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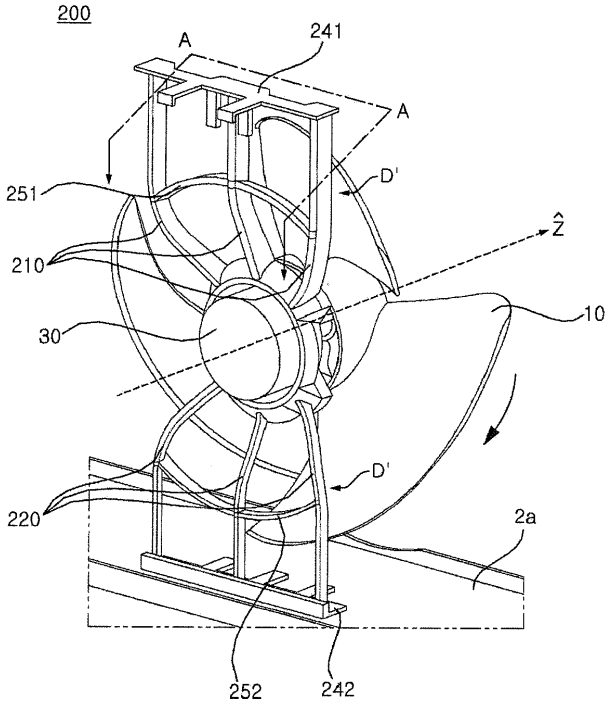
(54) Outdoor unit of air conditioner

(57) Disclosed herein is an outdoor unit of an air conditioner. The outdoor unit includes an axial fan, a motor rotating the axial fan and a motor supporter supporting the motor, and the motor supporter includes deflection parts deflecting an air current sucked into the axial fan so as to have a rotating direction component of the axial fan.

Fig. 4



EP 2 910 863 A1

Description

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority under 35 U.S.C. § 119 to Korean Application No. 10-2013-0150899, filed on December 05, 2013, the subject matter of which is hereby incorporated in by reference.

BACKGROUND OF THE INVENTION

1. Field of the invention

[0002] The present invention relates to an outdoor unit of an air conditioner.

2. Description of the Related Art

[0003] FIG. 8 is a perspective view illustrating an outdoor unit of a general air conditioner. FIG. 9 is a view illustrating inner elements of the outdoor unit of FIG. 8. FIG. 10 is a view illustrating a motor support structure in FIG. 8. With reference to FIGs. 8 to 10, an air conditioner is an apparatus which exchanges heat between a refrigerant and surrounding air during a circulation process in which the refrigerant is compressed, condensed, expanded, and evaporated, to condition indoor air. Such an air conditioner may include an indoor unit installed indoors and conditioning indoor air through heat exchange with the indoor air and an outdoor unit installed outdoors and exchanging heat with outdoor air.

[0004] The outdoor unit may include a casing 2, a heat exchanger 20 performing heat exchange between a refrigerant and outdoor air, an axial fan 10 forcibly blowing the outdoor air to perform effective contact between the outdoor air and the heat exchanger 20, and a motor 30 rotating the axial fan 10. In case of an air conditioner used for both cooling and heating, a heat exchanger provided in an outdoor unit acts as a condenser during cooling and acts as an evaporator during heating. Suction holes 3 through which outdoor air is sucked into the outdoor unit and a discharge hole 4 through which air blown by the axial fan 10 is discharged to the outside may be formed on the casing 2.

[0005] The motor 30 is supported at the inside of the casing 2 by a motor supporter 40. Flow resistance caused by interference between an air current sucked into the axial fan 10 and the motor supporter 40 lowers performance of the axial fan 10 and particularly, increases noise.

SUMMARY OF THE INVENTION

[0006] An object of the present invention is to provide an air conditioner which may improve performance of a fan and reduce generation of noise.

[0007] The objects of the present invention are not limited to the above-mentioned objects and other objects that have not been mentioned above will become evident to those skilled in the art from the following description.

[0008] To achieve the above objects, there is provided an outdoor unit of an air conditioner according to an exemplary embodiment of the present invention including an axial fan, a motor rotating the axial fan, and a motor supporter supporting the motor, wherein the motor supporter includes deflection parts deflecting an air current sucked into the axial fan so as to have a rotating direction component of the axial fan.

[0009] The deflection part may include a deflection surface having a designated angle from the axial direction of the axial fan to guide the sucked air current. The angle may be an acute angle.

[0010] An air current contact surface of the deflection part contacting the sucked air current may be convex toward the upstream side of the sucked air current, the air current contact surface may include a forward facing surface facing the rotating direction of the axial fan and a backward facing surface facing the opposite direction to the rotating direction of the axial fan, and the deflection surface may be formed on the forward facing surface.

[0011] The deflection surface may extend so as to be gradually closer to the rotating axis of the axial fan in the direction of the rotating axis.

[0012] The deflection parts may include at least one deflection part provided above the rotating axis of the motor and at least one deflection part provided below the rotating axis of the motor, and the at least one deflection part provided above the rotating axis of the motor and the at least one deflection part provided below the rotating axis of the motor may deflect the sucked air current in opposite directions.

[0013] A vector proceeding from a leading edge of the deflection part, which the sucked air current starts to contact, to a trailing edge of the deflection part, from which the air current is separated, may have the rotating direction component of the axial fan. The leading edge and the trailing edge may be located on a streamlined closed path. Among a suction surface and a pressure surface of the deflection part interconnecting the leading edge and the trailing edge, the pressure surface may face the rotating direction of the axial fan and static pressure on the suction surface may be lower than static pressure on the pressure surface.

[0014] The motor supporter may include a mount part in which the motor is mounted and support legs extending from the mount part and connected to a designated fixing body to support the motor, and the deflection parts may be formed on the support legs.

