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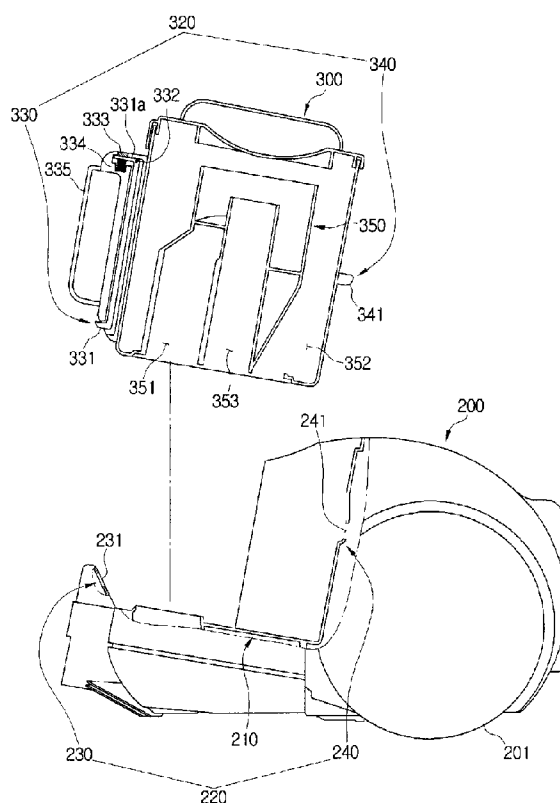
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(54) Title: A DUST-COLLECTION-CAPACITY-SELECTABLE CLEANER AND DUST CONTAINER SET

[Fig. 2]



(57) Abstract: A cleaner which allows dust containers of various sizes is disclosed. The cleaner includes a suction brush through which dirt and air are drawn in from a cleaning surface; a dust container which stores the dirt separated from the drawn-in air; and a cleaner body which has a dust container mounting portion where the dust container is mounted, wherein the dust container has a top which does not interference with the cleaner body if the dust container is mounted on the dust container mounting portion, so that various dust containers of different heights can be mounted on the cleaner.

Description

A DUST-COLLECTION-CAPACITY-SELECTABLE CLEANER AND DUST CONTAINER SET

Technical Field

- [1] The present invention relates to a cleaner, and more particular, to a cleaner which allows dust containers of various sizes to be mounted thereon, thereby allowing a user to select a dust collection capacity.

Background Art

- [2] In general, a cleaner includes a cleaner body in which a motor for generating a suction force is mounted and a dust container which is removably mounted on the cleaner body. The cleaner draws in dirt and air from a cleaning surface using the suction force generated by the motor and separates the dirt from the drawn-in air. The separated dirt is stored in the dust container. If the user uses the cleaner for a long time and if the dust container is full of the dirt, a user dismounts the dust container from the cleaner body and empties the dirt out of the dust container. After that, the user mounts the dust container back on the cleaner body to perform a cleaning operation.
- [3] A dust collection capacity of a cleaner means an amount of dirt that can be stored by the dust container. If the dust container is bigger, the dust collection capacity is larger and thus a larger amount of the dirt can be stored. Accordingly, a period of emptying the dust container increases and thus a user's convenience is improved. However, an overall size of the cleaner inevitably increases as the size of the dust container increases, which may cause any inconvenience to the user.
- [4] Therefore, it is preferable for users to purchase a cleaner having a dust container of a dust collection capacity suitable for their respective residential environments. However, a conventional cleaner does not allow dust containers of various sizes to be mounted thereon. That is, a single cleaner allows only a single dust container to be mounted thereon and a size of the dust container is fixed according to a cleaner the user purchased. Thus, if the user wants a dust container of a large dust collection capacity, the user cannot help purchasing a big size cleaner where a large dust container is mounted. As described above, the conventional cleaner has a problem that a dust container cannot be selectively mounted on the cleaner as the user wants.
- [5] Also, there is another problem that once the user purchases a cleaner, a dust collection capacity of the cleaner is fixed. For example, if a user moves into a larger house and his/her residential environment changes, it is convenient for the user to use a dust container of a large dust collection capacity. However, there is no solution that can increase a dust collection capacity of the existing cleaner and thus the user has to

purchase another cleaner having a large dust container mounted thereon.

Disclosure of Invention

Technical Problem

[6] The present invention overcomes the above-described disadvantages and an aspect of the present invention is to provide a cleaner that is capable of allowing dust containers of various sizes to be mounted thereon.

[7] Another aspect of the present invention is to provide dust containers that can be mounted on the same cleaner with different dust collection capacities.

Technical Solution

[8] The above aspects are achieved by providing a cleaner, including a suction brush through which dirt and air are drawn in from a cleaning surface, a dust container which stores the dirt separated from the drawn-in air, and a cleaner body which has a dust container mounting portion where the dust container is mounted.

[9] A top of the dust container mounted on the dust container mounting portion does not interfere with the cleaner body so that dust containers of various heights can be mounted on the cleaner.

[10] Also, the dust container mounting portion supports a bottom and a side surface of the dust container and does not interfere with the top of the dust container so that dust containers of various heights can be mounted on the cleaner.

[11] The dust container mounting portion may include a fixing unit for fixing the dust container and the dust container may include a fixed unit corresponding to the fixing unit, and the fixed unit may have the same position and the same configuration regardless of a height of the dust container.

[12] The fixed unit may include a first fixed portion located at a second position and a second fixed portion located at a second position, and the fixing unit may include a first fixing portion for fixing the first fixed portion and a second fixing portion for fixing the second fixed portion.

[13] The first position may be at a lower end of the dust container.

[14] The second position may be above the first position with respect to a lengthwise direction of the dust container.

[15] The first fixed portion may be formed of a pivotable hook and the first fixing portion may be formed of a hook recess into which the hook is inserted.

[16] The first fixed portion may be formed of a locking recess and the first fixing portion may be formed of a locking projection fitted into the locking recess.

