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(71) Applicant: **M. M. & R. PRODUCTS, INC.** [US/US]; 5000 North Parkway Calabasas, Suite 308, Calabasas, California 91302 (US).

(72) Inventors: **RAGOSTA, Michael, A.**; M.M. & R. Products, Inc., 5000 North Parkway Calabasas, Suite 308, Calabasas, California 91302 (US). **MEGLIO, Bruno**; 404 N. Canon Drive, Beverly Hills, California 90210-4820 (US). **MARINO, Claudio**; 20929 Ventura Blvd., No. 46, Woodland Hills, California 91364-2334 (US). **RICHMOND, David**; 5826 Uplander Way, Culver City, California 90230 (US). **RICHMOND, Howard**; 2804 Medil Place, Los Angeles, California 90064 (US).

(74) Agents: **LLOYD, Laura, M.** et al.; Sheldon Mak & Anderson PC, 100 Corson Street, Third Floor, Pasadena, CA, California 91103-3842 (US).

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(54) Title: CONCENTRATOR

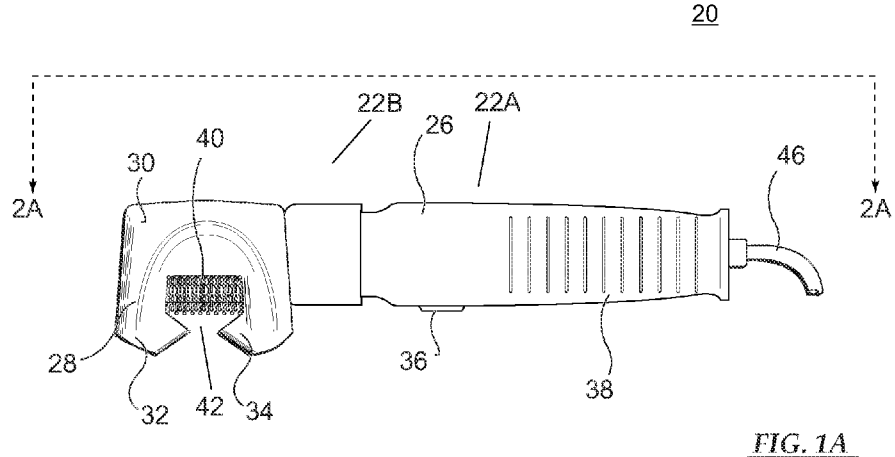

FIG. 1A

(57) Abstract: A hair treatment device 20 has a body 22 and a blower 26 supported by the body 22 from which air is blown. A concentrator 60 separately connected to the body 22 or integral with the body 22 comprises at least one gas flow conduit 28 in gas flow communication with the blower 26. A nozzle 34 is in gas flow communication with a distal portion of the conduit 28 and is oriented to blow air from a distal portion of the first conduit 28 back toward the body 20.

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CONCENTRATOR

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This International Patent Application is related to and claims the benefit of United States Provisional Patent Application No. 61/69 3,136 titled "Concentrator," filed on August 24, 2012, and United States Patent Application No. 12/673,706 titled "Concentrator" filed on November 9, 2012, the contents of which are incorporated herein by reference in their entirety.

BACKGROUND

[0002] Hair drying devices deliver a stream of hot air for drying and shaping hair into a desired style. A diffuser is commonly used to disperse the air flow from a hair drying device thereby creating curls, body and texture in the hair without frizz. Under certain circumstances it is desirable to modify the design of a hair drying or styling device or its attachments in order to achieve a certain hair style.

[0003] Consumers often pay a premium to have their hair professionally blown dry to achieve a finished salon look. Hairdressers operate meticulously by drying and styling specific parts of the hair at one time. When drying hair, the hairdresser uses a brush, selects a small section of hair, and repeatedly applies heat to the hair. By concentrating the heat on a particular section and simultaneously pulling the brush in a desired direction, the drying process shapes the hair, while also creating volume and shine. For example, when the heated air from the dryer is applied, and the brush is pulled downward toward the ends of the hair a smooth finish is created.

[0004] Modifications to hair drying devices to improve performance can be found in U.S. Patents Nos. 3,563,250, 5,956,863, 3,939,850, 6,199,295, and 5,316,025. However, each of these modifications suffers from one or more disadvantages such as complexity, high cost, and limited effectiveness. For example, most hair dryer modifications have awkward configurations, making the drying process even more challenging for the user which can be tiresome and frustrating.

[0005] Typically, hair dryers have a tubular body that houses a blower defining an air intake and air outlet. An electric motor is provided to run an internal fan which draws air from the environment into the air intake. The air is generally forced across a heating element toward the air outlet. The heated air flows through the air outlet and out of the body surrounding the air outlet. The circular cross section dries and flattens the surface of the hair,

while the hair underneath remains wet for a longer period of time.

[0006] A conventional hair drying device without an accessory attached has a circular cross section flow pattern. Accessories can be attached to the body surrounding the air outlet of the hair dryer. The heated air flows through the body and exits the air outlet and through the accessory altering the flow pattern of the air. A variety of accessories are known for altering the flow pattern of air from the hair dryer, such as those described in U.S. Patent Nos., D426674, 4538362, 71521610, D440354, and French Patent No. 2888095. However, each of these suffers from one or more of the disadvantages of low efficiency, and inability to create volume and a smooth finished hair style.

[0007] For the foregoing reasons, there is a need for a hair treatment device that overcomes the disadvantages of prior devices.

SUMMARY

[0008] A hair treatment device having features of the present invention satisfies the above-identified needs. An exemplary device has a body and a blower supported by the body from which air is blown. A concentrator separately connected to the blower or integral with the blower comprises at least one gas flow conduit in gas flow communication with the blower. A nozzle is in gas flow communication with a distal portion of the conduit and is oriented to blow air from the distal portion of the first conduit back toward the body.

[0009] Advantageously, the gas flow conduit has a longitudinal axis and the nozzle directs the air from the distal portion of the gas flow conduit toward the body at an angle greater than one hundred degrees relative to the longitudinal axis to direct air on the exterior surface of the hair.

[0010] The body can comprise two such gas flow conduits, each having a nozzle in gas flow communication with the respective conduit, both nozzles oriented to blow air from the distal portion of the respective conduit toward the body. Preferably, the longitudinal axes of the conduits are parallel to each other. The diameter of the nozzle outlets can be smaller than the diameter of the gas flow conduits for concentrating the air to increase its velocity.

[0011] The hair treatment device can optionally have a bar, which optionally has projecting bristles, positioned between the two gas flow conduits. The bar with projecting bristles is positioned on the device so the air exiting the nozzles intersects with the bristle portion of the device. The bristle portion can be used to engage the hair of a user. The bar can be permanently attached to the device or insertable so that the user can remove the bar. The removable feature allows for bars of various sizes or bristle properties to be inserted into

the hair treatment device. For example, the bristle portion can have more of a brush-like configuration or a comb-like configuration. The bar can be of solid construction so that no air travels through the bar or the interior of the bar can be hollow creating an additional air flow path through the device. When the bar has a hollow configuration it can optionally have apertures so that air exits from both the bristle portion of the device as well as the nozzles.

[0012] The body may be cylindrically shaped, with the gas conduit portion positioned at one end of body and a gripping section proportioned to fit in a user's hand at the other end. Alternatively, when there is a cylindrically shaped body, the device can have a gripping section positioned substantially perpendicular to that body, and a switch can be positioned on that gripping section.

[0013] In use of the device a user grasps the hair treatment device and activates the blower whereby air is forced through an optional heating assembly, and subsequently through the one or more gas flow conduits and the one or more nozzles. The nozzle directs the air toward the body. The user places the hair at a location wherein the directed air along with the bristle portion engages the hair, thereby drying and styling the hair.

[0014] When the concentrator is not integral with a blower, it can be used by (a) placing the inlet of the concentrator over the outlet of a hair appliance, b) placing the hair in a location where the air is blown from the nozzle; and c) before or after step (b), activating the hair appliance to blow heated air through the concentrator.

DRAWINGS

[0015] These and other features, aspects, and advantages of the present invention will become better understood with reference to the following description, appended claims, and accompanying drawings where:

[0016] FIG. 1A is a side elevation view of a first hair treatment device having features of the invention;

[0017] FIG. 1B is a side elevation view of a second hair treatment device having the features of the invention;

[0018] FIG. 2A is a sectional view of the device in FIG. 1A taken on line 2A-2A in Fig. 1A;

[0019] FIG. 2B is a sectional view of the device in FIG. 1B taken on line 2B-2B in Fig. 1B;

[0020] FIG.3 is a perspective view of a concentrator having the features of the present invention;

[0021] FIG. 4 is a sectional view of the concentrator of FIG. 3 taken on line 4-4 in Fig. 3;

[0022] FIG. 5 is a bottom plan view of the concentrator of FIG. 3; and

[0023] FIG. 6 shows the device of FIG. 3 mounted on a hair dryer.

DESCRIPTION

[0024] The present invention is directed to a hair treatment device capable of drying and styling hair, and a method for doing the same. In the following description, numerous specific details are set forth to provide a more thorough description of embodiments of the invention. It is apparent, however, to one skilled in the art, that the embodiments of the present invention can be practiced without these specific details. In other instances, well known features have not been described in detail so as not to obscure the invention.

[0025] Referring to Figures 1A and 2A, a hair treatment device 20 comprises a body 22 having a main body section 22A and a concentrator section 22B and an internal cavity 24. A blower 26 supported by the body 22 is within the cavity 24. The concentrator section 22B comprises at least one and preferably two gas flow conduits 28, each having a proximal section 30 in gas flow communication with the blower 26 and a distal section 32 having at least one nozzle 34 in gas flow communication with its respective conduit 28. The nozzles 34 are oriented to direct air from the distal section 32 of the conduit 28 toward the body 22. A switch 36 can be located on the main body section 22A or at another appropriate location to control the hair treatment device 20 heat and/or operating speeds. The exterior of the main body section 22A can be provided with gripping projections 38 for ease in using the device 20. An optional bar 40, optionally with projecting bristles 42, can be located on the device 20 between the conduits 28 to engage the hair of the user.

