The dispenser applicator (1) for a cosmetic product, typically a mascara, has an axial direction (10) and comprises a body (2) comprising a typically threaded neck (20) and a container (21) for said cosmetic product, said neck (20) being unitary with a wiper (3), and an applicator (4) comprising:

a) a manualprehension means (40),

b) an axial rod (4) which is oriented along said axial direction (10),

c) an application means (42),

said axial rod (41) being unitary with said manualprehension means (40) at its so-called upper end (410), and with said application means (42) at its so-called lower end (411).

It is characterized in that said wiper (3) is a so-called single-piece wiper (3') defining with said body (2) a single-piece member (5) which is molded with plastic material. Said wiper (3) constitutes with said body (2) a single-piece member (5) which is molded with plastic material and in that said wiper comprises a plurality of N radial tongues (30), said radial tongues (30) being typically identical and regularly disposed around said axial direction (10), two consecutive radial tongues defining an angle of 360°/N between one another.
DISPENSER APPLICATOR WITH INTEGRATED WIPER AND PROCESS OF MANUFACTURE

BACKGROUND OF THE INVENTION

(a) Field of the Invention

The invention concerns the field of dispenser applicators for cosmetic products, typically for mascara.

(b) Description of the Prior Art

Dispenser applicators for cosmetic products and mascara in particular, comprise a container defining a reservoir for said cosmetic product or said mascara with a threaded neck provided with a wiper, and an applicator comprising an axial rod provided at one end with a threaded cap, and at the other end with an application means, typically a brush, the threaded cap being associated with the neck to seal the reservoir, and the wiper having a diameter selected to allow the rod to pass therethrough and to wipe the application means, for example a brush loaded with a product to be applied every time the applicator is removed from the reservoir.

The applicator is generally made by assembling at least three members: a member defining an exterior cap, a single-piece member of plastic material comprising said rod provided at one end with an insert or a part that is snapable in said exterior cap, and an application means, for example a brush, adapted to be fixed at the other end of said rod.

Typically, the reservoir is a article of plastic material generally made by molding, the wiper being a separate member, typically made of an elastomer, which is snapped onto the neck.

However, French Patent No. 2,733,734 is already known to teach a container defining a reservoir comprising a neck with interior truncated shape in a manner to obtain a decreased diameter of the neck which is adapted to wipe out liquid from the brush of the applicator.

On the one hand, known containers comprise a body for said cosmetic product, which is provided with a typically threaded neck, and a wiper fixed to the neck, the body and the wiper being two distinct molded members typically assembled by snapping, welding or gluing. The problem which is raised with respect to the traditional dispenser applicators is the manufacturing cost of these containers since such a manufacture requires the supply or the manufacture of two distinct members, i.e. the body and the wiper, and the assembly thereof into a unitary body.

On the other hand, the proposal made in French Patent No. 2,733,734 to dispense with a wiper has not replaced the traditional containers in spite of its lesser cost, because, in practice, the proposal made in this Patent could only be used with low capacity bodies, typically bodies adapted to distribute samples, since molding of these bodies requires a nucleus of small diameter corresponding to the diameter of the wiping orifice.

The applicant has therefore searched for a means to solve all these problems.

SUMMARY OF THE INVENTION

According to the invention, the dispenser applicator for a cosmetic product, typically a mascara, is made with an axial direction and comprises a body comprising a typically threaded neck and a container for said cosmetic product, said neck being integral with a wiper, and an applicator comprising:

(a) a manualprehension means,

(b) an axial rod oriented along said axial direction,

(c) an application means,

said axial rod being unitary with said manualprehension means at its so-called upper end, and with said application means at its so-called lower end. It is characterized in that said wiper is a so-called single-piece wiper defining a single-piece member with said body, said single-piece member being molded with plastic material, and in that said wiper comprises a plurality of N radial tongues (30), said radial tongues (30) being identical and regularly disposed about said axial direction (10), two consecutive radial tongues defining between them an angle of 360°/N.

This dispenser applicator solves the problems raised since, on the one hand, the body comprises a wiper, the word “wiper” adopting here the known meaning of this word in traditional dispenser applicators, and on the other hand, this wiper and said body constitute a single-piece molded member.

Thus, the invention makes it possible to obtain the same performances as the traditional dispenser applicators, while reducing the number of members to be molded and assembled, which represents a great advantage in practice.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGS. 1a to 9b relate to the invention, FIG. 10 being concerned with prior art.

FIGS. 1a and 1b are axial cross-sections along the axial direction 10.

