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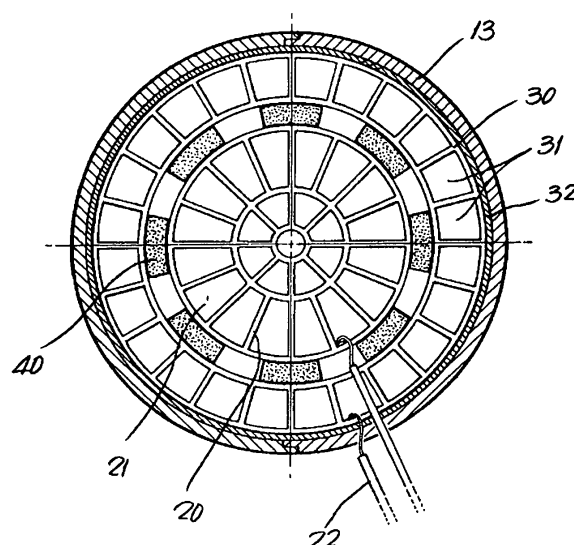
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(54) **Heating element for hair dryer**

(57) Disclosed is a heating element of a hair dryer in which heating efficiency is improved, the calorific value is uniform, negative ions and far infrared rays are generated, disadvantages due to power saving and a broken heating wire are prevented, a structure is simplified so that manufacturing and productivity of the hair dryer can be improved. The heating element includes an aluminum inner radiating plate, installed in the front end of the wind discharging passage, and having a plurality of ventilation holes, an aluminum outer radiating plate, installed in the outside of the inner radiating plate to be spaced apart from the inner radiating plate, and having a plurality of ventilations, and a plurality of ceramic heating elements disposed in a space formed between the inner and outer radiating plates and heated by conducted heat from the inner and outer radiating plates to emit negative ions and far infrared rays.

Fig.3



Description

Field of the Invention

[0001] The present invention relates to a hair dryer used for setting and drying hair, and more particularly, to a heating element of a hair dryer in which heating efficiency is improved, the quantity of generated heat is uniform, negative ions and far infrared rays are generated, disadvantages due to power saving and a broken heating wire are prevented, a structure is simplified so that manufacturing and productivity of the hair dryer can be improved.

Description of the Related Art

[0002] Hair dryers are widely used to set or dry hair using hot or cold wind blown by a blower fan rotated by a motor that is installed in the hair dryer.

[0003] A conventional hair dryer, as illustrated in FIG. 1, includes a blower fan 3 installed in the inner rear side and rotated by a motor 2, and a Nichrome wire 6 installed in a blowing path facing a front discharging hole 4 and heated by supplying electric power.

[0004] Thus, in a cold wind blowing mode, due to the manipulation of a switch 7, the nichrome wire 6 is turned off and only the blower fan 3 rotates so that wind is blown toward the discharging hole 4. In a hot wind blowing mode, the nichrome wire 3 and the blower fan 3 are simultaneously operated so that high-temperature hot wind due to heat generated by the nichrome wire 6 is discharged through the discharging hole 4.

[0005] However, since the conventional hair dryer is configured to simply set or dry hair with only hot or cold wind, the efficiency of setting and drying hair is deteriorated, high power consumption is required, and it takes a long time to set or dry hair.

[0006] Particularly, in a case of thin hair, since is not as easily set as is desired, a hair color and an acid color have a low fixity, and gloss and vital power of hair are not sufficient even when a lot permanent is performed to hair, it is difficult to restrict a wave down permanent.

[0007] Moreover, the conventional hair dryer uses a nichrome wire 6 as a heating element.

[0008] The nichrome wire 6 is easily corroded due to a long use and is often broken because the nichrome wire 6 melts due to an instantaneous heating when electric power is supplied. Thus, the nichrome wire 6 is inconvenient to use and has a high power consumption.

