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(54) Title: A HAIRCARE APPLIANCE

(57) Abstract: A haircare appliance has an air inlet, an air outlet, and an airflow generator for generating an airflow from the air inlet to the air outlet. The haircare appliance has a fixed body defining the air outlet, and a rotatable member rotatable relative to the fixed body. The air outlet has a first aperture located on a first side of the fixed body, and a second aperture located on a second side of the fixed body opposite to the first side of the fixed body. The rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture and blocks airflow through the first aperture. The rotatable member is located internally of the fixed member.

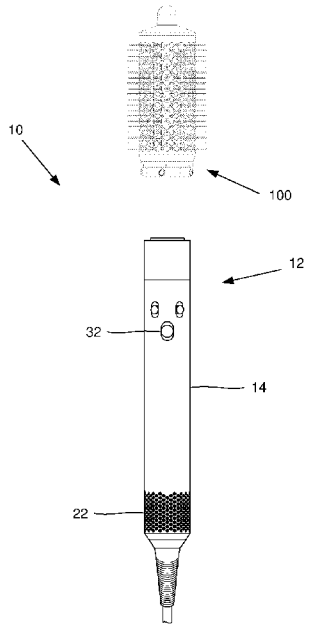


Fig. 1

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A HAIRCARE APPLIANCE

Field of the Invention

The present invention relates to a haircare appliance, and an attachment for a haircare appliance.

Background of the Invention

Haircare appliances are generally used to treat or style hair, and some haircare appliances may treat or style hair using airflow. To provide versatility in treating and styling hair some haircare appliances provide airflow at a variable flow rate.

Summary of the Invention

According to a first aspect of the present invention there is provided an attachment for a haircare appliance, the attachment comprising an air inlet, and an air outlet, wherein the attachment comprises a fixed body defining the air outlet, and a rotatable member rotatable relative to the fixed body, wherein the air outlet comprises a first aperture located on a first side of the fixed body, and a second aperture located on a second side of the fixed body opposite to the first side of the fixed body, the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture and blocks airflow through the first aperture, the rotatable member located internally of the fixed member.

The attachment according to the first aspect of the present invention may be beneficial as the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the

second aperture and blocks airflow through the first aperture. In particular, this may provide an arrangement where airflow passes through the first aperture but not through the second aperture in the first configuration, and where airflow passes through the second aperture but not through the first aperture in the second configuration. This may enable a greater volume of airflow to be provided on one side of the attachment relative to the other side of the attachment in use, which may provide increased efficiency, for example with less wasted airflow directed away from hair in use, and may provide increased styling control with airflow primarily directed only in a desired direction in use, thereby decreasing the risk of stray airflow affecting a styling process.

Use of a rotatable member may provide a more reliable arrangement than, for example, a linearly movable member, as a rotatable member may experience less friction in use, thereby reducing a risk of failure.

Locating the rotatable member internally of the fixed member may reduce a risk of external objects, for example hair or dust or debris or the like, being trapped during movement of the rotatable member, and this may reduce the risk of failure of the rotatable member.

The attachment and the haircare appliance may comprise a central axis, for example a central longitudinal axis, and the first and second sides of the fixed body may be located on opposing sides of the central axis. The first and second sides of the fixed body may be located on opposing sides of a plane containing the central axis.

The first and second apertures may be located opposite, for example substantially diametrically opposite, one another on the fixed body.

The rotatable member may be located radially inwardly of the fixed body. The fixed body may define a cavity within which the rotatable member is housed.

The rotatable member may comprise a channel, the channel may be at least partially aligned with the first aperture in the first configuration, and the channel may be at least partially aligned with the second aperture in the second configuration. This may enable airflow to pass through the rotatable member to the first and second apertures in the respective first and second configurations.

The rotatable member may comprise a blocking surface, the second aperture may be blocked by the blocking surface in the first configuration, and the first aperture may be blocked by the blocking surface in the second configuration. This may prevent airflow from passing through the rotatable member to the second and first apertures in the respective first and second configurations.

A first side of the rotatable member may comprise the blocking surface, and a second side of the rotatable member may comprise the channel. This may enable selective opening and closing of the first and second apertures on the respective first and second sides of the fixed body.

The blocking surface may comprise a perimeter having a length corresponding substantially to half a length of a perimeter of the fixed body. The fixed body may be generally cylindrical in form, and the blocking surface may be generally semi-cylindrical in form. The blocking surface may comprise a circumferential extent corresponding substantially to half a circumferential extent of the fixed body. This may ensure that half of the fixed body is blocked by the blocking surface at any point in time, thereby ensuring that airflow can only pass through one side of the fixed body at any point in time.

The blocking surface may be substantially solid, for example uninterrupted with substantially no apertures formed therein.

The channel may be at least 50% aligned with the first aperture in the first configuration, and may be at least 50% aligned with the second aperture in the second configuration.

The channel may be fully aligned with the first aperture in the first configuration, and may be fully aligned with the second aperture in the second configuration

The first side of the rotatable member may be aligned with the second side of the fixed body in the first configuration, and the second side of the rotatable member may be aligned with the first side of the fixed body in the second configuration.

The rotatable member may be rotatable about the central axis. This may provide a simple arrangement compared to, for example, a rotatable member rotatable about an axis offset from the central axis.

The rotatable member may be rotatable about an axis offset from the central axis. This may provide greater flexibility for positioning of the rotatable member relative to the fixed member.

The rotatable member may comprise a monolithic structure, for example a single-piece unitary component. This may reduce component count and cost compared to, for example, use of multiple or multi-piece rotatable members, and may reduce a risk of failure in use.

No airflow may pass through the second side of the fixed body in the first configuration, and no airflow may pass through the first side of the fixed body in the second configuration. This may enable a greater volume of airflow to be provided on one side of the attachment relative to the other side of the attachment in use, which may provide increased efficiency, for example with less wasted airflow directed away from hair in use, and may provide increased styling control with airflow primarily directed only in a desired direction in use, thereby decreasing the risk of stray airflow affecting a styling process.

The first and second apertures may be shaped such that airflow passes through the first and second apertures in a radial direction. This may provide greater directionality of

airflow from the attachment than, for example, an arrangement where the airflow passes through the first and second apertures in a tangential direction to the fixed body.

The first and second apertures may be shaped such that airflow passes through the first and second apertures in a tangential direction. This may enable direction of airflow along a length of hair in use, which may provide increased styling control and may reduce flyaways in use.

The attachment may comprise a user actuable dial for rotating the rotatable member relative to the fixed body. This may provide a simple mechanism for moving the rotatable member relative to the fixed body, and may provide increased user control and ease of use compared to, for example, an attachment where the rotatable member rotates automatically without user input.

The rotatable member may be rotatable relative to the fixed body under the action of gravity. This may provide automatic movement of the rotatable member in response to different orientations of the attachment and haircare appliance in use, and may remove the need for a user to interact with the attachment and/or haircare appliance to modify the direction from which airflow leaves the attachment and/or haircare appliance in use.

The rotatable member may comprise a weight such that airflow is directed through the one of the first and second apertures that face toward a surface upon which a user is standing in use when the attachment and haircare appliance is held parallel to the surface. A weight may provide a simple mechanism to ensure movement of the rotatable member under action of gravity. The weight may be located adjacent to the channel. This may ensure that the channel is aligned with the relevant aperture in use. The second side of the rotatable member may comprise the weight.

The attachment may comprise a signal generator for generating a signal indicative of hair contacting the attachment , and a drive mechanism for driving movement of the rotatable member in response to the signal indicative of hair contacting the attachment. This may

ensure that the rotatable member is in the correct configuration to enable airflow to be provided to hair to be styled and/or dried in use. The drive mechanism may drive movement of the rotatable member to the first configuration when the signal indicates hair contacting a first side of the attachment corresponding to the first side of the fixed body. The drive mechanism may drive movement of the rotatable member to the second configuration when the signal indicates hair contacting a second side of the attachment corresponding to the second side of the fixed body.