[0026] The gas conduit 28 portion is located at one axial end of the tubular body 22 directing the airflow of forced air into the desired pattern while the gripping projections 38 for the user are located at the other axial end of the body 22.

[0027] The device 20 as shown in FIG. 1 illustrates a preferred embodiment with two parallel gas conduits 28 in a horseshoe-type configuration. They each have a longitudinal axis in parallel. The two parallel gas flow conduits 28 work in tandem to direct the air toward a common point. By having more than one gas conduit 28, the air exiting the nozzles 34 is concentrated at the common point. The distance between the two gas conduits 28 can be from about 1 to about 6 inches.

[0028] Preferably the nozzles 34 are oriented so that the air is directed by the nozzles 34 toward the body 22 at an angle greater than one hundred degrees relative to the longitudinal

axis of the conduits 28. In a preferred embodiment the interior diameters of the nozzles 34 is less than the interior diameters of the gas flow conduits 28. The nozzle 34 openings can optionally be covered with a screen or mesh to prevent hair from being sucked into the openings.

[0029] The bar 40 can be located where the air exiting the nozzles 34 intersects with the bristles 42. The bar 40 with projecting bristles 42 can be permanently affixed to the body 22 of the device 20 or can be removable to allow for bars 40 of various sizes and different bristle properties to be used. The cross section of the bar 40 can be square, rectangular, circular or any shape that is suitable for the design of the device. By having bars 40 with various sizes or bristle properties the resulting hair style capability can be changed. The bristles 42 can be a type of hair brush bristle including boar bristles, nylon or other plastic bristles, or a combination of bristle types, such as boar and plastic bristles. The boar and plastic bristles can be of varying stiffness for different brushing applications, such as soft bristles for thin or fine hair, and stiff bristles for thick or coarse hair. The nylon or plastic bristles can have rounded or balled ends to prevent scratching of the scalp, and boar and plastic or nylon bristles may be combined in one brush for yet other hair brushing applications. Other options may also be used for the projections, such as tourmaline, silicon or silicon coated bristles, or other bristle coatings which reduce frizz and enhance smoothing and detangling of the hair. The bar 40 with projecting bristles 42 can be of solid construction or can have an internal hollow cavity. Optionally, when the bar 40 has an internal hollow cavity the bar 40 can have apertures that allow air to exit the bar 40 and flow through the bristles 42.

[0030] Figure 1B illustrates another version of a hair treatment device that has an alternate body 22 design that can accommodate a larger size bar 40 with projecting bristles 42. In this version the bar 40 with projecting bristles 42 is hollow, creating a flow path so that the forced air from the blower 26 enters the distal gas flow conduit 28 and nozzle 34.

[0031] As shown in Figures 2A and 2B, ambient air is drawn into the internal cavity 24 of the main body section 22A into a gas communication path therethrough so that the air is forced under pressure through the body 22 of the device 20 by the blower 26.

[0032] As is typical with hair dryers, the main body section 22A encases the blower 26 and its components. The blower 26 generally comprises a motor to run a fan located internal to the body 22 that is electrically connected with a power source such as AC power by a power cord 46. A heater typically is in the body 22 for heating the air flow travelling therethrough. According to this version, a heated blower 50, which includes a heater assembly 52 and a fan assembly 54, is used. In one exemplary version, the heater assembly

52 performs as a resistor to which current is supplied via power cord 46 or other means. Other examples of a hair styling tool having a heating element may be seen in US Pat. Nos. 7,631,646; and 7,481,228, the entire disclosure of which is hereby incorporated by reference.

[0033] Referring now to Figure 3, rather than having a concentrator 60 integral with a hair blower 26, a concentrator 60 can be a stand-alone unit that can be removably attached to a hair appliance 70 having a blower 26. In a preferred embodiment the hair appliance 70 is a hair dryer. Generally a hair dryer air outlet 62 has a tubular or circular opening, and likewise an inlet 64 portion of the concentrator 60 is tubular and circular in cross section. The concentrator 60 can be placed on the hair appliance 70 before or after the hair appliance 70 is activated.

[0034] In this version, the body 22 of the concentrator 60 has a mid-conical section 66 and a discharge end 68, with the mid-conical section 66 being between the inlet 64 portion and the discharge end 68 defining a gas flow path therethrough. In a preferred embodiment the body 22 of the concentrator 60 defines two parallel gas conduits 28 in a horseshoe-type configuration. The body 22 can be made of a variety of materials conventionally used for hair appliances 70, hair dryers and hair dryer attachments, such as metal or plastic, namely polypropylene or combinations thereof.

[0035] As can be seen in Figure 4, air flowing through the internal cavity 24 of the body 22 is diverted into the gas conduits 28 which are in gas flow communication with the body 22. The air then passes through the gas conduits 28 and subsequently through the nozzles 34 as shown in Figure 3 toward a common point. A bar 40 with projecting bristles 42 is located at the common point.

[0036] In Figure 5, a bottom plan view of the concentrator 60 illustrates the internal cavity 24 of the concentrator 60. The air is directed from the blower 26 into the gas flow conduits 28 and through the nozzles 34 as shown in Figure 3, thereby concentrating the air. When the

interior diameter of the nozzles 34 is less than the interior diameter of the gas flow conduits 28 the air is further concentrated before exiting the nozzles 34.

[0037] Figure 6 shows the concentrator 60 mounted on a hair appliance 70. In this figure the concentrator 60 is configured as an attachment which can be removably attached to the hair appliance 70. When the concentrator 60 is attached the otherwise conventional airflow of the hair appliance 70 is concentrated. In professional settings or for home use it often desirable to remove the concentrator 60 when it is configured as a separable adapter when drying is complete. When the concentrator 60 is removed an alternative hair drying attachment can now be used with the hair appliance 70.

[0038] Whether the features of the present invention are configured as an attachment with a hair appliance 70 or integral with a blower 26, the user needs only to hold the device 20 or hair appliance 70 with one hand, while selecting portion of the hair to be treated. When the section of hair is engaged the hair is pulled away from the user while the concentrated air is applied.

[0039] When the device 20 is integral with the blower 26, the hair may be simultaneously heated and styled without the use of a hair dryer which is very convenient for the user. Once the device 20 is activated the bar 40 with projecting bristles 42 can engage the hair of a user. The concentrated air in combination with the bar 40 with projecting bristles 42 engages the hair of the user thereby lifting the hair away from the user's scalp. As a result, the engaged section of hair is dried by the air exiting the one or more nozzles 34. As the user further pulls the device 20 away from their head the hair is lifted and glides over the bristle portion 42 in a brush-like manner. As a result air moves through the hair uniformly drying it in a smooth manner. By drying the hair using this method a voluminous smooth finish is created.

[0040] When the concentrator 60 is used as an attachment for drying and styling the hair the user places the concentrator 60 as described above on a hair appliance 70 having an outlet 62. The inlet 64 portion of the concentrator 60 is proximate to the hair appliance 70 outlet 62 and the hair appliance 70 is activated to blow air, usually heated through the concentrator 60.

[0041] In addition, it should be understood that aspects of the various embodiments may be interchanged both in whole or in part. Furthermore, those of ordinary skill in the art will appreciate that the foregoing description is by way of example only, and is not intended to be limitative of the invention so further described in the appended claims.

What is claimed is:

1. A hair treatment device comprising:

(a) a body;

(b) a blower supported by the body;

(c) a first gas flow conduit in gas flow communication with the blower, the first gas flow conduit having a proximal portion supported by the body and a distal portion away from the body; and

(d) a first nozzle in gas flow communication with the distal portion of the first gas flow conduit and oriented to blow air from the distal portion of the first gas flow conduit toward the body.

2. The hair treatment device of claim 1, wherein the gas flow conduit has a longitudinal axis and the nozzle directs the air from the distal portion of the gas flow conduit toward the body at an angle greater than one hundred degrees relative to the longitudinal axis.

3. The hair treatment device of claim 1, wherein the body comprises a second gas flow conduit having a second nozzle in gas flow communication with the second conduit and oriented to blow air from the distal portion of the second conduit toward the body.

4. The hair treatment device of claim 3, wherein both conduits have a longitudinal axis parallel to each other and the nozzle directs the air from the distal portion of the conduit toward the body at an angle greater than one hundred degrees relative to the longitudinal axis.

5. The hair treatment device of claim 3, wherein a bar with projecting bristles is located in between the first gas flow conduit and the second gas flow conduit.

6. The hair treatment device of claim 3, wherein both nozzles have an internal diameter less than the internal diameter of the gas flow conduits.

7. The hair treatment device of claim 1, wherein the first nozzle has an internal diameter less than the internal diameter of the first gas flow conduit.

8. The hair treatment device of claim 1, wherein the body has an elongated longitudinal axis, with a gripping section positioned distal from the body.

9. A concentrator for use with a hair appliance outputting air through an outlet, the concentrator comprising:

a) a body having

(i) an inlet sized to fit over the outlet of a hair treatment device, the inlet for receiving air output by the hair treatment device,

(ii) a discharge end opposed to the inlet, and

(iii) a gas flow path between the inlet and the discharge end;

b) a first gas flow conduit in gas flow communication with the discharge end of the body, the first conduit having a proximal portion supported by the body and a distal portion away from the body; and

c) a first nozzle in gas flow communication with the first conduit and oriented to blow air from the distal portion of the first conduit toward the body.

10. The concentrator of claim 9, wherein the gas flow conduit has a longitudinal axis and the nozzle directs the air from the distal portion of the gas flow conduit toward the body at an angle greater than one hundred degrees relative to the longitudinal axis.

