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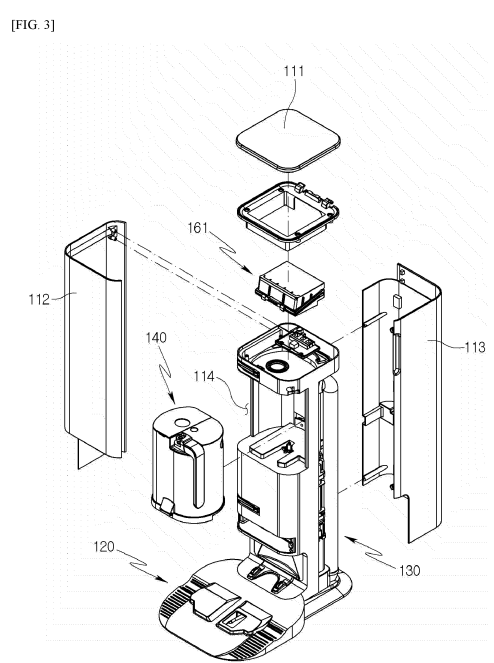
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(54) **VACUUM CLEANER STATION**

(57) The present disclosure relates to a cleaner station, in which a dust collecting part includes an air discharge port formed to allow air to be discharged, a mesh configured to cover the air discharge port, and a compression plate rotatably disposed in an internal space of a dust collecting body and configured to clean the mesh while rotating, such that a rotary plate may rotate in the dust collecting body and move dust to a space, which is not an air flow path, to ensure a smooth flow of air, the rotary plate may compress dust to additionally capture the dust, and the rotary plate may wipe away dust attached to the mesh to ensure a smooth flow of air.



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Description

[Technical Field]

[0001] The present disclosure relates to a cleaner station, and more particularly, to a cleaner station configured to capture dust in a cleaner and equipped with a bagless type dust collecting part.

[Background Art]

[0002] In general, a cleaner refers to an electrical appliance that draws in small garbage or dust by sucking air using electricity and fills a dust bin provided in a product with the garbage or dust. Such a cleaner is generally called a vacuum cleaner.

[0003] The cleaners may be classified into a manual cleaner which is moved directly by a user to perform a cleaning operation, and an automatic cleaner which performs a cleaning operation while autonomously traveling. Depending on the shape of the cleaner, the manual cleaners may be classified into a canister cleaner, an upright cleaner, a handy cleaner, a stick cleaner, a robot cleaner, and the like.

[0004] The canister cleaners were widely used in the past as household cleaners. However, recently, there is an increasing tendency to use the handy cleaner and the stick cleaner in which a dust bin and a cleaner main body are integrally provided to improve convenience of use.

[0005] In the case of the canister cleaner, a main body and a suction port are connected by a rubber hose or pipe, and in some instances, the canister cleaner may be used in a state in which a brush is fitted into the suction port.

[0006] The handy cleaner (hand vacuum cleaner) has maximized portability and is light in weight. However, because the handy cleaner has a short length, there may be a limitation to a cleaning region. Therefore, the handy cleaner is used to clean a local place such as a desk, a sofa, or an interior of a vehicle.

[0007] A user may use the stick cleaner while standing and thus may perform a cleaning operation without bending his/her waist. Therefore, the stick cleaner is advantageous for the user to clean a wide region while moving in the region. The handy cleaner may be used to clean a narrow space, whereas the stick cleaner may be used to clean a wide space and also used to a high place that the user's hand cannot reach. Recently, modularized stick cleaners are provided, such that types of cleaners are actively changed and used to clean various places.

[0008] In addition, recently, a robot cleaner, which autonomously performs a cleaning operation without a user's manipulation, is used. The robot cleaner automatically cleans a zone to be cleaned by sucking foreign substances such as dust from the floor while autonomously traveling in the zone to be cleaned.

[0009] In particular, because the robot cleaner is generally designed to have a small size to perform a cleaning

operation while autonomously traveling, a capacity of a dust bin for storing the collected dust, which inconveniences the user because the user needs to empty the dust bin frequently.

[0010] A cleaner station has been developed to cope with the inconvenience. The cleaner station refers to a device configured to accommodate the robot cleaner, which has completed the cleaning operation, and to suck the dust collected by the robot cleaner. In general, the cleaner station is equipped with a dust collecting part much larger in size than the dust bin of the robot cleaner. That is, the dust collected by the robot cleaner is continuously captured in the dust collecting part of the cleaner station, and the user empties the dust collecting part of the cleaner station. The configuration using the cleaning station has an advantage in that the number of times the user empties the dust bin rapidly decreases in comparison with a case in which the user frequently empties the dust bin of the robot cleaner.

[0011] Meanwhile, the dust collecting parts are broadly classified into a bag type dust collecting part and a bagless type dust collecting part. The bag type dust collecting part is equipped with a separate bag, the bag captures dust, and a user separates only the bag from the cleaner station and discards the bag. In contrast, the bagless type dust collecting part is not equipped with a separate bag, the dust collecting part captures dust, and a user separates the dust collecting part from the cleaner station and eliminates the dust. In this case, because the bag is a single-use consumable component and is generally made of vinyl materials, costs are required to purchase the bag every time, and the bag causes an environmental problem such as environmental pollution. Therefore, the bagless type dust collecting part is often installed in the cleaner station in order to solve the above-mentioned problems.

[0012] In general, a predetermined or larger amount of dust is collected in the cleaner, and the dust primarily collected by the cleaner is introduced into the cleaner station. For this reason, a large amount of dust may be introduced into the cleaner station at one time. In this case, in case that a large amount of dust is introduced into the bagless type dust collecting part at one time, there may occur a problem in that a flow path is instantaneously clogged, which degrades the dust capturing function of the cleaner station.

[0013] As Related Art 1, there is a discharge station configured to empty a dust bin of a robot cleaner. The station according to Related Art 1 includes a base configured to accommodate the robot cleaner equipped with the dust bin, and a canister in which a dust capturing part is disposed. The dust contained in air introduced into the station of Related Art 1 is primarily filtered out by a filter while moving radially inward and secondarily filtered out by a cyclone part.

[0014] However, in case that a large amount of dust is introduced into the station at one time from the cleaner as described above, there may occur a problem in that

clumps of dust are trapped at an inlet end of the dust capturing part disclosed in Related Art 1, and the clumps of dust clog a flow path.

[0015] As Related Art 2, there is a station configured to be docked with a cleaner and equipped with a detachable dust capturing bin. Related Art 2 provides a station housing, a bagless type dust capturing bin equipped with a cyclone part, and a detachable filter. According to Related Art 2, the dust capturing bin may be attached to or detached from the station.

[0016] However, Related Art 2 merely provides several embodiments related to the methods of docking the cleaner to the station or the methods of attaching or detaching the dust capturing bin but does not show a solution for solving the problem in that the flow path is clogged by a large amount of dust introduced into the station at one time.

[0017] That is, clumps of dust may be introduced into the station from the cleaner, and a large amount of dust may be introduced at one time. However, Related Arts 1 and 2 have a problem in that the flow path is clogged by the large amount of dust. In particular, in case that dust is accumulated on an upper portion of the filter in Related Art 2, there is a problem in that the dust hinders airflow, which degrades dust capturing performance of the station.

[Disclosure]

[Technical Problem]

[0018] An object of the present disclosure is to provide a cleaner station equipped with a bagless type dust collecting part capable of preventing a flow path from being clogged even when an excessively large amount of dust is temporarily introduced at one time.

[0019] Another object of the present disclosure is to provide a cleaner station equipped with a dust collecting part capable of capturing a maximum amount of dust when a capacity remains the same.

[0020] Still another object of the present disclosure is to provide a cleaner station equipped with a prefilter capable of ensuring a minimum airflow even when a predetermined or larger amount of dust is introduced.

[0021] Technical problems of the present disclosure are not limited to the aforementioned technical problems, and other technical problems, which are not mentioned above, may be clearly understood by those skilled in the art from the following descriptions.

[Technical Solution]

[0022] In order to achieve the above-mentioned objects, a cleaner station according to an embodiment of the present disclosure includes a housing, a coupling part disposed in the housing and including a coupling surface to which at least a part of a cleaner is coupled, and a dust collecting part accommodated in the housing and con-

figured to capture dust in a dust bin of the cleaner. The dust collecting part includes a dust collecting body, a mesh, and a compression plate. The dust collecting body defines an external shape and has an internal space in which dust is collected. The dust collecting body has an air inlet port through which air is introduced into the internal space, and an air discharge port through which the air in the internal space is discharged. In addition, the dust collecting part includes the mesh configured to cover the air discharge port, and the compression plate rotatably disposed in the internal space of the dust collecting body and configured to clean the mesh while rotating.

[0023] The air inlet port may be formed in one of a bottom surface, an outer wall surface, and an upper surface of the dust collecting body, and the air discharge port may be formed in one of the bottom surface, the outer wall surface, and the upper surface of the dust collecting body, except for the surface in which the air inlet port is formed.

[0024] The air discharge port may be formed in the upper surface of the dust collecting body.

[0025] The dust collecting body may include a shaft disposed in the internal space and extending in a longitudinal direction, and the outer wall surface of the dust collecting body may be formed in a cylindrical shape based on the shaft. The compression plate may include a stationary plate extending from the outer wall surface of the dust collecting body toward the shaft, and a rotary plate rotatably coupled to the shaft and extending radially outward.

[0026] The dust collecting part may be disposed to be mounted or detached in a direction of one side of the housing.

[0027] The cleaner station may include a handle rotatably coupled to the dust collecting part. In this case, a rotation center axis of the handle may be disposed to be in parallel with a rotation center axis of the compression plate.

[0028] The cleaner station may include a prefilter disposed above the dust collecting part and configured to communicate with the air discharge port of the dust collecting part. In this case, the prefilter may be coupled or detached in a direction inconsistent with a direction in which the dust collecting part is coupled or detached.

[0029] The cleaner station may include a suction flow path having an inlet end communicating with the dust bin of the cleaner, and an outlet end communicating with the air inlet port of the dust collecting part. In this case, the outlet end of the suction flow path may be disposed above the inlet end of the suction flow path.

[0030] The cleaner station may include a discharge flow path having an inlet end communicating with the air discharge port of the dust collecting part, and an outlet end communicating with the outside at one side of the housing. In this case, the outlet end of the discharge flow path may be disposed below the inlet end of the discharge flow path.

[0031] The dust collecting part may include a cyclone

part disposed on an outer peripheral surface of the dust collecting body and configured to communicate with the air discharge port and separate the dust from the air by using a centrifugal force.

[0032] The cleaner station may further include: a dust collecting motor configured to generate a flow of air and disposed between the cleaner and the dust collecting part when the cleaner is coupled.

[0033] Other detailed matters of the exemplary embodiment are included in the detailed description and the drawings.

[Advantageous Effects]

[0034] The cleaner station of the present disclosure has one or more of the following effects.

[0035] First, the rotary plate rotates in the dust collecting body and moves the dust to the space in which no air flows, such that the airflow in the dust collecting body is not hindered even when an excessively large amount of dust is temporarily introduced at one time.

[0036] Second, the rotary plate rotates in the dust collecting body and compresses the dust in the dust collecting body, such that the volume of the captured dust may be reduced, and the dust may be additionally captured.

[0037] Third, the rotary plate rotates in the dust collecting body and wipes away the dust attached to the mesh of the air discharge port, such that an air flow rate is maintained to a performed degree or higher in the mesh.

[0038] Fourth, the air flows upward in the filtering member of the prefilter, such that the dust is filtered out by the lower surface of the filtering member, and the dust having a predetermined weight or heavy is dropped to the lower portion of the filtering member by gravity. Therefore, it is possible to ensure the minimum airflow in the prefilter.

[0039] The effects of the present disclosure are not limited to the aforementioned effects, and other effects, which are not mentioned above, will be clearly understood by those skilled in the art from the claims.

[Description of Drawings]

[0040]

FIG. 1 is a perspective view of a cleaner station according to the present disclosure.

FIG. 2 is a perspective view illustrating a state in which a cover in FIG. 1 is opened.

FIG. 3 is an exploded view of the cleaner station according to the present disclosure.

FIGS. 4A and 4B are views illustrating states made before and after a handle of a dust collecting part in FIG. 2 is rotated.

FIG. 5 is a cross-sectional view illustrating the cleaner station in FIG. 1 when viewed in direction A.

FIG. 6 is a cross-sectional view illustrating the cleaner station in FIG. 1 when viewed in direction B.

FIGS. 7A and 7B are perspective views of the dust

collecting part according to the present disclosure.

FIG. 8 is a view illustrating the dust collecting part in a state in which a discharge cover in FIG. 7 is opened.

FIG. 9 is an exploded view of the dust collecting part according to the present disclosure.

FIGS. 10A and 10B are cross-sectional views illustrating the dust collecting part in FIGS. 7A and 7B when viewed in direction C.

FIG. 11 is a cross-sectional view illustrating the dust collecting part in FIG. 10A when viewed in direction D.