The signal may be indicative of physical contact of hair with the attachment, or may be indicative of potential contact of hair with the attachment . The signal generator may be configured to generate the signal when hair is no more than 1cm, no more than 0.5 cm, or no more than 0.25cm away from the attachment.

The attachment may comprise a plurality of bristles for contacting hair, and the signal generator may be configured to generate the signal when hair contacts the plurality of bristles. Provision of a plurality of bristles may allow increased flexibility in styling of hair, whilst also ensuring that the signal generator is provided with an engagement mechanism, in the form of the bristles, for triggering generation of the signal.

The signal generator may comprise a sensor for detecting the presence of hair, and the signal generator may be configured to generate the signal based on an output of the sensor. Use of a sensor, for example a digital sensor, to generate an output, ie a trigger, on which the output of the signal is based may provide a system having fewer moving parts, and hence which is less prone to failure, than, for example, a signal generator where the trigger is provided by a mechanical mechanism. The sensor may comprise a proximity sensor, which may allow for generation of the signal where hair is within a pre-determined threshold distance of the attachment. The sensor may comprise a capacitive sensor, for example a capacitive touch sensor.

The attachment may comprise a switch that opens or closes an electrical circuit when the switch is engaged by hair, and a change in state of the electrical circuit may cause

generation of the signal. Use of such a switch may ensure that the signal is only generated when there is a change in state of the electrical circuit.

The switch may comprise a depressible switch that is depressed upon engagement of the attachment with hair. Such a depressible switch may provide a relatively simple, inexpensive and reliable engagement mechanism.

The switch may comprise a pair of electrical contacts spaced apart from one another, and an electrically conductive member configured to selectively bridge the pair of electrical contacts when the attachment is in contact with hair. Such a switch may require less physical space than, for example, a depressible switch, which may allow the size of at least a portion of the attachment to be reduced.

The signal generator may comprise an image sensor and/or a light sensor to detect the presence of hair, with the signal generated when the image sensor and/or the light sensor detects the presence of hair in use.

The air outlet may comprise a plurality of apertures spaced about a periphery of the attachment such that a plurality of apertures are located on the first side of the fixed body and a plurality of apertures are located on the second side of the fixed body, and the rotatable member may be rotatable such that the rotatable member permits airflow through the plurality of apertures on the first side of the fixed body and blocks airflow through the plurality of apertures on the second side of the fixed body in the first configuration, and such that rotatable member permits airflow through the plurality of apertures on the second side of the fixed body and blocks airflow through the plurality of apertures on the first side of the fixed body in the second configuration. This may provide more diffuse airflow than, for example, a single large aperture at either side of the attachment, which may increase user comfort.

The second side of the rotatable member may comprise a plurality of channels, each channel aligned with at least one aperture in the first and second configurations. The blocking surface may block a plurality of apertures in the first and second configurations.

According to a second aspect of the present invention there is provided a haircare appliance comprising an air inlet, an air outlet, an airflow generator for generating an airflow from the air inlet to the air outlet, a fixed body defining the air outlet, and a rotatable member rotatable relative to the fixed body, wherein the air outlet comprises a first aperture located on a first side of the fixed body, and a second aperture located on a second side of the fixed body opposite to the first side of the fixed body, the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture and blocks airflow through the first aperture, the rotatable member located internally of the fixed member.

The haircare appliance may comprise a handle unit within which the airflow generator is disposed, and an attachment comprising the air outlet, the attachment removably attachable to the handle unit. Providing the air outlet described above as part of a removable attachment may allow the functionality described herein to be selectively provided by a user.

According to a third aspect of the present invention there is provided a haircare appliance comprising an air inlet, an air outlet, an airflow generator for generating an airflow from the air inlet to the air outlet, a fixed body defining the air outlet, and a rotatable member rotatable relative to the fixed body, wherein the air outlet comprises a first aperture located on a first side of the fixed body, and a second aperture located on a second side of the fixed body opposite to the first side of the fixed body, the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture

and blocks airflow through the first aperture, and the rotatable member is rotatable relative to the fixed member under the action of gravity in use.

The haircare appliance according to the third aspect of the present invention may be advantageous as the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture and blocks airflow through the first aperture. In particular, this may provide an arrangement where airflow passes through the first aperture but not through the second aperture in the first configuration, and where airflow passes through the second aperture but not through the first aperture in the second configuration. This may enable a greater volume of airflow to be provided on one side of the haircare appliance relative to the other side of the haircare appliance in use, which may provide increased efficiency, for example with less wasted airflow directed away from hair in use, and may provide increased styling control with airflow primarily directed only in a desired direction in use, thereby decreasing the risk of stray airflow affecting a styling process.

Use of a rotatable member may provide a more reliable arrangement than, for example, a linearly movable member, as a rotatable member may experience less friction in use, thereby reducing a risk of failure.

By having the rotatable member rotate relative to the fixed member under the action of gravity in use switching between the first and second configurations may be achieved automatically, thereby reducing a need for user input and providing increased user convenience.

The rotatable member may comprise a weight such that airflow is directed through the one of the first and second apertures that face toward a surface upon which a user is standing in use when the haircare appliance is held parallel to the surface. A weight may

provide a simple mechanism to ensure movement of the rotatable member under action of gravity.

The rotatable member may comprise a channel, the channel may be at least partially aligned with the first aperture in the first configuration, and the channel may be at least partially aligned with the second aperture in the second configuration. This may enable airflow to pass through the rotatable member to the first and second apertures in the respective first and second configurations. The channel may comprise first and second channel portions, with the first channel portion at least partially aligned with the first aperture and the second channel portion misaligned with the second aperture in the first configuration, and the first channel portion misaligned with the first aperture and the second channel portion at least partially aligned with the second aperture in the second configuration

The rotatable member may comprise a blocking surface, the second aperture may be blocked by the blocking surface in the first configuration, and the first aperture may be blocked by the blocking surface in the second configuration. This may prevent airflow from passing through the rotatable member to the second and first apertures in the respective first and second configurations.

The rotatable member may be located internally of the fixed member, for example radially inwardly of the fixed member in a hollow interior of the fixed member. This may reduce a risk of external objects, for example hair or dust or debris or the like, being trapped during movement of the rotatable member, and this may reduce the risk of failure of the rotatable member.

The rotatable member may be located outwardly of the fixed member, for example radially outwardly from a hollow interior of the fixed member. This may remove the movable member from a flow path within the interior of the fixed member, which may enable a flow path of greater cross-sectional area, and may reduce turbulent flow within the interior of the fixed member in use.

The haircare appliance may comprise a central axis, for example a central longitudinal axis, and the first and second sides of the fixed body may be located on opposing sides of the central axis. The first and second sides of the fixed body may be located on opposing sides of a plane containing the central axis.

The first and second apertures may be located opposite, for example substantially diametrically opposite, one another on the fixed body.

The rotatable member may comprise a monolithic structure, for example a single-piece unitary component. This may reduce component count and cost compared to, for example, use of multiple or multi-piece rotatable members, and may reduce a risk of failure in use.

No airflow may pass through the second side of the fixed body in the first configuration, and no airflow may pass through the first side of the fixed body in the second configuration. This may enable a greater volume of airflow to be provided on one side of the haircare appliance relative to the other side of the haircare appliance in use, which may provide increased efficiency, for example with less wasted airflow directed away from hair in use, and may provide increased styling control with airflow primarily directed only in a desired direction in use, thereby decreasing the risk of stray airflow affecting a styling process.

The haircare appliance may comprise a handle unit within which the airflow generator is disposed, and an attachment comprising the air outlet, the attachment removably attachable to the handle unit. Providing the air outlet described above as part of a removable attachment may allow the functionality described herein to be selectively provided by a user.

