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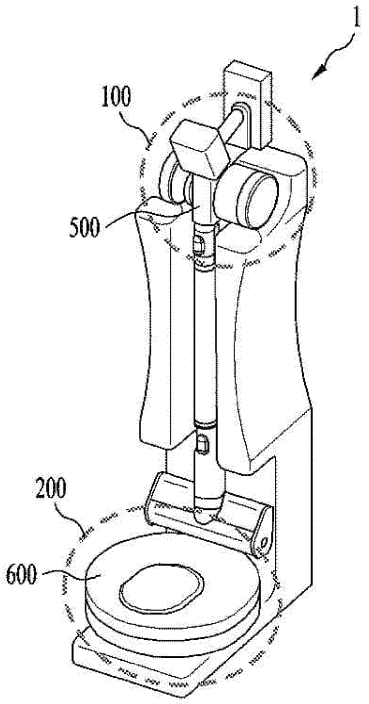
(54) CLEANER STATION

(57) Disclosed is a cleaner station including a first station with which a hand vacuum cleaner can be combined and a second station with which a robotic vacuum cleaner can be combined. The first station may include a first suction portion which sucks dust from a dust bin of the hand vacuum cleaner. The second station may include a second suction portion which sucks dust from a dust bin of the robotic vacuum cleaner. The cleaner station may include a dust inlet where the dust sucked by the first suction portion and the second suction portion is discharged. The cleaner station may include a dust storage box which communicates with the dust inlet and receives the dust sucked by the first suction portion and the second suction portion.

Figure 1a



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Description

TECHNICAL FIELD

[0001] The present disclosure relates to a cleaner station and more particularly to a cleaner station has a function of sucking dust by causing a hand vacuum cleaner and a robotic vacuum cleaner to be combined simultaneously therewith.

BACKGROUND ART

[0002] In general, a holder of a cleaner may be used for storing a cordless cleaner. The cordless cleaner is driven by using the power of a built-in battery. According to these characteristics, it is common to use a holder also capable of charging the power of the battery when the cordless cleaner is mounted.

[0003] A cordless vacuum cleaner includes a hand vacuum cleaner and a robotic vacuum cleaner. In the hand vacuum cleaner, a user grips a handle and moves directly to suck dust or foreign substances on the floor. The robotic vacuum cleaner performs autonomously cleaning while moving based on set movement information or movement information collected by a sensor.

[0004] After cleaning by operating the vacuum cleaner, the user must remove the dust and foreign substances that the vacuum cleaner has sucked. In the process of separating a dust bin from the vacuum cleaner or carrying the vacuum cleaner outside to remove dust, the user is exposed to fine dust that scatters again from the dust bin.

[0005] In addition, the hand vacuum cleaner is generally sold as a separate product from the robotic vacuum cleaner. Accordingly, there is an inconvenience of having to install different cleaner stations included in the respective products. In this case, it is inconvenient to connect different power sources to respective holders, and a space occupied by the holder increases. As a result, these cause inconvenience.

DISCLOSURE

Technical Problem

[0006] The present invention includes a cleaner station with which a hand vacuum cleaner and a robot vacuum cleaner can be combined simultaneously. Dust sucked by the two different devices can be managed by using one dust storage box.

[0007] Also, different cleaner stations are integrated into one cleaner station, so that it is possible to increase space efficiency and make it convenient to install the cleaner station.

[0008] Also, a plurality of flow paths can be selectively opened and closed, thereby preventing dust scattering and improving cleaning efficiency.

Technical Solution

[0009] In order to achieve the above-objectives, the cleaner station according to embodiments may have a structure in which a hand vacuum cleaner and a robotic vacuum cleaner can be combined simultaneously.

[0010] The cleaner station according to the embodiments includes stations with which the hand vacuum cleaner and the robotic vacuum cleaner can be combined respectively. The hand vacuum cleaner can be combined with an upper portion of the cleaner station, and the robotic vacuum cleaner can be combined with a lower portion of the cleaner station.

[0011] The cleaner station according to the embodiments enables the hand vacuum cleaner and the robotic vacuum cleaner to be combined therewith. The cleaner station may include a first station which is disposed on an upper portion of the cleaner station and is combined with the hand vacuum cleaner and a second station which is disposed on a lower portion of the cleaner station and is combined with the robotic vacuum cleaner. The first station may include a first suction portion which sucks dust from a dust bin of the hand vacuum cleaner. The second station may include a second suction portion which sucks dust from a dust bin of the robotic vacuum cleaner.

[0012] The cleaner station according to the embodiments may include a dust inlet where the dust sucked by the first suction portion and the second suction portion communicates, and may include a dust storage box which receives the dust sucked by the first suction portion and the second suction portion.

[0013] The cleaner station according to the embodiments may include a suction motor which sucks dust through at least one of the first suction portion and the second suction portion.

[0014] The cleaner station according to the embodiments may include a first flow path which communicates with the first suction portion; a second flow path which communicates with the second suction portion; a third flow path where the first flow path and the second flow path join and which communicates with the dust inlet.

[0015] The first flow path and the second flow path of the cleaner station according to the embodiments may be selectively opened and closed in response to a combined state of the hand vacuum cleaner and the robotic vacuum cleaner.

[0016] The first station of the cleaner station according to the embodiments may include a separated space where a suction tube of the hand vacuum cleaner is placed. Also, a first dust bin and a second dust bin included in the hand vacuum cleaner may be coupled to both ends of the separated space of the first station.

[0017] According to the embodiments, the first suction portion may be positioned at both ends of the first station respectively. The first dust bin and the second dust bin included in the hand vacuum cleaner may be coupled to a place where the first suction portion is located.

[0018] Also, the first flow path may include a Y-shaped flow path. Both ends of the Y-shaped flow path may be provided respectively in the first suction portion to which the first dust bin and the second dust bin are coupled.

[0019] The dust storage box of the cleaner station according to the embodiments may include a dust bag that is attachable and detachable. The dust bag may communicate with the dust inlet. The dust bag may include a filter that filters dust from air introduced into the dust inlet. The dust bag may store the filtered dust therein.

[0020] Also, the cleaner station according to the embodiments may further include an exhaust portion which exhausts dust-filtered air.

[0021] Also, within an opening closing area provided on one side of the cleaner station, the cleaner station may include a space to which the dust storage box can be coupled.

[0022] According to the embodiments, at least one of the dust inlet, the first suction portion, and the second suction portion may include a sealing member.

[0023] The cleaner station according to the embodiments may include a first charger which provides power to the hand vacuum cleaner; and a second charger which provides power to the robotic vacuum cleaner.

[0024] Meanwhile, the flow path switching portion of the cleaner station according to a first embodiment may include an opening closing portion which includes a communication hole and is movable slidingly. When the first flow path is opened, the opening closing portion may be disposed such that the communication hole is located between the first flow path and the third flow path.

[0025] Here, the communication hole may be formed to correspond to an end of the first flow path.

[0026] Meanwhile, when the second flow path is opened, the opening closing portion may be disposed such that a position of the communication hole moves in one direction out of between the first flow path and the third flow path.

[0027] Meanwhile, the flow path switching portion of the cleaner station according to a second embodiment may include a sealing portion which is selectively coupled to the first flow path and the second flow path and closes the flow path; and a link portion which is connected to the sealing portion and rotates the sealing portion. The sealing portion may be formed to have a cross-section larger than those of ends of the first flow path and the second flow path.

[0028] Here, the sealing portion may maintain a state of being coupled to any one of the first flow path and the second flow path, during the operation of the suction motor.

[0029] Meanwhile, the flow path switching portion may further include: a link housing to which the link portion is fixedly coupled; and a switching motor which provides power for rotating the sealing portion. The sealing portion may include at least one partition member which sets a rotatable region of the link portion.

[0030] Meanwhile, the cleaner station may further include a second processor which processes foreign substances sucked by the second suction portion. The second processor may be formed in the form of a blade or a saw blade capable of cutting long foreign substances.

Advantageous Effects

[0031] Embodiments provide a cleaner station which is able to increase the convenience of removing dust in a hand vacuum cleaner and a robotic vacuum cleaner and is able to charge and store the devices.

[0032] The cleaner station according to the embodiments is characterized in that it is possible to mount a hand vacuum cleaner and a robotic vacuum cleaner at the same time. This makes it possible to charge the hand vacuum cleaner and the robotic vacuum cleaner with one power source. Also, two different holders are integrated into one holder, so that it is possible to maximize space efficiency and improve the convenience of installation.

[0033] Also, the cleaner station according to the embodiments has an advantage of automatically sucking and storing the dust of the vacuum cleaner by using a suction portion. A user does not have to directly empty a dust bin of the vacuum cleaner. In the process of emptying the dust bin, the user may not be exposed to the dust scattering toward the user.

[0034] Also, the cleaner station according to the embodiments allows the user to manage different dust bins included in the hand vacuum cleaner and the robotic vacuum cleaner through one device.

[0035] Also, the cleaner station according to the embodiments seals the sucked foreign substances and dust within the holder and provides to the user. Through this, it is possible for the user to conveniently remove the dust within the vacuum cleaner.

[0036] Also, the cleaner station according to the embodiments may preferentially remove dust of any one of the hand vacuum cleaner and the robotic vacuum cleaner, thereby improving the emptying efficiency of the dust bin.

[0037] Also, the cleaner station according to the embodiments can prevent dust from scattering again by closing an opposite flow path in the process of removing dust of any one of the hand vacuum cleaner and the robotic vacuum cleaner.

[0038] Also, the cleaner station according to the embodiments may provide the user with an aesthetic sense by processing long foreign substances that are likely to be caught in the dust bins of the hand vacuum cleaner and the robotic vacuum cleaner.

DESCRIPTION OF DRAWINGS

[0039]

FIG. 1A is a perspective view showing that a hand vacuum cleaner and a robotic vacuum cleaner are combined with a cleaner station according to em-

bodiments of the present disclosure;

FIG. 1B is a front view showing that the hand vacuum cleaner and the robotic vacuum cleaner 600 are combined with the cleaner station according to embodiments of the present disclosure;

FIG. 1C is a side view showing that the hand vacuum cleaner and the robotic vacuum cleaner are combined with the cleaner station according to embodiments of the present disclosure;

FIG. 2A is a cross-sectional view of a flow path structure and an exhaust path of the cleaner station according to embodiments of the present disclosure as viewed from the side;

FIG. 2B is a cross-sectional view of the flow path structure and the exhaust path of the cleaner station according to embodiments of the present disclosure as viewed from the rear;

FIG. 3 is a perspective view showing a structure of a state where a flow path switching portion according to a first embodiment of the present disclosure opens a first flow path;

FIG. 4 is a perspective view showing a structure of a state where the flow path switching portion according to the first embodiment of the present disclosure opens a second flow path;

FIG. 5 is a cross-sectional view of the state where the flow path switching portion according to the first embodiment of the present disclosure opens the first flow path;

FIG. 6 is a cross-sectional view of the state where the flow path switching portion according to the first embodiment of the present disclosure opens the second flow path;

FIG. 7 is a side view of a state where a flow path switching portion according to a second embodiment of the present disclosure opens the first flow path as viewed from one side;

FIG. 8 is a side view showing that some components are disassembled, as viewed from one side, in the state where the flow path switching portion according to the second embodiment of the present disclosure opens the first flow path;

FIG. 9 is an exploded perspective view showing that some components are disassembled in the state where the flow path switching portion according to the second embodiment of the present disclosure opens the first flow path;

FIG. 10 is a side view of a state where the flow path switching portion according to the second embodiment of the present disclosure opens the second flow path as viewed from one side;

FIG. 11 is a side view showing that some components are disassembled, as viewed from one side, in the state where the flow path switching portion according to the second embodiment of the present disclosure opens the second flow path;

FIG. 12 is an exploded perspective view showing that some components are disassembled in the state where the flow path switching portion according to the second embodiment of the present disclosure opens the second flow path;

FIGS. 13A and 13B are perspective views showing a structure in which the hand vacuum cleaner including a first dust bin and a second dust bin is combined with a first station in accordance with embodiments of the present disclosure;

FIG. 14A is a cross-sectional view of the flow path structure of the cleaner station according to the embodiments of the present disclosure as viewed from the rear;

FIG. 14B is a cross-sectional view of the cleaner station including a first flow path with a Y-shaped structure according to the embodiments of the present disclosure as viewed from the rear;

FIG. 15A is a side view showing a state where a dust storage box according to the embodiments of the present disclosure is coupled to the inside of the cleaner station;

FIG. 15B is a perspective view showing an internal space of the cleaner station with which the dust storage box according to the embodiments of the present disclosure is combined;

FIG. 16A is a cross-sectional view showing schematically a structure of the dust storage box according to the embodiments of the present disclosure; and

FIG. 16B is a cross-sectional view showing schematically a structure of a dust bag coupled to the dust storage box according to the embodiments of the present disclosure.

MODE FOR INVENTION

[0040] Embodiments of the present disclosure will be described with reference to the accompanying drawings such that the purpose of the present disclosure may be specifically understood and implemented.

[0041] In this process, the size or shape of the components shown in the drawings may be exaggerated for clarity and convenience of description. Also, terms specifically defined in consideration of the configuration and operation of the present disclosure may vary depending on the intentions or customs of users and operators.

[0042] Meanwhile, in the present disclosure, while terms such as the first and the second, etc., can be used to describe various components, the components are not limited by the terms mentioned above. The terms are used only for distinguishing between one component and other components. For example, the first component may be designated as the second component without departing from the scope of rights according to the concept of the present invention. Similarly, the second component may be designated as the first component. The term of 'and/or' includes a combination or one of a plurality of related items mentioned.

[0043] These terms should be defined and understood

based on what has been described throughout the present specification.

[0044] As mentioned above, the present disclosure is not limited to the above-described embodiment. As can be seen from the appended claims, the present invention can be modified by those skilled in the art to which the present invention pertains, and such modifications are within the scope of the present invention.

[0045] Hereinafter, a cleaner station 1 with which a hand vacuum cleaner 500 and a robotic vacuum cleaner 600 can be combined will be described.

[0046] A vacuum cleaner is a device that sucks dust existing on the floor or in a place that is difficult to reach by using a member such as a pipe. The vacuum cleaner includes a motor and a dust bin. The motor which is rotating forms a vacuum within the dust bin, and thus, an internal pressure of the dust bin is lower than an external pressure of the dust bin, so that foreign substances such as dust, etc., can be sucked in by the pressure difference.

[0047] The vacuum cleaner can be divided into the hand vacuum cleaner 500 that cleans the floor, etc., while being held and moved by a user and the robotic vacuum cleaner 600 that automatically sets a path and performs cleaning. Both types of vacuum cleaners have a dust bin and a battery therewithin, and the user should separate the dust bin from each vacuum cleaner and remove the dust in the dust bin.

[0048] The hand vacuum cleaner 500 and the robotic vacuum cleaner 600 may be charged by using a holder connected to a power source. It is common for each device to use a different charging holder. The charging holder has to be connected to a power source and occupies a volume. Therefore, if one or more holders are provided in the house, the efficiency of spatial use is degraded and a plurality of power sources is required.

[0049] The cleaner station 1 according to the embodiments has a function of simultaneously being combined with two types of vacuum cleaners. By using this, it is possible to simultaneously charge different types of vacuum cleaners with only one power source. Also, it is possible to increase the efficiency of spatial use.

[0050] The cleaner station 1 has a flow path structure and a dust storage box 300 therein, so that interior materials of the dust bin included in each vacuum cleaner can be sucked. At least one dust bin included in different types of cleaners can be managed by using one dust bin 300.

[0051] Hereinafter, with reference to FIG. 1, components included in the cleaner station 1 according to embodiments and a combining structure between the components will be described.

