(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) EP 2 022 367 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
11.02.2009 Bulletin 2009/07

(51) Int Cl.:
A46B 3/10 *(2006.01)* ***A46B 9/02*** *(2006.01)*

(21) Application number: **07015682.3**

(22) Date of filing: **09.08.2007**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HU IE IS IT LI LT LU LV MC MT NL PL PT RO SE SI SK TR
Designated Extension States:
AL BA HR MK RS

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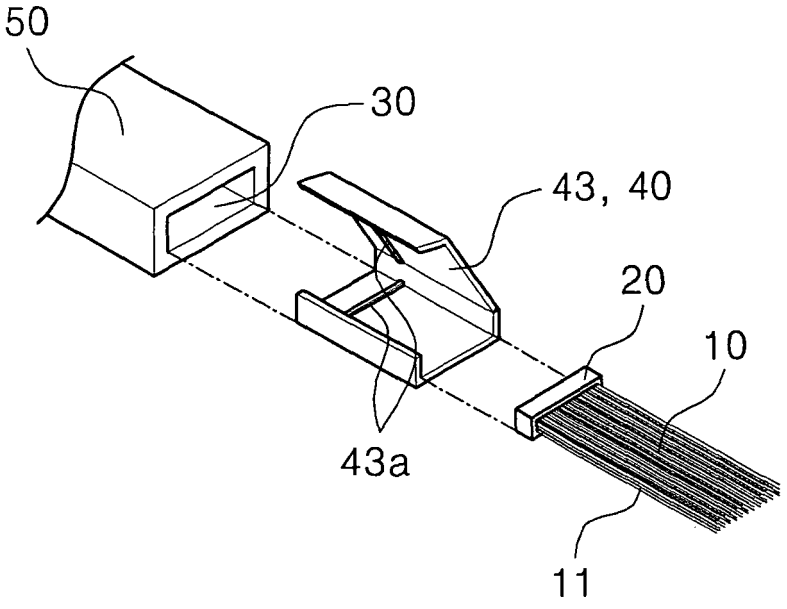
(54) Make-up brush and method of manufacturing the same

(57) Provided is a make-up brush including a coating section (10) for applying liquid cosmetic on a predetermined surface, the coating section (10) having a plurality of bristles (11) which forms a bundle, while being spaced at a predetermined distance from each other; a heat-bonded portion (20) formed by melting one ends of the bristles (11) such that the ends are integrally connected to each other; a housing section (30) having such a cross-sectional shape that the end of the coating section (10) having the heat-bonded portion (20) is inserted and housed; a fixing section (40) for fixing the end of the coating section (10), inserted into the housing section (30), to the housing section (30) such that the density of the bristles (11) is uniform; and a rod section (50) connected to the housing section (30) and having such a length that a user can hold the rod section (50) by hand.

[FIG. 8A]



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Description

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0001] The present invention relates to a make-up brush and a method of manufacturing the same, and more specifically, to a make-up brush, which is used for applying liquid cosmetic such as manicure on a predetermined portion such as a nail or the like, and a method of manufacturing the same.

2. Description of the Related Art

[0002] In general, a make-up 1' brush includes a cylindrical rod 2' which is integrated with or coupled to a lid and a tuft 3' which is inserted and fixed to a lower portion of the rod 2'. When the rod 2' having the tuft 3' is inserted into a container such that liquid cosmetic is smeared on the tuft 3', the rod 2' is drawn out of the container to apply the liquid cosmetic on a predetermined portion.

[0003] Such a make-up brush 1' is disclosed in US Patent No. 5,588,447. As shown in Fig. 1A, the rod 2' has a cross-sectional surface formed in a ring shape. Further, the middle portion of the tuft 3' obtained from a bundle of bristles 31', which are cut by a predetermined length, is folded in two approximately halfway by using a staple 4' and is then inserted and fixed to a housing 21' of the rod 2'.

[0004] Accordingly, the tuft 3' folded by the staple 4' has a space T formed in the middle thereof, as shown in Fig. 1 B. Therefore, distances between the bristles 31' of the tuft 3' are not uniform, so that manicure is not applied uniformly and a coat thickness differs. In this case, the color of the manicure may be expressed differently. Further, the bristles are aggregated into both sides on the basis of the space T such that two lines of manicure-coated surfaces may occur during the application of the manicure.

[0005] In addition, the conventional make-up brush 2' can be manufactured in such a manner that the cross-sectional surface of the tuft 3' is formed in various shapes, such as a circle, a ring, a V character, a straight line, and a cross. In this case, the tuft 3' of the brush 1' for applying manicure should be fixed to the housing 21' of the rod 2' by using the staple 4', in order to form various shapes. However, the fixing operation is difficult to perform, thereby degrading productivity. As a result, a unit price of the make-up brush increases.

[0006] Further, although a predetermined cross-sectional shape is formed through a difficult operation using a plurality of staples 4', the bristles 31' of the tuft 3', inserted into the housing 21' while being folded by the staples 4', are not contacted uniformly with each other. Therefore, during using the brush 1', the bristles 31' are split into two portions such that liquid manicure cannot be applied uniformly.

SUMMARY OF THE INVENTION

[0007] An advantage of the present invention is that it provides a make-up brush in which a plurality of bristles forming the brush are uniformly contacted with each other so as to provide a uniformly-coated layer and can be formed in various shapes.

[0008] Another advantage of the invention is that it provides a method of manufacturing a make-up brush.

[0009] Additional aspects and advantages of the present general inventive concept will be set forth in part in the description which follows and, in part, will be obvious from the description, or may be learned by practice of the general inventive concept.

[0010] According to an aspect of the invention, a make-up brush comprises a coating section for applying liquid cosmetic on a predetermined surface, the coating section having a plurality of bristles which forms a bundle, while being spaced at a predetermined distance from each other; a heat-bonded portion formed by melting one ends of the bristles such that the ends are integrally connected to each other; a housing section having such a cross-sectional shape that the end of the coating section having the heat-bonded portion is inserted and housed; a fixing section for fixing the end of the coating section, inserted into the housing section, to the housing section such that the density of the bristles is uniform; and a rod section connected to the housing section and having such a length that a user can hold the rod section by hand.

