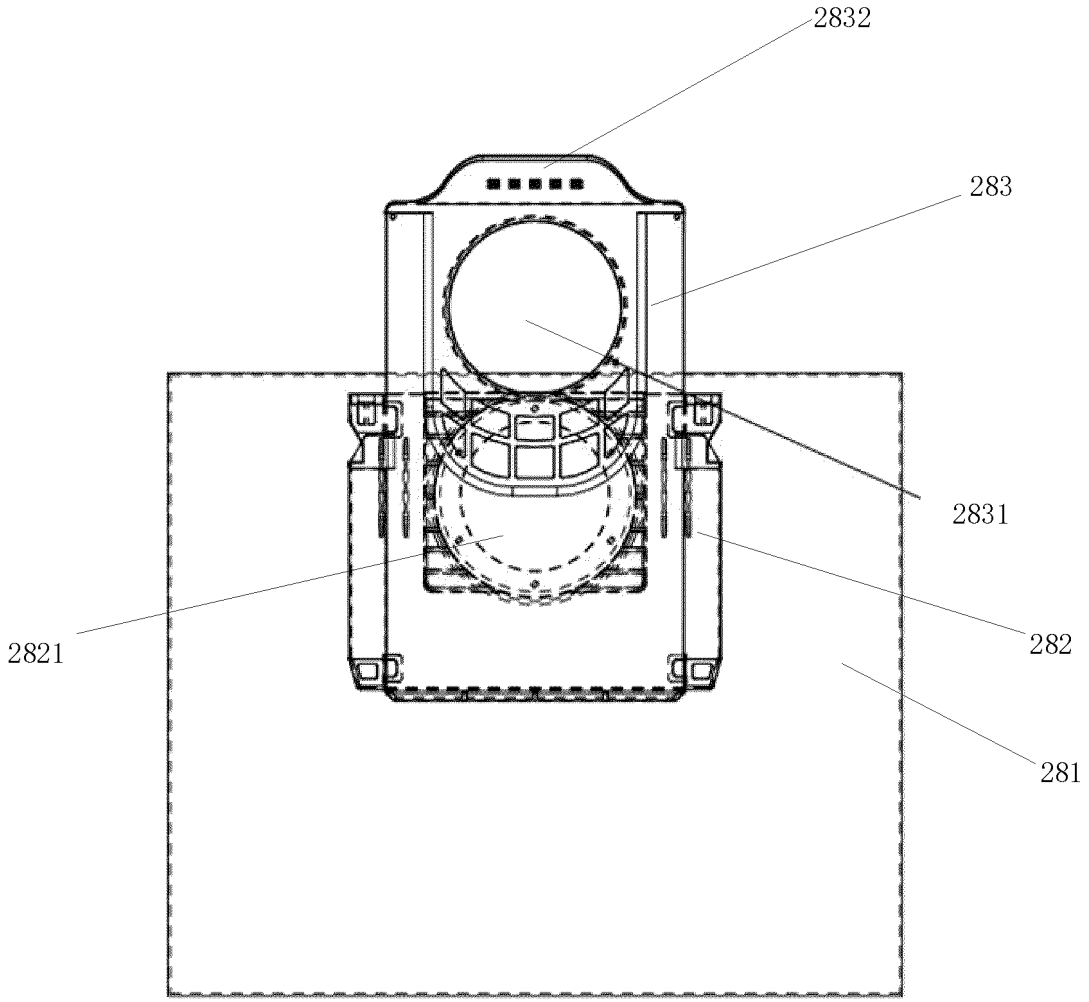
270

FIG. 8



