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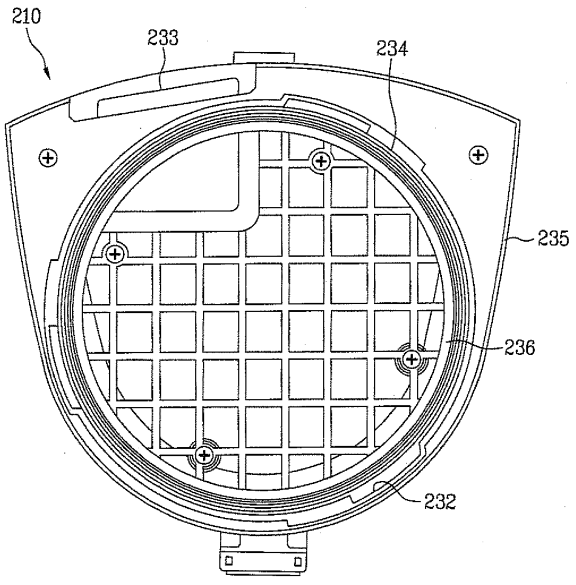
(54) Apparatus for collecting dust and vacuum cleaner having the same

(57) An apparatus for collecting dust and vacuum cleaner having the same are disclosed, by which dust collecting performance is enhanced. The present invention includes a dust collecting container (210) collecting the dust by separating the dust from an introduced air to discharge the air in an upper direction, an upper cover (230) assembled to an upper part of the dust collecting container, the upper cover having an outlet at one side to communicate with the dust collecting container, and a sealing member (234) provided to the upper cover to prevent the air from leaking via a gap between the dust collecting container and the upper cover.

FIG. 8



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Description

[0001] This application claims the benefit of the Korean Patent Application No. P2005-0000487, filed on January 4, 2005, which is hereby incorporated by reference as if fully set forth herein.

BACKGROUND OF THE INVENTION

Field of the Invention

[0002] The present invention relates to an apparatus for collecting dust in a vacuum cleaner, and more particularly, to an apparatus for collecting particles by a cyclonic principle.

Discussion of the Related Art

[0003] Generally, a vacuum cleaner is an appliance for cleaning a carpet, a normal room floor and the like. In the vacuum cleaner, polluted air containing particles is sucked by driving an air intake device provided within a cleaner body to generate an air-sucking force, the particles are separated from the polluted air for dust collecting, and the particle-removed air is then discharged to an outside of the cleaner.

[0004] A cyclone is a device for collecting particles contained in air such as dust and the like. The cyclone is applicable to various fields. For example, the cyclone is applied to a vacuum cleaner as a home appliance.

[0005] Recently, a multi-cyclone having a plurality of cyclone parts is used to enhance dust collecting performance.

[0006] A dust collector in a vacuum cleaner according to a related art is explained with reference to FIG. 1 as follows.

[0007] Referring to FIG. 1, a dust collector according to a related art consists of a primary cyclone dust collecting part 10 collecting relatively large dust by sucking polluted air from outside and a secondary cyclone dust collecting part 20 connected to the primary cyclone dust collecting part 10 to collect relatively small dust.

[0008] The primary cyclone dust collecting part 10 is a cylindrical receptacle of which lower end adheres closely to a bottom of the dust collector. In the primary cyclone dust collecting part 10, a first inlet 11 is formed at an upper lateral side to introduce the polluted air having particles in a tangential direction and a first outlet 12 is provided to a center of an upper end to discharge primarily cleaned air.

[0009] Hence, an upper space of the primary cyclone dust collecting part 10 configures a first cyclone 13 that separates particles by a centrifugal force and a lower space of the first cyclone dust collecting part 10 configures a primary dust storing part 14 storing the particles separated by the centrifugal force.

[0010] The secondary cyclone dust collecting part 20 consists of a plurality of small secondary cyclones 21 provided to an upper circumference of the primary cyclone dust collecting part 10 in a circumferential direction and a secondary dust storing part 22 storing dust separated from the secondary cyclones 21.

[0011] The secondary dust storing part 22 is provided under the secondary cyclones 21. And, the primary and secondary dust storing parts 14 and 22 are partitioned from each other by a sidewall of the primary cyclone dust collecting part 10.

[0012] Hence, the air discharged from the first outlet 12 is introduced into the secondary cyclones 21 to go through a secondary dust separating process and is then discharged in an upper direction of the dust collector.

[0013] Meanwhile, a separate upper cover (not shown in the drawing) is provided to an upper part of the related art dust collector. And, a grip is provided to the upper cover to attach or detach the dust collector.

[0014] However, the above-configured related art dust collector fails in guaranteeing airtightness between the upper cover and the cyclone dust collecting parts, whereby dust collecting performance is degraded.

[0015] And, in case that a separate sealing member is added to sustain the airtightness between the upper cover and the cyclone dust collecting parts in assembling the dust collector, the number of assembly steps of the dust collector is raised to make the corresponding assembly difficult.

[0016] Moreover, since the particles introduced into the dust collector are separated by the cyclone system only, a motor and/or fan is damaged by the inseparable small particles.

SUMMARY OF THE INVENTION

[0017] Accordingly, the present invention is directed to an apparatus for collecting dust and vacuum cleaner having the same that substantially obviate one or more problems due to limitations and disadvantages of the related art.

[0018] An object of the present invention is to provide an apparatus for collecting dust and vacuum cleaner having the same, by which dust collecting performance is enhanced.

[0019] Additional advantages, objects, and features of the invention will be set forth in part in the description which follows and in part will become apparent to those having ordinary skill in the art upon examination of the following or may be learned from practice of the invention. The objectives and other advantages of the invention may be realized and attained by the structure particularly pointed out in the written description and claims hereof as well as the appended drawings.

[0020] To achieve these objects and other advantages and in accordance with the purpose of the invention, as embodied and broadly described herein, an apparatus for collecting dust in a vacuum cleaner according to the present invention includes a dust collecting container collecting the dust by separating the dust from an introduced

air to discharge the air in an upper direction, an upper cover assembled to an upper part of the dust collecting container, the upper cover having an outlet at one side to communicate with the dust collecting container, and a sealing member provided to the upper cover to prevent the air from leaking via a gap between the dust collecting container and the upper cover.

[0021] Preferably, the sealing member is provided within the upper cover to contact with an upper surface rim of the dust collecting container in assembling the upper cover to the dust collecting container.

[0022] Preferably, the upper cover includes a cover housing having the outlet at one side and a filter accommodating part inserted in the cover housing to accommodate a filter purifying the air discharged from the dust collecting container.

[0023] More preferably, the sealing member is provided to enclose a lower end rim of the filter accommodating part so that a lower end and lateral side of the sealing member contact with an upper surface rim of the dust collecting container and an inner wall of the cover housing, respectively. More preferably, the sealing member is outwardly projected to be fixed to a flange configuring the lower end rim of the filter accommodating part. More preferably, the sealing member is firmly fixed to the flange with a ' ⊓ ' type cross-section by insert molding.

