This applicator comprises a first body (12), formed by a first molded part, which first body (12) comprising a first primary row (22A) of projecting elements (38) and a second primary row (22B) of projecting elements, the first primary row (22A) being angularly spaced apart from the second primary row (22B) with respect to an axis (A-A') of the body (12). It comprises a second body (14) comprising a first secondary row (51A) of projecting elements (62), arranged between the first primary row (51A) and the second primary row (51B), with the second body (14) being applied against the first body (12) between the first primary row (51A) and the second primary row (51B). The second body (14) is made of a second molded part assembled on the first body (12) after molding thereof.
COSMETIC PRODUCT APPLICATOR AND ASSOCIATED PRODUCTION METHOD

[0001] This invention relates to a cosmetic product applicator, including:

[0002] a first body, formed by a first molded part, which first body comprises at least one first primary row of projecting separation/combing/loading elements and at least one second primary row of projecting separation/combing/loading elements, the first primary row being angularly spaced apart from the second primary row with respect to an axis of the body;

[0003] a second body comprising a first secondary row of projecting separation/combing/loading elements, arranged between the first primary row and the second primary row, with the second body being applied against the first body between the first primary row and the second primary row.


[0005] The cosmetic product intended to be applied by the applicator according to the invention is in particular in the form of a powder, a compacted solid, or a fluid such as a liquid. The product is advantageously a product intended to be placed on the keratin fibers of a user, such as the eyelashes or eyebrows. The product is, for example, a makeup product.

[0006] Makeup product applicators include, in some cases, a central core and a plurality of separation/combing/loading teeth projecting radially from the core.

[0007] To produce such applicators, it is known, for example, to form teeth by molding, in particular when molding the core or by insert molding the core with a material different from that of the core.

[0008] To this end, WO 2008/091128 describes a mascara brush that comprises a core equipped with a plurality of primary rows of separation/combing elements. The applicator comprises a second body injection molded on the first body and supporting a secondary row of separation/combing elements arranged between a first primary row and a second primary row.

[0009] The second body is applied against the first body, between the first primary row and the second primary row.

[0010] Such an applicator can be formed from two materials of different types and/or different colors. However, the production of such an applicator by injection molding is complicated, and does not make it possible to obtain, in some cases, various forms of projecting elements, in a simple and inexpensive manner.

[0011] EP 2 332 443 describes a cosmetic product applicator for eyelashes or eyebrows, including a support and an application portion. The support comprises a branch inserted in an orifice provided through the application portion. This portion does not therefore have a solid cross-section.

[0012] An objective of the invention is to obtain a cosmetic product applicator comprising a first body equipped with projecting elements and a second body, also equipped with projecting elements, assembled on the first body, which are produced in a simple and inexpensive manner, with the first body and the second body having projecting element shapes that are easily adaptable.

[0013] To this end, the invention relates to an applicator of the type mentioned above, characterized in that the second body is formed by a second molded part assembled on the first body after molding thereof.

[0014] The applicator according to the invention can include one or more of the following features, considered alone or in any technically possible combination:

[0015] the second body comprises a member holding the first secondary row, with the first body defining, between the first primary row and the second primary row, a member insertion groove, with the member being engaged in the groove;

[0016] the member is slidingly mobile along axis A-A' in the groove during the assembly of the second body in the first body;

[0017] it comprises at least one element for radially retaining the member with respect to the first body;

[0018] the second body comprises a second secondary row of projecting elements, with the first primary row being inserted between the first secondary row and the second secondary row;

[0019] the second body comprises a base, the first secondary row and the second secondary row projecting longitudinally from the base on each side of a slot for receiving a portion of the first body holding the first primary row;

[0020] the first body comprises a projecting portion, the base defining a central opening for passage of the projecting portion of the first body, and the projecting portion being engaged through the passage opening;

[0021] the first body defines a plurality of grooves, with each groove being arranged between a first primary row of projecting elements and a second primary row of projecting elements, with the second body defining a plurality of members, each member holding a secondary row of projecting elements, and each member being inserted into a corresponding groove;

[0022] the first body and the second body are made based on different materials;

[0023] the projecting elements of at least one primary row have a different shape from the projecting elements of at least one secondary row.

