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Jung et al.

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(54) **AIR CLEANER**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 16 days.

This patent is subject to a terminal disclaimer.

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(30) **Foreign Application Priority Data**

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F24F 13/20 (2006.01)
(Continued)

(52) **U.S. Cl.**
CPC ***B01D 46/0047*** (2013.01); ***B01D 46/002*** (2013.01); ***B01D 46/0019*** (2013.01);
(Continued)

(58) **Field of Classification Search**
CPC B01D 46/2411; B01D 46/0005; B01D 46/0019; B01D 46/0047; B01D 46/0008;
(Continued)

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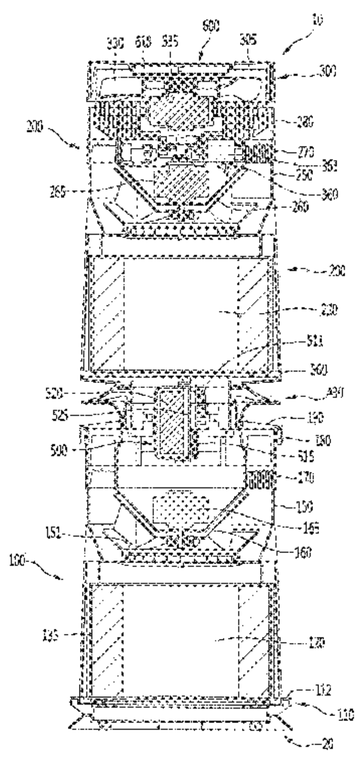
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Primary Examiner — Robert Clemente
(74) *Attorney, Agent, or Firm* — KED & Associates LLP

(57) **ABSTRACT**

An air cleaner is provided that may include a first air cleaning module including a first fan that generates air flow toward a first discharge outlet from a first suction inlet; a second air cleaning module including a second fan that generates air flow toward a second discharge outlet from a second suction inlet; and a divider provided between the first air cleaning module and the second air cleaning module, the divider being configured to block air discharged through the first discharge outlet from being suctioned into the second suction inlet.

19 Claims, 16 Drawing Sheets



(51) **Int. Cl.**

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B01D 46/42	(2006.01)
F24F 1/02	(2019.01)

(52) **U.S. Cl.**

CPC ***B01D 46/0021*** (2013.01); ***B01D 46/24*** (2013.01); ***B01D 46/2403*** (2013.01); ***B01D 46/42*** (2013.01); ***F24F 1/02*** (2013.01); ***F24F 3/1603*** (2013.01); ***F24F 13/20*** (2013.01); *B01D 2273/30* (2013.01)

(58) **Field of Classification Search**

CPC B01D 46/24; B01D 46/0021; B01D 46/4245; B01D 46/002; F24F 1/02; F24F 1/025; F24F 2001/004; F24F 13/20; F24F 3/1603

See application file for complete search history.

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Fig. 1

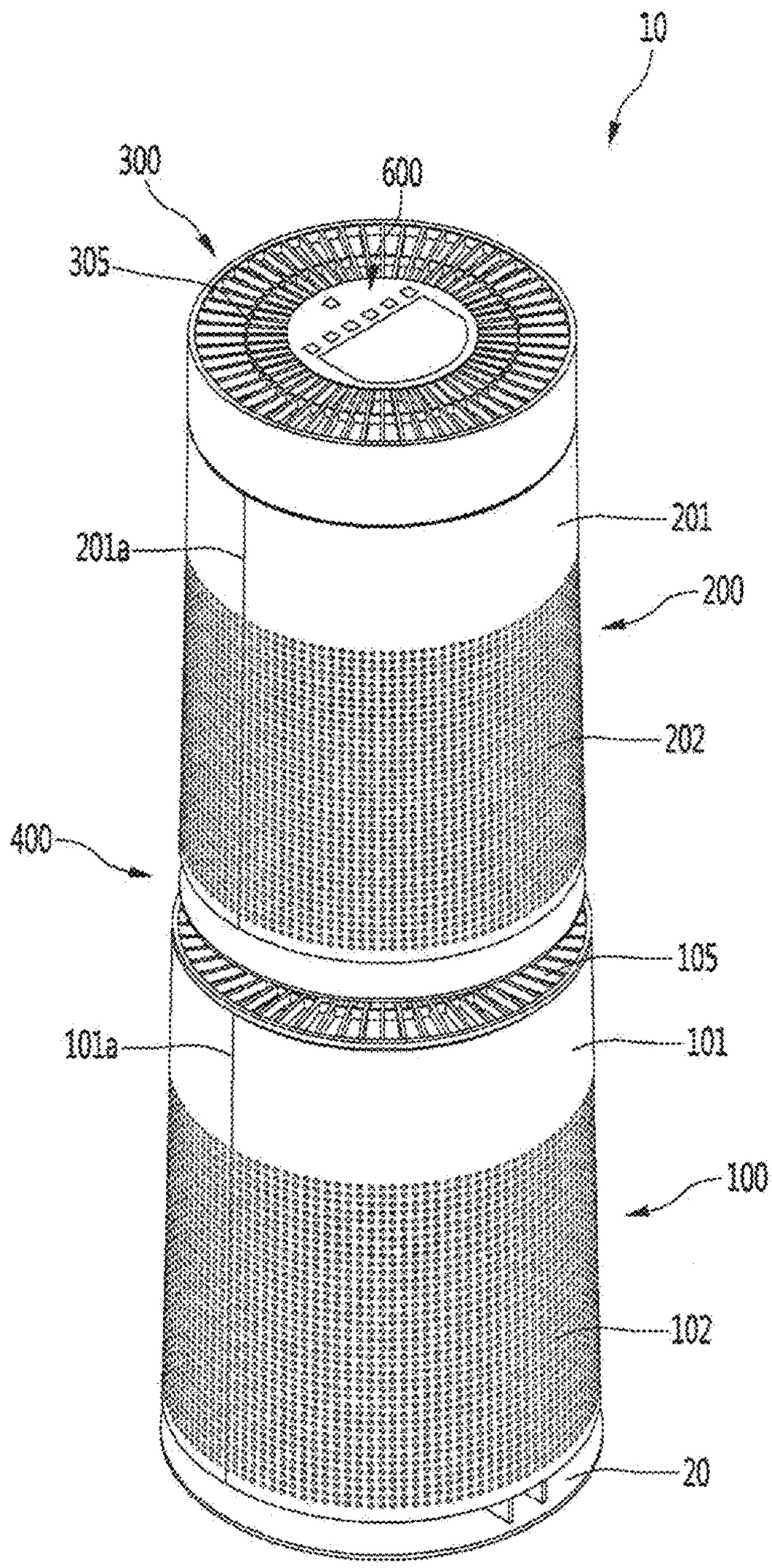


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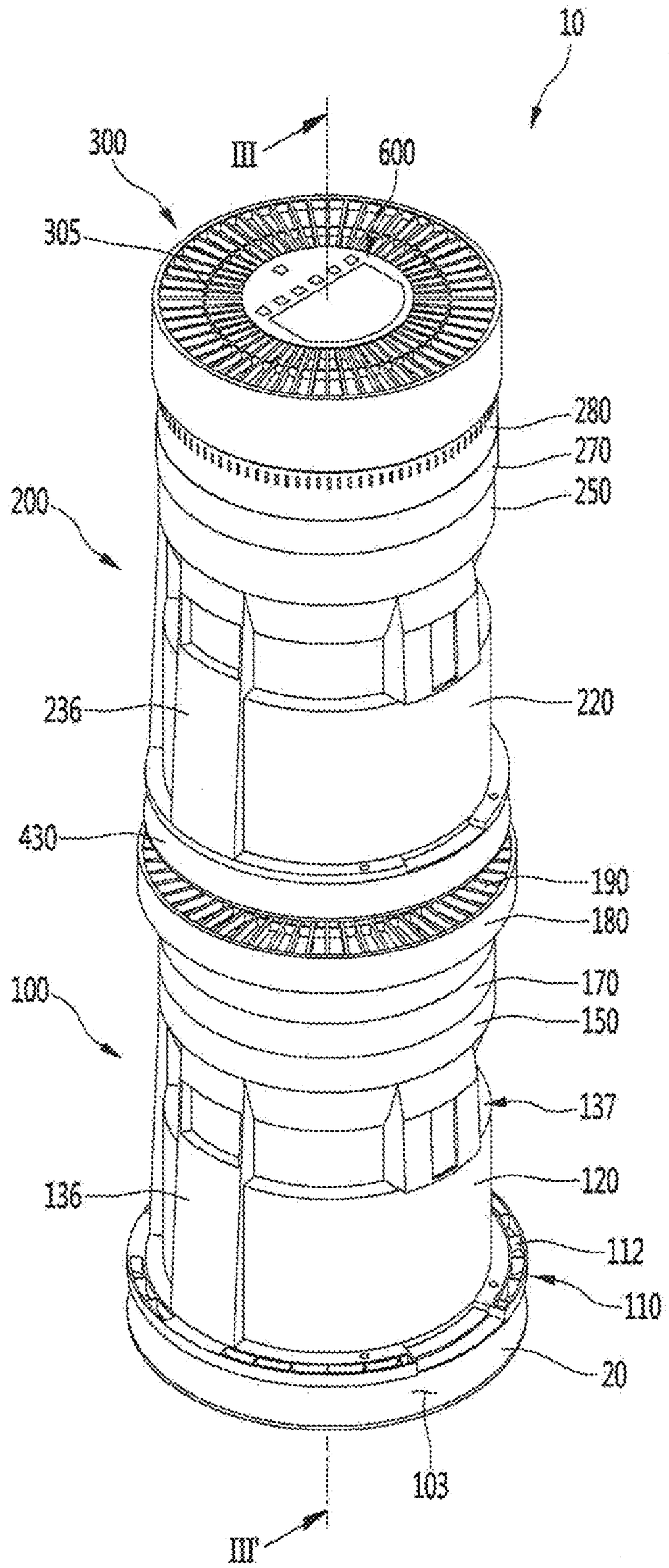

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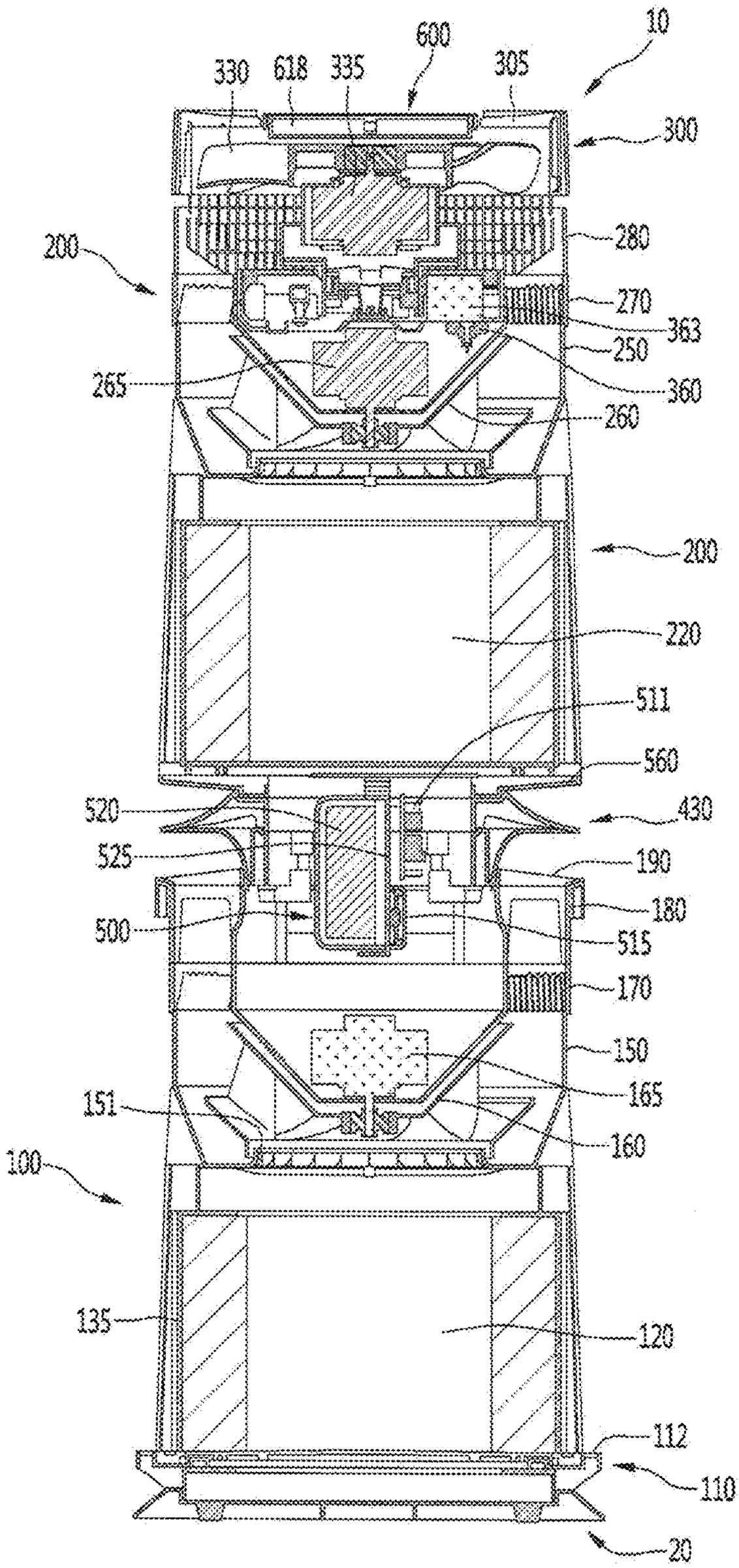

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Fig. 4

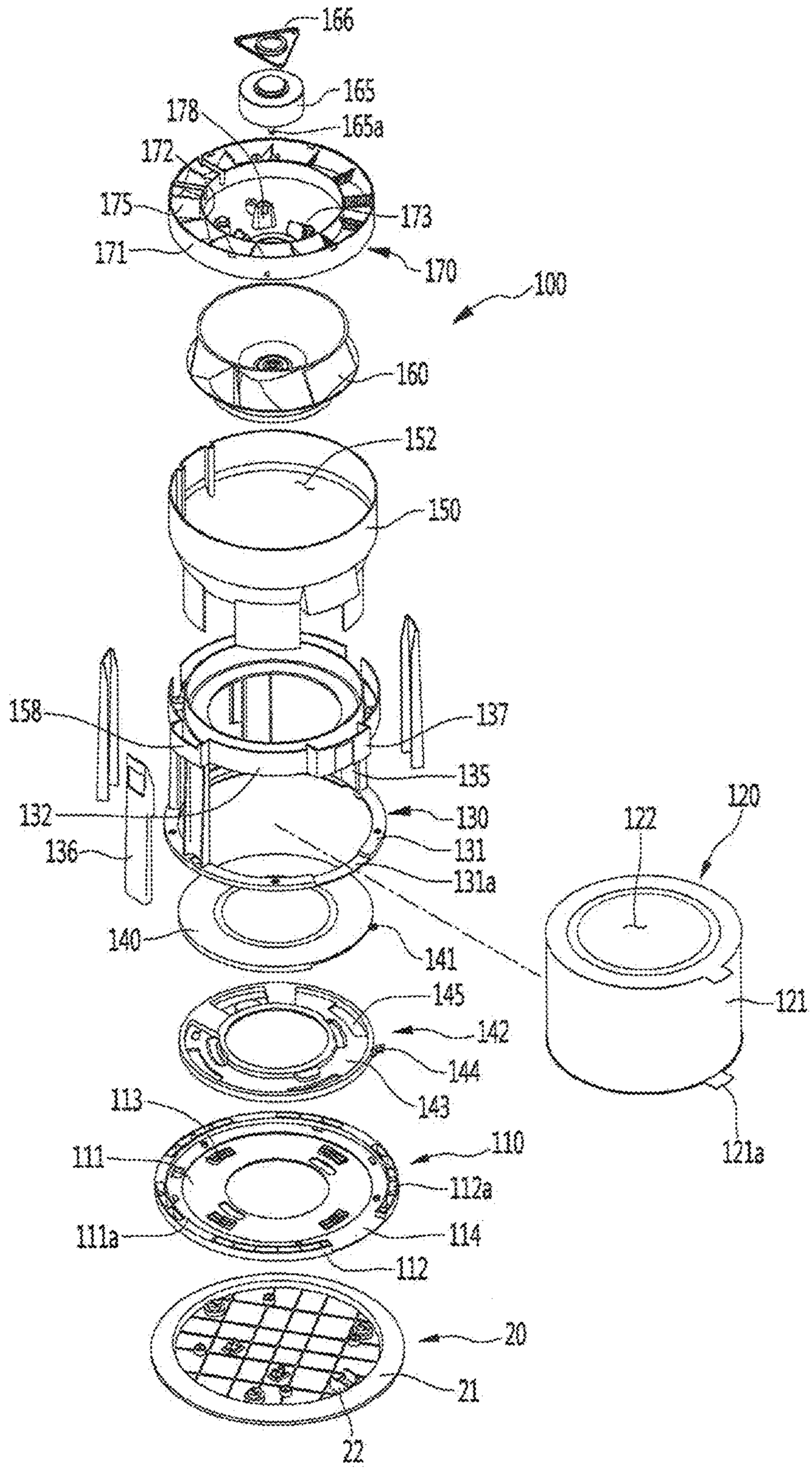
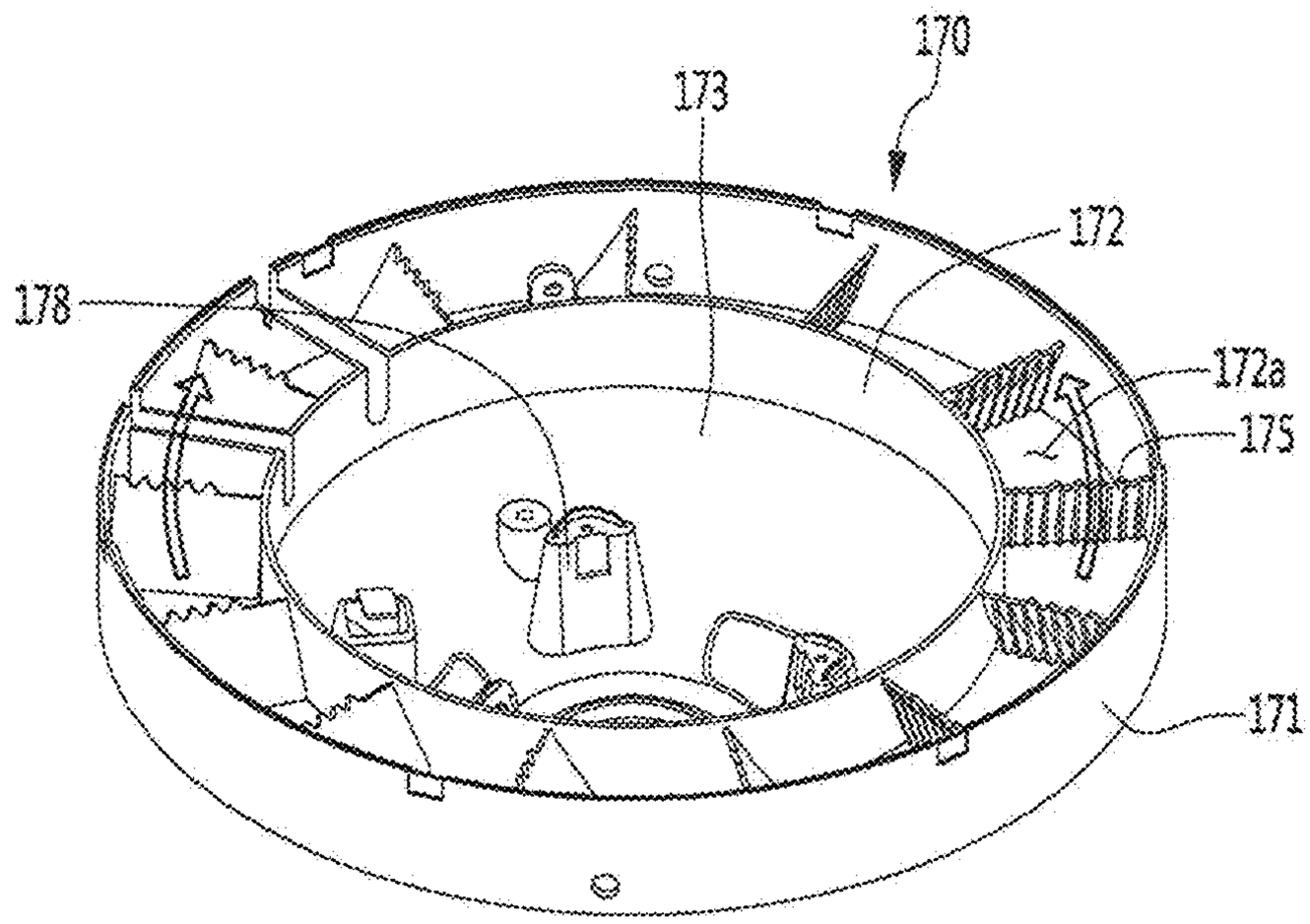

