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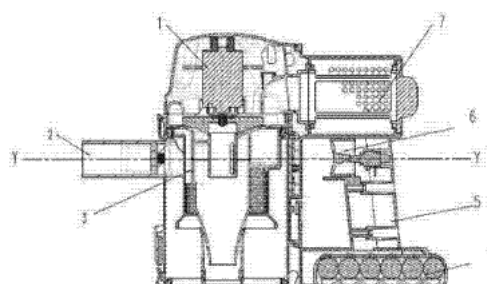
1 page of claims, 3 pages of instructions, 2 pages of
attached figures

(54) Title of invention

Hand-held vacuum cleaner

(57) Abstract

The present invention provides a hand-held vacuum cleaner comprising: a suction duct with a longitudinal axis; an airflow generator assembly generating an airflow flowing along the said suction duct; a cyclone separator assembly connected with the said suction duct to separate the inhaled dust from the airflow; a filter assembly arranged in the hand-held vacuum cleaner; a power supply assembly supplying power to the airflow generator assembly; a handle for the user to hold. The airflow generator assembly and the cyclone separator assembly are aligned in a direction perpendicular to the said longitudinal axis. Compared with the prior art, the present invention makes the overall layout smaller and more compact by setting the airflow generator and the cyclone separator up and down; the suction of the vacuum cleaner is stronger by directly connecting the airflow generator and the cyclone separator.



1. A hand-held vacuum cleaner, comprising:
A suction duct with a longitudinal axis;
An airflow generator assembly that generates an airflow flowing along the said suction duct;
A cyclone separator assembly connected to the suction duct to separate the inhaled dust from the air flow;
A filter assembly arranged in the hand-held vacuum cleaner;
A power supply assembly for supplying power to the airflow generator assembly;
A handle for the user to hold, characterized in that:
The flow generator assembly and the cyclone separator assembly are aligned in a direction perpendicular to the longitudinal axis.
2. The hand-held vacuum cleaner according to claim 1, characterized in that the handle is arranged on the side of the air flow generator assembly and the cyclone separator assembly along the longitudinal axis.
3. The hand-held vacuum cleaner according to claim 2, characterized in that the suction duct is located on the other side of the cyclone separator assembly.
4. The hand-held vacuum cleaner according to claim 1, characterized in that the filter assembly is connected to the airflow generator assembly, and the filter assembly and the airflow generator assembly are arranged along the direction of the longitudinal axis.
5. The hand-held vacuum cleaner according to claim 1, characterized in that one end of the handle is connected to the filter assembly, and the other end is connected to the power supply assembly.
6. The hand-held vacuum cleaner according to claim 1, characterized in that the cyclone separator assembly is a single-cone multi-stage filter type or a single-stage filter type.
7. The hand-held vacuum cleaner according to claim 1, characterized in that the airflow generator assembly is located at the upper or lower portion of the cyclone separator assembly.
8. The hand-held vacuum cleaner according to claim 1, characterized in that the filter assembly is detachably arranged in the hand-held vacuum cleaner.
9. The hand-held vacuum cleaner according to claim 1, characterized in that the cyclone separator assembly has an upstream cyclone separator and a downstream cyclone separator, and the downstream cyclone separator is arranged in the upstream cyclone separator.

Hand-held vacuum cleaner

Technical field

The present invention relates to a kind of hand-held vacuum cleaner, specifically a kind of hand-held vacuum cleaner with a cyclone separator assembly.

Background technology

[0002] A hand-held vacuum cleaner with a cyclone separator assembly typically includes an airflow generator assembly, a suction duct with a suction opening, a cyclone separator assembly, a power supply, a handle and a filter. In the prior art, the layout of these components is often as disclosed in CN101489454B, that is: 1. The air flow generator 35 and the power supply 32 are respectively located at the upper end and the lower end of the handle 28; 2. The filter 42 is located between the cyclone separator device and the airflow generator of the main body; 3. The cyclone separator and the main body are generally arranged along the horizontal direction.

