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(54) DUST-COLLECTING AUXILIARY DEVICE FOR VACUUM CLEANER

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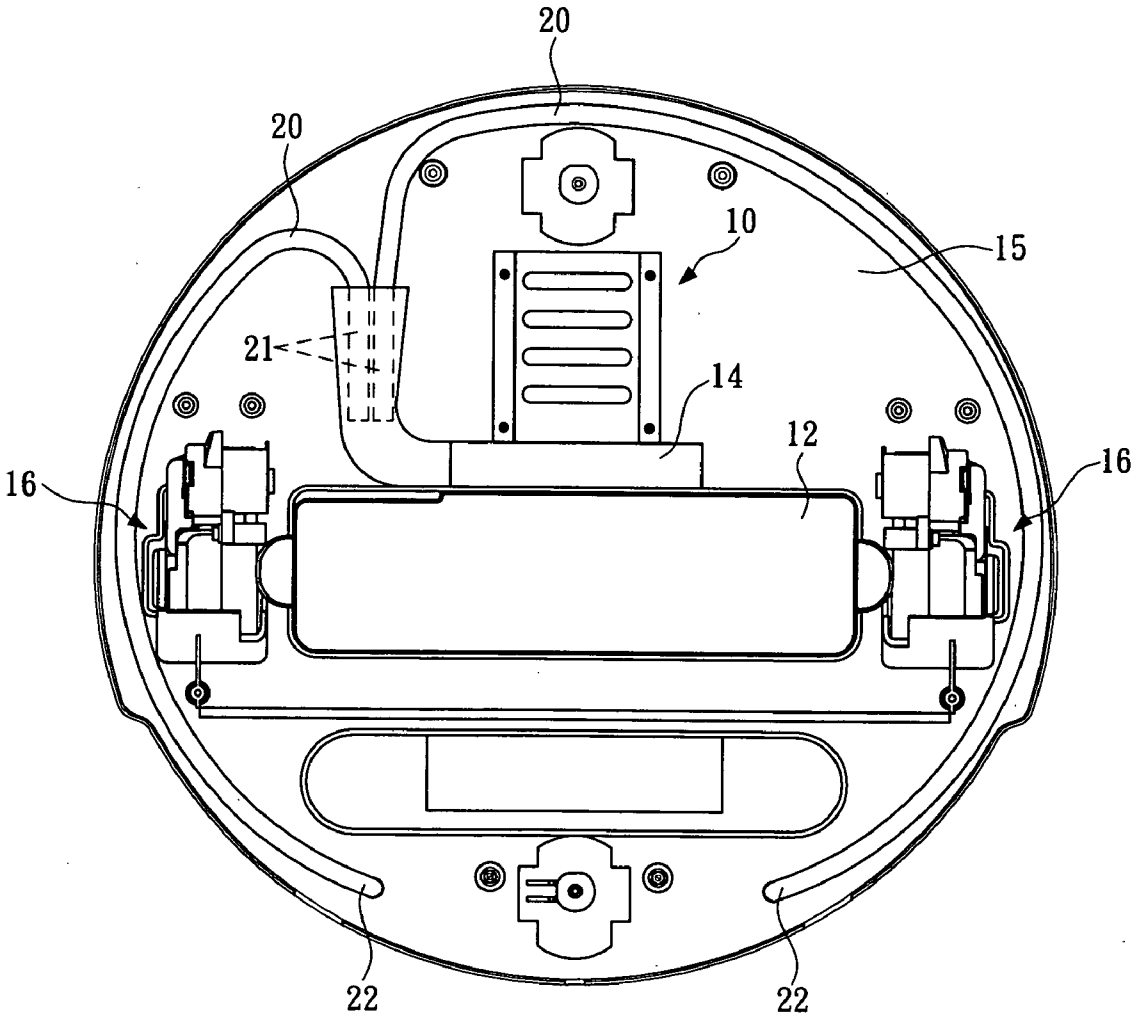
(57) **ABSTRACT**

A dust-collecting auxiliary device is equipped on a vacuum cleaner that comprises at least a motor, a fan, a dust-collecting chamber, a suction inlet, and a driving device. Said dust-collecting auxiliary device includes at least one air pipe of which an air inlet at one end is fixed in a fan container of said fan and an air outlet is placed at the lower surface of the bottom cover of the vacuum cleaner in to the neighboring-front the suction inlet, at least two wings wherein each wing with one end fixed at the one side of the suction inlet, while the other end thereof extended forward and outward to give an increasing distance from another wing.



