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(54) **Hair iron brush**

(57) A hair iron brush is provided that can form or straighten curls and waves in hair by functioning as an iron using a heating plate while brushing hair by a brushing function using synthetic resin brush bristles, and that can style hair while providing care by weak energy radiated from a multi-element mineral powder and/or far-infrared radiation radiated from far-infrared radiating powder, and that can effectively provide care by promoting blood circulation to the scalp. Alternatingly provided in the brush width direction on an arc shaped bristle implanting surface (20) that is formed on the surface of a brush base (2) are brush bristle rows (3) where synthetic resin brush bristles (31) are aligned in the brush longitudinal direction, and long stripe shaped heating surfaces (42) in the brush longitudinal direction of the heating plate (4). The brush bristle rows and/or heating plate contain multi-element mineral powder formed by crushing a multi-element mineral.

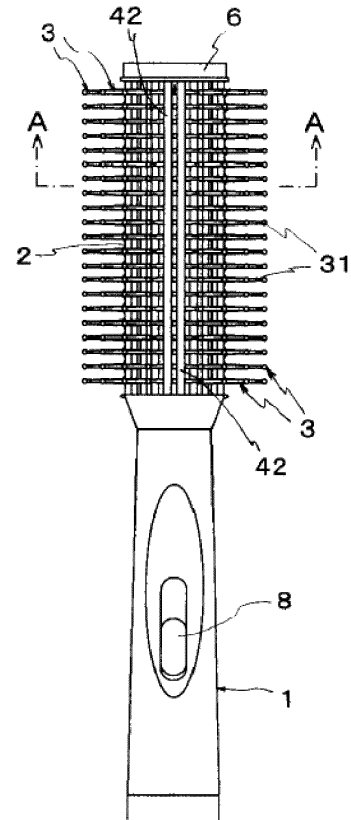


FIG. 2

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Description

[0001] The present invention relates to improved technology for a hair iron brush that combines a brushing function using brush bristles and an ironing function using a heating plate.

[0002] Conventionally, a hair iron brush is known where long brush bristle rows in the brush longitudinal direction and long heating plates in the brush longitudinal direction are arranged alternately in the brush width direction on the surface of the brush base connected to the tip end part of the handle (refer to Patent Document 1).

[0003] Furthermore, a hair brush is conventionally known in which the brush bristles contain the multi-element mineral powder that is made by powderizing multi-element minerals (refer to Patent Document 2).

[0004] However, with a conventional hair iron brush, a flat bristle implanting surface is formed on the surface of the brush base that is connected to the tip end part of the handle. In this manner, when the brush bristle rows and the stripe shaped heating surfaces are alternately arranged on the flat bristle implanting surface, although the brush has a brushing function, the stripe shaped heating surface cannot sufficiently and positively come into contact with the hair for the ironing function, because the bristle implanting surface is flat, and in particular the ironing function that applies curls and waves to the hair is insufficient.

[0005] Furthermore, conventionally, with the hair iron brush where the brush bristle rows and the stripe shaped heating surfaces are alternately arranged, the brush bristles and/or stripe shaped heating surfaces do not contain multi-element mineral powder.

Patent Document 1 Japanese Unexamined Patent Application 2006-255349

Patent Document 2 Japanese Registered Utility Model 3094498

[0006] The present invention provides a hair iron brush that can form or straighten (straight hair) curls and waves in hair by functioning as an iron using the heating plate while brushing hair by a brushing function using the synthetic resin brush bristles.

[0007] Furthermore, the present invention aims to provide a hair iron brush that can style hair while providing care by weak energy radiated from a multi-element mineral powder and/or the far-infrared radiation radiated from far-infrared radiating powder, and also that can effectively provide care by promoting blood circulation to the scalp.

