



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
23.04.2008 Bulletin 2008/17

(51) Int Cl.:
A47L 9/20 (2006.01) A47L 9/10 (2006.01)

(21) Application number: **07019140.8**

(22) Date of filing: **28.09.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

- **Toshiba Consumer Marketing Corporation**
Tokyo 101-0021 (JP)
- **Toshiba Ha Products Co., Ltd.**
Ibaraki-shi
Osaka 567-0013 (JP)

(30) Priority: **18.10.2006 JP 2006283949**

(72) Inventor: **Morishita, Atsushi**
Ibaraki-shi
Osaka 567-0013 (JP)

(71) Applicants:
• **Kabushiki Kaisha Toshiba**
Minato-ku,
Tokyo 105-8001 (JP)

(74) Representative: **Kramer - Barske - Schmidtchen**
European Patent Attorneys
Landsberger Strasse 300
80687 München (DE)

(54) **Electric vacuum cleaner with two dust collecting sections and a switching mechanism**

(57) Dust is trapped in a main dust collecting chamber by selecting a cleaning state through a switching mechanism where a switching valve provides communication between the main dust collecting chamber and the upstream side of an electric blower while an outside air incoming valve is closed to cut off the communication with outside air. The dust trapped in the main dust collecting chamber can be transferred to the auxiliary dust collecting chamber by selecting a dust transfer state

through the switching mechanism where the switching valve provides communication between the auxiliary dust collecting chamber and the upstream side of the electric blower while the opening-closing valve provides communication between the main dust collecting chamber and the auxiliary dust collecting chamber, and the outside air incoming valve is opened to introduce outside air into the main dust collecting chamber, which can limit the reduction in suction power over time.

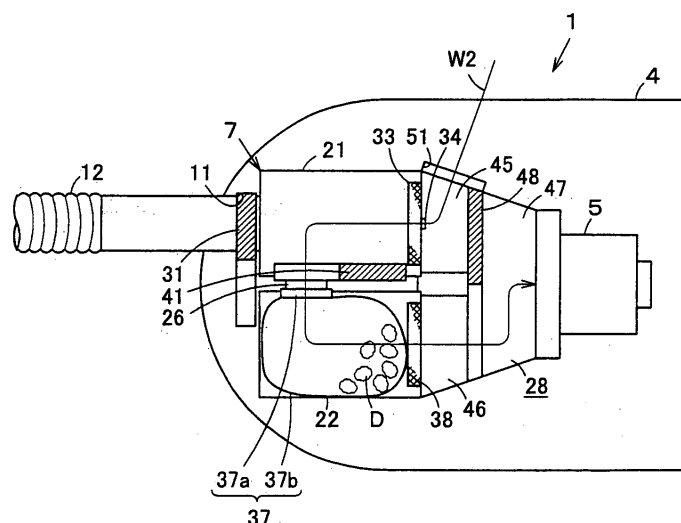


FIG. 2

Description

INCORPORATION BY REFERENCE

[0001] The present application claims priority under 35 U.S.C. § 119 to Japanese Patent Application No. 2006-283949 filed on October 18, 2006. The content of the application is incorporated herein by reference in its entirety.

FIELD OF THE INVENTION

[0002] The present invention relates to an electric vacuum cleaner having a filter so as to be capable of trapping dust that is sucked by driving an electric blower.

BACKGROUND OF THE INVENTION

[0003] Conventionally, such kinds of electric vacuum cleaners are equipped with a vacuum cleaner main body with an electric blower housed therein as shown in Japanese Laid-Open Patent Publication No. 2003-265376, for example. In the front part of the vacuum cleaner main body, there is provided a dust collecting section communicating with the suction side of the electric blower, where a main body suction port is formed in an opening manner in the front of the dust collecting section and a hose body, an extension duct, and a floor brush are connected in series in a communicating manner to the main body suction port. Then, in the dust collecting section, there is detachably provided an approximately bottomed cylindrical dust collecting cup for trapping dust that is sucked therein through the main body suction port by driving the electric blower, such as a cyclone-separation-type dust collecting device. There is installed a filter in the dust collecting cup, the filter being adapted to trap fine dust contained in sucked air when the sucked air passes through the filter after coarse dust, relatively large dust, is cyclone-separated away therefrom.

[0004] However, the above-described electric vacuum cleaner suffers from a problem in that the filter may be clogged over time, resulting in a reduction in suction power of the electric blower.

[0005] For this reason, the filter must be maintained regularly to remove fine dust adhering to the filter at frequent intervals, and also if the removed fine dust is not discharged outside of the dust collecting cup, it will adhere to the filter again, causing poor maintenance performance.

[0006] The present invention has been made in consideration of the above-described problem, and an object thereof is to provide an electric vacuum cleaner with limited reduction in suction power over time.

