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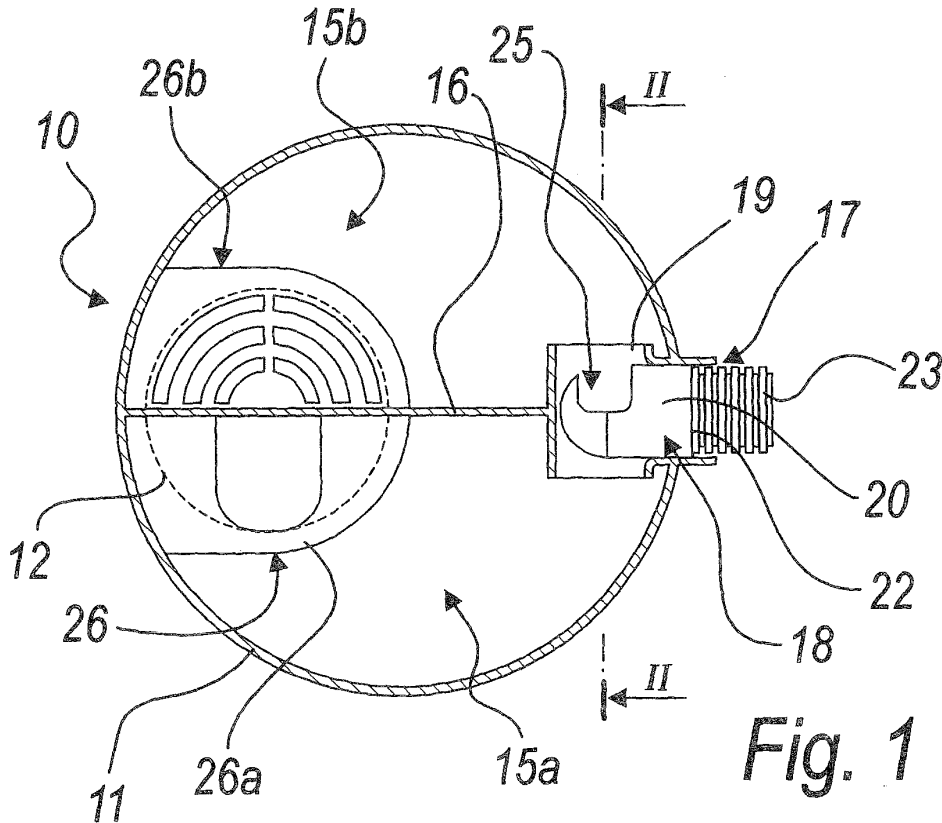
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(54) **WET AND DRY VACUUM CLEANER**

(57) A wet and dry vacuum cleaner (10, 100), comprising a body (11, 111) with which a suction motor (12, 112) is associated, the motor being functionally connected to the inside of the body (11, 111), the body having an outward suction intake (17, 117). Inside the body (11, 111) there are two mutually separate collection compart-

ments (15a, 15b, 115a, 115b), of which at least one (15a, 115a) is designed for collecting liquids. The suction motor (12, 112) is functionally connected to both of the two compartments (15a, 15b, 115a, 115b). The suction intake (17, 117) is associated with switchable means (18, 118) for connection to a single compartment of the two compartments (15a, 15b, 115a, 115b).



Description

[0001] The present invention relates to a wet and dry vacuum cleaner.

[0002] Vacuum cleaners are known which can be used to aspirate both solid substances, such as dust or solid matter in general, and liquids.

[0003] These vacuum cleaners are generally constituted by a body (typically associated with movement means, such as ground contact wheels), which forms the compartment for containing the aspirated substances (solid and liquid ones), and by an upper closure cover.

[0004] The suction motor (electric motor with suction impeller) is generally associated with the upper closure cover; this is done in order to reduce, in the liquid suction function, the problems of isolating the motor from water.

[0005] A wet vacuum cleaner is also known and disclosed for example in Italian patent application PD2004A000088, filed by this same Applicant, which uses a suction motor, which is arranged on the bottom of the body and is functionally connected to the compartment for containing liquids (or, optionally, solids) by means of a U-shaped duct, which ends with an opening that faces downward and can be closed by a float.

[0006] In certain situations it may be necessary to aspirate solid items to be reused, such as for example nails, screws and bolts from the floor of a workshop.

[0007] In this case, however, if the vacuum cleaner had previously aspirated a liquid, the solid elements mix with said liquid.

[0008] To avoid this, it would be necessary to empty the vacuum cleaner beforehand, and this is not always feasible, for example due to the lack of a drain in the vicinity.

[0009] The aim of the present invention is to provide a wet and dry vacuum cleaner that solves the problems noted in known types.

[0010] Within this aim, an object of the present invention is to provide a wet and dry vacuum cleaner that avoids mixing aspirated liquids with solid objects.

[0011] Another object of the present invention is to provide a wet and dry vacuum cleaner that does not require troublesome readaptations and inconvenient cleaning operations to use it as a wet vacuum cleaner or as a dry vacuum cleaner.