[0011] Preferably, the coating section has a cross-sectional shape with an outer circumference, a cross-sectional shape with outer and inner circumferences, or a cross-sectional shape where a diagram with a specific shape is divided into a plurality of portions.

[0012] Preferably, the fixing section is an inward protrusion formed by pressing a portion of the housing section such that the portion is bent toward the coating section, a staple which passes through the housing section and the coating section, or a socket which closely covers the periphery of the end of the coating section having the heat-bonded portion and has such a predetermined thickness as to be closely inserted onto the inner surface of the housing section.

[0013] Further, the socket having a plurality of edges covers the coating section while being folded, and has a fixing protrusion formed on a connection surface between the edges, the fixing protrusion protruding toward the coating section.

[0014] According to another aspect of the invention, a method of manufacturing a make-up brush comprises densely housing a plurality of bristles with a predetermined length into a frame such that one ends of the bristles are exposed; melting and thermally bonding the ends of the bristles exposed to the outside of the frame by using a heating apparatus; integrally forming or assembling a housing section in one end of a rod section which extends by a predetermined length such that a user can hold the rod section by hand, the housing section having

such a cross-sectional shape that the bonded ends of the bristles can be inserted and housed; and inserting and housing the bonded ends of the bristles into the housing section and fixing the ends of the bristles to the housing section such that the bristles have a uniform density.

[0015] The method further comprises continuously providing a bristle wound around a bobbin to one side and cutting the bristle by a predetermined length; stacking the plurality of cut bristles such that the bristles are directed to a predetermined direction; and weighing a necessary quantity of bristles from the plurality of stacked bristles to form a predetermined shape and then providing the bristles. In addition, the method further comprises cutting and trimming the leading ends of the bristles exposed to the outside of the housing section.

BRIEF DESCRIPTION OF THE DRAWINGS

[0016] These and/or other aspects and advantages of the present general inventive concept will become apparent and more readily appreciated from the following description of the embodiments, taken in conjunction with the accompanying drawings of which:

[0017] Fig. 1A is a schematic view of a conventional make-up brush;

[0018] Fig. 1 B is a side view of the conventional make-up brush of Fig. 1A;

[0019] Fig. 2 is an exploded perspective view of a make-up brush according to an embodiment of the invention;

[0020] Figs. 3A to 3T are cross-sectional views of examples of a coating section and a housing section of the make-up brush according to the invention;

[0021] Figs. 4A to 4H are cross-sectional views of examples of a coating section and a housing section of the make-up brush according to the invention;

[0022] Figs. 5A to 5H are cross-sectional views of examples of a coating section and a housing section of the make-up brush according to the invention;

[0023] Fig. 6A and 6B are perspective views and cross-sectional views of a fixing section of the make-up brush according to the invention, showing a state where the fixing section is installed;

[0024] Figs. 7A and 7B are perspective views and cross-sectional views of a fixing section of the make-up brush according to the invention, showing a state where the fixing section is installed;

[0025] Figs. 8A and 8B are perspective views and cross-sectional views of a fixing section of the make-up brush according to the invention, showing a state where the fixing section is installed; and

[0026] Fig. 9 is a flow chart showing a method of manufacturing a make-up brush according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0027] Reference will now be made in detail to the embodiments of the present general inventive concept, examples of which are illustrated in the accompanying drawings, wherein like reference numerals refer to like elements throughout. The embodiments are described below in order to explain the present general inventive concept by referring to the figures.

[0028] Hereinafter, preferred embodiments of the present invention will be described in detail with reference to the accompanying drawings.

[0029] Fig. 2 is an exploded perspective view of a make-up brush according to an embodiment of the invention. Figs. 3A to 3T, Figs. 4A to 4H, and Figs. 5A to 5H are cross-sectional views of examples of a coating section and a housing section of the make-up brush according to the invention. Figs. 6A and 6B, Figs. 7A and 7B, and Figs. 8A and 8B are perspective views and cross-sectional views of examples of a fixing section of the make-up brush according to the invention, showing a state where the fixing section is installed. Fig. 9 is a flow chart showing a method of manufacturing a make-up brush according to an embodiment of the invention.

[0030] The make-up brush according to the invention includes a coating section 10, a heat-bonded portion 20, a housing section 30, a fixing section 40, and a rod section 50. As shown in Fig. 2, one ends of a plurality of bristles 11 forming the coating section 10 are bonded to each other, thereby forming the heat-bonded section 20. The plurality of bristles are uniformly arranged. The coating section 10 is inserted into the housing section 30 formed at an end of the rod section 50 so as to be fixed by the fixing section 40.

[0031] The plurality of bristles 11 of the coating section 10 are aggregated at a predetermined distance from each other, thereby forming a bundle. When the coating section 10 comes in contact with liquid cosmetic, the liquid cosmetic soaks between the plurality of bristles 11 or is smeared on the surfaces thereof. Further, when the coating section 10 having the liquid cosmetic therein is moved while coming in contact with a predetermined surface, the liquid cosmetic is applied on the surface while moving downward due to the gravity.

[0032] As described above, the heat-bonded section 20 is formed by thermally melting one end of the coating section 10. In a state where the plurality of bristles 11 of the coating section 10 are aggregated with a predetermined cross-section, the one end of the coating section 10 is exposed to a high temperature so as to be melted. Then, the melted end of the coating section 10 is cooled so that the plurality of bristles 11 forming the coating section 10 are coupled to each other while maintaining a predetermined cross-sectional shape.

[0033] The housing section 30 provides an internal space into which the end of the coating section 10 having the heat-bonded portion 20 formed can be inserted and

housed. Specifically, the housing section 30 provides an internal space having an opened end and a cross-sectional shape corresponding to the cross-sectional shape of the coating section 10 such that the end of the coating section 10 can be inserted.

[0034] As described above, the plurality of bristles 11 forming the coating section 10 are connected to each other through the heat-bonded portion 20 so as to maintain uniform density as a whole, and the internal space having a shape corresponding to the coating section 10 is provided in the housing section 30. Therefore, the coating section 10 can be implemented to have various cross-sectional shapes including those of the examples shown in Figs. 3A to 3T, 4A to 4H, and 5A to 5H.