[0008] In order to resolve the aforementioned problems, the hair iron brush of the present invention has a configuration in which: an arc shaped bristle implanting surface (20) is formed on a surface of a brush base (2) that is connected to a tip end part of a handle (1), and brush bristle rows (3) where synthetic resin brush bristles (31) are aligned in the brush longitudinal direction and

long stripe shaped heating surfaces (42) in the brush longitudinal direction of the heating plate (4) are alternately arranged in the brush width direction on the arc shaped bristle implanting surface (20).

[0009] Furthermore, the brush bristle rows (3) may be formed from synthetic resin brush bristles (31) integrally arranged on long stripe shaped bases (32) in the brush longitudinal direction that is made of synthetic resins; long stripe shaped grooves (41) in the brush longitudinal direction may be formed in a plurality of rows in the brush width on the surface of the heating plate (4); and the brush bristle rows (3) and the stripe shaped heating surfaces (42) of the heating plate (4) may be alternately arranged in the brush width direction by fitting a stripe shaped base (32) of each of the brush bristle rows (3) to each of the stripe shaped grooves (41) and exposing the stripe shaped heating surface (42) of the heating plate (4) between the brush bristle rows (3).

[0010] Furthermore, the brush bristle rows (3) and/or heating plate (4) may contain multi-element mineral powder formed by crushing a multi-element mineral.

[0011] Furthermore, the brush bristle rows (3) and/or heating plate (4) contain far-infrared radiating powder formed by crushing a far-infrared radiating material in addition to the multi-element mineral powder.

[0012] The hair iron brush of the present invention is a hair iron brush where brush bristle rows and stripe shaped heating surfaces are alternately provided in the brush width direction, in which the bristle implanting surface of the brush base is formed in an arc shape. In this manner, the brush bristle rows and the stripe shaped heating surfaces are alternately arranged in the brush width direction, and therefore can form or straighten curls and waves in hair by an ironing function using the stripe shaped heating surfaces while brushing the hair by a brushing function using the brush bristles. In particular, the bristle implanting surface of the brush base is formed in the shape of an arc, so curls and waves can easily and efficiently be formed in hair by placing the stripe shaped heating surfaces into sufficiently close contact with the hair.

[0013] Furthermore, the hair iron brush of the present invention may have a configuration in which the stripe shaped base of each of the brush bristle rows is fitted to the stripe shaped groove formed in the surface of the heating plate. Thereby a hair iron brush can easily be manufactured with a configuration where brush bristle rows and stripe shaped heating surfaces of the heating plate are alternately arranged.

[0014] Furthermore, the iron function can be demonstrated by directly touching the stripe shaped heating surface of the heating plate to the hair, and the ironing function can be improved because the synthetic resin brush bristles can be heated via the stripe shaped base that is fitted to the stripe shaped groove.

[0015] Furthermore, the user may support or grab the brush portion with their hand, but the brush bristles are made of synthetic resin, so heat transfer from the heating

plate is gradual, and because the heating plate is covered by the synthetic resin brush bristles, the hand and fingers are blocked from directly touching the heating plate, and thus burning and feeling heat can be prevented.

[0016] Furthermore, the hair iron brush of the present invention may include multi-element mineral powder in either one of the brush bristle rows or the heating plate, or both the brush bristle rows and the heating plate. Herein, hair can be styled while being cared for by the weak energy radiated from the multi-element mineral powder, and furthermore, hair growth can be promoted and effective scalp care is possible while promoting blood circulation of the scalp.

[0017] Furthermore, static electricity cannot be generated while brushing because of the effect of the multi-element mineral powder, and thus the hair can be easily styled in conjunction with smoothly curling and the like by brushing and by the heating plate.

[0018] Furthermore, blood circulation of the hair and scalp can be enhanced simply by brushing due to the minus ions generated from the multi-element mineral powder, and furthermore, a cluster phenomenon (ability to shrink the molecular assembly of water) is induced in the moisture of the hair due to the minus ions, a sense of shininess and rehydration of the hair is enhanced, and thus a silky and manageable hair styling can be achieved. Furthermore, the minus ions function in the cuticles (glass like fibres) of the hair, and a shiny state can be sustained, and this is particularly effective on unmanageable hair that is thin and damaged.

