

DESCRIPTION

AIR BLOWER

5 TECHNICAL FIELD

The present invention relates to an air blower.

BACKGROUND ART

10 In a conventional air blower such as a fan or a ceiling fan, an impeller and a motor are encased in a base portion which constitutes a pedestal. In such an air blower, air is blown out parallel to a floor surface from a circular annular air blowout portion mounted on an upper portion of the base portion, thus generating the circulation and the flow of air (see PTLs 1 and 2, for example).

15 Hereinafter, the air blower is described with reference to FIG. 14 and FIG. 15. FIG. 14 is a front view of the conventional air blower, and FIG. 15 is a partial cross-sectional view of the conventional air blower. Air blower assembled body 300 which constitutes the air blower includes annular nozzle 301 which defines center opening portion 302. Motor 322 generates an air
20 flow which passes through annular nozzle 301. Motor 322 and motor housing 326 are arranged in the inside of base portion 316. Impeller 330 is connected to a rotary shaft which extends outward from motor 322. Diffuser 332 is mounted on a downstream side of impeller 330 in place. Motor 322 is connected to an electrical connecting portion and a power source.
25 A user can operate air blower assembled body 300 using a plurality of selection buttons 320.

In the above-mentioned configuration, air blower assembled body 300 described above performs the following operation. A user selects a suitable button among the plurality of selection buttons 320 so that motor 322 is driven. As a result, air is sucked into the inside of air blower assembled body 300 through air inlet 324. Air passes through outer casing 318 and flows to inlet 334 of impeller 330. An air flow which flows out from outlet 336 of diffuser 332 and a discharge portion of impeller 330 is divided into two air flows which advance through inner passage 310 in opposite directions.

The air flow is throttled at the time of entering mouth 312, and the air flow is further throttled at outlet 344 of mouth 312. A pressure is generated in air blower assembled body 300 due to such throttling.

The air flow generated in this manner overcomes a pressure generated by throttling. Then, the air flow flows out through outlet 344 as a primary air flow. Due to the arrangement of guide portion 348, the primary air flow is focused or converged toward the user. A secondary air flow is generated by accompanying air from an external environment, particularly, from a region around outlet 344 and from the surrounding of an outer peripheral portion of annular nozzle 301. This secondary air flow passes through center opening portion 302. In center opening portion 302, the secondary air flow is mixed with the primary air flow, thus forming a total air flow discharged frontward from air blower assembled body 300.

In such a conventional air blower, it is necessary to make a front side and a rear side of center opening portion 302 opened for allowing the secondary air flow to pass through center opening portion 302. Accordingly, it is necessary to arrange base portion 316 outside inner passage 310, base portion 316 encasing impeller 330 for generating a primary air flow and

motor 322 therein. As a result, the conventional air blower has a drawback that air blower assembled body 300 cannot be formed in a compact shape.

Citation List

Patent Literature

5 PTL 1: Unexamined Japanese Patent Publication No. 2010-077969

PTL 2: Unexamined Japanese Patent Publication No. 2012-036897

SUMMARY OF THE INVENTION

An air blower according to the present invention, in a housing of the
10 air blower, includes: a suction port through which air outside the housing is taken in; and a high pressure air generating portion which includes an impeller for turning the air into a high pressure air and a motor for driving the impeller. The housing also includes: an annular blowout port through which the high pressure air is blown out; a first air passage for guiding the
15 high pressure air from the impeller to the blowout port; and a plurality of introduction air suction ports for sucking air drawn by the high pressure air blown out from the blowout port. The housing also includes: an introduction air mixing portion where the air sucked through the plurality of introduction air suction ports is mixed; an introduction air blowout port
20 through which drawn-in air in the introduction air mixing portion is blown out; and a second air passage which connects the introduction air suction ports, the introduction air mixing portion, and the introduction air blowout port to each other.

Such an air blower is configured to have the first air passage and the
25 second air passage in the inside of the housing, hence the plurality of introduction air suction ports and the introduction air mixing portion can be arranged between the annular blowout port and the high pressure air

generating portion, whereby the air blower can be formed in a compact shape.

BRIEF DESCRIPTION OF DRAWINGS

5 FIG. 1 is a perspective view of an air blower according to a first exemplary embodiment of the present invention.

FIG. 2 is a cross-sectional view taken along a plane A in FIG. 1.

