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(54) **AIRFLOW CONVERSION DEVICE AND DUST COLLECTOR COMPRISING SAME**

(57) An airflow conversion device and a dust collector including the same are provided. The airflow conversion device includes a first portion (100), a second portion (200) and an impeller structure (300). A first flow channel is formed in the first portion (100). A second flow channel is formed in the second portion (200). The impeller structure (300) is configured as: when driving airflow is provided to one of the first flow channel and the second flow channel, the driving airflow makes the impeller structure (300) to rotate. Under an action of the impeller structure (300), the other one of the first flow channel and the second flow channel generates airflow in an opposite direc-

tion from the driving airflow. The airflow conversion device provided by the present invention is provided with the first flow channel and the second flow channel, and enables one of the flow channels to generate airflow in the opposite direction from the driving airflow provided to the other flow channel by means of the impeller structure (300). The airflow conversion device is applied to air suction or air blowing equipment, so that the equipment has plentiful functions without changing the structure of the equipment.

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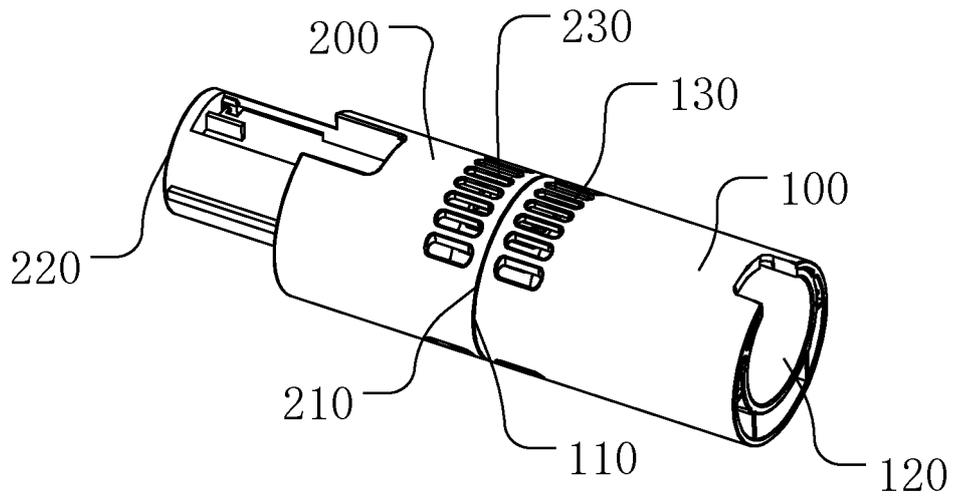


Fig. 1

Description

Cross Reference to Related Applications

[0001] The present invention claims priority Chinese Patent Application No. 201811195428.0, filed on October, 15, 2018 and entitled "Airflow Conversion Device and Dust Collector Including Same", the disclosure of which is hereby incorporated by reference in its entirety.

Technical Field

[0002] The present invention relates to the technical field of airflow driving equipment, and in particular, to an airflow conversion device and a dust collector including the same.

Background

[0003] A suction force is formed by a dust collector through negative pressure, and dust in some areas is sucked into a designated cavity, so that the cleaning effect is achieved. Compared with cleaning tools such as common brooms, the cleaning effect is better, and the cleaning tool is more and more popular. However, since dust in some areas cannot be removed by the existing dust collectors due to some reasons (such as being shielded or adhered), some dust collectors with a dust blowing function are provided, and these types of machines generally use an air outlet of a motor to blow air. The biggest disadvantage of the structure is that the dust blowing air duct is still connected to the original dust collecting air duct, so that the blown air contains dust, and secondary pollution is caused. Meanwhile, because the air outlet duct is lengthened, the wind resistance is increased, the motor is heated, and the service life of the motor is shortened, so that the structure of the dust collector is more complex, and the manufacturing cost is higher.

Summary

[0004] In view of this, some embodiments of the present invention provide an airflow conversion device capable of converting a flow direction of airflow and a dust collector including the same.

[0005] In some embodiments, an airflow conversion device is provided, which includes a first portion, a second portion and an impeller structure. A first flow channel is formed in the first portion. A second flow channel is formed in the second portion.

[0006] The impeller structure is configured as: when driving airflow is provided to one of the first flow channel and the second flow channel, the driving airflow makes the impeller structure to rotate. Under an action of the impeller structure, the other one of the first flow channel and the second flow channel generates airflow in an opposite direction from the driving airflow.

[0007] In some embodiments, the first portion is configured as a cylindrical structure, the first flow channel is formed inside the first portion, a first side port is formed on a side wall of the first portion, a port at a second end of the first portion constitutes a first shaft port, and the first side port and the first shaft port constitute two end ports of the first flow channel, respectively; and/or the second portion is configured as a cylindrical structure, the second flow channel is formed inside the second portion, a second side port is formed on a side wall of the second portion, a port at a second end of the second portion constitutes a second shaft port, and the second side port and the second shaft port constitute two end ports of the second flow channel.

[0008] In some embodiments, a first end of the first portion forms a first connecting end, and a first end of the second portion forms a second connecting end, the first connecting end being connectable to the second connecting end.

