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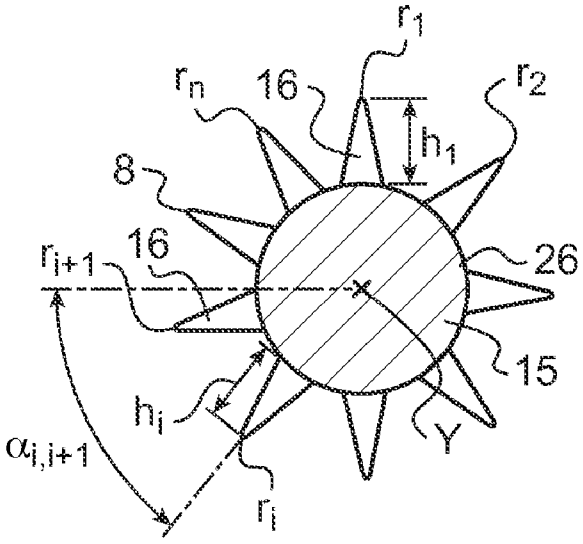
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(54) Title: AN APPLICATOR FOR APPLYING A COMPOSITION TO THE EYELASHES AND/OR THE EYEBOWS

Fig.4



(57) Abstract: The present invention relates to an applicator (2) for applying a composition to the eyelashes and/or the eyebrows, the applicator including: • an applicator member (8), comprising: • a core (15) having a longitudinal axis (Y); and • teeth (16) that are carried by the core and that are molded integrally therewith; the section and/or the spacing at the base of the teeth, in particular axial and/or circumferentially, varying progressively between a first region (A) and second region (B) of the core, on going around the longitudinal axis (Y) of the core.

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AN APPLICATOR FOR APPLYING A COMPOSITION TO THE EYELASHES AND/OR THE EYEBROWS

The present invention relates to applying a composition to the eyelashes or the eyebrows.

There exist on the market numerous applicators including applicator members that are made by molding a thermoplastic material.

Such an applicator member comprises a core carrying teeth, and numerous configurations of teeth have been proposed.

In particular, publication WO 2009/053926 discloses an applicator member in which the teeth are disposed on a first side of the core with a small spacing, and on the opposite side with a large spacing. Depending on the side selected for applying makeup, the applicator is turned from one extreme to the other in terms of the look of the resulting makeup, thereby making the applicator relatively difficult to use.

In order to vary the characteristics of the resulting makeup look, it has also been proposed to fit the container containing the composition with a variable wiper member. Thus, depending on whether wiping is more or less thorough, a lesser or greater amount of composition remains on the applicator member, and the resulting makeup look is modified. However, this solution makes the container more difficult to make, and it does not always result in makeup looks that are as different as desired.

There exists a need to improve still further applicators for applying a composition to the eyelashes and/or the eyebrows.

The invention thus provides an applicator for applying a composition to the eyelashes and/or the eyebrows, the applicator including:

- an applicator member, comprising:
    - a core; and

· teeth that are carried by the core and that are molded integrally therewith;

the section and/or the spacing at the base of the teeth, along the core and/or circumferentially, varying progressively between first and second regions of the core, on going around the longitudinal axis of the core.

Thus, the user may select the region of the applicator member that corresponds to the spacing and/or to the section that is best suited to the treatment to be performed, and may do this in gradual manner.

When makeup is applied with teeth that are very close together, the applicator delivers little composition and the makeup look is natural. When makeup is applied with teeth that are spaced apart, the eyelashes are coated with more composition. By means of the invention, the user does not have only two extreme tooth configurations available, but also at least one configuration that is intermediate in terms of the resulting makeup look.

Variation that is "progressive" should be understood to mean variation that is monotonic or that is in stages.

The variation preferably progressing through at least three, better at least four or five, levels of size and/or spacing. In other words, at least one, better at least three, intermediate levels of size and/or spacing exist(s) on the applicator member, between the extreme levels corresponding to the first and second regions respectively.

For example, the spacing passes progressively from a small spacing in the first region to a large spacing in the second region. Thus, by way of example, the applicator member includes at least three rows, better at least four or five rows, having teeth disposed with different respective pitches within the rows. In a variant or in addition, the section of the teeth passes progressively from a small section in the first region to a large section in the second region.

In the first region, the teeth may have a small axial spacing and the rows are close together, whereas in the second region the teeth are spaced further apart within the rows and the rows are also spaced further apart.

In a variant, the spacing between the rows is constant and the teeth pass progressively from closer together to further apart.

Still in a variant, the spacing between the teeth within the rows is constant for all of the rows and the spacing between the rows increases progressively from the first region to the second.

The teeth of the same spacing and/or of the same section may be disposed in rows extending parallel to the longitudinal axis of the core. Thus, the spacing and/or the section changes on turning around the longitudinal axis of the applicator member.

The relative variation in the spacing between the two regions $|e_{max}-e_{min}|/e_{min}$ is preferably greater than or equal to 10%, better greater than or equal to 30%, e_{max} designating the maximum spacing between two teeth within a row, and e_{min} the minimum spacing.

The angular spacing between the rows may satisfy $|\alpha_{max}-\alpha_{min}|/\alpha_{min}$ greater than or equal to 10%, better greater than or equal to 30%, where α_{min} is the minimum spacing in the first region, and α_{max} is the maximum spacing in the second region.

The variation in the spacing of the teeth may be due to variation in the pitch with which the teeth are disposed along the corresponding row and/or to variation in their size. The pitch is measured between the centers of the bases of the teeth, and the spacing is measured between their outside surfaces. Within a row extending along the core, the pitch and the spacing between the teeth are preferably constant.

The relative variation in section between the two regions $|s_{max}-s_{min}|/s_{min}$ taken at the base of the teeth is

preferably greater than or equal to 10%, better greater than or equal to 30%, s_{max} designating the greatest section, and s_{min} the smallest section.

The teeth may optionally be of the same height. The height may increase with the section at the base of the teeth.

Within each row, the spacing may be constant or that varies in the row.

The applicator member is carried by a stem that is connected to a grip member. The grip member preferably includes at least one marker informing the user about the section and/or the spacing of the teeth for one particular angular orientation of the applicator relative to the user. Thus, the applicator member is mounted in angularly indexed manner relative to the marker.

The marker may comprise one or more colors, e.g. a colored strip of optionally-variable width, of color that varies around the longitudinal axis of the applicator.

The marker may be in the form of a colored strip that widens on going around the longitudinal axis of the applicator.

The spacing and/or the section may vary over at least 150°, better over at least 180°, around the longitudinal axis of the core. This variation may occupy less than 360°, or even less than 270°.

The variation in the section and/or the spacing may occupy 180°, from a first zone on the surface of the core to an opposite zone, with the variation occurring on both sides of a mid-plane intersecting the two zones. In this configuration, the variation may occupy both sides of the mid-plane. In addition to the first and second regions that are diametrally opposite on the core, the applicator member may include rows having teeth of the same spacing and/or section, said rows being disposed substantially symmetrically on either side of said mid-plane. An advantage of such a configuration is to enable the user to change hand in order to apply makeup to the left eye

or to the right eye, while ensuring that on the side facing the user, the zone that comes into contact with the eyelashes is in the same position relative to the first and second regions. This configuration also avoids having two rows of teeth of very different properties being situated side by side.

For example, the user may maintain a region of close-together teeth facing downwards, and may apply makeup to the eyelashes with a zone in which the teeth present greater spacing, the eyelashes coming into engagement with the teeth while turning the applicator member a little.

The disposition of the rows of teeth around the core may be as follows: a first row of teeth of smallest spacing and/or section situated between two extreme rows of teeth of greatest spacing and/or section, preferably with one or more intermediate rows between the first row and each extreme row, at least one magnitude varying progressively between the extreme row and the first row, the magnitude being the spacing between the teeth along the longitudinal axis of the applicator member, or the section of the teeth, or the spacing between the rows. Two of the three magnitudes may vary, or even all three magnitudes.

The disposition of the rows of teeth around the core may equally well be as follows: a first row of teeth of greatest spacing and/or section situated between two extreme rows of teeth of smallest spacing and/or section, preferably with one or more intermediate rows between the first row and each extreme row, at least one magnitude varying progressively between the extreme row and the first row, the magnitude being the spacing between the teeth along the longitudinal axis of the applicator member, or the section of the teeth, or the spacing between the rows, for example. Two of the three magnitudes may vary, or even all three magnitudes.

The variation may also occur over substantially 360° around the longitudinal axis of the core. The applicator member may include at least five rows of teeth. Each row preferably includes 10 to 50 teeth.

The teeth may extend radially. Preferably, the teeth are disposed all around the core.

A "tooth" is defined as an individualizable portion in relief that projects from the surface of the core.

By way of example, the number of teeth in the first and second regions of the core is at least 3, better at least 10 per region. The teeth of the first or second region may be disposed in a row. Each region may optionally include the same number of teeth.

The density of teeth in the first region, where the teeth are closer together in said region, is greater than or equal to 15 teeth per square centimeter (cm^2), for example. The density of teeth in the second region, where the teeth are spaced further apart in said second region, is less than or equal to 10 teeth/cm^2. In exemplary embodiments of the invention, each of the first and the second regions is assumed, arbitrarily, to have an area equal to 4 square millimeters (mm^2), and in this embodiment, the spacing of the teeth within each region is the average spacing between the teeth within the row(s) under consideration, and the section is the average section of the teeth.

A line connecting a tooth of a row of smallest spacing and/or smallest section to a tooth of a row of greatest spacing and/or greatest section may pass through the centers of the bases of the teeth of all of the rows presenting the intermediate spacing or section characteristics. The line may be a portion of a helix or of a circle. By way of example, the respective lines joining the teeth of the extreme rows are contained in planes that slope increasingly relative to the longitudinal axis of the applicator member, or in planes having a slope that decreases then increases along the

longitudinal axis of the applicator member. The lines may also be contained in planes that are parallel to one another and perpendicular to the longitudinal axis of the applicator member, or forming an angle therewith, in particular when the pitch between the teeth of the rows is the same, but the section of the teeth vary.

