

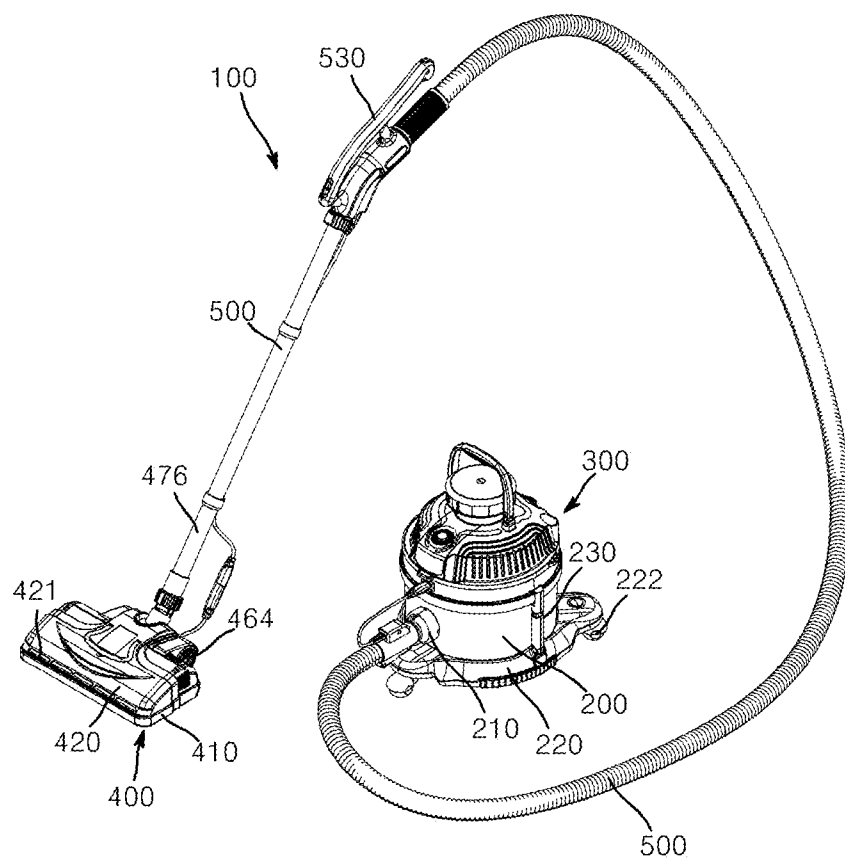


Figure 1

Figure 2

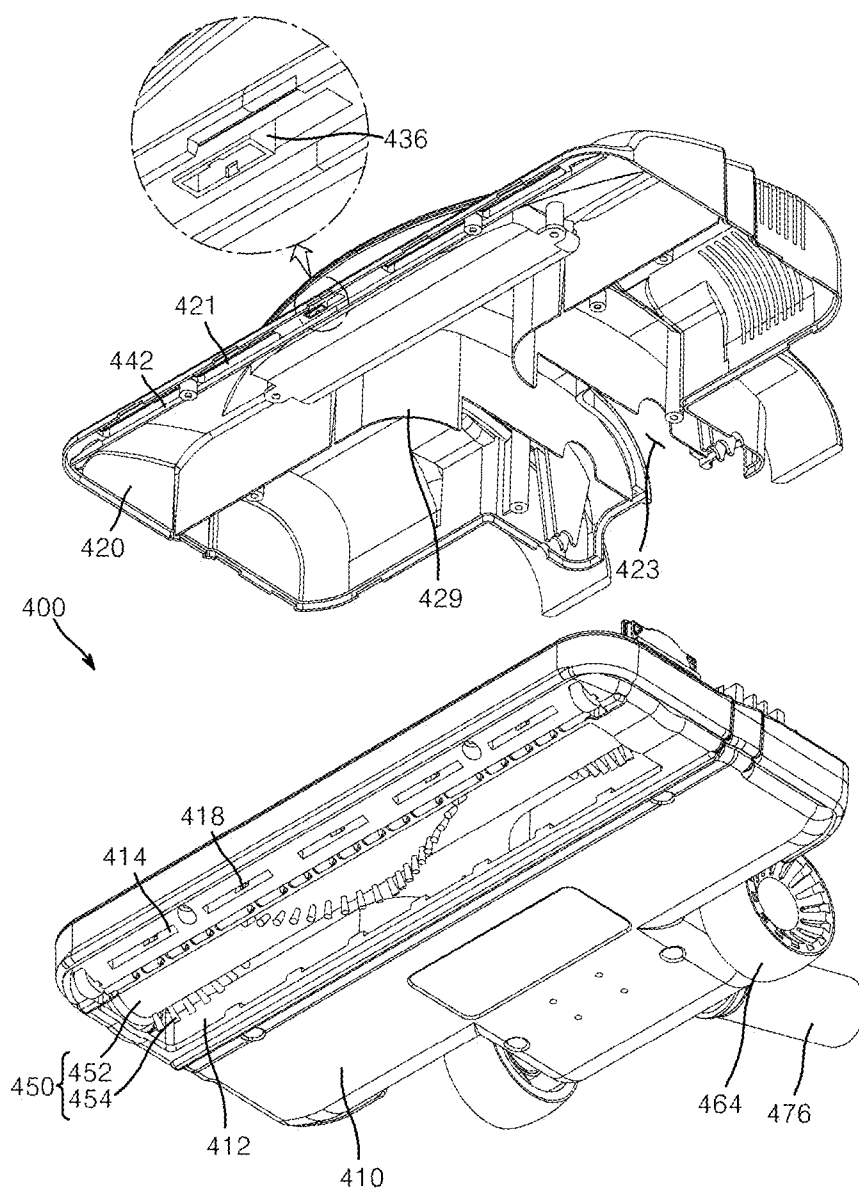


Figure 3

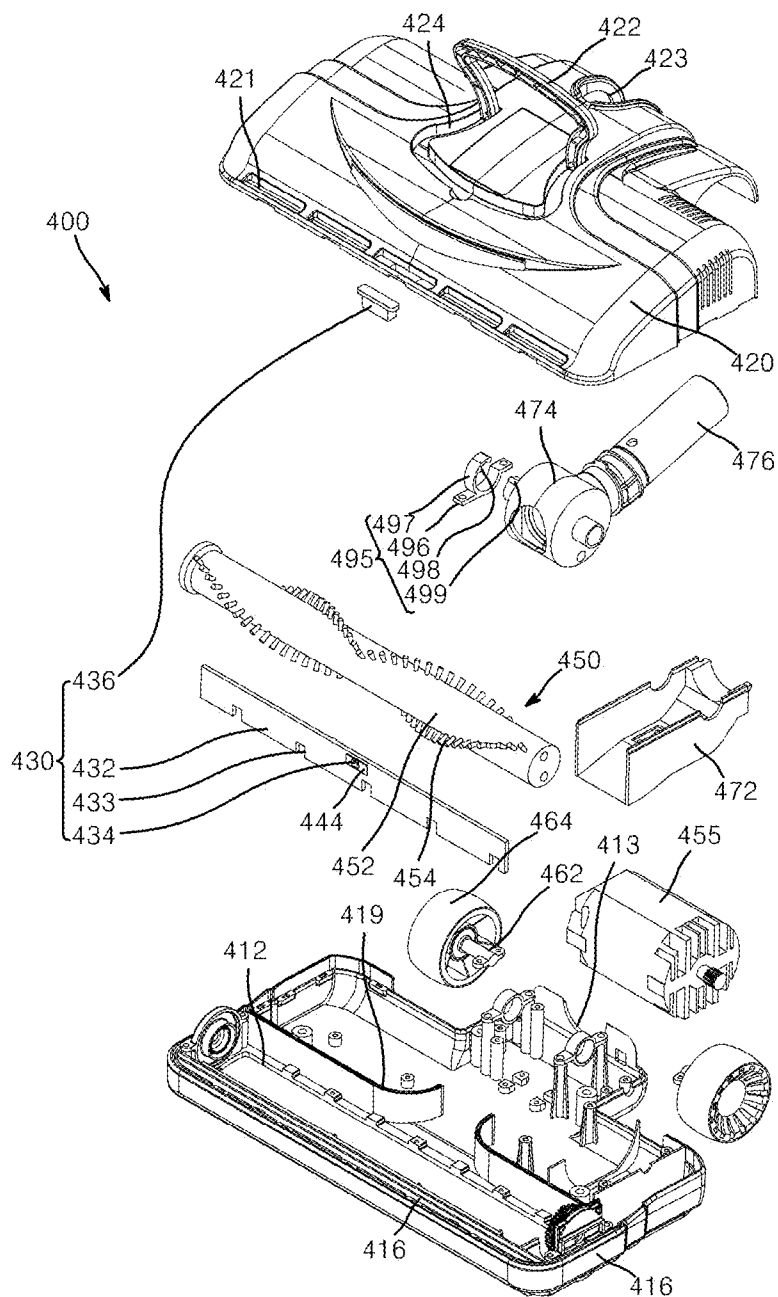


Figure 4

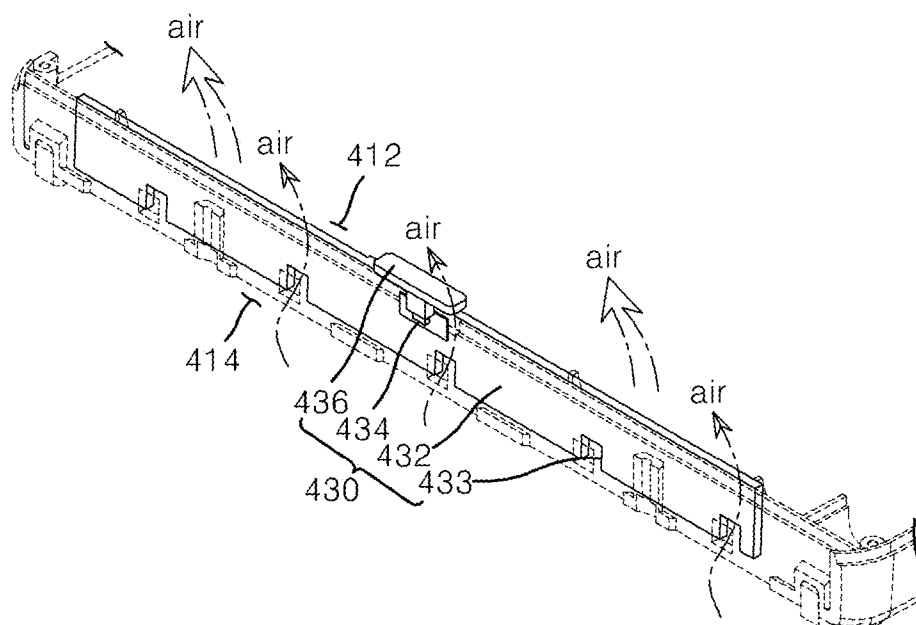


Figure 5

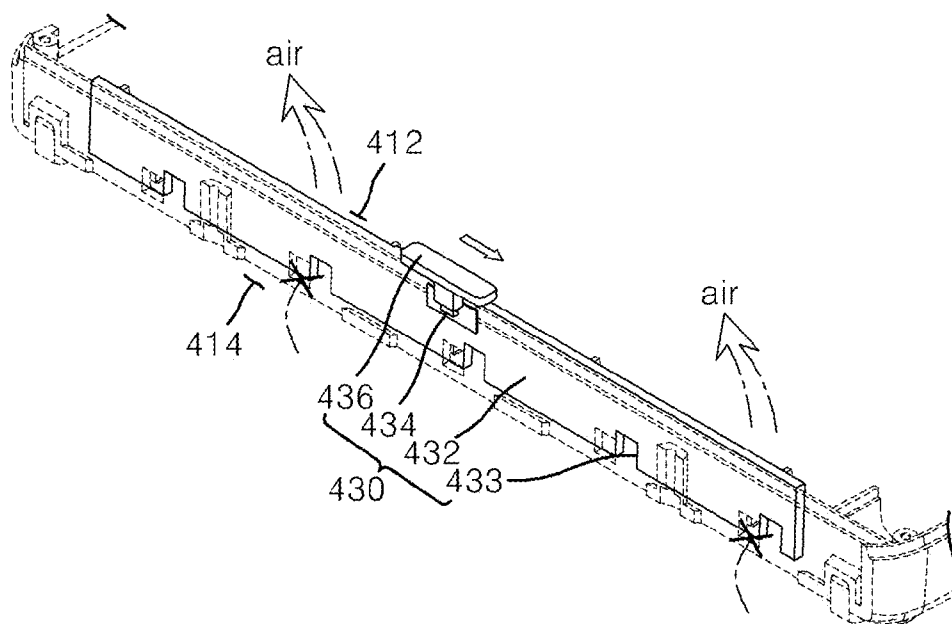


Figure 6

Figure 7

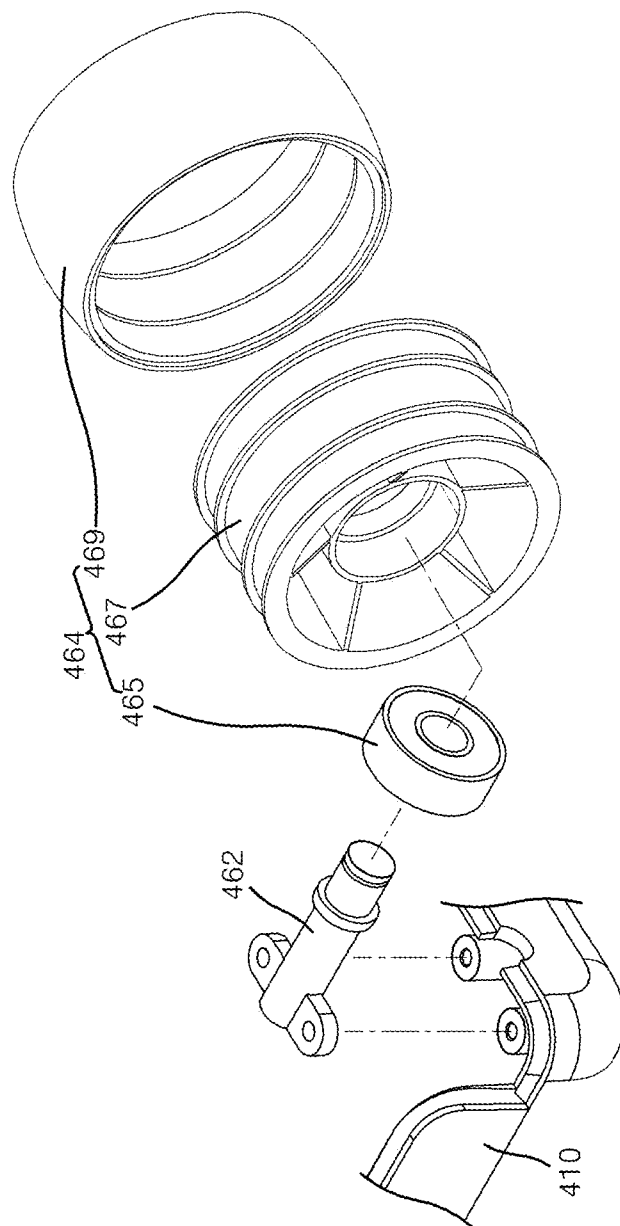


Figure 8

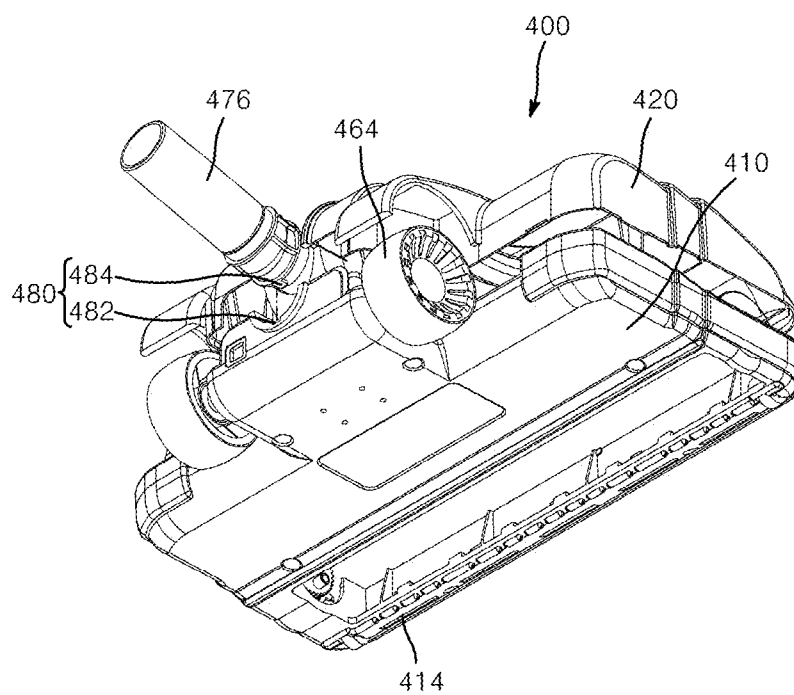


Figure 9

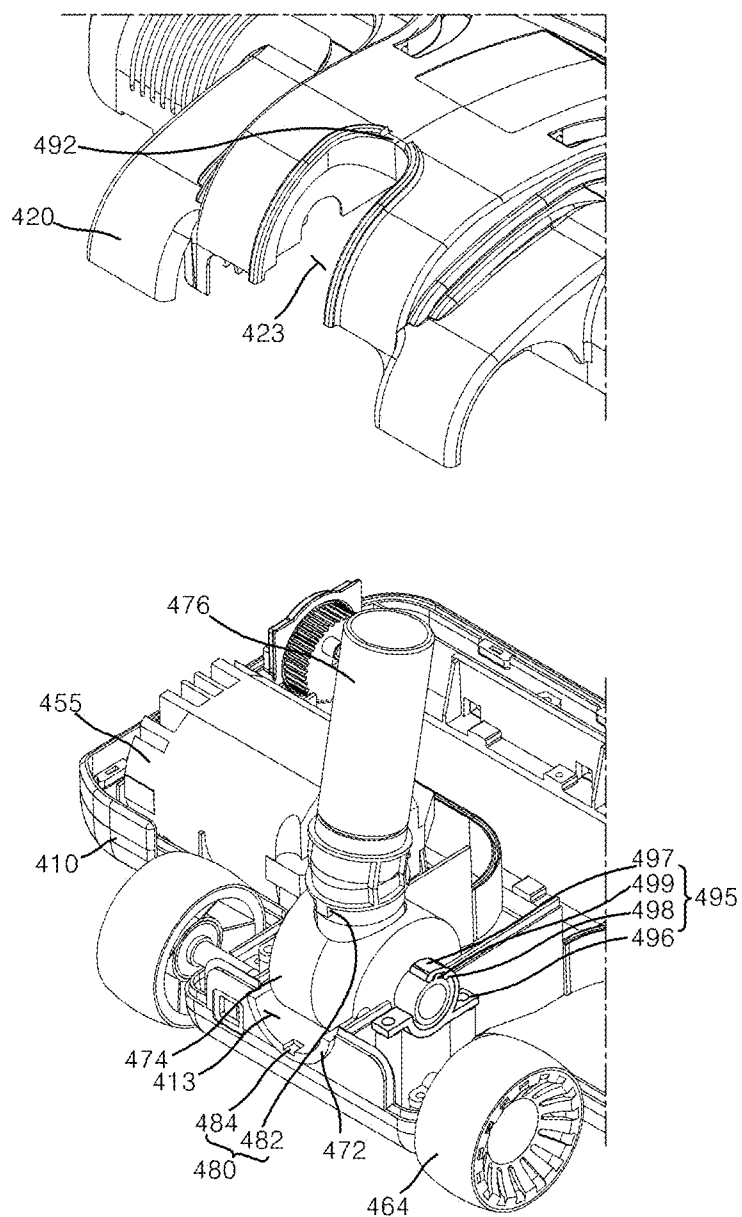


Figure 10

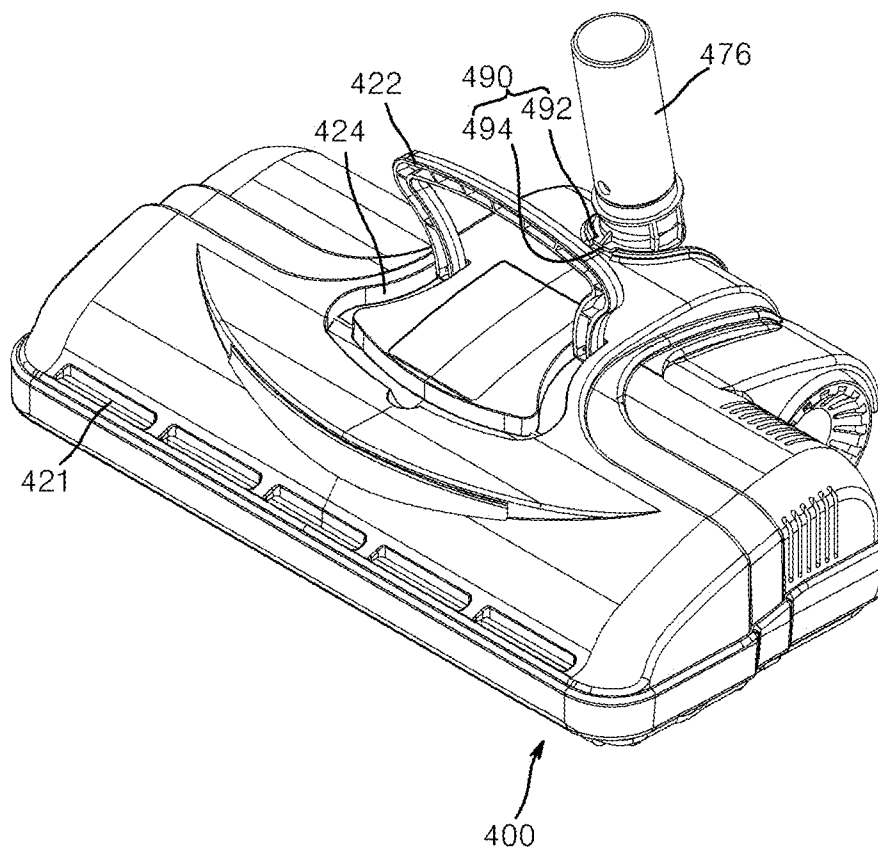


Figure 11

CLEANING NOZZLE ASSEMBLY

BACKGROUND

[0001] 1. Technical Field

[0002] The present invention relates to a cleaning nozzle assembly. More particularly, the present invention relates to a cleaning nozzle assembly which can switch inlets of a cleaning nozzle receiving air and foreign substances, thereby selectively providing dust suction over a wider area and intensive dust suction, prevent a noise generated by wheels of the cleaning nozzle, and allow the cleaning nozzle to remain horizontal with respect to a floor when a transfer pipe provided to the cleaning nozzle for changing a cleaning location during cleaning is lifted up.

[0003] 2. Description of the Related Art