[0009] In some embodiments, the impeller structure includes a first impeller and a second impeller, the first impeller and the second impeller rotating synchronously, the first impeller and the second impeller being in opposite directions of rotation, the first impeller being located in the first flow channel, and the second impeller being located in the second flow channel.

[0010] In some embodiments, the impeller structure further includes a connecting shaft, the first impeller and the second impeller is provided on the connecting shaft.

[0011] In some embodiments, a first supporting structure is provided in the first flow channel, a second supporting structure is provided in the second flow channel, and the first supporting structure and the second supporting structure support the connecting shaft.

[0012] In some embodiments, the airflow conversion device further includes a rotating shaft through which the connecting shaft is rotatably connected to the first supporting structure and the second supporting structure.

[0013] In some embodiments, the airflow conversion device further includes a partition structure that partitions the first flow channel and the second flow channel.

[0014] In some embodiments, there are two partition structures, which partition the first flow channel and the second flow channel after being spliced.

[0015] In some embodiments, the airflow conversion device is the airflow conversion device in claim 5, the partition structure includes a partition plate that is configured as a semi-circular ring structure, two of the partition plates are spliced to form a circular ring structure, and the connecting shaft passes through an inner circle of the circular ring structure.

[0016] In some embodiments, the partition structure further includes a mounting portion that is configured as a semi-cylindrical structure, an axis of the mounting portion is perpendicular to the partition plate, and an outer edge of the partition plate is connected to a radially inner side wall of the mounting portion.

[0017] In some embodiments, a first mounting seat is

provided inside the first portion, a second mounting seat is provided inside the second portion, and the first mounting seat and the second mounting seat abut against both ends of the mounting portion to complete mounting of the mounting portion.

[0018] In some embodiments, a limiting structure is provided on the connecting shaft, and the limiting structure cooperates with the partition plate to limit the connecting shaft in an axial direction of the connecting shaft.

[0019] In some embodiments, the limiting structure is configured as a ring structure formed in a circumferential direction of the connecting shaft, there are two ring structures, a ring groove is formed between the two ring structures, and an inner edge of the partition plate extends into the ring groove.

[0020] In a second aspect, a dust collector is provided, which includes a body and the above airflow conversion device, the airflow conversion device being mountable to a suction opening of the dust collector.

[0021] The airflow conversion device provided by the present invention is provided with the first flow channel and the second flow channel, and enables one of the flow channels to generate airflow in the opposite direction from the driving airflow provided to the other flow channel by means of the impeller structure. The airflow conversion device is applied to air suction or air blowing equipment, so that the equipment has plentiful functions without changing the structure of the equipment.

Brief Description of the Drawings

[0022] The above and other objectives, features and advantages of the application will be clearer through the following description of the embodiments of the application with reference to the drawings. In the drawings:

Fig. 1 shows a schematic structural view of an airflow conversion device according to the present invention;

Fig. 2 shows a schematic exploded structural diagram of the airflow conversion device;

Fig. 3 shows a schematic cross-section view of the airflow conversion device in an assembled state;

Fig. 4 shows a schematic cross-section view of the airflow conversion device in a disassembled state;

Fig. 5 shows an airflow state in the airflow conversion device applied to a dust collector; and

Fig. 6 shows an airflow state in the airflow conversion device applied to a hair dryer.

Detailed Description of the Embodiments

[0023] The following describes the present invention based on the embodiments, but the present invention is not limited to these embodiments. Those of ordinary skill in the art should understand that the drawings provided herein are for illustrative purposes, and the drawings are not necessarily drawn to scale.

[0024] Unless the context clearly requires, the words "including", "containing" and the like in the entire specification and claims should be interpreted as the meaning of inclusive rather than exclusive or exhaustive meaning, that is, "including but not limited to" meaning.

[0025] In the description of the present invention, it should be understood that the terms "first", "second", etc. are for descriptive purposes only, and cannot be understood as indicating or implying relative importance. In addition, in the description of the present invention, unless otherwise stated, the meaning of "multiple" is two or more.

[0026] An airflow conversion device provided by the present invention can be applied to air suction or blowing equipment. When the airflow conversion device is used on the air suction equipment, the air suction equipment is capable of blowing air, and when the airflow conversion device is used on the blowing equipment, the blowing equipment is capable of sucking air.

[0027] As shown in Fig. 1 and Fig. 2, the airflow conversion device provided by the present invention includes a first portion 100, a second portion 200 and an impeller structure 300. A first flow channel is formed in the first portion 100. A second flow channel is formed in the second portion 200. The first flow channel does not communicate with the second flow channel. A portion of the impeller structure 300 is located in the first flow channel, and the other portion is located in the second flow channel. Driving airflow is provided to the first flow channel or the second flow channel under an action of the impeller structure 300 to drive the impeller structure 300 to rotate. Under the action of the impeller structure 300, the second flow channel or the first flow channel generates airflow in an opposite direction from the driving airflow.