When the teeth are double or triple teeth, and when the spacing between the teeth varies progressively, the spacing is measured between adjacent sets of double or triple teeth.

Other exemplary embodiments of the invention also provide a packaging and applicator device for applying a composition to the eyelashes and/or the eyebrows, the device comprising:

- a container containing the composition for application; and
- an applicator including an applicator member, comprising:
  - a core; and
  - rows of teeth that are molded integrally with the core, said rows of teeth having at least an extreme first row and an extreme second row, plus one or more intermediate rows that are disposed between the extreme rows on going around the longitudinal axis of the core, the rows extending longitudinally over the core, at least one characteristic magnitude of the rows being at a maximum value for the extreme first row, at a minimum value for the extreme second row, and at an intermediate value between the maximum and minimum values for at least one intermediate row, the characteristic magnitude being selected from the spacing of the teeth within a row, the section of the teeth, and the angular spacing between the rows.

The above-mentioned characteristics apply likewise to these exemplary embodiments of the invention. In particular, the density of the teeth may vary from more than 15 teeth/cm^2 to less than 10 teeth/cm^2, the density

being measured on regions that are assumed, arbitrarily, to have an area equal to 4 mm^2.

It is possible for the variation to involve only the spacing between the teeth within rows and between the rows, or only the section of the teeth, or only the spacing within the rows, or only the spacing between the rows. The section of the teeth may be constant when the spacing between the rows and/or between the teeth within a row vary.

The invention also provides a packaging and applicator device comprising one of the applicators as defined above, and a container containing the composition for application, preferably mascara.

The container may be fitted with a wiper member for wiping the stem and the applicator member, which wiper member may be of any type.

Other exemplary embodiments of the invention also provide a method of applying makeup to the eyelashes and/or the eyebrows, wherein:

· a region of the applicator member is selected as a function of the desired characteristics for the application; and

· the selected region is brought into contact with the eyelashes and/or the eyebrows.

Selection may be made using a marker that is present on the applicator, in particular on the grip member.

The marker may be arranged in such a manner as to be positioned facing the user in order to select an application characteristic. While applying makeup, the user may, if so desired, change the characteristics of the application, by using a different zone for coming into engagement with the eyelashes.

The invention can be better understood on reading the following detailed description of non-limiting embodiments thereof, and on examining the accompanying drawings, in which:

· Figure 1 is a fragmentary longitudinal section in elevation showing an embodiment of a packaging and applicator device made in accordance with the invention;

· Figure 2 shows the applicator of the Figure 1 device in isolation;

· Figure 3 is a fragmentary longitudinal section of the Figure 2 applicator;

· Figure 4 is a section on IV-IV of Figure 1;

· Figure 5 is a developed view showing the arrangement of teeth at the surface of the core;

· Figures 5A to 5E and 6 to 8 are views similar to Figure 5 showing variant embodiments of the invention;

· Figures 9A to 9E show examples of tooth sections;

· Figure 10 shows a variant applicator member;

· Figures 11A to 11F are longitudinal sections showing example envelope-surface shapes;

· Figures 12A and 12B are cross-sections showing example envelope-surface shapes;

· Figures 13A to 13C show examples of grip members; and

· Figure 14 is a longitudinal section of a variant embodiment of the grip member.

The packaging and applicator device 1 shown in Figure 1 comprises an applicator 2 having a general shape that is elongate along a longitudinal axis Y, and a container 3 containing a composition P for application, e.g. mascara or a care product for the eyelashes.

By way of example, and as shown, the container 3 includes a neck 4 in which there is fastened a wiper member 5 including a wiper lip 6 for wiping a stem 7 of the applicator 2.

The stem 7 connects an applicator member 8 to a grip member 10 that also constitutes a closure cap for closing the container 3.

In the embodiment shown, the longitudinal axis X of the container 3 coincides with the longitudinal axis Y of

the applicator 2 when said applicator is in place on the container.

The applicator member 8 includes a core 15 from which teeth 16 project.

The core 15 and the teeth 16 are made by molding thermoplastic material, and thus are preferably made out of the same material, or, in a variant, out of different materials, the teeth 16 being over-molded onto the core 15, for example. When the teeth and the core are made out of different materials, the teeth 16 may be molded through openings in the core 15.

In Figures 1 to 4, the core 15 is shown with a circular cross-section, but the invention is not limited to any particular section, and said section may be polygonal, e.g. with as many sides as there are rows of teeth.

The core 15 may have a cross-section having a size that varies depending on the position along the longitudinal axis of the core, e.g. the core may have a cross-section that passes through an extremum between the distal and proximal ends of the core, in particular a maximum or a minimum.

The core 15 may have a cylindrical shape of optionally-circular section, or it may have a non-cylindrical shape, e.g. conical, biconical, or spherical.

The diameter of the greatest circle that circumscribes the core 15 lies in the range 1.2 millimeters (mm) to 6 mm, for example.

The core 15 may be extended at its proximal end by an endpiece 18 for fastening on the stem 7, as shown in Figure 3.

In the embodiment in Figure 3, the endpiece 18 is inserted into a housing 20 of the stem 7, but, in variants that are not shown, the applicator member 8 is fastened to the stem 7 in some other way, e.g. being made integrally therewith.

The applicator member 8 may be fastened to the stem by snap-fastening, by crimping, by screw-fastening, by stapling, by over-molding, or by adhesive.

The applicator member 8 may be made by protrusion, i.e. injecting a portion of the applicator member through another portion of the applicator member or of the stem. The stem 7 may be connected to a cap-liner 22 that is fastened in a handle 24 of the grip member 10, the handle 24 including a mounting skirt 25 that is arranged to screw-fasten on the neck 4. In variant embodiments, the stem 7 is fastened to the grip member 10 in some other way, e.g. the cap-liner 22 being made integrally with the mounting skirt 25.

In a variant that is not shown, the applicator member is movable relative to the container and remains secured thereto during application. In that configuration, the container serves as a grip member.

The grip member may be fastened other than by screw-fastening on the container, e.g. by snap-fastening.

Figure 5 shows the developed surface of the core 15, and in this figure there can be seen the bases 26 of the teeth 16 via which said teeth are connected to the core 15.

In the example shown, the applicator member 8 has *n* rows r_1 to r_n of teeth 16, each of which rows is disposed along a respective longitudinal axis Y_r that is parallel to the longitudinal axis Y.

The number of teeth 16 may vary from one row to another.

By way of example, the angular spacing $\alpha_{i,i+1}$ around the axis Y between two rows r_i and r_{i+1} may be constant, as shown, or, in a variant, the angular spacing may vary for all *i* lying in the range 1 to n-1.

The variation in the pitch *p* between two consecutive teeth of one row may be progressive between the extreme rows r_1 and r_n. It is thus possible to have $p_{i+1}>p_i$ for *i* lying in the range 1 to n-1, designating the number of

the row. The variation in pitch occupies 360° around the longitudinal axis Y, for example.

The number of rows *n* depends on the angular spacing between the longitudinal axes Y_r of the rows. It is possible to have a spacing $\alpha_{i,i+1}$ between two consecutive rows r_i and r_{i+1} that is constant, e.g. equal to a sub-multiple of 360°.

The row r_1 may be adjacent to the row r_n.

Figure 5 shows two regions A and B between which the pitch p_i between the teeth within a row *i* varies progressively depending on the number of the row.

In the example shown in Figure 4, the height h_i of the teeth of a row r_i is constant, but, in a variant, the height could vary within the row and/or from one row to another. By way of example, the height h_i may increase with the section of the teeth. For teeth of the same section, the height may be constant.

The height of the teeth may decrease towards the distal or proximal end of the applicator member. This makes it easier to pass through the wiper member.

In the example shown in Figure 5A, the spacing $\alpha_{i,i+1}$ between the rows varies, e.g. decreasing when the pitch *p* between the teeth of the rows decreases.

Thus, the spacing $\alpha_{i,i+1}$ may be linked to the pitch p_i. In accordance with exemplary embodiments of the invention, the pitch p_i, measured between the centers of the bases 26 of two teeth 16 of a row r_i, varies between the rows r_1 et r_n, passing from a small pitch p_1 within the row r_1 to a larger pitch p_n within the row r_n, as shown in Figure 5 or in Figure 5A.

The number *n* of rows around the axis Y lies in the range 5 to 30, for example.

The smallest pitch value p_1 lies in the range 0.2 mm to 3 mm, for example, and the greatest pitch value p_n lies in the range 0.5 mm to 4 mm, for example.

In the examples shown in Figures 5 and 5A, all of the rows present different respective pitch values.

In a variant, adjacent rows may present the same pitch values. For example, $p_{2i} = p_{2i+1}$, i.e. the pitch changes value every two rows.

The centers of the bases of the teeth may be situated on lines L_k that are contained in respective planes of slopes that vary relative to the longitudinal axis of the applicator member. By way of example, slope increases, as shown in Figure 5.

In accordance with other exemplary embodiments of the invention, it is not the pitch between the teeth that varies progressively from one row to another, but the size of the teeth, and in particular the section of the teeth at their base.

In the example shown in Figure 6, change thus occurs progressively from a row r_1 having teeth 16 of small section to a row r_n of teeth having a large section. In Figure 6, it can be seen that the axial spacing between the teeth within a row may decrease while the section of the teeth increases.

All of the teeth of the intermediate rows r_2 to r_{n-1} between the rows r_1 and r_n may have sections that increase progressively.