[0004] A typical vacuum cleaner has a structure wherein a motor for generating vacuum and an envelope type filter are disposed within a main body of the cleaner to allow sludge to be introduced into the main body of the cleaner through vacuum force generated by activation of the motor and to be filtered out through the filter, such that filth having been filtered out remains in the main body of the cleaner and only sludge and air having passed through the filter are discharged through an outlet port at an upper portion of the main body.

[0005] In particular, a vacuum cleaner absorbs and removes dust or foreign matter using suction force of air introduced from outside through activation of a motor received in a main body thereof, and is generally used to clean a floor.

[0006] Such a vacuum cleaner is mainly divided into a canister type vacuum cleaner and an upright type vacuum cleaner. For the canister type vacuum cleaner, a suction nozzle for suctioning dust on a floor is provided separately from a main body and thus can be replaced to suit various applications. On the contrary, for the upright type vacuum cleaner, a suction nozzle is integrally formed with a main body.

[0007] A canister type vacuum cleaner generally includes a main body generating suction force and collecting dust; a suction nozzle suctioning dust and foreign substances while being moved on a floor; and a connection tube for connection of the suction nozzle to the main body. Such a canister type vacuum cleaner allows a suction nozzle to be replaced depending upon the shape or material of objects or floors to be cleaned, has strong suction force, and thus has a wide range of applications as compared with an upright type vacuum cleaner.