11. The concentrator of claim 9, wherein the body comprises a second gas flow conduit having a second nozzle in gas flow communication with the second conduit and oriented to blow air from the distal portion of the second conduit toward the body.

12. The concentrator of claim 11, wherein both conduits have a longitudinal axis parallel to each other and the nozzle directs the air from the distal portion of the conduit toward the body at an angle greater than one hundred degrees relative to the longitudinal axis.

13. The concentrator of claim 11, wherein a bar with projecting bristles is located in between the first gas flow conduit and the second gas flow conduit.

14. The concentrator of claim 11, wherein both nozzles have an interior diameter less than the interior diameter of the gas flow conduits.

15. The concentrator of claim 9, wherein the first nozzle has an interior diameter less than the interior diameter of the first gas flow conduit.

16. The concentrator of claim 9, wherein the hair appliance is a hair dryer.

17. A hair appliance comprising:

a) a hair appliance for outputting heated air through an outlet; and

b) the concentrator of claim 9 with the concentrator inlet fitted over the outlet of the hair appliance.

18. A method of drying hair comprising the steps of:

a) grasping the hair treatment device of claim 1;

b) placing the hair in a location where the air is blown from the nozzle; and

c) before or after step (b), activating the blower to dry the hair.

19. A method of drying hair comprising the steps of:

a) placing the concentrator of claim 9 with the concentrator inlet fitted over the outlet of the hair appliance;

b) placing the hair in a location where the air is blown from the nozzle; and

c) before or after step (b), activating the hair appliance to blow heated air through the concentrator.

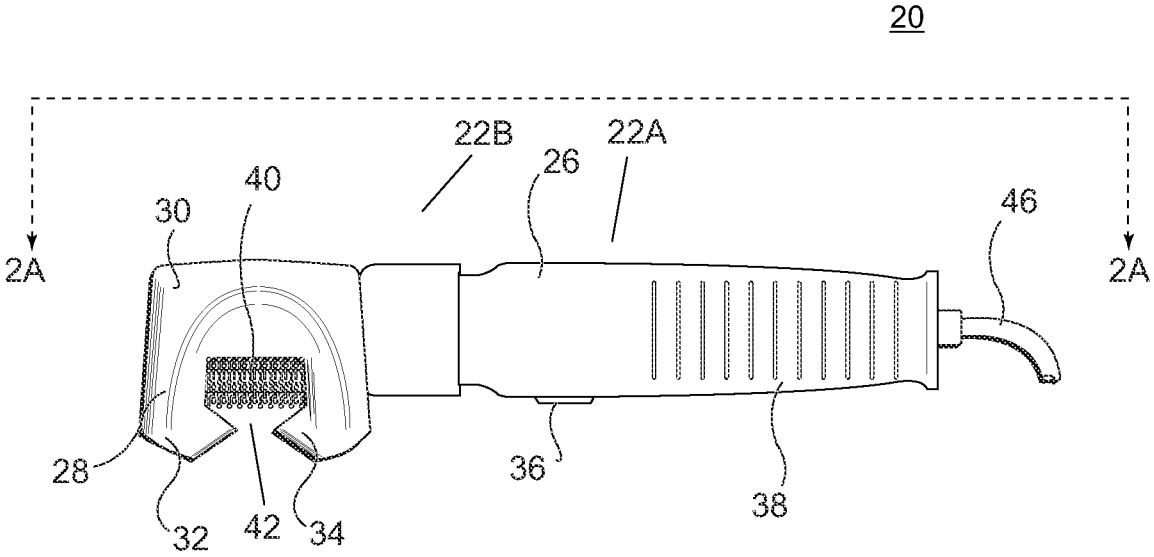
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FIG. 1A

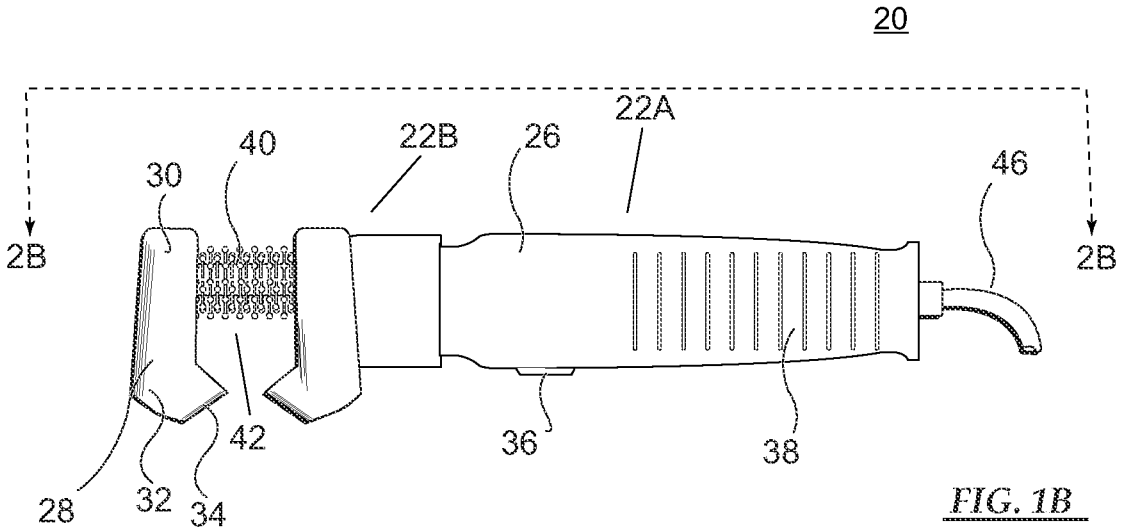
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FIG. 1B

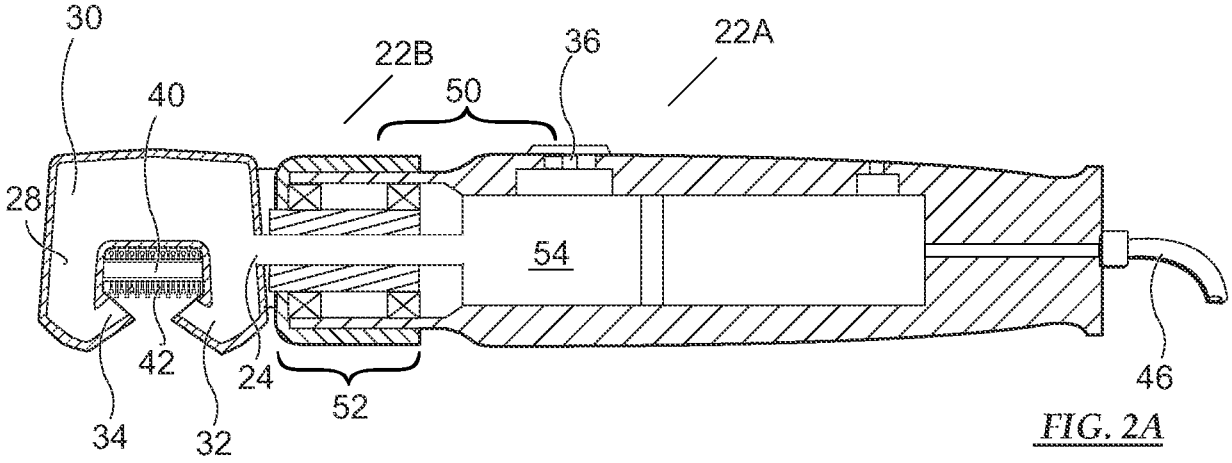
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FIG. 2A

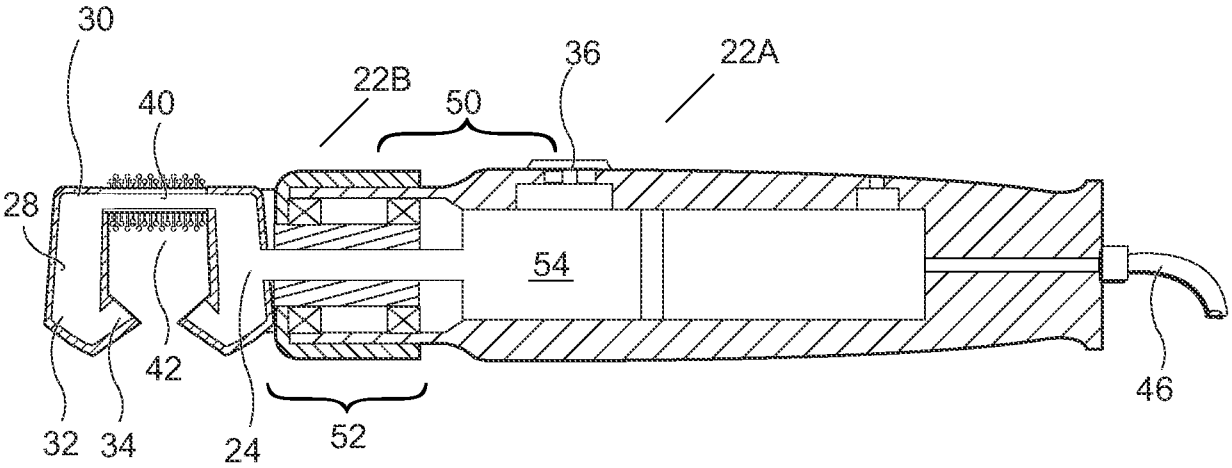
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FIG. 2B