[0009] Moreover, due to the condition of electric power and the structural inferiority of the nichrome wire and an electric circuit, temperature of heating is not uniform, the conventional hair dryer has difficulty handling hair and gives a bad effect to hair.

[0010] Particularly, since the nichrome wire 6 is fabricated in the form of a coil, it is difficult to manufacture and to assemble the nichrome wire 6.

SUMMARY OF THE INVENTION

[0011] Therefore, the present invention has been made in view of the above and/or other problems, and it is an aspect of the present invention to provide a heating element of a hair dryer in which an excellent power saving effect is provided, heat of the heating element is uniform and stable so that the setting and drying efficiency of hair can be improved, an electric leakage is not generated due to the shortage of the heating element, and far infrared ray healthful to hair and scalp skin is generated.

[0012] In accordance with the present invention, the above and other objects can be accomplished by the provision of a hair dryer comprising inner and outer radiating plate which are made of aluminum, have a plurality of ventilation holes through which a hot wind passes, and installed on a wind discharging passage through which cold and hot winds are discharged, and a special ceramic heating element installed between the inner and outer radiating plates to continuously discharge negative ions and far infrared rays healthful to the human body when the special ceramic is heated.

[0013] The ceramic heating element is referred to as a mixed mineral powder in which sandstone powder material and powder of multi-element minerals are mixed together with each other to generate at least two kinds of negative ions, and has a uniform calorific value. Since the ceramic heating element is heated by conduction due to the inner and outer radiating plates, wiring is not necessary and the ceramic heating element is easily assembled. Moreover, since high-temperature hot wind is blown together with the radiation of the negative ions and the far infrared rays, the ceramic heating element is healthful.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] These and/or other objects and advantages of the present invention will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a sectional view illustrating a conventional hair dryer,

FIG. 2 is a sectional view illustrating a hair dryer according to an embodiment of the present invention; FIG. 3 is an enlarged sectional view of the line A-A in FIG. 2; and

FIG. 4 is a sectional view illustrating inner and outer radiating plates separated from a ceramic heating element.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0015] Hereinafter, embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0016] FIG. 2 is a sectional view illustrating a hair dryer

according to an embodiment of the present invention.

[0017] A main body 10 of a hair dryer is configured that a motor 11 and a blower fan 12 are installed in the inner rear side and inner and outer radiating plates 20 and 30 are installed on a discharging passage 14 facing a discharging hole 13 formed in the front side such that a plurality of ceramic heating elements 40 arranged in the radial direction are inserted between the inner and outer radiating plates 20 and 30.

[0018] The inner and outer radiating plates 20 and 30 have predetermined thicknesses and a plurality of ventilation holes 21 and 31 formed in the radial direction so that the inner and outer radiating plates 20 and 30 form an overall net-like shape.

[0019] Moreover, the inner and outer radiating plates 20 and 30 are made of aluminum having an excellent thermal conductivity and can be used as heating elements as well as electric conductors.

[0020] Any ones of the sides of the inner and outer radiating plates 20 and 30 are electrically connected to electric wires 22 respectively so that the inner and outer radiating plates 20 and 30 are heated to a high temperature and heat generated by the inner and outer radiating plates 20 and 30 is radiated when electric power is supplied.

[0021] The ventilation holes 21 serve as passages through which wind blown by the blower fan 21 passes, and can provide the same effect when the ventilation holes 21 are formed in various shapes such as a rectangular shape, a circular shape, or a polygonal shape.

[0022] In a space formed between the inner and outer radiating plates 20 and 30, that is, in a space formed by a predetermined distance between the outer circumference of the inner radiating plate 20 and the inner circumference of the outer radiating plate 30, a plurality of ceramic heating elements 40 made of a special ceramic are disposed in the radial direction.

[0023] The main component of the ceramic heating elements 40 is sandstone.

