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(54) **A MASCARA BRUSH**

MASCARABÜRSTCHEN

BROSSE DE MASCARA

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Description

[0001] The present invention relates to applicators for applying a cosmetic composition to the eyelashes or the eyebrows, said applicators also being known as mascara brushes.

[0002] A mascara brush should enable the eyelashes to be loaded with composition, without however clumping the eyelashes together. The brush should thus also be capable of separating the eyelashes.

[0003] Brushes have been made available with a wide variety of shapes, with the purpose of obtaining both loading and separating properties that are satisfactory.

[0004] In particular, brushes are known having facets that are machined on a brush blank as described in EP application n° 1369056 A1. The presence of facets makes it possible, after passing through a wiper member, to obtain a distribution of composition on the brush that is not uniform, with some zones carrying more composition and thus being better adapted to loading the eyelashes, and other zones carrying less composition and thus being better adapted to separating the eyelashes.

[0005] Within a cross-section, certain known brushes present differences of length between the bristles that are relatively substantial. In use, this leads to an accumulation of composition that is excessive, and also to flattening of the brush and/or of the wiper member.

[0006] There exists a need to improve mascara brushes still further, and in particular to reach a satisfactory compromise between the separating ability of the brush and its loading ability. In addition, the brush should be able to be made easily, and to be used by the user without any special precautions. Preferably, the above-mentioned flattening problem is reduced, or even eliminated.

[0007] Exemplary embodiments of the invention provide packaging and applicator device for applying a composition to the eyelashes or the eyebrows, said device comprising:

- a container containing the composition; and
- a brush comprising:
    - a rectilinear core that extends along a longitudinal axis; and
    - bristles that are connected to the core, the free ends of the bristles defining an envelope surface, the brush having a varying portion of cross-section that varies along the longitudinal axis and that passes through at least one extremum at a non-zero distance from its axial ends;

the envelope surface not having a plane surface along the varying portion, and defining at least one facet that is not plane and that is not parallel to the longitudinal axis of the core, the facet being defined by at least one edge that is never rectilinear and that is contained in a plane that passes through the core, the edge presenting a distance to the longitudinal axis of the core that passes through a maximum wherever the cross-section of the varying portion also passes through a maximum, and through a minimum wherever the cross-section of the varying portion also passes through a minimum.

[0008] The invention makes it possible to satisfy the above-mentioned need. The shape of the brush enables wiping to be progressive.

[0009] In exemplary embodiments of the invention, the brush defines at least three facets around the longitudinal axis of the core, at least two of which are not plane, are of the same shape, and are not parallel to the longitudinal axis.

[0010] At least one longitudinal strip of the envelope surface may extend between two adjacent facets when said facets are at a distance from each other, or one longitudinal edge may be formed at the junction of two facets when said facets are contiguous. The strip or the edge presents a distance to the axis of the core that varies along the axis of the core. When it exists, the longitudinal strip presents a shape that is not plane between its axial ends.

[0011] The term "distance to the core" of the envelope surface at a point along the core should be understood to mean the shortest distance to the core within a cross-section of the envelope surface of the brush that passes through said point. Said shortest distance is designated by the magnitude d_{min}. In addition, d_{max} designates the greatest distance from the envelope surface to the longitudinal axis of the core, within the same cross-section.

[0012] Each facet has a distance to the core that varies along the varying portion.

[0013] The variation includes an extremum.

[0014] In a plane constituting a mid-plane for a facet and containing the longitudinal axis of the core, a tangent to the facet has a slope that varies along the facet. Preferably, over at least a portion of the length of the facet, the slope formed by the tangent relative to the longitudinal axis of the core varies in monotonic manner. For example, the slope decreases continuously, passes through zero, and then increases continuously. By way of example, the slope is zero at the point at which the cross-section of the envelope surface is at its maximum or its minimum, e.g. substantially mid-way along the bristled portion of the brush.

[0015] The brush need not have any facet of a shape that is cylindrical around an axis that is at a constant angle relative to the longitudinal axis of the core. The brush need not have any rectilinear edge parallel to the longitudinal axis of the core.

[0016] In a plane constituting a mid-plane for a longitudinal strip and containing the axis of the core, a tangent to the longitudinal strip that extends between two adjacent facets may have a slope that likewise varies along the longitudinal strip, e.g. increasing then decreasing, or vice versa, from one end of the longitudinal strip to the other.

[0017] Preferably, in the cross-section of the brush where the distance d_{max} is at its maximum for the entire

brush, $|d_{max}-d_{min}|/d_{min} \leq 3$. Thus, the brush presents zones having different properties without the relative differences in the lengths of the bristles within a single cross-section being very substantial; it is thus easier to avoid having zones with bristles that are too short and thus load too much composition on the eyelashes, which could make the operation of applying makeup more difficult and/or generate a problem of the brush and/or the wiper member being flattened.

[0018] Preferably, all of the facets are of the same shape, and the portion of the envelope surface that corresponds to a facet becomes superposed on the portion of the envelope surface that corresponds to another facet of identical shape, on turning the brush about the longitudinal axis.

[0019] The distance d_{min} may be greater than or equal to 3.5 mm at the point at which the cross-section of the brush is at its greatest, e.g. approximately mid-way along the bristled portion of the brush for a brush that is generally egg shaped. The distance d_{max} may be greater than or equal to 5 mm, or greater than or equal to 14 mm, at the point at which the cross-section of the brush is at its greatest.

[0020] The envelope surface may present axial symmetry about the longitudinal axis of the core.

[0021] At least one facet may present a profile that is concave or convex when the brush is observed in at least one direction of observation that is perpendicular to the longitudinal axis of the core. All of the facets are preferably non-plane. Also preferably, when the brush is observed perpendicularly to its longitudinal axis, the facets are either convex or concave, without any points of inflection and without any undulating shapes.

[0022] In cross-section, the facets may present a profile that is rectilinear, concave, or convex.