FIG. 12 is a perspective view of a prefilter according to the present disclosure.

FIG. 13 is a cross-sectional view illustrating the prefilter in FIG. 12 when viewed in direction E.

[Mode for Invention]

[0041] Advantages and features of the present disclosure and methods of achieving the advantages and features will be clear with reference to embodiments described in detail below together with the accompanying drawings. However, the present disclosure is not limited to the embodiments disclosed herein but will be implemented in various forms. The embodiments of the present disclosure are provided so that the present disclosure is completely disclosed, and a person with ordinary skill in the art can fully understand the scope of the present disclosure. The present disclosure will be defined only by the scope of the appended claims. Throughout the specification, the same reference numerals denote the same constituent elements.

[0042] Hereinafter, the present disclosure will be described with reference to the drawings for explaining a cleaner station 100 according to embodiment of the present disclosure.

[0043] FIG. 1 is a perspective view of a cleaner station according to the present disclosure, FIG. 2 is a perspective view illustrating a state in which a cover in FIG. 1 is opened, FIG. 3 is an exploded view of the cleaner station according to the present disclosure, FIGS. 4A and 4B are views illustrating states made before and after a handle of a dust collecting part in FIG. 2 is rotated, FIG. 5 is a cross-sectional view illustrating the cleaner station in FIG. 1 when viewed in direction A, FIG. 6 is a cross-sectional view illustrating the cleaner station in FIG. 1 when viewed in direction B, FIGS. 7A and 7B are perspective views of the dust collecting part according to the present disclosure, FIG. 8 is a view illustrating the dust collecting part in a state in which a discharge cover in FIG. 7 is opened, FIG. 9 is an exploded view of the dust collecting part according to the present disclosure, FIGS. 10A and 10B are cross-sectional views illustrating the dust collecting part in FIGS. 7A and 7B when viewed in direction C, FIG. 11 is a cross-sectional view illustrating the dust collecting part in FIG. 10A when viewed in direction D, FIG. 12 is a perspective view of a prefilter according to the present disclosure, and FIG. 13 is a cross-

sectional view illustrating the prefilter in FIG. 12 when viewed in direction E.

[0044] A cleaner system is divided into a cleaner 200 and the cleaner station 100. The cleaner 200 is a movable component, and the cleaner 200 sucks dust present in a cleaning region while moving and collects the dust in a dust bin provided in the cleaner 200. The cleaner station 100 is a fixed, non-movable component, and the cleaner station 100 sucks dust from the cleaner 200, which has completed the cleaning operation, and collects the dust in a dust collecting part 140 provided in the cleaner station 100.

[0045] The cleaner 200 according to the present disclosure may be a robot cleaner. The robot cleaner refers to a cleaner equipped with a drive motor and configured to be operated by the drive motor. The cleaner 200 is disposed adjacent to a lower side of one side of the cleaner station 100 and coupled to the cleaner station 100.

[0046] The configuration in which the cleaner 200 is coupled to the cleaner station 100 may include a configuration in which the cleaner 200 is fixed and coupled mechanically to the cleaner station 100, a configuration in which a terminal of the cleaner 200 and a terminal of the cleaner station 100 come into contact with each other and are electrically coupled, and a configuration in which a dust bin of the cleaner 200 and a dust collecting part 140 of the cleaner station 100 communicate with each other so that air flows therebetween.

[0047] The cleaner 200 includes driving wheels (not illustrated). The driving wheels receive power from a drive motor of the cleaner 200 and move the cleaner 200. The driving wheels are disposed on a bottom of the cleaner 200. The driving wheels may be provided as a pair of driving wheels disposed at left and right sides. Gear teeth are formed on outer peripheral surfaces of the driving wheels, such that the cleaner may climb an inclined surface of a coupling part 120.

[0048] The cleaner 200 includes a caster (not illustrated). The caster is a component for steering the cleaner 200. The caster is disposed to be rotatable about a central axis defined in an upward/downward direction. The caster is disposed between the left driving wheel and the right driving wheel. The caster is disposed at a front end of the cleaner 200. When the caster rotates, the cleaner 200 may turn.

[0049] The cleaner 200 includes a discharge port (not illustrated) configured to communicate with the dust bin. Dust collected in the dust bin moves to the cleaner station 100 through the discharge port. The discharge port of the cleaner 200 is formed in a bottom surface of the cleaner 200. The discharge port of the cleaner 200 communicates with a suction port 124 formed in the coupling part 120. Specifically, the discharge port of the cleaner 200 and the suction port 124 of the coupling part 120 are disposed to overlap each other in the upward/downward direction.

[0050] The cleaner 200 includes a brush (not illustrated). The brush is a component that wipes away dust at-

tached to a floor so that the dust may be more easily sucked. The brush is disposed at one side of the bottom of the cleaner 200. The brush rotates about a central axis extending upward and downward.

[0051] The cleaner 200 includes a rag (not illustrated). The rag is a component that contains moisture and is used to clean the floor by wiping away dust attached to the floor. The rag is disposed at one side of the bottom of the cleaner 200. The rag is disposed opposite to the caster based on an imaginary line that connects the left driving wheel and the right driving wheel.

[0052] The cleaner station 100 is a component coupled to the cleaner 200 and configured to charge the cleaner 200, suck the dust collected in the dust bin of the cleaner 200, and safely store the cleaner 200 that has completed the cleaning operation.

[0053] A housing 110 defines an external appearance of the cleaner station 100 and provides a space in which the components are accommodated.

[0054] A height of the housing 110 in the upward/downward direction may be larger than a width in a leftward/rightward direction or a width in a forward/rearward direction. This arrangement may minimize a space of a room in which the cleaner station 100 is installed.

[0055] The housing 110 may include an upper cover 111 and lateral covers 112 and 113.

[0056] The upper cover 111 is disposed at an upper side of the housing 110.

[0057] With reference to FIG. 2, the upper cover 111 may be opened or closed. Specifically, a rear end of the upper cover 111 is coupled to a body of the housing 110 by means of a hinge. When the upper cover 111 rotates upward, an upper side of the housing 110 is opened or closed. When the upper cover 111 is opened, a prefilter 161 may be separably mounted.

[0058] The first lateral cover 112 is disposed at a lateral side of the housing 110. Specifically, the first lateral cover 112 is disposed at the left and front sides of the housing 110.

[0059] With reference to FIG. 2, the first lateral cover 112 may be opened or closed. Specifically, a rear end of the first lateral cover 112 is coupled to a body of the housing 110 by means of a hinge. When the first lateral cover 112 rotates leftward, a front side of the housing 110 is opened or closed. When the first lateral cover 112 is opened, the dust collecting part 140 may be separably mounted.

[0060] The second lateral cover 113 is disposed at a lateral side of the housing 110. Specifically, the second lateral cover 113 is disposed at right and rear sides of the housing 110.

[0061] The second lateral cover 113 covers a suction flow path 130 and a discharge flow path 170. A sound-absorbing material may be provided on an inner surface of the second lateral cover 113 and prevent noise, which is generated in the housing 110, from being dispersed to the outside.

[0062] The coupling part 120 is a component config-

ured to be coupled to the cleaner 200 and connected to at least any one of the components of the cleaner 200. The coupling part 120 is disposed in the housing 110 and includes a coupling surface to which at least a part of the cleaner 200 is coupled.

[0063] The coupling part 120 may cover a lower side of the housing 110 and extend forward from the housing 110.

[0064] The coupling part 120 may define an inclined surface having a low front end and a high rear end. Therefore, the cleaner 200 may enter the coupling part 120 while moving rearward from a front side of the coupling part 120.

[0065] The coupling part 120 includes driving wheel seating portions 121. The driving wheels of the cleaner 200 are seated on upper portions of the driving wheel seating portions 121. The driving wheel seating portions 121 are recessed downward from the coupling surface of the coupling part 120. The driving wheel seating portions 121 are provided as a pair of left and right driving wheel seating portions 121 corresponding to the driving wheels.

[0066] The coupling part 120 includes a rag seating portion 122. When the cleaner 200 is coupled to the cleaner station 100, the rag seating portion 122 is disposed below the rag of the cleaner 200.

[0067] The coupling part 120 includes a caster guide 123. The caster guide 123 is formed along a trajectory along which the caster of the cleaner 200 moves when the cleaner 200 is coupled to the cleaner station 100. The caster guide 123 is formed in a groove shape recessed downward. The caster guide 123 extends in the forward/rearward direction, i.e., a direction in which the cleaner 200 enters.

[0068] The coupling part 120 includes the suction port 124. The suction port 124 of the coupling part 120 is connected to an inlet end of the suction flow path 130. The suction port 124 of the coupling part 120 communicates with the discharge port of the dust bin of the cleaner 200.

[0069] The coupling part 120 includes charging terminals 125. The charging terminal 125 is disposed at a front end of the coupling part 120 and protrudes upward. The charging terminal 125 of the coupling part 120 comes into contact with a charging terminal (not illustrated) of the cleaner, such that the cleaner 200 and the cleaner station 100 are electrically connected.

[0070] The housing 110 has a dust collecting part installation space 114. The dust collecting part installation space 114 is a part of an internal space of the housing 110. The dust collecting part installation space 114 is isolated from an external space by the first lateral cover 112 and the second lateral cover 113. When the first lateral cover 112 rotates, the dust collecting part installation space 114 is opened, such that the dust collecting part 140 may be mounted or detached.

[0071] The inlet end of the suction flow path 130 communicates with the dust bin (not illustrated) of the cleaner,

and an outlet end of the suction flow path 130 communicates with an air inlet port 1411 of the dust collecting part 140. The suction flow path 130 extends forward in the coupling part 120. The inlet end of the suction flow path 130 is connected to the suction port 124 of the coupling part 120 and communicates with the dust bin of the cleaner, such that dust in the dust bin of the cleaner may be introduced into the suction flow path 130.

[0072] The outlet end of the suction flow path 130 is disposed above the inlet end of the suction flow path 130. The suction flow path 130 extends upward in the cleaner station 100. The outlet end of the suction flow path 130 is connected to the air inlet port 1411 of the dust collecting part 140, such that the dust flows in the suction flow path 130 may flow to the dust collecting part 140.

[0073] The air in the suction flow path 130 flows upward from a lower side of the suction flow path 130. The inside of the suction flow path 130 is provided in the form of a simply cylindrical structure, such that almost no air resistance occurs in the suction flow path 130. Therefore, the dust contained in the air may flow to the outlet end of the suction flow path 130 without air resistance.

[0074] The dust collecting part 140 is a component configured to capture dust in the dust bin of the cleaner. The dust collecting part 140 is accommodated in the housing 110.

[0075] The dust collecting part 140 according to the present disclosure is a bagless type dust collecting part. The types of dust collecting parts are broadly classified into a bag type dust collecting part and a bagless type dust collecting part. The bag type dust collecting part 140 is equipped with a separate bag, the bag captures dust, and a user separates only the bag from the cleaner station 100 and discards the bag. In contrast, the bagless type dust collecting part 140 is not equipped with a separate bag, the dust collecting part 140 captures dust, and a user separates the dust collecting part 140 from the cleaner station and eliminates the dust.

[0076] In general, a predetermined or larger amount of dust is collected in the cleaner 200, and the dust primarily collected by the cleaner 200 is introduced into the cleaner station 100. For this reason, a large amount of dust may be introduced into the cleaner station 100 at one time. In this case, in case that a large amount of dust is introduced into the bagless type dust collecting part 140 at one time, there may occur a problem in that a flow path is clogged, which degrades the dust capturing function of the cleaner station 100. Therefore, the cleaner station 100 according to the present disclosure may be equipped with a means for removing dust trapped in the discharge port and compressing the captured dust, thereby ensuring the dust capturing function of the cleaner station 100.

[0077] The dust collecting part 140 includes a dust collecting body 141, a mesh 144, and a compression plate 142.

[0078] The dust collecting body 141 defines an external shape of the dust collecting part 140 and has an in-

ternal space in which dust may be collected.

[0079] The dust collecting body 141 is formed in a cylindrical shape defined based on a shaft 1414. The shaft 1414 is disposed in the internal space of the dust collecting body 141 and extends in a longitudinal direction. The shaft 1414 may be disposed in parallel with a longitudinal direction of the suction flow path 130. Specifically, the shaft 1414 may be disposed in the upward/downward direction. A rotary plate 1422 is rotatably coupled to the shaft 1414.

[0080] The dust collecting body 141 has the air inlet port 1411 through which the air is introduced into the internal space, and an air discharge port 1412 through which the air in the internal space is discharged. The air inlet port 1411 communicates with the suction flow path 130, and the air discharge port 1412 communicates with the discharge flow path 170.