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Fig. 5


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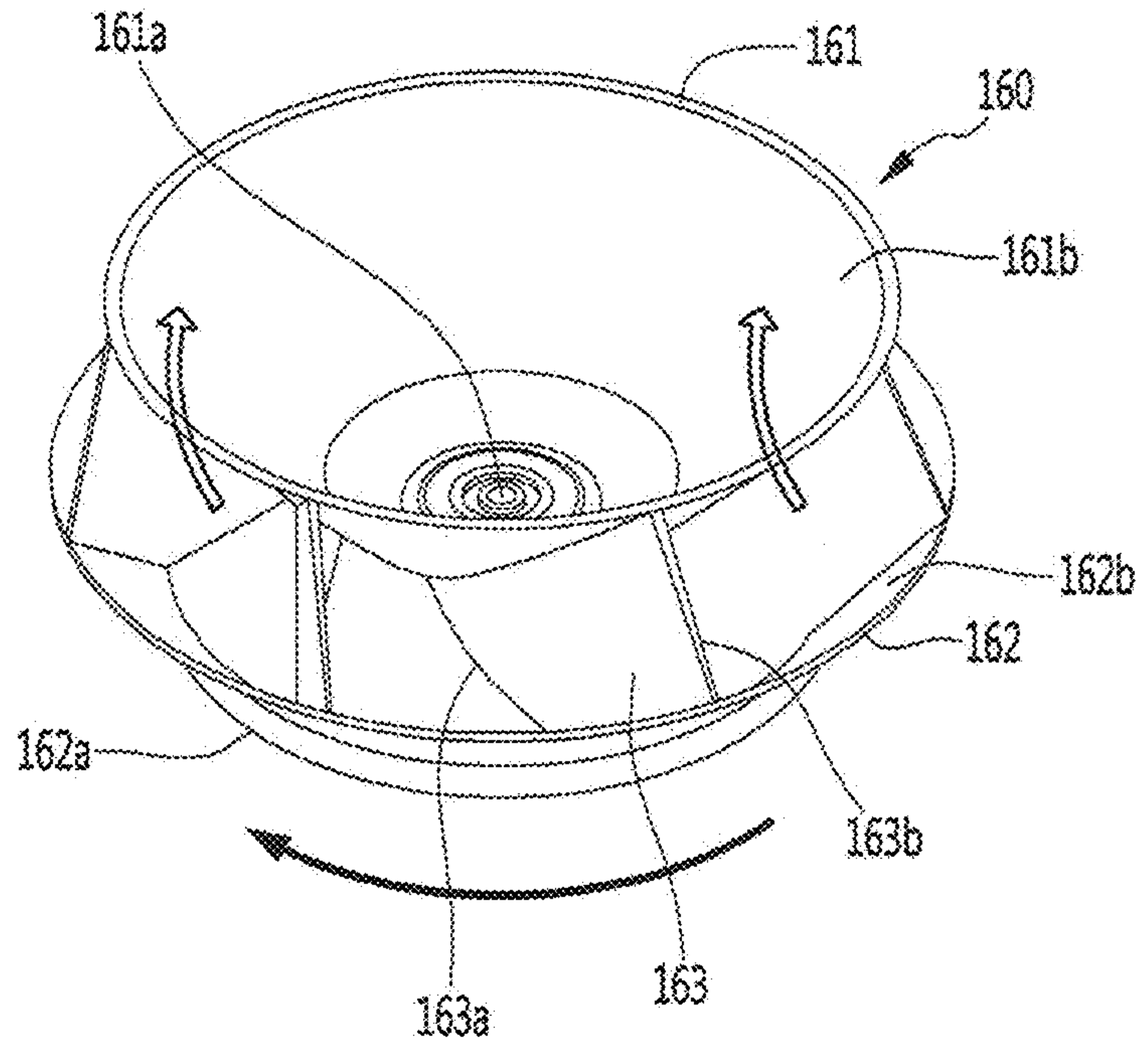

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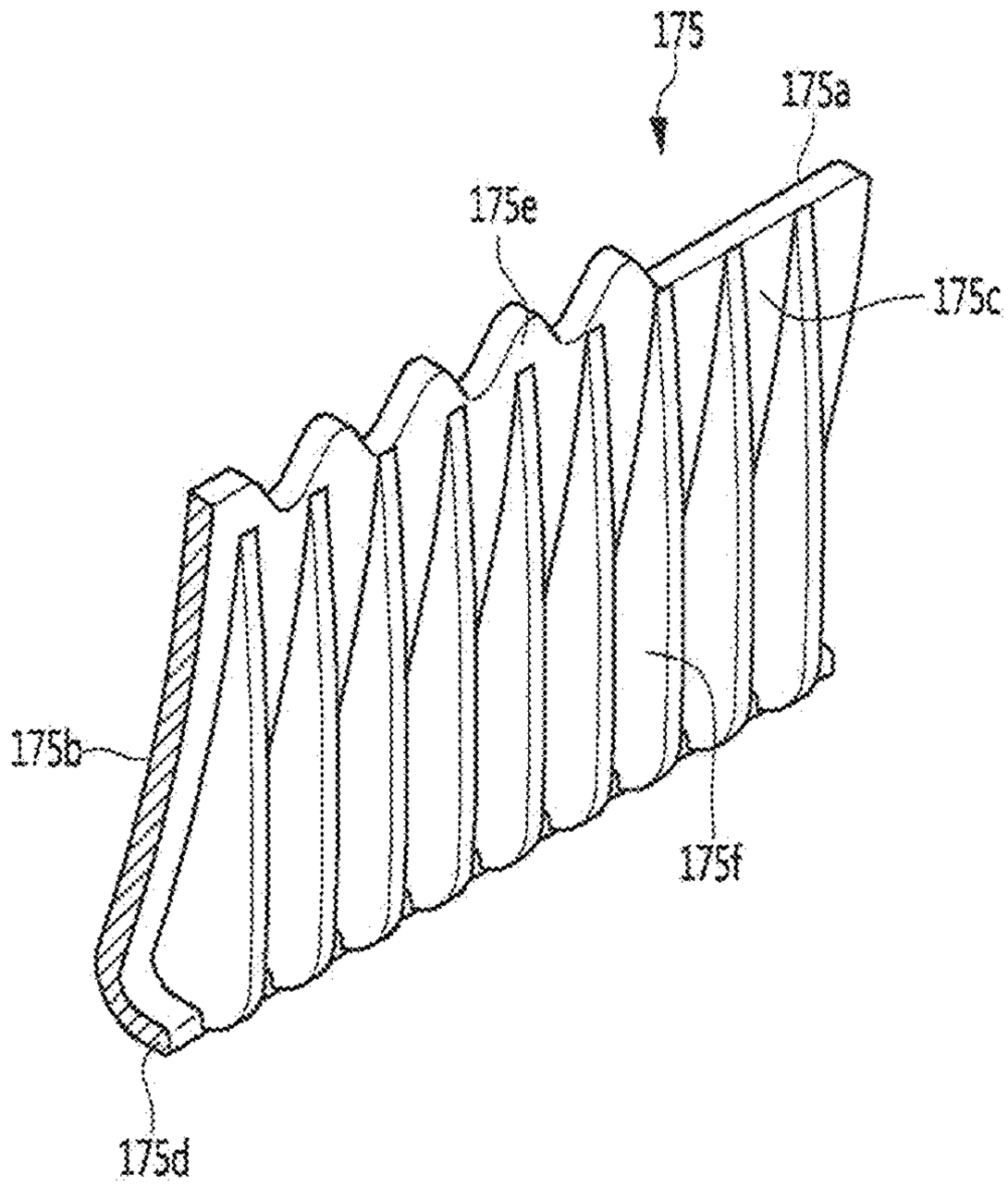


Fig. 7

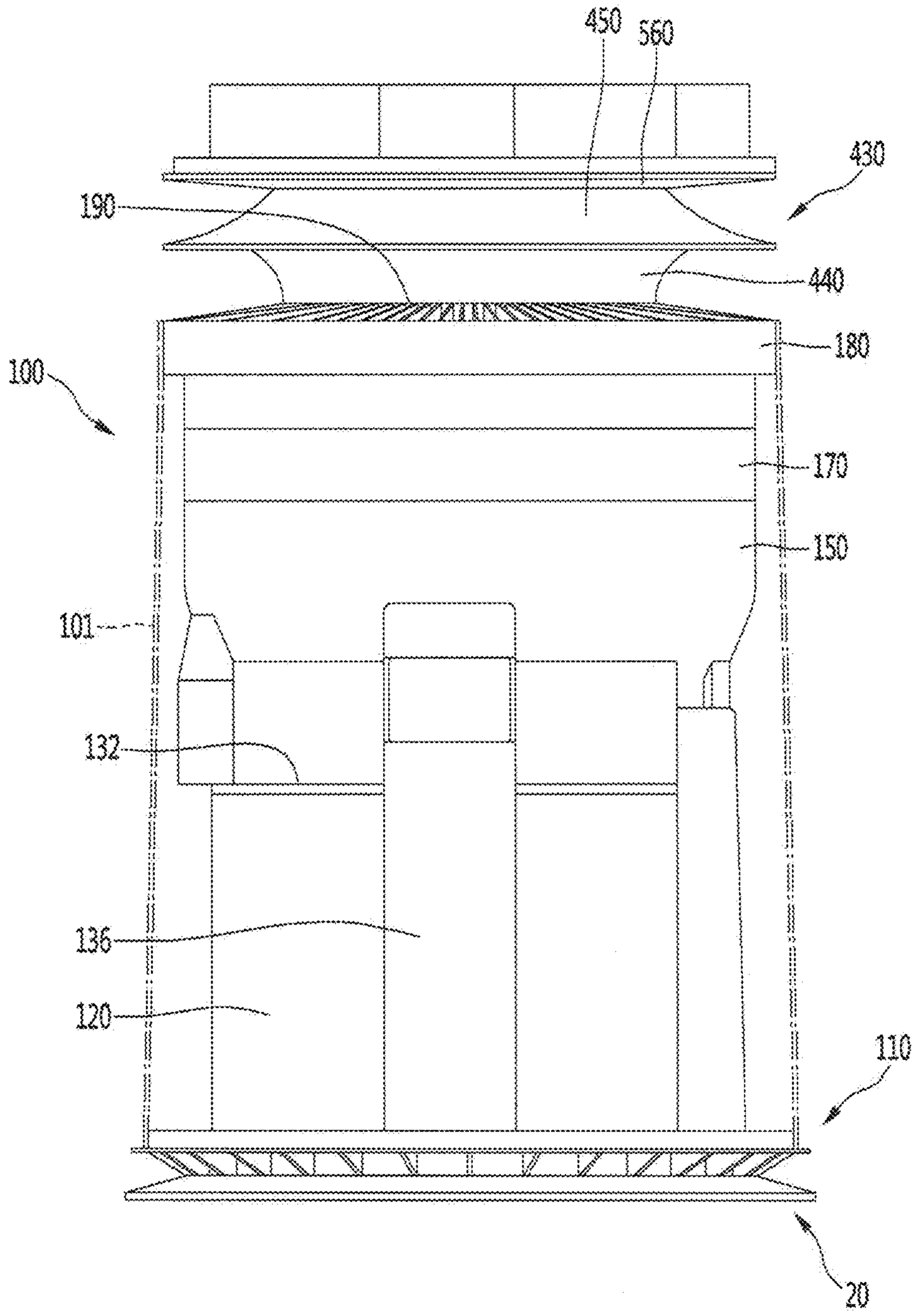


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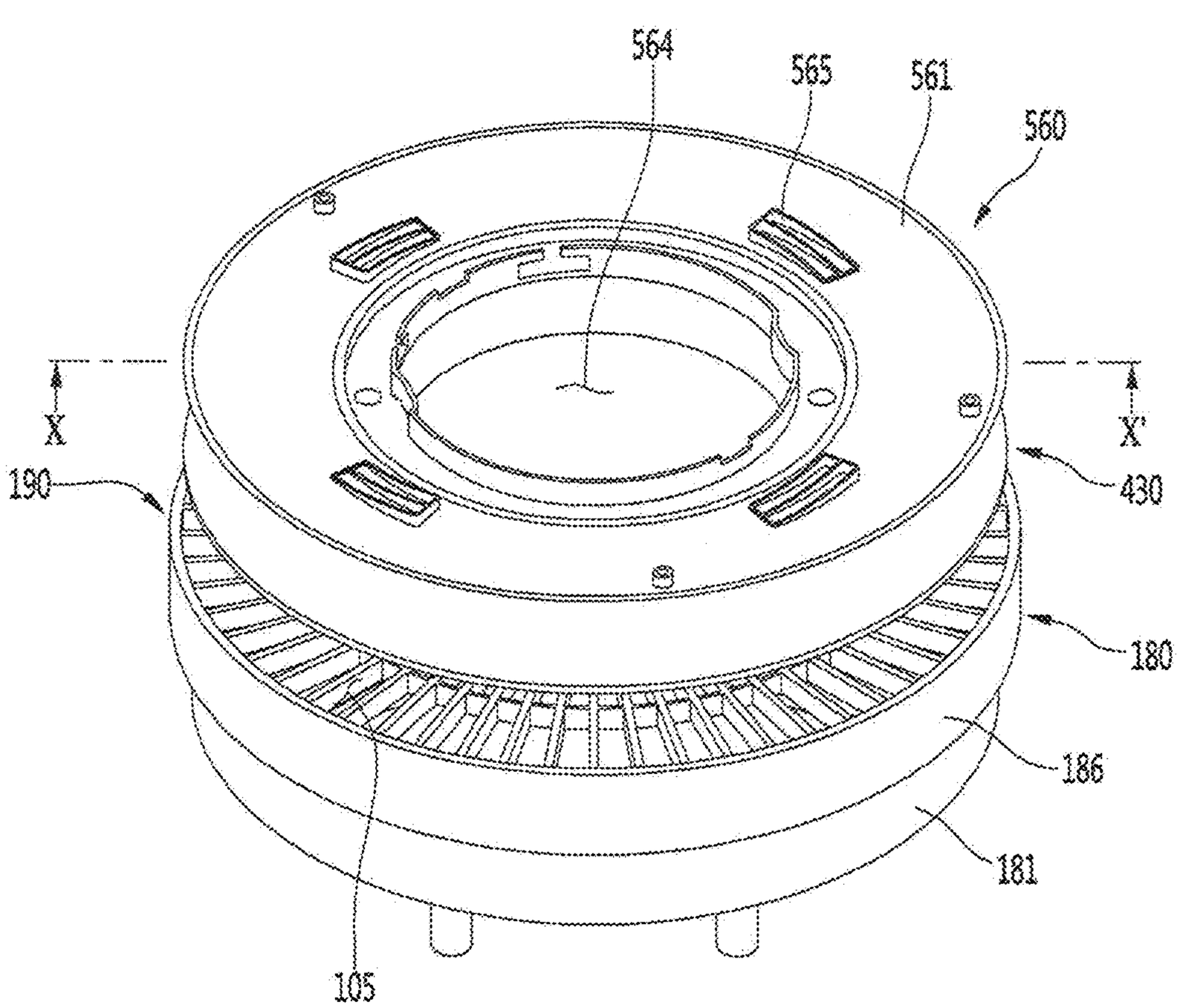


