(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 May 2014 (01.05.2014)

WIPO | PCT

(10) International Publication Number
WO 2014/065783 A1

(51) International Patent Classification:
A45D 40/26 (2006.01) *A46B 5/02* (2006.01)

(21) International Application Number:
PCT/US2012/061472

(22) International Filing Date:
23 October 2012 (23.10.2012)

(25) Filing Language: English

(26) Publication Language: English

(71) Applicant: **AVON PRODUCTS, INC.** [US/US]; c/o Joan M. McGillycuddy, 777 Third Avenue, New York, New York 10017 (US).

(72) Inventor: **SIMARD, Marisol**; 14 Castle Heights, Upper Nyack, New York 10960 (US).

(74) Agent: **JOYAL, David M.**; Avon Products, Inc., Avon Place, Suffern, New York 10901 (US).

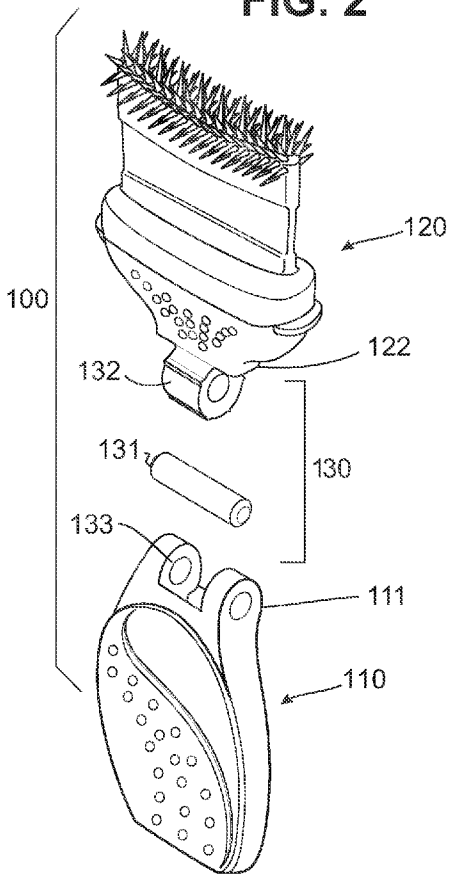
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PA, PE, PG, PH, PL, PT, QA, RO, RS, RU, RW, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

[Continued on next page]

(54) Title: ERGONOMIC COSMETIC APPLICATOR

(57) Abstract: An ergonomic applicator is provided for applying a cosmetic composition to the eyelashes. The applicator comprises a handle portion and a head portion wherein the longitudinal axis of the head portion is positioned or can be rotatably positioned with respect to the longitudinal axis of the handle. The handle being suitable dimensioned for holding between the thumb and fingers without rotation of the handle. The head portion having at its distal end means for holding a charge of cosmetic composition and transferring it to the eyelashes on contact therewith, such as but not limited to bristles.

FIG. 2



WO 2014/065783 A1

(84) **Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— *with international search report (Art. 21(3))*

ERGONOMIC COSMETIC APPLICATOR

FIELD OF INVENTION

[0001] The present invention relates generally to ergonomic applicators and kits including such applicators for applying cosmetic products, such as mascara to eyelashes. The kits may include a flexible reservoir having a chamber disposed therein and a wiper disposed within or above the chamber such that an applicator may be seated within the reservoir and may serve as a closure to prevent the leakage or spillage of a cosmetic product contained therein.

BACKGROUND OF THE INVENTION

[0002] The general purpose of a mascara applicator or brush is to pick up a supply of mascara from a container, carry it from a reservoir of the container through a dosing or metering system (in one embodiment, a wiper) without dripping, and apply it evenly to the eyelashes. The applicator must accomplish this without leaving lumps or blobs of the material on the eyelashes.

[0003] Conventional mascara applicators generally include a brush attached to an elongated rod that is also connected to a handle. The brush typically comprises a twisted wire core and a bristle portion including a number of uniformly sized bristles spaced evenly throughout its length. The brush and rod are usually housed in a somewhat cylindrical container, and the brush handle forms a closure for the container when the mascara applicator is not in use.

[0004] When use of the mascara applicator is desired, the handle is pulled away from the container to remove the mascara-laden brush. During application of mascara to the eyelashes, the brush rod is generally positioned parallel to the face, and oriented horizontally with the brush handle held beside a cheek or temple for purposes of manipulation and alignment of the brush with the eyelashes.

[0005] During transfer of mascara to the eyelashes, the applicator is twisted or rotated along its central axis and moved in a vertical, up-and-down motion, while held in a horizontal or vertical position, such as up to the forehead to do the top eyelashes, and down from the forehead to do the bottom eyelashes. Some users will hold the mascara brush handle in the right hand to apply mascara to the right eyelashes, and switch the brush handle to the left

hand to apply mascara to the left eyelashes. Other users favor the right or left hand and use the favored hand to apply mascara to the eyelashes of both the right and left eyes. However, even when the favored hand is used for the eyelashes of both eyes, it may be necessary to hold the mascara applicator in the opposite hand to get to the extreme ends of the eyelash that are furthest from the favored hand or closest to the nose bridge.

[0006] It should be noted that the application of mascara with conventional mascara applicators usually requires dozens of repeated strokes and rotations or twists to achieve the desired eyelash appearance. Because of the manner in which a conventional mascara applicator is held and manipulated, the application of mascara can be a difficult and tiresome exercise.

SUMMARY OF THE INVENTION

[0007] In accordance with the foregoing objectives and others, the present invention provides an ergonomic applicator for applying a cosmetic composition such as mascara to an integument, methods of using the ergonomic applicator, and kits including the ergonomic applicator. In one embodiment, the invention provides a cosmetics applicator that can be easily manipulated with a favored or non-favored hand for applying a cosmetic product. In another embodiment, a cosmetics applicator can be conveniently held with the hand positioned directly in front of the face (although not in the line of sight) rather than off to one side of the head. In another embodiment, a cosmetics applicator can be easily manipulated in the same hand to apply a cosmetic (e.g., mascara) to the full range of eyelashes for both eyes.

[0008] In one aspect of the invention, an applicator is provided. The applicator may include a handle portion having a front side opposed from a back side, and the handle portion may be suitably dimensioned to permit the applicator to be held by a user between the thumb and fingers. Generally, the handle may be suitably shaped to prevent rotation and/or otherwise stabilize the handle during use.

[0009] The applicator may also include a head portion having at its distal end a plurality of bristles for holding a charge of cosmetic composition and transferring the composition to an integument (for example, an eyelid) and/or to keratin fibers (e.g., hair, lashes, etc.) during use. In one embodiment, the distal end of the head portion may be dimensioned to contact the eyelashes of a user along at least a major portion of the lateral width of a human eyelid. Moreover, the head portion and handle portion may be joined by a hinge or socket which permits the head portion to pivot with respect to the handle portion.

The hinge and/or pivot point may be located at a position away from an axis extending longitudinally through the handle portion and towards the back side of the handle portion such that the user may apply a cosmetic composition to keratin fibers such as the eyelashes without having their hand in a direct line of sight and/or without the handle portion held between the thumb and fingers being coplanar with the head portion.

[0010] In another aspect of the invention, a kit including the applicator and a reservoir charged with a liquid cosmetic composition for application to a keratin fiber is provided. The reservoir may be configured to receive the head portion of the applicator when inserted into the reservoir so as to bring the bristles of the applicator into contact with the composition. The kit may also include a wiper attached to the reservoir for removing excess composition from the bristles upon removal of the applicator from the reservoir.

[0011] In yet another aspect of the invention, a method for applying a cosmetic composition such as mascara to the eyelashes is provided. The method may include metering a charge of a cosmetic composition (e.g., mascara) onto the bristles of the applicator and transferring the composition to the eyelashes by contacting the bristles with the eyelashes.

[0012] In another aspect of the invention, an applicator is provided. The applicator may include a handle portion having a front side opposed from a back side, and the handle portion may be suitably dimensioned to permit the applicator to be held between the thumb and fingers without accidental and/or unexpected movement of the handle portion relative to the thumb and fingers during use. The applicator may also include a head portion connected at its proximal end to the handle portion, in one embodiment via a pivotable connection, in one embodiment via a hinge. Generally, the head portion may have at its distal end a plurality of bristles for holding a charge of cosmetic composition and transferring the composition to keratin fibers (e.g., hair and/or eyelashes) during use. The head portion of the applicator may include a row of bristles disposed along the distal end of the head portion, and alternating bristles along the row may project to opposing sides of a plane through the distal end of the head portion such that adjacent bristles define an angle of from about 1 degree to about 179 degrees, in another embodiment from about 10 to about 25 degrees (e.g., about 18 degrees), in another embodiment from about 35 degrees to about 55 degrees (e.g., about 45 degrees), and in another embodiment from about 80 degrees to about 100 degrees (e.g., 90 degrees). The bristles in the row of bristles may be longer or shorter than any other bristles present on the head portion.

[0013] In yet another aspect of the invention, a kit housing an applicator for applying a cosmetic composition to eyelashes is provided. The kit may include a reservoir having flexible walls for holding a cosmetic composition and a chamber seated within or above the reservoir. The chamber may be adapted to receive an applicator therein, and may have a passage or plurality of passages therethrough such that the cosmetic composition enters the chamber when an inward force is applied to the flexible walls of the reservoir. The cosmetic composition may dwell in the chamber when the force is removed, thereby bringing the cosmetic composition in the reservoir into contact with the applicator. The kit may include a wiper having an orifice or orifices forming a passage between the exterior of the reservoir and interior of the chamber. The kit may also include a rim, ring or skirt along a rim of the reservoir for securing the chamber and/or the wiper to the reservoir. Generally, the rim, ring or skirt may be made of a material that has or is structurally designed to have a greater rigidity than the reservoir such that the kit can be gripped without deforming the reservoir or other kit portions or features situated underneath the gripping area. The rim, ring or skirt may also include a number of protrusions on one or more sides thereof to increase friction between the rim, ring or skirt and a user's fingers during removal and/or replacement of the applicator.

[0014] In certain embodiments, the kit may include an applicator for removing a portion of the cosmetic composition from the reservoir and transferring it to a surface. The applicator may be reversibly disposable through the wiper such that one or more bristles of the applicator are brought into contact with the cosmetic composition within the chamber. The kit may also include a cap configured to fit over the applicator and secure onto the rim, ring or skirt, bottle, and/or reservoir. Finally, the reservoir of the kit may contain a liquid cosmetic composition having a non-Newtonian rheology such that the composition readily flows through the passages into the chamber at a first viscosity when an inward force is applied to the walls of the reservoir and thereafter assumes a second viscosity that is higher than the first viscosity when the inward force is released such that the flow of the composition out of the chamber is retarded.

[0015] These and other aspects of the invention will become apparent to those skilled in the art after a reading of the following detailed description of the invention, including the figures and appended claims.

BRIEF DESCRIPTION OF THE FIGURES

[0016] **Figure 1a** and **1b** show perspective views of the front side and back side of an ergonomic mascara applicator according to an embodiment of the invention, respectively.

[0017] **Figure 2** shows an exploded view of an ergonomic mascara applicator according to an embodiment of the invention.

[0018] **Figures 3a** and **3b** show a perspective view and a side view of a head portion **120** comprising bristles **125** of an exemplary ergonomic mascara applicator, respectively.