[0008] An upright type vacuum cleaner can be conveniently moved and easily operated by virtue of integral formation of a suction nozzle and a handle with a main body, and is thus generally used for relatively simple cleaning.

[0009] The aforementioned features provide background information related to the present disclosure, which is not necessarily prior art.

[0010] One example of the related art is disclosed in Korean Patent Publication No. 10-2012-0114132 (entitled "Suction tube for vacuum cleaner and vacuum cleaner including the same")

SUMMARY

[0011] In a typical vacuum cleaner, wheels of a suction nozzle formed by injection molding are rotatably mounted on a body of the nozzle. Here, friction between the body and the wheels, both of which are injection molded articles, causes

noise. In addition, a typical vacuum cleaner has a problem in that when cleaning is performed using a rotary brush type suction nozzle for cleaning carpets, bedclothes, and the like, the suction nozzle can be brought into too close contact with a surface to be cleaned depending upon the kind and state of the surface, which makes it difficult to move the nozzle while causing damage to the surface.

[0012] Therefore, there is a need for an improved technique capable of overcoming these problems.

[0013] The present invention have been conceived to solve such problems in the art and an aspect of the present invention is to provide a cleaning nozzle assembly which can switch inlets of a cleaning nozzle receiving air and foreign substances to selectively provide dust suction over a wider area and intensive dust suction, and to allow adjustment of suction force, thereby sufficiently suctioning only air and foreign substances while preventing damage to a surface to be cleaned.

[0014] Another aspect of the present invention is to provide a cleaning nozzle assembly which includes a bearing provided to wheels of a cleaning nozzle, thereby preventing noise from being generated from a case connection of the cleaning nozzle while enhancing durability of the wheels.

[0015] A further aspect of the present invention is to provide a cleaning nozzle assembly which allows a transfer pipe provided to a cleaning nozzle for changing a cleaning location to be confined to the cleaning nozzle in an upright state and in use, thereby allowing the cleaning nozzle to remain horizontal with respect to a floor and preventing the transfer pipe from being randomly rotated in the upright state when the transfer pipe is lifted up.