[0024] Components of the sandstone are silicone dioxide (SiO_2), aluminum oxide (Al_2O_3), ferric oxide (Fe_2O_3), calcium oxide (CaO), alkaline oxide ($\text{K}_2\text{O} + \text{Na}_2\text{O}$), magnesium oxide (MgO), manganese oxide (MnO), phosphorous pentoxide (P_2O_5), and barium titanate (BaTiO_3).

[0025] The ceramic heating elements 40 are manufactured by which raw material, i.e. powder of the sandstone is poured into a mold and the mold is pressed. When at least two kinds of mineral powder to generate the negative ions are added into the powder of the sandstone and the mold is pressed, the effect of the ceramic heating elements 40 can be increased.

[0026] Since the ceramic heating elements 40 are room temperature heating elements and maintain almost constant temperature even when being heated, have a rare risk of being overheated, and have a semi-permanent lifespan, the ceramic heating elements 40 are very suitable to the hair dryer according to the embodiment

of the present invention.

[0027] Moreover, the ceramic heating element 40 may be substituted with a PTC semiconductor heater used as a room temperature heating element, one of semiconductor material to maintain a constant temperature, having a very low risk of being overheated, a semi-permanent lifespan, and a low power consumption.

[0028] In the hair dryer 10 constructed as described above, as illustrated in FIG. 2, the inner and outer radiating plates 20 and 30 are installed and the heating element made of the ceramic heating element 40 is installed, respectively on the wind discharging passage 14 in the main body 10.

[0029] In this case, since the outer circumference of the outer radiating plate 30 contacts the wind discharging passage 14, it is preferable to install an insulator 32 to insulate thermal transfer between the outer circumference of the outer radiating plate 30 and the wind discharging passage 14.

[0030] Moreover, when switching on in order to use the hair dryer, electric current flows through the inner and outer radiating plates 20 and 30 to heat the inner and outer radiating plates 20 and 30, so that heat is generated. The heat is conducted to the ceramic heating elements 40 disposed so that the ceramic heating elements 40 are heated.

[0031] As the ceramic heating elements 40 are heated, negative ions and far infrared rays are emitted due to the property of the ceramic heating elements 40.

[0032] At the same time, the motor 11 is driven, so that the blower fan 12 rotates to blow wind toward the wind discharging hole 13. The wind is transformed into a hot wind when the wind goes past the ventilation holes 21 and 31 of the inner and outer radiating plates 20 and 30 and the ceramic heating elements 40.

[0033] Thus, since the hot wind, which is discharged toward the discharging hole 13, contains the negative ions and the far infrared rays, the negative ions make protein contained in the hair activate so the hair becomes glossy. The far infrared rays infiltrate deep in the tissues of the scalp skin so that a blood flow is accelerated and as a result the scalp skin is healthier.

[0034] Since the plurality of ventilation holes 21 and 31 are formed in the inner and outer radiating plates 20 and 30, the blowing wind is uniformly scattered and a stable blowing is enabled.

[0035] According to the hair dryer of the present invention, the inner and outer radiating plates made of aluminum and having the ventilation holes are installed on the wind discharging passage through which the hot wind is discharged and the ceramic heating elements to emit the negative ions and the infrared rays are installed between the inner and outer radiating plates, so that the heating wire can be removed. Moreover, the heating efficiency is increased due to the excellent thermal conductivity and the calorific value is uniform so that power saving can be achieved and damage caused by the short circuit can be also prevented.

[0036] Moreover, the ceramic heating elements are heated by the conducted heat transferred from the inner and outer radiating plates and emit the negative ions and the far infrared rays so that the setting of the hair can be effectively achieved, time for drying the hair can be significantly reduced, and the calorific value can be more uniform.

[0037] Although the preferred embodiments of the present invention have been disclosed for illustrative purposes, those skilled in the art will appreciate that various modifications, additions and substitutions are possible, without departing from the scope and spirit of the invention as disclosed in the accompanying claims.