For teeth 16 having a circular section of diameter d_i at their base, the relationship $d_{i+1} > d_i$ applies, for example.

The diameter at the base may vary from a diameter d_1 of 2/10 mm to a diameter d_n of 8/10 mm.

Within the rows, the pitch between the teeth may be constant.

The pitch may also vary, and, by way of example, it is possible to have both pitch that varies between the extreme rows and section that varies, as shown in Figure 7. The teeth of greatest section may be the teeth that are separated by a greatest pitch, as shown in this figure.

It is possible to have various mathematical expressions giving the variation in the magnitude *x* that

varies progressively between the teeth of the rows, e.g. of the type $x_j = aj + b$, in which *a* and *b* are constants and *j* is the number of the row, lying in the range 1 to n, with $a \neq 0$, or of the type $x_j = a\theta + b$, in which θ is the angle around the longitudinal axis of the core. By way of example, the magnitude x_j is the pitch p_j, the diameter d_j at the base, or the section s_j at the base.

The magnitude *x* may also be the angular spacing $\alpha_{i,i-1}$ between the rows.

The magnitude x_j may be constant within the row of number *j*, or it may be a function $x_j(q) = f(q)$ of the number of the tooth within the row of number *j*. The function f(q) may be the same regardless of the number of the row, or it may depend on the number of the row.

The applicator member may be asymmetrical, as happens when a characteristic of the teeth varies progressively between the rows r_1 and r_n over more than 180°, in particular over practically 360°, as shown in Figures 5 to 7.

As shown in Figure 8, it is also possible to have a row r_0 of teeth from which the same characteristic, e.g. the pitch between the teeth and/or the spacing between the rows, varies in symmetrical manner on either side of side row.

In the example in Figure 8, the pitch *p* increases progressively from a pitch value p_0, corresponding to the row r_0, to greatest pitch values p_n and p_{-n} for the extreme rows r_n and r_{-n}, that are symmetrical to each other about a mid-plane of symmetry containing the longitudinal axis Y_{r0} of the row r_0. By way of example, and as shown, $p_n = p_{-n}$. In Figure 8, the spacing $\alpha_{i,i-1}$ is constant, but, in a variant, the spacing also varies, e.g. decreasing on going away from the row r_0.

In Figure 5D, the angular spacing $\alpha_{i,i+1}$ varies depending on the number *i* of each row r_i. For example, $\alpha_{i,i+1}$ increases with row number *i* in optionally-linear manner. By way of example, $\alpha_{i,i+1} = k.i+m$, in which *k*

designates a positive number, and *m* designates a positive, negative, or zero number.

It is possible to have a disposition of teeth in which the spacing within the row and the spacing between the rows both increase, as shown in Figure 5D. In such a configuration, the size of the teeth may optionally increase. By way of example, Figure 5E shows a disposition of teeth in which the spacing $\alpha_{i,i+1}$, the pitch p_i, and the size of the teeth increase with the increasing row number *i*.

In Figure 5E, it can be seen that the spacing between the teeth within a row may increase while the section of the teeth is also increasing.

The teeth 16 may have various cross-sections, without going beyond the ambit of the present invention.

For example, all of the teeth may have a cross-section having the same shape, e.g. a circular, polygonal, or other shape.

The cross-section shape of the teeth of one row may be different from the cross-section shape of the teeth of another row.

Figures 9A to 9E show various non-limiting examples of tooth sections.

For example, in cross-section, the teeth may present a shape that is circular, as shown in Figure 9A, oval, as shown in Figure 9E, polygonal, e.g. triangular, as shown in Figure 9B, or square as shown in Figure 9C, or even a more complex shape, e.g cross-shaped, as shown in Figure 9D.

The teeth 16 may be double teeth, as shown in Figure 5B, or triple teeth. A multiple tooth is defined as a tooth that is formed by a plurality of close-together teeth, e.g. touching at their bases. The spacing at the base of double or triple teeth is less than or equal to 0.1 mm.

Within a row r_i, all of the teeth may be aligned along the longitudinal axis of the row, or, in a variant,

the teeth may be disposed in a staggered configuration along the longitudinal axis of the row, as shown in Figure 5C.

When the teeth are disposed in a staggered configuration along the core, the centers of the bases are for example offset by a distance *u* of up to 1 mm, relative to a separator line S separating the two alignments of teeth disposed in a staggered configuration. Channels may be made transversally to the longitudinal axis Y of the applicator, as shown in Figure 10. In this figure, the teeth 16 are carried by ribs 35 of the core, that form between them annular channels 36. The applicator member 8 may also be made without channels at the surface of the core 15.

The applicator member 8 may present a variety of envelope surfaces E, as defined by the free ends of the teeth 16.

By way of example, the envelope-surface shape E is circularly cylindrical over the major fraction of its length, as shown in Figure 11B. Where appropriate, the distal portion of the applicator member 8 presents a shape that tapers, in particular so as to make it easier to pass through the wiper member.

The envelope surface E may also present a shape that tapers from a proximal portion to a distal portion, as shown in Figure 11A, e.g. an envelope surface that is substantially frustoconical over the major fraction of its length.

The envelope surface E may present a narrowing of its cross-section between its proximal and distal portions, as shown in Figure 11C.

The envelope surface E may present a shape that is not circularly symmetrical around the longitudinal axis Y, e.g. with one side 101 that is substantially in alignment with the stem 7, and an opposite side 102 that is offset. By way of example, the side 102 is the side on which the pitch between the teeth is the greatest.

In the example in Figure 11E, the envelope surface E presents a generally curved shape, with one side 103 that is concave, and an opposite side 104 that is outwardly convex.

In the example in Figure 11F, the envelope surface E extends around a longitudinal axis Y that forms an angle β with the longitudinal axis of the stem 7.

In cross-section, the envelope surface E may present various shapes, e.g. a circular, polygonal, or other shape.

By way of example, Figure 12A shows an envelope surface E of cross-section that is polygonal, specifically square, and Figure 12B shows an envelope surface E of triangular section with rounded corners.

The applicator 2 advantageously presents a marker 40 that informs the user about the orientation of the rows relative to the grip member 10. For example, the marker 40 presents an indicator that informs about the spacing of the rows or about the resulting makeup look for a given angular position of the grip member 10 relative to the user. As in the embodiment shown in Figure 2, the indicator may comprise a line 41 that is further away from the distal edge 42 of the grip member 10 when the pitch between the teeth is smaller, and that is closer to the distal edge 42 when the pitch between the teeth is greater. The applicator member 8 is fastened in identified manner relative to the grip member 10, so as to enable the grip member 10 to inform the user.

Figure 13A shows a grip member in which the marker 40 is in the form of a colored strip that widens on going around the axis Y.

In Figure 13B, the marker 40 is in the form of a plurality of signs 49 that are spaced angularly around the axis Y, e.g. various colored spots.

In Figure 13C, the marker 40 is carried by a rotary ring 10b that may turn relative to the body 10a of the

grip member, the stem 7 and the ring 10b turning together.

In Figure 14, the applicator member 8 includes a core 15 that turns about a pin 126 that is fastened in the stem 7 or that is made integrally with said stem. The core 126 may be made with a wide head 127 for retaining the core 15 axially.

In order to use the applicator 2, the grip member 10 is positioned facing the user, with the orientation of said grip member corresponding to the desired makeup look, e.g. a pitch between the teeth that is very small or very large depending on whether the desired makeup look is more natural or more heavily made up.

Naturally, the invention is not limited to the embodiments described above. In particular, the disposition of the teeth on the core could be changed without going beyond the ambit of the present invention.

The material of the teeth and/or of the core could include a biocidal agent.

Where appropriate, the applicator member could be mounted in such a manner that the core can turn about its axis relative to the stem, although an angularly marked mounting is preferable.

The applicator could include a motor for rotating the applicator member in one direction or in both directions.

The applicator could include a vibration source for subjecting the applicator member to vibration.

The applicator member could be heated.

The teeth and/or the core could be magnetic and/or flocked.

The expression "comprising a" should be understood as being synonymous with "comprising at least one", and "lying in the range" should be construed as including the limits of the range.

CLAIMS

1. An applicator (2) for applying a composition to the eyelashes and/or the eyebrows, the applicator including:
   · an applicator member (8), comprising:
      · a core (15) having a longitudinal axis (Y); and
      · teeth (16) that are carried by the core and that are molded integrally therewith;
   the section and/or the spacing at the base of the teeth, in particular axial and/or circumferentially, varying progressively between first and second regions (A, B) of the core, on going around the longitudinal axis (Y) of the core, and
   the applicator member including at least five rows (r_1, …, r_n) of teeth.

2. An applicator according to claim 1, the variation progressing through at least three, better at least five, levels of size, section, and/or spacing.

3. An applicator according to any preceding claim, the spacing passing progressively from a small spacing, in particular axial, in the first region (A) to a large spacing in the second region (B).

4. An applicator according to any preceding claim, the section of the teeth passing progressively from a small section in the first region to a large section in the second region.

5. An applicator according to any preceding claim, the teeth being disposed in rows (r_1, …, r_n) extending parallel to the longitudinal axis (Y) of the core.

6. An applicator according to any preceding claim, the relative variation in the axial spacing $|e_{max}-e_{min}|/e_{min}$ being greater than or equal to 10%.

7. An applicator according to any preceding claim, the relative variation in section $|s_{max}-s_{min}|/s_{min}$ taken at the base of the teeth being greater than or equal to 10%.

8. An applicator according to any preceding claim, the angular spacing ($\alpha_{i,i+1}$) between the rows being variable, in particular with a minimum spacing α_{min} between the rows in the first region and a maximum spacing α_{max} between the rows in the second region with the following relationship being satisfied: $|\alpha_{max}-\alpha_{min}|/\alpha_{min} \geq 10\%$

9. An applicator according to any preceding claim, the teeth (16) being of the same height.

10. An applicator according to any preceding claim, the applicator member being carried by a stem (7) that is connected to a grip member (10), said grip member including at least one marker (40) that informs the user about the section and/or the spacing of the teeth for one particular angular orientation of the applicator relative to the user.