[17] The second fixed portion may be formed of a protrusion and the second fixing portion may be formed of a recess into which the protrusion is inserted.

[18] The second fixed portion may be formed of a protrusion where a penetrating hole is

formed, and the second fixing portion may include a receiving recess which receives the protrusion, an insertion member which is inserted into the penetrating hole, an elastic member which presses the insertion member toward the penetrating hole, and a moving member which moves the insertion member to escapes from the penetrating hole.

- [19] The insertion member may include a curved portion which is curved in a direction in which the protrusion is received in the receiving recess.
- [20] The elastic member may be a compressing spring which has one end being in contact with the insertion member and the other end being fixed to an inner portion of the cleaner body.
- [21] The moving member may include a pivoting lever and a button, and one end of the pivoting lever may be connected to the insertion member and the other end of the pivoting lever may be connected to the button.
- [22] A bottom of the dust container may be opened.
- [23] A top of the dust container may be opened.
- [24] The suction brush may be integrally formed with the cleaner body.
- [25] The dust container may be integrally formed with a cyclone dust-collecting apparatus.
- [26] The above aspects of the present invention are also achieved by providing a dust container set including a plurality of dust containers of different dust collection capacities, the plurality of dust containers each includes a fixed unit fixed by a fixing unit formed on a dust container mounting portion of a cleaner, and the fixed units have the same position and the same configuration regardless of the dust collection capacities.
- [27] The fixed units each may include a first fixed portion located at a first position, and a second fixed portion located at a second position.
- [28] The first position may be at a lower end of the dust container, and the second position may be above the first position with respect to a lengthwise direction of the dust container.
- [29] The first fixed portion may be formed of a pivotable hook.
- [30] The first fixed portion may be formed of a locking projection.
- [31] The second fixed portion may be formed of a protrusion.
- [32] The second fixed portion may be formed a protrusion having a penetrating hole formed therein.

Advantageous Effects

- [33] According to the exemplary embodiments of the present invention, since various dust containers of different dust collection capacities can be mounted on the same cleaner,

the user can select a dust container of a dust collection capacity suitable for his/her residential environment. Also, even if the user's residential environment changes, the user is not required to purchase a new cleaner and instead is required only to purchase another dust container and mount it on the same cleaner.

Brief Description of the Drawings

- [34] Fig. 1 is a perspective view of a canister type cleaner according to an exemplary embodiment of the present invention;
- [35] Fig. 2 is a partially cutaway view of the cleaner of Fig. 1;
- [36] Fig. 3 is a front view of a dust container of a different dust collection capacity;
- [37] Figs. 4 and 5 are front views of dust containers of different dust collection capacities mounted on cleaner body;
- [38] Figs. 6 and 7 are front views of examples of emptying dirt out of the dust container;
- [39] Fig. 8 is a perspective view of an upright type cleaner according to another exemplary embodiment of the present invention;
- [40] Fig. 9 is a front view of a dust container to be mounted on a cleaner body of the cleaner ;
- [41] Fig. 10 is an enlarged partially cutaway view of the dust container mounted on the cleaner body;
- [42] Fig. 11 and 12 are concept views seen from the back portion of the dust container to explain operating states of a moving member;
- [43] Fig. 13 is a front view of another dust container of a different dust collection capacity;
- [44] Figs. 14 and 15 are front views of dust containers of different dust collection capacities mounted on the cleaner body; and
- [45] Figs. 16 and 17 are front views of examples of emptying dirt out of the dust container.

Best Mode for Carrying Out the Invention

- [46] The above aspects and other aspects of the present invention will be more apparent by describing certain exemplary embodiments of the present invention in greater detail with reference to the accompanying drawings. In the following description, well-known functions or constructions are not described in detail since they would obscure the invention with unnecessary detail.
- [47] Fig. 1 is a perspective view of a cleaner according to an exemplary embodiment of the present invention, and Fig. 2 is a cutaway view taken a part of the cleaner of Fig. 1. The cleaner 10 shown in Fig. 1 is a canister type cleaner.
- [48] The cleaner 10 according to an exemplary embodiment of the present invention includes a suction brush 100, a cleaner body 200, and a dust container 300.

- [49] The suction brush 100 draws dirt and air from a cleaning surface therethrough. The drawn-in dirt and air is transferred to the cleaner body 200 through a brush pipe 101 and a suction hose 102. Between the brush pipe 101 and the suction hose 102 is formed a handle 103 that is gripped by a user in performing a cleaning operation.
- [50] A motor for generating a suction force is mounted in the cleaner body 200. The dirt and the air drawn in the cleaner body 200 are separated from each other by a dust-collecting apparatus. The dirt separated from the drawn-in air is stored in the dust container 300 and the filtered air is discharged from the cleaner body 200 to the outside. The dust-collecting apparatus may be separately mounted in the cleaner body 200 or may be integrally formed with the dust container 300. Wheels 201 are attached to the cleaner body 200 to allow the cleaner body 200 to travel. The cleaner body 200 includes a dust container mounting portion 210 where the dust container 300 is mounted.
- [51] The dust container mounting portion 210 includes a fixing unit 220 for fixing the dust container 300.
- [52] The dust container 300 includes a fixed unit 320 corresponding to the fixing unit 220.
- [53] As shown in Fig. 2, the fixed unit 320 includes a first fixed portion 330 located at a first position of the dust container 300 and a second fixed portion 340 located at a second position of the dust container 300, and the fixing unit 220 includes a first fixing portion 230 for fixing the first fixed portion 330 and a second fixing portion 240 for fixing the second fixed portion 340. The first position is at a lower end of the dust container 300 and the second position is above the first position with respect to a lengthwise direction of the dust container 300. The fixing unit 220 fixes the dust container 300 at the first and the second positions such that the dust container 300 is stably mounted on the dust container mounting portion 210.
- [54] According to the exemplary embodiment of the present invention, the dust container 300 includes the two fixed portions 330, 340. However, the dust container 300 may include three or more fixed portions. Accordingly, the number of fixing portions for fixing the fixed portions may increase. Also, the position of the fixed unit 320 is variable.
- [55] As shown in Fig. 2, the first fixed portion 330 is formed of a hook 331. The hook 331 is pivotable on a hinge shaft 332. One end 331a of the hook is in contact with a button 333, and a spring 334 elastically supports one end 331a of the hook toward the button 333. Accordingly, if a user presses the button 333, the hook 331 pivots in a counter clockwise direction, and if the user releases the button 222, the hook 331 pivots in a clockwise direction.
- [56] The first fixing portion 230 is formed of a hook recess 231 into which the hook 331 is inserted.