FIG. 3 is a front view of the air blower according to the first exemplary embodiment of the present invention.

10 FIG. 4 is a perspective view of another air blower according to the first exemplary embodiment of the present invention having a configuration different from the configuration of the air blower shown in Fig. 1.

FIG. 5 is a perspective view of still another air blower according to the first exemplary embodiment of the present invention having the
15 configuration different from the configuration of the air blower shown in Fig. 1.

FIG. 6 is a cross-sectional view taken along a plane B in FIG. 5.

FIG. 7 is a perspective view of an air blower according to a second exemplary embodiment of the present invention.

20 FIG. 8 is a cross-sectional view taken along a plane C in FIG. 7.

FIG. 9A is a perspective view of an air blower according to a third exemplary embodiment of the present invention.

FIG. 9B is a cross-sectional view taken along a plane D in FIG. 9A.

FIG. 10 is a perspective view of an air blower according to a fourth
25 exemplary embodiment of the present invention.

FIG. 11 is a cross-sectional view taken along a plane E in FIG. 10.

FIG. 12 is a perspective view of an air blower according to a fifth exemplary embodiment of the present invention.

FIG. 13 is a cross-sectional view taken along a plane F in FIG. 12.

FIG. 14 is a front view of a conventional air blower.

FIG. 15 is a partial cross-sectional view of the conventional air blower.

DESCRIPTION OF EMBODIMENTS

Hereinafter, exemplary embodiments of the present invention are described with reference to the drawings.

FIRST EXEMPLARY EMBODIMENT

FIG. 1 is a perspective view of an air blower according to a first exemplary embodiment of the present invention, and FIG. 2 is a cross-sectional view taken along a plane A in FIG. 1. As shown in FIG. 1 and FIG. 2, air blower 11 incorporates in housing 12 thereof: suction port 15; high pressure air generating portion 18; blowout port 19; first air passage 20; introduction air suction ports 21; introduction air mixing portion 22; introduction air blowout port 23; and second air passage 24.

Housing 12 has a spherical shape, and includes a double wall formed of outer wall 13 and inner wall 14. Suction port 15 takes in air 33 outside housing 12 into the inside of housing 12 therethrough. High pressure air generating portion 18 includes impeller 16 for turning air 33 into high pressure air 33a, and motor 17 for driving impeller 16. Blowout port 19 has an annular shape, and blows out high pressure air 33a therethrough. First air passage 20 is an air passage which guides high pressure air 33a to blowout port 19 from impeller 16. A plurality of (six in the first exemplary embodiment) introduction air suction ports 21 are formed in housing 12.

Air 33 is sucked into housing 12 through introduction air suction ports 21 as air 33 is introduced by high pressure air 33a blown out from blowout port 19. Air 33 sucked through the plurality of introduction air suction ports 21 is mixed in introduction air mixing portion 22. Introduction air 33b in introduction air mixing portion 22 is blown out through introduction air blowout port 23. Second air passages 24 are air passages which connect introduction air suction ports 21, introduction air mixing portion 22 and introduction air blowout port 23 together.

First air passage 20 is defined by outer wall 13, inner wall 14 and penetration walls 25. Second air passage 24 is defined by inner wall 14 and penetration walls 25. Introduction air blowout port 23 is formed by being surrounded by inner wall 14 which constitutes an inner ring of blowout port 19.

Penetration walls 25 are formed in an extending manner from introduction air suction ports 21 to introduction air mixing portion 22. Second air passages 24 and first air passage 20 intersect with each other at penetration holes 25a whose peripheries are formed of penetration walls 25 respectively.

The plurality of introduction air suction ports 21 are positioned at equal intervals in the circumferential direction between horizontal position 16a disposed at an upper end of impeller 16 in housing 12 and blowout port 19. Further, introduction air suction port centers 21a which are centers of introduction air suction ports 21 are disposed on outer peripheral surface 12a of housing 12 an equal distance away from blowout center position 19a which is the center of annular blowout port 19. Due to such a configuration, after introduction air 33b is efficiently mixed at a center portion of introduction air mixing portion 22, the direction of the flow of introduction

air 33b is changed toward introduction air blowout port 23, and introduction air 33b is collectively blown out from introduction air blowout port 23. A core region is formed in a center portion of introduction air 33b blown out from introduction air blowout port 23 so that introduction air 33b has high straight advancing property, hence introduction air 33b can reach a remote destination while suppressing the lowering of an air flow speed.