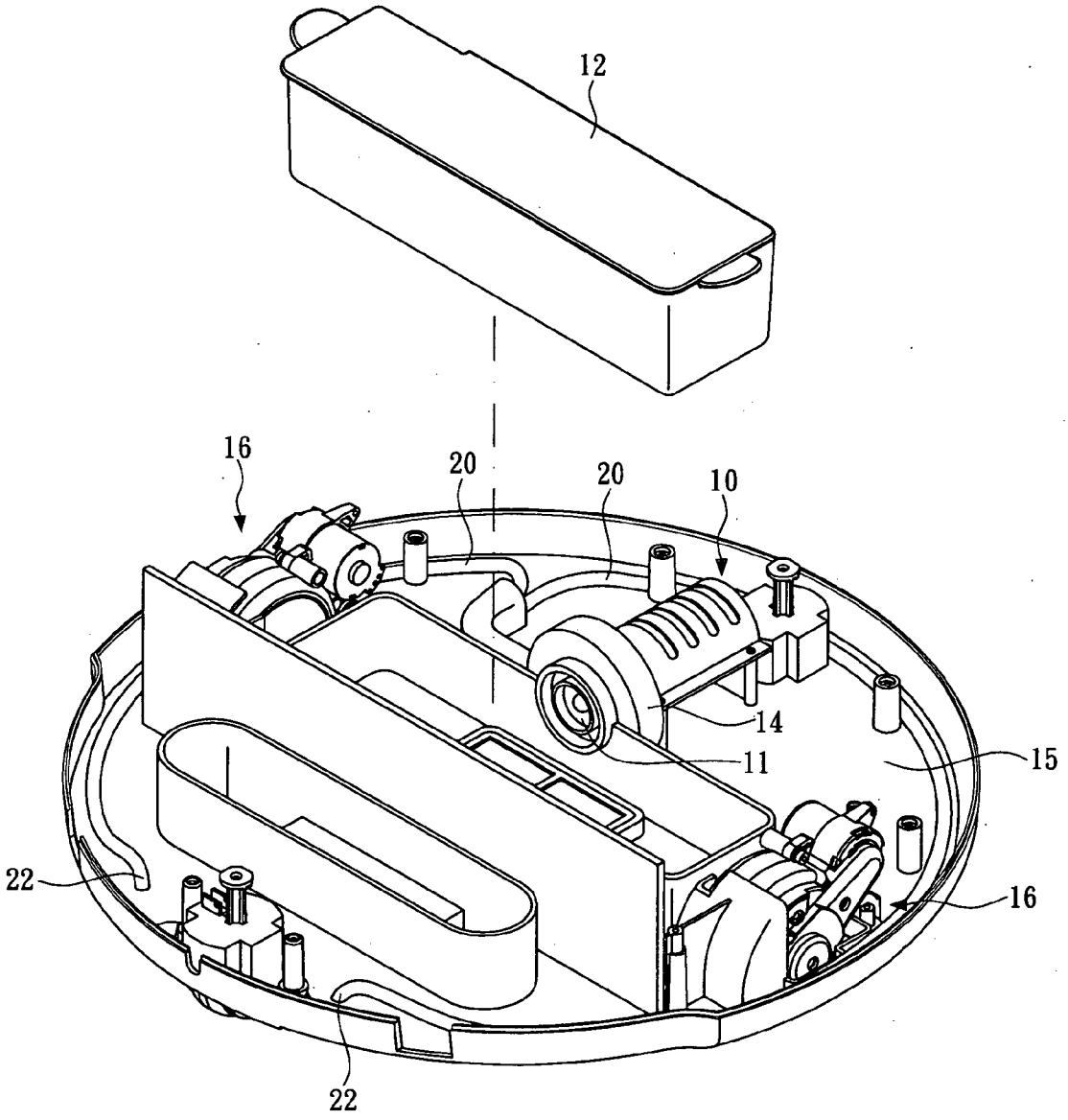


FIG. 1

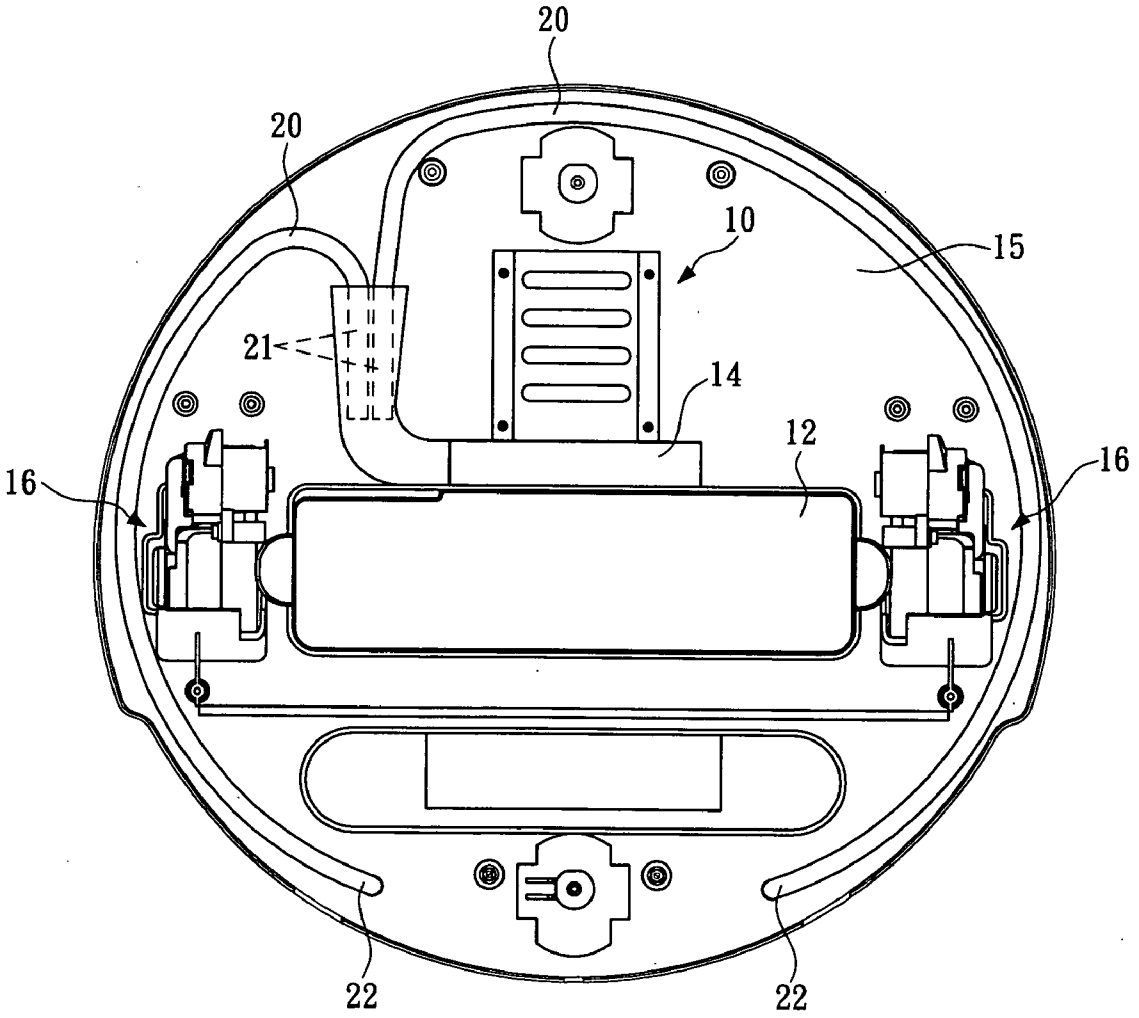


FIG. 2

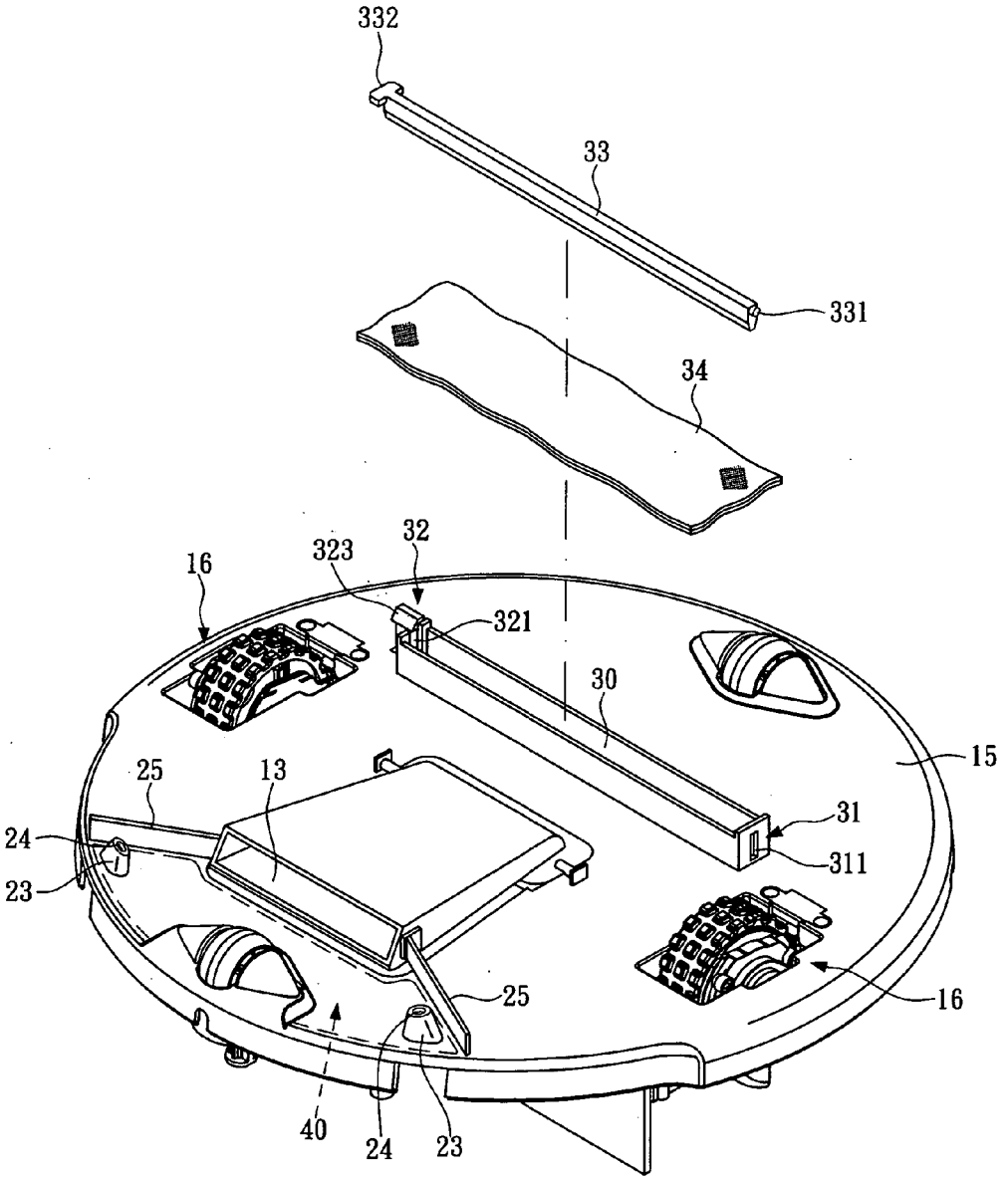


FIG. 3

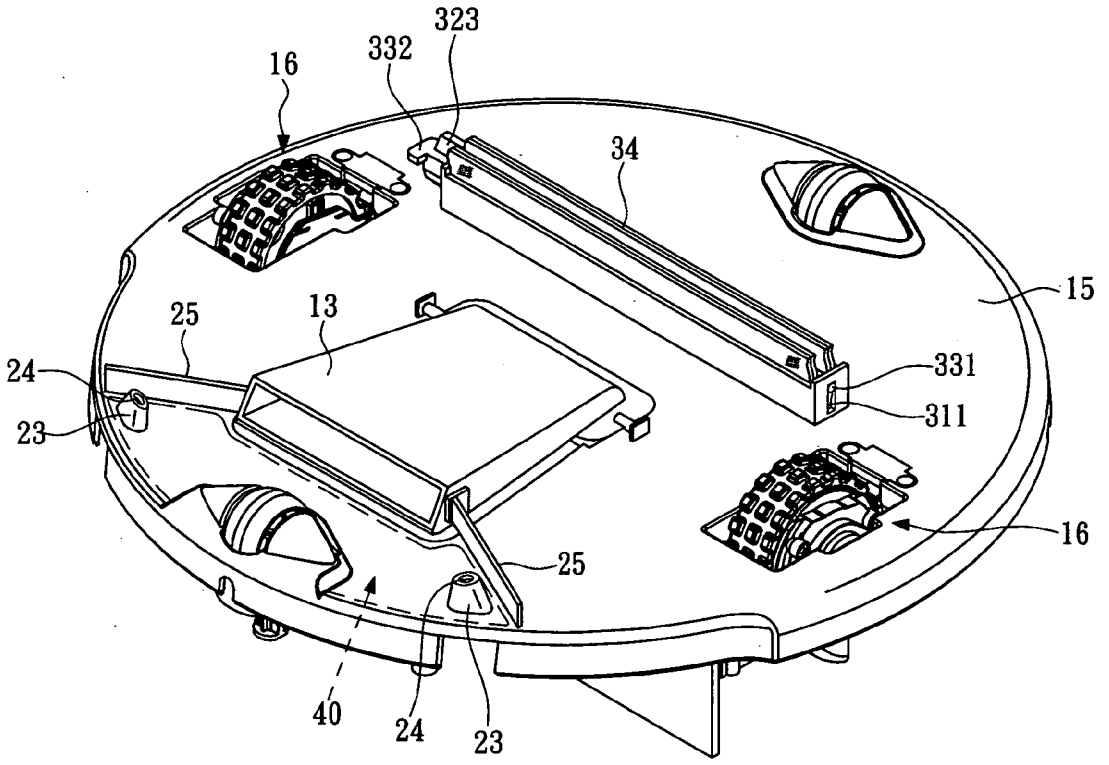


FIG. 4

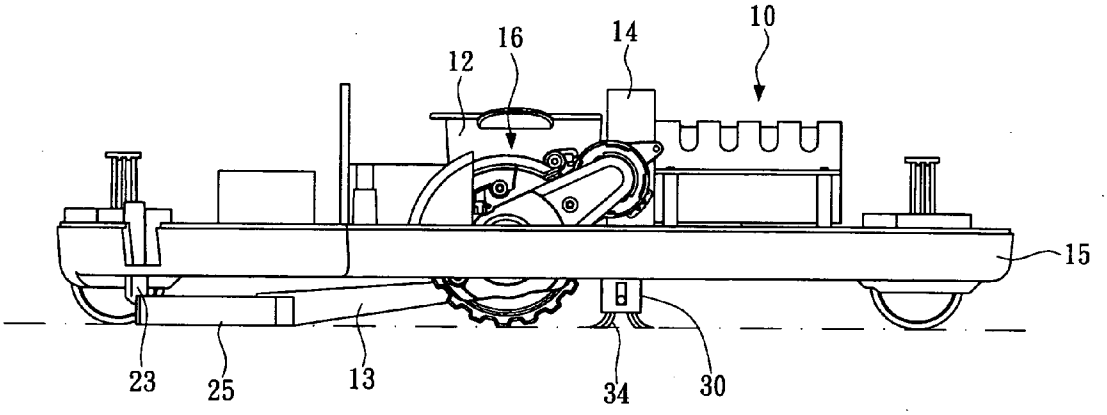


FIG. 5

DUST-COLLECTING AUXILIARY DEVICE FOR VACUUM CLEANER

BACKGROUND OF THE INVENTION

[0001] 1. Technical Field

[0002] The present invention relates to vacuum cleaners and, more particularly, to a dust-collecting auxiliary device that improves the dust-collecting efficiency of a vacuum cleaner.

[0003] 2. Description of Related Art

[0004] A typical vacuum cleaner primarily comprises a motor, a fan, a dust-collecting chamber and a suction inlet, wherein the motor drives the fan to create suction which passes through the