11. An applicator according to any preceding claim, the spacing and/or the section may vary over at least 180° around the longitudinal axis (Y) of the core.

12. An applicator according to any preceding claim, the variation in the section and/or the spacing occupying 180°, from a first zone on the surface of the core to an opposite zone, with the variation occurring on both sides of a plane.

13. An applicator according to any one of claims 1 to 12, the variation occurring over substantially 360° around the longitudinal axis of the core.

14. An applicator according to any preceding claim, each row including 10 to 50 teeth (16).

15. A method of applying makeup to the eyelashes and/or the eyebrows, using an applicator according to any preceding claim, wherein:

· a region of the applicator member is selected as a function of the desired characteristics for the application; and

· the selected region is brought into contact with the eyelashes and/or the eyebrows

16. A packaging and applicator device for applying a composition to the eyelashes and/or the eyebrows, the device comprising:

· a container containing the composition for application; and

· an applicator including an applicator member, comprising:

· a core; and

· rows of teeth that are molded integrally with the core, said rows of teeth having at least an extreme first row and an extreme second row, plus several intermediate rows that are disposed between the extreme rows on going around the longitudinal axis of the core, the rows extending longitudinally over the core, at least one characteristic magnitude of the rows being at a maximum value for the extreme first row, at a minimum value for the extreme second row, and at an intermediate value between the maximum and minimum values for at least one intermediate row, the characteristic magnitude being selected from the

spacing of the teeth within a row or between the rows, and the section of the teeth.