[0024] The invention also relates to a method for producing a cosmetic product applicator, including the following steps:

[0025] providing a first body formed by a first molded part, with the first body comprising at least one first primary row of projecting separation/combing/loading elements and at least one second primary row of projecting separation/combing/loading elements;

[0026] providing a second body formed by a second molded part, with the second body comprising a first secondary row of separation/combing/loading elements;

[0027] assembly of the second body on the first body after molding of the second molded part so as to arrange the first secondary row between the first primary row and the second primary row, with the second body being applied against the first body between the first primary row and the second primary row.

[0028] The method according to the invention can include one or more of the following features, considered alone or in any technically possible combination:

[0029] the step of providing the first body includes the molding of the first molded part, the step of providing the second body including the molding of the second molded part, with the first molded part and the second molded part being molded at a distance from one another, in particular in separate molding cavities;

[0030] the second body comprises a member holding a secondary row of projecting separation/combing/loading ele-
ments, with the first body defining, between the first primary row and the second primary row, a member insertion groove, and the member being inserted in the groove during assembly;

[0031] the engagement of the member in the groove comprises the longitudinal sliding of the member in the groove along the axis of the first body;

[0032] the first body defines a plurality of grooves, each groove being arranged between a first primary row and a second primary row, with the second body defining, for each groove, a corresponding member, each member supporting a secondary row of projecting elements, and the assembly step comprising the engagement, advantageously simultaneous, of each member in a corresponding groove.

[0033] The invention will be easier to understand in view of the following description, provided solely as an example, in reference to the appended drawings, in which:

[0034] FIG. 1 is a three-quarter perspective view of a first cosmetic product apparatus according to the invention;

[0035] FIG. 2 is a view equivalent to that FIG. 1, with an exploded perspective of the assembly of the apparatus;

[0036] FIG. 3 is a view equivalent to that of FIG. 1 of a first applicator body of FIG. 1;

[0037] FIG. 4 is a view equivalent to that of FIG. 1 of a second applicator body of FIG. 1.

[0038] A first cosmetic product applicator 10 is shown in FIG. 1. This applicator 10 is intended to apply a cosmetic product in the form of a powder, a compacted solid or a fluid such as a liquid. The product is advantageously a product intended to be placed on the keratin fibers of a user, such as the eyelashes or the eyebrows. The product is, for example, a makeup product.

[0039] The first applicator 10 comprises a first body 12 formed by a first molded part and a second molded part 14 formed by a second molded part. According to the invention, the second body 14 is assembled on the first body 12 after the first body 12 and the second body 14 have been molded.

[0040] As shown in FIGS. 1, 2 and 3, the first body 12 is formed in a single piece of the same material.

[0041] Advantageously, the first body 12 is based on a plastic material, in particular a thermoplastic, thermosetting or elastomer material. The first body is, for example, based on polypropylene, thermoplastic elastomer, polyamide and/or polyethylene.

[0042] As shown in FIG. 3, the first body 12 extends according to a central axis A-A’. It comprises an elongate base 16 and a plurality of radial ribs 18A to 18D projecting radially from the elongate base 16. The ribs 18A to 18D mutually define intermediate grooves 20.

[0043] The first body 12 also comprises a first primary row 22A of projecting separation/combing/loading elements supported by a first rib 18A and at least one second primary row 22B, 22C, 22D of projecting separation/combing/loading elements, supported by a second rib 18B to 18D, separate from the first rib 18A.

[0044] The first body 12 also advantageously comprises an attachment rod 24 projecting at a proximal end of the body 12, and a head 26 projecting at a distal end of the body 12.

[0045] In this example, the base 16 is formed by an element rotating about axis A-A’. The base 16 is, for example, formed by a solid cylinder with a circular cross-section. Alternatively, the cross-section of the base 16 is elongate, in particular elliptical, or is polygonal.

[0046] The base 16 defines an exterior peripheral surface 28 forming the base of the grooves 20.

[0047] In this example, the ratio of the maximum radial span of the base 16, in this case its diameter, measured perpendicularly to axis A-A’, to the length of the base 16, measured along axis A-A’, is less than 50%.