[0019] **Figures 4a** and **4b** show an exemplary kit **140** including an ergonomic applicator in a closed perspective view and an exploded view, respectively.

[0020] **Figures 5a** and **5b** show top perspective and side cross-sectional views of an exemplary rim, ring or skirt **160** according to an embodiment of the invention, respectively.

[0021] **Figures 6a - 6c** show top perspective, bottom perspective and side cross-sectional views of an exemplary wiper **180** according to an embodiment of the invention, respectively.

[0022] **Figures 7a - 7c** show top perspective, side cross-sectional, and bottom views of an exemplary chamber **190** according to an embodiment of the invention, respectively.

[0023] **Figure 8** shows an exemplary ergonomic applicator seated within a reservoir, wiper, chamber and rim, ring or skirt to close the reservoir.

[0024] **Figure 9** shows a cross sectional view of an exemplary kit **140** according to an embodiment of the invention. The kit is shown to comprise a reservoir **170**, a chamber **190**, a wiper **180**, and a rim, ring or skirt **160**.

[0025] **Figures 10a- b** are process diagrams for the application of a cosmetic composition to the eyelashes of a user, using an exemplary ergonomic mascara applicator **100** according to an embodiment of the invention.

DETAILED DESCRIPTION

[0026] All terms used herein are intended to have their ordinary meaning in the art unless otherwise provided.

[0027] The materials to be dispensed are not particularly limited and include paints, cosmetics, and adhesives, inks to name a few, and may be in the form of solids (e.g.,

powders), suspensions, emulsions, liquids, semi-liquids and the like. As used herein, the term "liquid" is intended to include very viscous materials, including non-Newtonian liquids having very high initial viscosities, as well as gels and other materials capable of being dispensed from a container onto an applicator. The applicator according to the invention may also be useful for application of a variety of cosmetic and personal care products to keratin fibers or to the integument or skin, including without limitation, eyelash compositions, eyeliner, mascara, hair dye, hair care products, hair pigments, hair styling compositions, lipliner, lipstick, lipcolor, lip gloss, etc. As used herein, the term "keratin fibers" may include, without limitation, eyelashes, eyebrows, or hair of any part of the body, including the scalp. The viscosity of the composition is not limited and may range, for example, from about 10 cps to about 1,000,000 cps.

[0028] In one embodiment, the inventive ergonomic applicators described herein are suitable for applying a composition, such as a cosmetic composition, to eyelashes. In particular, the applicators are useful for application of an eyelash composition to the eyelashes, including without limitation, pigmented and unpigmented mascaras, pharmaceutically and/or cosmeceutically active eyelash compositions, one or more parts of a multi-component mascara formulation, or a combination thereof.

[0029] Generally, the inventive applicators comprise an ergonomic shape to improve a user's comfort and/or agility in applying the cosmetic composition. It is believed that the applicator of the present invention has an advantageous shape that allows the applicator to be more conveniently held in the hand of a user and more easily manipulated by a single hand to apply the cosmetic composition in an efficient and even manner as compared to conventional cosmetic applicators. In addition, it is believed that the applicator of the present invention is capable of providing increased coverage of eyelashes with each stroke and more uniform distribution of mascara compositions across the length of the eyelashes as compared to conventional cosmetic applicators. Without being bound by any theory, it is believed that increased coverage of eyelashes with each stroke is achieved by the advantageous size and shape which provides for increased contact area with the eyelashes. Accordingly, it is believed that the applicator can effectively deposit mascara to the eyelashes using fewer strokes than with a conventional applicator, and may also be capable of more efficiently and effectively delivering mascara to a greater surface area of the eyelashes through more uniform pressure application on and/ or better bristle penetration between the eyelashes.

[0030] Referring to **Figures 1a** and **1b**, a front perspective view and a back perspective view of an exemplary mascara applicator **100** according to the invention is illustrated, respectively. The applicator **100** is shown to include a handle portion **110** extending towards a proximal end thereof **112** and a head portion **120** extending towards a distal end thereof **121**.

[0031] As shown, the handle portion **110** comprises a distal end **111** and a proximal end **112** having a first and second convex-shaped edge therebetween to define a generally non-planar structure. The handle portion **110** is shaped in such a way as to permit a user to manipulate the applicator **100** with the hand or fingers. In particular, the size and shape of the handle portion **110** permits the user to hold the same with the hand and fingers and manipulate the applicator for application of a cosmetic composition to the eyelashes.

[0032] In one embodiment, the handle portion **110** comprises a front side **115** adapted to have an index and/or middle finger of a user rested thereon and a back side **116** adapted to have a thumb of the user apply an upward and/or downward force thereto. The front **115** and back **116** sides may comprise any suitable modifications that improve the comfort and/or stability of the applicator **100** when held between fingers. For example, the front side **115** may comprise a slightly concave contour, while the back side **116** may comprise a convex contour or a combination of convex and concave curves.

[0033] In certain embodiments, the modification may include finger grip enhancements **117** that are attached to or formed integrally with the handle portion **110**. The finger grip enhancements **117** may include any means for increasing the friction of the handle portion **110** against the fingers and/or thumb, such as but not limited to, raised semi-circles, ridges, depressions, other shaped projections or void spaces between such projections. Such enhancements may be present on all or a portion of the front side **117**. Moreover, the finger grip enhancements **117** may be formed unitarily with the handle portion **110** or may be attached by any suitable means, including an adhesive or fusion of the enhancements with the handle portion. The finger grip enhancements **117** may be formed using any suitable technique, including molding and finishing techniques such as soft touch finish or bi-injection/ overmolding of polymers.

[0034] In an illustrated embodiment, the front side **115** is shown to comprise a number of finger grip enhancements **117** in the form of projections or nibs, which may be of any size and/or shape to allow for improved grip (e.g., comfort and/or stability) of the handle

portion **110**. The projections **117** may comprise any material (i.e., plastic, polymer, rubber, glass, metal, etc.) and may comprise the same or similar material as the front side **115** of the handle portion **110** or may comprise a different material. Moreover, although the projections **117** are shown as being present on only a portion of the front side **115**, it will be recognized that they may be present throughout for functional purposes and/or in any aesthetically pleasing design. In one embodiment the back side **116** of the handle portion **110** may also or alternatively comprise finger grip enhancements.

[0035] In another embodiment, the back side **116** of the handle portion **110** is shown to comprise a "scoop" **118** or generally elliptical indentation. The scoop **118** is ideally designed to allow for at least a portion of a user's thumb to rest therein during use of the applicator. Accordingly, the scoop **118** may assist with positioning, comfort, feel and/or control of the applicator **100**.

[0036] In certain embodiments, the handle portion **110** may comprise a length of from about 20 mm to about 80 mm, from about 25 to about 35 mm, or about 30 mm. The handle portion **110** may vary in thickness along its length, such that it may have a thickness of about 7 mm towards its distal end **111** and a thickness of about 3 mm at its most proximal end **112**. The handle portion **110** may also vary in width along its length, such that it may comprise a width of from about 15 mm to about 23 mm at its widest point, and a width of from about 5 mm to about 12 mm at its narrowest point. The handle portion **110** and head portion **120** may be suitably designed with a length suitable for the desired application; for example, the handle length may be longer and/or more separated from the bristles **125** so as to facilitate use in applying materials to scalp hair, eyebrows, eyelids, cheeks, etc.

[0037] Generally, the handle portion **110** may be shaped such that it allows for easier handling and better control of the applicator **110** as compared to previously known handles. For example, the curved front **115** and back **116** faces of the handle combined with the varying thickness of the handle portion throughout its length allows for a better, more comfortable grip of the handle portion between the thumb and fingers of a user. Moreover, the convex-shaped side edges can provide additional control, as a user may more easily determine where the handle portion **110** begins and ends. The handle portion **110** may be wide enough to prevent the handle from twisting or turning unexpectedly between a user's fingers (i.e., radial movements) during use and manipulation. For example, the handle may

not rotate or roll about its central axis, or voluntarily tilt relative to the central axis, when held between the fingers, as an applicator having a circular or oval cross section would.

[0038] The applicator **100** also includes a head portion **120** connected to the handle portion **110** by any connecting means **130** (discussed in detail below). The head portion **120** comprises any suitable size and shape, however it will preferably comprise a size and shape that are convenient and comfortable for use with either hand, regardless of whether a user has a favored hand for applying a composition to the eyelashes. In situations where a user holds the applicator **100** only with the favored hand for application of mascara to the eyelashes on both the left and right eyes, the head portion **120** is shaped such that the applicator **100** is capable of easily accessing the full range of eyelashes for both eyes, including those eyelashes that are furthest from the favored hand or closest to the nose bridge. In one embodiment, the head portion **120** is connected to the handle portion **110** via a joint. In another embodiment, the joint is comprised of a deformable or pliable material. In another embodiment, the joint is comprised of a "stepped" joint permitting movement of the head portion **120** and the handle portion **110** relative to each other in defined intervals. In another embodiment, the joint is comprised of a stepped pin hinge.

[0039] The head portion **120** generally comprises a concave, convex, or flat distal end **121** having bristles **125** extending therefrom and a proximal end **122** including a connecting means **130**. The distal end **121** and proximal end **122** are connected by a generally flat, planar, solid structure. Preferably, the head portion **120** will be substantially rigid such that it does not bend during application. However, in certain embodiments, the head portion **120** may be slightly flexible such that it may "give" during use. The head portion **120**, like the handle portion **110**, may comprise any number of finger grip enhancements **117** in the form of projections or nibs, which may be of any size and/or shape to allow for improved grip (e.g., comfort and/or stability) of the head portion **120**, and/or to allow for a physical location cue for placement of fingers.

[0040] As shown, the head portion **120** may comprise one or more outward projections or "wings" **123** on either side thereof. The wings **123** are generally small enough as to be unobtrusive to a user during application of a cosmetic composition. However, as discussed in detail below, the wings **123** may be employed to prevent the applicator **100** from extending farther into a reservoir containing a composition than a predefined distance, and/or to hold the applicator in position during transit and daily storage. The wings **123** may also be

positioned on any surface of the head portion **120**. In one embodiment, the wings **123** are configured to prevent the applicator **100** from extending farther into a reservoir containing a composition than a predefined distance, and/or to hold the applicator in position during transit and daily storage. In another embodiment, the wings **123** are capable of preventing the applicator **100** from extending farther into a reservoir containing a composition than a predefined distance, and/or holding the applicator in position during transit and daily storage.

[0041] Generally, the length and curvature of the head portion **120** may be designed to as to be suitable for the desired application (for example, use for application of paints, application to an integument, application to scalp hair, etc.) In one embodiment, the length of the head portion **120** may range from about 15 mm to about 45 mm, from about 20 mm to about 35 mm, or in some embodiments may be about 25 mm. A width of the head portion **120** towards the distal end **121** thereof of may range from about 10 mm to about 50 mm, from about 12.5 mm to about 45 mm, from about 15 mm to about 40 mm, or from about 18 mm to about 23 mm (e.g., 21.5 mm). The width of the proximal end **122** of the head portion **120** may range from about 2 mm to about 45 mm, more preferably from about 4 mm to about 8 mm, and most preferably will be about 5 mm. The thickness of the head portion **120** may vary along its length, but will generally range from about 10 mm at its thickest point towards the proximal end **122** to about 1.5 mm at its thinnest point towards the distal end **121**. In one embodiment, the head portion may have proximal and/or distal ends that are thicker than the section of the head portion between the proximal and distal ends.