[0003] Although this arrangement is convenient for the user to hold the vacuum cleaner, there are still some disadvantages. When the cyclone separator has multiple stages as in CN101489454B, its volume is relatively large; when the cyclone separator and the airflow generator of the main body are arranged along the horizontal direction, the airflow channel between the cyclone separator and the airflow generator is longer and the direction of the airflow changes, which reduces the airflow intensity entering the cyclone separator.

Contents of the invention

[0004] In order to solve the problems referred to above, the object of the invention is to provide a kind of hand-held vacuum cleaner with compact structure and strong suction.

[0005] To achieve the above object, a kind of hand-held vacuum cleaner according to an embodiment of the present invention comprises: a suction duct, with a longitudinal axis; an airflow generator assembly generating an airflow that flows along described suction duct; a cyclone separator assembly connected to the said suction duct to separate the inhaled dust from the airflow; a filter assembly arranged in the hand-held vacuum cleaner; a power supply assembly supplying power to the airflow generator assembly; a handle for the user to hold,. The airflow generator assembly and said cyclone separator assembly are aligned in a direction perpendicular to said longitudinal axis.

[0006] Preferably, the handle is arranged on one side of the airflow generator assembly and the cyclone separator assembly along the longitudinal axis direction.

[0007] Preferably, one end of the handle is connected to the filter assembly, and the other end is connected to the power supply assembly.

[0008] Preferably, the filter assembly is connected to the airflow generator assembly, and the filter assembly and the airflow generator assembly are arranged along the longitudinal axis.

[0009] Preferably, the suction duct is located on the other side of the cyclone separator assembly.

[0010] Preferably, the cyclone separator assembly is a single-cone multi-stage filter or a single-stage filter.

[0011] Preferably, the airflow generator assembly is positioned at the upper or lower portion of the cyclone separator assembly.

[0012] Preferably, the filter assembly is detachably arranged in the hand-held vacuum cleaner.

[0013] Preferably, the cyclone separator assembly has an upstream cyclone separator and a downstream cyclone separator, and the downstream cyclone separator is located in the upstream cyclone separator.

[0014] Compared with the prior art, the present invention makes the overall layout of the hand-held vacuum cleaner smaller and more compact by setting the airflow generator and the cyclone separator up and down; the loss of the suction is minimum by directly connecting the airflow generator and the cyclone separator.

Description of attached figures

[0015] Fig. 1 is the schematic diagram of the hand-held vacuum cleaner of the first embodiment of the present invention.

[0016] Fig. 2 is the schematic diagram of the hand-held vacuum cleaner of the second embodiment of the present invention.

[0017] Fig. 3 is the schematic diagram of the hand-held vacuum cleaner of the third embodiment of the present invention.

[0018] Fig. 4 is the schematic diagram of the hand-held vacuum cleaner of the fourth embodiment of the present invention.

[0019] Wherein: 1, airflow generator assembly; 2, suction duct; 3, cyclone separator assembly; 4, power supply assembly; 5, handle; 6, trigger switch; 7, filter assembly; 8, air outlet; Y, the longitudinal axis.

Detailed embodiments

[0020] In order to make the purpose, technical scheme and advantages of the present invention clearer, the present invention is described in detail below in conjunction with attached figures and specific embodiments.