[0015] The support legs may be prepared in at least one pair and separated from each other by a space into which the sucked air current is sucked, and one of the at least one pair of the support legs may have a deflection surface gradually becoming closer to the rotating axis in the direction of the rotating axis and formed at a part defining the space. The deflection surface may include a deflection surface having a designated angle from the axial direction of the axial fan to guide the sucked air

current, the support legs may include upper support legs extending upward from the mount part and lower support legs extending downward from the mount part, and a deflection surface formed on the upper support leg and a deflection surface formed on the lower support leg may face opposite directions based on a fixed coordinate system. A vector from a leading edge of the deflection part, which the sucked air current starts to contact, to a trailing edge of the deflection part, from which the air current is separated, may have the rotating direction component of the axial fan, the support legs may include upper support legs extending upward from the mount part and lower support legs extending downward from the mount part, and a first vector proceeding from the leading edge to the trailing edge of the upper support leg and a second vector proceeding from the leading edge to the trailing edge of the lower support leg may have direction components of different signs based on a fixed coordinate system.

[0016] The support legs may be provided in plural and the sucked air current may pass through spaces between the support legs provided in plural.

[0017] The motor supporter may include a mount part in which the motor is mounted, upper support legs extending upward from the mount part and lower support legs extending downward from the mount part, and the upper support legs and the lower support legs may correspond to the deflection parts and deflect the sucked air current in opposite directions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0018] Arrangements and embodiments may 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 view illustrating direction components of an air current sucked from an outdoor unit to an axial fan of an air conditioner in accordance with one embodiment of the present invention;

FIG. 2 is a view illustrating a motor supporter in accordance with one embodiment of the present invention;

FIGs. 3(a) and 3(b) are views comparatively illustrating a sucked air current in a conventional air conditioner and a sucked air current in an air conditioner in accordance with one embodiment of the present invention;

FIG. 4 is a view illustrating a motor supporter in accordance with another embodiment of the present invention;

FIG. 5A is a cross-sectional view taken along line A-A of FIG. 4;

FIG. 5B is an enlarged view of the cross-section of a deflection part of FIG. 5A;

FIG. 6 is a graph illustrating static pressures according to air volumes if the motor supporter of FIG. 4 is applied and if a conventional motor supporter is applied;

FIGs. 7(a) and (b) are graphs illustrating power consumption and generated noise according to air volumes if the motor supporter of FIG. 4 is applied and if the conventional motor supporter is applied;

FIG. 8 is a perspective view illustrating an outdoor unit of a general air conditioner;

FIG. 9 is a view illustrating inner elements of the outdoor unit of FIG. 8; and

FIG. 10 is a view illustrating a motor support structure in FIG. 8.

DETAILED DESCRIPTION OF THE EMBODIMENTS

[0019] The advantages, features and methods for achieving those of embodiments may become apparent upon referring to embodiments described later in detail together with attached drawings. However, embodiments are not limited to the embodiments disclosed hereinafter, but may be embodied in different modes. The embodiments are provided for perfection of disclosure and informing a scope to persons skilled in this field of art. The same reference numbers may refer to the same elements throughout the specification.

[0020] FIG. 1 is a view illustrating direction components of an air current sucked from an outdoor unit to an axial fan of an air conditioner in accordance with one embodiment of the present invention. FIG. 2 is a view illustrating a motor supporter in accordance with one embodiment of the present invention. FIGs. 3(a) and 3(b) are views comparatively illustrating a sucked air current in a conventional air conditioner and a sucked air current in an air conditioner in accordance with one embodiment of the present invention.

[0021] First, with reference to FIG. 1, direction components which will be described later are defined.

[0022] In FIG. 1, a circle represents a rotating orbit of an axial fan 10, and $\hat{X}$, $\hat{Y}$ and Z represent respective axes of an X-Y-Z fixed coordinate system when the axial direction of the axial fan 10 is defined as $\hat{Z}$. Further, a vector V on an XY plane of the fixed coordinate system is converted into a rotating coordinate system including a rotating direction component $\hat{t}$ and a radial direction component $\hat{r}$ of the axial fan 10. Here, V represents a $\hat{Y}$ direction component of an air current sucked in the axial fan 10 (hereinafter, referred to as a "sucked air current"). An angle θ is an angle rotated in a positive (+) direction from the axis $\hat{Z}$ (in the counterclockwise rotating direction of the axial fan 10 in FIG. 1).

$V\hat{Y}$ will be defined as below.

$$V\hat{Y} = V1\hat{r} + V2\hat{t} = V\sin\theta\hat{r} + V\cos\theta\hat{t}$$

[0023] As known from the above Equation, the vector V has a rotating direction component V2. The outdoor

unit of the air conditioner of the present invention includes a motor supporter deflecting an air current sucked in the axial direction $\hat{Z}$ of an axial fan 10 so as to have a rotating direction component. Hereinafter, embodiments of the present invention will be described in more detail with reference to the accompanying drawings.

[0024] With reference to FIGs. 1 to 3(b), an outdoor unit of an air conditioner in accordance with one embodiment of the present invention includes an axial fan 10, a motor 30 rotating the axial fan 10, and a motor supporter supporting the motor 30.

[0025] The motor supporter 100 supports the motor 30 at the rear of the axial fan 10. The motor supporter 100 may include at least one support leg 110 and 120 supporting the motor 30. Further, the motor supporter 100 may include a mount part 130 into which the motor 30 is inserted. The support legs 110 and 120 may extend from the mount part 130 and be connected to a designated fixing body, such as a casing 2, to support the motor 30.

[0026] The support legs 110 and 120 may be provided in plural so as to distribute load applied from the motor 30. In this embodiment, a pair of support legs 110 separated from each other is provided on the upper portion of the mount part 130 and a pair of support legs 120 separated from each other is provided on the lower portion of the mount part 130, but the disclosure is not limited thereto. An air current flows through separation spaces S1 and S2 between the support legs 110 and 120. Hereinafter, among the support legs 110 and 120, support legs extending upward from the mount part 130 will be referred to as upper support legs 110 and support legs extending downward from the mount part 130 will be referred to as lower support legs 120.