[0016] In accordance with one aspect of the present invention, a cleaning nozzle assembly includes: a lower case having a main inlet and a lower sub-inlet to guide foreign substances and air to be introduced into the lower case, wherein the lower case is open at an upper side thereof and includes a partition wall isolating the main inlet from the lower sub-inlet and having a connection hole; an upper case coupled to the lower case to cover the open upper side of the lower case; and an inflow setting unit setting inflow of foreign substances and air into the lower case through the lower sub-inlet and an upper sub-inlet by opening/closing the connection hole.

[0017] The inflow setting unit may include: a plate member reciprocating along the partition wall and having an open hole to open/close the connection hole; a manipulation knob extending from one side of the plate member; and a switch knob mounted on the upper case to reciprocate the manipulation knob for opening/closing the connection hole.

[0018] The upper case may have a guide wall supporting a lateral portion of the plate member at one side thereof to guide the plate member to reciprocate; and the manipulation knob may be provided with a supporting and transferring member to be guided to reciprocate along the other side of the guide wall.

[0019] The main inlet may be rotatably provided with a brush, wherein the brush includes a rotary rod formed of wood to reduce or prevent thermal deformation, and bristles disposed on a circumferential surface of the rotary rod to sweep foreign substances into the lower case

[0020] The bristles may form a helical trajectory from both sides of the rotary rod toward a predetermined portion within the lower case in an axial direction of the rotary rod to collect foreign substances to the predetermined portion.

[0021] The lower case or the upper case may be provided at both sides thereof with ribs and a wheel member may be rotatably provided to each of the ribs.

[0022] The wheel member may include: a bearing member provided to the rib, a roller member provided to the bearing member; and a buffer member surrounding a circumferential surface of the roller member.

[0023] The lower case and the upper case may be provided with a transfer duct guiding transfer of introduced foreign substances and air and connected to a transfer pipe, and the transfer pipe may prevent the lower case from rotating by virtue of a first confining unit when the lower case is lifted up.

[0024] The first confining unit may include: a first groove formed on an inner surface of the transfer duct; and a first protrusion protruding from a circumferential surface of the transfer pipe and received by a corresponding first groove to prevent the lower case from rotating with respect to the transfer pipe.

[0025] The lower case and the upper case may be provided with a transfer duct guiding transfer of introduced foreign substances and air and connected to a transfer pipe; a connector may be rotatably provided to the transfer duct to connect the transfer pipe to the transfer duct and erect the transfer pipe; and the transfer duct may be prevented from rotating in an upright state with respect to the upper case by virtue of a second confining unit.

[0026] The second confining unit may include: a second groove formed on the upper case contacting the transfer pipe in an upright state; and a second protrusion protruding from a circumferential surface of the transfer pipe and received by a corresponding second groove to prevent the transfer pipe from rotating with respect to the upper case.

[0027] A handle may be rotatably provided to the upper case and prevented from protruding outside the upper case.

[0028] The upper case may have an upper sub-inlet corresponding to the lower sub-inlet

BRIEF DESCRIPTION OF THE DRAWINGS

[0029] The above and other aspects, features and advantages of the present invention will become apparent from the following description of embodiments given in conjunction with the accompanying drawings, in which:

[0030] FIG. 1 is a perspective view of a vacuum cleaner including a cleaning nozzle assembly according to one embodiment of the present invention;

[0031] FIG. 2 is an exploded perspective view of the cleaning nozzle assembly according to the embodiment of the present invention;

[0032] FIG. 3 is a bottom exploded perspective view of the lower case and the upper case of the cleaning nozzle assembly shown in FIG. 2;

[0033] FIG. 4 is an exploded perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing various components mounted on the lower case of the cleaning nozzle assembly;

[0034] FIGS. 5 and 6 are perspective views of an inflow setting unit of the cleaning nozzle assembly according to the embodiment of the present invention in operation;

[0035] FIG. 7 is a plan view of the lower case according to the embodiment of the present invention;

[0036] FIG. 8 is an exploded perspective view of a wheel of the lower case according to the embodiment of the present invention;

[0037] FIG. 9 is a bottom perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing a transfer pipe confined to the lower case;

[0038] FIG. 10 is a bottom perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing the transfer pipe confined to the upper case; and

[0039] FIG. 11 is a perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing the transfer pipe confined to the upper case.

DETAILED DESCRIPTION

[0040] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings. It should be noted that the drawings are not to precise scale and may be exaggerated in thickness of lines or size of components for descriptive convenience and clarity only. In addition, terms used herein are defined by taking functions of the present invention into account and can be changed according to user or operator custom or intention. Therefore, definition of the terms should be made according to the overall disclosure set forth herein.

[0041] FIG. 1 is a perspective view of a vacuum cleaner including a cleaning nozzle assembly according to one embodiment of the present invention, FIG. 2 is an exploded perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, and FIG. 3 is a bottom exploded perspective view of the lower case and the upper case of the cleaning nozzle assembly shown in FIG. 2.

[0042] FIG. 4 is an exploded perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing various components mounted on the lower case of the cleaning nozzle assembly, and FIGS. 5 and 6 are perspective views of an inflow setting unit of the cleaning nozzle assembly according to the embodiment of the present invention in operation.

[0043] FIG. 7 is a plan view of the lower case according to the embodiment of the present invention and FIG. 8 is an exploded perspective view of a wheel of the lower case according to the embodiment of the present invention.

[0044] FIG. 9 is a bottom perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing a transfer pipe confined to the lower case, FIG. 10 is a bottom perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing the transfer pipe confined to the upper case, and FIG. 11 is a perspective view of the cleaning nozzle assembly according to the embodiment of the present invention, showing the transfer pipe confined to the upper case.

[0045] Referring to FIG. 1, a vacuum cleaner 100 according to one embodiment of the present invention includes a dust container 200, an operation unit 300, a cleaning nozzle assembly 400, and a cleaner hose 500.

[0046] The dust container 200 is provided at one side thereof with an intake port 210 to create forced flow and serves to store air and foreign substances, such as dust, introduced thereto. Here, the container 200 may be formed in a variety of shapes.

[0047] The dust container 200 is mounted on a carrier 220 to be easily moved to a desired location. The carrier 220 is provided with a plurality of rollers 222. The carrier 220 may be formed in a variety of shapes.

[0048] The operation unit 300 is disposed at the other side of the dust container 200. The operation unit 300 forcibly

generates airflow to force air and foreign substances to be introduced into the dust container 200 via the intake port 210 or to force air to be discharged from the dust container.

[0049] The cleaning nozzle assembly 400 serves to suction foreign substances such as dirt on a floor together with air through operation of the operation unit 300.

[0050] The cleaner hose 500 serves to connect the cleaning nozzle assembly 400 to the dust container 200 and to guide foreign substances and air suctioned by the cleaning nozzle assembly 400 to be delivered to the dust container 200.

[0051] Particularly, referring to FIGS. 2, 3 and 4, the cleaning nozzle assembly 400 includes a lower case 410, an upper case 420, and an inflow setting unit 430.

