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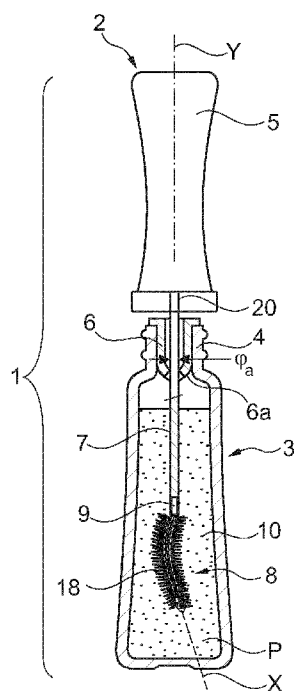


Fig. 1

(57) Abstract: The present invention relates to an applicator (2) for applying a cosmetic, makeup or care, product (P) to the eyelashes and/or eyebrows, having a molded applicator member (8) having: a core (10) that extends at least partially along a curved longitudinal axis (X) contained in a plane of curvature (Pc), and spikes (18) that are carried by the core (10) and are disposed all around the latter, wherein, in said applicator, the core (10) has a cross section, taken perpendicularly to its longitudinal axis (X), with an elongate overall shape and having a major elongation axis (Ts) perpendicular to the plane of curvature (Pc) of the core (10).

APPLICATOR FOR APPLYING A COSMETIC PRODUCT

Technical field

The present invention relates to an applicator for applying a cosmetic, makeup or care, product to the eyelashes and/or eyebrows, for example mascara. The invention also relates to devices comprising the applicator and to a container containing the product to be applied.

Prior art

The container is conventionally provided with a wiping member which wipes the stem of the applicator as it is withdrawn from the container. The behavior of the applicator member on passing through the wiping member depends on numerous factors such as the shape and the nature of the lip of the wiping member, the arrangement of the application elements on the applicator member, and the overall shape of the applicator, and also the shape of the cross section thereof, and in particular of its core.

A compromise has to be found with regard to the quantity of product which is left on the applicator member for application of makeup. Excessive wiping of the applicator member causes the latter to be insufficiently loaded and obliges the user to frequently dip the applicator back into the container. Insufficient wiping leaves an excess of product that is difficult to manage and could result in clumps of product on poorly separated eyelashes.

Moreover, the choice of the overall shape of the applicator is also important for effective separation and combing of the eyelashes and eyebrows.

The application US 2008/178901 describes a mascara brush having a core with a rectilinear axis and an oval cross section, bearing application elements on two opposite faces.

The international application WO 2009/053925 discloses a mascara brush having a core with an oval cross section, bearing application elements with different lengths.

The application FR 2 891 709 describes a mascara brush having a holder with an oval cross section, bearing rows of axially opposite application elements.

An applicator having a core with an oval cross section, bearing application elements on only one side of the core, is known from the application FR 2 961 384.

Objective of the invention

There is a need to further improve applicators for applying a product, notably mascara, to the eyelashes and/or eyebrows, in order to improve the performance thereof, and more particularly to promote the creation on the applicator member of regions that are
5 more heavily laden with product, which allow easy application of makeup and rapid and abundant loading of the eyelashes and/or eyebrows, while retaining a satisfactory capacity for separating and combing the latter.

Summary of the invention

The invention aims to meet this objective and the subject thereof, according to
10 one of its aspects, is an applicator for applying a cosmetic, makeup or care, product to the eyelashes and/or eyebrows, having a molded applicator member having:

- a core that extends at least partially along a curved longitudinal axis contained in a plane of curvature, and

- spikes that are carried by the core and are disposed all around the latter,

15 wherein, in said applicator, the core has a cross section, taken perpendicularly to its longitudinal axis, with an elongate overall shape and having a major elongation axis perpendicular to the plane of curvature of the core.

The recess formed by the curvature of the core is less wiped on passing through the wiping member when the applicator is withdrawn, while the flanks of the core are
20 scraped, since the elongate cross section of the core deforms the wiper member, returning the product onto the wider faces.

Therefore, the invention makes it possible to obtain a surplus of product on the applicator member, in particular at the recess formed by the curvature of the core. This surplus of product allows the eyelashes and/or eyebrows to be loaded with a large and
25 satisfactory amount of product from the first application. The wider faces furthermore enlarge the contact surface on application, while the curvature of the core, in particular on the convex side on the opposite side from the recess formed by the curvature, makes it easier to access the base of the eyelashes.

The less wide flanks make it possible to separate and comb the eyelashes and
30 eyebrows with precision since they are less loaded with product.

The “*longitudinal axis of the core*” denotes the line connecting all of the centers of mass of the cross sections of the core. The longitudinal axis may be a central axis, or even an axis of symmetry for the core, in particular when the core has a cross

section in the overall shape of a regular polygon. The longitudinal axis of the core is contained in a plane, which may be a plane of symmetry for some or even for all of the cross sections of the core.

The term “*spike*” denotes an individualizable projecting element intended to come into engagement with the eyelashes and/or eyebrows.

The “*plane of curvature*” denotes the plane of observation along which the curvature of the applicator member is visible, corresponding to the plane in which the latter is observed from the side.

Core

The longitudinal axis of the core is preferably entirely contained in the plane of curvature.

The core advantageously has a cross section with an oval overall shape, in particular elliptical.

The core may extend, from its distal end, along a rectilinear longitudinal axis along at least a quarter of its length, better still along around a third of its length.