[0081] The air inlet port 1411 is formed in one of a plurality of surfaces that constitutes the dust collecting body 141 and excludes a surface in which the air discharge port 1412 is formed. For example, the air inlet port 1411 may be formed in one of a bottom surface, an outer wall surface, and an upper surface of the dust collecting body 141, and the air discharge port 1412 may be formed in one of the bottom surface, the outer wall surface, and the upper surface of the dust collecting body 141, except for the surface in which the air inlet port 1411 is formed. With reference to FIG. 7, the air inlet port 1411 is formed in the outer wall surface of the dust collecting body 141, and the air discharge port 1412 is formed in the upper surface of the dust collecting body 141.

[0082] A direction in which the air is introduced into the air inlet port 1411 may be inconsistent with a direction in which the air is discharged from the air discharge port 1412. The air may be introduced into the air inlet port 1411 in a direction intersecting the longitudinal direction of the shaft 1414, and the air may be discharged from the air discharge port 1412 in a direction parallel to the longitudinal direction of the shaft 1414. With this arrangement, a flow direction of the air may change at least one or more times in the dust collecting body 141, such that the dust may be separated from the air by inertia.

[0083] The air discharge port 1412 is formed in the upper surface of the dust collecting body 141. The air in the air discharge port 1412 is discharged to the outside of the dust collecting body 141 while flowing upward. Therefore, the dust contained in the air in the air discharge port 1412 is moved downward by gravity without being discharged to an upper side of the dust collecting body 141.

[0084] An upper cover 146 of the dust collecting part covers at least a part of the upper side of the dust collecting body 141. The upper cover 146 of the dust collecting part is disposed to be spaced apart from an upper side of the air discharge port 1412, and at least a part of the upper cover 146 is disposed to overlap the air discharge port 1412 in the upward/downward direction.

[0085] The upper cover 146 of the dust collecting part

may be divided into a first upper cover 1461 and a second upper cover 1462.

[0086] The first upper cover 1461 and the second upper cover 1462 may be disposed in parallel. The first upper cover 1461 and the second upper cover 1462 may be disposed to be spaced apart from each other at a predetermined interval. The first upper cover 1461 is disposed above the second upper cover 1462.

[0087] The first upper cover 1461 has through-holes through which the air may be discharged.

[0088] A cyclone part 145 may be connected to the second upper cover 1462.

[0089] The dust collecting body 141 has a dust discharge port 1413 through which the captured dust is discharged. With reference to FIG. 7, the dust discharge port 1413 is formed in a lower surface of the dust collecting body 141.

[0090] A discharge cover 143 covers the dust discharge port 1413. With reference to FIG. 7, the discharge cover 143 is disposed on the lower surface of the dust collecting body 141. The discharge cover 143 is coupled to the dust collecting body 141 by means of a hinge and opens or closes the dust discharge port 1413 while rotating.

[0091] A power transmission member 1425 may be disposed on the discharge cover 143.

[0092] The mesh 144 is a component configured to filter out dust from the air discharged from the dust collecting body 141. The mesh 144 covers the air discharge port 1412.

[0093] The mesh 144 has a plurality of holes. The plurality of holes of the mesh 144 may be formed by interweaving a plurality of wires.

[0094] The mesh 144 filters out dust from the air by means of a physical method. That is, the dust, which has a smaller size than the hole of the mesh 144, passes through the mesh 144, but the dust, which has a larger size than the hole of the mesh 144, cannot pass through the mesh 144. The dust, which cannot pass through the mesh 144, moves downward to the lower side of the dust collecting body 141 or is attached to a lower surface of the mesh 144.

[0095] The mesh 144 is disposed to be spaced apart radially outward from the shaft 1414.

[0096] The mesh 144 may be formed in a shape similar to a semicircle. In this case, the mesh 144 may be formed to be convex radially outward.

[0097] The compression plate 142 is a component configured to compress the dust collected in the internal space of the dust collecting body 141. The compression plate 142 is rotatably disposed in the internal space of the dust collecting body 141 and cleans the mesh 144 while rotating.

[0098] The compression plate 142 has a first function of compressing the dust collected in the internal space of the dust collecting body 141, and a second function of wiping away the dust attached to the mesh 144.

[0099] The compression plate 142 may include a sta-

tionary plate 1421, the rotary plate 1422, and a mesh cleaner 1423.

[0100] With reference to FIGS. 10A and 10B, the stationary plate 1421 extends toward the shaft 1414 from the outer wall surface of the dust collecting body 141.

[0101] The stationary plate 1421 may be integrated with the dust collecting body 141. The stationary plate 1421 protrudes from the dust collecting body 141 and extends radially inward. An inner end of the stationary plate 1421 is disposed adjacent to the shaft 1414 and spaced apart from the shaft 1414. Therefore, the stationary plate 1421 does not hinder a rotation of the rotary plate 1422.

[0102] The stationary plate 1421 extends in the longitudinal direction of the shaft 1414.

[0103] The stationary plate 1421 may be formed in a flat plate shape.

[0104] With reference to FIGS. 10A and 10B, the rotary plate 1422 is rotatably coupled to the shaft 1414 and extends radially outward.

[0105] The rotary plate 1422 surrounds at least a part of an outer peripheral surface of the shaft 1414. The rotary plate 1422 may include a cylindrical shape having a hollow portion, and the shaft 1414 may be inserted into the hollow.

[0106] The rotary plate 1422 extends radially outward. An outer end of the rotary plate 1422 is disposed adjacent to an inner peripheral surface of the dust collecting body 141 and spaced apart from the dust collecting body 141. Therefore, the rotary plate 1422 may rotate about the shaft 1414 as a rotation center axis.

[0107] When the rotary plate 1422 has rotated, the rotary plate 1422 may be disposed in an imaginary space defined by the air inlet port, the central axis of the shaft, and the stationary plate 1421. With this arrangement, the dust is moved to a space in which the air does not flow when the rotary plate 1422 has rotated, such that the airflow in the dust collecting body may not be hindered.

[0108] An operation of the compression plate 142 will be described with reference to FIG. 10.

[0109] FIG. 10A is a view illustrating a state made before the compression plate 142 moves, and FIG. 10B is a view illustrating a state made after the compression plate 142 moves.

[0110] With reference to FIG. 10A, based on the shaft 1414, the stationary plate 1421 is disposed in the 3-o'clock direction, and the compression plate 142 is disposed in the 6-o'clock direction. The air inlet port 1411 is disposed in the 1-o'clock direction of the shaft 1414. Although not illustrated, the air discharge port 1412 is disposed in the 9-o'clock direction of the shaft 1414. Therefore, the dust may exist from the 1-o'clock direction to the 9-o'clock direction based on the shaft 1414.

[0111] With reference to FIG. 10B, the rotary plate 1422 may rotate clockwise (CW) about the shaft 1414 and finally rotate to the 2-o'clock direction of the shaft 1414. In this case, the dust in the dust collecting body 141 is compressed and positioned between the rotary

plate 1422 and the stationary plate 1421.

[0112] After the state in FIG. 10B, the rotary plate 1422 may return back to the state in FIG. 10A. In the state in FIG. 10B, the dust introduced into the dust collecting body 141 is positioned in the space in the 4-o'clock direction of the shaft 1414. The dust may be compressed as the rotary plate 1422 rotates counterclockwise (CCW), and the dust may be finally positioned in the 4-o'clock direction of the shaft 1414.

[0113] The mesh cleaner 1423 is a component configured to wipe away the dust attached to the mesh 144. The mesh cleaner 1423 is disposed at an upper end of the rotary plate 1422.

[0114] An inner end of the mesh cleaner 1423 may extend to an inner end of the rotary plate 1422, and an outer end of the mesh cleaner 1423 may extend to the outer end of the rotary plate 1422.

[0115] The mesh cleaner 1423 extends upward from the upper end of the rotary plate 1422. An upper end of the mesh cleaner 1423 may come into contact with the mesh 144 and wipe away the dust attached to the lower surface of the mesh 144 when the rotary plate 1422 rotates.

[0116] The mesh cleaner 1423 may include a material having flexibility. For example, a part of the mesh cleaner 1423 may be made of a rubber material.

[0117] The rotary plate 1422 is operated by a compression motor 1424 and the power transmission member 1425.

[0118] The compression motor 1424 is a component configured to generate power for operating the rotary plate 1422. The compression motor 1424 is disposed at one side of the dust collecting part 140, provided at a side opposite to the air discharge port 1412, and configured to transmit power to the rotary plate 1422.

[0119] With reference to FIG. 6, the compression motor 1424 is disposed below the dust collecting part 140. The compression motor 1424 is disposed outside the discharge cover 143 and passes through the discharge cover 143. The compression motor 1424 transmits power to the rotary plate 1422 disposed in the internal space of the dust collecting part 140.

[0120] The compression motor 1424 may rotate in two directions. FIG. 10A illustrates a state in which the compression motor 1424 rotates in a first direction, and FIG. 10B illustrates a state in which the compression motor 1424 rotates in a second direction.

[0121] The shaft 1414 connected to the compression motor 1424 may be disposed in parallel with the shaft 1414 connected to a dust collecting motor 150. Specifically, the shaft 1414 connected to the compression motor 1424 and the shaft 1414 connected to the dust collecting motor 150 may be disposed coaxially. Therefore, the single motor may simultaneously serve as the compression motor 1424 and the dust collecting motor 150.

[0122] The power transmission member 1425 is a component configured to transmit power of the compression motor 1424 to the rotary plate 1422.

[0123] The power transmission member 1425 may include at least one gear.

[0124] The power transmission member 1425 may be disposed on the discharge cover 143. In this case, the power transmission member 1425 may include a sealer (not illustrated) in order to isolate the internal space of the dust collecting part 140 from the external space.

[0125] The dust collecting part 140 may be disposed to be attachable or detachable in a direction of one side of the housing 110.

[0126] A direction in which the dust collecting part 140 is inserted into the housing 110 intersects a direction in which the prefilter 161 is inserted into the housing 110. With reference to FIG. 2, the dust collecting part 140 is mounted by being inserted into the rear side of the housing 110 from the front side of the housing 110, and the dust collecting part 140 is detached by being withdrawn forward. This configuration is compared to the configuration in which the prefilter 161 is inserted into the lower side of the housing 110 from the upper side of the housing 110.

[0127] A handle 181 is a component gripped by the user when the user separates the dust collecting part 140 from the housing 110. The handle 181 is rotatably coupled to the dust collecting part 140.

[0128] The handle 181 is rotated at the time of detaching the dust collecting part 140. With reference to FIG. 4B, at the time of detaching the dust collecting part 140, the handle 181 is rotated clockwise and disposed to protrude forward from the dust collecting part 140. The user may grip the handle 181 and detach the dust collecting part 140 by pulling the handle 181 forward. The handle 181 is rotatably coupled to the dust collecting part, and the handle 181 is rotated and protrudes forward only at the time of detaching the dust collecting part. Therefore, when the handle 181 is mounted, the handle 181 occupies only a minimum space of the internal space of the cleaner station 100, such that the internal space may be efficiently used.

[0129] The dust collecting body 141 has a handle insertion groove 1415. The handle insertion groove 1415 defines a space into which the handle 181 is inserted when the handle 181 is mounted. The handle insertion groove 1415 is recessed inward at one side of the dust collecting body 141. When the handle 181 is mounted, the handle 181 is rotated laterally about a rotation center axis and inserted into the handle insertion groove 1415.

[0130] The handle 181 is coupled to the dust collecting body 141 by means of a hinge. A handle hinge 182 protrudes at one side of the dust collecting body 141. The handle hinge 182 is inserted into one side of the handle 181 or penetrates the handle 181. In case that the handle hinge 182 penetrates the handle 181, a fastening member 183 may be fastened to an end of the handle hinge 182.

[0131] The rotation center axis of the handle 181 is disposed in parallel with the rotation center axis of the compression plate 142. With reference to FIG. 4, the ro-

tation center axis of the handle 181 is disposed in the upward/downward direction. With reference to FIG. 4A, when the dust collecting part 140 is mounted, the handle 181 is rotated counterclockwise about the rotation center axis and inserted into the handle insertion groove 1415. In addition, with reference to FIG. 4B, at the time of detaching the dust collecting part 140, the handle 181 is rotated clockwise and protrudes forward from the dust collecting part 140.

[0132] The handle 181 may be divided into a horizontal portion 1811 and a vertical portion 1812. The horizontal portion 1811 of the handle extends radially outward from the dust collecting body 141 when viewed in one aspect. The handle hinge 182 is inserted into or penetrates an inner end of the horizontal portion 1811 of the handle. The vertical portion 1812 of the handle is bent from an outer end of the horizontal portion 1811 of the handle and extends in a direction different from the extension direction of the horizontal portion 1811. Specifically, the vertical portion 1812 of the handle extends in a direction perpendicular to the direction in which the horizontal portion 1811 extends.

[0133] The prefilter 161 is a component configured to filter out dust from the air. Specifically, the prefilter 161 is disposed at an upstream side of a HEPA filter and primarily filters out large dust contained in the air introduced into the HEPA filter.

[0134] The prefilter 161 is disposed above the dust collecting part 140 and communicates with the air discharge port 1412 of the dust collecting part 140.