Suction port 15 is formed in plural numbers in housing 12 around a suction position 15a disposed farthest from blowout center position 19a of blowout port 19. Accordingly, a distance between suction port 15 and blowout port 19 can be increased so that it is possible to prevent high pressure air 33a blown out from blowout port 19 from being sucked into suction port 15 again, hence high pressure air 33a can be carried to a remote destination efficiently.

Although housing 12 has a spherical shape in the first exemplary embodiment, the shape of housing 12 is not particularly limited to the spherical shape. As the shape of housing 12, a polyhedral shape (regular polyhedron or truncated polyhedron), a cylindrical columnar shape, a polygonal columnar shape, an organic form or shape or the like may preferably be selected. The annular shape of blowout port 19 is not limited to a circular shape, and may be a polygonal shape or a shape formed of curved lines provided that a shape forms a ring. The annular shape may be formed in a partially interrupted manner by forming ribs or the like on blowout port 19 provided that the performance of air blower 11 is not adversely affected.

According to the above-mentioned configuration, impeller 16 is encased in the inside of housing 12 such that a user cannot get access to impeller 16 from the outside of air blower 11. Accordingly, the user can

safely use the air blower without worrying about being injured due to contact of his/her body with impeller 16.

Air 33 introduced into the housing 12 through the plurality of introduction air suction ports 21 is mixed in introduction air mixing portion 22. Then, the direction of mixed introduction air 33b is changed toward introduction air blowout port 23, and is collectively blown out from introduction air blowout port 23. Accordingly, a core region is formed in a center portion of introduction air 33b blown out from introduction air blowout port 23, hence introduction air 33b has high straight advancing property whereby introduction air 33b can reach a remote destination while suppressing the lowering of an air flow speed. In this manner, air blower 11 can efficiently generate an air flow which is constituted of high pressure air 33a and introduction air 33b and has high straight advancing property. Accordingly, air blower 11 can efficiently give a cooling feeling to a user in a wide range from an area close to air blower 11 to an area remote from air blower 11 with a compact configuration. In this exemplary embodiment, high pressure air 33a means air having a pressure ranging from an atmospheric pressure to a pressure exceeding the atmospheric pressure by 10kPa inclusive.

By positioning introduction air suction ports 21 closer to impeller 16 than to blowout port 19, a space for introduction air mixing portion 22 can be increased so that introduction air 33b can be efficiently collected. The number of introduction air suction ports 21 and sizes of introduction air suction ports 21 are set such that a total cross-sectional area of the plurality of introduction air suction ports 21 as a whole is equal to or larger than a cross-sectional area of introduction air blowout port 23. As a result, air 33 can be efficiently introduced.

Introduction air mixing portion 22 of air blower 11 is provided with discharge electrode unit 26 which constitutes an electric discharge portion. As a result, various kinds of ions and ozone which are generated due to an electric discharge and are effective in deodorization and sterilization can be carried on introduction air 33b and are conveyed a long distance, hence a large space can be deodorized and sterilized efficiently.

In this exemplary embodiment, discharge electrode unit 26 is configured such that a pair of metal electrodes is arranged with a desired distance therebetween. Discharge electrode unit 26 may be also formed of an ozone generating electrode unit to which a high voltage is applied, an ion generating electrode unit or the like.

FIG. 3 is a front view of the air blower according to the first exemplary embodiment of the present invention. As shown in FIG. 3, housing 12 of air blower 11 has a spherical shape, hence air blower 11 can be used at any desired angle provided that blowout port 19 is not closed. Accordingly, the air blower 11 can efficiently supply an air flow to an air blowing object wherever the air blowing object is placed. Even when air blower 11 is placed on ground 27 such that suction port 15 is in contact with ground 27, there is no possibility that suction port 15 is completely closed. Further, introduction air suction ports 21 are provided in plural numbers, hence even when air blower 11 is placed on ground 27 such that introduction air suction port 21 is in contact with ground 27, air 33 is introduced through other introduction air suction ports 21. Here, the shape of the suction port 15 may preferably be a shape which can minimize an area of the suction port 15 closed by ground 27 such as a multiple hole shape.

