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(54) CERAMIC COSMETIC APPLICATOR

KERAMISCHER KOSMETIKAPPLIKATOR

APPLICATEUR EN CÉRAMIQUE POUR PRODUIT COSMÉTIQUE

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Description

FIELD OF THE INVENTION

[0001] The present invention is in the field of cosmetic packaging that includes an applicator. More particularly, the present invention is a cosmetic applicator formed from ceramic material designed to provide a product chilling effect when applying creams, lotions, treatment products, etc.

BACKGROUND OF THE INVENTION

[0002] For the convenience of the cosmetic user, cosmetic packaging often includes a cosmetic applicator suitable for dispensing the particular cosmetic contained in the package reservoir. In the case of a jar or vial, the applicator may be a wand with a handle at one end and an applicator head in the form of a brush, spatula or other applicator structure suitable for applying the particular cream, lotion, foundation or color cosmetic. Where the cosmetic container is a bottle or tube, the applicator may be in the form of an applicator tip secured directly to the neck of the bottle or tube, and may additionally be provided with an opening or openings, or a duct or ducts, adapted to expel or express cosmetic product from the container. The applicator head or applicator tip is used to apply and spread the applied product, and may additionally serve to massage the skin of the user in the application area. Applicator heads and applicator tips having a variety of shapes and configurations are known, a number of which are provided with means for heating. Heating the applicator head or applicator tip is said to facilitate treatment and efficacy by, for example, expanding skin pores.

[0003] Applicators used in combination with heat are disclosed for example in patents, such as, US Pat. No. 2298157 to Phillips or U.S. Publn. No. 2007/0206986 to Gueret.

[0004] It is also believed that cooling certain skin conditions can have a beneficial effect. For example, cooling the skin area below the eyes has been shown to reduce puffiness. In the past such cooling has been accomplished with, for example, chilled cucumber slices, prechilled treatment creams or lotions, or chilled washcloths or cleansing pads.

[0005] Prior art packages with applicator heads or applicator tips including glass or metal components have been used to provide some chilling effects to the package, but the effectiveness has generally been limited by the relatively small thermal mass of the components and by other limitations. Glass, for example, may shatter when dropped. Some types of metal may oxidize which in turn may cause discoloration of the cosmetic product. Both metal and glass present challenges with respect to cost effective manufacture of complex shapes, structural and surface details.

GB2 449 141 A discloses a dispenser comprising a housing having a reservoir containing cosmetic product and a thermal storage tip coupled to the housing.

[0006] Accordingly there is a need for an applicator head or applicator tip that provides a relatively large thermal chilling effect without the limitations and disadvantages of the prior art.

SUMMARY OF THE INVENTION

[0007] The present invention is a molded-ceramic applicator head or applicator tip designed to provide a relatively larger product-chilling effect to both the dose of cosmetic applied and to the user's skin in the application area when applying creams, lotions, treatment products, etc. The purpose of the invention is to provide an application device which will deliver the creams, lotions, treatment products, etc. such that the temperature of the product being delivered is lower than the temperature of the skin, and to provide a means of lowering the temperature of the skin by virtue of the thermal absorption capacity of the applicator head or tip, and to provide a vehicle by which formulations may be activated or enhanced by specific compounds in the ceramic material from which the applicator tip is comprised.

DESCRIPTION OF THE DRAWINGS

[0008]

FIG. 1 is a cross-sectional view of an applicator tip of the present invention.

FIG. 2 is an elevation view of the embodiment of the applicator tip shown in FIG. 1.

FIG. 3 is a perspective view of the embodiment of the applicator tip shown in FIGS. 1 and 2.

FIG. 4 is a cross-sectional and perspective view of the embodiment of the applicator tip shown in FIGS. 1-3.

DETAILED DESCRIPTION OF THE INVENTION

[0009] A cosmetic applicator tip of the present invention for applying a quantity of cosmetic product to an application area on the skin of a user is shown generally in FIGS. 1-4 designated by reference number 2. The terms "applicator tip" and "applicator head" are used interchangeably throughout this application to mean any structure or device provided for use in connection with a cosmetic product and that includes a surface adapted and intended to facilitate the loading, dispensing, transport and application of cosmetic product drawn from the product reservoir and applied to the application area on a user. The applicator tip 2 may take the form of an applicator structure on an applicator device, such as, for example, a tube end dispenser 16 securely mounted in the neck 14 of a tube container 10 that defines a cosmetic product reservoir 12 (as shown in FIG. 1). Alternatively, the applicator tip may take the form of a roller ball (not

shown - e.g., like a roll-on deodorant applicator) secured in the neck of a tube or bottle container. As yet another alternative, the applicator tip may take the form of a spatula, spreader, spoon, etc., on a wand or handle (not shown).

