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Aspirateur

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(56) References cited:
WO-A-01/60226
FR-A- 2 812 531
FR-A- 2 844 174
US-A1- 2004 074 042

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Description

BACKGROUND OF THE INVENTION

Field of the Invention

[0001] The present invention relates to a cleaner, and more particularly, to a vacuum cleaner, which draws in dirt or dust from a surface to be cleaned by using a suction force thus to carry out a cleaning operation.

Description of the Related Art

[0002] Generally, a vacuum cleaner generates a suction force by using a suction motor installed in a cleaner body, and draws in dust or dirt along with air from a surface to be cleaned by using the suction force. The drawn-in air laden with the dust or dirt is deprived of the dust or dirt while passing through a dust collecting unit, so that only the purified air is discharged to the outside of the cleaner body.

[0003] However, the conventional vacuum cleaner is configured, so that as disclosed in Korean patent publication No. 2006-13855, a filter for filtering the air from which the dirt is separated is located in the dust collecting unit, or as Korean patent No. 623916, a filter is covered with a grill unit, which supports the filter. As the filter is disposed in a state where it is not separated from the dust collecting unit as described above, the conventional vacuum cleaner may present a problem in that if large dust or dirt is flowed into the dust collecting unit, the filter is clogged due to the large dust or dirt, thereby causing the suction motor to carry a large load thus to reduce the lifespan thereof, as well as causing a filtering efficiency for minute dust of the filter to deteriorate. Accordingly, a problem occurs in that since the dust or dirt collected in the dust collecting unit should be frequently dumped, that is, the maintenance period is shortened, the conventional vacuum cleaner comes inconvenient to use. In addition, according to the conventional vacuum cleaner, the minute dust and the large dust or dirt are dumped together as because of structure, the dust collecting unit collects the minute dust along with the large dust or dirt.

[0004] Also, the conventional vacuum cleaner is inconvenient in that as far as a user does not directly draws out the filter to the outside, she or he cannot accurately grasp a contamination level of the filter. In process of confirming the contamination level of the filter as described above, the user should pick up the contaminated filter with her or his fingers or by using separate tongs. Moreover, since the filter is in a state where it is inserted in a very narrow space, it is not only difficult to draw out the filter to the outside, but also to insert it again into the narrow space.

[0005] FR 2 844 174 A1 describes a complementary removable filter assembly.

SUMMARY OF THE INVENTION

[0006] The present invention has been developed in order to solve the above problems in the related art. Accordingly, an aspect of the present invention is to provide a vacuum cleaner capable of maintaining a dust collecting unit and a filter assembly, which collect large dirt or dust and minute dust, respectively, in different periods according to amounts of the dirt or dust collected therein, respectively, thereby improving a separating or collecting efficiency for minute dust.

[0007] Another aspect of the present invention is to provide a vacuum cleaner capable of easily grasping a contamination level of a filter with the naked eye.

[0008] The above aspects are achieved by providing a vacuum cleaner according to claim 1. Accordingly, according to the present invention, the dust collecting unit and the filter assembly, which collect large dirt or dust and minute dust, respectively, can be maintained in different periods according to amounts of the dirt or dust collected therein, respectively, thereby improving a separating or collecting efficiency for the minute dust.

[0009] Also, the dust collecting unit may be mounted in an accommodating part horizontally projected in the front of the cleaner body and the filter assembly may be mounted in a seating space part formed in an lower side of the accommodating part, so that the filter assembly and the collecting unit are communicated with each other.

[0010] Preferably, but not necessarily, the filter assembly is disposed below the dust collecting unit to communicate therewith. At least one of the casing and the cover may be formed of transparent material. As a result, a user can easily grasp whether the filter assembly disposed in the casing is contaminated, and thus directly keep a check on a maintenance period of the filter assembly.

[0011] The cover may have a penetrated hole formed to communicate with the discharging hole, and the discharging hole and the penetrated hole may be communicated with in a sealed state with each other. Such a cover at an upper side thereof may have a recessed groove part formed in the form of a loop along an outer side of the penetrated hole, and the dust collecting unit may have a coupling projection formed corresponding to the recessed groove part along an outer side of the discharging hole to couple with the recessed groove. Also, preferably, but not necessarily, the cover has at least two gripping grooves recessed downward from an upper surface thereof, to enable the filter assembly to be gripped and drawn out from the cleaner body.

[0012] The top of the casing may be inclined, so that a dust accumulating space, which dust or dirt included in the air discharged from the discharging hole of the dust collecting unit is accumulated, is formed above the filter inserted in the casing. In this case, the cover may include at least one fist supporting projection projected from a undersurface of the cover by at least one of the gripping grooves, and a second supporting projection projected

from the undersurface of the cover, so that a lower end thereof is located on the same plane as that of a lower end of the fist supporting projection, and positioned in a spaced-apart relation with the fist supporting projection, and the first and the second supporting projections may support an upper surface of the filter, so that the filter is not freely moved in the casing due to a gap formed by the dust accumulating space.

[0013] Also, the cleaner may further include a locking part to lock the cover to the casing. The locking part may include at least one hook projected from one side of a undersurface of the cover adjacent to an outer circumference surface of the cover, at least one first hooking hole formed on one side of the top of the casing to accommodate and lock the hook therein, a locking lever hinged on the other side of the undersurface of the cover adjacent to the outer circumference surface of the cover and having a hanging prominence formed on the inside thereof, and at least one hanging projection formed on the other side of the top of the casing to engage with and lock the hanging prominence of the locking lever.

[0014] According to an exemplary embodiment of the present invention, the filter may include a sponge filter, and a micro filter thinner that the sponge filter. Thus, the filter filters the minute dust twice, so that the collecting efficiency for minute dust can be improved.

BRIEF DESCRIPTION OF THE DRAWING FIGURES

[0015] The above aspects and other advantages of the present invention will be more apparent by describing an exemplary embodiment of the present invention with reference to the accompanying drawing figures, in which:

[0016] FIG. 1 is a schematic side elevation view exemplifying a vacuum cleaner according to an exemplary embodiment of the present invention;

[0017] FIGS. 2A and 2B are schematic perspective views exemplifying mounted and dismounted states where a filter assembly is mounted in and dismounted from a cleaner body;

[0018] FIG. 3 is a perspective view exemplifying a dust collecting unit of the vacuum cleaner illustrated in FIG.1;

[0019] FIG. 4 is a perspective view exemplifying the filter assembly of the vacuum cleaner illustrated in FIG.1;

[0020] FIG. 5 is an exploded perspective view exemplifying the filter assembly illustrated in FIG.4;

[0021] FIG. 6 is a schematic side elevation view of the filter assembly as viewed in a direction of arrow A indicated in FIG. 4; and

[0022] FIG. 7 is a partly magnified cross-sectional view exemplifying a part B indicated in FIG. 6.