FIG. 4 is a perspective view of another air blower according to the first exemplary embodiment of the present invention having the

configuration different from the configuration of the air blower shown in Fig.

1. In air blower 31, introduction air suction ports 32a, 32b, 32c have different sizes respectively. Although not shown in FIG. 4, introduction air suction ports having different sizes are also formed in a surface of a body of the housing 12 on an opposite side.

According to air blower 31 having such a configuration, amounts of introduced air induced through the plurality of introduction air suction ports 32a, 32b, 32c differ from each other. Accordingly, when air is mixed in introduction air mixing portion 22, disturbance of air is increased so that it is possible to impart random fluctuation to an air flow blown out from introduction air blowout port 23. Due to such an operation, the air flow blown out from introduction air blowout port 23 does not become an air flow which has a mechanical rhythm but becomes an air flow having fluctuation which is similar to natural wind, hence it is possible to increase comfort of a user when the air flow hits the user. When some introduction air suction ports are closed, an amount of air blown out from introduction air blowout ports 23 on a closed side is decreased so that an air flow biased to a non-closed side is blown out from introduction air blowout ports 23 on the non-closed side. Accordingly, by changing the introduction air suction ports to be closed, winds having the different fluctuations and the different blowout directions can be generated.

In the first exemplary embodiment of the present invention, the example where all of the plurality of introduction air suction ports 32a, 32b, 32c have different sizes has been described. However, the present invention is not limited to such an example, and the plurality of introduction air suction ports 32a, 32b, 32c may have two kinds of sizes, for example. By arranging the large introduction air suction port at positions of introduction

air suction ports 32a, 32b, 32c and by arranging the small introduction air suction port at positions other than introduction air suction ports 32a, 32b, 32c, a wind which is biased to large introduction air suction ports 32a, 32b, 32c is generated. In this manner, by changing the sizes and arrangements
5 of the introduction air suction ports, a wind having desired direction and fluctuation can be generated.

FIG. 5 is a perspective view of still another air blower according to the first exemplary embodiment of the present invention having the configuration different from the configuration of the air blower shown in Fig.

10 1. FIG. 6 is a cross-sectional view taken along a plane B in FIG. 5. As shown in FIG. 6, in air blower 41, the direction of openings of penetration walls 25 which constitute the plurality of introduction air suction ports 42 is not directed toward introduction air mixing portion center 22a of introduction air mixing portion 22, but is directed in the turning direction of
15 introduction air 33b in introduction air mixing portion 22. Inclination angles 25b of the plurality of penetration walls 25 are equal. Here, inclination angle 25b is a displacement of angle between the direction toward the opening of penetration wall 25 and the direction toward introduction air mixing portion center 22a from introduction air suction port 42. Arrows in
20 FIG. 5 and FIG. 6 indicate air 33 to be introduced and introduction air 33b.

As shown in FIG. 5 and FIG. 6, in air blower 41, air 33 introduced through the plurality of introduction air suction ports 42 is mixed while circulating in introduction air mixing portion 22. Accordingly, introduction air 33b blown out from introduction air blowout port 23 becomes a turning
25 flow so that introduction air 33b can reach a remote destination while suppressing the lowering of an air flow speed.

SECOND EXEMPLARY EMBODIMENT

In the second exemplary embodiment of the present invention, constitutional elements identical with the corresponding constitutional elements of the first exemplary embodiment are given the same symbols and the detailed description of these constitutional elements is omitted, and only
5 points which make this exemplary embodiment different from the first exemplary embodiment are described. FIG. 7 is a perspective view of an air blower according to a second exemplary embodiment of the present invention, and FIG. 8 is a cross-sectional view taken along a plane C in FIG. 7. As shown in FIG. 7 and FIG. 8, air blower 111 further includes LED light unit
10 126 as an illumination portion in introduction air mixing portion 22 in the inside of second air passage 24.

According to this air blower 111, operation/stop of air blower 111 can be easily determined even from a place remote from air blower 111. Further, based on a light emitted from LED light unit 126, it is possible to easily
15 determine the direction of the flow of introduction air 33b from introduction air blowout port 23.