The longitudinal axis of the core may extend, from its proximal end, along at least a part of its length, along an arc of a circle with a constant radius of curvature.

Preferably, the cross section of the core narrows, along at least a part of its length, in the direction of its distal end.

The transverse dimension of the core measured along the major elongation axis may be between 2 mm and 5 mm.

The transverse dimension of the core measured along an axis passing through its center and perpendicular to the major elongation axis may be between 1 mm and 3.5 mm.

The applicator may have a stem bearing the applicator member at a first end, said applicator member having a portion for attaching to the stem that extends along a rectilinear longitudinal axis, which may be coincident with the longitudinal axis of the stem. The distance between the longitudinal axis of the core and the longitudinal axis of the portion for attaching to the stem may pass through a maximum at a point of the core that is situated at a distance from the proximal and distal ends thereof, in particular between one third and two thirds of the length of the core, and then preferably decreases in the direction of the distal end of the core, in particular until it is zero.

The angular offset γ between the longitudinal axis of the portion for attaching to the stem and a straight line passing through this axis at the proximal end of the core and through the location where the distance between the longitudinal axis of the core and the longitudinal axis of the portion for attaching to the stem is at its maximum, may be
5 between 5° and 55° , better still between 10° and 35° .

The distal end of the core may be aligned with the longitudinal axis of the portion for attaching to the stem. The distal end of the core may thus not be off-center with respect to its proximal end, the distal end returning to face the proximal end. In one variant, the distal end of the core is off-center with respect to its proximal end.

10 The core may comprise two opposite flanks that extend parallel to the plane of curvature, and two opposite faces, the transverse dimension of which extends along the major elongation axis of the cross section of the core. The recess formed by the curvature of the core is located on the side of one of these two faces when the applicator is viewed from the side.

15 Spikes

The spikes are preferably disposed in a plurality of longitudinal rows,

At least one first longitudinal row may be offset axially with respect to a second longitudinal row, better still each longitudinal row of spikes is offset axially with respect to the adjacent longitudinal row. The expression "*axially offset longitudinal rows*"
20 should be understood as meaning that the spikes of the same rank in these rows do not occupy the same position along the longitudinal axis of the core.

The applicator according to the invention makes it possible to separate the eyelashes and/or eyebrows, avoiding the formation of clumps, by virtue of the axial offset between the longitudinal rows of spikes.

25 During manufacture, it is possible to vary the spacing between and arrangement of the spikes, over the curvature of the core and its cross section, and the axial offset between the longitudinal rows of spikes, in order to alter the extent to which the applicator is loaded with product after wiping.

30 The spikes of the same rank in every other longitudinal row of spikes may all occupy the same axial position along the longitudinal axis of the core.

The spikes may be spaced apart regularly along the longitudinal rows.

The spacing between the spikes is preferably constant within at least one longitudinal row of spikes, better still within each longitudinal row. In one variant, the

spacing between the spikes is variable within at least one longitudinal row and/or from one row to another.

Within a longitudinal row, the spacing between two consecutive spikes, measured at the base of the spikes that connects them to the core, between the outer flanks of the spikes, along the axis of the row containing the spikes, may be between 0.1 mm and 1.5 mm, better still between 0.3 mm and 1 mm.

The longitudinal rows of spikes advantageously follow the longitudinal axis of the core, and are thus not rectilinear.

The spikes may also be disposed in circumferential rows, referred to as crowns of spikes, that are each formed by spikes that occupy one and the same axial position along the longitudinal axis of the core.

The implantation of the spikes may be such that the angular offset α about the longitudinal axis of the core, between the spikes of two consecutive crowns of spikes, is non-zero, being preferably equal to half the angular pitch λ between two consecutive spikes in one and the same crown.

It is possible for the spikes not to meet at their base. In one variant, the spikes of at least one longitudinal row meet at their base, the spacing between the bases of the spikes that face one another being zero.

The majority of the spikes may be the same height in each position along the longitudinal axis of the core. In one variant, the height of the spikes varies, for example in a monotonous manner, along the longitudinal axis of the core, within one longitudinal row of spikes or from one row to another.

The height of the spikes may be between 0.5 mm and 2.5 mm, better still between 0.8 mm and 1.8 mm. The “*height of a spike*” denotes the distance measured along the elongation axis of the spike between its free end and the base of the spike by way of which it is connected to the core. The “*elongation axis of the spike*” denotes an axis which passes through the centers of mass of the cross sections of the spike.

Within a longitudinal row, the spacing between two consecutive spikes, measured at the free ends of the spikes, between the elongation axes of the spikes, along the axis of the row containing the spikes, may be between 1 mm and 3 mm, better still between 1.2 mm and 2.3 mm, and in particular in the region of 1.6 mm.

The spikes may have a width of between 0.3 mm and 0.85 mm, better still between 0.45 mm and 0.75 mm. The “*width of a spike*” denotes the greatest transverse

dimension of the spike, in cross section, along the elongation axis of the spike and parallel to the plane of curvature of the core.

The spikes may have a thickness of between 0.2 mm and 0.8 mm, better still between 0.35 mm and 0.65 mm. The “*thickness of a spike*” denotes the greatest transverse
5 dimension of the spike, in cross section, perpendicularly to the elongation axis of the spike and to the plane of curvature of the core.

The spikes of at least one longitudinal row are advantageously the same shape, better still all the spikes of the applicator member are the same shape. In one variant, the shape of the spikes differs within longitudinal rows and/or from one row to another.