[0135] Because the prefilter 161 is disposed above the dust collecting part 140, the dust positioned between the prefilter 161 and the dust collecting part 140 is lowered by gravity and deposited on the dust collecting part 140. According to the present disclosure, because a capacity of the prefilter 161 is smaller than a capacity of the dust collecting part 140, the dust collecting part 140 is configured to capture as much dust as possible to ensure a maximum dust capturing capacity of the cleaner station 100.

[0136] A prefilter casing 1611 defines an external shape of the prefilter 161 and defines therein a space for accommodating a filtering member 1614.

[0137] The filtering member 1614 of the prefilter is a component configured to separate the dust from the air introduced into the prefilter 161. The filtering member 1614 of the prefilter separates the dust from the air by means of a physical method. That is, the filtering member 1614 of the prefilter has a plurality of through-holes, such that the dust smaller in size than the through-hole passes through the filtering member 1614, and the dust larger in size than the through-hole is filtered out.

[0138] The prefilter 161 is configured such that the air is introduced in a direction parallel to the direction in which the air is discharged from the air discharge port 1412 of the dust collecting body 141, and the air is discharged in a direction intersecting the direction in which the air is discharged from the air discharge port 1412 of

the dust collecting body 141. With reference to FIG. 11, an inlet port 1612 is formed in a lower surface of the prefilter 161, and a discharge port 1613 is formed in a lateral surface of the prefilter 161. Therefore, the air is introduced upward toward the prefilter 161 and discharged laterally from the prefilter 161. With this arrangement, the direction in which the air flows in the prefilter 161 may change one or more times, and the air may pass through a surface of the filtering member 1614 equally as a whole.

[0139] The inlet port 1612 of the prefilter may be disposed to be biased toward one side based on an imaginary centerline that divides the prefilter 161 into left and right sides. The discharge port 1613 of the prefilter may be elongated in one direction.

[0140] The prefilter 161 is mounted or detached in a direction inconsistent with the direction in which the dust collecting part 140 is mounted or detached. The direction in which the prefilter 161 is mounted in or detached from the housing 110 intersects the direction in which the prefilter 161 is mounted in or detached from the housing 110. With reference to FIG. 2, when the upper cover 111 is opened, the prefilter 161 is mounted while moving downward toward the upper side of the housing 110. On the contrary, the prefilter 161 is detached while moving upward from the housing 110. This configuration is compared to the configuration in which the dust collecting part 140 is mounted or detached forward or rearward from the housing 110.

[0141] A front end of the prefilter 161 is disposed above a rear end of the prefilter 161. More specifically, with reference to FIG. 12, a front end of the filtering member 1614 of the prefilter is disposed above a rear end of the filtering member 1614 of the prefilter. With this arrangement, the direction in which the air flows in the prefilter 161 may be disposed to be close to a direction perpendicular to a surface of the filtering member 1614.

[0142] The inlet port of the prefilter 161 faces a lower surface of the filtering member 1614, and the discharge port of the prefilter 161 faces an upper surface of the filtering member 1614. Therefore, in case that a large amount of dust is filtered out by the filtering member 1614, the dust is dropped onto the lower portion of the filtering member 1614 by gravity. Therefore, it is possible to prevent a predetermined or larger amount of dust from being attached to the filtering member 1614 and to ensure the minimum airflow.

[0143] An inlet end of the discharge flow path 170 communicates with the air discharge port 1412 of the dust collecting part 140, and an outlet end of the discharge flow path 170 communicates with the outside at one side of the housing 110.

[0144] The discharge flow path 170 may pass through the prefilter 161, a suction motor, and the HEPA filter and communicate with the outside of the cleaner station 100.

[0145] The discharge flow path 170 may be disposed in parallel with the suction flow path 130.

[0146] An outlet end of the discharge flow path 170 is

disposed below an inlet end of the discharge flow path 170. That is, the air in the discharge flow path 170 moves downward from the upper side of the discharge flow path 170.

[0147] A diameter of a cross-section of the discharge flow path 170 in the first direction may be larger than a diameter of the cross-section of the discharge flow path 170 in the second direction. The cross-section of the discharge flow path 170 may be formed in an elliptical shape, unlike a circular cross-section of the suction flow path 130.

[0148] The cyclone part 145 may be disposed in the dust collecting part 140. The cyclone part 145 is a component configured to separate the dust from the air by using a centrifugal force. The cyclone part 145 is disposed on an outer peripheral surface of the dust collecting body 141 and communicates with the air discharge port 1412.

[0149] The cyclone part 145 is disposed at a downstream side of the air inlet port 1411 of the dust collecting body 141 and disposed at an upstream side of the air discharge port 1412.

[0150] The cyclone part 145 is disposed on the outer peripheral surface of the dust collecting body 141. With reference to FIG. 7, the dust collecting body 141 is formed in a cylindrical shape, and the cyclone part 145 may be disposed to surround at least a part of the outer peripheral surface of the dust collecting body 141.

[0151] The cyclone part 145 may be integrated with the dust collecting body 141. Although not illustrated, unlike the above-mentioned description, the cyclone part 145 and the dust collecting body 141 may be separately provided and then coupled.

[0152] The cyclone part 145 may be divided into an outer tube and an inner tube. The outer tube of the cyclone part 145 is integrated with the dust collecting body 141. The inner tube of the cyclone part 145 may be formed on the upper cover 146 of the dust collecting part 140, and specifically formed on the second upper cover 1462.

[0153] A central axis of the inner tube of the cyclone part 145 is disposed on the same line as a central axis of the outer tube of the cyclone part 145. Therefore, the air introduced into the cyclone part 145 spirally flows in a space between the inner tube and the outer tube, such that the dust is separated from the air by a centrifugal force. The separated dust moves downward toward a lower side of the cyclone part 145, and the air is discharged through an internal space of the inner tube.

[0154] The air discharged from the cyclone part 145 is directed toward the prefilter 161 through the air discharge port 1412 formed in the first upper cover 1461.

[0155] The dust collecting motor 150 is a component configured to generate a flow of air in the cleaner station 100. When the cleaner 200 is coupled, the dust collecting motor 150 is disposed between the cleaner 200 and the dust collecting part 140.

[0156] The dust collecting motor 150 is disposed above

the cleaner 200 and disposed below the dust collecting part 140.

[0157] The dust collecting motor 150 is disposed above the HEPA filter and disposed below the prefilter 161.

[0158] The dust collecting motor 150 is disposed below the compression motor 1424.

[0159] The prefilter 161 is disposed opposite to the dust collecting motor 150 based on the dust collecting part 140.

[0160] The prefilter 161 and the HEPA filter are disposed to be spatially spaced apart from each other. Specifically, the prefilter 161 is disposed opposite to the HEPA filter based on the dust collecting part 140. The prefilter 161 is disposed opposite to the HEPA filter based on the dust collecting motor 150.

[0161] The compression motor 1424 is disposed at the same side as the dust collecting motor 150 based on the dust collecting part 140. That is, the compression motor 1424 and the dust collecting motor 150 may be disposed adjacent to each other. Both the compression motor 1424 and the dust collecting motor 150 are component that generate noise. Therefore, the compression motor 1424 and the dust collecting motor 150 may be disposed in the single space, and a noise absorbing member is disposed to surround the space, such that the noise member may be disposed to a minimum degree, and the occurrence of noise in the cleaner station 100 may be maximally suppressed.

[0162] The airflow in the cleaner station 100 according to the present disclosure configured as described above will be described below. When the cleaner 200 is coupled to the cleaner station 100, the dust bin of the cleaner 200 communicates with the suction flow path 130 of the cleaner station 100. When the dust collecting motor 150 operates, the air passes through the suction flow path 130, the dust collecting part 140, the cyclone part, the prefilter 161, the discharge flow path 170, the dust collecting motor 150, and the HEPA filter and is discharged to the outside of the cleaner station 100. In this case, an upward flow path is formed from the suction flow path 130 to the prefilter 161, and a downward flow path is formed from the prefilter 161 to the HEPA filter.

[0163] The operation of the cleaner station 100 according to the present disclosure configured as described above will be described below.

[0164] The dust collecting part 140 according to the present disclosure separates dust from the introduced air. The air discharge port 1412 is formed in the upper surface of the dust collecting part 140, and the mesh 144 is disposed in the air discharge port 1412, such that the air passes through the mesh 144, but the dust cannot pass through the mesh 144.

[0165] The compression plate 142 is disposed in the dust collecting part 140. The compression plate 142 is rotatably coupled to the shaft 1414 of the dust collecting body 141. Specifically, when the rotary plate 1422 rotates, the dust captured in the dust collecting body 141 is compressed by the rotary plate 1422 and the stationary

plate 1421. As the dust is compressed and a volume of the dust is reduced, the dust collecting part 140 may additionally capture a larger amount of dust, such that the operating time of the cleaner station 100 may be improved.

[0166] The mesh cleaner 1423 is disposed on the compression plate 142. The mesh cleaner 1423 is disposed at the upper end of the rotary plate 1422 and wipes away the dust attached to the mesh 144 when the rotary plate 1422 rotates. Therefore, it is possible to prevent the dust attached to the mesh 144 from hindering the airflow and to prevent the deterioration in performance of the cleaner station 100.

[0167] While the exemplary embodiments of the present disclosure have been illustrated and described above, the present disclosure is not limited to the specific exemplary embodiments, and various modifications can of course be made by those skilled in the art to which the present disclosure pertains without departing from the subject matter of the present disclosure as claimed in the claims. Further, the modifications should not be appreciated individually from the technical spirit or prospect of the present disclosure.

[Description of Reference Numerals]

[0168]

10: Cleaner system
 100: Cleaner station
 110: Housing
 120: Coupling part
 130: Suction flow path
 140: Dust collecting part
 141: Dust collecting body
 1411: Air inlet port
 1412: Air discharge port
 1413: Dust discharge port
 1414: Shaft
 1415: Handle insertion groove
 142: Compression plate
 1421: Stationary plate
 1422: Rotary plate
 1423: Mesh cleaner
 1424: Compression motor
 1425: Power transmission member
 143: Discharge cover
 144: Mesh
 145: Cyclone part
 146: Upper cover
 1461: First upper cover
 1462: Second upper cover
 150: Dust collecting motor
 160: Filter
 161: Prefilter
 1611: Prefilter casing
 1612: Inlet port
 1613: Discharge port

1614: Filtering member
 162: HEPA filter
 170: Discharge flow path
 181: Handle
 182: Handle hinge
 183: Fastening member
 200: Cleaner

Claims

1. A cleaner station comprising:

a housing configured to define an external appearance and define a space in which components are accommodated;
 a coupling part disposed in the housing and including a coupling surface to which at least a part of a cleaner is coupled; and
 a dust collecting part accommodated in the housing and configured to capture dust in a dust bin of the cleaner,
 wherein the dust collecting part comprises:

a dust collecting body configured to define an external shape and having an internal space in which the dust is collected;
 an air inlet port formed at one side of the dust collecting body and configured to allow air to be introduced into the internal space;
 an air discharge port formed in an upper surface of the dust collecting body and configured to allow the air in the internal space to be discharged;
 a mesh configured to cover the air discharge port; and
 a compression plate movably disposed in the internal space of the dust collecting body and configured to clean the mesh while moving.

2. The cleaner station of claim 1, wherein the air inlet port is formed in one of a plurality of surfaces that constitutes the dust collecting body and excludes a surface in which the air discharge port is formed.

3. The cleaner station of claim 1, wherein the compression plate wipes a lower surface of the mesh while reciprocating.

4. The cleaner station of claim 1, wherein the dust collecting body comprises a shaft disposed in the internal space and extending in a longitudinal direction,

wherein an outer wall surface of the dust collecting body is formed in a cylindrical shape based on the shaft, and
 wherein the compression plate comprises:

a stationary plate extending toward the shaft from the outer wall surface of the dust collecting body; and
 a rotary plate rotatably coupled to the shaft and extending radially outward.

5. The cleaner station of claim 4, wherein the compression plate comprises a mesh cleaner disposed at an upper end of the rotary plate and configured to wipe away dust attached to the mesh.

6. The cleaner station of claim 4, comprising:
 a compression motor provided at one side of the dust collecting part, disposed opposite to the air discharge port, and configured to transmit power to the rotary plate.

7. The cleaner station of claim 1, wherein the dust collecting part is disposed to be mounted or detached in a direction of one side of the housing.

8. The cleaner station of claim 1, comprising:
 a handle rotatably coupled to the dust collecting part.

9. The cleaner station of claim 8, wherein a rotation center axis of the handle is disposed in parallel with a rotation center axis of the compression plate.

10. The cleaner station of claim 1, comprising:
 a prefilter disposed above the dust collecting part and configured to communicate with the air discharge port of the dust collecting part.

11. The cleaner station of claim 10, wherein the prefilter is configured such that the air is introduced in a direction parallel to a direction in which the air is discharged from the air discharge port of the dust collecting body, and the air is discharged in a direction intersecting the direction in which the air is discharged from the air discharge port of the dust collecting body.