[57] The second fixed portion 340 is formed of a protrusion 341.

[58] The second fixing portion 240 is formed of a recess 241 into which the protrusion 341 is inserted.

[59] A process of mounting and dismounting the dust container 300 according to the exemplary embodiment will now be described.

[60] In order to mount the dust container 300 on the dust container mounting portion 210, the user grips a dust container handle 335 and presses the button 333, thereby allowing the hook 331 to pivot in a counter clockwise direction, and then inserts the protrusion 341 into the recess 241. After that, if the user releases the button 333, the hook 331 pivots a clockwise direction and is fixed to an upper projection of the hook recess 231. Conversely, in order to dismount the dust container 300 from the dust container mounting portion 210, the user grips the dust container handle 335 and presses the button 333, thereby allowing the hook 331 to pivot in a counter clockwise direction, and then pulls the protrusion 341 out of the recess 241.

[61] These constructions of the fixing unit 220 and the fixed unit 320 are merely examples and they are variable.

[62] As shown in Fig. 2, a top of the dust container 300 mounted on the dust container mounting portion 210 does not interfere with the cleaner body 200. Therefore, any one of dust containers of various heights can be mounted. That is, any one of a plurality of dust containers having different dust collection capacities can be mounted on the same cleaner body 200. Therefore, the user selectively purchases a dust container having a dust collection capacity suitable for his/her residential environment and then mounts it to an existing cleaner. Also, even if the user moves into another house and thus his/her residential environment changes, the user is required only to purchase a dust container of a suitable dust collection capacity and mount it on the existing cleaner.

[63] Fig. 3 illustrates another dust container 300a which can be mounted on the cleaner body 200 of Fig. 2. The dust container 300a of Fig. 3 is shorter than the dust container 300 of Fig. 2 and accordingly has a smaller dust collection capacity. The dust container 300a of Fig. 3 has the same first fixed portion 330 and the same second fixed portion 340 as those of the dust container 300 of Fig. 2 in their configurations and positions, so that the container 300a can be mounted on the same cleaner body 200. That is, a set of the plurality of dust containers 300, 300a having different dust collection capacities has the same fixed unit 320 regardless of their respective dust collection capacities, so that the plurality of dust container 300, 300a can be mounted on the same cleaner.

[64] Fig. 4 illustrates the dust container 300a of Fig. 3 mounted on the cleaner body 200, and Fig. 5 illustrates the dust container 300 of Fig. 2 mounted on the cleaner body 200. Likewise, another dust container which is higher than the dust container 300 of Fig. 2 and thus has a larger dust collection capacity is allowed to be mounted on the same

cleaner body 200.

- [65] As described above, a dust-collecting apparatus for separating dirt from drawn-in air may be separately mounted in the cleaner body 200 or may be integrally formed with the dust container 300. In the embodiment of Fig. 2, the dust-collecting apparatus is integrally formed with the dust container 300.
- [66] In Fig. 2, a cyclone dust-collecting apparatus 350 is located in the dust container 300. The cyclone dust-collecting apparatus 350 separates dirt from drawn-in air using a centrifugal force of a whirling air current. The cyclone dust-collecting apparatus 350 is widely used in a cleaner field and thus a detailed description thereof will be omitted.
- [67] The dirt-entrained air drawn in through the suction brush 100 and transferred to the cleaner body 200 flows into the cyclone dust-collecting apparatus 350 through an inlet 351. The cyclone dust-collecting apparatus 350 generates a whirling air current such that relatively heavy dirt enters into a dust chamber 352 and relatively light air exits through an outlet 353. The filtered air is discharged from the cleaner body 200 through a channel (not shown).
- [68] Figs. 6 and 7 illustrate examples of emptying dirt out of the dust container.
- [69] If the user uses the cleaner for a predetermined time and if the dust container 300 is full of dirt, the user should empty dirt out of the dust container 300. The dust container 300 may be made of a transparent or semi-transparent material to enable the user to easily check an amount of dirt stored in the dust container 300. The dust container 300 has a top 360 that can be opened as shown in Fig. 6. In this case, the user opens the dust container top 360 to empty dirt out of the dust container 300. As an alternative, the dust container 300 has a bottom 370 that can be opened as shown in Fig. 7. In this case, the user opens the dust container bottom 370 and empties dirt out of the dust container 300. Also, the dust container 300 may be designed to have a top 360 and a bottom 370 both of which can be opened.
- [70] Fig. 8 is a perspective view of a cleaner according to another exemplary embodiment of the present invention. The cleaner 20 shown in Fig. 8 is an upright type cleaner.
- [71] The same drawing reference numerals are used for the same elements described in the above embodiment and thus detailed description will be omitted.
- [72] The cleaner 20 according to another exemplary embodiment of the present invention includes a suction brush 100, a cleaner body 200, and a dust container 300.
- [73] The suction brush 100 draws in dirt and air from a cleaning surface. In this embodiment, the suction brush 100 is integrally formed with the cleaner body 200, which differs from the preceding embodiment. The drawn-in dirt and air is transferred to the cleaner body 200 through a suction hose 102. A handle 202 which can be gripped by a user is formed on the cleaner body 200.
- [74] A motor for generating a suction force is mounted in the cleaner body 200. The dirt

and the air drawn into the cleaner body 200 are separated from each other by a dust-collecting apparatus. The dirt separated from the drawn-in air is stored in the dust container 300, whereas the filtered air is discharged from the cleaner body 200 to the outside. As described above, the dust-collecting apparatus may be separately mounted in the cleaner body 200 or may be integrally formed with the dust container 300. In this embodiment, a cyclone dust-collecting apparatus is integrally formed with the dust container 300 as in the above embodiment. The cleaner body 200 includes a dust container mounting portion 210 (see Fig. 9) where the dust container 300 is mounted.

