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⑤④ **Applicator for creams and viscous liquids.**

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DE-A-3 009 587
GB-A-1 358 608

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Description

This invention relates to an applicator for creams and viscous liquids and more particularly to an applicator for cosmetic creams.

Many products, and particularly cosmetic products, take the form of creams or viscous liquids. Among such materials there may be mentioned skin creams, sun-shield lotions and especially deodorants and antiperspirants. Various types of applicators or dispensers have been proposed for such substances. Among these have been dispensers in which the cream is forced out of a tube having a perforated head by the pressure of a piston advanced inside the tube. The piston causes the fluid material to be forced through the perforations in the dispenser head and the material is applied by rubbing the head on the surface to be coated, the head thus serving as an applicator member.

One difficulty which has arisen with such dispensers is that after use fluid material remains lodged in the perforations of the head, or just below the head. If the dispenser is then subjected to an increase in temperature or possibly a decrease in atmospheric pressure, even to a relatively modest extent, the fluid will flow out of the perforated head. Often material as extruded will dry and cake, making it difficult to use the dispenser and presenting an unsightly appearance.

The present invention overcomes these disadvantages and provides a dispenser or applicator for viscous fluids or creams in which the contents may be advanced from a container through a perforated applicator member whence they can be applied to the surface as desired. When the application has been completed the device may be withdrawn from the surface and stored indefinitely through substantial changes in ambient temperature and pressure without undesired extrusion of the stored material.

GB—A—1358608 discloses cosmetic applications in which a piston-expelled fluent cosmetic preparation is forced through the pores of an applicator member in the form of a foam pad to impregnate the foam pad with the preparation. The pore size is said to be small enough to prevent dripping when impregnated but large enough to permit the preparation to be pressed through the pad during use.

In all the embodiments disclosed in GB—A—1358608, the foam pad expands outwardly under the influence of pressurised preparation and in one embodiment the initial position of the pad leaves a reservoir before the cosmetic material is urged into it. However, since the pad of this known applicator is made of foam the pores of which, when occluded, would prevent the pad from springing back, the teaching of this document does not give any hint to solve the problem stored in this application.

What constitutes an applicator according to this invention is set forth in the following claim

1, the classifying portion of which is drawn from the disclosure of GB—A—1358608.

An applicator in accordance with this invention is characterised in that the applicator member is a cap the central portion of which is provided with at least one orifice therein and is capable of springing back to its original shape upon release of the pressure to free said at least one orifice of cream or viscous fluid.

The invention will now be described with reference to the drawings, in which:

Fig. 1 is a view in vertical section of an applicator according to the invention, the right hand side showing a piston in starting position and the left hand side showing the piston fully advanced.

Fig. 2 is a detailed view in vertical section of the applicator member according to the invention, in its original shape.

Fig. 3 is a view in vertical section of the applicator member of Fig. 2 depressed by external pressure.

Referring to the drawings, an applicator according to the invention comprises a container 10 which is normally, but not necessarily, a cylindrical tube. The lower end of the container is closed by a plug 12 having a lug 13 which engages an inwardly turned flange 11 at the bottom of the container. The plug 12 may be provided with a collar 14, which may be knurled, if desired, and by means of which the plug 12 may be rotated within the container 10.

The outer surface of the plug 12 is threaded as at 15 and a hollow piston 16 is interposed between the plug 12 and the container 10. Its inner wall is threaded as at 17, these threads engaging the threads 15 of the plug 12.

At the right hand side of Fig. 1 the piston 16 is shown fully retracted and seated at the bottom of container 10, leaving a space 33 of variable volume above it, which space may be filled with the liquid or cream to be dispensed.

The inner wall of container 10 is provided with vertical guide means in the form of ribs 18 which engage vertical slots 19 in the wall of piston 16 and prevent the piston from rotating. Thus when plug 12 is rotated by means of collar 14 the piston 16 is moved upwardly, from the position shown on the right side of Fig. 1, ultimately reaching the position shown at the left hand side of Fig. 1.

At the top of the piston 16 is provided an annular collar 20 which fits closely against the inner surface of the container and slides on that surface as the piston moves upwardly, thus providing a seal for the liquid material in space 33.

The top of container 10 is split to provide an outer rim 21 which branches from a central wall 22 of the container. The outer rim 21 has an annular channel 23.

The upper end of container 10 is closed by an applicator member in the form of a cap 24 which is held in place by the engagement of an inner ring 25 in the annular channel 23 of the container rim 21. A vertical ring 26 extending

down from the under surface of cap 24 engages the outer surface of the central wall 22 of the container.