[0024] Preferably, the dust collecting container includes a cylindrical primary cyclone separating the dust from the introduced air according to a cyclone principle wherein an outlet is formed at an upper end of the primary cyclone to be vertically perforated and a plurality of secondary cyclones provided along a circumference of the primary cyclone to receive the air discharged from the primary cyclone.

[0025] Preferably, the dust collecting container includes a lower panel configuring a bottom of the dust collecting container to be opened/closed.

[0026] In another aspect of the present invention, a vacuum cleaner includes the above-described apparatus.

[0027] It is to be understood that both the foregoing general description and the following detailed description of the present invention are exemplary and explanatory and are intended to provide further explanation of the invention as claimed.

BRIEF DESCRIPTION OF THE DRAWINGS

[0028] The accompanying drawings, which are included to provide a further understanding of the invention and are incorporated in and constitute a part of this application, illustrate embodiment(s) of the invention and together with the description serve to explain the principle of the invention. In the drawings:

FIG. 1 is a schematic cross-sectional diagram of a dust collector according to a related art;

FIG. 2 is an exploded perspective diagram of a cleaner body and a dust collector according to the present invention;

FIG. 3 is a perspective diagram of a dust collector according to one embodiment of the present invention;

FIG. 4 is a schematic cross-sectional diagram of a dust collector according to one embodiment of the present invention;

FIG. 5 is an exploded perspective diagram of a dust collector according to the present invention;

FIG. 6 is a perspective diagram of a dust collecting container provided to the dust collector according to one embodiment of the present invention shown in FIG. 5;

FIG. 7 is a perspective diagram of a dust collecting container cover provided to the dust collector according to one embodiment of the present invention shown in FIG. 5;

FIG. 8 is a layout of a bottom of an upper cover provided to the dust collector according to one embodiment of the present invention shown in FIG. 5; and

FIG. 9 is a cross-sectional diagram of a filter accommodating part provided to the upper cover shown in FIG. 8.

DETAILED DESCRIPTION OF THE INVENTION

[0029] Reference will now be made in detail to the preferred embodiments of the present invention, examples of which are illustrated in the accompanying drawings. Wherever possible, the same reference numbers will be used throughout the drawings to refer to the same or like parts.

[0030] A canister type vacuum cleaner as one embodiment of a vacuum cleaner having a dust collector according to the present invention is explained with reference to FIG. 2 and FIG. 3 as follows.

[0031] FIG. 2 is an exploded perspective diagram of a cleaner body and a dust collector according to the present invention and FIG. 3 is a perspective diagram of a dust collector according to one embodiment of the present invention.

[0032] Referring to FIG. 2 and FIG. 3, a vacuum cleaner according to the present invention includes an intake nozzle (not shown in the drawings) moving along a room floor to be cleaned to suck air containing particles, a cleaner body 100 provided separate from the intake nozzle, and a connecting pipe (not shown in the drawings) connecting the intake nozzle to the cleaner body 100 to guide the polluted air sucked via the intake nozzle to the cleaner body 100.

[0033] In this case, a nozzle inlet having a prescribed size is provided to a bottom of the intake nozzle to suck dust piled up on the room floor and the air by an air intake force generated from an air intake device built in the cleaner body 100.

[0034] And, in the cleaner body 100, an electronic part

controlling the vacuum cleaner and a motor-fan assembly configuring the air intake device are built,

[0035] In particular, a hose connecting part 110 connected to the connecting pipe is provided to an upper front end of the cleaner body 100, wheels 120 are rotatably provided to both rear sides of the cleaner body 100 to enable the cleaner body 100 to smoothly move on the room floor, respectively, and a caster (not shown in the drawing) as a rotating member for changing a direction of the cleaner body 100 is connected to a front bottom of the cleaner body 100.

[0036] A dust collector 200 for collecting dust is detachably provided to a front side of the cleaner body 100. The dust collector 200 plays a role in collecting dust by separating particles from the air introduced into the dust collector 200 via the intake nozzle and the connecting pipe.

[0037] The air discharged from the dust collector 200 is discharged to a rear side of the cleaner body 100 via a prescribed passage configured within the cleaner body 100 and the motor-fan assembly (not shown in the drawing).

[0038] A dust collector 200 according to one embodiment of the present invention is explained with reference to FIGs. 4 to 7 as follows.

[0039] FIG. 4 is a schematic cross-sectional diagram of a dust collector according to one embodiment of the present invention, FIG. 5 is an exploded perspective diagram of a dust collector according to the present invention, FIG. 6 is a perspective diagram of a dust collecting container provided to the dust collector according to one embodiment of the present invention shown in FIG. 5, and FIG. 7 is a perspective diagram of a dust collecting container cover provided to the dust collector according to one embodiment of the present invention shown in FIG. 5.

[0040] Referring to FIGs. 4 to 7, a dust collector 200 includes an approximately cylindrical dust collecting container 210 collecting dust by separating particles and an upper cover 230 mounted on an upper part of the dust collecting container 210.

[0041] In the present embodiment, the dust collecting container 210 is configured to separate the particles such as dust and the like included in the air sucked into the dust collecting container, to store the separated particles and to discharge the particle-off air upwardly.

[0042] In this case, the dust collecting container 210 is an approximately cylindrical container. A primary dust collecting part and a secondary dust collecting part are provided within the dust collecting container 210 to separate and collect the particles such as dust and the like. And, a bottom of the dust collecting container 210 includes a lower panel 211 that can be opened/closed.

[0043] The primary dust collecting part includes a primary dust separating part and a primary dust storing part 212 storing the dust separated from the primary dust separating part. And, the primary dust separating part substantially includes a cylindrical receptacle provided within the dust collecting container 210.

[0044] And, the secondary dust collecting part includes a secondary dust separating part provided to a circumference of the primary dust separating part to separate particles from the air discharged from the primary dust collecting part and a secondary dust storing part 213 storing dust separated by the secondary dust separating part.

[0045] In the present invention, the primary dust separating part includes a primary cyclone 214 separating particles by a cyclone system, while the secondary dust separating part includes a plurality of small secondary cyclones 215 separating particles by the cyclone system each.

[0046] In particular, the primary cyclone 214 has a cylindrical receptacle shape of which lower end is open. A first inlet 214a communicating with the hose connecting part 110 is provided to an upper lateral side of the primary cyclone 214. A first outlet 214b perforated in a vertical direction is formed at a center of a ceiling of the primary cyclone 214.

[0047] The first inlet 214a guides the polluted air introduced from outside in a tangential direction of an inner wall of the primary cyclone 214. Hence, the air introduced into the first inlet 214a can flow spirally along the inner wall of the primary cyclone 214.

[0048] A plurality of the small secondary cyclones 215 built in one body of an outer wall of the primary cyclone 214 are arranged on an upper circumference of the primary cyclone 214. An upper end of each of the secondary cyclones 215 is projected higher than that of the primary cyclone 214.

[0049] Meanwhile, a lateral side of each of the secondary cyclones 215 projected higher than the upper end of the primary cyclone 214 is cut in a vertical direction to configure a second inlet 215a communicating with the first outlet 214b. An upper end of each of the secondary cyclones 215 is open to configure a second outlet 215b.