[0027] Joint plates 141 and 142 may be formed at ends of the support legs 110 and 120 and be combined with the casing 2. Hereinafter, among the joint plates 141 and 142, a joint plate interconnecting ends of at least one pair of upper support legs 110 and combined with the upper surface (not shown) of the casing 2 will be referred to as an upper joint plate 141 and a joint plate interconnecting ends of at least one pair of lower support legs 120 and combined with the bottom surface 2a of the casing 2 will be referred to as a lower joint plate 142.

[0028] The motor supporter 100 includes deflection parts D deflecting an air current sucked in the axial fan 10 (i.e., a sucked air current) so as to have a rotating direction component $\hat{t}$ of the axial fan 10. The deflection parts D may be formed on the support legs 110 and 120.

[0029] At least one deflection part D may be provided above a rotating axis of the motor 30 and at least one deflection part D may be provided below the rotating axis. The deflection part D provided above the rotating axis and the deflection part D provided below the rotating axis deflect the sucked air current in opposite directions.

[0030] The deflection part D may include a surface guiding the sucked air current, i.e., a deflection surface 111 or 121 formed at a designated angle α from the axial direction $\hat{Z}$ of an axial fan 10. the angle α may be an acute angle. Since the deflection surface 111 or 121 forms an acute angle α from the axial direction $\hat{Z}$ of an axial fan 10, at least one of the upper support legs 110 has a deflection surface 111 that gradually becomes closer to the rotating axis in the axial direction $\hat{Z}$. Which one of the upper support legs 110 has the deflection surface 111 that gradually becomes closer to the rotating axis in the axial direction $\hat{Z}$ is determined in consideration of the rotating direction of the axial fan 10. In this embodiment, the deflection surface 111 that gradually becomes closer to the rotating axis in the axial direction $\hat{Z}$ is formed at a part, defining the space S1, of the right upper support leg 110 of one pair of upper support legs 110 in FIG. 2.

[0031] In the same manner, at least one of the lower support legs 120 has a deflection surface 121 that gradually becomes closer to the rotating axis in the axial direction $\hat{Z}$. Since directions in which the sucked air current needs to be deflected in the upper region and the lower region based on the mount part 130 are opposite to each other, the deflection surface 121 of the lower support leg 120 that gradually becomes closer to the rotating axis in the axial direction $\hat{Z}$ is formed at a part, defining the space S2, of the left lower leg 120 of one pair of lower support legs 120 in FIG. 2, on the contrary to the upper support legs 110.

[0032] The sucked air current is guided by the deflection surfaces 111 and 121 and thus, an air current having a rotating direction component $\hat{t}$ is formed. In more detail, an air current contact surface 115 or 125 of the deflection part D contacting the sucked air current may be convex toward the upstream side of the sucked air current. In this case, the deflection surface 111 or 121 is formed on a forward facing surface of the air current contact surface 115 or 125, facing the rotating direction of the axial fan 10 (the leftward direction in an area above the mount part 130 and in the rightward direction in an area below the mount part 130, in FIG. 2), and a backward facing surface 112 or 122 is formed at a part of the air current contact surface 115 or 125, facing the opposite direction to the rotating direction of the axial fan 10. The deflection surface 111 or 121 and the backward facing surface 112 or 122 may be connected by a connection surface 113 or 123.

[0033] The backward facing surface 112 or 122 extends from the connection surface 113 or 123 substantially in parallel with the axial direction $\hat{Z}$ from the upstream side to the downstream side of the air current. Therefore, the angle α between the deflection surface 111 or 121 and the axial direction $\hat{Z}$ is greater than the angle between the backward facing surface 112 or 122 and the axial direction $\hat{Z}$. As exemplarily shown in FIGs. 3(a) and 3(b), in the conventional air conditioner, sucked air has a component in the opposite direction to the rotating direction of an axial fan, but, in this embodiment of the present invention, sucked air is deflected by the deflection surfaces 111 and 121 and thus has the rotating direction component $\hat{t}$ of the axial fan 10.

[0034] As exemplarily shown in FIG. 2, the deflection

surfaces 111 and 121 formed on the support legs 110 and 120 face the rotating direction $\hat{t}$ of the axial fan 10 based on the rotating coordinate system, but the deflection surface 111 formed on the upper support leg 110 and the deflection surface 121 formed on the lower support leg 120 face opposite directions based on the fixed coordinate system.

[0035] FIG. 4 is a view illustrating a motor supporter in accordance with another embodiment of the present invention. FIG. 5A is a cross-sectional view taken along line A-A of FIG. 4. FIG. 5B is an enlarged view of the cross-section 210(S) of a deflection part of FIG. 5A.

[0036] With reference to FIG. 4 and FIGs. 5A and 5B, an outdoor unit of an air conditioner in accordance with another embodiment of the present invention includes an axial fan 10, a motor 30 rotating the axial fan 10, and a motor supporter 200 supporting the motor 30.

[0037] The motor supporter 200 supports the motor 30 at the rear of the axial fan 10. The motor supporter 200 may include at least one support leg 210 and 220 supporting the motor 30. Further, the motor supporter 200 may include a mount part 230 into which the motor 30 is inserted. The support legs 210 and 220 may extend from the mount part 230 and be provided in plural so as to distribute load applied from the motor 30. The support legs 210 and 220 are separated from each other, and an air current flows through separation spaces between the support legs 210 and 220. The support legs 210 and 220 in plural may include at least one of upper support legs 210 extending upward from the mount part 230 and lower support legs 220 extending downward from the mount part 230.

[0038] Joint plates 241 and 242 may be formed at ends of the support legs 210 and 220 and be combined with the casing 2. Hereinafter, among the joint plates 241 and 242, a joint plate interconnecting ends of the upper support legs 210 and combined with the upper surface (not shown) of the casing 2 will be referred to as an upper joint plate 241 and a joint plate interconnecting ends of the lower support legs 220 and combined with the bottom surface 2a of the casing 2 will be referred to as a lower joint plate 242.