[75] Fig. 9 illustrates the dust container to be mounted on the cleaner body, Fig. 10 is an enlarged view illustrating a part of the dust container mounting portion when the dust container is mounted on the cleaner body, and Figs. 11 and 12 illustrate operation of mounting the dust container as viewed from the back portion of the dust container.

[76] The dust container mounting portion 210 includes a fixing unit 220 for fixing the dust container 300 and the dust container 300 includes a fixed unit 320 corresponding to the fixing unit 220.

[77] The fixed unit 320 includes a first fixed portion 330 located at a first position of the dust container 300 and a second fixed portion 340 located at a second position, and the fixing unit 220 includes a first fixing portion 230 for fixing the first fixed portion 330 and a second fixing portion 240 for fixing the second fixed portion 340.

[78] The first fixed portion 330 is formed of a locking recess 337.

[79] The first fixing portion 230 is formed with a locking projection 237 to be fitted into the locking recess 337.

[80] The second fixed portion 340 is formed of a protrusion 342. As shown in Figs. 10 and 12, a penetrating hole 343 penetrating through the protrusion 342 in a vertical direction is formed through the protrusion 342.

[81] The second fixing portion 240 includes a receiving recess 242, an insertion member 243, an elastic member 244, and a moving member 245 (see Figs. 11 and 12).

[82] The receiving recess 242 receives the protrusion 342.

[83] The insertion member 243 is inserted into the penetrating hole 343. As shown in Fig. 10, the insertion member includes a curved portion 243a which is curved in a direction in which the protrusion 342 is received in the recess 242.

[84] The elastic member 244 presses the insertion member 243 toward the penetrating hole 343. In Fig. 10, a lower end of the elastic member 244 is in contact with the insertion member 243 and an upper end of the elastic member 244 is fixed to an inner portion of the cleaner body 200. The elastic member 244 may be a compression spring. The elastic member 244 presses the insertion member 243 being inserted into the penetrating hole 343 so that the dust container 300 can be fixed.

[85] The moving member 245 moves the insertion member 243 to escape from the

penetrating hole 343. The moving member 245 includes a pivoting lever 246 and a button 247.

[86] The pivoting lever 246 has one end connected to the insertion member 243 and the other end connected to the button 247.

[87] The button 247 is exposed outside the cleaner body 200 as shown in Fig. 8.

[88] A process of mounting and dismounting the dust container 300 according to another exemplary embodiment of the present invention will now be described.

[89] In order to mount the dust container 300 on the dust container mounting portion 210, the user grips a dust container handle 335 and fits the locking recess 337 over the locking projection 237. At the same time, the protrusion 342 enters into the receiving recess 242. At this time, the elastic member 244 is pressing the insertion member 243 in the receiving recess 242 downwardly. However, due to the curved portion 243a of the insertion member 243 which is curved in a direction in which the protrusion 342 is received in the receiving recess 242 (to the right in Fig. 10), the protrusion 342 slides under the insertion member 243 and is received in the receiving recess 242. After that, the insertion member 243 is inserted into the penetrating hole 343 formed in the protrusion 342 such that the dust container 300 is fixed to the cleaner body 200. Figs. 10 and 11 illustrate the dust container 300 fixed to the cleaner body 200.

[90] Conversely, in order to dismount the dust container 300 from the dust container mounting portion 210, the user presses the button 247 exposed outside the cleaner body 200 as shown in Fig. 8. Then, as shown in Fig. 12, as the button 247 descends, and the insertion member 243 ascends. Accordingly, the insertion member 243 escapes from the penetrating hole 343 formed in the protrusion 342 so that the user can dismount the dust container 300 from the cleaner body 200.

[91] As shown in Figs. 8 and 9, a top of the dust container 300 mounted on the dust container mounting portion 210 does not interfere with the cleaner body 200. Therefore, any of dust containers of diverse heights can be mounted. That is, any one of a plurality of dust containers having different dust collection capacities can be mounted on the same cleaner body 200. Therefore, the user selectively purchases a dust container having a dust collection capacity suitable for his/her residential environment and mounts it on the same cleaner. Even if the user moves into another house and thus his/her residential environment changes, the user is required only to purchase a dust container of a suitable dust collection capacity and mount it on an existing cleaner.

[92] Fig. 13 illustrates another dust container 300a that can be mounted on the cleaner body 200 of Fig. 9. The dust container 300a of Fig. 13 is longer than the dust container 300 of Fig. 9 and thus has a larger dust collection capacity. However, the dust container 300a of a large dust collection capacity has the same first fixed portion 330

and the same second fixed portion 340 as those of the dust container 300 of Fig. 9 in their positions and configurations. Accordingly, the dust container 300a can be mounted on the same cleaner body 200. That is, since a set of the plurality of dust containers 300, 300a of different dust collection capacities have the same fixed unit 320 regardless of their respective dust collection capacities, they can be mounted on the same cleaner.

[93] Fig. 14 illustrates the dust container 300 of Fig. 9 mounted on the cleaner body 200, and Fig. 15 illustrates the dust container 300a of Fig. 13 mounted on the cleaner body 200. Likewise, a dust container which is lower than the dust container 300 of Fig. 9 and thus has a smaller dust collection capacity can be mounted on the same cleaner body 200.

[94] Figs. 16 and 17 illustrate examples of emptying dirt out of the dust container.

