

FIG. 1a

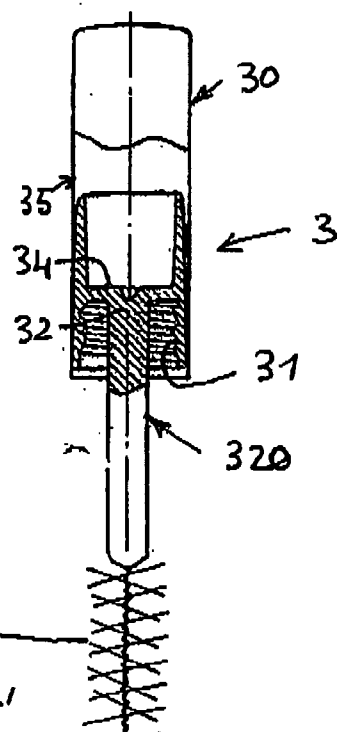


FIG. 1b

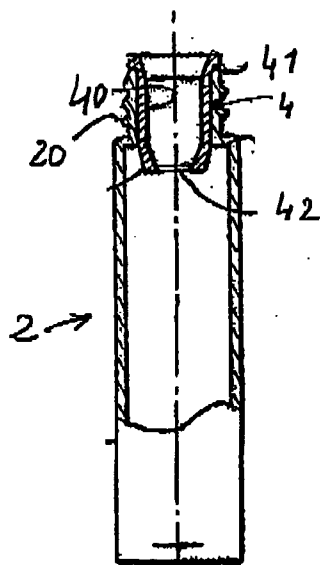


FIG. 1c

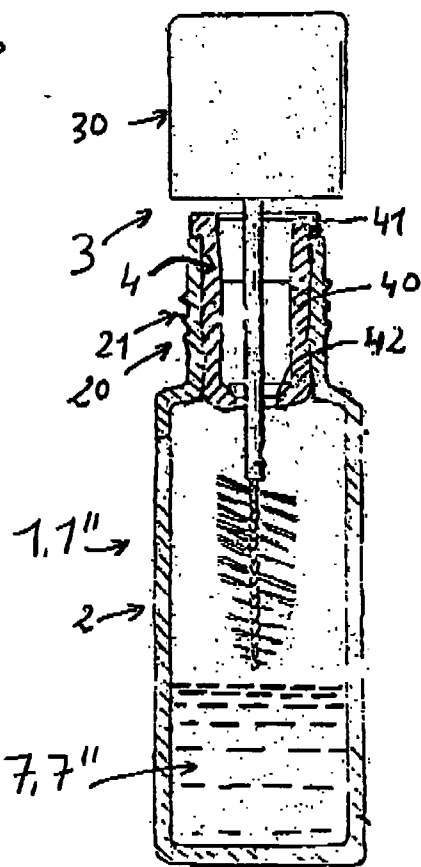


FIG. 1d

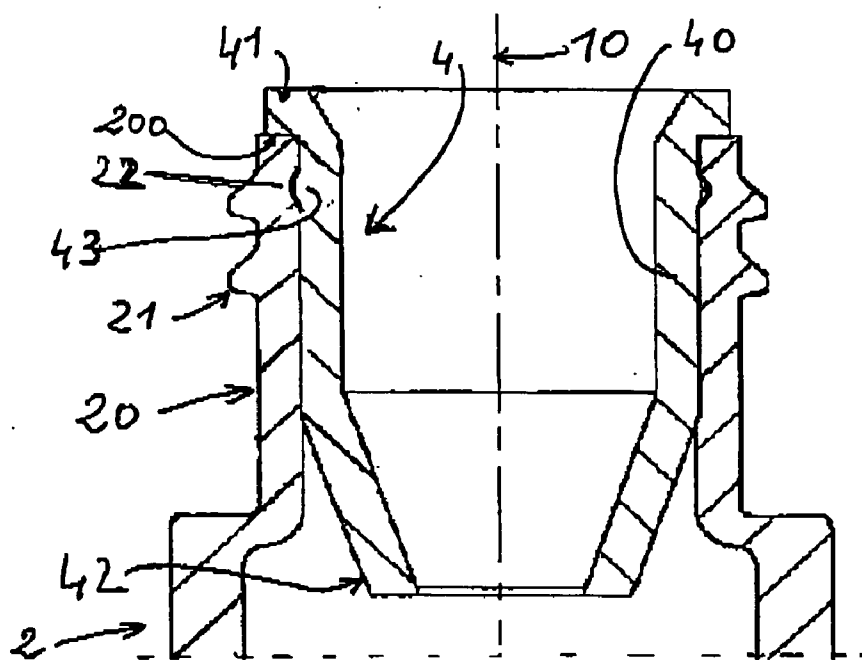


FIG. 2a

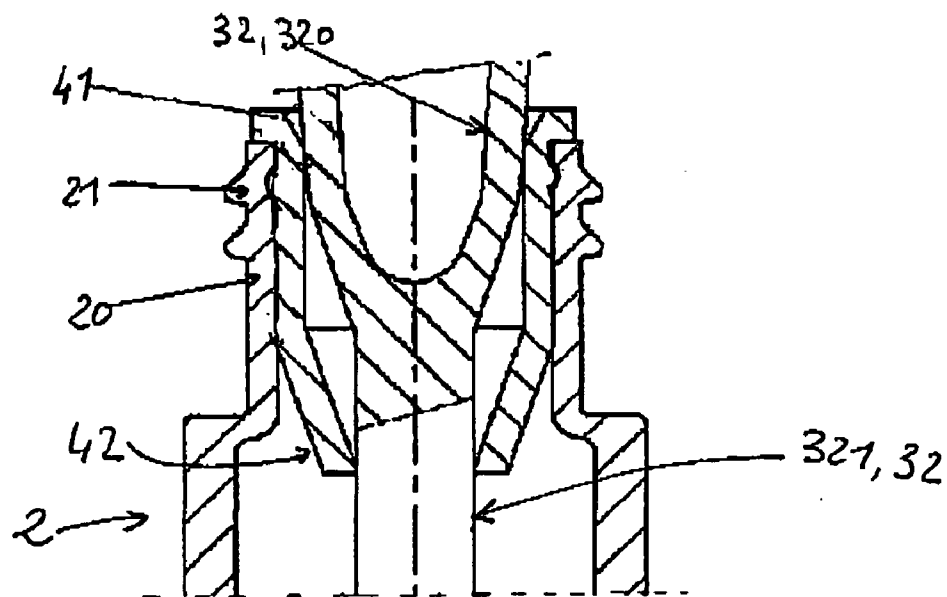


FIG. 2b

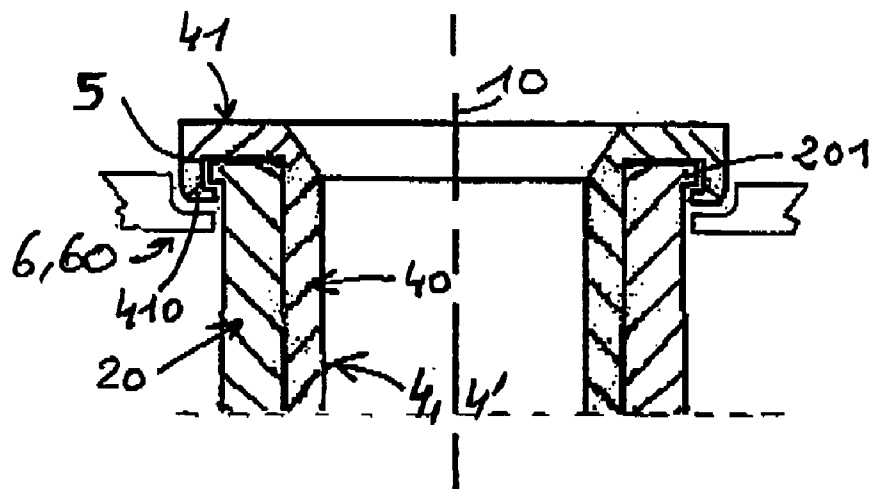


FIG. 3a

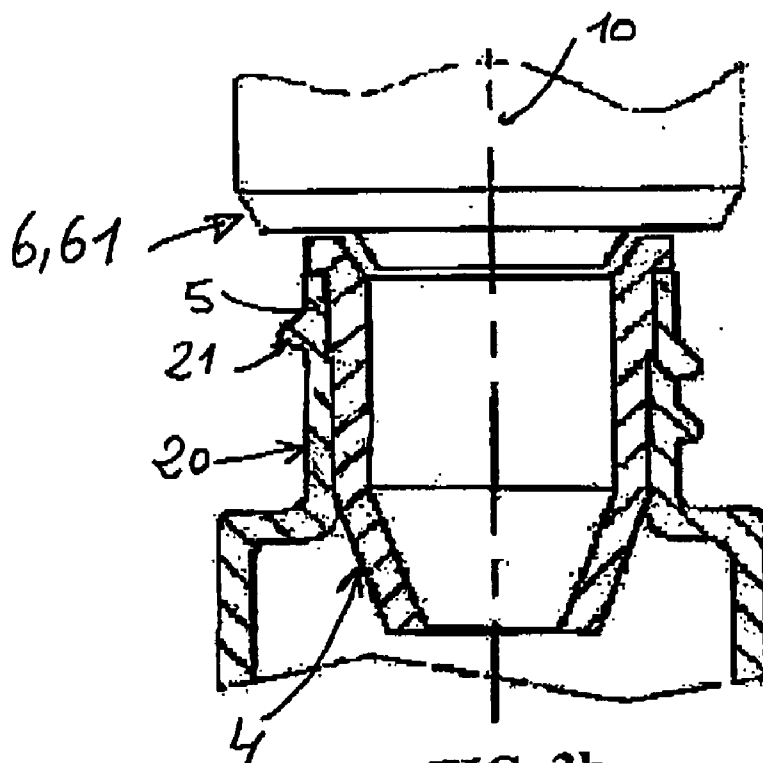


FIG. 3b

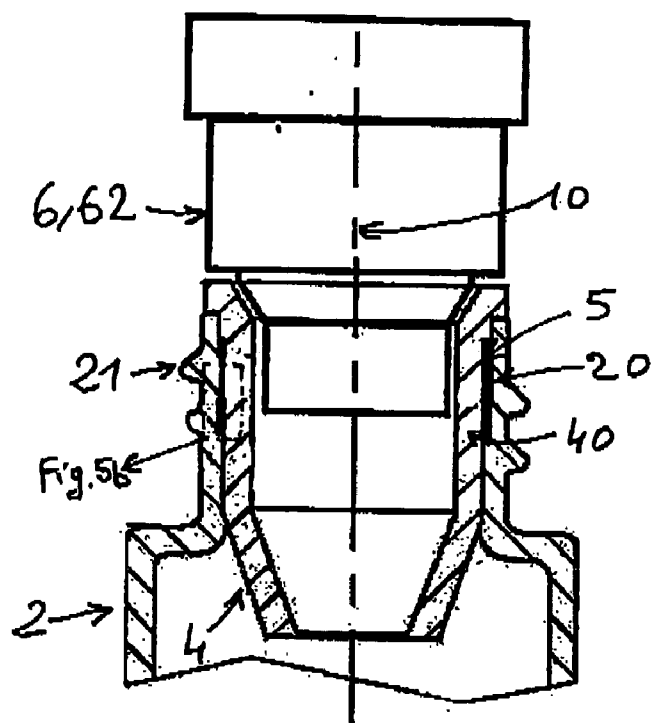


FIG. 4a

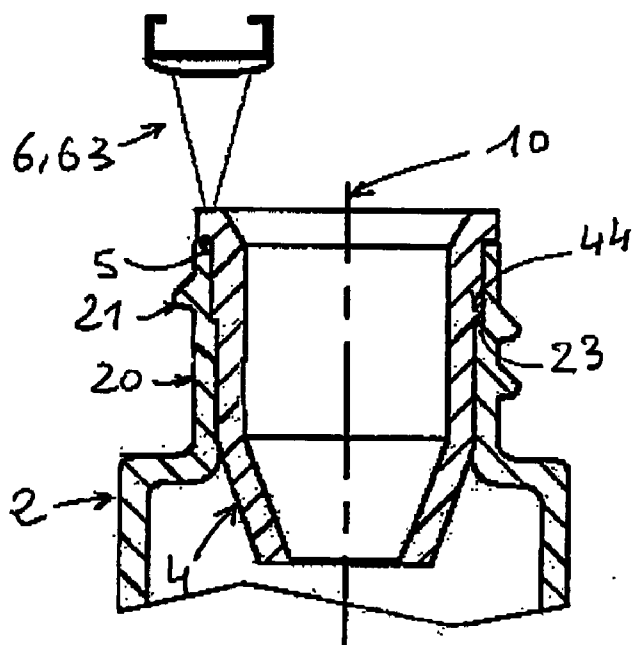


FIG. 4b

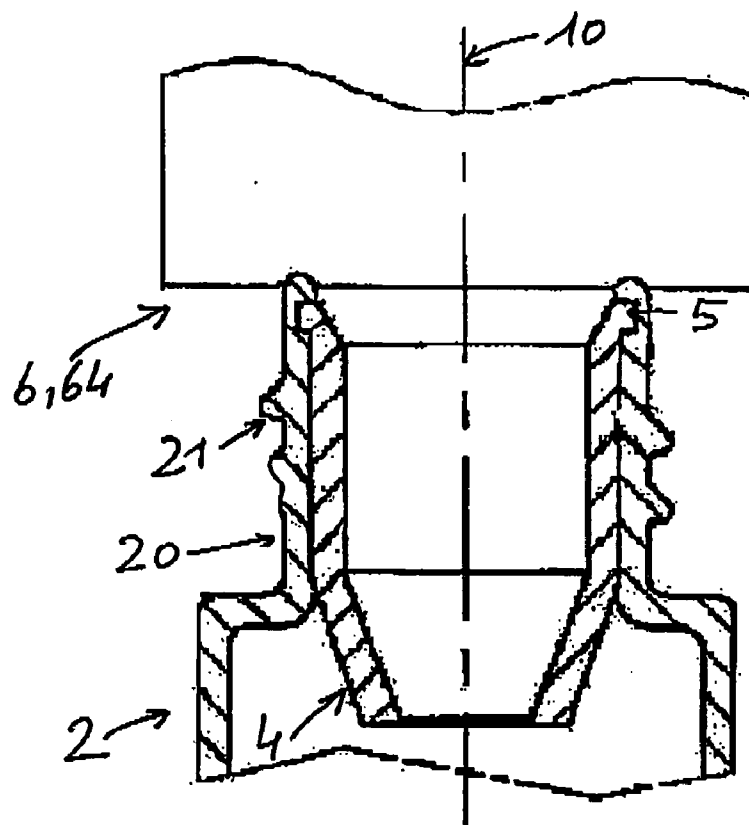


FIG. 5a

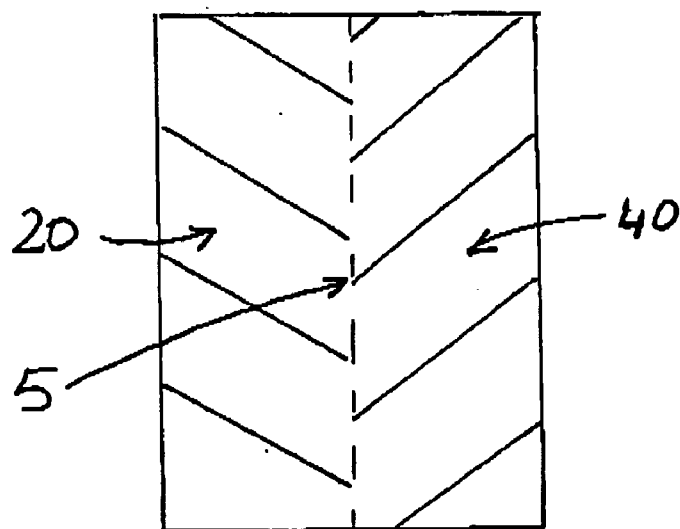


FIG. 5b