[0052] The lower case 410 has a main inlet 412 and a lower sub-inlet 414 to guide inflow of foreign substances and air thereinto, while adjoining or close to a floor. Foreign substances and air are introduced into the lower case 410 through the main inlet 412 as well as the lower sub-inlet 414. In other words, besides dust on a floor, foreign substances and air floating over the cleaning nozzle assembly 400 are introduced into the lower case 410 via both the main inlet 412 and the lower sub-inlet 414, whereby foreign substances can be removed at an increased rate.

[0053] The main inlet 412 and the lower sub-inlet 414 are separated from each other by the partition wall 416 inside the lower case 410. The partition wall 416 has connection holes 418 through which the main inlet 412 communicate with the lower sub-inlet 414. The number and size of the connection holes 418 are not particularly limited. It should be understood that the main inlet 412 and the lower sub-inlet 414 may have various sizes. In particular, the main inlet 412 and the lower sub-inlet 414 are aligned with each other and formed at a lower front edge of the lower case 410. Thus, the lower case 410 can suction foreign substances and air while moving forward.

[0054] The lower case 410 is open at an upper side thereof. This structure facilitates assembly and repair of the inflow setting unit 430, a rotary motor 455, a brush 450, and the like described below. It should be understood that the lower case 410 may be formed of various materials and be formed in a variety of shapes.

[0055] The upper case 420 serves to cover the open upper side of the lower case 410, thereby protecting the inflow setting unit 430, the rotary motor 455, and the brush 450 coupled to the lower case 410. In particular, the upper case 420 may be formed therethrough with an upper sub-inlet 421 corresponding to the lower sub-inlet 414. Thus, lots of foreign substances and ambient air can be introduced into the upper case 420 and the lower case 410 through the lower sub-inlet 414 and the upper sub-inlet 421 in a short time.

[0056] In particular, the upper sub-inlet 421 serves to decentralize suction force of the main inlet 412 and the lower sub-inlet 414 and to allow only foreign substances to be sufficiently suctioned so as to prevent difficulty in suctioning foreign substances, when performing suction of foreign substances floating around the lower case 410 and cleaning of a soft floor surface, the surface to be cleaned is suctioned or in excessively close contact with the a bottom surface of the lower case 410 clogging the main inlet 412 and the lower sub-inlet 414 and blocking flow of air.

[0057] It should be understood that the upper case 420 and the lower case 410 may be assembled through various methods such as bolting, hook fastening, or the like. In addition, the upper case 420 may be shaped in various shapes. In

particular, the upper case 420 may be provided with an LED lamp to display operation of the rotary motor 455 and shed light on a front floor surface to facilitate detection of foreign substances, thereby allowing easy cleaning.

[0058] Further, the upper case 420 may be provided with a handle 422 to allow the cleaning nozzle assembly 400 to be carried by hand. The handle 422 may be rotatably coupled to the upper case 420. Here, the handle is embedded in the upper case 420 so as not to protrude outwards. In other words, the upper case 420 has an embedding groove 424 in an upper surface thereof. The handle 422 is rotatably connected at both ends thereof to an inside of the embedding groove 424. Thus, the handle 422 is embedded in the embedding groove 424 so as not to protrude outwards when not in use, and is rotated to stand upright in use. It should be understood that the handle 422 may be formed in a variety of shapes and be formed of various materials.

[0059] The inflow setting unit 430 serves to set inflow of foreign substances and air into the lower case 410 through the lower sub-inlet 414 and the upper sub-inlet 421 by opening/closing the connection holes 418. In other words, when foreign substances need to be locally and intensively suctioned from under the upper case 420, the foreign substances and air may be introduced only through the main inlet 412. On the other hand, when foreign substances need to be suctioned over a wide area, the foreign substances and air may be introduced through the main inlet 412, the lower sub-inlet 414, and the upper sub-inlet 421 at the same time. Here, intensive suction is needed when trying to suction foreign substances from furry mattresses, rugs, carpets, and the like.

[0060] Accordingly, the inflow setting unit 430 serves to open/close the connection holes 418.

[0061] The inflow setting unit 430 includes a plate member 432, a manipulation knob 434, and a switch knob 436.

[0062] As shown in FIGS. 5 and 6, the plate member 432 is configured to reciprocate along the partition wall 416. In addition, the plate member 432 has open holes 433 corresponding to the connection holes 418 in a one-to-one manner. Thus, as the plate member 432 reciprocates along the partition wall 416, the connection hole 418 is open when the connection holes 418 are aligned with the open holes 433, or is blocked by the plate member 432. It should be understood that the plate member 432 may be formed in a variety of shapes and be formed of various materials.

[0063] The manipulation knob 434 extends from one side of the plate member 432, and the switch knob 436 is coupled to the upper case 420 and serves to reciprocate the manipulation knob 434. Thus, the switch knob 436 is reciprocally coupled to the upper case 420 and is connected to the manipulation knob 434. Thus, when the switch knob 436 is moved in one direction or in the other direction, the connection holes 418 are blocked by the plate member 432 or are opened by being aligned with the open hole 433. It should be understood that the manipulation knob 434 and the switch knob 436 may be formed in a variety of shapes.

[0064] The plate member 432 may be guided to stably reciprocate through manipulation of the switch knob 436.

[0065] Namely, a guide wall 442 is formed inside the upper case 420 corresponding to an upper side of the partition wall 416 of the lower case 410. The guide wall 442 guides the plate member 432 to reciprocate, while supporting a lateral portion of the plate member 432 at one side thereof.

[0066] The manipulation knob 434 is supported by the partition wall 416 and moved along the partition wall 416. In

addition, the manipulation knob **434** is provided with a supporting and transferring member to reciprocate along the other side of the guide wall **442**.

[0067] Accordingly, the supporting and transferring member **444** is moved while contacting the other side of the partition wall **416** and the other side of the guide wall **442**. Thus, the plate member **432** can stably reciprocate by contacting one side of the partition wall **416** and one side of the guide wall **442**.

[0068] In addition, the brush **450** is rotatably provided to the main inlet **412**. The brush **450** sweeps foreign substances on a floor into the lower case **410** and the upper case **420** while rotating. Here, as air is forcibly introduced into the lower case **410** and the upper case **420** via the main inlet **412** through operation of a fan motor member **320**, foreign substances swept by the brush **450** are suctioned into the lower case **410** and the upper case **420**.

[0069] In particular, the lower case **410** is provided with a lower divider **419** to guide air and foreign substances introduced through the main inlet **412**, and the lower sub-inlet **414**, and the upper sub-inlet **421** to be delivered to a predetermined portion. Further, the upper case **420** is provided with an upper divider **429** corresponding to the lower divider **419**. For convenience, the lower case **410** is shown as being formed at a rear side thereof with a lower opening **413**, and the upper case **420** is shown as being formed at a rear side thereof with an upper opening **423**. Thus, air and foreign substances are delivered to the lower opening **413** and the upper opening **423** along the upper divider **429** and the lower divider **419**. It should be understood that the lower divider **419** and the upper divider **429** may be formed in a variety of shapes, and the upper opening **423** and the lower opening **413** may be formed in a variety of shapes.

