A HAIR DRYER AND A METHOD OF MAKING A HAIR DRYER

TECHNICAL FIELD

The present disclosure relates broadly to a hair dryer and a method of making a hair dryer.

BACKGROUND

Hair dryers typically rely on a rotary fan driven by an electric motor to generate air flow, e.g., heated air flow, for drying hair. The rotary fan draws air from an external environment into a housing of a hair dryer via an air inlet and causes air to flow through the housing towards an air outlet whereby the air passes though one or more heating elements within the housing.

Hair dryers typically emit a loud and irritating noise during operation due to the electric motor rotating at a high speed (e.g., 18,000 to 20,000 revolutions per minute). In general, the noise produced by a hair dryer is directly proportional to the speed of rotation or level of vibration of the electric motor. The noise produced by a typical hair dryer can be as loud as 80 to 90 decibels. When hair dryers are used in enclosed spaces, the noise is amplified. Prolonged and repeated exposure to such high noise levels may result in hearing loss to users such as hairdressers who frequently operate hair dryers at work. The high speed of rotation of the electric motor also tends to create excessive vibration of the hair dryer. Consequently, this may create an uncomfortable or unpleasant experience for users of the hair dryer.

Thus, there is a need for a hair dryer and a method of making a hair dryer that seek to address or alleviate at least one of the above problems.

SUMMARY

In accordance with a first aspect of the present disclosure, there is provided a hair dryer comprising, a housing having an air inlet formed at a side of the housing and an air outlet formed at an opposite side of the housing; an inlet fan disposed within the housing, proximal to the air inlet; and an outlet fan disposed within the housing, between the inlet fan and the air outlet; wherein the inlet fan and outlet fan are configured to rotate in opposite directions to direct air flow through the housing, from the air inlet to the air outlet.

The inlet fan and the outlet fan may be axially aligned.

The inlet fan and outlet fan may respectively comprise a plurality of blades; and wherein the plurality of blades of the outlet fan are pitched in an opposite direction to the plurality of blades of the inlet fan.

The plurality of blades of the inlet fan may be of a larger size as compared to the plurality of blades of the outlet fan.

The inlet fan may be further configured to rotate at a lower speed relative to the outlet fan.

The inlet fan may be coupled to a first motor and the outlet fan is coupled to a second motor; and wherein the first motor has a larger size as compared to the second motor.

The hair dryer may further comprise a heater disposed between the air outlet and the outlet fan.

In accordance with a second aspect of the present disclosure, there is provided a method of making a hair dryer, the method comprising, providing a housing having an air inlet formed at a side of the housing and an air outlet formed at an opposite side of the housing; providing an inlet fan within the housing, proximal to the air inlet; providing an outlet fan within the housing, between the inlet fan and the air outlet; configuring the inlet fan and the outlet fan to rotate in opposite directions to direct air flow through the housing, from the air inlet to the air outlet.

The method may further comprise axially aligning the inlet fan and the outlet fan.

The method may further comprise providing a plurality of blades for the inlet fan and a plurality of blades for the outlet fan; wherein the plurality of blades of the outlet fan are pitched in an opposite direction to the plurality of blades of the inlet fan.

The plurality of blades of the inlet fan in the method as disclosed herein may be of a larger size as compared to the plurality of blades of the outlet fan.

The method may further comprise configuring the inlet fan to rotate at a lower speed relative to the outlet fan.

The method may further comprise coupling the inlet fan to a first motor and coupling the outlet fan to a second motor; wherein the first motor has a larger size as compared to the second motor.

The method may further comprise providing a heater disposed between the air outlet and the outlet fan.

BRIEF DESCRIPTION OF THE DRAWINGS

Exemplary embodiments of the invention will be better understood and readily apparent to one of ordinary skill in the art from the following written description, by way of example only, and in conjunction with the drawings, in which:

FIG. 1 is a schematic drawing of a hair dryer in an example embodiment.

FIG. 2 is a schematic drawing of a hair dryer in another example embodiment.

FIG. 3 is a schematic flow chart illustrating a method of making a hair dryer in an example embodiment.