[0050] In particular, to enable the air introduced into the second inlet 215a to flow along an inner wall of the secondary cyclone 215, the second inlet 215a guides the air discharged from the first outlet 214b in a tangential direction to the inner wall of the secondary cyclone 215.

[0051] Preferably, a guide vane 215c is built in one body of an outer sidewall of the second inlet 215a to extend toward the first outlet 214b.

[0052] Meanwhile, a cone portion 215d having a conoid shape having a decreasing diameter downwardly is provided to one side of the secondary cyclone 215, and more particularly, to a lower part of the secondary cyclone 215. A vertically perforated particle discharging hole 215e is provided to a lower end of the secondary cyclone 215 to discharge particles such as dust and the like.

[0053] In this case, the secondary cyclones 215 are built in one body to be adjacent to one another. Hence, air is prevented from leaking between the secondary cyclones 215.

[0054] The dust collecting container 210 may further include a dust collecting container cover 220 provided

over the secondary cyclones 215 to be opened/closed. And, the dust collecting container cover 210 configures an air passage to the second inlet 215a from the first outlet 214b.

[0055] In this case, third outlets 221, which are vertically perforated, are provided along a rim of the dust collecting container cover 220 to oppose the second outlets 215b of the secondary cyclones 215, respectively to discharge the air upwardly. And, the air discharged via the third outlets 221 is introduced into the upper cover 230.

[0056] The dust having been separated by the above-configured primary cyclone 214 and the above-configured secondary cyclones 215 is preferentially stored in a dust storing part configured by an outer wall of the dust collecting container 210 and the lower panel 211 and is then discharged outside by gravity if the lower panel 211 forming the bottom of the dust storing parts 212 and 213 is open.

[0057] The dust storing part includes the primary dust storing part 212 and the secondary dust storing part 213. The primary dust storing part 212 stores the dust separated by the primary cyclone 214, whereas the secondary dust storing part 213 stores the dust separated by the secondary cyclones 215.

[0058] In this case, the primary and secondary dust storing parts 212 and 213 are connected in one body of the lower sides of the secondary cyclones 215 and are partitioned from each other by a boundary wall 216 having an approximately cylindrical shape of which radius is smaller than that of the outer wall of the dust collecting container 210.

[0059] A lower end of the boundary wall 216 is formed longer than that of the primary cyclone 214 in a lower direction to extend to a bottom of the dust collecting container 210, i.e., an upper lateral side of the lower panel 211.

[0060] Hence, the boundary wall 216 prevents the primary and secondary dust storing parts 212 and 213 from communicating with each other.

[0061] This is to prevent the dust stored in the primary dust storing part 212 from being scattered by the spiral flow generated from the primary cyclone 214.

[0062] In addition to the above-explained configuration, the vacuum cleaner according to the present invention further includes an exhaust member 217 vertically provided within the primary cyclone 214 to have a multitude of perforated holes formed at its later side to communicate with the first outlet of the primary cyclone 214 and a guide rib 218 provided to the primary cyclone 214 to guide the air introduced into the first inlet 214a.

[0063] In this case, the exhaust member 217 is provided in an axial direction to a center of the primary cyclone 214 and preferably has an approximately hollow conoid shape, of which upper end is open and of which lower end is closed, having a downwardly decreasing diameter.

[0064] This is to prevent the dust descending along the inner wall of the primary cyclone 214 from being affected by a sucking force of the exhaust member 217 since a speed of a spiral flow tends to decrease toward a lower side of the primary cyclone 214.

[0065] Preferably, the upper end of the exhaust member 217 is detachably assembled to a rim of the first outlet 214b. Preferably, a ring type first sealing member is provided between the upper end of the exhaust member 217 and the first outlet 214b to sustain airtightness in-between.

[0066] Preferably, a scatter-preventing member 219 is provided beneath the exhaust member 217 to prevent the dust stored in the primary dust storing part 212 from being scattered.

[0067] The scatter-preventing member 219 plays a role in preventing the dust collected in the primary dust storing part 212 from ascending by a spiral flow to be introduced into the second cyclones 215.

[0068] For this, the scatter-preventing member 219 preferably provided to the lower end of the exhaust member 217 to have a shape extending radially.

[0069] Preferably, an upper surface of the scatter-preventing member 219 is tilted downwardly. In particular, the scatter-preventing member 219 has a conoid shape having a diameter increasing downwardly.

[0070] Meanwhile, the upper cover 230 is detachably assembled to an upper part of the dust collecting container cover 220.

[0071] In this case, the upper cover 230 has an open lower end. If the upper cover is assembled to the dust collecting container 210, the upper end of the dust collecting container 210, i.e., the dust collecting container cover 220 blocks a bottom of the upper cover 230. And, a grip 231 is provided to an upper side of the upper cover 230.

[0072] To joint the upper cover 230 and the dust collecting container 210 together, three hanging protrusions 222 are provided to an outer circumference of the dust collecting container cover 220. And, three hanging recesses 232 are provided to an inner circumference of the upper cover 230 so that the hanging protrusions 222 can be fitted into the hanging recesses 232, respectively. It is a matter of course that the positions and shapes of the hanging protrusions and recesses 222 and 232 can be variously modified.

[0073] Another outlet 233 communicating with the dust collecting container 210 is provided to one side of the upper cover 230.

[0074] In the present embodiment, the outlet 233 of the upper cover 230 is provided to a rear side of the upper cover 230 and is named a fourth outlet for convenience of explanation.

[0075] An air flow space communicating with the fourth exhaust 233 is provided within the upper cover 230.

[0076] In this case, a sealing member 234 is provided to the upper cover 230 to prevent air from leaking between the dust collecting container 210 and the upper cover 230. For convenience of explanation, the sealing member 234 provided to the upper cover 230 is named a second sealing member.

[0077] In particular, the upper cover 230 includes a cover housing 230 having the air flow space formed inside to have the fourth outlet 233 and a filter accommodating part 236 inserted in the cover housing 235 to accommodate a filter.

[0078] Preferably, the second sealing member 234 is provided within the upper cover 230 to enable the upper cover 230 to contact with an upper surface rim of the dust collecting container in assembling the upper cover 230 to the dust collecting container 210.

[0079] More preferably, the second sealing member 234 is configured to have a ring shape adhering closely to an upper surface rim of the dust collecting container cover 220 configuring an upper surface of the dust collecting container 210.

[0080] This is because, in providing the second sealing member 234 to a lower end of an inner circumference of the upper cover 230 to adhere closely to an upper end of an outer circumference of the dust collecting container 210, i.e., an outer circumference of the dust collecting container cover 220, the coupling between the upper cover 230 and the dust collecting container cover 220 is not smooth due to a frictional force between the second sealing member 234 and the dust collecting container cover 220.

[0081] In particular, the second sealing member 234 is preferably provided to enclose a lower end rim of the filter accommodating part 235, thereby adhering closely to the upper surface rim of the dust collecting container cover 220 and an inner wall of the cover housing 235.