[0028] The first portion 100 and the second portion 200 are optionally configured as a cylindrical structure, an inner cavity of the cylindrical structure constitutes the first flow channel and the second flow channel, a first end in the axial direction of the first portion 100 forms a first connecting end 110, a first end in the axial direction of the second portion 200 forms a second connecting end 210, and optionally the first connecting end 110 and the second connecting end 210 are identical in radial dimension. The first connecting end 110 and the second connecting end 210 can be connected by clamping, screwing or the like. The first connecting end 110 and the second connecting end 210 are in sealing connection, for example, the first connecting end 110 and the second connecting end 210 are in sealing contact through a structure in which positioning ribs and positioning grooves are matched, or a sealing structure is provided on the first connecting end 110 and/or the second connecting end 210. As shown in Fig. 2 and Fig. 4, the first portion 100 is provided with a first positioning structure 111, the second portion 200 is provided with a second positioning structure 211, and the first positioning structure 111 and the second positioning structure 211 are matched and positioned when the first connecting end 110 and the

second connecting end 210 are connected. Optionally, the first positioning structure 111 is configured as a cylindrical structure protruded from the first connecting end 110 inside the first portion 100, the second positioning structure 211 is configured as a hole or a groove-like structure formed on an inner wall of the second portion 200, and the first positioning structure 111 is inserted into the second positioning structure 211 when the first connecting end 110 and the second end 210 are connected. Optionally, there are multiple first positioning structures 111 and second positioning structures 211 at corresponding positions, and further, there are two first positioning structures and two second positioning structures.

[0029] A port of a second end, far away from a first end of the first portion 100, forms a first shaft port 120, and the first shaft port 120 enables the first flow channel to communicate with the outside. A first side port 130 is formed on a side wall of the first portion 100, and the first side port 130 enables the first flow channel to communicate with the outside. Optionally, the first side port 130 is formed at a position close to the first connecting end 110. Further, multiple first side ports 130 are distributed along the circumferential direction of the first portion 100. The first shaft port 120 and the first side port 130 constitute two ports of the first flow channel. A port of a second end, far away from a first end of the second portion 200, forms a second shaft port 220, and the second shaft port 220 enables the second flow channel to communicate with the outside. A second side port 230 is formed on a side wall of the second portion 200, and the second side port 230 enables the second flow channel to communicate with the outside. Optionally, the second side port 230 is formed at a position close to the second connecting end 210. Further, multiple second side ports 230 are distributed along the circumferential direction of the second portion 200. The second shaft port 220 and the second side port 230 constitute two ports of the second flow channel.

[0030] The impeller structure 300 includes a first impeller 310, a second impeller 320 and a connecting shaft 330. The first impeller 310 and the second impeller 320 are connected through the connecting shaft 330 so that the first impeller 310 and the second impeller 320 can rotate synchronously, and the first impeller 310 and the second impeller 320 are provided in opposite directions of rotation. Optionally, the first impeller 310, the second impeller 320 and the connecting shaft 330 are integrally formed, or connected into an integrated structure after being split. The first impeller 310 extends into the first flow channel from the first connecting end 110 on the first portion 100, and the second impeller 320 extends into the second flow channel from the second connecting end 220 on the second portion 200, such that when the impeller structure 300 rotates, the flow directions of airflow in the first flow channel and the second flow channel are opposite since the first impeller 310 and the second impeller 320 are in opposite directions of rotation.

[0031] As shown in Fig. 3 and Fig. 4, the first portion

100 is internally provided with a first supporting structure 140. The first supporting structure 140 includes a first supporting portion 141 and a first connecting portion 142. The first connecting portion 142 is connected to the inner wall of the first portion 100 and the first connecting portion 142. The space inside the first portion 100 between the first supporting structure 140 and the first connecting end 110 constitutes a first receiving chamber for receiving the first impeller 310, the first supporting portion 141 is located in the first receiving chamber, and optionally, the first supporting portion 141 is located on the axis of the first portion 100. The first receiving chamber communicates with a cavity between the first supporting structure 140 and the first shaft port 120, and the first side port 130 communicates with the first receiving chamber, i.e. the first receiving chamber is a portion of the first flow channel, i.e. the first impeller 310 is located in the first flow channel.

[0032] The second portion 200 is internally provided with a second supporting structure 240. The second supporting structure 240 includes a second supporting portion 241 and a second connecting portion 242. The second connecting portion 242 is connected to the inner wall of the second portion 200 and the second connecting portion 242. The space inside the second portion 200 between the second supporting structure 240 and the second connecting end 210 constitutes a second receiving chamber for receiving the second impeller 320, the second supporting portion 241 is located in the second receiving chamber, and optionally, the second supporting portion 241 is located on the axis of the second portion 200. The second receiving chamber communicates with a cavity between the second supporting structure 240 and the second shaft port 220, and the second side port 230 communicates with the second receiving chamber, i.e. the second receiving chamber is a part of the second flow channel, i.e. the second impeller 320 is located in the second flow channel.