[0019] The hair iron brush of the present invention may include far-infrared radiating powder in addition to the multi-element mineral powder in the brush bristle row and/or heating plate. In this manner, when far-infrared radiating powder in addition to multi-element mineral powder is included, infrared radiation is radiated from the far-infrared radiating powder, and the hair and scalp can be internally warmed. Thereby, the hair can be effectively cared for, and blood circulation of the scalp can be favourable.

FIG. 1 is a cross sectional diagram illustrating the hair iron brush according to the embodiment of the present invention, and is an A-A cross sectional diagram of FIG. 2.

FIG. 2 is a front surface diagram illustrating the hair iron brush according to the embodiment of the present invention.

FIG. 3 is a side surface diagram of the hair iron brush according to the embodiment of the present invention.

FIG. 4 is a side surface view illustrating the brush row of the hair iron brush relating to the embodiment of the present invention.

[0020] The multi-element mineral used in the present invention refers to a mineral that contains silicon as a main component such as perlite, pitchstone, and tour-

maline, and includes a good balance of multiple elements, and these multi-element minerals are known to emit minus ions.

[0021] Multi-element mineral powder is formed into powder by crushing the multi-element mineral with a ball-mill or the like, and the crushing value in this case is preferably 1 to 3 micrometers, but this value can change.

[0022] The multi-element mineral powder can be used independently or in combination, but appropriately combining 2 or more types is preferable. The multi-element mineral powder can also be used as is, or the powder can be mixed with water, heated or compressed, and then the supernatant is powderized by vacuum freeze drying or spray drying.

[0023] Note that perlite contains components shown below in Table 1.

Table 1

Anhydrous silicon (SiO ₂)	71.94%
Aluminium oxide (Al ₂ O ₃)	14.94%
Iron oxide (Fe ₂ O ₃)	2.54%
Magnesium oxide (MgO)	0.44%
Calcium oxide (CaO)	2.47%
Alkali oxide (K ₂ O + Na ₂ O)	6.87%
Manganese oxide (MnO)	0.03%
Phosphoric anhydride (P ₂ O ₅)	0.14%
Loss by heating	3.43%
Loss by drying (at 110°C)	0.07%
Other: Titanium	Trace

[0024] The electromagnetic waves (weak energy) with a wavelength of 4 to 14 μm radiated from the multi-element mineral powder electrically change the area around the nucleus of the atom and excites the atom as well as the material thereof into an excited state (vibration), and as a result, cuts and shortens the water cluster polymer, reduces the volume of the water, increases the specific gravity, and cause sufficient adhesion of the water (free water) to the cell outer membrane of the plant or animal, and thus the permeation of water together with the Ca²⁺ into the cell is enhanced and there is an effect of activating various functions of the cell.

[0025] Therefore, the water in the hair and scalp is mineralized, and protein is activated throughout the hair and scalp by applying the electromagnetic waves (weak energy) to the hair and scalp, and thus healthy shiny hair can always be achieved.

[0026] Furthermore, far-infrared radiating powder is made by powderizing the far-infrared radiating materials alumina (Al₂O₃), titania (TiO₂), ferrite (Fe₂O₃), chrome oxide (Cr₂O₃), silica (SiO₂), yttria (Y₂O₃), magnesia (MgO), and the like, so blending and using these far-

infrared radiating powders is preferable in order to radiate far-infrared radiation of an appropriate wavelength for absorption into the hair and scalp.

[0027] Furthermore, in the term "include" of the present invention, a material is included that is moulded into a predetermined shape by incorporating the multi-element mineral powder or far-infrared radiating powder into a synthetic resin brush and/or in an actual heating plate, and a material is also included in which a coating layer (for example, a ceramic coating layer, a plating layer, a fluorine coating layer, a nylon layer, a synthetic resin layer, a silicon rubber layer, a fluorine rubber layer, and the like) is formed by mixing the multi-element mineral powder or far-infrared radiating powder in the coating agent and applying onto the surface.