[0082] In the present embodiment, a lower end of the second sealing member 234 contacts with the upper surface rim of the dust collecting container cover 220 configuring the upper surface of the dust collecting container 210 and a lateral side of the second sealing member 234 contacts with the inner wall of the cover housing 235.

[0083] Meanwhile, a flange 236a is provided to the lower end rim of the filter accommodating part to be outwardly projected. A step portion (not shown in the drawing) is provided to the inner circumference wall of the cover housing 235 to enclose the flange 236a and to support an upper side of the flange 236a.

[0084] In this case, the filter accommodated in the filter accommodating part 236 purifies the air discharged from the dust collecting container 210, i.e., the air discharged from the third outlet 221. In the present embodiment, the filter accommodating part 236 has a ring shape having a prescribed height. An upper side of the filter accommodating part 236 has a grid shape including a multitude of ventilation holes but can be variously modified.

[0085] The second sealing member 234 is fixed to the flange 236a configuring the lower end rim of the filter accommodating part 236.

[0086] Preferably, the second sealing member 234 has a '⊓' type cross-section by insert molding to be firmly fixed to the flange 236a of the filter accommodating part 236.

[0087] In other words, the flange 236a of the filter accommodating part 236 is inserted in a mold having a '' type recess bigger than the flange 236a of the filter accommodating part 236. A sealant is then injected into a gap between the '⊓' type recess and the flange 236a of the filter accommodating part 236. Hence, the second sealing member 234 is formed to be firmly fixed to the flange 236a of the filter accommodating part 236.

[0088] In order to fix the second sealing member 234 to the flange 236a of the filter accommodating part 236 more firmly, if injection holes (not shown in the drawing) perforated in a vertical direction are provided to the flange 236a of the filter accommodating part 236, the sealant injected into a lower part of the flange 236a and the sealant injected into an upper part of the flange 236a are connected together by the insert molding. Hence, the second sealing member 234 can be fixed to the flange 236a of the filter accommodating part 236 more firmly.

[0089] Once the filter accommodating part 236 provided with the second sealing member 234 is assembled to the inside of the upper cover 230, the upper surface of the second sealing member 234 adheres closely to the step portion of the upper cover 230.

[0090] If the upper cover 230 is assembled to the dust collecting container 210, the bottom of the second sealing member 234 adheres closely to the rim of the dust collecting container cover 220 outside the third outlets 221 to sustain airtightness in-between.

[0091] An operation of the vacuum cleaner having the dust collector according to one embodiment of the present invention is explained as follows.

[0092] First of all, once the vacuum cleaner is driven, the external polluted air is introduced into the primary cyclone 214 via the intake nozzle and the connecting pipe.

[0093] The air introduced into the primary cyclone 214 is not directly introduced into the exhaust member 217 by the first inlet 214a and the guide rib 218 but is guided in the direction tangential to the inner wall of the primary cyclone 214 to form the spiral flow.

[0094] According to the cyclone principle, the relatively large and heavy dust is separated and falls to be stored in the primary dust storing part 212. The dust stored in the primary dust storing part 212 is prevented from being scattered by the scatter-preventing member 219 and the curved boundary wall 216.

[0095] The air, from which the relatively large dust was separated, is discharged to the first outlet 214b communicating with a multitude of the perforated holes provided to the lateral side of the exhaust member 217 and is then introduced into a plurality of the secondary cyclones 215 for dust separation.

[0096] The air, from which the relatively small dust was separated, is introduced into the upper cover 230 via the second outlets 215b and the third outlets 221.

[0097] The air introduced into the upper cover 230 is filtered by the filter and is then discharged to a rear side

via the fourth outlet 233. The air discharged from the fourth outlet 233 passes through the prescribed passage provided to the rear part of the cleaner body and is then discharged outside the cleaner body.

[0098] Meanwhile, the above-explained dust collector according to the present invention is applicable to a canister type vacuum cleaner or a stand type cleaner.

[0099] Accordingly, the present invention provides the following effects or advantages.

[0100] First of all, in the dust collector of the vacuum cleaner according to the present invention, since the sealing member having the prescribed shape is provided to the upper cover to sustain the airtightness between the dust collecting container and the upper cover, the degradation of the dust collecting performance can be prevented.

[0101] Secondly, in the dust collector of the vacuum cleaner according to the present invention, since the sealing member is provided in one body to the filter accommodating part of the upper cover by the insert molding, the assembly of the upper cover is facilitated.

[0102] Thirdly, in the dust collector of the vacuum cleaner according to the present invention, since the micro-dust failing in being separated by the cyclone dust collecting part is separated by the filter, the dust separating performance is enhanced and the risk of the motor and fan damaged by the micro-dust can be minimized.

[0103] Finally, in the dust collector of the vacuum cleaner according to the present invention, since a plurality of the secondary cyclones are provided to the circumference of the primary cyclone, the dust collector can have a compact configuration and dust collecting performance is enhanced.

[0104] It will be apparent to those skilled in the art that various modifications and variations can be made in the present invention without departing from the spirit or scope of the inventions. Thus, it is intended that the present invention covers the modifications and variations of this invention provided they come within the scope of the appended claims and their equivalents.

Claims

1. An apparatus for collecting dust in a vacuum cleaner, comprising:

   a dust collecting container (210) for collecting dust by separating the dust from an introduced air and discharging the air in an upper direction;
   an upper cover (230) assembled to an upper part of the dust collecting container (210), the upper cover (230) having an outlet (233) at one side communicating with the dust collecting container (210); and
   a sealing member (234) provided to the upper cover (230) to prevent air from leaking via a gap between the dust collecting container (210) and the upper cover (230).

2. The apparatus of claim 1, wherein the sealing member (234) is provided within the upper cover (230) to contact with an upper surface rim of the dust collecting container (210) in assembling the upper cover (230) to the dust collecting container (210).

3. The apparatus of claim 1 or 2, the upper cover (230) comprising:

   a cover housing (235) having the outlet (233) at one side; and
   a filter accommodating part (236) inserted in the cover housing (235) to accommodate a filter for purifying the air discharged from the dust collecting container (210).

4. The apparatus of claim 3, wherein the sealing member (234) is provided to enclose a lower end rim of the filter accommodating part (236) so that a lower end and a lateral side of the sealing member (234) contact with an upper surface rim of the dust collecting container (210) and an inner wall of the cover housing (235), respectively.

5. The apparatus of claim 4, wherein the sealing member (234) is outwardly projected to be fixed to a flange configuring the lower end rim of the filter accommodating part (236).

6. The apparatus of claim 5, wherein the sealing member (234) is firmly fixed to the flange with a '⊓' type cross-section by insert molding.

7. The apparatus of any one of claims 1 to 6, the dust collecting container (210) comprising:

   a cylindrical primary cyclone (214) for separating the dust from the introduced air according to a cyclone principle wherein an outlet is formed at an upper end of the primary cyclone (214) to be vertically perforated; and
   a plurality of secondary cyclones (215) provided along a circumference of the primary cyclone (214) to receive the air discharged from the primary cyclone (214).