SUMMARY OF THE INVENTION

[0007] An electric vacuum cleaner according to the present invention includes: a first dust collecting section

having a filter and capable of communicating with outside air as well as trapping dust that is sucked therein through a main body suction port by driving an electric blower; a second dust collecting section connected in a communicating manner to the first dust collecting section; and a switching mechanism switchable selectively between a first state where the communication between the first dust collecting section and the upstream side of the electric blower is provided while the communication between the first dust collecting section and the second dust collecting section is cut off, and the upstream side of the first dust collecting section is opened while the communication with the outside air is cut off and a second state where the communication between the second dust collecting section and the upstream side of the electric blower is provided while the communication cutoff between the first dust collecting section and the second dust collecting section is released, and the upstream side of the first dust collecting section is closed while the communication cutoff with the outside air is released. Then, dust can be trapped in the first dust collecting section by selecting the first state through the switching mechanism where the communication between the first dust collecting section and the upstream side of the electric blower is provided while the communication between the first dust collecting section and the second dust collecting section is cut off, and the upstream side of the first dust collecting section is opened while the communication cutoff with the outside air is released, and then the dust trapped in the first dust collecting section can be transferred to the second dust collecting section using outside air by selecting the second state through the switching mechanism where the communication between the second dust collecting section and the upstream side of the electric blower is provided while the communication between the first dust collecting section and the second dust collecting section is provided, and the upstream side of the first dust collecting section is closed while the outside air is introduced into the first dust collecting section, which can limit the reduction in suction power over time.

BRIEF DESCRIPTION OF THE DRAWINGS

[0008]

Fig. 1 is an illustrative side view showing a first state of an electric vacuum cleaner according to a first embodiment of the present invention; Fig. 2 is an illustrative side view showing a second state of the electric vacuum cleaner; Fig. 3 is a plan view showing the vicinity of a filter in the electric vacuum cleaner; Fig. 4 is a perspective view of the electric vacuum cleaner; Fig. 5 is an illustrative side view showing a first state of an electric vacuum cleaner according to a second embodiment of the present invention; and Fig. 6 is an illustrative side view showing a second state of the electric vacuum cleaner.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0009] The configuration of an electric vacuum cleaner according to a first embodiment of the present invention will hereinafter be described with reference to Figs. 1 to 4.

[0010] In Fig. 4, numeral 1 denotes a vacuum cleaner main body. The vacuum cleaner main body 1 is a so-called canister-type electric vacuum cleaner travelable on the floor. The vacuum cleaner main body 1 includes a main body case 4 having a lower case 2 with the upper side thereof being slanted downward from rear toward the front and opened upward and a cover body 3 covering the lower case 2 from above. There are disposed an electric blower 5 and a dust collecting unit 7 (Fig. 1) as a dust collecting section adapted to be opened and closed upward by the cover body 3, respectively, in the rear and front parts of the main body case 4, and further disposed control means 8 for controlling the operations of the electric blower 5.

[0011] Then, a main body suction port 11 communicable with the suction side of the electric blower 5 via the dust collecting unit 7 is formed in an opening manner in the front end portion of the main body case 4. A hose body 12 is provided detachably at the main body suction port 11 and a handled operation part 13 is provided at the leading end portion of the hose body 12. A grip part 14 to be gripped by an operator is provided in a protruding manner from the handled operation part 13 and a plurality of setup buttons 15 through which operation modes of the electric blower 5, etc., are to be set by the operator are provided on the grip part 14. Then, an extension duct 16 and a floor brush 17 as a suction port body are connected in series in a communicating manner to the leading end portion of the handled operation part 13.

[0012] Further, in the main body case 4, there is disposed a cord reel with a power cord (not shown in the drawings) for supplying power to the electric blower 5 wound therearound, whereby the power cord can be taken out and put in the main body case 4.

[0013] The electric blower 5 is disposed in approximately the lateral center of the vacuum cleaner main body 1 with the suction side thereof being positioned forward while the exhaust side is positioned rearward. Also, the electric blower 5 is adapted to be operated in accordance with an operation mode that is set for the control means 8 by the setup buttons 15.

[0014] Then, as shown in Figs. 1 and 2, the dust collecting unit 7 includes a main dust collecting chamber 21 as a first dust collecting section and an auxiliary dust collecting chamber 22 as a second dust collecting section, respectively, on the upper and lower sides, for example. The main dust collecting chamber 21 and the auxiliary dust collecting chamber 22 are connected in a communicating manner with each other by a communication passage 26. Also, the downstream side of the dust collecting unit 7 is connected in a communicating manner to the suction side of the electric blower 5 via a suction

air passage 28.

[0015] The main dust collecting chamber 21, which is to be used mainly when cleaning with the electric vacuum cleaner, is connected in a communicating manner to the downstream side of the main body suction port 11 and disposed on the central axis of the main body suction port 11, forming a so-called cyclone-type dust collecting section in which dust sucked by driving the electric blower 5 is separated centrifugally from air, for example. Also, on the upstream outer side of the main dust collecting chamber 21, there is disposed a communication duct valve 31 as an upstream side valve body capable of cutting off the communication between the main dust collecting chamber 21 and the main body suction port 11. Further, in the main dust collecting chamber 21, there is disposed a pleated filter 33 as an exhaust side filter in a part for communication with the suction air passage 28.

[0016] The control means 8 is adapted to control the opening and closing operations of the communication duct valve 31.