[0070] In addition, the brush **450** is connected to both inner sides of the main inlet **412** to receive drive force of the rotary motor **455** to be unidirectionally rotated.

[0071] In particular, drive force of the rotary motor **455** is transmitted to the brush **450** by a transmission member **456**. For convenience, the transmission member **456** is shown as being a belt.

[0072] The brush **450** includes a rotary rod **452** and bristles **454**.

[0073] The rotary rod **452** may be formed of wood to reduce or prevent thermal deformation. The bristles **454** are disposed on a circumferential surface of the rotary rod **452** and serves to sweep foreign substances into the lower case **410**.

[0074] As shown in FIG. 7, the bristles **454** form a helical trajectory from both sides of the rotary rod toward the lower opening **413** and the upper opening **423** in an axial direction of the rotary rod **452** to collect foreign substances to a predetermined portion within the lower case **410**, i.e. to the lower opening **413** side and the upper opening **423** side. In other words, the bristles **454** are helically arranged along a clockwise trajectory from one edge of the rotary rod **452** to the lower opening **413** side in an axial direction of the rotary rod, and are helically arranged from the other edge of the rotary rod **452** to the lower opening **413** side in an axial direction of the rotary rod. Herein, "the lower opening **413** side" refers to a portion at which a straight line extending from the lower opening **413** to be perpendicular to the rotary rod **452** meets the rotary rod **452**.

[0075] In addition, the lower case **410** or the upper case **420** is provided with wheel members **464** to be easily moved. For

convenience, the wheel members **464** are rotatably provided at both rear sides of the lower case **410** and are in rolling contact with a floor.

[0076] Here, the lower case **410** is provided at both sides thereof with ribs **462**. The wheel members **464** are rotatably carried by the respective ribs **462**. The ribs **462** may be formed in a variety of shapes and be formed integrally with or removably from the lower case **410**.

[0077] Further, as shown in FIG. 8, the wheel member **464** includes a bearing member **465**, a roller member **467**, and a buffer member **469**.

[0078] The bearing member **465** axially receives each of the ribs **462**. For convenience, the bearing member **465** is, for example, a ball bearing.

[0079] The roller member **467** axially receives the bearing member **465**. Here, the roller member **467** has a circular shape to be able to roll on a floor. It should be understood that the roller member **467** may be formed of various materials.

[0080] The buffer member **469** is configured to surround the roller member **467**. The buffer member **469** may be formed of shock absorbable materials such as rubber. As above, when the bearing member **465** is coupled to the rib **462** and the roller member **467** is coupled to the bearing member **465**, it is possible to provide reduced noise and enhanced durability as compared with when the roller member **467** is directly coupled to the rib **462**.

[0081] In addition, when the roller member **467** is provided with the buffer member **469** as above, it is possible to provide considerably reduced noise as compared with when the roller member **467** is in direct contact with a floor.

[0082] In particular, the lower case **410** and the upper case **420** is respectively provided with the lower divider **419** and the upper divider **429** to guide transfer of introduced foreign substances and air. In addition, a transfer duct **472** is disposed at an inside of the lower case **410** adjacent to the lower opening **413** or at an inside of the upper case **420** adjacent to the upper opening **423**. It should be understood that the transfer duct **472** may be provided inside the lower divider **419** or the upper divider **429**.

[0083] For convenience, the transfer duct **472** is shown as being fixedly coupled to the lower case **410** to connect the lower opening **413** to the lower divider **419**. Thus, the transfer duct **472** serves to guide transfer of air and foreign substances.

[0084] In addition, a connector **474** is rotatably provided to the transfer duct **472**. The connector **474** is open at both sides thereof to allow flow of air and foreign substances there-through. In other words, air and foreign substances introduced into the lower case **410** are introduced through one side of the connector **474** and discharged from the other side of the connector.

[0085] In particular, the connector **474** is connected to a transfer pipe **476** at the other side thereof. The transfer pipe **476** is connected to the cleaner hose **500**.

[0086] The lower case **410** has the rotary motor **455** mounted thereon at a location eccentric with respect to the center thereof. In this case, when a user carries the transfer pipe **476** or the cleaner hose **500**, the lower case **410** eccentrically rotates in a circumferential direction of the transfer pipe **476**. Accordingly, the transfer pipe **476** may prevent the lower case **410** held in hand from rotating by virtue of a first confining unit **480**.

[0087] As shown in FIGS. 9 to 10, the first confining unit **480** includes a first groove **482** and a first protrusion **484**.

[0088] The first groove 482 is formed on an inner surface of the transfer duct 472. Here, it should be understood that the first groove 482 may be formed on the transfer duct 472 in a variety of shapes and the number of first grooves is not particularly limited.

[0089] The first protrusion 484 protrudes from a circumferential surface of the transfer pipe 476 and is received by the corresponding first groove 482. Thus, when a user carries the transfer pipe 476 in hand, the lower case 410 is prevented from rotating in a circumferential direction of the transfer pipe 476 even though the center of gravity of the lower case deviates from the geometric center of the lower case. Thus, even when the lower case 410 is lifted up, the lower case remains parallel to a floor, thereby preventing inconvenience due to eccentric rotation of the lower case 410.

[0090] In addition, when the cleaning nozzle assembly 400 is not used, the transfer pipe 476 may be stored in an upright state with respect to the lower case 410. Here, the transfer pipe 476 is rotated together with the connector 474 to be upright. In particular, when the transfer pipe 476 is rotated in the circumferential direction in the upright state, the direction of a handle of the cleaner hose 500 will be shifted. Accordingly, the transfer pipe 476 may be held in place in the upright state by a second confining unit 490.

[0091] As shown in FIG. 11, the second confining unit 490 includes a second groove 492 and a second protrusion 494.

[0092] The second groove 492 is formed on an inner surface of the upper opening 423 of the upper case 420 contacting the transfer pipe 476 in the upright state. Here, the shape and number of the second groove 492 are not particularly limited.

[0093] The second protrusion 494 protrudes from a circumferential surface of the transfer pipe 476 and is received by the corresponding second groove 492. As a result, the transfer pipe 476 is fastened to the upper case 420 to be prevented from rotating in a circumferential direction.

[0094] In particular, a separate location holding unit 495 may be provided to prevent the second protrusion 494 from being randomly separated from the second groove 492.

[0095] The location holding unit 495 includes a bracket 496, a resilient piece 497, a positioning protrusion 498, and a stopper 499.