[95] If a user uses the cleaner for a predetermined time and if the dust container 300 is full of dirt, the user should empty the dirt out of the dust container 300. The dust container 300 may be made of a transparent or semi-transparent material to enable the user to easily check an amount of dirt stored in the dust container 300. As shown in Fig. 16, the dust container 300 has a top 360 that can be opened. In this case, the user opens the top 360 of the dust container to empty dirt out of the dust container 300. As an alternative, the dust container 300 has a bottom 370 that can be opened as shown in Fig. 17. In this case, the user opens the bottom 370 to empty dirt out of the dust container 300.

[96] The forgoing exemplary embodiments and the terms used in these embodiments are merely exemplary and are not to be construed as limiting the present invention. Also, it will be appreciated by those skilled in the art that changes and modifications may be made in these embodiments without departing from the scope of the appended claims.

Claims

- [1] A cleaner comprising:
a suction brush through which dirt and air are drawn in from a cleaning surface;
a dust container which stores the dirt separated from the drawn-in air; and
a cleaner body which has a dust container mounting portion where the dust container is mounted,
wherein a top of the dust container does not interference with the cleaner body if the dust container is mounted on the dust container mounting portion, so that various dust containers of different heights can be mounted on the cleaner.
- [2] The cleaner of claim 1, wherein the dust container mounting portion comprises a fixing unit for fixing the dust container and the dust container comprises a fixed unit corresponding to the fixing unit, and the fixed unit has the same position and the same configuration regardless of a height of the dust container.
- [3] The cleaner of claim 2, wherein the fixed unit comprises a first fixed portion located at a second position and a second fixed portion located at a second position, and the fixing unit comprises a first fixing portion for fixing the first fixed portion and a second fixing portion for fixing the second fixed portion.
- [4] The cleaner of claim 3, wherein the first position is at a lower end of the dust container.
- [5] The cleaner of claim 4, wherein the second position is above the first position with respect to a lengthwise direction of the dust container.
- [6] The cleaner of claim 3, wherein the first fixed portion is formed of a pivotable hook and the first fixing portion is formed of a hook recess into which the hook is inserted.
- [7] The cleaner of claim 3, wherein the first fixed portion is formed of a locking recess and the first fixing portion is formed of a locking projection fitted into the locking recess.
- [8] The cleaner of claim 3, wherein the second fixed portion is formed of a protrusion and the second fixing portion is formed of a recess into which the protrusion is inserted.
- [9] The cleaner of claim 3, wherein the second fixed portion is formed of a protrusion where a penetrating hole is formed, and the second fixing portion comprises: a receiving recess which receives the protrusion; an insertion member which is inserted into the penetrating hole; an elastic member which presses the insertion member toward the penetrating hole; and a moving member which moves the insertion member to escapes from the penetrating hole.
- [10] The cleaner of claim 9, wherein the insertion member comprises a curved portion

which is curved in a direction in which the protrusion is received in the receiving recess.

[11] The cleaner of claim 9, wherein the elastic member is a compressing spring which has one end being in contact with the insertion member and the other end being fixed to an inner portion of the cleaner body.

[12] The cleaner of claim 9, wherein the moving member comprises a pivoting lever and a button, and one end of the pivoting lever is connected to the insertion member and the other end of the pivoting lever is connected to the button.

[13] The cleaner of claim 1, wherein a bottom of the dust container is opened.

[14] The cleaner of any one of claims 1 to 13, wherein a top of the dust container is opened.

[15] The cleaner of claim 1, wherein the suction brush is integrally formed with the cleaner body.

[16] The cleaner of claim 1, wherein the dust container is integrally formed with a cyclone dust-collecting apparatus.

[17] A cleaner comprising:
a suction brush through which dirt is drawn in from a cleaning surface;
a dust container which stores the dirt; and
a cleaner body which has a dust container mounting portion where the dust container is mounted,
wherein the dust container mounting portion supports a bottom and a side surface of the dust container and does not interfere with a top of the dust container, so that various dust containers of different heights can be mounted on the dust container mounting portion.

[18] A dust container set comprising a plurality of dust containers of different dust collection capacities, the plurality of dust containers each comprising a fixed unit fixed by a fixing unit formed on a dust container mounting portion of a cleaner, the fixed units having the same position and the same configuration regardless of the dust collection capacities.

[19] The dust container set of claim 18, wherein the fixed units each comprises a first fixed portion located at a first position; and a second fixed portion located at a second position.

[20] The dust container set of claim 19, wherein the first position is at a lower end of the dust container, and the second position is above the first position with respect to a lengthwise direction of the dust container.

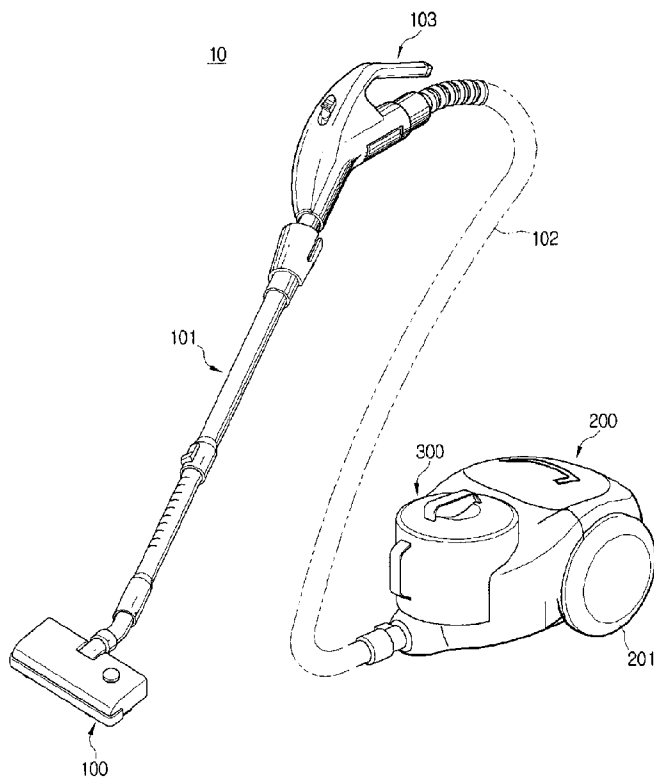
[21] The dust container set of claim 19, wherein the first fixed portion is formed of a pivotable hook.