According to a fourth aspect of the present invention there is provided an attachment for a haircare appliance, the attachment comprising an air inlet, and an air outlet, wherein the

attachment comprises a fixed body defining the air outlet, and a rotatable member rotatable relative to the fixed body, wherein the air outlet comprises a first aperture located on a first side of the fixed body, and a second aperture located on a second side of the fixed body opposite to the first side of the fixed body, the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture and blocks airflow through the first aperture, and the rotatable member is rotatable relative to the fixed member under the action of gravity in use.

Optional features of aspects of the present invention may be equally applied to other aspects of the invention, where appropriate.

Brief Description of the Drawings

Figure 1 is a schematic view illustrating a haircare appliance according to the present invention;

Figure 2 is a schematic cross-sectional view through a handle unit of the haircare appliance of Figure 1;

Figure 3 is a schematic perspective view of a first embodiment of an attachment for the haircare appliance of Figure 1;

Figure 4 is a schematic cross-section of the attachment of Figure 3 in a first configuration;

Figure 5 is a schematic cross-section of the attachment of Figure 3 in a second configuration;

Figure 6 is a schematic perspective view of a second embodiment of an attachment for the haircare appliance of Figure 1;

Figure 7 is a schematic cross-section of a third embodiment of an attachment for the haircare appliance of Figure 1;

Figure 8 is a schematic cross-section of a fourth embodiment of an attachment for the haircare appliance of Figure 1, in a first configuration; and

Figure 9 is a schematic cross-section of the attachment of Figure 8 in a second configuration.

Detailed Description of the Invention

A haircare appliance according to the present invention, generally designated 10, is shown schematically in Figure 1.

The haircare appliance 10 comprises a handle unit 12, and an attachment 100 removably attachable to the handle unit 12.

The handle unit 12 comprises a housing 14, an airflow generator 16, a heater 18, and a control unit 20, as can be seen schematically in Figure 2.

The housing 14 is tubular in shape, and comprises an air inlet 22 through which an airflow is drawn into the housing 14 by the airflow generator 16, and an air outlet 24 through which the airflow is discharged from the housing 14. The airflow generator 16 is housed within the housing 14, and comprises an impeller 26 driven by an electric motor 28. The heater 18 is also housed within the housing 14, and comprises heating elements 30 to optionally heat the airflow.

The control unit 20 comprises electronic circuitry for a user interface 32 and a control module 34. The user interface 32 is provided on an outer surface of the housing 14, and is used to power on and off the haircare appliance 10, to select a flow rate (for example

high, medium and low), and to select an airflow temperature (for example hot, medium or cold). In the example of Figure 1, the user interface comprises a plurality of sliding switches, but other forms of user interface 32, for example buttons, dials or touchscreens, are also envisaged.

The control module 34 is responsible for controlling the airflow generator 16, and the heater 18 in response to inputs from the user interface 32. For example, in response to inputs from the user interface 32, the control module 34 may control the power or the speed of the airflow generator 16 in order to adjust the airflow rate of the airflow, and the power of the heater 18 in order to adjust the temperature of the airflow.

The attachment 100 is shown schematically in Figures 3 and 4.

The attachment 100 is shown schematically in Figures 3 to 6. The attachment 100 comprises a fixed body 102 and a rotatable member 104 rotatable relative to the fixed body 102.

The fixed body 102 is generally cylindrical in form, and is open at one end and closed at the other end. The open end serves as an inlet 106 into the fixed body 102. The fixed body 102 is generally hollow in form, and has recesses within which the rotatable member 104 is rotatable, as will be described hereafter. An outer surface of the fixed body 102 comprises openings 108 through which bristles 110 extend, and a plurality of apertures 112 which serve as the air outlet for the attachment 100. The apertures 112 and openings 108 are disposed in columns about the periphery of the outer surface of the attachment 100, with openings 108 and apertures 112 alternating in each column. Openings 108 and apertures 112 are offset between adjacent columns, such that an opening 108 in one column is roughly aligned in a same row as apertures 112 of adjacent columns.

The rotatable member 104 is a monolithic single piece structure, which is generally hollow in form, having first 114 and second 116 sides. The first side 114 of the

rotatable member 104 is substantially solid, such that the first side 114 of the rotatable member 104 defines a blocking surface 115. The second side 116 of the rotatable member 104 comprises a plurality of channels 118 through which airflow can pass in use.

A connecting portion 120 of the second side 116 of the rotatable member 104 extends radially inwardly toward the centre of the rotatable member 104, and a rod 122 extends through the connecting portion 120 and is located within the recesses of the fixed body 102 such that the rotatable member 104 is rotatable within the fixed body 102 in use. A weight 124 is embedded in the connecting portion 120, such that the weight 124 is located within the second side 116 of the rotatable member 104. This ensures that the second side 116 of the rotatable member 104, and hence the channels 118, face downwardly when the attachment 100 is held in a horizontal orientation by a user, for example such that airflow is directed through the channels 118 in a generally downward direction.

As can be seen from Figure 4, the fixed body 102 can also be considered to have a first side 126 and a second side 128, with the first 126 and second 128 sides either side of a central longitudinal axis C of the attachment 100, and with apertures disposed on each of the first 126 and second 128 sides of the fixed body 128. In the configuration shown in Figure 4, the first side 126 faces in a generally downward direction, whilst the second side 128 faces in a generally upward direction. Here the second side 116 of the rotatable member 104 is aligned with the first side 126 of the fixed body 102, whilst the first side 114 of the rotatable member 104 is aligned with the second side 128 of the fixed body 102. Thus the channels 118 of the rotatable member 104 are aligned with apertures 112 on the first side 126 of the fixed body 102 in the configuration shown in Figure 4, whilst the blocking surface 115 of the rotatable member 104 is aligned with apertures 112 on the second side 128 of the fixed body 102 in the configuration shown in Figure 4.

In such a manner airflow is able to escape from apertures 112 on the first side 126 of the fixed body 102, whilst airflow is prevented from escaping apertures 112 on the second side 128 of the fixed body 102. This may enable a greater volume of airflow to be provided on one side of the attachment 100 relative to the other side of the attachment 100 in use, which may provide increased efficiency, for example with less wasted airflow directed away from hair in use, and may provide increased styling control with airflow primarily directed only in a desired direction in use, thereby decreasing the risk of stray airflow affecting a styling process.

As previously mentioned, the rotatable member 104 is rotatable relative to the fixed body 102, and the second side 116 of the rotatable member 104 comprises the weight 124. If a user were to rotate the haircare appliance 10, ie rotating the haircare appliance about the central longitudinal axis C, then, given the rotatable member 104 and its weight 124, the rotatable member would remain in the position shown in Figure 4, whilst the first 126 and second 128 sides of the fixed body 102 would flip. Such a configuration is illustrated in Figure 5.

In Figure 5, the first side 126 of the fixed body 102 faces in a generally upward direction, whilst the second side 128 of the fixed body 102 faces in a generally downward direction. Here the second side 116 of the rotatable member 104 is aligned with the second side 128 of the fixed body 102, whilst the first side 114 of the rotatable member 104 is aligned with the first side 126 of the fixed body 102. Thus the channels 118 of the rotatable member 104 are aligned with apertures 112 on the second side 128 of the fixed body 102 in the configuration shown in Figure 5, whilst the blocking surface 115 of the rotatable member 104 is aligned with apertures 112 on the first side 126 of the fixed body 102 in the configuration shown in Figure 4.

In such a manner airflow is able to escape from apertures 112 on the first side 126 of the fixed body 102, whilst airflow is prevented from escaping apertures 112 on the second side 128 of the fixed body 102. Airflow is therefore consistently through one side of the attachment 100 only.