[0052] FIG. 1A is a perspective view showing that the hand vacuum cleaner 500 and the robotic vacuum cleaner 600 are combined with the cleaner station 1 according to embodiments. FIG. 1B is a front view showing that the hand vacuum cleaner 500 and the robotic vacuum cleaner 600 are combined with the cleaner station 1 according to embodiments. FIG. 1C is a side view showing that the hand vacuum cleaner 500 and the robotic vacuum cleaner 600 are combined with the cleaner station 1 according to embodiments.

[0053] The cleaner station 1 according to the embodiments may allow the hand vacuum cleaner 500 and the robotic vacuum cleaner 600 to be combined therewith. Specifically, it is possible that only one of the hand vacuum cleaner 500 and the robotic vacuum cleaner 600 may be combined with the cleaner station 1 or two types of cleaners may be combined with the cleaner at the same time.

[0054] An upper portion of the cleaner station 1 may include a first station 100 with which the hand vacuum cleaner 500 is combined. The first station 100 may include a first suction portion 110 that sucks dust from the dust bin of the hand vacuum cleaner 500. The dust bin included in the hand vacuum cleaner 500 may be connected to the first suction portion 110, and dust and foreign substances within the dust bin can be discharged to the outside of the dust bin by a suction force acting on the first suction portion 110.

[0055] A lower portion of the cleaner station 1 may include a second station 200 with which the robotic vacuum cleaner 600 is combined. The second station 200 may include a second suction portion 210 that sucks dust from the dust bin of the robotic vacuum cleaner 600. The dust bin included in the robotic vacuum cleaner 600 may be connected to the second suction portion 210, and dust and foreign substances within the dust bin can be discharged to the outside of the dust bin by a suction force acting on the second suction portion 210.

[0056] Specifically, when the hand vacuum cleaner 500 is combined, a portion where the dust bin of the hand vacuum cleaner 500 is located may be seated in the first station 100. Here, a suction tube 520 may be disposed in a longitudinal direction of the cleaner station 1. The second station 200 includes a flat structure protruding forward from the lower portion of the cleaner station 1, and the robotic vacuum cleaner 600 may be seated thereon.

[0057] Hereinafter, with reference to FIG. 2, an internal structure of the cleaner station 1 for sucking dust will be described.

[0058] FIG. 2A is a cross-sectional view of a flow path structure and an exhaust path P of the cleaner station 1 according to embodiments as viewed from the side, and FIG. 2B is a cross-sectional view of the flow path structure and the exhaust path P of the cleaner station 1 according to embodiments as viewed from the rear.

[0059] The cleaner station 1 according to the embodiments may include the dust storage box 300 and a dust inlet 310. The dust storage box 300 stores the sucked dust. The dust inlet 310 discharges the dust sucked by the first suction portion 110 and/or the second suction portion 210. The dust storage box 300 communicates with the dust inlet 310, and the dust sucked by the first suction portion 110 and the second suction portion 210 is received within the dust storage box 300.

[0060] The cleaner station 1 according to embodiments may include a suction motor 800 that provides power for sucking dust.

[0061] Specifically, the suction motor 800 may be a fan motor. The suction motor 800 receives power to rotate the fan, and the flow of air generated by the rotation of the fan may function to reduce the pressure inside the dust storage box 300.

[0062] The cleaner station 1 according to the embodiments may include a first flow path 111 communicating with the first suction portion 110 and a second flow path 211 communicating with the second suction portion 210. Also, the cleaner station 1 may further include a third flow path 311 where the first flow path 111 and the second flow path 211 join. The third flow path 311 communicates with the dust inlet 310.

[0063] Specifically, one end of the first flow path 111 communicates with the first suction portion 110, and may suck the dust of the hand vacuum cleaner 500. The other end of the first flow path 111 may be connected to one end of the third flow path 311. In addition, one end of the second flow path 211 communicates with the second suction portion 210, and the dust of the robotic vacuum cleaner 600 may be sucked. The other end of the second flow path 211 may be connected to one end of the third flow path 311. The dust sucked along the first flow path 111 and the second flow path 211 joins at one end of the third flow path 311. The other end of the third flow path 311 communicates with the dust inlet 310, and the sucked dust passes through the dust inlet 310 and is received into the dust storage box 300.

[0064] Air P, which is also sucked together in order to suck dust, may be exhausted through one side of the cleaner station 1 after the included dust is filtered.

[0065] The first flow path 111 and the second flow path 211 according to embodiments may be selectively opened and closed in response to the combined state of the hand vacuum cleaner 500 and the robotic vacuum cleaner 600.

[0066] Specifically, when the hand vacuum cleaner 500 and the robotic vacuum cleaner 600 suck dust simultaneously, there is a possibility that a suction force of the cleaner station 1 may be reduced. If a sufficient suction force is not provided to the dust bin of the vacuum cleaner, dust and foreign substances may remain within the dust bin even after the suction process is completed.

[0067] As the first flow path 111 and the second flow path 211, or, in other words, the first suction portion 110 and the second suction portion 210 are selectively opened and closed, the suction force provided by the suction motor 800 can be focused on one side. Hereinafter, the description of opening and closing the first flow path 111 has the same meaning as the description of opening and closing the first suction portion 110, and may be used interchangeably. Similarly, the description of opening and closing the second flow path 211 has the same meaning as the description of opening and closing the second suction portion 210, and may be used interchangeably.

[0068] Specifically, when the cleaner station 1 closes the second suction portion 210 and sucks dust of the hand vacuum cleaner 500, air may be introduced more quickly from the first suction portion 110. Conversely, when the cleaner station 1 closes the first suction portion 110 and sucks dust of the robotic vacuum cleaner 600, air may be introduced more quickly from the second suction portion 210.

[0069] Therefore, when only the hand vacuum cleaner 500 is combined, the cleaner station 1 may suck the dust of the hand vacuum cleaner 500 with the first suction portion 110 open and the second suction portion 210 closed. Also, when only the robotic vacuum cleaner 600 is combined, the cleaner station 1 may suck the dust of the robotic vacuum cleaner 600 with the second suction portion 210 open and the first suction portion 110 closed.

[0070] Also, when both the hand vacuum cleaner 500 and the robotic vacuum cleaner 600 are combined with the cleaner station 1, the cleaner station 1 may, in accordance with a user's selection, suck the dust of the hand vacuum cleaner 500 with the first suction portion 110 open and the second suction portion 210 closed or may suck the dust of the robotic vacuum cleaner 600 with the second suction portion 210 open and the first suction portion 110 closed.

[0071] A backflow phenomenon may occur in the process in which the cleaner station 1 sucks the dust. In this case, some of the dust moving along the flow path may be discharged to the external space. Also, there is a possibility that the dust remaining within the flow path is blown to the external space by convection. In order to prevent dust from scattering in the indoor space, the cleaner station 1 may include a sealing member 350 that closes the flow path.

[0072] Specifically, at least one of the dust inlet 310, the first suction portion 110, and the second suction portion 210 may include the sealing member 350 that prevents the dust from passing therethrough. The sealing member 350 may be made of a rubber material. In the state where the hand vacuum cleaner 500 is combined, the sealing member 350 of the first suction portion 110 may be opened, and in the state where the robotic vacuum cleaner 600 is combined, the sealing member 350 of the second suction portion 210 may be opened.

[0073] Also, the cleaner station 1 may include a flow path switching portion capable of opening and closing the first flow path 111 and the second flow path 211. The flow path switching portion 400 may be provided together with the sealing member 350 described above, and both the components may be selectively provided according to the embodiment. Hereinafter, the configuration of the flow path switching portion 400 will be described in detail with reference to FIGS. 3 to 12.

[0074] FIG. 3 is a perspective view showing a structure of a state where the flow path switching portion 400 according to a first embodiment of the present disclosure opens the first flow path. FIG. 4 is a perspective view

showing a structure of a state where the flow path switching portion 400 according to the first embodiment of the present disclosure opens the second flow path. FIG. 5 is a cross-sectional view of the state where the flow path switching portion 400 according to the first embodiment of the present disclosure opens the first flow path. FIG. 6 is a cross-sectional view of the state where the flow path switching portion 400 according to the first embodiment of the present disclosure opens the second flow path.

[0075] First, referring to FIGS. 3 to 6, the flow path switching portion 400 according to the first embodiment of the present disclosure may selectively open and close the first flow path 111 and the second flow path 211 through forward and backward movement, that is, sliding. Here, the forward may mean a direction in which the hand vacuum cleaner 500 or the robotic vacuum cleaner 600 enters the cleaner station 1. Also, the backward has a relative concept to the forward and may be defined as a direction in FIG. 3 from a point where the flow path switching portion 400 is connected to the second flow path to a point where the flow path switching portion 400 is connected to the first flow path 111. However, depending on a design in which the first flow path 111, the second flow path 211, the third flow path 311, and the flow path switching portion 400 are arranged, the movement direction may be changed, and such a changed embodiment is also included in the scope of the present disclosure.

[0076] The flow path switching portion 400 may include a housing 410, an opening closing portion 420, a rotating disk 430, a micro switch 480, and a switching motor 490.

[0077] The housing 410 may form a predetermined internal space by coupling an upper housing 411 and a lower housing 412. Accordingly, in the internal space of the housing 410, the components of the flow path switching portion 400 can be disposed without external interference.

[0078] A communication hole 421 for opening the first flow path 111 may be formed in the opening closing portion 420 according to the first embodiment.

[0079] The shape of the communication hole 421 may be formed to correspond to the first flow path 111 and the third flow path 311 such that they can communicate with each other. For example, referring to FIG. 3, the communication hole 421 may be formed in an approximate circular shape to correspond to the shape of the end of the first flow path 111. Also, if the shape of the first flow path 111 is changed, the shape of the communication hole 421 may be changed correspondingly. Accordingly, it is possible to prevent the leakage of the gas which is guided from the first flow path 111 to the third flow path 311.

[0080] A catching groove 422 which is opened with a predetermined width and extends may be formed in one side of the opening closing portion 420. The catching groove 422 is a space to which a catching protrusion 432 of the rotating disk 430 to be described later is fitted and coupled, and details thereof will be described later.

[0081] The opening closing portion 420 may be coupled to the lower housing 412. A sliding guide 413 which enables the opening closing portion 420 coupled to the lower housing 412 to slide may be formed on one side of the lower housing 412. The opening closing portion 420 is coupled with being fitted, thereby being prevented from separating. Also, the opening closing portion 420 is movable forward and backward with being coupled to the sliding guide 413.

[0082] Referring to FIGS. 3 to 6, the opening closing portion 420 can slide forward and backward. Specifically, when the state where the first flow path 111 is opened (see FIGS. 3 and 5) is switched to the state where the second flow path 211 is opened (refer to FIGS. 4 and 6), the opening closing portion 420 can slide forward. Conversely, when the state where the second flow path 211 is opened is switched to the state where the first flow path 111 is opened, the opening closing portion 420 can slide backward. Accordingly, the opening closing portion 420 can selectively open and close the first flow path 111 or the second flow path 211.

[0083] In another embodiment, the communication hole 421 may be formed to open the second flow path 211. In this case, the second flow path 211 and the communication hole 421 may meet in a state where the opening closing portion 420 has moved to the rear to the maximum degree. Accordingly, the gas sucked through the second flow path 211 may be guided to the third flow path 311. Here, the opening closing portion excluding the communication hole 421 may seal the first flow path 111 and the third flow path 311.

[0084] The rotating disk 430 may change the position of the opening closing portion 420. Specifically, the rotating disk 430 may be connected to the opening closing portion 420 to move the position of the opening closing portion 420 forward and backward through rotation. To this end, the rotating disk 430 is arranged to be able to rotate and can be rotated by a rotational force of the switching motor 490 to be described later.

[0085] Referring to FIG. 3, the rotating disk 430 may include a disk body 431 and a catching protrusion 432.

[0086] The disk body 431 may be provided in the form of a disk having a substantially circular cross-section and extending to a predetermined height. However, in an embodiment where the rotation does not cause interference with surrounding components, the disk body may be provided in another form.

[0087] The catching protrusion 432 may be formed to protrude to a predetermined height from the top surface of the disk body 431. The catching protrusion 432 may be fitted into the catching groove 422 of the opening closing portion 420. Accordingly, when the rotating disk 430 rotates, the catching protrusion 432 may move the opening closing portion 420 by catching and pulling the opening closing portion 420. That is, the catching protrusion 432 may perform a function of converting a rotational motion of the rotating disk 430 into a linear motion of the opening closing portion 420.

[0088] Specifically, when the disk body 431 rotates, the catching protrusion 432 rotates together with the disk body along the rotation direction of the disk body 431. Here, since the catching protrusion 432 is in a state of being coupled to the catching groove 422, the catching protrusion may pull and move the opening closing portion 420 while rotating in the circumferential direction of the disk body 431. Through this, the opening closing portion 420 can perform a linear motion, and moreover, can selectively open and close the first flow path 111 and the second flow path 211.

[0089] The micro switch 480 may be disposed to determine the rotation and position state of the opening closing portion 420 and the rotating disk 430. In the embodiment of FIG. 3, the micro switch is provided on the opening closing portion 420 and the rotating disk 430. Also, the arrangement position of the micro switch 480 may be changed according to a design change.

[0090] The micro switch 480 may recognize the position of the opening closing portion 420. Specifically, one end of the micro switch 480 may include a cantilever-shaped fixed handle 481. Accordingly, when the handle 481 is pressed, the position of the opening closing portion is changed, and the micro switch 480 can recognize the change of the position.

[0091] The micro switch 480 may turn on/off the power of the switching motor 490 to be described later. When the above-described handle 481 moves more than a certain distance, the micro switch 480 may turn on/off the power of the switching motor 490.

[0092] Since the detailed configuration of the micro switch 480 is known to those skilled in the art, detailed description thereof will be omitted. In other words, the micro switch 480 may be provided by selectively employing a device capable of controlling the power of the switching motor 490 through the recognition of the position of the opening closing portion 420. Such a modified embodiment is also within the scope of the present invention.

[0093] In the first embodiment, the switching motor 490 may be provided below the lower housing 412. The switching motor 490 is configured to provide power that can move the opening closing portion 420, and may include a shaft 491 and a motor housing 493.

[0094] The shaft 491 is a rotation shaft of the switching motor 490, and may rotate in one direction when the switching motor 490 is operated. In addition, when the switching motor 490 operates in the opposite direction, the shaft may rotate in the other direction. Here, the one direction and the other direction may mean a clockwise direction and a counter-clockwise direction, respectively, and they may mean vice versa.

[0095] The motor housing 493 can protect the switching motor 490 from external interference. The motor housing 493 may be coupled below the lower housing 412. Accordingly, the switching motor 490 can be provided below the lower housing.

[0096] The switching motor 490 may be coupled to the rotating disk 430. Specifically, the shaft 491 provided in the switching motor 490 may be coupled to the rotating disk 430. When the switching motor 490 is operated, the shaft 491 may rotate the coupled rotating disk 430 together while rotating.

[0097] The rotational operation of the switching motor 490 may be controlled by the micro switch 480. Specifically, the switching motor 490 may rotated in one direction, and the rotating disk 430 may rotate together to move the opening closing portion 420. Accordingly, when the position of the opening closing portion 420 reaches a one-way limit point, the catching protrusion may come into contact with the handle of the micro switch 480. When the micro switch 480 recognizes that pressure is applied through the handle 481, the micro switch may determine that the opening closing portion 420 has moved to a limited area. Here, the micro switch 480 may end the operation of the switching motor 490. A method for controlling the switching motor 490 and the micro switch 480 for moving the opening closing portion 420 in the opposite direction can also be performed in the same manner.

