A brush assembly, having a brush body, a brush cover mounted on the brush body, a suction port formed on the brush body, and a pet hair removal unit, is provided. The pet hair removal unit includes at least two pet hair removal members that are disposed apart from each other, and the at least two pet hair removal members rotate with respect to the brush body when the brush assembly moves forward and backward, alternately contacting a surface being cleaned, thereby removing dirt or dust such as pet hair from the surface being cleaned.
FIG. 4
FIG. 5
BRUSH ASSEMBLY OF VACUUM CLEANER

CROSS-REFERENCE TO RELATED APPLICATIONS


BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present disclosure relates to a brush assembly, and more particularly, to a brush assembly of a vacuum cleaner, which draws dust from the space in which the cleaner is used. The brush assembly is used to rotate a dusting member to rotate a rotating drum.

[0004] 2. Description of the Related Art

[0005] General vacuum cleaners include a brush assembly that draws dust from the space in which the cleaner is used. The brush assembly is used to rotate a dusting member to rotate a rotating drum.

[0006] When a vacuum generator of a cleaner body operates to generate a suction force, a suction port draws in dust from the space in which the cleaner is used. However, it is difficult to remove dust from the rotating drum using only suction force. It is desirable for the rotating drum to be mounted on a rotating drum according to an exemplary embodiment of the present disclosure.

SUMMARY OF THE INVENTION

[0007] Exemplary embodiments of the present disclosure address at least the above problems and/or disadvantages and other disadvantages not described above. Also, the present disclosure is not required to overcome the disadvantages described above, and an exemplary embodiment of the present disclosure may not overcome any of the problems described above.

[0008] The present disclosure provides a brush assembly of a vacuum cleaner that efficiently draws in fibrous dirt or dust such as pet hair from the space in which the cleaner is used.

[0009] According to an exemplary aspect of the present disclosure, there is provided a brush assembly of a vacuum cleaner, which includes a brush body, a brush cover mounted on the brush body, a suction port formed on the brush body, and a pet hair removal unit. The pet hair removal unit includes at least two pet hair removal members that are disposed apart from each other; the at least two pet hair removal members rotate with respect to the brush body when the brush assembly moves forward and backward, alternately contacting the surface being cleaned, thereby removing dirt or dust such as pet hair from the space being cleaned.

[0010] The pet hair removal unit may transfer at least part of the dirt or dust such as pet hair removed from the space being cleaned to the suction port when the brush assembly moves forward and backward.

[0011] The brush assembly may further include a rotating drum that is rotatably mounted on the brush body, and of which at least one side is cut. The at least two pet hair removal members may be mounted on both sides of the rotating drum, and rotate along with the rotating drum.

[0012] The at least two pet hair removal members may include directionally inclined bristles. The bristles may be inclined in an opposite direction against a horizon.

[0013] The brush assembly may further include at least two dusters that remove the dirt or dust such as pet hair off the at least two pet hair removal members, wherein the at least two dusters include bristles that are inclined in an opposite direction to each other. The at least two dusters may be mounted on the brush body and the brush cover.

[0014] The rotating drum may include a rotation leading member, and the rotation leading member may contact a surface being cleaned, and rotate the rotating drum when the brush assembly moves forward and backward.

[0015] The brush assembly may further include a rotating brush, which is mounted on the brush assembly to be adjacent to the suction port. The brush assembly may further include a turbine fan that rotates the rotating brush, wherein a plurality of air inlets may be formed on the brush cover, and wherein external air may flow into the brush assembly through the plurality of air inlets, and drive the turbine fan.

[0016] According to an exemplary aspect of the present disclosure, there is provided a brush assembly of a vacuum cleaner, including a brush body on which a suction port is formed; a cover that is mounted on the brush body; a rotating drum that is rotatably mounted on the brush body or the brush cover, and of which at least part is cut; a pet hair removal member that is mounted on the rotating drum; and a duster that removes dirt or dust such as pet hair off the pet hair removal member.

[0017] The duster may be mounted on the brush body. A side surface of the rotating drum may be formed in an approximate semicircular shape.

[0018] The pet hair removal member and the duster may include directionally inclined bristles.