10 The spikes may have any shape. The spikes advantageously have a cylindrical or tapered, in particular conical, frustoconical or pyramidal shape, notably with a hexagonal base. In one variant, the spikes have an asymmetric, semi-conical shape, having a first face with a first shape, notably a flat shape, and a second face with a second shape, for example a non-flat shape, notably a rounded shape.

15 The cross section of the spikes is advantageously polygonal, notably hexagonal. In one variant, the cross section of the spikes is substantially circular, elliptical or semi-elliptical, or may also be for example semi-circular (referred to as half-moon).

At least some of the spikes, better still all of the spikes, may extend along a rectilinear elongation axis. In one variant, the spikes are curved.

20 At least some of the spikes may extend along an elongation axis that is not perpendicular to the surface of the core at the point at which the spikes are attached to the core. In one variant, the spikes each extend from the core along an elongation axis perpendicular to the surface of the core at the point at which the spikes are attached to the core. The angle β formed between the elongation axis of the spikes and the surface of the
25 core may be between 60° and 120°.

At least some of the spikes that are disposed closer to the proximal end of the core than to its distal end may extend along an elongation axis oriented toward the proximal end of the core.

30 At least some of the spikes that are disposed closer to the distal end of the core than to its proximal end may extend along an elongation axis oriented toward the distal end of the core. This makes it possible to give a more wide-eyed look by pushing the eyelashes toward the outside of the row of eyelashes.

The spikes situated close to the location where the distance between the longitudinal axis of the core and the longitudinal axis of the portion for attaching to the stem is at its maximum may extend in an elongation axis perpendicular to the surface of the core. The spikes may notably be spikes that are disposed in at least two circumferential rows of spikes on either side of this location at the maximum distance.

The free ends of the spikes of the applicator member define an envelope surface of the applicator member, which is in particular in the form of a cylinder of revolution about the longitudinal axis of the core.

The envelope surface may have a cross section that varies along all or part of the length of the applicator member. The cross section of the envelope surface preferably narrows in the direction of the distal end of the core. The transverse dimension of the envelope surface measured along the major elongation axis may be between 4 mm and 7 mm. The transverse dimension of the envelope surface measured along an axis passing through its center and perpendicular to the major elongation axis may be between 3 mm and 6 mm.

In one variant, the envelope surface has a greatest transverse dimension that is substantially constant along at least a part of the length of the applicator member, notably along more than half the part of the core that carries the spikes.

The spikes may be ended by a rounded, notably hemispherical, free end, the radius of which may be between 0.06 mm and 0.2 mm

The applicator member may have between six and 24 longitudinal rows.

The core and the spikes may be molded from one and the same material, or in a variant they can be made from at least two different materials. In exemplary embodiments of the invention, the spikes are produced by overmolding on the core.

The core and/or the spikes are preferably produced from a thermoplastic material.

Applicator

The stem of the applicator may be fastened at a second end to a gripping member.

The core may be solid, being for example molded with an end piece for fastening to the stem of the applicator, extending the portion for attaching the applicator member to the stem.

The applicator member may be fastened to the stem by snap-fastening, adhesive bonding, welding, crimping, pressing, stapling, force-fitting, fitting in a cold state or fitting in a hot state, for example by an end piece of the applicator member being mounted in a housing in the stem. In a variant, the stem is received in a housing provided in the core.

It is also possible for the stem and the applicator member to be molded or not to be molded in one piece and from the same thermoplastic material.

The spikes may be made of a material that is more or less rigid than a material used to produce the stem of the applicator to which the core is attached.

The core extends along a longitudinal axis which, at at least one point along its length, forms a non-zero angle with the longitudinal axis of the stem to which the core is fastened. The applicator member may be angled at its attachment to the stem.

The stem extends preferably along a rectilinear longitudinal axis. In one variant, the stem has a rectilinear portion that extends along a rectilinear longitudinal axis and a curved portion that extends along a curved longitudinal axis.

The stem may have a first, rigid portion that is extended on the distal side by a second, more flexible portion, for example made of elastomer, that bears the applicator member.

The visible length of the applicator member may be between 15 mm and 35 mm, better still between 22 mm and 29 mm.

The applicator may have a total of between 150 and 600 spikes, better still between 200 and 400 spikes.

Application device

A further subject of the invention is a device for packaging and applying a product to the eyelashes and/or eyebrows, having an applicator according to the invention, as defined above, and a container containing the product to be applied.

The gripping member of the applicator may constitute a cap for closing the container.

The container may have a wiping member suitable for wiping the stem and the applicator member. The wiping orifice preferably has a circular shape.

The ratio S_{pd}/φ_a between the transverse dimension S_{pd} of the envelope surface measured along an axis passing through its center and perpendicular to the major

elongation axis, close to the distal end of the core, and the diameter φ_a of the orifice defined by the lip of the wiping member may be between 1 and 2.1.

The product is preferably a mascara.

Description of the figures

5 The invention may be understood better from reading the following detailed description of a nonlimiting exemplary embodiment thereof, and with reference to the attached drawing, in which:

- Figure 1 is a schematic elevation view, in partial longitudinal section, of an example of a packaging and application device produced in accordance with the invention,

10 - Figure 2 shows a perspective side view of the applicator member from figure 1 on its own,

- Figure 2A shows a detail of the applicator member from figure 2,

- Figure 3 shows a top view of the applicator member from figure 1 on its own,

15 - Figure 4 is a cross-sectional view on IV-IV in figure 2,

- Figure 5 is a cross-sectional view on V-V in figure 2,

- Figure 6 is a cross-sectional view on VI-VI in figure 2, and

- Figure 7 illustrates the withdrawal of the applicator member from the container of the packaging and application device from figure 1.