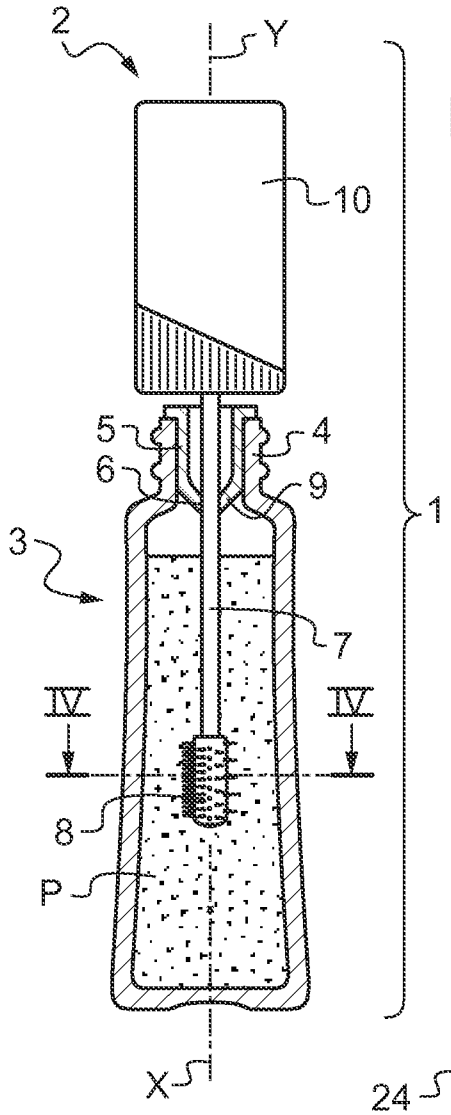


Fig.1

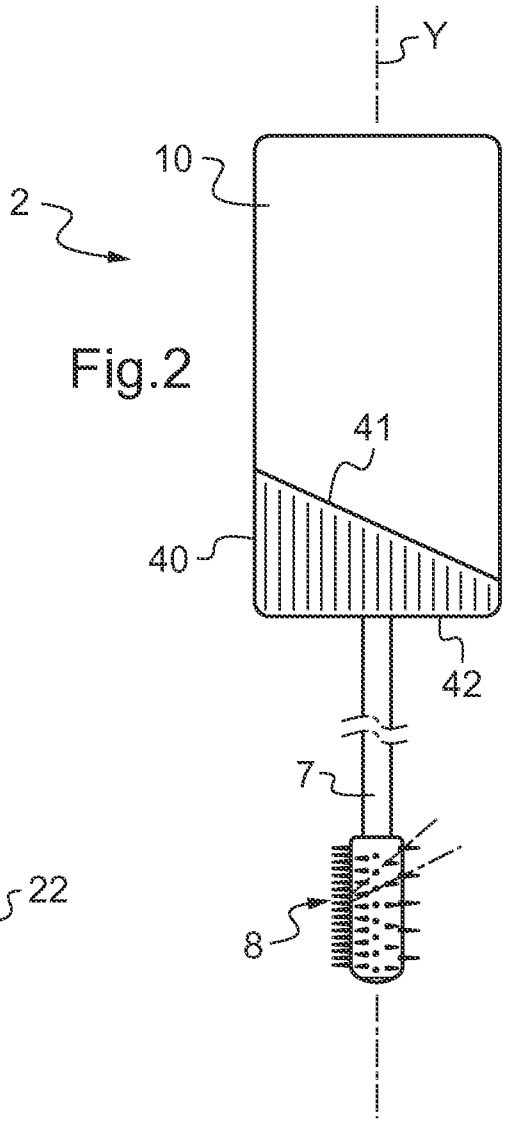


Fig.2

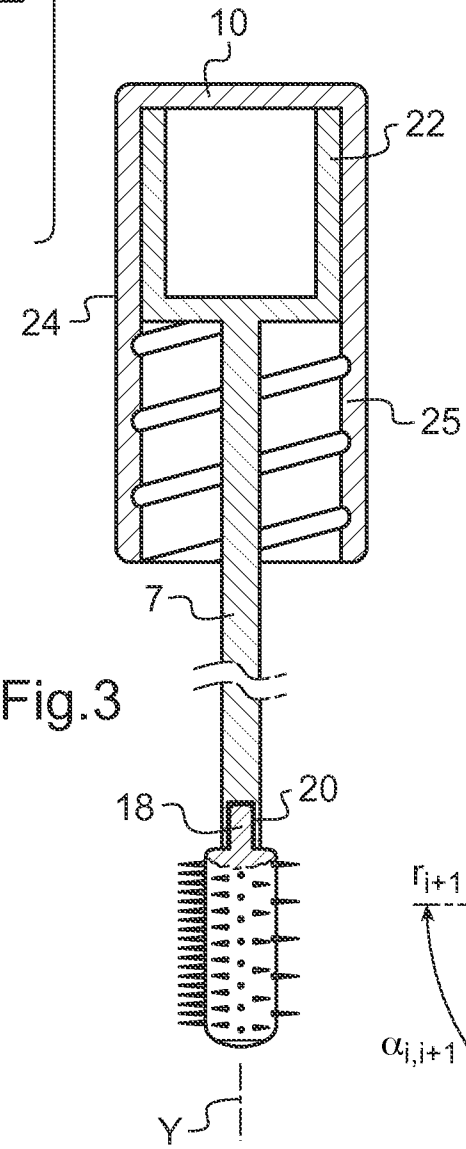


Fig.3

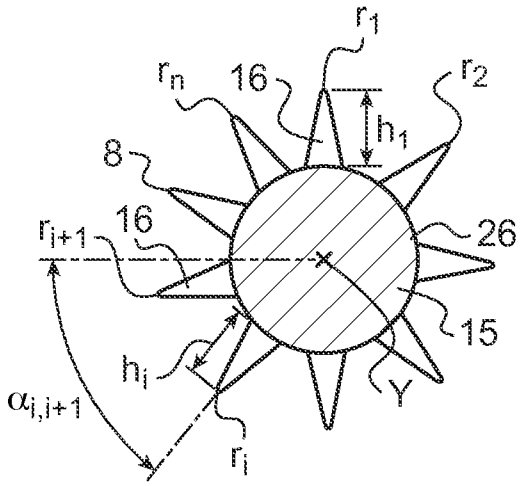


Fig.4

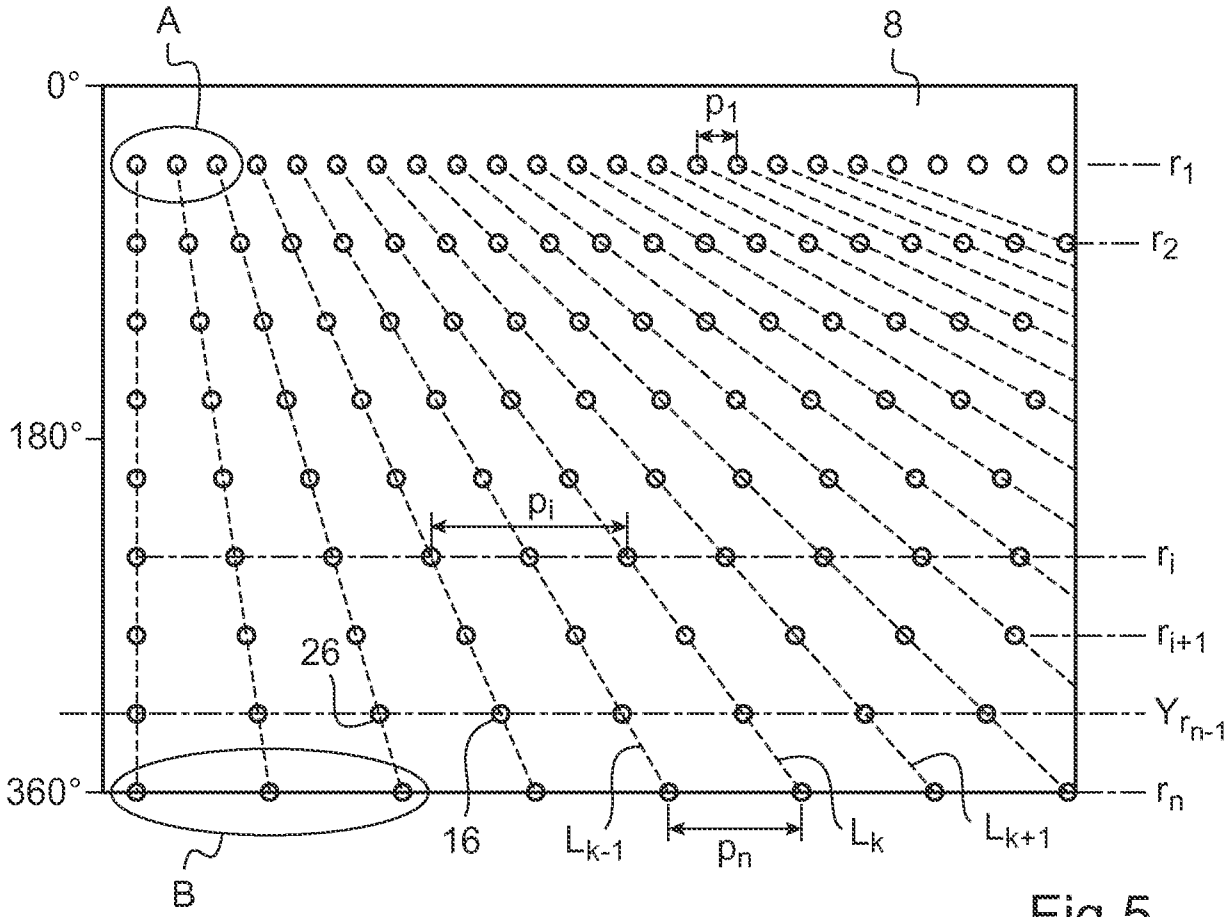

A
8
0°
p_1
r_1
r_2
180°
p_i
r_i
r_{i+1}
26
$Y_{r_{n-1}}$
360°
r_n
16
L_{k-1}
p_n
L_k
L_{k+1}
B

Fig.5

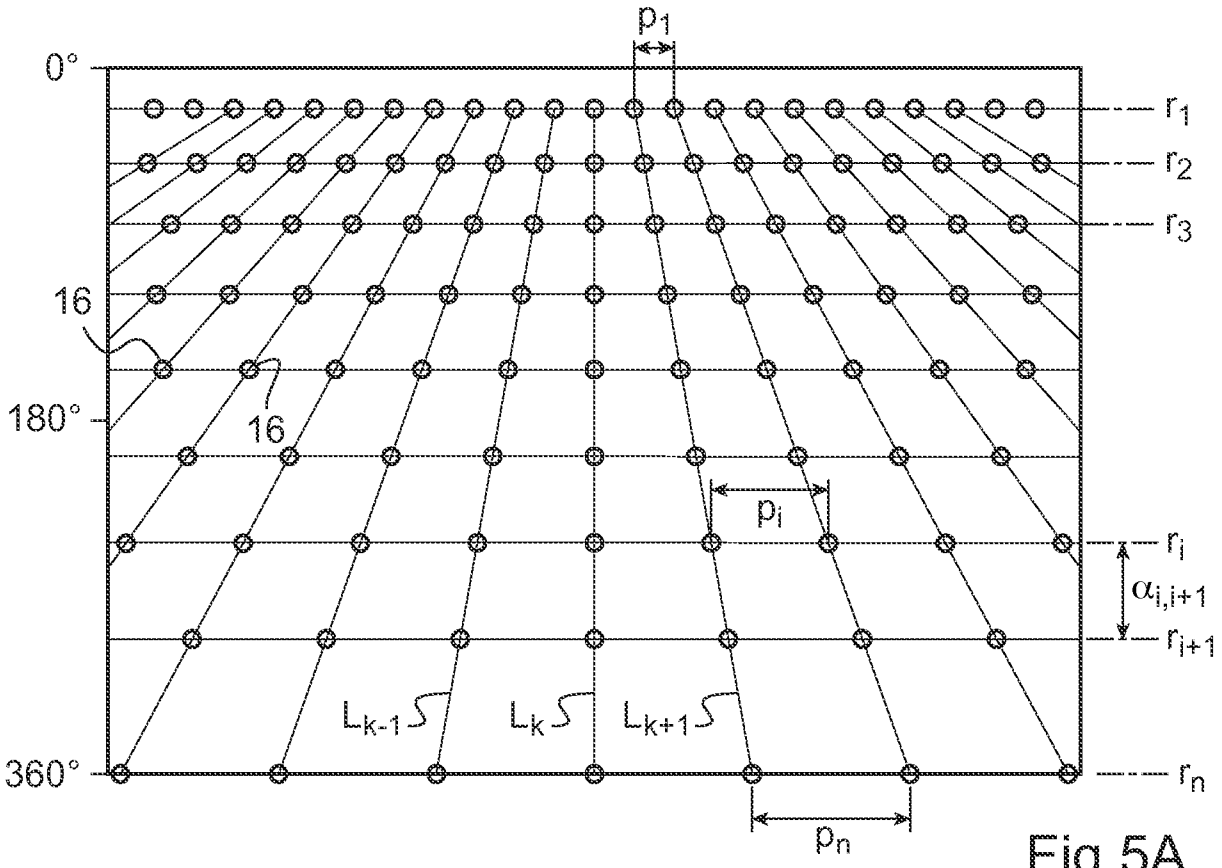

p_1
0°
r_1
r_2
r_3
16
16
180°
p_i
r_i
$\alpha_{i,i+1}$
r_{i+1}
L_{k-1}
L_k
L_{k+1}
360°
r_n
p_n

