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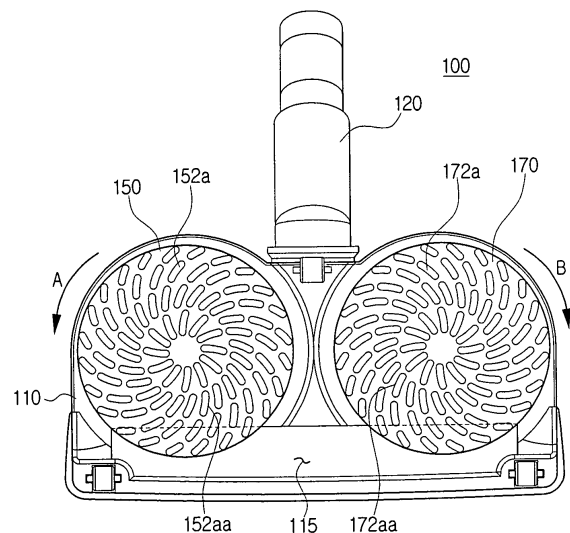
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(54) **Suction brush assembly**

(57) A suction brush assembly (100) is provided that includes a suction brush casing (110) having a dust introducing channel (115/215) for introducing dirt and a suction port (116) for drawing the dirt from the dust introducing channel (115/215); a first and a second rotation plate (150,170) rotatably disposed on a bottom surface of the suction brush casing (110) and rotating in the opposite direction (A,B) to each other, a rotation power source (130) for providing power for rotating the rotation plates (150,170); a power transmission (190) transmitting the rotation power of the rotation power source (130) to the rotation plates (150,170); and a dirt guidance member formed on the first and the second rotation plate (150,170), for scraping off hairs or feathers from a surface to be cleaned and to guide them to the dust introducing channel (115/215) so that the hairs or the feathers can be easily guided to the suction port (116).

FIG. 2



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present disclosure relates to suction brush assembly, and more particularly, to a suction brush assembly for efficiently removing hairs or dirt spread on a surface to be cleaned.

2. Description of the Related Art

[0002] Generally, a suction brush assembly is for use in an upright type or canister type vacuum cleaner and a general vacuum cleaner performs a cleaning action by drawing dirt laden air on a surface to be cleaned through a suction port formed in a suction brush assembly in a state that the suction brush assembly is in contact with the surface to be cleaned, introducing the dirt laden air into the body of the vacuum cleaner, then collecting dirt using a collecting apparatus which is built in the cleaner body and discharging cleaned air to outside.

[0003] The suction brush assembly, however, has a limitation to efficiently draw feathers of an animal or hairs which are spread on a surface to be cleaned and, particularly in a case that the surface to be cleaned is a carpet, has the more limitation to efficiently draw feathers of an animal or hairs which are get tangled on the carpet.

SUMMARY OF THE INVENTION

[0004] The present disclosure has been developed in order to overcome the above drawbacks and other problems associated with the conventional arrangement. An aspect of the present disclosure is to provide a suction brush assembly capable of easily removing dirt such as hairs or feathers of an animal from a surface to be cleaned so as to maximize a cleaning efficiency.

[0005] The above aspect and/or other feature of the present disclosure can substantially be achieved by providing a suction brush assembly, which comprises a suction brush casing provided with a dust introducing channel for introducing dirt from a surface to be cleaned and a suction port for drawing the dirt from the dust introducing channel; a first and a second rotation plates rotatably disposed on a bottom surface of the suction brush casing and rotating in the opposite direction to each other; a rotation power source for providing power for rotating the first and the second rotation plates; a power transmission transmitting the rotation power of the rotation power source to the first and the second rotation plates; and a dirt guidance member formed on the first and the second rotation plates, for scraping off hairs or feathers from the surface to be cleaned to guide them to the dust introducing channel so that the hairs or the feathers can be easily guided to the suction port.

[0006] The dirt guidance member may comprise a plu-

rality of projection ribs arranged in spaces along a helical shape which runs from a center of the first and the second rotation plates to outside, and a rotation direction of the first rotation plate and the direction that the projection ribs are arranged in a helical shape from the center of the first rotation plate to outside are opposite to each other and a rotation direction of the second rotation plate and the direction that the projection ribs are arranged in a helical shape from the center of the second rotation plate to outside are opposite to each other.

[0007] The dust introducing channel may be formed at a front of the suction brush casing along a longitudinal direction of the suction brush casing.

[0008] The dust introducing channel may be formed in a shape which surrounds some front portion of the first and the second rotation plates disposed on the bottom surface of the suction brush casing.

[0009] The dirt guidance member may comprise a plurality of rod members having a projected side end and arranged in spaces along a helical shape which runs from a center of the first and the second rotation plates to outside, and a rotation direction of the first rotation plate and the direction that the rod members are arranged in a helical shape from the center of the first rotation plate to outside are opposite to each other, and a rotation direction of the second rotation plate and the direction that the rod members are arranged in a helical shape from the center of the second rotation plate to outside are opposite to each other.