[0023] Two adjacent facets may be contiguous in a given cross-section. In a variant, two adjacent facets may be at a non zero distance from each other in a given cross-section, thus being separated by a longitudinal strip as defined above. Where appropriate, the longitudinal strip may be of zero width over at least a fraction of the length of the brush, the facets thus locally touching.

[0024] The core may be twisted, in particular it may have a right-hand twist or a left-hand twist.

[0025] The bristles may be of diameter lying in the range 6/100 mm to 35/100 mm. The strands of the core may be of diameter lying in the range 0.35 mm to 1.5 mm.

[0026] The cross-section of the envelope surface may pass through an extremum, preferably a maximum, between one third and two thirds of the way along the portion of the core carrying bristles.

[0027] The varying portion may extend over the entire length of the portion of the core that carries the bristles. In a variant, the varying portion extends over a fraction only of the portion of the core that carries the bristles. The brush may include distal and proximal envelope-surface portions that are prismatic in shape, the distal portion being longer than the proximal portion, for example. The varying portion may be situated between the proximal and distal portions.

[0028] The facets may extend axially as far as the distal and/or proximal end(s) of said portion carrying the bristles. In a variant, the brush presents an intermediate portion that carries said facets, and proximal and distal portions that have their own facets, e.g. that are plane and oriented obliquely relative to the longitudinal axis of the core, and that are preferably situated to extend the facets of the intermediate portion.

[0029] Advantageously, the container is fitted with a wiper member. A method of applying makeup to the eyelashes or the eyebrows is disclosed, in which method the composition is applied to the eyelashes or to the eyebrows by means of a device of the invention.

[0030] When said brush is a twisted-core brush, in order to manufacture said brush, it is possible to start from a blank of shape that is circularly cylindrical, which blank is then machined so as to impart thereto a shape that is circularly symmetrical, with a longitudinal profile that is not rectilinear. At this stage, the envelope surface of the brush is thus in the shape of an American football, an hourglass, a fish, or a peanut, for example. Then, the facets are trimmed. It is also possible to pass directly from a circularly-cylindrical blank to the final shape by machining the brush.

[0031] The present invention can be better understood on reading the following detailed description of nonlimiting embodiments thereof, and on examining the accompanying drawings, in which:

- Figure 1 is a diagrammatic longitudinal section view of an example of a packaging and applicator device made in accordance with the invention;
- Figure 2 shows the brush of the Figure 1 applicator in isolation;
- Figure 3 is an end view as seen looking along direction III of Figure 2;
- Figure 4 is a cross-section of the brush in a plane in which the transverse dimension of the envelope surface is at its maximum;
- Figures 5, 7, 9, 11, 13, and 17 are views similar to Figure 2 of variant embodiments of the brush;
- Figures 6, 8, 10, 12, and 14 are end views respectively as seen looking along directions VI, VIII, X, XII, and XIV of Figures 5, 7, 9, 11, and 13;
- Figures 15A to 15C are cross-sections, each showing the envelope surface of the blank and of the brush obtained after machining, for three variant embodiments;
- Figures 16A to 16C are longitudinal sections of the envelope surface of variant embodiments of the brush;
- Figure 18 shows the possibility of the core forming an angle with the longitudinal axis of the stem at the outlet therefrom; and
- Figure 19 shows a variant embodiment of the container.

[0032] The packaging and applicator device 1 shown in Figure 1 comprises: a container 2 containing the composition P for application; and an applicator 3 comprising a stem 4 of longitudinal axis X, provided at one end with a brush 5 and at the other end with a handle 6 that also constitutes a closure cap for closing the container 2.

[0033] The composition P is for application to the eyelashes and/or the eyebrows. It may include iron oxide, amongst others pigments, and an aqueous or organic solvent, depending on the formulation.

[0034] The container 2 comprises a body 2b that is provided with a neck 7 in which there is engaged a wiper member 8 presenting a lip 9 that is adapted to wipe the stem 4 while it is being removed from the container. By way of example, the lip 9 defines an orifice of section that is circular, and of diameter that is slightly greater than the diameter of the stem 4. As shown, the stem may be provided at its distal end with an intermediate element 10 that is elastically deformable, and in which the brush 5 is fastened, the intermediate element 10 itself being engaged in a housing of a rigid portion of the stem. By way of example, the intermediate element 10 may be as described in US application No. 2008/0107470.

[0035] The wiper member 8 may be of any kind, and, in particular, it may be conventional or as described in US applications Nos. 2009/0028627 or 2009/0052969.

[0036] Figure 2 is a diagram showing the brush 5 in isolation.

[0037] The brush 5 includes a core 11 that extends along a rectilinear longitudinal axis Y that coincides with the longitudinal axis of the stem 4.

[0038] The core 11 is preferably constituted by two metal strands that are twisted together so as to trap bristles having free ends that define an envelope surface E.

[0039] By way of example, the core 11 is formed by folding a wire into a U-shape, then twisting said wire about its own axis after the bristles have been inserted between the strands. The core 11 presents a proximal portion 11a that does not have bristles, and a bristled portion 11b of rectilinear longitudinal axis that carries the bristles. The ends of the bristles 32 of the brush 5, taken between the turns of the core 11, define the envelope surface E, as shown in Figure 4. The portion 11a is received in a housing of the stem 4, possibly provided with an intermediate element 10 as shown.

[0040] The bristled portion 11b is of total length L_{max}, measured along the longitudinal axis of the core 11.

[0041] In the embodiment in Figure 2, the varying portion of the brush extends over the entire bristled portion 11b of the core.

[0042] The envelope surface E presents a cross-section that varies along the bristled portion, and that, at at least one point along its length, passes through at least one extremum that is situated at a non-zero distance from the distal and proximal ends 13a and 13b of the bristled portion.

[0043] At the point at which the envelope surface E is at its maximum, as shown in Figure 4, a greatest transverse dimension D of the envelope surface E lies in the range 10 mm to 35 mm, or in the range 10 mm to 28 mm, for example.