Fig.5A

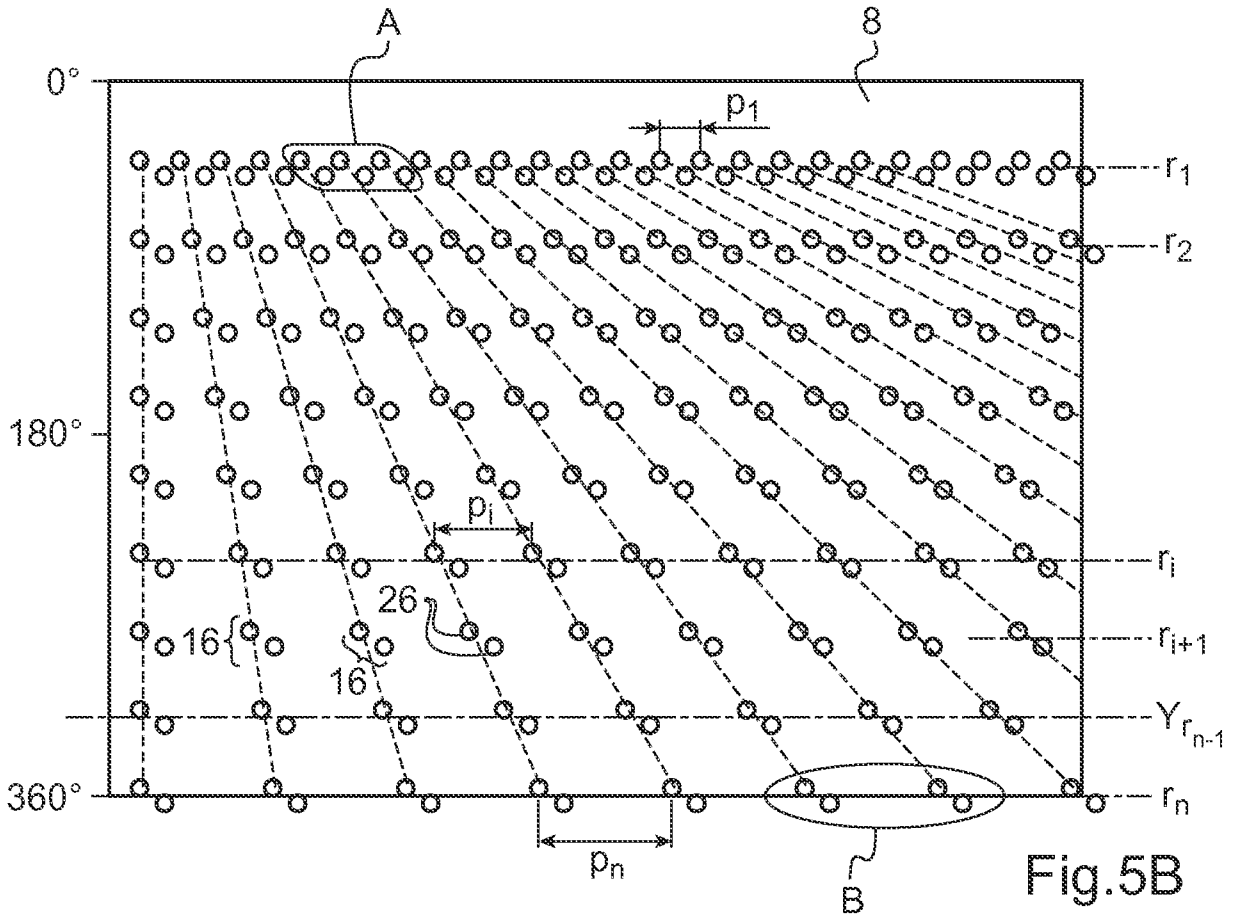

A
8
0°
p_1
r_1
r_2
180°
p_i
r_i
26
16
16
r_{i+1}
$Y_{r_{n-1}}$
360°
r_n
p_n
B

Fig.5B

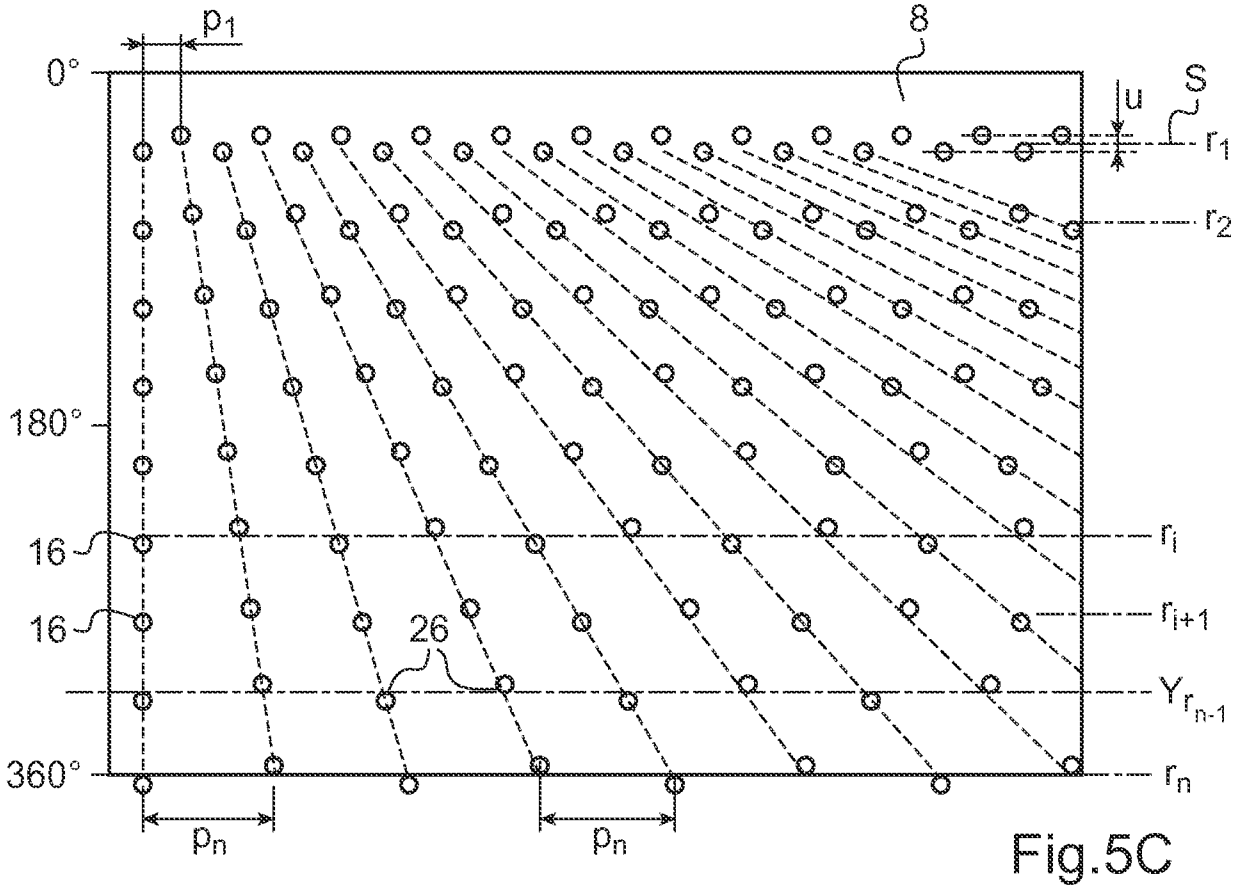

p_1
8
0°
u
S
r_1
r_2
180°
16
r_i
16
26
r_{i+1}
$Y_{r_{n-1}}$
360°
r_n
p_n
p_n

Fig.5C

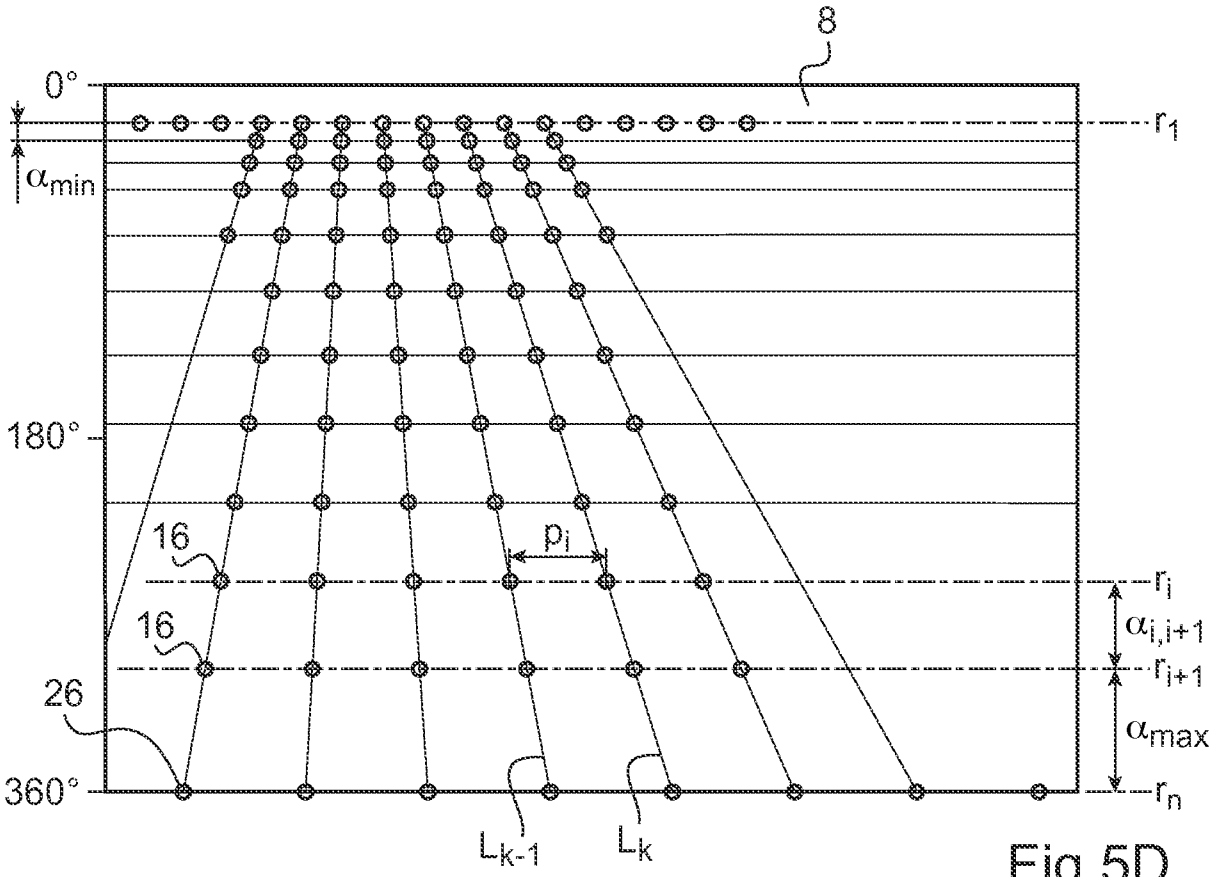

8
0°
r_1
α_{min}
180°
16
p_i
r_i
16
$\alpha_{i,i+1}$
r_{i+1}
26
α_{max}
360°
r_n
L_{k-1}
L_k

Fig.5D

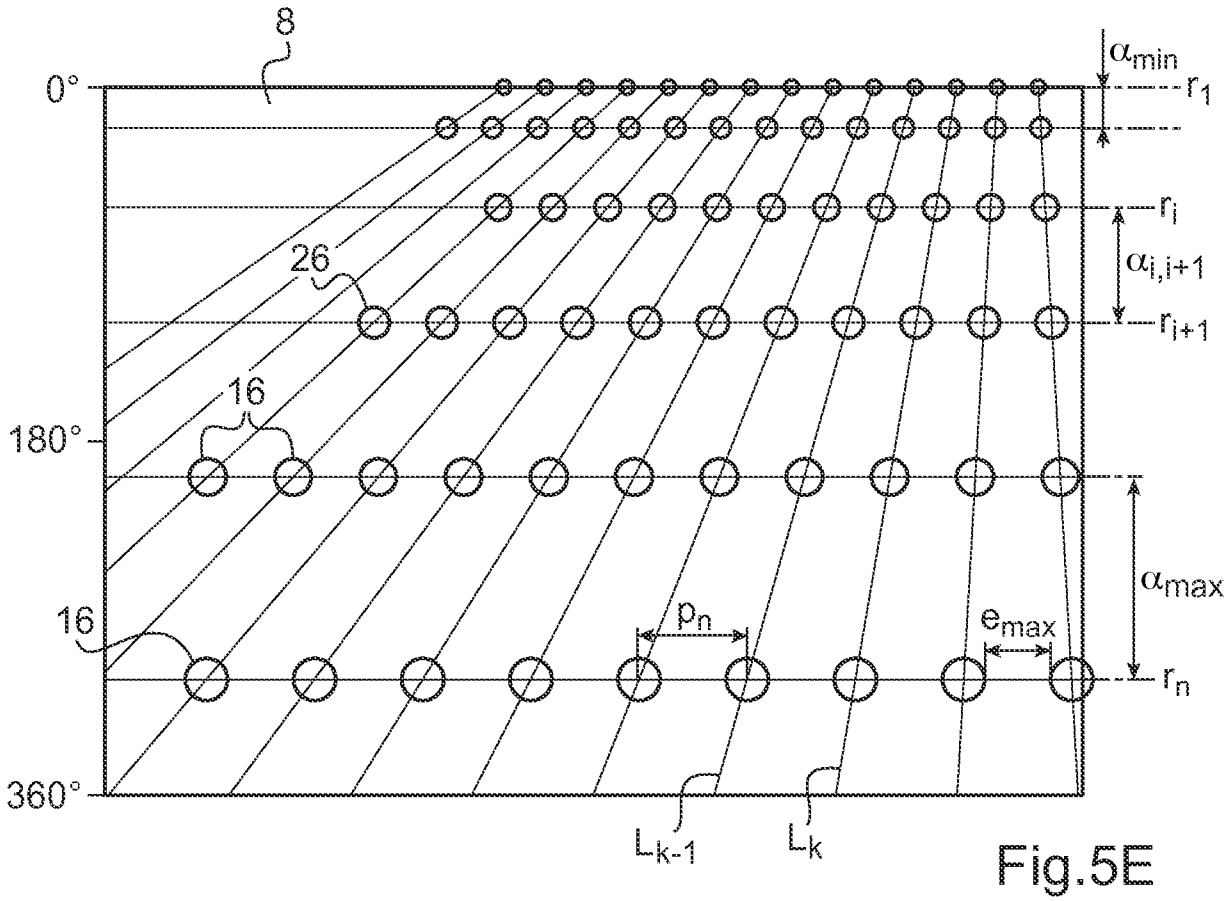

8
α_{min}
0°
r_1
r_i
$\alpha_{i,i+1}$
26
r_{i+1}
16
180°
α_{max}
16
p_n
e_{max}
r_n
360°
L_{k-1}
L_k