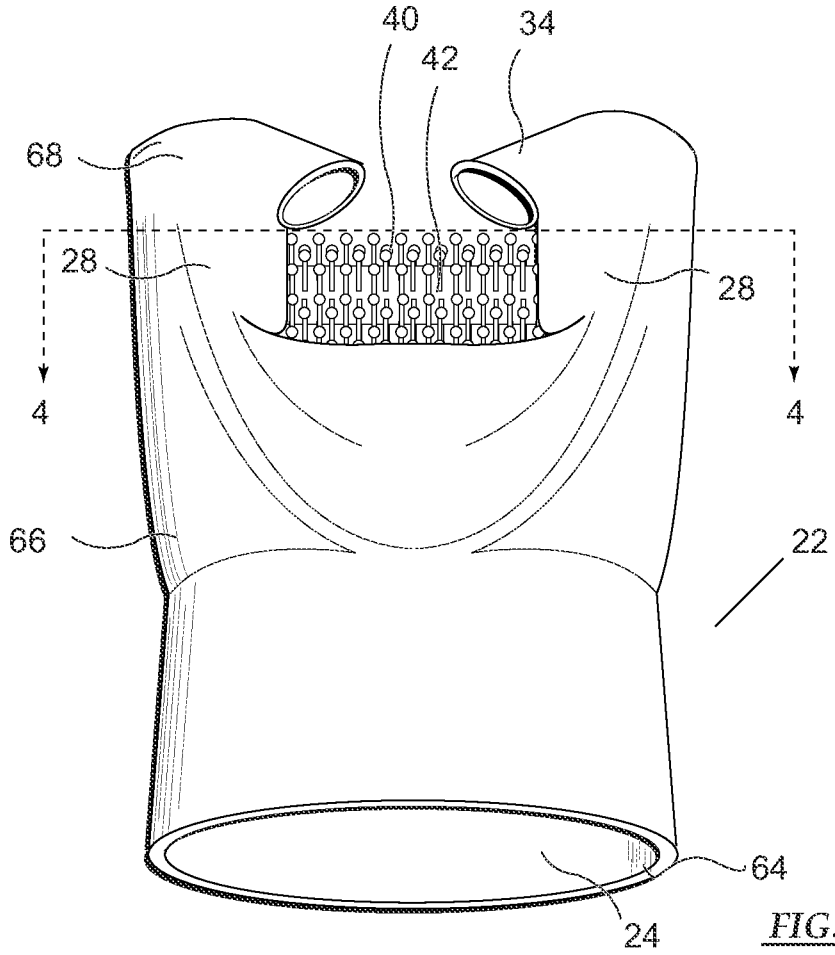

FIG. 3

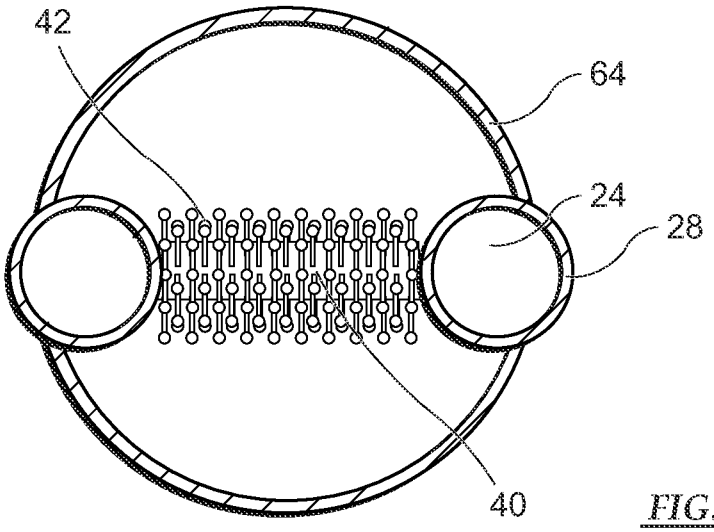

FIG. 4

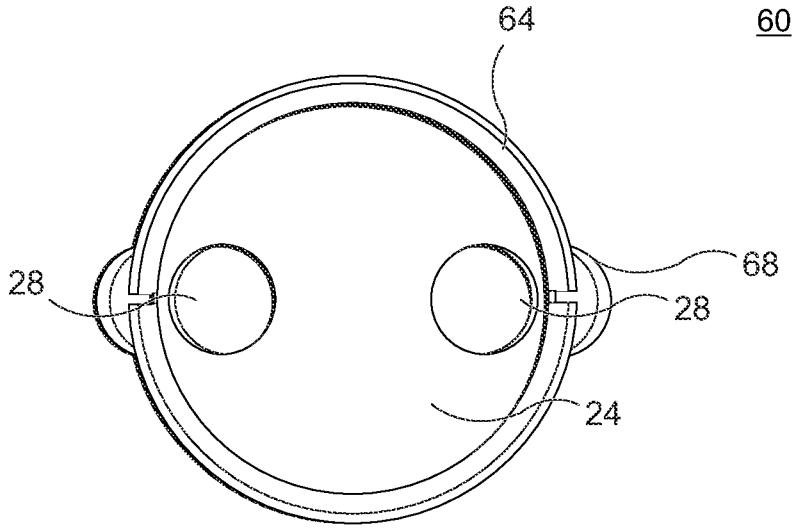

FIG. 5

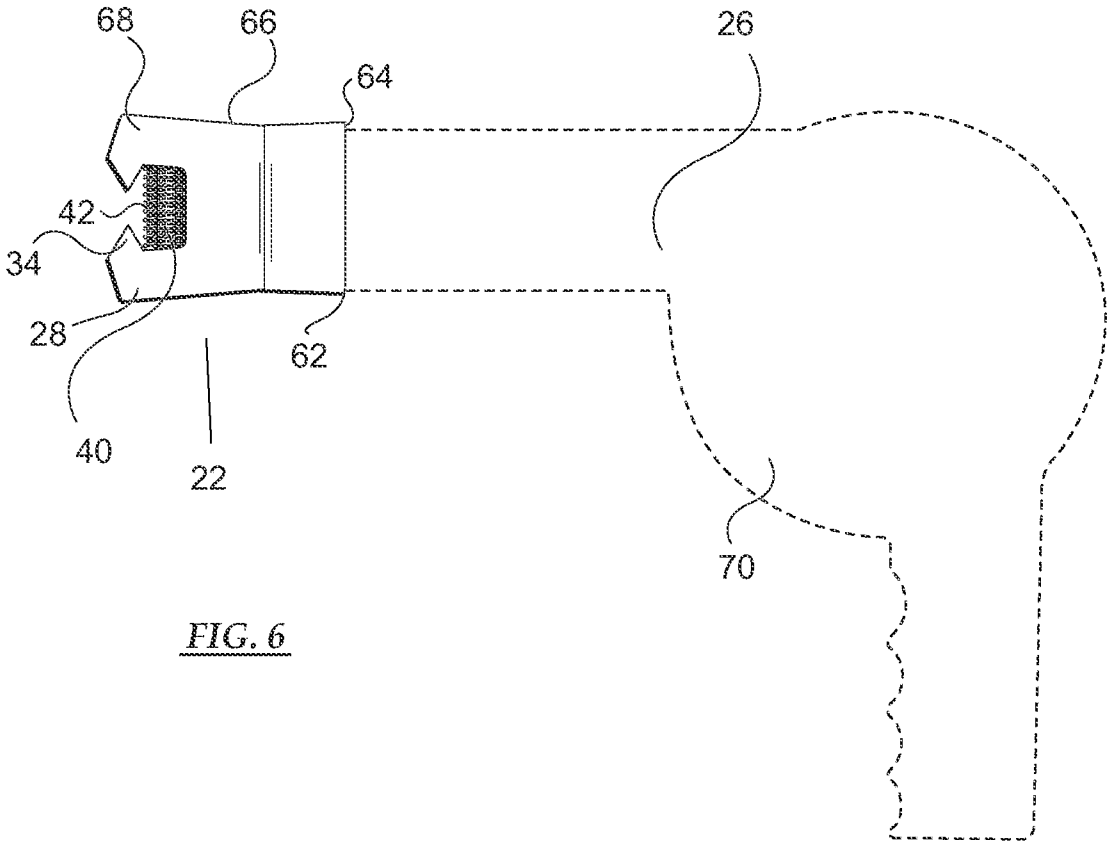

FIG. 6

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2013/056427

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A45D 20/12 (2014.01)
USPC - 34/97
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)
IPC(8) - A45D 20/00, 20/12 (2014.01)
USPC - 34/96, 97, 98; 132/271; 392/380, 384, 385

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC - A45D 20/12, 20/122 (2014.01)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase, Google Patents

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2005/0257395 A1 (KEONG) 24 November 2005 (24.11.2005) entire document	1-4, 6-7, 9-12, 14-19
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Y		5, 8, 13
Y	EP 1,587,392 B1 (MAESTRINI) 26 September 2007 (26.09.2007) entire document	5, 13
Y	US 2002/0189128 A1 (NAKAGAWA et al) 19 December 2002 (19.12.2002) entire document	8

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
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Name and mailing address of the ISA/US	Authorized officer:
Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

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(71)申请人 M.M.& R. 产品公司
地址 美国加利福尼亚州
(72)发明人 M·A·拉戈斯塔 B·梅里奥
C·马里诺 D·里奇蒙 H·里奇蒙
(74)专利代理机构 北京安信方达知识产权代理有限公司 11262
代理人 崔丽娟 郑霞
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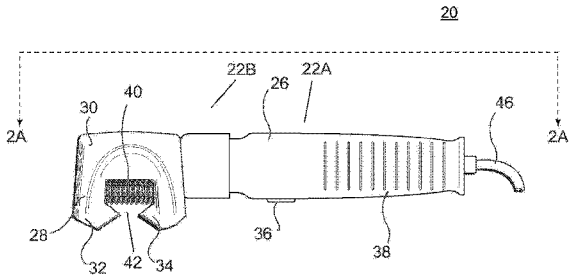
聚集器