[0019] As described above, according to the exemplary embodiments of the present disclosure, when the brush assembly moves forward and backward, the pet hair removal member rotates, alternately contacting a surface being cleaned, thereby efficiently removing dirt or dust such as pet hair from the surface being cleaned.

[0020] The pet hair removal unit removes dirt or dust such as pet hair using the duster without contacting the surface being cleaned, and thus is always clean when contacting the surface being cleaned. Therefore, cleaning efficiency is enhanced.

BRIEF DESCRIPTION OF THE DRAWINGS

[0021] The above and/or other aspects of the present disclosure will be more apparent by describing certain exemplary embodiments of the present disclosure with reference to the accompanying drawings, in which:

[0022] FIG. 1 is a schematic view illustrating a brush assembly according to an exemplary embodiment of the present disclosure;

[0023] FIG. 2 is a schematic view illustrating a bottom surface of a brush assembly according to an exemplary embodiment of the present disclosure;

[0024] FIG. 3 is a view illustrating a pet hair removal unit mounted on a rotating drum according to an exemplary embodiment of the present disclosure;
FIG. 4 is a sectional view in which a brush assembly moves forward according to an exemplary embodiment of the present disclosure; and

FIG. 5 is a sectional view in which a brush assembly moves backward according to an exemplary embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE INVENTION

Certain exemplary embodiments of the present disclosure will now be described in greater detail with reference to the accompanying drawings.

In the following description, the same drawing reference numerals are used for the same elements even in different drawings. The matters defined in the description, such as detailed construction and elements, are provided to assist in a comprehensive understanding of the disclosure. Thus, it is apparent that the present disclosure can be carried out without those specifically defined matters. Also, well-known functions or constructions are not described in detail since they would obscure the disclosure with unnecessary detail.

A brush assembly of a vacuum cleaner according to an exemplary embodiment of the present disclosure will be explained with reference to the accompanying drawings.

Referring to FIG. 1, the brush assembly 100 according to an exemplary embodiment of the present disclosure is mounted on a conventional canister type vacuum cleaner 1. The canister type vacuum cleaner 1 comprises a cleaner body 10 having a suction motor (not shown) and a dust separating unit (not shown) therein, a hose 20 connected to the cleaner body 10, and an extension pipe assembly 40 having a handle 30. The brush assembly 100 according to the exemplary embodiment of the present disclosure is applied to the canister type vacuum cleaner 1 as shown in FIG. 1, but this is not limited thereto. The brush assembly 100 may be applied to an upright type vacuum cleaner.

The brush assembly 100 includes a brush body 110, a brush cover 130, and a fibrous dirt or hair removal unit 150 (referred to as FIG. 3), which is referred to herein as a pet hair removal unit.

Referring to FIGS. 1 and 2, the brush body 110 is connected to the extension pipe assembly 40 through a connector 111 attached to a lower end of the brush body 110, and is capable of being in fluid communication with the extension pipe assembly 40. The brush body 110 mounts main wheels 113a, 113b at both sides of a rear portion, and auxiliary wheels 114a, 114b at a bottom surface of a front portion.

A suction port 115 is formed on the front bottom surface of the brush body 110 in a width direction to draw in dirt or dust from a surface being cleaned. A rotating brush 116 of which opposite ends are rotatably supported in the brush body 110 is disposed inside the suction port 115. Bristles 116a are planted along a periphery of the rotating brush 116 in a spiral direction.

Referring to FIG. 4, the brush body 110 includes a turbine fan 117 that rotates the rotating brush 116 by applying a rotating force to the rotating brush 116. The turbine fan 117 is connected to the rotating brush 116 through a belt 117a, and the belt 117a transfers the rotating force of the turbine fan 117 to the rotating brush 116.

An opening 118 is formed on the bottom surface of the brush body 110. The opening 118 is disposed approximately parallel to a front portion of the suction port 115 at a predetermined interval, and the length of the opening 118 is approximately equal to the length of the suction port 115. A rotating drum 155 to which the pet hair removal unit 150 is attached is mounted in the opening 118.