Detailed description

20 Figure 1 shows a packaging and application device 1 produced in accordance with the invention, having an applicator 2 and an associated container 3 containing a product P to be applied to the eyelashes and/or eyebrows, for example mascara or a care product.

25 The container 3 has, in the example in question, a threaded neck 4 and the applicator 2 has a closure cap 5 designed to be fastened on the neck 4 so as to close the container 3 in a sealed manner when it is not in use, the closure cap 5 also constituting a gripping member for the applicator 2.

30 The latter has a stem 7 of longitudinal axis Y, which is attached at its upper end to the closure cap 5 and at its lower end to an applicator member 8. The latter has a core 10 carrying spikes 18 that extend from the core 10 and all around the latter. As can be seen in figure 3, the first spikes 18 along the longitudinal axis X of the core 10, starting from the stem 7, are disposed at a non-zero distance d_i from the proximal end 14 of the core. The

last spikes 18 along the longitudinal axis X of the core 10, starting from the stem 7, are disposed at a non-zero distance d_d from the distal end 13 of the core 10.

The container 3 also has a wiping member 6, inserted into the neck 4.

5 This wiping member 6, which may be of any suitable type, has, in the example in question, a lip designed to wipe the stem 7 and the applicator member 8 when the applicator 2 is withdrawn from the container 3. The lip defines a wiping orifice 6a having a diameter φ_a adapted to that of the stem 7. The wiping member 6 may be made of elastomer. The wiping orifice 6a has for example a circular shape, but the invention is not limited to one particular shape of the wiping orifice.

10 The diameter φ_a of the wiping orifice 6a is typically between 3 and 5.75 mm.

In the example illustrated, the stem 7 has a circular cross section, but it would not constitute a departure from the scope of the present invention if the stem 7 had a different cross section, it then being possible to fasten the cap 5 on the container 3 in some other way than by screwing, if necessary. The wiping member 6 is adapted to the shape of
15 the stem 7 and to that of the applicator member 8, if appropriate.

Preferably, and as in the example in question, the longitudinal axis Y of the stem 7 is rectilinear and coincident with the longitudinal axis of the container 3 when the applicator 2 is in place thereon, but it would not constitute a departure from the scope of the present invention if the stem 7 were not rectilinear, forming for example an elbow.

20 If need be, the stem 7 may have an annular narrowing at its portion that is positioned opposite the lip of the wiping member 6, so as not to mechanically stress the latter unduly during storage.

As illustrated in figure 3, the applicator member 8 may have an end piece 9 for fastening it in a corresponding housing in the stem 7.

25 The applicator member 8 may be fastened to the stem 7 by any means, and notably by force-fitting, snap-fastening, adhesive bonding, welding, stapling or crimping, in this housing.

With reference to figures 1 and 2, it is apparent that the core 10 has an elongate shape along a curved longitudinal axis X contained entirely in a plane of curvature Pc, corresponding to the plane of observation of these figures. The longitudinal axis X may be
30 central, as illustrated. The longitudinal axis X of the core 10 may extend, from its proximal end 14, along at least a part of its length, along an arc of a circle with a constant radius of

curvature R_1 . In the example described, starting from its distal end 13, the core 10 extends along a rectilinear longitudinal axis along around a third of its length.

As can be seen in figures 3 and 6, the core 10 has a cross section, taken perpendicularly to its longitudinal axis X, with an oval overall shape and having a major elongation axis T_s perpendicular to the plane of curvature P_c of the core 10.

Preferably, and as in the example described, the cross section of the core 10 narrows, along at least a part of its length, in the direction of its distal end 13.

As can be seen in figure 6, the transverse dimension D_{gd} of the core 10 measured along the major elongation axis T_s , close to its distal end 13, is for example equal to 2.8 mm. The transverse dimension D_{pd} of the core along an axis passing through its center and perpendicular to the major elongation axis T_s , close to its distal end 13, is for example equal to 1.5 mm.

As can be seen in figure 4, the transverse dimension D_{gp} of the core 10 measured along the major elongation axis T_s , close to its proximal end 14, is for example equal to 3.7 mm. The transverse dimension D_{pp} of the core measured along an axis passing through its center and perpendicular to the major elongation axis T_s , close to its proximal end 14, is for example equal to 2 mm.

In the example in question, the applicator member 8 has a portion 11 for attaching to the stem 7, which is extended by the end piece 9 and extends along a rectilinear longitudinal axis Z. As can be seen in figure 2, the distance between the longitudinal axis X of the core 10 and this longitudinal axis Z passes through a maximum D_o at a point of the core 10 that is situated at a distance from the proximal 14 and distal 13 ends of the latter, between one third and two thirds of the length of the core 10, and then decreases in the direction of the distal end 13 of the core 10 until it is zero.

In the example described, the angular offset γ between the longitudinal axis Z of the portion 11 for attaching to the stem 7 and a straight line D passing through this axis Z at the proximal end 14 of the core 10 and through the location 10c where the distance between the longitudinal axis X of the core 10 and the longitudinal axis Z is at its maximum, is between 5° and 55° , better still between 10° and 35° .

Preferably, and as shown, the distal end 13 of the core 10 is aligned with the longitudinal axis Z of the portion 11 for attaching to the stem 7, the distal end returning to face the proximal end.