12. The cleaner station of claim 10, wherein the prefilter is mounted or detached in a direction inconsistent with a direction in which the dust collecting part is mounted or detached.

13. The cleaner station of claim 10, wherein a front end of the prefilter is disposed above a rear end of the prefilter.

14. The cleaner station of claim 1, comprising:
 a suction flow path having an inlet end communicating with the dust bin of the cleaner, and an outlet end communicating with the air inlet port of the dust collecting part.

15. The cleaner station of claim 14, wherein an outlet

end of the suction flow path is disposed above an inlet end of the suction flow path.

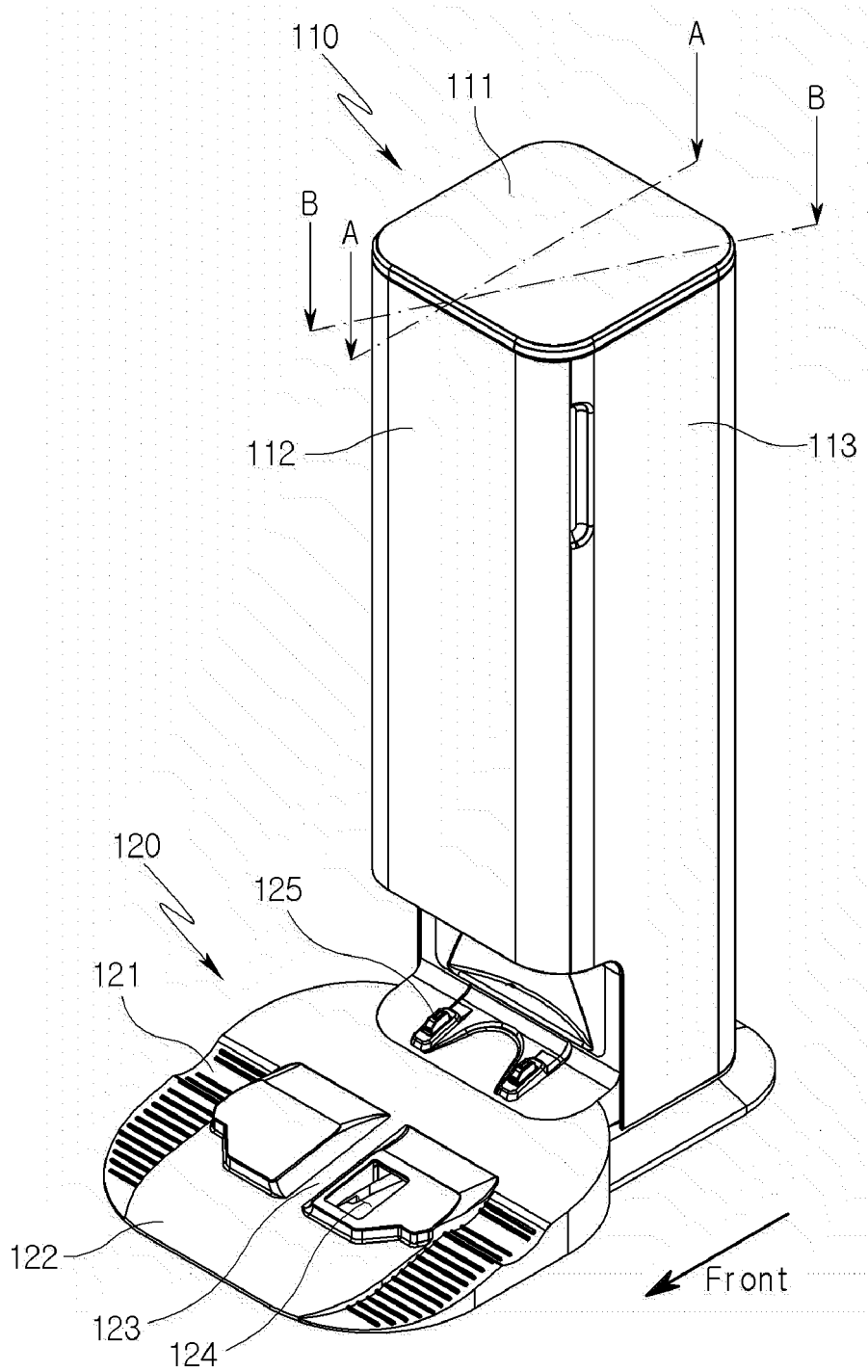
16. The cleaner station of claim 1, comprising:
a discharge flow path having an inlet end communicating with the air discharge port of the dust collecting part, and an outlet end communicating with the outside at one side of the housing. 5
17. The cleaner station of claim 16, wherein an outlet end of the discharge flow path is disposed below an inlet end of the discharge flow path. 10
18. The cleaner station of claim 1, wherein the dust collecting part comprises a cyclone part disposed on an outer peripheral surface of the dust collecting body and configured to communicate with the air discharge port and separate the dust from the air by using a centrifugal force. 15
19. The cleaner station of claim 1, further comprising:
a dust collecting motor configured to generate a flow of air and disposed between the cleaner and the dust collecting part when the cleaner is coupled. 20
20. A cleaner station comprising: 25
a housing configured to define an external appearance and define a space in which components are accommodated; 30
a coupling part disposed in the housing and including a coupling surface to which at least a part of a cleaner is coupled; and
a dust collecting part accommodated in the housing and configured to capture dust in a dust bin of the cleaner, 35
wherein the dust collecting part comprises:
a dust collecting body configured to define an external shape and having an internal space in which dust is collected; 40
a suction flow path having an inlet end communicating with the dust bin of the cleaner, and an outlet end communicating with an air inlet port formed in the dust collecting body; 45
a discharge flow path having an inlet end communicating with an air discharge port formed in an upper surface of the dust collecting body, and an outlet end communicating with the outside at one side of the housing; 50
a mesh configured to cover the air discharge port; and
a compression plate movably disposed in the internal space of the dust collecting body and configured to clean the mesh while moving. 55

21. The cleaner station of claim 20, wherein a flow direction of air introduced into the dust collecting body from the suction flow path is disposed to be inconsistent with a flow direction of air discharged from the dust collecting body from the discharge flow path.

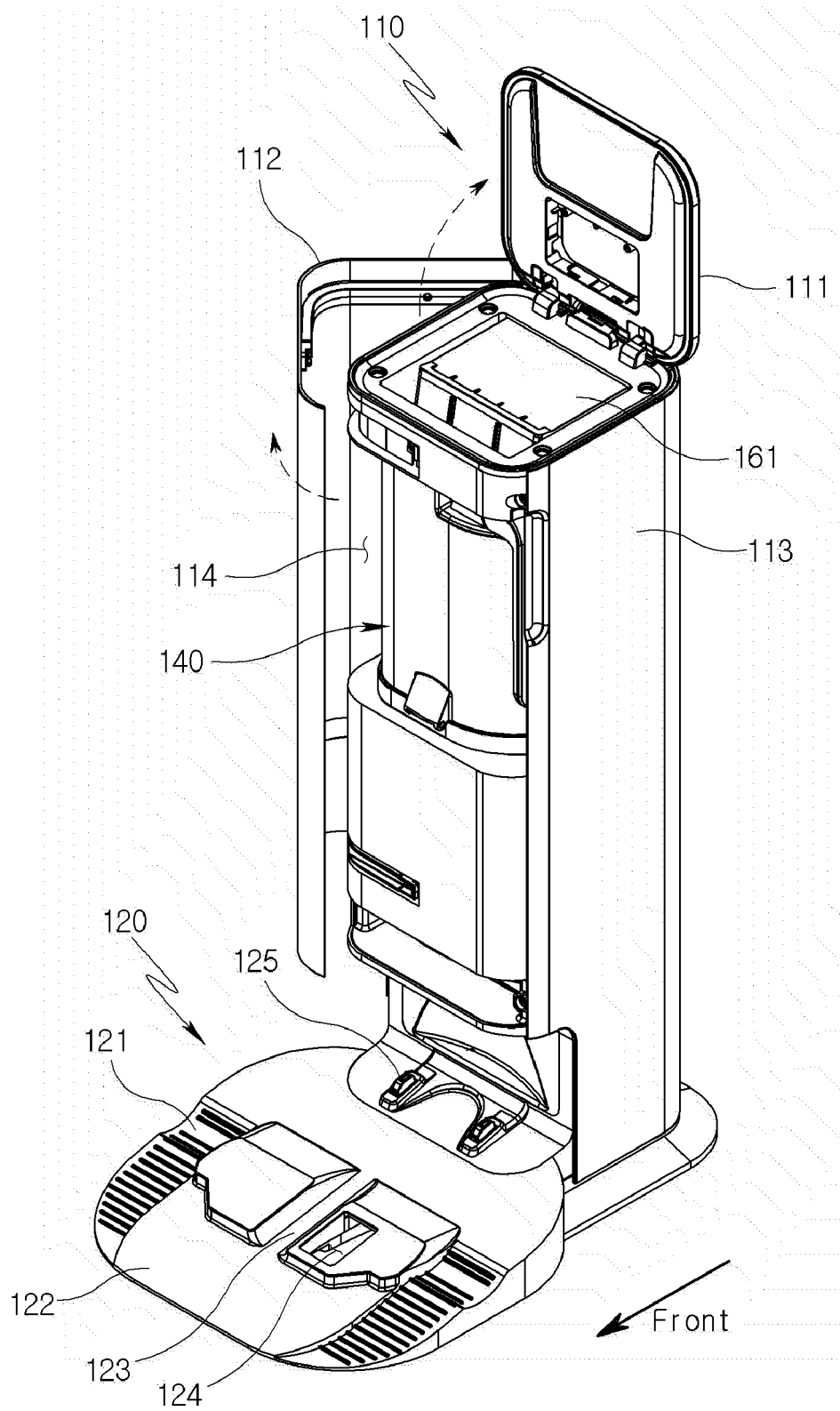
22. The cleaner station of claim 20, wherein the dust collecting part comprises a cyclone part disposed in the discharge flow path, having an inlet disposed above the air discharge port, and configured to separate dust from air by using a centrifugal force.

23. The cleaner station of claim 20, further comprising:
a dust collecting motor disposed in the discharge flow path, disposed below the dust collecting part, and configured to generate a flow of air.

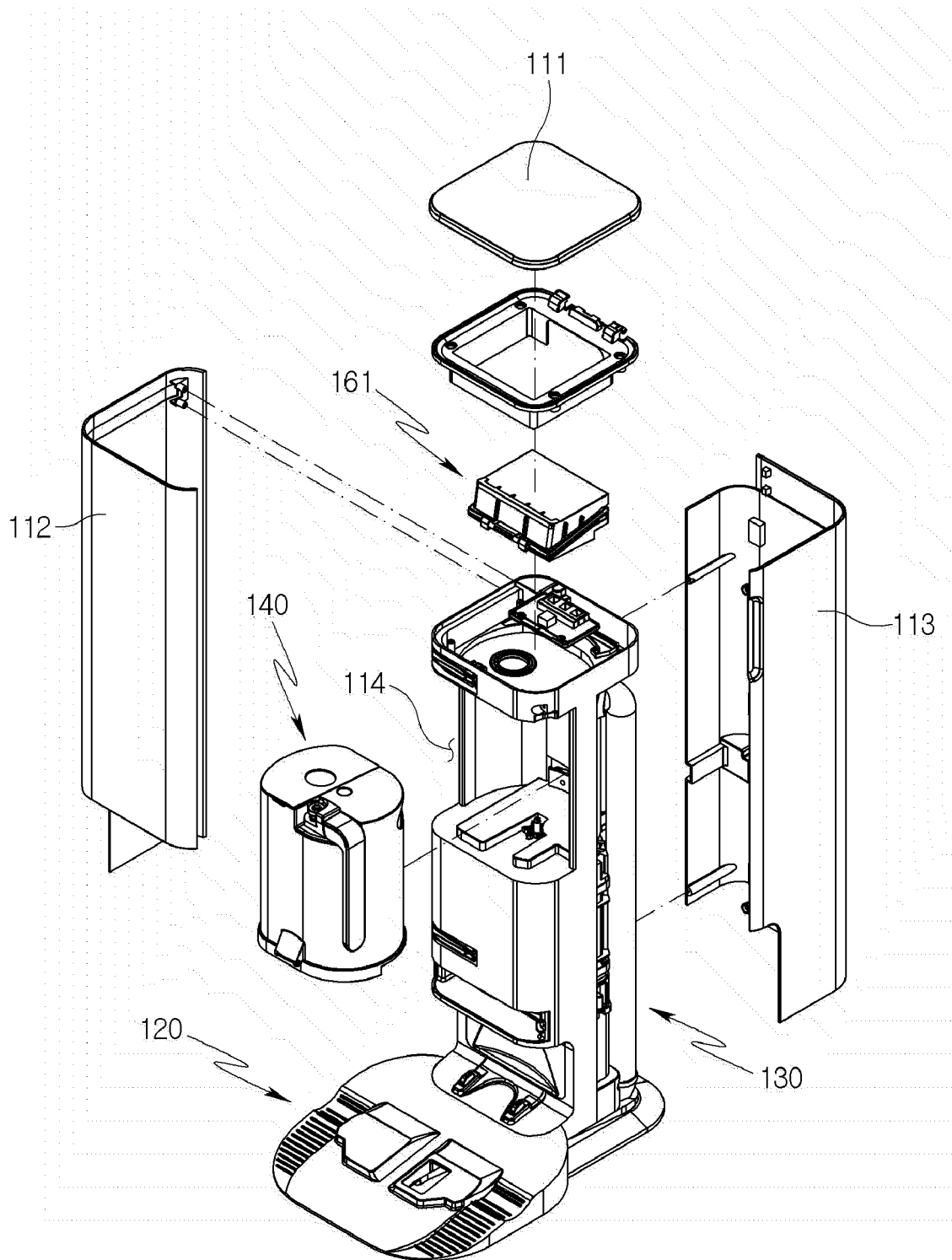
[FIG. 1]