A further embodiment of an attachment 200 for use with the main body 12 of the haircare appliance 10 of Figure 1 is illustrated in Figure 6. The attachment 200 of Figure 6 is substantially similar to the attachment 100 of Figures 3 to 5 save that the weight 124 of the rotatable member 104 has been removed, and instead the attachment 300 of Figure 6 comprises a user actuable dial 202 protruding upwardly from the attachment. The user actuable dial 202 is mechanically linked to the rotatable member 104 in any appropriate manner such that rotation of the user actuable dial 302 by a user causes rotation of the rotatable member 104 within the fixed body to adopt configurations similar to those illustrated in Figures 4 and 5.

For example, the user actuable dial 202 may be used to move the rotatable member from a first configuration in which the channels 118 of the rotatable member 104 are aligned with apertures 112 on the first side 126 of the fixed body 102 whilst the blocking surface 115 of the rotatable member 104 is aligned with apertures 112 on the second side 128 of the fixed body 102, to a second configuration in which the channels 118 of the rotatable member 104 are aligned with apertures 112 on the second side 128 of the fixed body 102 whilst the blocking surface 115 of the rotatable member 104 is aligned with apertures 112 on the first side 126 of the fixed body 102. Thus airflow may be provided through one side only of the attachment 200 at a time, with the side through which airflow is allowed being chosen by a user via the user actuable dial 202.

A further embodiment of an attachment 300 for use with the main body 12 of the haircare appliance 10 of Figure 1 is illustrated in Figure 7. The attachment 300 of Figure 7 is substantially similar to the attachment 100 of Figures 3 to 5 save that the weight 124 of the rotatable member 104 has been removed, and instead the attachment 300 of Figure 7 comprises a signal generator 302 to generate a signal indicative of hair contacting the attachment 300, and a drive motor 304 to drive rotation of the rotatable member 104 in response to the signal provided by the signal generator 302.

The signal generator 302 may take any appropriate form, including, for example, any of a proximity sensor, a proximity sensor, a capacitive sensor, a switch that opens or closes an electrical circuit when the switch is engaged by hair, an image sensor and a light sensor.

In response to the signal generated by the signal generator 302, the drive motor 304 is able to drive rotation of the rotatable member 104 such that airflow is always directed toward hair in use. For example, the drive motor 304 may drive rotation of the rotatable member 104 within the fixed body to adopt configurations similar to those illustrated in Figures 4 and 5, albeit rotated through 90 degrees in Figure 7. Given the different mechanism for moving the rotatable member 104, it will be appreciated that the apertures 112 through which air passes in the embodiment of Figure 7 may be located in any rotational direction about the periphery of the attachment 300, and not just in a downward direction as with the embodiment illustrated in Figures 4 and 5.

For example, signal generator 302 and drive motor 304 may be used to move the rotatable member 104 from a first configuration in which the channels 118 of the rotatable member 104 are aligned with apertures 112 on the first side 126 of the fixed body 102 (left-hand side of the central axis in Figure 7) whilst the blocking surface 115 of the rotatable member 104 is aligned with apertures 112 on the second side 128 of the fixed body 102 (right-hand side of the central axis in Figure 7), to a second configuration in which the channels 118 of the rotatable member 104 are aligned with apertures 112 on the second side 128 of the fixed body 102 whilst the blocking surface 115 of the rotatable member 104 is aligned with apertures 112 on the first side 126 of the fixed body 102. Thus airflow may be provided through one side only of the attachment 300 at a time, with the side through which airflow is allowed being chosen being determined by the signal generator 302 and the drive motor 304.

A further embodiment of an attachment 400 for use with the main body 12 of the haircare appliance 10 of Figure 1 is illustrated in Figures 8 and 9.

The attachment 400 of Figure 8 comprises a fixed body 402 having first 404 and second 406 apertures, and a rotatable member 408 rotatable relative to the fixed body 402, for example via a rod (not shown) as in the embodiment of Figures 3 to 5. Here the rotatable member 408 is disposed radially outwardly of the fixed body 402, such that the rotatable member 402 is rotatable about an outwardly facing surface of the fixed body 402. The rotatable member 408 has a single channel 410 formed therein, and a plurality of weights 412 embedded in the rotatable member 408 either side of the channel 410. A plurality of bristles 414 extend outwardly from the rotatable member 408.

The first aperture 404 is located on a first side 416 of the fixed body 402, and the second aperture 406 is located on a second side 418 of the fixed body 402 opposite to the first side 416 of the fixed body 402. The channel 410 is located on a first side 420 of the rotatable member 408, whilst a second side 422 of the rotatable member 408 is substantially solid with no apertures or openings, save those through which bristles may extend, formed therein.

Similar to the embodiment of Figures 3 to 5, the attachment 400 of Figures 8 and 9 has a first configuration, illustrated in Figure 8, where the first side 420 of the rotatable member 408 is aligned with the first side 416 of the fixed body 402, such that the channel 410 is aligned with the first aperture 404 and airflow can escape from the first side 416 of the fixed body 402. Airflow through the second aperture 406 is blocked by the rotatable member 408 in the first configuration.

The attachment 400 of Figures 8 and 9 has a second configuration, illustrated in Figure 9, where the first side 420 of the rotatable member 408 is aligned with the second side 418 of the fixed body 402, such that the channel 410 is aligned with the second aperture 406 and airflow can escape from the second side 418 of the fixed body 402. Airflow through the first aperture 404 is blocked by the rotatable member 408 in the second configuration.

These two configurations are enabled by the plurality of weights 412 embedded in the rotatable member 408, such that airflow is consistently through one side of the attachment 400 only. The plurality of weights 412 enable the rotatable member 404 to rotate relative to the fixed body 402 under the action of gravity in use, which may provide automatic adjustment of airflow from different sides of the fixed body 402.

Although described with only first 404 and second 406 apertures, and a single channel 410, it will be appreciated that a number of apertures and channels may be provided in practice, similar to the embodiment of the attachment 100 illustrated in Figures 3 to 5.

Furthermore, although the attachment 400 of Figures 8 and 9 is illustrated with the rotatable member 408 rotating about a central axis, it will be appreciated that embodiments where the rotatable member 408 rotates within the fixed body about an axis offset from the central axis are also envisaged.

Embodiments are also envisaged where, rather than the haircare appliance 10 comprising a handle unit 12 and an attachment 100,200,300,400 the haircare appliance 10 is a single-piece unit, for example taking the form of the combined handle unit 12 and attachment 100,200,300,400 previously described.

Claims

1. An attachment for a haircare appliance, the attachment comprising an air inlet, and an air outlet, wherein the attachment comprises a fixed body defining the air outlet, and a rotatable member rotatable relative to the fixed body, wherein the air outlet comprises a first aperture located on a first side of the fixed body, and a second aperture located on a second side of the fixed body opposite to the first side of the fixed body, the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture and blocks airflow through the first aperture, the rotatable member located internally of the fixed member

2. An attachment as claimed in Claim 1, wherein the rotatable member comprises a channel, the channel is at least partially aligned with the first aperture in the first configuration, and the channel is at least partially aligned with the second aperture in the second configuration.

3. An attachment as claimed in Claim 1 or Claim 2, wherein the rotatable member comprises a blocking surface, the second aperture is blocked by the blocking surface in the first configuration, and the first aperture is blocked by the blocking surface in the second configuration.

4. An attachment as claimed in any preceding claim, wherein the rotatable member comprises a monolithic structure.

5. An attachment as claimed in any preceding claim, wherein no airflow can pass through the second side of the fixed body in the first configuration, and no airflow can pass through the first side of the fixed body in the second configuration.

6. An attachment as claimed in any preceding claim, wherein the first and second apertures are shaped such that airflow passes through the first and second apertures in a radial direction.

7. An attachment as claimed in any preceding claim, wherein the attachment comprises a user actuable dial for rotating the rotatable member relative to the fixed body.

8. An attachment as claimed in any of Claims 1 to 6, wherein the rotatable member is rotatable relative to the fixed body under the action of gravity.