(57)摘要

一种头发护理装置20具有一个本体22和一个吹风机26，该吹风机由该本体22支持并且吹送空气。单独与该本体22连接或者与该本体22一体的一个聚集器60包括与该吹风机26处于气体流动联通的至少一个气体流动导管28。一个喷嘴34与该导管28的远端部分处于气体流动联通并且被定向成使该第一导管28的远端部分的空气向后朝该本体20吹送。



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1. 一种头发护理装置，包括：

(a) 一个本体；

(b) 一个由本体支持的吹风机；

(c) 一个与吹风机处于气体流动联通的第一气体流动导管，该第一气体流动导管具有一个由本体支持的近端部分和一个远离本体的远端部分；以及

(d) 一个第一喷嘴，该第一喷嘴与该第一气体流动导管的远端部分处于气体流动联通并且被定向成将空气从该第一气体流动导管的远端部分朝该本体吹送。

2. 如权利要求 1 所述的头发护理装置，其中，该气体流动导管具有一个纵向轴线并且该喷嘴相对于该纵向轴线以一个大于一百度的角将空气从该气体流动导管的远端部分朝该本体引导。

3. 如权利要求 1 所述的头发护理装置，其中，该本体包括一个第二气体流动导管，该第二气体流动导管具有一个第二喷嘴，该第二喷嘴与该第二导管处于气体流动联通并且被定向成将空气从该第二导管的远端部分朝该本体吹送。

4. 如权利要求 3 所述的头发护理装置，其中，这两个导管具有彼此平行的纵向轴线并且该喷嘴相对于该纵向轴线以一个大于一百度的角将空气从该导管的远端部分朝该本体引导。

5. 如权利要求 3 所述的头发护理装置，其中，带有多个突出刺毛的一个棒被定位于该第一气体流动导管与该第二气体导管之间。

6. 如权利要求 3 所述的头发护理装置，其中，这两个喷嘴具有的内径小于这些气体流动导管的内径。

7. 如权利要求 1 所述的头发护理装置，其中，该第一喷嘴具有的内径小于该第一气体流动导管的内径。

8. 如权利要求 1 所述的头发护理装置，其中，该本体具有一条延长的纵向轴线，一个抓握区段被定位在该本体的远端。

9. 一种与经过出口将空气输出的用于头发的电器一起使用的聚集器，该聚集器包括：

a) 一个本体，该本体具有

(i) 一个尺寸被确定成配合在头发护理装置的出口上的入口，该入口用于接收该头发护理装置输出的空气，

(ii) 一个与入口相反布置的排出端，以及

(iii) 一个在入口与排出端之间的气体流动路径；

b) 一个与本体的排出端处于气体流动联通的第一气体流动导管，该第一导管具有一个由本体支持的近端部分和一个远离本体的远端部分；以及

c) 一个第一喷嘴，该第一喷嘴与该第一导管处于气体流动联通并且被定向成将空气从该第一导管的远端部分朝该本体吹送。

10. 如权利要求 9 所述的聚集器，其中，该气体流动导管具有一个纵向轴线并且该喷嘴相对于该纵向轴线以一个大于一百度的角将空气从该气体流动导管的远端部分朝该本体引导。

11. 如权利要求 9 所述的聚集器，其中，该本体包括一个第二气体流动导管，该第二气体流动导管具有一个第二喷嘴，该第二喷嘴与该第二导管处于气体流动联通并且被定向成

将空气从该第二导管的远端部分朝该本体吹送。

12. 如权利要求 11 所述的聚集器，其中，这两个导管具有彼此平行的纵向轴线并且该喷嘴相对于该纵向轴线以一个大于一百度的角将空气从该导管的远端部分朝该本体引导。

13. 如权利要求 11 所述的聚集器，其中，带有多个突出刺毛的一个棒被定位于该第一气体流动导管与该第二气体流动导管之间。

14. 如权利要求 11 所述的聚集器，其中，这两个喷嘴具有的内径小于这些气体流动导管的内径。

15. 如权利要求 9 所述的聚集器，其中，该第一喷嘴具有的内径小于该第一气体流动导管的内径。

16. 如权利要求 9 所述的聚集器，其中，该用于头发的电器是一个头发吹干器。

17. 一种用于头发的电器，包括 ：

a) 一个用于头发的电器，用于经过一个出口来输出加热的空气 ；以及

b) 权利要求 9 所述的聚集器，该聚集器的入口装配在该用于头发的电器具的出口上。

18. 一种吹干头发的方法，该方法包括以下步骤 ：

a) 握住权利要求 1 所述的头发护理装置 ；

b) 将头发放置在空气从该喷嘴吹送之处 ；以及

c) 在步骤 (b) 之前或之后，致动该吹风机来吹干头发。

19. 一种吹干头发的方法，该方法包括以下步骤 ：

a) 放置权利要求 9 所述的聚集器，使得该聚集器的入口配合在该用于头发的电器的出口上 ；

b) 将头发放置在空气从该喷嘴吹送之处 ；以及

c) 在步骤 (b) 之前或之后，致动该用于头发的电器来经过该聚集器吹送加热的空气。

聚集器

相关申请的交叉引用

[0001] 本国际专利申请涉及于 2012 年 8 月 24 日提交的题为“聚集器 (Concentrator)”的美国临时专利申请号 61/693,136 以及于 2012 年 11 月 9 日提交的题为“聚集器 (Concentrator)”的美国专利申请号 12/673,706 并且要求它们的权益，这些专利申请的内容通过引用以其全文结合在此。

背景

[0002] 头发吹干装置传送一个热空气流以用于吹干头发并将头发成形为所希望的发型。扩散器通常用来使头发吹干装置的气流分散，由此使头发卷曲、浓密和有条理而不发生卷结。在某些情况下，令人希望的是修改头发吹干装置或造型装置或其附属装置的设计以实现某种发型。

[0003] 消费者经常支付额外费用来将其头发专业地吹干以实现完美的沙龙外表。美发师一丝不苟地操作来将头发的特定部分吹干同时将头发定型。在将头发吹干时，美发师使用毛刷，选择小部分头发，并且反复将热量施用于头发。通过将热量集中在特定部分上并且同时在希望的方向上拉动毛刷，这个吹干过程使头发成形，同时还产生了卷和光泽。例如，在应用吹干器的加热的空气时，毛刷被向下朝头发末端拉动，就产生了柔顺的呈现。

[0004] 在美国专利号 3,563,250、5,956,863、3,939,850、6,199,295 和 5,316,025 中可以找到针对头发吹干装置来改善性能的修改。然而，这些修改中的每个修改都有一个或多个缺点，例如，复杂性、高成本以及有限的有效性。例如，多数头发吹干器的修改具有笨拙的构形，从而使吹干过程对于使用者甚至更具挑战性，这个过程会使人厌烦和受挫。

[0005] 通常，头发吹干器具有一个管状体，该管状体容纳了一个限定进风口和出风口的吹风机。提供了一个电动机来使内部风扇运转，该内部风扇将环境中的空气吸入到进风口中。通常迫使空气横穿一个加热元件而朝向该出风口。加热的空气流经该出风口并且流动到环绕着该出风口的本体之外。圆形截面将头发的表面吹干并使其变平，而下面的头发在较长的一段时间仍保持潮湿。

[0006] 常规的不带有附接的附件的头发吹干装置具有圆形截面的流动型态。附件可以附接到该本体上从而围绕该头发吹干器的出风口。加热的空气流过该本体并且离开该出风口并且经过该附件从而改变空气的流动型态。已知用于改变头发吹干器的空气流动型态的多种不同附件，例如在美国专利号 D426674、4538362、71521610、D440354 和法国专利号 2888095 中所描述的那些。然而，这些专利中的每一个都有以下缺点中的一个或多个缺点，这些缺点即：低效率、没有能力产生卷以及没有能力产生柔顺呈现的发型。

[0007] 出于以上原因，对于克服了现有装置缺点的头发护理装置存在一种需要。

概述

[0008] 一种具有本发明特征的头发护理装置满足了上述需要。一个示例性装置具有一个本体和一个吹风机，该吹风机由本体支持并且吹送空气。单独与该吹风机连接或与该吹风机一体的一个聚集器包括与该吹风机处于气体流动联通的至少一个气体流动导管。一个喷嘴与该导管的远端部分处于气体流动联通并且被定向成将空气从该第一导管的远端部分

向后朝该本体吹送。

[0009] 有利地，该气体流动导管具有一个纵向轴线并且该喷嘴相对于该纵向轴线以一个大于一百度的角将空气从该气体流动导管的远端部分朝该本体引导，以便引导头发外表面上的空气。

[0010] 该本体可以包括两个这样的气体流动导管，每个气体流动导管都具有一个与对应导管处于气体流动联通的喷嘴，两个喷嘴被定向成将空气从该对应导管的远端部分朝该本体吹送。优选地，这些导管的纵向轴线彼此平行。这些喷嘴出口的直径可以小于这些气体流动导管的直径，以用于集中空气来增加其速度。

[0011] 该头发护理装置可以任选地具有一个棒，该棒任选地具有在两个气体流动导管之间定位的多个突出刺毛。带有突出刺毛的棒被定位在该装置上，从而使得离开这些喷嘴的空气与该装置的刺毛部分相交。可以使用该刺毛部分来接合使用者的头发。该棒可以被永久地附接到该装置上或者是可插入的从而使用者可以移除该棒。这个可移除的特征允许将具有不同尺寸或刺毛性质的棒插入到该头发护理装置中。例如，该刺毛部分可以具有比刺毛状构形或梳状构形更多的构形。该棒可以具有实心结构，从而使得头发不会行进经过该棒，或者该棒的内部可以是空心的从而产生一个额外的经过该装置的空气流动路径。当该棒具有空心构形时，该棒可以任选地具有多个孔口从而使得空气从该装置的刺毛部分以及这些喷嘴处离开。