FIG. 1a is a schematic representation of a molding device 8 comprising an outline mold 80 made of two parts 80a, 80b, which cooperate with a central nucleus 81 provided with a plurality of axial projections 810, in a manner to define a molding cavity provided with an orifice 800.

FIG. 1b represents the first outline body 6 obtained by molding a thermoplastic material by means of the molding device 8 of FIG. 1a.

FIGS. 2a to 2g relate to the central nucleus 81 used for the tests.

FIG. 2a is an axial cross-section of the central nucleus 81 comprising a plurality of members.

FIG. 2b is a side view of the central nucleus 81.

FIG. 2c is a partial side view of the lower part of the central nucleus 811 obtained after having removed the peripheral crown 810 of the nucleus 81.

FIG. 2d is an enlarged view of the portion of FIG. 2a that is circled with a dotted line.

FIG. 2e is an enlarged view of the portion of FIG. 2c which is circled with a dotted line, the central nucleus 811 comprising a plurality of hollowed parts 812 facing periph-
eral crown 810, in a manner to make it possible to obtain a plurality of outline tongues 62 by molding.

[0027] FIG. 3 is a view similar to FIG. 1 in which, the first outline 6 having been formed, the outline mold 80 has been replaced by a finishing mold 82 for the purpose of obtaining the second outline 7 by blowing, a fluid under pressure being introduced through an axial duct 813 as schematically represented by an arrow in dark line in order to obtain container 2.

[0028] FIG. 4 is a cross-sectional view of the second outline 7 obtained after blowing the first outline 6 with the device of FIG. 3.

[0029] FIGS. 5 and 6 are views in axial cross-section which illustrate the turn-around of the plurality of outline tongues 62 as upwardly oriented in the second outline 7 for the purpose of obtaining the single-piece wiper 3' according to the invention. On the right part of FIG. 5, which is similar to the right part of FIG. 4, the annular member 90 has been illustrated in an upper position intended to initiate the turn-around of the plurality of outline tongues 62. On the left part of FIG. 5, the annular member 90 has been illustrated in low position and in abutment against the neck, so as to obtain an inclined outline tongue 62a. On FIG. 6, the central member 91 of the turn-around punch 9' has been illustrated in the annular member 90 so as to obtain a plurality of downwardly turned outline tongues 62b.

[0030] FIG. 7 is a view of the annular member 90, a lower part being represented in side view.

[0031] FIG. 8a is a view in axial cross-section of body 2 according to the invention obtained after removal, on FIG. 6, of the different members 90, 91 of the turn-around punch 9'.

[0032] FIG. 8b is a view from underneath of the single-piece wiper 3' made of a plurality of but-jointed radial tongues 30 in the shape of a truncated cone.

[0033] FIGS. 9a and 9b represent a dispenser applicator 1, opened in FIG. 9a and closed in FIG. 9b, the applicator 4, being unscrewed, facing body 2 on FIG. 9a.

[0034] FIG. 10 is a partial cross-section of a wiper 3 mounted on a body 2 according to the prior art.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0035] According to the invention, wiper 3' may comprise a plurality of N radial tongues 30, the radial tongues 30 typically being identical and regularly disposed around axial direction 10, two consecutive radial tongues defining between them an angle of 360°/N, as illustrated for example in FIG. 8b.

[0036] The number N of radial tongues 30 may be from 2 to 10, and typically from 3 to 8, and is preferably 6.

[0037] As illustrated in FIG. 8a, radial tongues 30 may constitute a substantially truncated wall 31 with a top angle of 2β ranging from 50° to 140°, truncated wall 31 defining at its lower end an orifice 310 of diameter D1 and connecting to neck 20 at its upper end by means of its base 311 of diameter D2-D1, diameter D2 typically corresponding to the interior diameter of neck 20.

[0038] Diameter D1 may be comprised between 0.3.D2 and 0.8.D2, and typically between 0.4.D2 and 0.7.D2.

[0039] Typically, radial tongues 30 may be connected to neck 20 through base 311 of truncated wall 31.

[0040] In addition, radial tongues 30 may be connected to neck 20 through its lower extremity 200.

[0041] According to the invention, radial tongues 30 may at least in part be butt-jointed, typically at the level of orifice 310, so as to provide a self-blocking of radial tongues 30 between one another and thereby preventing any risk of turn-around of the tongues towards the exterior of the body when applicator 4 is separated from body 2, the means of manual prehension 40 of applicator 4 defining a cap adapted to seal body 2 by screwing it onto threaded neck 20.