[0010] The dirt guidance member may comprise a plurality of loop members arranged in a spaces along a helical shape which runs from a center of the first and the second rotation plates to outside, and a rotation direction of the first rotation plate and the direction that the loop members are arranged in a helical shape from the center of the first rotation plate to outside are opposite to each other and a rotation direction of the second rotation plate and the direction that the loop members are arranged in a helical shape from the center of the second rotation plate to outside are opposite to each other.

[0011] The dirt guidance member may comprise a plurality of fibers planted along a helical shape which runs from a center of the first and the second rotation plates to outside, and a rotation direction of the first rotation plate and the direction that the fibers are planted in a helical shape from the center of the first rotation plate to outside are opposite to each other and a rotation direction of the second rotation plate and the direction that the fibers are planted in a helical shape from the center of the second rotation plate to outside are opposite to each other.

[0012] The dirt guidance member may be made of rubber.

[0013] Additional aspects of the present disclosure will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the present disclosure.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Above and other aspects of the present disclosure will become apparent and more readily appreciated from the following description of the exemplary embodiments, taken in conjunction with the accompanying drawings of which:

[0015] FIG. 1 is a view illustrating a suction brush assembly according to an exemplary embodiment of the present disclosure;

[0016] FIG. 2 is a bottom view illustrating the suction brush assembly of FIG. 1;

[0017] FIG. 3 is a view illustrating an inside of a suction brush casing of FIG. 1, in which some upper portion of the suction brush casing is removed;

[0018] FIGS. 4 is a view illustrating a suction port having another shape than the exemplary embodiment of FIG. 1;

[0019] FIG. 5 is a view illustrating a first rotation plate of FIG. 2;

[0020] FIG. 6 is a view illustrating an alternate exemplary embodiment of the first rotation plate of FIG. 1;

[0021] FIG. 7 is a view illustrating another alternate exemplary embodiment of the first rotation plate of FIG. 1;

[0022] FIG. 8 is a view illustrating another alternate exemplary embodiment of the first rotation plate of FIG. 1; and

[0023] FIG. 9 is a view illustrating another alternate exemplary embodiment of the first rotation plate of FIG. 1.

DETAILED DESCRIPTION OF THE EXEMPLARY EMBODIMENTS

[0024] Certain exemplary embodiments of the present disclosure will be described in greater detail with reference to the accompanying drawings.

[0025] The matters defined in the description, such as a detailed construction and elements thereof, are provided to assist in a comprehensive understanding of the present disclosure. Thus, it is apparent that the present disclosure may be carried out without those defined matters. Also, well-known functions or constructions are omitted to provide a clear and concise description of exemplary embodiments of the present disclosure.

[0026] A suction brush assembly 100 according to the exemplary embodiment of the present disclosure is for collecting and drawing dust from a surface to be cleaned and hairs or feathers of an animal spread on the surface to be cleaned (hereinafter, referred to as dirt), and a rear stream side of the suction brush assembly 100 is connected through an extension flow path (not illustrated) to a body of a vacuum cleaner (not illustrated) in which a vacuum motor (not illustrated) and a collecting apparatus (not illustrated) are built. Meanwhile, in the present disclosure, the suction brush assembly 100 is explained in use in a canister type vacuum cleaner but it can be appreciated that the suction brush assembly 100 may be used in an upright type vacuum cleaner.

[0027] Referring to FIGS. 1 to 3, the suction brush assembly 100 comprises a suction brush casing 110, a turbine fan 130, a first rotation plate 150, a second rotation plate 170, a power transmission 190.

[0028] An extension pipe connector 120 for connection to an extension flow path (not illustrated) is formed at a rear side of the suction brush casing 110, a rectangular dust introducing channel 115 is formed in a longitudinal direction at a front side of the suction brush casing 110 so as to be stepped to a bottom surface of the suction brush casing 110, and a suction port 116 (see FIG. 3) for drawing the dirt introduced to the dust introducing channel 115. In this case, the dirt introduced through the dust introducing channel 115 is moved through the suction port 116 and an inside of the suction brush casing 110 to the extension connector 120 and then introduced to the extension flow path (not illustrated).

[0029] The turbine fan 130 is used as a rotation power source for providing a rotation power for rotating the first and second rotation plates 150 and 170 and, for this end, is rotatably disposed at a rear side of the suction brush casing 110. In addition, the turbine fan 130 is formed with a plurality of turbine blades 130a and rotates as air drawn from the suction port 116 collides with the turbine blade 130a.

[0030] The first and the second rotation plates 150 and 170 are rotatably installed at a rear side lower portion of the suction brush casing 110 and are for scraping off hairs or feathers of an animal spread on a surface to be cleaned and easily guiding it into the suction port 116.