A plurality of introduction air suction ports 21 are provided away from blowout center position 19a at an equal distance, and the plurality of introduction air suction ports 21 are arranged at equal intervals in the
20 circumferential direction. Accordingly, air 33 introduced through the plurality of introduction air suction ports 21 is efficiently mixed at a center portion of introduction air mixing portion 22 so that LED light unit 126 can be efficiently cooled by introduction air 33b. Due to such a configuration, thermal deterioration of LED light unit 126 can be prevented, hence air
25 blower 111 can be stably used for a long period.

When LED light unit 126 which can emit light at a wide angle is used, the light leaks also through introduction air suction ports 21, hence air blower 111 can be used also for indirect illumination in a room.

In air blower 111, suction port 15 and blowout center position 19a are arranged with the largest distance possible therebetween. Due to such an arrangement, there is no possibility that warm introduction air 33b blown out after cooling LED light unit 126 will be sucked through suction port 15 again. Accordingly, LED light unit 126 can be efficiently cooled.

Although the case where air blower 111 includes the plurality of introduction air suction ports 21 is described in the second exemplary embodiment, even when air blower 111 includes only one introduction air suction ports 21, such air blower 111 can acquire substantially the same advantageous effects as the case where air blower 111 includes the plurality of introduction air suction ports 21 except for the advantageous effects obtained by the above-mentioned technical feature where “the plurality of introduction air suction ports 21 are formed”.

THIRD EXEMPLARY EMBODIMENT

FIG. 9A is a perspective view of an air blower according to a third exemplary embodiment of the present invention, and FIG. 9B is a cross-sectional view taken along a plane D in FIG. 9A. As shown in FIG. 9A and FIG. 9B, air blower 131 is mounted on ceiling surface 132 by way of movable arm 133. The direction of air blower 131 can be freely changed using movable arm 133.

Air blower 131 incorporates in circular cylindrical housing 134 thereof: suction port 137; high pressure air generating portion 140; blowout port 141; first air passage 142; introduction air suction ports 143; introduction air mixing portion 144; introduction air blowout port 145; and

second air passage 146. Air blower 131 further includes LED light unit 147 which constitutes an illumination portion in introduction air mixing portion 144 in the inside of second air passage 146.

Housing 134 includes a double wall formed of outer wall 135 and
5 inner wall 136. Suction port 137 takes in air 33 from the outside of housing 134 into the inside of housing 134 therethrough. High pressure air generating portion 140 includes impeller 138 for turning air 33 into high pressure air 33a, and motor 139 for driving impeller 138. Blowout port 141 has an annular shape, and blows out high pressure air 33a therethrough.
10 First air passage 142 is an air passage which guides high pressure air 33a to blowout port 141 from impeller 138. A plurality of (five in this exemplary embodiment 3) introduction air suction ports 143 are formed in housing 134. Air 33 is sucked into housing 134 through introduction air suction ports 143 as air 33 is introduced by high pressure air 33a blown out from blowout port
15 141. Air 33 sucked in through the plurality of introduction air suction ports 143 is mixed in introduction air mixing portion 144. Introduction air 33b in introduction air mixing portion 144 is blown out through introduction air blowout port 145. Second air passages 146 are air passages which connect introduction air suction ports 143, introduction air mixing portion 144 and
20 introduction air blowout port 145 together. In this exemplary embodiment, high pressure air 33a means air having a pressure ranging from an atmospheric pressure to a pressure exceeding the atmospheric pressure by 10kPa inclusive.

LED light unit 147 provided to air blower 131 has directivity. In
25 this exemplary embodiment, as one example, illumination direction 148 and air blowing direction 149 are set in the same direction.

In air blower 131 having such a configuration, a core region is formed in a center portion of an air flow blown out from introduction air blowout port 145, hence the air flow has high straight advancing property and directivity which allow the air flow to reach a remote destination while suppressing the lowering of an air flow speed. Further, an illuminated light has directivity, hence air blowing direction 149 and illumination direction 148 are unequivocally determined. By observing the illuminated light by naked eyes, a user can easily confirm air blowing direction 149. As a result, the user can mount air blower 131 such that an air flow easily hits a desired place by adjusting illumination direction 148.