8. The apparatus of any one of claims 1 to 7, wherein the dust collecting container (210) includes a lower panel (211) configuring a bottom of the dust collecting container (210) to be opened/closed.

9. A vacuum cleaner including the apparatus for collecting dust of any one of claims 1 to 8.

FIG. 1

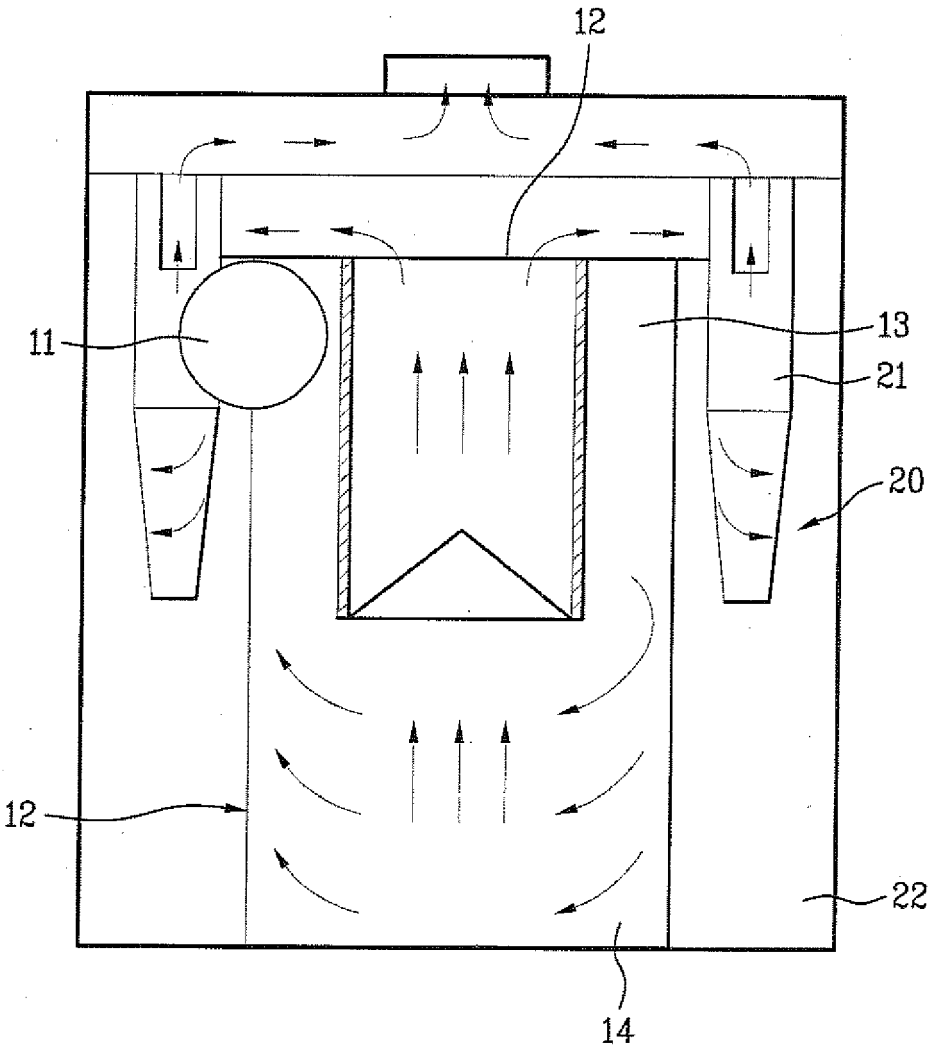


FIG. 2

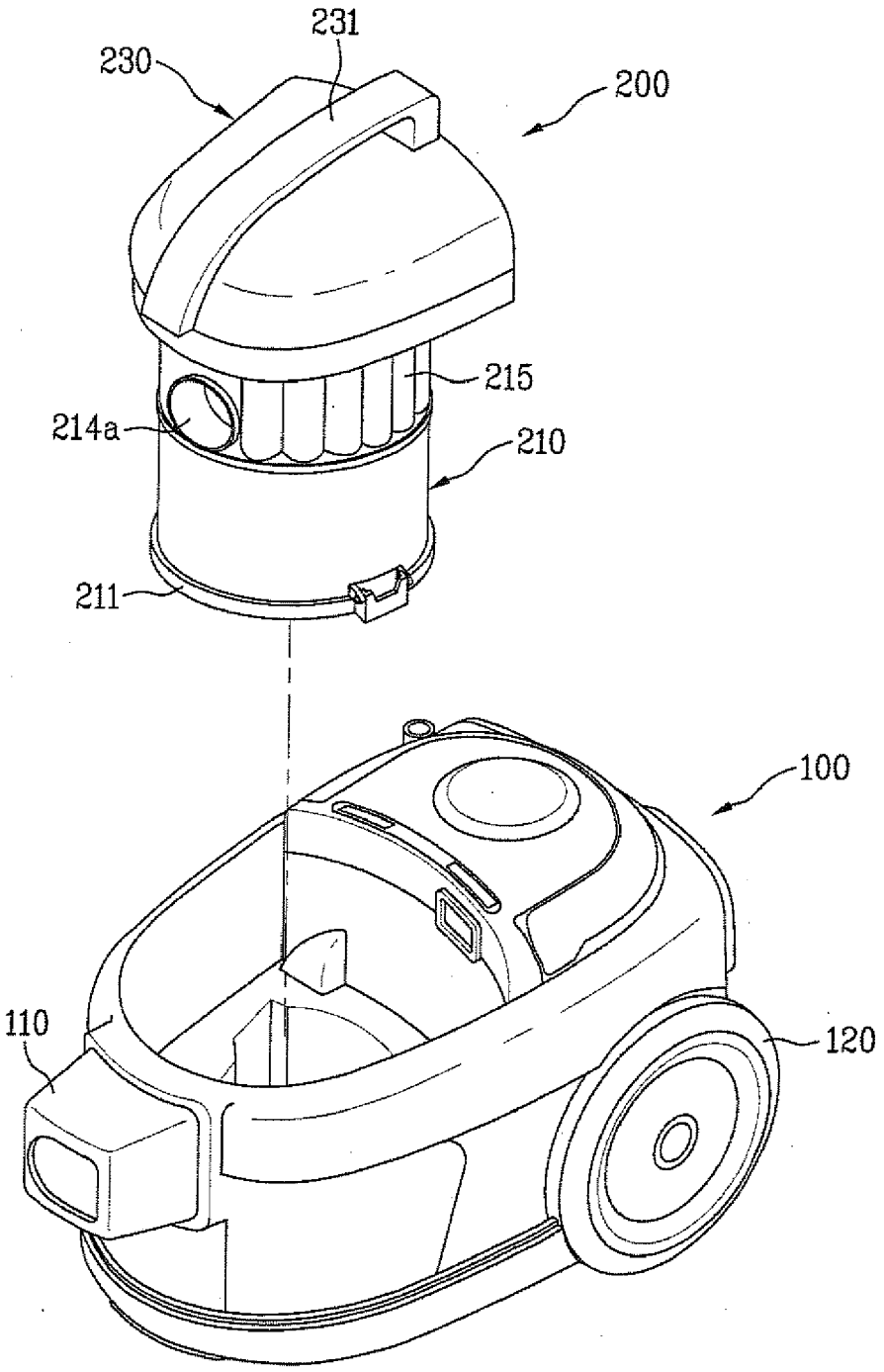


FIG. 3

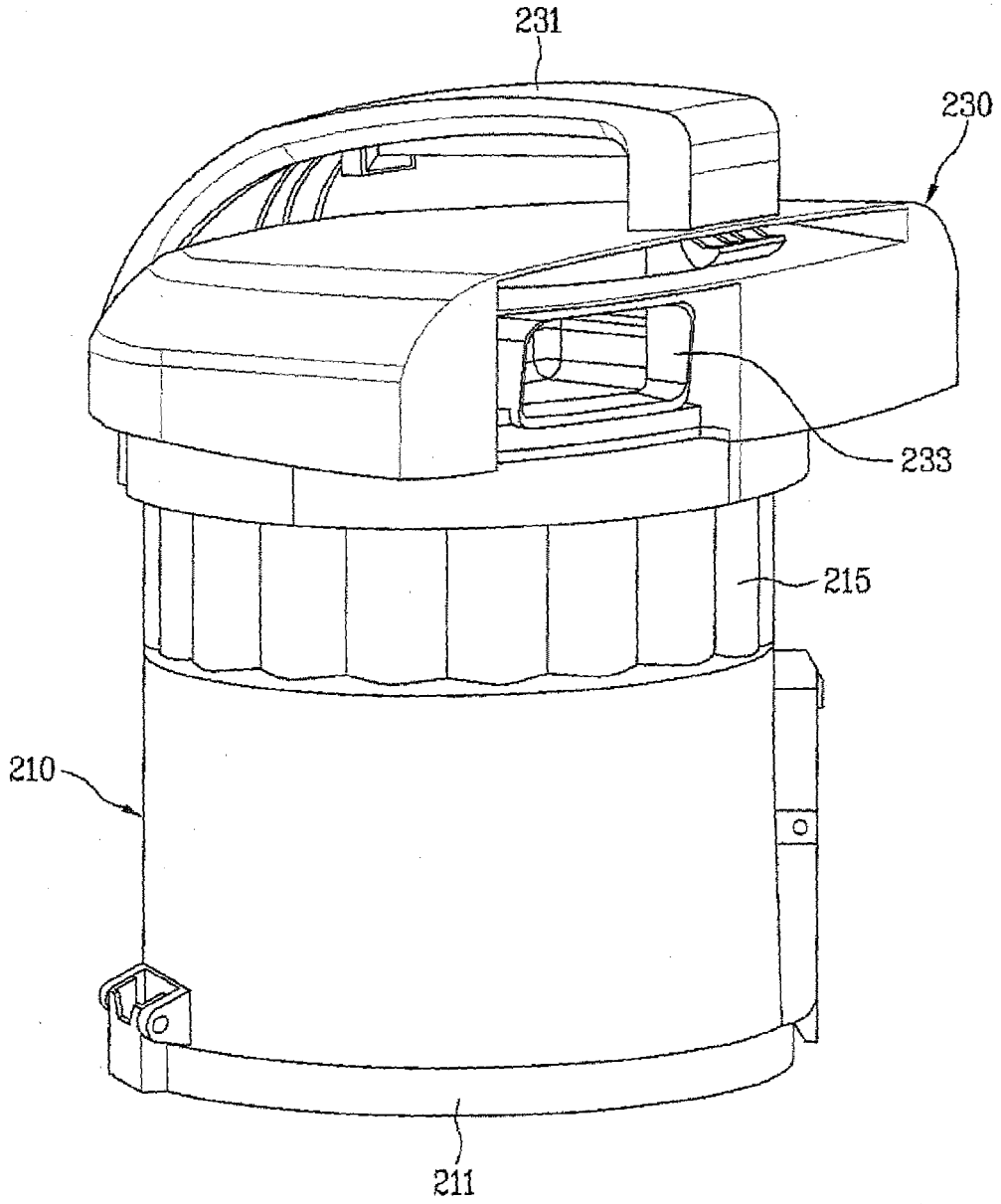
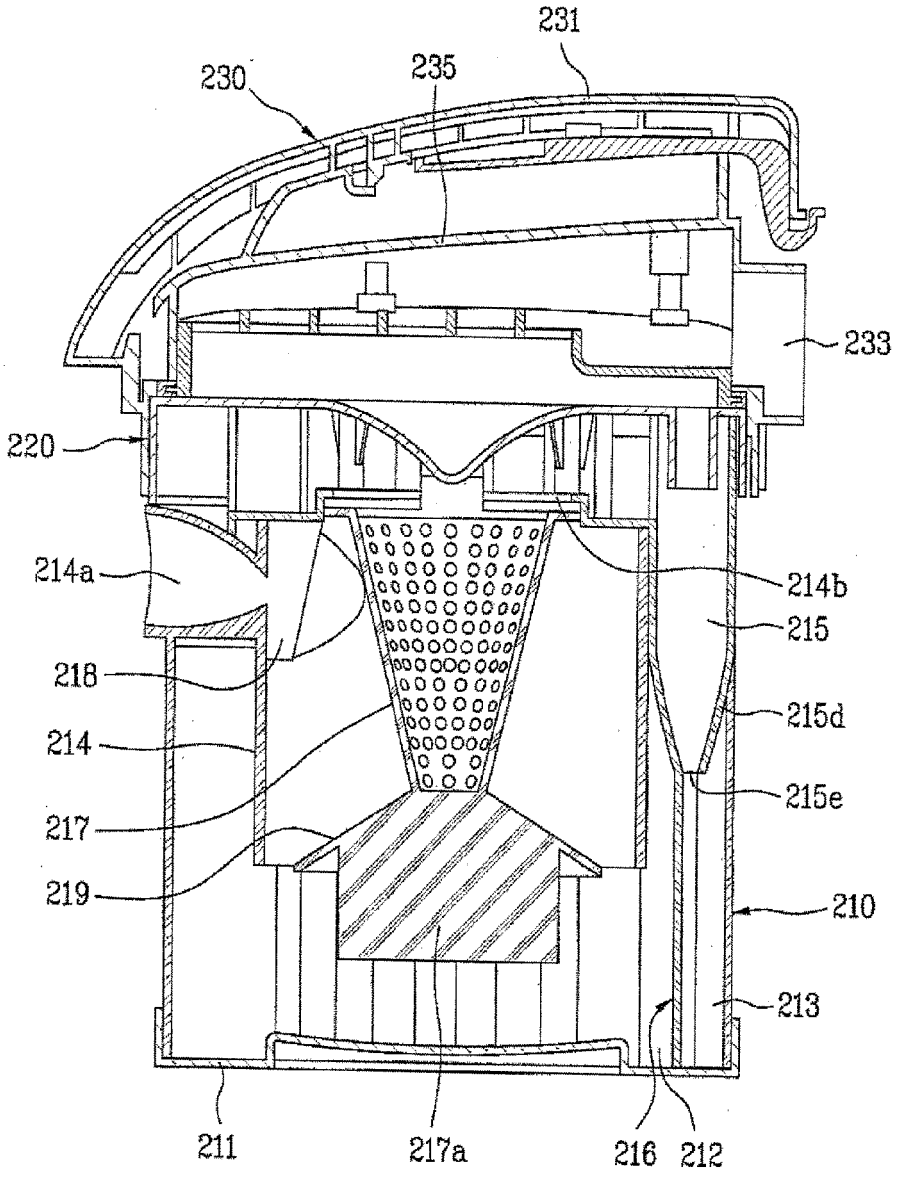