The visible length H of the applicator member 8 is for example equal to around 27 mm.

In the example described, the spikes 18 are disposed within longitudinal rows 17, 19, 20 of spikes, as can be seen notably in figures 2 and 3, each longitudinal row 17 being offset axially with respect to the adjacent longitudinal rows 19, 20. The longitudinal rows 17, 19, 20, 21, 22 of spikes 18 advantageously follow the longitudinal axis X of the core 10, and are thus not rectilinear.

In the example illustrated, some of the spikes 18 each extend from the core 10 along an elongation axis T that is not perpendicular to the surface 12 of the core at the point at which the spike 18 is attached to the core 10.

As shown, some of the spikes 18 that are disposed closer to the proximal end 14 of the core 10 than to its distal end 13 may extend along an elongation axis T oriented toward the proximal end 14 of the core 10, while some of the spikes 18 that are disposed closer to the distal end 13 of the core 10 than to its proximal end 14 may extend along an elongation axis T oriented toward the distal end 13 of the core 10. The spikes 18 situated close to the location 10c where the distance between the longitudinal axis X of the core 10 and the longitudinal axis Z of the portion 11 for attaching to the stem 7 is at its maximum may for their part extend along an elongation axis T perpendicular to the surface 12 of the core 10, for example the spikes that are disposed in at least two circumferential rows 31, 32, 33, 34 of spikes on either side of this location 10c at the maximum distance.

The angle β formed between the elongation axis T of the spikes 18 and the surface 12 of the core 10, visible in figure 2A, is for example between 60° and 120° .

Preferably, as illustrated, the spikes 18 are regularly spaced along the longitudinal rows 17, 19, 20.

The spikes 18 in every other longitudinal row advantageously all occupy the same axial position along the longitudinal axis X of the core 10, as illustrated in figure 3, for example between the longitudinal rows 17 and 20.

The spacing S_p between the spikes, measured at the free ends of the spikes, between the elongation axes of the spikes, is for example between 1.2 mm and 2.3 mm, and is equal to 1.6 mm in the example in question.

The spacing S_e between two consecutive spikes 18, measured at the base of the spikes that connects them to the core 10, between the outer flanks of the spikes, along the axis of the row 22 containing the spikes, is for example between 0.3 mm and 1 mm.

As can be seen in figure 6, the implantation of the spikes 18 within the rows 16 of spikes may be such that the angle α about the longitudinal axis X of the core 10 between two consecutive spikes 18 is non-zero, preferably being equal to half the angular pitch λ between two consecutive spikes 18.

5 The majority of the spikes 18 may be the same height.

The height h_p of the spikes 18 is for example between 0.8 mm and 1.8 mm.

The spikes 18 may have various shapes, optionally varying within a row and/or from one row to another. In the example in question, and as can be seen notably in figure 4, all the spikes 18 have a hexagonal base. The invention is not limited to one particular
10 type of spikes, however.

In the example in question, the free ends 28 of the spikes 18 define an envelope surface S of the applicator member 8, having a curved longitudinal axis that is coincident with the longitudinal axis X of the core 10, and is rotationally symmetrical about said axis X.

15 The ratio S_{pd}/φ_a , visible in figure 7, between the transverse dimension S_{pd} of the envelope surface S measured along an axis passing through its center and perpendicular to the major elongation axis Ts, close to the distal end 13 of the core 10, and the diameter φ_a of the orifice 6a defined by the lip of the wiping member 6 may be between 1 and 2.1.

As can be seen in figure 6, the transverse dimension S_{gd} of the envelope surface
20 S measured along the major elongation axis Ts, close to the distal end 13 of the core 10, is for example equal to 4.6 mm. The transverse dimension S_{pd} of the envelope surface S measured along an axis passing through its center and perpendicular to the major elongation axis Ts, close to the distal end 13 of the core 10, is for example equal to 4.5 mm.

25 As can be seen in figure 4, the transverse dimension S_{gp} of the envelope surface S measured along the major elongation axis Ts, close to the proximal end 14 of the core 10, is for example equal to 5.9 mm. The transverse dimension S_{pp} of the envelope surface S measured along an axis passing through its center and perpendicular to the major elongation axis Ts, close to the proximal end 14, is for example equal to 5.7 mm.

30 In the example in question, the spikes 18 are made in one piece with the core 10 by molding thermoplastic material.

In order to mold the applicator member 8, use can be made of any thermoplastic material which is or is not relatively rigid, for example SEBS, a silicone,

latex, a material having improved slip, butyl, EPDM, a nitrile, a thermoplastic elastomer, a polyester elastomer, a polyamide elastomer, a polyethylene elastomer or a vinyl elastomer, a polyolefin such as PE or PP, PVC, EVA, PS, SEBS, SIS, PET, POM, PU, SAM, PA or PMMA. It is also possible to use a ceramic, for example based on alumina, a resin, for example of the urea-formaldehyde type, and possibly a material containing graphite as filler. It is possible notably to use the materials known under the trade names Teflon[®], Hytrel[®], Cariflex[®], Alixine[®], Santoprene[®], Pebax[®] and Pollobas[®], this list not being limiting.

In order to use the device 1, the user unscrews the closure cap 5 and withdraws the applicator member 8 from the container 3.