[0028] As illustrated in FIG. 2 and FIG. 3, the hair iron brush of the embodiment has a configuration in which a brush base 2 is connected to a tip of a handle 1, an arc shaped bristle implanting surface 20 is formed on the surface of the brush base 2, and brush bristle rows 3 where synthetic resin brush bristles 31 are aligned in the brush longitudinal direction and a long stripe shaped heating surface 42 in the brush longitudinal direction of a heating plate 4 are alternately arranged in the brush width direction on the arc shaped bristle implanting surface 20.

[0029] As illustrated in FIG. 1, a cross sectional shape of the brush base 2 is formed in a long elliptical shape in the brush width direction, and the front surface is formed by the heating plate 4 that is formed in a half circle arc shape by metal or ceramic, and the surface of the heating plate 4 is formed on the arc shaped bristle implanting surface 20. Furthermore, a back surface plate part 21 is formed in a half circle arc shape by the synthetic resin (for example, an ABS resin and the like) that is integrally formed with the handle 1.

[0030] A supporting plate 5 is fixed to the inside of the back surface plate part 21 by screws, and hook pieces 43 protrude on both sides of the back surface of the heating plate 4 in conjunction with hook pieces 50 that protrude on the edge of both sides of the supporting plate 5, and the brush base 2 in which the heating plate 4 and the back surface plate part 21 are fixed in an elliptical shape can be assembled by engaging the hook pieces 50 and 43 together and aligning the tip of the back surface plate part 21 and the tip of the heating plate 4 to insert a cap 6.

[0031] As illustrated in FIG. 4, the brush bristle row 3 is formed by integrally aligning the synthetic resin brush bristles 31 in one row on a long stripe shaped base 32 in the brush longitudinal direction that is made of synthetic resin.

[0032] Furthermore, the tip of the synthetic resin brush bristle 31 is formed in the shape of a sphere, and as a result, hair loss can be prevented while relieving contact with the scalp when brushing and styling.

[0033] Note that the number, alignment pitch, thickness (bristle diameter), and number of rows of the syn-

thetic resin brush bristles 31 in the brush bristle row 3 can be determined appropriately, and silicon rubber, nylon, and other synthetic resins can be used.

[0034] A long stripe shaped groove 41 in the brush longitudinal direction is formed on the surface of the heating plate 4 by a plurality of rows (9 rows in the embodiment) in the brush width direction. Furthermore, by dovetailing the stripe shaped base 32 of each brush bristle row 3 to each stripe shaped groove 41 and exposing the stripe shaped heating surface 42 of the heating plate 4 between the brush rows 3, the brush bristle rows 3 and the stripe shaped heating surface 42 of the heating plate 4 are alternately arranged along the arc shaped bristle implanting surface 20 in the brush width direction. The cross sectional shape of the stripe shaped heating surface 42 is formed in a half circle arc convex shape (approximately reverse U shaped) or a mountain shape (approximately reverse V shaped) so that a good contact with the hair can be achieved, but a flat shape is also possible.

[0035] Furthermore, an electric heater 7 is mounted on the back surface of the heating plate 4; power is provided by turning ON a switch 8 on the handle 1 to heat the electric heater 7; and the heat is transferred to the heating plate 4 and then transferred to the brush bristle rows 3 from the heating plate 4. Note that the power cord is not illustrated in the drawings. Furthermore, because the tip part of the synthetic resin brush bristle comes into a direct contact with the scalp of the user, the temperature is set so that the user does not feel heat or get burned.

[0036] Upon use, the user may support or grab the brush portion with their hands, but the brush bristles 31 are made of a synthetic resin, so the heat transfer from the heating plate 4 is gradual, and because the heating plate 4 is covered by the synthetic resin brush bristles 31, the hand and fingers are blocked from directly touching the heating plate 4, and thus burning and feeling heat can be prevented.