COSMETIC PRODUCT DISPENSER INCLUDING A RECEPTACLE EQUIPPED WITH A WELDED WIPER AND AN APPLICATOR

SCOPE OF THE INVENTION

[0001] The invention relates to the field of dispensers for fluid cosmetic products that include a receptacle forming a vessel for the cosmetic product and that is equipped with a neck sealed by an applicator forming a cap that can be screwed onto the neck; at one end, the cap is integrated into a rod that, at its other end, bears means for applying the cosmetic product.

[0002] The neck of this type of dispenser generally includes an insert that forms a wiping element or "wiper" that is intended to limit the quantity of cosmetic product withdrawn from the receptacle each time the applicator is withdrawn from the dispenser in order to apply the cosmetic product onto the human body, face, nails, or eyelashes, depending upon the nature of the cosmetic product.

STATE OF THE ART

[0003] The wiper is a basic element of the dispenser and its essential functions are absolutely critical to ensuring proper operation of the dispenser and a good service life of the product contained inside the body of the dispenser forming the vessel.

[0004] Indeed, the wiper may form a seal for the dispenser in order to prevent any cosmetic product leakage or loss, and to prevent any drying of the cosmetic product due to evaporation of its liquid and volatile components. The wiper's primary role is to regulate the quantity of product remaining on the applicator after the latter has been extracted: dispensing of the appropriate quantity is determined by the diameter of the wiper opening. It is important for the applicator to carry only a predetermined quantity of cosmetic product in order to obtain the desired effect, typically a makeup-type effect.