[0042] As illustrated in FIG. 8b, radial tongues 30 may be radial tongues that are typically butt-jointed along their entire radial length.

[0043] As illustrated in FIG. 8a, single-piece wiper 3 may be flexible with respect to axial direction 10, typically it may be resiliently flexible, radial tongues 30 being adapted to move away from axial direction 10 under a constraint when the application means 42 of applicator 4 is introduced in body 2 and acts jointly with wiper 3', so as to constitute a pseudo truncated wall with a top angle of 2β=2.β, the tongues reverting back to their position and defining substantially truncated wall 31 with a top angle of 2β when the constraint stops.

[0044] Another object of the invention is provided by the process of manufacture of a body 2 of a dispenser applicator 1 according to the invention.

[0045] In this process, by means of a molding device 8, and in order to make single-piece molded member 5:

[0046] a) a so-called first outline body 6 comprising an outline container 60 and a typically threaded neck 61 comprising a plurality of N outline tongues 62 disposed inside neck 61 and outwardly oriented with respect to outline container 60, is made by compression molding of a thermoplastic material in cooperation with an outline mold 80 made of two parts 80a, 80b and a molding nucleus or punch 81 typically comprising a plurality of N axial cavities 812 adapted to constitute by molding the plurality of N outline tongues 62.

[0047] b) a so-called second outline body 7 comprising container 21 of body 2 is made by blowing in a finishing mold, the first outline body 6, container 21 of body 2 typically comprising a bottom 210, a lateral skirt 211 and a shoulder 212 connecting lateral skirt 211 to neck 20.

[0048] c) then, typically by means of a turn-around device 9, the plurality of N outline tongues 62 are caused to be pivoted towards the interior of container 212, in order to orient the N outline tongues 62 towards the interior of body 2, body 2 then being at a so-called inversion temperature, which is lower than the molding temperature of the outline, and is chosen to be low enough so that the tongues remain unitary with the neck and high enough so that the plurality of tongues are sufficiently flexible with respect to the neck to allow the outline tongues 62 to pivot, so as to constitute single-
piece member 5 provided with single-piece wiper 3', comprising the plurality of N radial tongues 30 typically defining truncated wall 31.

[0049] The plurality of N axial cavities 812 may be disposed in a manner that the plurality of N radial tongues 30 are connected to the neck 20 at its lower end 200 by means of an annular connecting zone 22.

[0050] As illustrated in FIGS. 5 and 6, it is possible to allow the plurality of outline tongues 62 to pivot by introducing in neck 20 a punch 9' constituting turnaround device 9, in a manner to cause the plurality of outline tongues 62 to tip over towards the interior of body 2.

[0051] As illustrated in FIG. 6, turnaround punch 9' may comprise an annular member 90 and a central member 91 capable of sliding in annular member 90.

[0052] As illustrated in FIG. 7, annular member 90 may comprise an exterior crown 900 adapted to come into abutment against neck 20 and an interior crown 901 having a lower extremity 902 defining a bevel forming an angle α which typically ranges from 10° to 70°, so that the lower extremity 902 directs the plurality of outline tongues 62 towards the interior of body 2.

[0053] To operate turnaround device 9, and as illustrated in FIG. 5, annular member 90 may first be introduced into neck 20, the interior crown 901 of annular member 90 having an axial height that is greater than the distance d between connecting zone 22 of the tongues and the upper extremity 201 of the neck, in a manner that, when exterior crown 900 comes into abutment against neck 20, interior crown 901 acts jointly with outline tongues 62 by turning them over towards the interior of body 2, then central member 91 is allowed to slide in annular member 90 so as to constitute a plurality of outline tongues 62' having pivoted by an angle γ near 180°, and so that, after retraction of turnaround device 9, radial tongues 30 are formed, outline tongues 62', especially through elastic memory, revert back in reverse direction until reaching their angular blocking point formed by their lateral edge to edge contact, by forming the truncated wall having an angle 2β ranging from 50° to 140°.

[0054] According to the invention, single-piece member 5 may be made of a plastic material typically selected from a polyolefin, for example PE or PP.

EXAMPLE

[0055] Single-piece members 5 of PE were manufactured by molding according to the process of the invention:

[0056] Initially, the first outline bodies 6 were prepared by being provided with 6 outline tongues 62, as illustrated in FIG. 1b, by using the molding means illustrated generally in FIG. 1a and in detail on FIGS. 2a to 2e with respect to the nucleus 81. In FIG. 1a, the arrow symbolizes the injection of PE in the closed cavity formed par cooperation of the two parts 80a, 80b of outline mold 80, and nucleus 81.