[0048] The length of the base 16 is, for example, between 15 mm and 40 mm and its maximum diameter is less than 10 mm, in particular between 2 mm and 4 mm.

[0049] In the example shown in the figures, the first body 12 comprises at least two ribs 18A, 18B angularly spaced apart from one another.

[0050] Advantageously, the number of ribs 18A, 18D is greater than two and is in particular between 2 and 6.

[0051] Each rib 18A to 18D extends longitudinally according to axis A-A’ of the body 12.

[0052] In the example shown in FIG. 3, each rib 18A to 18D extends linearly, parallel to axis A-A’.

[0053] The ribs 18A to 18D are spaced apart from one another and mutually angularly define the grooves 20.

[0054] Each rib 18A to 18D projects radially from axis A-A’ with respect to the base 16, from the exterior radial surface 28. In this example, the length of each rib 18A to 18D, measured along axis A-A’, is less than or equal to the length of the base 16.

[0055] In particular, a proximal portion 30 of the base 16 projects axially toward the rod 24 from each rib 18A to 18D. The length of the projecting proximal portion 30 is advantageously less than the total length of the base 16, with the lengths being measured along axis A-A’.

[0056] In this example, each rib 18A to 18D has a curved exterior face 32. The cross-section of the exterior face 32 is, for example, substantially in the shape of an arc of circle.

[0057] The maximum height of each rib 18A to 18D measured radially with respect to axis A-A’ between the exterior surface 28 and the exterior face 32 is greater than 20% of the maximum transverse span e1 of the base 16, measured perpendicularly to axis A-A’. This height is advantageously less than 45% of the maximum transverse span e1 of the base 16.

[0058] The maximum height of the rib 18A to 18D is, for example, between 0.5 mm and 1.5 mm for a diameter of the body 16 advantageously between 2 mm and 4 mm.

[0059] Each rib 18A to 18D comprises at least one element 34A, 34B for radial retaining of the second body 14. In this example, each rib 18A to 18D comprises two retaining elements 34A, 34B located laterally, on each side of the rib 18A to 18D.

[0060] Each element 34A, 34B is, for example, formed by a tab-like projection 36 extending over at least some of the length of the rib 18A to 18D. The retaining element 34A, 34B projects into the groove 20. It is arranged at an intermediate height between the exterior surface 28 and the exterior face 32.

[0061] Alternatively, the rib 18A to 18D is in the form of a dovetail and does not have a retaining element 36A, 36B.

[0062] In the example shown in FIG. 3, each rib 18A to 18D has a primary row 22A to 22D of projecting separation/combing/loading elements 38.

[0063] Each row 22A to 22D comprises a plurality of projecting separation/combing/loading elements 38 adjacent to one another and separated from one another by intermediate spaces 39.
Each projecting element 38 projects radially from the rib 18A to 18D. It has an end 40 connected to the exterior face 52 of the rib 18A to 18D and a free end 42.

Advantageously, each projecting element 38 tapers between the connected end 40 and the free end 42. In the example shown in FIG. 3, the projecting elements 38 are continuously pinched by being moved radially outwardly. They are, for example, in the form of a point.

The projecting elements 38 are substantially aligned. They form the primary row 22A, 22B.

The intermediate space 39 between each pair of projecting elements 38 is intended to receive cosmetic product and/or a keratin fiber of a user.

The rod 24 projects axially with respect to the proximal end of the base 16. It has a length shorter than that of the base 16.

The head 26 projects from the distal end of the base 16. Advantageously, it axially closes off each groove 20. The exterior surface of the head 26 is, for example, curved.

As shown in FIG. 4, the second body 14 is made in a single piece of the same material. According to the invention, the second body 14 is formed separately from the first body 12, with the first molded part forming the first body 12 being molded at a distance from the second molded part forming the second body 14.

The second body 14 is based on a plastic material, in particular a thermoplastic, thermostetting or elastomer material. The first body is, for example, based on polypropylene, thermoplastic elastomer, polyanide and/or polyethylene.