[0044] In the embodiment in Figure 2, the cross-section of the envelope surface E of the brush passes through a maximum in a middle region, the envelope surface E having a general bulbous shape, like an American football with facets.

[0045] The envelope surface E defines a plurality of facets 20 of identical shape, and which, by way of example, are separated by longitudinal strips 21, each extending between two adjacent facets 20, as shown.

[0046] As shown in Figure 2, the facets 20 may extend axially as far as the distal and proximal ends 13a and 13b of the bristled portion of the brush 5.

[0047] The facets 20 may be formed by machining a brush blank having an envelope surface that is a surface of revolution. Machining may be performed by a machine that is numerically controlled. By way of example, machining is performed in such a manner as to give the facets a profile that is generally outwardly convex when the brush is observed in a direction that is perpendicular to its longitudinal axis Y, as shown in Figure 2, and that is outwardly concave when the brush is observed along its longitudinal axis Y, as shown in Figure 3. Machining may also be performed in two stages, namely giving the blank an egg shape starting from a shape this is circularly cylindrical, and then trimming the egg-shaped blank to produce the facets, the facets trimmed in this way not being plane.

[0048] The width ℓ_2 of the facets 20, measured between the edges 24 via which said facets join the longitudinal strips 21, may vary along the longitudinal axis Y of the brush 5, e.g. passing through a maximum at the point at which the envelope surface E presents a greatest cross-section. By way of example, and as shown, the edges 24 that border a single facet 20 are two curved lines that are concave towards each other, when the facet is observed from above. The distance from the edges 24 to the core vary along the axis of the core.

[0049] The width ℓ_1 of the longitudinal strips 21 varies between the ends 13a and 13b of the bristled portion. By way of example, the width ℓ_1 is at its maximum at the point at which the cross-section of the envelope surface E is at its maximum.

[0050] In Figure 4, it can be seen that the distance from the envelope surface E to the axis Y varies within a cross-section, between a maximum value d_{max} and a minimum value d_{min}. In the embodiment in Figures 2 to 4, d_{max} is reached at the longitudinal strips 21, and d_{min} is reached at the middle of the facets 20.

[0051] Each edge 24 extends in a single plane that contains the longitudinal axis of the core. Such a plane K is shown in Figure 4.

[0052] At the point at which the cross-section of the envelope surface E is at its maximum, the ratio $|d_{max}-d_{min}|/d_{min}$ lies in the range 0.1 to 3, or in the range 0.1 to 5, for example. By way of example, d_{max} equals 8

and d_{min} equals 3.5 for a brush in which the envelope surface E passes through a cross-section maximum mid-way along the bristled portion.

[0053] In the embodiment in Figures 2 to 4, the brush presents four facets 20 that are separated by the same number of longitudinal strips 21.

[0054] In these figures, at the point at which the cross-section of the brush is at its maximum, i.e. mid-way along the varying portion, it can be seen that the distance from the edges 24 to the longitudinal axis Y of the core is also at its maximum.

[0055] It would not be beyond the ambit of the present invention for the number of facets to be different, while nevertheless being greater than or equal to three, or even greater than or equal to two.

[0056] In the embodiment in Figures 5 and 6, the brush thus includes three facets 20 that are separated by three longitudinal strips 21.

[0057] In the embodiment in Figures 7 and 8, the number of facets 20 is six, and said facets are contiguous, being connected together via edges 24. However, by way of example, and as shown, the facets 20 have a profile that is outwardly concave in cross-section.

[0058] For example, between the ends of the bristled portion of the brush and the point at which the cross-section is at its greatest, the greatest transverse dimension of the envelope surface E varies by a factor that is not less than 2, as can be seen in Figures 3, 6, or 8, for example.

[0059] As can be seen in Figures 9, 11, and 13, the bristled portion may include an intermediate portion 5a that corresponds to the varying portion. Said portion may present a plurality of facets 20, and the envelope surface E of the intermediate portion 5a may define an extremum of the cross-section of the envelope surface E of the bristled portion of the brush, specifically a minimum in the embodiment in these figures.

[0060] The facets 20 are connected to distal and proximal portions 5b and 5c that may present prismatic shapes with respective facets 20b and 20c, as shown. Each of the facets 20b and 20c is situated in the prolongation of a facet 20 of the intermediate portion 5a and may be plane, the facets 20 not being plane.

[0061] In the embodiment in Figure 9, the cross-section of the envelope surface E of the brush 5 increases over the distal portion 5b, towards the stem 4, while conserving the same shape in cross-section, namely square in the embodiment shown, then decreases, passing through a minimum substantially mid-way along the intermediate portion 5a, and increases once again until it reaches the proximal portion 5c, at which point said cross-section decreases towards the proximal end 13b of the bristled portion. The facets 20b and 20 may be connected together forming edges 27 that are arranged as the sides of a polygon, in particular a square, in a common plane that is perpendicular to the longitudinal axis of the core. The facets 20 and 20c may be connected together via edges 28, also arranged as the sides of a polygon, in particular a square.

[0062] In the embodiment in Figures 9 and 10, the facets 20 are contiguous, being connected together via edges 24 that present a distance to the axis Y that varies along the axis Y.

[0063] The facets 20 may have a profile that is rectilinear when observed along the axis Y, as shown in Figures 10, 12, or 14.

[0064] In Figures 9, 11, and 13, at the point at which the cross-section of the brush is at its minimum, mid-way along the varying portion, it can be seen that the distance from the edges 24 to the longitudinal axis Y also passes through a local minimum.

[0065] Figure 15A shows the possibility of the facets 20 presenting, in cross-section, a profile that is outwardly convex, e.g. with a radius of curvature that is greater than the radius of curvature of the envelope surface E_i of the circularly-cylindrical blank from which the brush is made.