[0017] The pleated filter 33 is adapted to not allow passage of coarse dust, relatively large-sized dust, to collect in the main dust collecting chamber 21 and to adherently trap fine dust contained in air passing therethrough, in which vertical pleated shapes are formed laterally over the entire vacuum cleaner main body 1. Also, on the downstream side of the pleated filter 33, there is installed a dust removing body 34 as a dust removing mechanism for removing dust adhering to the pleated filter 33 down into the main dust collecting chamber 21, as shown in Fig. 3.

[0018] The dust removing body 34 is provided movably in the lateral direction of the vacuum cleaner main body 1 (vertical direction in Fig. 3) with the leading end portion thereof being fitted to the pleated part on the downstream side of the pleated filter 33 and is adapted to move in this direction, so that the leading end portion gets over mountain portions of the pleated part repeatedly to vibrate the pleated filter 33 and thereby to remove dust adhering to the pleated filter 33.

[0019] It is noted that the dust removing body 34 may be operated automatically by the control means 8 (Fig. 4), etc., or manually by an operator at any timing such as when turning the electric blower 5 on and/or off.

[0020] Referring again to Figs. 1 and 2, the auxiliary dust collecting chamber 22 is an auxiliary dust collecting section where dust trapped in the main dust collecting chamber 21 is moved and collected, in which a paper bag 37 as a disposable dust bag is housed detachably and a filter 38 having a mesh finer than that of the paper bag 37 is disposed in a part for communication with the suction air passage 28 on the exhaust outer side of the paper bag 37.

[0021] The paper bag 37 has a port plate 37a attached to the lower end portion of the communication passage 26 and a sac-like filter section 37b provided integrally with the port plate 37a. The port plate 37a is formed with an opening not shown in the drawings to provide com-

munication between the communication passage 26 and the filter section 37b. Also, the filter section 37b is folded up in an unused state and is to be inflated in the entire auxiliary dust collecting chamber 22 to be used.

[0022] The communication passage 26 is a hollow pipe-shaped air passage for providing communication between the upstream side of the pleated filter 33 in the main dust collecting chamber 21 and the upstream side of the filter 38 in the auxiliary dust collecting chamber 22, being disposed vertically and arranged openably by an opening-closing valve 41 as a communication switching valve. The control means 8 is adapted to control the opening and closing operations of the opening-closing valve 41.

[0023] The suction air passage 28 has a main dust collecting air passage 45 as a first air passage communicating with the downstream side of the main dust collecting chamber 21, an auxiliary dust collecting air passage 46 as a second air passage communicating with the downstream side of the auxiliary dust collecting chamber 22, and a suction air passage main body 47 where the dust collecting air passages 45 and 46 meet to communicate with the suction side of the electric blower 5, in which a switching valve 48 is disposed in a part for communication between the main and auxiliary dust collecting air passages 45 and 46 and the suction air passage main body 47.

[0024] The main dust collecting air passage 45 is provided in such a manner that the center thereof is positioned approximately in alignment with that on the exhaust side of the main dust collecting chamber 21. Also, the main dust collecting air passage 45 is bored with an outside air introduction hole 51 for providing communication with outside air. Therefore, in the main dust collecting chamber 21, intake air to the electric blower 5 can pass from the main body suction port 11 through the pleated filter 33 in a first state, that is, in a cleaning state, while outside air can be introduced from the downstream side, i.e., the backwash side of the pleated filter 33 via the outside air introduction hole 51 and main dust collecting air passage 45 in a second state, that is, in a dust transfer state. Further, in the outside air introduction hole 51, there is disposed an outside air incoming valve 52 as an outside air switching valve for opening and closing the outside air introduction hole 51. The control means 8 is adapted to control the opening and closing operations of the outside air incoming valve 52.

[0025] It is noted that backwash here means causing fluid to pass through a filter in a direction opposite to that in which fluid passes when trapping dust, etc., in the filter, that is, removing dust, etc., adhered to the filter.

[0026] The auxiliary dust collecting air passage 46 is provided in such a manner that the center thereof is positioned approximately in alignment with that on the exhaust side of the auxiliary dust collecting chamber 22.

[0027] In addition, the switching valve 48 is adapted to bring one of either the main or auxiliary dust collecting air passage 45 or 46 into communication selectively with

the suction side of the electric blower 5 via the suction air passage main body 47, and the control means 8 is adapted to control the opening and closing operations of the valve.

[0028] Then, the communication duct valve 31, opening-closing valve 41, switching valve 48, outside air incoming valve 52, and control means 8, etc., form a switching mechanism 58, the switching mechanism 58 being switchable between the first state, i.e., the cleaning state where a main air passage W1 is formed in which a negative pressure by the electric blower 5 interacts with the floor brush 17, extension duct 16, hose body 12, main body suction port 11, main dust collecting chamber 21, main dust collecting air passage 45, and suction air passage main body 47 and the second state, i.e., the dust transfer state where an auxiliary air passage W2 is formed in which a negative pressure by the electric blower 5 interacts with the outside air introduction hole 51, main dust collecting air passage 45, main dust collecting chamber 21, communication passage 26, auxiliary dust collecting chamber 22, auxiliary dust collecting air passage 46, and suction air passage main body 47.