[0042] Referring to **Figure 2**, the head portion **120** may be operably connected to the handle portion **110** via a connecting means **130**. In certain embodiments the connecting means **130** may be a hinge, a friction-fit mechanism, a locking mechanism, an adhesive, or the fusing during process (e.g., bi-injection or overmolding) of a distal end **111** of the handle portion **120** to the proximal end **122** of the head portion **120**. In an alternative embodiment, the head portion **120** and the handle portion **110** may be integral and formed together in one piece. In some embodiments the head portion **120** may be detachably attached to the handle portion **120**.

[0043] In the illustrated embodiment, the handle portion **110** is connected to the head portion **120** via a stepped pin hinge. The proximal end of the head portion **120** is shown to comprise a pin receiving member **132** which may be inserted into a complimentary cutout **133** at the distal end **111** of the handle portion **110**. When the pin receiving member **132** is

seated in the cutout **133**, a pin **131** inserted therethrough may hold the handle portion **110** and head portion **120** into place. Such a configuration allows for tilting of the handle portion **110** to a desired angle position with respect to the head portion **120**.

[0044] Accordingly, certain embodiments allow for the head portion **120** to be freely or semi-freely rotatably adjustable with respect to the handle portion **110** so as to adjust the angle between a longitudinal axis of the head portion and a longitudinal axis of the handle portion. Preferably, the head portion **120** and the handle portion **110** are fully rotatable such that an angle between a longitudinal axis of the handle portion and a longitudinal axis of the head portion ranges from about 0 to about 180 degrees. In certain embodiments, the exterior of the pin receiving member **132** may comprise any number of bumps or projections corresponding to grooves in the interior of the complementary cutout **133**, such that the handle may be "stepped" through a number of predetermined angles (in one embodiment, 0°, in another embodiment, about ±35°, in another embodiment, about ±45°, in another embodiment, about ±55°, in another embodiment, about ±65°, in another embodiment, about ±75°, in another embodiment, about ±85°, and in another embodiment, about ±90°). In this way, a user may set or reversibly "lock" the handle portion **110** at a desired angle relative to the head portion **120** without fear of the relative angle between the handle and head portion changing (i.e., slipping) during use.

[0045] Generally, the applicator **100** may be suitably sized such that the hand or wrist of the user may lean on the cheek for additional support during application of a composition to the eyelashes, without the hand being in a line of sight between a user's eye and a mirror. The ability to lean on portions of the face such as the cheek or the forehead may provide increased stability and may allow the user to more precisely apply compositions (e.g., mascara) to the eyelashes and avoid a smudged appearance.

[0046] The applicator **100**, including the handle portion **110** and head portion **120**, may be made of any suitable material, for example, molded or blow-molded plastic, glass, metal, laminated material, or any combination thereof. Preferably, the applicator **100** may be in a relatively small and convenient size for portable use by a consumer. For example, the total length of the applicator **100** at the longest point from the proximal end **112** of the handle portion **110** to the distal end **121** of the head portion **120** (not including bristles **125**) may be about the length of a standard mascara applicator (e.g., above 80 mm); may range from about 15 mm to about 80 mm, from about 25 mm to about 80 mm, from about 25 mm to about 75

mm, from about 35 mm to about 80 mm, from about 35 mm to about 65 mm, or from about 40 mm to about 60 mm. In a specific embodiment, the total length of the applicator **100** at the longest point may be approximately 55 mm, with the handle portion **110** being about 30 mm in length and the head portion **120** being about 25 mm in length.

[0047] Referring to **Figures 3a** and **3b**, a perspective view and side view of the bristles **125** of a head portion **120** of an exemplary ergonomic mascara applicator are illustrated, respectively. As shown, the head portion **120** comprises a plurality of bristles **125** projecting outwardly therefrom. The head portion **120** and bristles **125** may be created individually by any suitable process, and/or may be molded integrally of any suitable material, for example a plastic material, such as a thermoplastic polyester elastomer, a thermoplastic polyurethane elastomer, or compound thermoplastic materials including SBS or SEBS. In one embodiment, the head portion **120** and bristles **125** may be injection molded.

[0048] A plurality of bristles **125** are shown for holding and releasing a composition, such as a cosmetic composition (e.g., mascara). Typically, each bristle **125** may be described as a projection and/or tine having a base that is wider than its tip. In certain embodiments, the bristles **125** may be fastened to the head portion **120** in any manner known in the art including staple set, fuse, adhesive or molding methods. The bristles **125** may comprise any suitable surface (e.g., textured or smooth) capable of holding and transferring a charge of composition. Moreover, the bristles **125** may also be capable of imparting various types of aesthetically pleasing appearances to the eyelashes, such as a volumized appearance, a separated appearance (i.e., the eyelashes being individually separated from each other), a curly appearance, etc.

[0049] The head portion **120** may be free of bristles **125** extending parallel to a longitudinal plane through the head portion. For example, the head portion **120** may include a first row of bristles extending substantially along the distal end thereof. The first row of bristles may include a first set of bristles projecting to one side of a longitudinal axis through the distal end and a second set of bristles projecting to the other side of the longitudinal axis. The first and second sets of bristles may be located along the first row in an alternating fashion such that a first angle (θ_1) of from about 10 to about 25 degrees (e.g., about 18 degrees) is defined between a bristle in the first set and a bristle in the second set. Stated another way, a row of bristles disposed along the distal end of the head portion, may include alternating bristles along the row projecting to opposing sides of a plane through the distal

end of the head portion such that adjacent bristles define an angle (θ_1) of in one embodiment, from about 10 degrees to about 25 degrees, in another embodiment, from about 15 to about 20 degrees, and in another embodiment, about 18 degrees. In another embodiment, the first and second set of bristles are positioned such that the sets of bristles overlap so as to define the angles described above—i.e., the angle formed by the bristle as it exits from the head portion and relative to the parallel longitudinal plane through the head portion is acute. In another embodiment, the angular positioning of the bristles may differ (i.e. may be asymmetrical) from one end of the brush to the other. In another embodiment, the first and second set of bristles are positioned such that the sets of bristles do not overlap so as to define the angles described above—i.e., the angle formed by the bristle as it exits from the head portion and relative to the parallel longitudinal plane through the head portion is obtuse. In yet another embodiment, the first and second sets of bristles may be located along a first row and a second row, rather than being located along the same row.

[0050] The head portion may also include a second and third row of bristles extending substantially along the distal end of the applicator, where the second and third rows of bristles project away from the longitudinal axis so as to define a second angle (θ_2) from about 35 degrees to about 55 degrees (e.g., about 45 degrees) between the second and third rows of bristles. The head portion may also include a fourth and fifth row of bristles extending substantially along the distal end of the applicator, where the fourth and fifth rows of bristles project away from the longitudinal axis so as to define a third angle (θ_3) from about 80° to about 100° (e.g., 90°) between the fourth and fifth rows of bristles. Any number of additional rows of bristles **125** may be positioned orthogonal or nearly orthogonal to the longitudinal plane of the head portion. Such a configuration may allow for an appropriate amount of void space between each bristle and between each rows of bristles such that a proper amount of composition may be charged to the bristles and may subsequently be distributed on the eyelashes of a user. In one alternative embodiment, the bristles may extend substantially parallel to a longitudinal axis of the head portion **120**.

[0051] In certain embodiments, one or more rows of bristles **125** may extend substantially across the width of the head portion **120**. Moreover, the bristles **125** may be arranged in any suitable shape or pattern and need not be symmetrical. Examples of suitable patterns include spaced and parallel rows, staggered rows and columns, linear rows and columns, or random patterns.

[0052] Generally, the length of the bristles **125** may be designed to as to be suitable for the desired application (for example, use for application of paints, application to an integument, application to scalp hair, etc.) Bristles **125** according to one embodiment of the invention will typically be less than about 7 mm in length, less than 4 mm in length, less than 3 mm in length, and less than 2 mm in length. In one embodiment, the bristles **125** are between 2 mm and 4 mm in length. In another embodiment, the bristles **125** comprise a diameter between about 0.1 and about 1 mm, as measured at the base, and typically comprise a diameter of about 0.5 mm. The bristles **125** may be formed so that some or all of the bristles have a varying diameter, length, or cross-sectional shape. For example, some bristles may have one diameter, length, and/or shape and other bristles will have another diameter, length and/or shape. Also, the cross-sectional shape or diameter of individual bristles may change along their length. The bristles may be, without limitation, integral with the head portion or may be synthetic or natural fibers implanted therein.

[0053] In one particular embodiment, the rows of bristles spaced at a first angle (θ_1) from a longitudinal axis of the head portion **120** may be longer than other rows of bristles spaced at other angles (i.e., bristles at a second angle (θ_2) or third angle (θ_3)).

[0054] Although described herein as "bristles," it will be appreciated that such bristles **125** may be made of any material and configuration capable of holding a charge of liquid or solid material and transferring it to the desired surface, such as a human integument, including keratin fibers (hair of the scalp, eyelashes, etc.), nails, lips, skin, or the like. The bristles may, for instance, take the form of a foam pad, a molded brush, a twisted wire brush, a flocked surface, a staked fiber brush, a comb, a plastic spatula, a sponge, or any other surface which can hold and deliver the liquid or solid material. In one embodiment, the bristles **125** may be in the form of a foam pad. In other embodiments, the bristles **125** may be made of rubber, sponge, or any other flexible or rigid material.

[0055] Referring to **Figure 4a** and **4b**, an exemplary kit **140** including an ergonomic applicator in a closed view and exploded view are illustrated, respectively. A kit **140** may comprise a reservoir **170** containing or charged with a cosmetic composition, preferably a liquid cosmetic composition such as a mascara, and the applicator **100** may be seated therein. As shown, an exemplary kit comprises a cap **150**, a rim, ring or skirt **160**, a reservoir **170**, a wiper **180**, a chamber **190**, and an applicator **100**.

[0056] In **Figure 4a**, the kit **140** is shown in a closed state, wherein a cap **150** can be sealably engaged with a reservoir **170** via a rim, ring or skirt **160**. The reservoir **170** generally comprises side walls extending from a closed base to an open mouth to define an interior space for holding a charge of a composition, such as a cosmetic liquid composition (e.g., mascara). The reservoir **170** is typically made of any suitable flexible material, for example, molded or blow-molded plastic, laminated material, foil, or any combination thereof, such that the reservoir may be squeezed/ rolled-up by a user to charge the bristles of an applicator seated therein with a composition. It will be appreciated that the size and/or shape of the reservoir may depend on a number of variables, such as but not limited to the intended use, the size/shape of an applicator, and/or the composition contained therein.

[0057] In one embodiment the reservoir **170** may be suitably dimensioned so as to hold a commercially sold volume of material (for example, be dimensioned so as to hold shampoos, personal care products, etc., in travel, regular, and/or economy sizes). In one embodiment, the reservoir comprises a height of from about 20 to about 50 mm, more preferably from about 25 to about 45 mm, and most preferably from about 30 mm to about 40 mm (e.g., 38 mm). The reservoir **170** may comprise a length along a longer side of from about 20 mm to about 40 mm, and more particularly from about 25 to about 35 mm; and a length along a shorter side of from about 10 mm to about 30 mm, more particularly from about 15 mm to about 20 mm. The reservoir **170** may comprise an opening having a width or diameter of from about 20 to about 30 mm in one direction and from about 10 to about 15 mm in an opposite direction.