[0005] The wiper is usually joined to the neck of the receptacle or of the bottle. In order to obtain the necessary seal, the material making up the wiper must be able to deform when the dispenser is closed, with one part of the wiper forming a seal that can be compressed between the neck and the cap, both of which are rigid parts. Wipers are made of thermoplastic polymers, polyolefins (PE, LDPE), or elastomers, such as Buna rubber. However, the use of wipers made of elastomer is limited by the higher cost of elastomers in comparison to polyolefins and by problems encountered during assembly on automatic lines due to their high flexibility.

[0006] Many dispensers, typically mascara dispensers, including a wiper that can also act as a seal for the vessel, are known.

[0007] In this regard, we may cite the dispensers described in European patent applications 00420175, 94304753, and 87304505.

[0008] We may also cite the dispensers described in French patent applications 01 08403, 99 05853, 97 15632, 95 11168, 95 10230, 95 02197, 95 02101, 93 06640, 92 04940, 90 13850, 89 08396, 87 09819, 86 14365, 85 12206, 85 05773, 85 04544, 84 05731, 83 10565, and 81 08770.

[0009] Problems Presented

[0010] It is crucial that the wiper remains attached to the neck while retaining its initial position inside the neck.

[0011] If it comes apart from the neck, especially when the cap is being unscrewed or when the applicator is being extracted, this might lead to an outflow of the cosmetic product, thereby running the risk of spotting one's hands or clothing. Furthermore, if the wiper comes apart from the neck, the user of the dispenser would not be able to reattach it to the neck and the dispenser would have to be discarded, as it could no longer be used. It goes without saying that, in light of this problem, no-one would buy the product in question again and consumers might even claim damages if their clothing becomes soiled, thereby presenting the manufacturer of the dispenser with a serious problem.

[0012] The wiper is usually integrated into the neck by snap fitting; that is, by cooperation of parts in relief with hollow elements.

[0013] However, this type of coupling does not adequately guarantee that the wiper will remain attached to the neck throughout the service life of the dispenser, due mainly to the fact that the frictional force between the wiper and the neck tends to decrease over time. This is caused by a lack of "elastic memory" on the part of the wiper, especially when it is made of thermoplastic polymers.

[0014] The elastic memory of a material is the ability of a material subjected to permanent deformation to cause stress that in turn lasts over time. If the material of the wiper were to have high elastic memory, it would remain permanently under stress due to permanent deformation and therefore would remain integral to the neck.

[0015] All thermoplastic materials undergo gradual elastic memory loss, such that wipers made of thermoplastic material are subject to the inherent risk of coming apart from the neck.

[0016] Moreover, it is not unusual to see a more or less dry and hard deposit of cosmetic product form on the inner surface of the wiper during its use. As a result, each time the applicator is withdrawn, an axial force tends to separate the wiper from the neck.

[0017] Finally, it appears that certain new formulations of cosmetic products may contain chemicals that tend to act upon the material making up the wiper; in particular, they tend to soften it, which may greatly contribute to rapid elastic memory loss. Additionally, other chemicals may act as lubricants, which may facilitate separation of the wiper from the neck.

[0018] The invention targets a solution to the problem of permanently attaching the wiper to the neck of the dispenser body; the solution must be both inexpensive and compatible with requirements in cosmetic products dispensing.

DESCRIPTION OF THE INVENTION

[0019] According to the invention, the cosmetic product dispenser includes a receptacle for containing the cosmetic product that is equipped with a neck, typically threaded on the outside, and an applicator that typically includes a cap, usually threaded on the inside, that cooperates with the neck to seal it and to ensure that the applicator can be manually

gripped, an axial rod that is integral to the cap at its upper end and, at its lower end, an application material that is able to take up a small amount of the product; the neck has a wiper that is integral to the neck and that enables wiping of the application material each time the applicator is withdrawn from the receptacle in order to apply the product to a support; the wiper includes a body that forms an inner skirt coaxial to the neck and typically an upper flange that rests against a lip or upper surface of the neck, and a lip inside the body that wipes the application material, wherein the wiper, typically via the skirt or the upper flange, cooperates with the neck by a weld area such that the wiper is irreversibly integrated into the neck by forming a single piece with it.

[0020] The means characterizing the present invention resolves the presented problem. Indeed, with this means, the wiper and the neck, even though they may be composed of different materials, form a solid single piece, since the weld area is extensive enough to withstand axial stress higher than 1 daN, even 2 daN, whereas the axial stress, even when a deposit has formed under the wiper, may typically be around 0.3 daN at the most.