[0029] Next will be described the operation of the above-described first embodiment.

[0030] First, the hose body 12, extension duct 16, and floor brush 17 are connected in series in a communicating manner to the main body suction port 11, and then the cover body 3 of the main body case 4 is opened to place the dust collecting unit 7, and the cover body 3 is closed.

[0031] Then, when the power cord is taken out of the main body case 4 to be plugged into a wall socket, etc., and an operator holds the grip part 14 to operate a predetermined setup button 15, the control means 8 drives the electric blower 5.

[0032] In the case above, as shown in Fig. 1, the control means 8 causes the switching valve 48 to close the auxiliary dust collecting air passage 46 so that the downstream side of the main dust collecting chamber 21 communicates with the suction side of the electric blower 5 via the main dust collecting air passage 45 while closing the opening-closing valve 41 to cut off the communication between the main dust collecting chamber 21 and the auxiliary dust collecting chamber 22, and opens the communication duct valve 31 to open the upstream side of the main dust collecting chamber 21 while closing the outside air incoming valve 52 to cut off the main dust collecting chamber 21 to communicate with outside air (cleaning state).

[0033] As a result, the main air passage W1 is formed in which a negative pressure interacts with the floor brush 17, extension duct 16, hose body 12, main body suction port 11, main dust collecting chamber 21, main dust collecting air passage 45, and suction air passage main body 47 by driving the electric blower 5, and that dust D is sucked with air into the main dust collecting chamber 21.

[0034] Then, among the dust D thus sucked into the main dust collecting chamber 21, coarse dust is centrif-

ugally separated, for example, to be trapped in the main dust collecting chamber 21, while fine dust is trapped in the pleated filter 33 when the air passes through the pleated filter 33. It is noted that the coarse dust housed in the main dust collecting chamber 21 is compressed by air passing therethrough.

[0035] The air passes through the pleated filter 33 to be sucked into the electric blower 5 via the main dust collecting air passage 45 and suction air passage main body 47, and then passes through the electric blower 5 to become an exhaust air stream and discharged outside of the vacuum cleaner main body 1 through an exhaust hole not shown in the drawings.

[0036] Next, when the operator operates a setup button 15 after cleaning, the control means 8 operates the dust removing body 34 for a predetermined time, for example, to remove the fine dust trapped in the pleated filter 33 down into the main dust collecting chamber 21, and as shown in Fig. 2, causes the switching valve 48 to close the main dust collecting air passage 45 so that the downstream side of the auxiliary dust collecting chamber 22 communicates with the suction side of the electric blower 5 via the auxiliary dust collecting air passage 46 while opening the opening-closing valve 41 to provide communication between the main dust collecting chamber 21 and the auxiliary dust collecting chamber 22, and closes the communication duct valve 31 to close the upstream side of the main dust collecting chamber 21 while opening the outside air incoming valve 52 (dust transfer state).

[0037] In the case above, part of the dust D trapped in the main dust collecting chamber 21 falls into the auxiliary dust collecting chamber 22 via the communication passage 26 due to its own weight to be trapped in the paper bag 37.

[0038] Further, an auxiliary air passage W2 is formed in which a negative pressure interacts with the outside air introduction hole 51, main dust collecting air passage 45, main dust collecting chamber 21, communication passage 26, auxiliary dust collecting chamber 22, auxiliary dust collecting air passage 46, and suction air passage main body 47 by driving the electric blower 5, and outside air is introduced into the main dust collecting air passage 45 through the outside air introduction hole 51.

[0039] Then, the outside air passes through the pleated filter 33 from the downstream side to the upstream side to backwash the pleated filter 33, and is further sucked into the auxiliary dust collecting chamber 22 via the communication passage 26 to pass through the paper bag 37 and filter 38 in this order to be sucked into the electric blower 5 through the auxiliary dust collecting air passage 46 and suction air passage main body 47, and then passes through the electric blower 5 to become an exhaust air stream and discharged outside of the vacuum cleaner main body 1 through the exhaust hole not shown in the drawings.

[0040] As a result, the rest of the dust D trapped in the main dust collecting chamber 21 flows on the outside air

stream into the paper bag 37 in the auxiliary dust collecting chamber 22 through the communication passage 26 to be trapped in the paper bag 37 or filter 38.

[0041] Then, the control means 8 turns the electric blower 5 off after a predetermined time period to halt the operation of the electric vacuum cleaner.

[0042] When a predetermined amount or more of dust is collected in the paper bag 37, the cover body 3 is opened to remove the paper bag 37 from the auxiliary dust collecting chamber 22 and discard it with the dust, and then a new paper bag 37 is installed in the auxiliary dust collecting chamber 22.