[0098] Referring to FIGS. 5 and 6, the first flow path 111 and the second flow path may selectively communicate with the third flow path 311 by the opening closing portion 420.

[0099] For convenience of description, the state of FIG. 5 may be referred to as an open state of the first flow path 111, and the state of FIG. 6 may be referred to as an open state of the second flow path 211.

[0100] In the open state of the first flow path 111, by the suction force generated by the suction motor 800, the air including dust may pass sequentially through the first flow path 111 and the third flow path 311 from the dust bin of the hand vacuum cleaner 500 and may be guided to the dust storage box 300. Here, the opening closing portion 420 blocks the second flow path 211 and the third flow path 311 to prevent the air from flowing from the second flow path 211 into the third flow path 311.

[0101] In the open state of the second flow path 211, by the suction force generated by the suction motor 800, the air including dust may pass sequentially through the second flow path 211 and the third flow path 311 from a dust bin 610 of the robotic vacuum cleaner 600 and may be guided to the dust storage box 300. Here, the opening closing portion 420 blocks the first flow path 111 and the third flow path 311 to prevent the air from flowing from the first flow path 111 into the third flow path 311.

[0102] Accordingly, the first flow path 111 and the second flow path 211 are opened simultaneously with the third flow path 311, so that it is possible to prevent a problem that the dust removal operation is not performed correctly by an insufficient suction force of the suction motor 800.

[0103] Hereinafter, FIGS. 7 to 12 show the flow path switching portion 400 according to a second embodiment of the present disclosure.

[0104] FIG. 7 shows a state where the flow path switching portion 400 opens the first flow path 111 as viewed

from one side. FIG. 8 shows that some components are disassembled, as viewed from one side, in the state where the flow path switching portion 400 opens the first flow path 111. FIG. 9 shows that some components are disassembled in the state where the flow path switching portion 400 opens the first flow path 111. FIG. 10 shows a state where the flow path switching portion 400 opens the second flow path 211. FIG. 11 shows that some components are disassembled, as viewed from one side, in the state where the flow path switching portion 400 opens the second flow path 211. FIG. 12. shows that some components are disassembled in the state where the flow path switching portion 400 opens the second flow path 211.

[0105] Referring to FIGS. 7 to 12, the flow path switching portion 400 according to the second embodiment of the present disclosure may be selectively coupled to the first flow path 111 and the second flow path 211 and may open and close them.

[0106] The flow path switching portion 400 according to the second embodiment may include a sealing portion 450, a link portion 460, a link housing 470, the micro switch 480, and the switching motor 490.

[0107] The sealing portion 450 may be coupled to the first flow path 111 or the second flow path 211 to close the flow path in order not to communicate with the third flow path 311. That is, the flow path switching portion 400 selectively couples the sealing portion 450 to the first flow path 111 or the second flow path 211, thereby opening another flow path to which the sealing portion 450 is not coupled.

[0108] The sealing portion 450 may be provided in a shape corresponding to the cross-sections of the first flow path 111 and the second flow path 211 in such a way as to close the first flow path 111 and the second flow path 211. That is, in order to prevent the air including dust from flowing into the first flow path 111 and the second flow path 211, the sealing portion may be provided in the corresponding shape.

[0109] One side of the sealing portion 450 may be connected to a second link 462 to be described later and may moves rotationally. Accordingly, the sealing portion 450 may be positioned at an end of the first flow path 111 on the third flow path 311 side and at an end of the second flow path 211 on the third flow path 311 side by rotation.

[0110] The link portion 460 is configured to change the position of the sealing portion 450, and may include a first link 461, a second link 462, and a link rod 463.

[0111] The first link 461 may be rotatably coupled to the shaft 491 of the switching motor 490.

[0112] One side of the second link 462 is connected to the sealing portion 450 and the other side is connected to the link rod 463. The second link 462 may be rotatably provided.

[0113] The link rod 463 is configured to connect between the first link 461 and the second link 462. Specifically, one side of the link rod 463 is coupled to the first link 461 and the other side is coupled to the second link 462. Thus, when the first link 461 moves rotationally, the link rod moves together and performs a function of rotating the second link 462.

[0114] That is, when the first link 461 rotates together with the shaft 491, the link rod 463 connected to the first link 461 moves together, and the second link 462 connected to the link rod 463 rotates. The second link 462 rotates, and may rotate the sealing portion 450.

[0115] The components such as the first link 461 and the micro switch 480 are coupled to the link housing 470. The link housing 470 may function to protect the coupled components from external interference.

[0116] The link housing 470 may include partition members 471 and 472 which protrude at a certain angle so as to set a rotation limit of the first link 461. The partition members 471 and 472 may be provided in the form of a pair in order to partition a rotation region of the first link 461.

[0117] When the state of FIG. 7 is changed to the state of FIG. 10, the first link 461 may rotate clockwise. Here, when the first link 461 comes into contact with the partition member 472, the first link is restricted not to rotate any more. Accordingly, it is possible to prevent the first link 461 from being excessively rotated.

[0118] Conversely, when the state of FIG. 10 is changed to the state of FIG. 7, the first link 461 may rotate counterclockwise. Here, the first link 461 comes into contact with the left partition member 471, thereby being restricted not to rotate any more. That is, the rotatable region of the first link 461 may be defined as a region between the two partition members 471 and 472.

[0119] In the second embodiment of the present disclosure, the flow path switching portion 400 may include the micro switch 480 and the switching motor 490. The basic configuration has been described in the first embodiment, arrangement with differences will be described. Other descriptions can be replaced with the description of the first embodiment.

[0120] In the second embodiment of the present disclosure, the micro switch 480 may be provided in an internal space of the link housing 470. The micro switches of a pair of micro switches 480 may be arranged to have a predetermined angle with each other. Also, the micro switch 480 may be coupled to the switching motor 490.

[0121] A contact end 464 connected to the first link 461 may come into contact with the handle 481 of the micro switch 480. When the position of the handle moves beyond a reference position by the contact end 464, the micro switch 480 may turn on/off the power of the switching motor 490. Accordingly, the rotation of the link portion 460 may start or end.

[0122] The switching motor 490 may have a shaft 492 and a motor housing 493.

[0123] The shaft 492 is coupled to the first link 461 and may rotate when the switching motor 490 is operated. Accordingly, the first link 461 is rotatable in the circumferential direction of the shaft 492.

[0124] The motor housing 493 may be coupled to the

link housing 470. An area opened with a predetermined width may exist in an area where the link housing 470 and the motor housing 493 are coupled. Through the open area, the first link 461 and the shaft 492 may be coupled.

[0125] In particular, a structure in which the flow path is switched in the second embodiment of the present disclosure will be described through the comparison of FIGS. 8 and 11.

[0126] For convenience of description, the state of FIG. 8 may be referred to as an open state of the first flow path 111, and the state of FIG. 11 may be referred to as an open state of the second flow path 211.

[0127] In the open state of the first flow path 111, by the suction force generated by the suction motor 800, the air including dust may pass sequentially through the first flow path 111 and the third flow path 311 from the dust bin 511 and 512 of the hand vacuum cleaner 500 and may be guided to the dust storage box 300. Here, the sealing portion 450 may be coupled to the second flow path 211 to block the second flow path 211 and the third flow path 311. Accordingly, the air is prevented from flowing from the second flow path 211 into the third flow path 311.

[0128] In the open state of the second flow path 211, by the suction force generated by the suction motor 800, the air including dust may pass sequentially through the second flow path 211 and the third flow path 311 from a dust bin 610 of the robotic vacuum cleaner 600 and may be guided to the dust storage box 300. Here, the opening closing portion 420 blocks the first flow path 111 and the third flow path 311 to prevent the air from flowing from the first flow path 111 into the third flow path 311.

[0129] Meanwhile, a power source of the hand vacuum cleaner 500 may have a horizontal cyclone structure. Also, the dust bin of the hand vacuum cleaner 500 may have a structure in which the first dust bin 511 and the second dust bin 512 are provided on both sides of the suction tube 520, respectively.

[0130] Hereinafter, an embodiment of the cleaner station 1 with which the hand vacuum cleaner 500 having two different dust bins is combined will be described with reference to FIG. 13.

[0131] FIGS. 13A and 13B are perspective views showing a structure in which the hand vacuum cleaner 500 including the first dust bin 511 and the second dust bin 512 is combined with the first station 100 in accordance with embodiments of the present disclosure.

[0132] The first station 100 according to embodiments may include a separated space in which the suction tube 520 of the hand vacuum cleaner 500 can be placed. In the first station 100, the first dust bin 511 and the second dust bin 512 may be mounted respectively on both ends of a portion where the separated space is located. Also, the suction tube 520 may be seated in the separated space, that is, between the first dust bin 511 and the second dust bin 512.

[0133] In addition, both ends of the separated space located in the first station 100 may include the first suction portion 110. The first suction portion 110 provided at both ends of the first station 100 may suck dust inside the first dust bin 511 and the second dust bin 512, respectively.

[0134] The first station 100 according to embodiments may include a separated space in which the suction tube 520 of the hand vacuum cleaner 500 can be located. In the first station 100, both ends of a portion where the separated space is located may include a first holder 121 and a second holder 122 on which the hand vacuum cleaner can be mounted. The first holder 121 and the second holder 122 may be disposed to be spaced apart from each other by a predetermined distance. When the hand vacuum cleaner 500 is combined, the first dust bin 511 is seated on the first holder 121, and the second dust bin 512 is seated on the second holder 122. The suction tube 520 may be seated between the separated spaces.

[0135] In addition, each of the first holder 121 and the second holder 122 may include the first suction portion 110. The first suction portion 110 provided on both sides of the first station 100 may suck dust inside the first dust bin 511 and the second dust bin 512, respectively.

[0136] The first flow path 111 according to embodiments may have a Y-shaped structure. An end of the first flow path 111 having a Y-shape may be connected to the first suction portion 110 provided on both sides of the separated space included in the first station 100. The other end of the first flow path 111 may be connected to the third flow path 311. Dust sucked by each end of the first flow path 111 having a Y-shape flows along one flow path, and may be discharged from the first flow path 111 and may flow along the third flow path 311.

[0137] In addition, the end of the first flow path 111 having a Y-shape may be connected to the first suction portion 110 provided in the first holder 121 and the second holder 122, respectively. The other end of the first flow path 111 may be connected to the third flow path 311. Dust sucked by each end of the first flow path 111 having a Y-shape flows along one flow path, and may be discharged from the first flow path 111 and may flow along the third flow path 311.

[0138] Referring to FIG. 5, in other embodiments, the first flow path 111 may be substantially formed linearly or formed in a streamlined shape. In this case, one side end of the first flow path 111 may be connected to the first suction portion 110, and the other side end may be connected to the third flow path 311.

[0139] The cleaner station 1 according to the embodiment may include a first processor 112 and a second processor 212. The first processor 112 and the second processor 212 may be simultaneously provided according to the embodiment, or only one of them may be selectively provided.

[0140] In the process in which the cleaner station 1 sucks dust from the dust bin of the hand vacuum cleaner or the robotic vacuum cleaner, there may occur a problem that foreign substances remain. Accordingly, there may occur sanitary problems such as microbial propagation

or aesthetic problems that foreign substances are visible to the user.

[0141] Specifically, fine dust remaining without being sucked into the first suction portion 110 from the dust bins 511 and 512 of the hand vacuum cleaner 500 may exist. In addition, foreign substances such as long hair or thread may be caught and remain between the first suction portion 110 and the dust bins 511 and 512. Accordingly, there may occur a problem that covers of the dust bins 511 and 512 are not properly closed.

[0142] Also, fine dust remaining without being sucked into a second suction portion 212 from the dust bin 610 of the robotic vacuum cleaner 600 may exist. In addition, foreign substances such as long hair or thread may be caught and remain between the second suction portion 212 and the dust bin 610 of the robotic vacuum cleaner 600.

[0143] The first processor 112 and the second processor 212 may be provided in the first suction portion 110 and the second suction portion 210 in order to remove such dust or foreign substances.

[0144] In one embodiment, the first processor 112 and the second processor 212 may be provided in the form of a blade. In this embodiment, the first processor 112 and the second processor 212 are installed to be movable up and down, so that long foreign substances can be cut. Accordingly, the cut foreign substances can be more easily processed by the first suction portion and the second suction portion.

[0145] In another embodiment, the first processor 112 and the second processor 212 may be provided in the form of a saw blade. In this embodiment, foreign substances pass through the first processor and the second processor by the suction force and may be cut or decomposed.

[0146] Hereinafter, with reference to FIG. 14, a structure in which the cleaner station 1 sucks dust and exhausts the sucked air will be described.

[0147] FIG. 14A is a cross-sectional view of the flow path structure of the cleaner station 1 according to the embodiments as viewed from the rear. FIG. 14B is a cross-sectional view of the cleaner station 1 including the first flow path 111 with a Y-shaped structure according to the embodiments as viewed from the rear.

[0148] The cleaner station 1 according to the embodiments may include a suction motor 800 for sucking air including dust. The suction motor 800 may provide a suction force to the first suction portion 110 and/or the second suction portion 210 through a flow path.

[0149] Specifically, the suction motor 800 may form a low pressure within the dust storage box 300. When the suction motor 800 is operated in a state where the hand vacuum cleaner 500 and/or the robotic vacuum cleaner 600 are combined, a relatively high pressure is formed within the dust bin of the cleaner, and a relatively low pressure is formed within the dust storage box 300. Due to the pressure difference, dust and foreign substances present within the dust bin may move into the dust storage box 300 along the flow path.

[0150] The cleaner station 1 according to embodiments may include an exhaust portion 900 for exhausting filtered air. When the suction motor 800 sucks dust, external air is introduced into the dust storage box 300. Therefore, it is necessary to provide the exhaust portion 900 for exhausting the air to the outside after the dust included in the sucked air is removed. The exhaust portion 900 may serve as a passage through which air sucked into the cleaner station 1 is discharged to the outside. The air sucked by the vacuum cleaner may include high concentration of fine dust. There is a possibility that such fine dust is not received in the dust storage box 300 and passes through the exhaust portion 900 and then is discharged to the outside of the cleaner station 1. Accordingly, in the cleaner station 1, a member that filters dust may be provided in the exhaust path P through which a fluid flows from the dust storage box 300 to the exhaust portion 900.

[0151] Specifically, a filter that uses a method of filtering dust by applying a microfiber structure and/or a filter that uses a method of collecting dust on a dust collection plate by electrifying dust may be used as the member that filters dust. Also, the member that filters dust may be provided within the suction motor 800 or in the exhaust portion 900.

[0152] Hereinafter, a structure in which the dust storage box 300 is provided within the cleaner station 1 will be described with reference to FIG. 15.

[0153] FIG. 15A is a side view showing a state where the dust storage box 300 according to the embodiments is coupled to the inside of the cleaner station 1. FIG. 15B is a perspective view showing an internal space of the cleaner station 1 with which the dust storage box 300 according to the embodiments is combined.

[0154] One side of the cleaner station 1 according to the embodiments may include an opening closing area 360, and the opening closing area 360 may include a space therein, to which the dust storage box 300 can be coupled. As the opening closing area 360 is opened and closed, the dust storage box 300 may be coupled to the inside of the cleaner station 1, or the dust storage box 300 may be detached from the inside of the cleaner station 1.

[0155] Hereinafter, structures of the dust storage box 300 and a dust bag 340 will be described with reference to FIG. 16.

[0156] FIG. 16A is a cross-sectional view showing schematically the structure of the dust storage box 300 according to the embodiments. FIG. 16B is a cross-sectional view showing schematically the structure of the dust bag 340 coupled to the dust storage box 300 according to the embodiments of the present disclosure.