Fig.5E

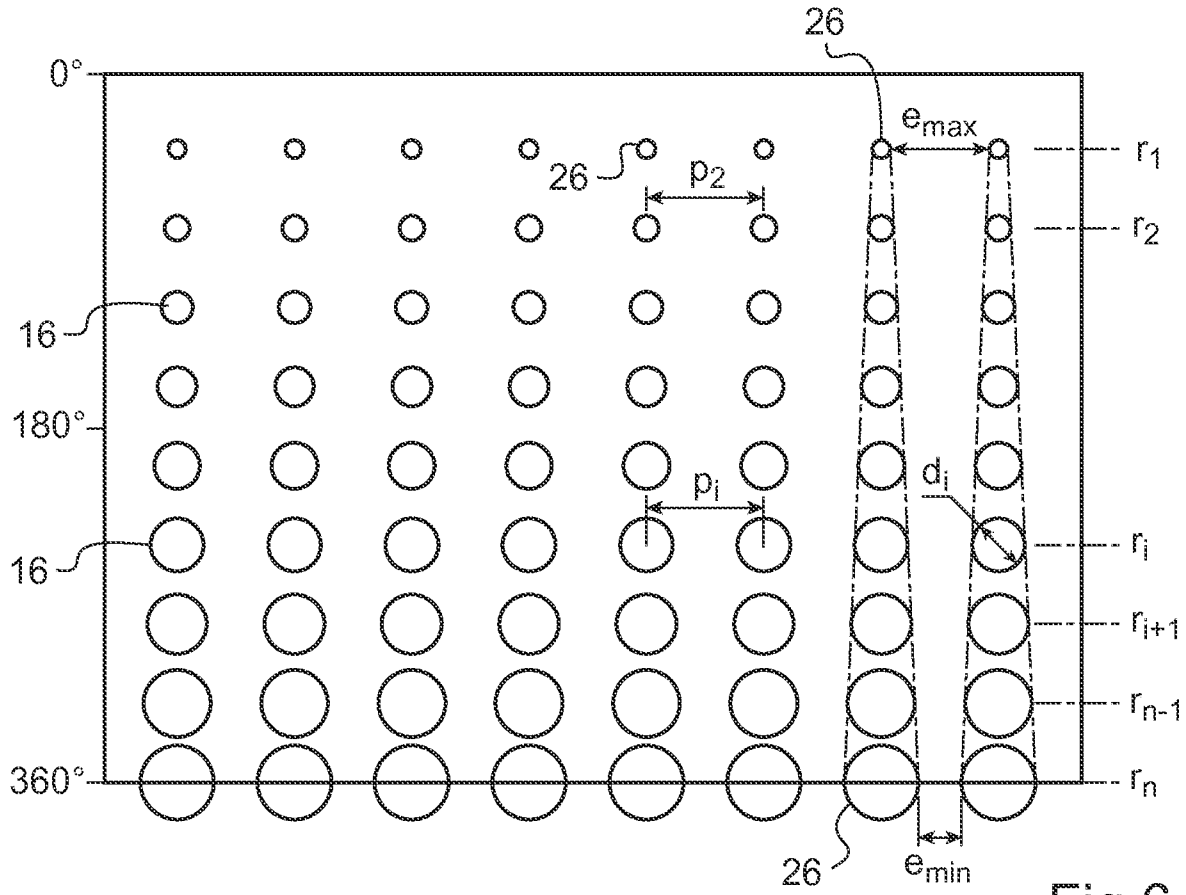

26
0°
e_{max}
r_1
26
p_2
r_2
16
180°
p_i
d_i
16
r_i
r_{i+1}
r_{n-1}
360°
r_n
26
e_{min}