[0039] Reinforcing ribs 251 and 252 interconnecting the support legs 210 and 220 may be further provided between the mount part 230 and the joint plates 241 and 242. The reinforcing ribs 251 and 252 may include an upper reinforcing rib 251 interconnecting the upper support legs 210 and a lower reinforcing rib 252 interconnecting the lower support legs 220.

[0040] The motor supporter 200 includes deflection parts D' deflecting an air current sucked in the axial fan 10 (i.e., a sucked air current) so as to have a rotating direction component $\hat{t}$ of the axial fan 10. The deflection parts D' may be formed on the support legs 110 and 120.

[0041] In the deflection part D', a vector $\hat{V}c$ proceeding from a leading edge LE of the deflection part D', which the sucked air current starts to contact, to a trailing edge TE of the deflection part D', from which the air current is separated, has the rotating direction component $\hat{t}$ of the axial fan 10. That is, the cross-section of the deflection part D', i.e., the cross-section of the deflection part D' taken long the XY plane, may have the shape of a streamlined closed path or an airfoil and, in this case, the vector $\hat{V}c$ is defined according to a chord connecting the leading edge LE to the trailing edge TE of the deflection part D'.

[0042] Among an upper surface (or a suction surface) U and a lower surface (or a pressure surface) L interconnecting the leading edge LE to the trailing edge TE of the deflection part D', the lower surface L faces the rotating direction of the axial fan 10 and the upper surface U faces the opposite direction to the rotating direction of the axial fan 10. The velocity of the air current on the upper surface U is higher than the velocity of the air current on the lower surface L and thus, the static pressure on the upper surface U is lower than the static pressure on the lower surface L.

[0043] The air current flows through separation spaces between the support legs 210 and 220. The support legs 210 and 220 may include at least one of the upper support legs 210 extending upward from the mount part 230 and lower support legs 220 extending downward from the mount part 230.

[0044] A first vector proceeding from the leading edge LE to the trailing edge TE of the upper support leg 210 and a second vector proceeding from the leading edge LE to the trailing edge TE of the lower support leg 220 face the rotating direction of the axial fan 10 based on the rotating coordinate system, but have direction components of different signs based on the fixed coordinate system. That is, the first vector has a component $\hat{Y}$ of a positive value and the second vector has a component $\hat{Y}$ of a negative value.

[0045] FIG. 6 is a graph illustrating static pressures according to air volumes if the motor supporter of FIG. 4 is applied and if a conventional motor supporter is applied. FIGs. 7(a) and (b) are graphs illustrating power consumption and generated noise according to air volumes if the motor supporter of FIG. 4 is applied and if the conventional motor supporter is applied.

[0046] With reference to FIG. 6, according to experimentation, static pressure if the motor supporter in accordance with the present invention is applied (with reference to a curve (a')) is increased, as compared to static pressure if the conventional motor supporter is applied (with reference to a curve (a)), and flow resistance if the motor supporter in accordance with the present invention is applied (with reference to a curve (b')) is decreased, as compared to flow resistance if the conventional motor supporter is applied (with reference to a curve (b)). Therefore, although the conventional outdoor unit may be operated at an air volume F so as to generate proper static pressure and flow resistance, the outdoor unit in accordance with the present invention may be operated at an increased air volume F' while generating static pressure and flow resistance similar to those of the conventional outdoor unit. Increase in static pressure and decrease in

flow resistance improve performance of the axial fan 10. As exemplarily shown in FIGs. 7(a) and 7(b), it is understood that the outdoor unit in accordance with the present invention lowers power consumption and reduces a level of generated noise, as compared to the conventional outdoor unit.

[0047] As apparent from the above description, an outdoor unit of an air conditioner in accordance with one embodiment of the present invention may reduce resistance on a flow path of an air current sucked into an axial fan.

[0048] Further, the outdoor unit of the air conditioner in accordance with the embodiment of the present invention may increase performance of the axial fan, particularly, static pressure of the axial fan.

[0049] Further, the outdoor unit of the air conditioner in accordance with the embodiment of the present invention may reduce generated noise.

[0050] Further, since a unit to guide the air current sucked into the axial fan is implemented by a motor supporter, the outdoor unit of the air conditioner in accordance with the embodiment of the present invention does not require any separate guide unit, such as a vane or an orifice, and may thus improve air blowing performance without great change of the structure of a conventional outdoor unit.

[0051] 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 fall within the spirit and scope of the principles of this disclosure. More particularly, various variations and modifications 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.

Claims

1. An outdoor unit of an air conditioner comprising:

   an axial fan (10);
   a motor (30) rotating the axial fan (10); and
   a motor supporter (100; 200) supporting the motor (30),
   characterized in that the motor supporter (100; 200) includes deflection parts deflecting an air current sucked into the axial fan (10) so as to have a rotating direction component of the axial fan (10).

2. The outdoor unit according to claim 1, wherein at least one of the deflection parts includes a deflection surface (111, 121) having a designated angle from the axial direction of the axial fan (10) to guide the sucked air current.

3. The outdoor unit according to claim 2, wherein the angle is an acute angle.

4. The outdoor unit according to claim 2 or 3, wherein an air current contact surface (115, 125) of said deflection part contacting the sucked air current is convex toward the upstream side of the sucked air current,
   wherein the air current contact surface (115, 125) includes:

   a forward facing surface facing the rotating direction of the axial fan (10); and
   a backward facing surface (112, 122) facing the opposite direction to the rotating direction of the axial fan,
   wherein the deflection surface (111, 121) is formed on the forward facing surface.

5. The outdoor unit according to claim 4, wherein the deflection surface (111, 121) extends so as to be gradually closer to the rotating axis of the axial fan (10) in the direction of the rotating axis.

6. The outdoor unit according to any one of claims 1 to 5, wherein the deflection parts include at least one deflection part provided above the rotating axis of the motor (30) and at least one deflection part provided below the rotating axis of the motor (30),
   wherein the at least one deflection part provided above the rotating axis of the motor (30) and the at least one deflection part provided below the rotating axis of the motor deflect the sucked air current in opposite directions.