After the applicator member 8 has passed through the wiping member 6, a certain quantity of product P remains in the recess 8b formed by the curvature of the core 10, creating a reservoir of product P that makes it possible to satisfactorily load the eyelashes and/or eyebrows with product P. Moreover, the eyelashes and/or eyebrows are separated satisfactorily, avoiding the formation of clumps, by virtue of the axial offset between the longitudinal rows 17, 19, 20 of spikes 18, and notably by using, for combing said eyelashes and/or eyebrows, the opposite flanks 10a, 10b extending parallel to the plane of curvature, these being less laden with product P.

Of course, the invention is not limited to the exemplary embodiment which has just been described.

At least one of the core 10 and a spike 18 may be flocked or undergo any heat treatment or mechanical treatment.

The expression “*having a*” should be understood as being synonymous with “*comprising at least one*”, and “*between*” is understood as including the limits, unless specified to the contrary.

CLAIMS

1. An applicator (2) for applying a cosmetic, makeup or care, product (P) to the eyelashes and/or eyebrows, having a molded applicator member (8) having:

5 - a core (10) that extends at least partially along a curved longitudinal axis (X) contained in a plane of curvature (Pc), and
 - spikes (18) that are carried by the core (10) and are disposed all around the latter,

 wherein, in said applicator, the core (10) has a cross section, taken perpendicularly to its longitudinal axis (X), with an elongate overall shape and having a major elongation axis (Ts) perpendicular to the plane of curvature (Pc) of the core (10).

2. The applicator as claimed in claim 1, wherein the core (10) has a cross section with an oval overall shape, in particular elliptical.

3. The applicator as claimed in claim 1 or 2, wherein the core (10) extends, 15 from its distal end (13), along a rectilinear longitudinal axis along at least a quarter of its length, better still along around a third of its length.

4. The applicator as claimed in one of claims 1 to 3, wherein the longitudinal axis (X) of the core (10) extends, from its proximal end (14), along at least a part of its length, along an arc of a circle with a constant radius of curvature (R_1).

20 5. The applicator as claimed in one of the preceding claims, wherein the cross section of the core (10) narrows, along at least a part of its length, in the direction of its distal end (13).

6. The applicator as claimed in any one of the preceding claims, which comprises a stem (7) bearing the applicator member (8) at a first end, said applicator member (8) having a portion (11) for attaching to the stem that extends along a rectilinear longitudinal axis (Z), the distance between the longitudinal axis (X) of the core (10) and the longitudinal axis (Z) of the portion for attaching to the stem (7) passing through a maximum (D_o) at a point of the core (10) that is situated at a distance from the proximal (14) and distal (13) ends thereof, in particular between one third and two thirds of the 25 length of the core (10), and then preferably decreases in the direction of the distal end (13) of the core (10), in particular until it is zero.

7. The applicator as claimed in the preceding claim, wherein the angular offset (γ) between the longitudinal axis (Z) of the portion (11) for attaching to the stem (7)

and a straight line (D) passing through this axis (Z) at the proximal end (14) of the core (10) and through the location (10c) where the distance between the longitudinal axis (X) of the core (10) and the longitudinal axis (Z) of the portion for attaching to the stem (7) is at its maximum, is between 5° and 55° , better still between 10° and 35° .

5 8. The applicator as claimed in claim 6 or 7, wherein the distal end (13) of the core (10) is aligned with the longitudinal axis (Z) of the portion (11) for attaching to the stem (7).

9. The applicator as claimed in any one of the preceding claims, wherein the spikes (18) are disposed in a plurality of longitudinal rows (17, 19, 20, 21, 22).

10 10. The applicator as claimed in the preceding claim, wherein at least one first longitudinal row (17) of spikes (18) is offset axially with respect to a second longitudinal row (19), better still each longitudinal row (17) of spikes (18) is offset axially with respect to the adjacent longitudinal row (19).

11. The applicator as claimed in claim 9 or 10, wherein the longitudinal rows
15 (17, 19, 20, 21, 22) of spikes (18) follow the longitudinal axis (X) of the core (10).

12. The applicator as claimed in any one of the preceding claims, wherein at least some of the spikes (18) extend along an elongation axis (T) that is not perpendicular to the surface (12) of the core (10) at the point at which the spikes (18) are attached to the core (10).

20 13. The applicator as claimed in the preceding claim, wherein the angle (β) formed between the elongation axis (T) of the spikes (18) and the surface (12) of the core (10) is between 60° and 120° .

14. The applicator as claimed in any one of the preceding claims, wherein at least some of the spikes (18) that are disposed closer to the proximal end (14) of the core
25 (10) than to its distal end (13) extend along an elongation axis (T) oriented toward the proximal end (14) of the core (10).

15. The applicator as claimed in any one of the preceding claims, wherein at least some of the spikes (18) that are disposed closer to the distal end (13) of the core (10) than to its proximal end (14) extend along an elongation axis (T) oriented toward the distal
30 end (13) of the core (10).