270

FIG. 9



280

FIG. 10

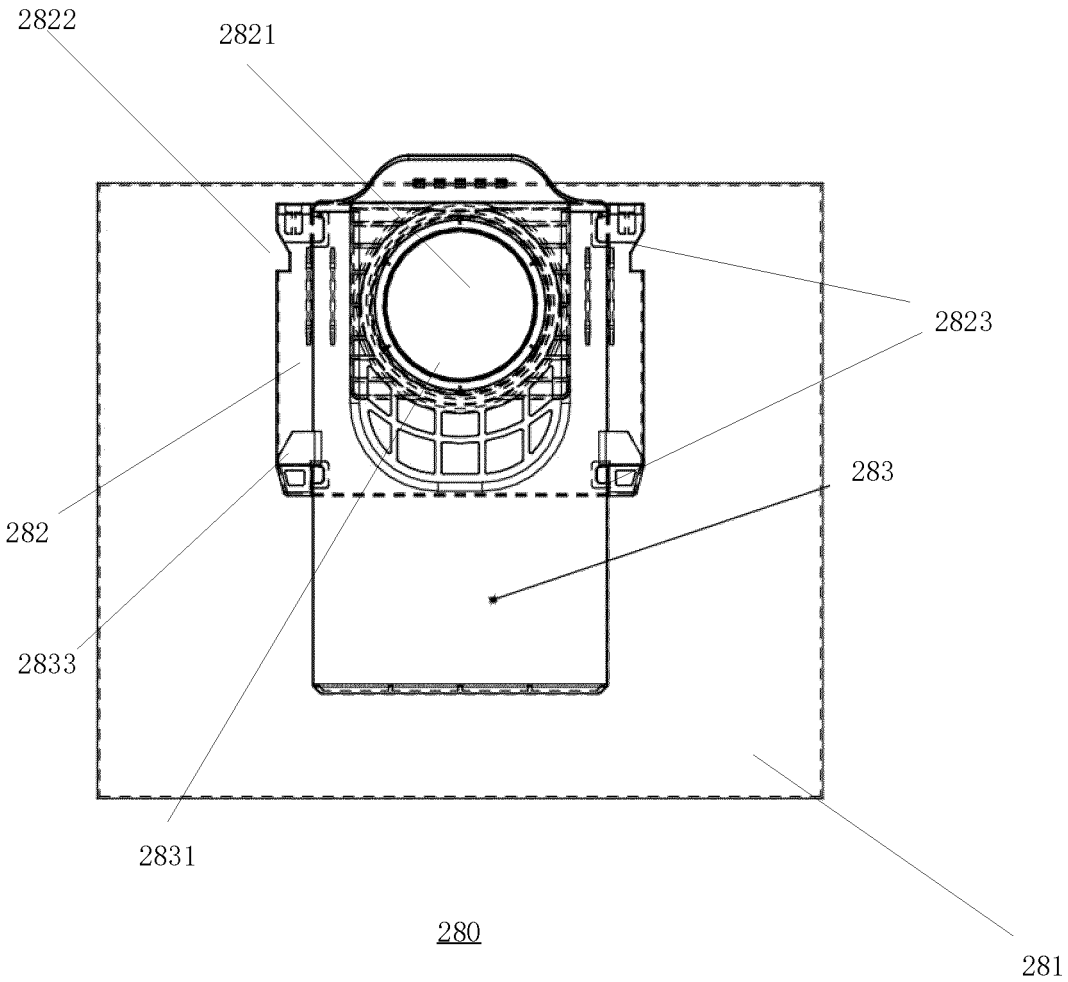