7. The outdoor unit according to any one of claims 1 to 6, wherein a vector proceeding from a leading edge of at least one of the deflection parts, which the sucked air current starts to contact, to a trailing edge of said deflection part, from which the air current is separated, has the rotating direction component of the axial fan (10).

8. The outdoor unit according to claim 7, wherein the leading edge and the trailing edge are located on a streamlined closed path.

9. The outdoor unit according to claim 8, wherein, among a suction surface and a pressure surface of said deflection part interconnecting the leading edge and the trailing edge, the pressure surface faces the rotating direction of the axial fan (10) and static pressure on the suction surface is lower than static pressure on the pressure surface.

10. The outdoor unit according to claim 1, wherein the motor supporter includes:

a mount part (130; 230) in which the motor (30) is mounted; and
support legs (110, 120; 210, 220) extending from the mount part (130; 230) and connected to a designated fixing body (2) to support the motor (30),
wherein the deflection parts are formed on the support legs (110, 120; 210, 220).

11. The outdoor unit according to claim 10, wherein the support legs (110, 120; 210, 220) are prepared in at least one pair and separated from each other by a space into which the sucked air current is sucked,
wherein one of the at least one pair of the support legs (110, 120; 210, 220) has a deflection surface (111, 121) gradually becoming closer to the rotating axis in the direction of the rotating axis and formed at a part defining the space.

12. The outdoor unit according to claim 10, wherein:

at least one of the deflection parts includes a deflection surface having a designated angle from the axial direction of the axial fan (10) to guide the sucked air current; and
the support legs (110, 120) include:

upper support legs (110) extending upward from the mount part; and
lower support legs (120) extending downward from the mount part,
wherein a deflection surface (111) formed on the upper support leg (110) and a deflection surface (121) formed on the lower support leg (120) face opposite directions based on a fixed coordinate system.

13. The outdoor unit according to claim 10, wherein:

a vector from a leading edge of at least one of the deflection parts, which the sucked air current starts to contact, to a trailing edge of the deflection part, from which the air current is separated, has the rotating direction component of the axial fan (10); and
the support legs (210, 220) include:

upper support legs (210) extending upward from the mount part (230); and
lower support legs (220) extending downward from the mount part (230),
wherein a first vector proceeding from the leading edge to the trailing edge of the upper support leg (210) and a second vector proceeding from the leading edge to the trailing edge of the lower support leg (220) have direction components of different signs based on a fixed coordinate system.

14. The outdoor unit according to claim 13, wherein:

the support legs (210, 220) are provided in plural; and
the sucked air current passes through spaces between the support legs (210, 220) provided in plural.

15. The outdoor unit according to claim 1, wherein the motor supporter (100; 200) includes:

a mount part (130; 230) in which the motor is mounted;
upper support legs (110; 210) extending upward from the mount part (130; 230); and
lower support legs (120; 220) extending downward from the mount part, wherein:

the upper support legs (110; 210) and the lower support legs (120; 220) correspond to the deflection parts; and
the upper support legs (110; 210) and the lower support legs (120; 220) deflect the sucked air current in opposite directions.

Fig. 1

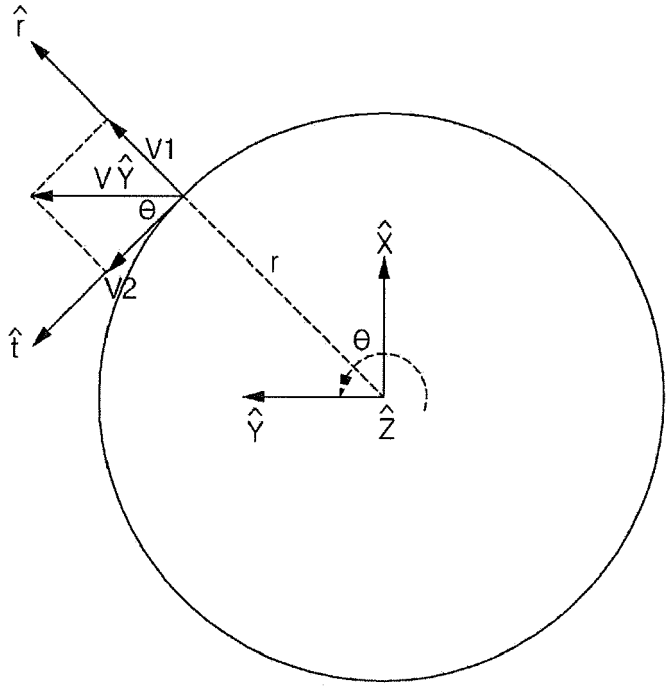
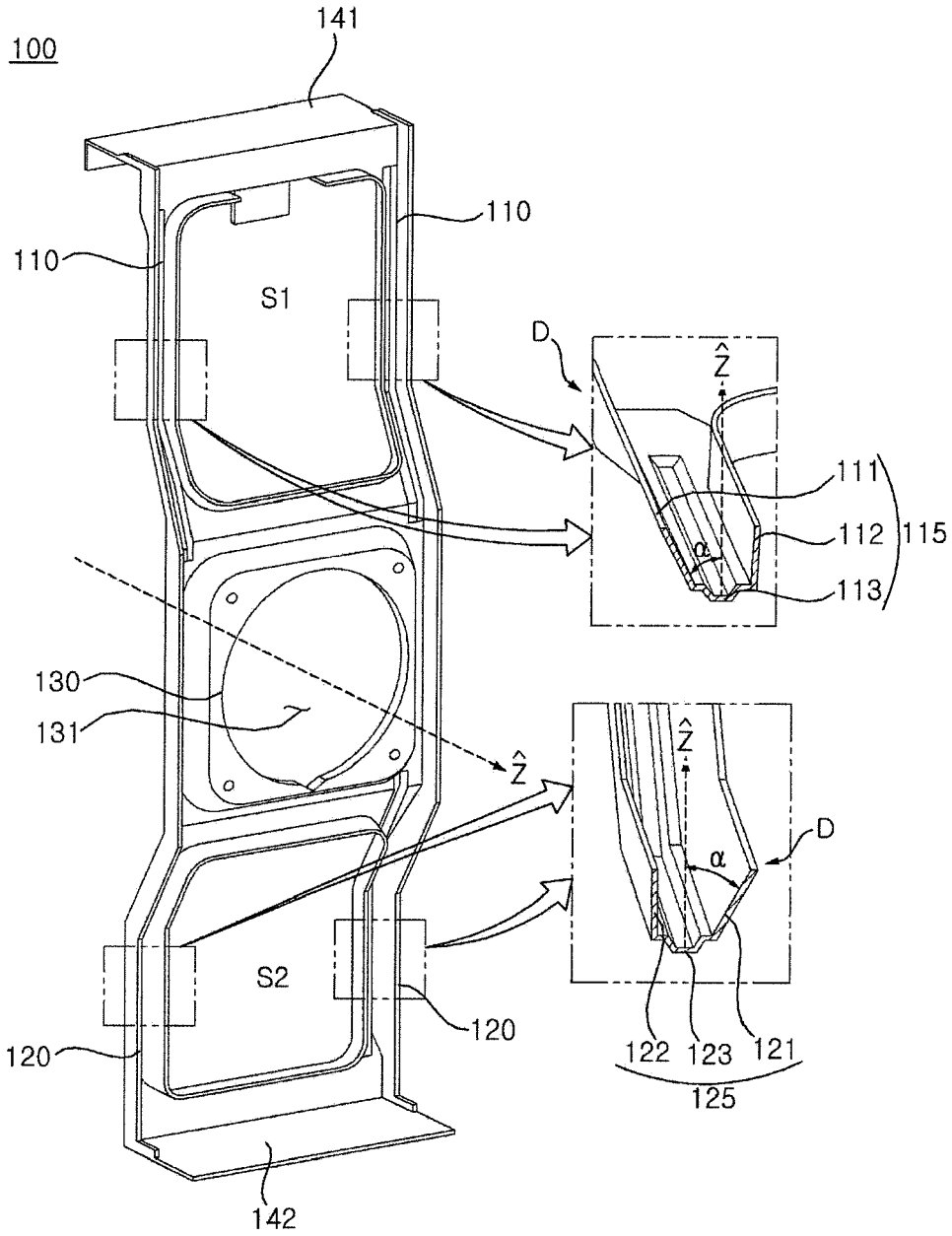