[0033] The first supporting portion 141 and the second supporting portion 241 support the connecting shaft 330. For example, the connecting shaft 330 is configured as a cylindrical structure, and the first supporting portion 141 and the second supporting portion 241 are configured as a columnar structure that protrudes into the connecting shaft 330 from both ends of the connecting shaft 330, respectively, supports the connecting shaft 330, and enables the connecting shaft 330 to rotate. It will be readily appreciated that the first supporting portion 141 and the second supporting portion 241 may also be provided in cylindrical structures into which both ends of the connecting shaft 330 are inserted respectively. In the present embodiment, a rotating shaft 500 is also provided. The rotating shaft 500 is penetratingly provided inside the connecting shaft 330, both ends of the rotating shaft 500 are rotatably connected to the first supporting portion 141 and the second supporting portion 241, and the rotating shaft 500 rotates in synchronization with the impeller structure 300. Optionally, both ends of the rotating shaft

500 are inserted into the first supporting portion 141 and the second supporting portion 241, and both ends of the connecting shaft 330 are fitted outside the first supporting portion 141 and the second supporting portion 241 so that the rotation of the impeller structure 300 is more stable.

[0034] As shown in Fig. 2, the airflow conversion device further includes a partition structure 400. The partition structure 400 isolates the space in which the first impeller 310 and the second impeller 320 are located, i.e., the partition structure 400 makes the first flow channel and the second flow channel unconnected. Optionally, there are two partition structures 400. The two partition structures 400 are spliced to form a structure capable of partitioning the first flow channel and the second flow channel. The partition structure 400 includes partition plates 410. The partition plates 410 are configured as a semi-circular ring structure. The two partition plates 410 are butted to form a complete circular ring structure. The connecting shaft 330 passes through an inner circle of the circular ring structure so that the first impeller 310 and the second impeller 320 are located at both sides of the partition plates 410, and the connecting shaft 330 can rotate relative to the partition plates 410. The radially outer edges of the partition plates 410 are in contact with the inner wall of the first portion 100 and/or the second portion 200. Optionally, the partition plates 410 are in sealing contact with the first portion 100 and/or the second portion 200, and the partition plates 410 are also in sealing contact with the connecting shaft 330.

[0035] Optionally, the partition structure 400 further includes a mounting portion 420. The mounting portion 420 is configured as a semi-cylindrical structure, an axis of the mounting portion 420 is perpendicular to the partition plate 410, an outer edge of the partition plate 410 is connected to a radially inner side wall of the mounting portion 420, and optionally, the partition plate 410 is located at an intermediate position of the mounting portion 420 in the axial direction of the mounting portion 420. Correspondingly, the first portion 100 is internally provided with a first mounting seat 150, and the first mounting seat 150 is configured as a cylindrical structure provided in the first receiving chamber. Optionally, the axis of the first mounting seat 150 is collinear with the axis of the first portion 100. One end of the first mounting seat 150 is connected to the first connecting portion 142 on the first supporting structure 140. The radial dimension of the mounting portion 420 is the same as the radial dimension of the first mounting seat 150. An axial end portion of the mounting portion 420 abuts against the first mounting seat 150. Optionally, the mounting portion 420 is in sealing contact with the first mounting seat 150. The second portion 200 is internally provided with a second mounting seat 250, and the second mounting seat 250 is configured as a cylindrical structure provided in the second receiving chamber. Optionally, the axis of the second mounting seat 250 is collinear with the axis of the second portion 200. One end of the second mounting seat 250 is con-

nected to the second connecting portion 242 on the second supporting structure 240. The radial dimension of the mounting portion 420 is the same as the radial dimension of the second mounting seat 250. An axial end portion of the mounting portion 420 abuts against the second mounting seat 250. Optionally, the mounting portion 420 is in sealing contact with the second mounting seat 250. The mounting portion 420 is compressed between the first mounting seat 150 and the second mounting seat 250 to complete the mounting.

[0036] As shown in Fig. 3 and Fig. 4, a ring clearance is formed between the first mounting seat 150 and the inner wall of the first portion 100, and a through hole is formed in the first mounting seat 150 so that the inner space of the first mounting seat 150 can communicate with the ring clearance through the through hole, thereby allowing the first side port 130 to communicate with the inside of the first mounting seat 150. Also, a through hole is formed in the second mounting seat 250 so that the second side port 230 communicates with the inside of the second mounting seat 250. Or, in the present embodiment, the mounting portion 420 is provided with communication holes 421. There are multiple communication holes 421 at both sides of the partition plate 410. The communication holes 421 have the same function as the through holes in the first mounting seat 150 and the second mounting seat 250. It is also possible to simultaneously provide through holes in the mounting portion 420, the first mounting seat 150 and the second mounting seat 250.

[0037] In other embodiments, the partition structure 400 may also be arranged between the first portion 100 and the second portion 200, i.e., the first connecting end 110 on the first portion 100 and the second connecting end 210 on the second portion 200 are connected to the mounting portion 420, where the first mounting seat 150 and the second mounting seat 250 need not be arranged.