Fig. 9

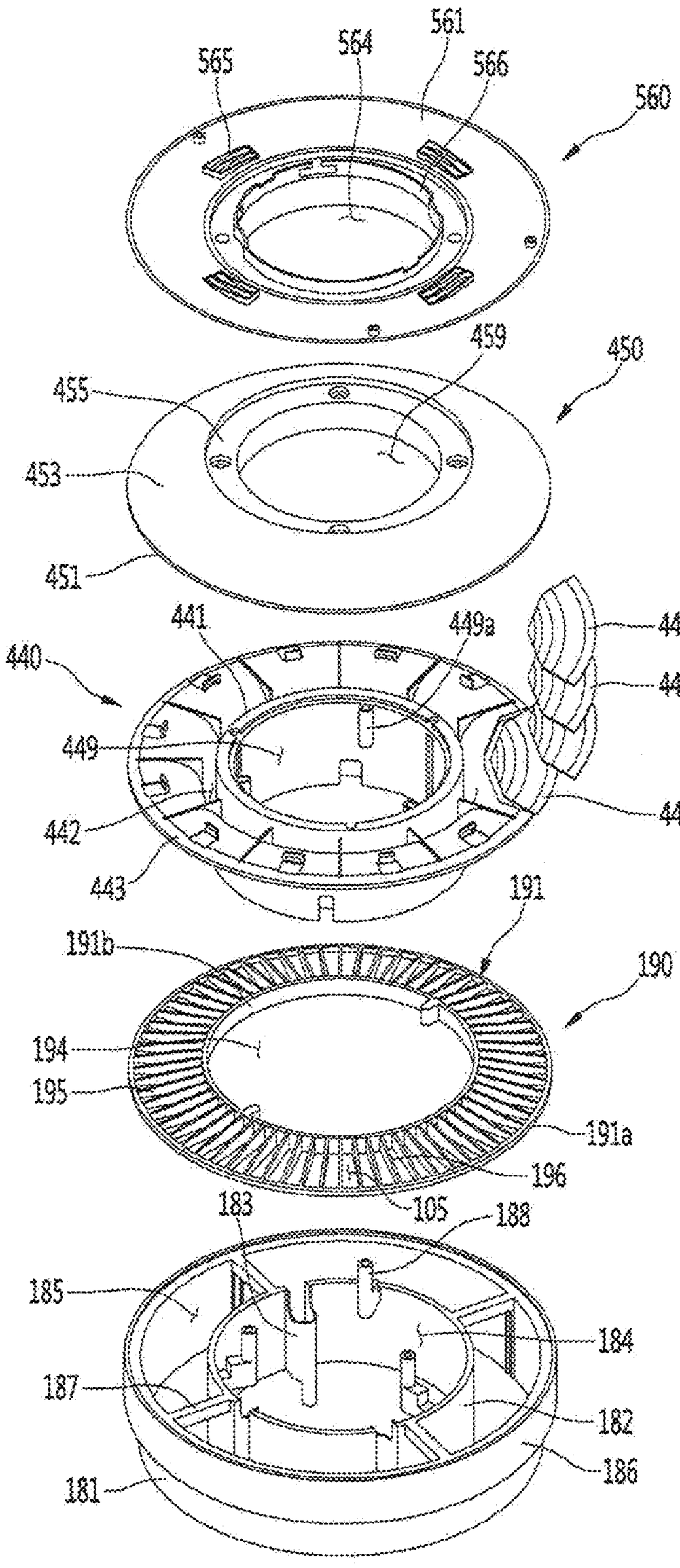

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Fig. 10

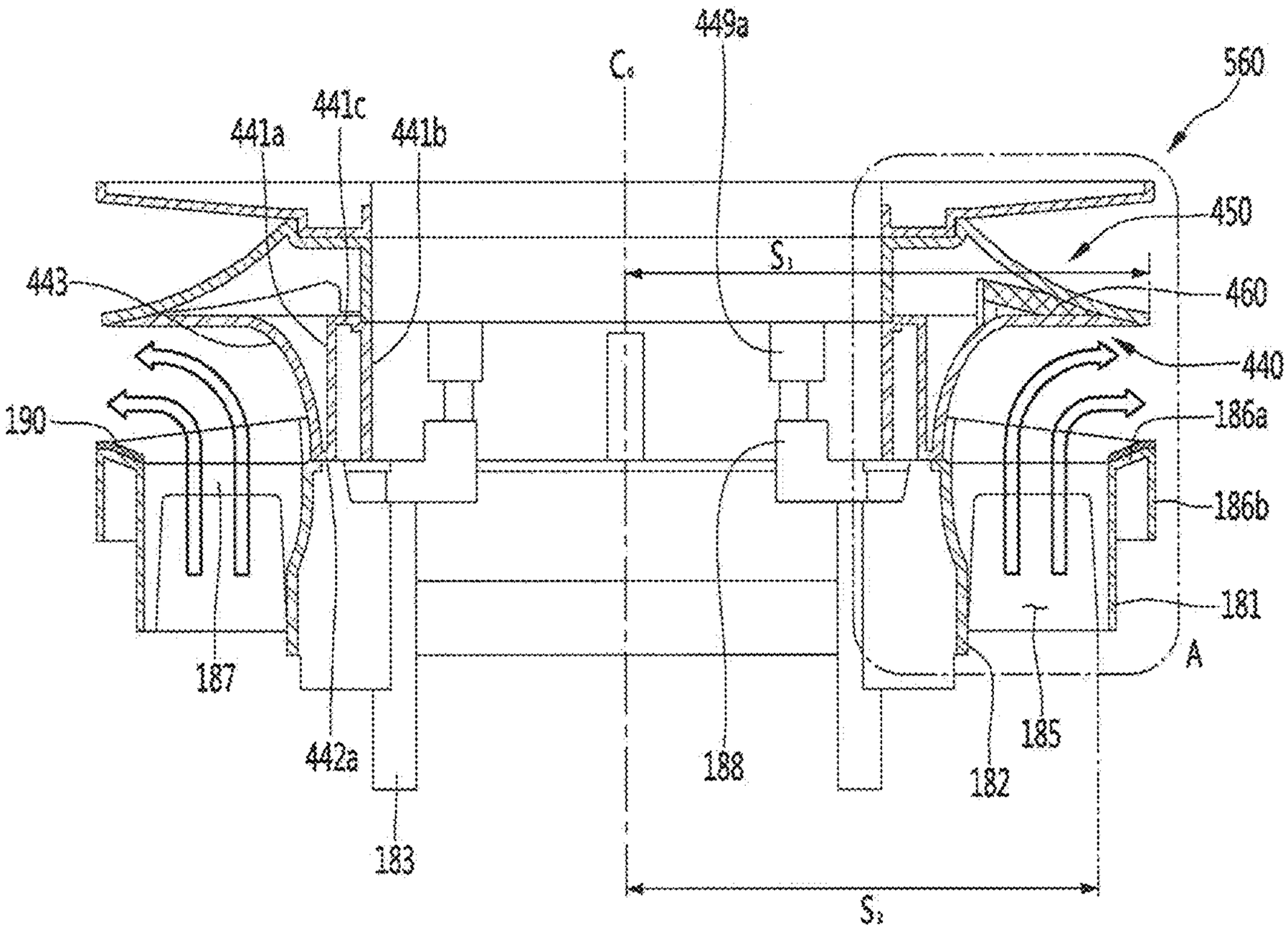

449a
C
560
441c
441a
441b
450
S1
443
460
440
190
186a
186b
181
187
A
185
188
182
442a
183
S2

Fig. 11

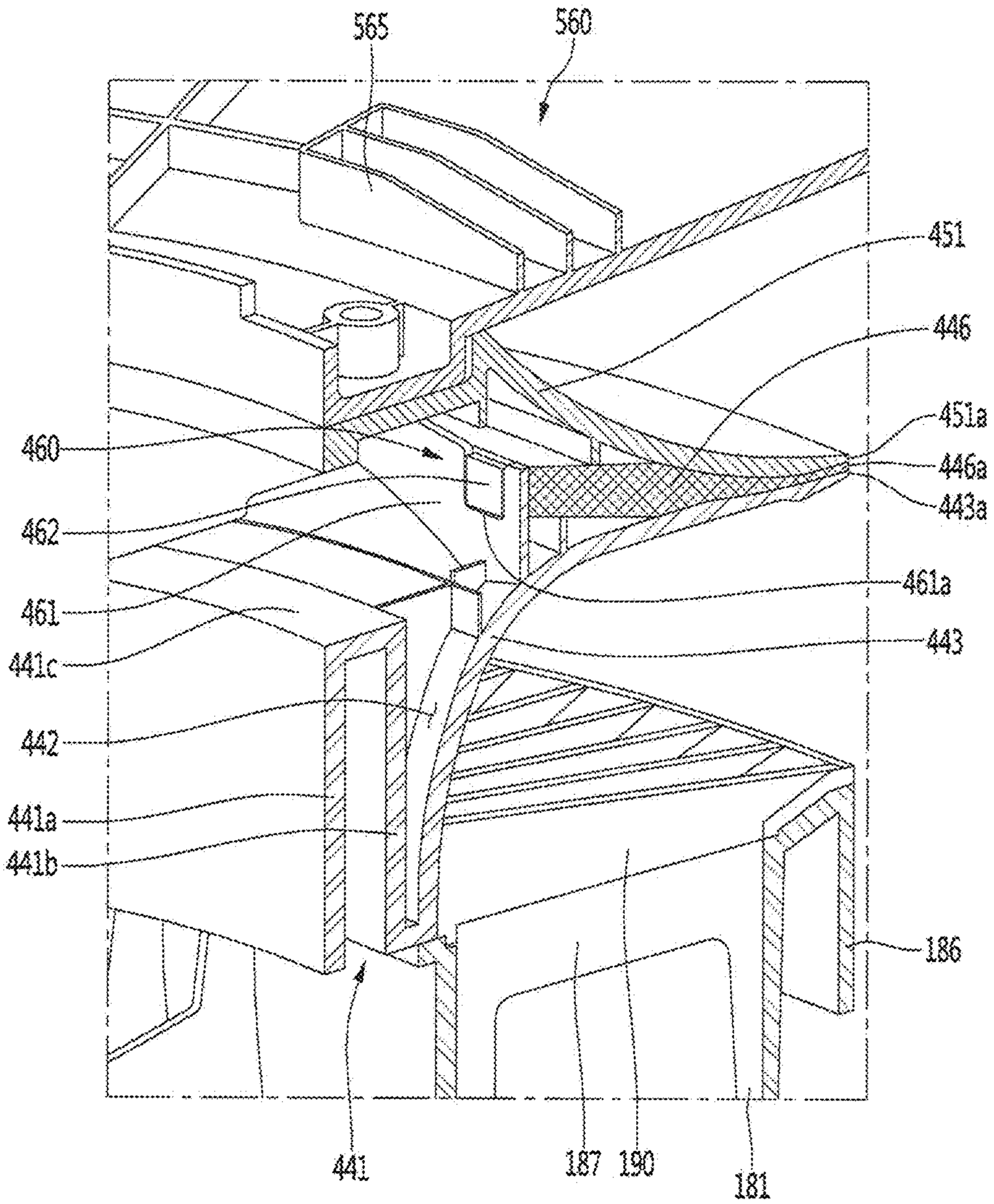

565
560
451
446
451a
446a
443a
460
462
461a
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443
441c
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441a
441b
4410
186
441
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190
181

Fig. 12

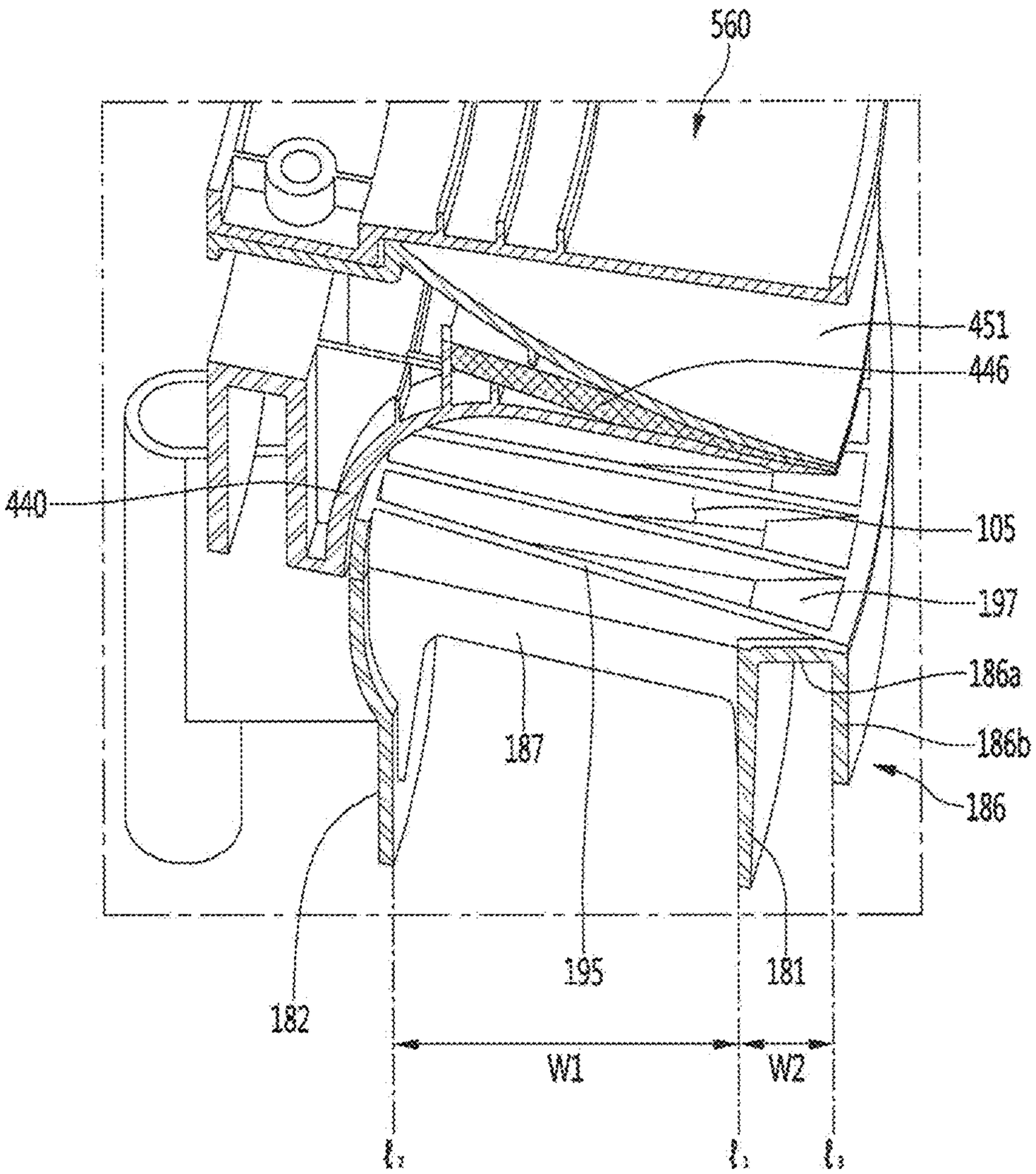

560
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105
197
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187
195
181
182
W1
W2
ℓ_1
ℓ_2
ℓ_3