Fig. 2


100
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α
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Fig. 3

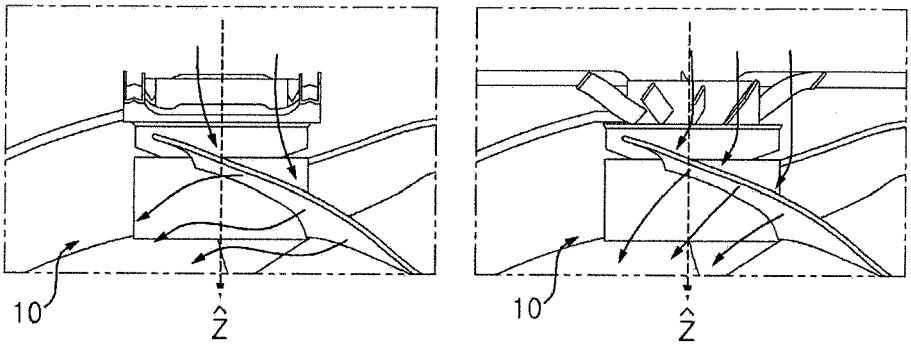


Fig. 4

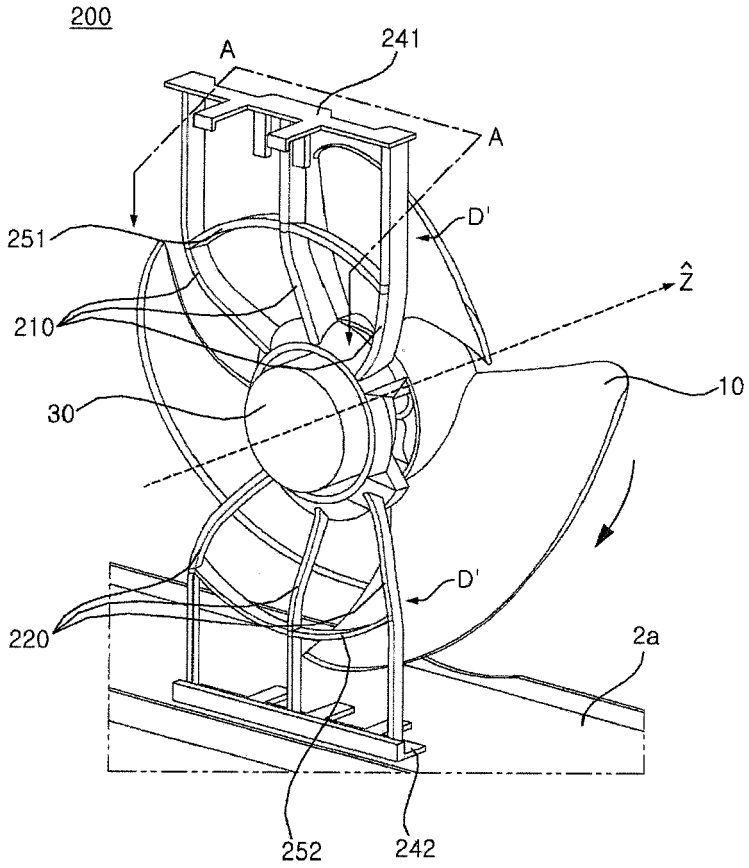


Fig. 5A