[0023] In the drawing figures, it should be understood that like reference numerals refer to like features and structures.

DETAILED DESCRIPTION OF AN EXEMPLARY EMBODIMENT

[0024] Hereinafter, a vacuum cleaner according to an exemplary embodiment of the present invention will now be described in greater detail with reference to the accompanying drawing figures.

[0025] FIG. 1 is a schematic side elevation view exemplifying the vacuum cleaner according to the exemplary embodiment of the present invention, FIGS. 2A and 2B are schematic perspective views exemplifying mounted and dismounted states where a filter assembly is mounted in and dismounted from a cleaner body, and FIG. 3 is a perspective view exemplifying a dust collecting unit of the vacuum cleaner illustrated in FIG.1.

[0026] Referring to FIG.1, the vacuum cleaner according to the exemplary embodiment of the present invention includes a suction nozzle 1 to draw in dust or dirt from a surface to be cleaned, an extended tube 3, a handle 5, a connecting hose 7, a cleaner body 10, a suction motor 20, a dust collecting unit 30, and a filter assembly 40.

[0027] In the cleaner body 10 are mounted the suction motor 20, the dust collecting unit 30, and the filter assembly 40. The connecting hose 7 is detachably coupled to the cleaner body 10 to connect the suction nozzle 1 to a hose connecting part 11 in front of the cleaner body 10 and thus to guide the dust or dirt drawn in from the surface to be cleaned, into the cleaner body 10. In this case, as illustrated in FIG. 2A, the hose connecting part 11 is communicated with an inflow hole 13 (see FIG. 2A), which is formed in an approximate right angle to a bottom surface of the cleaner body 10 to communicate in a bent state with the hose connecting part 11. Also, referring to FIGS. 2A and 2B, the cleaner body 10 has an accommodating part 18 horizontally projected in the front thereof, so that the dust collecting unit 30 can be mounted in the accommodating part 18. A seating space part 15 is formed in a lower side of the accommodating part 18, so that the filter assembly 40 can be seated and mounted in the seating space part 15. In this case, the seating space part 15 and a motor chamber 9 in which the suction motor 20 is disposed are communicated by a plurality of air discharging hole 17 with each other. As a result, air passing through the filter assembly 40 can be flowed toward the suction motor 20.

[0028] The suction motor 20 generates a suction force for drawing in the dust or dirt into the cleaner body 10 through the suction nozzle 1, and is disposed in the rear of the cleaner body 10.

[0029] As illustrated in FIG. 3, the dust collecting unit 30 includes a body 31, a lid 33, and a handle 35. The body 31 is detachably joined to the accommodating part 18, and as illustrated in FIG. 3, at an undersurface thereof has a suction hole 31 a communicating with the inflow hole 13 (see FIG. 2A) and a discharging hole 31 b communicating with a penetrated hole 43a of the filter assembly 40. Such a body 31 has a cyclone structure, which separates the dust or dirt drawn in together with the air

therefrom by a centrifugal force and discharges the dust-removed air through the discharging hole 31 b. The lid 33 is detachably coupled to an upper part of the body 31 to open and close the upper part of the body 31. Reference numerals 37 and 38 indicate a filter and a mount to support the filter 37, respectively.

[0030] As illustrated in FIG.1, the filter assembly 40, as an assembly formed of a member separate from the dust collecting unit 30, is disposed on a discharging passage between the duct collecting unit 30 and the suction motor 20, and includes a casing 41, a cover 43, a first filter 45 and a second filter 47.

[0031] Hereinafter, a construction of the filter assembly 40 will be explained as follows with reference to FIGS. 4 through 7.

[0032] FIG. 4 is a perspective view exemplifying the filter assembly, FIG. 5 is an exploded perspective view exemplifying the filter assembly, FIG. 6 is a schematic side elevation view of the filter assembly, and FIG. 7 is a partly magnified cross-sectional view exemplifying a locking structure.

[0033] The casing 41 is detachably seated and mounted in the seating space part 15 (see FIG. 2B) of the cleaner body 10. In this case, the casing 41 at a side thereof has a first recess 41 c formed corresponding to a circumference surface of the inflow hole 13 (see FIG. 2B) projected into the seating space part 15 to surround the inflow hole 13. In addition, the casing 41 is formed, so that an upper part thereof is opened and a top 41 d is inclined in a certain angle. In this case, as illustrated in FIG. 6, the casing 41 having the inclined top 41 d at an upper side of the inside thereof has a certain dust accumulating space 40a. That is, the dust accumulating space 40a is formed at the upper side of the inside of the casing 41, so that a volume thereof is gradually enlarged from a second supporting projection 43e to a first supporting projection 43d of the cover 43. Also, as the top of the casing 41 is inclined, the dust collecting unit 30 mounted above the filter assembly 40 is maintained in an inclined state. As a result, when the dust collecting unit 30 is drawn out from the cleaner body 10 having a low height, a user, which is in a position higher than the cleaner body 10, comes easy to draw out the dust collecting unit 30. A discharging hole 41 b through which the air purified while passing through the first and the second filters 45 and 47 is discharged is formed in an undersurface of the casing 41. A filter mount 41 a, which supports an undersurface of the second filter 47, is formed across the discharging hole 41 b in the discharging hole 41 b. In this case, preferably, but not necessarily, the casing 41 is formed of transparent material, so that the user can grasp a contamination level of the first and the second filter 45 and 47 with the naked eye.

[0034] Like the casing 41, the cover 43 has a second recessed part 43c formed at a side thereof, so that it is detachably connected to the top of the casing 41, and a penetrated hole 43a, which is communicated with the discharging hole 31 b of the dust collecting unit 30. In this case, the discharging hole 43a and the penetrated hole 31 b are communicated in a sealed state with each other by a recessed groove part 61 of cover 43 and a coupling projection 64 (see FIG. 3) of the dust collecting unit 30. Such a recessed groove part 61 is formed in the form of a loop along an outer side of the penetrated hole 31 b on a surface of the cover 43 abutting the undersurface of the duct collecting unit 30, and the coupling projection 63 is formed in the form of a loop on the undersurface of the duct collecting unit 30 to correspond to the recessed groove part 61, so that it is coupled with the recessed groove part 61 along an outer side of the discharging hole 31 b. In addition, the cover 43 has a pair of gripping grooves 43b in which user's fingers are inserted to easily draw out the filter assembly 40 from the seating space part 15 of the cleaner body 10. The pair of gripping grooves 43b is disposed on both sides of the cover 43 to correspond to each other, and is recessed downward from an upper surface of the cover 43. Also, the cover 43 at one side of a undersurface thereof has a pair of fist supporting projections 43d formed by the pair of gripping grooves 43b recessed, and at the other side of the undersurface thereof has a second supporting projection 43e. The second supporting projection 43e has a height located on the same plane as that of lower ends of the fist supporting projections 43d, and is positioned in a spaced-apart relation with the fist supporting projection 43d. At this time, the first and the second supporting projections 43d and 43e support an upper surface of the filter 45, so that the first and the second filter 45 and 47 are not freely moved in the casing 41. Also, preferably, but not necessarily, like the casing 41, the cover 43 is formed of transparent material, so that the user can grasp the contamination level of the first and the second filter 45 and 47 inserted in the casing 41 with the naked eye.