[0043] As described heretofore, in the first embodiment, dust D can be sucked and trapped in the main dust collecting chamber 21 by selecting a cleaning state through the switching mechanism 58 where the switching valve 48 provides communication between the main dust collecting chamber 21 and the upstream side of the electric blower 5 while the opening-closing valve 41 cuts off the communication between the main dust collecting chamber 21 and the auxiliary dust collecting chamber 22, and the communication duct valve 31 opens the upstream side of the main dust collecting chamber 21 while the outside air incoming valve 52 is closed to cut off the communication with outside air, and then the dust trapped in the main dust collecting chamber 21 can be transferred to the auxiliary dust collecting chamber 22 using outside air by selecting a dust transfer state through the switching mechanism 58 where the switching valve 48 provides communication between the auxiliary dust collecting chamber 22 and the upstream side of the electric blower 5 while the opening-closing valve 41 provides communication between the main dust collecting chamber 21 and the auxiliary dust collecting chamber 22, and the communication duct valve 31 closes the upstream side of the main dust collecting chamber 21 while the outside air incoming valve 52 is opened to introduce outside air into the main dust collecting chamber 21.

[0044] This results in reducing the possibility that dust D is collected continuously in the main dust collecting chamber 21, which is used mainly when cleaning, and/or that the pleated filter 33 is clogged over time, which therefore can limit the reduction in suction power over time until the paper bag 37 is filled up with dust D that is transferred from the main dust collecting chamber 21.

[0045] Also, since dust D is once compressed in the main dust collecting chamber 21 to be transferred to the paper bag 37 in the auxiliary dust collecting chamber 22, the volume of dust D to be transferred to the paper bag 37 is reduced, which allows the capacity of the paper bag 37 to be used effectively.

[0046] Further, since the main dust collecting chamber 21 is disposed above the auxiliary dust collecting chamber 22, part of the dust D trapped in the main dust collecting chamber 21 can fall into the auxiliary dust collecting chamber 22 through the communication passage 26 due to its own weight when the opening-closing valve 41 is opened through the switching mechanism 58, and also

the dust D trapped in the main dust collecting chamber 21 can be transferred efficiently when transferring the dust D trapped in the main dust collecting chamber 21 to the auxiliary dust collecting chamber 22 using outside air.

[0047] Then, since the switching mechanism 58 introduces outside air on the backwash side of the pleated filter 33, the backwashing of the pleated filter 33 using outside air allows dust adhering to the pleated filter 33 to be removed efficiently.

[0048] In addition, since the disposable paper bag 37 is installed detachably in the auxiliary dust collecting chamber 22, the dust D transferred from the main dust collecting chamber 21 can be discarded easily and reliably with the paper bag 37 with no dispersal to the outside air, and after discarding the paper bag 37, the trapping capacity of the auxiliary dust collecting chamber 22 can be kept by installing a new paper bag 37 in the auxiliary dust collecting chamber 22.

[0049] Furthermore, since the dust removing body 34 for removing dust adhering to the pleated filter 33 down into the main dust collecting chamber 21 is provided, it is possible to more reliably prevent the pleated filter 33 from being clogged.

[0050] It is noted that in the first embodiment, the electric blower 5 may be disposed nearer to the main dust collecting chamber 21 than the auxiliary dust collecting chamber 22, and preferably in such a manner that the center on the exhaust side of the main dust collecting air passage 45 is positioned approximately in alignment with the center on the suction side of the electric blower 5, as in a second embodiment shown in Figs.5 and 6. In this case, the hose body 12, main body suction port 11, main dust collecting chamber 21, main dust collecting air passage 45, and electric blower 5 are all positioned approximately in alignment, which reduces resistance in the air passage, resulting in a further improvement in suction efficiency.

[0051] Also, in the above-described embodiments, the outside air introduction hole 51 may be opened on the upstream side of the pleated filter 33. In this case, if the outside air introduction hole 51 is opened toward, for example, the vicinity of the upstream side surface of the pleated filter 33, dust adhering to the pleated filter 33 can be separated from the pleated filter 33 using introduced outside air, which can exhibit the same effects as in the above-described embodiments.

[0052] Further, the main dust collecting chamber 21 and auxiliary dust collecting chamber 22 may be arranged variously other than arranging the main dust collecting chamber 21 and auxiliary dust collecting chamber 22 respectively above and below each other.

[0053] Then, the dust removing mechanism may be achieved by any component other than dust removing body 34 or may not be provided to simplify the configuration of the electric vacuum cleaner.

[0054] Moreover, no paper bag 37 may be installed in the auxiliary dust collecting chamber 22 and the auxiliary

dust collecting chamber 22 itself may be configured as a dust collecting cup attachable and detachable to/from the vacuum cleaner main body 1.

[0055] Then, although the control means 8 is adapted to control the opening and closing operations of the valves 31, 41, 48, and 52, separate valve control means may be provided or each valve may be opened and closed in mechanical association with the opening and closing of any other valve.

[0056] In addition, the details of the electric vacuum cleaner are not restricted to the above-described arrangements, and the type of the electric vacuum cleaner is not restricted to the canister type but may be, for example, a self-propelled type (assisted-travel type) or autonomous-travel type (robot type). It is also possible to adaptively employ other types such as an upright type and handy type in which a floor brush 17 is formed directly on the lower surface of a vacuum cleaner main body 1.

[0057] It is explicitly stated that all features disclosed in the description and/or the claims are intended to be disclosed separately and independently from each other for the purpose of original disclosure as well as for the purpose of restricting the claimed invention independent of the composition of the features in the embodiments and/or the claims. It is explicitly stated that all value ranges or indications of groups of entities disclose every possible intermediate value or intermediate entity for the purpose of original disclosure as well as for the purpose of restricting the claimed invention, in particular as limits of value ranges.