[22] The dust container set of claim 19, wherein the first fixed portion is formed of a

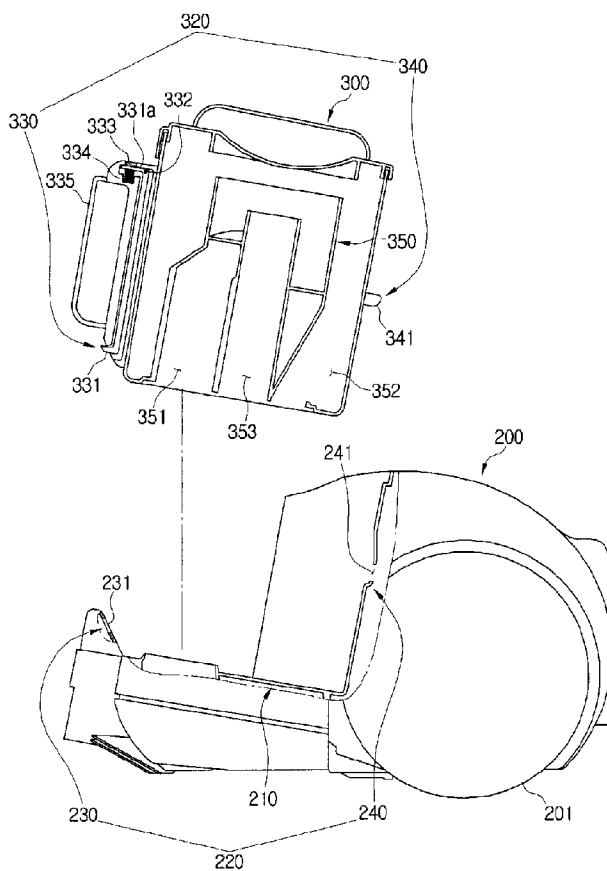
locking projection.

- [23] The dust container set of claim 19, wherein the second fixed portion is formed of a protrusion.
- [24] The dust container set of claim 19, wherein the second fixed portion is formed a protrusion having a penetrating hole formed therein.
- [25] The dust container set of claim 18, wherein the dust container is integrally formed with a cyclone dust collecting apparatus.

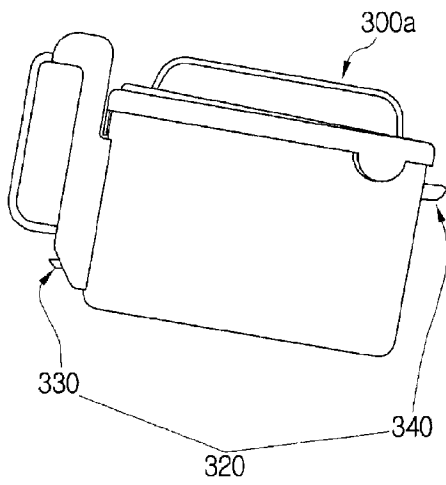
[Fig. 1]



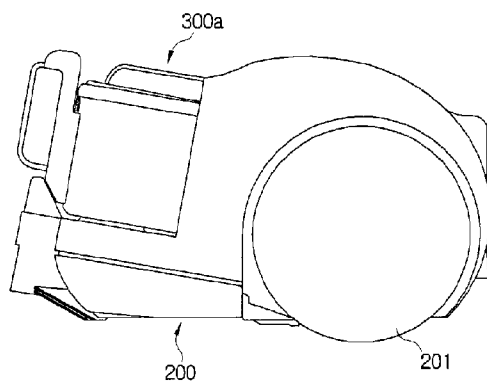
[Fig. 2]



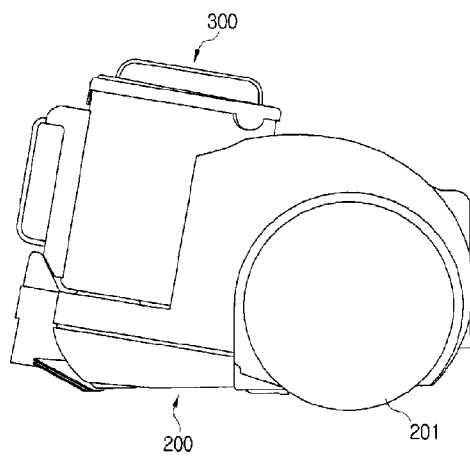
[Fig. 3]



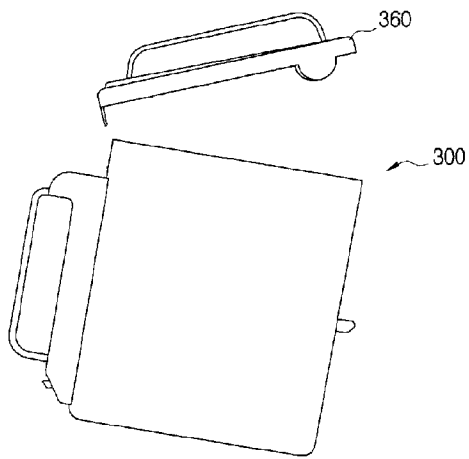
[Fig. 4]



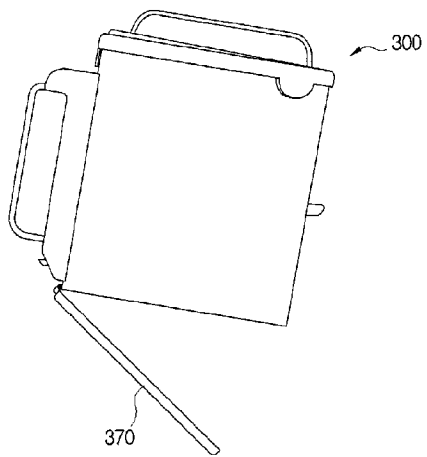
[Fig. 5]