[0012] Another object of the present invention is to provide a wet and dry vacuum cleaner that can be manufactured with known systems and technologies.

[0013] This aim and these and other objects that will become better apparent hereinafter are achieved by a wet and dry vacuum cleaner, which comprises a body with which a suction motor is associated, said motor being functionally connected to the inside of said body, said body having an outward suction intake, characterized in that inside said body there are at least two mutually separate collection compartments, of which at least one is designed for collecting liquids, said suction

motor being functionally connected to both of said at least two compartments, said suction intake being associated with switchable means for connection to a single compartment of said at least two compartments.

[0014] Further characteristics and advantages of the present invention will become better apparent from the following detailed description of two preferred but not exclusive embodiments thereof, illustrated by way of nonlimiting example in the accompanying drawings, wherein:

Figure 1 is a sectional plan view of a first embodiment of the vacuum cleaner according to the invention;

Figure 2 is a sectional front view of the first embodiment of a vacuum cleaner according to the invention;

Figure 3 is a sectional front view of a second embodiment of a vacuum cleaner according to the invention;

Figure 4 is a partially cutout exploded perspective view of the second embodiment of a vacuum cleaner according to the invention.

[0015] With reference to Figures 1 and 2, a first embodiment of a vacuum cleaner according to the invention is generally designated by the reference numeral 10.

[0016] The vacuum cleaner 10 comprises a body 11, with which a suction motor 12 (understood as an electric motor with a suction impeller) is associated, said motor being functionally connected to the inside of the body 11.

[0017] In particular, in this first embodiment the suction motor 12 is arranged on the bottom 14 of the body 11, as described in greater detail hereinafter.

[0018] Inside the body 11 there are, in this embodiment, two collection compartments, which are mutually separated by a partition 16: respectively, a first compartment 15a for containing liquids and a second compartment 15b for containing solids.

[0019] The body 11 has an outward suction intake 17, which is associated with switchable means 18 for connection to a single compartment 15a or 15b alternatively.

[0020] The switchable connection means 18 comprise a connector 19, for example a T-shaped connector, for connecting the two compartments 15a and 15b and the outside.

[0021] A coupling 20 is inserted rotatably in the connector 19 and is provided with an opening 22 for connection to a suction hose 23, which can be maneuvered by a user, and a lateral opening 25, which is connected, depending on its rotational arrangement in the connector 19, alternatively with only one of the two compartments 15a or 15b.

[0022] The suction motor 12 is functionally connected at the intake simultaneously to both compartments 15a and 15b.

[0023] As mentioned, in this embodiment the suction motor is arranged on the bottom 14 of the body 11.

[0024] A vacuum cleaner with the motor on the bottom of the body is disclosed for example in Italian patent application PD2004A000088 filed by this same Applicant.

[0025] In this case, the suction motor is accommodated in a box-like chamber 26, which straddles both compartments 15a and 15b.

[0026] The parts of the box-like chamber 26, respectively the first part 26a and the second part 26b, which are located in the first compartment 15a and in the second compartment 15b, have suction paths, respectively a first suction path 27a and second suction paths 27b, for connection between the suction motor 12 and the compartments 15a and 15b.

[0027] The first suction path 27a comprises a duct 28, which extends upward from the box-like chamber 26 and ends with an end portion 29 that has an inlet 30 that faces downward.

[0028] The inlet 30 can be closed by a float 31, which is arranged on a vertical guide 32, substantially at the vertical of the inlet 30.

[0029] The float 31 is laterally larger than the inlet 30, so as to cover it completely and hermetically if it is moved so as to close it.

[0030] The second suction paths 27b are constituted by a grille 33, which is formed monolithically with the box-like chamber 26.

[0031] Obviously, the box-like chamber 26 is provided with outward vents (not shown in the figures) to allow the suction of the suction motor 12.

[0032] Operation is simple.

[0033] Depending on the liquid or solid substance to be aspirated, the coupling 20 is turned, connecting the lateral opening 25 to the first compartment 15a or to the second compartment 15b.

[0034] At this point, the suction motor 12 is started and suction is performed.

[0035] To change the aspirated substance, it is sufficient to turn the coupling 20 through 180°.

[0036] A second embodiment of a vacuum cleaner according to the invention is generally designated by the reference numeral 100 and is shown in Figures 3 and 4.

[0037] The vacuum cleaner 100 comprises a body 111, with which a suction motor 112 (understood as an electric motor with a suction impeller) is associated and is functionally connected to the inside of the body 111.

[0038] In particular, in this second embodiment, the suction motor 112 is integrated, in a known manner, on the cover 114 of the body 111.

[0039] In this case also, inside the body 111 there are two collection compartments, which are mutually separated by a partition 116, respectively a first compartment 115a for containing liquids and a second compartment 115b for containing solids.

[0040] The body 111 is provided with an outward suction intake 117, which is associated with switchable means 118 for connection to a single compartment 115a

or 115b alternatively.