[0058] As shown in **Figure 4b**, a cap **150** may comprise any complementary size and shape to the reservoir **170** and a rim, ring, or skirt **160** that is capable of fitting around and securing a handle portion of the applicator **100** therewithin. Typically, the cap **150** is also made from a flexible material, such as a plastic, although in some embodiments the cap may comprise a rigid material in one or more dimensions or a combination of flexible, rigid and gasket/rubber like material.

[0059] The cap **150** will generally comprise a snap fit or other closing means such that it may be temporarily affixed or affixed and compressed to a complementary closing means of a rim, ring, reservoir, or skirt **160**. In this way, the cap **150** may be reversibly attached to the reservoir **170** (directly or via the rim, ring or skirt **160**) to prevent the applicator **100** from inadvertently being disengaged or removed therefrom. When a user

desires to remove the applicator **100**, the cap **150** is removed from the reservoir **170** (i.e., pulled off) and the applicator is pulled from within the reservoir and/or chamber. It will be appreciated but is not essential that the cap **150**, rim, ring or skirt **160**, and reservoir **170** may each comprise a complementary size and shape such that, when connected together, the individual pieces form a continuous outer surface of a container.

[0060] In one embodiment the cap **150** may comprise a length of from about 30 to about 80 mm, more preferably from about 40 to about 50 mm, and most preferably from about 42 mm to about 46 mm (e.g., 44 mm). The cap **150** may comprise an opening having a width or diameter of from about 20 mm to about 50 mm, more preferably from about 30 to about 40 mm, and most preferably from about 32 to about 36 mm (e.g., 33 mm). Of course, the dimensions of the cap will depend on at least the size and/or shape of the applicator **100**, rim, ring or skirt **160** and reservoir **170**.

[0061] In one embodiment, the cap **150** and handle portion of an applicator may be integrally formed, such that the handle portion is removed from the reservoir **170** when the cap is removed. In another embodiment a cap **150** may comprise a handle portion removably formed therein.

[0062] Referring to **Figures 5a** and **5b**, a top perspective and cross-sectional view of an exemplary rim, ring or skirt **160** according to an embodiment of the invention are illustrated, respectively. As shown, the rim, ring or skirt **160** comprises an open bottom portion **161** having side walls extending therefrom to an open top portion **162**. The rim, ring or skirt **160** is generally adapted to sit between a cap **150** and a reservoir **170** of an exemplary kit **140**. As such, the bottom portion **161** of the rim, ring or skirt may comprise any shape that is compatible with the top portion of the reservoir **170**, and the top portion **162** of the rim, ring or skirt may comprise any shape that is compatible with the bottom portion of the cap **150**.

[0063] In one embodiment, the inner surface of the bottom portion **161** of the rim, ring or skirt **160** may comprise an inner fastening means **166** (e.g., snap fit, threading, etc.) adapted to permanently fasten, join, or snap the rim, ring or skirt to a corresponding fastening means located on the outer surface of the top portion of the reservoir (Fig. **4b** at **170**). The outer surface of the top portion **162** of the rim, ring or skirt **160** may comprise an outer fastening means **167** (e.g., snap fit, threading, etc.) adapted to removably fasten, join, or snap, the rim, ring or skirt **160** to corresponding fastening means located on an inner surface of a

bottom portion of a cap (**Fig. 4b** at **150**). Accordingly, when a user holds the rim, ring or skirt **160** and attempts to remove the cap **150** from the kit, the rim, ring or skirt will remain attached to the reservoir **170**, while the cap is detached. As discussed in detail below, the rim, ring or skirt may also include an inner stopping means **168** to engage the wings **123** of an applicator such that the applicator is prevented from being pushed downward into a reservoir or disengaged during transit or storage.

[0064] Generally, the outer surface of the rim, ring or skirt **160** may include finger grip enhancements **165** (e.g., bumps, protrusions, grooves and/or cut-outs) on one or more sides thereof to increase friction between the outer surface of the kit and the thumb and/or fingers of a user. Whereas the reservoir **170** and cap **150** of an exemplary kit may be made of a flexible material, in one embodiment the rim, ring or skirt **160** comprise a relatively rigid material, such as but not limited to injection molded or blow-molded plastic, glass, metal, laminated material, or any combination thereof. In this way, the rim, ring or skirt **160** may be gripped by a user to remove the cap **150**, without squeezing the reservoir **170**.

[0065] Referring to **Figures 6a** through **6c,** a top perspective, bottom perspective and a cross-sectional view of an exemplary wiper **180** according to an embodiment of the invention are illustrated, respectively. Generally, a wiper **180** is adapted to be seated within a reservoir **170**. The wiper **180** may comprise an orifice **181** in a top portion thereof, and one or more projections **182** (e.g., edges, teeth, or the like) that engage with bristles of an applicator when they extend into the interior of the reservoir. When the applicator is removed from the reservoir, such as by pulling or the like, the bristles may pass through the projections **182** of the wiper **180**, and any excess composition contained thereon may be freed and maintained inside the reservoir.

[0066] The dimension and geometry of the wiper **180** may vary depending on several factors, such as but not limited to, the thixotropy, pseudoelasticity, or other viscosity of the composition and/or the shape and size of the bristles. As shown, one embodiment of the wiper **180** comprises a number of projections **182** extending from either side of the bottom side of the wiper to form a curved V-shape having broad, wide cuts. The projections **182** extend downward from the bottom of the wiper **180** towards an plane through the middle of the wiper orifice.

[0067] In certain embodiments, a composition contained in a reservoir may be prevented from escaping when an applicator is positioned within the orifice **181** of the wiper

180. The wiper orifice **181** and applicator **100** may form a seal, preferably a liquid-tight seal, and more preferably an air-tight and vapor seal, when the applicator is seated within the orifice. Accordingly, the orifice **181** may comprise a size/shape that is complementary to the size/shape of an exemplary applicator head portion. For example, the dimensions and size of the orifice **181** may vary depending on the geometry of the head portion and bristle configuration of the applicator. Thus, the orifice **181** may be rectangular when the cross-sections of the head portion of an applicator is rectangular.

[0068] In certain embodiments, the curved V-shape of the projections **182** may prevent the applicator from inadvertently exiting the reservoir, such as when the projections apply a force on either side of the bristles or head portion of the applicator. Additionally or alternatively, the wiper **180** may or may not comprise a snap fit, friction fit or other inner connecting means **184** to removably anchor an applicator within the orifice **181** thereof. As shown, the wiper **180** may comprise an outer wiper rim **188** extending from the top portion of the wiper away from the orifice **181** and slightly downward toward the bottom thereof. Such a structure may allow the wiper to be held within a chamber **190** of the kit, as discussed in detail below.

[0069] Referring to **Figures 7a** through **7c**, a top perspective view, side cross-sectional view, and bottom view of an exemplary chamber **190** according to an embodiment of the invention are illustrated, respectively. As shown, the chamber **190** comprises a bottom surface **191** connected to an open top portion **192** by side walls **193**. In one embodiment, the chamber **190** lacks a bottom surface **191**, but may comprise a constriction at the bottom of the chamber to limit or regulate flow into and/or out of the chamber. Generally, the chamber **190** may be adapted to sit within a reservoir **170** and may therefore comprise any size/shape that is compatible with a reservoir. As shown, an exemplary chamber **190** comprises a bottom surface **191** having a generally rectangular shape with rounded corners.

[0070] The bottom surface **191** comprises any number and shape of passages or pores **194** that allow the passage of a cosmetic composition therethrough when inward pressure (e.g., squeezing) is applied to the reservoir or during insertion of the chamber into the reservoir. The pores **194** may allow for substantially one-way passage of the composition into the chamber **190**, such that composition may not exit or may partially exit the chamber once it enters (or only small amounts may exit). In this way the chamber **190** forms a chamber filled with the composition upon squeezing of the outer walls of a reservoir by a

user or insertion of the chamber into the reservoir. In another embodiment, the chamber **190** lacks a bottom surface **191**.but is configured so as to allow for substantially one-way passage of the composition into the chamber **190**, such that composition may not exit or may partially exit the chamber once it enters (or only small amounts may exit). In another embodiment, the chamber **190** has a bottom surface **191**. with a single opening but is configured so as to allow for substantially one-way passage of the composition into the chamber **190**, such that composition may not exit or may partially exit the chamber once it enters (or only small amounts may exit).

[0071] The pores **194** may comprise any suitable shape and size. For example, the shape of the pores **194** may be, without limitation, a circle, semi-circle, square, rectangle, triangle, etc. In one specific embodiment, the pores may comprise a rectangular shape of about 1.4 mm by 1.8 mm. More generally, the pores may comprise a surface area of from about 1 mm^2 to about 5 mm^2. If pores are present in the bottom surface, any number of pores **194** may be spaced throughout the bottom surface, for example from about 1 to about 20 pores, from about 5 to about 15 pores, or from about 10 to about 12 pores may be present in the bottom surface. Such pores **194** may be spaced throughout the bottom portion **191**, for example at a distance of from about 1 mm to about 4 mm and preferably about 2 mm.

[0072] The side walls **193** along the longer sides of the chamber **190** are shown to comprise a number of additional pores or apertures **195** (e.g., elongated slits**)** spaced throughout the length of the side walls. It will be appreciated that the apertures **195** may allow for the passage of a composition therethrough when inward pressure (e.g., squeezing) is applied to a reservoir or during insertion of chamber in bottle. The apertures **195** may allow for substantially one-way passage of the composition into the chamber **190**, such that composition may not exit the chamber once it enters (or only limited amounts of composition may exit).

[0073] The apertures **195** may comprise any suitable shape and size, such as but not limited to a rectangle, circle, semi-circle, square, triangle, etc. In one embodiment, the aperture may comprise a rectangular shaped slit of about 1.2 mm by about 9 mm. More generally, an exemplary slit may comprise a surface area of from about 5 mm^2 to about 12 mm^2 (e.g., about 10 mm^2. If apertures are present in the side walls, any number of apertures **195** may be spaced throughout the side walls **193**, for example from about 1 to about 40 apertures, from about 10 to about 30 apertures, from about 15 apertures to about 25 apertures,

or from about 18 to about 20 apertures may be present in the side walls. Such apertures **195** may be spaced throughout the length of the side walls **193**, for example at a distance of from about 1 to about 3 mm apart (e.g. about 2 mm apart). In one embodiment, the chamber **190** may not comprise any apertures **195** on shorter side walls thereof. In other embodiments, the chamber may comprise apertures along all or substantially all side walls **193**.

[0074] In one specific embodiment, the chamber **190** may comprise a length along its longer sides of from about 20 mm to about 30 mm, more preferably from about 22 mm to about 28 mm, and most preferably from about 24 mm to about 26 mm. An exemplary chamber **190** may comprise a length along its shorter sides of from about 5 mm to about 15 mm, more preferably from about 8 to about 13 mm, and most preferably from about 9 to about 12 mm. As discussed above, in one embodiment the chamber **190** will have a size and/or shape dependent upon that of a reservoir **170** and/or applicator **100** of a kit.