[0021] Fig. 1 is the first embodiment of the present invention. As shown in the figure, the hand-held vacuum cleaner includes an air flow generator assembly 1, a suction duct 2, a cyclone separator assembly 3, a power supply assembly 4, a handle 5, a trigger switch 6, and a filter assembly 7. The suction duct 2 has a longitudinal axis Y and a suction opening. Taking the longitudinal axis Y as the reference, the upper side in Fig. 1 in the vertical direction is the upward side of the hand-held vacuum cleaner, which is the same as in Fig. 2 to 4 below. The airflow generator assembly 1 is used to generate an airflow flowing along the suction duct. The cyclone separator assembly 3 is communicated with the suction duct 2 and is used to separate the inhaled dust from the air flow. In this embodiment, the cyclone separator assembly is a single-cone multi-stage filter type, and its specific structure is known to those skilled in the art. No more details here. The power supply assembly 4 supplies power to the airflow generator assembly 1. The handle 5 is for the user to hold, and a trigger switch 6 is arranged on it. The trigger switch 6 is used for operation by the user to activate or deactivate the airflow generator of the hand-held vacuum cleaner.

[0022] The air flow generator assembly 1 and the cyclone separator assembly 3 are arranged perpendicular to the direction of the longitudinal axis Y, and in the present embodiment, the air flow generator assembly 1 is positioned above the cyclone separator assembly 3, that is, they are arranged up and down. Further, the air flow generator assembly 1 and the cyclone separator assembly 3 are directly communicated without a filtering device in between such as filter assembly 7.

[0023] The present invention emphasizes that the airflow generator assembly 1 is directly arranged on the top of the cyclone separator assembly 3, so that the airflow path between the airflow generator assembly 1 and the cyclone separator assembly 3 is the shortest and the direction of the airflow does not change, reducing the vacuum degree loss, which reduces the volume and weight of the airflow generator to the greatest extent, and promote the miniaturization and light weight of the hand-held vacuum cleaner.

[0024] The handle 5 is arranged on one side of the airflow generator assembly 1 and the cyclone separator assembly 3 along the longitudinal axis Y direction. That is, if the airflow generator assembly 1 and the cyclone separator assembly 3 are regarded as a combined main body, the handle 5 and the main body are arranged along the longitudinal axis Y direction. And, one end of the handle 5 is connected to the filter assembly 7, and the other end is connected to the power supply assembly 4. The handle 5 is connected to the main body through the filter assembly 7 and the power supply assembly 4; and the filter assembly 7 is connected to the air flow generator assembly 1, and the filter assembly 7 and the air flow generator assembly 1 are arranged along the axis Y direction; and the power supply assembly 4 is connected to the cyclone separator assembly 3. Alternatively, the handle 5, the power supply assembly 4 and the filter assembly 7 form an integral body to be connected to the combined body of the air flow generator assembly 1 and the cyclone separator assembly 3. Preferably, the filter assembly 7 is detachably arranged

in the hand-held vacuum cleaner, which is convenient for users to clean or replace the filter assembly.

[0025] In the present embodiment, cyclone separator assembly 3 has upstream cyclone separator and downstream cyclone separator, and downstream cyclone separator is positioned inside of upstream cyclone separator, reducing the height of cyclone separator assembly 3. And the suction duct 2 is located on the other side of the cyclone separator assembly 3 in this embodiment, opposite to the side where the handle 5 is located.

[0026] Fig. 2 is the second embodiment of the present invention. As shown in the figure, its structure is similar to that of the first embodiment, and the difference is that its cyclone separator assembly 3 is a single-stage filter type. Others will not be repeated.

[0027] Fig. 3 is the third embodiment of the present invention. As shown in the figure, its structure is similar to that of the first embodiment, and the difference is that the air flow generator assembly 1 is located below the cyclone separator assembly 3. Correspondingly, the filter assembly 7 is also below the cyclone separator assembly 3, just like the airflow generator assembly 1. The filter assembly 7 is located between the handle 5 and the airflow generator assembly 1. Specifically, the lower end of the handle 5 is connected to the power supply assembly 4, which is connected to the main body, adjacent to the filter assembly 7, that is, a power supply assembly 4 is provided between the filter assembly 7 and the handle 5. The upper end of the handle 5 is connected to the cyclone assembly 3. Others will not be repeated.