DETAILED DESCRIPTION

Example, non-limiting embodiments may provide a hair dryer and a method of making a hair dryer.

FIG. 1 is a schematic drawing of a hair dryer 100 in an example embodiment. The hair dryer 100 comprises a housing 102 having an air inlet 104 formed at a side of the housing 102 and an air outlet 106 formed at an opposite side of the housing 102; an inlet fan 108 disposed within the housing 102, proximal to the air inlet 104; and an outlet fan 110 disposed within the housing 102, between the inlet fan 108 and the air outlet 106; wherein the inlet fan 108 and outlet fan 110 are configured to rotate in opposite directions to direct air flow (as depicted by the arrows 112 and 114) through the housing 102, from the air inlet 104 to the air outlet 106.

In the example embodiment, the hair dryer 100 has a dual fan design with the inlet fan 108 and the outlet fan 110 disposed within the housing 102. The inlet fan 108 and the outlet fan 110 are configured to rotate about their respective axes of rotation. The inlet fan 108 and the outlet fan 110 may be axially aligned such that their respective axes of rotation lie along the same straight line.

In the example embodiment, the inlet fan 108 and the outlet fan 110 are counter-rotating fans configured to rotate in opposite directions about their respective axes of rotation. In one example, the inlet fan 108 may be configured to rotate in a clockwise manner and the outlet fan 110 may be configured to rotate in a counterclockwise manner, when viewed in a direction from the air inlet 104 towards the air outlet 106. In another example, the inlet fan 108 may be configured to rotate in a counterclockwise manner and the outlet fan 110 may be configured to rotate in a clockwise manner, when viewed in the direction from the air inlet 104 towards the air outlet 106.

In the example embodiment, the counter rotating fans 108, 110 may advantageously result in lesser vibration during operation, as compared to a single rotating fan in a conventional hair dryer. For example, the inlet fan 108 may be driven by a first motor (e.g., a lower speed motor) and the outlet fan 110 may be driven by a second motor (e.g., a higher speed motor). In a conventional hair dryer with a single fan coupled to a single motor, the amount of vibration generated by the single motor is proportional to its speed of rotation. In the example embodiment, the rotation of the two motors in opposite directions cancel out most of the vibrations from the individual motors, such that the combined motors provide a significantly lower vibration level. Accordingly, the vibration and associated noise level

generated during operation may be advantageously minimized, thereby resulting in a quieter and more pleasant hair drying experience.

In the example embodiment, the counter rotating fans 108, 110 may generate a higher volume of air as compared to a single rotating fan in a conventional hair dryer. In the example embodiment, when the inlet fan 108 and outlet fan 110 rotate in opposite directions, they create a more powerful air flow as compared to a single fan. The increased air flow may help to dry the hair more quickly and more efficiently. The increased air flow may also assist in shaping and setting the hair, giving it volume, and making it easier to style. In the example embodiment, the counter rotating fans 108, 110 may help to create a more powerful air flow that is focused over a smaller area. For example, the outlet fan 110 may have smaller blades but may be rotating at a higher speed as compared to the inlet fan 108, thereby creating a relatively high pressure region at the centre region where a heater may be placed. In the example embodiment, the counter rotating fans 108, 110 may also help to dissipate heat more effectively by creating a continuous flow of air, thereby preventing the hair dryer from overheating and minimize the likelihood of heat-related issues.

In the example embodiment, the housing 102 may be shaped to direct air flow produced by the counter-rotating fans 108, 110 towards a target, e.g., hair of a subject. In the example embodiment, the housing 102 may take the form of a substantially hollow cylindrical body. The air inlet 104 may take the form of an opening at one end of the hollow cylindrical body of the housing 102. The air outlet 106 may take the form of an opening at an opposite end of the hollow cylindrical body of the housing 102. In the example embodiment, an air flow path is defined within the housing 102, between the air inlet 104 and the air outlet 106, such that air that is drawn into the housing 102 via the air inlet 104 moves along the air flow path towards the air outlet 106. The air inlet 104 and air outlet 106 may have the same size or different sizes. The air inlet 104 may have a larger size (i.e., larger area) as compared to the air outlet 106. The hollow cylindrical body of the housing 102 may be tapered towards the air outlet 106 to focus the air exiting from the air outlet 106. The air inlet 104 and air outlet 106 may be of the same shape or different shapes. For example, the air inlet 104 and air outlet 106 may both have a circular shape. For example, the air inlet 104 may have a circular shape and the air outlet 106 may have an elliptical shape. The air inlet 104 and/or air outlet 106 may be covered with a barrier that is porous to air, e.g., a mesh cover at the air inlet 104 to prevent unwanted objects, e.g., debris, large particles, hair etc., from getting drawn/sucked into the housing 102. In the example embodiment, the housing