Fig. 13

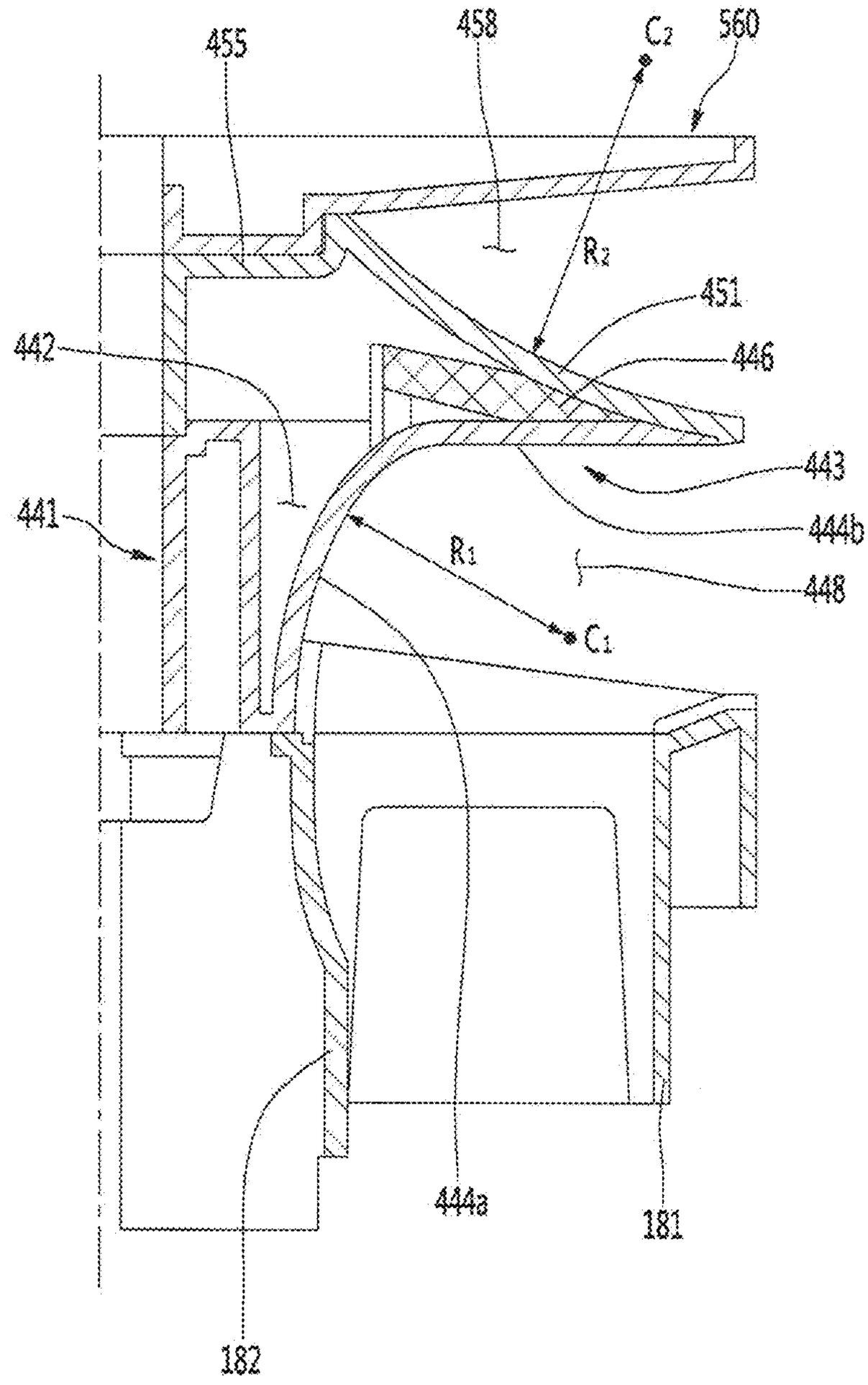


Fig. 14

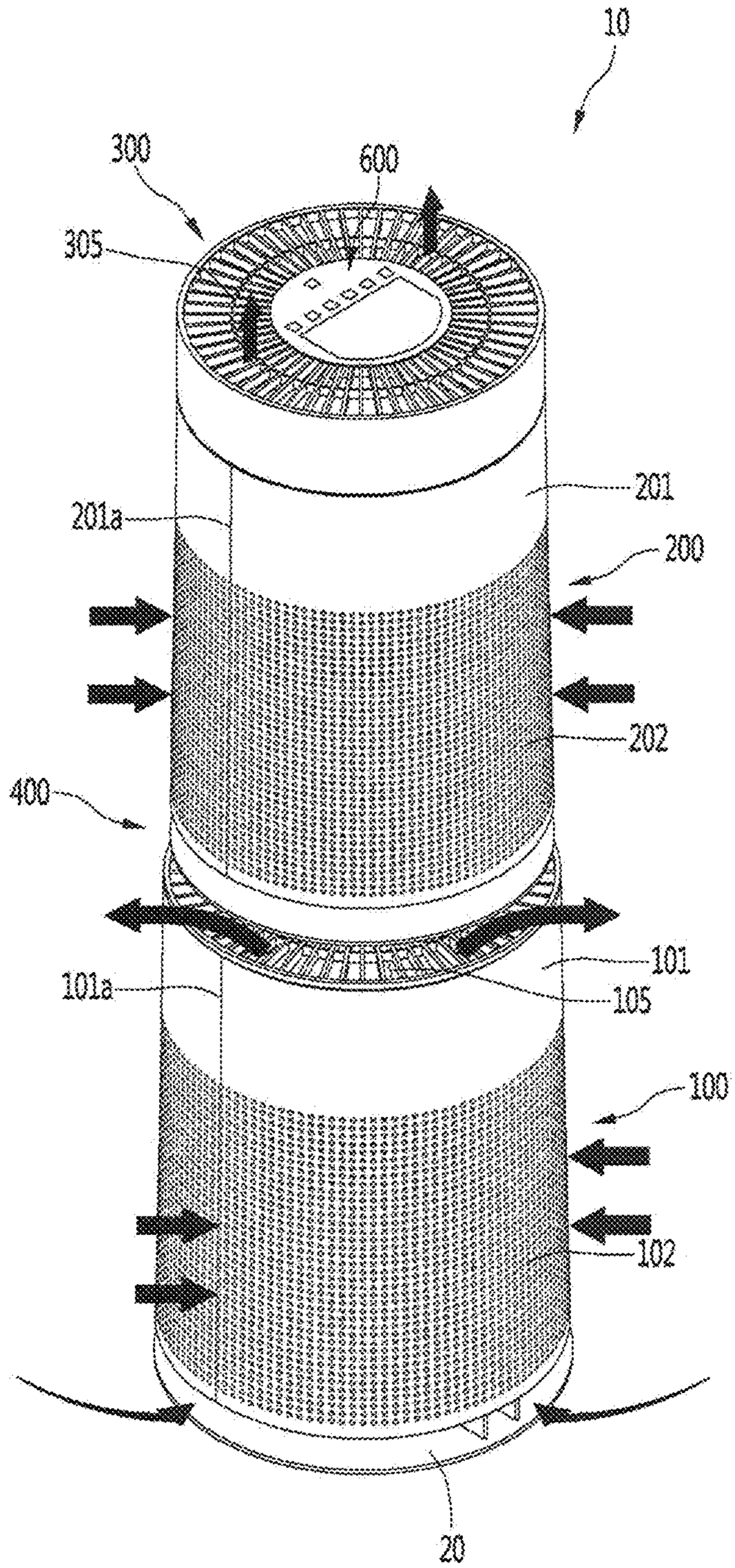


Fig. 15

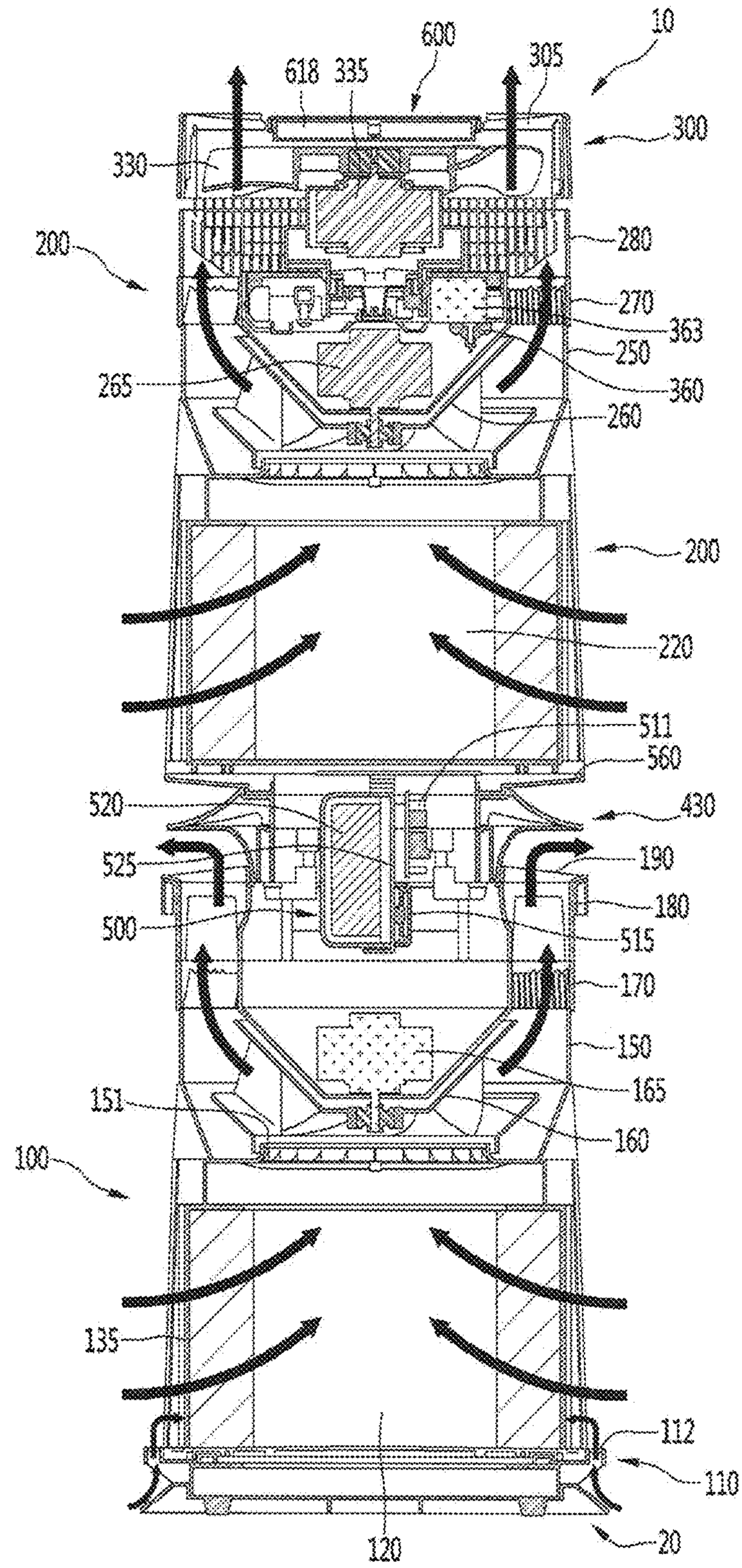
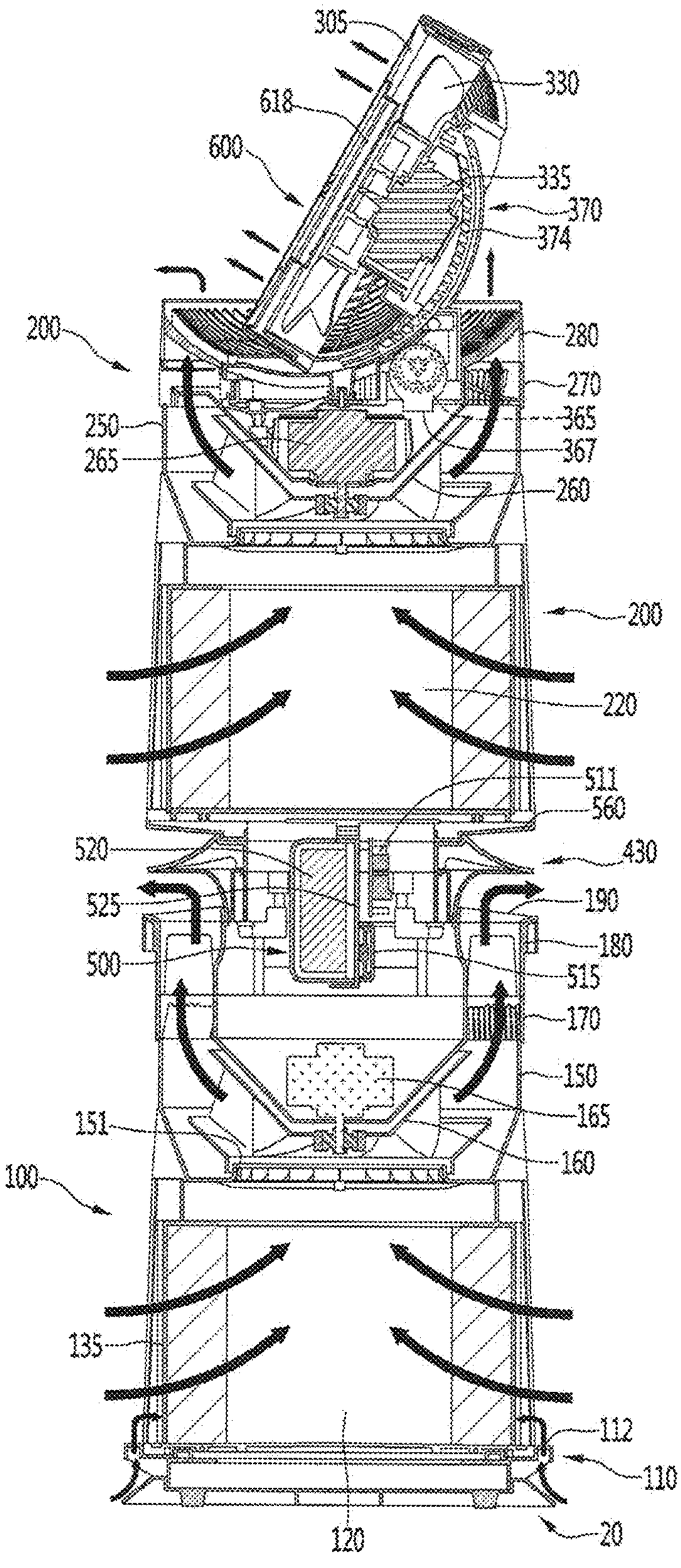

10
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190
180
500
515
170
150
165
151
160
100
135
112
110
120
20

Fig. 16


305
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AIR CLEANER

CROSS-REFERENCE TO RELATED APPLICATION(S)

This application is a Continuation Application of prior U.S. patent application Ser. No. 15/363,156 filed Nov. 29, 2016, which claims priority under 35 U.S.C. 119 and 35 U.S.C. 365 to Korean Patent Application No 10-2016-0073055 filed in Korea on Jun. 13, 2016, No. 10-2016-0023663 filed in Korea on Feb. 26, 2016, and No. 10-2016-0139376 filed on Oct. 25, 2016, which are hereby incorporated by reference in their entirety.

BACKGROUND

1. Field

An air cleaner is disclosed herein.

2. Background

An air cleaner is a device that suctions in and purifies contaminated air and then discharge purified air. For example, the air cleaner may include a blower that introduces outside air into the air cleaner and a filter capable of filtering dust and bacteria, for example.

Generally, the air cleaner s configured to purify an indoor space, such as a home or an office. According to the air cleaner in the related art, there is a problem that a capacity thereof is limited, and thus, purification of air in an entire indoor space is limited. Accordingly, air around the air cleaner is purified whereas air in a space away from the air cleaners not purified.

In order to solve this problem there are efforts to improve a performance of a fan provided in the air cleaner. However, noise generated by the fan gradually increases as a blowing amount of the fan increases. Accordingly, there is a problem is that reliability of the product is decreased. Finally, there is inconvenience that the air cleaner has to be moved by a user in order to purify air in the desired space.

A related art air cleaner is disclosed in Korean Publication No. KR10-2012-0071992 published on Jul. 3, 2012 and entitled AIR CLEANER, which is hereby incorporated by reference. According to this disclosure, air cleaning components, such as the fan and a filter are installed, in an inside of a case having a substantially rectangular parallelepiped shape of a main body of the air cleaner. Air suction ports are formed on a side portion and a lower portion of the main body of the air cleaner and an air discharge port is formed on an upper portion of the main body thereof.

According to this configuration, there is a problem in that a suction capacity is reduced as the contaminated air is suctioned from a limited direction, that is, from a side direction and a lower direction relative to the air cleaner. A corner portion of the case having a rectangular parallelepiped shape provides structural resistance interfering with the suction of air.

In addition, there is a problem that an air cleaning function is limited as purified air does not flow to a space away from the air cleaner, whereas air around the air cleaner is purified. That is, the air which is purified in the air cleaner is discharged in only one direction, that is, only in an upward direction. Further, there is a problem that a blowing capacity is limited as only one blowing fan is provided in the main body of the air cleaner.

BRIEF DESCRIPTION OF THE DRAWINGS

Embodiments will be described in detail with reference to the following drawings in which like reference numerals refer to like elements, and wherein:

FIG. **1** is a perspective view of an air cleaner according to an embodiment;

FIG. **2** is a perspective view illustrating an internal configuration of the air cleaner of FIG. **1**;

FIG. **3** is a cross-sectional view, taken along line III-III' of FIG. **2**;

FIG. **4** is an exploded perspective view of a first blowing device of the air cleaner of FIG. **1**;

FIG. **5** is an exploded perspective view of a first fan and a first guide of the air cleaner of FIG. **1**;

FIG. **6** is a perspective view of a guide rib of the air cleaner of FIG. **1**;

FIG. **7** is a view illustrating some components of the air cleaner of the air cleaner of FIG. **1**;

FIG. **8** is a perspective view of a dividing plate and components coupled to the dividing plate of the air cleaner of FIG. **1**;

FIG. **9** is an exploded perspective view illustrating the dividing plate and the components coupled to the dividing plate of FIG. **8**;

FIG. **10** is a cross-sectional view, taken along line X-X' of FIG. **8**;

FIGS. **11** and **12** are views illustrating a state in which the dividing plate and a first discharge guide are provided;

FIG. **13** is an enlarged view of portion "A" of FIG. **10**; and

FIGS. **14** to **16** are views illustrating a state in which air flows in the air cleaner of FIG. **1**.

DETAILED DESCRIPTION

Hereinafter, embodiments will be described in detail with reference to the illustrative drawings. Regarding the reference numerals assigned to the components in the drawings it should be noted that the same components may be designated by the same reference numerals, wherever possible, even though they are shown in different drawings. Also, in the description of embodiment, specific description of known related configuration or functions may be omitted when it is deemed that such description may cause ambiguous interpretation of the present invention.

Also, in the description of embodiments, terms such as first, second, A, B, (a), (b) or the like may be used herein when describing components. Each of these terminologies is not used to define an essence, order or sequence of a corresponding component but used merely to distinguish the corresponding component from other component(s). In a case where it is described that any component is "connected" or "coupled" to another component, the component may be directly or indirectly connected or coupled to another component. However, it is to be understood that another component may be "connected" or "coupled" between the components.

FIG. **1** is a perspective view of an air cleaner according to an embodiment. With reference to FIG. **1**, the air cleaner **10** according to this embodiment may include blowing devices or blowers **100** and **200** that generate air flow and a flow adjusting device or adjuster **300** that adjusts a discharge direction of the air flow generated in the blowing devices **100** and **200**. The blowing devices **100** and **200** may include a first blowing device **100** that generates a first air flow and, second blowing device **200** that generates a second air flow.