The brush cover 130 is mounted on the brush body 110 to cover a top portion of the brush body 110. The brush cover 130 has a space 131 at a front portion so that the rotating drum 155 whirls therein. A plurality of air inlets 133 are formed on a part of the brush cover 130 corresponding to a position of the turbine fan 117. Air outside the brush assembly 100 flows into the brush assembly 100 through the plurality of air inlets 133, and drives the turbine fan 117.

Referring to FIGS. 3 to 5, when the brush assembly 100 moves forward, that is, in a direction indicated by arrow F (referred to FIG. 4), and moves backward, that is, in a direction indicated by arrow B (referred to FIG. 5), the pet hair removal unit 150 removes dirt or dust such as pet hair from a surface being cleaned 50 while rotating with respect to the brush body 110 and contacting the surface being cleaned 50 alternately.

The pet hair removal unit 150 includes first and second pet hair removal members 151, 153. The first pet hair removal member 151 is attached to a periphery of the rotating drum 155 corresponding to the forward direction (the direction indicated by arrow F) of the brush assembly 100, and the second pet hair removal member 153 is attached to a periphery of the rotating drum 155 corresponding to the backward direction (the direction indicated by arrow B) of the brush assembly 100. The length of the first and second pet hair removal members 151, 153 may be equal to or shorter than the length of the rotating drum 155.

The first and second pet hair removal members 151, 153 include directional bristles 151a, 153a, respectively, and the bristles 151a, 153a are inclined in an opposite direction to each other. That is, the bristles 151a of the first pet hair removal member 151 are inclined in the backward direction (the direction indicated by arrow B) of the brush assembly 110, and the bristles 153a of the second pet hair removal member 153 are inclined in the forward direction (the direction indicated by arrow F) of the brush assembly 110. Accordingly, if a user moves the brush assembly 100 forward (the direction indicated by arrow F), the bristles 151a of the first pet hair removal member 151 may ride off dirt or dust such as pet hair from the surface being cleaned 50, and if a user moves the brush assembly 100 backward (the direction indicated by arrow B), the bristles 153a of the second pet hair removal member 153 may ride off dirt or dust such as pet hair from the surface being cleaned 50.

Hinge protrusions 155b, 155c that are formed on both ends of the rotating drum 155 are rotatably hinged with a part inside the brush body 110. The rotating drum 155 is configured so that at least one side is cut, and thus the side surface is formed in a semicircular shape. A periphery 155a of the rotating drum 155 is disposed to be opposed to the surface being cleaned 50 so that the first and second pet hair removal members 151, 153 attached to the periphery 155a of the rotating drum 155 contact the surface 50 through the opening 118 and clean the surface being cleaned 50.

A rotation leading member 156 is mounted on the center of the periphery 155a of the rotating drum 155 in a lengthwise direction of the rotating drum 155.

When the brush assembly 100 moves forward (the direction indicated by arrow F) and backward (the direction indicated by arrow B), the rotation leading member 156 whirls the rotating drum 155 in a direction opposite the direction in which the brush assembly 100 moves while a bottom
The first and second pet hair removal members 151, 153 that rotate along with the rotating drum 155 remove dirt or dust such as pet hair from the surface being cleaned 50 by contacting the surface being cleaned 50 alternately. In this situation, at least part of the dirt or dust stuck to the first and second pet hair removal members 151, 153 is drawn into the suction port 115 by a suction force.

A first duster 157 is disposed on a portion inside the brush cover 130, and a second duster 159 is disposed on a portion of the brush body 110. The first and second dusters 157, 159 remove dirt or dust off the corresponding first and second pet hair removal members 151, 153 respectively, when the rotating drum 155 rotates in a direction or in an opposite direction.

At least part of the dirt or dust detached from the first and second pet hair removal members 151, 153 is drawn into the extension pipe assembly 40 through an inflow passage 135 connecting the space 131, the rotating brush 116, and the turbine fan 117 by a suction force, and then finally enters the dust separating unit (not shown) mounted on the cleaner body 10.

The operation of the brush assembly 100 according to an exemplary embodiment of the present disclosure will be explained with reference to FIGS. 4 and 5.