As shown more particularly in Fig. 2, the cap 24 has an outer section 27, which is relatively thick and an inner section 28 which is thin. At the center of the inner section there is provided an orifice 29. The cap 24 is made of a material which is strong and resilient so that if the inner section 28 is pressed it will bend inwardly toward the container 10, but when released will spring back to its original shape. For many purposes it will be desirable to have the cap 24 soft to the touch. Polypropylene and polyethylene will provide these properties.

Over the cap 24 there may be placed a cover 30. Cover 30 has an inner ring 31 which bears on cap 24. Cover 30 is sized to make a friction fit with the side of the cap 24 and the container 10, as at 32.

In operation, the cover 30 is removed and the collar 14 is rotated to move the piston 16 upwardly, forcing the cream or liquid material in the space 33 into the upper domelike part of cap 24, out the orifice 29 and onto the outer surface of the cap. The user then applies the liquid material to the surface to be coated. In doing so he presses the domed surface of the cap 24 against the surface to be coated, causing at least the inner section 28 of the cap 24 to be deformed inwardly as shown in Fig. 3. In this process, additional liquid material is squeezed from the top of the container through orifice 29.

When the application has been completed, the applicator is removed from the coated surface, relieving the pressure on the cap 24. The thin, resilient inner section 28 then springs back to its original shape, leaving an air space 34 at the top of the cap and freeing the orifice of liquid material. The presence of this air space 34 acts as a reservoir to receive liquid material caused to expand from the space 33 by changes in temperature or pressure and avoiding undesired extrusion of such material through orifice 29.

The materials used to make the applicator can be varied widely. For various reasons including texture, economy and chemical inertness polypropylene is preferred, though for some parts, for example, the cover 30, low density polyethylene is the substance of choice. Obviously more expensive materials such as nylon, polymethylmethacrylate, or other plastics, or various rubbers, may be employed, as may metals such as stainless steel.

Many variations are possible in the structure of the applicator. For example, a central threaded rod may be used to advance a piston to extrude the stored material in a fashion analogous to that shown in United States Patents Nos. 2,935,191 and 2,818,167. Alternatively, the container may be a simple squeeze bottle. Finally, although only a single orifice has been described it is obvious that multiple orifices may be used as may slots or openings of other shapes.

Claims

1. An applicator for a cream or viscous fluid comprising a container (10), means (14, 12, 16) for forcing cream or viscous fluid from said container and a resilient outwardly domed applicator member (24) through which cream or viscous fluid can pass outwardly from the container for application to a surface to be coated by a user of the applicator, the applicator member having a central portion which is deformable toward the interior of the container (10) under external pressure of the applicator member against the surface to expel cream or viscous fluid from said container, and which is capable of resuming its domed configuration upon release of said pressure thereby to leave an air space (33) below said central portion of the applicator member, characterised in that said applicator member is a cap the central portion of which is provided with at least one orifice (29) therein and is capable of springing back to its original shape upon release of the pressure to free said at least one orifice (29) of cream or viscous fluid.

2. The applicator claimed in claim 1, in which the means for forcing cream or viscous fluid from said container includes a piston (16) slidable within the container, characterised in that the piston (16) substantially contacts the cap (24) when the piston (16) is fully advanced into the container (10).

3. The applicator claimed in claim 2, characterised in that the piston (16) is advanced within the container by means of interengaging screw threads (15, 17).

4. The applicator claimed in claim 1, characterised in that the container (10) is cylindrical and is closed at its bottom end by a plug (14) rotatable within said container (10) and extending axially upwardly in said container (10), said plug (14) having a threaded outer surface (15), a hollow piston (16) is fitted over said plug (14) and extends between said plug (14) and said container (10), said piston (16) having internal threads (17) to engage the threads (15) on said plug (14), whereby rotation of said plug (14) causes said piston (16) to move axially in said container (10).

5. The applicator claimed in claim 4, characterised in that vertical guide means (18, 19) is provided between said piston (16) and said container (10) to prevent said piston (16) from turning relative to the container (10).

6. An applicator claimed in any preceding claim, characterised in that the domed cap (24) provides a central portion provided with at least one orifice (29) therein and a surrounding non-apertured portion, whereby in use of the applicator, cream or viscous fluid leaving the at least one orifice (29) in the central portion passes onto the surrounding non-apertured portion as the cap is pressed against the surface to be coated to spread cream or viscous fluid thereon.

7. The applicator claimed in any preceding claim, characterised in that the cap (24) is thinner in an inner central section (28) thereof than in its

peripheral outer section (27).