[0012] 该本体可以是圆柱形状的，该气体导管部分被定位在该本体的一端，并且在另一端带有相称地配合使用者的手的一个抓握区段。可替代地，当存在一个圆柱形状的本体时，该装置可以具有一个基本上与本体垂直定位的抓握区段，并且可以将一个开关定位在该抓握区段上。

[0013] 使用该装置时，使用者握住头发护理装置并且致动该吹风机，由此迫使空气经过一个任选的加热组件，并且随后经过该一个或多个气体流动导管以及该一个或多个喷嘴。该喷嘴朝该本体引导空气。使用者将头发放置在被引导的空气通过该刺毛部分与头发接合的一个位置，由此将头发吹干并使其定型。

[0014] 当该聚集器与吹风机并非一体时，可以通过以下步骤使用该聚集器：(a) 将该聚集器的入口放置在用于头发的电器的出口上，(b) 将头发放置在空气从该喷嘴中被吹送的一个位置处；并且 (c) 在步骤 (b) 之前或之后，致动该用于头发的电器来将加热的空气吹送经过该聚集器。

附图

[0015] 通过参考以下描述、附加权利要求和附图可以更好地理解本发明的这些和其他特征、方面以及优点，在附图中：

[0016] 图 1A 是具有本发明特征的第一头发护理装置的侧面视图；

[0017] 图 1B 是具有本发明特征的第二头发护理装置的侧面视图；

[0018] 图 2A 是图 1A 中的装置以图 1A 中的线 2A-2A 截取的截面视图；

[0019] 图 2B 是图 1B 中的装置以图 1B 中的线 2B-2B 截取的截面视图；

[0020] 图 3 是具有本发明特征的一个聚集器的透视图；

[0021] 图 4 是图 3 的聚集器沿图 3 中的线 4-4 截取的截面视图；

[0022] 图 5 是图 3 的聚集器的底部平面视图；并且

[0023] 图 6 示出了安装在头发吹干器上的图 3 的装置。

说明

[0024] 本发明针对一种能够将头发吹干和定型的头发护理装置，以及一种用于将头发吹干和定型的方法。在以下说明中，阐述了多个特定细节以提供本发明的更深入的实施例说明。然而，对于本领域技术人员清楚的是，可以实践本发明的实施例而无需这些特定细节。在其他实例中并未详细说明众所周知的特征，以免阻碍理解本发明。

[0025] 参见图 1A 和图 2A，一个头发护理装置 20 包括一个本体 22 和一个内部空腔 24，该本体具有一个主体区段 22A 和一个聚集器区段 22B。空腔 24 中有一个由本体 22 支持的吹风机 26。该聚集器区段 22B 包括至少一个并且优选两个气体流动导管 28，每个气体流动导管都具有一个近端区段 30 和一个远端区段 32，该近端区段与吹风机 26 处于气体流动联通，并且该远端区段具有与其对应导管 28 处于气体流动联通的至少一个喷嘴 34。这些喷嘴 34 被定向成将空气从该导管 28 的远端区段 32 朝该本体 22 引导。一个开关 36 可以位于该主体区段 22A 或位于另一个适当位置以便控制该头发护理装置 20 和 / 或运行速度。主体区段 22A 的外部可以配备有多个抓握突起 38 以便易于使用该装置 20。一个任选的棒 40（任选地带有多个伸出刺毛 42）可以在装置 20 上位于这些导管 28 之间以接合使用者头发。

[0026] 气体导管 28 部分是位于该管状体 22 的一个轴向末端从而将加压空气的气流引导成所希望的模式，而用于使用者的这些抓握突起 38 是位于该本体 22 的另一个轴向末端。

[0027] 如图 1 中所示的装置 20 展示的一个优选实施例带有马蹄型构形的两个平行的气体导管 28。这两个平行的气体导管各自具有一条纵向轴线。这两个平行的气体流动导管 28 串联地工作以便朝一个共同点引导空气。通过具有不止一个气体导管 28，就使得离开这些喷嘴 34 的空气在这个共同点处被集中。这两个气体导管 28 之间的距离可以从约 1 英寸至约 6 英寸。

[0028] 优选地，这些喷嘴 34 被定向成使得这些喷嘴 34 相对于这些导管 28 的纵向轴线以一个大于一百度的角将空气朝该本体 22 引导。在一个优选的实施例中，这些喷嘴 34 的内径小于这些气体流动导管 28 的内径。喷嘴 34 的开口可以任选地覆盖有屏或网以防止头发吸入到这些开口之中。

[0029] 棒 40 可以位于离开这些喷嘴 34 的空气与刺毛 42 相交之处。带有多个突出刺毛 42 的棒 40 可以永久地附接到该装置 20 的本体 22 上或者可以是可移除的以允许使用具有不同尺寸和不同刺毛性质的棒 40。棒 40 的截面可以是方形的、矩形的、圆形的或者适合用于该装置的设计的任何形状。通过具有带不同尺寸或刺毛性质的棒 40，就可以改变产生发型的能力。这些刺毛 42 可以是包括野猪毛、尼龙或其他塑料刺毛的毛刷刺毛类型，或者是例如野猪毛与塑料刺毛的刺毛组合类型。野猪毛和塑料刺毛可以具有不同的硬度以用于不同的刷拭应用，例如用于稀薄或细小头发的软刺毛、以及用于浓密或粗头发的硬刺毛。尼龙或塑料刺毛可以具有圆化的或球形末端以防止划伤头皮，并且野猪毛和塑料或尼龙刺毛可以组合成用于其他刷拭头发的应用的一种毛刷。针对这些突出物还可以使用其他选项，例如电气石、硅胶、涂有硅胶的刺毛、或者减少卷结并增强头发柔顺和易梳性的其他刺毛涂覆物。带有多个突出刺毛 42 的棒 40 可以具有实心结构或者可以具有一个内部空腔。任选地，棒 40 具有一个内部空腔时，棒 40 可以具有允许空气离开棒 40 并且流经这些刺毛 42 的多个孔口。

[0030] 图 1B 展示了头发护理装置的另一个版本，该头发护理装置具有一个替代本体 22 的设计，该替代本体可以容纳较大尺寸的带有突出刺毛 42 的棒 40。在这个版本中，带有多个突出刺毛 42 的棒 40 是空心的，从而产生一个流动路径从而使得来自该吹风机 26 的加压空气进入该远端气体流动导管 28 和喷嘴 34 中。

[0031] 如图 2A 和图 2B 所示，环境空气被吸入到主体区段 22A 的内部空腔 24 之中并穿过其中进入一个气体联通路径中，从而使得吹风机 26 迫使空气在压力之下经过该装置 20 的本体 22。

[0032] 当典型地带有头发吹干器时，主体区段 22A 包裹该吹风机 26 及其多个部件。吹风机 26 总体上包括用来运行位于本体 22 内部的风扇的一个电机，该电机通过一条电源线 46 而与一个例如 AC 电源的功率源电连接。一个加热器典型地处在本体 22 中以用于对行进经过其的空气流进行加热。根据这个版本，使用了一个加热的吹风机 50，该加热的吹风机包括一个加热器组件 52 和一个风扇组件 54。在一个示例性版本中，加热器组件 52 作为一个电阻器来起作用，电流是经由电源线 46 或其他装置来供给的。在美国专利号 7,631,646 和 7,481,228 中可以看到具有加热元件的头发定型工具的其他实例，这两个专利的全部披露内容通过引用结合在此。

[0033] 现在参见图 3，不是具有与头发吹风机 26 一体的一个聚集器 60，而是一个聚集器 60 可以是一个能可移除地附接到具有吹风机 26 的用于头发的电器 70 上的独立单元。在一个优选实施例中，该用于头发的电器 70 是一个头发吹干器。总之，头发吹干器的出风口 62 具有一个管状或圆形开口，并且同样该聚集器 60 的一个入口 64 部分是管状的并且截面是圆形的。聚集器 60 可以在用于头发的电器 70 被致动之前或之后放置在该用于头发的电器 70 上。

[0034] 在这个版本中，聚集器 60 的本体 22 具有一个中间锥形区段 66 和一个排出端 68，该中间锥形区段 66 是在入口 64 部分与排出端 68 之间从而限定了一个穿其而过的气体流动路径。在一个优选的实施例中，聚集器 60 的本体 22 限定了马蹄型构形的两个平行的气体导管 28。本体 22 可以由常规用于用于头发的电器 70、头发吹干器以及头发吹干器附属装置的多种材料（例如金属或塑料，即聚丙烯或其组合物）制成。

[0035] 如在图 4 中可见，流经该本体 22 的内部空腔 24 的空气被转移到与该本体 22 处于气体流动联通的这些气体导管 28 中。空气然后经过这些气体导管 28 并且随后如在图 3 中示出的朝一个共同点地经过这些喷嘴 34。带有多个突出刺毛 42 的棒 40 位于这个共同点处。

[0036] 在图 5 中，聚集器 60 的底部平面视图展示了聚集器 60 的内部空腔 24。空气被从吹风机 26 引导到这些气体流动导管 28 中并且经过这些喷嘴 34，如图 3 中所示，从而由此使空气集中。当这些喷嘴 34 的内径小于这些气体流动导管 28 的内径时，空气在离开这些喷嘴 34 之前被进一步集中。

[0037] 图 6 示出了安装在用于头发的电器 70 上的聚集器 60。在这个附图中，聚集器 60 被配置成一个附接件，该附接件可以可移除地附接到用于头发的电器 70 上。当附接了聚集器 60 时，用于头发的电器 70 的在其他情况下常规状态的气流就会被集中起来。在专业设置或家庭使用中，经常令人希望的是在聚集器 60 配置成一个可分离的适配器时，在完成吹干时能将该聚集器移除。当移除了聚集器 60 时，此时可以将一个可替代的头发吹干附件与