16. The applicator as claimed in one of claims 6 to 8, wherein the spikes (18) situated close to the location (10c) where the distance between the longitudinal axis (X) of the core (10) and the longitudinal axis (Z) of the portion (11) for attaching to the stem (7)

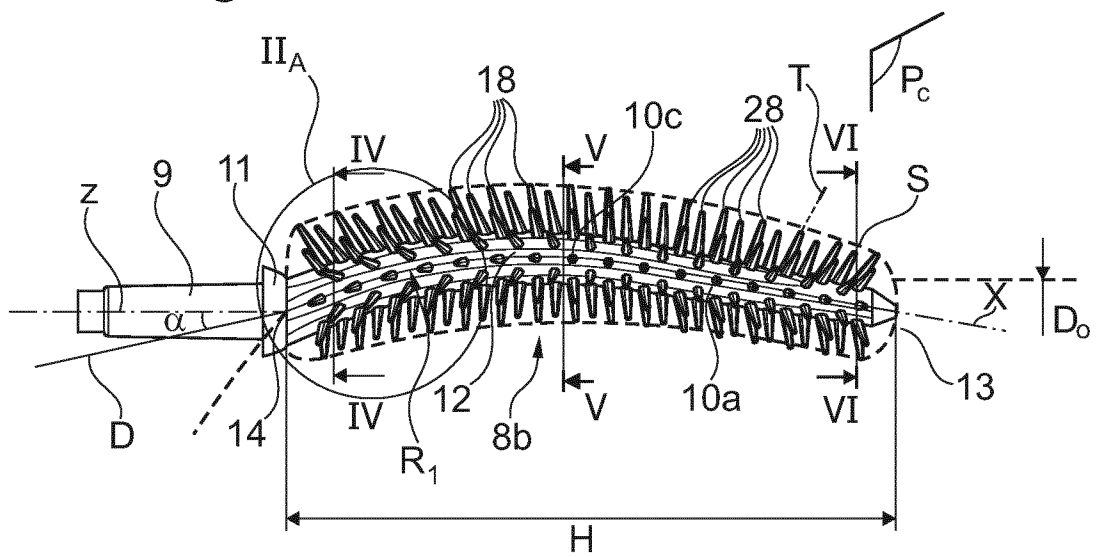
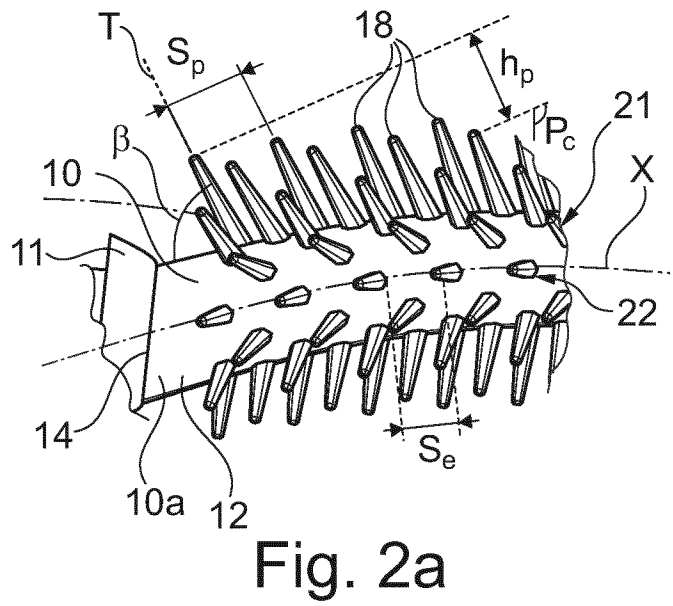
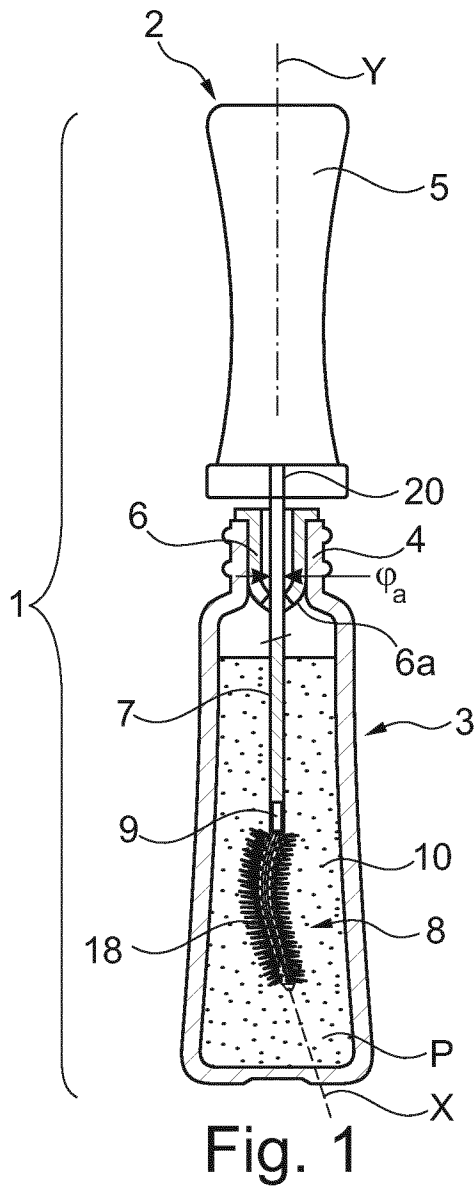
is at its maximum extend along an elongation axis (T) perpendicular to the surface (12) of the core (10), in particular the spikes that are disposed in at least two circumferential rows (31, 32, 33, 34) of spikes on either side of this location (10c) at the maximum distance.

17. The applicator as claimed in any one of the preceding claims, wherein the
5 majority of the spikes (18) are the same height, in each position on the longitudinal axis (X) of the core (10).

18. The applicator as claimed in any one of the preceding claims, wherein the spikes (18) are molded together with the core (10), in particular from the same material.

19. A device (1) for packaging and applying a product (P) to the eyelashes
10 and/or eyebrows, having an applicator (2) as claimed in any one of the preceding claims and a container (3) containing the product (P) to be applied.