The turbine fan 117 is rotated by air flowing through the plurality of air inlets 133 when the vacuum cleaner operates, and the rotating force generated by the turbine fan 117 is transferred to the rotating brush 116 through the belt 117a. The rotating brush 116 takes off dirt or dust from the surface being cleaned 50 while rotating, and the dirt or dust flows into the suction port 115.

If a user touches the brush assembly 100 forward (the direction indicated by arrow F) as shown in FIG. 4, the rotating drum 155 rotates with respect to the hinge protrusions 155a, 155b at a predetermined angle in the backward direction (the direction indicated by arrow B) of the brush assembly 100 while the bottom end 156a of the rotating leading unit 156 rubs the surface being cleaned 50.

The first pet hair removal member 151 is disposed to be opposed to a surface along with the rotating drum 155, and the bristles 151a of the first pet hair removal member 151 are entangled with dirt or dust such as pet hair on the surface being cleaned 50 while the brush assembly 100 moves forward (the direction indicated by arrow F), and then remove the dirt or dust such as pet hair from the surface being cleaned 50.

If a user moves the brush assembly 100 backward (the direction indicated by arrow B) as shown in FIG. 5, the bottom end 156a of the rotating leading unit 156 rubs the surface being cleaned 50, and the rotating drum 155 rotates with respect to the hinge protrusions 155a, 155b at a predetermined angle in the forward direction (the direction indicated by arrow F) of the brush assembly 100.

Accordingly, the first pet hair removal member 151 moves into the brush assembly 100 along with the rotating drum 155, and when the first pet hair removal member 151 contacts the first duster 157, the bristles 151a of the first duster 157 cause dirt or dust such as pet hair to be removed from the bristles 151a of the first pet hair removal member 151. A part of the dirt or dust such as pet hair removed from the first pet hair removal member 151 is remained on the first duster 157, and the other part is drawn into the extension pipe assembly 40 through the inflow passage 135.

The second pet hair removal member 153 is disposed to be opposed to a surface along with the rotating drum 155, and the dirt or dust such as pet hair is entangled with the bristles 153a of the second pet hair removal member 153 while the brush assembly 100 moves backward (the direction indicated by arrow B). By doing so, the second pet hair removal member 153 may remove dirt or dust such as pet hair from the surface being cleaned 50.

The dirt or dust such as pet hair stuck to the second pet hair removal member 153 flows into the brush assembly 100 along with the rotating drum 155 while the brush assembly 100 moves again forward (the direction indicated by arrow F), and when the second pet hair removal member 153 contacts the second duster 159, the bristles 153a of the second duster 159 cause the dirt or dust such as pet hair to be removed from the bristles 153a of the second pet hair removal member 153. A part of the dirt or dust such as pet hair removed from the second pet hair removal member 153 is remained on the second duster 159, and the other part is drawn into the extension pipe assembly 40 through the inflow passage 135.

The brush assembly 100 according to the exemplary embodiment of the present disclosure may efficiently remove dirt or dust such as pet hair from the surface being cleaned 50 using the pet hair removal unit 150 as the brush assembly 100 moves forward and backward in an alternate manner. In addition, the first and second dusters 157, 159 removes all dirt or dust such as pet hair from the pet hair removal unit 150 before contacting the surface being cleaned 50, and thus the first and second dusters 157, 159 are always clean when contacting the surface being cleaned 50. Therefore, cleaning efficiency is enhanced.

When the brush assembly 100 moves backward, the pet hair removal unit 150 removes dirt or dust such as pet hair from the surface being cleaned 50, and transfers at least part of the dirt or dust such as pet hair to the suction port 115 at the same time. Accordingly, when the brush assembly 100 moves forward, the dirt or dust may be drawn into the suction port 115.

The foregoing exemplary embodiments and advantages are merely exemplary and are not to be construed as limiting the present disclosure. The present teaching can be readily applied to other types of apparatuses. Also, the description of the exemplary embodiments of the present disclosure is intended to be illustrative, and not to limit the scope of the claims, and many alternatives, modifications, and variations will be apparent to those skilled in the art.