[0035] The cross-sectional shape of the coating section 10 can be roughly divided into a shape where the plurality of bristles 11 are aggregated while forming an outer circumference with a specific shape, a shape where the plurality of bristles 11 are aggregated while forming outer and inner circumferences, a shape where the plurality of bristles 11 are aggregated in such a manner that a diagram with an outer circumference is divided into a plurality of portions, and a shape where the plurality of bristles 11 are aggregated in such a manner that a diagram with outer and inner circumferences are divided into a plurality of portions.

[0036] Figs. 3A to 3T illustrate various examples where the plurality of bristles 11 are aggregated while forming an outer circumference with a specific shape. As shown in Figs. 3A to 3H, the plurality of bristles 11 of the coating section 10 may have outer circumferences such as a circle, an ellipse, a rectangle, a lozenge, a semi-circle, a semi-ellipse, and a triangle. Further, as shown in Figs. 3I to 3L, the plurality of bristles 11 of the coating section 10 may have outer circumferences such a circle, an semi-ellipse, a rectangle, and a triangle of which the lower portions are opened. In addition, as shown in Figs. 3M to 3P, the plurality of bristles 11 of the coating section 10 may have outer circumferences such as a cross, a star, irregularities, and a corolla in which projections and recesses are provided.

[0037] Figs. 3Q to 3T illustrate the coating sections 10 having the same cross-sections as those of the coating sections 10 of Figs. 3I to 3L, respectively. However, the housing sections 30 shown in Figs. 3Q to 3T have concaved grooves corresponding to the cross-sectional shapes of the coating sections 10 of Figs. 3I to 3L, respectively. In this case, raw materials can be reduced by the amount corresponding to the concaved grooves.

[0038] If the concaved groove extends to the rod section 50, and when the make-up brush is dipped into coat liquid contained in a container, the coat liquid can be introduced into the concaved groove. Therefore, the coat liquid introduced into the concaved groove flows down along the surfaces of the housing section 30 and the rod section 50 toward to the coating section 10, while the coat liquid is coated. Therefore, it is possible to form a thick coated layer on a wider region.

[0039] Figs. 4A to 4H illustrate various examples in which the plurality of bristles 11 are aggregated while forming outer and inner circumferences with specific shapes. As shown in Figs. 4A to 4D, the plurality of bristles 11 of the coating section 10 may have outer circumferences formed in various shapes, such a circle, an ellipse, a rectangle, and a triangle, and inner circumferences formed in shapes corresponding to those of the outer circumferences, respectively. Further, as shown in Figs. 4E and 4F, the plurality of bristles 11 of the coating section 10 may have outer and inner circumferences which are formed symmetrically from side to side and up and down. As shown in Figs. 4G and 4H, the plurality of bristles 11 of the coating section 10 may have outer circumferences in which projections and recesses are formed and inner circumferences which are formed in different shapes from the outer circumferences.

[0040] When the coating section 10 having a cross-section with an inner circumference shown in Figs. 4A to 4H comes in contact with coat liquid, the coat liquid is introduced into an empty space defined inside the inner circumference. In this case, the coating section 10 can hold a larger amount of coat liquid than when the plurality of bristles are aggregated without the empty space defined inside the inner circumference. Accordingly, it is possible to form a thick coated layer on a wider region.

[0041] Figs. 5A to 5h illustrate various examples in which the plurality of bristles 11 are aggregated in a shape where a diagram with an outer circumference is divided into upper and lower portions and in a shape where a diagram with outer and inner circumferences is divided into upper and lower portions. As shown in Figs. 5A to 5D, the coating section 10 may have a cross-section in which the plurality of bristles 11 are aggregated in a shape where a diagram with an outer circumference is divided into upper and lower portions. Further, as shown in Figs. 5E to 5G, the coating section 10 may have a cross-section in which the plurality of bristles 11 are aggregated in a shape where a diagram with outer and inner circumferences is divided into upper and lower portions.

[0042] When the coating section 10 has cross-sections formed in the shapes as shown in Figs. 5A to 5H, coat liquid can be filled into an empty space corresponding to a distance defined by the division. Therefore, coating can be uniformly performed using the coating section 10 divided into two portions, thereby forming a thick coated layer on a wider region.

[0043] When it is assumed that a coated surface is positioned under the coating section 10, the coating section 10 is displaced in such a manner that the lower portion thereof is pushed upward, as the coating section 10 is pressed against the coated surface during coating. In this case, when the coating section 10 has an irregular top-to-bottom width like a circle or triangle, a larger number of bristles are aggregated upward and downward.

[0044] For example, in the coating section 10 having the cross-section shown in Figs. 4A to 4C, the density of

bristles in the left and right portions becomes larger than the density of bristles in the central portion during coating. In this case, when the coating section 10 is formed to have the cross-section shown in Figs. 5E to 5G, the bristles positioned in the left and right portions are introduced into the empty space defined between the upper and lower portions of the coating section, while being pushed upward. Therefore, it is possible to reduce the density of bristles in the left and right portions.

[0045] According to the invention, in a state where the plurality of bristles 11 are aggregated and housed in a frame having a housing space corresponding to the cross-sectional shape of the coating section 10, one ends of the bristles 11 are melted to thereby form the heat-bonded portion 20. Further, the housing section 30 having a cross-sectional shape corresponding to the cross-sectional shape of the coating section 10 is provided. Therefore, it is possible to manufacture the examples shown in Figs. 3A to 3T, 4A to 4H, and 5A to 5H.

[0046] The fixing section 40 serves to fix the end of the coating section 10, inserted into the housing section 30, to the housing section 30. As shown in Figs. 6A and 6B, 7A and 7B, and 8A and 8B, the fixing section 40 is formed in various manners. In addition, if the fixing section 40 can fix the ends of the bristles 11 forming the coating section 10 to the housing section 30 such that the density of the bristles 11 is uniform, the fixing section 40 is not limited to a specific structure.