[0035] On the other hand, the cover 43 is stably mounted on the casing 41 through a locking part. Such a locking part has a pair of hooks 51 a and 51 b projected from one side of the undersurface of the cover 43 adjacent to an outer circumference surface of the cover 43, respectively, while interposing the first recessed part 43c of the cover 43 therebetween, as illustrated in FIG. 5. In addition, the case 41 has a pair of hooking holes 53a and 53b (see FIG. 5) formed on one side of the top thereof to accommodate and lock the hooks 51 a and 51 b therein, respectively, as illustrated in FIG. 6. With this, referring FIG. 7, a locking lever 55 is formed, so that one end thereof is hinged by a hinge pin 56 on the other side of the undersurface of the cover 43 adjacent to the outer circumference surface of the cover 43. Also, a hanging projection 59 is formed on the other side of the top of the casing 41 to engage with and lock a hanging prominence 57 formed on the inside of the locking lever 55.

[0036] The first filter 45 has one side recessed, so that an outer circumference surface thereof corresponds to an inner circumference surface of the casing 41, and is made of a sponge type filter. The second filter 47 is made of a high efficiency particulate arrestor (HEPA) filter ca-

pable of filtering minute dust passing through the first filter 45, and is formed thinner than the first filter 45. The second filter 47 is formed, so that an outer circumference surface thereof corresponds to the inner circumference surface of the casing 41, like the first filter 45. Such first and the second filters 45 and 47 have a total thickness, which when they are inserted into and layered in the casing 41, an upper surface of the first filter 45 is supported in a lightly pressed state by the first and the second supporting projections 43d and 43e of the cover 43. Accordingly, the filters 45 and 47 filter the minute dust twice, so that the collecting efficiency for minute dust can be improved.

[0037] The vacuum cleaner according to the exemplary embodiment of the present invention constructed as described above allows the user to easily grasp the contamination level of the first filter 45 through the cover 43 of the filter assembly 40 when the dust collecting unit 30 is drawn out from the accommodating part 18 (see FIG. 2A) in order to dump the dust or dirt collected therein. In addition, if the user wants to confirm the contamination level of the second filter 47 layered below the first filter 45, she or he draws out the filter assembly 40 from the seating space part 15 by inserting her or his fingers into the pair of gripping grooves 43b to grip the cover 43 and then pulling upward the cover 43 as illustrated in FIG. 2B, so that she or her can easily grasp the contamination level of the second filter 47 through the transparent casing 41.

[0038] Also, in the present embodiment, the filter assembly 40 is configured in a detachable type, so that the user can easily replace the filters. An operation of replacing the first and the second filters are as follows. First, the locking lever 55 is pivoted about the hinge pin 56 to move a free end 55a thereof upward and thus to release the locking between the hanging prominence 57 and the hanging projection 59. Subsequently, the cover 43 is rotated about the pair of hooks 51a and 51 b, so that the other side of the cover 43, that is, a side of the cover 43 on which the locking lever 55 is disposed is moved upward. As a result, the locking between the hooks 51 a and 51 b and the hooking holes 53a and 53b is released and at the same time, the cover 43 is separated from the casing 41. And then, the first and the second filters 45 and 47 are drawn out from the casing 41 and new first and second filters are inserted and mounted. The cover 43 is assembled and mounted on the casing 41 in a reverse order to the operation of separating the cover 43.

[0039] As described above, the user can not only easily grasp the changing time of the filters, but also conveniently replace the used filters with new filters.

[0040] In the present embodiment, although the filter assembly 40 is explained as disposed below the dust collecting unit 30, the present invention is not limited thereto. For instance, it is possible to dispose the filter assembly 40 above or in the rear of the dust collecting unit 30 according to the position of the suction hole 31 a of the dust collecting unit 30.

[0041] As apparent from the foregoing description, according to the exemplary embodiment of the present invention, the vacuum cleaner is configured, so that the dust collecting unit and the filter assembly, which collect the large dirt or dust and the minute dust, respectively, can be maintained in different periods according to the amounts of the dirt or dust collected therein, respectively. Particularly, as the filter assembly is formed of a member separate from the dust collecting unit, the vacuum cleaner according to the exemplary embodiment of the present invention is advantageous in that the filters of the filter assembly can be prevented from being clogged due to the large dirt or dust and thus the separating or collecting efficiency for the minute dust can be improved.

[0042] Further, the vacuum cleaner according to the exemplary embodiment of the present invention allows the user to easily grasp the contamination level of the filters through the filter assembly formed of the transparent material and thus to grasp replacement and maintenance periods of the filters when she or he draws out the dust collecting unit from the accommodating part in order to dump the dust or dirt collected therein.

[0043] Also, the vacuum cleaner according to the exemplary embodiment of the present invention is configured, so that the filter assembly has the gripping grooves integrally formed with the cover to draw out the filter assembly from the cleaner body. Accordingly, the vacuum cleaner according to the exemplary embodiment of the present invention does not need parts forming a separate handle, thereby allowing fabrication costs to reduce and allowing working processes to be simplified.

Claims

1. A vacuum cleaner comprising:

a suction motor (20) to draw in dirt or dust into a cleaner body (10) through a suction nozzle (1);
a dust collecting unit (30) to collect the dirt or dust drawn into the cleaner body and having a discharging hole (31b) to discharge air; and
a filter assembly (40) detachably joined to the cleaner body on an air
discharging passage between the dust collecting unit and the suction motor, and provided as a member separate from the dust collecting unit,
characterised in that the filter assembly (40) comprises:

a casing (41) having an opened upper part and a partly opened lower part;
a cover (43) mounted on a top (41d) of the casing to communicate with the discharging hole (31b) of an undersurface of the dust collecting unit (30); and
at least one filter (45, 47) inserted into and mounted in the casing.

2. The cleaner of claim 1, wherein the filter assembly (40) is disposed below the dust collecting unit (30) to communicate therewith.