In the third exemplary embodiment, the description has been made by taking the case where illumination direction 148 and air blowing direction 149 are set in the same direction as an example. However, illumination direction 148 and air blowing direction 149 may be desirably displaced from each other by displacing a place where LED light unit 147 is mounted or by inclining LED light unit 147. Accordingly, when air blower 131 is used in a kitchen, for example, it is also possible to make the illuminated light directed to a hand of a user, and make the air flow hit the user.

FOURTH EXEMPLARY EMBODIMENT

In the fourth exemplary embodiment of the present invention, constitutional elements identical with the corresponding constitutional elements of the first exemplary embodiment are given the same symbols and the detailed description of these constitutional elements is omitted, and only points which make this exemplary embodiment different from the first exemplary embodiment are described. FIG. 10 is a perspective view of an air blower according to a fourth exemplary embodiment of the present

invention, and FIG. 11 is a cross-sectional view taken along a plane E in FIG. 10.

As shown in FIG. 10 and FIG. 11, air blower 211 further includes ceramic heaters 226 which constitute an air heating portion between high pressure air generating portion 18 and introduction air suction port 21 in the inside of first air passage 20.

Ceramic heaters 226 have a plate shape, and are radially arranged in the vicinity of the periphery of impeller 16. In the fourth exemplary embodiment, ceramic heater 226 is formed into an inverted V shape. Such a shape is adopted for increasing a contact area between high pressure air 33a and ceramic heater 226 so as to enhance air heating efficiency. The shape of ceramic heater 226 is not particularly limited to the inverted-V shape.

Air heating portion is not particularly limited to ceramic heater 226, and a heating wire, a carbon heater, a halogen heater or the like may be used. In this exemplary embodiment, high pressure air 33a means air having a pressure ranging from an atmospheric pressure to a pressure exceeding the atmospheric pressure by 10kPa inclusive.

As shown in FIG. 10, air blower 211 is mounted on mount base 227. Accordingly, the direction of blowout port 19 can be freely changed. Mount base 227 may preferably have base opening portion 228 so as to prevent mount base 227 from shutting off the flow of air 33 into suction port 15. When housing 12 is directly mounted on a floor or on a desk using mount base 227, it is difficult to change the direction of blowout port 19 and to fix the direction of blowout port 19. However, air-blowing performance is not adversely affected.

As shown in FIG. 11, plate shaped ceramic heaters 226 are radially arranged around the periphery of impeller 16. Accordingly, high pressure air 33a supplied to blowout port 19 from impeller 16 as a turning flow is straightened so as to be easily flown in the direction toward blowout port 19.

5 As a result, a temperature of sucked air 33 is increased by ceramic heaters 226 and, at the same time, high pressure air 33a is efficiently supplied to blowout port 19 by ceramic heaters 226. Also in the case where ceramic heaters 226 are not used as heating means, ceramic heaters 226 function as means for straightening high pressure air 33a. Accordingly, air blowing
10 efficiency at the time of blowing air of room temperature can be increased without increasing the number of parts.

Although the case where air blower 211 includes the plurality of introduction air suction ports 21 is described in the fourth exemplary embodiment, even when air blower 211 includes only one introduction air
15 suction port 21, such air blower 211 can acquire the substantially same advantageous effects as the case where air blower 211 includes the plurality of introduction air suction ports 21 except for the advantageous effects obtained by the above-mentioned technical feature where “the plurality of introduction air suction ports 21 are formed” provided that a size of an
20 opening area of the introduction air suction port is equal to a size of an opening area in the case where the plurality of introduction air suction ports are formed.

FIFTH EXEMPLARY EMBODIMENT

In the fifth exemplary embodiment of the present invention,
25 constitutional elements identical with the corresponding constitutional elements of the first exemplary embodiment and the fourth exemplary embodiment are given the same symbols and the detailed description of

these constitutional elements is omitted, and only points which make this exemplary embodiment different from the first exemplary embodiment and the fourth exemplary embodiment are described.

FIG. 12 is a perspective view of an air blower according to a fifth exemplary embodiment of the present invention, and FIG. 13 is a cross-sectional view taken along a plane F in FIG. 12. As shown in FIG. 12 and FIG. 13, dryer 231 has pot-shaped housing 232 which is obtained by changing the shape of housing 12 according to the fourth exemplary embodiment into a pot shape. Introduction air suction port 21 of dryer 231 has an opening area of a size which allows a user to hold dryer 231 by putting his/her hand into introduction air suction ports 21 arranged adjacent to each other.