Claims

1. An electric vacuum cleaner comprising:

a vacuum cleaner main body housing an electric blower and including a main body suction port communicating with the suction side of the electric blower;
a first dust collecting section having a filter and capable of communicating with outside air as well as trapping dust that is sucked therein through the main body suction port by driving the electric blower;
a second dust collecting section connected in a communicating manner to the first dust collecting section; and
a switching mechanism switchable selectively between a first state where the communication between the first dust collecting section and the upstream side of the electric blower is provided while the communication between the first dust collecting section and the second dust collecting section is cut off, and the upstream side of the first dust collecting section is opened while the communication with the outside air is cut off and a second state where the communication be-

tween the second dust collecting section and the upstream side of the electric blower is provided while the communication cutoff between the first dust collecting section and the second dust collecting section is released, and the upstream side of the first dust collecting section is closed while the communication cutoff with the outside air is released. 5

2. The electric vacuum cleaner according to claim 1, wherein the electric blower is disposed on the side of the first dust collecting section. 10
3. The electric vacuum cleaner according to claim 1 or 2, wherein the first dust collecting section is positioned above the second dust collecting section. 15
4. The electric vacuum cleaner according to any one of claims 1 to 3, wherein the switching mechanism is adapted to introduce outside air from the backwash side of the filter in the first dust collecting section. 20
5. The electric vacuum cleaner according to any one of claims 1 to 4, further comprising a dust removing mechanism for removing dust, that is trapped in the filter, from the filter. 25
6. The electric vacuum cleaner according to any one of claims 1 to 5, wherein the second dust collecting section includes a detachable dust bag. 30