102, air inlet 104 and/or air outlet 106 may be specifically shaped and sized to optimize the air flow path, reduce turbulence, and minimize air leakage, thereby improving the efficiency and effectiveness of the counter-rotating fans 108, 110.

In the example embodiment, the hair dryer 100 may further comprise a heater 116 disposed between the air outlet 106 and the outlet fan 110. The heater 116 provides heat to its surroundings and may be positioned in the direction of air flow such that the air flowing/blowing through the heater 116 is heated prior to being discharged from the air outlet 106. Arrow 112 depicts the inflow of air from an external environment into the air inlet 104. Arrow 114 depicts the outflow of air from the air outlet 106 to the external environment. In the example embodiment, air exiting from the air outlet 106 may have a higher temperature as compared to air entering the air inlet 104, as the air is passed through and heated by the heater 116, prior to exiting from the air outlet 106.

In the example embodiment, the hair dryer 100 may further comprise a casing 118 coupled to the housing 102. The casing 118 may comprise a hollow interior for accommodating circuitry components of the hair dryer 100, e.g., power supply circuit for drawing power from an external power supply, speed control circuit for varying the speed of the inlet fan 108 and outlet fan 110, temperature control circuit for varying a heating temperature of the heater 116, and the like. The casing 118 may be communicatively coupled to the housing 102 such that the inlet fan 108, outlet fan 110, and heater 116 can be electrically connected to the circuity components within the casing 118. The casing 118 may further comprise an exterior surface that is shaped to allow a user to hold/grasp the hairdryer 100.

FIG. 2 is a schematic drawing of a hair dryer 200 in another example embodiment. The hair dryer 200 comprises a housing 202 having an air inlet 204 formed at a side of the housing 202 and an air outlet 206 formed at an opposite side of the housing 202; an inlet fan 208 disposed within the housing 202, proximal to the air inlet 204; and an outlet fan 210 disposed within the housing 202, between the inlet fan 208 and the air outlet 206; wherein the inlet fan 208 and outlet fan 210 are configured to rotate in opposite directions to direct air flow (as depicted by the arrows 212, 214A and 214B) through the housing 202, from the air inlet 204 to the air outlet 206. The hair dryer 200 further comprises a heater 216 disposed between the air outlet 206 and the outlet fan 210, said heater configured to heat air passing therethrough. The hair dryer 200 further comprises a casing 218 coupled to the housing 202.

In the example embodiment, the hair dryer 200 has a dual fan design with the inlet fan 208 and the outlet fan 210 disposed within the housing 202. In the example embodiment, the inlet fan 208 and the outlet fan 210 are configured to rotate in opposite directions. In one example, the inlet fan 208 may be configured to rotate in a clockwise manner and the outlet fan 210 may be configured to rotate in a counterclockwise manner, when viewed in a direction from the air inlet 204 towards the air outlet 206. In another example, the inlet fan 208 may be configured to rotate in a counterclockwise manner and the outlet fan 210 may be configured to rotate in a clockwise manner, when viewed in the direction from the air inlet 204 towards the air outlet 206.

In the example embodiment, the inlet fan 208 and the outlet fan 210 are substantially axially aligned. That is, the inlet fan 208 and the outlet fan 210 are arranged in a straight line and share a common axis of rotation 220, such that they rotate about the same axis 220 as shown in FIG. 2. In the example embodiment, the air flow has the lowest friction when the inlet fan 208 and outlet fan 210 are axially aligned. Any misalignment or nonalignment of angles between the axes of rotation of the inlet fan 208 and outlet fan 210 may result in higher power consumption and may not be desirable.