9. An attachment as claimed in Claim 8, wherein the rotatable member comprises a weight such that airflow is directed through the one of the first and second apertures that face toward a surface upon which a user is standing in use when the attachment is held parallel to the surface.

10. An attachment as claimed in any of Claims 1 to 6 wherein the attachment comprises a signal generator for generating a signal indicative of hair contacting the attachment, and a drive mechanism for driving movement of the rotatable member in response to the signal indicative of hair contacting the attachment.

11. An attachment as claimed in any preceding claim, wherein the air outlet comprises a plurality of apertures spaced about a periphery of the attachment such that a plurality of apertures are located on the first side of the fixed body and a plurality of apertures are located on the second side of the fixed body, and the rotatable member is rotatable such that the rotatable member permits airflow through the plurality of apertures on the first side of the fixed body and blocks airflow through the plurality of apertures on the second side of the fixed body in the first configuration, and such that rotatable member permits airflow through the plurality of apertures on the second side of the fixed body and blocks airflow through the plurality of apertures on the first side of the fixed body in the second configuration.

12. A haircare appliance comprising an air inlet, an air outlet, an airflow generator for generating an airflow from the air inlet to the air outlet, a fixed body defining the air outlet, and a rotatable member rotatable relative to the fixed body, wherein the air outlet comprises a first aperture located on a first side of the fixed body, and a second aperture located on a second side of the fixed body opposite to the first side of the fixed body, the rotatable member is rotatable from a first configuration in which the rotatable member permits airflow through the first aperture and blocks airflow through the second aperture, to a second configuration in which the rotatable member permits airflow through the second aperture and blocks airflow through the first aperture, the rotatable member located internally of the fixed member.

13. A haircare appliance as claimed in claim 12, wherein the haircare appliance comprises a handle unit within which the airflow generator is disposed, and an attachment comprising the air outlet, the attachment removably attachable to the handle unit.