FIG. 4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214
215e
217
219
210
213
211
217a
216
212

FIG. 5

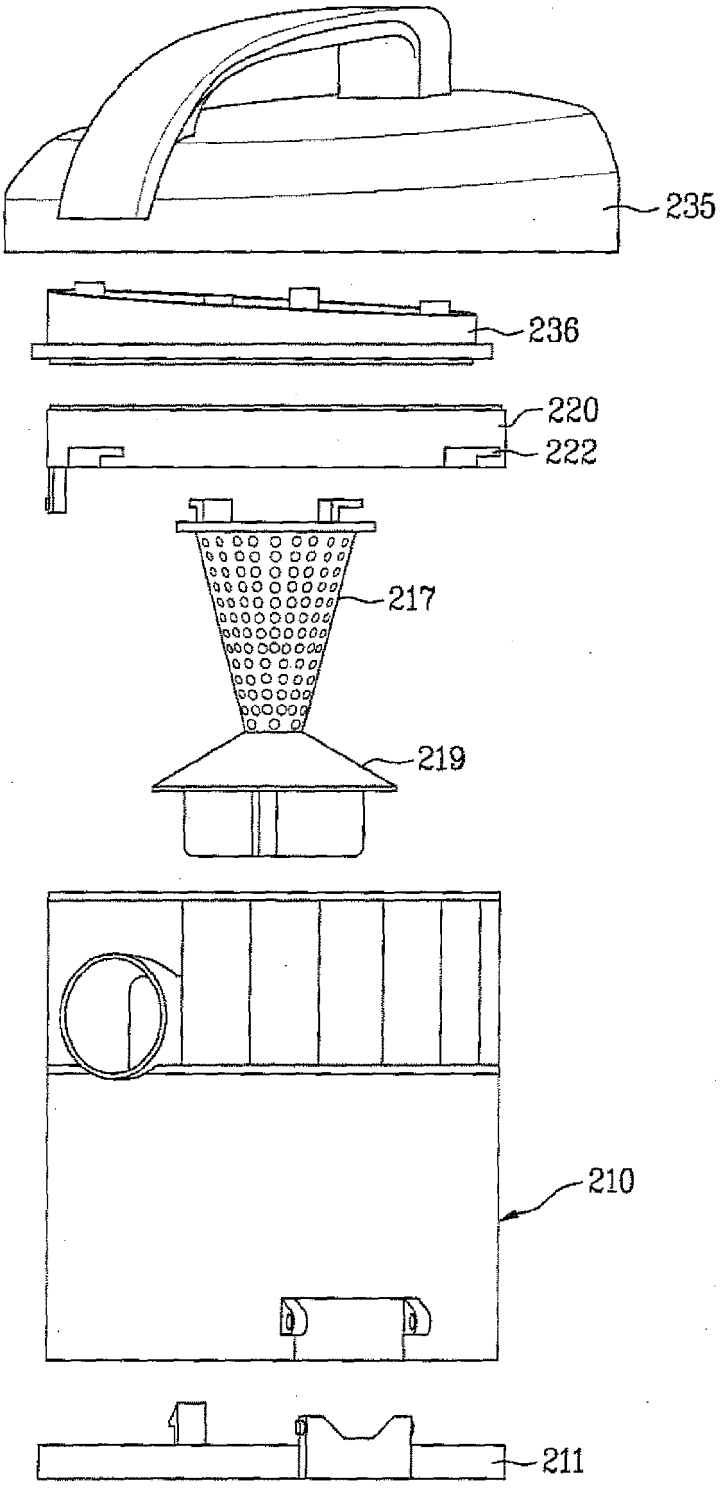