In the example embodiment, the inlet fan 208 comprises a plurality of blades/fan blades e.g., 222 and the outlet fan 210 comprises a plurality of blades/fan blades e.g., 224. The blades e.g., 222, 224 may be curved or angled to create air flow along the axis of rotation of the fans, when the fans rotate. The plurality of blades e.g., 222 of the inlet fan 208 are pitched in an opposite direction to the plurality of blades e.g., 224 of the outlet fan 210, such that the inlet fan 208 and outlet fan 210 blow or propel air in the same direction from the air inlet 204 towards the air outlet 206 even though the fans are rotating in opposite directions. The term “pitch” as used herein refers to the angle of a fan’s blades and is measured in degrees. The term “pitch angle” as used herein refers to the angle formed by a straight line connecting the width of a blade and a plane perpendicular to the axis of rotation of a fan.

In the example embodiment, the inlet fan 208 and outlet fan 210 may have the same or different number of blades. The inlet fan 208 may have more blades as compared to the outlet fan 210. The inlet fan 208 may have less blades as compared to the outlet fan 210. In general, more blades may require less speed to achieve the same air flow. However, this

may not be applicable to all fans. In the example embodiment, the number of blades in the inlet fan 208 may be a prime number, e.g., 3, 5, 7, 13, 17, 19 and the like. In the example embodiment, the number of blades in the outlet fan 210 may be a prime number, e.g., 3, 5, 7, 13, 17, 19 and the like. In the example embodiment, an inlet fan 208 and/or outlet fan 210 with a prime number of blades may advantageously ensure that there is no harmonic.

In the example embodiment, the plurality of blades e.g., 222 of the inlet fan 208 are of a larger size as compared to the plurality of blades e.g., 224 of the outlet fan 210. The blade 222 of the inlet fan 208 may be longer than the blade 224 of the outlet fan 210. The blade 222 of the inlet fan 208 may have a larger surface area than the blade 224 of the outlet fan 210. At the same rotation speed, larger blades are capable of moving more air than smaller blades. As such, the inlet fan 208 may be configured to rotate at a slower/lower speed relative to the outlet fan 210 in order to match the air flow generated by the outlet fan 208. Similarly, as smaller blades are capable of moving lesser air than larger blades at the same rotation speed, the outlet fan 210 may be configured to rotate at a faster/higher speed relative to the inlet fan 208.

In the example embodiment, the inlet fan 208 is coupled to a first motor 226 and the outlet fan 210 is coupled to a second motor 228. The first motor 226 and the second motor 228 are configured to rotate the inlet fan 208 and outlet fan 210 in opposite directions. The first motor 226 has a larger size as compared to the second motor 228 to effectively drive the inlet fan 208 having larger sized blades e.g., 222. The second motor 228 has a smaller size as compared to the first motor 226 to effectively drive the outlet fan 210 having smaller sized blades e.g., 224. The first motor 226 and second motor 228 may be electric motors. The first motor 226 and second motor 228 may each comprise a rotor and stator. The first motor 226 and second motor 228 may each comprise a rotating shaft for rotating the respective inlet fan 208 and outlet fan 210. The rotating shaft of the first motor 226 and the rotating shaft of the second motor 228 may be axially substantially aligned, i.e., disposed along the same straight line. In the example embodiment, the two separate motors 226, 228 allow the inlet fan 208 and outlet fan 210 to operate independently of each other. Accordingly, with two separate motors 226, 228, parameters such as the speed of rotation, angles (e.g., pitch angle) and power of the inlet fan 208 and outlet fan 210 can be optimized by design to achieve better overall efficiency, lower power and lower noise. It would be appreciated that the construction of a motor, e.g., electric motor that converts electrical

energy into mechanical energy to rotate the fans would be understood by a person skilled in the art and is not further described herein.

In the example embodiment, the counter rotating fans 208, 210 may advantageously result in lesser vibration during operation, as compared to a single rotating fan in a conventional hair dryer. During operation, the two motors rotating/spinning in opposite directions cancel out most of the vibrations from the individual motors, such that the combined motors provide a significantly lower vibration level. In the example embodiment, the counter rotating fans 208, 210 may also advantageously provide greater air pressure at the air outlet 206, as compared to a single rotating fan in a conventional hair dryer.