As shown in FIG. 4, the second body 14 comprises a plurality of members 50A to 50D, each member 50A to 50D being intended to be inserted in a corresponding groove 20.

The second body 14 also comprises at least one first secondary row 51A of separation/combing/loading elements supported by a first member 50A and at least one second secondary row 51B to 51D of separation/combing/loading elements supported by a second member 50B to 50D.

In the example shown in FIG. 4, the second body 14 also advantageously comprises a base 52 connecting the members 50A to 50D to one another.

Each member 50A to 50D has a shape substantially fitting that of the groove 20 in which it is arranged.

Each member 50A to 50D thus has a length substantially equal to the length of the groove 20 and an angular span substantially equal to the angular span of the groove 20.

The members 50A to 50D are angularly spaced apart from one another and define intermediate slots 54 intended to receive a rib 18A to 18D.

Each member 50A to 50D extends radially between an internal face 56 intended to be applied against the first body and an external face 58, on which a secondary row 51A to 51D projects.

In the example shown in FIG. 4, each member 50A to 50B comprises a complementary retaining element 60A, 60B intended to cooperate with a radial retaining element 34A, 34B present on the ribs 18A to 18D.

Each complementary retaining element 60A, 60B is formed in this example by a longitudinal groove with a shape substantially fitting that of the retaining element 34A, 34B.

In this example, each member 50A to 50D supports a secondary range 51A to 51D of projecting separation/combing/loading elements 62.

Each secondary row 51A to 51D thus comprises a plurality of projecting elements 62 projecting radially from the exterior face 58 of the member 50.

Each projecting element 62 has a tapered shape between an end 64 connected to the member 50A and a free end 66. In this example, the free end 66 is curved, and has, for example, a ball shape.

The projecting elements 62 of each secondary row 51A to 51D are aligned substantially longitudinally parallel to axis A-A'.

In this example, each pair of adjacent elements 62 defines an intermediate passage space 68 intended to receive a keratin fiber, and/or the cosmetic product.

In this example, the base 52 is arranged at the proximal end of the second body 14.

It comprises a ring 70, with a height substantially equal to the height of the proximal portion 30. The ring 70 defines a central opening 72 for passage of the proximal portion 30 and advantageously the rod 24.

The members 50A to 50D project axially from the ring 70.

The slots 54 defined between the members 50A, 50B are axially closed off at their ends by the ring 70.

According to the invention, the first body 12 and the second body 14 are assembled one on the other, after they have been molded separately from one another. Thus, when the applicator 10 is assembled, the second body 14 is mobile with respect to the first body 12 between a disassembled configuration, visible in FIG. 2, and an assembled configuration, shown in FIG. 1.

In the disassembled configuration, the first body 12 and the second body 14 are entirely separate from one another.

In the assembled configuration, shown in FIG. 3, the members 50A to 50D have been inserted into the grooves 20 located between each pair of ribs 18A to 18D. Each member 50A to 50D is applied by its interior face 56 against the first body 12, at the level of the exterior surface 28 defining the base of the groove 20.

The retaining elements 34A, 34B cooperate with the complementary retaining elements 60A, 60B so as to radially hold each member 50A to 50D in position between two ribs 18A to 18D of the first body 12.

Advantageously, in the assembled configuration, the ring 70 forming the base 52 has been arranged around the projecting portion 30 of the body. The projecting portion 30 is engaged through the central opening 72 and is applied against the ring 70.

Each secondary row 51A to 51D of projecting elements 62 is located between two primary rows 22A, 22B of projecting elements 38. Similarly, each primary row 22A, 22B of projecting elements 38 is located between two secondary rows 51A to 51D of projecting elements 62.

Advantageously, in the example shown in FIGS. 1 to 4, each member 50A to 50D of the second body 14 is inserted into an associated groove 20, by sliding along an axis parallel to axis A-A'. The second body 14 is thus moved in translation along axis A-A' to go from its disassembled configuration to its assembled configuration.

In the assembled configuration, the exterior face 32 of each rib 18A to 18D is advantageously flush with the exterior face 58 of each member 50A to 50B placed between the ribs 18A, 18B.
Each rib 18A to 18D is inserted into a corresponding slot 54.