1/2



2/2

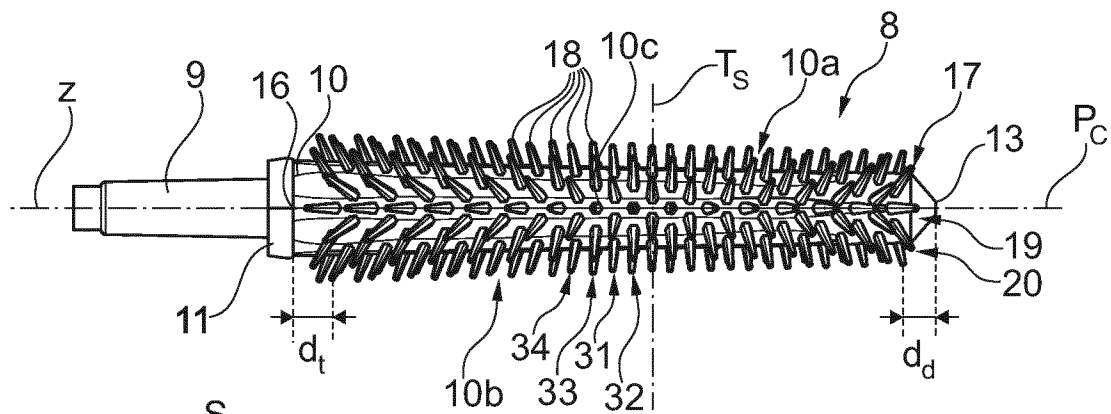


Fig. 3

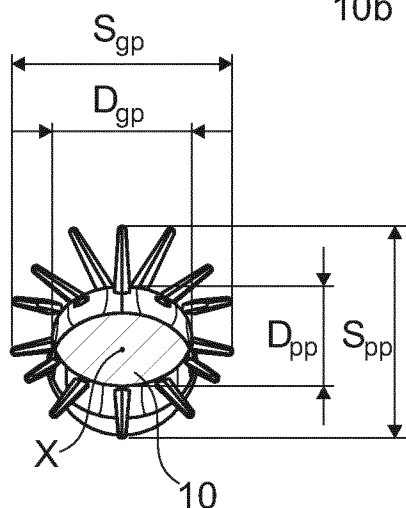


Fig. 4

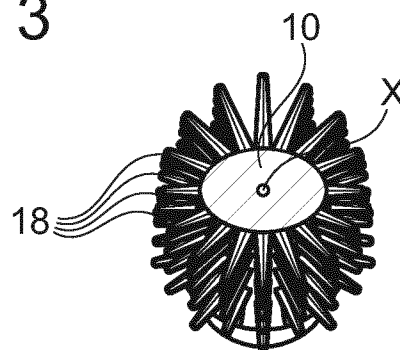


Fig. 5

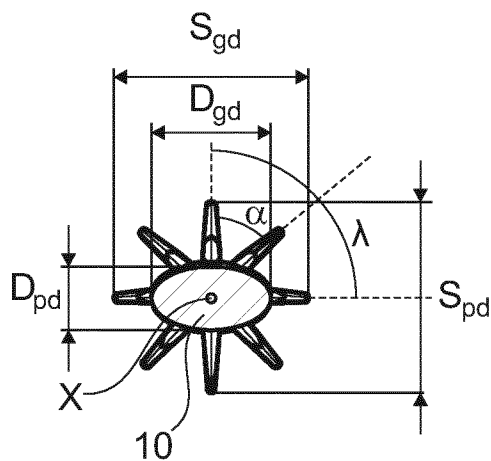


Fig. 6

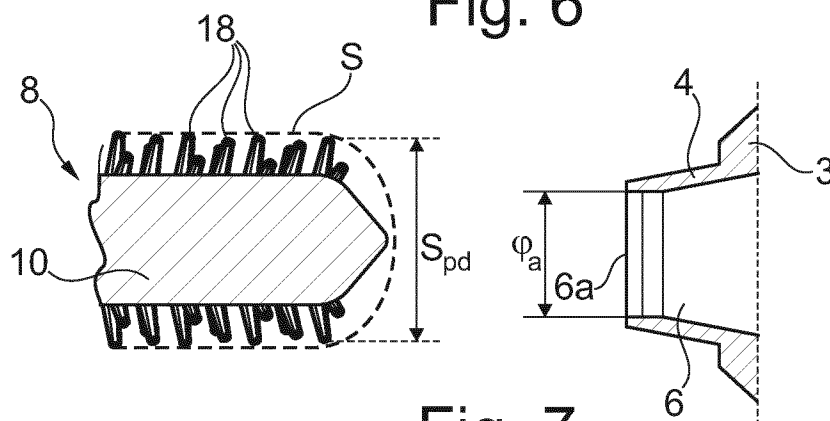


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2018/082956

A. CLASSIFICATION OF SUBJECT MATTER
INV. A46B3/00 A46B9/02
ADD. A45D40/26

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
A45D A46B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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A	----- WO 2010/007588 A2 (OREAL [FR]; GUERET JEAN-LOUIS [FR]) 21 January 2010 (2010-01-21) abstract figure 48 ----- -/-	2,12-16



Further documents are listed in the continuation of Box C.



See patent family annex.

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Date of the actual completion of the international search

7 January 2019

Date of mailing of the international search report

18/01/2019

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Authorized officer

Zetzsche, Brigitta

INTERNATIONAL SEARCH REPORT

International application No

PCT/EP2018/082956

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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