[0021] This means is a permanent means that makes it possible to disregard completely the wiper's elastic memory, since there is no longer any permanent or presumed-permanent deformation or stress.

[0022] Moreover, since the wiper can cooperate with the neck without becoming deformed, this facilitates the placement and fitting together of the wiper and neck on the production line, such that the invention can be produced at high speed.

[0023] It should be noted that this means enables the use of the most up-to-date—and therefore, least expensive—materials, specifically current thermoplastic materials, and that it does not require the use of additional materials such as glues, adhesives, hot melt, or any other bonding product for integrating the wiper into the neck.

DESCRIPTION OF THE FIGURES

[0024] All of the figures are axial cross sections along the axial direction (10) of the dispenser (1).

[0025] FIG. 1a shows a dispenser (1, 1') for mascara (7, 7').

[0026] FIG. 1b shows the applicator (3) of the dispenser (1, 1') of FIG. 1a; the applicator includes an insert (34) with an inner threading (31) and is inserted into a shell (35) forming a cap (30); the insert is integrated into an axial rod (32) that bears the application material (33) at its lower end.

[0027] FIG. 1c shows the receptacle (2), the neck of which (20) is equipped with a wiper (4).

[0028] FIG. 1d shows a dispenser (1, 1'') for nail polish (7, 7''), inside which the applicator (3) is unscrewed.

[0029] FIG. 2a is a partial view of a neck (20) and of a wiper (4) integrated into the neck by cooperation of a ratchet motion means (22) on the neck—namely, a groove—that cooperates with a ratchet motion means (43) on the wiper—namely, a rib—with the wiper (4) having an upper flange (41) that comes to rest against the upper part or lip (200) of the neck (20).

[0030] FIG. 2b corresponds to FIG. 2a and includes a portion of the axial rod (32); the axial rod (32) has an upper part (320) that is larger in diameter and integrated into the cap (30), and a lower part (321) that is integrated into the application material (33); the upper part (320) cooperates with the inner skirt (40) of the wiper.

[0031] FIGS. 3a to 5a illustrate several means (6) for welding the wiper (4) to the neck (20).

[0032] FIG. 3a is a diagram of ultrasonic cold forming (60) of a precursor (4') to a wiper in order to weld a folded part (410) of the upper flange (41) cooperating with a lateral part (201) of the upper part (200) of the neck (20), thereby yielding a wiper (4) welded to the neck (20).

[0033] FIG. 3b is a diagram of ultrasonic welding (61).

[0034] FIG. 4a is a diagram of spin welding (62); a portion surrounded by dashed lines is shown, enlarged, in FIG. 5b.

[0035] FIG. 4b is a diagram of laser welding (63), with the skirt (40) of the wiper (4) and the neck (2) having shoulders that cooperate to form axial blocking means (44) and (23).

[0036] FIG. 5a is a diagram of ultrasonic hot welding (64).

[0037] FIG. 5b is a diagram of a portion of the weld area (5) obtained by welding according to FIG. 4a between the neck (20) and the inner skirt (40) of the wiper (4).

DETAILED DESCRIPTION OF THE INVENTION

[0038] According to the invention, the receptacle (2) may be formed of thermoplastic material by molding, blow molding, co-blow molding, injection molding, injection, co-injection, or overmolding.

[0039] The thermoplastic material may be selected, typically, from among polyolefins, polystyrenes and styrene-containing copolymers, PVCs, polymethacrylates, polyamides, and polyesters.

[0040] The receptacle (2) may also be made of glass or metal; the metal is typically either aluminum or stainless steel. In this case, the material for the wiper (4) must be selected with the latter in mind in order to weld it to glass or metal.

[0041] Likewise, the wiper (4) may be formed of thermoplastic material by molding, injection, co-injection, or overmolding.

[0042] The thermoplastic material may be selected, typically, from among polyolefins, PVCs, acetal resins, polyamides, and polyesters.

[0043] These materials are both the most up-to-date and inexpensive ones available and are not elastomeric materials, whose disadvantages are known both in terms of their cost and of the production problems due to their high flexibility.

[0044] According to one variation on the invention illustrated diagrammatically in FIG. 3b, the weld area (5) may be an area formed by ultrasonic welding (6, 61), since the materials forming the wiper (4) and the neck (20) or the

receptacle (2) are selected so that they can be welded together using ultrasonic welding.

[0045] According to another variation on the invention illustrated diagrammatically in FIG. 4b, the weld area (5) may be an area formed by laser welding (6, 63), since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using laser welding.