[0038] Optionally, the connecting shaft 330 is provided with a limiting structure 331. The limiting structure 331 cooperates with the partition plate 410 in the axial direction of the connecting shaft 330 to limit the connecting shaft 330. The limiting structure 331 is optionally configured as a ring structure formed on the outer wall of the connecting shaft 330 along the circumferential direction thereof, there are two limiting structures 331, a ring groove 332 is formed between the two limiting structures 331, and the ring groove 332 is cooperatively mounted with the partition plate 410 so that the radially inner edge of the partition plate 410 can extend into the ring groove 332, and the connecting shaft 330 is axially limited by the cooperation of the ring groove 332 and the partition plate 410. The provision of the ring groove 332 also makes it easier to form a sealing fit between the connecting shaft 330 and the partition plate 410, e.g. a seal may be provided in the ring groove 332, and forms a sealing fit with the partition plate 410, etc.

[0039] The airflow conversion device provided by the present invention can be mounted on a dust collector,

and the second portion 200 is connected to a suction opening of the dust collector as a connecting end. When the dust collector works, airflow in the first portion 100 and the second portion 200 flows as shown in Fig. 5, under the action of the dust collector, driving airflow is generated in the second flow channel, the second side port 230 of the second portion 200 intakes air, and the airflow flows into the second flow channel, drives the second impeller 320 to rotate, and then flows into an air inlet duct of the dust collector through the second shaft port 220. The second impeller 320 rotates to drive the first impeller 310 to synchronously rotate. Since the first impeller 310 and the second impeller 320 are in opposite directions of rotation, under the action of the first impeller 310, the first side port 130 of the first portion 100 intakes air, and airflow flows through the first flow channel and is blown out from the first shaft port 120. The airflow conversion device enables the dust collector to realize a blowing function.

[0040] The airflow conversion device provided by the present invention can also be mounted on a hair dryer, and the second portion 200 is connected to an air outlet of the hair dryer as a connecting end. When the hair dryer works, airflow in the first portion 100 and the second portion 200 flows as shown in Fig. 6, under an action of the hair dryer, driving airflow is generated in the second flow channel, and the airflow flows into the second flow channel from the second shaft port 220 of the second portion 200, drives the second impeller 320 to rotate, and then is blown out from the second side port 230. The second impeller 320 rotates to drive the first impeller 310 to synchronously rotate, and since the first impeller 310 and the second impeller 320 are in opposite directions of rotation, under an action of the first impeller 310, the first shaft port 120 of the first portion 100 intakes air, and airflow flows through the first flow channel and is blown out from the first side port 130. The airflow conversion device enables the hair dryer to realize an air suction function.

[0041] In other embodiments, it is also possible to use the first portion 100 as a connecting end. The first portion 100 and the second portion 200 have the same effect as connecting ends.

[0042] According to the airflow conversion device provided by the present invention, the two impellers on the impeller structure are provided in opposite directions of rotation structurally, so that when the impeller structure rotates, one of the two portions of the airflow conversion device can suck air, and the other portion can blow air. Therefore, when the airflow conversion device is driven by air suction, the blowing function can be realized, or when the airflow conversion device is driven by blowing, the air suction function can be realized.

[0043] Those skilled in the art easily understand that the above technical solutions can be freely combined and superimposed on the premise of no conflict.

[0044] It should be understood that the above implementation manners are only exemplary, and not limiting,

without departing from the basic principles of the present invention. Those skilled in the art can make various obvious or equivalent modifications or replacements for the above details, which will be included within the scope of the claims of the present invention.

Claims

1. An airflow conversion device, comprising a first portion, a second portion and an impeller structure, wherein a first flow channel is formed in the first portion, a second flow channel is formed in the second portion, and the impeller structure is configured as: when driving airflow is provided to one of the first flow channel and the second flow channel, the driving airflow makes the impeller structure to rotate, and under an action of the impeller structure, the other one of the first flow channel and the second flow channel generates airflow in an opposite direction from the driving airflow.
2. The airflow conversion device as claimed in claim 1, wherein the first portion is configured as a cylindrical structure, the first flow channel is formed inside the first portion, a first side port is formed on a side wall of the first portion, a port at a second end of the first portion constitutes a first shaft port, and the first side port and the first shaft port constitute two end ports of the first flow channel, respectively; and/or the second portion is configured as a cylindrical structure, the second flow channel is formed inside the second portion, a second side port is formed on a side wall of the second portion, a port at a second end of the second portion constitutes a second shaft port, and the second side port and the second shaft port constitute two end ports of the second flow channel.
3. The airflow conversion device as claimed in claim 2, wherein a first end of the first portion forms a first connecting end, and a first end of the second portion forms a second connecting end, the first connecting end being connectable to the second connecting end.
4. The airflow conversion device as claimed in claim 1, wherein the impeller structure comprises a first impeller and a second impeller, the first impeller and the second impeller rotating synchronously, the first impeller and the second impeller being in opposite directions of rotation, the first impeller being located in the first flow channel, and the second impeller being located in the second flow channel.
5. The airflow conversion device as claimed in claim 4, wherein the impeller structure further comprises a

connecting shaft, the first impeller and the second impeller is provided on the connecting shaft.