[0066] Figure 15B shows the possibility of the facets 20 presenting, in cross-section, a profile that is rectilinear, the greatest width ℓ_2 of each of the facets 20 being, for example, such that the edges 24 formed at the junction of the facets 20, form part of the envelope surface E_i of the blank that served to make the brush, at at least one point along the length of the brush.

[0067] Figure 15C shows the possibility of the brush 5 presenting facets 20 that are not all of identical shape, e.g. with alternating facets 20 having, in cross-section, a profile that is rectilinear and a profile that is concave. Figure 15C also shows the possibility of the brush 5 presenting at least two facets having an identical shape, said at least two facets being situated diametrally opposite each other.

[0068] Figures 16A to 16C show various shapes for the envelope surface E, in longitudinal section along the axis Y, each of the brushes 5 being capable of receiving any number of facets, greater than or equal to three, e.g. with facets having the same shapes as shown in the above-described embodiments. The facets may optionally be separated by longitudinal strips 11.

[0069] In the embodiment in Figure 16A, the envelope surface E presents the shape of a drop of water, in the embodiment in Figure 16B, the envelope surface E presents the shape of a fish, and in the embodiment in Figure 16C, the envelope surface E presents the shape of a ball.

[0070] Where appropriate, the core 11 may be curved at the outlet from the stem 4 so that the rectilinear longitudinal axis of the portion of the core carrying bristles forms a non-zero angle α with the longitudinal axis X of the stem 4, as shown in Figure 18. By way of example, the angle α lies in the range 1° to 20°.

[0071] The container 2 can be of various shapes and can be made in such a manner that the brush 5 is situated in the proximity of the inside surface 2a of the container while the brush 5 is being removed from or inserted into the container.

[0072] Figure 19 shows the possibility of making the

container 2 with a double sheath, the inner sheath defining the inside surface 2a of the container that is in contact with the composition. The inside surface 2a may be circularly cylindrical over a major fraction of the stroke along which the brush moves inside the container. The brush and the container may be made in accordance with the teaching of US application No. 2011/0030718 A1.

[0073] Figure 17 shows the possibility of subjecting the bristles that define the various facets of the envelope surface to special treatment, while the ends of the bristles that are not situated in the facets possibly not being subjected to treatment, or being subjected to different treatment.

[0074] The brush 5 may thus present, firstly, facets 20 having bristles with ends that present a first appearance, and, secondly, longitudinal strips 21 between the facets 20 and having bristles with ends that present a different appearance.

[0075] By way of example, the ends of the bristles that form part of the longitudinal strips 21 may be subjected to heat treatment, so as to form beads at the ends of the bristles, and the ends of the bristles that define the facets 20 may be subjected to no special treatment, or vice versa.

[0076] The invention is not limited to the embodiments shown. In particular, features of the various embodiments shown could be combined with one another to form variants that are not shown.

[0077] The bristles could include a material that has bacteriostatic properties and/or that favors sliding and/or that is magnetic.

[0078] A mixture of bristles could be used in any of the embodiments made in accordance with the invention. By way of example, the bristles could be made out of various materials. The bristles could be subjected to a treatment as described in US patent No. 7 125 188.

[0079] Although the embodiments shown relate to a twisted-core brush, the invention also applies to an injection-molded brush in which the bristles are molded with the core, out of the same material or out of a different material.

[0080] The expression "comprising a" should be understood as being synonymous with "comprising at least one" unless specified to the contrary.

Claims

1. A packaging and applicator device (1) for applying a composition (P) to the eyelashes or the eyebrows, said device comprising:

   • a container (2) containing the composition; and
   • a brush (5) comprising:

   • a core (11) that extends along a rectilinear longitudinal axis; and
   • bristles (32) that are connected to the core (11), the free ends of the bristles defining an envelope surface (E), the brush having a varying portion which cross-section varies along the longitudinal axis and passes through at least one maximum or minimum of section at a non-zero distance from its axial ends;

   the envelope surface (E) not having a plane surface along the varying portion, and defining at least one facet (20) that is not plane and that is not parallel to the longitudinal axis (Y) of the core, the facet being defined by at least one edge (24) that is never rectilinear and that is contained in a plane (K) that passes through the core, the edge (24) presenting a distance to the longitudinal axis of the core that passes through a maximum wherever the cross-section of the varying portion also passes through said maximum of section, and through a minimum wherever the cross-section of the varying portion also passes through said minimum of section.

2. A device according to claim 1, with $|d_{max}-d_{min}|/d_{min} \leq 3$, where d_{max} designates the greatest distance from the envelope surface (E) to the longitudinal axis (Y), and where d_{min} designates the shortest distance from the envelope surface (E) to the longitudinal axis (Y), in the cross-section where the distance d_{max} is at its maximum for the entire brush.

3. A device according to claim 2, the distance d_{min} being greater than or equal to 3.5 mm at the point at which the cross-section of the envelope surface of the brush is at its greatest.

4. A device according to claim 2, the distance d_{max} being greater than or equal to 5 mm at the point at which the cross-section of the envelope surface (E) of the brush is at its greatest.

5. A device according to any preceding claim, the envelope surface (E) presenting axial symmetry about the longitudinal axis of the core and/or all the facets (20) being of a same shape.

6. A device according to any preceding claim, at least one facet (20) presenting a profile that is concave when the brush is observed in at least one direction of observation that is perpendicular to the longitudinal axis (Y) of the core.

7. A device according to any preceding claim, in cross-section, the facets (20) presenting a profile that is rectilinear, concave, or convex.

8. A device according to any preceding claim, two adjacent facets (20) being contiguous in a given cross-section.

9. A device according to any one of claims 1 to 7, two adjacent facets (20) being at a non zero distance from each other in a given cross-section.

10. A device according to any preceding claim, the core (11) being twisted.

11. A device according to any preceding claim, the cross-section of the envelope surface (E) passing through an extremum, preferably a maximum, between one third and two thirds of the way along the portion (11b) of the core carrying bristles.