dust-collecting chamber and sucks up external air, dust and trash at the suction inlet. As the collected air, dust and trash are drawn into the dust-collecting chamber, which possess reduced pressure due to the relatively large internal space, dust and trash which are relatively heavier than the air are retained in the chamber, while the air is successively filtered through a filter before exhausted from the cleaner at an exhaust.

[0005] Varied technical means for improving dust-collecting efficiency for various vacuum cleaners has been proposed. A traditional vacuum cleaner in an upright form with a detachable extension pipe, a suction tip and other components can perform relatively strong suction by implementing a relatively large and powerful motor. Alternatively, suction generated under equivalent motor power may by enhanced by simply replacing the suction tip with another having smaller suction inlet to enlarge vacuum pressure at the suction inlet.

[0006] The current trend is towards self-propelled vacuum cleaners having small volume, and equipped with remote controlling and automatic dust-collecting functions. Such a modern product, as disclosed in U.S. Design Pat. D524,495 and D503,251 generally has a disk-shaped boy and is welcome by the consumers for the advantages as light, easy to be stored, remote-controllable, adaptable, self-propelled and so on. However, the improvement in suction of such a disk-shaped vacuum cleaner may be limited by because the reduced volume thereof may not sufficient to accommodate a larger and powerful motor and the suction inlet thereof is not designed to be fixed an irreplaceable. Thus, a need exists for a disk-shaped vacuum cleaner that performs improved dust-collecting efficiency.

SUMMARY OF THE INVENTION

[0007] The present invention has been accomplished under the circumstances in view to provide a dust-collecting auxiliary device that facilitates enhancing dust-collecting efficiency of a vacuum cleaner.

[0008] A dust-collecting auxiliary device is equipped on a vacuum cleaner that comprises at least a motor, a fan, a dust-collecting chamber, a suction inlet, wherein the motor drives the fan to create suction which passes through the dust-collecting chamber and sucks up external air, dust and trash at the suction inlet and draws the dust an trash into the dust-collecting chamber, and a driving device to propel the vacuum cleaner. Said dust-collecting auxiliary device includes at least one air pipe of which an air inlet at one end is fixed in a fan container of said fan and an air outlet at the opposite end is placed at the lower surface of the bottom cover of the vacuum cleaner adjacent to and with a distance from the suction inlet, at least two wings each with one end fixed at one side of the suction inlet, while the other end thereof extended forward and outward to give an increasing distance from another wing. The disclosed vacuum cleaner further comprises a dust wiper which is composed by battening a wiping cloth in a slot with a batten so that the vacuumed route can be successively cleaned by the wiping cloth.