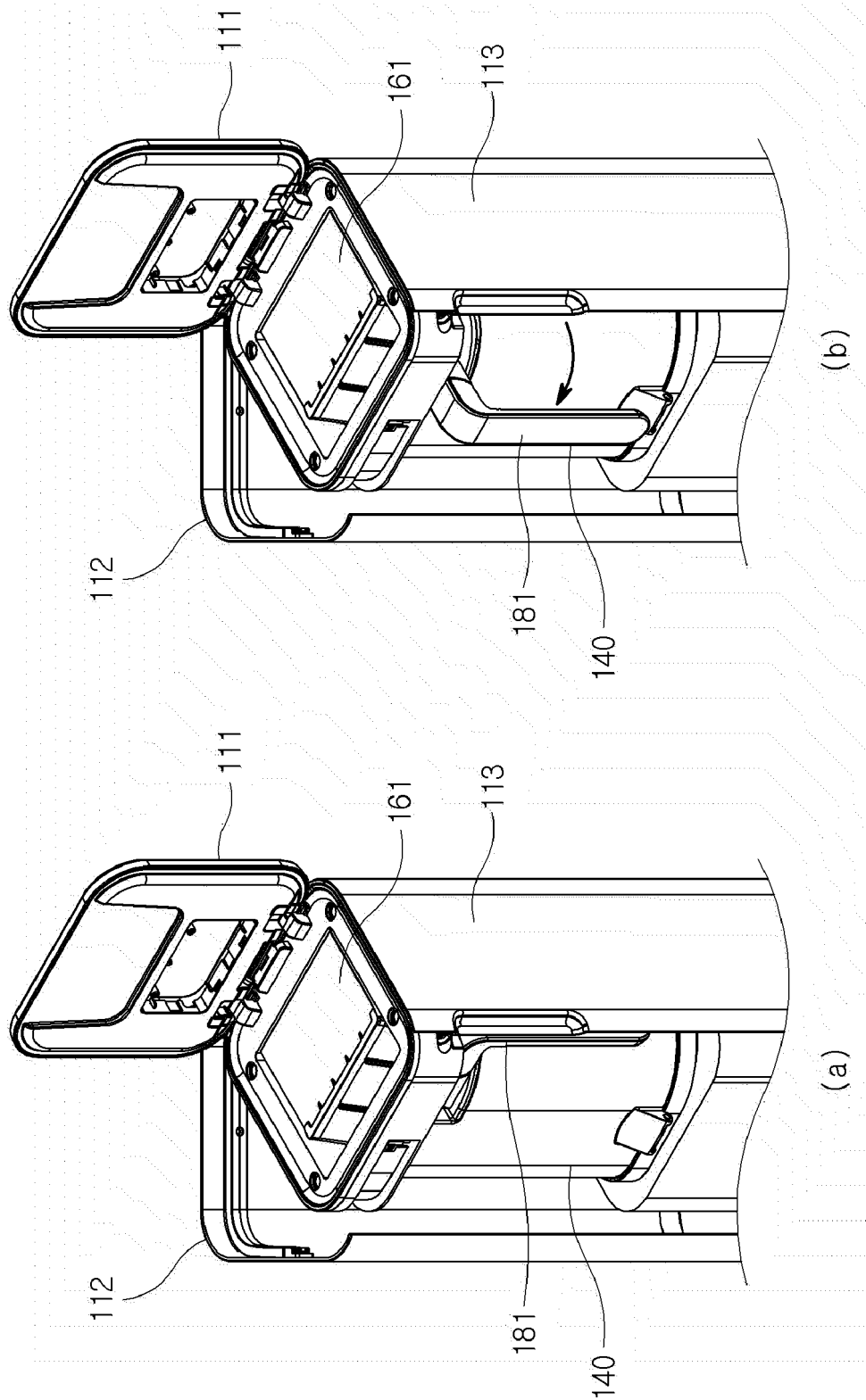
[FIG. 2]



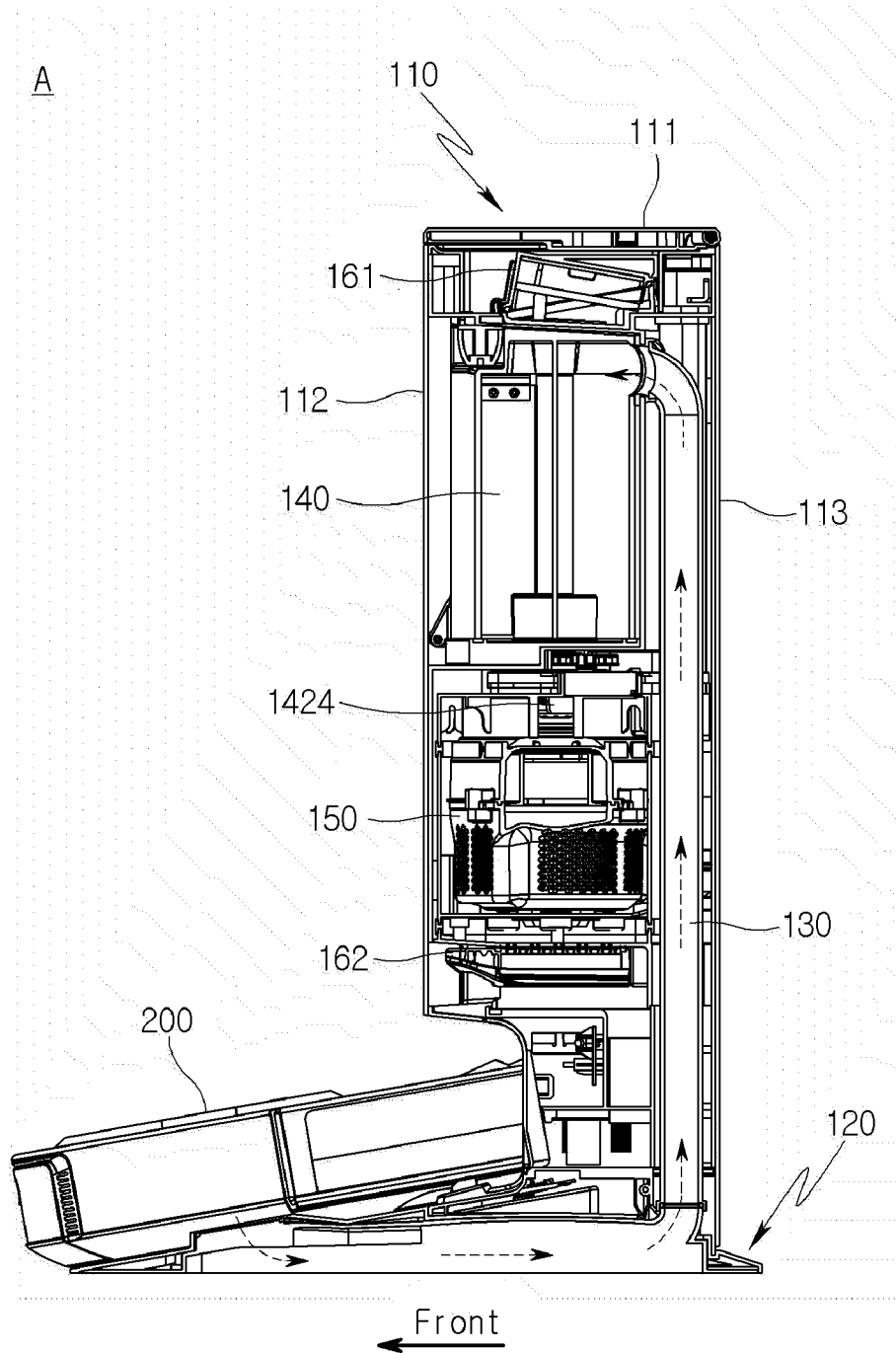
[FIG. 3]



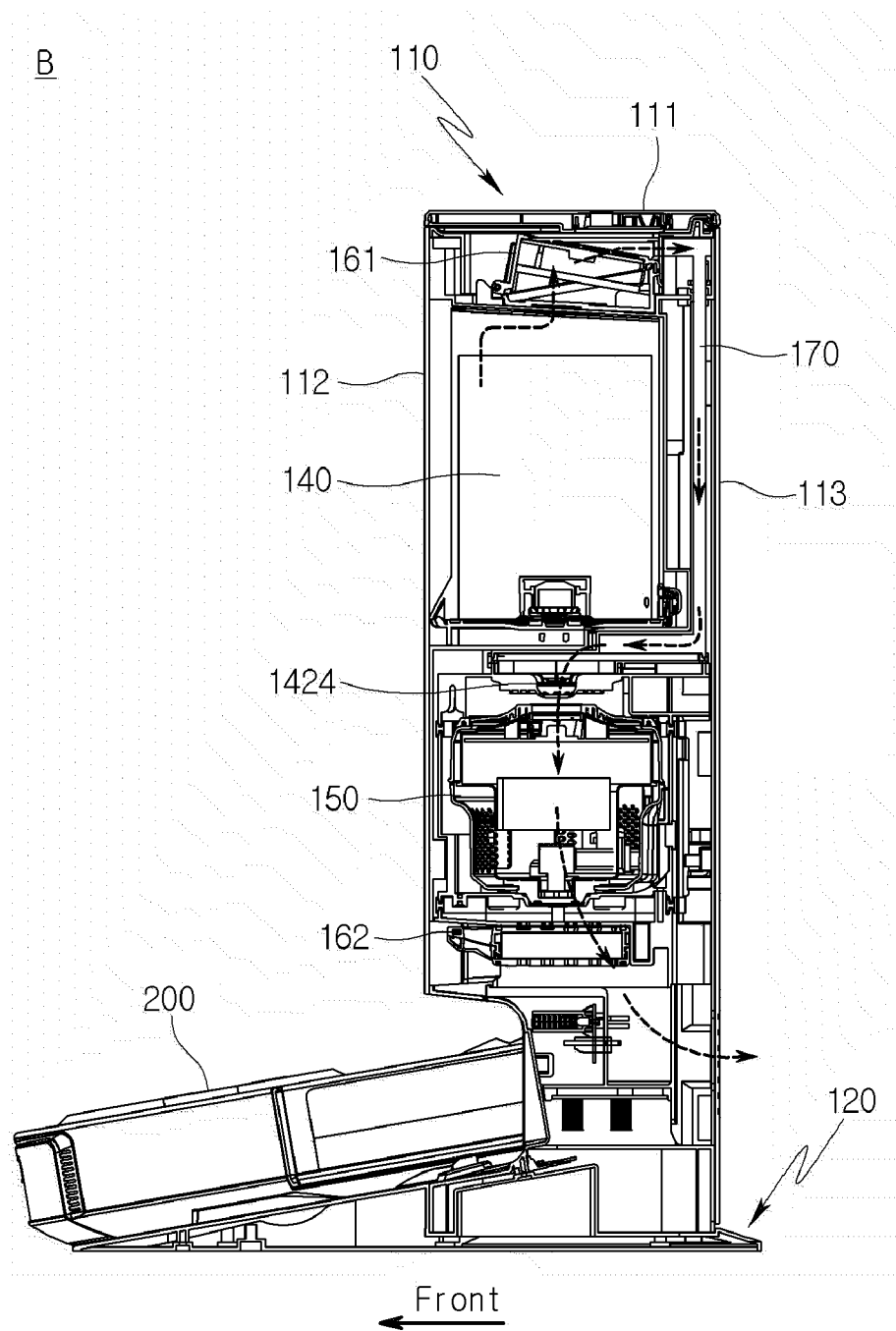
[FIG. 4]