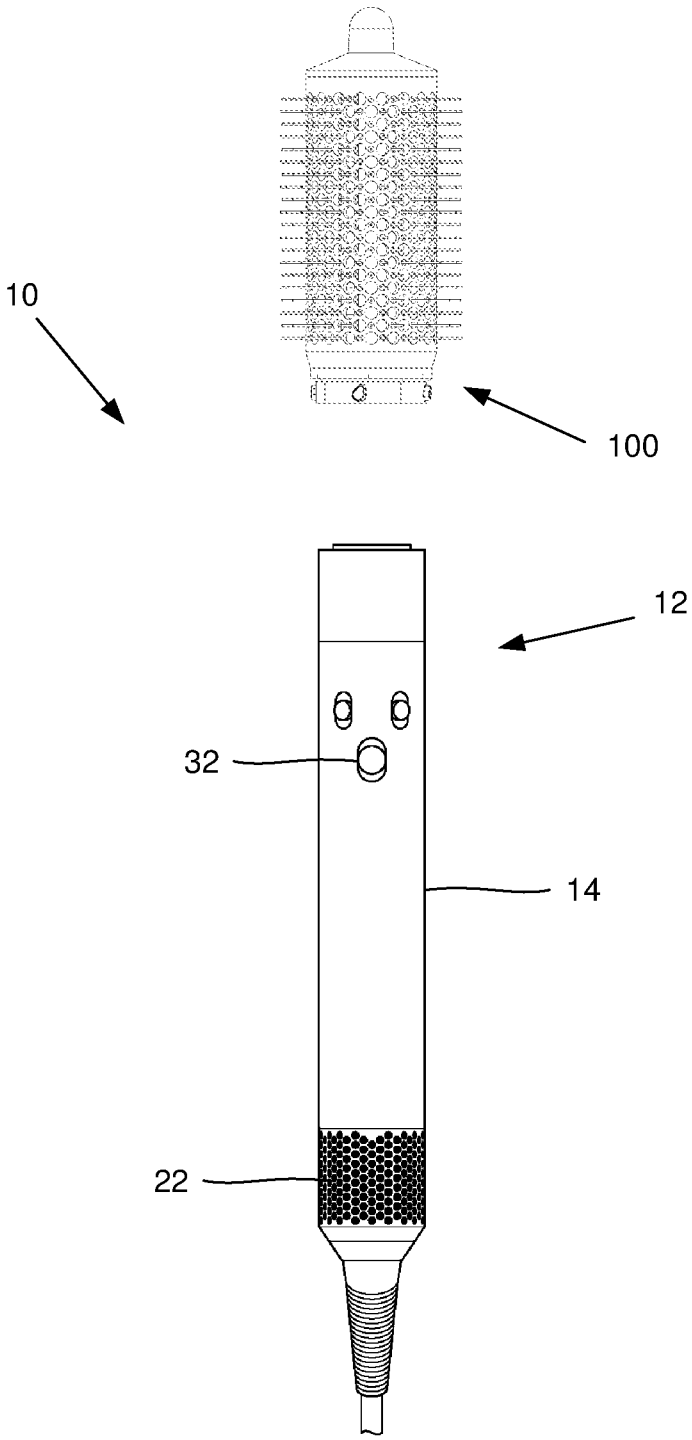


Fig. 1

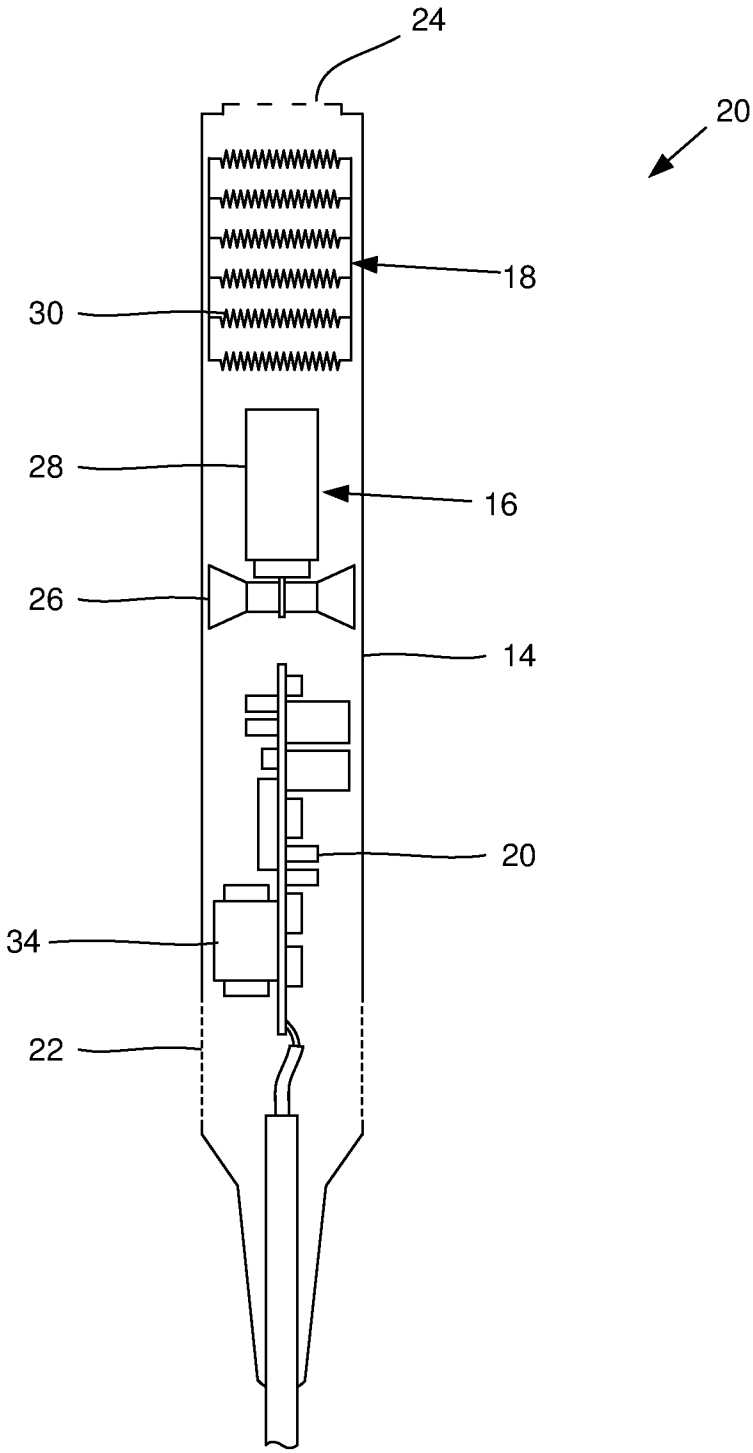


Fig. 2

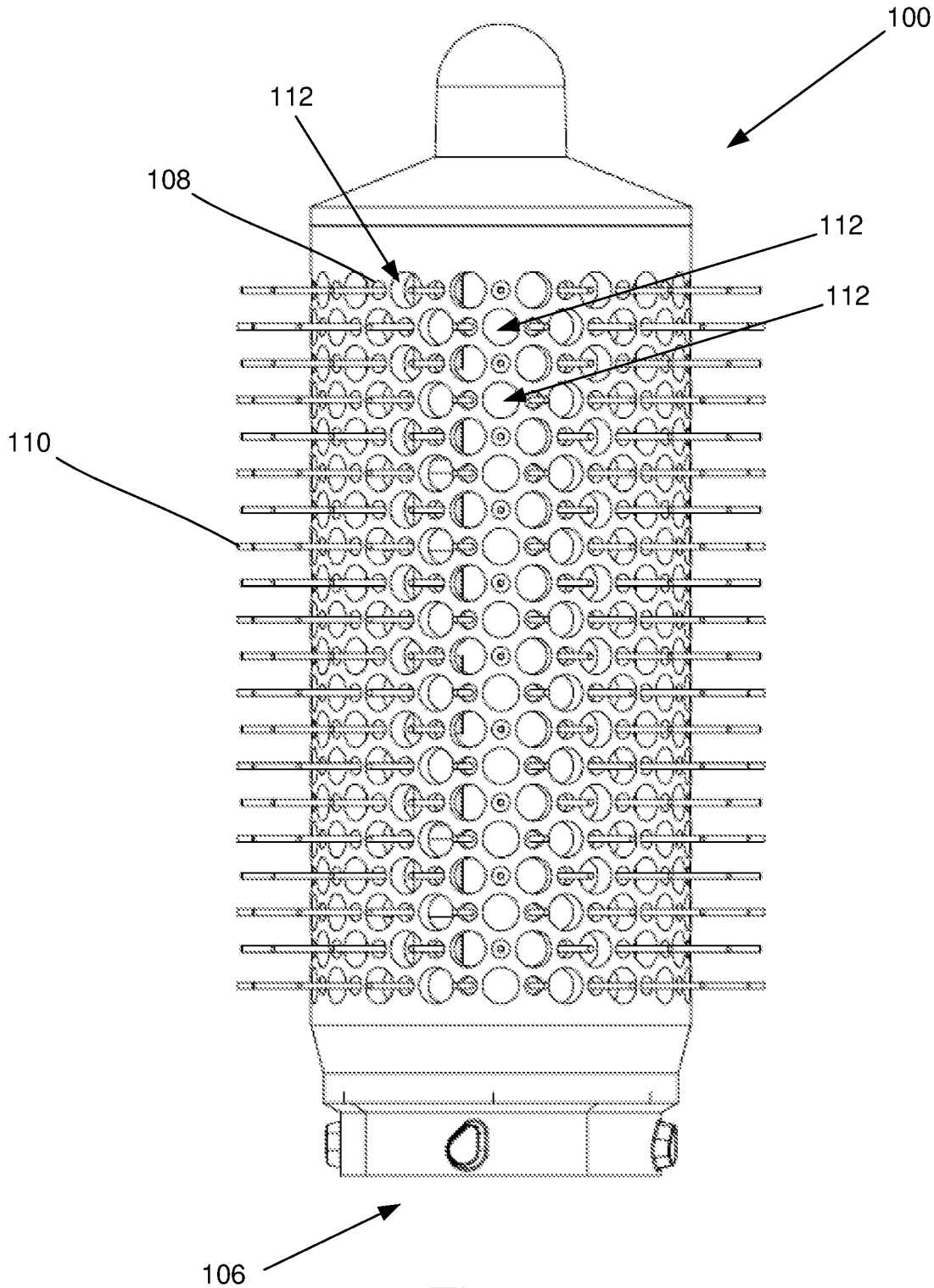


Fig. 3

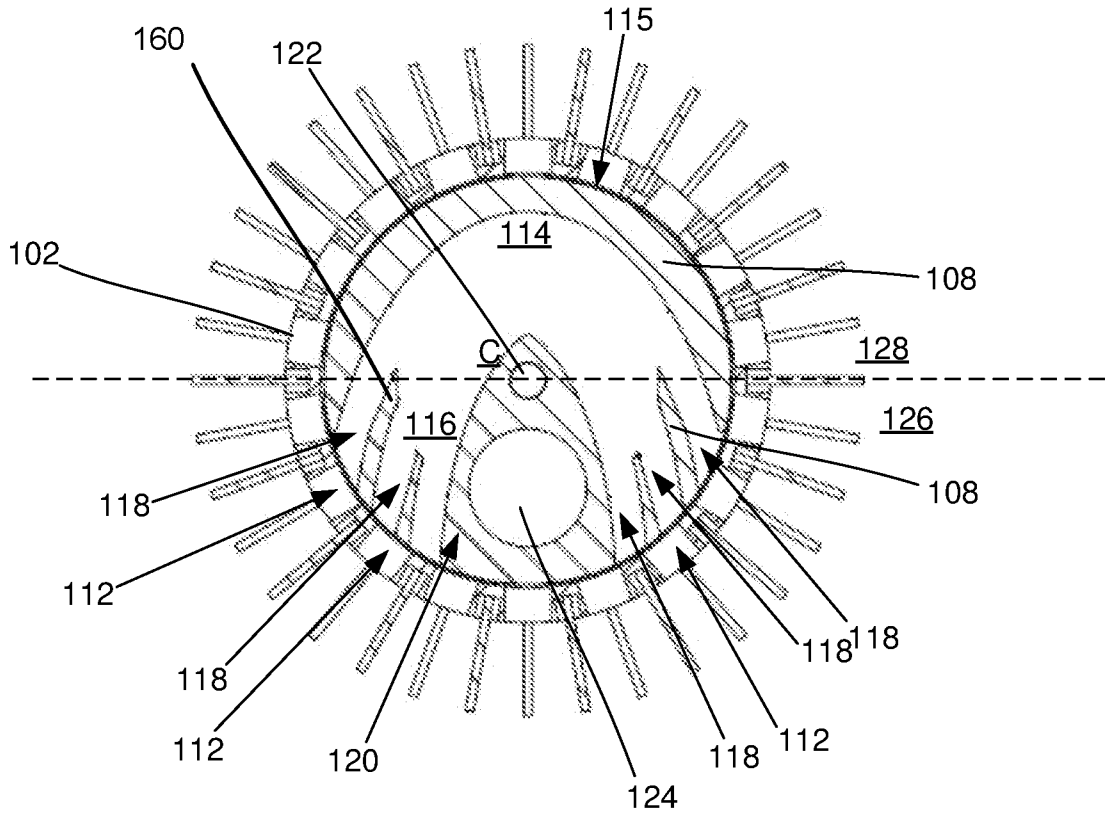

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Fig. 4

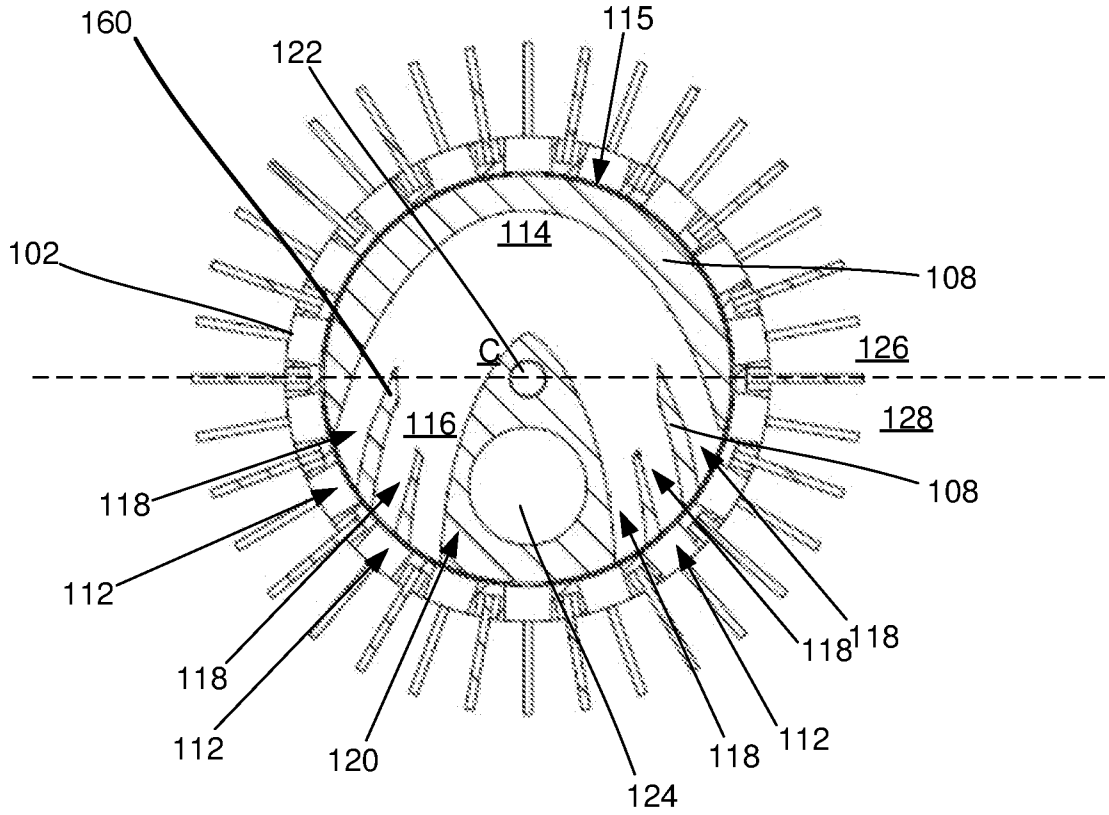

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Fig. 5

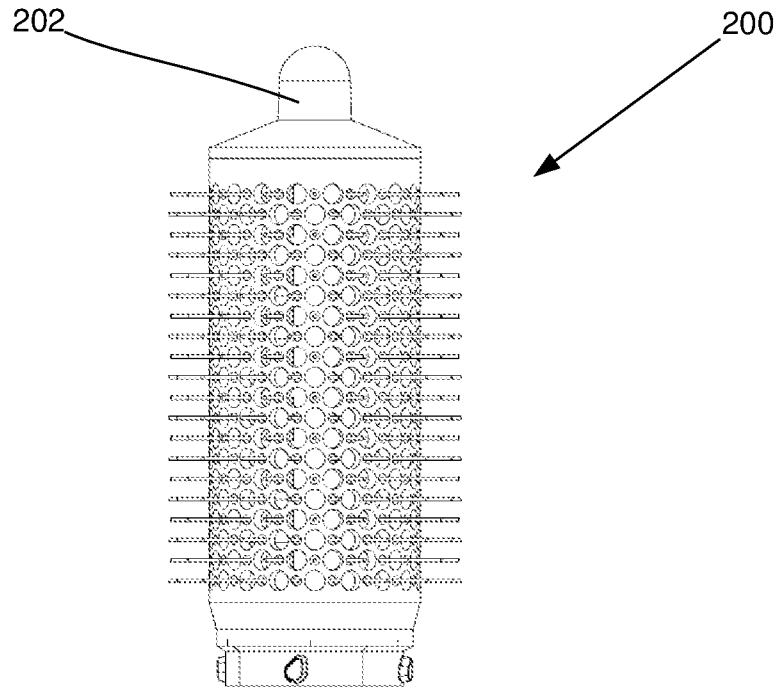

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Fig. 6