FIG. 11

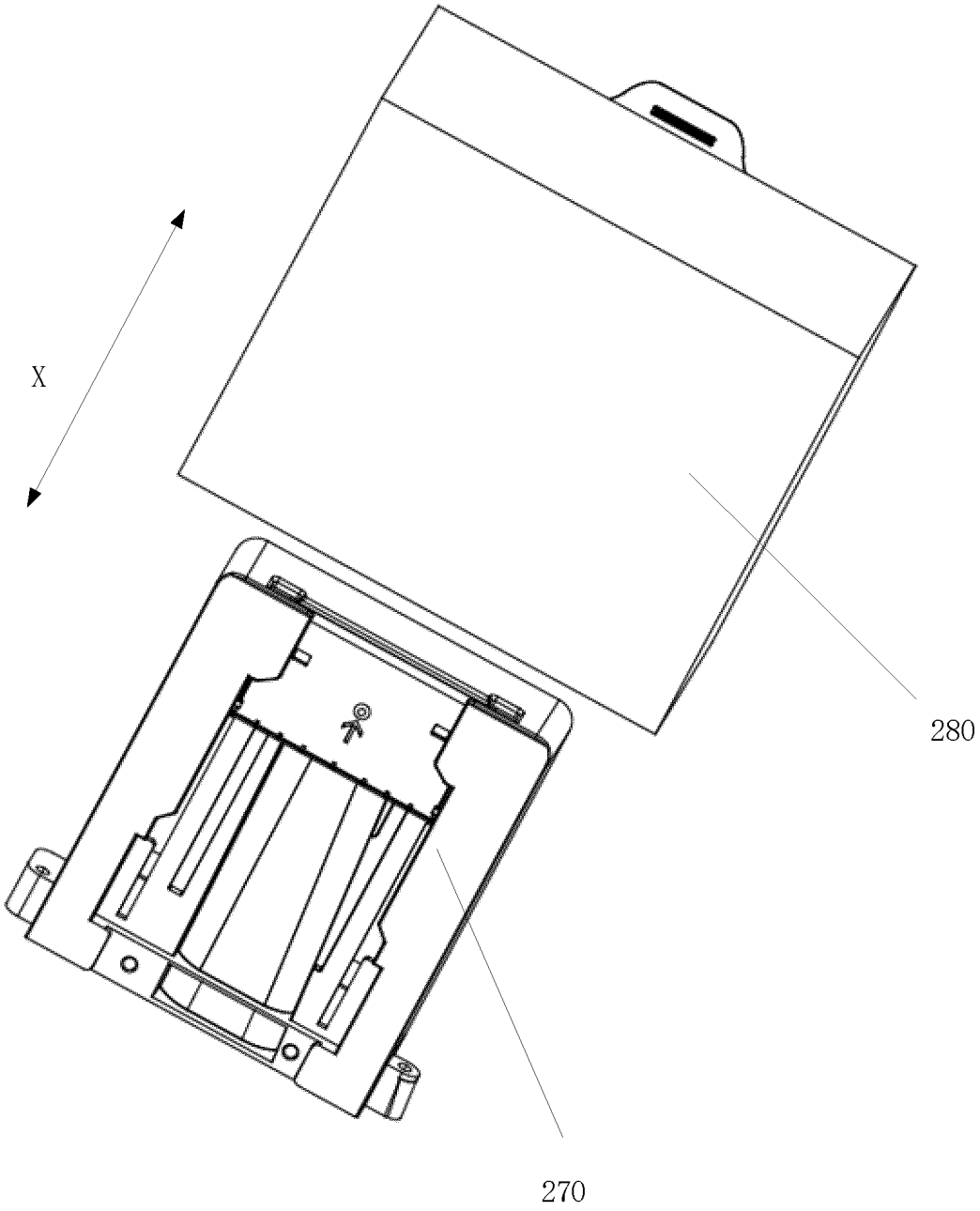