该用于头发的电器 70 一起使用。

[0038] 本发明的这些特征被配置成对于用于头发的电器 70 的附接装置或者是与吹风机 26 一体的，使用者仅需一手握持该装置 20 或用于头发的电器 70，同时选择头发有待被处理的部分。当这个区段的头发被接合时，将头发从使用者处拉开，同时应用集中的空气。

[0039] 当装置 20 与吹风机 26 为一体时，头发可以同时被加热和定型而不需要使用头发吹干器，这对于使用者是非常方便的。一旦装置 20 被致动，带有突出刺毛 42 的棒 40 可以接合使用者的头发。与带有突出刺毛 42 的棒 40 组合的集中的空气会接触使用者的头发，由此使头发耸立而远离使用者的头皮。结果，头发的接触到的部分就被离开该一个或多个喷嘴 34 的空气吹干。当使用者进一步将该装置 20 拉开而远离其头部时，头发被拉起并且以刷状方式滑过该刺毛部分 42。结果，空气移动经过头发从而以顺滑的方式将头发均匀地吹干。通过使用这种方法将头发吹干，产生了大量顺滑的呈现。

[0040] 当聚集器 60 被用作将头发吹干和定型的附接装置时，使用者将该聚集器 60 放置在具有出口 62 的用于头发的电器 70 上，如以上所描述的。聚集器 60 的入口 64 部分邻近用于头发的电器 70 的出口 62 并且用于头发的电器 70 被致动来将空气（通常是加热的）吹送经过该聚集器 60。

[0041] 此外，应该理解的是，可以全部或部分地互换不同实施例的多个方面。此外，本领域的普通技术人员将认识到，以上说明是仅通过举例的方式，而并非旨在对如附加权利要求书中进一步说明的本发明加以限制所以在。

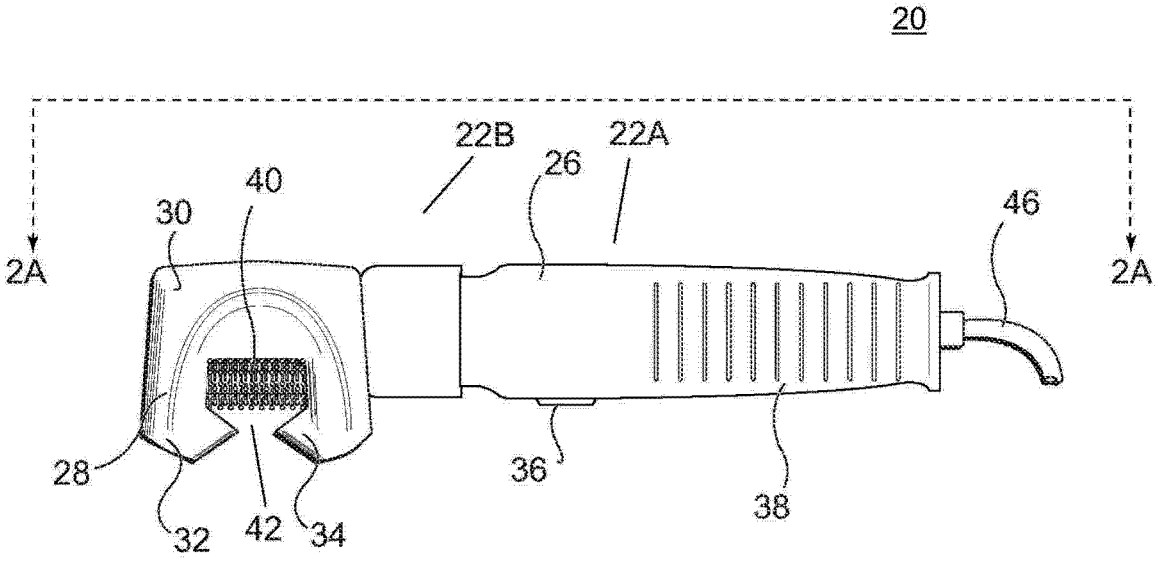

20
22B
22A
26
40
30
46
2A
2A
28
32
42
34
36
38

图 1A

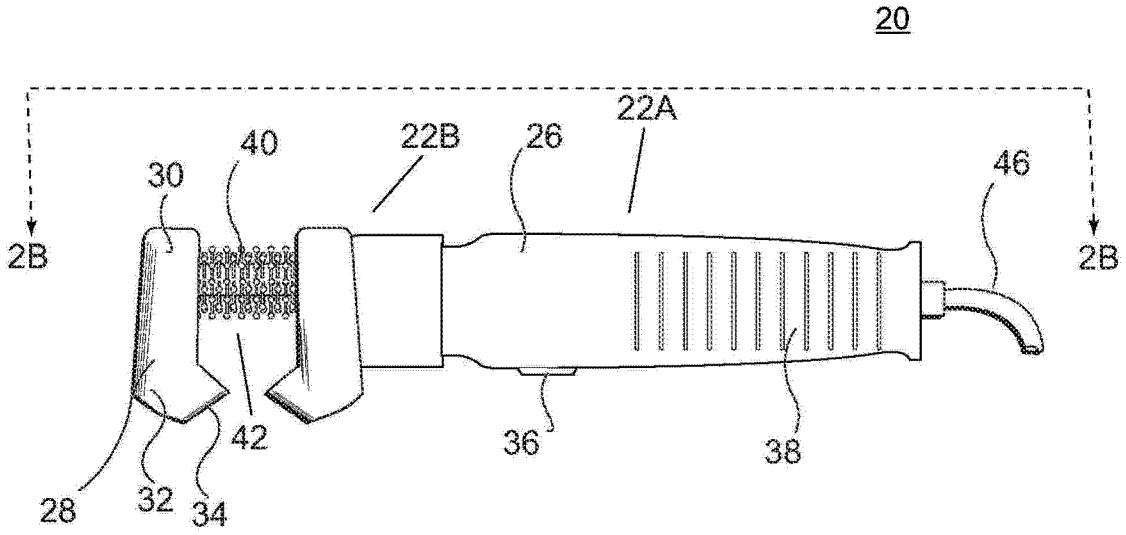
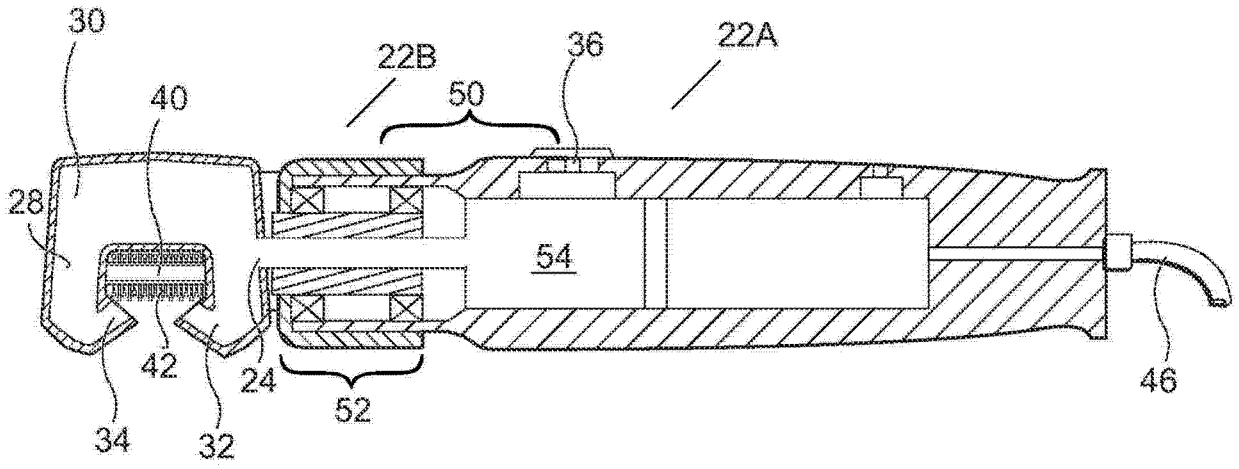

20
22A
40
22B
26
30
46
2B
2B
28
32
34
42
36
38

图 1B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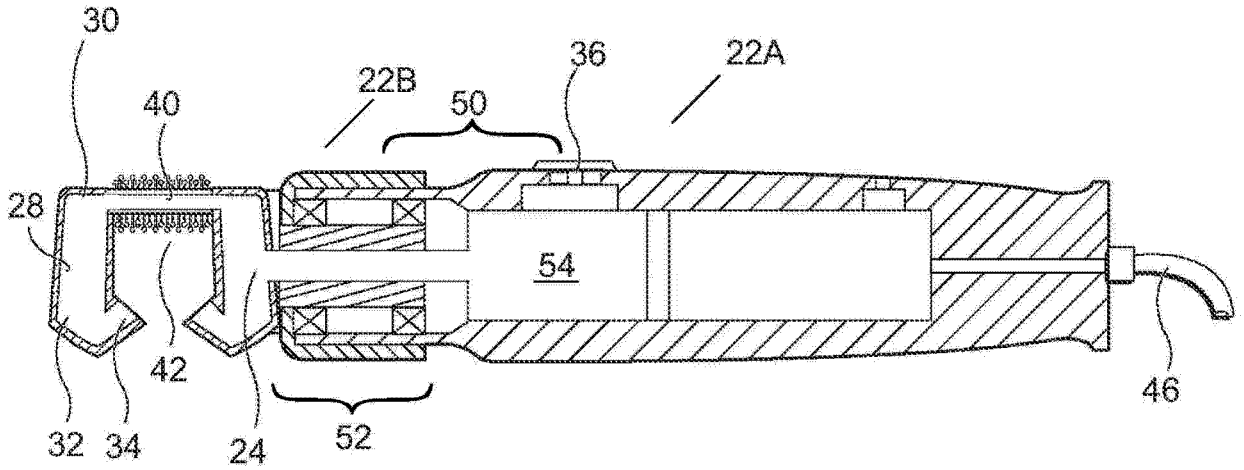
40
22B
50
36
22A
28
54
42
24
52
46
34
32