In the example embodiment, the heater 216 is positioned in the direction of air flow such that the air flowing/blowing through the heater 216 is heated prior to being discharged from the air outlet 206. In the example embodiment, the air inlet 204, air outlet 206, and the heater 216 may be positioned in a straight line, along the axis of rotation 220 of the fans 208, 210. The heater 216 may take the form of an electric heating element that is configured to generate heat when an electric current is passed therethrough. Arrow 212 depicts the inflow of air from an external environment into the air inlet 204. Arrows 214A and 214B depict the outflow of air from the air outlet 206 to the external environment. In the example embodiment, air exiting the air outlet 206 after passing through the heater 216 (see arrow 214A) is heated to a higher temperature as compared to air entering the air inlet 204. On the other hand, air that is flowing along a periphery within the housing 202 does not pass through the heater 216 (see arrow 214B) and has a substantially similar temperature as the air entering the air inlet 204. In the example embodiment, the outlet fan 210 which is running at a higher speed creates a relatively high-pressure region at the centre region where the heater 216 is placed.

In the example embodiment, the heater 216 is configured to heat the air passing therethrough. In the example embodiment, the heater 216 may be configured to have adjustable heat settings configured to produce air flow with different temperatures. For example, the heater 216 may be configured to produce air temperatures generally falling within the following temperature ranges: low heat, medium heat, and high heat. In the example embodiment, air that is flowing along a periphery region within the housing 202 that does not pass through the heater 216 may not be subject to heating. In the example embodiment, air that is flowing along a periphery region within the housing 202 that does not

pass through the heater 216 may exit from the air outlet 206 at a temperature which is close to a typical room temperature.

In the example embodiment, the casing 218 may comprise a hollow interior for accommodating circuitry components of the hair dryer 200, e.g., power supply circuit, speed control circuit for varying the speed of the inlet fan 208 and outlet fan 210, temperature control circuit for varying a heating temperature of the heater 216, and the like. The casing 218 may be communicatively coupled to the housing 202 such that the inlet fan 208, outlet fan 210, and heater 216 can be electrically connected to the circuity components within the casing 218. The casing 218 may further comprise an exterior surface that is shaped to allow a user to hold/grasp the hairdryer 200.

In the example embodiment, the shape of the fan blade, e.g., 222 and 224 and the material used to make the fan blade are not particularly limited as long as the fan blade is capable of maintaining its structure under rotation. In the example embodiment, the shape of the housing 202 and the material used to make the housing 202 are not particularly limited as long as the housing is capable of maintaining its structure at the operating temperature of the heater 216, i.e., the housing does not substantially deform or melt under high temperature.

FIG. 3 is a schematic flow chart 300 illustrating a method of making a hair dryer in an example embodiment. At step 302, a housing is provided, said housing having an air inlet formed at a side of the housing and an air outlet formed at an opposite side of the housing. At step 304, an inlet fan is provided within the housing, proximal to the air inlet. At step 306, an outlet fan is provided within the housing, between the inlet fan and the air outlet. At step 308, the inlet fan and the outlet fan are configured to rotate in opposite directions to direct air flow through the housing, from the air inlet to the air outlet.

In the example embodiment, the method may further comprise axially aligning the inlet fan and the outlet fan. In the example embodiment, the method may further comprise providing a plurality of blades for the inlet fan and a plurality of blades for the outlet fan; wherein the plurality of blades of the outlet fan are pitched in an opposite direction to the plurality of blades of the inlet fan. In the example embodiment, the plurality of blades of the inlet fan may be of a larger size as compared to the plurality of blades of the outlet fan. In the example embodiment, the method may further comprise configuring the inlet fan to rotate at

a lower speed relative to the outlet fan. In the example embodiment, the method may further comprise coupling the inlet fan to a first motor and coupling the outlet fan to a second motor; wherein the second motor has a larger size as compared to the first motor. In the example embodiment, the method may further comprise providing a heater disposed between the air outlet and the outlet fan.