FIG. 12

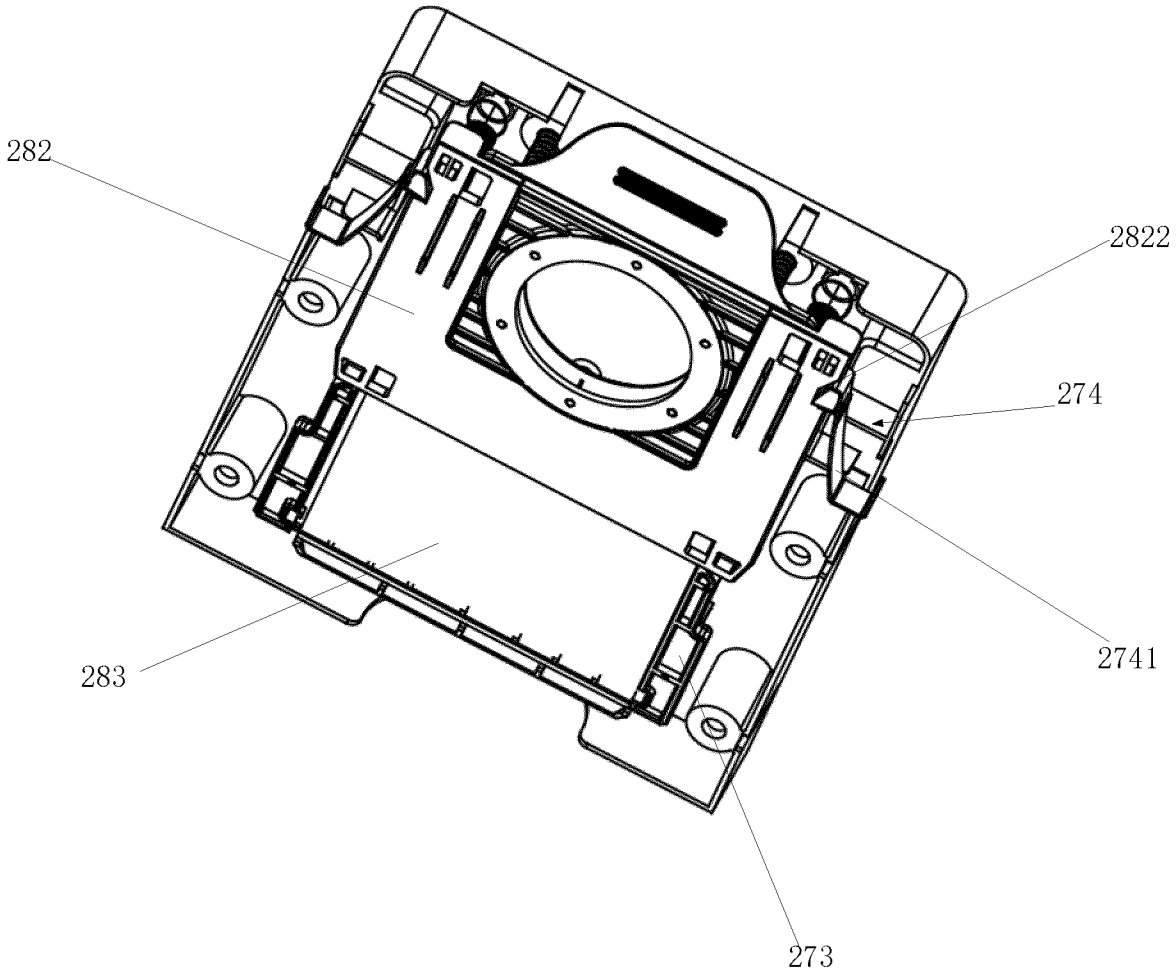