[0031] Referring to FIGS. 2 and 5, the first and the second rotation plates 150 and 170 are provided with a guidance member so as to scrape off hairs or feathers of an animal spread on a surface to be cleaned and easily guide it into the suction port 116. The guidance member is formed with a plurality of projection ribs 152a and 172a having a predetermined thickness. In addition, the projection ribs 152a and 172a are made of rubber. The plurality of the projection ribs 152a and 172a are arranged in predetermined spaces in a helical shape which runs from a center of the first and the second rotation plates 150 and 170 to outside, so as to scrape off hairs or feathers of an animal spread on a surface to be cleaned. In other words, the projection ribs 152a and 172a are arranged in a swirl shape on a bottom surface of the first and the second rotation plates 150 and 170. At this time, helical shapes of the opposite direction to each other should be formed on the first and the second rotation plates 150 and 170. Referring to FIG. 2, the projection ribs 152a should be arranged to form a helical shape which runs in a clockwise direction from the center of the first rotation plate 150 to outside and the projection ribs 172a should be arranged to form a helical shape which runs in a counterclockwise direction from the center of the second rotation plate 170 to outside.

[0032] Meanwhile, the dirt guidance member, illustrated in FIG. 5, has the projection ribs 152a and 172a having

the predetermined thickness in the exemplary embodiment, however, the dirt guidance member, illustrated in FIG. 6, may have the projection ribs 152a and projection ribs 152b which are multi-layered so as to have the same thickness as the projection ribs 152a of the exemplary embodiment, in which the projection ribs 152a and 152b are arranged alternately to form a helical shape.

[0033] In addition, as the dirt guidance member, the projection ribs 152a and 172a are formed on the first and the second rotation plate 150 and 170 so as to scrape off a hair or a feather of an animal spread on a surface to be cleaned and guide it to the suction port 116, however a plurality of cylindrical rod members 152c of which end is projected may be arranged on the first rotation plate 150 to form a helical shape which runs in a clockwise direction from the center of the first rotation plate 150 to outside and, in this case, cylindrical rod members are also arranged on the second rotation plate 170 to form a helical shape of the opposite direction to the rod members 152c arranged on the first rotation plate 150. At this time, the rod members can scrape off more deeply stuck hair or feather of an animal compared to the projection ribs 152a and 172a in the exemplary embodiment.

[0034] In addition, illustrated in FIG. 8, a plurality of loop shaped members 152d may be arranged on the first rotation plate 150 to form a helical shape which runs in a clockwise direction from the center of the first rotation plate 150 to outside, and in this case loop members are also arranged on the second rotation plate 170 to form a helical shape of the opposite direction to the loop members 152d arranged on the first rotation plate 150.

[0035] In addition, in this exemplary embodiment, the projection ribs 152a and 172a made of rubber are arranged in a helical shape on the first and the second rotation plates 150 and 170 so as to scrape off hairs or feathers of an animal spread on a surface to be cleaned to push them to the dust introducing channel 115, however, illustrated in FIG. 9, a plurality of fibers 152e may be planted on the first rotation plate 150 to form a helical shape from the center of the first rotation plate 150 to outside and, in this case, a plurality of fibers also may be planted on the second rotation plate 170 to form a helical shape of the opposite direction of the fibers 152e planted on the first rotation plate 150. At this time, various kinds of fibers may be used as the fibers 152e.

[0036] The power transmission 190 is for transmitting power generated by the turbine fan 130 to the first and the second rotation plates 150 and 170 and comprises a first and a second rotation shaft 155 and 175, a worm 137 and worm wheels 157 and 177.

[0037] The first rotation shaft 155 (see FIG. 3) is secured to the center of the first rotation plate 150 and disposed rotatably in a side of an inside of the suction brush casing 110. The second rotation shaft 175 (see FIG. 3) is secured to the center of the second rotation plate 170 and disposed rotatably in the other side of the inside of the suction brush casing 110. The worm 137 extends to right and left directions on the same axis as the turbine

fan 130. The worm wheels 157 and 177 are formed on upper portions of the first and the second rotation shafts 155 and 175 so as to correspond to the worm 137. However, unlike the exemplary embodiment, power may be transmitted by various means from the turbine fan 130 to the first and the second rotation shafts 155 and 175. In addition, the turbine fan 130 is used to generate the power from the introduced air in this exemplary embodiment, but a separate motor may be used instead of the turbine fan 130 to supply power to the first and the second rotation plates 150 and 170.

[0038] Meanwhile, the dust introducing channel 115 is formed in a longitudinal direction at a front of the bottom surface of the suction brush casing 110 in the suction brush assembly 100 according to the exemplary embodiment of the present disclosure, but, illustrated in FIG. 4, the dust introducing channel 215 may be formed so as to surround some front portion of the first and the second rotation plates 150 and 170. In this case, an amount of dirt introduced to the suction port 116 is increased and thus a cleaning efficiency can be increased as feathers of an animal or hairs collected by rotation of the first and the second rotation plates 150 and 170 can be more easily introduced to the dust introducing channel 215.