A method for producing an applicator 10 according to the invention will now be described.

Initially, the first body 12 and the second body 14 are formed separately by molding. Thus, the first body 12 is made in a single piece of the same material molded in a first molding cavity. The second body 14 is made in a single piece of the same material in the form of a second molded part in a second molding cavity different from that intended to form the first molded part.

Thus, the molding of each body 12, 14 is adapted to the structure of this body, thereby enabling different configurations of projecting elements 38, 62 to be obtained in a simple manner adapted to the particular shape of the projecting element 38, 62.

The first body 12 and the second body 14 are molded separately, they can be made of materials of different types and/or of different colors, thereby increasing the technical solutions available to the user.

Once the first body 12 and the second body 14 have been provided separately, they go from their disassembled configuration shown in FIG. 2 to their assembled configuration shown in FIG. 1.

To this end, each member 50A to 50D is inserted into a corresponding groove 20 located between two adjacent ribs 18A, 18B and is held in position against the first body 12.

The interior face 56 of the member 50 is applied on the exterior face 28 of the base 16 of the first body 12.

Each rib 18A to 18D is received in a slot 54 defined between two members 50A to 50D.

Advantageously, the engagement of each member 50A to 50D in a groove 20 comprises the longitudinal sliding of the member 50A to 50D into the groove 20 along axis A-A'.

The members 50A to 50D are connected to one another by the base 52, and the engagement of the different members 50A to 50D can be simultaneous.

Once engaged, the second body 14 is held in position against the first body 12 by the cooperation between the retaining elements 34A, 34B and the complementary retaining elements 60A, 60B.

Then, the applicator 10 is advantageously mounted at the end of a sheath (not shown).

To use the applicator 10, the user advantageously soaks the applicator 10 in a cosmetic product container, causing the cosmetic product to fill the intermediate spaces 39, 68 between the projecting elements 38, 62 of the primary rows 22A to 22D and the secondary rows 51A to 51D.

Then, the user brings the projecting elements 38, 62 into contact with a keratin surface, in particular into contact with the keratin fibers, such as the eyelashes, the eyebrows or the hair.

The user then deposits the cosmetic product supported by the applicator 10 onto the keratin surface.

In the case of keratin fibers, the user may also insert at least one keratin fiber into the respective intermediate space 39, 68 between two projecting elements 38, 62 so as to obtain an adequate separation, combing or loading effect of the cosmetic product on the fiber.

In alternatives, the first body 12 and the second body 14 are assembled to one another by snap-locking, welding, in particular by ultrasonic welding or bonding.

In alternatives, the number of ribs 18A to 18D and the number of members 50A to 50D is between 1 and 6.

The term “one” must be understood as meaning “at least one” unless otherwise indicated.

With respect to the applicators of the prior art, and in particular that described in EP 2 332 443, the applicator according to the invention is easier to assemble.

In particular, the second body 14 is assembled only from the outside of the first body 12, without having to perform a precise positioning through the first body 12.

The elongate base 16 of the first body 12 has a solid cross-section. It may be extended by an attachment rod 24 suitable for being inserted more easily into an opening of the rod of a gripping member. Conventionally, this gripping member advantageously forms a cap of a cosmetic product container.

In particular, as the attachment rod 24 is made in a single piece, it is simple to insert it into the rod of the gripping member and to attach it by crimping, unlike the applicator described in the prior art.

1. Cosmetic product applicator including:
   a first body, formed by a first molded part, which first body comprises an elongate base having a proximal portion, at least one first primary row of projecting separation/combing/loading elements and at least one second primary row of projecting separation/combing/loading elements, the first primary row being angularly spaced apart from the second primary row with respect to an axis (A-A') of the body and defining a groove, wherein the elongate base has a solid cross-section defining an external peripheral surface forming the base of the groove;
   a second body, formed by a second molded part, wherein the second body comprises at least one first secondary row of projecting separation/combing/loading elements, arranged between the first primary row and the second primary row, with the second body being applied against the first body after molding thereof,
   in which the second body comprises a base defining a central opening and at least one member supporting said at least one first secondary row,
   the member being engaged in the groove and the proximal portion of the elongate base (16) being inserted into the central opening.