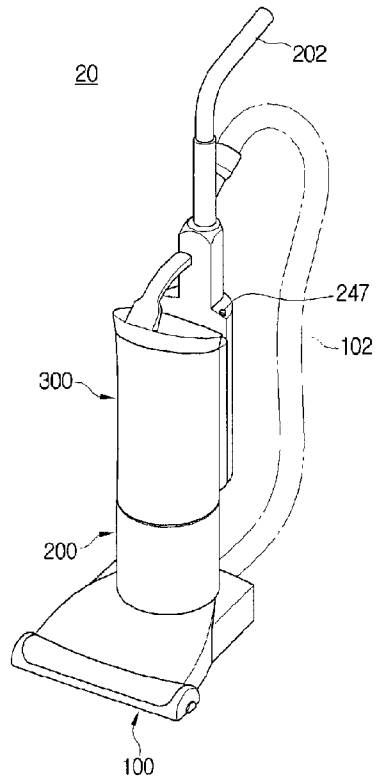
[Fig. 6]



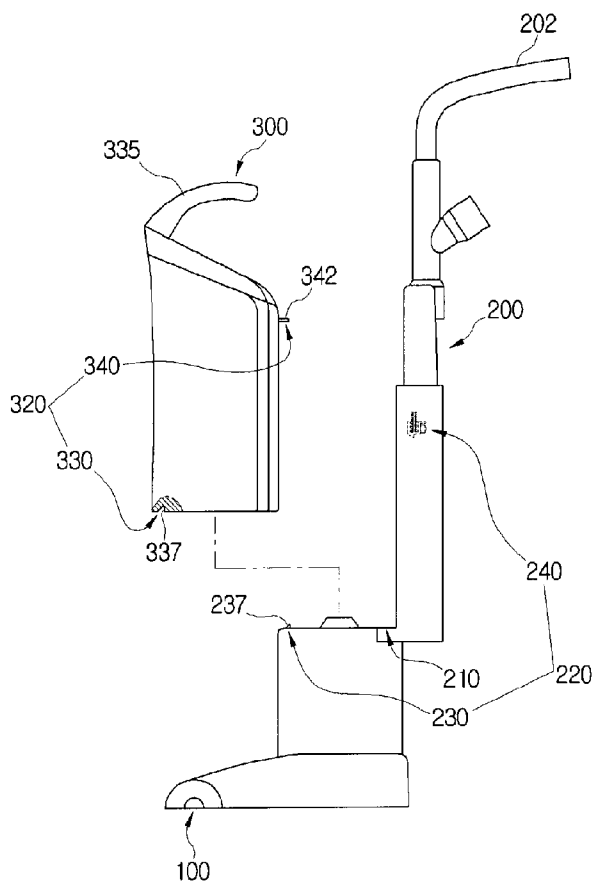
[Fig. 7]



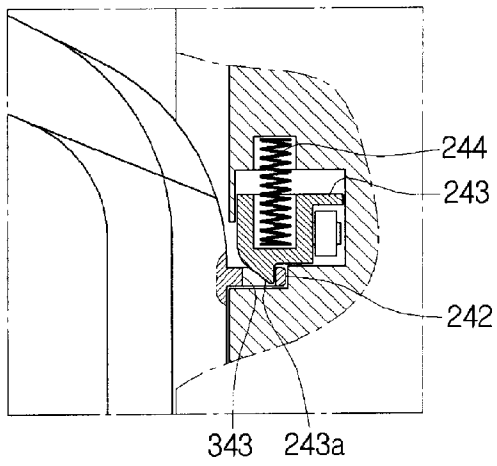
[Fig. 8]



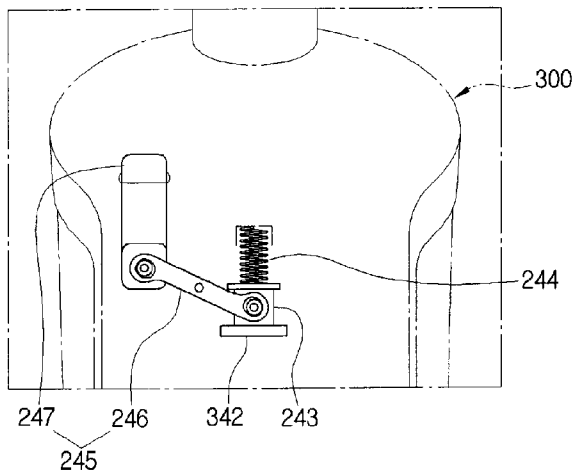
[Fig. 9]



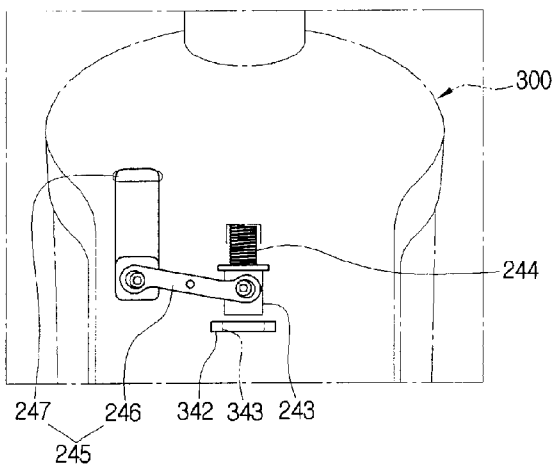
[Fig. 10]