Fig.6

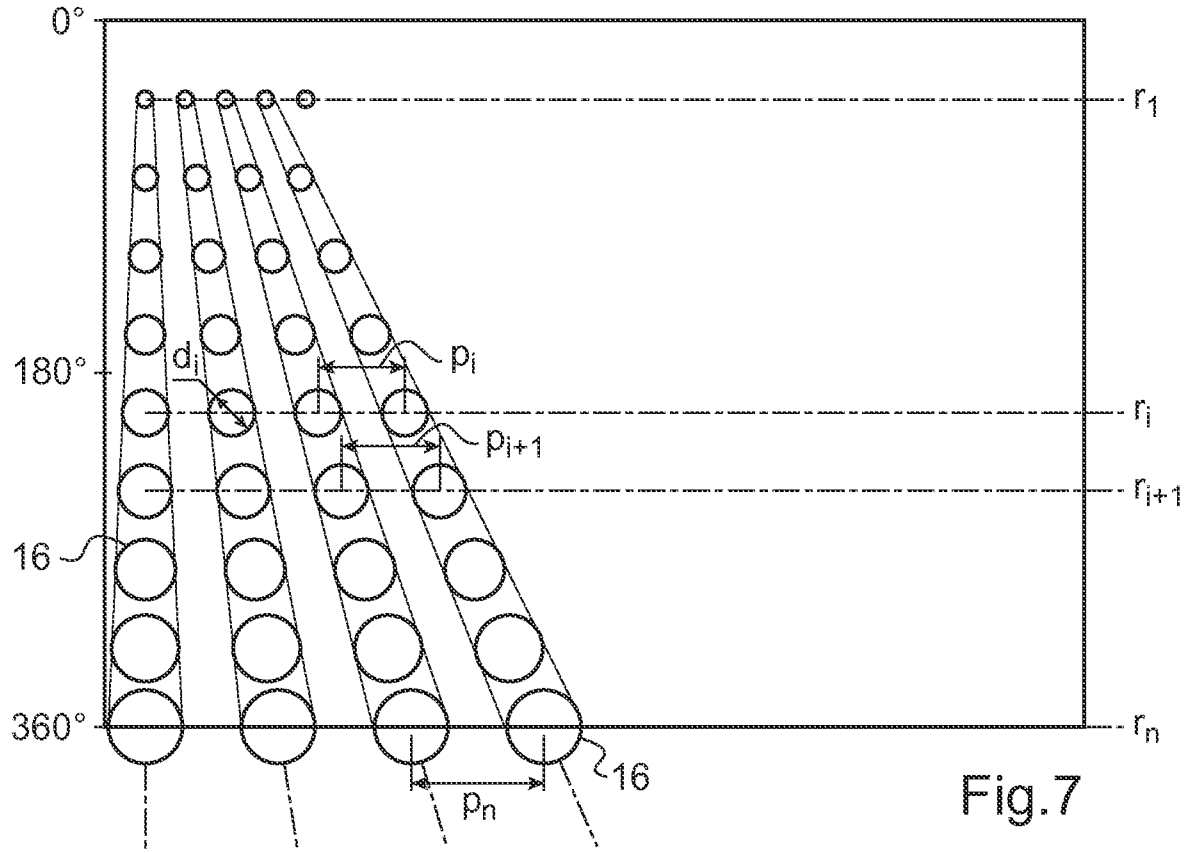

0°
r_1
180°
d_i
p_i
r_i
p_{i+1}
r_{i+1}
16
360°
r_n
16
p_n

Fig.7

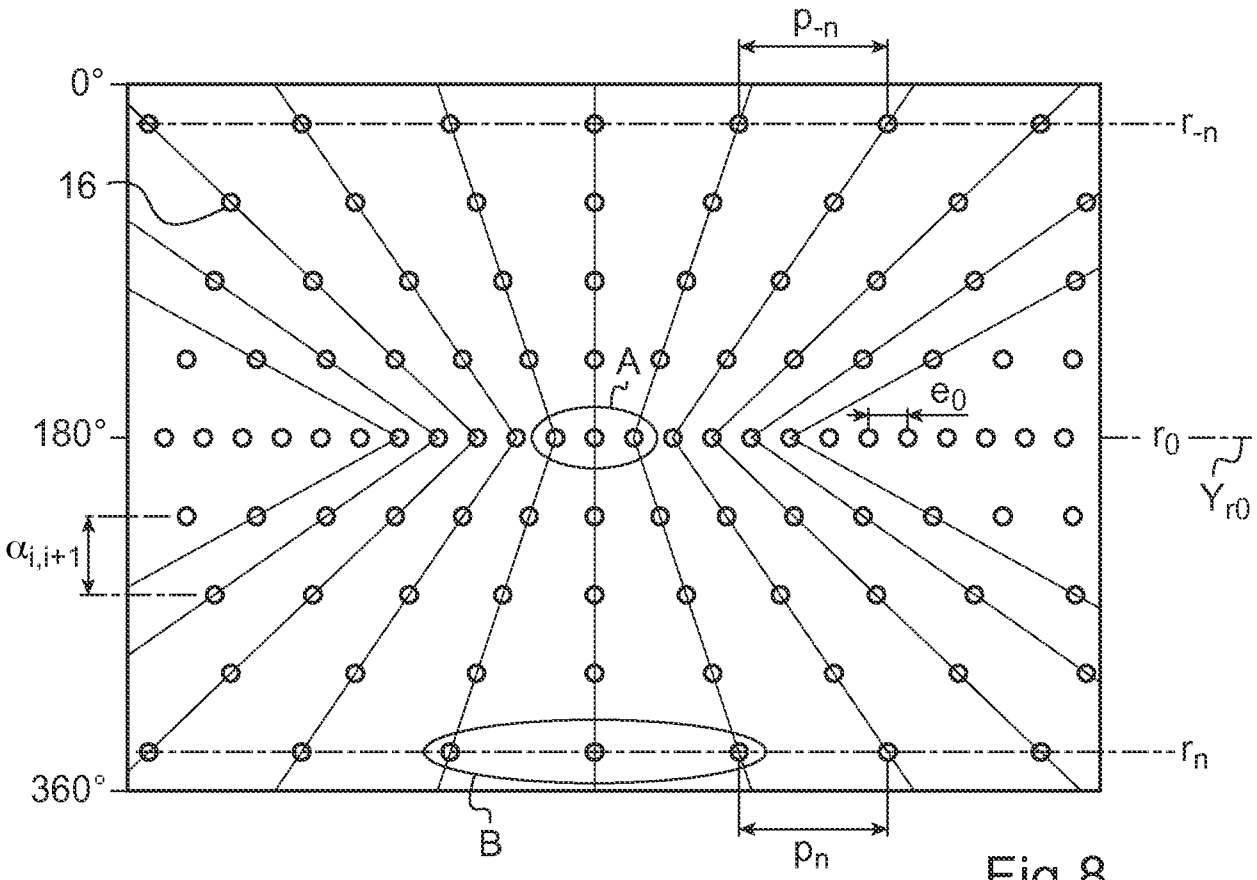


Fig.8

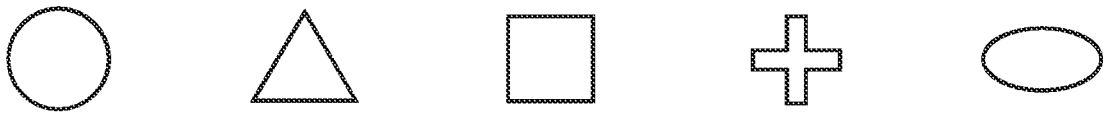


Fig.9A Fig.9B Fig.9C Fig.9D Fig.9E

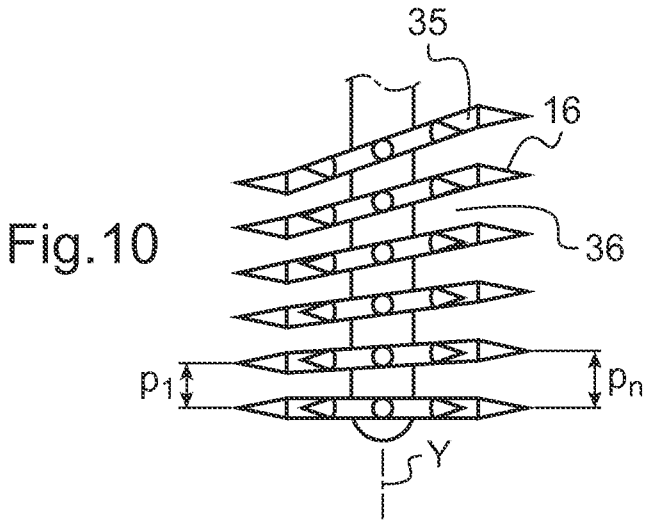


Fig.10



Fig.11A

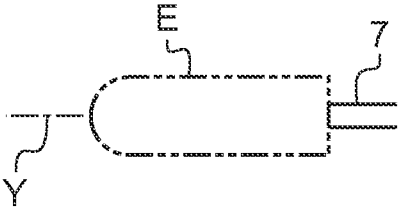


Fig.11B

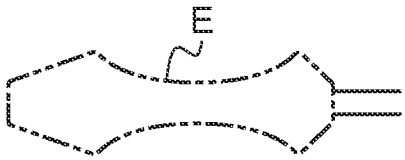


Fig.11C

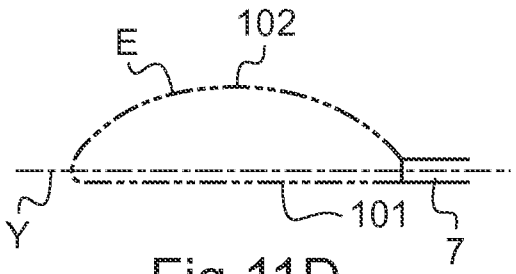


Fig.11D

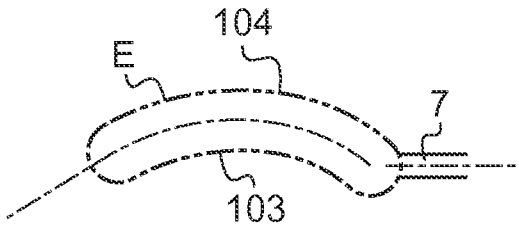


Fig.11E

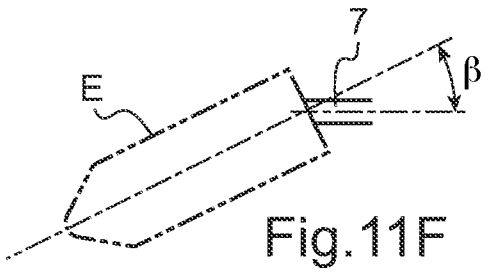


Fig.11F



Fig.12A



Fig.12B

Fig.13A

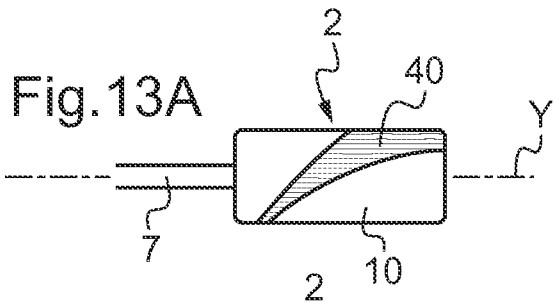


Fig.13B

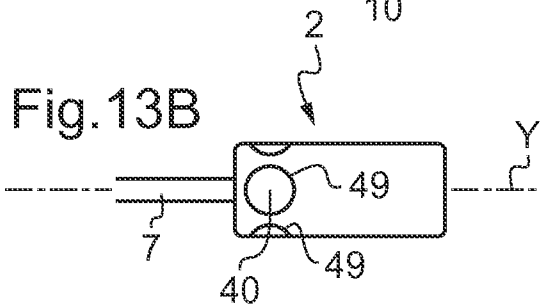
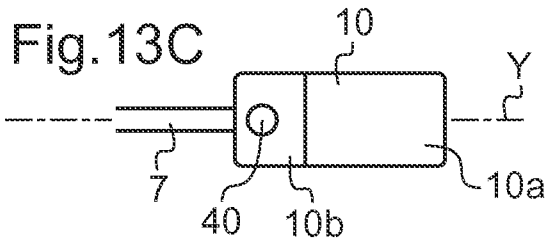


Fig.13C



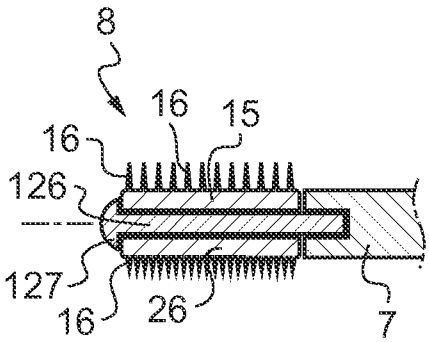


Fig.14

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2011/052367

A. CLASSIFICATION OF SUBJECT MATTER
INV. A45D34/04 A45D40/26 A46B9/02
ADD.

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 practical, search terms used)
EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2009/053926 A2 (OREAL [FR]; GUERET JEAN-LOUIS [FR]) 30 April 2009 (2009-04-30) page 10, line 4 - line 12 page 13, line 15 - line 17 page 22, line 18 - line 29 page 23, line 35 - page 24, line 21 page 26, line 11 - page 27, line 14 page 34, line 5 - line 13 page 34, line 32 - line 36 page 41, line 3 - line 11 page 42, line 6 - line 11 figures 1,20,25,53,56,57 ----- -/--	1-5, 7-13,15, 16

[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
8 September 2011	16/09/2011

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Görlach, Tobias

INTERNATIONAL SEARCH REPORT

International application No
PCT/IB2011/052367

C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X Y	EP 1 632 149 A2 (OREAL [FR]) 8 March 2006 (2006-03-08) paragraph [0024] - paragraph [0028] paragraph [0104] paragraph [0137] - paragraph [0140] paragraph [0144] - paragraph [0154] figures 1-6,12-15	1-7,9, 11,13-16 8
Y	US 2008/011317 A1 (MALVAR MICHAEL [US] ET AL) 17 January 2008 (2008-01-17)	8
A	paragraph [0060] - paragraph [0061] paragraph [0071] figures 3,5-9B,25-29	1-7,9-16
A	FR 2 831 032 A1 (COTY SA [FR]) 25 April 2003 (2003-04-25) page 6, line 1 - page 7, line 22 figures 3-5	1-16

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
PCT/IB2011/052367

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