[0009] Thus, the object of the present invention to provide a dust-collecting auxiliary device utilizing airflow blew form the air pipe to congregate dust or trash toward the suction inlet. Additionally, the two wings enlarge the dust-collecting area of the suction inlet suction inlet and facilitate converging airflow blew form the air pipe toward the suction inlet so that dust and trash in said dust-collecting area can be sucked through the suction inlet efficiently an smoothly due to the aid of the air pipe and wings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. **1** is a perspective view showing the inner composition of a vacuum cleaner according to the present invention;

[0011] FIG. **2** is a top view showing the inner composition of a vacuum cleaner according to the present invention;

[0012] FIG. **3** is an exploded view of the bottom portion of the disclosed vacuum cleaner;

[0013] FIG. **4** is a perspective view according to FIG. **3**; and

[0014] FIG. **5** is a side view showing the inner composition of the disclosed vacuum cleaner.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[0015] As a modern disk-shaped vacuum cleaner according to the present invention is schematically shown in the Figures, those details not related to the essentials of the present invention are not accounted herein. In the Figures, a motor **10**, a fan **11**, a dust-collecting chamber **12**, a suction inlet **13** and a driving device **16** of prior art are disclosed, wherein the driving device **16** drives the vacuum cleaner moving automatically; the motor **10** rotates the fan **11** to generate suction which passes through the dust-collecting chamber **12** and sucks up external air, dust and trash at the suction inlet **13**; and retains dust and trash in the dust-collecting chamber **12**.

[0016] For improving dust-collecting ability of such a vacuum cleaner, the present invention provides a dust-collecting auxiliary device which is composed of two air pipes **20** and two wings **25** as shown in FIGS. **1** to **5**.

[0017] Each of the air pipes **20** is a flexible tube, of which an inlet **21** at one end is fixed in a fan container **14** enclosed said fan **11**, while an outlet **22** at the opposite end is fixed at the lower surface of the bottom cover **15** adjacent to and with a predetermined distance from one end of the suction inlet **13**. For the outlet **22** of each air pipe **20**, a nozzle **23** is provided at the lower surface of the bottom cover **15** inclined toward the suction inlet **13** and a nozzle hole **24** is attached to the end thereof. Also, the outlet **22** of each air pipe **20** is fixed in the corresponding nozzle **23**.

[0018] The two wings **25** are made of flexible sheets and each wing **25** has one end respectively fixed at one side of the suction inlet **13**, while the other ends thereof are extended forward and outward to give an increasing distance

from another wing whereby a dust-collecting division **40**, which is greater than the suction inlet **13** in width and accommodating said nozzles **23** is defined between the two wings **25**. It is to be noted that the dust-collecting division **40** indicated in FIGS. **3** and **4** by dotted lines is just for illustrating the concept of the present invention, and is not for limiting the dust-collecting division **40** with an absolute spatial pattern.

[0019] In the disclosed vacuum cleaner, the motor **10** rotates the fan **11** to generate suction which passes through the dust-collecting chamber **12** and collects the external air, dust and trash at the suction inlet **13**. As the collected dust and trash are retained in the dust-collecting chamber **12**, the sucked air is then filtered by the filter of the dust-collecting chamber **12** before enters the two air pipes **20** through the fan container **14** to be further emitted by the nozzle holes **24** of nozzles **23**. Since the nozzles **23** are inclined toward the suction inlet **13** and fenced by said wings **25**, the emitted airflow can be oriented toward the suction inlet **13** and precisely facilitates collecting dust and trash and as a result enhances dust-collecting activity of the vacuum cleaner. Additionally, the dust-collecting division **40** defined by said two wings **25** enlarges dust-collecting area of the suction inlet **13** and beneficially aggrandizes dust-collecting ability of the vacuum cleaner.