The first blowing device **100** and the second blowing device **200** may be provided in a vertical direction. For example, the second blowing device **200** may be provided on or at an upper side of the first blowing device **100**. In this case, the first air flow is a flow of indoor air suctioned from a lower side of the air cleaner **10** and the second air flow is a flow of indoor air suctioned from an upper side of the air cleaner **10**.

The air cleaner **10** may include cases **101** and **201** that form an outer appearance thereof. That is, the oases **101** and **201** may include a first case **101** that forms an outer appearance of the first blowing device **100**. The first case **101** may have a cylindrical shape. An upper portion of the first case **101** may have a diameter which is less than a diameter of a lower portion thereof. That is, the first case **101** may have a truncated cone shape.

The first blowing device **100** and the second blowing device **200** may be referred to as a "first air cleaning module or cleaner **100**" and a "second air cleaning module or cleaner **200**", respectively in that the first blowing device **100** and the second blowing device **200** perform a function of cleaning air in a space to be cleaned. The first blowing device **100** may be referred to as a "lower air cleaning module or cleaner" or "lower module or cleaner" in that the first blowing device **100** is provided at a lower portion of the air cleaner **10** and the second blowing device **200** may be referred to as an "upper air cleaning module or cleaner" or "upper module or cleaner" in that the second blowing device **200** is provided at an upper portion of the air cleaner **10**. The flow adjusting device **300** may be referred to as "flow adjusting module or adjuster **300**" or "flow control module **300**".

The first case **101** may include a first separation portion **101***a* at which two parts which constitute the first case **101** may be assembled or disassembled. The first case **101** may further include a hinge portion or hinge which is provided on an opposite of the first separation portion **101***a*. The two parts may be capable of being relatively rotated about the hinge portion.

When at least any one part of the two parts rotates, the first case **101** may be opened and separated from the air cleaner **10**. A locking device or lock may be provided at a portion at which the two parts are coupled that is, a side opposite to the hinge portion. The locking device may include a locking projection or a magnet or coupler. Components of the first blowing device **100** may be replaced or repaired by opening the first case **101**.

The first case **101** may include a first suction portion or inlet **102** through which air may be suctioned in a radial direction. The first suction portion **102** may include one or more through hole formed to pass through at least a portion of the first case **101**. A plurality of first suction, portions **102** may be provided.

The plurality of first suction portions **102** may be evenly provided in a circumferential direction along an outer circumferential surface of the first case **101** so that air suction may be performed in any direction relative to the first case **101**. That is, air may be suctioned in 360 degree directions relative to a center line that extends in the vertical direction and passes through an inside center of the first case **101**.

Accordingly, a suction amount of air may be increased by the first case **101** having a cylindrical shape and the plurality of first suction portions **102** formed along the outer circumferential surface of the first case **101**. Flow resistance to suctioned air may be reduced by avoiding a cube shape having edges or edge portions such as the case of the related art air cleaner.

Air which is suctioned in through the first suction portion **102** may flow substantially in the radial direction from the outer circumferential surface of the first case **101**. Directions may be defined as follows. Referring to the FIG. **1**, the vertical direction may refer to an axial direction and a transverse direction may refer to the radial direction. The axial direction may correspond to a central axis direction of the first fan **160** and the second fan **260**, which are described hereinafter that is, a motor shaft direction of the fan. The radial direction may refer to a direction which is perpendicular to the axial direction. The circumferential direction may refer to a virtual circle direction which is formed when rotating about the axial direction and having a distance of the radial direction as a rotational radius.

The first blowing device **100** may include a base **20** provided at a lower side of the first case **101** and placed on the ground. The base **20** may be positioned spaced apart from a lower end portion or end of the first case **101** in a downward direction. A base suction portion or inlet **103** may be formed in a space between the first case **101** and the base **20**.

Air which is suctioned in through tide base suction portion **103** may flow n an upward direction through a suction port **112** of a suction grill **110** (see FIG. **2**), which may be provided in or at an upper side of the base **20**. That is, the first blowing device **100** may include the plurality of suction portions **102** and the base suction portion **103**. Air in a lower portion of the indoor space may be easily introduced to the first blowing device **100** through, the plurality of suction portions **102** and the base suction portion **103**. Accordingly, the suction amount of air may be increased.

A first discharge portion or outlet **105** may be formed at an upper portion of the first blowing device **100**. The first discharge portion **105** may be formed on a first discharge grill **195** of a first discharge guide device or guide **190** (see, FIG. **8**) which may be provided in the first blowing device **100**. The first discharge guide **190** may form an outer appearance of an upper end portion or end of the first blowing device **100**. Air discharged through the first discharge portion **105** may flow to the upper side in the axial direction.

The cases **101** and **201** may include a second case **201** which may form an outer appearance of the second blowing device **200**. The second case **201** may have a cylindrical shape. An upper portion of the second case **201** may have a diameter which is less than a diameter of a lower portion thereof. That is, the second cake **201** may have a truncated cone shape.

The second case **201** may include two parts and a hinge portion or hinge which are capable of being assembled or being disassembled through a second separation portion **201***a*. The second case **201** may be openable similar to the first case **101**. The second case **201** may be the same or similar to the first case **101**, and thus, repetitive disclosure has been omitted. Inner components of the second blowing device **200** may be replaced or repaired by opening the second case **201**.

A diameter of a lower end portion of the second case **201** may be less than a diameter of the upper end portion or end of the first case **101**. Accordingly, in a general shape of the cases **101** and **201**, a lower cross-sectional area of the cases **101** and **102** may be formed to be greater than an upper cross-sectional area. Accordingly, the air cleaner **10** may be stably supported on the ground.

The second case **201** may include a second suction portion or inlet **202** through which air may be suctioned in the radial direction. The second sanction portion **202** may

include one or more through hole formed to pass through at least a portion of the second case **201**. A plurality of the second suction portion **202** may be provided.

The plurality of second suction portions **202** may be evenly provided in the circumferential direction along an outer circumferential surface of the second case **201** so that air suction may be performed in any direction relative to the second case **201**. That is, air may be suctioned in 360 degree directions relative to a center line that extends in the vertical direction and passes through an inside center of the second case **201**.

Accordingly, a suction amount of air may be increased by the second case **201** having a cylindrical shape and the plurality of second suction portions **202** formed along the outer circumferential surface of the second case **201**. Flow resistance to suctioned air may be reduced by avoiding a cube shape having an edge portions such as the case of the related are air cleaner. Air which is suctioned in through the second suction portion **202** may flow substantially in the radial direction from the outer circumferential surface of the second case **201**.

The air cleaner **10** may include a dividing device or divider **400** provided between the first blowing device **100** and the second blowing device **200**. By the dividing device **400**, the second blowing device **200** may be positioned at the upper side of the first blowing device **100** spaced apart therefrom. The dividing device **400** will be described hereinafter, with reference to the drawings.

The flow adjusting device **300** may be provided at an upper side of the second blowing device **100**. An air flow path of the second blowing device **100** may communicate with an air flow path of the flow adjusting device **300**. The air passing through the second blowing device **100** may be discharged through a second discharge portion or outlet **305** to the outside via the air flow path of the flow adjusting device **300**. The second discharge portion **305** may be, provided on or at an upper end portion of the flow adjusting device **300**.

The flow adjusting device **300** may be movable. That is, the flow adjusting device **300** may be movable between a laid-out state (first position), as illustrated in FIG. **1**, or an inclined erected state (second position), as illustrated in FIGS. **16** to **21**. In addition, a display device or display **600** that displays operation information of the air cleaner may be provided at an upper portion of the flow adjusting device **300**. The display device **600** may be movable together with the flow adjusting device **300**.

FIG. **2** is a perspective view illustrating an internal configuration of the air cleaner of FIG. **1**. FIG. **3** is a cross-sectional view, taken along line III-III' of FIG. **2**. FIG. **4** is an exploded perspective view of a first blowing device of the air cleaner of FIG. **1**. FIG. **5** is an exploded perspective view of a first fan and a first guide device of the air cleaner of FIG. **1**. FIG. **6** is a perspective view of a guide rib of the air cleaner of FIG. **1**.

Referring to FIGS. **2** to **6** the base **20** and the suction grill **110** which may be provided on or at an upper side of the base **20**, may be included in the first blowing device **100** according to this embodiment. The base **20** may include a base main body **21**, which may be placed on the ground, and a base projecting portion or projection **22** that projects from the base main body **21** in the upward direction and on which the suction grill **10** may be placed. The base projecting portion **22** may be provided at both sides of the base **20**.

The base main body **21** and the suction grill **110** may be spaced apart from each other by the base projecting portion **22**. The base suction portion **103** which forms a suction space of air may be included between the base **20** and the suction grill **110**.

The suction grill **110** may include a grill main body **111** having a substantially ring shape and a rim portion or rim **110***a* that protrudes from an outer circumferential surface of the grill main body **111** in the upward direction. By the configuration of the grill main body **111** and the rim portion **111***a*, the suction grill **110** may have a stepped structure.

The suction grill **110** may include a suction portion or inlet **112** formed on the rim portion **111***a*. The suction portion **112** may protrude along a circumference of the rim portion **111***a* in the upward direction and extend in a circumferential direction. In addition, a plurality of suction holes **112***a* may be formed in the suction portion **112**. The plurality of suction holes **112***a* may communicate with the base suction portion **103**.

Air suctioned in through the plurality of suction holes **112***a* and the base suction portion **103** may pass through a first filter member or filter **120**. The first filter may have a cylindrical shape and a filter surface that filters air. The air passing through the plurality of suction holes **112***a* may be introduced to an inside portion of the first filter **120** by passing through an outer circumferential surface of the cylindrical first filter **120**.

The suction grill **110** may further include a movement guide portion or guide **113** that protrudes from a top surface of the grill main body **111** in the upward direction to guide movement of the first filter **120** in the upward or downward direction. The movement guide **113** may be configured to have a shape further protruding in the circumferential direction from the top surface of the grill main body **111**. That is, the movement guide **113** may have an inclined surface that protrudes in the circumferential direction.

A plurality of movement guides **113** may be provided to be spaced apart from each other in the circumferential direction. For example, as shown in FIG. **4**, four movement guides **113** may be provided. However, a number of the movement guides **113** is not limited thereto.

The grill main body **111** may further include a groove portion or groove **114** which provides a space in which a handle **144** described hereinafter may be movable. The groove **113** forms at least a portion of the grill main body **111** and may be a portion at which the suction portion **112** is not formed in the rim portion of the grill main body **111**.

The first blowing device **100** may include a lever device or lever **142**, which may be provided on or at an upper side of the suction grill **110** and which may be operable by a user. The lever device **142** may be rotatable in the circumferential direction.

The lever device **142** may include a lever main body **143**, which may have a substantially ring shape and be rotatable. In addition, a plurality of cut-out portions or cut-outs disposed or provided at positions corresponding to the plurality of movement guides **113** may be formed in the lever main body **143**. The plurality of cut-out portions **145** may be through holes formed in the lever main body **143**.

The plurality of cut-out portions **145** may be arranged in the circumferential direction of the lever main body **143** spaced apart from each other. In addition, each of the cut-out portions **145** may be rounded with a predetermined curvature in the circumferential direction, corresponding to the curvature of an outer circumferential surface of the lever main body **143**.

The lever device **142** may be supported on the upper surface of the grill main body **111**. If the lever device **142** is supported by the grill main body **111**, the plurality of

movement guides **113** may be inserted into the plurality of cut-out portions **145**. The plurality of movement guides **113** may protrude from the plurality of cut-out portions **145** in the upward direction by passing through the plurality of cut-out portions **145**.

A length of each of the cut-out portions **145** may be formed longer than a length of the movement guide **113**. Thus, the lever device **142** may rotate in a state in which the movement guide **113** is inserted into the cut-out portion **145**. In addition, one end portion or end of the movement guide **113** may interfere with one end portion or end of the cut-out portion **145** in a process in which the lever device **142** rotates in one direction, and the other end portion or end of the movement guide **113** may interfere with the other end portion or end of the cut-out portion **145**. A second handle **144** may be provided at the outer circumferential surface of the lever main body **143**.

A supporting device **140** that supports the first filter **120** may be provided on an upper side of the lever device **142**. The supporting device **140** may include a first handle **141** coupled to the second handle **144**. A user may grasp the first and second handles **141** and **144** and then rotates the lever main body **143** and the supporting device **140** in a clockwise direction or in a counterclockwise direction.

The lever device **142** may support a lower surface of the supporting device **140**. A support projecting portion or projection (not shown), which may be in contact with the movement guide **113**, may be provided on the supporting device **140**. The support projecting portion may protrude downward from the lower surface of the supporting device **140**, and may be provided at a position corresponding to the movement guide **113**. In addition a shape of the support projecting portion may correspond to a shape of the movement guide **113**, and the support projecting portion may include an inclined surface formed to further protrude in the circumferential direction.

A direction in which the mover guide **113** gradually projects and a direction in which the support projecting portion gradually projects may be opposite to each other. For example, when the direction in which the movement guide **113** gradually projects is the counterclockwise direction, the direction in which the support projecting portion gradually projects may be clockwise direction.

The support projecting portion may be disposed or provided at a position corresponding to the cut-out portion **145**. That is, the movement guide **113** and the support projecting portion may be disposed or provided at a position at which they are inserted into the cut-out portion **145**.

The lever device **142** and the supporting device **140** may rotate together. In the rotation process, the movement guide **113** and the support projecting portion may interfere with each other. If a lower portion of the support projecting portion and an upper portion of the movement guide **113** are in contact with each other, the lever device **142** and the supporting device **140** may be lifted in the upward direction. In addition, the first filter **120** supported by the supporting device **140** may be in a state in which the first filter **120** is coupled to the first blowing device **100** while moving in the upward direction.

On the other hand, if the lower portion of the support projecting portion and the upper portion of the movement guide **113** are in contact with each other or if inference between the support projecting portion and the movement guide **113** is released, the lever device **142** and the supporting device **140** may move downward. In addition, the first filter **120** supported by the supporting device **140** may be in a state (released state) in which the first filter **120** is separable from the first blowing device **100**.

The first filter **120** may have a cylindrical shape having an open upper portion. The first filter **120** may include a filter main body **121**, which may have a cylindrical filter, an inside of which may be empty, and a filter hole **122** formed to be open at an upper end portion or end of the filter main body **121**. A filter grasping portion or grasp **121***a* may be provided at an upper or lower portion of the filter main body **121**. Air may be introduced to the inside of the filter main body **121** through an outer circumferential surface of the film main body **121**, and may be discharged from the first filter **120** through the filter hole **122**.

The first blowing device **100** may further include a first filter frame **130**, which may form a mounting space for the first filter **120**. More specifically, the first filter frame **130** may include a first frame **131**, which may form a lower portion of the first filter frame **130** and a second frame **132**, which may form an upper portion of the first filter frame **130**.

The first frame **131** may include a frame depression portion or depression **131***a* having a downwardly depressed shape. The frame depress on portion **131** may be configured such that at least a portion of the first frame **131** is depressed. The frame depression portion **131***a* may be formed at a position corresponding to the groove portion **114** of the suction grill **110**. The groove portion **114** and the frame depression portion **131***a* may provide a space portion or space in which the first and second handles **141** and **144** may be movable. The first and second handles **141** and **144** may be located in the space portion, to rotate in the clockwise direction or in the counterclockwise direction.

The second frame **132** may be spaced apart from the first frame **131** in the upward direction. The second frame **132** may have a substantially ring shape. The ring-shaped inside portion space of the second frame **132** may form at least a portion of an air flow path passing through the first filter frame **130**. In addition, an upper portion of the second frame **132** may support a first fan housing **150** described hereinafter.

The first filter frame **130** may further include a first filter supporting portion or support **135** that extends from the first frame **131** to the second frame **132** in the upward direction. The first frame **131** and the second frame **132** may be spaced apart from each other by the first filter supporting portion **135**. A plurality of first filter supporting portions **135** may be provided and the plurality of the first filter supporting portions **135** may be arranged in the circumferential direction, and thus, may be connected to rim portions or rims of the first frame **131** and the second frame **132**. A mounting space of the first filter **120** may be defined by the plurality of first filter supporting portions **135** and the first frame **131** and the second frame **132**.

A sensor device or sensor **137** may be installed or provided in or on the first filter frame **130**. The sensor device **137** may include a dust sensor that senses an amount of dust in the air and a gas sensor that senses an amount of gas in the air. The dust sensor and the gas sensor may be disposed or provided to be supported by the second frame **132** of the first filter frame **130**.

The first filter **120** may be detachably mounted in the mounting space. The first filter **120** may have a cylindrical shape and air may be introduced through the outer circumferential surface of the first filter **120**. Impurities, such as fine dust in air, may be filtered in a process of passing through the first filter **120**.

The air may be introduced from any direction relative to the first filter **120**, by the first filter **120** having the cylindrical shape. Accordingly, a filtering area of air may be increased.

The mounting space may have a cylindrical shape corresponding to the shape of the first filter **120**. The first filter **120** may be slidably introduced toward the mounting space in a mounting process. In contrast, the first filter **120** may be slidably withdrawn from the mounting space in a separating process.

That is, when the first and second handles **141** and **144** are operated in a state in which the first filter **120** is located on the upper surface of the supporting device **140**, the first filter **120** may be in a released position with the first filter **120** being moved in the downward direction. The first filter **120** may be slid to the outside in the radial direction and may be separated from the mounting space.

In contrast, when separated from the mounting space the first filter **120** may be slid toward the mounting space to the inside in the radial direction, supported on the upper surface of the supporting device **140**, and thus, may be in close contact upwardly by an operation of the first and second handles **141** and **144**. At this time, the first filter **120** is in a coupling position. A first supporting portion cover **136** may be coupled with the outside of the first filter supporting portion **135**.

The first blowing device **100** may further include a first fan housing **150**, which may be installed or provided on or at an outlet side of the first filter **120**. A housing space portion or space **152**, in which a first fan **160** may be accommodated, may be formed in the first fan housing **150**. In addition, the first fan housing **150** may be supported by the first filter frame **130**.