[0047] In an example shown in Figs. 6A and 6B, the fixing section 40 is implemented as an inward protrusion 41 formed by pressing a portion of the housing 30 such that the portion of the housing 30 is bent toward the coating section 10. As shown in Figs. 6A and 6B, the inward protrusion 41 may be formed on one side of the housing 30. Alternately, the inward protrusion 41 may be uniformly formed on the entire periphery of the housing 30.

[0048] In an example shown in Figs. 7A and 7B, the fixing section 40 is implemented as a staple 42 which passes through the housing section 30 and the coating section 10. In this case, both ends of the staple 42 pass through the left and right portions of the housing section 30 from the top to the bottom. Further, the housing section 30 is pressed in such a manner that the internal space thereof housing the coating section 10 is reduced. Then, both ends of the staple 42 projecting from the bottom surface of the housing section 30 are bent, so that the coating section 10 is fixed to the housing section 30.

[0049] In an example shown in Figs. 8A and 8B, the fixing section 40 is implemented as a socket 43 which is disposed between the end of the coating section 10, where the heat-bonded portion 20 is formed, and the internal surface of the housing section 30. If the socket 43 has such a predetermined thickness as to closely cover the periphery of the coating section 10 and to be closely inserted onto the internal surface of the housing section 30, the structure of the socket 43 is not limited to a specific structure.

[0050] As shown in Figs. 8A and 8B, the socket 43 having a plurality of edges covers the end of the coating section 10 while being folded. The socket 43 has a fixing protrusion 43a formed on a connection surface between the edges, the fixing protrusion 43a protruding toward the coating section 10. When the socket 43 is inserted into the housing section 30 in a state where the socket 43 is folded to cover the end of the coating section 10, the fixing protrusion 43 presses the coating section 10 while the shape of the folded socket 43 is maintained. Then, the coating section 10 is fixed to the housing section 30.

[0051] The rod section 50 is connected to the housing section 30 and has such a predetermined length that a user can hold the rod section 50 by hand. The rod section 50 is based on well-known techniques, and thus the descriptions thereof will be omitted.

[0052] In the make-up brush according to the invention, the plurality of bristles 11 forming the coating section 10 is fixed to the housing section 30 while the density of the bristles is uniformly maintained by the fixing section 40. Therefore, liquid cosmetic can be uniformly held between the plurality of bristles 11, and the leading end of the coating section 10 can be contacted with the coated surface with uniform density.

[0053] In addition, with the enhancement of the coating performance, the cross-section of the coating section 10 can be formed in various shapes, in accordance with the use of the make-up brush, by the above-described method in which the cross-sectional shape of the coating section 10 is maintained by the heat bonding, and the heat-bonded portion 20 is fixed to the housing 30.

[0054] The make-up brush having the above-described structure can be manufactured by a method of manufacturing a make-up brush which is another technical aspect of the invention. The method of manufacturing a make-up brush is roughly divided into a bristle housing step, a heat-bonded-portion forming step, a housing forming step, and a bristle fixing step.

[0055] In the bristle housing step, a plurality of bristles having a predetermined length are densely housed in a frame with a predetermined shape such that one ends thereof are exposed. In the heat-bonded-portion forming step, the ends of the bristles exposed to the outside of the frame are thermally bonded to each other by a heating apparatus such that the bristles maintain a predetermined cross-sectional shape. Then, a heat-bonded portion is formed.

[0056] In the housing forming step, a housing section having such a cross-sectional shape that the bonded ends of the bristles can be inserted and housed is manufactured integrally with a rod section or is assembled into one end of the rod section. In the bristle fixing step, the bonded ends of the bristles, where the heat-bonded portion is formed, are inserted and housed into the housing section. Then, the bonded ends of the bristles are fixed to the housing section such that the bristles have a uniform density.

[0057] In the method of the manufacturing a make-up

brush according to the invention, the bristles are provided to the bristle housing step through a bristle cutting step, a bristle stacking step, and a bristle providing step. Further, a leading-end forming step is further performed in a state where the coating section is fixed to the housing section through the bristle fixing step.

[0058] In the bristle cutting step, while bristle wound around a bobbin is continuously supplied to one side, it is cut by a predetermined length. In the bristle stacking step, the plurality of cut bristles are stacked in a container so as to be directed to a predetermined direction. In the bristle providing step, a certain quantity of bristles are weighed and provided, which are required for forming a predetermined cross-sectional shape.

[0059] In the leading-end forming step, the leading ends of the bristles exposed to the outside of the housing section are cut in a straight-line shape, a concave shape, or a convex shape, in accordance with the use of the make-up brush. Then, the leading ends of the bristles are trimmed. The respective steps include a process of moving a product of a previous step to a next step.

[0060] According to the invention, the plurality of bristles forming the coating section of the brush is fixed to the housing section while the density of the bristles is maintained by the fixing section. Therefore, liquid cosmetic can be uniformly held between the plurality of bristles and can be uniformly applied on the coated surface.

[0061] Further, after the cross-sectional shape of the coating section is uniformly maintained by the heat bonding, the heat-bonded portion is fixed to the rod section. Therefore, while the density of the bristles is uniformly maintained, the cross-section of the coating section can be formed in various shapes depending on the use of the make-up brush.

[0062] Although a few embodiments of the present general inventive concept have been shown and described, it will be appreciated by those skilled in the art that changes may be made in these embodiments without departing from the principles and spirit of the general inventive concept, the scope of which is defined in the appended claims and their equivalents.

Claims

1. A make-up brush comprising:

a coating section for applying liquid cosmetic on a predetermined surface, the coating section having a plurality of bristles which forms a bundle, while being spaced at a predetermined distance from each other;

a heat-bonded portion formed by melting one ends of the bristles such that the ends are integrally connected to each other;

a housing section having such a cross-sectional shape that the end of the coating section having the heat-bonded portion is inserted and housed;

a fixing section for fixing the end of the coating section, inserted into the housing section, to the housing section such that the density of the bristles is uniform; and

a rod section connected to the housing section and having such a length that a user can hold the rod section by hand.

2. The make-up brush according to claim 1, wherein the coating section has a cross-sectional shape with an outer circumference.

3. The make-up brush according to claim 1, wherein the coating section has a cross-sectional shape with outer and inner circumferences.