FIG. 6

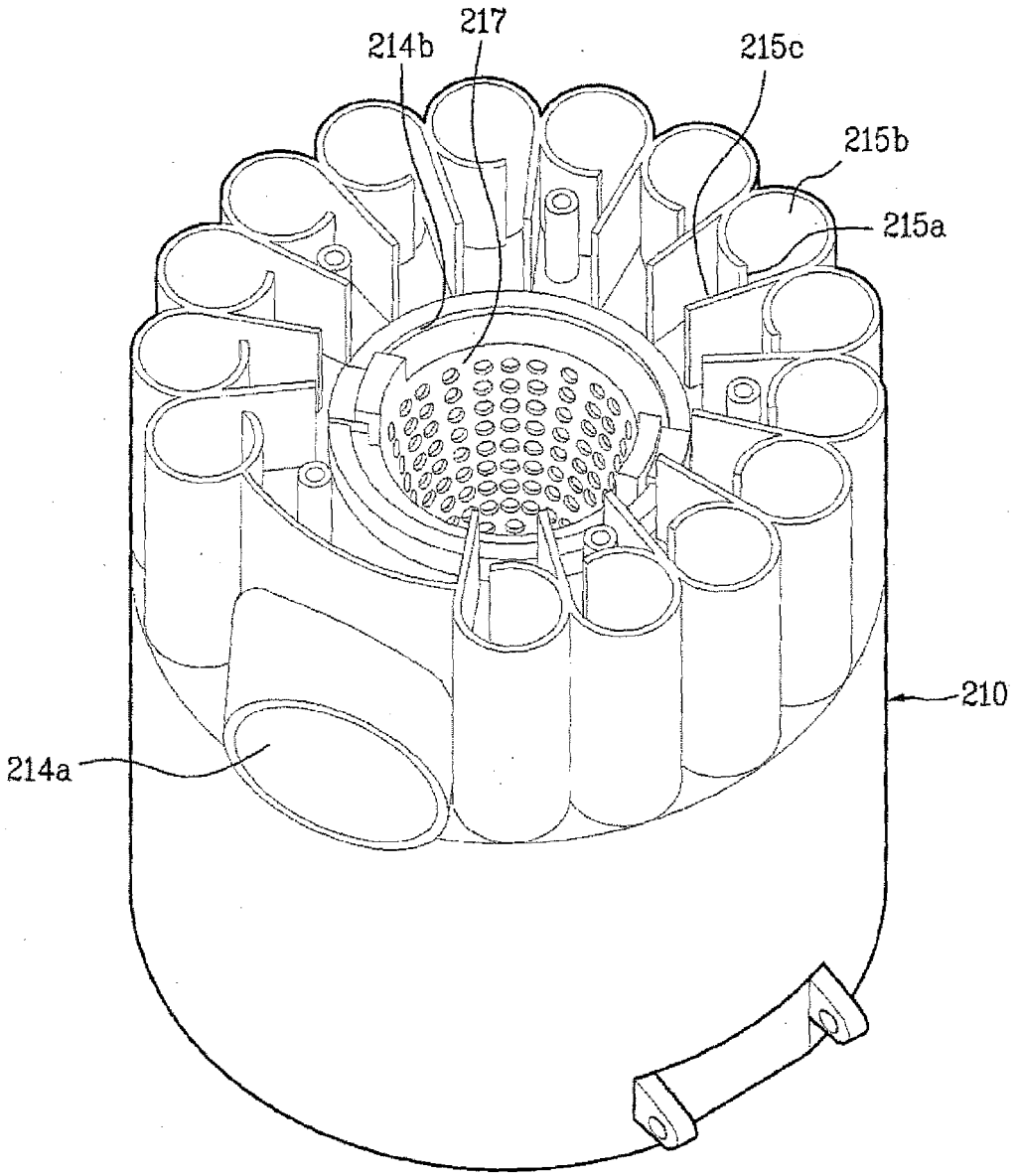

FIG. 7

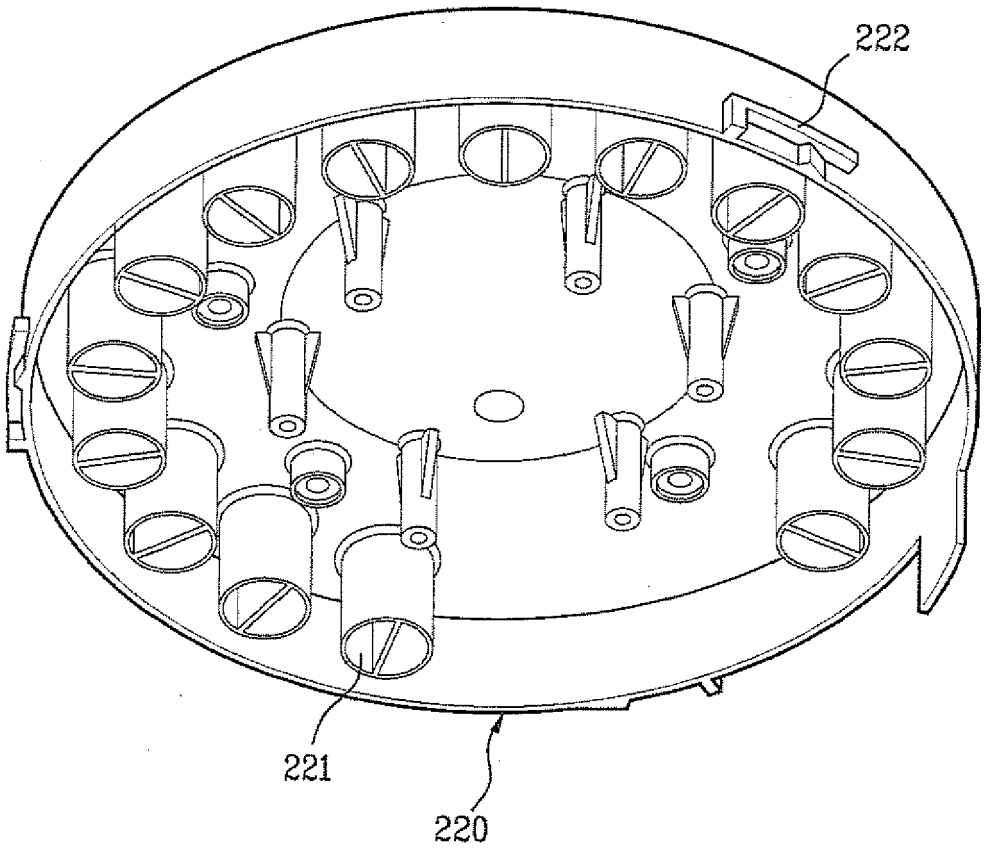

FIG. 8

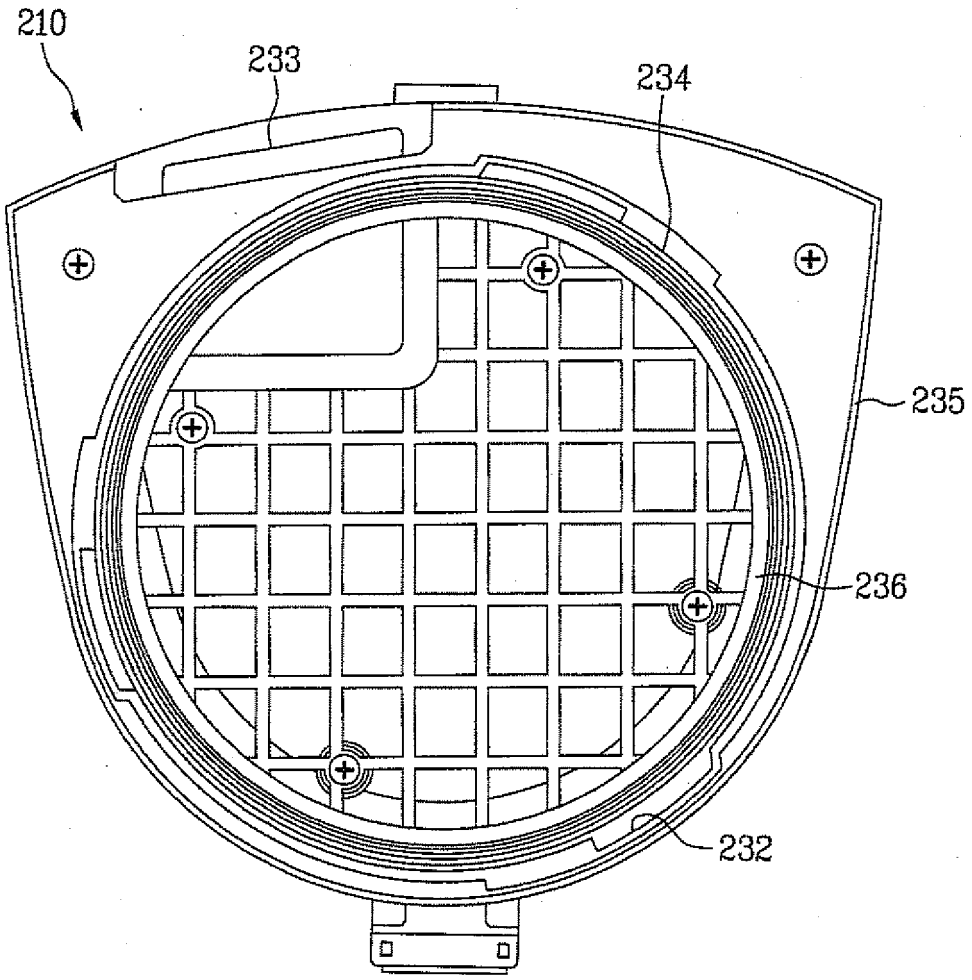

FIG. 9