[0039] In addition, the first rotation plate 150 rotates in a counterclockwise direction, the projection ribs 152a formed on the first rotation plate 150 are arranged to form a helical shape which runs a clockwise direction from the center of the first rotation plate 150, the second rotation plate 170 rotates in a clockwise direction, and the projection ribs 172a formed on the second rotation plate 170 are arranged to form a helical shape which runs a counterclockwise direction from the center of the second rotation plate 170 in the present disclosure; but the projection ribs formed on the first rotation plate 150 may be arranged to form a helical shape which runs a counterclockwise direction from the center of the first rotation plate 150 and the projection ribs formed on the second rotation plate 170 may be arranged to form a helical shape which runs a clockwise direction from the center of the second rotation plate 170 in the case that the first rotation plate 150 rotates in a clockwise direction and the second rotation plate 170 rotates in a counterclockwise direction.

[0040] An operation of the suction brush assembly 100 according to an exemplary embodiment of the present disclosure will be described hereinafter.

[0041] If a suction motor (not illustrated) which is built in the cleaner body (not illustrated) operates, a suction power is generated in the dust introducing channel 115 and the suction port 116 to draw outside dirt laden air on a surface to be cleaned and the drawn outside air collides with the turbine blades 130a formed in the turbine fan 130 to rotate the turbine fan 130. If the turbine fan rotates, the worm 137 formed on the same axis as the turbine fan 130 rotate to transmit power to the worm wheels 157 and 177. The power transmitted to the worm wheels 157 and 177 rotates the first and the second rotation shafts

155 and 175 which are formed integrally with the worm wheels 157 and 177 respectively and thus the first and the second rotation plates 150 and 170, which are secured to the first and the second rotation shafts 155 and 175, rotate respectively.

[0042] In this case, illustrated in FIG. 2, the first rotation plate 150 rotates in A direction or a counterclockwise direction and the second rotation plate 170 rotates in B direction or a clockwise direction. With the rotation of the first and the second rotation plates 150 and 170, the projection ribs 152a and 172a formed on the first and the second rotation plates 150 and 170 scrape hairs or feathers of an animal spread on a surface to be cleaned (a carpet) to separate them from the bottom surface. At this time, because the projection ribs 152a on the first rotation plate 150 are arranged to form a helical shape which runs a clockwise direction from the center of the first rotation plate 150 and the first rotation plate 150 rotates in a counterclockwise direction, if the first rotation plate 150 rotates in a counterclockwise direction, the projection ribs 152a scrape dirt on a bottom surface and the dirt separated from the bottom surface which is covered by the first rotation plate 150 are subject to a force which moves the dirt to outside of the first rotation plate 150 along an outside surface 152aa of the projection ribs 152a by centrifugal force. After then, the dirt pushed to an outside of the first rotation plate 150 are introduced to the dust introducing channel 115 formed at a front of the suction brush casing 110 and then introduced through the suction port 116 and the extension flow path (not illustrated) into the collecting apparatus (not illustrated) in the cleaner body (not illustrated).

[0043] In addition, because the projection ribs 172a on the second rotation plate 170 are arranged to form a helical shape which runs a counterclockwise direction from the center of the second rotation plate 170 and the second rotation plate 170 rotates in a clockwise direction, if the second rotation plate 170 rotates in a clockwise direction, the projection ribs 172a scrape dirt on a bottom surface and the dirt separated from the bottom surface which is covered by the second rotation plate 170 are subject to a force which moves the dirt to outside of the second rotation plate 170 along an outside surface 172aa of the projection ribs 172a by centrifugal force. After then, the dirt pushed to an outside of the second rotation plate 170 are introduced to the dust introducing channel 115 formed at a front of the suction brush casing 110 and then introduced through the suction port 116 and the extension flow path (not illustrated) into the collecting apparatus (not illustrated) in the cleaner body (not illustrated).

[0044] According to the above described suction brush assembly, a cleaning efficiency can be increased as capable of removing more easily hairs or feathers of an animal because it is possible to scrape the hairs or feathers of an animal spread on a surface to be cleaned by the dirt guidance member to guide them to the dust introducing channel and then introduce them into the suc-

tion port 116.

[0045] Although a few exemplary embodiments of the present disclosure have been shown and described, it will be appreciated by those skilled in the art that changes may be made in these exemplary embodiments without departing from the principles and spirit of the present disclosure, the scope of which is defined in the appended claims and their equivalents.

Claims

1. A suction brush assembly, comprising:

a suction brush casing provided with a dust introducing channel for introducing dirt on a surface to be cleaned and a suction port for drawing the dirt from the dust introducing channel;
a first and a second rotation plate rotatably disposed on a bottom surface of the suction brush casing and rotating in the opposite direction to each other;
a rotation power source for providing power for rotating the first and the second rotation plates;
a power transmission transmitting the rotation power of the rotation power source to the first and the second rotation plates; and
a dirt guidance member formed on the first and the second rotation plates, for scraping off hairs or feathers of an animal spread on a surface to be cleaned to guide them to the dust introducing channel so that the hairs or the feathers can be easily guided to the suction port.