4. The make-up brush according to claim 2 or 3, wherein the coating section has a cross-sectional shape where a diagram with a specific shape is divided into a plurality of portions.

5. The make-up brush according to claim 1, wherein the fixing section is an inward protrusion formed by pressing a portion of the housing section such that the portion is bent toward the coating section.

6. The make-up brush according to claim 1, wherein the fixing section is a staple which passes through the housing section and the coating section.

7. The make-up brush according to claim 1, wherein the fixing section is a socket which closely covers the periphery of the end of the coating section having the heat-bonded portion and has such a predetermined thickness as to be closely inserted onto the inner surface of the housing section.

8. The make-up brush according to claim 7, wherein the socket having a plurality of edges covers the coating section while being folded, and has a fixing protrusion formed on a connection surface between the edges, the fixing protrusion protruding toward the coating section.

9. A method of manufacturing a make-up brush, the method comprising:

densely housing a plurality of bristles with a predetermined length into a frame such that one ends of the bristles are exposed;

melting and thermally bonding the ends of the bristles exposed to the outside of the frame by using a heating apparatus;

integrally forming or assembling a housing section in one end of a rod section which extends by a predetermined length such that a user can hold the rod section by hand, the housing section

having such a cross-sectional shape that the bonded ends of the bristles can be inserted and housed; and

inserting and housing the bonded ends of the bristles into the housing section and fixing the ends of the bristles to the housing section such that the bristles have a uniform density.

10. The method according to claim 9 further comprising:

continuously providing a bristle wound around a bobbin to one side and cutting the bristle by a predetermined length;

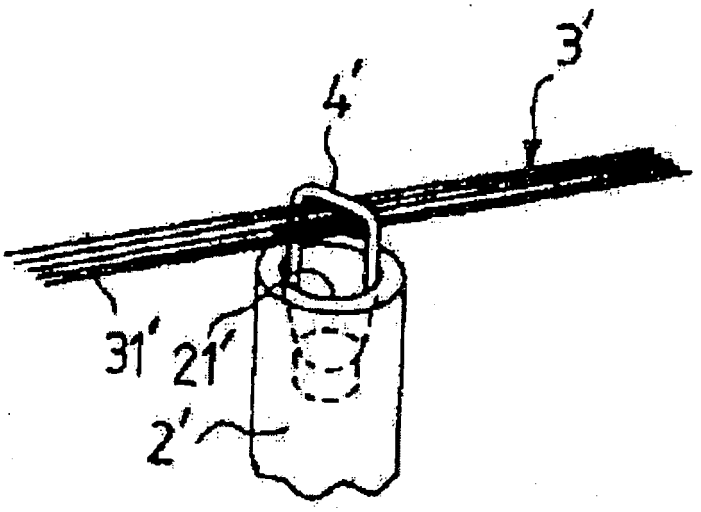
stacking the plurality of cut bristles such that the bristles are directed to a predetermined direction; and

weighing a necessary quantity of bristles from the plurality of stacked bristles to form a predetermined shape and then providing the bristles.

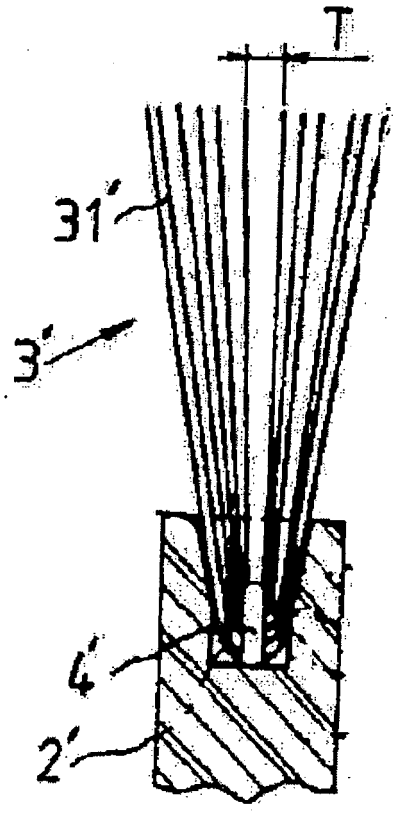
11. The method according to claim 9 or 10 further comprising:

cutting and trimming the leading ends of the bristles exposed to the outside of the housing section.

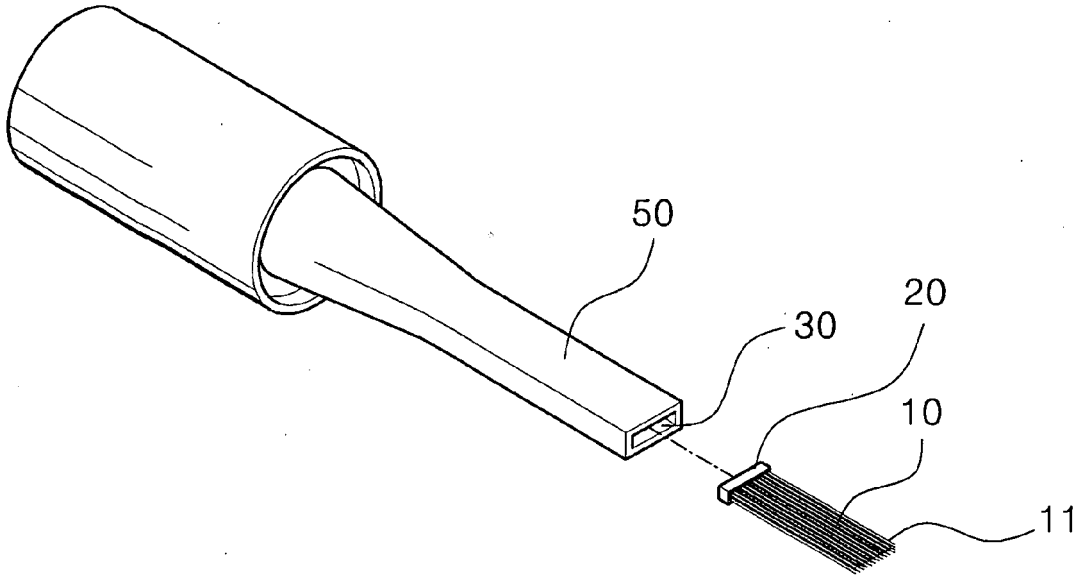
[FIG. 1A]