[0075] The inventive design of the chamber **190** with passageways (i.e., pores **194** and apertures **195**, open bottom design, and/or bottom designed with a single opening such as one or more constrictions (in one embodiment ovoid, in another embodiment taking the form of physical baffles) at the lower end of the chamber for regulating fluid flow into and/or out of the chamber) allows for substantially one-way passage of composition from a reservoir **170** into the chamber. Accordingly, a user may squeeze the outside walls of a reservoir in order to fill the chamber **190** with composition, and such composition, once held within the chamber, may not exit the chamber (or may only exit in small quantities) through the openings, pores or apertures. The bristles of an applicator **100** may then be charged with composition merely by placing the bristles within the chamber, rather than having to push the applicator deep into the reservoir. This feature is advantageous as it allows for shorter applicators to be employed and may prevent an applicator stored within a composition-filled chamber from excessive bristle drying. In one embodiment, the inventive design of the kit allows the user to charge an applicator with mascara by bringing the mascara into contact with the brush, for example by squeezing the flexible container rather than bringing the brush into contact with the mascara, for example by inserting the brush into a reservoir of mascara.

[0076] It will be appreciated that the design of the chamber **190** is not limited to any particular configuration, provided that it (1) is suitable to permit passage of a cosmetic composition from the reservoir into a location within the chamber in contact with bristles of

an applicator; and (2) retards the flow of the cosmetic composition from within the chamber back to the reservoir.

[0077] In one embodiment, a liquid cosmetic composition having a non-Newtonian rheology may fill the reservoir such that the composition readily flows through the passages (i.e., pores and/or apertures) into the chamber **190** at a first viscosity when an inward force is applied to the walls of the reservoir. The liquid may then assume a second viscosity that is higher than the first viscosity when the inward force is released such that the flow of the composition out of the chamber is retarded. Accordingly, the chamber **190** may be adapted to impart a second viscosity on a liquid cosmetic product that is higher than the viscosity of the liquid when contained in a reservoir. In addition, the apertures may be suitably designed with respect to geometry so as to allow substantially only one-way passage of the liquid cosmetic product.

[0078] In one embodiment, the chamber **190** comprises an outer lip **196** such that it may be attached to a reservoir **170** at a specific depth and without falling through to the bottom of a reservoir. For example, a chamber **190** may be inserted into a reservoir **170** during manufacture until the lip **196** of the chamber catches on an outer rim **176** of the reservoir (discussed in detail below).

[0079] Referring to **Figure 8**, the applicator **100** may serve as a closure element for the reservoir **170** and/or reservoir **170** sub-assembly, without the use of a separate closure device, such as a cap or a cover. Generally, the composition contained in a reservoir **170** may be prevented from escaping when an applicator is positioned within the wiper and reservoir. The wiper orifice and applicator **100** may form a seal, preferably a liquid-tight seal, and more preferably a vapor and/ or air-tight seal, when the applicator is seated within the orifice.

[0080] Moreover, the head portion of an applicator may comprise one or more wings **123** on either side thereof which may take the form of outward projections extending laterally from the head portion. The outward projections or wings **123** may prevent the applicator from being depressed into the reservoir beyond a predefined point. Accordingly, the outward projections or wings may "catch" or otherwise be prevented from moving in a downward direction by a stopping means located on the interior or exterior of a wiper, chamber, or rim, ring or skirt. For example, the rim, ring or skirt **160** may comprise an inner stopping means (*see* **Fig. 5b** at **168**), which may allow for the head portion of the applicator to be inserted

therethrough, but which may prevent the wings **123** of the head portion from progressing downward or upwards upon application of force.

[0081] Referring to **Figure 9**, a cross-sectional view of an exemplary kit **140** is shown having a wiper **180** seated within a chamber **190**, which in turn is seated within the reservoir **170**. As discussed above, when closed, the kit **140** comprises an applicator **100** seated within the wiper **180** such that the head portion **120** of the applicator is in contact with a composition contained within the reservoir **170**.

[0082] As shown, the reservoir **170** comprises a closed bottom portion having flexible side walls extending therefrom to an open top portion. The outer surface of the open top portion of the reservoir is adapted to receive the inner surface of the rim, ring or skirt **160**. For example, the outer surface of the top portion of the reservoir **170** may comprise a snap-fit (i.e., groove, rim, lip or projection) **177** that is complementary to the inner fastening means **167** of the rim, ring or skirt **160**. In this way the rim, ring or skirt **160** may be permanently attached to the reservoir **170**. In alternative embodiments, the rim, ring or skirt **160** may be removably attached to the reservoir or may be attached via complementary threading or the like.

[0083] An outer rim **176** located at the top portion of a reservoir **170** may be adapted to receive an outer lip **196** of the chamber **190**, such that the lip of the chamber catches on the top portion, preventing the chamber from falling into the reservoir when inserted therein. Generally, the chamber **190** may be fastened, snapped or joined to the top portion of the reservoir **170** by any suitable means.

[0084] The chamber **190** may comprise an upper rim **198** about its open top portion such that an outer wiper rim **188** of the wiper **180** may catch on the upper rim **198** when the wiper is inserted into the chamber. The upper rim **198** therefore prevents the wiper **180** from falling into the chamber **190** when a downward force is exerted thereon (i.e., when an applicator is pushed into the reservoir and when an applicator is utilized to create a seal). Generally, the wiper **180** may be fastened, snapped or joined to the top portion of the chamber **190** by any suitable means.

[0085] In one particular embodiment, the chamber **190** and wiper **180** may be prevented from being pulled off of the reservoir (e.g., during withdrawal of the applicator) by attaching the rim, ring or skirt **160** onto the reservoir **170**, over the chamber and wiper. The top portions of the chamber **190** and wiper **180** may both be shaped in such a way that an

inner surface of the rim, ring or skirt **160** rests on at least a portion thereof. Accordingly, the chamber **190** will be prevented from being pulled out of the reservoir **170** by the rim, ring or skirt **160**, which is fastened to (i.e., prevented from being pulled away from) the reservoir.

[0086] The reservoir **170**, chamber **190** and wiper **180** are configured to receive the head portion **120** of an applicator **100** so as to bring the bristles **125** of the applicator into contact with a composition housed within the reservoir. Once the applicator head portion **120** is seated within the reservoir **170** (via the wiper and chamber), any composition contained within the reservoir is prevented from exiting through the orifice of the wiper. Accordingly, the inventive kits may prevent or reduce bacterial contamination and lost volume of composition due to squeezing, spillage, backsplash, and/or diffusion.

[0087] Referring to **Figure 10**, a process diagram for the application of a cosmetic composition using an exemplary applicator **100** is illustrated. Once the bristles of the applicator **100** are impregnated with composition, such as when a user squeezes a reservoir in which the applicator is seated, the applicator may be removed and used to apply the composition to a desired structure or surface. In one embodiment, the applicator **100** is removed from the reservoir, and a wiper acts to remove excess product from the bristles.

[0088] In the case of mascara, a charged applicator **100** may be used to apply the mascara to a user's eyelashes. As shown, a user may hold the handle portion of the applicator **100** between the thumb and fingers and place the head portion directly in front of the eyelashes in a substantially horizontal position, where the head portion would be orthogonal or substantially orthogonal to the eyelid. The applicator **100** is then easily moved upwardly (towards the top of the head) or downwardly (toward the chin) in a single motion such that the bristles engage the eyelashes and deposit a mascara composition in a uniform manner thereon.

[0089] In one embodiment, the ability to rotate the head portion **120** with respect to the handle portion, combined with the "scooped" design of the back side of the handle portion and/or the location of the connecting means **130** along the handle allow the user to utilize the applicator without having their hand in their direct line of sight. As shown, the connecting means **130** may be located along an axis **II-II** extending from a proximal end of the head portion of an applicator through the handle. When a user holds the applicator along the handle, an axis **I-I** extending substantially longitudinally through the distal end of the handle portion and centered approximately between the fingers may be defined. As shown,

the connecting means **130** is located at a point on the handle below the axis **I-I** (i.e., towards the back side of the handle portion). Such a configuration allows for the user to view the eyelashes in a mirror or the like while using the applicator to apply a cosmetic thereto.

[0090] The invention having been described by the forgoing description of various embodiments, it will be understood that the skilled artisan may make modifications and variations of these embodiments without departing from the spirit or scope of the invention as set forth in the following claims.

CLAIMS

What is claimed:

1. An applicator comprising:

a handle portion having a front side opposed from a back side, the handle portion being suitably dimensioned to permit the handle portion to be held between the thumb and fingers during use; and

a head portion having at its distal end a plurality of bristles for holding a charge of a cosmetic composition and transferring the composition to eyelashes during use, wherein the distal end of the head portion is suitably dimensioned to contact the eyelashes along at least a major portion of the lateral width of a human eyelid;

wherein the handle portion and the head portion are joined in a manner which permits the head portion to pivot with respect to the handle portion, the joint being located at a position away from an axis extending longitudinally through the handle portion and towards the back side of the handle portion such that the user may apply the cosmetic composition to the eyelashes without having their hand in a direct line of sight.

2. The applicator according to claim 1, wherein the handle portion and the head portion are joined by a hinge

3. The applicator according to claim 1, wherein the handle portion is non-coplanar with the head portion.

4. The applicator according to claim 1, wherein the distal end of the head portion has a configuration to approximate the curvature of the eye lids.

5. The applicator according to claim 1, wherein the back side of the handle portion has a concave shape.

6. The applicator according to claim 2, wherein the hinge is a stepped pin hinge.

7. The applicator according to claim 1, wherein the head portion is pivotable in both directions about 90 degrees with respect to the axis extending longitudinally through the handle portion and towards the back side of the handle portion

8. The applicator according to claim 1, wherein the bristles do not extend in a direction parallel to a longitudinal plane coplanar with the head portion.

9. A kit comprising:

the applicator according to claim 1;

a reservoir charged with a composition for application to a keratin fiber, wherein the reservoir is configured to receive the head portion of the applicator when the head portion of the applicator is inserted into the reservoir so as to bring the bristles into contact with the composition; and

a wiper attached to the reservoir for removing excess composition from the bristles upon removal of the applicator from the reservoir.

10. A method for applying mascara to the eyelashes comprising metering a charge of mascara onto the bristles of the applicator according to claim 1 and transferring the composition to the eyelashes by contacting the bristles with the eyelashes.

11. An applicator comprising:

a handle portion having a front side opposed from a back side, the handle portion being suitably dimensioned to permit the applicator to be held between the thumb and fingers of a user; and

a head portion connected at its proximal end to the handle portion, the head portion having at its distal end a plurality of bristles for holding a charge of composition and transferring the composition to an integument during use,

wherein the head portion comprises a row of bristles disposed along the distal end of the head portion, wherein alternating bristles along the row project to opposing sides of a plane through the distal end of the head portion such that adjacent bristles define an angle of from about 10 degrees to about 25 degrees.

12. The applicator of claim 10, wherein the head portion is free of bristles extending parallel to a longitudinal plane coplanar with the head portion.

13. The applicator according to claim 10, wherein the first row of bristles comprises bristles having a length greater than a length of any remaining bristles.

14. A kit comprising:

a reservoir having flexible walls for holding a cosmetic composition; and

a chamber seated within or above the reservoir and adapted to receive an applicator therein, the chamber having at least one passage therethrough such that the cosmetic composition enters the chamber when an inward force is applied to the flexible walls of the reservoir and thereafter dwells in the chamber when the force is removed, thereby bringing the cosmetic composition in the reservoir into contact with the applicator.