[0046] According to another variation on the invention illustrated diagrammatically in FIG. 4a, the weld area (5) may be an area formed by spin welding (6, 62), since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using spin welding.

[0047] According to another variation on the invention illustrated diagrammatically in FIG. 3a, the weld area (5) may be an area formed by ultrasonic cold forming (60), since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using ultrasonic cold forming.

[0048] According to another variation on the invention illustrated diagrammatically in FIG. 5a, the weld area (5) may be an area formed by hot die forming (64), typically with ultrasound, since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using hot die forming.

[0049] Other variations, not shown in the figures, are also possible.

[0050] Thus, the weld area (5) may be formed by high-frequency welding, since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using high-frequency welding.

[0051] The weld area (5) may also be formed by induction, as the neck (20) and/or the wiper (4) include a metallic material that is able to be heated by induction, and since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using induction.

[0052] According to the invention, and as is shown in FIG. 5b, the weld area (5) may include an area that is typically cylindrical and vertical, formed over all or part of the height of the skirt (40) coaxial to the neck (20).

[0053] However, the weld area (5) may include an area that is typically flat, formed over all or part of the upper flange (41) facing the upper part or lip (200) of the neck (20).

[0054] As is shown in FIG. 2a, for example, the wiper (4) and the neck (20) may also cooperate via ratchet motion means (43) and (22), respectively. These means generally only involve limited elastic deformations and may specifically be used to position the wiper (4) inside the neck (20) and to integrate it enough to make it manipulable up to the welding station, especially when the welding of the wiper (4) to the neck (20) is performed in concurrent operation time downstream of the point along the manufacturing line where the wiper (4) is placed inside the neck (20).

[0055] As is shown in FIGS. 1a to 1c, the cosmetic product (7) may be mascara (7'); in this case, the support is formed by the eyelashes.

[0056] As is shown in FIG. 1d, the cosmetic product (7) may be nail polish (7'') contained inside a flask-shaped receptacle, typically made of glass; in this case, the support is formed by the nails.

[0057] Another aim of the invention is a method for manufacturing a dispenser (1, 1', 1'').

[0058] Wherein:

[0059] a) the receptacle (2) and the wiper (4) or, if applicable, its precursor (4') may be supplied with product,

[0060] b) the wiper (4), or its precursor (4'') if applicable, may be positioned axially inside the neck (20) of the receptacle (2),

[0061] c) the wiper (4) or its precursor (4) may be welded to the neck (20) by a welding means selected from among:

[0062] ultrasonic welding (61),

[0063] laser welding (63),

[0064] spin welding (62),

[0065] ultrasonic cold forming (60),

[0066] hot die forming (64),

[0067] high-frequency welding,

[0068] induction welding, since the neck or wiper includes a metallic part that can be heated by induction.

IMPLEMENTATION EXAMPLES

[0069] The figures constitute implementation examples.

[0070] We manufactured dispensers for mascara and nail polish according to the invention.

[0071] In doing so, we implemented weldings starting from wipers (4) and receptacles (2) and necks (20) made of polyolefin (specifically, PE) in order to obtain very strong autogenous PE/PE welds. We also subjected these dispensers to an axial pull test of the wiper (4) and compared the resistance to the axial pull of the dispensers (1) according to the invention and according to the state of the art equipped with a wiper ratcheted into the neck.

[0072] We found that the pull resistance was at least twice as high, and typically at least three times as high in the case of the dispensers according to the invention, as the dispensers according to the state of the art; the wipers (4) were sometimes destroyed rather than pulled out during the pull test, so it is possible to guarantee that with the dispensers (1) according to the invention, the wiper (4) cannot be separated from the neck (2) under normal conditions of use.

ADVANTAGES OF THE INVENTION

[0073] The invention presents many advantages. As previously indicated, in addition to the fact that it solves the problem of permanently attaching the wiper (4) to the neck (20), it saves more on costs for materials and enables higher productivity than does the state of the art since it is no longer necessary to use highly-deformable elastomer products.