[0041] The switchable connection means 118 comprise a connector 119, for example a T-shaped connector, for connection between the two compartments 115a and 115b and the outside.

[0042] A coupling 120 is inserted rotatably in the connector 119 and is provided with an opening 122 for connection to a suction hose 123 that can be maneuvered by a user and a lateral opening 125, which is connected, depending on its rotational arrangement in the connector 119, alternatively to only one of the two compartments 115a or 115b.

[0043] The suction motor 112 is functionally connected for suction simultaneously to both compartments 115a and 115b.

[0044] In this case also, the suction motor straddles both compartments 15a and 15b and has independent suction paths, not shown in the figures.

[0045] A grille-like covering is associated with the suction motor 12 and is divided by the wall 116 respectively into a first grille-like covering portion 126a, in the first compartment 115a, and a second grille-like covering portion 126b, in the second compartment 115b, which prevents large objects from obstructing said independent suction paths.

[0046] Operation is the same as in the first embodiment.

[0047] In practice it has been found that the invention thus described solves the problems noted in known types of vacuum cleaner for liquid and solid substances; in particular, the present invention provides a wet and dry vacuum cleaner that allows to aspirate both liquid and solid substances without performing troublesome readaptations or inconvenient cleanings of said vacuum cleaner.

[0048] In practice, a vacuum cleaner with "sorted collection" of the aspirated substances has been provided, thus avoiding mixing solids with liquids.

[0049] All this has been achieved by separating the inside of the body into independent and mutually isolated compartments connected to the suction motor.

[0050] The suction motor is functionally connected to each compartment in a differentiated manner, in order to be able to aspirate liquids on one side and dust on the other side.

[0051] This has been achieved by using known vacuum cleaner structures that are typical of wet vacuum cleaners and of dry vacuum cleaners with single collection compartments, both with motors integrated in the cover and with motors accommodated on the bottom, and with structures in which the motors are accommodated in other positions (for example integrated laterally with respect to the body).

[0052] It is evident that the invention can also be provided with more than two compartments.

[0053] The invention thus conceived is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. All the details

may further be replaced with other technically equivalent elements.

[0054] In practice, the materials employed, so long as they are compatible with the specific use, as well as the dimensions, may be any according to requirements and to the state of the art.

[0055] The disclosures in Italian Patent Application No. PD2004A000091 from which this application claims priority are incorporated herein by reference.

[0056] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. A wet and dry vacuum cleaner, comprising a body (11, 111) with which a suction motor (12, 112) is associated, said motor being functionally connected to the inside of said body (11, 111), said body having an outward suction intake (17, 117), **characterized in that** inside said body (11, 111) there are at least two mutually separate collection compartments (15a, 15b, 115a, 115b), of which at least one (15a, 115a) is designed for collecting liquids, said suction motor (12, 112) being functionally connected to both of said at least two compartments (15a, 15b, 115a, 115b), said suction intake (17, 117) being associated with switchable means (18, 118) for connection to a single compartment of said at least two compartments (15a, 15b, 115a, 115b).
2. The vacuum cleaner according to claim 1, **characterized in that** it comprises two of said collection compartments (15a, 15b, 115a, 115b), which are separated at least in a lower region by a partition (16, 116), said switchable connection means (18, 118) comprising a connector (19, 119) for connection between said two compartments (15a, 15b, 115a, 115b) and the outside, with which a coupling (20, 120) is associated, said coupling being inserted rotatably in said connector (19, 119), provided with an opening (22, 122) for connection to a suction hose (23, 123) that can be maneuvered by a user, and a lateral opening (25, 125), which is connected alternatively to only one of said two compartments (15a, 15b, 115a, 115b), depending on its rotational arrangement in said connector (19, 119).
3. The vacuum cleaner according to claim 1 or 2, **characterized in that** said suction motor (12) is arranged on the bottom (14) of said body (11).
4. The vacuum cleaner according to claim 3, **characterized in that** said suction motor (12) is accommodated in a box-like chamber (26), which straddles both of said compartments (15a, 15b), and the parts of said box-like chamber (26), respectively a first part (26a) and a second part (26b), that are in said first compartment (15a) and said second compartment (15b) have suction paths, respectively a first suction path (27a) and second suction paths (27b), for connection between said suction motor (12) and said compartments (15a, 15b), said first suction path (27a) comprising a duct (28), which extends upward from said box-like chamber (26) and ends with an end portion (29) that has an inlet (30) that faces downward and can be closed by a float (31), which is arranged on a vertical guide (32) substantially at the vertical of said inlet (30).
5. The vacuum cleaner according to claim 1 or 2, **characterized in that** said suction motor (112) is integrated on the cover (114) of the body (111).
6. The vacuum cleaner according to one of the preceding claims, **characterized in that** said connector (19, 119) for connection between said two compartments (15a, 15b, 115a, 115b) and the outside is of the T-shaped type.