15. A kit according to claim 14, wherein the cosmetic composition is a liquid cosmetic composition.

16. A kit according to claim 14, further comprising a wiper having an orifice forming a passage between the exterior of the reservoir and interior of the chamber.

17. A kit according to claim 16, further comprising a rim, ring or skirt along a rim of the reservoir, for securing the chamber and the wiper to the reservoir.

18. A kit according to claim 17, wherein the rim, ring or skirt is made of a material having a greater rigidity than the reservoir such that the kit can be gripped without deforming the reservoir.

19. A kit according to claim 17, wherein the rim, ring or skirt comprises one or more protrusions on one or more external sides thereof to increase friction between the rim, ring or skirt and a user's fingers during removal and/or replacement of the applicator or/and cap.

20. A kit according to claim 17, further comprising an applicator for removing a portion of the cosmetic composition from the reservoir and transferring it to a surface, the applicator being reversibly disposable through the wiper such that one or more bristles of the applicator are brought into contact with the cosmetic composition within the chamber.

21. A kit according to claim 20, wherein the applicator comprises one or more protrusions that engage with the wiper or the rim, ring, or skirt when the applicator is disposed within the wiper, the protrusions adapted to prevent the applicator from extending farther into the reservoir than a predefined distance

22. A kit according to claim 20, further comprising a cap configured to fit over the applicator and secure onto the rim, ring or skirt or reservoir.

23. A kit according to claim 15, wherein the reservoir contains a liquid cosmetic composition having a non-Newtonian rheology such that the composition readily flows through the passages into the chamber at a first viscosity when an inward force is applied to the walls of the reservoir and thereafter assumes a second viscosity that is higher than the first viscosity when the inward force is released such that the flow of the composition out of the chamber is retarded.

24. The applicator of claim 1, further comprising at least one wing deposited on at least one side of the head portion, wherein the at least one wing is capable of preventing the applicator from extending further into a reservoir containing a composition than a predefined distance and/or holding the applicator in position during transit and daily storage.

25. The kit according to claim 15, wherein the applicator further comprises at least one wing deposited on at least one side of the head portion, wherein the at least one wing is configured to prevent the applicator from extending further into the reservoir containing a composition than a predefined distance and/or holding the applicator in position during transit and daily storage.

26. The method of claim 10, wherein the charge of mascara is metered onto the bristles of the applicator according to claim 1 by applying a compressive force to the walls of the reservoir so as to bring the mascara into contact with the applicator.

27. The method of claim 26, wherein the charge of mascara is a pseudoplastic composition having a first viscosity under conditions of no applied shear which is greater than a second viscosity under conditions of applied shear such that when a compressive force is applied to the walls of the reservoir the mascara composition thins in viscosity and flows through a passage into a chamber under reduced viscosity and tends to dwell in the chamber when the compressive force applied to the reservoir walls is removed.

FIG. 1A

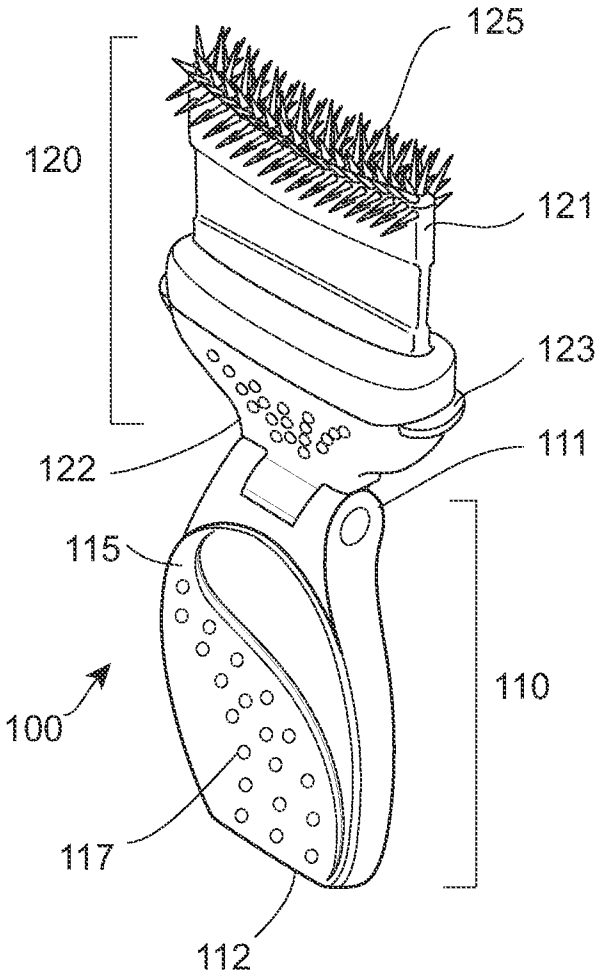


FIG. 1B

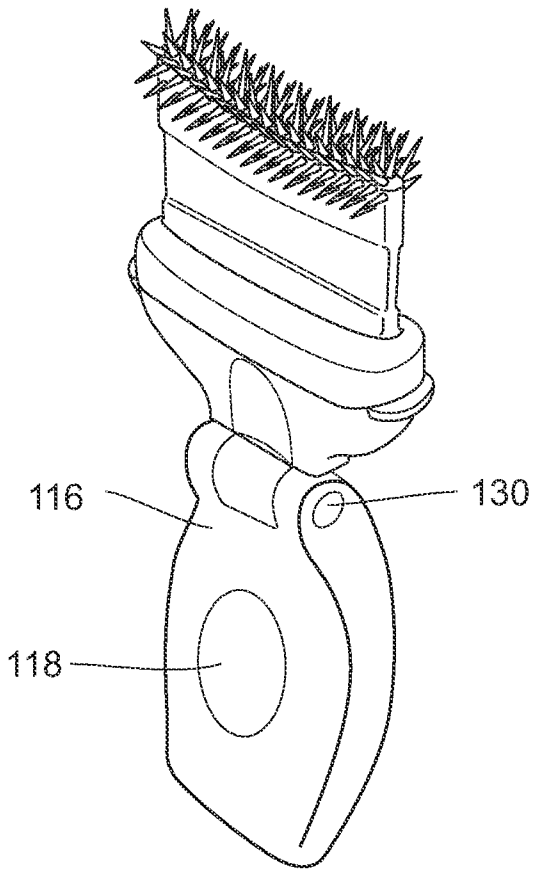


FIG. 2

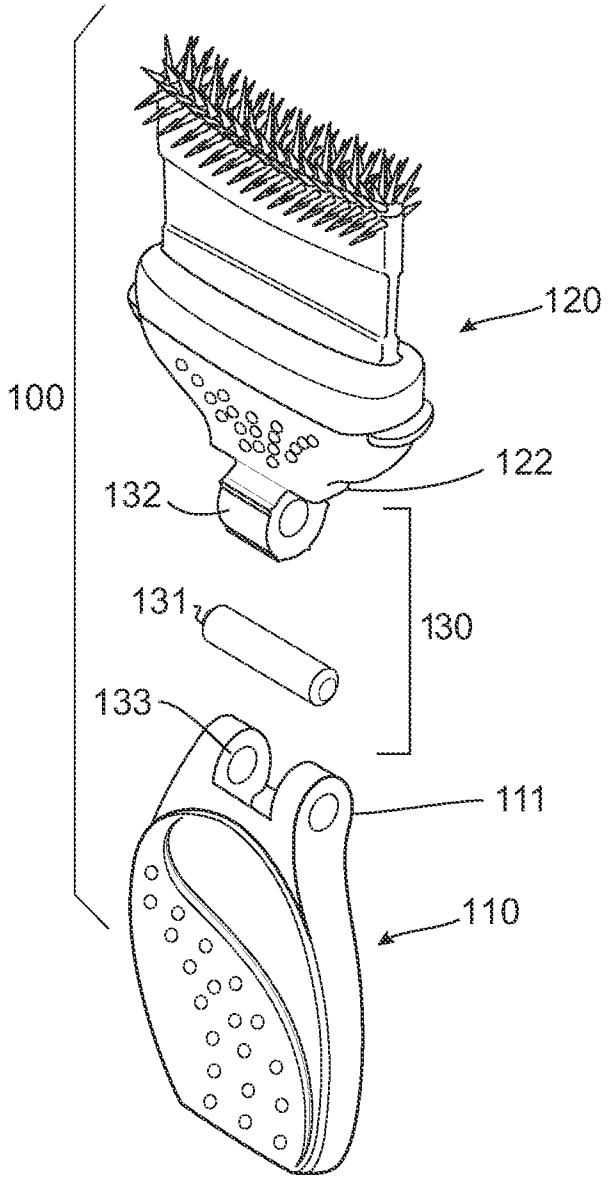
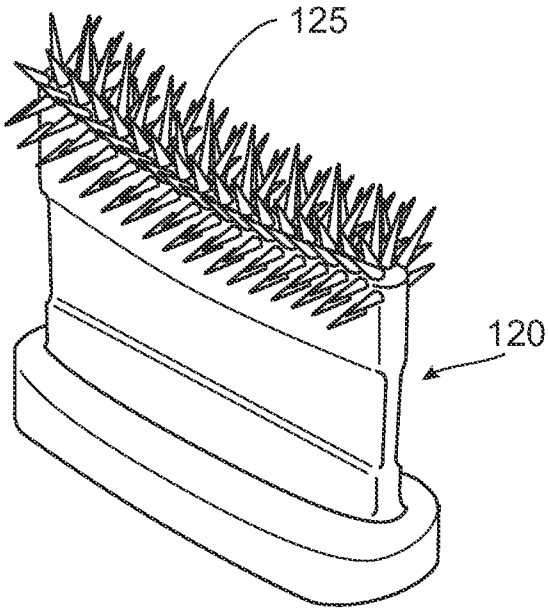