[0096] The bracket 496 is fixedly provided to a portion of the lower case 410 corresponding to at least one of both centers of the connector 474 mounted on the transfer duct 472. The bracket 496 may be formed in a variety of shapes.

[0097] The resilient piece 497 extends from one side of the bracket 496 to the other side thereof and is configured to resiliently spread apart from the bracket 496. It should be understood that the bracket 496 may be formed in a variety of shapes.

[0098] The positioning protrusion 498 includes a pair of positioning protrusions separated from each other and protruding from a lower side of the resilient piece 497, i.e. a portion of the resilient piece 497 facing the bracket 496. Here, the positioning protrusions 498 may be curved with a radius of curvature along an arc trajectory thereof.

[0099] The stopper 499 protrudes from a circumferential surface of the connector 474 adjacent to the positioning protrusion 498. When the connector 474 and the stopper 499 are rotated to push the positioning protrusions 498 in an upper direction, the resilient piece 497 resiliently spreads. Then, when the stopper 499 is placed between the pair of positioning protrusions 498, the resilient piece 497 is resiliently

restored. In other words, as the stopper 499 is placed between the pair of positioning protrusions 498 and thus prevents the connector 474 from being randomly rotated, the connector 474 can remain standing upright.

[0100] It should be understood that when the connector 474 is forcibly rotated in an opposite direction by a user, the stopper 499 lifts the resilient piece 497 up and returns to an initial location thereof.

[0101] As described above, the cleaning nozzle assembly according to the present invention can switch inlets of a cleaning nozzle receiving air and foreign substances to selectively provide dust suction over a wider area and intensive dust suction, and to allow adjustment of suction force, thereby sufficiently suctioning only air and foreign substances while preventing damage to a surface to be cleaned. In other words, the cleaning nozzle assembly according to the present invention allows adjustment of suction force during cleaning of a soft floor surface such as carpets or bedclothes, and thus can solve a problem that a nozzle is brought into too close contact with the floor surface to make it difficult to move the nozzle.

[0102] In addition, the cleaning nozzle assembly according to the present invention includes bearings provided to wheels of a cleaning nozzle, thereby preventing noise from being generated from a case connection of the cleaning nozzle while enhancing durability of the wheels.

[0103] Further, the cleaning nozzle assembly according to the present invention allows a transfer pipe provided to a cleaning nozzle for changing a cleaning location to be confined to the cleaning nozzle in an upright state and in use, thereby allowing the cleaning nozzle to remain horizontal with respect to a floor and preventing the transfer pipe from being randomly rotated in the upright state when the transfer pipe is lifted up.

[0104] Although the present invention has been described with reference to some embodiments in conjunction with the drawings, it should be understood that these embodiments are provided for illustration only and that various modifications and other equivalent embodiments can be made without departing from the spirit and the scope of the present invention. Thus, the technical scope of the present invention should be determined by the attached claims.

<Legend of Reference Numerals>

100: Vacuum cleaner	200: Dust container
210: Intake port	220: Carrier
400: Cleaning nozzle assembly	410: Lower case
420: Upper case	430: Inflow setting unit
432: Plate member	433: Open hole
434: Manipulation knob	436: Switch knob
450: Brush	455: Rotary motor
464: Wheel member	465: Bearing member
472: Transfer duct	474: Connector
476: Transfer pipe	480: First confining unit
490: Second confining unit	500: Cleaner hose

What is claimed is:

1. A cleaning nozzle assembly, comprising:

a lower case having a main inlet and a lower sub-inlet to guide foreign substances and air to be introduced into the lower case, the lower case being open at an upper side thereof and comprising a partition wall isolating the main inlet from the lower sub-inlet and having a connection hole;

an upper case coupled to the lower case to cover the open upper side of the lower case; and

an inflow setting unit setting inflow of foreign substances and air into the lower case through the lower sub-inlet and an upper sub-inlet by opening/closing the connection hole.

2. The cleaning nozzle assembly according to claim 1, wherein the inflow setting unit comprises:

a plate member reciprocating along the partition wall and having an open hole to open/close the connection hole; a manipulation knob extending from one side of the plate member; and

a switch knob mounted on the upper case to reciprocate the manipulation knob for opening/closing the connection hole.

3. The cleaning nozzle assembly according to claim 2, wherein the upper case has a guide wall supporting a lateral portion of the plate member at one side thereof to guide the plate member to reciprocate; and the manipulation knob is provided with a supporting and transferring member to be guided to reciprocate along the other side of the guide wall.

4. The cleaning nozzle assembly according to claim 1, wherein the main inlet is rotatably provided with a brush, the brush comprising a rotary rod formed of wood to reduce or prevent thermal deformation and bristles disposed on a circumferential surface of the rotary rod to sweep foreign substances into the lower case, the bristles forming a helical trajectory from both sides of the rotary rod toward a predetermined portion within the lower case in an axial direction of the rotary rod to collect foreign substances to the predetermined portion.

5. The cleaning nozzle assembly according to claim 1, wherein the lower case or the upper case is provided at both sides thereof with ribs, and a wheel member is rotatably provided to each of the ribs and comprises a bearing member provided to the rib, a roller member provided to the bearing member, and a buffer member surrounding a circumferential surface of the roller member.

6. The cleaning nozzle assembly according to claim 1, wherein the lower case and the upper case are provided with a transfer duct guiding transfer of introduced foreign substances and air and connected to a transfer pipe; and the transfer pipe prevents the lower case from rotating by virtue of a first confining unit when the lower case is lifted up.

7. The cleaning nozzle assembly according to claim 6, wherein the first confining unit comprises:

a first groove formed on an inner surface of the transfer duct; and

a first protrusion protruding from a circumferential surface of the transfer pipe and received by a corresponding first groove to prevent the lower case from rotating with respect to the transfer pipe.

8. The cleaning nozzle assembly according to claim 1, wherein the lower case and the upper case are provided with a transfer duct guiding transfer of introduced foreign substances and air and connected to a transfer pipe; a connector is rotatably provided to the transfer duct to connect the transfer pipe to the transfer duct and erect the transfer pipe; and the transfer duct is prevented from rotating in an upright state with respect to the upper case by virtue of a second confining unit.

9. The cleaning nozzle assembly according to claim 8, wherein the second confining unit comprises:

a second groove formed on the upper case contacting the transfer pipe in an upright state; and

a second protrusion protruding from a circumferential surface of the transfer pipe and received by a corresponding second groove to prevent the transfer pipe from rotating with respect to the upper case.

10. The cleaning nozzle assembly according to claim 1, wherein a handle is rotatably provided to the upper case, the handle being prevented from protruding outside the upper case.

11. The cleaning nozzle assembly according to claim 1, wherein the upper case has an upper sub-inlet corresponding to the lower sub-inlet.

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