2. Applicator according to claim 1, wherein the member is slidingly mobile along axis (A-A') in the groove during the assembly of the second body in the first body.

3. Applicator according to claim 1, which comprises at least one element for radially retaining the member with respect to the first body.

4. Applicator according to claim 1, wherein the second body comprises a second secondary row of projecting elements, with the first primary row being inserted between the first secondary row and the second secondary row.

5. Applicator according to claim 4, wherein the first secondary row and the second secondary row project longitudinally from the base on each side of a slot for receiving a portion of the first body supporting the first primary row.

6. Applicator according to claim 1, wherein the first body defines a plurality of grooves, each groove being arranged between a first primary row of projecting elements and a second primary row of projecting elements, the second body defining a plurality of members, each member supporting a secondary row of projecting elements, each member being inserted into a corresponding groove.
7. Applicator according to claim 1, wherein the first body and the second body are made based on different materials.

8. Applicator according to claim 1, wherein projecting elements of at least one first row have a shape different from the projecting elements of at least one secondary row.

9. Method for producing a cosmetic product applicator, including the following steps:

- providing a first body formed by a first molded part, with
  the first body comprising an elongate base having a proximal portion, at least one first primary row of projecting separation/combing/loading elements and at least one second primary row of projecting separation/combing/loading elements, the first primary row and the second primary row define a groove, with the elongate base having a solid cross-section defining an external peripheral surface forming the base of the groove;

- providing a second body formed by a second molded part, with
  the second body comprising a base defining a central opening and at least one member supporting a first secondary row of projecting separation/combing/loading elements;

- assembly of the second body (14) on the first body after molding of the second molded part so as to arrange the proximal portion of the elongate base (16) in the central opening of the base and so as to arrange the member supporting the first secondary row in the groove between the first primary row and the second primary row.

10. Method according to claim 9, wherein the step of providing the first body includes the molding of the first molded part, the step of providing the second body including the molding of the second molded part, with the first molded part and the second molded part being molded at a distance from one another, in particular in different molding cavities.

11. Method according to claim 9, wherein the engagement of the member in the groove comprises the longitudinal sliding of the member in the groove along the axis (A-A') of the first body.

12. Method according to claim 9, wherein the first body defines a plurality of grooves, each groove being arranged between a first primary row and a second primary row, with the second body defining, for each groove, a corresponding member, each member supporting a secondary row of projecting elements, and the assembly step comprising the engagement, advantageously simultaneous, of each member in a corresponding groove.

13. Applicator according to claim 2, which comprises at least one element for radially retaining the member with respect to the first body.

14. Applicator according to claim 2, wherein the first body comprises a second secondary row of projecting elements, with the first primary row being inserted between the first secondary row and the second secondary row.

15. Applicator according to claim 3, wherein the second body comprises a second secondary row of projecting elements, with the first primary row being inserted between the first secondary row and the second secondary row.

16. Applicator according to claim 2, wherein the first body defines a plurality of grooves, each groove being arranged between a first primary row of projecting elements and a second primary row of projecting elements, the second body defining a plurality of members, each member supporting a secondary row of projecting elements, each member being inserted into a corresponding groove.

17. Applicator according to claim 3, wherein the first body defines a plurality of grooves, each groove being arranged between a first primary row of projecting elements and a second primary row of projecting elements, the second body defining a plurality of members, each member supporting a secondary row of projecting elements, each member being inserted into a corresponding groove.

18. Applicator according to claim 4, wherein the first body defines a plurality of grooves, each groove being arranged between a first primary row of projecting elements and a second primary row of projecting elements, the second body defining a plurality of members, each member supporting a secondary row of projecting elements, each member being inserted into a corresponding groove.

19. Applicator according to claim 5, wherein the first body defines a plurality of grooves, each groove being arranged between a first primary row of projecting elements and a second primary row of projecting elements, the second body defining a plurality of members, each member supporting a secondary row of projecting elements, each member being inserted into a corresponding groove.

20. Applicator according to claim 2, wherein the first body and the second body are made based on different materials.

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