FIG. 3A



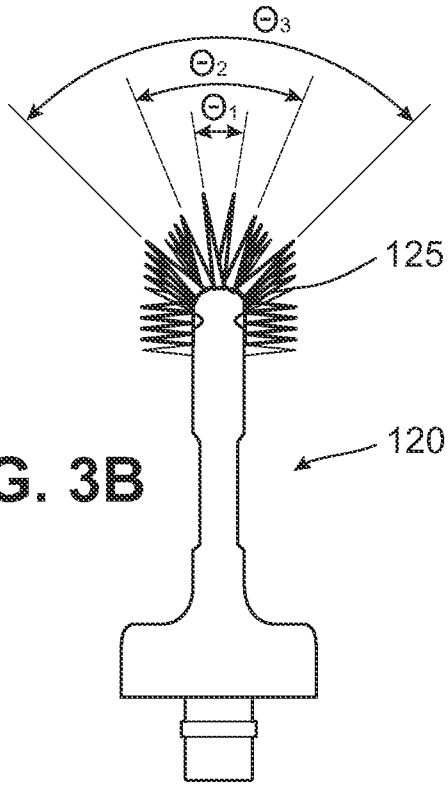


FIG. 3B

FIG. 4B

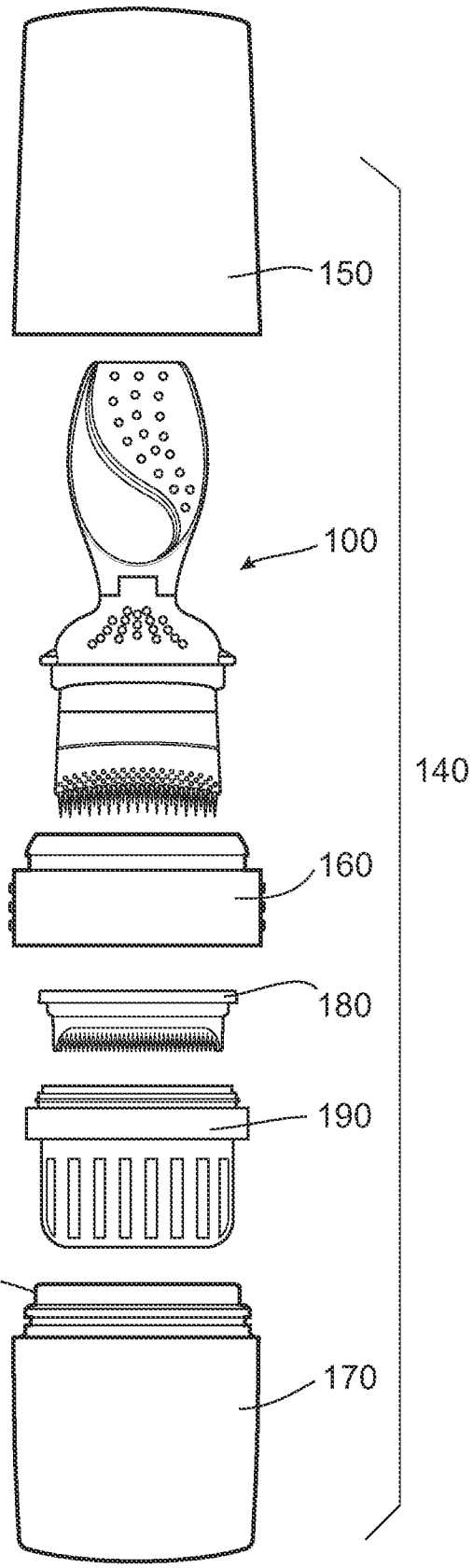


FIG. 4A

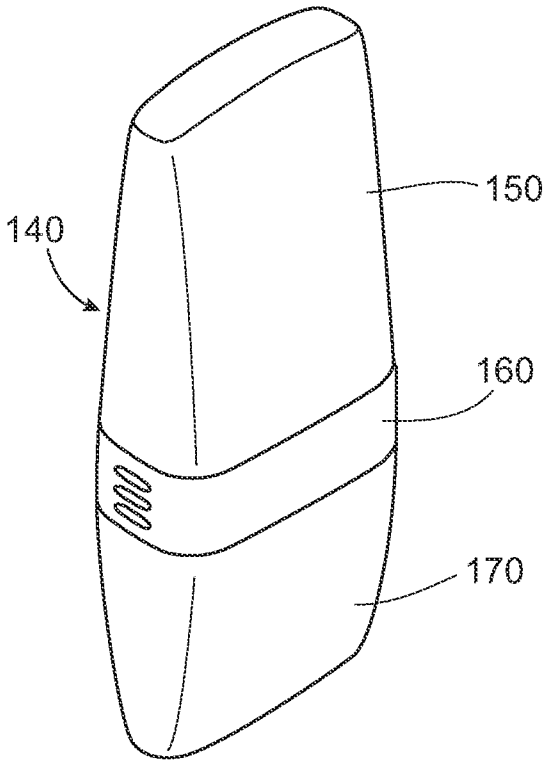


FIG. 5A

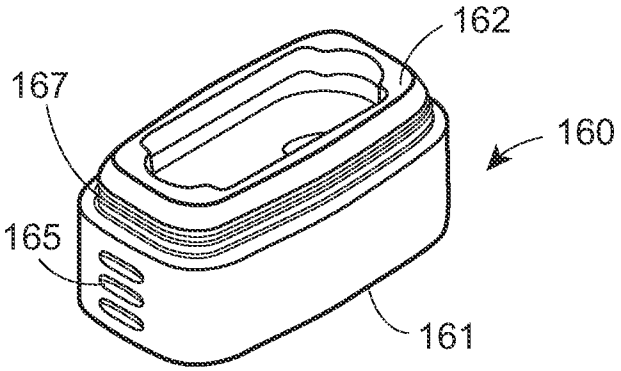


FIG. 5B

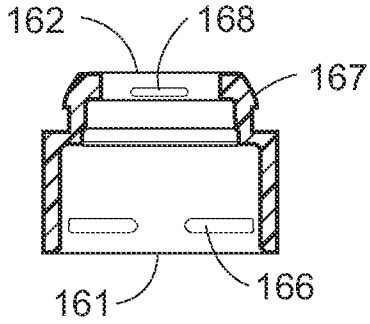


FIG. 6A

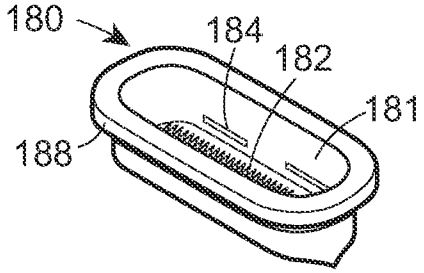


FIG. 6B

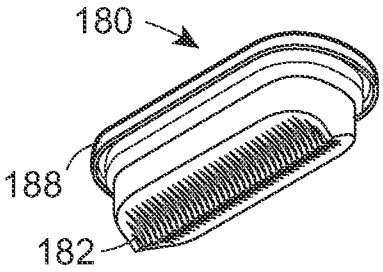


FIG. 6C

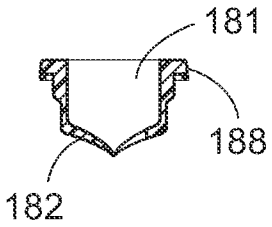


FIG. 7A

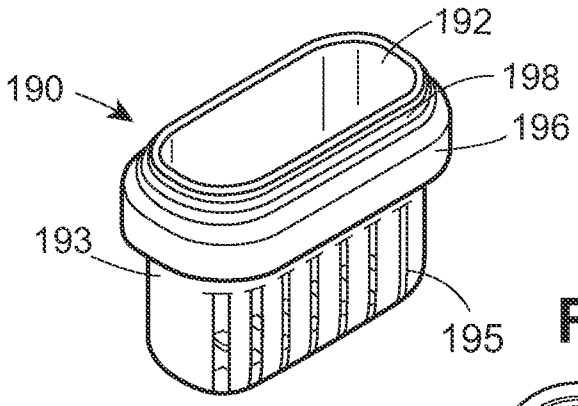


FIG. 7B

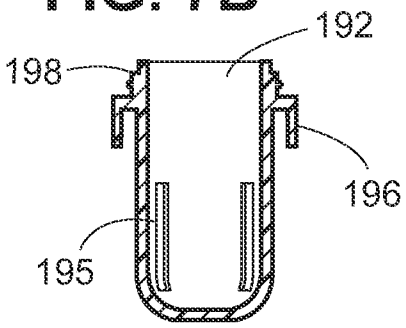


FIG. 7C

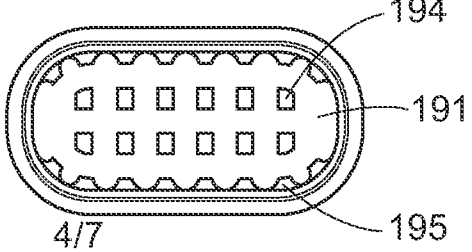
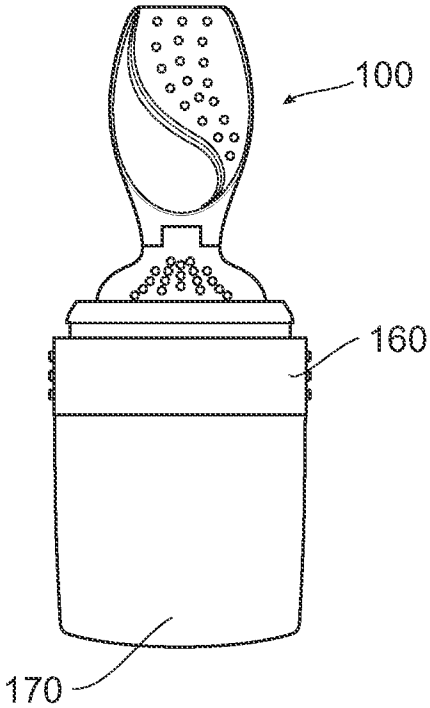