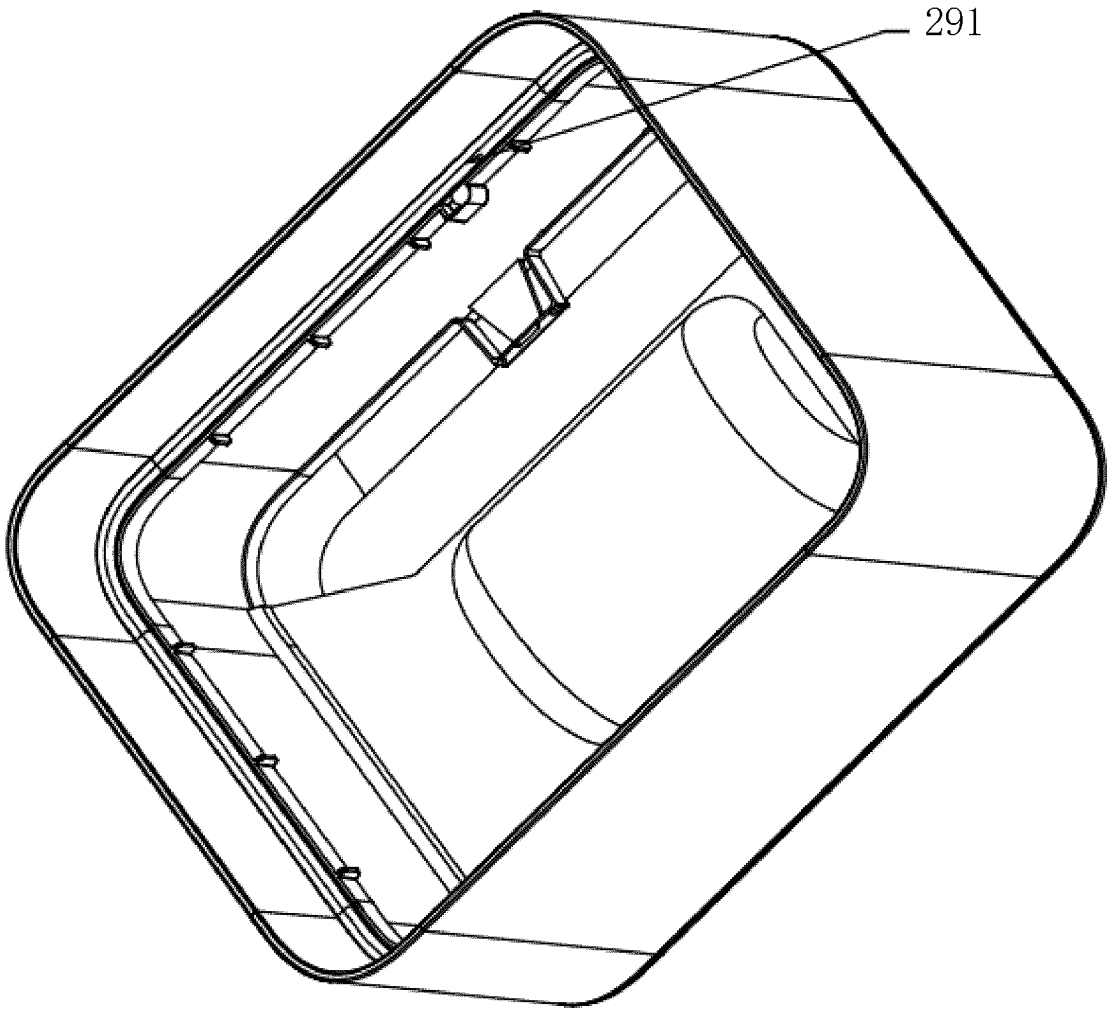