[0057] The first outline bodies 6 were then blown to constitute the second outline bodies 7, as illustrated in FIGS. 3 and 4.

[0058] Finally the turnaround of the outline tongues 62 was carried out, as illustrated in FIGS. 5 to 7, in a manner to obtain the single-piece members 5 as illustrated in FIGS. 8a and 8b. On FIG. 7, the dimensions are expressed in mm.

[0059] These single-piece members 5 had an exterior diameter of 16 mm corresponding to the exterior diameter of the cylindrical container 21, and a total height of 88 mm with a height of the container 21 of 80 mm and a height for neck 20 of 8 mm.

[0060] These single-piece members 5, through the addition of applicators 4, were used to constitute dispenser applicators 1 for mascara as illustrated in FIGS. 9a and 9b, which had a height of 124 mm and an exterior diameter of 16 mm which is constant along its entire height.

[0061] These dispenser applicators 1 for mascara were tested by mascara users. It was found that the single-piece wipers 3' according to the invention had performances similar to those of the traditional wipers 3 illustrated in FIG. 10, with respect to the quality of the wiping out operation as well as to the permanency of this quality of wiping during the entire life of the product.

ADVANTAGES OF THE INVENTION

[0062] The invention makes it possible to replace the manufacture and the assembling of two molded distinct members, body 2 and wiper 3, by the manufacture of only one single-piece member 5 constituting body 2 and the so-called single-piece wiper 3', and this applies to bodies 2 of any capacity. The single-piece members 5 may have an exterior diameter which ranges from 12 mm to 25 mm, and a height ranging from 40 mm to 100 mm.

[0063] The invention therefore has important advantages of economical nature since it concerns the industrial manufacture of manufactured articles of large capacity and in large number.

LIST OF REFERENCE MARKS

<table>
<thead>
<tr>
<th>Description</th>
<th>Reference</th>
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</thead>
<tbody>
<tr>
<td>Dispenser applicator</td>
<td>1</td>
</tr>
<tr>
<td>Axial direction</td>
<td>10</td>
</tr>
<tr>
<td>Body of 1</td>
<td>2</td>
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<tr>
<td>Threaded neck of 1</td>
<td>20</td>
</tr>
<tr>
<td>Lower extremity</td>
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</tr>
<tr>
<td>Container of 2</td>
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</tr>
<tr>
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<tr>
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</tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Upper extremity</td>
<td>410</td>
</tr>
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<td>411</td>
</tr>
<tr>
<td>Application means</td>
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<tr>
<td>Inclined tongue outline</td>
<td>62a</td>
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What is claimed is:

1. Dispenser applicator (1) for a cosmetic product, having an axial direction (10) and comprising a body (2) comprising a neck (20) and a container (21) for said cosmetic product, said neck (20) being unitary with a wiper (3), and an applicator (4) comprising:
   a) a manual prehension means (40),
   b) an axial rod (41) oriented according to said axial direction (10),
   c) an application means (42),

said axial rod (41) being unitary with said manual prehension means (40) at its so-called upper extremity (410), and with said application means (42) at its so-called lower extremity (411);

said wiper (3) defines with said body (2) a single-piece member (5) which is molded of plastic material; and

said wiper comprises a plurality of N radial tongues (30), said radial tongues (30) being identical and regularly disposed around said axial direction (10), two consecutive radial tongues define therebetween an angle of 360°/N.

2. Dispenser applicator according to claim 1 in which the number N of radial tongues (30) ranges from 2 to 10, and preferably 6.

3. Dispenser applicator according to claim 1 in which said radial tongues (30) define a substantially truncated wall (31) with a top angle equal to 2β ranging from 50° to 140°, said truncated wall (31) defining at its lower part an orifice (310) of diameter D1 and connecting to said neck (20) at its lower part by means of its base (311) of diameter D2=D1, diameter D2 typically corresponding to the interior diameter of said neck (20).

4. Dispenser applicator according to claim 3 in which the diameter D2 is comprised between 0.3D2 and 0.8D2, and typically between 0.4D2 and 0.7D2.

5. Dispenser applicator according to claim 3 in which said radial tongues (30) are connected to said neck (20) through said base (311) of said truncated wall (31).

6. Dispenser applicator according to claim 5 in which said radial tongues (30) are connected to said neck (20) through its lower extremity (200).