[0010] The applicator tip 2 is intended for use with a cosmetic product P (FIG. 1) that is capable of conducting heat. The applicator tip 2 comprises a body 6 made of a ceramic material. At least one applicator surface 8 is provided on the body 6. In the embodiment shown, a product delivery orifice 20 is provided in the applicator surface 8. An internal product delivery passage 18 in the body 6 provides fluid communication between the reservoir 12 and the orifice 20 to permit product P to flow or be expelled from the reservoir 12 through the orifice 20 to the applicator surface 8. The applicator surface 8 is adapted to receive from the reservoir 12 a pre-determined quantity 4 (represented schematically in broken lines) of cosmetic product P. The applicator tip 2, and in particular, the applicator surface 8, are also adapted to apply the quantity 4 of cosmetic product P to an application area on a user's skin, such as, for example, the puffy area of skin under a user's eye. The pre-determined quantity 4 can be approximately equal to a pre-selected, relatively uniform thickness of product P spread over the total area of the applicator surface 8. The quantity 4 of cosmetic product P has a thermal capacity (thermal capacity is also known as a heat capacity). The application area on the user's skin also has a thermal capacity. For the purposes of this invention, the combined thermal capacity of the quantity 4 of cosmetic and the thermal capacity of the application area is defined as the "first thermal capacity".

[0011] The body 6 is provided in a relatively large mass and made of a material sufficient to act as a thermal sink or a heat sink relative to the first thermal capacity of the quantity 4 of cosmetic product P and application area on the user's skin. As shown in the cross-sectional view in FIG. 1, the body 6 is formed from a relatively massive amount of material beneath the applicator surface 8 and about the orifice 20 and passage 18. This relatively massive amount of material and the type of material provides to the body 6 a second thermal capacity that is substantially greater than the first thermal capacity. Because the second thermal capacity of the body 6 is greater than the first thermal capacity of the quantity 4 of cosmetic product and application area on the user's skin, and because the applicator tip 2 will generally be at temperature close to an ambient air temperature, thermal energy in the form of heat will be drawn from the higher temperature of the user's skin to the applicator tip either through the quantity 4 of cosmetic product P or through direct contact of the applicator tip 2 to the user's skin. In other words, the second thermal capacity of the body 6 draws thermal energy in the form of heat from the first thermal capacity of the quantity of cosmetic product 4 and the application area on the user's skin such that a chilling sensation or effect is provided to the skin of the user. This chilling sensation or effect is believed to reduce, for example, the puffiness associated with the skin area below the eye. To further enhance the chilling effect and increase the heat drawing capacity of the applicator tip 2, prior to use, the applicator tip 2 can be chilled by, for example, refrigerating the package or dipping the applicator tip 2 into cool water or other liquid.

[0012] The cosmetic applicator tip 2 may be provided with means for attaching the body to a wand (not shown) or a package. For example, in FIG. 1, the package illustrated is a tube container 10 with a neck 12. The neck 12 includes external threads 22 for attaching a closure cap (not shown) over the applicator tip 2. The tip 2 has an upper portion 24 below which is a reduced diameter portion 26 defined between an upper annular shoulder 28 and lower annular shoulder 30. A reduced diameter portion 32 of neck 14 of tube container 10 is received in press fit in the reduced diameter portion 26 of the applicator 2 between the upper annular shoulder 28 and the lower annular shoulder 30. Other means for attaching the body to a wand or package may be provided, such as, for example, threaded attachment, bayonet attachment, rod-in-bore, bonded, welded, glued, interference or friction fit, etc.

[0013] The ratio of the first thermal capacity of the quantity of cosmetic product and the application area of the user's skin to the second thermal capacity of the applicator tip is in the range of at least 1:2, but preferably a much higher ratio, such as, for example 1:5 or 1:10 or 1:20 or greater. The greater the ratio, the more quickly the chilling effect will be felt and the effect will be felt by the user for a longer period of time.

[0014] The applicator tip 2 is made from a ceramic material. Preferably, the ceramic material is made by a high-temperature, fired-ceramic process, e.g., sintered. The parts are formed for example, by injection molding (e.g. colloidal slurry), thermoforming, dry pressing, gel casting, hot isostatic pressing, slip casting or other known molding methods. Alternatively, the parts may be made by jiggering or jolleying. The ceramic material preferably includes aluminum. More particularly, at least one component of the ceramic material is selected from aluminum oxide or aluminum nitride, or combinations thereof. Alternatively, the applicator tip 2 may be made at least in part from a silicon carbide.

[0015] Preferably, the ceramic material comprises concentrations ranging from 0.1 % to 99.9% of the mass of the body 6. More preferably, the ceramic material comprises concentrations ranging from 94% to 99.9% of the mass of the body.

[0016] The material of the body 6 may also include minerals to improve the efficacy and/or the beneficial effect of the cosmetic product applied to the application area. The minerals may include tourmaline, jade, calcite, agate, etc.