[0157] The dust storage box 300 according to the embodiments may communicate with the dust inlet 310. The first suction portion 110 and the second suction portion 210 suck dust, and the sucked dust flows along the first flow path 111 and along the second flow path 211, re-

spectively, and then is collected at one end of the third flow path 311. The other end of the third flow path 311 communicates with the dust inlet 310, and the sucked dust is discharged from the third flow path 311 and moves into the dust storage box 300 through the dust inlet 310. The dust that has moved is stored in the dust storage box 300.

[0158] The dust storage box 300 according to the embodiments may include the dust bag 340 therein. In the process of opening the dust storage box 300 and of shaking off the dust within the dust storage box, dust may scatter to the outside. In this case, the user may inhale the air including the dust while removing the dust of the dust storage box 300, and the dust may be introduced into the human body.

[0159] Accordingly, the dust bag 340 is provided within the dust storage box 300, and the dust bag 340 can filter the air passing through the dust inlet 310. The filtered dust may be stored in the dust bag 340. When the user intends to remove the dust within the dust storage box 300, the user may tie or seal the dust bag 340 and then may open the dust storage box 300. In this case, dust does not scatter to the outside of the dust bag 340, so that it is possible to cleanly remove the dust.

[0160] In addition, the dust bag 340 may have a fine fiber material or a vinyl material which does not allow fine dust to pass therethrough.

[0161] Hereinafter, an embodiment of the cleaner station 1 including a charger will be described.

[0162] The cleaner station 1 according to the embodiments may include a first charger which provides power to the hand vacuum cleaner 500 and a second charger which provides power to the robotic vacuum cleaner 600. In addition, the cleaner station 1 may be connected to an outlet that provides power through electric wires and may provide power to the first charger and the second charger.

[0163] Specifically, the first charger is provided in the first station 100. When the hand vacuum cleaner 500 is combined, the first charger can provide power to a battery of the hand vacuum cleaner 500 In addition, the second charger is provided in the second station 200. When the robotic vacuum cleaner 600 is combined, the second charger can provide power to a battery of the robotic vacuum cleaner 600.

[0164] As mentioned above, the present invention is not limited to the above-described embodiment. As can be seen from the appended claims, the present invention can be modified by those skilled in the art to which the present invention pertains, and such modifications are within the scope of the present invention.

Claims

1. A cleaner station which is combinable with a hand vacuum cleaner and a robotic vacuum cleaner, the cleaner station comprising:

a first station which is disposed on an upper portion of the cleaner station and is combined with the hand vacuum cleaner;

a second station which is disposed on a lower portion of the cleaner station and is combined with the robotic vacuum cleaner;

a first suction portion which is provided in the first station and sucks dust from a dust bin of the hand vacuum cleaner;

a second suction portion which is provided in the second station and sucks dust from a dust bin of the robotic vacuum cleaner;

a dust storage box which comprises a dust inlet where the dust sucked by the first suction portion and the second suction portion communicates, and receives the dust; and

a suction motor which sucks dust through at least one of the first suction portion and the second suction portion.

2. The cleaner station of claim 1, comprising:

a first flow path which communicates with the first suction portion;

a second flow path which communicates with the second suction portion;

a third flow path where the first flow path and the second flow path join and which communicates with the dust inlet.

3. The cleaner station of claim 2, comprising a flow path switching portion which selectively opens and closes the first flow path and the second flow path in response to a combined state of the hand vacuum cleaner and the robotic vacuum cleaner.

4. The cleaner station of claim 2,

wherein the first station comprises a separated space where a suction tube is placed,

and wherein a first dust bin and a second dust bin which are provided on both sides of the suction tube of the hand vacuum cleaner are coupled to both ends of the first station.

5. The cleaner station of claim 4,
wherein both ends of the first station comprise the first suction portion, respectively, and wherein the first flow path comprises a Y-shaped flow path of which ends are respectively connected to the first suction portion provided at both ends of the first station.

6. The cleaner station of claim 1,

wherein the dust storage box communicates with the dust inlet and comprises a dust bag that is attachable and detachable,

and wherein the dust bag comprises a filter that filters dust from air introduced into the dust inlet.

7. The cleaner station of claim 1, further comprising an exhaust portion which exhausts dust-filtered air.

8. The cleaner station of claim 1, comprising a space to which the dust storage box is coupled and one side of which is opened and closed.

9. The cleaner station of claim 1, wherein at least one of the dust inlet, the first suction portion, and the second suction portion comprises a sealing member.

10. The cleaner station of claim 1, comprising:

a first charger which provides power to the hand vacuum cleaner; and
a second charger which provides power to the robotic vacuum cleaner.

11. The cleaner station of claim 3,

wherein the flow path switching portion comprises an opening closing portion which comprises a communication hole and is movable slidingly, and wherein, when the first flow path is opened, the opening closing portion is disposed such that the communication hole is located between the first flow path and the third flow path.

12. The cleaner station of claim 11, wherein the communication hole is formed to correspond to an end of the first flow path.

13. The cleaner station of claim 11, wherein, when the second flow path is opened, the opening closing portion is disposed such that a position of the communication hole moves in one direction out of between the first flow path and the third flow path.

14. The cleaner station of claim 3,

wherein the flow path switching portion comprises:

a sealing portion which is selectively coupled to the first flow path and the second flow path and closes the flow path; and
a link portion which is connected to the sealing portion and rotates the sealing portion,

and wherein the sealing portion is formed to have a cross-section larger than those of ends of the first flow path and the second flow path.

15. The cleaner station of claim 14, wherein the sealing portion maintains a state of being coupled to any one of the first flow path and the second flow path, during the operation of the suction motor.

16. The cleaner station of claim 14,

wherein the flow path switching portion further comprises:

a link housing to which the link portion is fixedly coupled; and
a switching motor which provides power for rotating the sealing portion,

and wherein the sealing portion comprises at least one partition member which sets a rotatable region of the link portion.

17. The cleaner station of claim 1, further comprising a second processor which processes foreign substances sucked by the second suction portion,
wherein the second processor is formed in the form of a blade or a saw blade capable of cutting long foreign substances.