A first fan introducing portion **151** that guides introduction of air to an inside of the first fan housing **150** may be included in a lower portion of the first fan housing **150**. A grill may be provided in or on the first fan introducing portion **151** to prevent, for example, a finger of a user from being put into the inside of the first fan housing **150** when the first filter **150** is separated.

The first blowing device **100** may further include an ionizer **158** that removes or sterilizes smell particles in the air. The ionizer **158** may be coupled to the first fan housing **150** and be capable of acting on the air which flows inside of the first fan housing **150**.

The sensor device **137** and the ionizer **158** may also be installed or provided in a second blowing device **200** described hereinafter. For example, the sensor device **137** and the ionizer **158** may be installed or provided in one of the first blowing device **100** or the second blowing device **200**.

The first fan **160** may be located on or at an the upper side of the first fan introducing portion **151**. For example, the first fan **160** may include a centrifugal fan that introduces air in the axial direction and then discharges air to the upper side in the radial direction.

The first fan **160** may include a hub **161** to which a rotational shaft **165***a* of a first fan motor **165**, which may be a centrifugal fan motor, may be coupled, a shroud **162** which may be disposed or provided in a state of being spaced apart from the hub **161**, and a plurality of blades **163**, which may be disposed or provided between the hub **161** and the shroud **162**. The first fan motor **165** may be coupled to the upper side of the first fan **160**.

The hub **161** may have a bowl shape, a diameter of which may be gradually reduced in the downward direction. The hub **161** may include a shaft coupling portion to which the rotational shaft **165***a* may be coupled and a first blade coupling portion that extends at an incline from the shaft coupling portion in the upward direction.

The shroud **162** may include a lower end portion or lower end, on or at which a shroud suction port **162***a* into which air having passed through the first fan introducing portion **151** may be suctioned, may be formed and a second blade coupling portion that extends from the lower end portion in the upward direction.

A first surface of each blade **163** may be coupled to the first blade coupling portion of the hub **161** and a second surface thereof may be coupled to the second blade coupling portion of the shroud **162**. The plurality of blades **163** may be disposed or provided spaced apart in a circumferential direction of the hub **161**.

Each blade **163** may include a leading edge **163***a*, which forms a side end portion or side end, to which air is introduced, and a trailing edge **163***b*, which forms a side end portion or side end from which air is output. The air having passed through the first filter **120** may be introduced to the first fan housing **150** through the first fan introducing portion **151** with the air flowing in the upward direction. The air may flow in the axial direction of the first fan **160**, may be introduced to the first leading edge **163***a*, and may be output to the trailing edge **163***b* via the blade **163**. The trailing edge **163***b* may extend at an inclined to the outside with respect to the axial direction in the upward direction corresponding to a flow direction of air so that the air which is output through the trailing edge **163***b* is capable of flowing to the upper side in the radial direction.

Reference to FIG. **5**, the first blowing device **100** may further include a first air guide device or guide **170** which may guide a flow of air having passed through the first fan **160** by being coupled to the upper side of the first fan **160**. The first air guide **170** may include an outer wall **171** having a cylindrical shape and an inner wall **172** positioned on or at an inside of the outer wall **171** and having a cylindrical shape. The outer wall **171** may be disposed or provided to surround the inner wall **172**. A first air flow path **172***a*, through which air may flow, may be formed between an inner circumferential surface of the outer wall **171** and an outer circumferential surface of the inner wall **172**.

The first air guide **170** may include a guide rib **175** which may be disposed or provided on or in the first air flow path **172***a*. The guide rib **175** may extend from the outer circumferential surface of the inner wall **172** to the inner circumferential surface of the outer wall **171**. A plurality of guide ribs **175** may be disposed or provided spaced apart from each other. The plurality of guide ribs **175** may guide the air introduced to the first air flow path **172***a* of the first air guide **170** via the first fan **160** in the upward direction.

The guide rib **175** may extend at an incline from a lower portion of the outer wall **171** and the inner wall **172** in the upward direction. For example, the guide rib **175** may be rounded, and thus, guide air so that it flows at an incline in the upward direction.

That is, with reference to FIG. **6**, the guide rib **175** may include a rib main body **175***a*, which may extend rounded in the upward direction. The rib main body **175***a* may include a positive pressurizing surface **175***b* which faces in a direction in which an air flow approaches and a negative pressuring surface **175***c* which is opposite to the positive pressurizing surface **175***b*. The positive pressurizing surface **175***b* may have a concave shape and the negative pressurizing surface **175***c* may have a convex shape.

The rib main body **175***a* may include a leading edge **175***d* which forms a side end portion or side end, to which air may be introduced, and a trailing edge **175***e* which forms a side

end portion or side end, to which air may be discharged. The leading edge **175***d* may be rounded and bent from the positive pressurizing surface **175***b* toward the negative pressurizing surface **175***c*. According to this configuration, a portion of air which is introduced via the leading edge **175***d* may be guided to the positive pressurizing surface **175***b* and the rest of the air may be guided to the negative pressurizing surface **175***c*. Air which flows to the negative pressurizing surface **175***c* may pass by a plurality of projecting portions **175***f*.

The plurality of projecting portions **1751** may project from the negative pressurizing surface **175***c* and may extend from the leading edge **175***d* toward the trailing edge **175***e*. The projecting portion **175***f* may have an airfoil shape a projecting height of which may be gradually reduced from the leading edge **175***d* toward the trailing edge **175***e*. Generation of a vortex on the negative pressurizing surface **175***c* may be prevented, and thus, air may easily flow toward the upper side, due to the plurality of projecting portions **175***f* formed on the negative pressurizing surface **175***c*.

The trailing edge **175***e* may have a saw tooth shape having peaks and valleys which may be repeated in the radial direction. According to this configuration, a difference between times at which air is output from the trailing edge **175***e*, that is, air is output from the peaks and valleys from, each other may be generated, and thus, generation of noise may be reduced.

The first air guide **170** may further include a motor accommodating portion **173** that extends from the inner wall **172** to the lower side, and thus, accommodates the first fan motor **165**. The motor accommodating portion **173** may have a bowl shape, a diameter of which may be gradually reduced in the downward direction. A motor coupling portion **166** may be provided on or at one side of the first fan motor **165** to fix the first fan motor **165** to the first air guide **170**. A shape of the motor accommodating portion **173** may correspond to the shape of the hub **161**. The motor accommodating portion **173** may be inserted into the hub **161**.

The first fan motor **165** may be supported to or at an upper side of the motor accommodating portion **173**. The rotational shaft **165***a* of the first fan motor **165** may extend from the first fan motor **165** in the downward direction and be coupled to the shaft coupling portion **161***a* of the hub **161** through the lower surface portion of the motor accommodating portion **173**.

In addition, a motor coupling portion **166** may be provided on or at an upper side of the first fan motor **165**. The motor coupling portion **166** may guide the first fan motor **165** to be fixed to the air guide **170**.

FIG. **7** is a partial view of the air cleaner according to an embodiment. FIG. **8** is a perspective view illustrating a dividing plate and components coupled to the dividing plate according to an embodiment. FIG. **9** is an exploded perspective view of the dividing plate and components coupled to the dividing plate of FIG. **8**.

Referring to FIGS. **7** to **9**, the first blowing device **100** according to this embodiment may further include a second air guide device or guide **180**, which may be coupled to the upper side of the first air guide **170** and guide air having passed through the first air guide **170** to the discharge guide **190**. The second air guide **180** may include a first guide wall **181**, which may have a substantially cylindrical shape, and a second guide wall **182**, which may be positioned at an inside of the first guide wall **181** and have a substantially cylindrical shape. The first guide wall **181** may be disposed or provided to surround the second guide wall **182**.

A second air flow path **185**, through which air may flow, may be formed between an inner circumferential surface of the first guide wall **181** and an outer circumferential surface of the second guide wall **182**. Air which flows along the first air flow path **172***a* of the first air guide **170** may flow in the upward direction through the second air flow path **185**. The second air flow path **185** may be referred to as a "discharge flow path." In addition, the first discharge portion **105** may be provided on or at an upper side of the second air flow path **185**.

A fastening guide **183**, which may be coupled with the first air guide **170**, may be provided on a lower portion of the second guide wall **182**. The fastening guide **183** may extend to the lower side of the second guide wall **182**.

A predetermined fastening member may be coupled to the fastening guide **183**, and the fastening member may be coupled to a fastening rib **178** of the first air guide **170**. The fastening rib **178** may project from an upper surface of the motor accommodating portion **173** in the upward direction. A plurality of fastening guides **183** and a plurality of fastening ribs **178** may be provided.

The second air guide **180** may further include a wall supporting portion or support **187** that extends from an inner circumferential surface of the first guide wall **181** to an outer circumferential surface of the second guide wall **182**. By the wall supporting portion **187**, the first and second guide walls **181** and **182** may be stably coupled to each other. A plurality of wall supporting portions **187** may be provided. For example, the plurality of wall supporting portions **187** may include four wall supporting portions **187** extending in four directions. In addition, the first discharge guide **190** may be supported on the plurality of wall support portions **187**.

A first space portion or space **184**, in which at least a portion of a printed circuit board (PCB) device **500** may be accommodated by passing therethrough in the vertical direction may be formed inside of the second guide wall **182** having a cylindrical shape. The PCB device **500** may include a power supply portion or power supply **520** and a main PCB **511**.

The power supply portion **520** may refer to a device that receives commercial power supplied from a power line connected to the air cleaner **10** to supply power to the main PCB **511** and a plurality of components in the air cleaner **10**. The power supply **520** may include a PCB (power PCB) for AC power. The main PCB **511** may include a PCB for DC power, which may be driven by a DC voltage converted in the PCB for AC power.

The PCB device **500** may further include a PCB supporting plate **525** that supports the power supply portion **520** and the main PCB **511**. The main PCB **511** may be supported on one or a first surface of the PCB supporting plate **525** and the power supply portion **520** may be supported on the other or a second surface of the PCB supporting plate **525**.

The PCB device **500** may include a communication module **515** through which the air cleaner **10** is capable of communicating with an external devices. For example, the communication module **515** may include a Wi-Fi module. The communication module **515** may be supported on the PCB supporting plate **525**, and may be disposed or provided at a lower side of the main PCB **511**.

The second air guide **180** may include a bending portion **186** that extends from an upper portion of the first guide wall **181** in an outer direction. The bending portion **186** may extend to the outside in the radial direction from the upper end of the first guide wall **181** and be bent in the downward direction. For example, the bending portion **186** may have a substantially eave shape.

The first blowing device **100** may further include a first discharge guide device or guide **190**, which may be disposed or provided on or at an upper side of the second air guide **180**, that is, an outlet side of air flow passing through the second air guide **180** relative to the air flow and guide the air discharge to outside of the air cleaner **10**.

The first discharge guide **190** may include a first discharge main body **191**, which may form the second space portion **194** at a substantially central portion. The first discharge main body **191** may include a main body outer wall **191***a*, which may form an outer circumferential surface thereof and a main body inner wall **191***b*, which may form an inner circumferential surface thereof. The main body outer wall **191***a* may surround the main body inner wall **191***b*. By this configuration of the main body outer wall **191***a* and the main body inner wall **191***b*, the first discharge main body **191** may have an annular shape.

The second space portion **194** may be formed inside of the main body inner wall **191***b*. At least a portion of the PCB device **500** may be accommodated in the second space portion **194**. The second space portion **194** may be formed on or at an upper &de of the first space portion **184**, and the first space portion **184** and the second space portion **194** may form an installation space portion or space in which the PCB device **500** may be installed or provided.

The first discharge main body **191** may include a first discharge grill **195**. The first discharge grill **195** may extend to the outside in the radial direction toward the main body outer wall **191***a* from the main body inner wall **191***b*. In addition, a plurality of first discharge grills **195** may be provided, and first discharge portions **105**, through which air may be discharged to the outside, may be formed between the plurality of first discharge grills **195**. The plurality of first discharge grills **195** may be disposed or provided on or at an upper side of the second air flow path **185**, and air passing through the second air flow path **185** may be discharged through the first discharge portion **105** while flowing toward the first discharge grill **195**. An air flow path formed from the second air flow path **185** to the first discharge portion **105** may be referred to as a "discharge flow path."

The second blowing device **200** may include a supporting device or support that supports a lower portion of the second filter **220** and a lever device or lever provided on or at a lower side of the supporting device. The supporting device and the lever device may be the same or similar to the supporting device **140** and the lever device **142** of the first blowing device **100**, and therefore, repetitive disclosure has been omitted.

The second blowing device **20** may further include a lever supporting device or support **560** that supports the second filter **220** or the lever device of the second blowing device **200**. The lever supporting device **560** may have a substantially annular shape. The lever supporting device **560** may include a third space portion or space **564**, which defines an installation space in which the PCB device **500** may be located or provided. The third space portion **564** may be formed at a substantially center portion of the lever supporting device **560** by passing through the lever supporting device **560** in the vertical direction.

The lever supporting device **560** may include a lever supporting main body **561**, which may have an annular shape. The lever supporting main body **561** may extend toward an outer circumferential surface from an inner circumferential surface thereof to be slightly inclined in the upward direction relative to the axial direction. That is, the surface forming the lever supporting main body **561** may be an inclined surface. A space between the inclined surface and an upper surface of a dividing plate **430** described hereinafter provides a space portion or space, in which a user's hand may be located.

The lever supporting main body **561** may be referred to as a "blocking portion" in that air which is discharged through the first discharge portion **105** of the first blowing device **100** may be blocked from being introduced to the second blowing device **200**. The lever supporting device **560** may further include a movement guide portion or guide **565**, which may protrude from the lever supporting main body **561** in the upward direction. The movement guide portion **565** may be the same or similar to the movement guide **113** of the first blowing device **100**, and therefore, repetitive disclosure has been omitted. For convenience of description the movement guide **113** may be referred to as a "first movement guide portion or guide," and the movement guide **565** may be referred to as a "second movement guide portion or guide."

The lever supporting device **560** may further include a supporting projection or support **566** that protrudes from an inner circumferential surface of the lever support main body **561** in the upward direction. The supporting projection **566** may support the lever device of the second blowing device **200**.

A dividing device **400** may be provided between the first blowing device **100** and the second blowing device **200**. The dividing device **400** may include a dividing plate **430** that separates or blocks air flow generated in the first blowing device **100** and air flow generated in the second blowing device **200**. By the dividing plate **430**, the first and second blowing devices **100** and **200** may be spaced apart from each other in the vertical direction.

That is, a separation space in which the dividing plate **430** may be located or provided may be formed between the first and second blowing devices **100** and **200**. The first discharge guide **190** of the first blowing device **100** may be located at a lower end portion or end of the separation space, and the lever supporting device **510** of the second blowing device **200** may be located at an upper end portion or end of the separation space.

The separation space may be divided into an upper space and a lower space by the dividing plate **430**. The lower space may be a first space portion or space **448** (see FIG. **13**) through which air discharged from the first discharge portion **105** of the first discharge guide **190** may pass in a process in which the air flows to the outside of the air cleaner **10**. The upper space may be a second space portion or space **458** (see FIG. **13**) that functions as a grasping space into which a user may put his or her hand when moving the air cleaner **10**.

Air discharged from the first discharge portion **105** may be guided by the dividing plate **430** to flow to the outside of the air cleaner **10**. Accordingly, it is possible to prevent the air from being introduced into the second blowing device **200**.

The dividing plate **430** may include a first plate **440**, and a second plate **450** coupled to the first plate **440**. The second plate **450** may be provided on or at an upper side of the first plate **440**. In addition, the first plate **440** may extend rounded in the upward direction and the second plate **450** may extend rounded in the downward direction.

The first plate **448** may include a plate inner wall **441**, which may have a substantially annular shape, and a plate outer wall **443**, which may surround the plate inner wall **441**. A first space portion or space **449** that passes through the first, plate **440** in the vertical direction may be formed at a center portion of the plate inner wall **441**. The first space

portion **449** may provide an installation space in which at least a portion of the PCB device **500** may be located or provided.

The plate outer wall **443** may extend to the outside in the radial direction from the plate inner wall **441**. The first plate **440** may further include a wall connecting portion that extends in the radial direction between the lower end portion or end of the plate inner wall **441** and the lower end portion or end of the plate outer wall **443**.

The plate outer wall **443** may extend rounded in the upward direction from the wad connecting portion. For example, at least a portion of the plate outer wall **443** may be a curved surface having a predetermined radius of curvature.

The first plate **440** may include a depression portion or depression **442** which defines a space between the plate inner wall **441** and the plate outer wall **443**. The depression portion **442** may be depressed in the downward direction in a space between the upper end portion of the plate inner wall **441** and the upper end portion of the plate outer wall **443**.

The first plate **440** may include a first coupling portion **449***a*, which may be coupled to the second air guide **180**. The first coupling portion **449***a* may be provided on an inner circumferential surface of the plate inner wall **441**. In addition, the first coupling portion **449***a* may be coupled to a second coupling portion **188** of the second air guide **180**. The second coupling portion **188** may be provided on an inner circumferential surface of the second guide wall **182**.

A display device or display **460** that displays information relative to an operation of the air cleaner **10** may be installed or provided at fine dividing plate **430**. For example, the information may include information on an air pollution level or air cleanliness.

The display device **460** may be installed or provided in a space between the first plate **440** and the second plate **450**. A device mounting portion or mount **445**, on which the display device **450** may be mounted, may be formed on the first, plate **440**. The device mounting portion **445** may be formed on an upper surface of the plate outer wall **443**.

The display device **460** may include an illumination source **482**. The illumination source **462** may be installed or provided at an illumination supporting portion or support **461**. The illumination supporting portion **461** may include a mounting groove into which the illumination source **462** may be inserted. For example, the illumination source **462** may include a light emitting diode (LED).