12. A device according to any preceding claim, the brush including distal (5b) and proximal (5c) envelope-surface portions that are prismatic in shape.

13. A device according to any preceding claim, the facets (20) extending axially as far as the distal and/or proximal ends of said portion (11b) carrying the bristles.

Patentansprüche

1. Verpackung und Applikatorvorrichtung (1) zum Aufbringen einer Mischung (P) auf die Augenwimpern oder die Augenbrauen, wobei die Vorrichtung Folgendes umfasst:

- einen Behälter (2), der die Mischung enthält; und
- eine Bürste (5), die Folgendes umfasst:

  - einen Kern (11), der sich entlang einer rechtwinkligen Längsachse erstreckt; und
  - Borsten (32), die mit dem Kern (11) verbunden sind, wobei die freien Enden der Borsten eine einhüllende Fläche (E) definieren, wobei die Bürste einen variierenden Abschnitt aufweist, dessen Querschnitt sich entlang der Längsachse ändert und wenigstens ein Maximum oder Minimum des Querschnitts bei einem Abstand vom axialen Ende, der nicht Null beträgt, durchläuft;

wobei die einhüllende Fläche (E) entlang des variierenden Abschnitts keine ebene Oberfläche aufweist und wenigstes eine Facette (20) definiert, die nicht eben ist und die zur Längsachse (Y) des Kerns nicht parallel ist, wobei die Facette durch wenigstens eine Kante (24) definiert ist, die niemals rechtwinklig ist und die in einer Ebene (K) enthalten ist, die durch den Kern verläuft, wobei die Kante (24) einen Abstand zu der Längsachse des Kerns aufweist, der ein Maximum durchläuft, wenn der Querschnitt des variierenden Abschnitts ebenfalls ein Querschnittsmaximum durchläuft, und ein Minimum durchläuft, wenn der Querschnitt des variierenden Abschnitts ebenfalls ein Querschnittsminium durchläuft.

2. Vorrichtung nach Anspruch 1, wobei $|d_{max} - d_{min}|/d_{min} \leq 3$ gilt, wobei im Querschnitt, dort, wo der Abstand d_{max} sein Maximum für die ganze Bürste hat, d_{max} den größten Abstand von der einhüllenden Fläche (E) zu der Längsachse (Y) bezeichnet und wobei d_{min} den kürzesten Abstand von der einhüllenden Fläche (E) zu der Längsachse (Y) bezeichnet.

3. Vorrichtung nach Anspruch 2, wobei an dem Punkt, an dem der Querschnitt der einhüllenden Fläche der Bürste maximal ist, der Abstand d_{min} größer oder gleich 3,5 mm ist.

4. Vorrichtung nach Anspruch 2, wobei an dem Punkt, an dem der Querschnitt der einhüllenden Fläche (E) der Bürste maximal ist, der Abstand d_{max} größer oder gleich 5 mm ist.

5. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die einhüllende Fläche (E) eine Achsensymmetrie bezüglich der Längsachse des Kerns aufweist und/oder wobei alle Facetten (20) die gleiche Form aufweisen.

6. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei wenigstens eine Facette (20) in wenigstens einer Betrachtungsrichtung der Bürste senkrecht zu der Längsachse (Y) des Kerns ein Profil aufweist, das konkav ist.

7. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die Facetten (20) im Querschnitt ein Profil aufweisen, das rechteckig, konkav oder konvex ist.

8. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei zwei aneinander angrenzende Facetten (20) in einem gegebenen Querschnitt zusammenhängen.

9. Vorrichtung nach einem der Ansprüche 1 bis 7, wobei zwei angrenzende Facetten (20) in einem gegebenen Querschnitt in einem Abstand zueinander sind, der nicht Null beträgt.

10. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der Kern (11) verdrillt ist.

11. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei der Querschnitt der einhüllenden Fläche (E) zwischen einem Drittel und zwei Drittel des Wegs entlang des Abschnitts (11b) des Kerns, der Borsten trägt, ein Extremum, vorzugsweise ein Maximum, durchläuft.

12. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei die Bürste einen distalen (5b) und einen proximalen (5c) Abschnitt der einhüllenden Fläche aufweist, die die Form eines Prismas aufweisen.

13. Vorrichtung nach einem der vorhergehenden Ansprüche, wobei sich die Facetten (20) axial so weit wie das distale und/oder das proximale Ende des Abschnitts (11b), der die Borsten trägt, erstrecken.

Revendications

1. Dispositif de conditionnement et d'application (1) destiné à appliquer une composition (P) sur les cils ou les sourcils, ledit dispositif comportant :

- un récipient (2) contenant la composition ; et
- une brosse (5) comprenant :

  - une âme (11) qui s'étend le long d'un axe longitudinal rectiligne ; et
  - des poils (32) qui sont raccordés à l'âme (11), les extrémités libres des poils définissant une surface enveloppe (E), la brosse ayant une portion évolutive dont la section transversale varie le long de l'axe longitudinal, et passe par au moins un extremum à une distance non nulle de ses extrémités axiales ;

la surface enveloppe (E) étant dépourvue, le long de la portion évolutive, de surface plane et définissant au moins une facette (20) qui est non plane et qui n'est pas parallèle à l'axe longitudinal (Y) de l'âme, la facette étant définie par au moins une arête (24) qui n'est jamais rectiligne et qui est contenue dans un plan (K) qui passe par l'âme, l'arête (24) présentant une distance par rapport à l'axe longitudinal de l'âme qui passe par un maximum lorsque la section transversale de la portion évolutive passe aussi par ledit maximum de section, et par un minimum lorsque la section transversale de la partie évolutive passe également par ledit minimum de section.