Figure 1a

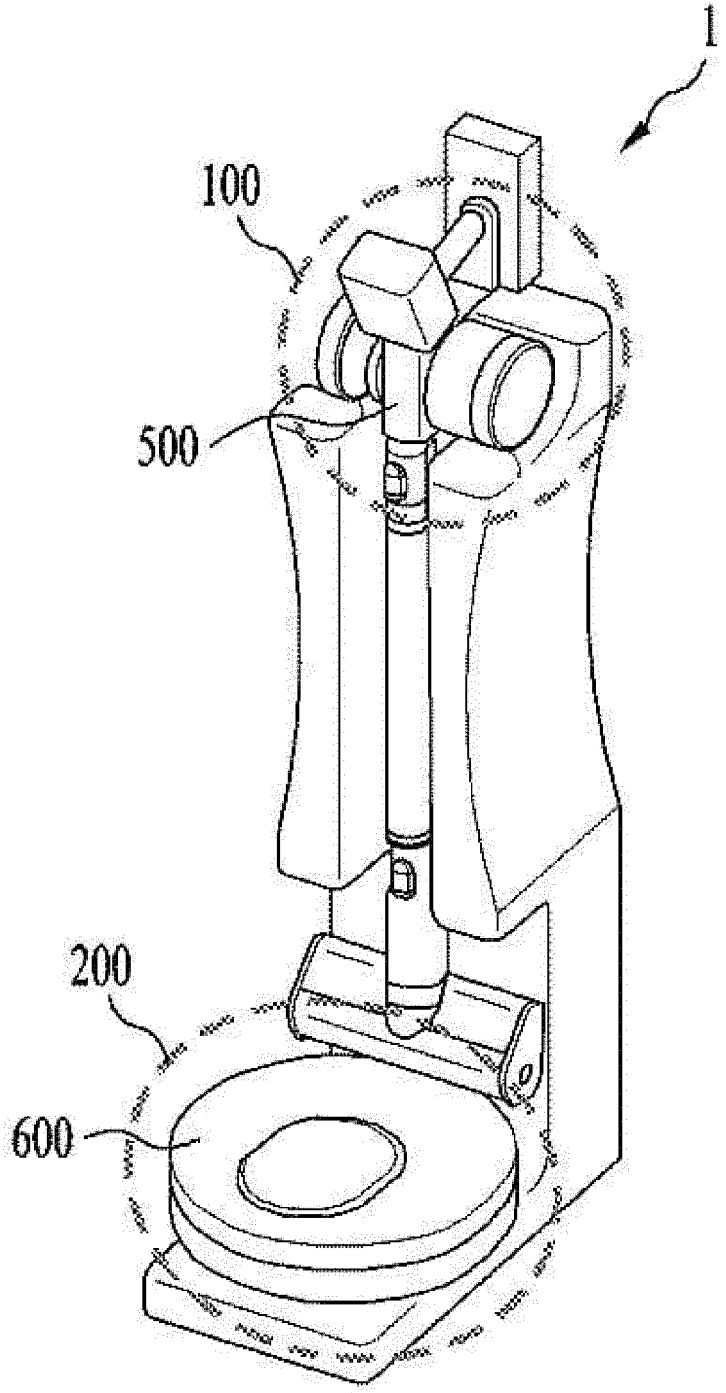


Figure 1b

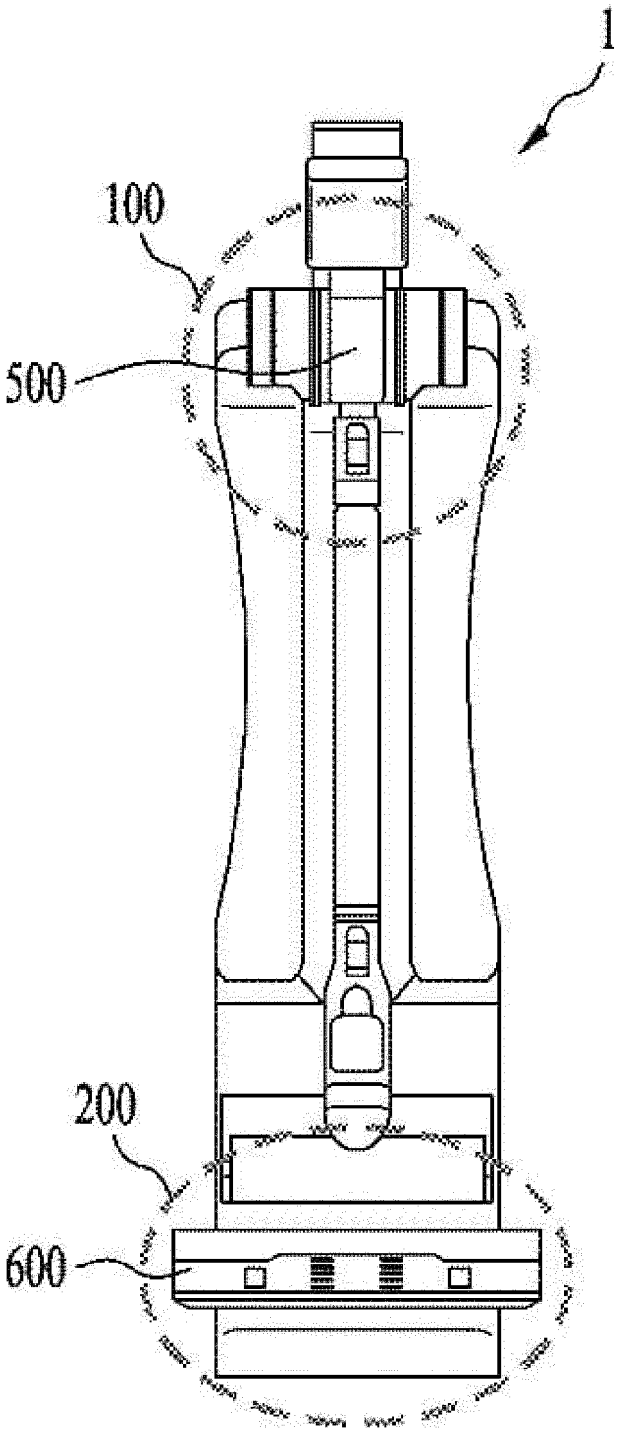


Figure 1c

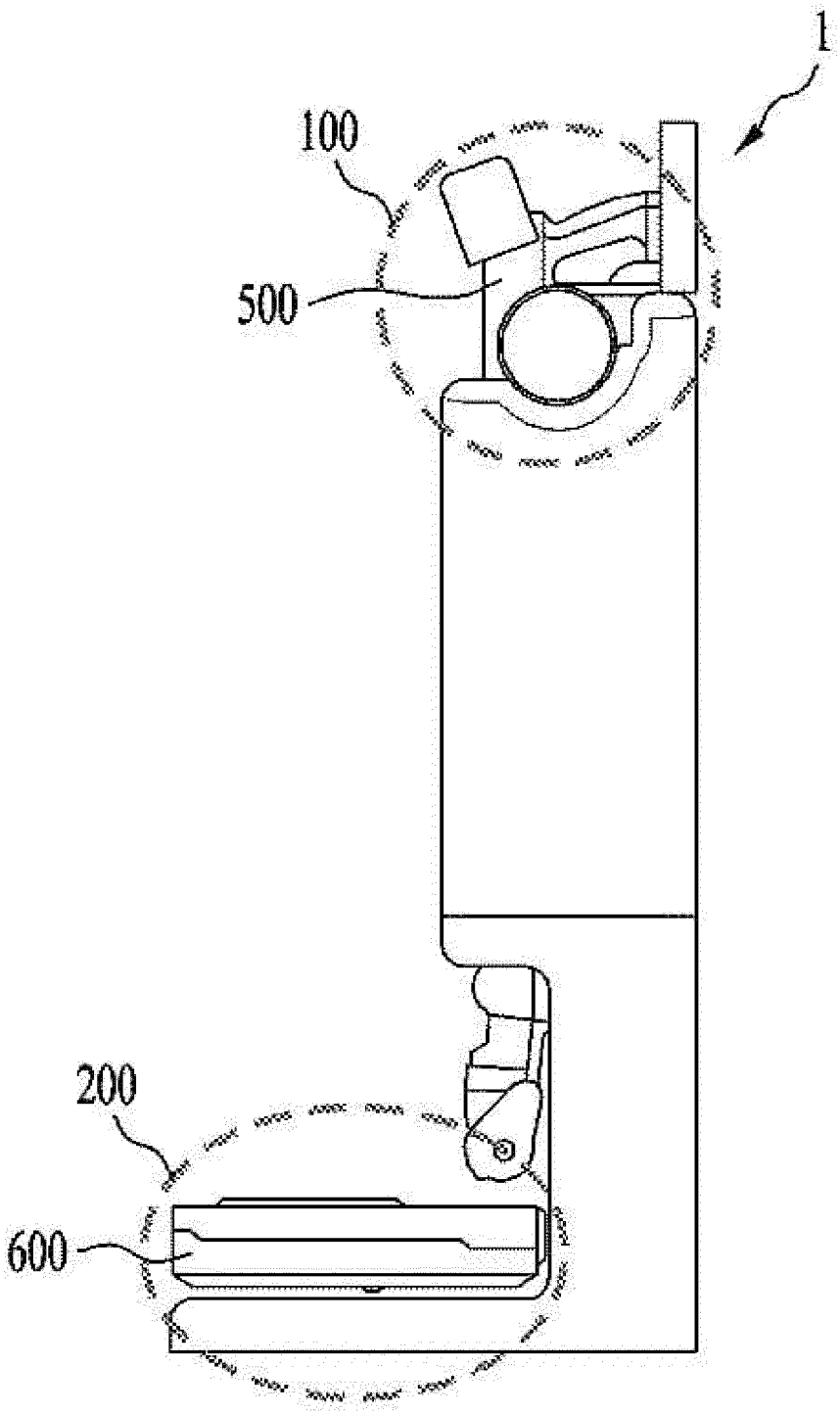


Figure 2a

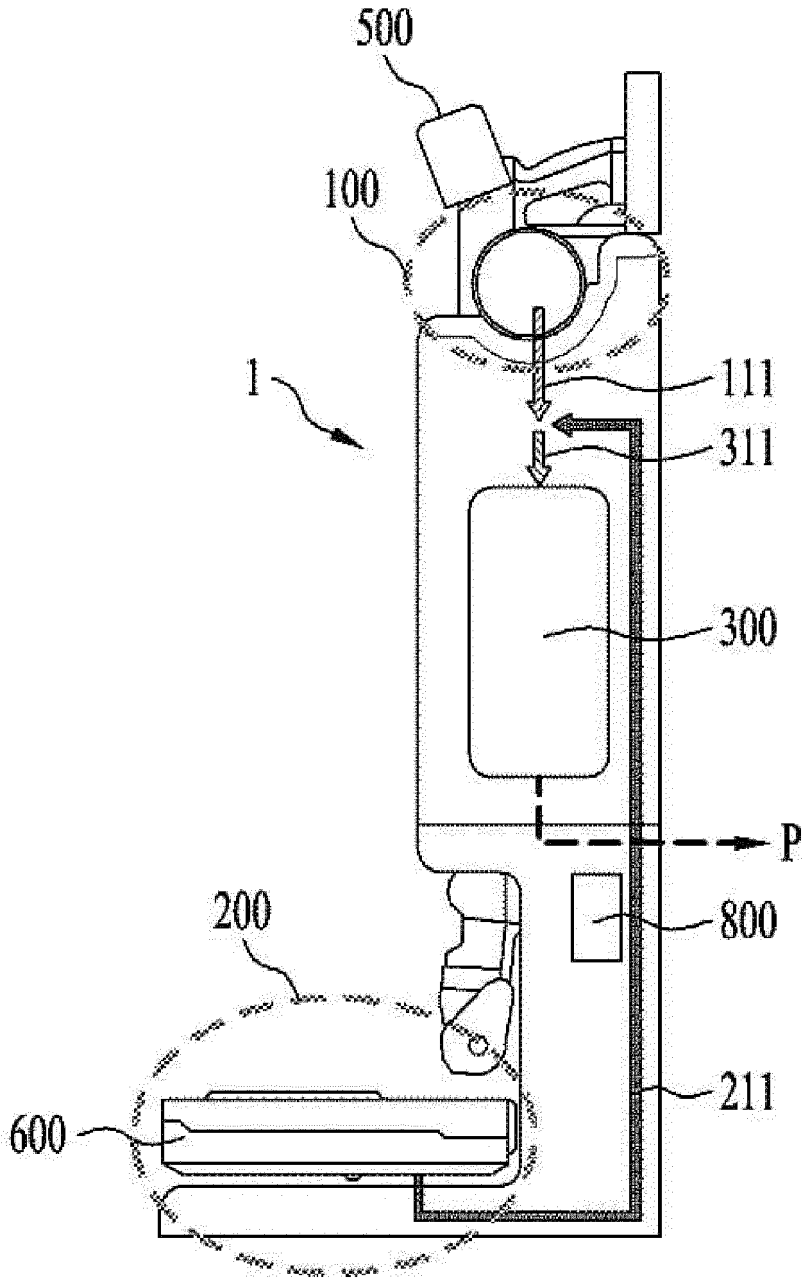


Figure 2b

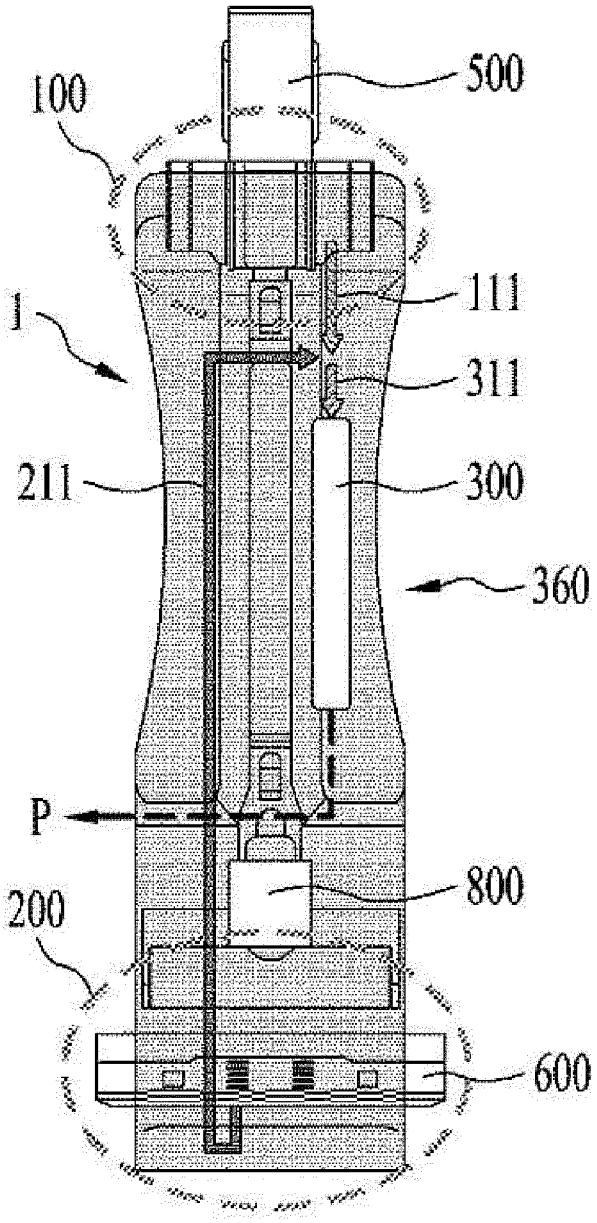


Figure 3

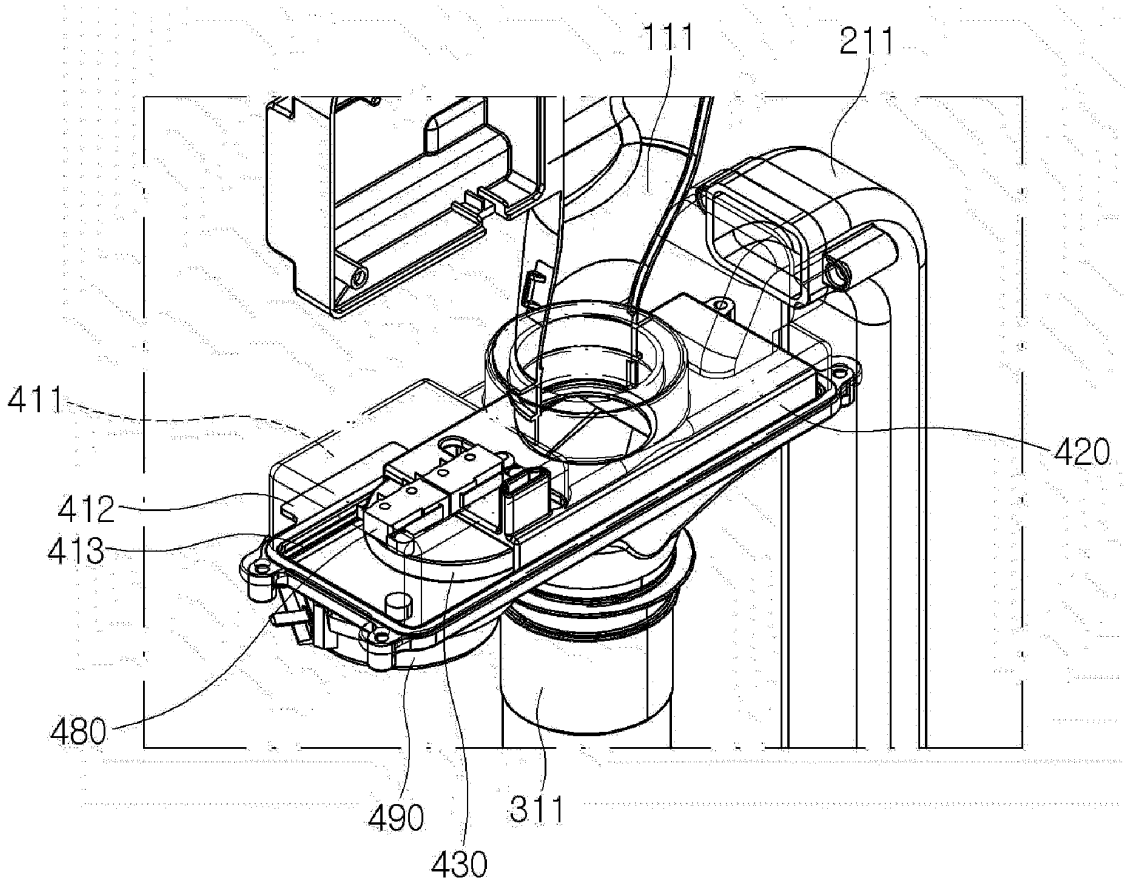


Figure 4

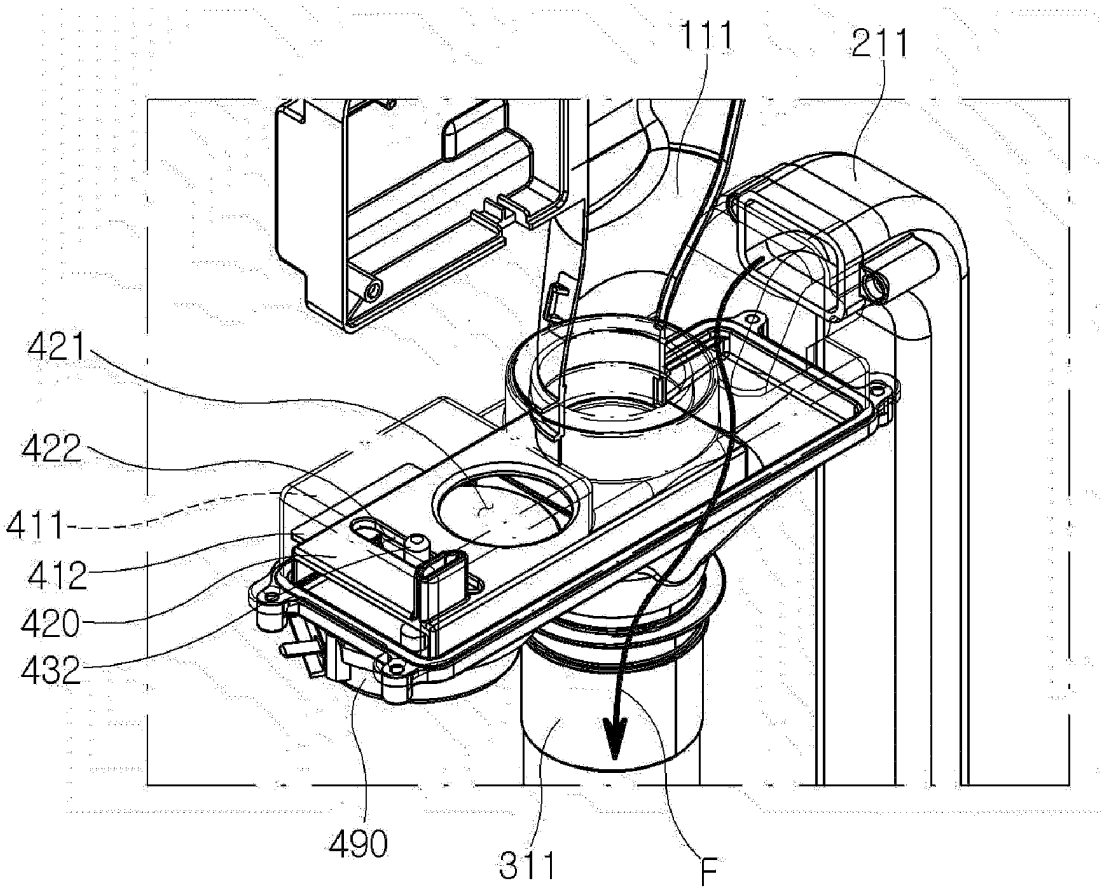


Figure 5

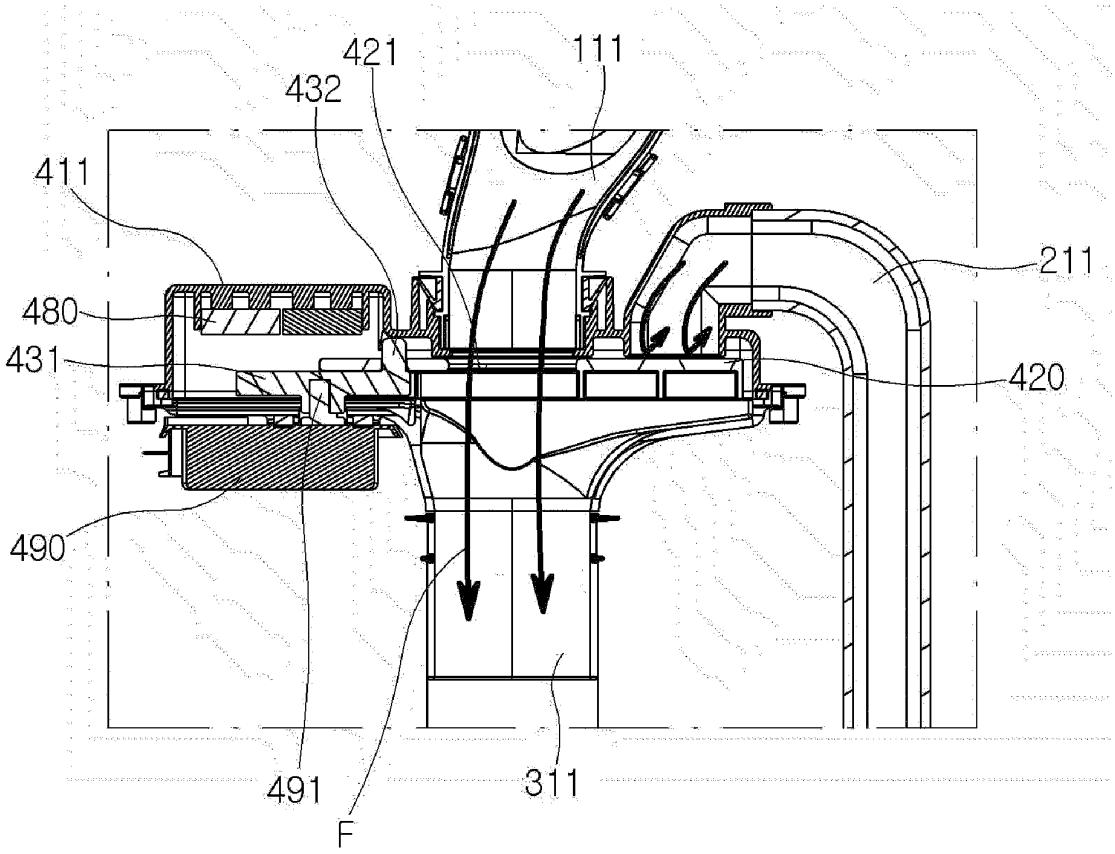


Figure 6

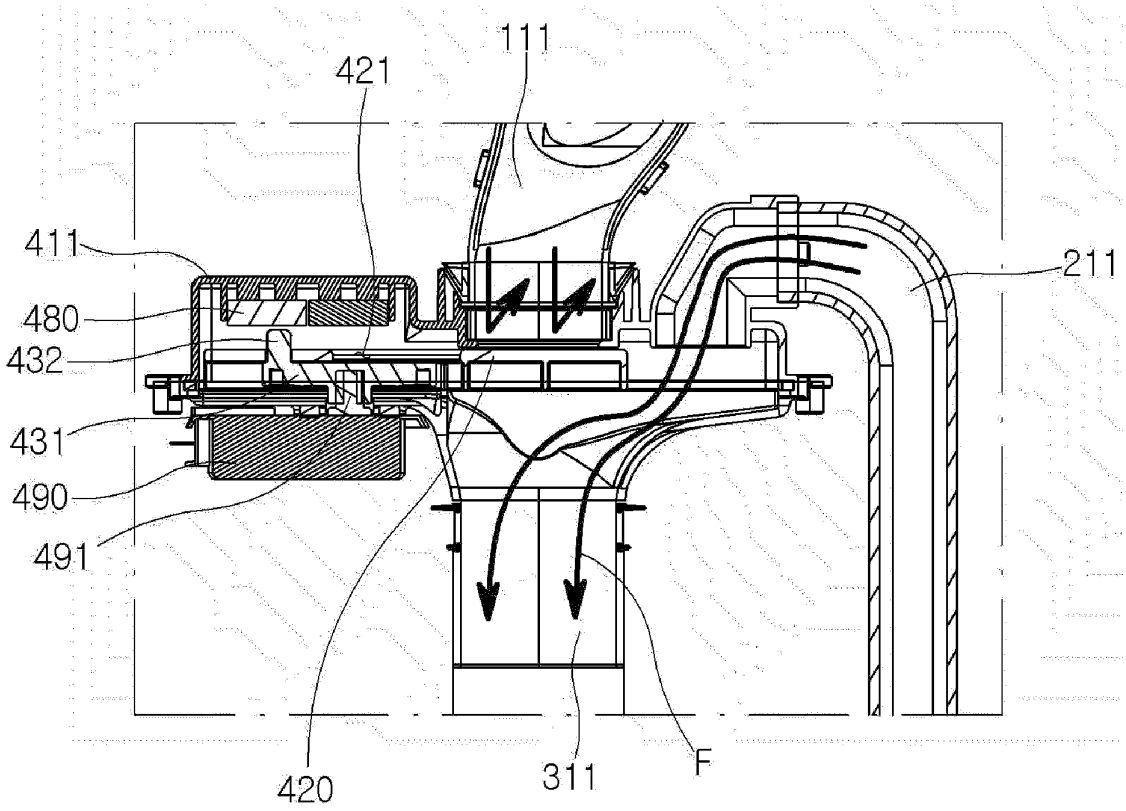


Figure 7

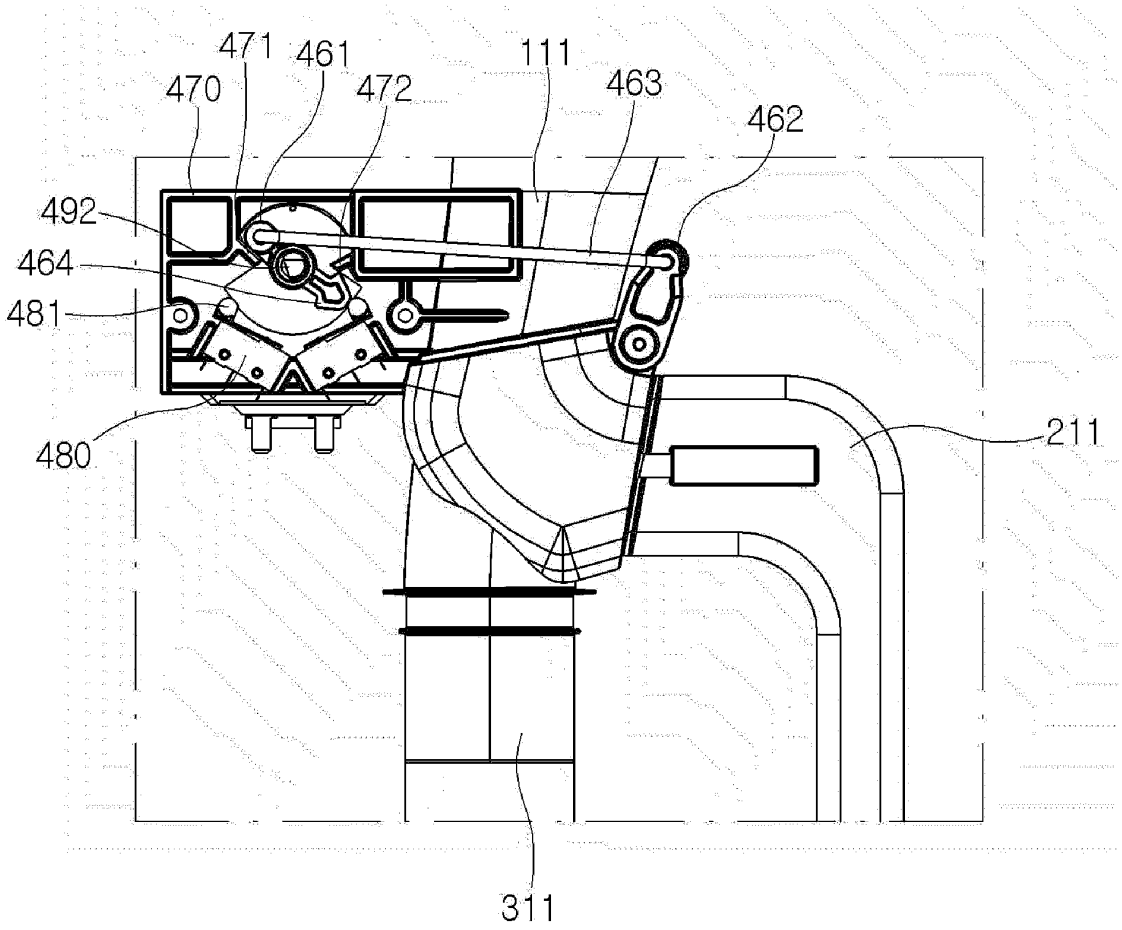


Figure 8

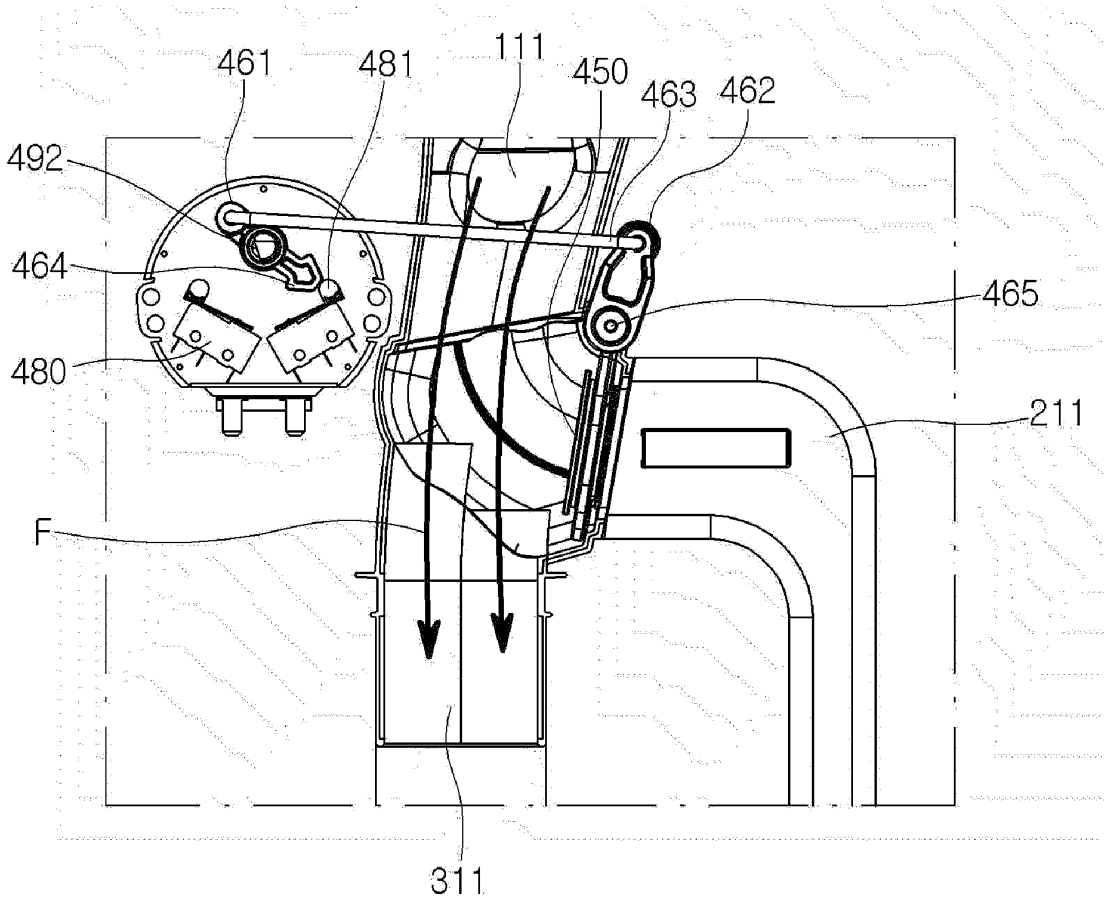


Figure 9

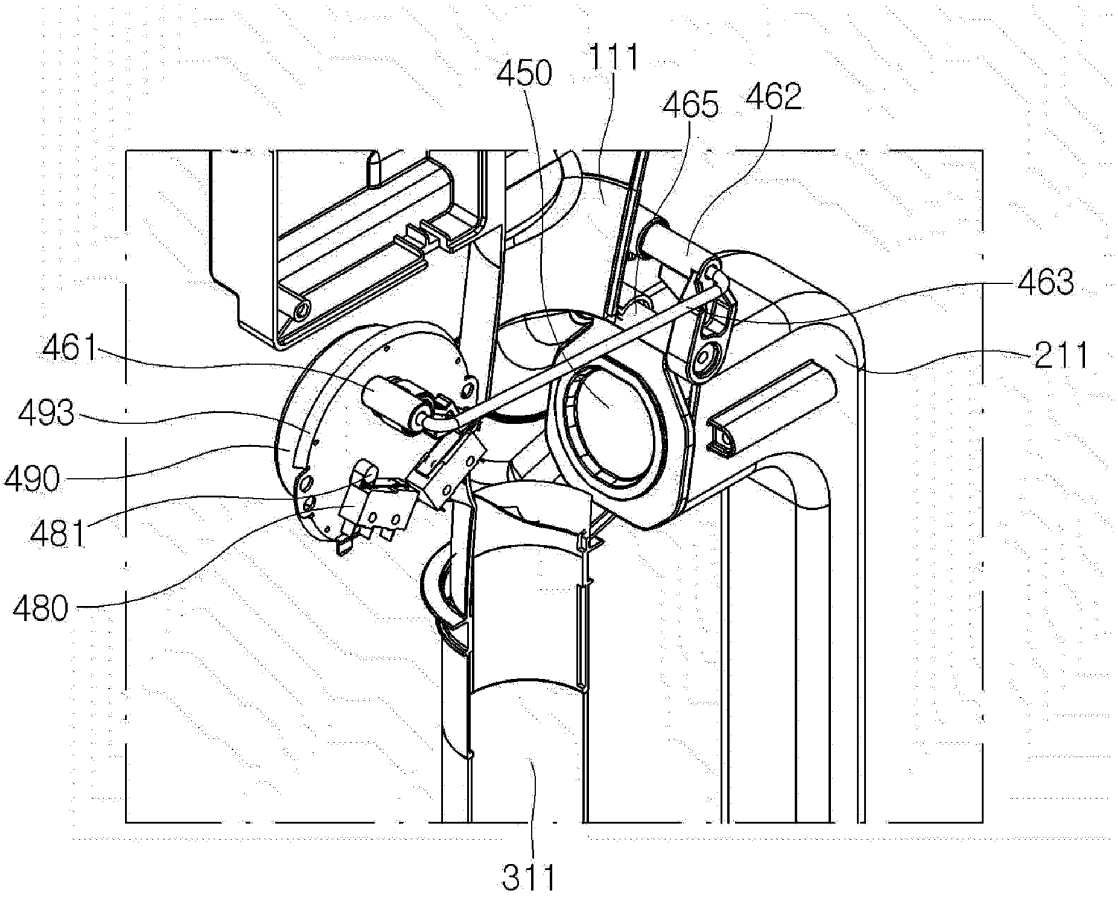


Figure 10

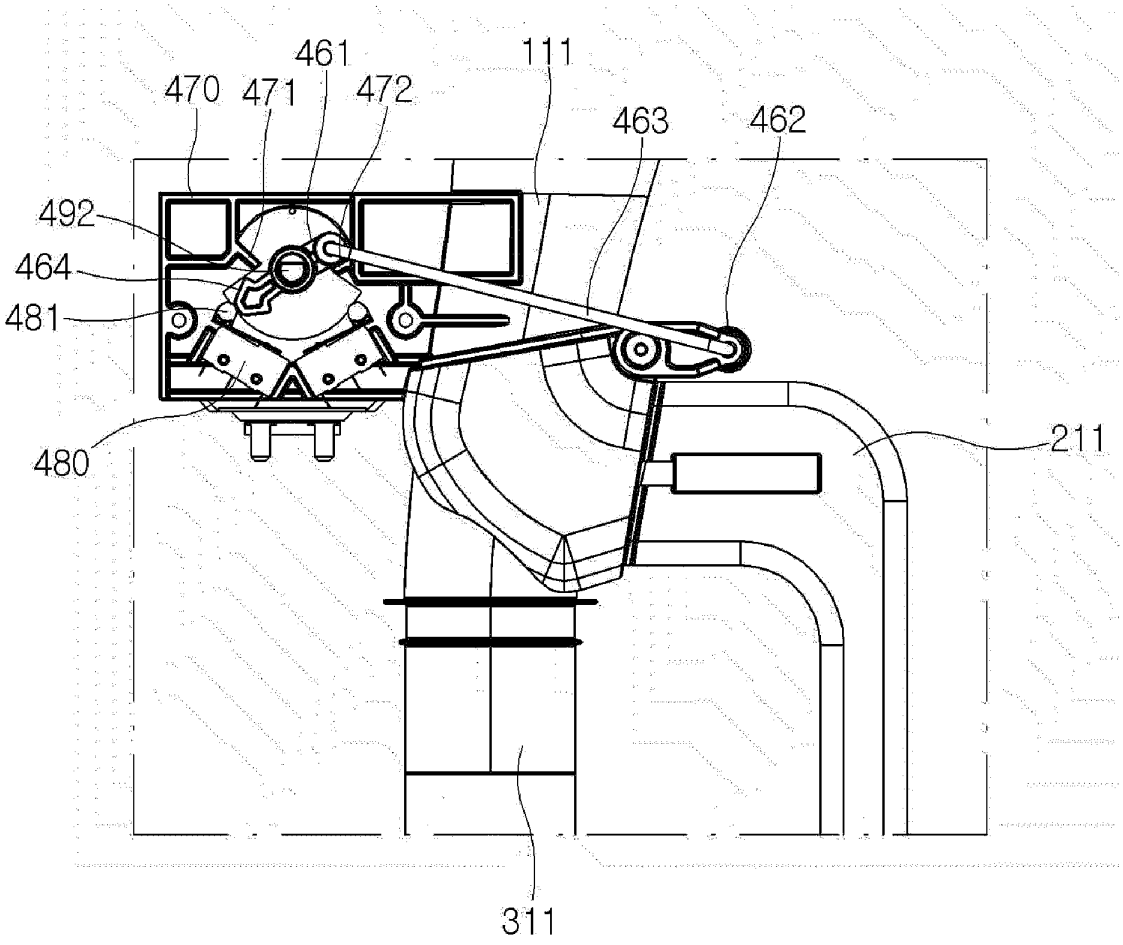


Figure 11

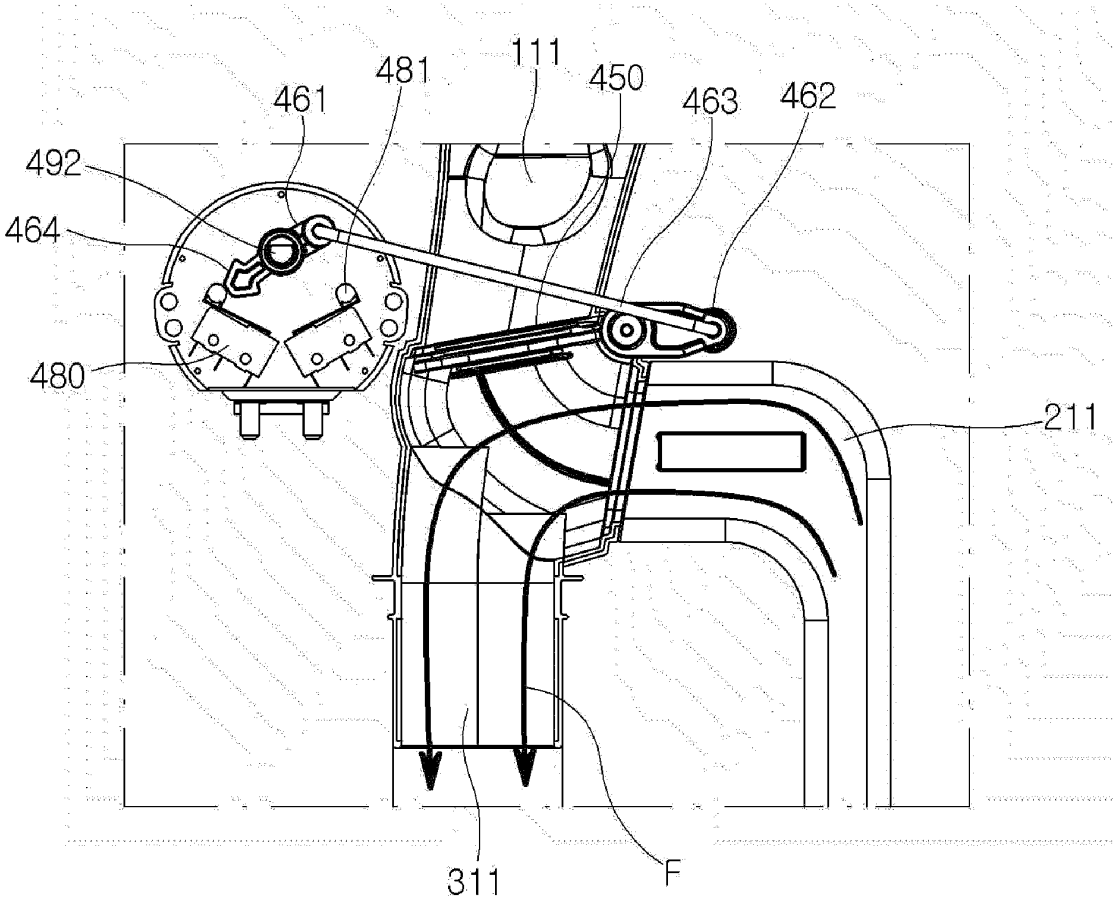