Claims

1. A heating element of a hair dryer comprising a motor (11) installed in the inner rear side of a main body (10) of the hair dryer, a blower fan rotated by the motor (11), and a nichrome wire as a heating member installed on a wind discharging passage (14) toward a discharging hole (13) formed in the front side of the hair dryer, the heating element comprising:
 - an inner radiating plate (20) made of aluminum, installed in the front end of the wind discharging passage, and having a plurality of ventilation holes (21);
 - an outer radiating plate (30) made of aluminum, installed in the outside of the inner radiating plate to be spaced apart from the inner radiating plate, and having a plurality of ventilations (31); and
 - a plurality of ceramic heating elements (40) disposed in a space formed between the inner and outer radiating plates (20, 30) and heated by conducted heat from the inner and outer radiating plates to emit negative ions and far infrared rays.

Fig.1

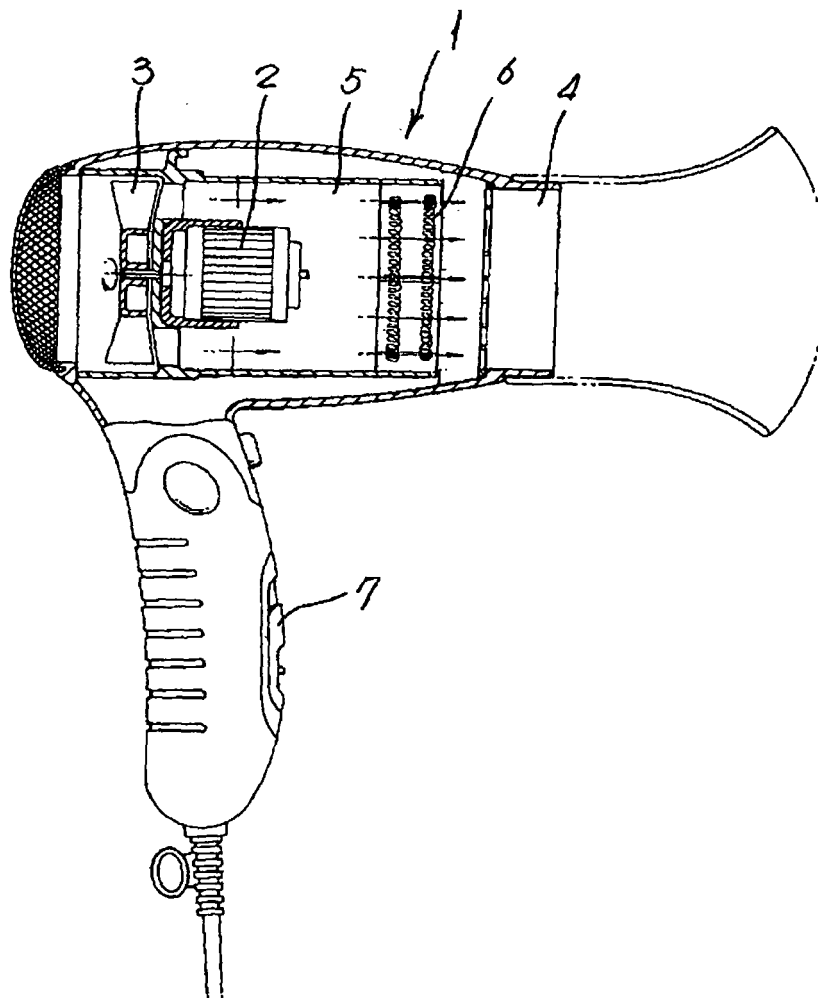


Fig.2

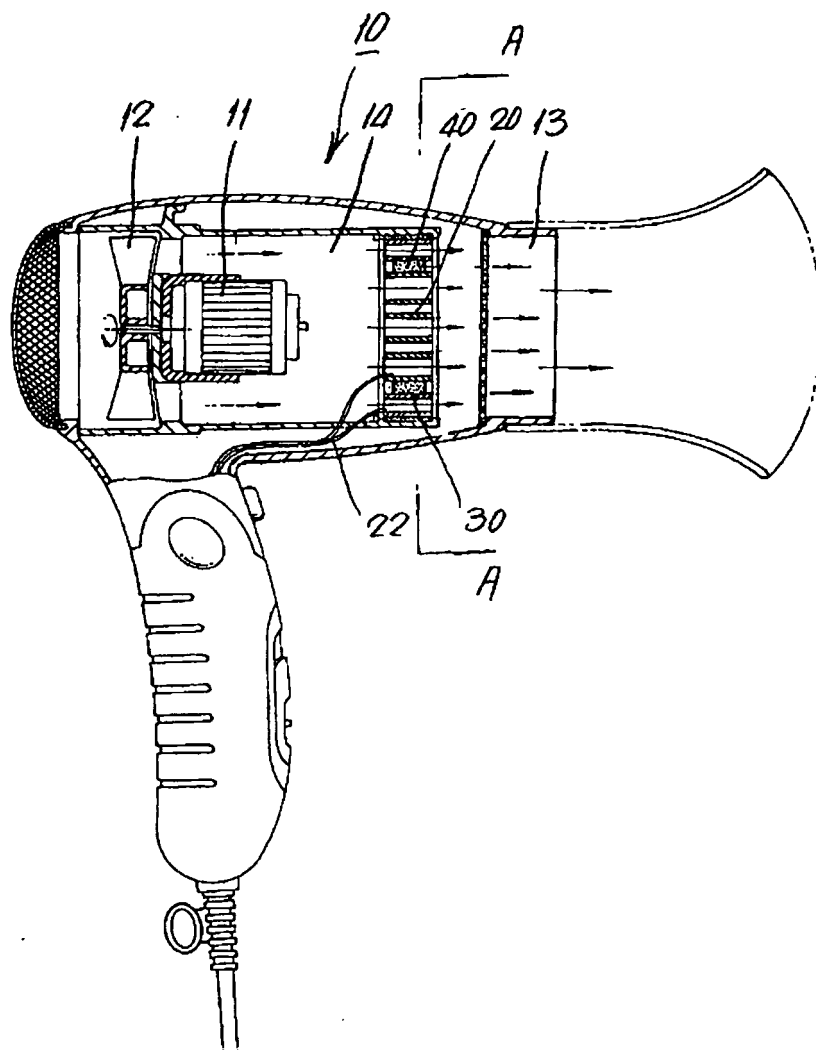


Fig.3

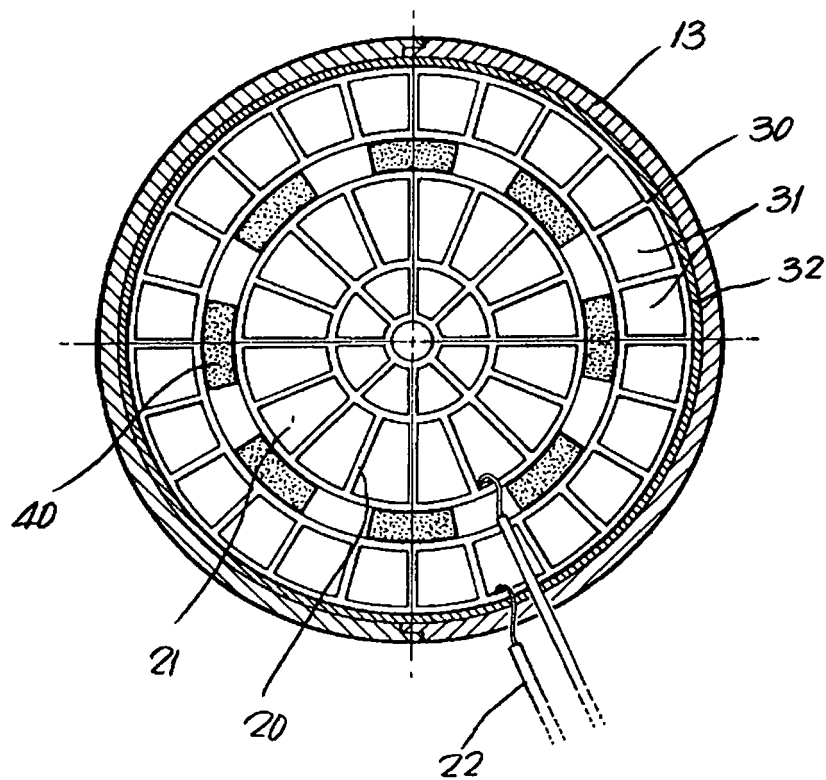
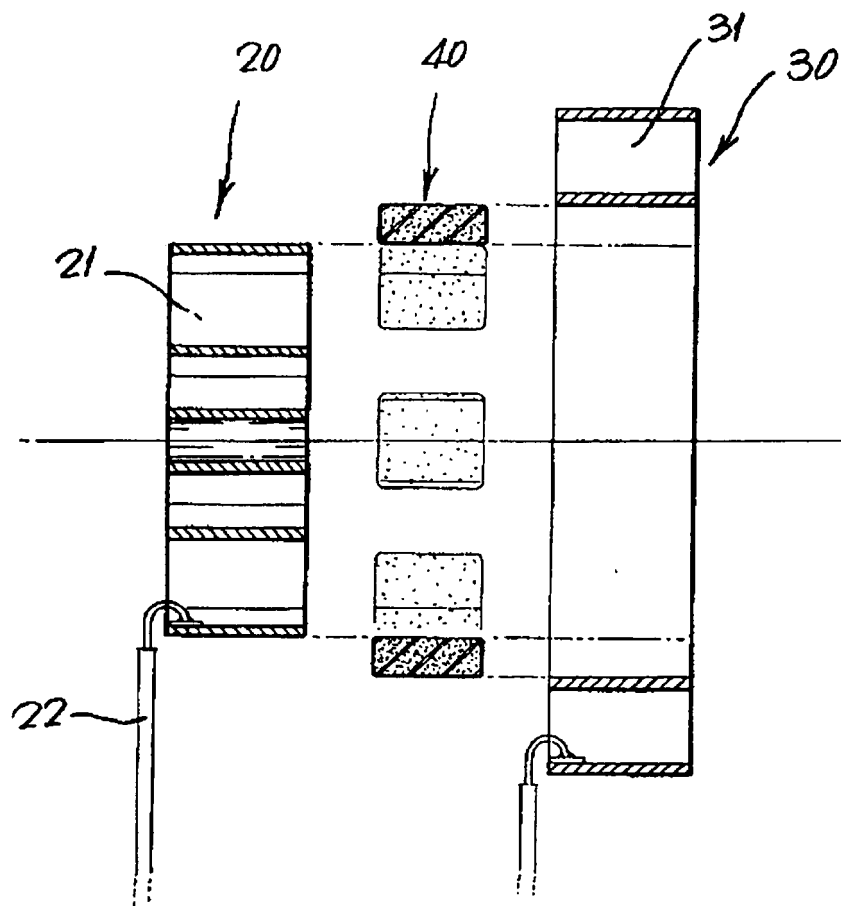


Fig.4





European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 07 35 6076

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A	WO 2005/032299 A (ROVCAL INC; MAIONE; TOBIN; WILCOX) 14 April 2005 (2005-04-14) * the whole document *	1	INV. A45D20/08
A	WO 2004/030491 A (SLINGO, FRED, M.) 15 April 2004 (2004-04-15) * the whole document *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A45D H05B
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 31 October 2007	Examiner IONESCU, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 07 35 6076

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
The members are as contained in the European Patent Office EDP file on
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31-10-2007

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WO 2005032299 A	14-04-2005	NONE	
WO 2004030491 A	15-04-2004	AU 2003272811 A1	23-04-2004

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82