3. The cleaner of claim 1 or claim 2, wherein the dust collecting unit (30) is mounted in an accommodating part horizontally projected in the front of the cleaner body (10), and the filter assembly (40) is mounted in a seating space part formed in a lower side of the accommodating part, the filter assembly (40) and the dust collecting unit (30) being communicated with each other.

4. The cleaner of any one of the previous claims, wherein at least one of the casing (41) and the cover (43) is formed of transparent material.

5. The cleaner of any one of the previous claims, wherein the cover has a penetrated hole (43a) formed to communicate with the discharging hole (31b), and the discharging hole and the penetrated hole are communicated in a sealed state with each other.

6. The cleaner of claim 5, wherein the cover (43) at an upper side thereof has a recessed groove part (61) formed in the form of a loop along an outer side of the penetrated hole (43a), and the dust collecting unit has a coupling projection (63) formed corresponding to the recessed groove part along an outer side of the discharging hole (31b) to couple with the recessed groove part.

7. The cleaner of any one of the previous claims, wherein the cover (43) has at least two gripping grooves (43b) recessed downward from an upper surface thereof, to enable the filter assembly to be gripped and drawn out from the cleaner body.

8. The cleaner of any one of the previous claims, wherein the top (41d) of the casing (41) is inclined, so that a dust accumulating space (40a), which dust or dirt included in the air discharged from the discharging hole of the dust collecting unit is accumulated, is formed above the filter inserted in the casing.

9. The cleaner of claim 8, wherein the cover (43) comprises;
at least one first supporting projection (43d) projected from an undersurface of the cover (43) by at least one of the gripping grooves; and
a second supporting projection (43e) projected from the undersurface of the cover, so that a lower end thereof is located on the same plane as that of a lower end of the first supporting projection, and positioned in a spaced-apart relation with the first supporting projection,
wherein the first and the second supporting projections (43d, 43e) support an upper surface of the filter, so that the filter is not freely moved in the casing due to a gap formed by the dust accumulating space (40a).

10. The cleaner of any one of the previous claims, further comprising a locking part to lock the cover (43) to the casing (41).

11. The cleaner of claim 10, wherein the locking part comprises:

at least one hook (51a) projected from one side of an undersurface of the cover adjacent to an outer circumference surface of the cover;
at least one first hooking hole (53a) formed on one side of the top (41 d) of the casing to accommodate and lock the hook therein;
a locking lever (55) hinged on the other side of the undersurface of the cover adjacent to the outer circumference surface of the cover and having a hanging prominence (57) formed on the inside thereof; and
at least one hanging projection (59) formed on the other side of the top of the casing to engage with and lock the hanging prominence (57) of the locking lever.

12. The cleaner of any one of the previous claims, wherein the filter comprises a sponge filter (45), and a micro filter (47) thinner than the sponge filter.

Patentansprüche

1. Staubsauger, der folgendes aufweist:

- einen Saugmotor (20) zum Einziehen von Schmutz oder Staub in einen Staubsaugerkörper (10) durch eine Saugdüse (1);
- eine Staubsammeleinheit (30) zum Sammeln des in den Staubsaugerkörper eingezogenen Schmutzes oder Staubs, wobei die Staubsammeleinheit eine Austrittsöffnung (31b) für den Austritt von Luft aufweist; und
- eine Filteranordnung (40), die an einer Luftaustrittspassage zwischen der Staubsammeleinheit und dem Saugmotor mit dem Staubsaugerkörper lösbar verbunden ist und als ein von der Staubsammeleinheit separates Element vorgesehen ist,

dadurch gekennzeichnet,
daß die Filteranordnung (40) folgendes aufweist:

ein Gehäuse (41) mit einem geöffneten oberen Teil und einem teilweise geöffneten unteren Teil:
eine Abdeckung (43), die an einer Oberseite

(41d) des Gehäuses derart angebracht ist, daß sie mit der Austrittsöffnung (31b) an einer unteren Oberfläche der Staubsammeleinheit (30) in Verbindung steht; und mindestens einen Filter (45, 47), der in das Gehäuse eingesetzt und in diesem montiert ist.

2. Staubsauger nach Anpsruch 1,
wobei die Filteranordnung (40) unter der Staubsammeleinheit (30) derart angeordnet ist, daß sie mit dieser in Verbindung steht.

3. Staubsauger nach Anspruch 1 oder Anspruch 2,
wobei die Staubsammeleinheit (30) in einem Unterbringungsbereich angebracht ist, der von dem Staubsaugerkörper (10) horizontal nach vorn ragend vorgesehen ist, und wobei die Filteranordnung (40) in einem Sitzraumbereich angebracht ist, der an einer Unterseite des Unterbringungsbereichs ausgebildet ist, wobei die Filteranordnung (40) und die Staubsammeleinheit (30) miteinander in Verbindung gebracht sind.

4. Staubsauger nach einem der vorhergehenden Ansprüche,
wobei von dem Gehäuse (41) und der Abdeckung (43) mindestens eine Kompenente aus transparentem Material gebildet ist.

5. Staubsauger nach einem der vorhergehenden Ansprüche,
wobei die Abdeckung eine Durchgangsöffnung (43a) aufweist, die zur Verbindung mit der Austrittsöffnung (31b) ausgebildet ist, und wobei die Austrittsöffnung und die Durchgangsöffnung in einem abgedichteten Zustand miteinander in Verbindung stehen.

6. Staubsauger nach Anspruch 5,
wobei die Abdeckung (43) an einer Oberseite einen vertieften Aussparungsbereich (61) aufweist, der in Form einer umlaufenden Bahn entlang einer Außenseite der Durchgangsöffnung (43a) ausgebildet ist, und wobei die Staubsammeleinheit einen Kopplungsvorsprung (63) aufweist, der zur Kopplung mit dem vertieften Aussparungsbereich diesem entsprechend entlang einer Außenseite der Austrittsöffnung (31b) ausgebildet ist.

7. Staubsauger nach einem der vorhergehenden Ansprüche,
wobei die Abdeckung (43) mindestens zwei Greifvertiefungen (43b) aufweist, die von einer oberen Oberfläche von dieser nach unten vertieft ausgebildet sind, so daß die Filteranordnung gegriffen und aus dem Staubsaugerkörper herausgezogen werden kann.

8. Staubsauger nach einem der vorhergehenden Ansprüche,
wobei die Oberseite (41 d) des Gehäuses (41) geneigt ausgebildet ist, so daß ein Staubsammelraum (40a) für Staub oder Schmutz, der in der Luft enthalten ist, die von der Austrittsöffnung der Staubsammeleinheit abgegeben wird, über dem in das Gehäuse eingesetzten Filter gebildet ist.