Figure 12

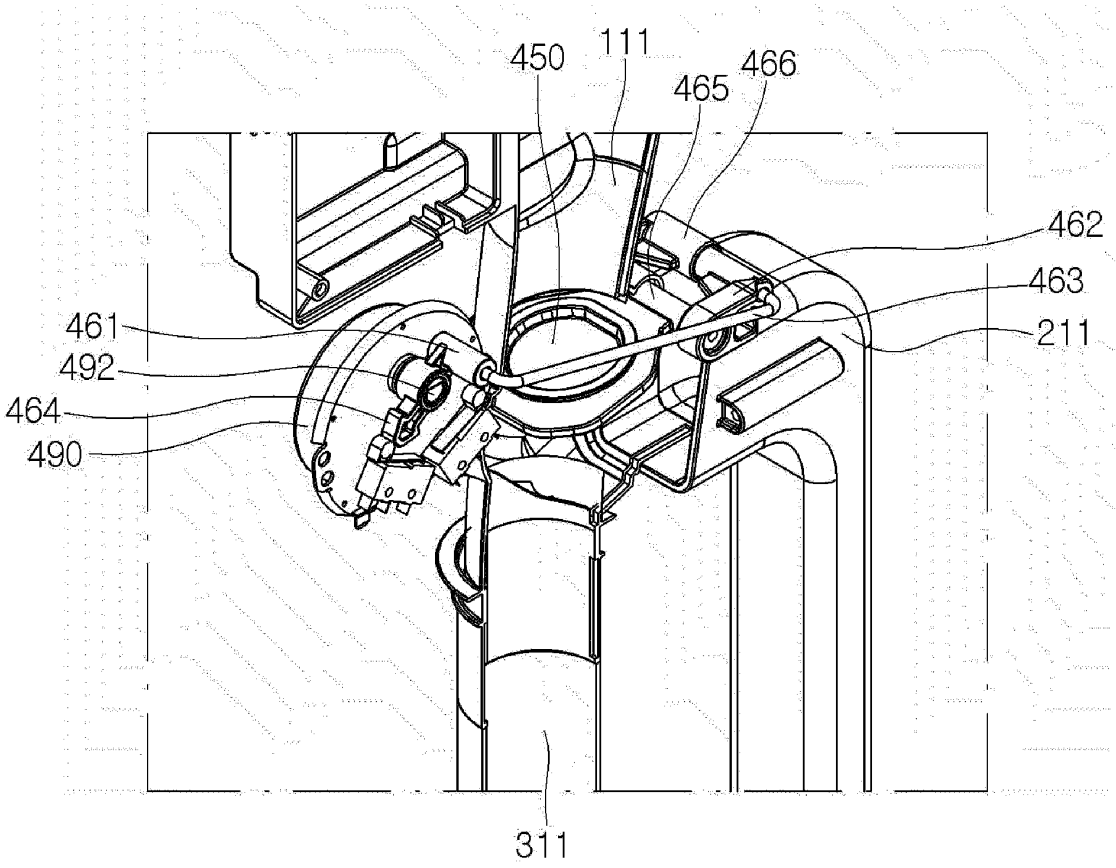


Figure 13a

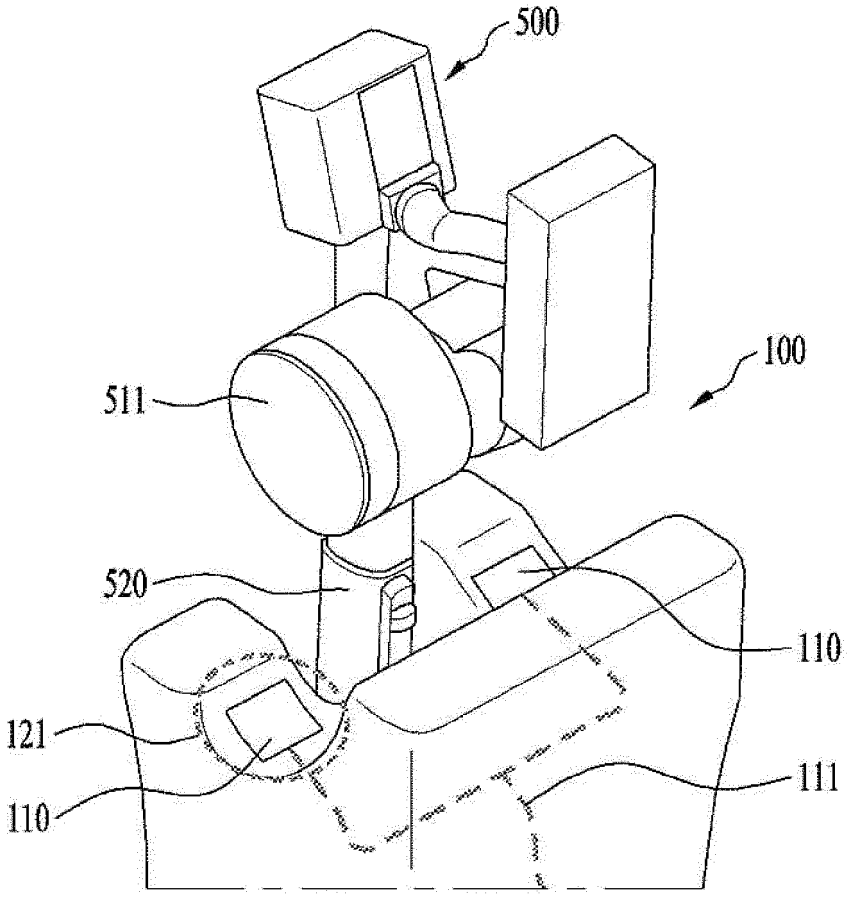


Figure 13b

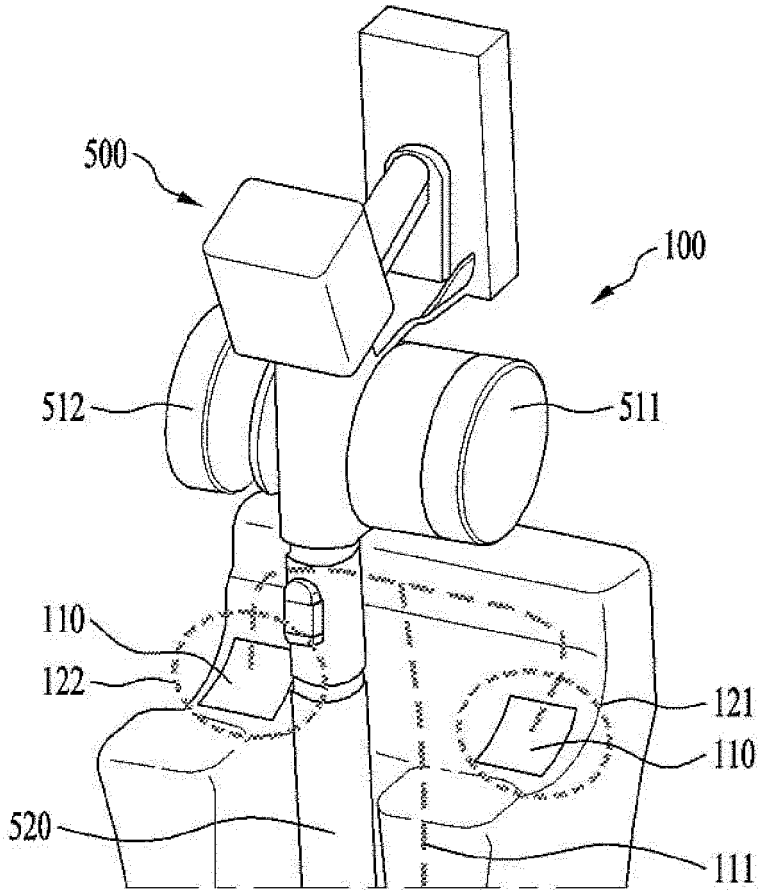


Figure 14a

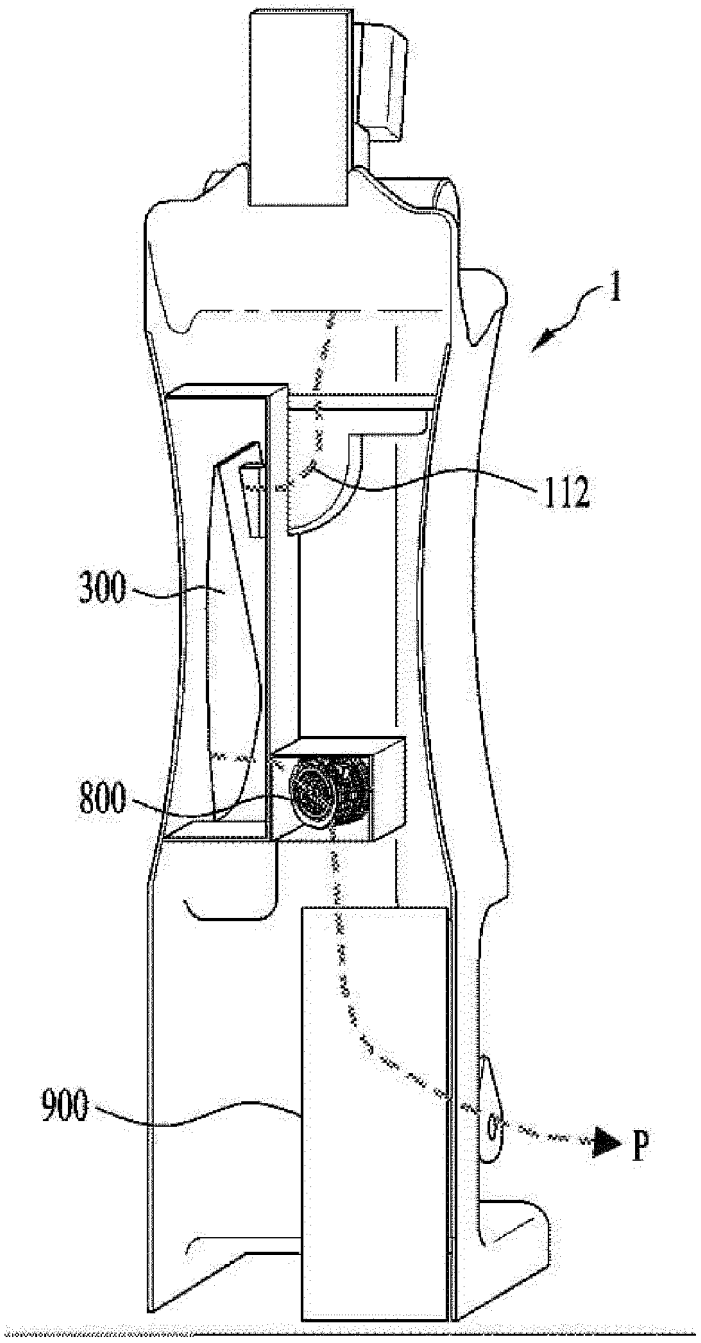


Figure 14b

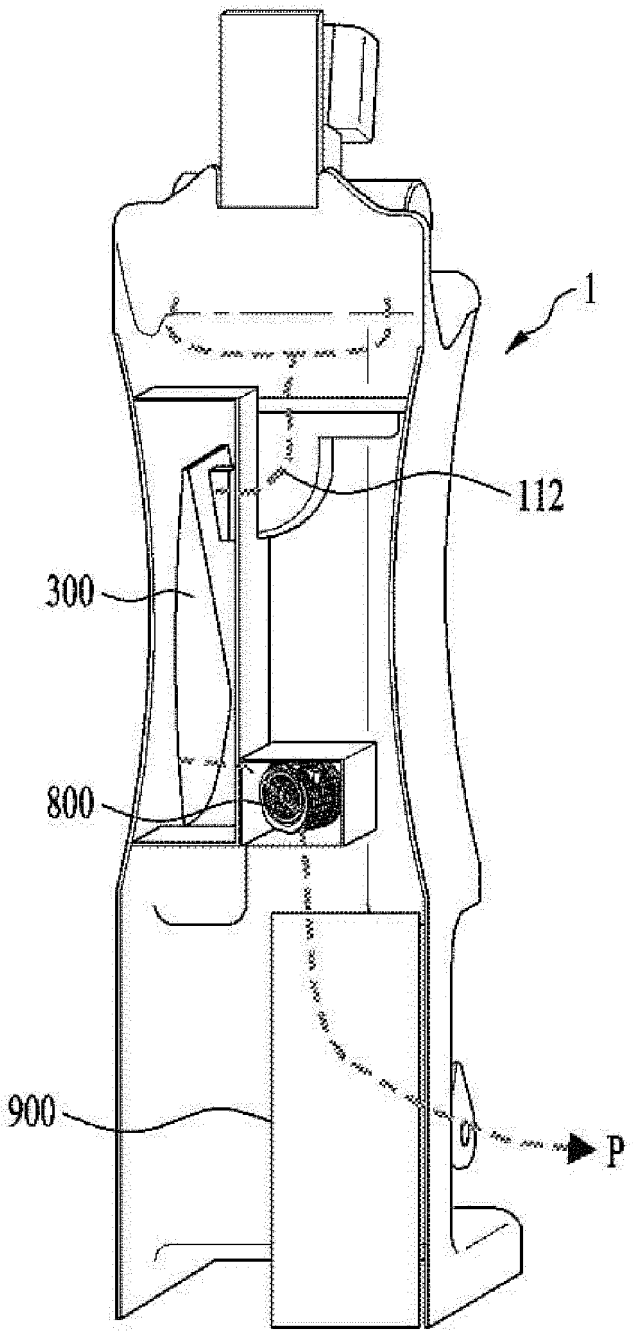


Figure 15a

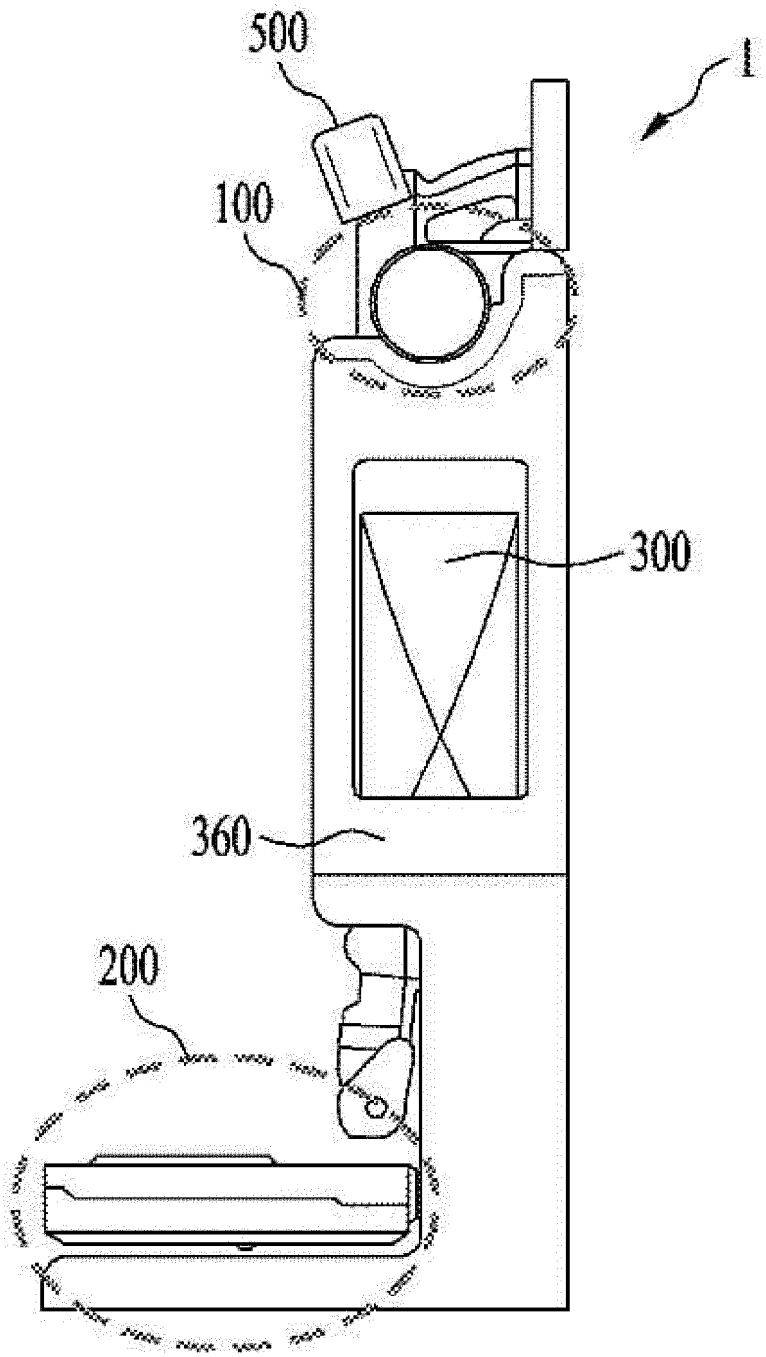


Figure 15b

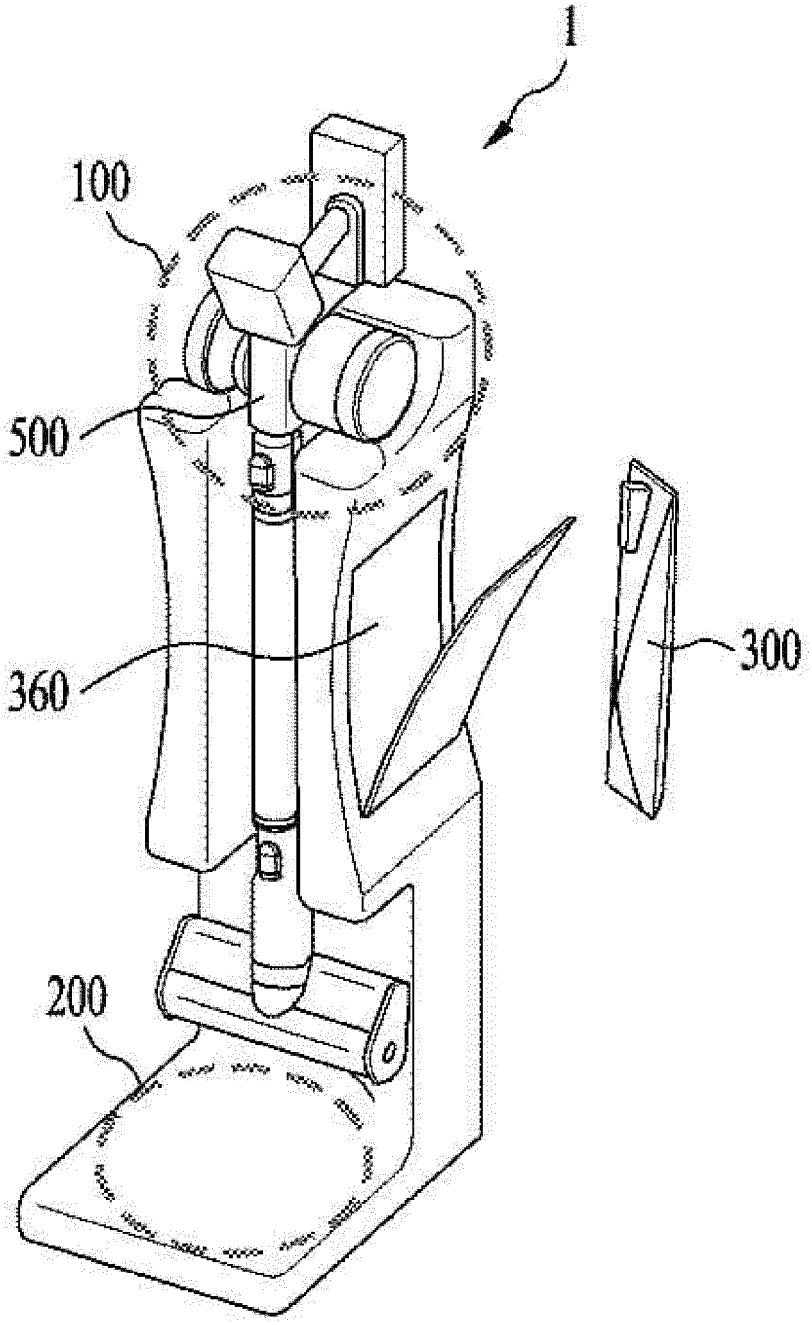


Figure 16a

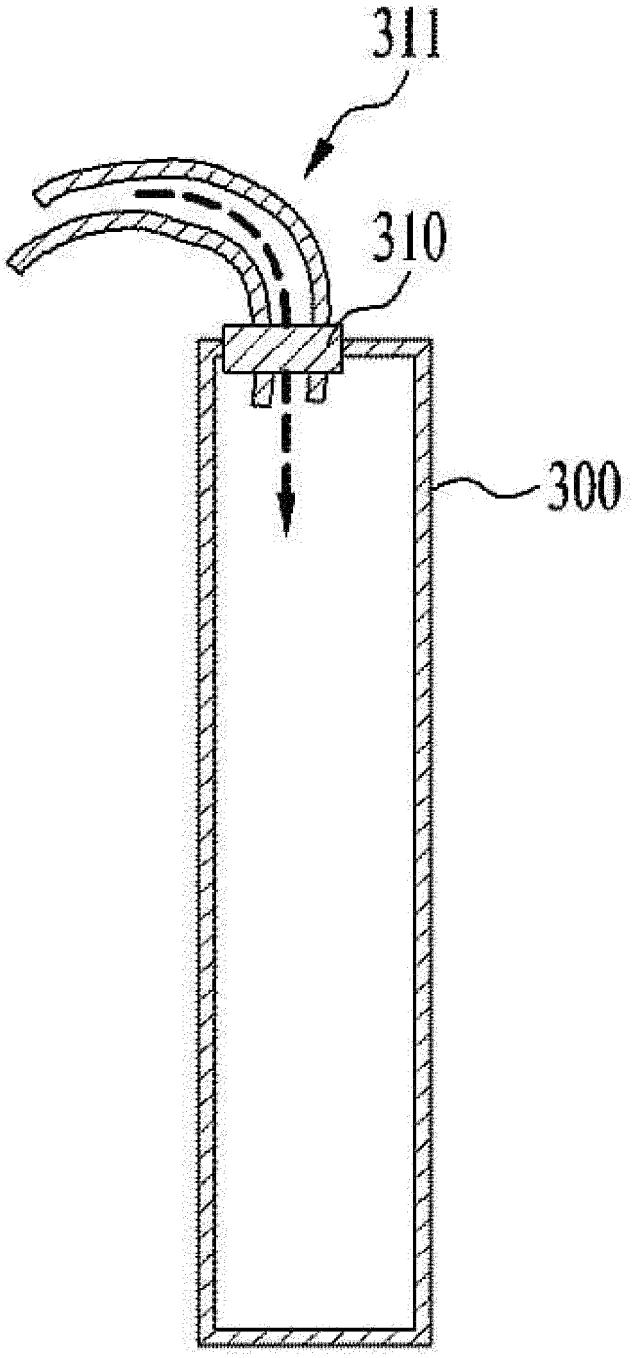
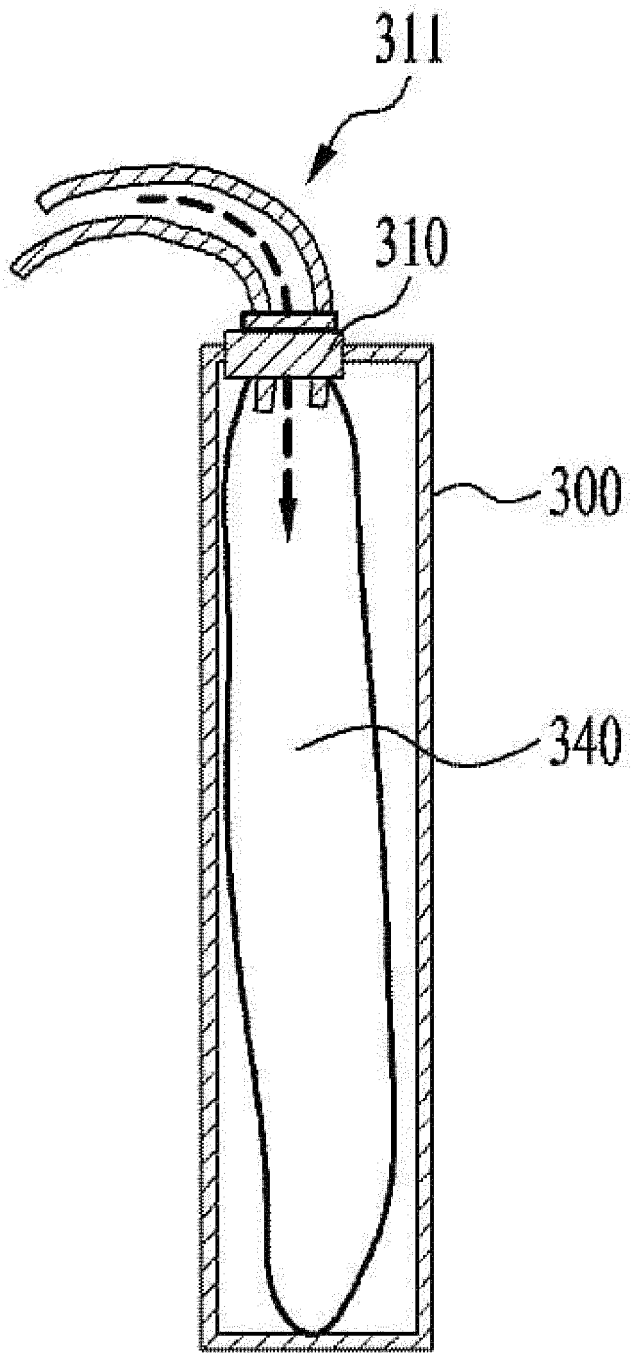


Figure 16b



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2021/005094

A. CLASSIFICATION OF SUBJECT MATTER

A47L 9/28(2006.01)i; **A47L 5/24**(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 9/28(2006.01); A47L 