图 2A


30
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22B
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36
22A
28
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42
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32
34
24
52

图 2B

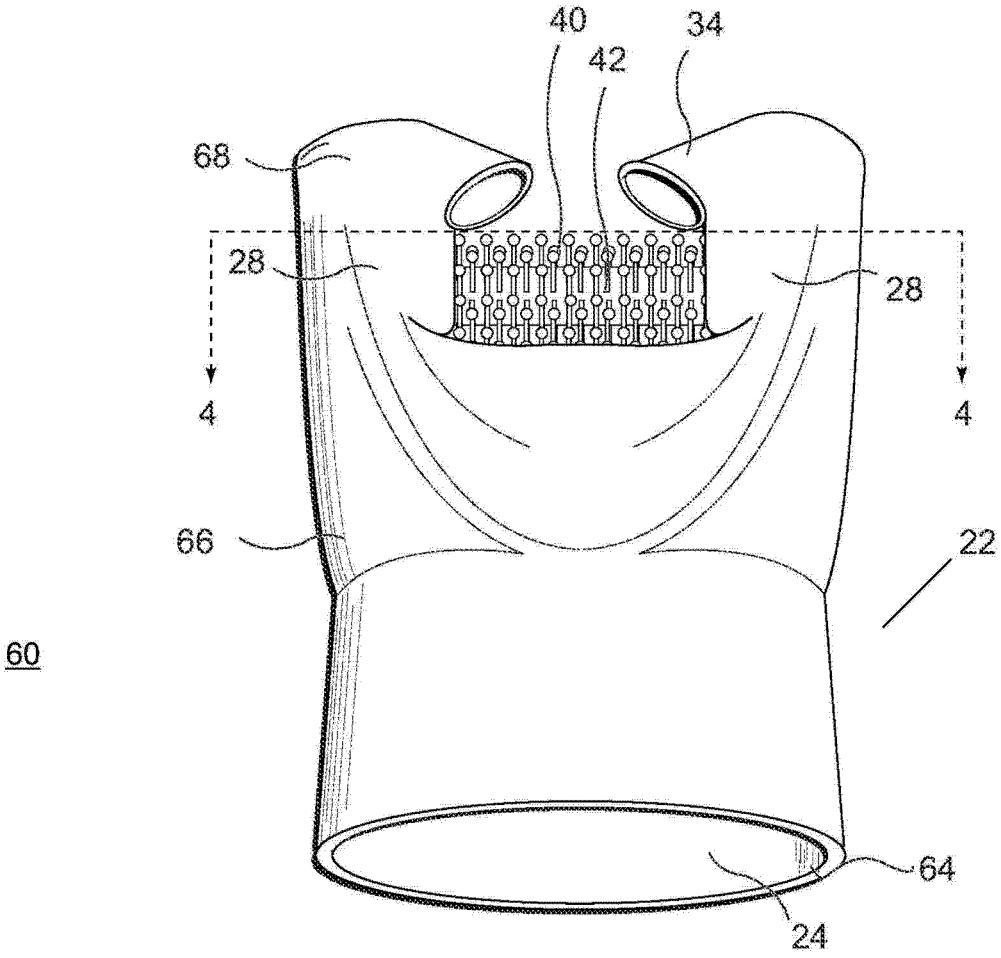

图 3

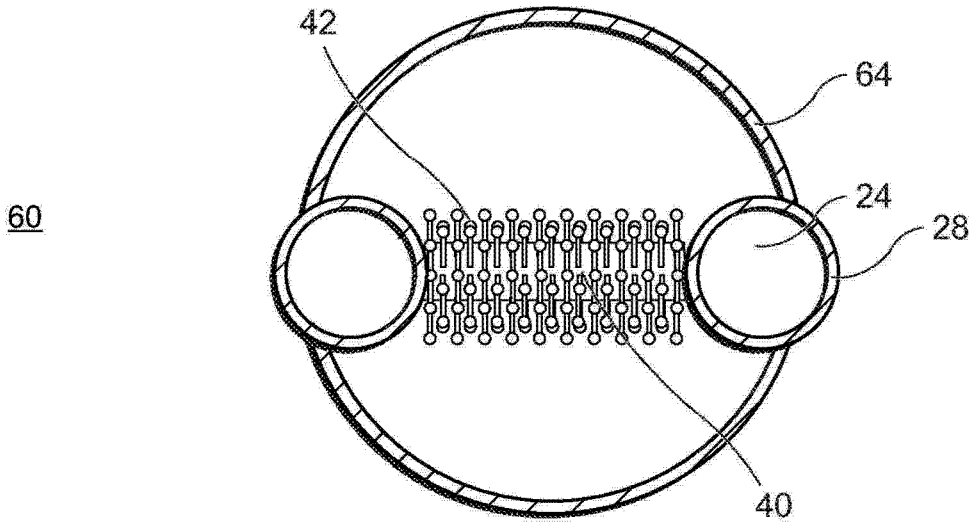

图 4

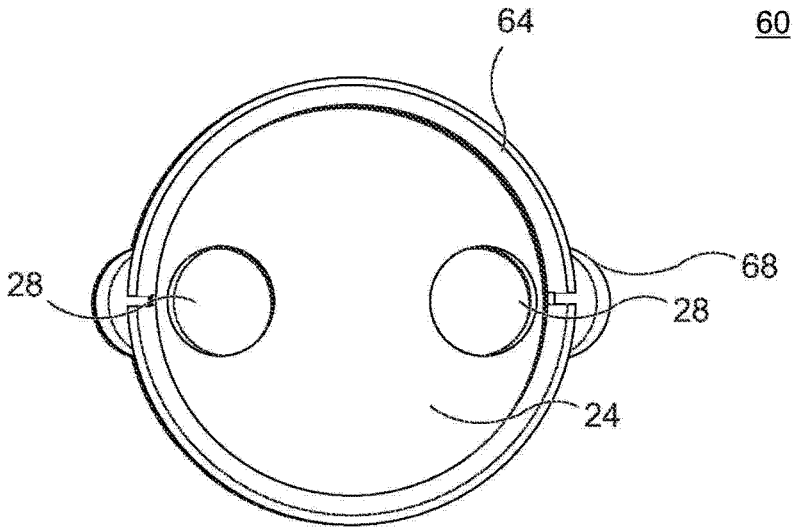

图 5

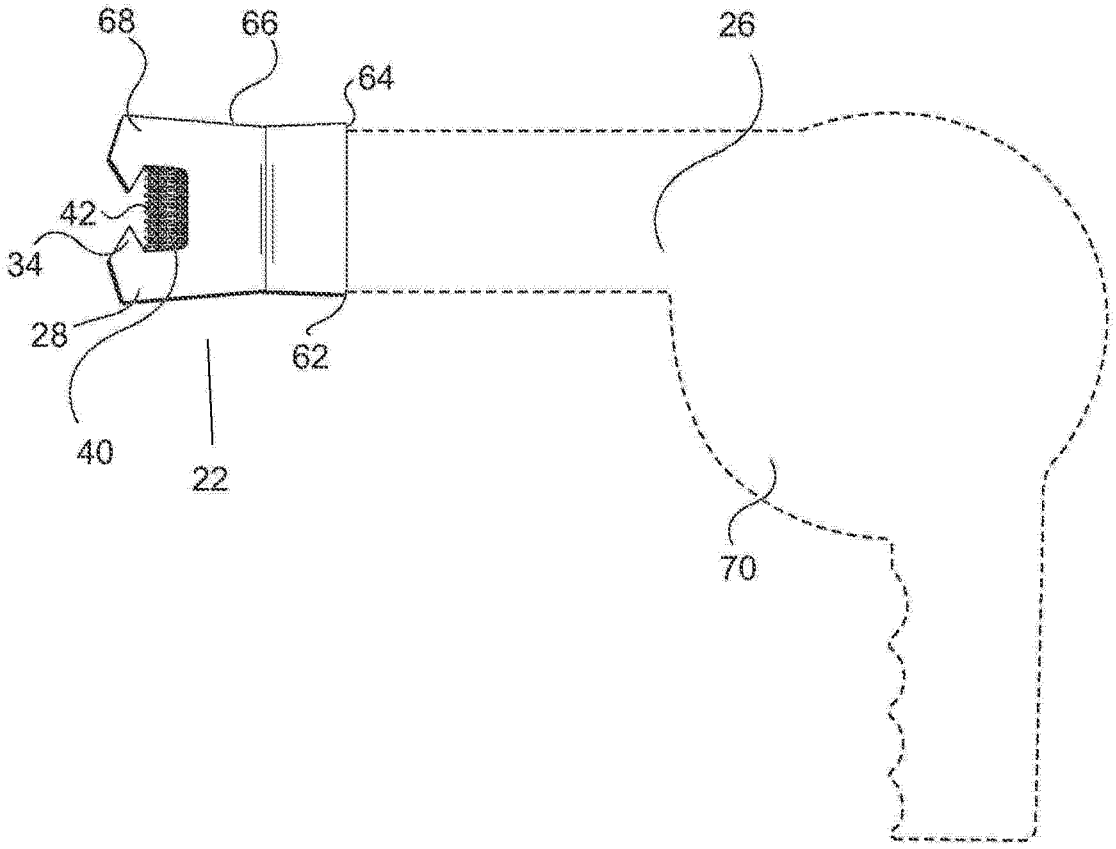

图 6

Abstract

A hair treatment device 20 has a body 22 and a blower 26 supported by the body 22 from which air is blown. A concentrator 60 separately connected to the body 22 or integral with the body 22 comprises at least one gas flow conduit 28 in gas flow communication with the blower 26. A nozzle 34 is in gas flow communication with a distal portion of the conduit 28 and is oriented to blow air from a distal portion of the first conduit 28 back toward the body 20.