LIST OF REFERENCE NUMBERS

Cosmetic product dispenser	1
Mascara dispenser	1'
Nail polish dispenser	1"
Axial direction -axis of axial symmetry	10
Body or receptacle	2
Neck	20
Upper part or lip of 20	200
Lateral part of 200 that cooperates with 410	201
Outer threading	21
Ratcheting motion means (groove) cooperating with 43	22
Axial blocking means of 4	23
Applicator	3
Cap	30
Inner threading	31
Axial rod	32
Upper part integral to 30 or 34	320
Lower part integral to 33	321
Application material	33
Insert	34
Shell	35
Wiper	4
Precursor of 4	4'
Inner skirt	40
Upper flange	41
Folded part that cooperates with 201	410
Inner lip	42
Ratcheting motion means (rib) cooperating with 22	43
Axial blocking means cooperating with 23	44
Weld area between 20 and 4	5
Welding means of 20 and 4	6
Ultrasonic cold forming	60
Ultrasonic welding	61
Spin welding	62
Laser welding	63
Hot ultrasonic welding	64
Cosmetic product	7
Mascara	7'
Nail polish	7"

1. Dispenser (1) for cosmetic products (7, 7', 7") including a receptacle (2) for containing the cosmetic product (7, 7', 7") that is equipped with a neck (20), typically threaded on the outside, and an applicator (3) that typically includes a cap (30), usually threaded on the inside, that cooperates with the neck (20) to seal it and to ensure that the applicator (3) can be manually gripped, an axial rod (32) that is integral to the cap (30) at its upper end and, at its lower end, an application material (33) that is able to take up a small amount of the product (7, 7', 7"); the neck (30) has a wiper (4) that is integral to the neck and that enables wiping of the application material (33) each time the applicator (3) is withdrawn from the receptacle (2) in order to apply the product (7, 7', 7") to a support; the wiper (4) forms a part, typically molded, that includes an inner skirt (40) coaxial to the neck (20), typically an upper flange (41) that rests against a lip or upper surface (200) of the neck (20), and a lip (42) inside the body that wipes the application material (33), inside which the wiper (4), typically via the skirt (40) and/or the upper flange (41) cooperates with the neck (20) by a weld area (5) such that the wiper (4) is irreversibly integrated into the neck (20) by forming with it a solid bloc part, wherein the weld area (5) is an area formed:

by ultrasonic welding (6, 61), since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using ultrasonic welding,

or by laser welding (6, 63), since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using laser welding,

or by spin welding (6, 62), since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using spin welding,

or by ultrasonic cold forming (60), since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using ultrasonic cold forming,

or by hot die forming (64), typically with ultrasound, since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using hot die forming,

or by high-frequency welding, since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using high-frequency welding,

or by induction, as the neck (20) and/or the wiper (4) include a metallic material that is able to be heated by induction, and since the materials forming the wiper (4) and the neck (20) or the receptacle (2) are selected so that they can be welded together using induction.

2. Dispenser according to claim 1, wherein the receptacle (2) is formed of thermoplastic material by molding, blow molding, co-blow molding, injection molding, injection, co-injection, or overmolding.

3. Dispenser according to claim 2, wherein the thermoplastic material is selected from among polyolefins, polystyrenes and styrene-containing copolymers, PVCs, polymethacrylates, polyamides, and polyesters.

4. Dispenser according to claim 1, wherein the receptacle (2) is made of glass or metal; the metal is typically either aluminum or stainless steel.

5. Dispenser according to claim 1, wherein the wiper (4) is formed of thermoplastic material by molding, injection, co-injection, or overmolding.

6. Dispenser according to claim 5, wherein the thermoplastic material is selected from among polyolefins, PVCs, acetal resins, polyamides, and polyesters.

7. Dispenser according to claim 1, wherein the weld area (5) has an area that is typically cylindrical and vertical, formed over all or part of the height of the skirt (40) coaxial to the neck (20).

8. Dispenser according to claim 1, wherein the weld area (5) may include an area that is typically flat, formed over all or part of the upper flange (41) facing the upper part or lip (200) of the neck (20).

9. Dispenser according to claim 1, wherein the wiper (4) and the neck (20) also cooperate via ratchet motion means (43) and (22), respectively.

10. Dispenser according to claim 1, wherein the cosmetic product (7) is mascara (7') and wherein the support is formed by the eyelashes.

11. Dispenser according to claim 1, wherein the cosmetic product (7) is nail polish (7") and wherein the support is formed by the nails.

12. Method for manufacturing a dispenser (1, 1', 1") according to claim 1, wherein:

- a) the receptacle (2) and the wiper (4) or, if applicable, its precursor (4") are supplied with product,
- b) the wiper (4), or its precursor (4") if applicable, is positioned axially inside the neck (20) of the receptacle (2),
- c) the wiper (4) or its precursor (4") is welded to the neck (20) by a welding means selected from among:
 - ultrasonic welding (61),
 - laser welding (63),

spin welding (62),

ultrasonic cold forming (60),

hot die forming (64),

high-frequency welding,

induction welding, since the neck or wiper includes a metallic part that can be heated by induction.

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