5/28(2006.01); A47L 9/00(2006.01); A47L 9/10(2006.01); A47L 9/26(2006.01); H02J 7/00(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: 로봇청소기(robot cleaner), 핸드청소기(hand cleaner), 스테이션(station), 스탠드(stand), 거치대(holder), 실링(sealing), 충전(charge), 홀(hole), 링크(link)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	JP 2016-116852 A (VORWERK & CO. INTERHOLDING GMBH) 30 June 2016 (2016-06-30) See paragraphs [0016] and [0020]-[0032], claim 2 and figures 1-5.	1-3,6-10,14-15,17
A		4-5,11-13,16
Y	JP 2016-116850 A (VORWERK & CO. INTERHOLDING GMBH) 30 June 2016 (2016-06-30) See paragraph [0017] and figures 1-11.	1-3,6-10,14-15,17
Y	US 2018-0310789 A1 (JIANGSU MIDEA CLEANING APPLIANCES CO., LTD.) 01 November 2018 (2018-11-01) See paragraphs [0085]-[0089] and figures 5, 10 and 13.	17
A	JP 2017-123895 A (TOSHIBA LIFESTYLE PRODUCTS & SERVICES CORP.) 20 July 2017 (2017-07-20) See claims 1-18 and figures 1-7.	1-17

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

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
06 August 2021	**06 August 2021**
Name and mailing address of the ISA/KR **Korean Intellectual Property Office** **Government Complex-Daejeon Building 4, 189 Cheongsa-ro, Seo-gu, Daejeon 35208** Facsimile No. **+82-42-481-8578**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
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Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
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