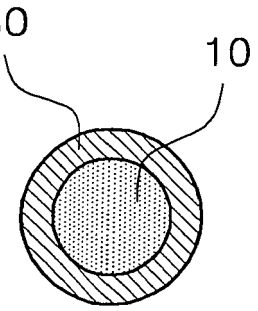
[FIG. 1B]



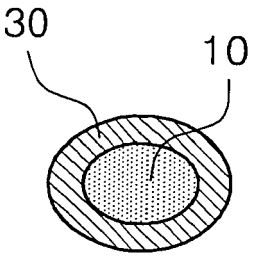
[FIG. 2]



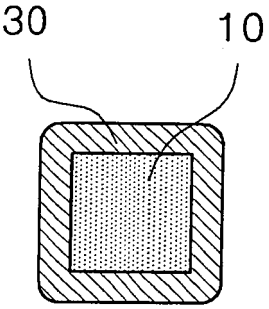
[FIG. 3A]



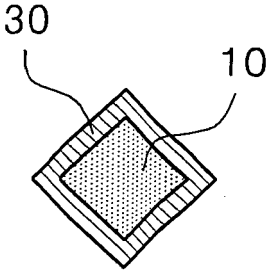
[FIG. 3B]



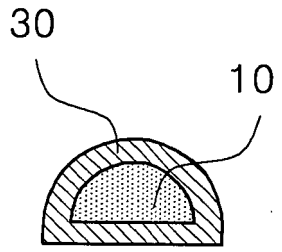
[FIG. 3C]



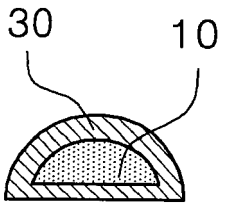
[FIG. 3D]



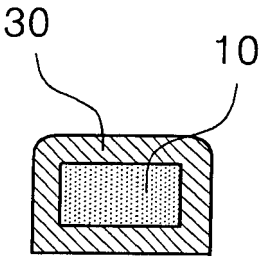
[FIG. 3E]



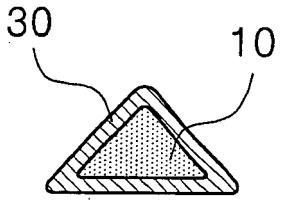
[FIG. 3F]



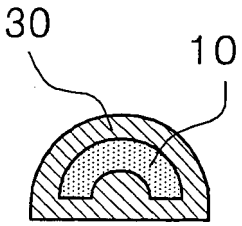
[FIG. 3G]



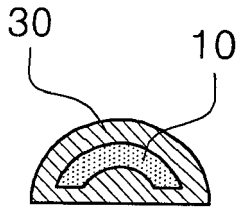
[FIG. 3H]



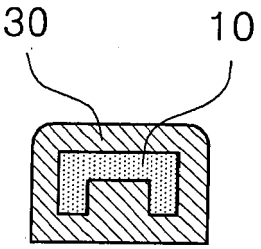
[FIG. 3I]



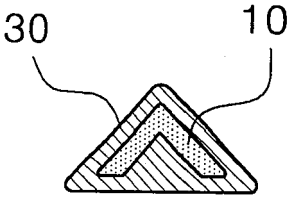
[FIG. 3J]



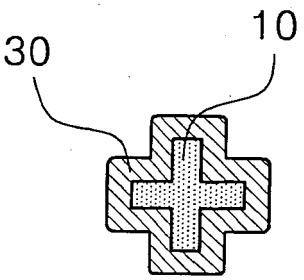
[FIG. 3K]



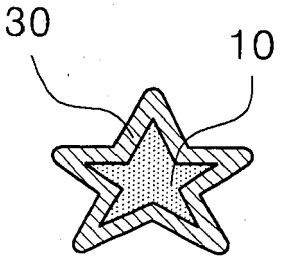
[FIG. 3L]



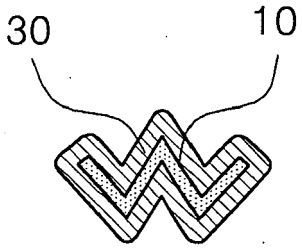
[FIG. 3M]



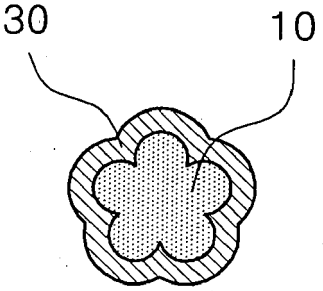
[FIG. 3N]



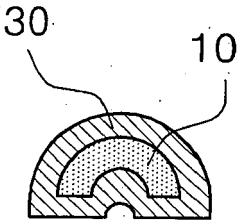
[FIG. 3O]



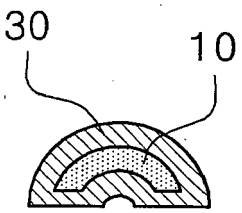
[FIG. 3P]



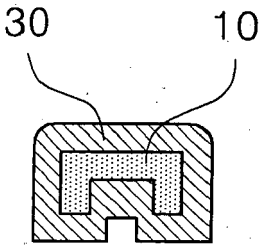
[FIG. 3Q]



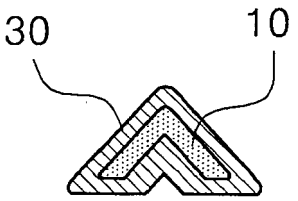
[FIG. 3R]



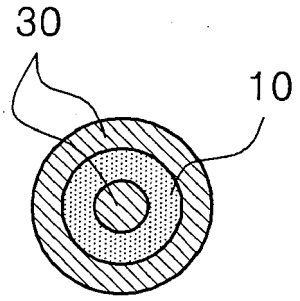
[FIG. 3S]



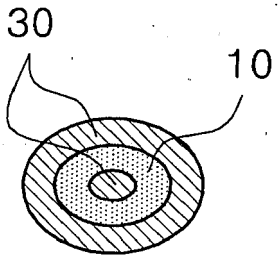
[FIG. 3T]