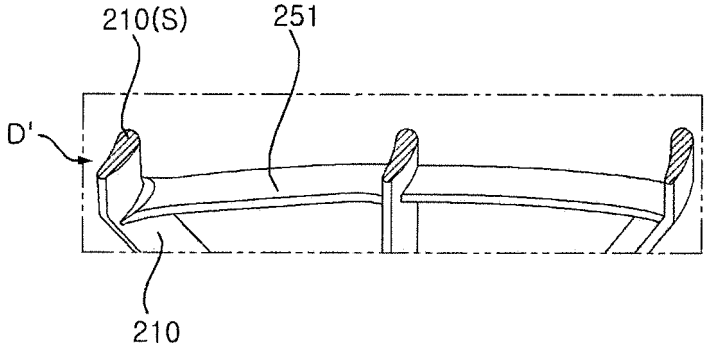


Fig. 5B

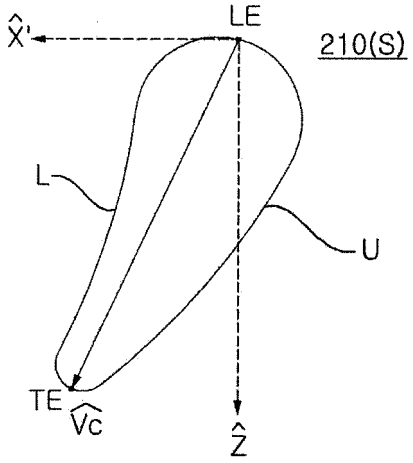


Fig. 6

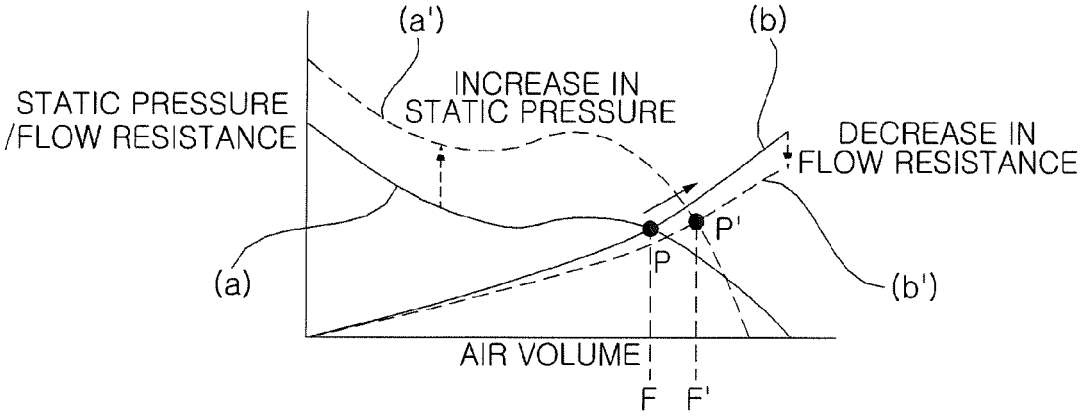
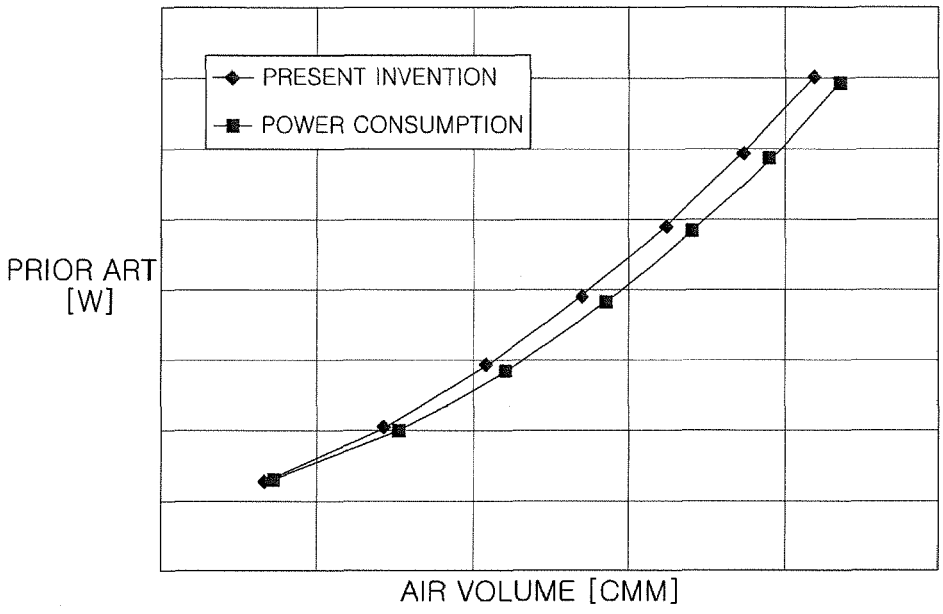
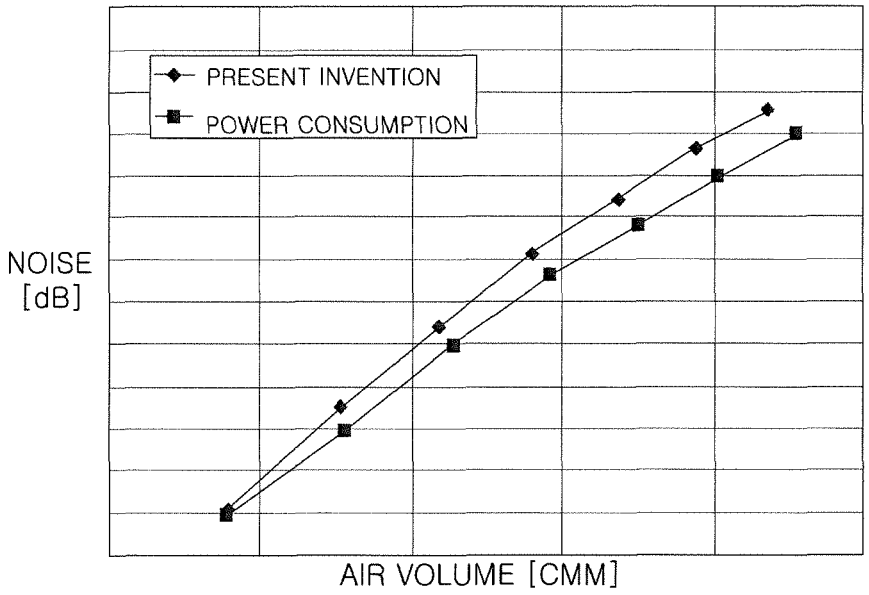