2. The suction brush assembly of claim 1, wherein the dirt guidance member comprises a plurality of projection ribs arranged in spaces along a helical shape which runs from a center of the first and the second rotation plates to an outside of the first and the second rotation plates, respectively,
a rotation direction of the first rotation plate and a direction that the projection ribs are arranged on the first rotation plate are opposite to each other, and
a rotation direction of the second rotation plate and a direction that the projection ribs are arranged on the second rotation plate are opposite to each other.

3. The suction brush assembly of any of claims 1 and 2, wherein the dust introducing channel is formed at a front of the suction brush casing along a longitudinal direction of the suction brush casing.

4. The suction brush assembly of any of claims 1 and 2, wherein the dust introducing channel is formed in a shape which surrounds some front portion of the first and the second rotation plates disposed on the bottom surface of the suction brush casing.

5. The suction brush assembly of any of claims 1 to 4, wherein the dirt guidance member comprises a plurality of rod members having a projected side end and arranged in spaces along a helical shape which runs from a center of the first and the second rotation plates to an outside of the first and the second rotation plates, respectively, a rotation direction of the first rotation plate and a direction that the rod members are arranged in the helical shape on the first rotation plate are opposite to each other, and a rotation direction of the second rotation plate and a direction that the rod members are arranged in the helical shape on the second rotation plate are opposite to each other. 5
6. The suction brush assembly of any of claims 1 to 5, wherein the dirt guidance member comprises a plurality of loop members arranged in a spaces along a helical shape which runs from a center of the first and the second rotation plates to an outside of the first and the second rotation plates, respectively, a rotation direction of the first rotation plate and a direction that the loop members are arranged in the helical shape on the first rotation plate are opposite to each other, and a rotation direction of the second rotation plate and a direction that the loop members are arranged in the helical shape on the second rotation plate are opposite to each other. 10 15 20 25 30
7. The suction brush assembly of any of claims 1 to 6, wherein the dirt guidance member comprises a plurality of fibers planted along a helical shape which runs from a center of the first and the second rotation plates to an outside of the first and the second rotation plates, respectively, a rotation direction of the first rotation plate and a direction that the plurality of fibers are planted in the helical shape on the first rotation plate are opposite to each other, and a rotation direction of the second rotation plate and a direction that the plurality of fibers are planted in the helical shape on the second rotation plate are opposite to each other. 35 40 45
8. The suction brush assembly of any of claims 1 to 7, wherein the dirt guidance member is made of rubber.
9. A suction brush assembly, comprising: 50
 - a suction brush casing having a dust introducing channel and a suction port;
 - a first rotation plate disposed on a bottom surface of the suction brush casing for rotation in a first rotation direction;
 - a second rotation plate disposed on the bottom surface for rotation in a second rotation direc-
- tion, the first and second rotation directions being opposite one another other;
- a rotation power source generating a rotation power;
- a power transmission transmitting the rotation power to the first and the second rotation plates in the first and second rotation directions, respectively;
- a first dirt guidance member on the first rotation plate, the first dirt guidance member being configured to scrape hair or feathers from a surface to be cleaned and to guide the hair or feathers to the dust introducing channel, the suction port drawing the hair or feathers from the dust introducing channel; and
- a second dirt guidance member on the second rotation plate, the second dirt guidance member being configured to scrape hair or feathers from the surface to be cleaned and to guide the hair or feathers to the dust introducing channel.
10. The suction brush assembly of claim 9, wherein the first dirt guidance member comprises a first helical shape which runs in a first helical direction from a center of the first rotation plate to an outside of the first rotation plate and the second dirt guidance member comprises a second helical shape which runs in a second helical direction from a center of the second rotation plate to an outside of the second rotation plate.
11. The suction brush assembly of claim 10, wherein the first helical direction and the first rotation direction are opposite one another and the second helical direction and the second rotation direction are opposite one another.
12. The suction brush assembly of any of claims 10 and 11, wherein the first dirt guidance member and/or the second dirt guidance member comprises a plurality of projection ribs.
13. The suction brush assembly of any of claims 10 to 12, wherein the first dirt guidance member and/or the second dirt guidance member comprises a plurality of rod members having a projected side end and arranged in spaces along the helical shape.
14. The suction brush assembly of any of claims 10 to 13, wherein the first dirt guidance member and/or the second dirt guidance member comprises a plurality of loop members arranged in spaces along the helical shape.
15. The suction brush assembly of any of claims 10 to 14, wherein the first dirt guidance member and/or the second dirt guidance member comprises a plurality of fibers arranged in spaces along the helical

shape.

- 16.** The suction brush assembly of any of claims 9 to 15,
wherein the dust introducing channel is formed at a
front of the suction brush casing along a longitudinal 5
direction of the suction brush casing.
- 17.** The suction brush assembly of any of claims 9 to 16,
wherein the dust introducing channel is formed in a
shape which surrounds some front portion of the first 10
and the second rotation plates disposed on the bot-
tom surface of the suction brush casing.
- 18.** The suction brush assembly of any of claims 9 to 17,
wherein the first dirt guidance member and/or the 15
second dirt guidance member is made of rubber.