2. Dispositif selon la revendication 1, avec $|d_{max}-d_{min}|/d_{min} \leq 3$, où d_{max} désigne la plus grande distance entre la surface enveloppe (E) et l'axe longitudinal (Y), et où d_{min} désigne la plus courte distance entre la surface enveloppe (E) et l'axe longitudinal (Y), dans la section transversale où la distance d_{max} est maximale pour l'ensemble de la brosse.

3. Dispositif selon la revendication 2, la distance d_{min} étant supérieure ou égale à 3,5 mm au point auquel la section transversale de la surface enveloppe de la brosse est la plus grande.

4. Dispositif selon la revendication 2, la distance d_{max} étant supérieure ou égale à 5 mm au point auquel la section transversale de la surface enveloppe (E) de la brosse est la plus grande.

5. Dispositif selon l'une quelconque des revendications précédentes, la surface enveloppe (E) présentant une symétrie axiale autour de l'axe longitudinal de l'âme et/ou toutes les facettes (20) étant de forme identique.

6. Dispositif selon l'une quelconque des revendications précédentes, au moins une facette (20) présentant un profil qui est concave lorsque la brosse est observée dans au moins une direction qui est perpendiculaire à l'axe longitudinal (Y) de l'âme.

7. Dispositif selon l'une quelconque des revendications précédentes, les facettes (20) présentant, en section transversale, un profil qui est rectiligne, concave ou convexe.

8. Dispositif selon l'une quelconque des revendications précédentes, deux facettes (20) adjacentes étant contigües dans une section transversale donnée.

9. Dispositif selon l'une quelconque des revendications 1 à 7, deux facettes (20) adjacentes à une distance non nulle l'une de l'autre dans une section transversale donnée.

10. Dispositif selon l'une quelconque des revendications précédentes, l'âme (11) étant torsadée.

11. Dispositif selon l'une quelconque des revendications précédentes, la section transversale de la surface enveloppe (E) passant par un extremum, de préférence un maximum, entre un tiers et deux tiers de la longueur de la portion (11b) de l'âme portant des poils.

12. Dispositif selon l'une quelconque des revendications précédentes, la brosse comportant des parties de surface enveloppe distale (5b) et proximale (5c) de forme prismatique.

13. Dispositif selon l'une quelconque des revendications précédentes, les facettes (20) s'étendant axialement jusqu'aux extrémités distale et/ou proximale de ladite portion (11b) portant les poils.