9. Staubsauger nach Anspruch 8,
wobei die Abdeckung (43) folgendes aufweist:

mindestens einen ersten Abstützvorsprung (43d), der von einer unteren Oberfläche der Abdeckung (43) durch mindestens eine der Greifvertiefungen hervorsteht; und
einen zweiten Abstützvorsprung (43e), der von der unteren Oberfläche der Abdeckung derart hervorsteht, daß sich ein unteres Ende von diesem in derselben Ebene wie ein unteres Ende des ersten Abstützvorsprungs befindet und in beabstandeter Weise von dem ersten Abstützvorsprung angeordnet ist,
wobei der erste und der zweite Abstützvorsprung (43d, 43e) eine obere Oberfläche des Filters haltern, so daß sich der Filter aufgrund eines durch den Staubsammelraum (40a) gebildeten Spalts nicht frei in dem Gehäuse bewegt.

10. Staubsauger nach einem der vorhergehenden Ansprüche,
wobei der Staubsauger weiterhin ein Verriegelungsteil zum Verriegeln der Abdeckung (43) an dem Gehäuse (41) aufweist.

11. Staubsauger nach Anspruch 10,
wobei das Verriegelungsteil folgendes aufweist:

- mindestens einen Haken (51a), der von der einen Seite einer unteren Oberfläche der Abdeckung angrenzend an eine Außenumfangsfläche der Abdeckung wegragt;
- mindestens eine erste Einhaköffnung (53a), die an der einen Seite von der Oberseite (41d) des Gehäuses ausgebildet ist, um den Haken darin aufzunehmen und zu verriegeln;
- einen Verriegelungshebel (55), der an der anderen Seite der unteren Oberfläche der Abdekkung angrenzend an die Außenumfangsfläche der Abdeckung ausgebildet ist und an seiner Innenseite mit einer Aufhängerhebung (57) ausgebildet ist; und
- mindestens einen Aufhängvorsprung (59), der an der anderen Seite der Oberseite des Gehäuses ausgebildet ist, um mit der Aufhängerhebung (57) des Verriegelungshebels in Eingriff zu treten und diesen zu verriegeln.

12. Staubsauger nach einem der vorhergenenden Ansprüche,
wobei der Filter einen Schwammfilter (45) sowie einen Mikrofilter (47) aufweist, der dünner ist als der Schwammfilter.

Revendications

1. Aspirateur, comportant :

un moteur d'aspiration (20) pour attirer de la saleté ou de la poussière jusque dans un corps d'aspirateur (10) à travers une buse d'aspiration (1),
une unité de recueil de poussière (30) pour collecter la saleté ou la poussière attirée jusque dans le corps d'aspirateur, et ayant un trou d'évacuation (31b) pour évacuer l'air, et
un ensemble formant filtre (40) relié de manière amovible au corps d'aspirateur sur un passage d'évacuation d'air entre l'unité de collecte de poussière et le moteur d'aspiration, et agencé sous la forme d'un élément séparé de l'unité de collecte de poussière,
caractérisé en ce que l'ensemble formant filtre (40) comporte :

un carter (41) ayant une partie supérieure ouverte et une partie inférieure partiellement ouverte,
un couvercle (43) monté sur une partie supérieure (41d) du carter pour communiquer avec le trou d'évacuation (31b) d'une surface inférieure de l'unité de collecte de poussière (30), et
au moins un filtre (45, 47) inséré dans le carter, et monté dans celui-ci.

2. Aspirateur selon la revendication 1, dans lequel l'ensemble formant filtre (40) est disposé sous l'unité de collecte de poussière (30) pour communiquer avec celle-ci.

3. Aspirateur selon la revendication 1 ou 2, dans lequel l'unité de collecte de poussière (30) est montée dans une partie de réception faisant saillie horizontalement en avant du corps d'aspirateur (10), et l'ensemble formant filtre (40) est monté dans une partie d'espace d'appui formée dans un côté inférieur de la partie de réception, l'ensemble formant filtre (40) et l'unité de collecte de poussière (30) étant mis en communication l'un avec l'autre.

4. Aspirateur selon l'une quelconque des revendications précédentes, dans lequel au moins un élément parmi le carter (41) et le couvercle (43) est formé d'un matériau transparent.

5. Aspirateur selon l'une quelconque des revendications précédentes, dans lequel le couvercle a un trou pénétré (43a) formé pour communiquer avec le trou d'évacuation (31b), et le trou d'évacuation et le trou pénétré sont mis en communication dans un état étanchéifié l'un avec l'autre.

6. Aspirateur selon la revendication 5, dans lequel le couvercle (43), au niveau d'un côté supérieur de celui-ci, a une partie de rainure évidée (61) formée sous la forme d'une boucle le long d'un côté extérieur du trou pénétré (43a), et l'unité de collecte de poussière a une saillie de couplage (103) formée correspondant à la partie de rainure évidée le long d'un côté extérieur du trou d'évacuation (31b) pour couplage à la partie de rainure évidée.

7. Aspirateur selon l'une quelconque des revendications précédentes, dans lequel le couvercle (43) a au moins deux rainures de préhension (43b) évidées vers le bas depuis une surface supérieure de celui-ci, pour permettre à l'ensemble formant filtre d'être saisi et extrait du corps d'aspirateur.

8. Aspirateur selon l'une quelconque des revendications précédentes, dans lequel la partie supérieure (41 d) du carter (41) est inclinée, de sorte qu'un espace d'accumulation de poussière (40a), dans lequel de la poussière ou de la saleté incluse dans l'air évacué depuis le trou d'évacuation de l'unité de collecte de poussière est accumulée, est formée au-dessus du filtre inséré dans le carter.

9. Aspirateur selon la revendication 8, dans lequel le couvercle (43) comporte :

au moins une première saillie de support (43d) faisant saillie à partir d'une surface inférieure du couvercle (43) par au moins une des rainures de préhension, et
une seconde saillie de support (43e) faisant saillie à partir de la surface inférieure du couvercle, de sorte que l'extrémité inférieure de celle-ci est positionnée sur le même plan que celui d'une extrémité inférieure de la première saillie de support, et est positionnée dans une relation espacée avec la première saillie de support,
dans lequel les première et seconde saillies de support (43d, 43e) supportent une surface supérieure du filtre, de sorte que le filtre n'est pas déplacé librement dans le carter du fait d'un espace formé par l'espace d'accumulation de poussière (40a).

10. Aspirateur selon l'une quelconque des revendications précédentes, comprenant en outre une pièce de verrouillage pour verrouiller le couvercle (43) sur le carter (41).