7. Dispenser applicator according to claim 1 in which said radial tongues (30) are at least in part butt-jointed, at the level of said orifice (310), so as to provide a self-blocking of said radial tongues (30) between one another and thereby preventing any risk of turnaround of said tongues towards the exterior of said body when said applicator (4) is separated from said body (2), said means of manual prehension (40) of said applicator (4) defining a cap adapted to seal said body (2) by screwing it onto said threaded neck (20).

8. Dispenser applicator according to claim 7 in which said radial tongues (30) are radial tongues that are butt-jointed along their entire axial length.

9. Dispenser applicator according to claim 1 in which said single-piece wiper (3) is flexible with respect to said axial direction (10), typically it is resiliently flexible, said radial tongues (30) being adapted to move away from said axial direction (10) under a constraint when said application means (42) of said applicator (4) is introduced in said body (2) and acts jointly with said wiper (3), so as to constitute a pseudo truncated wall with a top angle of 2β<2β said tongues reversion to their position and defining said substantially truncated wall (31) with a top angle of 2β when said constraint stops.

10. Process for manufacturing a body (2) of a dispenser applicator (1) according to claim 1 in which, by means of a molding device (8), and in order to make said single-piece molded member (5):

   a) a so-called first outline body (6) comprising an outline container (60) and a typically threaded neck (61) comprising a plurality of N outline tongues (62) disposed inside said neck (61) and outwardly oriented with respect to said outline container (60), is made by compression molding of a thermoplastic material in cooperation with an outline mold (80) made of two parts (80a, 80b) and a molding nucleus or punch (81) typically comprising a plurality of N axial cavities (812) adapted to constitute by molding said plurality of N outline tongues (62),
   b) a so-called second outline body (7) comprising said container (21) of said body (2) is made by blowing in a finishing mold, said first outline body (6), said container (21) of said body (2) typically comprising a bottom (210), a lateral skirt (211) and a shoulder (212) connecting said lateral skirt (211) to said neck (20),
   c) then, typically by means of a turnaround device (9), said plurality of N outline tongue (62) are caused to be pivoted towards the interior of said container (212), in order to orient said N outline tongues (62) towards the interior of said body (2), said body (2) then being at a so-called inversion temperature, which is lower than the molding temperature of said outline, and is chosen to be low enough so that said tongues remain unitary with said neck and high enough so that said plurality of tongues are sufficiently flexible with respect to said neck to allow said outline tongues (62) to pivot, so as to constitute said single-piece member (5) provided with said single-piece wiper (3) comprising said plurality of N radial tongues (30) typically defining said truncated wall (31).
11. Process according to claim 10 in which said plurality of N axial cavities (812) is disposed in a manner that said plurality of N radial tongues (30) are connected to the neck (20) at its lower end (200) by means of an annular connecting zone (22).

12. Process according to claim 10 in which said plurality of outline tongues (62) is allowed to pivot by introducing in said neck (20) a punch (9') constituting said turnaround device (9), in a manner to cause said plurality of outline tongues (62) to tip over towards the interior of said body (2).

13. Process according to claim 12 in which said turnaround punch (9') comprises an annular member (90) and a central member (91) adapted to slide in said annular member (90).

14. Process according to claim 13 in which said annular member (90) comprises an exterior crown (900) adapted to come into abutment against said neck (20) and an interior crown (901) having a lower extremity (902) defining a bevel forming an angle \( \alpha \) which typically ranges from 10° to 70°, so that said lower extremity (902) direct said plurality of outline tongues (62) towards the interior of said body (2).

15. Process according to claim 13 in which, to operate said turnaround device (9), said annular member (90) is first introduced into said neck (20), said interior crown (901) of said annular member (90) having an axial height that is greater than the distance \( d \) between said connecting zone (22) of said tongues and the upper extremity (201) of said neck, in a manner that, when said exterior crown (900) comes into abutment against said neck (20), said interior crown (901) acts jointly with said outline tongues (62) by turning them over towards the interior of said body (2), then said central member (91) is allowed to slide in said annular member (90) so as to constitute a plurality of outline tongues (62b) having pivoted by an angle \( \gamma \) near 180°, and so that, after retraction of said turnaround device (9), said radial tongues (30) are formed, said outline tongues (62b), especially through the elastic memory, revert back in reverse direction until reaching their angular blocking point formed by their lateral edge to edge contact, by forming said truncated wall having an angle \( 2\beta \) ranging from 50° to 140°.

16. Process according to claim 10 in which said single-piece member (5) is made of a plastic material typically selected from a polyolefin, for example PE or PP.