8. The applicator claimed in any preceding claim, characterised in that a cover (30) is removably provided to overlie the orifice(s) (29) in the cap (24).

Patentansprüche

1. Applikator für eine Creme oder zähflüssige Flüssigkeit mit einem Behälter (10), einem Mittel (14, 12, 16), um Creme oder zähflüssige Flüssigkeit aus jenem Behälter herauszupressen und einem elastischen, nach außen gewölbten Applikatorelement (24), durch das Creme oder zähflüssige Flüssigkeit aus dem Behälter nach außen treten kann, zur Anwendung auf einer Oberfläche, die von einem Verwender des Applikators bestrichen werden soll, wobei das Applikatorelement ein mittleres Teil aufweist, das unter äußerem Druck zum Inneren des Behälters (10) deformierbar ist, wenn das Applikatorelement zum Herausdrücken von Creme oder zähflüssiger Flüssigkeit aus jenem Behälter gegen die Oberfläche gedrückt wird, und das bei Druckentlastung seine gewölbte Ausführung wieder einnehmen kann, wodurch unter jenem mittleren Teil des Applikatorelements ein Luftraum (33) bleibt, dadurch gekennzeichnet, daß es sich bei jedem Applikatorelement um eine Kappe handelt, deren mittleres Teil mit mindestens einer Öffnung (29) versehen ist und bei Druckentlastung in ihre ursprüngliche Form zurückspringen kann, so daß jene mindestens eine Öffnung (29) frei von Creme oder zähflüssiger Flüssigkeit wird.

2. Applikator nach Anspruch 1, bei dem das Mittel, um Creme oder zähflüssige Flüssigkeit aus jenem Behälter herauszupressen einen Kolben (16) umfaßt, der im Behälter gleiten kann, dadurch gekennzeichnet, daß der Kolben (16) die Kappe (24) im wesentlichen berührt, wenn der Kolben (16) voll in den Behälter vorgeschoben wird.

3. Applikator nach Anspruch 2, dadurch gekennzeichnet, daß der Kolben (16) mittels ineinandergreifender Schraubengewinde (15, 17) im Behälter vorgeschoben wird.

4. Applikator nach Anspruch 1, dadurch gekennzeichnet, daß der Behälter (10) zylindrisch und an seinem unteren Ende mit einem in jedem Behälter (10) drehbaren Stopfen (14) verschlossen ist, der sich in jenem Behälter (10) axial nach oben erstreckt und eine mit einem Gewinde versehene äußere Oberfläche (15) aufweist, wobei über jenen Stopfen (14) ein hohler Kolben (16) angebracht ist, der sich zwischen jenem Stopfen (14) und jenem Behälter (10) erstreckt und zum Eingriff in das Gewinde (15) an jenem Stopfen (14) über ein Innengewinde (17) verfügt, wodurch die Drehung jenes Stopfens (14) bewirkt, daß sich jener Kolben (16) axial in jenem Behälter (10) bewegt.

5. Applikator nach Anspruch 4, dadurch gekennzeichnet, daß zwischen jenem Kolben (16) und jenem Behälter (10) ein vertikales Führungsmittel (18, 19) vorgesehen ist, um zu verhindern,

daß sich jener Kolben (16) in bezug auf den Behälter (10) dreht.

6. Applikator nach einem vorhergehenden Anspruch, dadurch gekennzeichnet, daß die gewölbte Kappe (24) ein mittleres Teil mit mindestens einer Öffnung (29) und darum herumliegend ein Teil ohne Öffnung aufweist, wodurch bei Verwendung des Applikators Creme oder zähflüssige Flüssigkeit, die aus der mindestens einen Öffnung (29) im mittleren Teil austritt, auf das darum herumliegende Teil ohne Öffnung übergeht, wenn die Kappe gegen die zu bestreichende Oberfläche gedrückt wird, um Creme oder zähflüssige Flüssigkeit darauf zu verteilen.

7. Applikator nach einem vorhergehenden Anspruch, dadurch gekennzeichnet, daß die Kappe (24) in ihrem inneren mittleren Teil (28) dünner ist als in ihrem äußeren Umfangsteil (27).

8. Applikator nach einem vorhergehenden Anspruch, dadurch gekennzeichnet, daß eine abnehmbare Abdeckung (30) vorgesehen ist, die über der (den) Öffnung(en) (29) in der Kappe (24) liegt.