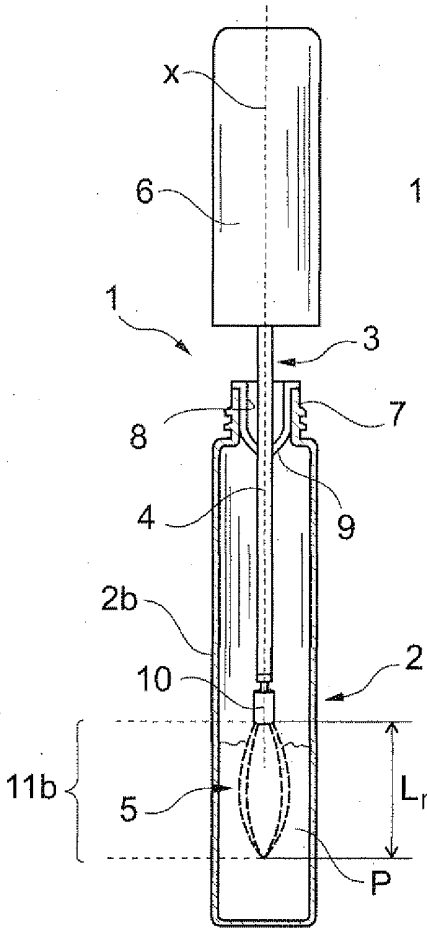

Fig. 1

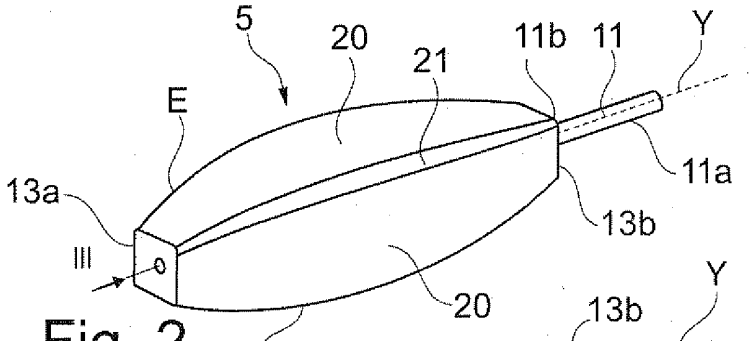

Fig. 2

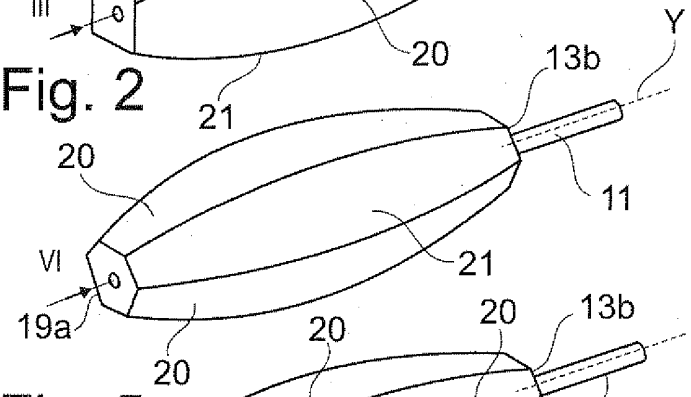

Fig. 5

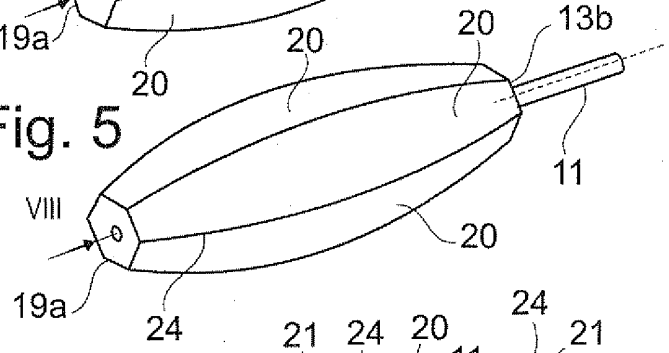

Fig. 7

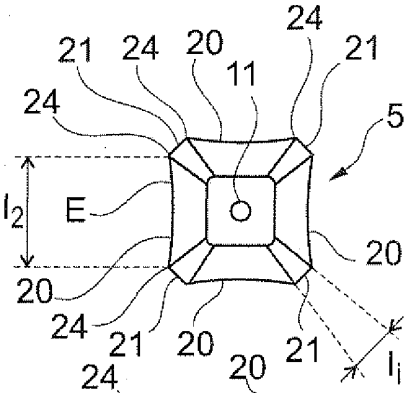

Fig. 3

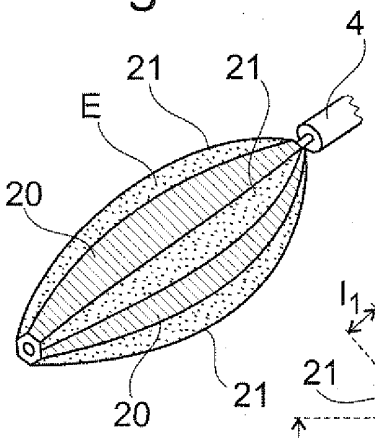

Fig. 17

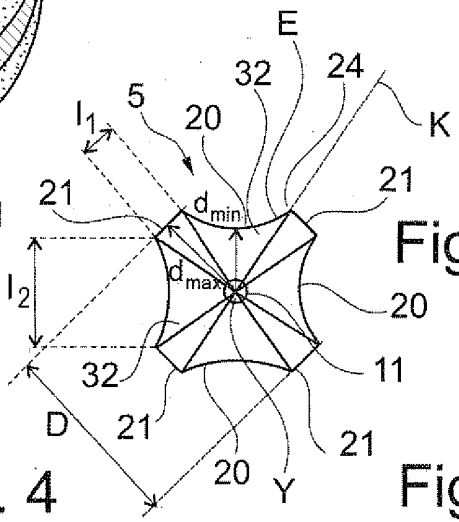

Fig. 4

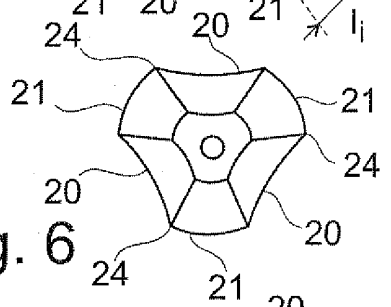

Fig. 6

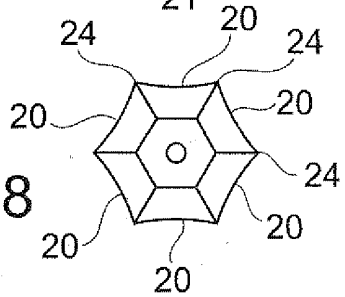

Fig. 8

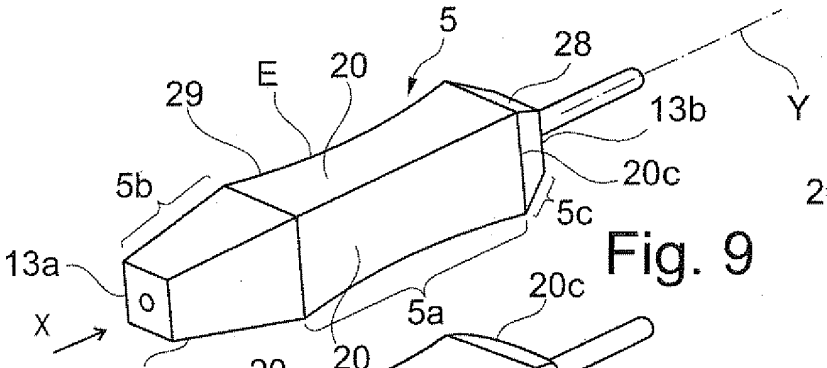

Fig. 9

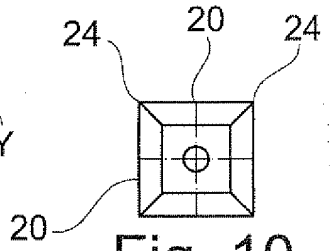

Fig. 10

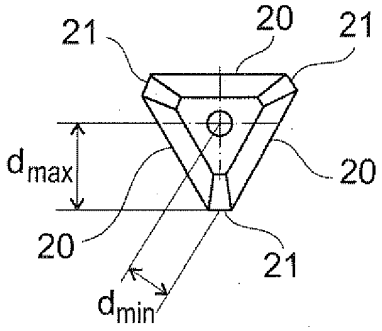