FIG. 8


100
160
170

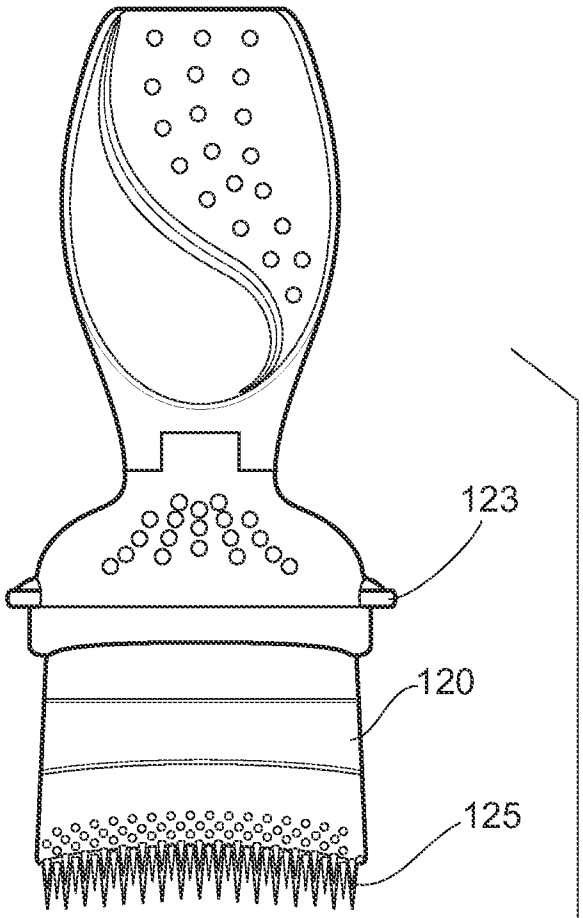

123
120
125

FIG. 9

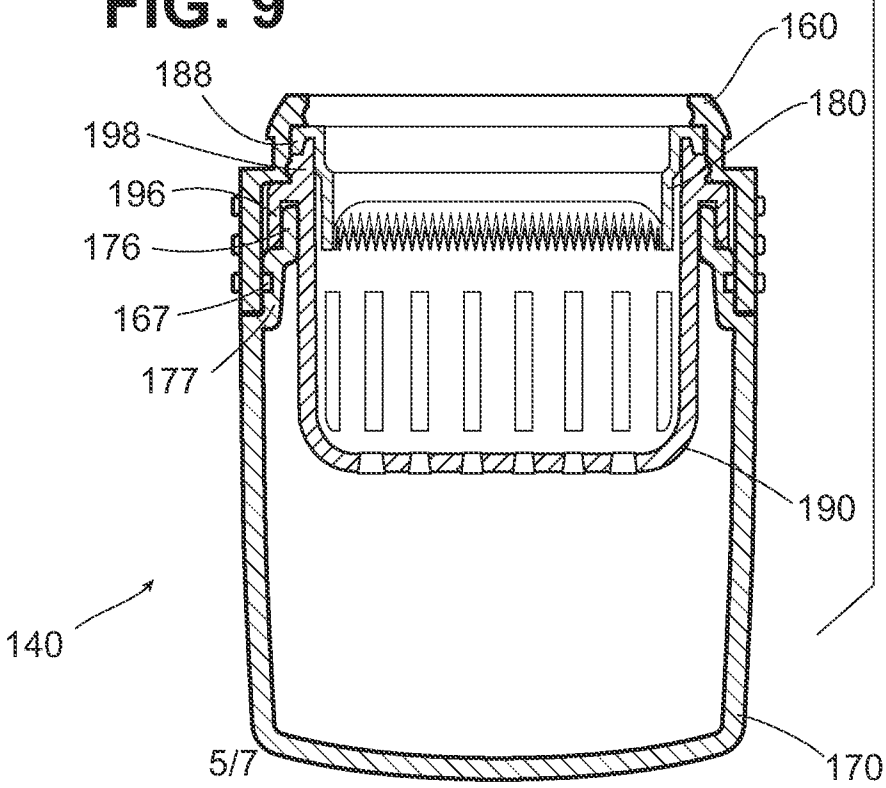

160
188
180
198
196
176
167
177
190
140
170

FIG. 10A

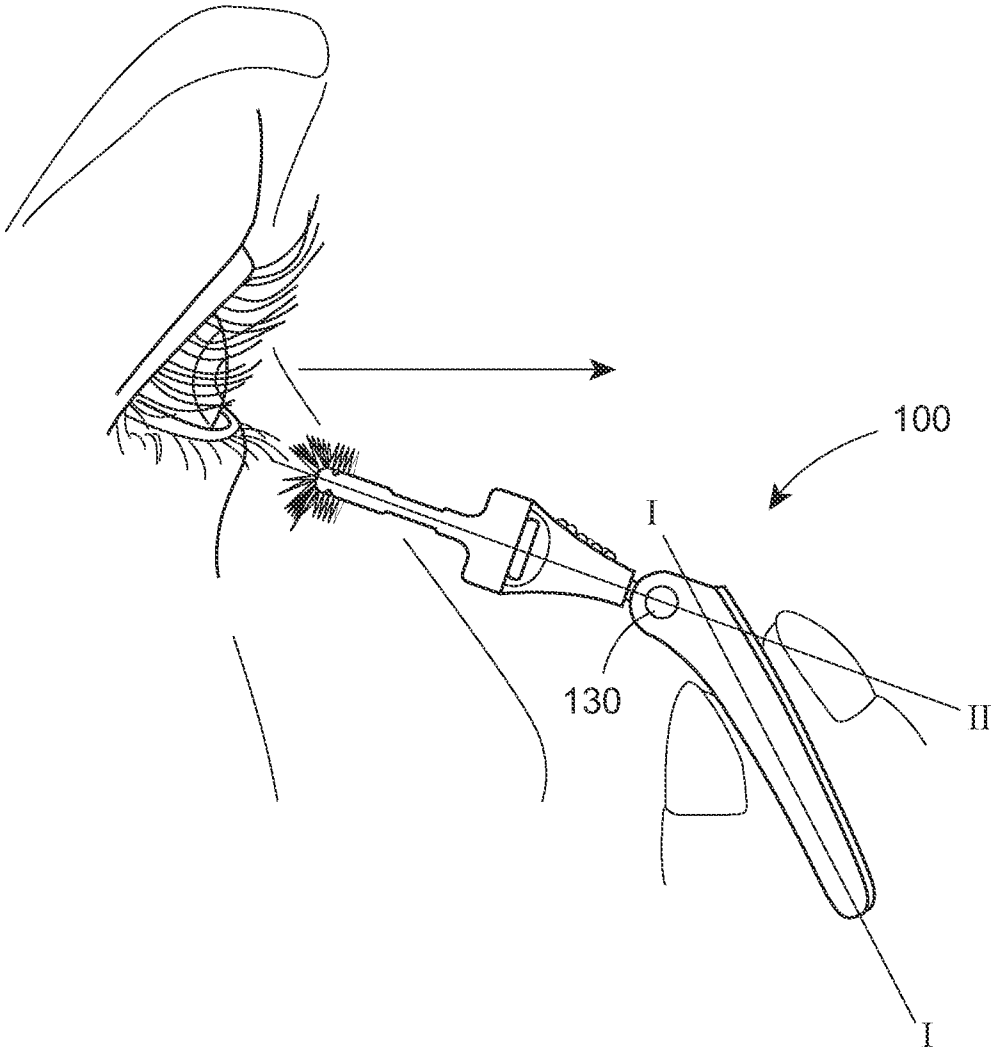
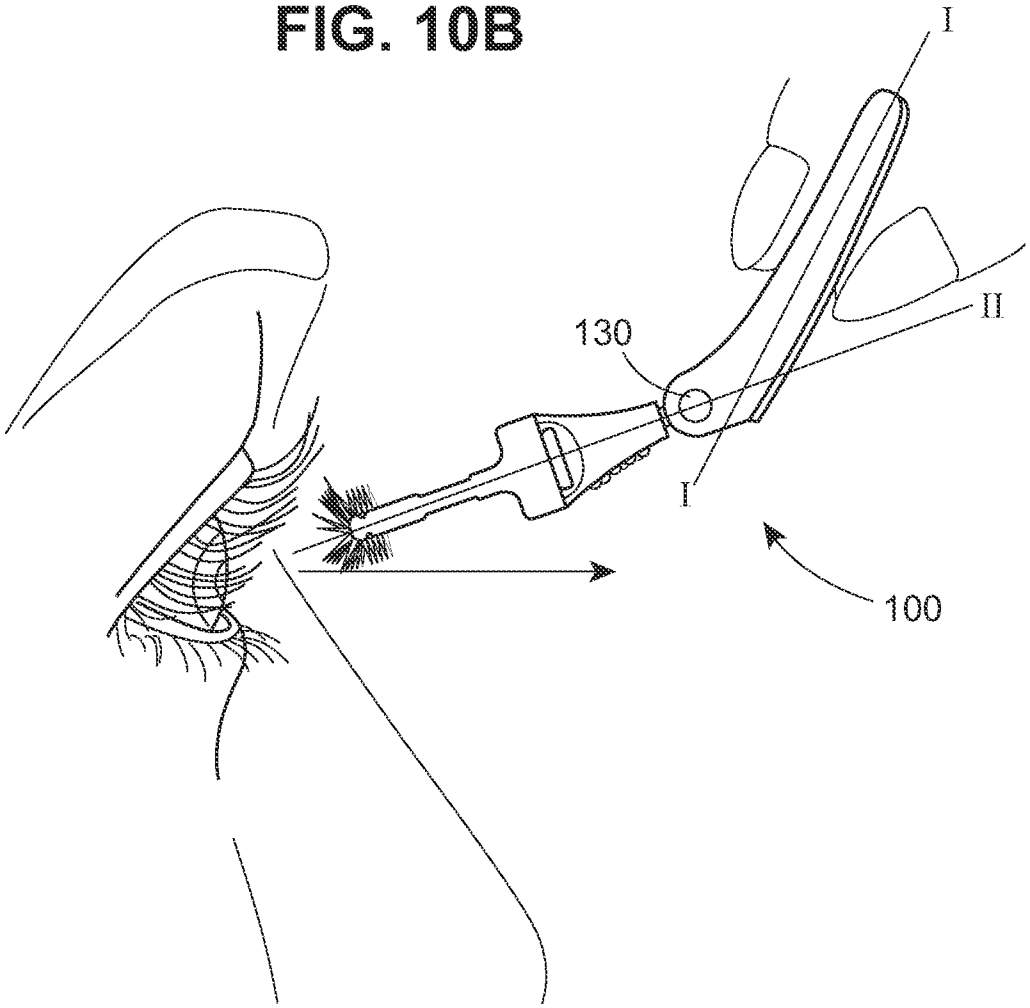


FIG. 10B



INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/061472

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A45D 40/26; A46B 5/02 (2013.01)
USPC - 132/218
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)
IPC(8) - A45D 40/26; A46B 5/02 (2013.01)
USPC - 15/104.93, 104.94; 16/381; 132/200, 218; 294/53.5; 401/123, 129

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
CPC- A45D 40/265; A46B 5/0083, 5/02, 9/021 (2013.01)

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

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 6,200,051 B1 (GUERET) 13 March 2001 (13.03.2001) entire document	1-5, 7, 8, 10-13, 24
Y		6
Y	US 2009/0183339 A1 (DUAN et al) 23 July 2009 (23.07.2009) entire document	6
A	US 2002/0020425 A1 (DORSA et al) 21 February 2002 (21.02.2002) entire document	1-8, 10-13, 24
A	US 2011/0174328 A1 (CERUTTI et al) 21 July 2011 (21.07.2011) entire document	1-8, 10-13, 24
A	US 4,165,755 A (CASSAI) 28 August 1979 (28.08.1979) entire document	1-8, 10-13, 24

☐ Further documents are listed in the continuation of Box C. ☐

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
04 March 2013	19 MAR 2013
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, Virginia 22313-1450 Facsimile No. 571-273-3201	Authorized officer: Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774

Form PCT/ISA/210 (second sheet) (July 2009)

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/061472

Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☒ Claims Nos.: 26, 27
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

See extra sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying additional fees, this Authority did not invite payment of additional fees.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
1-8, 10-13, 24

Remark on Protest

☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.

☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.

☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2012/061472

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1. In order for all inventions to be examined, the appropriate additional examination fees must be paid.

Group I, claims 1-8, 10-13, 24, are drawn to an applicator.

Group II, claim 9, is drawn to a kit with an applicator, reservoir and wiper.

Group III, claims 14-23, 25, are drawn to a kit with a reservoir and a chamber.

Please note, claims 12 and 13 are objected to under PCT Rule 66.2(a)(v) as lacking clarity under PCT Article 6 because claims 12 and 13 are indefinite for the following reason: Claims 12 and 13 are written as being dependent from claim 10. However, it is assumed that claims 12 and 13 depend from claim 11, not claim 10 in order to follow proper antecedent basis.

The inventions listed as Groups I through III do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:

The special technical features of Group I, an applicator with a handle portion having a front side opposed from a back side, a head portion having at its distal end a plurality of bristles for holding a charge of a cosmetic composition, and where the handle and head portions are joined which permits the head portion to pivot with respect to the handle portion, are not present in Groups II-III; the special technical features of Group II, a kit with an applicator, reservoir charged with a composition and wiper attached to the reservoir, are not present in Groups I, III; the special technical features of Group III, a kit comprising a reservoir with flexible walls for holding a composition and a chamber seated within or above the reservoir and adapted to receive an applicator, are not present in Groups I-II.

Groups I through III share the technical features of an applicator and a reservoir with a composition. However, these shared technical features do not represent a contribution over the prior art. Specifically, US 4,687,364 A to Kingsford, teaches of an applicator (brush 5, Fig. 2) and a reservoir with a composition (mascara reservoir 4, Fig. 2, therefore the reservoir holds a mascara composition).

Since none of the special technical features of the Groups I through III inventions are found in more than one of the inventions, unity of invention is lacking.