Revendications

1. Appicateur pour une crème ou un fluide visqueux, comprenant un récipient (10), des moyens (14, 12, 16) pour chasser la crème ou le fluide visqueux hors dudit récipient et un organe applicateur (24) élastique arrondi en dôme vers l'extérieur à travers lequel la crème ou le fluide visqueux peut passer vers l'extérieur depuis le récipient pour son application sur une surface à recouvrir par un utilisateur de l'applicateur, l'organe applicateur présentant une portion centrale qui est déformable vers l'intérieur du récipient (10) sous l'effet d'une pression externe de l'organe applicateur contre la surface pour expulser la crème ou le fluide visqueux hors dudit récipient, et qui est capable de reprendre sa forme en dôme lors du relâchement de ladite pression laissant ainsi un espace d'air (33) sous ladite portion centrale de l'organe applicateur, caractérisé en ce que ledit organe applicateur est un capuchon dont la portion centrale est pourvue d'au moins un orifice (29) dans celle-ci et est capable de revenir à sa forme originale lors du relâchement de la pression afin de laisser ledit au moins un orifice (29) libre de crème ou de fluide visqueux.

2. Appicateur suivant la revendication 1, dans lequel les moyens pour chasser la crème ou le fluide visqueux hors dudit récipient comprennent un piston (16) coulissant à l'intérieur du récipient, caractérisé en ce que le piston (16) touche substantiellement le coussin (24) lorsque le piston (16) est complètement avancé dans le récipient (10).

3. Appicateur suivant la revendication 2, caractérisé en ce que le piston (16) est avancé à l'intérieur du récipient au moyen de filets de vis (15, 17) engagés l'un dans l'autre.

4. Appicateur suivant la revendication 1, caractérisé en ce que le récipient (10) est cylindri-

que et est fermé à son extrémité inférieure par un bouchon (14) tournant à l'intérieur dudit récipient (10) et s'étendant axialement vers le haut dans ledit récipient (10), ledit bouchon (14) présentant une surface extérieure (15) filetée, et en ce qu'un piston creux (16) est ajusté au-dessus dudit bouchon (14) et s'étend entre ledit bouchon (14) et ledit récipient (10), ledit piston (16) présentant un filetage intérieur (17) à engager sur le filetage (15) dudit bouchon (14), la rotation dudit bouchon (14) provoquant ainsi un mouvement axial dudit piston (16) dans ledit récipient (10).

5. Applicateur suivant la revendication 4, caractérisé en ce qu'il est prévu des moyens de guidage vertical (18, 19) entre ladite piston (16) et ledit récipient (10) pour empêcher ledit piston (16) de tourner par rapport au récipient (10).

6. Applicateur suivant l'une ou l'autre des revendications précédentes, caractérisé en ce que le capuchon (24) en forme de dôme présente une

portion centrale pourvue d'au moins un orifice (29) dans celle-ci et d'une portion sans ouverture qui l'entoure, disposition grâce à laquelle, pendant l'utilisation de l'applicateur, la crème ou le fluide visqueux quittant ledit au moins un orifice (29) dans la portion centrale s'écoule sur la portion sans ouverture qui l'entoure lorsque le capuchon est pressé contre la surface à recouvrir pour étendre sur celle-ci la crème ou le fluide visqueux.

7. Applicateur suivant l'une ou l'autre des revendications précédentes, caractérisé en ce que le capuchon (24) est plus mince dans une section centrale (28) intérieure de celui-ci que dans sa section périphérique extérieure (27).

8. Applicateur suivant l'une ou l'autre des revendications précédentes, caractérisé en ce qu'il est prévu un couvercle (30) amovible pour recouvrir l'orifice (les orifices) (29) existant dans le capuchon (24).