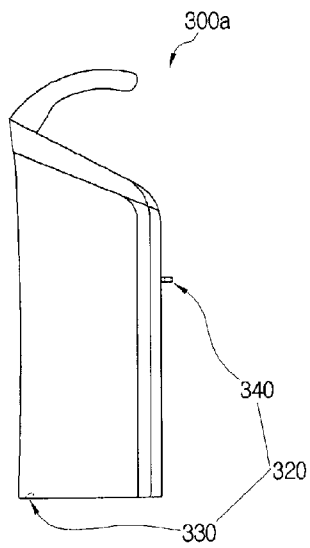
[Fig. 11]



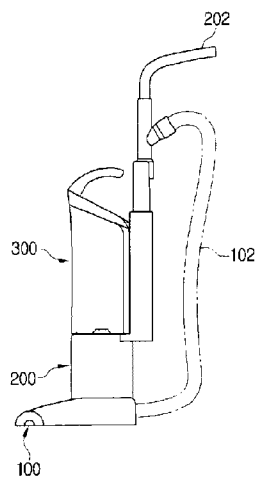
[Fig. 12]



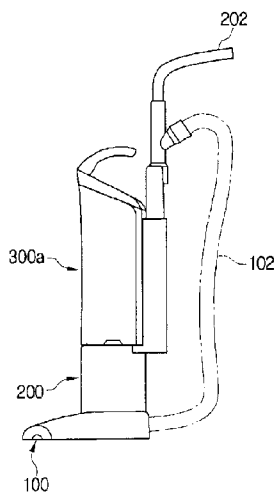
[Fig. 13]



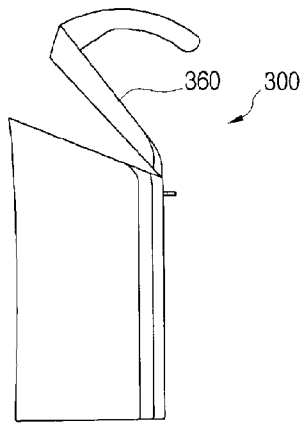
[Fig. 14]



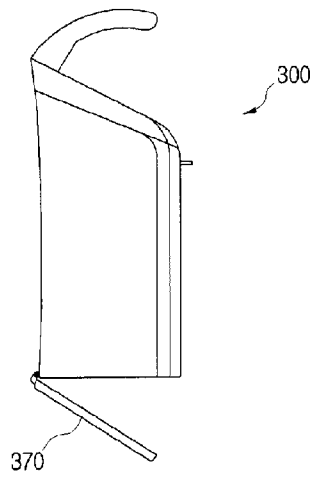
[Fig. 15]



[Fig. 16]



[Fig. 17]



INTERNATIONAL SEARCH REPORT

International application No.
PCT/KR2008/002305**A. CLASSIFICATION OF SUBJECT MATTER****A47L 9/16(2006.01)i**

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 8 : A47L 05/28, 05/32, A47L 09/00, 09/10, 09/16, 09/24, 0/32

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Korean Utility models and applications for Utility models since 1975

Japanese Utility models and application for Utility models since 1975

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

eKIPASS (KIPO internal) & keyword: "cleaner", "collector", "cyclone", "desorption"

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	JP 2007-117710 A (SAMSUNG GWANGJU ELECTRONICS CO., LTD.) 17 MAY 2007 See fig 1 and page 2, paragraph 1 - page 5, paragraph 41.	1-5, 7-20, 17-20, 22-25
Y		6, 21
X	JP 2002-233484 A (SANYO ELECTRIC CO., LTD.) 20 AUG 2002 See fig 7 and page 2, paragraph 0001 - page 3, paragraph 0023.	1-5, 7-13, 15-20, 17-20, 22-25
Y		6, 21
Y	KR 10-2006-0119587 A (LG ELECTRONICS INC.) 24 NOV 2006 See page 7, line 2 - page 7, line 3.	6, 21
A	KR 10-0555321 B1 (SAMSUNG GWANGJU ELECTRONICS CO., LTD.) 20 FEB 2006 See page 2, line 31 - page 4, line 35.	1-25
A	KR 10-0640830 B1 (LG ELECTRONICS INC.) 25 OCT 2006 See page 7, claim 01 - page 8, claim 09.	1-25
A	JP 2005-87508 A (TOSHIBA TEC CORP.) 07 APR 2005 See fig 1 and page 4, paragraph 0021 - page 5, paragraph 0039.	1-25

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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Date of the actual completion of the international search

12 JUNE 2008 (12.06.2008)

Date of mailing of the international search report

13 JUNE 2008 (13.06.2008)

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Telephone No. 82-42-481-8432



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/KR2008/002305

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
JP 2007-117710 A	17-05-2007	AU2006202050A 1 AU2006202050B2 AU2006202050AA CN1954757A EP1779758A2 JP19117710 KR10-0648961B1 US2007-094837A A	17-05-2007 17-05-2007 17-05-2007 02-05-2007 02-05-2007 17-05-2007 16-11-2006 03-05-2007
JP 2002-233484 A	20-08-2002	CN1164232C CN1369249 CN1369249A JP14233484 JP2002233484A2 KR1020020066958 KR2002066958A US06735818 US20020108208A1 US2002108208A1 US2002108208AA US6735818BB	01-09-2004 18-09-2002 18-09-2002 20-08-2002 20-08-2002 21-08-2002 21-08-2002 18-05-2004 15-08-2002 15-08-2002 15-08-2002 18-05-2004
KR 10-2006-0119587 A	24-11-2006	None	-
KR 10-0555321 B1	20-02-2006	AU2005209641A 1 AU2005209641B2 AU2005209641AA AU2005209641BB CA2518576AA CA2518576A1 GB200518870A0 GB2420073A GB2420073B2 KR100555321B1 US2006101610AA	01-06-2006 01-06-2006 01-06-2006 08-11-2007 16-05-2006 16-05-2006 26-10-2005 17-05-2006 18-10-2006 20-02-2006 18-05-2006
KR 10-0640830 B1	25-10-2006	None	-
JP 2005-87508 A	07-04-2005	None	-