The terms “coupled” or “connected” as used in this description are intended to cover both directly connected or connected through one or more intermediate means, unless otherwise stated.

The description herein may be, in certain portions, explicitly or implicitly described as algorithms and/or functional operations that operate on data within a computer memory or an electronic circuit. These algorithmic descriptions and/or functional operations are usually used by those skilled in the information/data processing arts for efficient description. An algorithm is generally relating to a self-consistent sequence of steps leading to a desired result. The algorithmic steps can include physical manipulations of physical quantities, such as electrical, magnetic or optical signals capable of being stored, transmitted, transferred, combined, compared, and otherwise manipulated.

Further, unless specifically stated otherwise, and would ordinarily be apparent from the following, a person skilled in the art will appreciate that throughout the present specification, discussions utilizing terms such as “scanning”, “calculating”, “determining”, “replacing”, “generating”, “initializing”, “outputting”, and the like, refer to action and processes of an instructing processor/computer system, or similar electronic circuit/device/component, that manipulates/processes and transforms data represented as physical quantities within the described system into other data similarly represented as physical quantities within the system or other information storage, transmission or display devices etc.

The description also discloses relevant device/apparatus for performing the steps of the described methods. Such apparatus may be specifically constructed for the purposes of the methods, or may comprise a general purpose computer/processor or other device selectively activated or reconfigured by a computer program stored in a storage member. The algorithms and displays described herein are not inherently related to any particular computer or other apparatus. It is understood that general purpose devices/machines may

be used in accordance with the teachings herein. Alternatively, the construction of a specialized device/apparatus to perform the method steps may be desired.

In addition, it is submitted that the description also implicitly covers a computer program, in that it would be clear that the steps of the methods described herein may be put into effect by computer code. It will be appreciated that a large variety of programming languages and coding can be used to implement the teachings of the description herein. Moreover, the computer program if applicable is not limited to any particular control flow and can use different control flows without departing from the scope of the invention.

Furthermore, one or more of the steps of the computer program if applicable may be performed in parallel and/or sequentially. Such a computer program if applicable may be stored on any computer readable medium. The computer readable medium may include storage devices such as magnetic or optical disks, memory chips, or other storage devices suitable for interfacing with a suitable reader/general purpose computer. In such instances, the computer readable storage medium is non-transitory. Such storage medium also covers all computer-readable media e.g., medium that stores data only for short periods of time and/or only in the presence of power, such as register memory, processor cache and Random Access Memory (RAM) and the like. The computer readable medium may even include a wired medium such as exemplified in the Internet system, or wireless medium such as exemplified in Bluetooth technology. The computer program when loaded and executed on a suitable reader effectively results in an apparatus that can implement the steps of the described methods.

The example embodiments may also be implemented as hardware modules. A module is a functional hardware unit designed for use with other components or modules. For example, a module may be implemented using digital or discrete electronic components, or it can form a portion of an entire electronic circuit such as an Application Specific Integrated Circuit (ASIC). A person skilled in the art will understand that the example embodiments can also be implemented as a combination of hardware and software modules.

Additionally, when describing some embodiments, the disclosure may have disclosed a method and/or process as a particular sequence of steps. However, unless otherwise required, it will be appreciated the method or process should not be limited to the particular

sequence of steps disclosed. Other sequences of steps may be possible. The particular order of the steps disclosed herein should not be construed as undue limitations. Unless otherwise required, a method and/or process disclosed herein should not be limited to the steps being carried out in the order written. The sequence of steps may be varied and still remain within the scope of the disclosure.

Further, in the description herein, the word “substantially” whenever used is understood to include, but not restricted to, “entirely” or “completely” and the like. In addition, terms such as “comprising”, “comprise”, and the like whenever used, are intended to be non-restricting descriptive language in that they broadly include elements/components recited after such terms, in addition to other components not explicitly recited. For an example, when “comprising” is used, reference to a “one” feature is also intended to be a reference to “at least one” of that feature. Terms such as “consisting”, “consist”, and the like, may, in the appropriate context, be considered as a subset of terms such as “comprising”, “comprise”, and the like. Therefore, in embodiments disclosed herein using the terms such as “comprising”, “comprise”, and the like, it will be appreciated that these embodiments provide teaching for corresponding embodiments using terms such as “consisting”, “consist”, and the like. Further, terms such as “about”, “approximately” and the like whenever used, typically means a reasonable variation, for example a variation of +/- 5% of the disclosed value, or a variance of 4% of the disclosed value, or a variance of 3% of the disclosed value, a variance of 2% of the disclosed value or a variance of 1% of the disclosed value.