6. The airflow conversion device as claimed in claim 5, wherein a first supporting structure is provided in the first flow channel, a second supporting structure is provided in the second flow channel, and the first supporting structure and the second supporting structure support the connecting shaft. 5
7. The airflow conversion device as claimed in claim 6, wherein the airflow conversion device further comprises a rotating shaft through which the connecting shaft is rotatably connected to the first supporting structure and the second supporting structure. 10 15
8. The airflow conversion device as claimed in any one of claims 1 to 7, wherein the airflow conversion device further comprises a partition structure that partitions the first flow channel and the second flow channel. 20
9. The airflow conversion device as claimed in claim 8, wherein there are two partition structures, which partition the first flow channel and the second flow channel after being spliced. 25
10. The airflow conversion device as claimed in claim 9, wherein the partition structure comprises a partition plate that is configured as a semi-circular ring structure, two of the partition plates are spliced to form a circular ring structure, and the connecting shaft passes through an inner circle of the circular ring structure. 30 35
11. The airflow conversion device as claimed in claim 10, wherein the partition structure further comprises a mounting portion that is configured as a semi-cylindrical structure, an axis of the mounting portion is perpendicular to the partition plate, and an outer edge of the partition plate is connected to a radially inner side wall of the mounting portion. 40
12. The airflow conversion device as claimed in claim 11, wherein a first mounting seat is provided inside the first portion, a second mounting seat is provided inside the second portion, and the first mounting seat and the second mounting seat abut against both ends of the mounting portion to complete mounting of the mounting portion. 45 50
13. The airflow conversion device as claimed in claim 10, wherein a limiting structure is provided on the connecting shaft, and the limiting structure cooperates with the partition plate to limit the connecting shaft in an axial direction of the connecting shaft. 55
14. The airflow conversion device as claimed in claim

13, wherein the limiting structure is configured as a ring structure formed in a circumferential direction of the connecting shaft, there are two ring structures, a ring groove is formed between the two ring structures, and an inner edge of the partition plate extends into the ring groove.

15. A dust collector, comprising a body and an airflow conversion device as claimed in any one of claims 1 to 14, the airflow conversion device being mountable to a suction opening of the dust collector.