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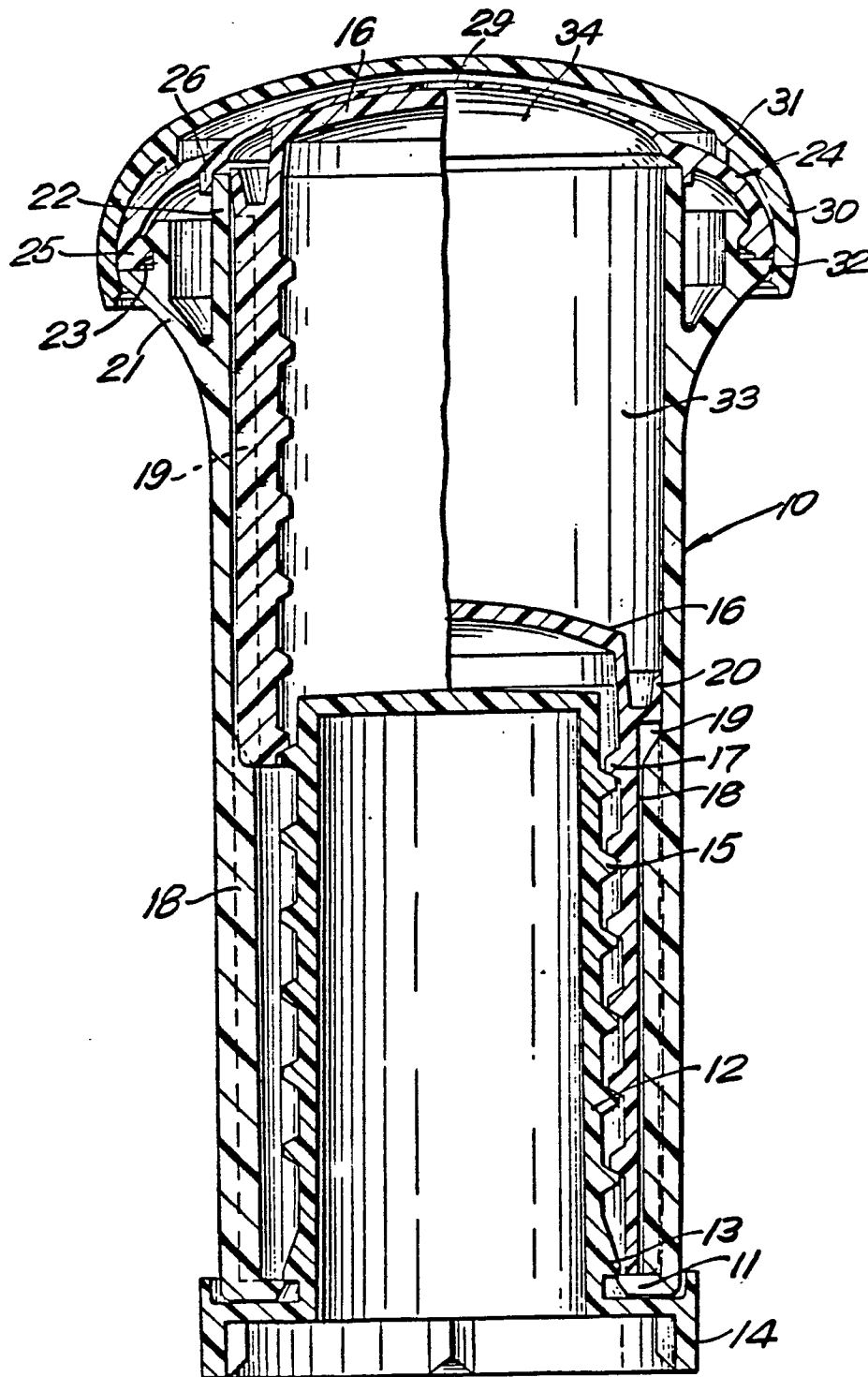


FIG. 1

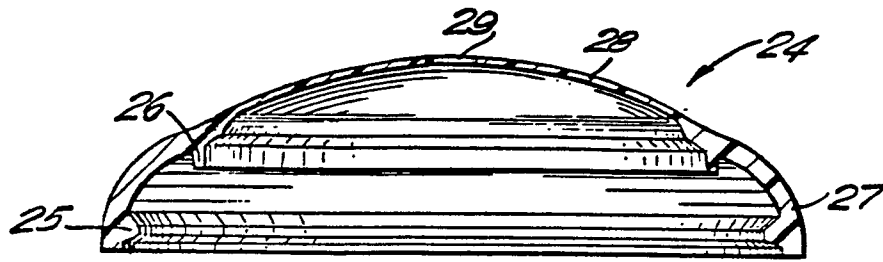


FIG. 2

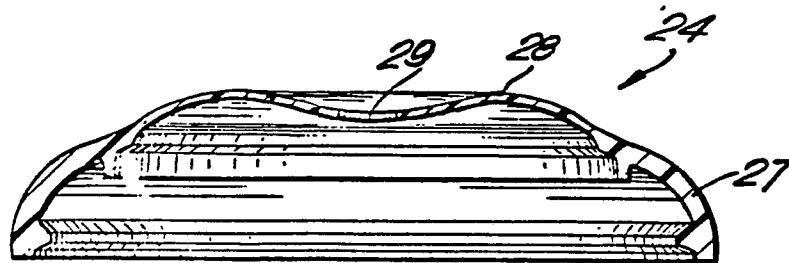


FIG. 3