[0037] Furthermore, in the present embodiment, multi-element mineral powder and far-infrared radiating powder are included in both the brush bristle rows 3 and the heating plate 4. In this case, the mixed powder is provided in the brush bristle rows 3 by mixing and melding the mixed powder into the synthetic resin which is a raw material of the brush bristle rows 3.

[0038] Furthermore, the heating plate 4 includes a ceramic coating layer formed on the surface. The ceramic coating layer is formed by adding the mixed powder to the heat resistant Formica, which is a coating agent, applying the paint-like material to the heating plate, and passing the plate through a heating oven to remove (bake out) the coating agent.

[0039] The mixing ratio of the mixed powder to the heat resistant Formica is preferably at a volume ratio of 3 to 15%, but the value can change.

[0040] Therefore, in the hair iron brush of the present embodiment, when the switch 8 is turned ON to provide power to the electric heater 7 and heat the heating plate

4, curls and waves in the hair can be formed or straightened by an ironing function of the heating plate 4 while combing the hair with a brushing function by the synthetic resin brush bristles 31.

[0041] In particular, because the arc shaped bristle implanting surface 20 is formed on the brush base 2, the stripe shaped heating surface 42 comes in sufficient contact with the hair, and thus curls and waves in the hair can easily and effectively be formed. Furthermore, the hair can be cared while styling by the weak energy radiated from the multi-element mineral powder and the far-infrared radiation radiated from the far-infrared radiating powder, and furthermore, the effective care is possible by promoting circulation of blood in the scalp.

[0042] Note that when the switch 8 is turned OFF, the heating plate 4 is not heated because the electric heater 7 does not generate heat, and only a brushing function by the synthetic resin brush bristles 31 is attainable, but the effect of the weak energy radiated from the multi-element mineral powder and the far-infrared radiation radiated from the far-infrared radiating powder can be enjoyed.

[0043] An embodiment of the present invention was described above based on the drawings, but the specific configuration is not limited to the present embodiment, and the present invention includes design alternates or the like to the extent that does not violate the gist of the present invention.

[0044] Note that, the hair iron brush of the present invention is used in conjunction with a hair dryer, hair can be brushed, and curls and waves can be formed or straightened by the hair iron brush while applying heat to the hair by the hair dryer. In this case, because the heat of the hair dryer is aimed towards the surface of the synthetic resin bristles and the heat that is transferred from the heating plate is given to the hair from the inside of the synthetic resin brush bristles, the hair can be held between the heat of the hair dryer and the heat from the heating plate, and thus more effective styling and care are possible. The ion dryer is preferably used as an ion dryer that emits the minus ions invented by the present inventor together with warm air or cold air.

Description of reference numerals

[0045]

1 Handle	
2 Brush base	
20 Arc shaped bristle implanting surface	50
3 Brush bristle row	
31 Synthetic resin brush bristle	
32 Stripe shaped base	
4 Heating plate	
41 Stripe shaped groove	55
42 Stripe shaped heating surface	

Claims

1. A hair iron brush wherein an arc shaped bristle implanting surface (20) is formed on a surface of a brush base (2) that is connected to a tip end part of a handle (1), and brush bristle rows (3) where synthetic resin brush bristles (31) are aligned in the brush longitudinal direction and long stripe shaped heating surfaces (42) in the brush longitudinal direction of the heating plate (4) are alternately arranged in the brush width direction on the arc shaped bristle implanting surface (20).
2. The hair iron brush according to claim 1, wherein the brush bristle rows (3) are formed from synthetic resin brush bristles (31) integrally arranged on long stripe shaped bases (32) in the brush longitudinal direction that is made of synthetic resins, long stripe shaped grooves (41) in the brush longitudinal direction are formed in a plurality of rows in the brush width direction on the surface of the heating plate (4), and the brush bristle rows (3) and the stripe shaped heating surfaces (42) of the heating plate (4) are alternately arranged in the brush width direction by fitting a stripe shaped base (32) of each of the brush bristle rows (3) to each of the stripe shaped grooves (41) and exposing the stripe shaped heating surface (42) of the heating plate (4) between the brush bristle rows (3).
3. The hair iron brush according to claim 1 or 2, wherein the brush bristle rows (3) and/or heating plate (4) contain multi-element mineral powder formed by crushing a multi-element mineral.
4. The hair iron brush according to claim 3, wherein the brush bristle rows (3) and/or heating plate (4) contain far infrared radiating powder formed by crushing a far infrared radiating material in addition to the multi-element mineral powder.