[0020] Thus, the disclosed dust-collecting auxiliary device exactly enhances dust-collecting ability of the vacuum cleaner by implementing the two wings **25** to extend dust-collecting area around the suction inlet **13** and utilizing the exhausted air during dust-collecting to blow dust and trash in the dust-collecting area toward the suction inlet **13** for more smooth and fast dust-collecting.

[0021] In FIGS. **3** and **4**, the dust-collecting auxiliary device of the present invention further comprises a dust wiper, which includes:

[0022] at least a slot **30** positioned at the lower surface of the bottom cover;

[0023] a first fastening portion **31** and a second fastening portion **32** provided respectively at the opposite ends of said slot **30**; and

[0024] a batten **33** matching the slot **30** so that a wiping cloth **34** can be pressed into the slot **30** and the two ends of the batten **33** can be fastened by the first fastening portion **31** and a second fastening portion **32** thus an wiping cloth **34** can be fixed in the slot **30** and an edge thereof resultantly stretches out the slot **30**.

[0025] Herein the fastening relationship between the batten **33** and the first fastening portion **31** and a second fastening portion **32** according to the particular embodiment is described. A fastening hole **311** and a gap **321** are relatively provided at the opposite ends of the slot **30**, and a hook **323** is arranged on the bottom cover adjacent to the gap **321**. Further, a salient **331** is provided on one end of the batten **33** and a retaining piece **332** is extended sidelong on the opposite end of the batten **33**. Thus, when the batten **33** is pressed into the slot **30**, the salient **331** can be fastened in the fastening hole **311** while the retaining piece **332** on other end can be retained by the hook **323** beyond the gap **321**. By this means, the batten **33** and slot **30** can be mutually engaged in a detachable way and a wiping cloth **34** may be infixed into the slot **30** by the batten **33**. According to the embodiment illustrated in the Figures, the wiping cloth **34** is replaceable.

[0026] As shown in FIG. **5**, as wiping cloth **34** has its edge stretching out the slot **30** contacting the ground, it cleans the ground that the vacuum cleaner passes so that the cleaning efficiency can be improved by the dual cleaning of vacuuming and wiping.

[0027] Although a particular embodiment of the invention has been described in detail for purposes of illustration, it will be understood by one of ordinary skill in the art that numerous variations will be possible to the disclosed embodiments without going outside the scope of the invention as disclosed in the claims.

What is claimed is:

1. A dust-collecting auxiliary device for a vacuum cleaner, which comprises at least a motor, a fan, a dust-collecting chamber, a suction inlet, wherein the fan is driven by the motor to generate suction which collects the external air, dust and trash at the suction inlet and collects said dust and trash in the dust collection, and a driving device to propel the vacuum cleaner, comprising:

at least one air pipe of which an air inlet at one end thereof is fixed in a fan container enclosed said fan and an air outlet at the opposite end is placed at the lower surface of the bottom cover of the vacuum cleaner adjacent to and with a predetermined distance from the suction inlet, and

at least two wings, each with one end fixed at the one side of the suction inlet, while the other end thereof extended forward and outward to give an increasing distance from another wing.

2. The dust-collecting auxiliary device as claimed in claim **1**, wherein the at least two wings define a dust-collecting division having a width greater than that of the suction inlet.

3. The dust-collecting auxiliary device as claimed in claim **2**, wherein the outlet of each air pipe is positioned in the dust-collecting division.

4. The dust-collecting auxiliary device as claimed in claim **3**, wherein a nozzle is provided on the lower surface of the bottom cover to accommodate each said outlet of the at least one air pipe and has a nozzle hole at the lower end thereof to permit air in the air pipe being emitted therethrough.

5. The dust-collecting auxiliary device as claimed in claim **4**, wherein the nozzle is arranged inclined toward the suction inlet.

6. The dust-collecting auxiliary device as claimed in claim **1**, wherein the at least one air pipe is a flexible tube.

7. The dust-collecting auxiliary device as claimed in claim **1**, wherein the wings are flexible sheets.

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