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FIG. 1

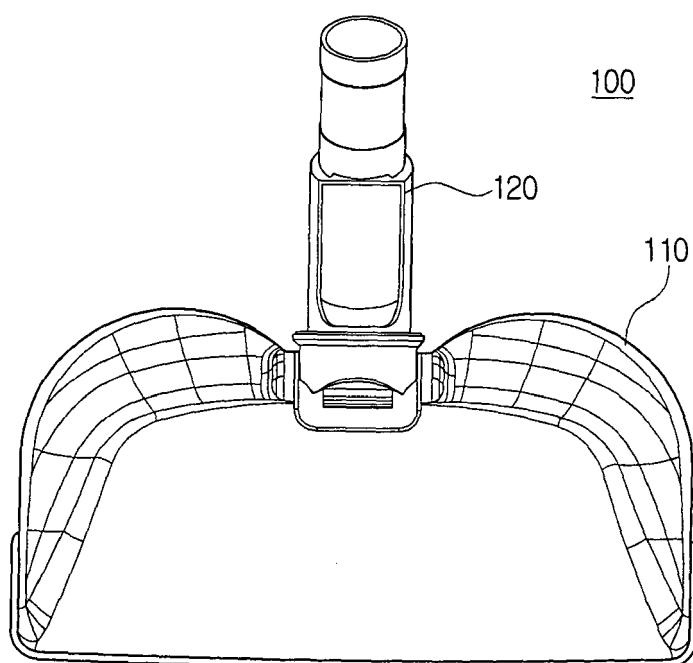


FIG. 2

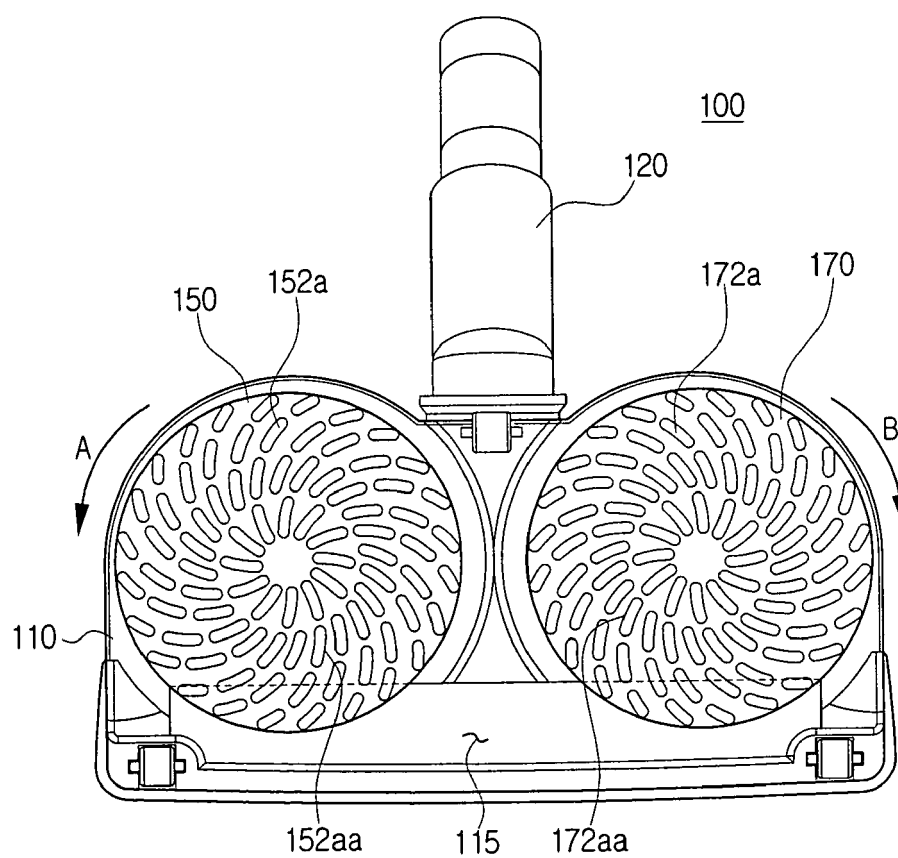


FIG. 3

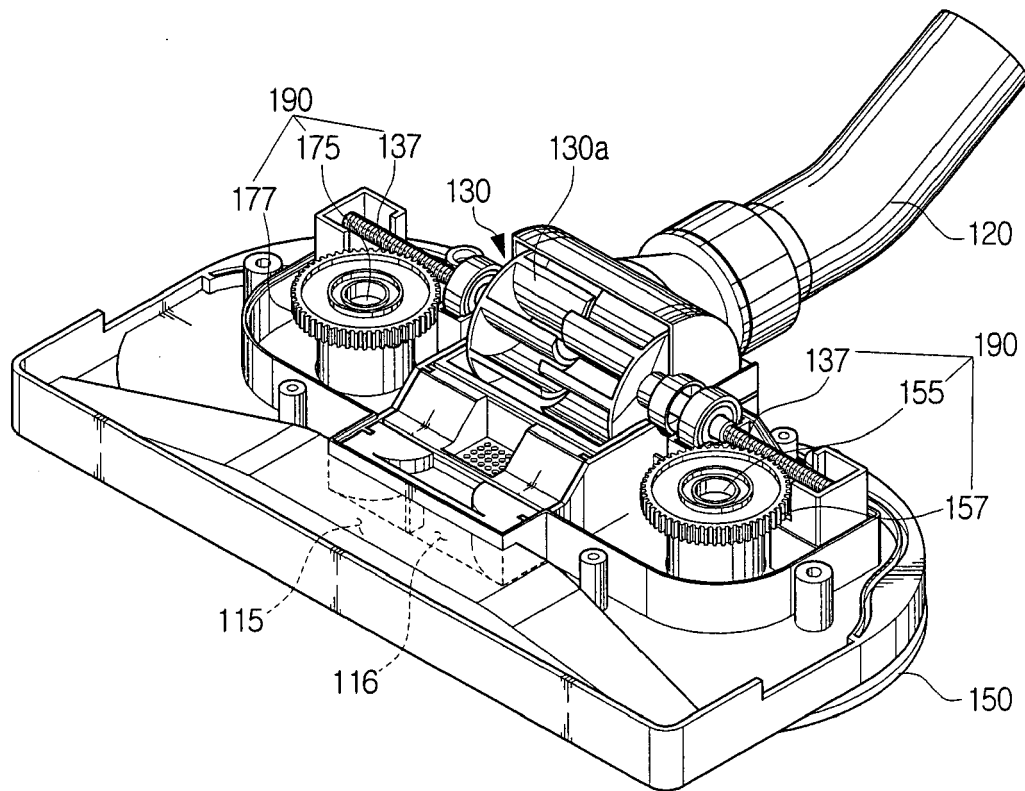


FIG. 4

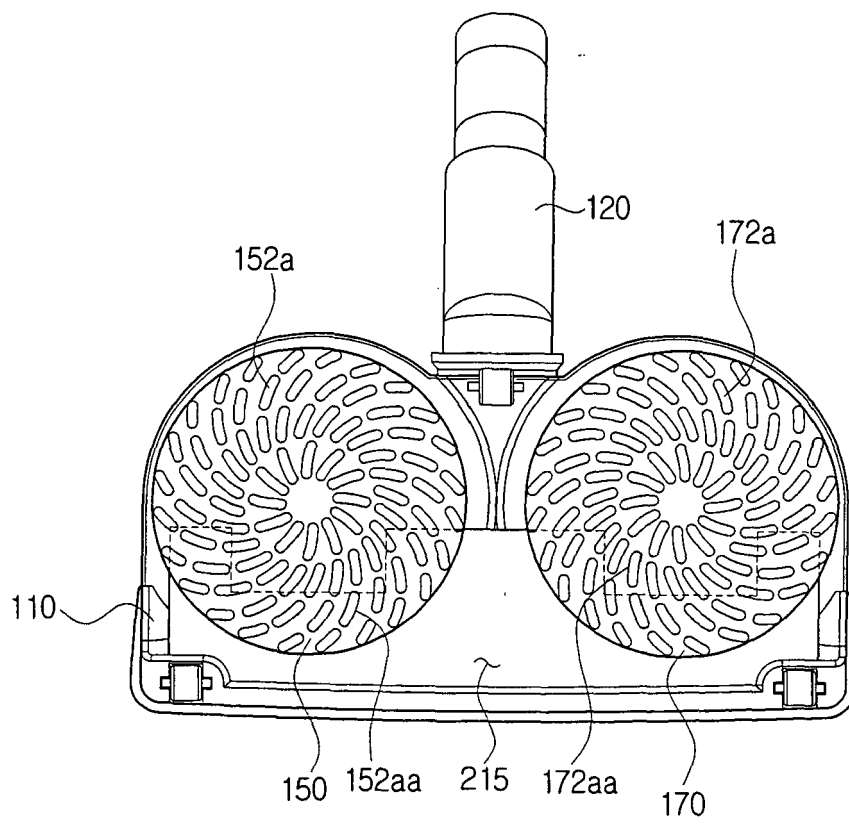


FIG. 5

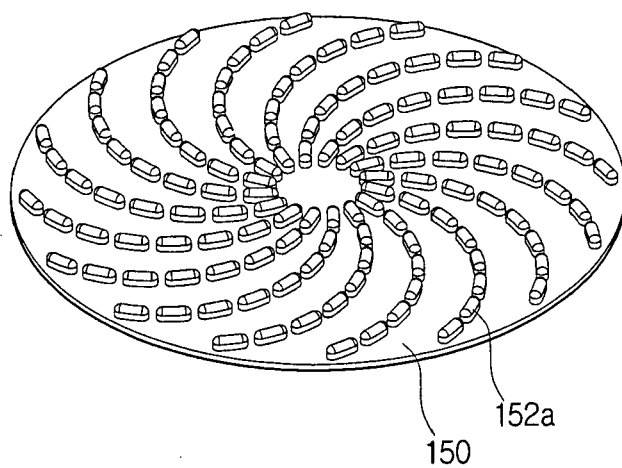


FIG. 6

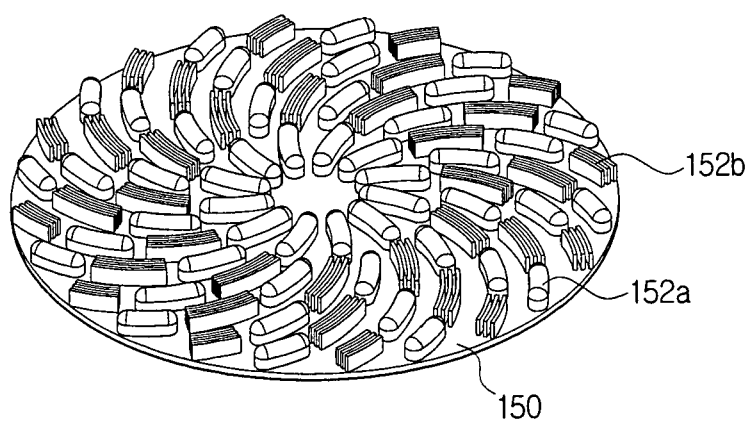


FIG. 7

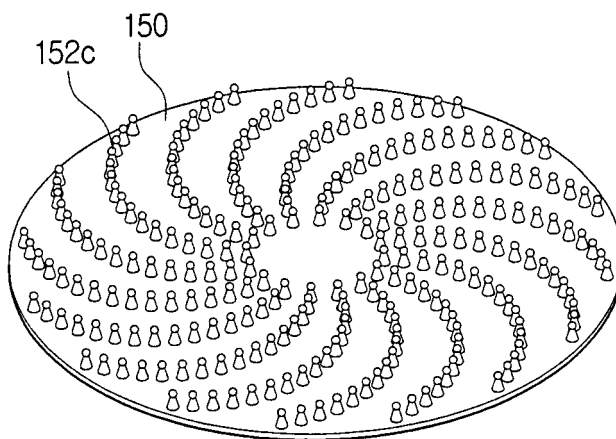