35

40

45

50

55

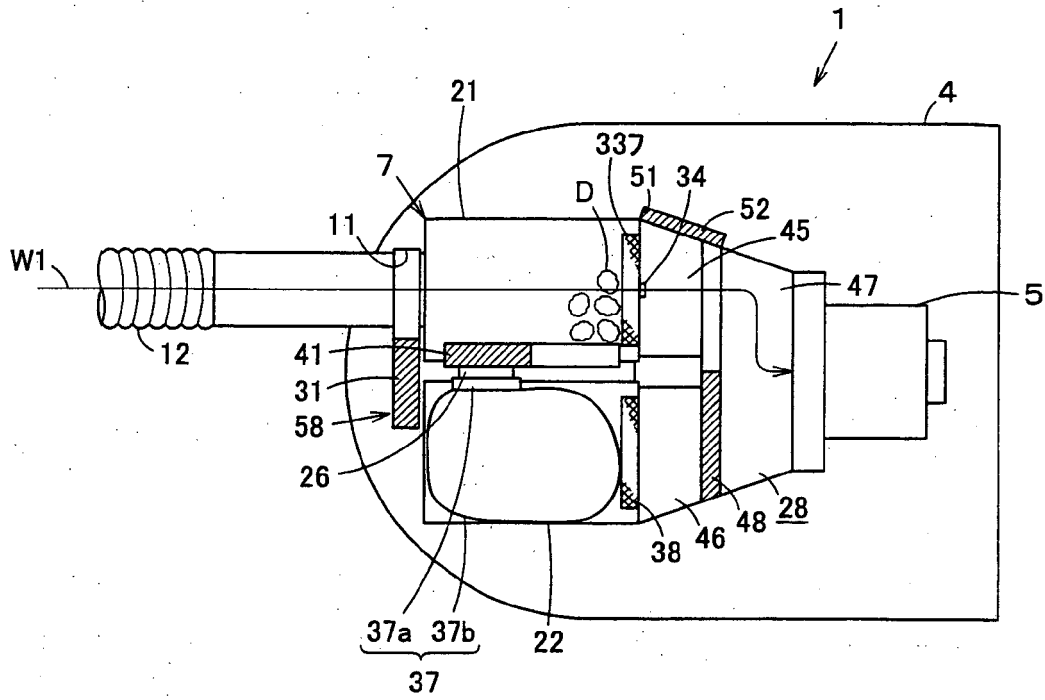


FIG. 1

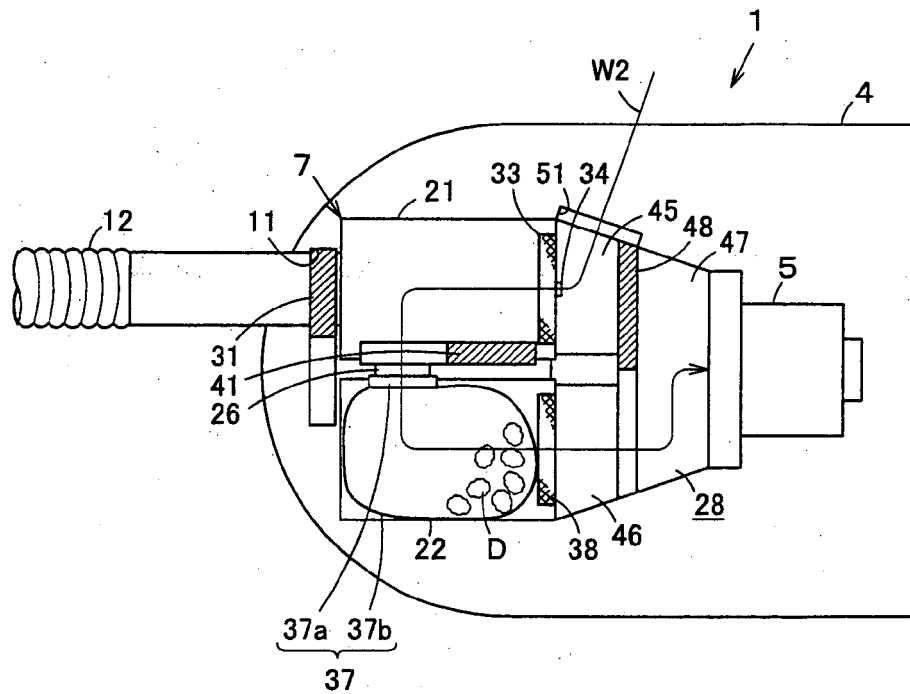


FIG. 2

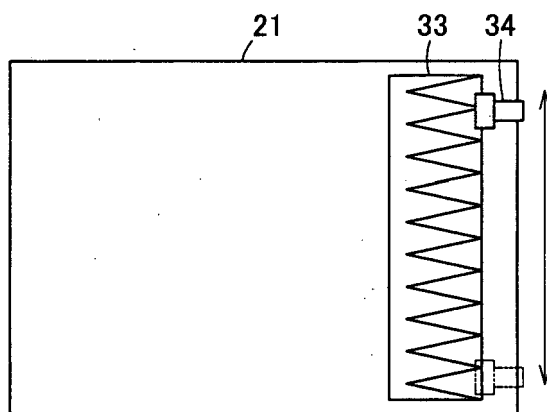


FIG. 3

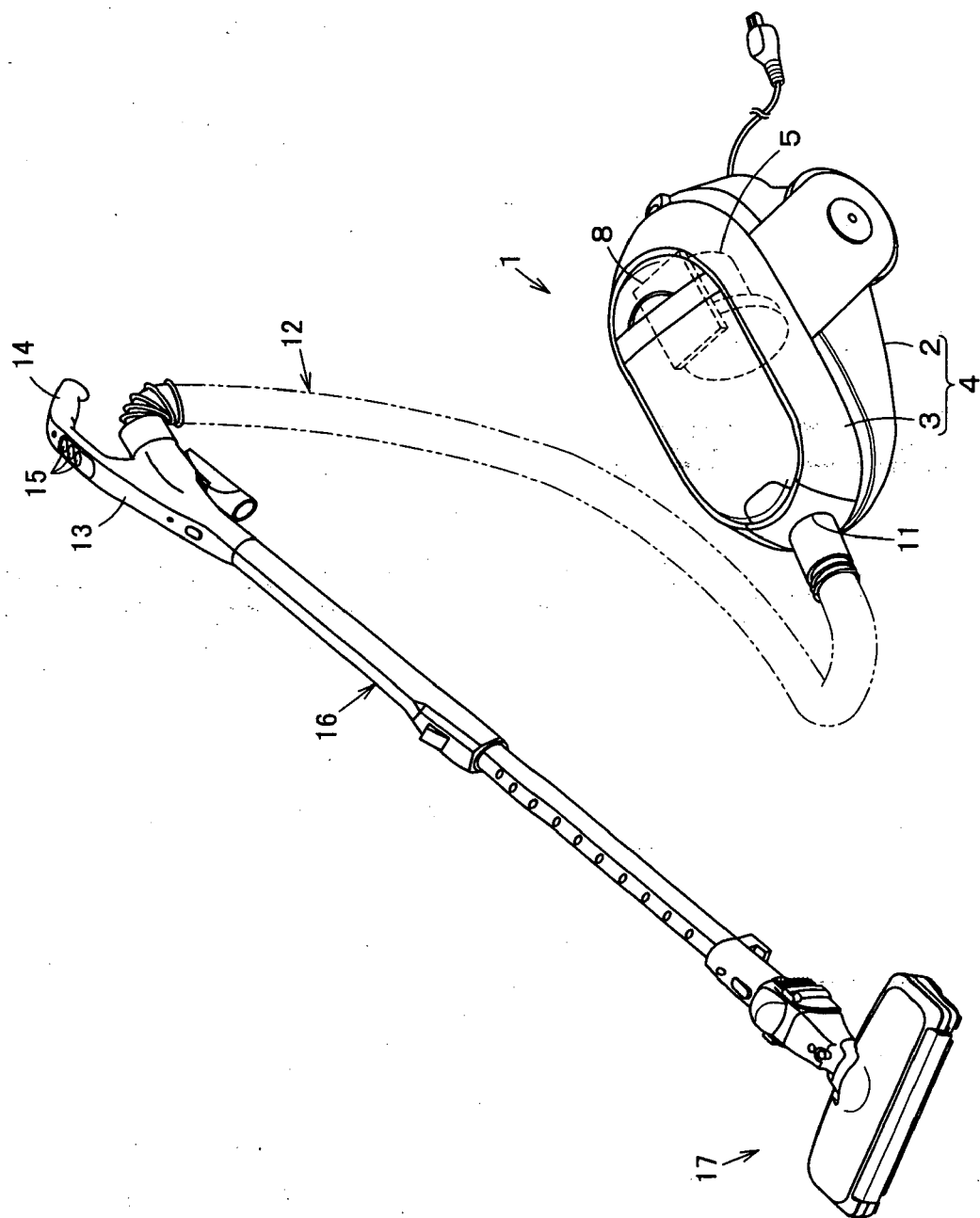


FIG. 4

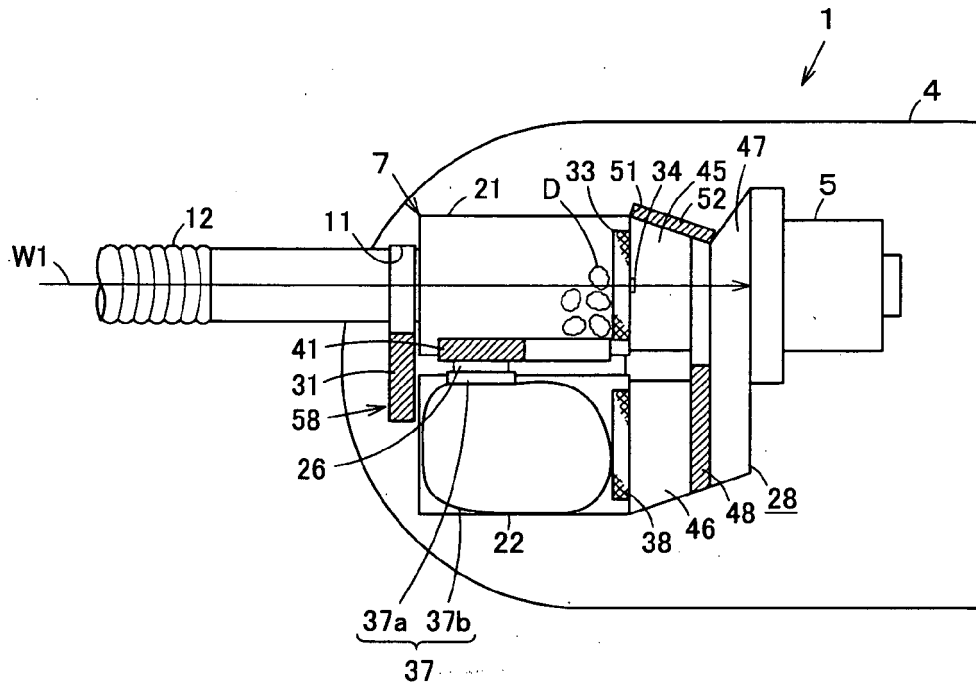