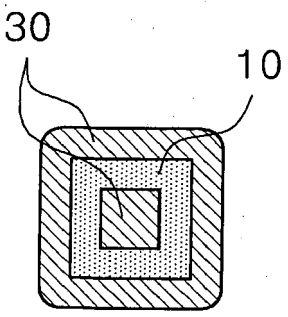
[FIG. 4A]



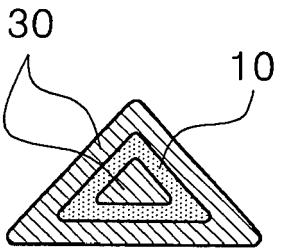
[FIG. 4B]



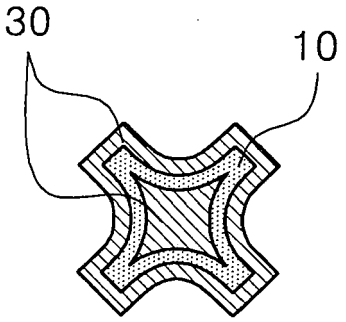
[FIG. 4C]



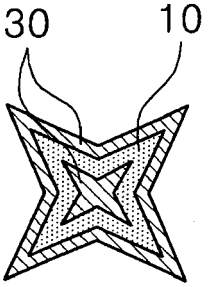
[FIG. 4D]



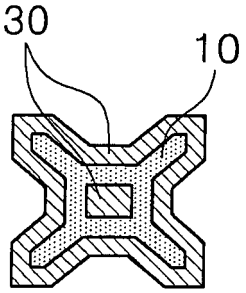
[FIG. 4E]



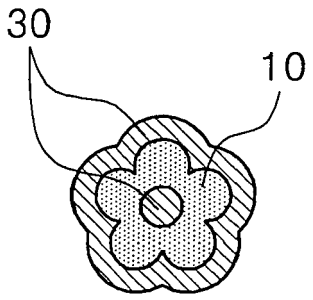
[FIG. 4F]



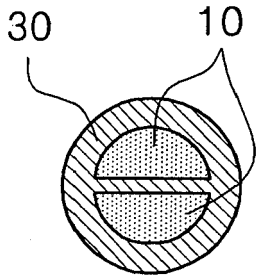
[FIG. 4G]



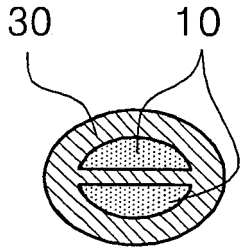
[FIG. 4H]



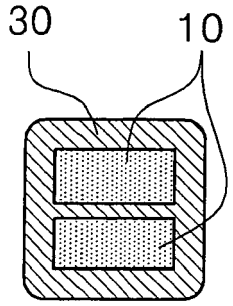
[FIG. 5A]



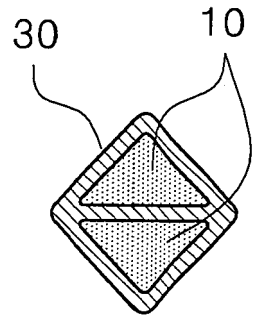
[FIG. 5B]



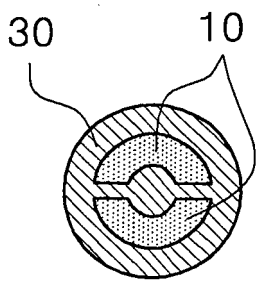
[FIG. 5C]



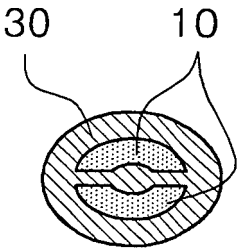
[FIG. 5D]



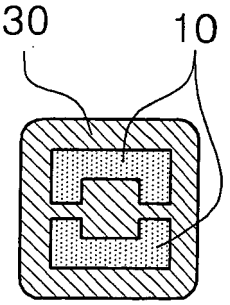
[FIG. 5E]



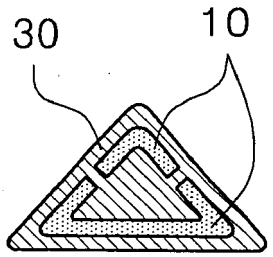
[FIG. 5F]



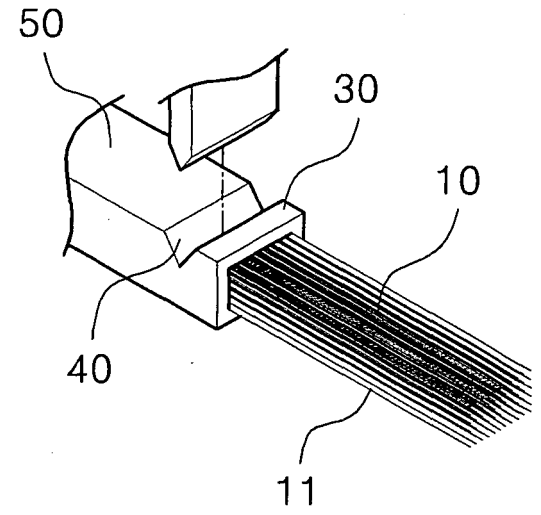
[FIG. 5G]



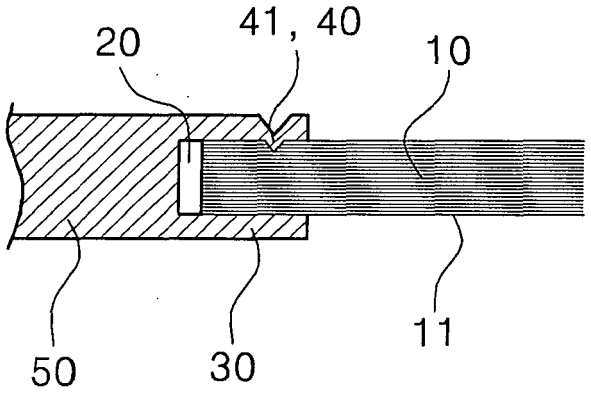
[FIG. 5H]