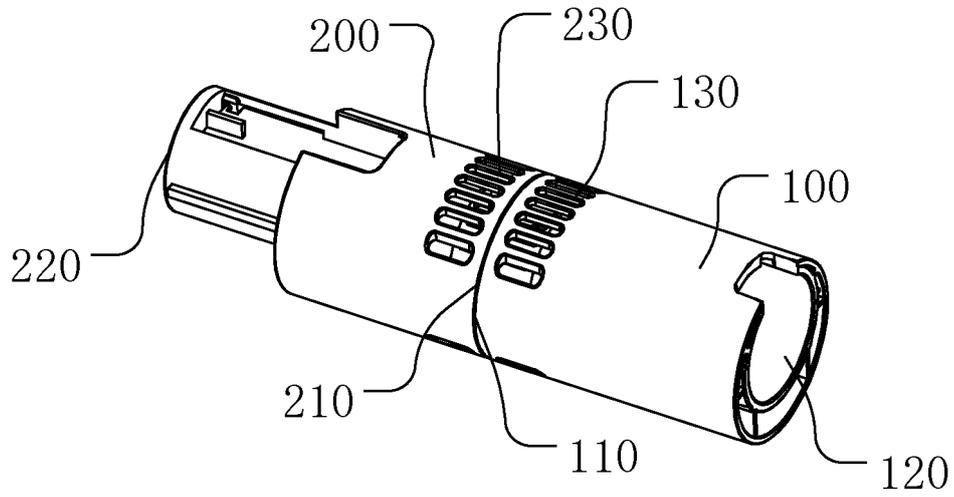


Fig. 1

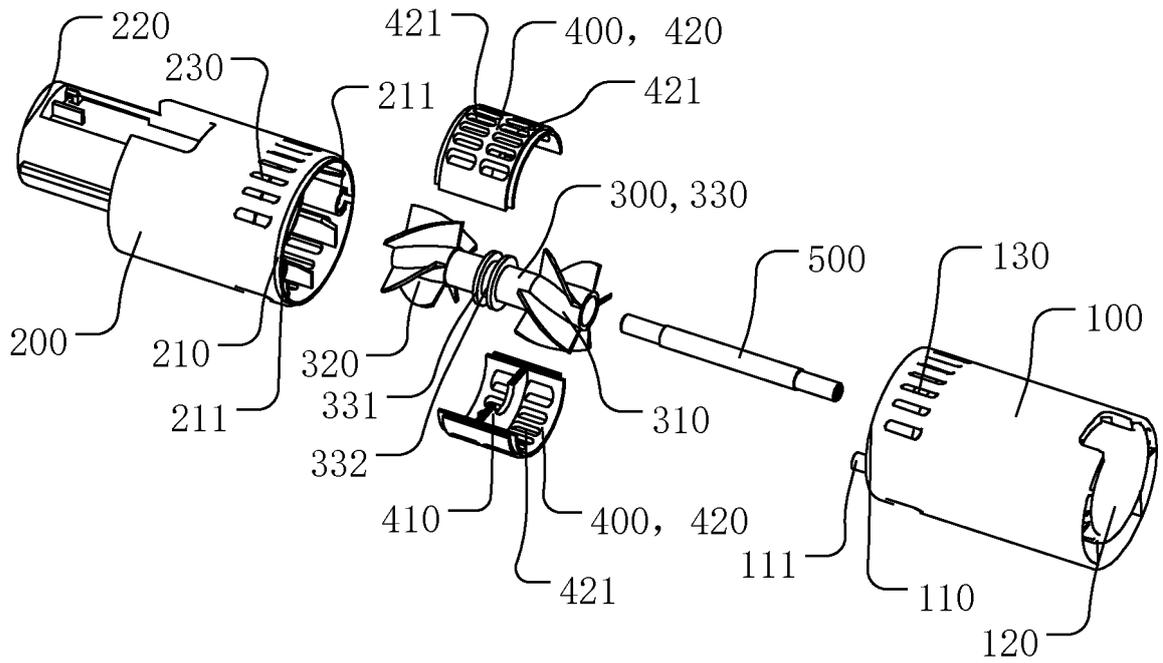


Fig. 2

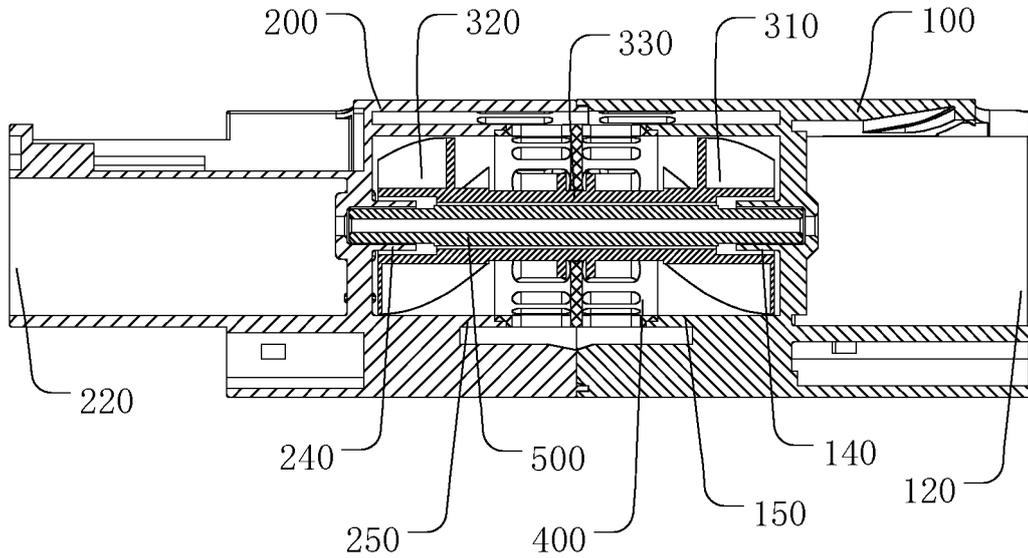


Fig. 3

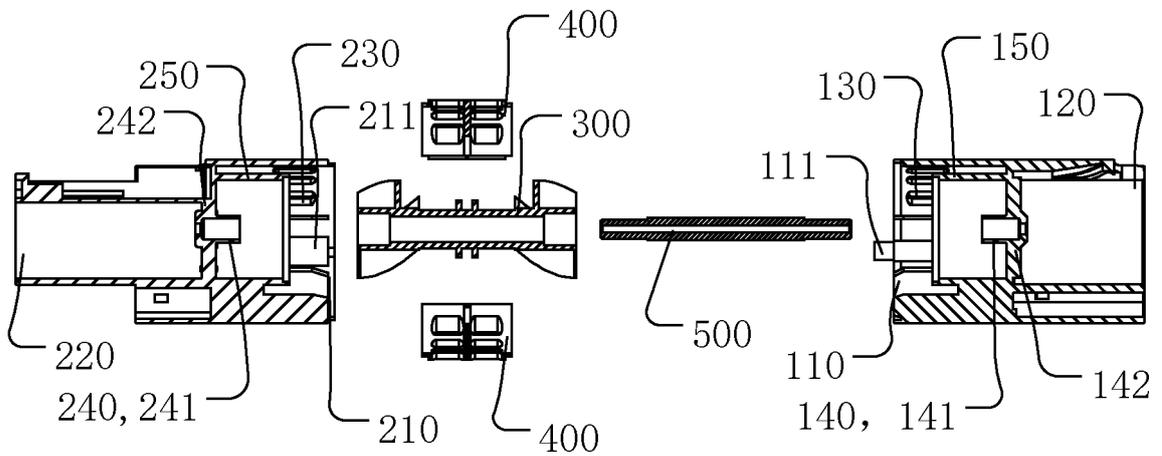


Fig. 4

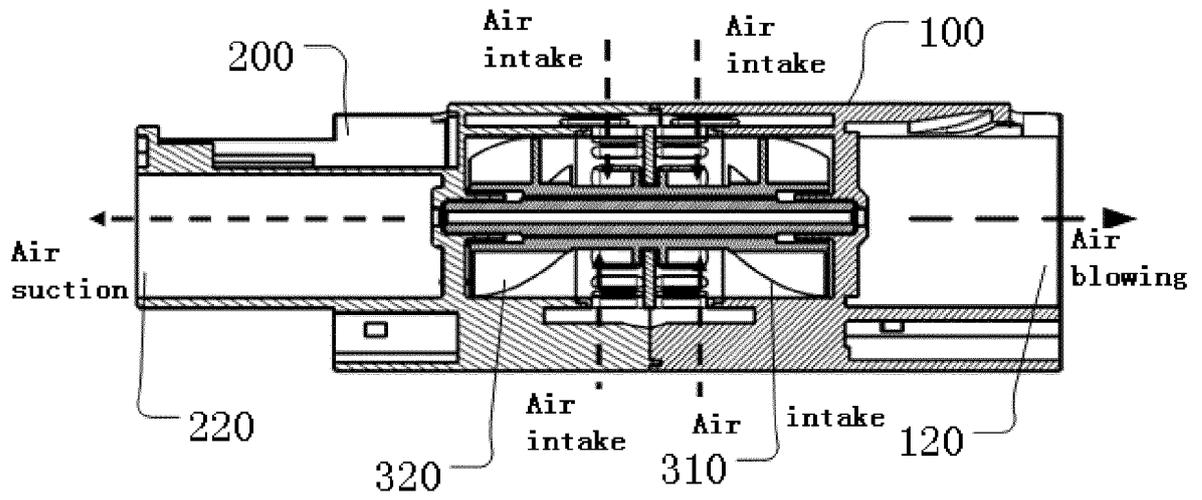


Fig. 5

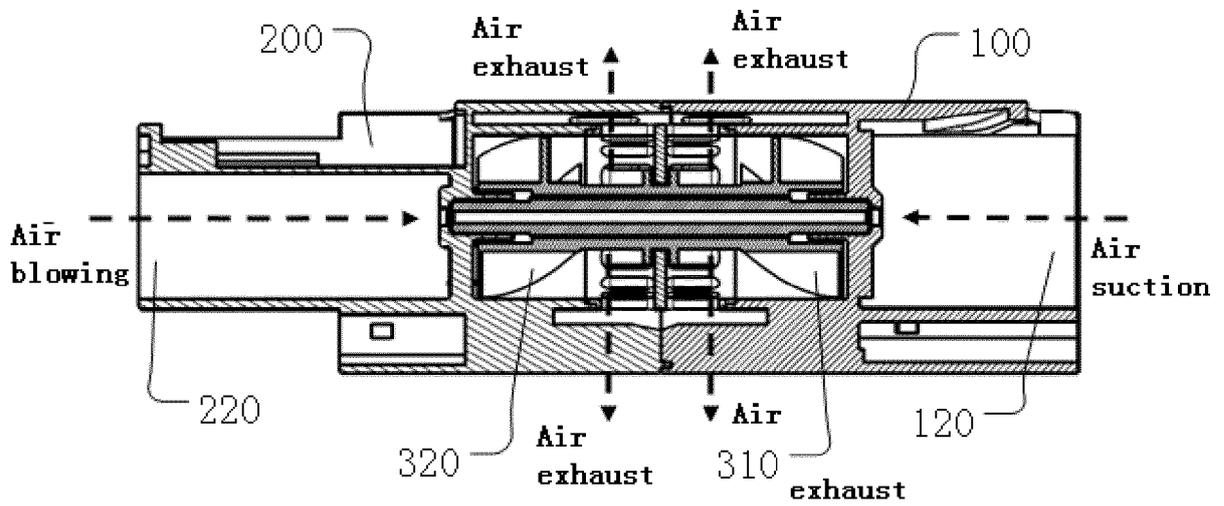


Fig. 6

INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/099176

| | | |
|----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5 | A. CLASSIFICATION OF SUBJECT MATTER A47L 7/06(2006.01)i; A47L 9/00(2006.01)i | |
| | According to International Patent Classification (IPC) or to both national classification and IPC | |
| 10 | B. FIELDS SEARCHED | |
| | Minimum documentation searched (classification system followed by classification symbols) A47L | |
| | Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched | |
| 15 | Electronic data base consulted during the international search (name of data base and, where practicable, search terms used) CNABS, CNTXT, VEN, CNKI: 吸尘, 气流, 转换, 叶轮, 相反, air flow, impeller+, opposite | |
| | C. DOCUMENTS CONSIDERED TO BE RELEVANT | |
| 20 | Category* | Citation of document, with indication, where appropriate, of the relevant passages |
| | PX | CN 109288447 A (GREE ELECTRIC APPLIANCES, INC. OF ZHUHAI) 01 February 2019 (2019-02-01) claims 1-15, description, paragraphs 4-46, and figures 1-6 |
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| 40 | * Special categories of cited documents: | “T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
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| | “O” document referring to an oral disclosure, use, exhibition or other means | |
| | “P” document published prior to the international filing date but later than the priority date claimed | |
| | Date of the actual completion of the international search 21 October 2019 | Date of mailing of the international search report 29 October 2019 |
| 50 | Name and mailing address of the ISA/CN China National Intellectual Property Administration No. 6, Xitucheng Road, Jimenqiao Haidian District, Beijing 100088 China | Authorized officer |
| 55 | Facsimile No. (86-10)62019451 | Telephone No. |

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