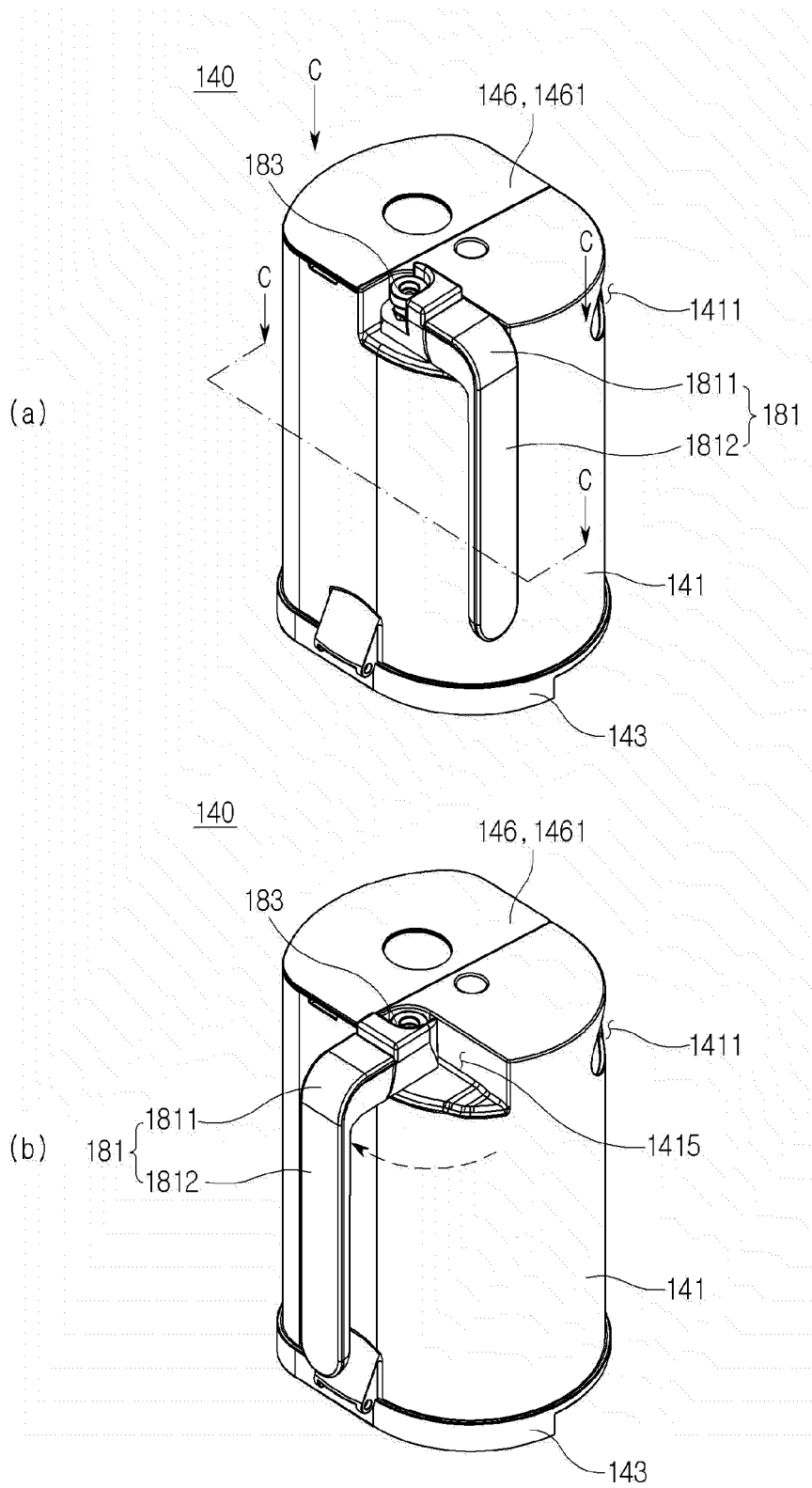
[FIG. 5]



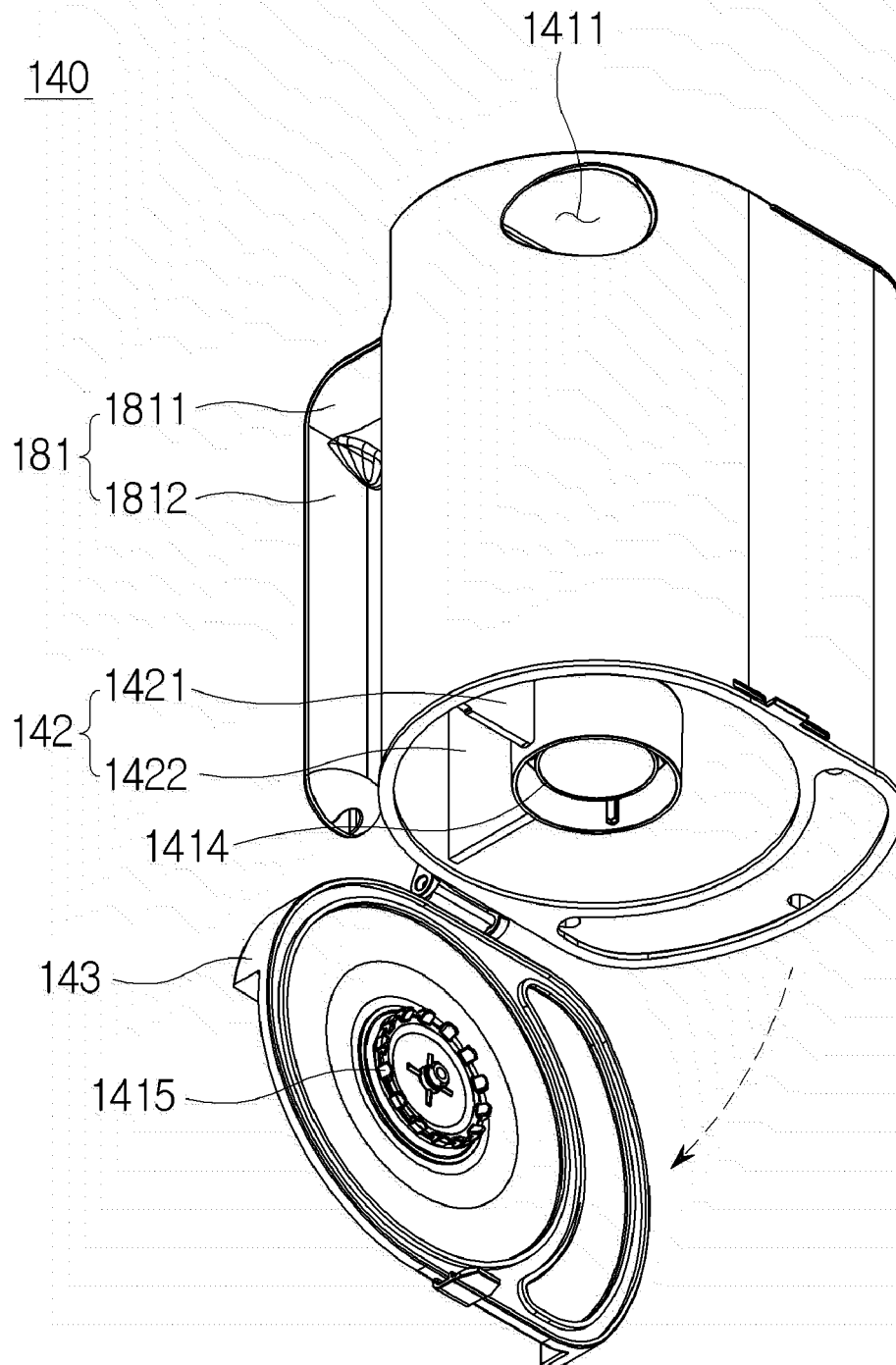
[FIG. 6]



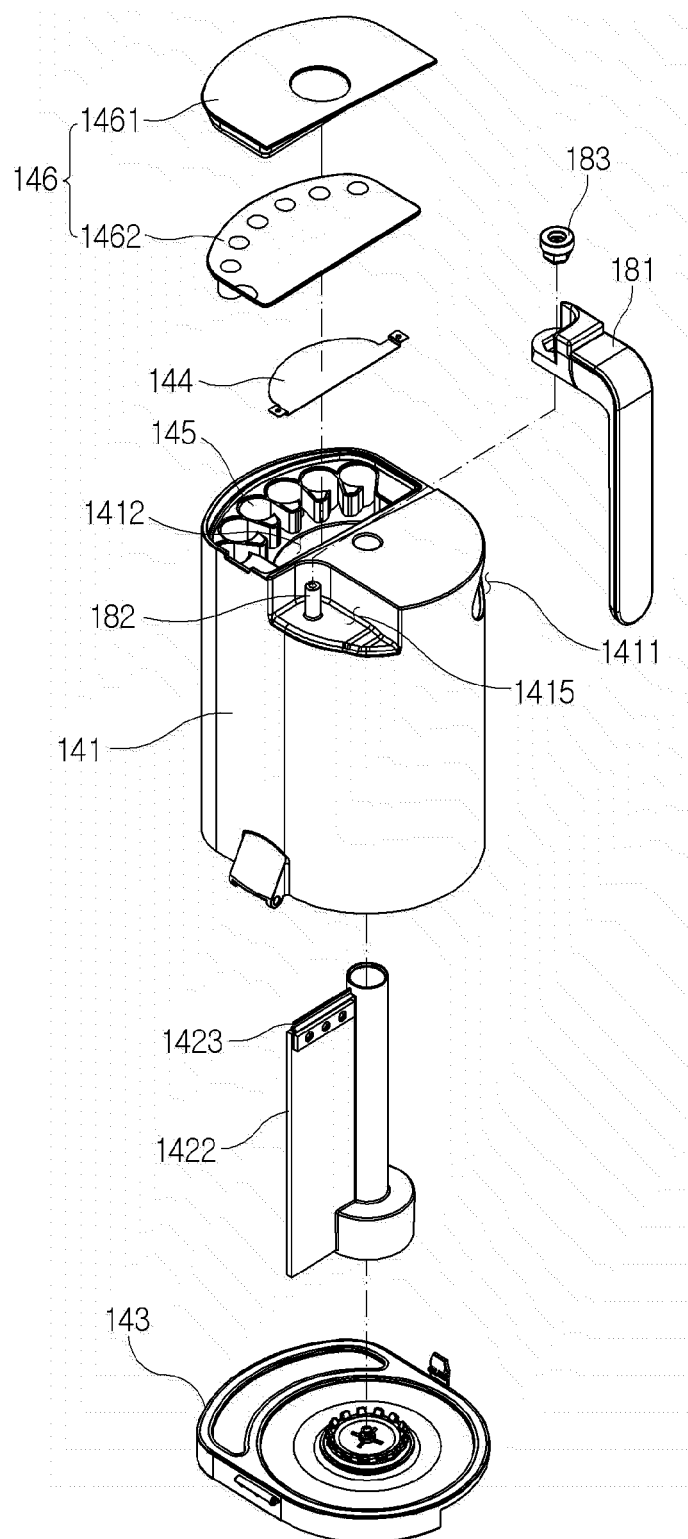
[FIG. 7]



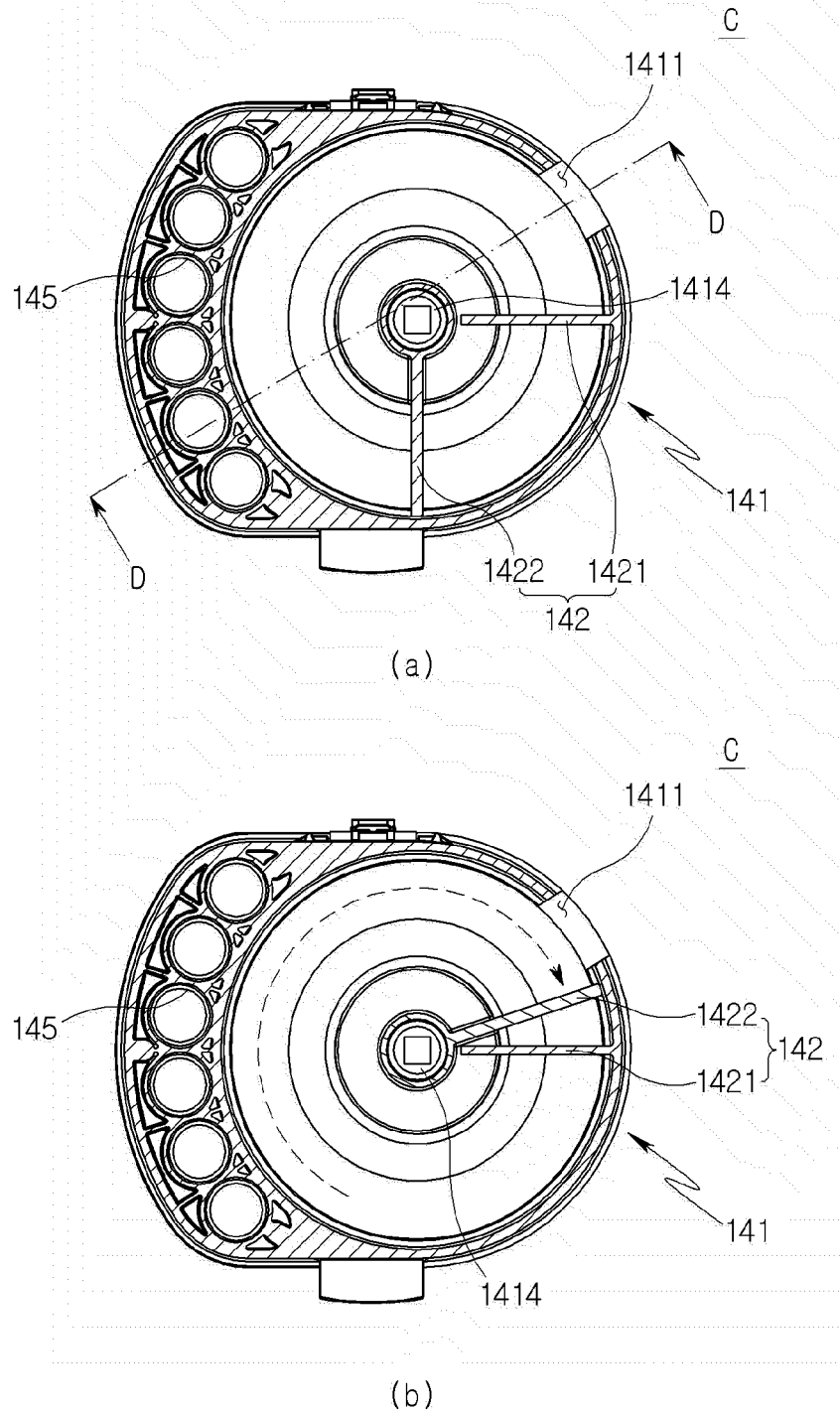
[FIG. 8]