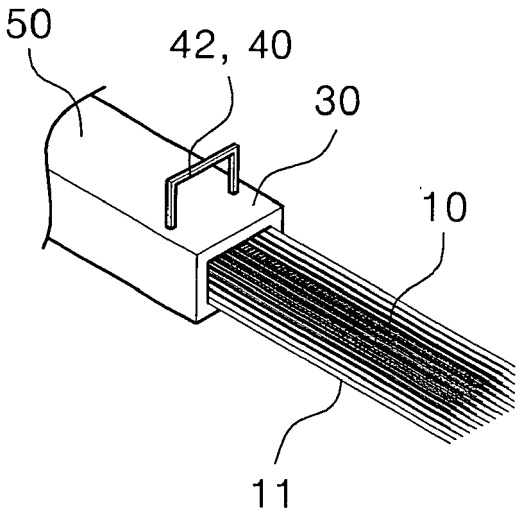
[FIG. 6A]



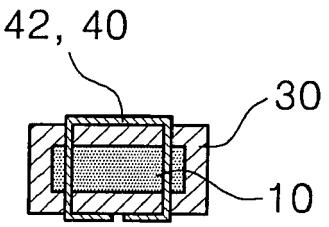
[FIG. 6B]



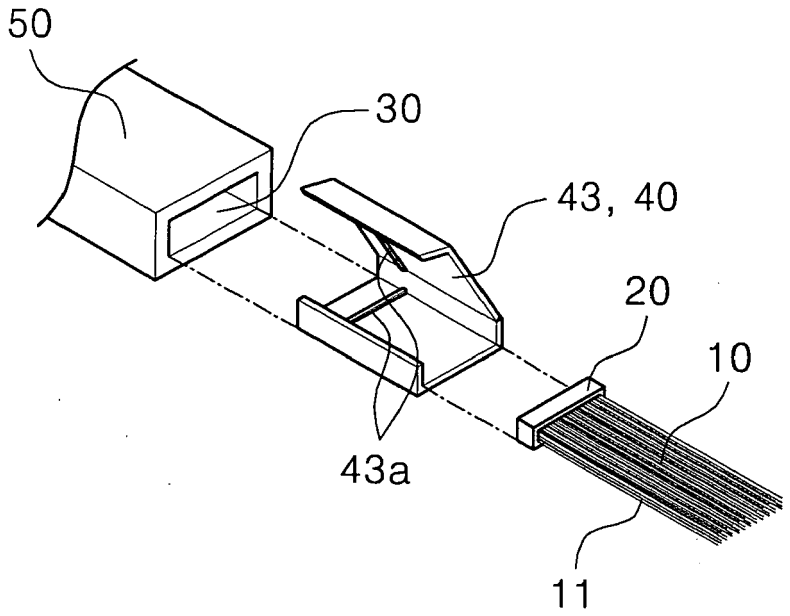
[FIG. 7A]



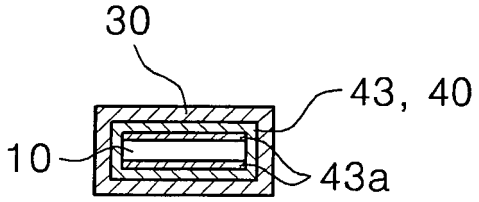
[FIG. 7B]



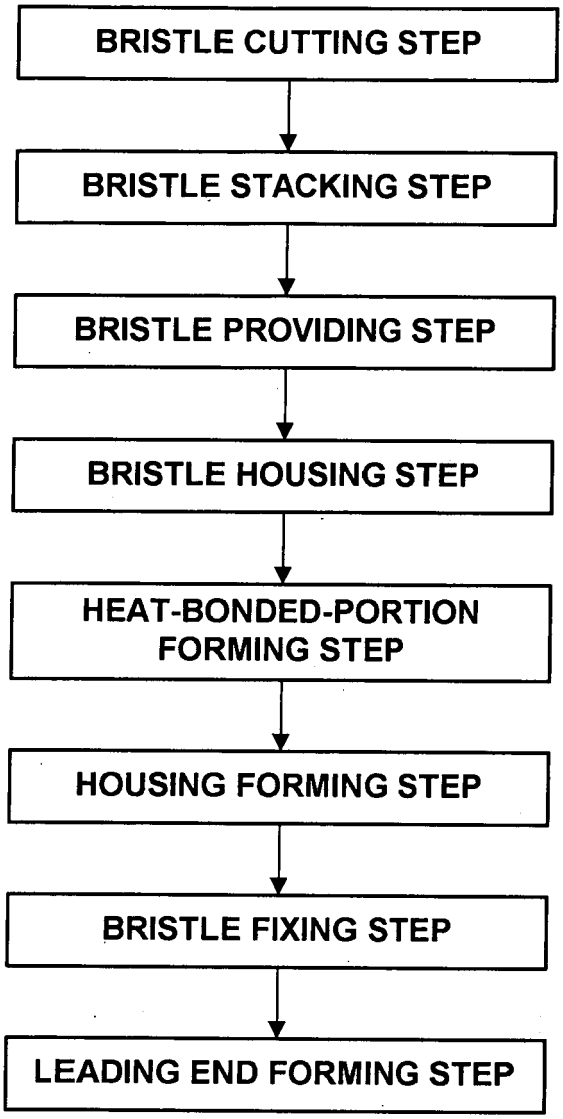
[FIG. 8A]



[FIG. 8B]



[FIG. 9]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EUROPEAN SEARCH REPORT

Application Number
EP 07 01 5682

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 37 12 962 A1 (SCHLERF CORONET WERKE [DE] CORONET WERKE GMBH [DE]) 3 November 1988 (1988-11-03) * column 5, line 13 - line 32 * * column 6, line 23 - line 25 * * figures 1-3,5,7,8 *	1-3,5,7, 9-11	INV. A46B3/10 A46B9/02
Y	-----	4	
Y	EP 0 694 266 A (OREAL [FR]) 31 January 1996 (1996-01-31) * figures 7-14 * -----	4	

TECHNICAL FIELDS SEARCHED (IPC)

A46B
A46D
A45D

The present search report has been drawn up for all claims

4

Place of search	Date of completion of the search	Examiner
The Hague	7 April 2008	Zetzsche, Brigitta

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