FIG. 13



290

FIG. 14

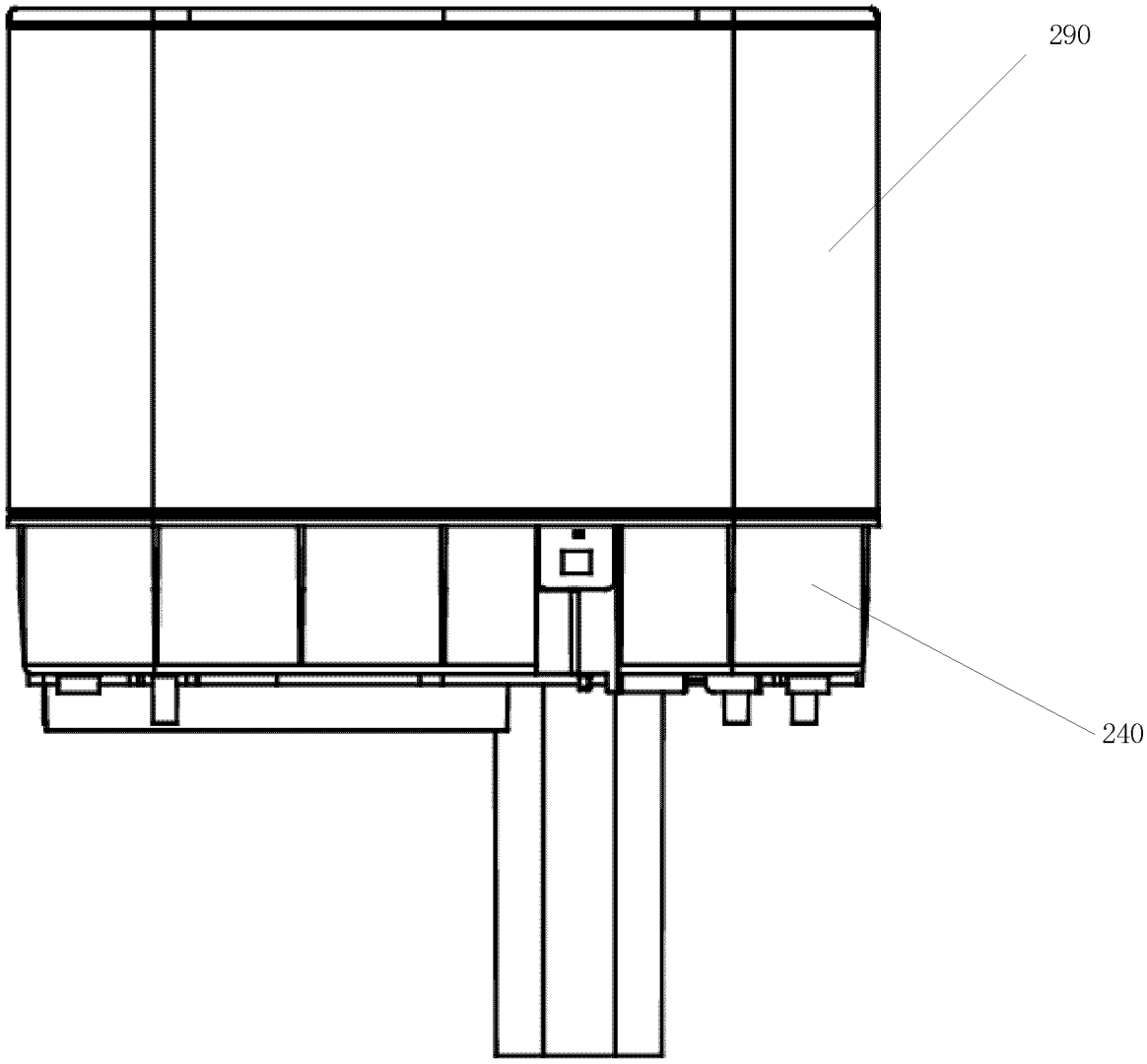


FIG. 15

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/096032

A. CLASSIFICATION OF SUBJECT MATTER

A47L 11/04(2006.01)i

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A47L

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

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

CNTXT, DWPI, ENTXT, CNKI: 仓体, 集尘, 收尘, 收集, 垃圾, 尘盒, 集尘盒, 回收, 排空, 站, 桩, 基站, 基地, 尘袋, 支架, 遮挡, 遮蔽, 阻挡, 滑动, 移除, dust, clean+, robot, gabage, recycl+, base station, evacuation, block+, slid+, shied+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	CN 112515547 A (SHENZHEN SILVER STAR INTELLIGENT TECHNOLOGY CO., LTD.) 19 March 2021 (2021-03-19) description, paragraphs 0055-0130, and figures 1-17	1-14
Y	CN 212281203 U (SHARKNINJA (CHINA) TECHNOLOGY CO., LTD.) 05 January 2021 (2021-01-05) description, paragraphs 0035-0046, and figures 1-10	1-14
A	CN 202751328 U (ECOVACS ROBOT TECHNOLOGY (SUZHOU) CO., LTD.) 27 February 2013 (2013-02-27) entire document	1-14
A	CN 215078072 U (GUANGZHOU COAYU ROBOT CO., LTD.) 10 December 2021 (2021-12-10) entire document	1-14
A	CN 212939596 U (SHENZHEN 3IROBOTIX CO., LTD.) 13 April 2021 (2021-04-13) entire document	1-14
A	JP 2020142066 A (VORWERK AND CO. INTERHOLDING GMBH) 10 September 2020 (2020-09-10) entire document	1-14

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

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13 September 2022	**22 September 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/096032

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