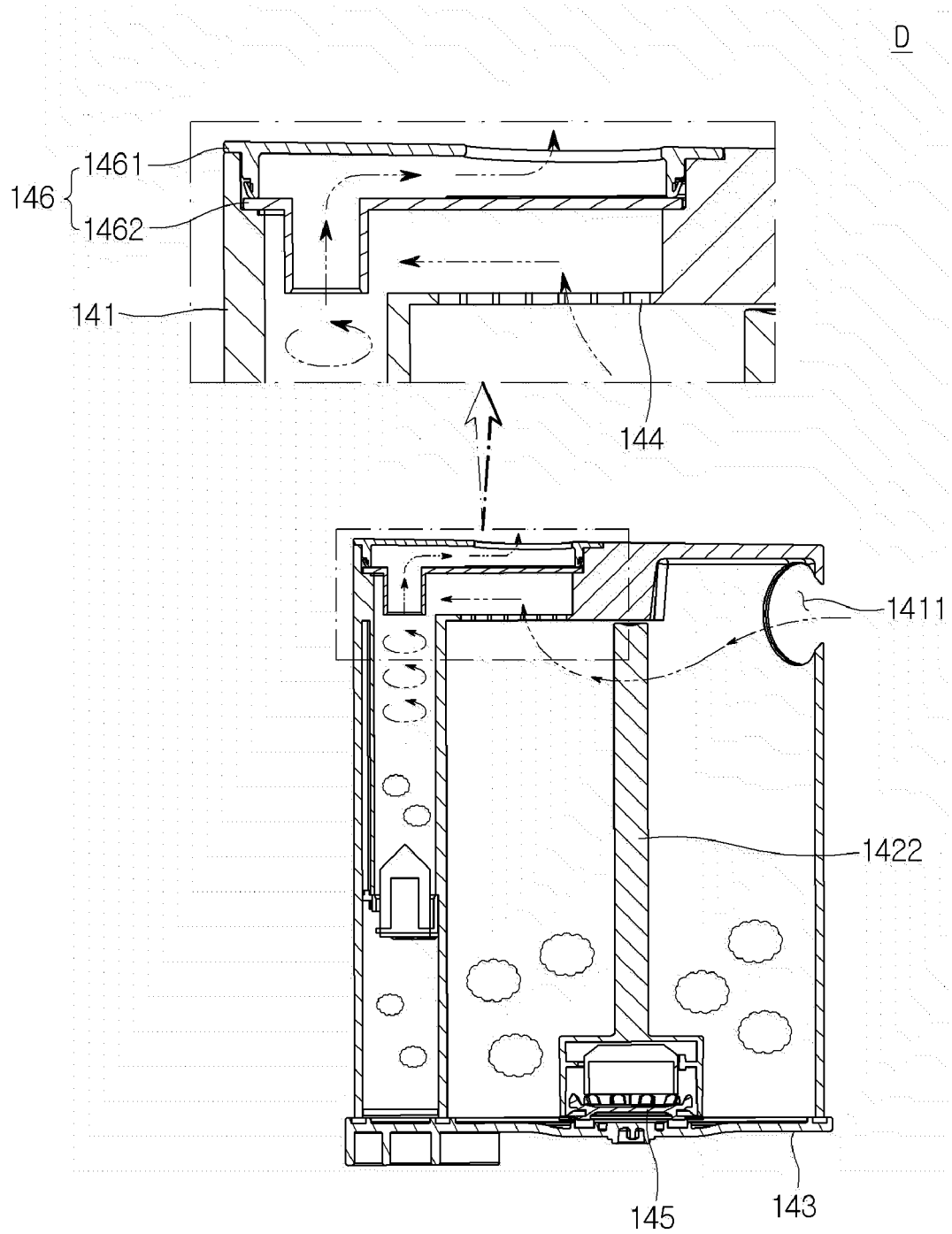
[FIG. 9]



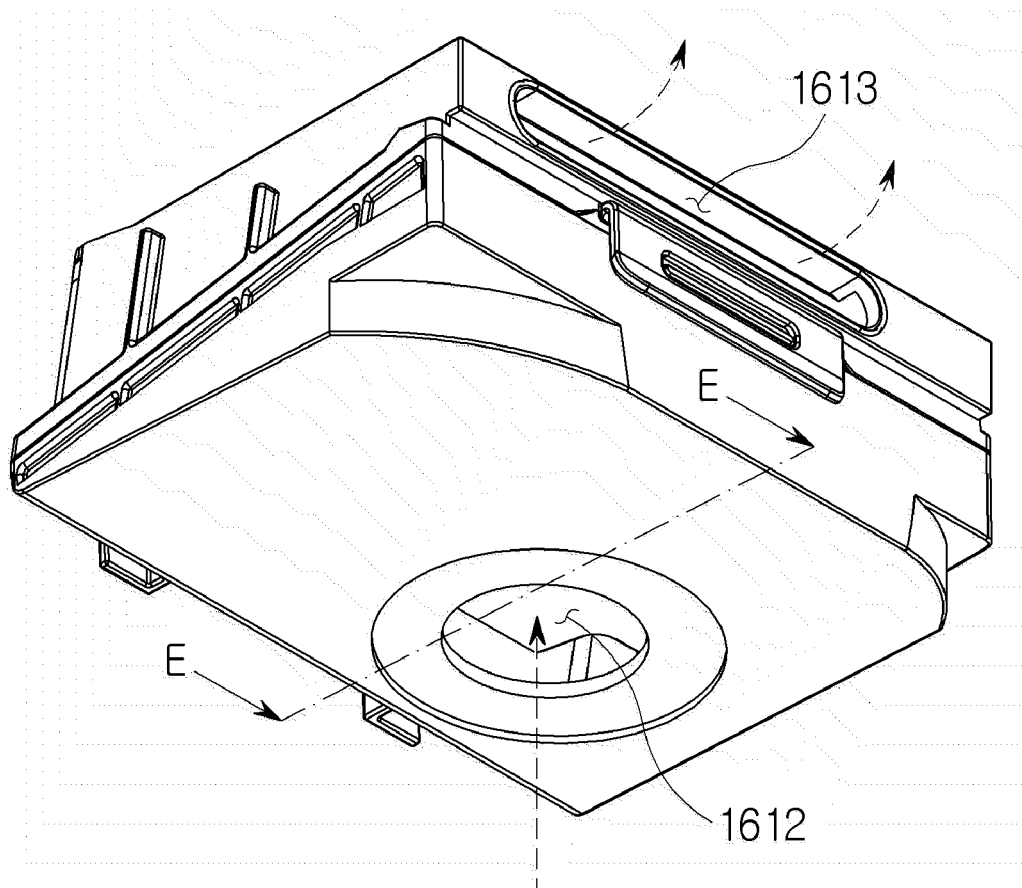
[FIG. 10]



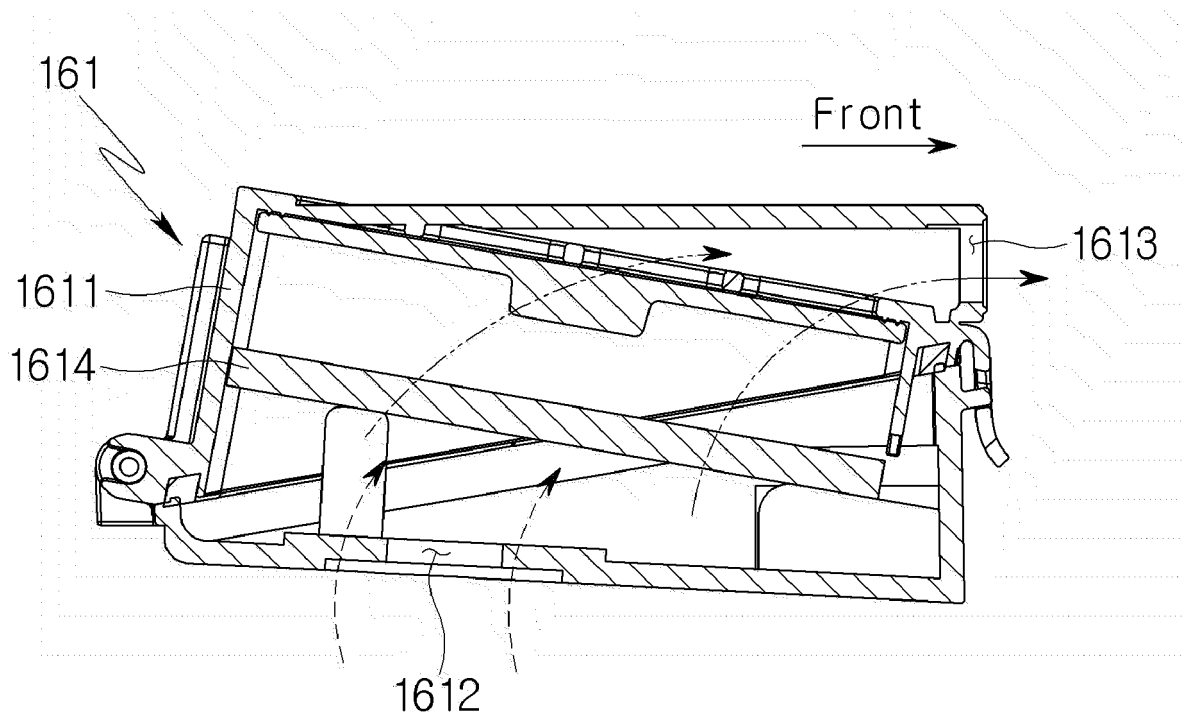
[FIG. 11]



[FIG. 12]



[FIG. 13]



INTERNATIONAL SEARCH REPORT

International application No.

PCT/KR2022/010892

A. CLASSIFICATION OF SUBJECT MATTER

A47L 9/16(2006.01)i; A47L 9/10(2006.01)i; A47L 9/20(2006.01)i; A47L 9/22(2006.01)i; A47L 9/28(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 9/16(2006.01); A47L 7/00(2006.01); A47L 9/00(2006.01); A47L 9/02(2006.01); A47L 9/10(2006.01);
A47L 9/12(2006.01); A47L 9/28(2006.01)

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

Korean utility models and applications for utility models: IPC as above
Japanese utility models and applications for utility models: IPC as above

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

eKOMPASS (KIPO internal) & keywords: 스테이션(station), 먼지집진부(dust collector), 공기 유입구(air inlet), 공기 배출구
(air outlet), 메시(mesh), 압축판(compression plate), 프리필터(prefilter), 싸이클론(cyclone)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	KR 10-2161708 B1 (SAMSUNG ELECTRONICS CO., LTD.) 05 October 2020 (2020-10-05) See paragraphs [0038]-[0060] and figures 1-4 and 6.	1-23
Y	KR 10-1306738 B1 (LG ELECTRONICS INC.) 11 September 2013 (2013-09-11) See paragraphs [0017]-[0037] and [0074]-[0084] and figures 1-5 and 9-10.	1-23
Y	CN 113925388 A (PURSUIT INNOVATION TECHNOLOGY (SUZHOU) CO., LTD.) 14 January 2022 (2022-01-14) See paragraph [0083], claim 13 and figures 1-2 and 14.	10-13
Y	KR 10-1970584 B1 (SAMSUNG ELECTRONICS CO., LTD.) 27 August 2019 (2019-08-27) See paragraphs [0082]-[0093] and figures 5-6.	14-17,20-23
A	JP 6707341 B2 (TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORP.) 10 June 2020 (2020-06-10) See paragraphs [0120]-[0141] and figures 1-2.	1-23

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

* Special categories of cited documents:

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

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