FIG. 5

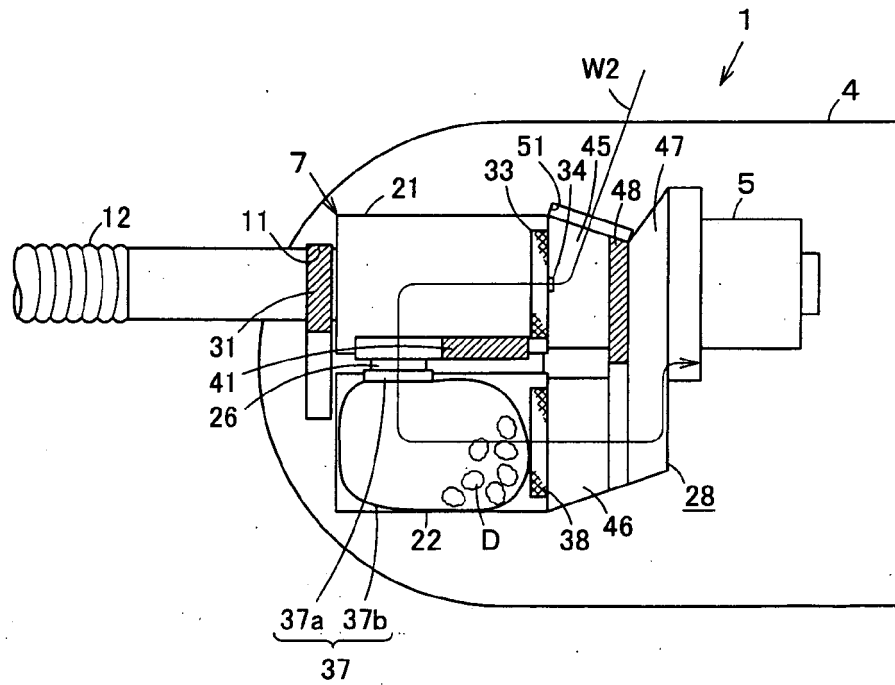


FIG. 6

REFERENCES CITED IN THE DESCRIPTION

This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.

Patent documents cited in the description

- JP 2006283949 A [0001]
- JP 2003265376 A [0003]