In dryer 231 having such a configuration, hot air is blown out from blowout port 19, and introduction air 33b of room temperature is blown out from introduction air blowout port 23. Accordingly, air flows having different temperatures can be generated in the vicinity of blowout port 19. As a result, the air flows having different temperatures hit hair of a user so that the gloss of the hair is increased and the flow of the hair is straightened.

INDUSTRIAL APPLICABILITY

The air blower according to the present invention is effectively applicable as various kinds of air blowers which are arranged on a floor of a living room, a desk, a ceiling or a wall, and are used for lowering a sensory temperature of a user using a direct air flow or for circulating air in a room.

REFERENCE MARKS IN THE DRAWINGS

11, 31, 41, 111, 131, 211 air blower

	12, 134	housing
	12a	outer peripheral surface
	13, 135	outer wall
	14, 136	inner wall
5	15, 137	suction port
	15a	suction position
	16, 138	impeller
	16a	horizontal position
	17, 139	motor
10	18, 140	high pressure air generating portion
	19, 141	blowout port
	19a	blowout center position
	20, 142	first air passage
	21, 32a, 32b, 32c, 42, 143	introduction air suction port
15	21a	introduction air suction port center
	22, 144	introduction air mixing portion
	22a	introduction air mixing portion center
	23, 145	introduction air blowout port
	24, 146	second air passage
20	25	penetration wall
	25a	penetration hole
	25b	inclination angle
	26	discharge electrode unit (electric discharge portion)
	27	ground
25	33	air
	33a	high pressure air
	33b	introduced air

	126, 147	LED light unit
	148	illumination direction
	149	air blowing direction
	226	ceramic heater
5	227	mount base
	228	mount base opening portion
	231	dryer
	232	pot-shaped housing

CLAIMS

1. An air blower, in a housing of the air blower, comprising:
 - a suction port through which air outside the housing is taken in;
 - 5 a high pressure air generating portion which includes an impeller for turning the air into a high pressure air and a motor for driving the impeller;
 - an annular blowout port through which the high pressure air is blown out;
 - a first air passage for guiding the high pressure air from the impeller
 - 10 to the blowout port; a plurality of introduction air suction ports for sucking air drawn by the high pressure air blown out from the blowout port;
 - an introduction air mixing portion where the air sucked through the plurality of introduction air suction ports is mixed;
 - an introduction air blowout port through which the drawn-in air in
 - 15 the introduction air mixing portion is blown out; and
 - a second air passage which connects the introduction air suction ports, the introduction air mixing portion and the introduction air blowout port.
- 20 2. The air blower according to claim 1, wherein
 - the suction port is formed of a plurality of suction ports which are arranged about a suction position farthest from a blowout center position of the blowout port.
- 25 3. The air blower according to claim 2, wherein
 - the plurality of introduction air suction ports are disposed at equal intervals around an outer peripheral surface of the housing between a

horizontal position parallel to the impeller and the blowout port, and a center of each of the introduction air suction ports is located at an equal distance from the blowout center position.

5 4. The air blower according to claim 1, wherein
the housing has an outer wall and an inner wall, the first air passage is defined by the outer wall, the inner wall and a penetration wall, the second air passage is defined by the inner wall and the penetration wall, the second air passage and the first air passage intersect with each other in a
10 penetration hole whose periphery is formed of the penetration wall, and the introduction air blowout ports are formed of the inner wall.

5. The air blower according to claim 4, wherein
the penetration wall is formed of a plurality of penetration walls of
15 which inclination angles are equal.

6. The air blower according to claim 1, wherein
sizes of the plurality of introduction air suction ports differ from each
other.

20 7. The air blower according to claim 1, wherein
the introduction air mixing portion is provided with an electric discharge portion.

25 8. The air blower according to claim 1, wherein
the housing has a spherical shape.

9. The air blower according to claim 1 further comprising an illumination portion in the second air passage.

10. The air blower according to claim 1 further comprising an air
5 heating portion disposed between the high pressure air generating portion
and the introduction air suction port in the first air passage.