11. Aspirateur selon la revendication 10, dans lequel la pièce de verrouillage comporte :

au moins un crochet (51a) faisant saillie depuis un premier côté d'une surface inférieure du couvercle adjacent à une surface circonférentielle extérieure du couvercle,
au moins un premier trou d'accrochage (53a) formé sur un premier côté du dessus (41 d) du capteur pour accepter et verrouiller le crochet dans celui-ci,
un levier de verrouillage (55) articulé sur l'autre côté de la surface inférieure du couvercle adjacent à la surface circonférentielle extérieure du couvercle, et ayant une protubérance de suspension (57) formée sur son intérieur, et
au moins une saillie de suspension (59) formée sur l'autre côté du dessus du carter pour venir en prise avec et verrouiller avec la protubérance de suspension (57) du levier de verrouillage.

12. Aspirateur selon l'une quelconque des revendications précédentes, dans lequel le filtre comporte un filtre en éponge (45) et un microfiltre (47) plus mince que le filtre en éponge.

FIG. 1

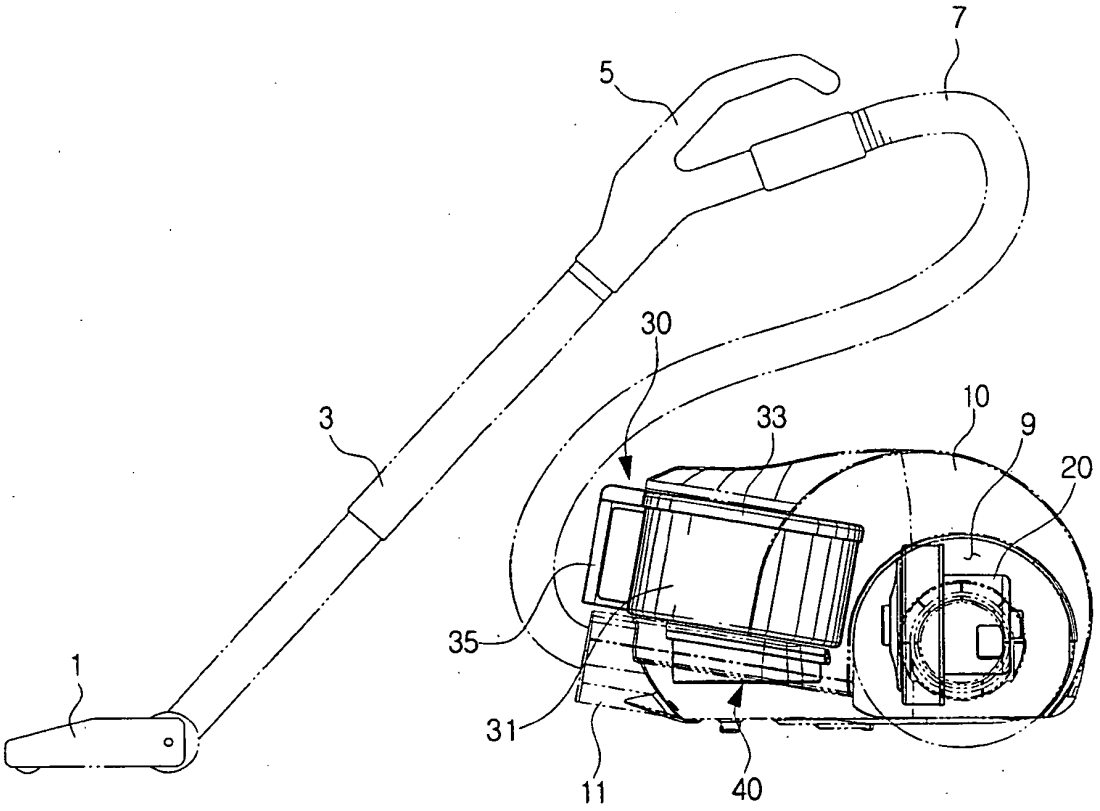


FIG. 2A