(a')
(b)
INCREASE IN
STATIC PRESSURE
STATIC PRESSURE
/FLOW RESISTANCE
DECREASE IN
FLOW RESISTANCE
P'
P
(a)
(b')
AIR VOLUME
F
F'

Fig. 7


PRESENT INVENTION
POWER CONSUMPTION
PRIOR ART
[W]
AIR VOLUME [CMM]

(a)


PRESENT INVENTION
POWER CONSUMPTION
NOISE
[dB]
AIR VOLUME [CMM]

(b)

Fig. 8

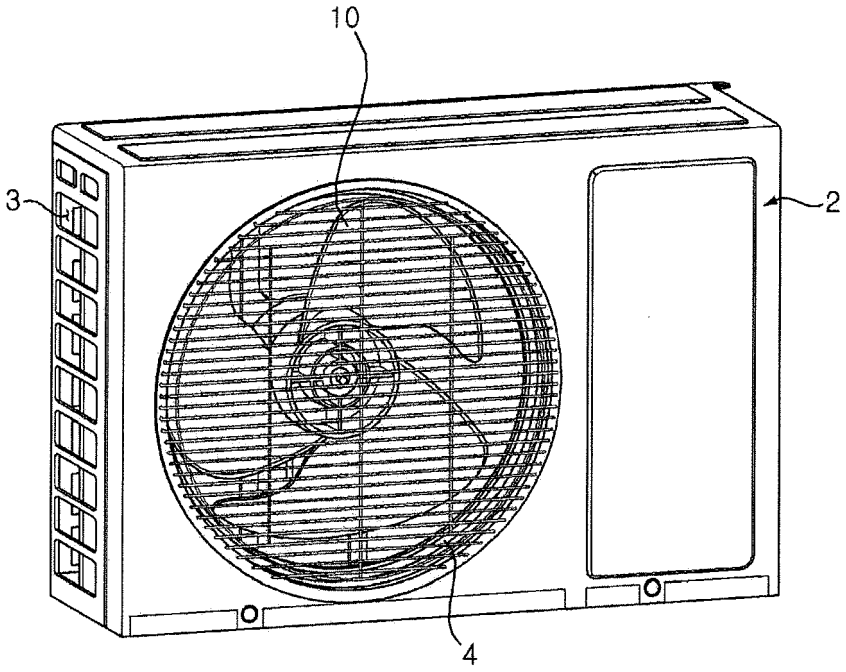


Fig. 9

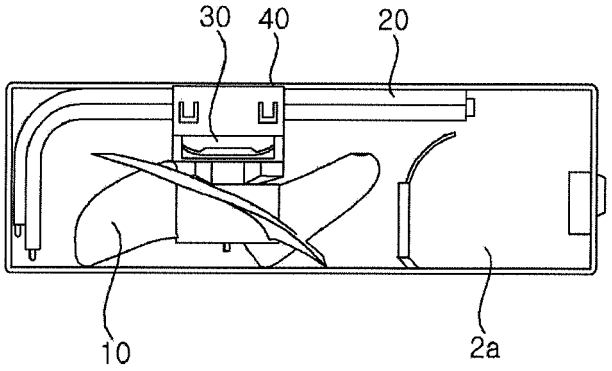
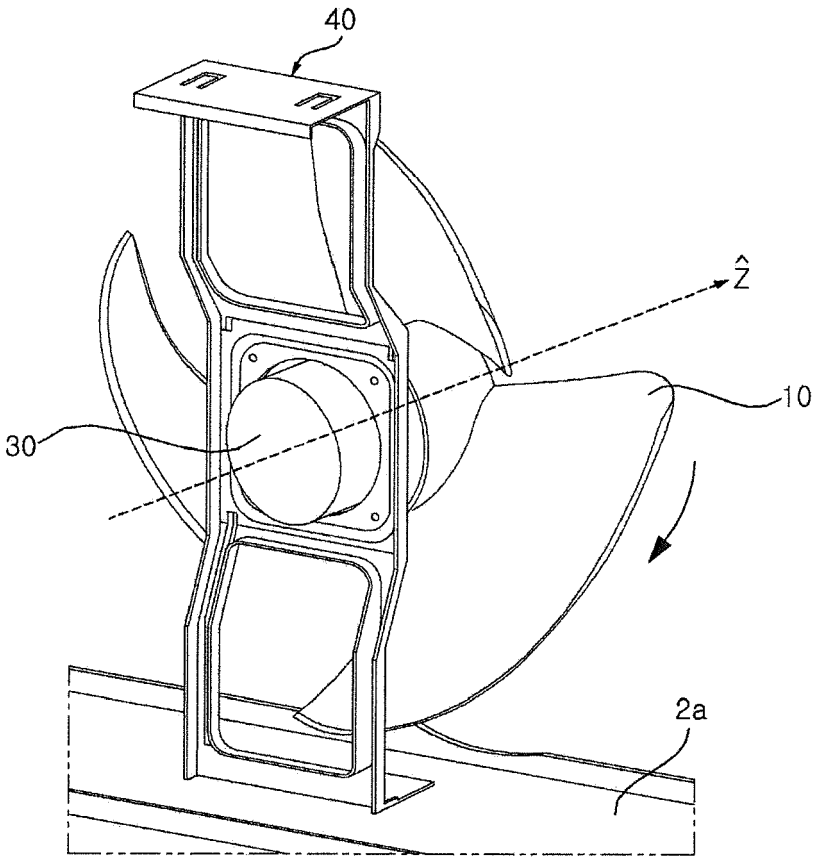


Fig. 10



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EUROPEAN SEARCH REPORT

Application Number
EP 14 19 6261

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	14 July 2015	Lienhard, Dominique

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