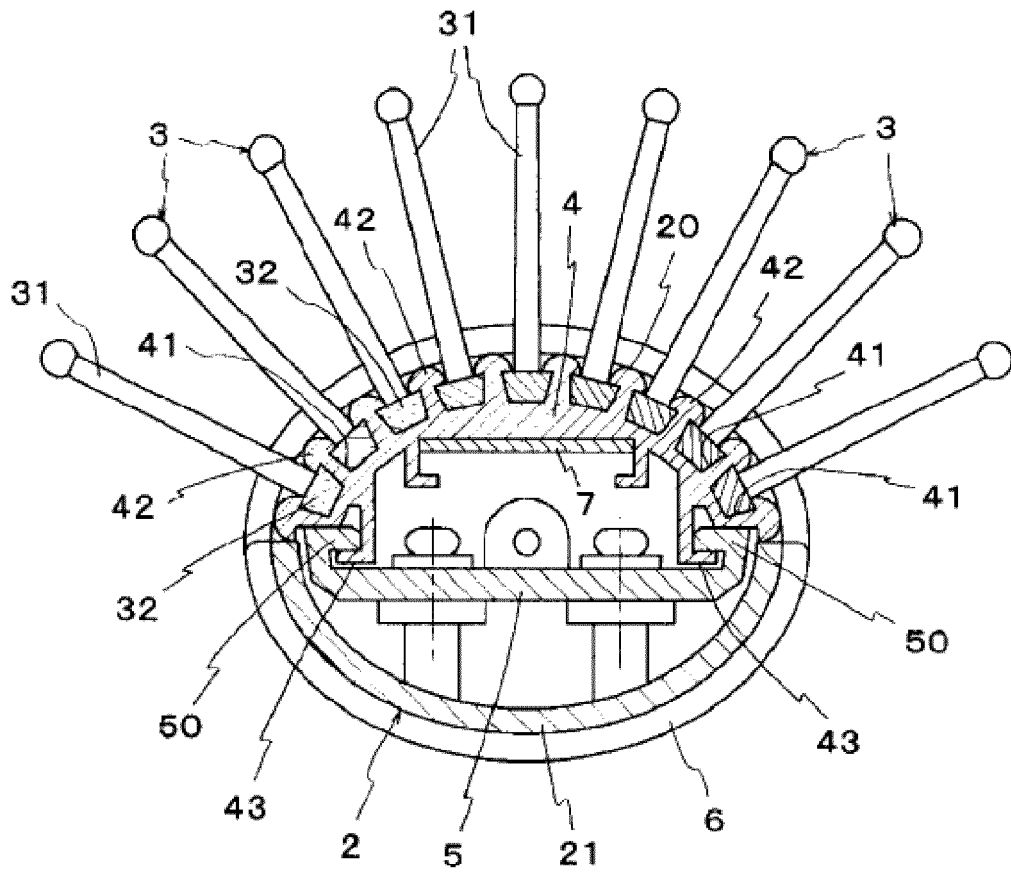


FIG. 1

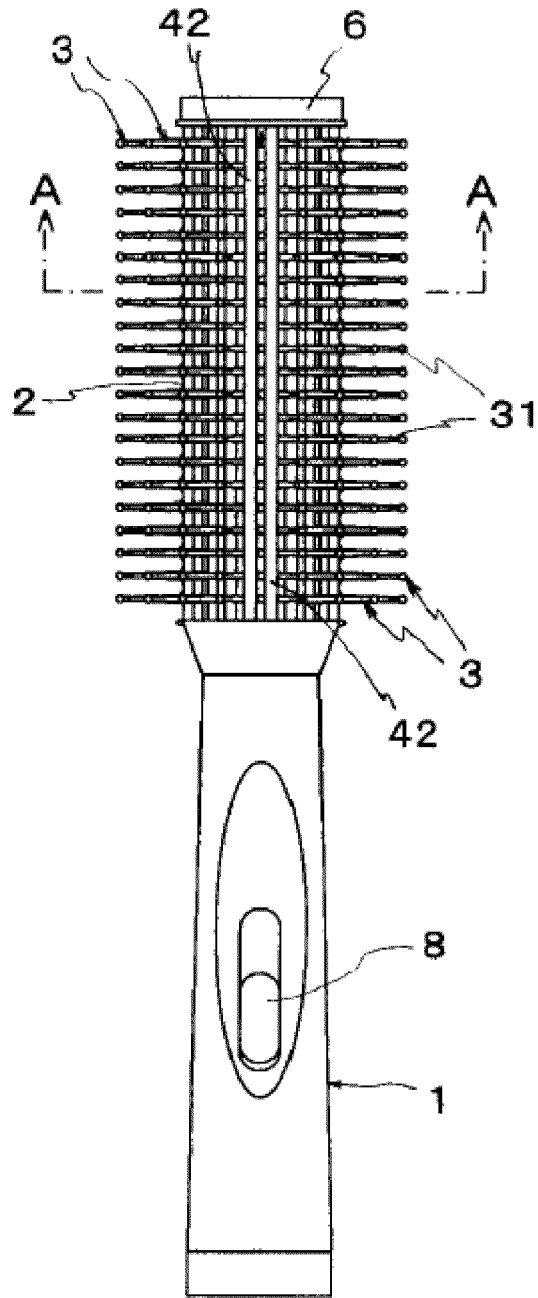


FIG. 2

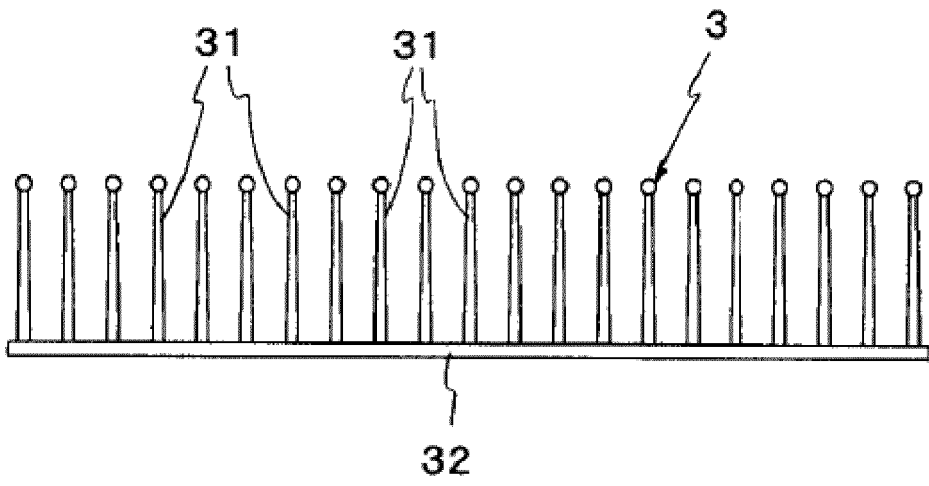


FIG. 4



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Place of search The Hague		Date of completion of the search 7 February 2014	Examiner Dinescu, Daniela
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