Fig. 12

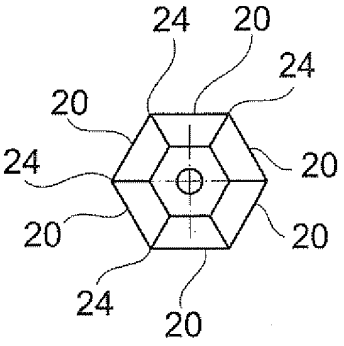

Fig. 14

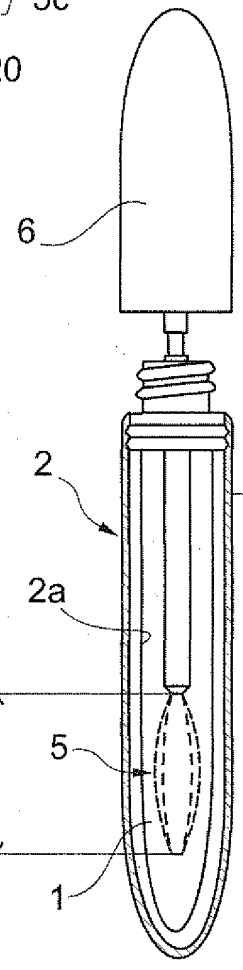

Fig. 19

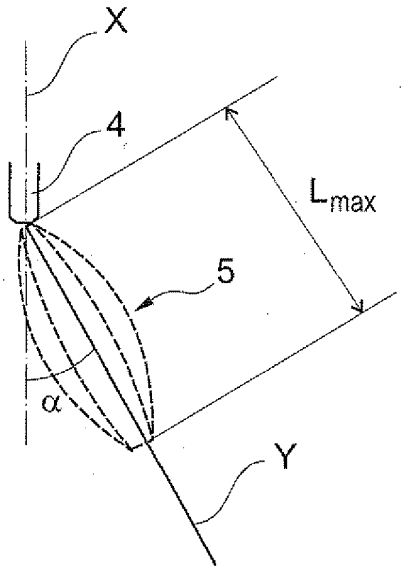

Fig. 18

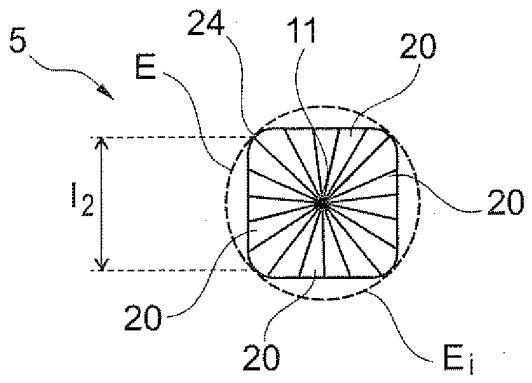

Fig. 15A

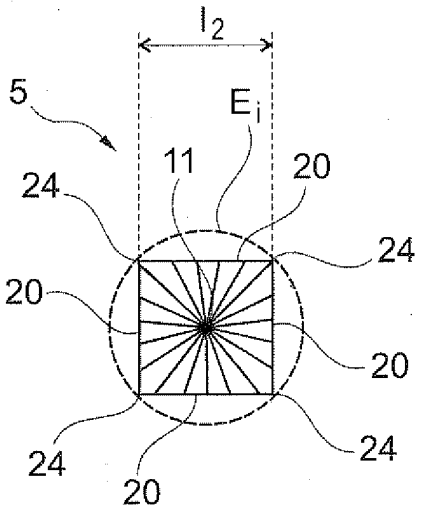

Fig. 15B

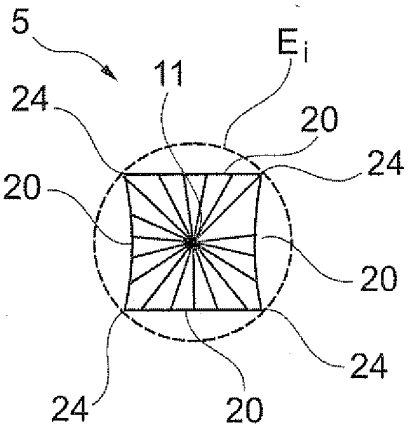

Fig. 15C

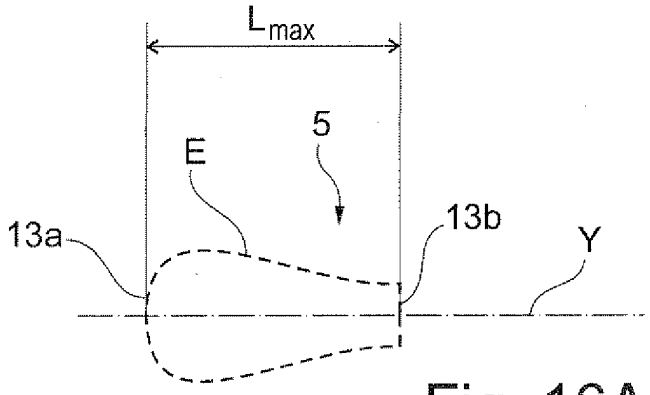

Fig. 16A

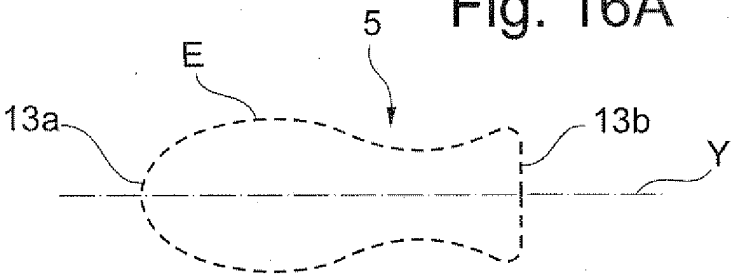

Fig. 16B

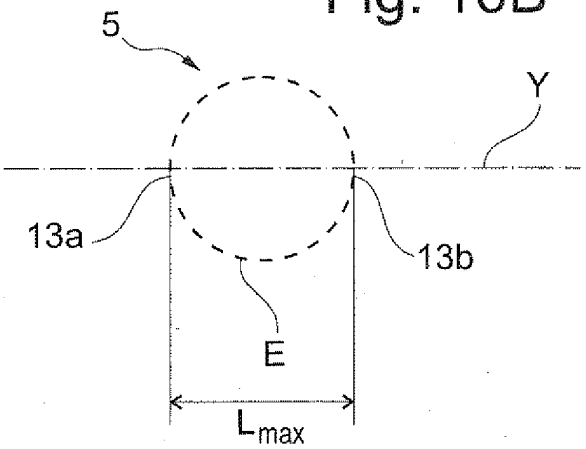

Fig. 16C

REFERENCES CITED IN THE DESCRIPTION

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