The display device **460** may further include a diffusing portion or diffuser **446** provided on or at one side of the illumination source **462** and diffusing light irradiated from the illumination source **462**.

The display device **460** may include a reflecting plate **447**, which may be provided on or at at least one side of the diffusing portion **446** and reflect light diffused through the diffusing portion **446** so as to concentrate the light on an outer circumferential surface of the dividing plate **430**. For example, the reflecting plate **447** may be provided on each of upper and lower sides of the diffusing portion **446**. According to this configuration, light irradiated from the illumination source **462** may be concentrated on the diffusing portion **446** by the reflecting plate **447**, and is capable of being converted into diffused light while passing through the diffusing portion **446**.

The second plate **450** may include a second plate main body **451**, which may have a substantially annular shape. The second plate **450** may include a plate mounting portion or mount **455**, which may protrude to the inside in the radial direction from an inner circumferential surface of the second plate main body **451**. The plate mounting portion **455** may be depressed in the downward direction from an upper end portion or end of the second plate main body **451**, and support the lever supporting device **560**.

A fifth space portion or space **459**, which may pass through the plate mounting portion **455** in the vertical direction may be formed at a center portion of the plate mounting portion **455**. The fifth space portion **459** may provide an installation space, in which at least a portion of the PCB device **500** may be located or provided. The fifth space portion **459** may be aligned on or at a lower side of a fourth space portion or space **449**. The first to fifth space portions **184**, **194**, **549**, **449**, and **459** may be aligned to communicate with one another in the vertical direction, thereby providing an installation space for the PCB device **500**.

The second plate main body **451** may extend at an incline toward the outside in the radial direction. The second plate main body **451** may include an inclined surface **453** that extends at an incline in the downward direction toward an outer circumferential surface from an inner circumferential surface of the second plate main body **451**. For example, the inclined surface **453** may have a surface that extends rounded.

A space portion or space **458** may be formed between the lower surface of the lever supporting main body **211** and the inclined surface **453**. The second space portion may be referred to as a "grasping space portion or space."

FIG. **10** is a cross-sectional view, taken along line X-X' of FIG. **8**. FIGS. **11** and **12** are views illustrating a state in which a dividing plate and a first discharge are provided. FIG. **13** is an enlarged view of portion "A" of FIG. **10**.

Referring to FIGS. **10** to **13**, the first blowing device **100** according to an embodiment may include a second air guide device or guide **180** and a first discharge guide device or guide **190**, which may be coupled to an upper side of the second air guide **180** and has the first discharge portion **105**.

The air cleaner **10** may include the dividing plate **430**, which may be disposed or provided on or at an upper side of the first discharge guide **190** and guide the air which is discharged through the first discharge portion **105** outside of the air cleaner **10** in the radial direction.

The air cleaner **10** may include the lever supporting device **560**, which may be coupled to an upper side of the dividing plate **430**. The lever supporting device **560** may form a lower configuration of the second blowing device **200**.

The air having passed through the first fan **160** may flow in the upward direction while passing through the first air guide **170** and may be discharged from the discharge guide **190** through the second air guide **180** in the upward direction. The air discharged in the upward direction may be changed in direction to the outside in the radial direction by the dividing plate **430** and then may be discharged to the outside of the air cleaner **10**.

The second plate **450** may be stably coupled to an upper side of the first plate **440**. The plate inner wall **441** of the first plate **440** may include a first wall **441***a*, a second wall **441***b* that extends in the vertical direction and spaced apart from the first wall **441***a*, and a third wall **441***c* that connects upper portions of the first wall **441***a* and the second wall **441***b* with each other.

The first wall **441***a* may be disposed or provided on or at an outside of the second wall **441***b*, and the third wall **441***c* may support a lower surface of the second plate **450**.

According to this configuration, a stable coupling structure of the first plate **440** and the second plate **450** may be implemented.

The plate outer wall **443** of the first plate **440** may be supported by an upper side of the second guide wall **182** of the second air guide **180**. The plate outer wall **443** may include a curved portion **444***a*, which may extend rounded with a predetermined curvature from the first discharge portion **105**. A direction in which the curved portion **444***a* extends rounded may be understood as a direction of extending from a lower end portion or end of the plate outer wall **443** to an upper side in the radial direction. According to the configuration of the curved portion **444***a*, change in direction to the outside in the radial direction may be easily performed with flow resistance to the air, which is discharged through the first discharge portion **105** of the first discharge guide **190** in the upward direction, being reduced.

The plate outer wall **443** may include a straight surface portion **444***b*, which may extend linearly. The straight surface portion **444***b* may extend from the curved surface portion **444***a* to the outside in the radial direction. By including the straight surface portion **444***b*, the air which may begin to change in direction through the curved surface portion **444***a* may be guided by the straight surface portion **444***b* and may be easily discharged to the outside in the radial direction of the air cleaner **10**.

The second plate **450** may be coupled to the upper side of the first plate **440**. The second plate main body **451** of the second plate **450** may include an inclined surface **453** that extends rounded. A direction in which the inclined surface **453** extends rounded may be a direction in which the inclined surface **453** extends downwardly to the outside in the radial direction from an upper end portion or end of an inner circumferential surface of the second plate main body **451**.

The plate outer wall **443** may include a first end portion or end **443***b*, which may be coupled with the second end portion **451***a* of the second plate **450**. A first end portion or end **443***a* may form the straight surface portion **444***b*, in particular, an end portion of the device seating portion **445**. The second end portion, **451***a* may form an end portion of the second plate main body **451**.

The display device **460** may be disposed or provided on or in a space of the first plate **440** and the second plate **450**. The display device **460** may include alight supporting portion or support **461**, which may be disposed or provided on an upper surface of the plate outer wall **443**, the light source **462**, which may be installed or provided on the mounting groove **46** of the light supporting portion **461**, and the diffusion portion **446**, which may be disposed on the outside of the light source **461** and extend in the radial direction.

The diffusing portion **446** may include a third end portion or end **446***a*, which may be disposed or provided between the first end portion **443***a* of the plate outer wall **443** and the second end portion **451***a* of the second plate **450**. That is, the first end portion **443***a*, the third end portion **446***a*, and the second end portion **451***a* may be aligned in the vertical direction.

According to dim configuration, a line of the diffusing portion **446** which emits subtle or soft light to the space between the first plate **440** and the second plate **450** may be exposed to the outside. In addition, the illumination source **462** may be driven to irradiate light of different colors. The air cleanliness in an indoor space may be levelized, and a color changed based on a level may be displayed to the outside, so that a user may intuitively recognize a level of the air cleanliness. Finally, the air cleanliness may be easily displayed without any display means, such as a separate character or picture.

The second air guide **180** may include a bending portion **186** that extends from the first guide wall **181** in the outer direction. The bending portion **186** may include a first extending portion or extension **186***a* that extends from the first guide wall **181** to the outside in the radial direction, and a second extending portion or extension **186***b* that extends from the first extending portion **186***a* in the downward direction.

The first discharge guide **190** may be disposed or provided on an upper side of the second air guide **180**. The first discharge guide **190** may include a first discharge main body **191** having an annular shape. The first discharge main body **191** may include a plurality of discharge grills **195** that extends from an inner circumferential surface toward an outer circumferential surface of the first discharge main body **191** and forms the first discharge portion **105**. The inner circumferential surface of the first discharge main body **191** may be in contact with an outer surface of the curved surface portion **444***a*.

The first discharge main body **191** may further include a bend supporting portion or support **197**, which may be provided between the plurality of discharge grills **195** and supported by the first extending portion **186***a*. A plurality of bend supporting portions **197** may be provided along a rim of the first discharge main body **191**. The bend supporting portion **197** may be connected to the outside of the plurality of discharging grills **195** in the radial direction.

Discharge of air may be blocked in a space which the first extending portion **186***a* and the bend supporting portion **197** are aligned in the vertical direction. In summary, the first discharge portion **105** may be an inside space formed by an inner circumferential surface of the first discharge main body **191**, the two closest discharge grills **195** and the bend supporting portion **197**. A plurality of first discharge portion **105** may be included.

The first discharge guide **190** may further include a grill supporting portion or support **196** which may be supported by the wall supporting portion **187** of the second air guide **180**. The grill supporting portion **196** may be disposed or provided between one discharge grill and the other discharge grill of the plurality of discharge grills **195**. A number of the grill supporting portion **196** may be provided to correspond to a number of the wall supporting portion **187**. For example, as described above, in a case where four wall supporting portions **187** are provided, four grill supporting portions **196** may be provided. A discharge flow path, that is, the first discharge portion **105** may not be provided in a space in which the wall supporting portions **187** and the grill supporting portion **196** is provided.

An outermost portion of the dividing plate **430** in the radial direction may be positioned further than an outermost of the first discharge portion **105** in the radial direction. That is, when a first imaginary line l**1** that vertically extends to the outermost portion of the first discharge portion **105** in the radial direction is defined, the first imaginary line l**1** passes through the dividing plate **430**.

When a second imaginary line l**2** that extends along the outer circumferential surface of the second guide wall **192** of the second air guide **180** in the vertical direction is defined, the second imaginary line l**2** passes through an innermost portion of the first discharge portion **105**. Accordingly, a distance w**1** between the first imaginary line l**1** and the second imaginary line l**2** may indicate a width of the first discharge portion **105**. When a third imaginary line l**3** that

extends along the outer circumferential surface of the second extending, portion **186***b* in the vertical direction is defined, the third imaginary line l3 passes through the end portions **443***a* and **451***a* of the dividing plate **430**.

A distance w**2** between the second imaginary line l**2** and the third imaginary line l**3** may indicate a width of the first extending portion **186***a* or the bend supporting portion **197** in the radial direction. A width of the dividing plate **430** in the radial direction may correspond to a value which adds the width w**1** of the first discharge portion **105** and the width w**2** of the first extending portion **186***a*.

In summary, as the inner circumferential surface of the first discharge main body **191** is disposed or provided to be in contact with the curved surface portion **444***a* of the dividing plate **430**, the innermost portion of the first discharge portion **105** may be understood as one disposed on the position corresponding to the curved surface portion **444***a*. A width w**1**+w**2** of the dividing plate **430** in the radial direction may be greater than the width w**1** of the discharge portion **105** by the width w**2** of the first extending portion **186***a*.

Accordingly, as the dividing plate **430** is elongated to completely cover the upper side of the first discharge portion **105** and an outermost portion of the dividing plate **430** is further positioned on the outside than the outermost portion of the first discharging portion **105**, a phenomenon where the air which is discharged through the first discharge portion **105** is introduced to the second blowing device **200** over the dividing plate **430**, that is, an air returning phenomenon may be prevented.

When a center line Co of the air cleaner **10** in the radial direction is defined, a distance S**1** from the center line Co to the outermost portion of the dividing plate **430** may be greater than a distance S**2** to the outermost portion of the discharge flow path **185**, which may be formed on the first discharge guide **190**. The center line Co may constitute a center line of the first blowing device **100** or a center line of the second blowing device **200**. As described above, the discharge flow path may refer to a flow path that extends from the second air flow path **185** to the first discharge portion **105**.

The first end portion **443***a* and the second end portion **451***a* may be disposed or provided on or at the outermost portion of the dividing plate **430**, and the first guide wall **181** may be disposed or provided at the outermost portion of the discharge flow path **185**. That is, the distance S_2 may be a distance from the center line Co to the first guide wall **181**.

According to this configuration, as the dividing plate **430** is disposed or provided on or at the upper side of the discharge flow path **185**, the dividing plate **430** is formed long enough to completely cover the outside portion of the discharge flow path **185**. Accordingly, it is possible to prevent a phenomenon that air discharged from the discharging flow path **185** is guided by the dividing plate **430** to be discharged in the radial direction and then suctioned into the second blowing device **200** by passing through the dividing plate **430**. Finally, the bending portion **186** may be provided in the second air guide **180**, so that the second air guide **180** may stably support the first case **101** and the first discharge guide **190**.

Referring to FIG. **7**, the first case **101** may be supported by the suction grill **110** to extend in the upward direction, and the inner surface of the first case **101** may be supported by the second extending portion **186***b* of the bending portion **186**. The first extending portion **186***a* of the bending portion **186** may support the bending support portion **197** of the first discharge guide **190**. By the supporting structure of the first extending portion **186***a* and the bending support portion **197**, a discharge flow path of air may be decreased by the width in the radial direction of the bending support portion **197**, and accordingly, the upper side of the discharge flow path of air may be covered by the dividing plate **430**. Finally, it is possible to prevent the discharged air from being suctioned to the second blowing device **200** by passing through the dividing plate **430**.

In the dividing plate **430**, a first radius R_1 of curvature of the first plate **440** and a second radius R_2 of curvature of the second plate **450** may be different from each other. The radius of curvature of the first platen **440** may correspond to the radius of curvature of the curved surface portion **444***a*. For example, the first radius R_1 of curvature may be smaller than the second radius R_2 of curvature. This is, because, while the curved surface portion **444***a* is slightly rapidly rounded such that air flowing in the upward direction through the discharge flowing path is guided in the radial direction perpendicular to the upward direction, the second plate **450** may be slightly gently rounded such that a user may conveniently put his or her hand in the upper side space of the second plate **450**.

The space between the first plate **440** and the first discharge guide **190** may form a first space portion or space **448** which guides the discharging of air. A second space **458**, in which a user may put hand to grasp the air cleaner **10** may be formed between the second plate **450** and the lever supporting device **560**.

With reference to FIG. **2** and FIG. **3**, the second blowing device **200** will be described hereinafter.

The second blowing device **200** may include a lever device and a supporting device or support, which may be provided on or at an upper side of the lever supporting device **560**. As the lever device and the supporting device are the same as or similar tip the lever device **142** and the supporting device **148** of the first blowing device **100**, repetitive disclosure has been omitted.

The second blowing device **200** may include a third air guide device or guide **278** that guides a flow of air having passed through the second fan **260** by being coupled to an upper side of the second fan **260**. As the third air guide **270** is the same as or similar to the first air guide **170**, repetitive disclosure has been omitted.

The third air guide **270** may include a guide device or guide that guide a movement of the flow adjusting device **300**. The guide may include a first rack and a shaft guide groove. The second blowing device **200** may include a second discharge guide device or guide **280**, which may be installed or provided to or at an upper side of the third air guide **270** and guide a flow of air having passed through the third air guide **270**.

The flow adjusting device **300** may be movable on an upper side of the second discharge guide **280**. The flow adjusting device **300** may include a third fan **330**. The third fan **330** may guide discharge air which passes through the third air guide **270** outside of the air cleaner **10**. A third fan motor **335** may be coupled to the third fan **330**.

The third fan **330** may include an axial flow fan. That is, the third fan **330** may be operated in order to axially discharge air which is axially introduced by passing through the third air guide **270**. The air passing through the third fan **330** may be discharged through the second discharge portion **305**, which may be positioned on or at an upper side of the third fan **330** to the outside.

In the air cleaner **10**, a discharging blowing amount, may be improved and air discharged in various directions, as the

second discharge portion **305** along with the first discharge portion **105** of the first blowing device **100** may be provided.

The display device or display **600**, on which operating information of the air cleaner **10** may be displayed, may be provided on an upper surface of the air cleaner **10**. The display device **600** may include a display PCB **618**. The display PCB **618** may be installed or provided in a space between the upper surface of the air cleaner **10** and the third fan **330**.

The first fan motor **165** and the second fan motor **265** may be disposed or provided in series relative to a longitudinal direction of the air cleaner **10**. The second fan motor **265** and the third fan motor **335** may be disposed or provided in series relative to the longitudinal direction of the air cleaner **10**.

The flow adjusting device **300** may further include a rotation guide device or guide that guides rotation in the lateral direction and rotation in the vertical direction of the flow adjusting device **300**. The rotation in the lateral direction may be referred to as a "first direction rotation" and the rotation in the vertical direction may be referred to as a "second direction rotation".

The rotation guide device may include a first guide mechanism or guide that guides the first direction rotation of the flow adjusting device **300** and a second guide mechanism or guide that guides the second direction rotation of the flow adjusting device **300**. The first guide may include a first gear motor **363** that generates a drive force and a first gear **360**, which may be rotatably coupled to the first gear motor **363** to be rotatable. For example, the first gear motor **363** may include a step motor a rotation angle of which may be easily controlled.

The second guide may include a rotating guide member or guide **370** (see FIG. **16**) that guides rotation in the second direction of the flow adjusting device **300**. The rotating guide **370** may include a rack **374**.

The second guide may include a second gear motor **367** that generates a drive force and a second gear **365**, which may be coupled to the second gear motor **367**. For example, the second gear motor **367** may be a step motor. When the second gear motor **367** is driven, the rotation guide **370** may rotate in the vertical direction by linkage of the second gear **365** and the second rack **374**. Accordingly, the flow adjusting device **300** may perform rotation in the second direction according to the movement of the rotation guide **370**.

When the flow adjusting device **300** rotates in the second direction, the flow adjusting device may in a "second position" at which it projects from the upper surface of the air cleaner **10** (see FIG. **18**). In contrast, as illustrated in FIG. **3**, a position in which the flow adjusting device **300** is laid out may be referred to as a "first position".

FIGS. **14** to **16** are views illustrating a state in which air flows in the air cleaner of FIG. **1**.

First, a flow of air according to operation of the first blowing device **100** is described hereinafter. When the first fan **160** is driven, indoor air is suctioned into the inside of the first case **101** through the first suction portion **102** and the base suction portion **103**. The suctioned air passes through the first filter **120** and foreign materials in the air may be filtered in this process. In the process of the air passing through the first filter **120**, air may be suctioned in a radial direction of the first filter **120**, filtered, and then flow in the upward direction.

The air which has passed through the first filter member **120** may flow to the upper side in the radial direction while passing through the first fan **160** and stably flow in the upward direction while passing through the first air guide **170** and the second air guide **180**. Air passing through the first air guide **170** and the second air guide **180** may pass by the first discharge guide **190** and flow in the upward direction through the first discharge, portion **105**. Air which is discharged through the first discharge portion **105** may be guided by the dividing plate **430** which may be positioned at an upper side of the first discharge guide **190**, and thus, may be discharged outside of the air cleaner **10**.