Furthermore, in the description herein, certain values may be disclosed in a range. The values showing the end points of a range are intended to illustrate a preferred range. Whenever a range has been described, it is intended that the range covers and teaches all possible sub-ranges as well as individual numerical values within that range. That is, the end points of a range should not be interpreted as inflexible limitations. For example, a description of a range of 1% to 5% is intended to have specifically disclosed sub-ranges 1% to 2%, 1% to 3%, 1% to 4%, 2% to 3% etc., as well as individually, values within that range such as 1%, 2%, 3%, 4% and 5%. The intention of the above specific disclosure is applicable to any depth/breadth of a range.

It will be appreciated by a person skilled in the art that other variations and/or modifications may be made to the specific embodiments without departing from the scope of the invention as broadly described. For example, in the description herein, features of

different exemplary embodiments may be mixed, combined, interchanged, incorporated, adopted, modified, included etc. or the like across different exemplary embodiments. The present embodiments are, therefore, to be considered in all respects to be illustrative and not restrictive.

CLAIMS

1. A hair dryer comprising,

a housing having an air inlet formed at a side of the housing and an air outlet formed at an opposite side of the housing;

an inlet fan disposed within the housing, proximal to the air inlet; and

an outlet fan disposed within the housing, between the inlet fan and the air outlet;

wherein the inlet fan and outlet fan are configured to rotate in opposite directions to direct air flow through the housing, from the air inlet to the air outlet.

2. The hair dryer according to claim 1, wherein the inlet fan and the outlet fan are axially aligned.

3. The hair dryer according to claim 1 or 2,

wherein the inlet fan and outlet fan respectively comprise a plurality of blades; and

wherein the plurality of blades of the outlet fan are pitched in an opposite direction to the plurality of blades of the inlet fan.

4. The hair dryer according to claim 3, wherein the plurality of blades of the inlet fan are of a larger size as compared to the plurality of blades of the outlet fan.

5. The hair dryer according to any one of claims 1 to 4, wherein the inlet fan is further configured to rotate at a lower speed relative to the outlet fan.

6. The hair dryer according to any one of claims 1 to 5,

wherein the inlet fan is coupled to a first motor and the outlet fan is coupled to a second motor; and

wherein the first motor has a larger size as compared to the second motor.

7. The hair dryer according to any one of claims 1 to 6, further comprising a heater disposed between the air outlet and the outlet fan.

8. A method of making a hair dryer, the method comprising,

providing a housing having an air inlet formed at a side of the housing and an air outlet formed at an opposite side of the housing;

providing an inlet fan within the housing, proximal to the air inlet;

providing an outlet fan within the housing, between the inlet fan and the air outlet;

configuring the inlet fan and the outlet fan to rotate in opposite directions to direct air flow through the housing, from the air inlet to the air outlet.

9. The method according to claim 8, further comprising axially aligning the inlet fan and the outlet fan.

10. The method according to claim 8 or 9,

further comprising providing a plurality of blades for the inlet fan and a plurality of blades for the outlet fan;

wherein the plurality of blades of the outlet fan are pitched in an opposite direction to the plurality of blades of the inlet fan.

11. The method according to claim 10, wherein the plurality of blades of the inlet fan are of a larger size as compared to the plurality of blades of the outlet fan.

12. The method according to any one of claims 8 to 11, further configuring the inlet fan to rotate at a lower speed relative to the outlet fan.

13. The method according to any one of claims 8 to 12,

further comprising coupling the inlet fan to a first motor and coupling the outlet fan to a second motor;

wherein the first motor has a larger size as compared to the second motor.

14. The method according to any one of claims 8 to 13, further comprising providing a heater disposed between the air outlet and the outlet fan.