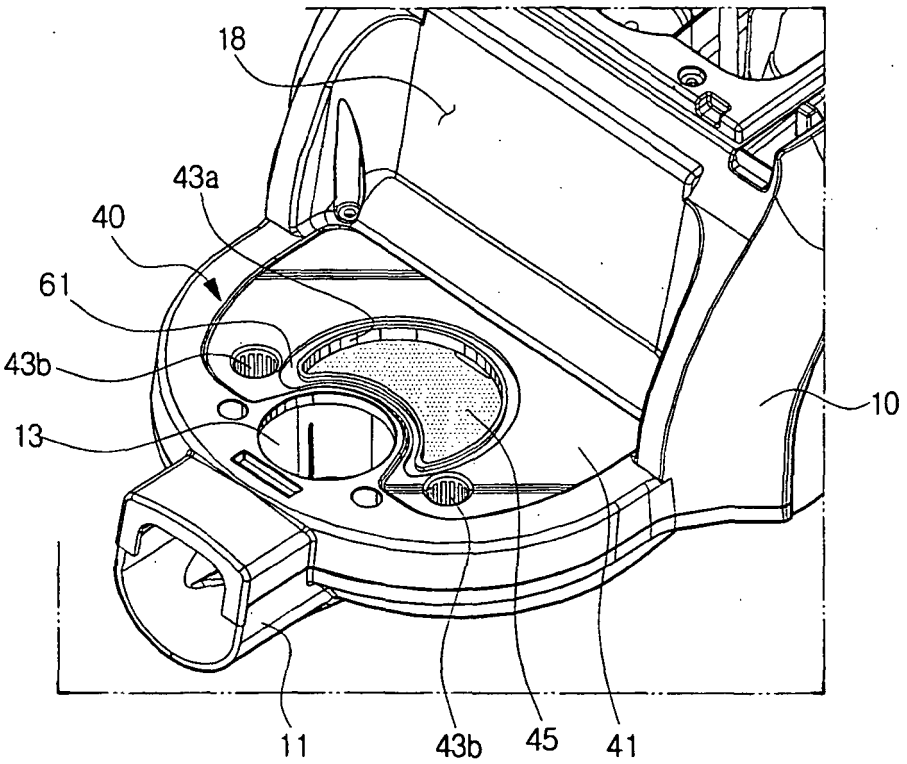


FIG. 2B

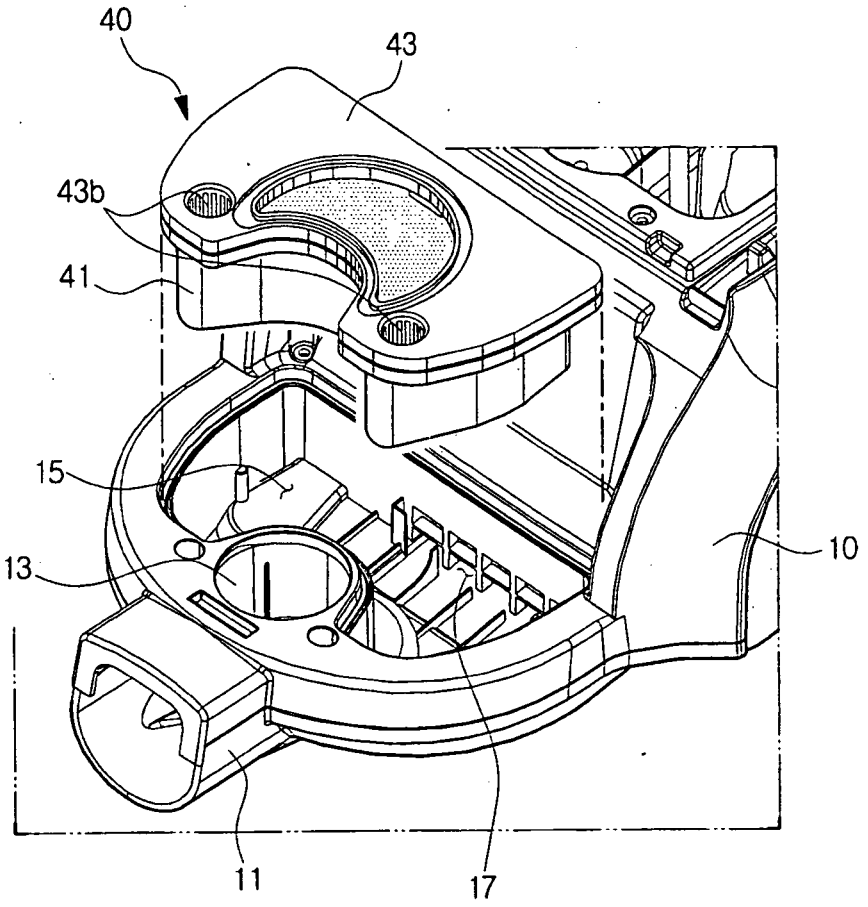


FIG. 3

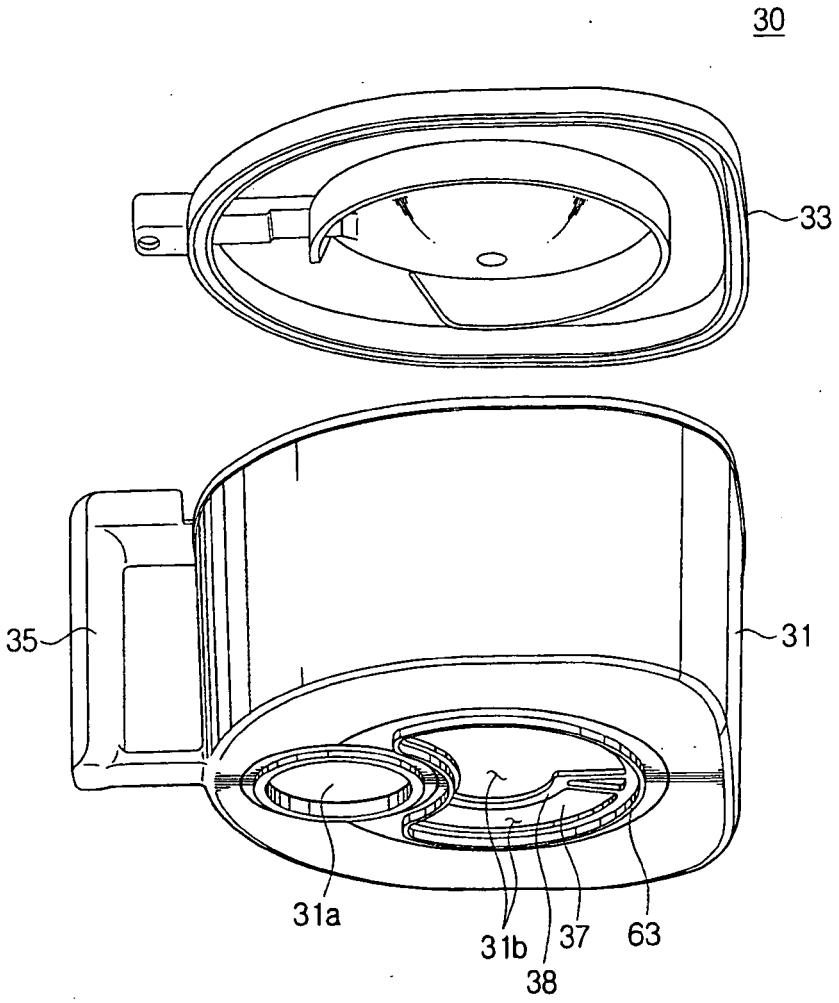


FIG. 4

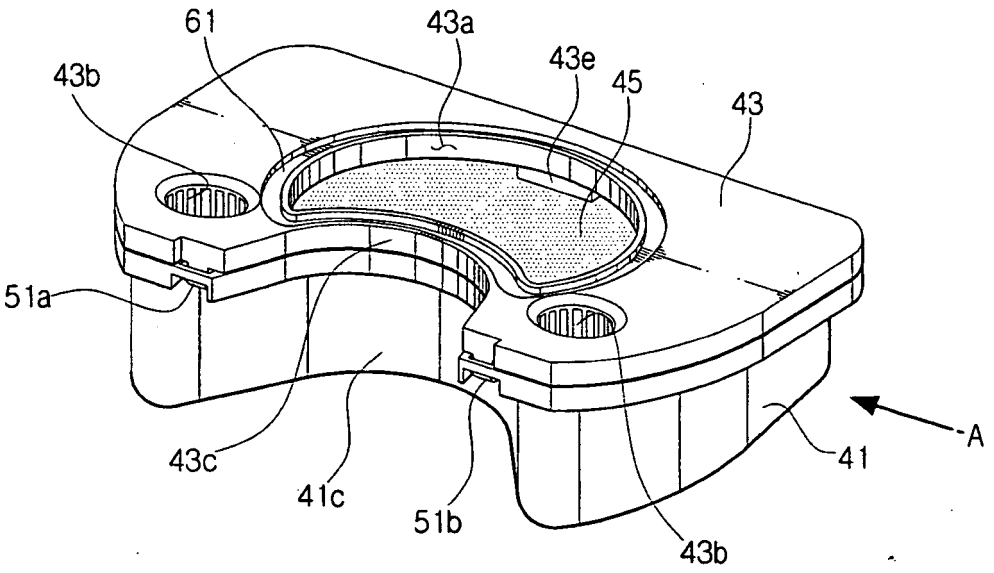


FIG. 5

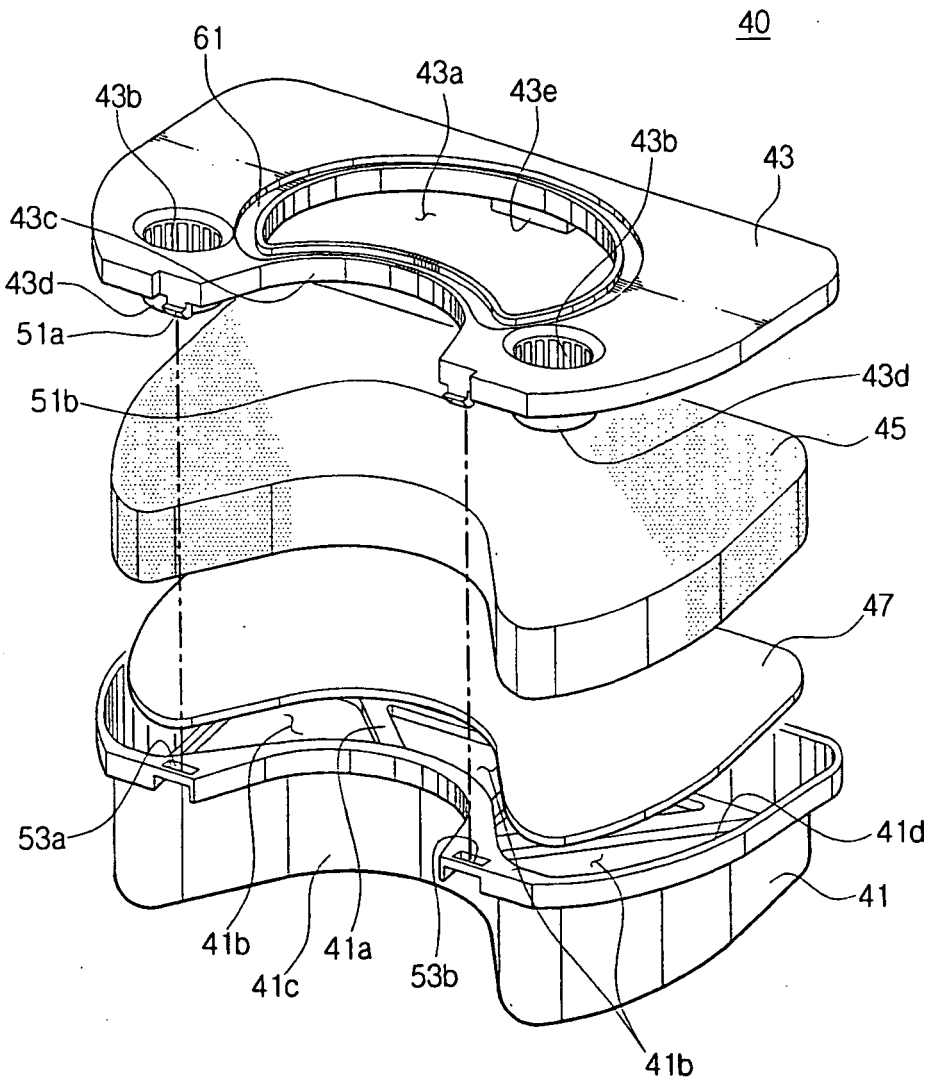

40
61
43b
43a
43e
43b
43
43c
43d
51a
51b
43d
45
47
53a
41d
41
41b
41c
41a
53b
41b

FIG. 6

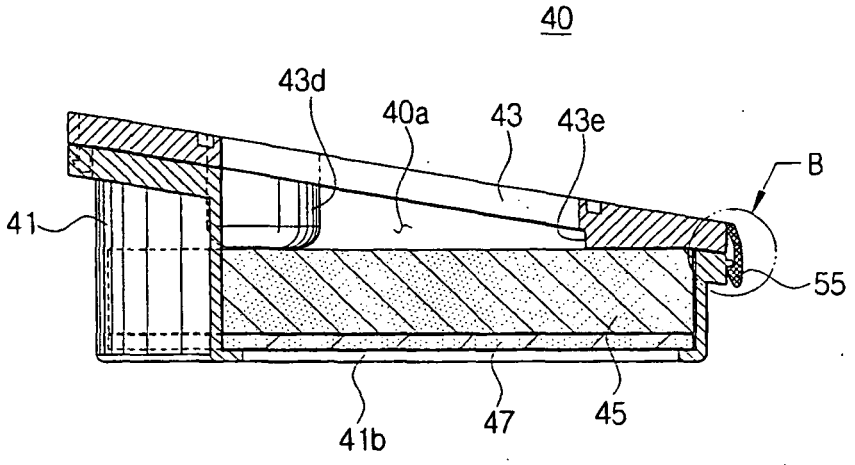
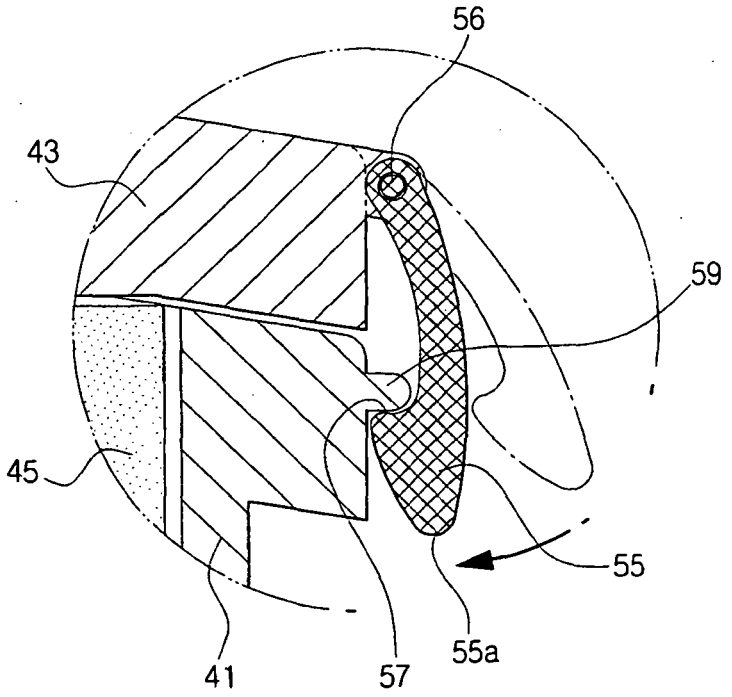


FIG. 7



REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- KR 200613855 **[0003]**
- KR 623916 **[0003]**
- FR 2844174 A1 **[0005]**