Air which is discharged through the first discharge portion **105** may be guided by the dividing plate **430**, which is located on or at the upper side of the first discharge guide **190** to be discharged to the outside of the air cleaner **10**. In particular, the direction of the air which flows in the upward direction may be changed to the outside in the radial direction while the air is flowing along the curved surface portion **444***a* and the flat surface portion **444***b*, which are provided in the first plate **440** of the dividing plate **430**.

As the outermost portion in the radial direction of the dividing plate **430** is located outward of the outermost portion of the flow path of air discharged through the first discharge portion **105**, it is possible to prevent the air discharged from the first discharge portion **105** from flowing in the upward direction, and air discharged in the radial direction may be effectively guided.

When the second fan **260** is driven, indoor air may be suctioned into the inside of the second case **201** through the second suction portion **202**. The suctioned air may pass through the second filter **220**, and in this, process, foreign materials in the air may be filtered. In the process of the air passing through the second filter **220**, air may be suctioned in the radial direction of the first filter **120**, filtered, and then flow in the upward direction.

Air having passed through the second filter **220** may flow to the upper side in the radial direction while passing through the second fan **160**, and stably flow in the upward direction while passing through the third air guide **270** and the second discharge guide **280**. Air having passes through the third air guide **270** and the second discharge guide **280** may be discharged through the second discharge portion **305** via the flow adjusting device **300**.

If the flow adjusting device **300** is in the first position in which the flow adjusting **300** is laid out, as shown in FIGS. **14** and **15**, air which is discharged from the flow adjusting device **300** flows in the upward direction. On the other hand, if the flow adjusting device **300** is in the second position in which the flowing adjusting device **300** is inclined, as shown in FIG. **16** air which is discharged from the flow adjusting device **300** may flow toward the front upper side. By the flow adjusting device **300**, an amount of air which is discharged from, the air cleaner **10** may be increased, and purified air may be supplied to a position a far distant from the air cleaner **10**.

Embodiments disclosed herein provide an air cleaner which is capable improving a suction capacity of air which is suctioned to the air cleaner. Embodiments also provide an air cleaner which is capable of sufficiently suctioned air around a person in a room whether the person in the room sitting down or standing up by including a suction flow path which is directed from a circumferential direction of the air cleaner to an inside portion thereof and a suction flow path along which air may b introduced through an upper portion and a lower portion of the air cleaner.

Embodiments disclosed herein provide an air cleaner which is capable of discharging air which is discharged from the air cleaner in various directions and sending the discharged air to a long distance. In particular, disclosed herein provide an air cleaner which is capable of easily discharging

air toward surrounding space of a person in a room whether the person in the room sitting down or standing up by a discharge air flow being easily generated in an upward direction a frontward direction, and lateral directions of the air cleaner.

Embodiments disclosed herein provide an air cleaner which is capable of easily guiding air which is discharged from the air cleaner to an outside of the air cleaner and preventing the discharged air from being introduced to the air cleaner again. Embodiments also provide an air cleaner a blowing capacity of which may be increased.

Embodiments disclosed herein provide an air cleaner in which an air guide device or guide is provided which allows air passing through a centrifugal fan to easily flow toward a discharge portion in an upward direction in a case of adopting the centrifugal fan in order to increase a blowing capacity. Embodiments disclosed herein also provide an air cleaner which improves purification capacity of a filter and in which re placement of the filter may be easily performed. Embodiments disclosed herein provide an air cleaner in which a filter may be easily installed without an installation space for installing the filter in an inside portion of the air cleaner being additionally provided.

Embodiments disclosed herein an air cleaner that may include a first air cleaning module including a first fan that generates air flow toward a first discharging portion or outlet from a first suction portion or inlet; a second air cleaning module including a second fan that generates air flow toward a second discharging portion or outlet from a second suction portion; and a dividing device or divider disposed or provided between the first air cleaning module and the second air cleaning module, the dividing device blocking air discharged through the first discharge portion from being suctioned to the second suction portion.

The second air cleaning module may be located on or at an upper side of the first air cleaning module. The first discharge portion may be provided at an upper portion of the first air cleaning module.

The first and second air cleaning modules may be spaced apart from each other in a vertical direction by the dividing device. The dividing device may include a dividing plate that guides air discharged in an upward direction through the first discharge portion to the outside in the radial direction.

An outermost portion in the radial direction of the dividing plate may extend outward of an outermost portion in the radial direction of the first discharge portion. A distance from a center line of the first air cleaning module to the outermost portion in the radial direction of the dividing plate may be greater than a distance from the center line of the first air cleaning module to the outermost portion in the radial direction of the first discharging portion.

The dividing plate may include a first plate; and a second plate coupled to an upper side of the first plate. The first plate may extend to be rounded in the upward direction. The second plate may extend to be rounded in the downward direction.

A radius of curvature of the first plate may be formed smaller than a radius of curvature of the second plate. The first plate may include: a curved surface portion that extends to be rounded toward the outside in the upward direction from the first discharge portion, and a flat surface portion that extends to the outside in the radial direction from the curved surface portion.

The first plate may include a plate inner wall which may have an annular shape; a plate outer wall disposed or provided to surround the plate inner wall; and a wall connecting portion that extends in the radial direction between a lower end portion or end of the plate inner wall and a lower end portion or end of the plate outer wall.

The first plate may further include a depression portion or depression which forms a space between the plate inner wall and the plate outer wall. The depression portion may be configured to be depressed in the downward direction from a space between an upper end portion or end of the plate inner wall and an upper end portion or end of the plate outer wall.

The air cleaner may further include a second air guide device or guide disposed or provided on or at a lower side of the first plate, the second air guide device being coupled to the plate inner wall; and a first discharge guide device or guide placed on an upper surface of the second air guide device, the first discharging guide device having an annular shape.

The second discharging guide device may include a plurality of discharge grills which form the first discharge portion, and a bending support portion or support provided at an outside portion in the radial direction of the plurality of discharge grills, the bending support portion being supported by the second air guide device.

The first discharge portion may be at an inside portion space or space which is defined by an inner circumferential surface of the first discharge guide device, the plurality of discharge grills, and the bending support portion. A first space portion or space which guides flow of air discharged through the first discharge portion may be formed in a space between an upper portion of the first discharge guide device and a lower portion of the first plate.

The air cleaner may further include a lever supporting device or support provided at a lower portion of the second air cleaning module. A second space portion for a user's grasping may be formed in a space between an upper portion of the second plate and a lower portion of the lever supporting device.

The dividing plate may include a display device. The display device may be installed or provided in a space between the first plate and the second plate.

According to the embodiments disclosed herein, a suction capacity be improved as the suction portion is formed along an outer circumferential surface of a cylindrical case and a structural resistance of the case is not generated in an air suction process. In particular, a plurality of apertures may be included on or in the suction portion and a suction flow path which may be directed to an inside portion of the air cleaner may be formed in 360 degree directions relative to the air cleaner, as the plurality of apertures may be formed evenly over an entire outer circumferential surface of the case. Finally, a suction area of air may be increased and air around a person in a room may be sufficiently suctioned where the person in the room is sitting down or standing up.

The suction portion may include a first suction portion or inlet, which may be provided in the first case, a third suction portion, which may be provided in the second case and a second suction portion, which may be provided in a base side, and thus, may be formed in an axial direction from a lower portion to an upper portion of the case. Accordingly, a suction capacity of the indoor space may be increased, as air which exists in a lower portion of the indoor space and air of the indoor space which exists in a relatively high position relative to the air cleaner may be suctioned into the air cleaner.

In addition, discharge of air in the upward direction may be guided through the second blowing device and a discharge of air in the frontward direction may be guided by the flow adjusting device, which may be provided on an upper

side of the second blowing device. Discharge of air in the lateral direction may be guided, in a process of rotating the flow adjusting device. Finally, an air cleaning function of the indoor space may be improved as discharge of air in various directions relative to the air cleaner may be performed and a discharge air flow may be formed to extend a long distance from the air cleaner. A discharge air flow may be easily generated toward a circumferential space of the person in the room whether the person in the room sitting down or standing up.

In addition, the second blowing device may be disposed or provided on or at an upper side of the first blowing device, a dividing plate may be provided between the first and second blowing devices, and air which is discharged from the first blowing device may be guided to the outside in the radial direction by the dividing plate. Accordingly, it is possible to prevent a phenomenon that air which is discharged from the first blowing device is re-introduced to the second blowing device.

A discharge flow path which passes through the first discharge guide of the first blowing device may extend in the upward direction, and the dividing plate may extend sufficiently long to the outside in the radial direction from the upper side of the discharge flow path. Accordingly, it is possible to prevent air in the discharge flow path from being introduced to the second blowing device by passing through the dividing plate.

That is, as the outer circumferential surface of the dividing plate extends further outward in the radial direction than an outside path of the discharge flow path, air which passes through the discharge flow path may be guided by the dividing plate, to easily flow in the outside direction of the air cleaner. That is, the dividing plate may include a first plate and a second plate. The first plate may include a curved surface portion or surface which extends to be rounded toward the outside in the radial direction from the axial direction, and a flat surface portion which linearly extends in the outside direction from the curved surface portion. Accordingly, air which flows in the upward direction may be easily discharged to the outside in the radial direction of the air cleaner.

The outside end portion of the flat surface portion may be located outward of the outside portion of the discharge flow path, so that it is possible to prevent air discharged through the discharge flow path from flowing in the upward direction by passing through the flat surface portion. A space portion or space may be formed in a space between the second plate and a lever supporting device or support coupled to an upper side of the second plate, so that a user's hand may be easily located in the space portion. Accordingly, the user may easily move the air cleaner.

The second plate may extend to be rounded, and a radius of curvature of the second plate may be formed as a value where the grasping of the user may be easily performed. In addition, a radius of curvature of the first plate may be formed smaller than the radius of curvature of the second plate. Accordingly, the discharging of air through first plate may be easily performed, and the grasping of the user using the second plate may be easily performed.

A display device or display which displays air cleanliness may be disposed or provided between the first and second plates, so that intuitive recognition of the user may be easily made. A blowing capacity of the air cleaner may be improved as the plurality of blowing devices may be provided.

The air which may flow in the radial direction through the centrifugal fan may be easily guided toward the discharge portion in the upward direction, as the centrifugal fan for increasing the blowing capacity of the air cleaner and the air guide device which is disposed on or at an outlet side of the centrifugal fan may be provided.

A phenomena of interference between the air flows may be prevented as the air flows which are independent from each other may be generated through the first blowing device and the second blowing device. Accordingly, the air flowing capacity may be improved.

A suction area may be increased as air may be introduced to the inside portion of the filter from an entire directions of the outside of the filter by the filter being provided in a cylindrical shape. Accordingly, the air cleaning capacity of the filter may be improved.

Assembly or disassembly of the After member may be easily performed as the filter may be slid toward the filter frame in the radial direction. A blowing amount may be increased as the turbo fan which suctions air in the axial direction and then discharges air in the radial direction may be included in the blowing fan.

In addition, flow loss may be reduced and noise may be reduced, as the air guide in which the guide rib is included may be provided in the outlet side of the turbo fan. Vortex generation may be reduced and air flow toward the discharge portion may be smoothly performed, as the projecting portion is provided in the guide rib.

Also, a flow adjusting device which may change a direction of air flow may be provided on or at one side of the blowing device, so that air may be discharged toward the front. Accordingly, air which is discharged from the air cleaner may be discharged a long distance.

The details of one or more embodiments are set forth in the accompanying drawings and the description. Other features will be apparent from the description and drawings, and from the claims.

The scope should not be limited to the aforementioned embodiments but defined by appended claims. The technical spirit within the scope substantially identical with the scope of the present disclosure will be considered to fall in the scope defined by the appended claims.

Although some embodiments are described for illustrative purposes it will be apparent to those skilled in the art that various modifications and changes can be made thereto within the scope of the disclosure without departing from the essential features of the disclosure.

Accordingly, the aforementioned embodiments should be construed not to limit the technical spirit but to be provided for illustrative purposes so that those skilled in the art can fully understand the spirit.

Any reference in this specification to "one embodiment," "an embodiment," "example embodiment," etc., means that a particular feature, structure, or characteristic described in connection with the embodiment is included in at least one embodiment. The appearances of such phrases in various places in the specification are not necessarily all referring to the same embodiment. Further, when a particular feature, structure, or characteristic is described in connection with any embodiment, it is submitted that it is within the purview of one skilled in the art to effect such feature, structure, or characteristic in connection with other ones of the embodiments.

Although embodiments have been described with reference to a number of illustrative embodiments thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fail within the spirit and scope of the principles of this disclosure. More particularly, various variations and modi-

fications are possible in the component parts and/or arrangements of the subject combination arrangement within the scope of the disclosure, the drawings and the appended claims. In addition to variations and modifications in the component parts and/or arrangements, alternative uses will also be apparent to those skilled in the art.

What is claimed is:

1. An air cleaner, comprising:

a first air cleaning module including a first cylindrical case in which a first suction inlet is formed, a first fan provided within the first case, and a discharge outlet through which air passing through the first fan is discharged upward;

a dividing plate provided above the first air cleaning module; and

a second air cleaning module disposed at an upper side of the dividing plate, the second air cleaning module including a second cylindrical case in which a second suction inlet is formed and a second fan within the second cylindrical case, wherein the discharge outlet is provided at a top of the first air cleaning module and the second suction inlet is provided at the second air cleaning module, wherein the dividing plate is provided between the first cylindrical case and the second cylindrical case and extends in a radial direction from an upper side of the discharge outlet, wherein each of the first and the second fans comprises a centrifugal fan, an axis of the centrifugal fan being configured to arrange vertically, wherein each of the first and the second suction inlets is formed with a plurality of through holes arranged in a circumferential direction so that air is suctioned in 360-degree directions with respect to the axis of the centrifugal fan, and wherein an outermost edge of the dividing plate is positioned further than an outermost edge of the discharge outlet in the radial direction such that air discharged from the discharge outlet flows away from the first air cleaning module.

2. The air cleaner according to claim **1**, wherein the first air cleaning module includes:

an air guide disposed at an outlet of the first fan, the air guide having an air flow path along which air passing through the first fan flows to the discharge outlet.

3. The air cleaner according to claim **2**, wherein the air guide includes a first guide wall and a second guide wall positioned at an inside of the first guide wall, and wherein the air flow path is formed between an inner circumferential surface of the first guide wall and an outer circumferential surface of the second guide wall.

4. The air cleaner according to claim **3**, wherein the air guide includes a first extension that extends towards an outside of the air cleaner in the radial direction from the first guide wall.

5. The air cleaner according to claim **4**, further including:

a discharge guide provided at an outlet of the air guide, the discharge guide including a bend support supported by the first extension.

6. The air cleaner according to claim **5**, wherein the discharge guide includes a discharge main body having a plurality of discharge grills, which defines the discharge outlet, and the bend support is provided along a rim of the discharge main body.

7. The air cleaner according to claim **6**, wherein the bend support is provided between the plurality of discharge grills.

8. The air cleaner according to claim **4**, wherein the air guide further includes a second extension that extends downward from the first extension.

9. The air cleaner according to claim **4**, wherein a width of the dividing plate in the radial direction corresponds to a value equivalent to a width of the discharge outlet and a width of the first extension.

10. The air cleaner according to claim **1**, wherein if a first imaginary line that vertically extends from the outermost edge of the discharge outlet is defined, the first imaginary line passes through the dividing plate.

11. The air cleaner according to claim **1**, wherein the dividing plate extends in the radial direction enough to completely cover the outermost edge of the discharge outlet, preventing air discharged from the discharge outlet from being suctioned into the suction inlet by passing through the dividing plate.

12. An air cleaner, comprising:

a first air cleaning module including a first fan, a discharge outlet through which air passing through the first fan is discharged, and an air guide disposed at an outlet of the first fan, the air guide including:

a first guide wall;

a second guide wall positioned at an inside of the first guide wall; and

an air flow path along which air passing through the first fan flows to the discharge outlet, the air flow path being formed between an inner surface of the first guide wall and an outer surface of the second guide wall;

a second air cleaning module disposed at an upper side of the first air cleaning module, the second air cleaning module including a suction inlet and a second fan; and

a dividing plate provided between the first air cleaning module and the second air cleaning module, the dividing plate extending in a radial direction at an upper side of the discharge outlet, wherein an outermost edge of the dividing plate is positioned further than an outermost edge of the discharge outlet in the radial direction such that air discharged from the discharge outlet flows away from the first air cleaning module, and wherein the dividing plate includes a rounded lower surface configured to guide the air discharged away from the first air cleaning module in the radial direction.

13. The air cleaner according to claim **12**, wherein the air guide includes a first extension that extends towards an outside of the air cleaner in the radial direction from the first guide wall.

14. The air cleaner according to claim **13**, further including:

a discharge guide provided at an outlet of the air guide, the discharge guide including a bend support supported by the first extension.

15. The air cleaner according to claim **14**, wherein the discharge guide includes a discharge main body having a plurality of discharge grills, which defines the discharge outlet, and the bend support is provided along a rim of the discharge main body and between the plurality of discharge grills.

16. The air cleaner according to claim **13**, wherein the air guide further includes a second extension that extends downward from the first extension.

17. The air cleaner according to claim **13**, wherein a width of the dividing plate in the radial direction corresponds to a value equivalent to a width of the discharge outlet and a width of the first extension.

18. The air cleaner according to claim **12**, wherein if a first imaginary line that vertically extends to the outermost edge

of the discharge outlet is defined, the first imaginary line passes through the dividing plate.

19. The air cleaner according to claim **12**, wherein the dividing plate extends in the radial direction enough to completely cover the outermost edge of the discharge outlet, preventing air discharged from the discharge outlet from being suctioned into the suction inlet by passing through the dividing plate.

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