[0028] Fig. 4 is the fourth embodiment of the present invention. As shown in the figure, its structure is similar to that of the first embodiment, and the difference is that the filter assembly 7 is arranged between the air flow generator assembly 1 and the cyclone separator assembly 3. One end of the handle is connected to the airflow generator assembly 1, and an air outlet 8 is arranged on the one end of the assembly 1. Others will not be repeated.

[0029] A series of detailed descriptions listed above are only specific descriptions for the feasible implementation mode of the present invention, and they are not designed to limit the protection scope of the present invention. Any equivalent embodiments or modifications that do not depart from the technical spirit of the present invention should be included within the protection scope of the present invention.

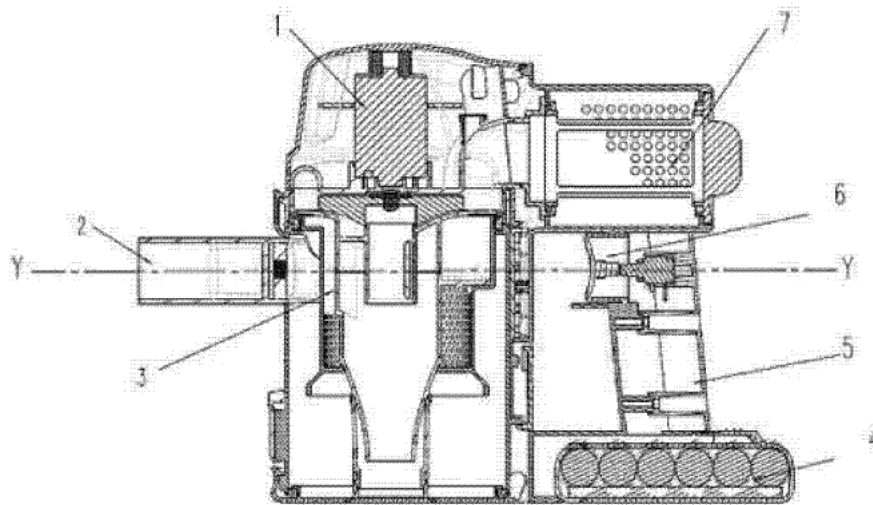


Fig. 1

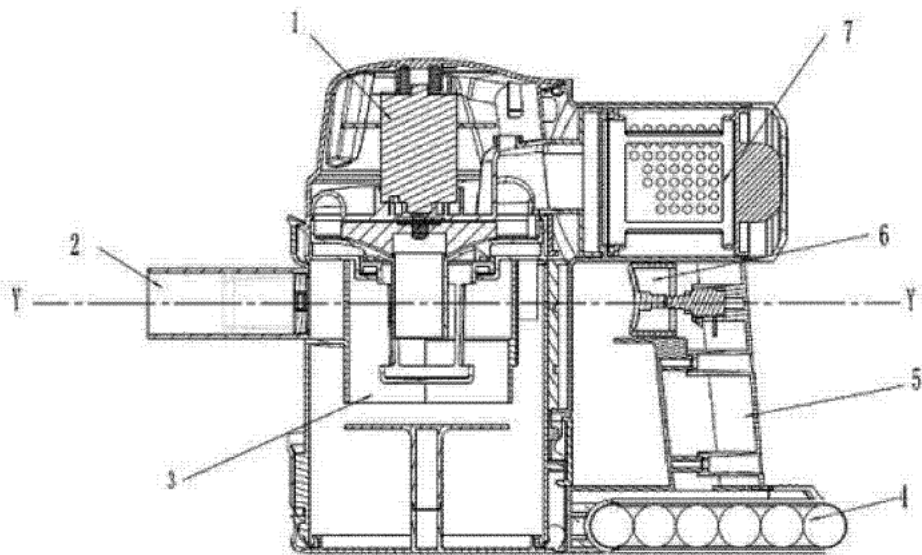


Fig. 2

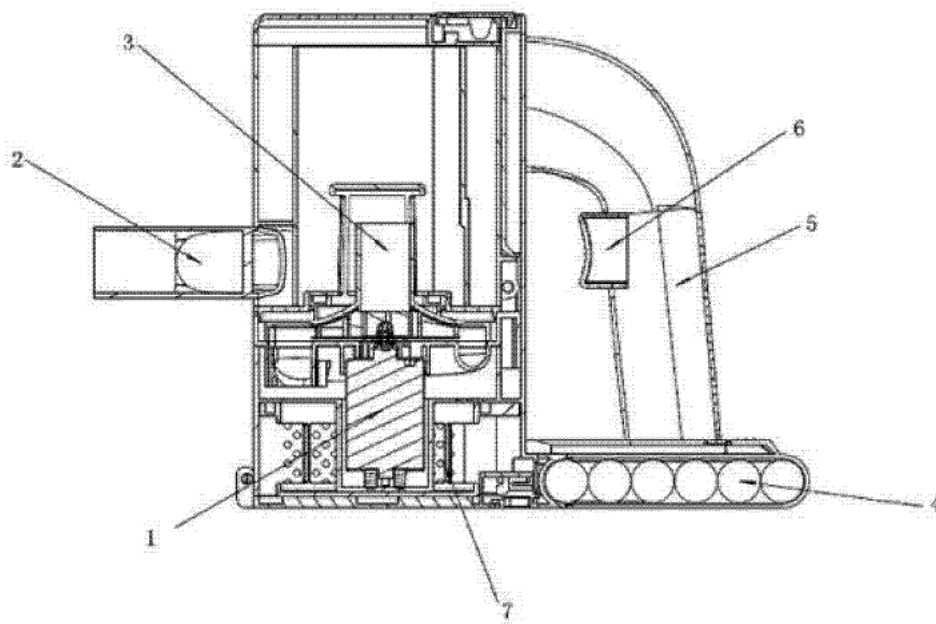


Fig. 3

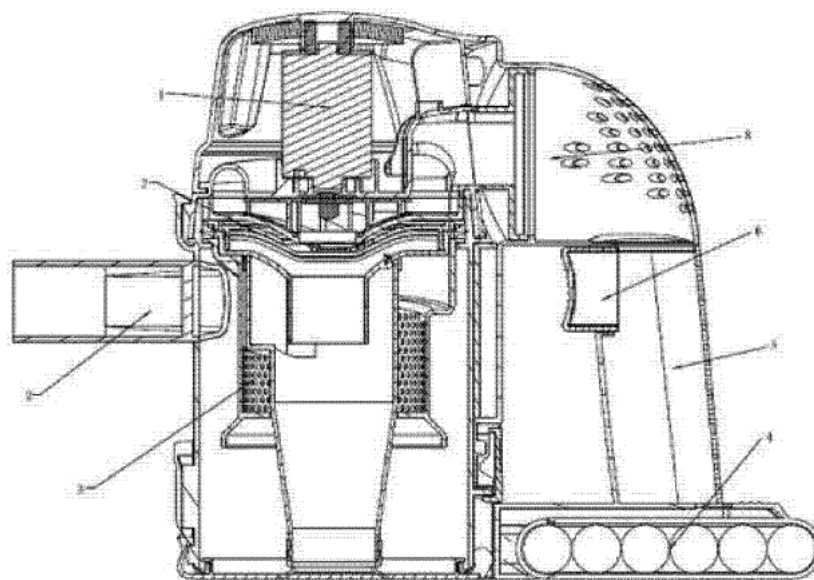


Fig. 4

TRANSLATION CERTIFICATION

Date: June 1, 2023

To whom it may concern:

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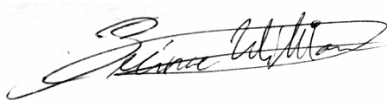
- English

The documents are designated as:

- CN103784081A
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“To the best of my knowledge, the aforementioned documents are a true, full and accurate translation of the specified documents.”



Signature of Prince Williams