[0017] The invention is unique in several ways:

[0018] First, it utilizes a manufacturing technology that provides a variety of component surface options, component material options, and component geometry op-

tions unavailable in applicators designed for similar purposes that are manufactured of metal, glass, etc. Applicator tips made according to the invention are free of any oxidation or corrosion issues common to some metals, and are inherently more shock resistant than comparable parts manufactured of glass.

[0019] Second, ceramic material can be specifically designed to provide a thermal capacity with a thermal coefficient and heat-absorption profile optimal for any given formula being delivered, thereby enhancing the performance of the formula to suit a particular formula or treatment regimen. This cannot be achieved with comparable metal or glass components used for similar purposes.

[0020] Third, the ceramic materials disclosed above may be alloyed or impregnated with specific minerals or other compounds that provide enhanced performance of the cosmetic product being delivered by the applicator tip. The alloyed or impregnated minerals or compounds will tend to interact with the cosmetic product as it passes through or over the applicator tip. For example, the alloyed or impregnated minerals or compounds may gradually dissolve into the cosmetic product as it passes through or over the applicator tip. These minerals include, but are not limited to, tourmaline, jade, calcite, agate, etc.

[0021] Fourth, the materials previously used to provide a chilling effect in current applications of comparable designs (metal, glass, etc.) are difficult or impossible to mold with sufficiently-fine details, such as, small orifices or passages for product delivery. Glass or metal materials may require a secondary operation to form fine details such as a product delivery orifice or product delivery passage or duct, and due to manufacturing constraints the details are generally larger than desired. With respect to the orifice or passage, this may require, for example, lining the orifice or passage with a secondary material (e.g., plastic or rubber) which may not have ideal thermal capacity or transfer characteristics or cosmetic product compatibility. Thus, product is delivered, for example, at a less than optimal temperature, i.e., not sufficiently chilled.

[0022] However, by making the same component according to the invention in a ceramic, the orifices and/or passages can be made as small in diameter as desired with no secondary operations, which provides fine-diameter orifices and/or passages with full-diameter contact with the thermal capacity of the ceramic, thereby increasing the chilling effect and delivering product which may be cooler than the product being stored in the container.

[0023] The advantage of this invention from a chemistry perspective is that it provides means of altering the applicator's composition and thermal capacity characteristics relative to a specific product delivery need or product-chemistry requirement. Comparable applicators comprised of metals and glass cannot be manipulated in this fashion, and subsequently the formulas they deliver must be designed around the characteristics of the applicator tip instead of the reverse, which is more desirable.

[0024] The advantage of the invention from a physical and manufacturing perspective is that the technology available to form ceramic parts provides a means to produce geometries, surface textures, and component details that are either unavailable in comparable metal and glass components, or require significant and complicated secondary operations to achieve the same effect.

[0025] The technology can be used to manufacture applicators and application system components for the delivery of creams, lotions, skin treatment products, hair treatment products, color cosmetics, etc. It can also be used to manufacture tools and devices for the manipulation and doctoring of creams, lotions, skin treatment products, color cosmetics, etc. once they have been applied.

[0026] The applicator tip is comprised of a ceramic material comprised of aluminum oxide, and/or aluminum nitride, and/or silicon carbide, possibly containing one or a combination of natural or man-made chemicals or minerals. It would be designed in a geometry which lends itself to a specific purpose relative to the formula being delivered (examples include an under-eye applicator designed for an under-eye formula; a hair-treatment applicator designed for a hair treatment formula, etc). The shape of the applicator is also designed in such a way to allow easy assembly to a suitable package or wand/handle without the need for additional components to retain it, e.g., to the package. This is facilitated by virtue of the processes inherent to the manufacture of ceramic materials. Such details are difficult or impossible to manufacture with other materials generally used for the same purpose (metals, glass, etc.) without the need for extensive post-processing and finishing.

[0027] The orifice or orifices and/or passage or passages of the applicator tip through which the product flows can be designed in various size diameters and positional arrays, and the application surface itself can me molded with a variety of textures and details to enhance the effectiveness of the delivery and the performance of the application. Such details are difficult or impossible to manufacture with other materials generally used for the same purpose (metals, glass, etc.) without the need for extensive post-processing and finishing.

[0028] The applicator would be made of high-temperature, fired-ceramic material (aluminum nitride, aluminum oxide, silicon carbide, etc.), with concentrations ranging from 0.1% to 99.9%, but preferably from 94% to 99.9% aluminum nitride, aluminum oxide, silicon carbide, etc.

[0029] Further, a variety of compounds, specifically natural and/or man-made minerals, may be added to the ceramic mixture and trapped or bonded within the structure of the ceramic material during the manufacturing process. These compounds and/or minerals enhance the efficacy of the product being delivered and/or the beneficial effect of the ceramic component in delivery and application of the product being delivered. The compounds

include, but are not limited to, tourmaline, jade, calcite and agate.