What is claimed is:

1. A brush assembly of a vacuum cleaner, which includes a brush body, a brush cover mounted on the brush body, a suction port formed on the brush body, and a pet hair removal unit, wherein:

   the pet hair removal unit includes at least two pet hair removal members that are disposed apart from each other; and

   the at least two pet hair removal members rotate with respect to the brush body when the brush assembly moves forward and backward, alternately contacting a surface being cleaned, thereby removing fibrous dirt or dust from the surface being cleaned.

2. The brush assembly as claimed in claim 1, wherein the pet hair removal unit transfers at least part of the dirt or dust such as pet hair removed from the surface being cleaned to the suction port when the brush assembly moves forward and backward.
3. The brush assembly as claimed in claim 1, further comprising a rotating drum that is rotatably mounted on the brush body, and of which at least one side is cut.

4. The brush assembly as claimed in claim 3, wherein the at least two pet hair removal members are mounted on both sides of the rotating drum, and rotate along with the rotating drum.

5. The brush assembly as claimed in claim 4, wherein the at least two pet hair removal members include directional bristles.

6. The brush assembly as claimed in claim 5, wherein the bristles are inclined in an opposite direction against a horizon.

7. The brush assembly as claimed in claim 4, further comprising at least two dusters that remove the dirt or dust such as pet hair off the at least two pet hair removal members, wherein the at least two dusters include bristles that are inclined in an opposite direction to each other.

8. The brush assembly as claimed in claim 7, wherein the at least two dusters are mounted on the brush body and the brush cover.

9. The brush assembly as claimed in claim 4, wherein the rotating drum includes a rotation leading member, and the rotation leading member contacts the surface being cleaned, and rotates the rotating drum when the brush assembly moves forward and backward.

10. The brush assembly as claimed in claim 1, further comprising a rotating brush that is mounted on the brush assembly adjacent to the suction port.

11. The brush assembly as claimed in claim 10, further comprising:
   a turbine fan that rotates the rotating brush,
   wherein the brush cover comprises a plurality of air inlets formed thereon, and
   wherein external air flows into the brush assembly through the plurality of air inlets, and drives the turbine fan.

12. A brush assembly of a vacuum cleaner, comprising:
    a brush body on which a suction port is formed;
    a brush cover that is mounted on the brush body;
    a rotating drum that is rotatably mounted on the brush body or the brush cover, and of which at least part is cut;
    a pet hair removal member that is mounted on the rotating drum; and
    a duster that remove dirt or dust such as pet hair off the pet hair removal member.

13. The brush assembly as claimed in claim 12, wherein the duster is mounted on the brush body.

14. The brush assembly as claimed in claim 12, wherein the rotating drum comprises a side surface formed in an approximate semicircular shape.

15. The brush assembly as claimed in claim 12, wherein the pet hair removal member and the duster include directional bristles.

16. A brush assembly of a vacuum cleaner, comprising:
    a brush body;
    a brush cover mounted on the brush body;
    a suction port formed on the bottom surface of the brush body;
    an opening is formed on the bottom surface of the brush body, the opening being approximately parallel to a front portion of the suction port;
    a rotating drum rotatably mounted in the opening;
    a rotation leading member mounted on a periphery of the rotating drum;
    a first pet hair removal member on the periphery of the rotating drum on a first side of the rotation leading member; and
    a second pet hair removal member on the periphery of the rotating drum on a second side of the rotation leading member, wherein the rotating drum rotates with respect to the brush body when the brush assembly moves forward and backward so that the first and second pet hair removal members alternately contact a surface being cleaned, thereby removing fibrous dirt or dust from the surface.

17. The brush assembly as claimed in claim 16, wherein the first and second pet hair removal members each include directional bristles that are inclined in opposite directions to each other.

18. The brush assembly as claimed in claim 17, further comprising a first duster that removes the fibrous dirt or dust from the first pet hair removal member and a second duster that removes the fibrous dirt or dust from the second pet hair removal member.

19. The brush assembly as claimed in claim 18, wherein the first duster includes directional bristles that are inclined in a direction opposite to the directional bristles of the first pet hair removal member and the second duster includes directional bristles that are inclined in a direction opposite to the directional bristles of the second pet hair removal member.

20. The brush assembly as claimed in claim 18, wherein the first and second dusters are mounted on the brush body or the brush cover.

* * * * *