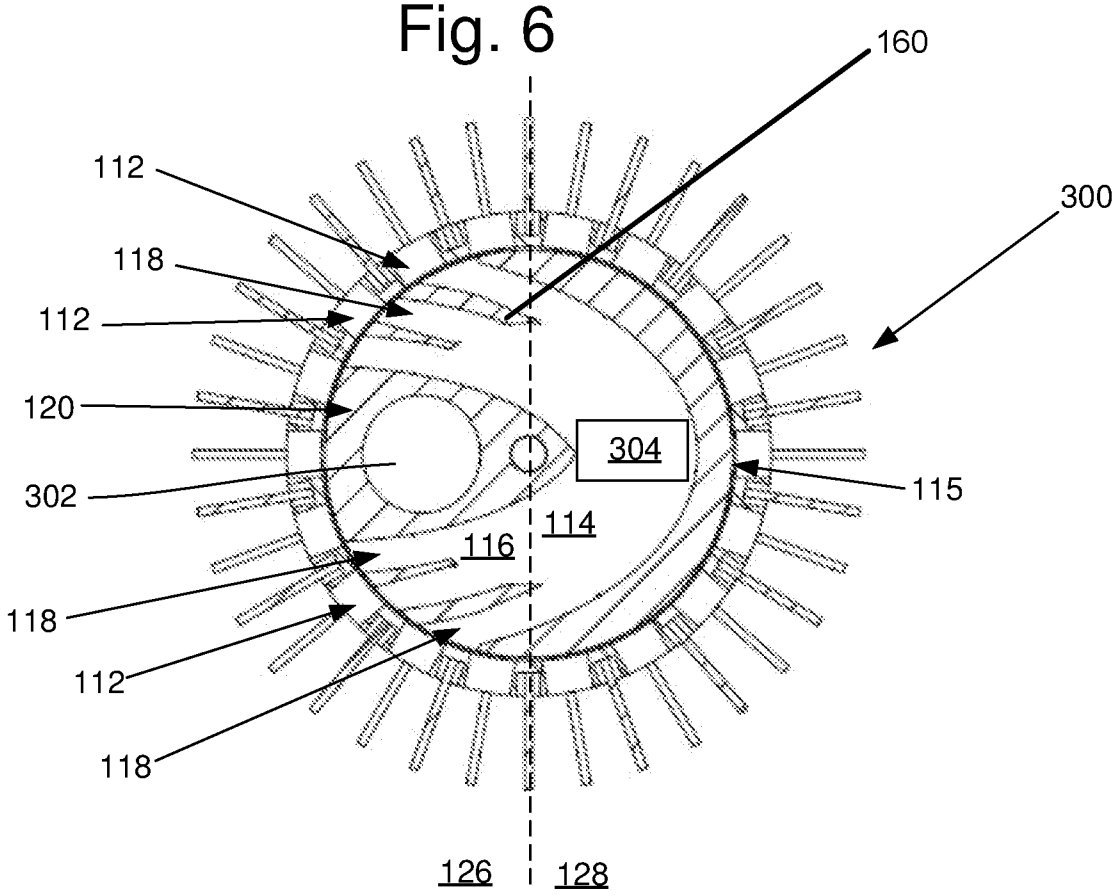

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Fig. 7

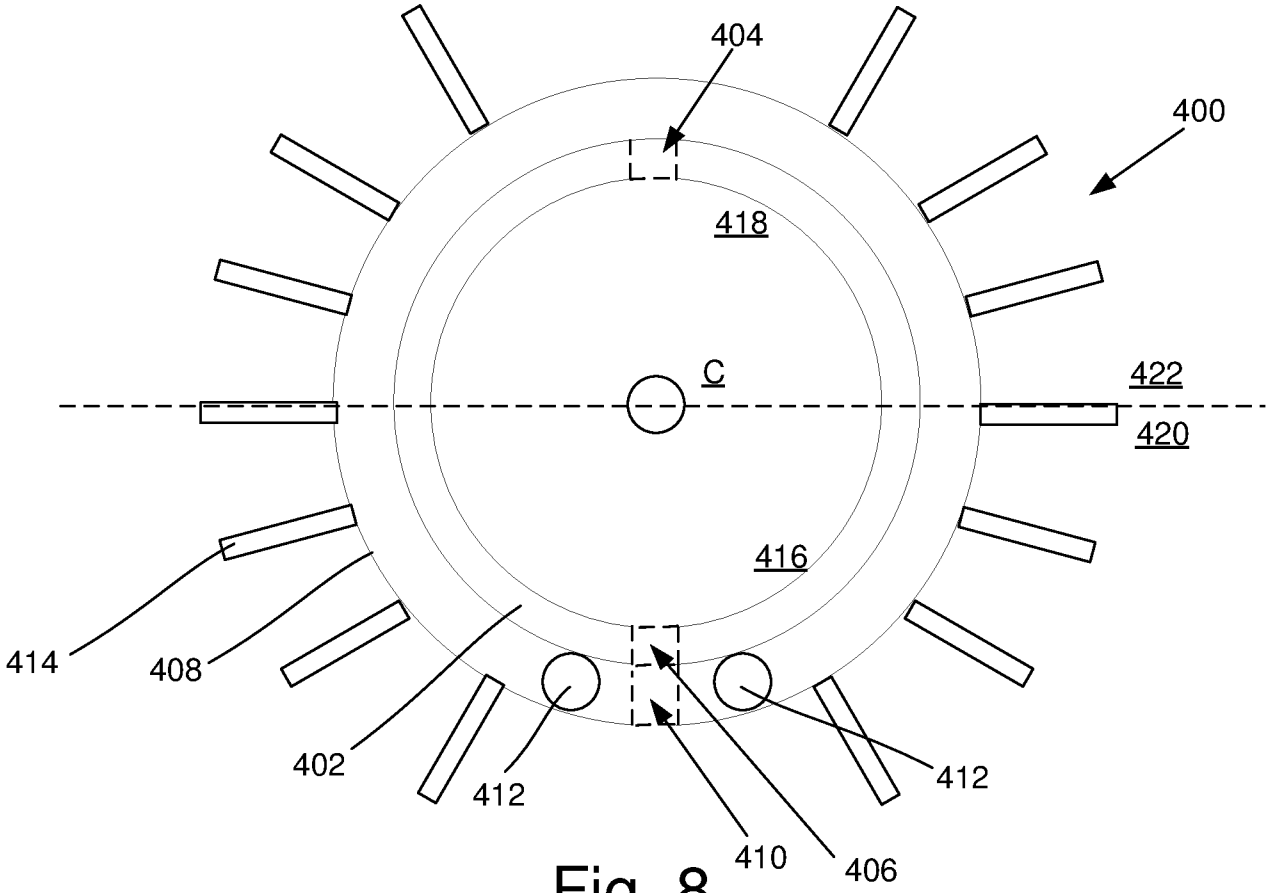

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Fig. 8

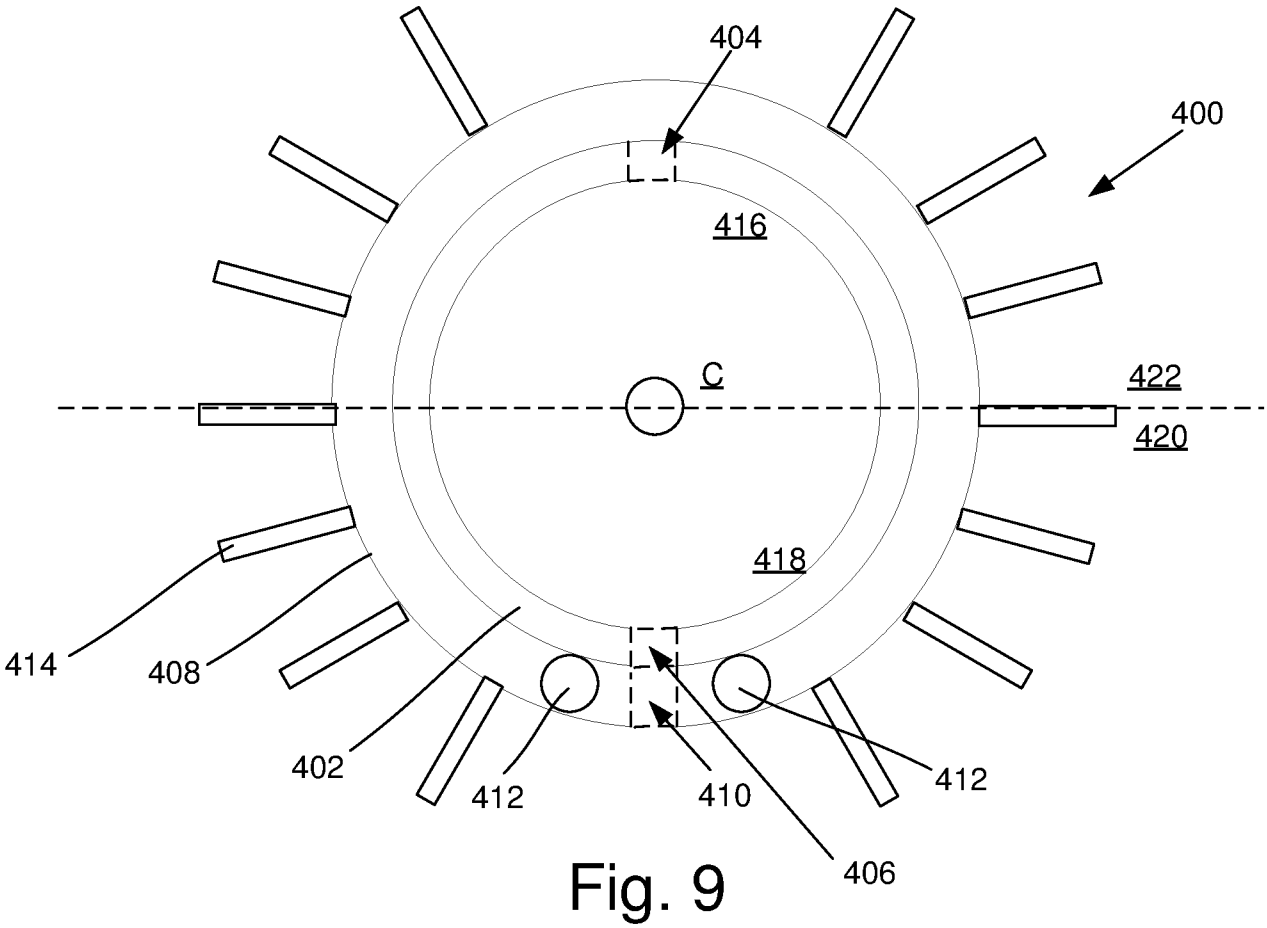

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Fig. 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/GB2021/053250

A. CLASSIFICATION OF SUBJECT MATTER
INV. A45D20/50 A46B5/00 A46B9/02 A46B13/02 A46B15/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A45D A61D A45F A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
15 February 2022	23/02/2022

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Beaufumé, Cédric

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INTERNATIONAL SEARCH REPORT

International application No
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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