[0030] In use, formula being delivered would flow through the passage and orifice and around at least part of the application surface of the tip, contacting the ceramic surfaces which would deliver the product as cold as possible relative to the thermal mass of the device by providing an optimum contact-surface for maximum thermal-exchange between both the formula and the applicator and the skin and the applicator concurrently. The conical configuration of passage 18 facilitates such thermal transfer by providing greater surface area for cosmetic product to contact as it passes through the applicator tip 2. Thus, the passage has an inwardly directed surface 34 through which the product is delivered which has an included draft angle A of no less than 1 degree, and no more than 45 degrees, which is believed to provide an optimum balance of thermal-absorption (heat absorption), product flow, and manufacturing requirements.

[0031] It is understood that various modifications and changes in the specific form and construction of the various parts can be made without departing from the scope of the following claims.

Claims

1. A cosmetic applicator tip (2) for applying a quantity of cosmetic product to an application area on the skin of a user, the cosmetic product capable of conducting heat, the quantity of cosmetic product and the application area combined having a first thermal capacity, the tip (2) comprising:

   a body (6) made of a ceramic material and in a mass sufficient to provide a second thermal capacity substantially greater than the first thermal capacity;
   at least one surface (8) on the body (6) adapted to receive the quantity of cosmetic product and apply it to the application area;
   wherein the body (6) draws heat from the quantity of cosmetic product and the application area such that a chilling effect is provided to the skin of the user;
   wherein the applicator tip (2) is adapted to be attached to a container (10) that defines a cosmetic product reservoir (12), the applicator tip (2) further comprising at least one product delivery orifice (20) in the applicator surface (8), and a product delivery passage (18) in the body between the delivery orifice (20) and the product reservoir (12), the product delivery passage (18) providing fluid communication from the product reservoir (12) to the delivery orifice (20),
   the product delivery passage (18) has a conical configuration with an inwardly directed surface (34) through which product is delivered, the surface (34) defining an included draft angle (A) of no less than 1 degree, and no more than 45 degrees.

2. The cosmetic applicator tip of claim 1 wherein the ratio of the first thermal capacity to the second thermal capacity is at least 1:2.

3. The cosmetic applicator tip of claim 1 wherein at least part of the ceramic material is aluminum.

4. The cosmetic applicator tip of claim 3 wherein the aluminum is selected from aluminum oxide and aluminum nitride or combinations thereof.

5. The cosmetic applicator tip of claim 1 wherein at least part of the ceramic material is silicon carbide.

6. The cosmetic applicator tip of claim 1 wherein the ceramic material comprises concentrations ranging from 0.1% to 99.9% of the mass of the body.

7. The cosmetic applicator tip of claim 1 wherein the ceramic material comprises concentrations ranging from 94% to 99.9% of the mass of the body.

8. The cosmetic applicator tip of claim 1 wherein the body further comprises minerals.

9. The cosmetic applicator tip of claim 8 wherein the minerals are selected from at least one of tourmaline, jade, calcite and agate.

10. The cosmetic applicator tip of claim 1 wherein the ceramic material is made by a high-temperature, fired-ceramic process.

11. The cosmetic applicator tip of claim 1 wherein the body is a dispenser (16) adapted to be mounted in a neck of a container that defines a cosmetic product reservoir (12).

12. The cosmetic applicator tip of claim 11 wherein the dispenser is adapted to be mounted in the neck of a tube container.

Patentansprüche

1. Kosmetikapplikatorspitze (2) zum Auftragen einer Menge kosmetischen Produkts auf einen Auftragebereich auf der Haut eines Benutzers, wobei das kosmetische Produkt fähig ist, Wärme zu leiten, wobei die Menge des kosmetischen Produkts und der Auftragebereich kombiniert eine erste Wärmekapazität haben, wobei die Spitze (2) Folgendes umfasst:

   einen Körper (6), der aus einem keramischen

Material hergestellt ist, und in einer Masse, die ausreicht, um eine zweite Wärmekapazität bereitzustellen, die größer ist als die erste Wärmekapazität,
mindestens eine Oberfläche (8) auf dem Körper (6), die angepasst ist, um die Menge an kosmetischem Produkt zu erhalten und sie auf den Auftragebereich aufzutragen,
wobei der Körper (6) Wärme aus der Menge kosmetischen Produkts und dem Auftragebereich derart bezieht, dass eine kühlende Wirkung für die Haut des Benutzers bereitgestellt wird,
wobei die Applikatorspitze (2) angepasst ist, um an einem Behälter (10) befestigt zu sein, der einen Behälter (12) für kosmetisches Produkt definiert,
wobei die Applikatorspitze (2) ferner mindestens eine Produktausgabeöffnung (20) in der Applikatoroberfläche (8) umfasst, und
eine Produktausgabepassage (18) in dem Körper zwischen der Ausgabeöffnung (20) und dem Produktbehälter (12), wobei die Produktausgabepassage (18) fluidtechnische Verbindung von dem Produktbehälter (12) zu der Ausgabeöffnung (20) bereitstellt,
wobei die Produktausgabepassage (18) eine kegelförmige Konfiguration mit einer nach innen gerichteten Oberfläche (34) hat, durch welche Produkt geliefert wird, wobei die Oberfläche (34) einen enthaltenen Freiwinkel (A) von nicht weniger als 1 Grad und nicht mehr als 45 Grad definiert.

2. Kosmetikapplikatorspitze nach Anspruch 1, wobei das Verhältnis der ersten Wärmekapazität zu der zweiten Wärmekapazität mindestens 1:2 beträgt.

3. Kosmetikapplikatorspitze nach Anspruch 1, wobei mindestens ein Teil des keramischen Materials Aluminium ist.

4. Kosmetikapplikatorspitze nach Anspruch 3, wobei Aluminium aus Aluminiumoxid und Aluminiumnitrit oder Kombinationen davon ausgewählt ist.

5. Kosmetikapplikatorspitze nach Anspruch 1, wobei mindestens ein Teil des keramischen Materials Silikoncarbid ist.

6. Kosmetikapplikatorspitze nach Anspruch 1, wobei das keramische Material Konzentrationen in einem Bereich von 0,1 % bis 99,9 % der Masse des Körpers umfasst.

7. Kosmetikapplikatorspitze nach Anspruch 1, wobei das keramischen Material Konzentrationen von 94 % bis 99,9 % der Masse des Körpers umfasst.

8. Kosmetikapplikatorspitze nach Anspruch 1, wobei der Körper ferner Mineralstoffe umfasst.

9. Kosmetikapplikatorspitze nach Anspruch 8, wobei die Mineralstoffe aus mindestens Tourmalin, Jade, Kalzit und Achat ausgewählt sind.

10. Kosmetikapplikatorspitze nach Anspruch 1, wobei das keramische Material anhand eines Prozesses mit hoher Temperatur für gebrannte Keramik hergestellt wird.

11. Kosmetikapplikatorspitze nach Anspruch 1, wobei der Körper ein Verteiler (16) ist, der angepasst ist, um in einen Hals eines Behälters, der einen Behälter (12) für kosmetisches Produkt definiert, montiert zu werden.

12. Kosmetikapplikatorspitze nach Anspruch 11, wobei der Verteiler angepasst ist, um in den Hals eines Tubenbehälters montiert zu werden.

Revendications

1. Embout applicateur pour produit cosmétique (2) pour appliquer une quantité de produit cosmétique à une zone d'application sur la peau d'un utilisateur, le produit cosmétique étant capable de conduire de la chaleur, la combinaison de la quantité de produit cosmétique et de la zone d'application présentant une première capacité calorifique, l'embout (2) comprenant:

un corps (6) constitué d'un matériau céramique et présentant une masse suffisante pour fournir une deuxième capacité calorifique sensiblement supérieure à la première capacité calorifique;
au moins une surface (8) sur le corps (6) adaptée pour recevoir la quantité de produit cosmétique et à l'appliquer à la zone d'application;
dans lequel le corps (6) extrait la chaleur à partir de la quantité de produit cosmétique et de la zone d'application de telle sorte qu'un effet de refroidissement est fourni à la peau de l'utilisateur;
dans lequel l'embout applicateur (2) est adapté pour être fixé à un récipient (10) qui définit un réservoir de produit cosmétique (12), l'embout applicateur (2) comprenant en outre au moins un orifice de distribution de produit (20) dans la surface d'application (8), et un passage de distribution de produit (18) dans le corps entre l'orifice d'administration (20) et le réservoir de produit (12), le passage de distribution de produit (18) assurant une communication fluidique entre le réservoir de produit (12) et l'orifice d'ad-

ministration (20),
le passage de distribution de produit (18) présentant une configuration conique avec une surface dirigée vers l'intérieur (34) à travers laquelle le produit est délivré, la surface (34) définissant un angle inclus de dépouille (A) de pas moins de 1 degré, et pas plus de 45 degrés.

2. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel le rapport de la première capacité calorifique à la seconde capacité calorifique est d'au moins 1: 2.

3. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel au moins une partie de la matière céramique est de l'aluminium.

4. L'embout applicateur pour produit cosmétique selon la revendication 3, dans lequel l'aluminium est choisi parmi l'oxyde d'aluminium et le nitrure d'aluminium ou des combinaisons de ceux-ci.

5. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel au moins une partie de la matière céramique est du carbure de silicium.

6. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel le matériau céramique comprend des concentrations allant de 0,1% à 99,9% de la masse du corps.

7. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel le matériau céramique comprend des concentrations allant de 94% à 99,9% de la masse du corps.

8. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel le corps comprend en outre des minéraux.

9. L'embout applicateur pour produit cosmétique selon la revendication 8, dans lequel les minéraux sont sélectionnés parmi au moins un de tourmaline, jade, calcite et agate.

10. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel le matériau céramique est obtenu par un procédé de cuisson à haute température.

11. L'embout applicateur pour produit cosmétique selon la revendication 1, dans lequel le corps est un distributeur (16) adapté pour être monté dans un col d'un récipient qui définit un réservoir de produit cosmétique (12).

12. L'embout applicateur pour produit cosmétique selon la revendication 11, dans lequel le distributeur est adapté pour être monté dans le col d'un récipient de forme tubulaire.

FIG. 1

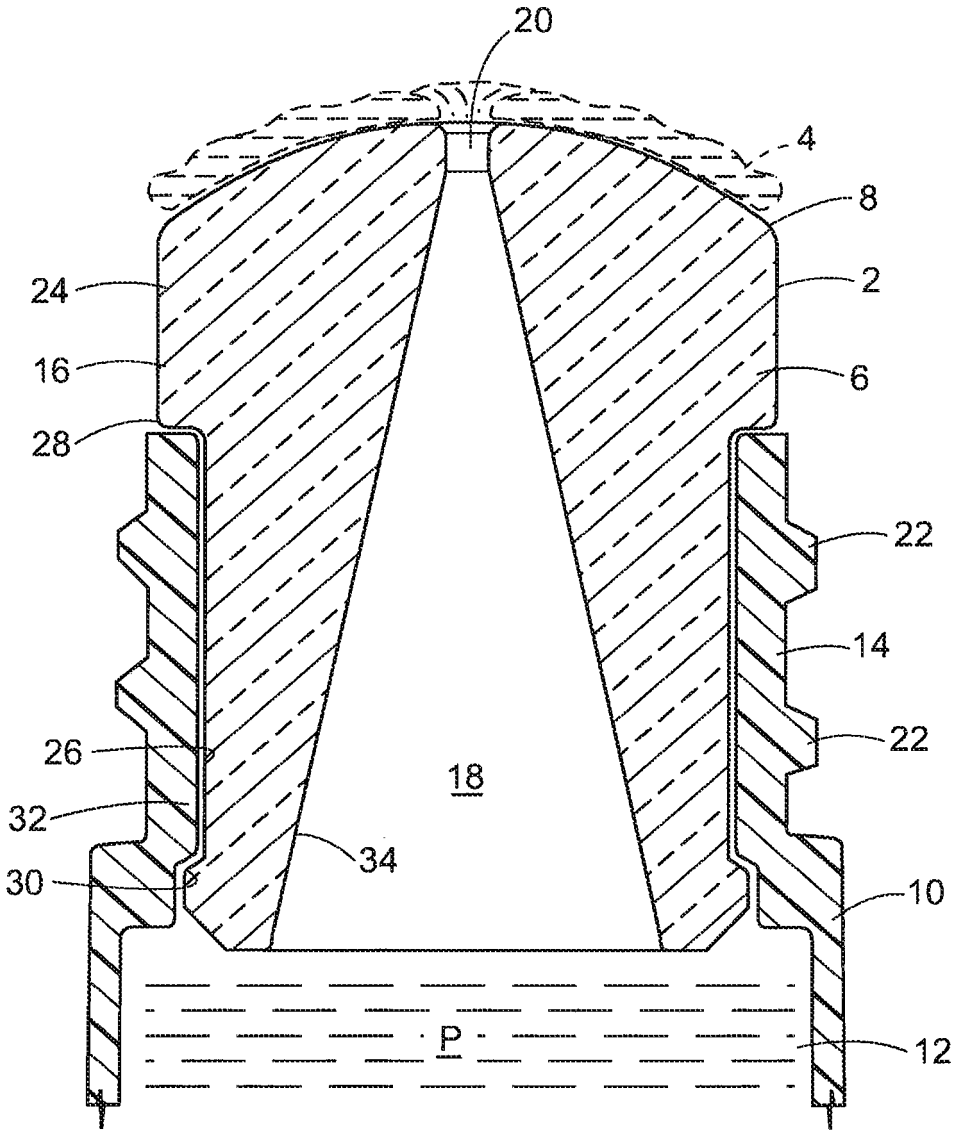


FIG. 2

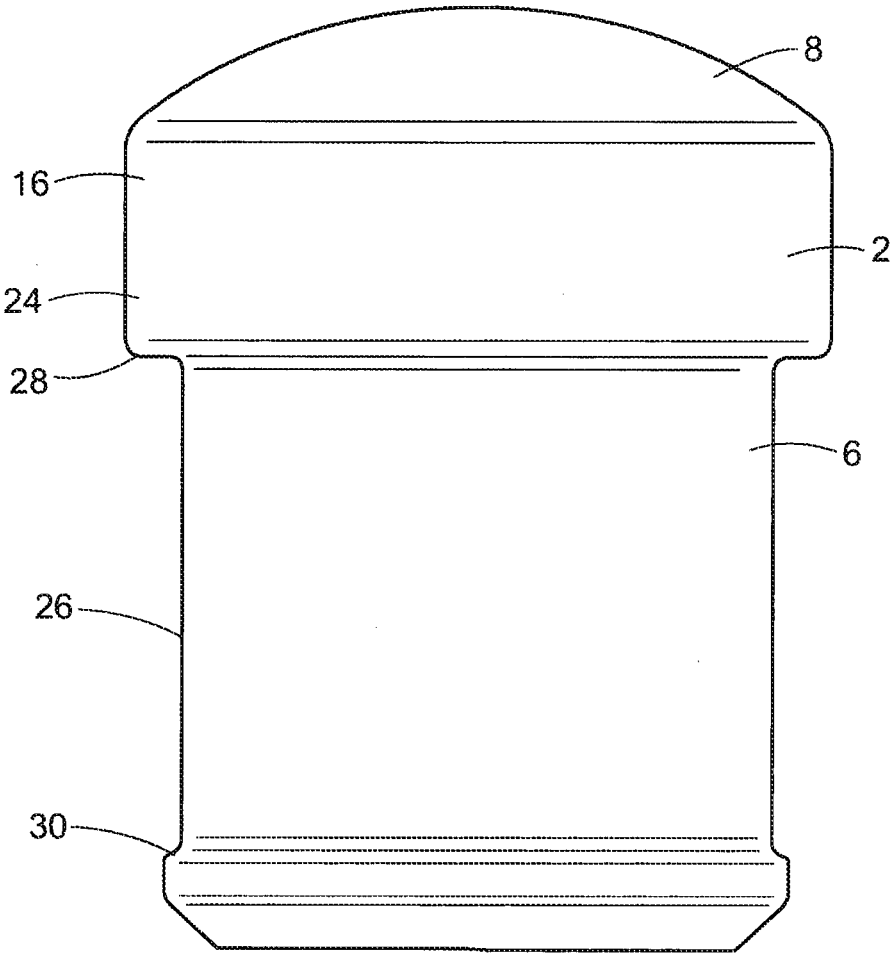


FIG. 3

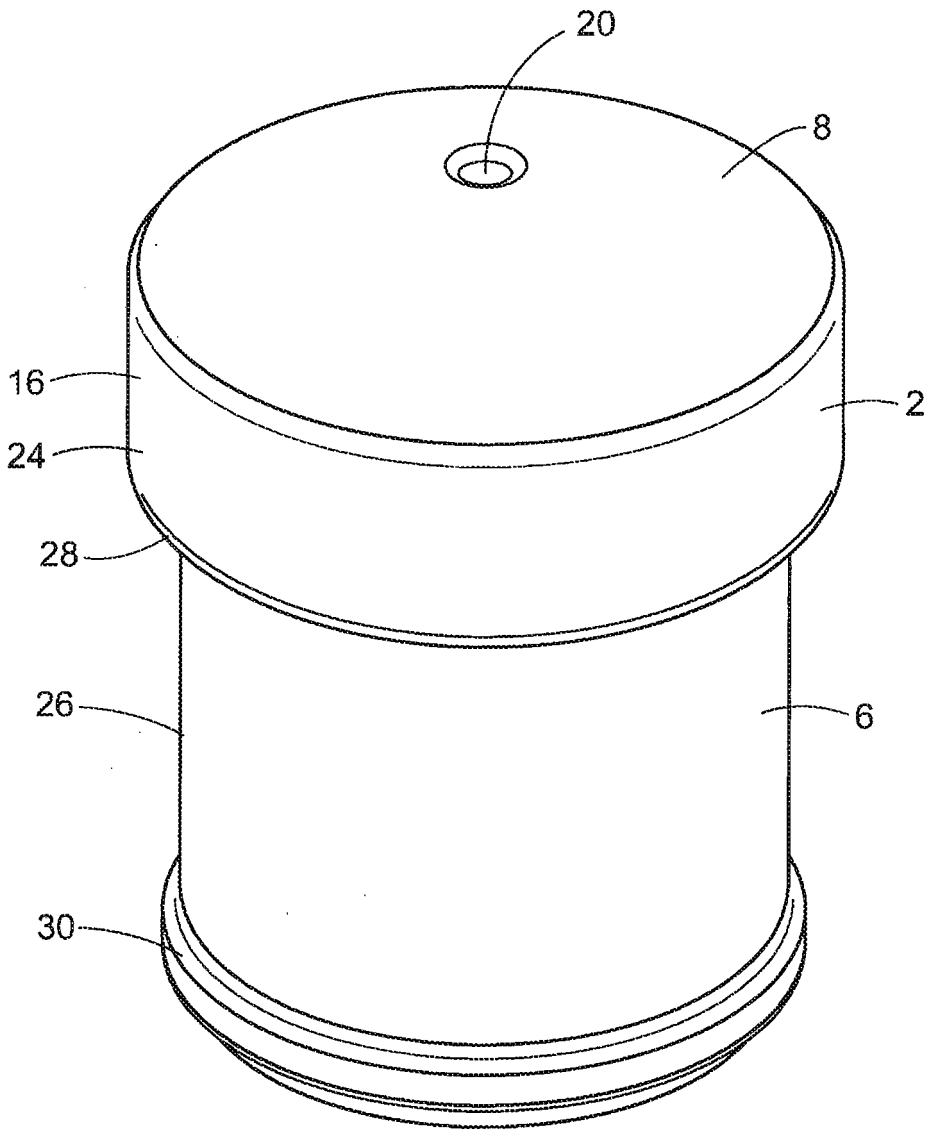
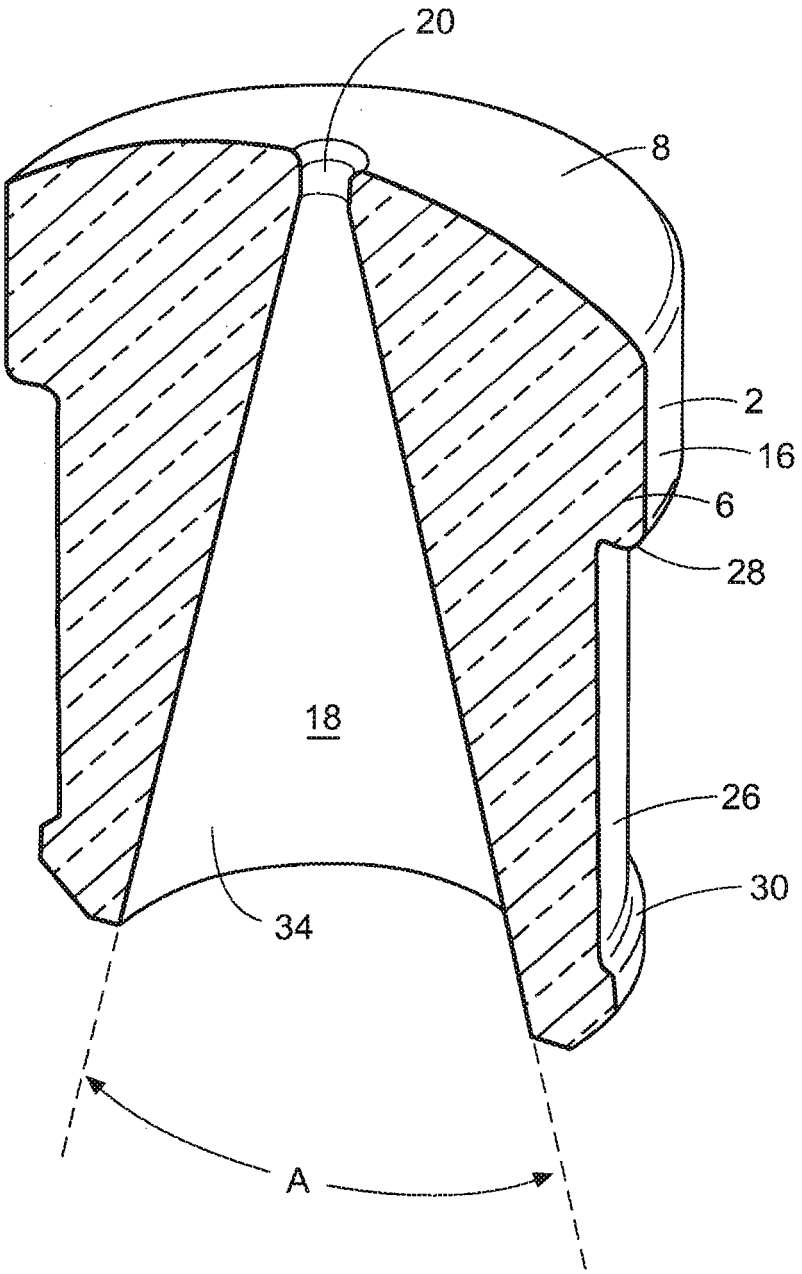


FIG. 4



REFERENCES CITED IN THE DESCRIPTION

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