FIG. 8

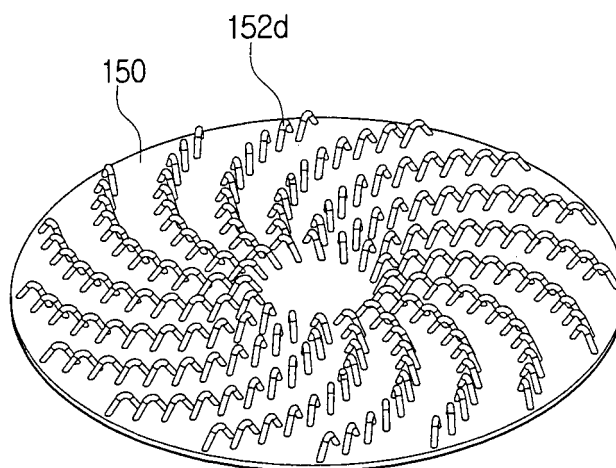
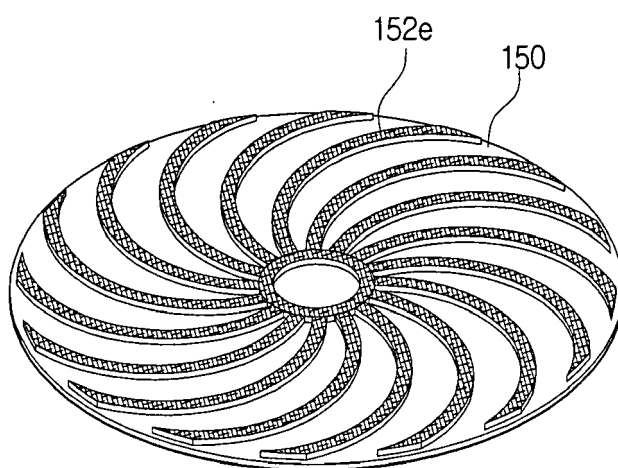


FIG. 9





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 29 1197

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 2004/073476 A (DELEO JOSEPH [AU]) 2 September 2004 (2004-09-02) * abstract * * page 3, line 8 - page 8, line 20 * * figures 1,3-5,10,13A,13D,15 *	1-17	INV. A47L9/04
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 22 January 2008	Examiner Baumgärtner, Ruth
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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EPO FORM 1503 03 82 (P04C01)



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Application Number
EP 07 29 1197

DOCUMENTS CONSIDERED TO BE RELEVANT			
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