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(54) Title: PACKAGING DEVICE FOR A COSMETIC PRODUCT

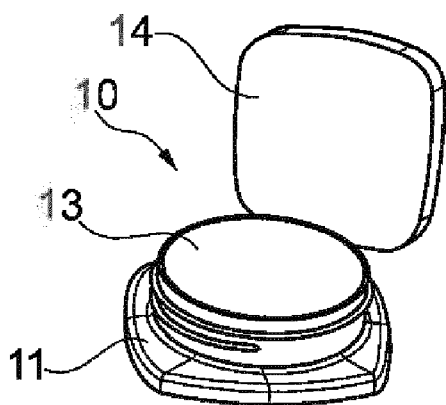


Fig. 2

(57) Abstract: The present invention relates to a packaging device for a cosmetic product, comprising: - a container (11) defining a housing, - a cover (14) tightly closing the container, - a pad (13) made of a non-compressible porous material arranged in the housing, soaked with a cosmetic composition, the pad having a generally flattened form and coming to bear at least partially in the bottom of the housing, having a top surface fed solely by capillarity, from which the composition can be taken with no action other than opening the container.

“Packaging device for a cosmetic product”

The present invention relates to the packaging devices for a cosmetic product.

5 The invention relates more particularly to the packaging devices for a liquid cosmetic product, such as a care oil.

“Cosmetic product” is used to denote any composition as defined in EC regulation N°1223/2009 of the European Parliament and Council dated 30 November 2009, concerning cosmetic product.

10 These days on the market there are packaging devices for a liquid make-up foundation, comprising a casing defining a housing in which is received a compressible porous material soaked with the make-up foundation. The porous material can be compressed to restore the composition with which it is soaked. Such a packaging device is unsuitable for a very fluid composition such as a care oil, which must be taken and applied only in small doses.

15 The application US 2006/0233594 discloses a packaging and application device comprising a container containing a liquid composition to be applied. This container is provided with an applicator dome made of a non-compressible porous material, such as a sintered plastic material. A compressible porous material is arranged under the dome, to feed it by capillarity. With the container being of elongate form, the height to be covered by the composition to rise within the porous material from the bottom of the container to the application surface is relatively high. To facilitate the movement of the composition, the container can be produced with a flexible wall, so as to be able, by crushing this wall, to create an internal pressurization promoting the rise of the composition. It can prove difficult to dose the quantity taken accurately and reproducibly
20 when a prior mechanical action has to be exerted on the container. Furthermore, that makes it necessary to produce the container in a flexible plastic material, which can prove restrictive aesthetically.

EP 1304057 discloses an application device for a cosmetic product comprising a casing in two articulated parts. That which forms the base of the casing defines a housing. The other, which forms the cover, bears an application member at least partially
30 made of a porous material, which can in a variant be pre-soaked with product and removably fixed in the bottom of an indentation formed by the cover. The application

member is fitted into the abovementioned housing of the base when the casing is closed. The casing does not contain the product in a free form, that is to say that all of the product is contained in the pores of the porous material of the application member and there is no excess quantity which would not be contained in this material. The result thereof is that the quantity of product taken in by the application member is limited. Furthermore, for obvious comfort reasons, the application member is preferentially produced in a compressible material, such as a foam of a polyester thermoplastic material. It is then preferable not to soak it to saturation, to avoid runs when it is pressed between two fingers or against the skin, which further reduces the quantity of product initially taken in.

In these variants, the application member is arranged in the neck of a container above a reservoir-forming compartment. To feed the application member, a specific action has to be exerted after having opened the container, such as an action on the wall of the container to reduce the internal volume of the compartment containing the product. There consequently remains a need to have a packaging suitable for a fluid composition such as a care oil, which is practical to use, notably on the go, allows product to be taken easily, without risk of runs, and which can be made aesthetically attractive.

The invention meets this need by virtue of a packaging device for a cosmetic composition, comprising:

- A container defining a housing,
- a cover tightly closing the container,
- a pad made of a non-compressible porous material arranged in the housing,

soaked with the cosmetic composition, the pad having a generally flattened form and coming to bear at least partially in the bottom of the housing, having a top surface fed solely by capillarity, from which the composition can be taken with no action other than opening the container.

By providing a taking surface produced from a non-compressible porous material, a liquid composition restoration capacity is obtained which does not substantially depend on the pressure exerted by the user. The restoration of the composition is performed by contact of the top surface of the pad with the finger or an applicator support, the top surface being able to be oriented upwards during this taking. This contact results in a break in capillarity in the pores retaining the composition and allows for a transfer of the composition to the finger or the applicator support.

By taking the composition by rubbing a finger on the surface of the pad or an applicator support, the quantity of composition retained and the risk of runs, are limited.

Furthermore, the container does not require any mobile part or deformable wall. It therefore remains simple, economical and easy to produce, and can notably be manufactured in a rigid material such as glass, a metal or an enamel ceramic. The wall of the container defining the housing can be rigid, notably be made of glass, of metal, or of rigid plastic material.

“Non-compressible material” describes a material which does not undergo any major deformation under the effect of the pressure applied in the taking. More specifically, it is a material which, unlike a sponge, a non-compressed foam or even a felt, is not filled with and does not discharge product by pumping (compression/relaxation of the material).

Examples of non-compressible materials more particularly suited to the invention that can be cited are those that exhibit a 25% compression resistance greater than 40 kPa, preferably greater than 50 kPa, even more preferably greater than 150 kPa, better than 300 kPa. The compression resistance is determined notably according to the standards DIN 53577 / ISO 3386.

Advantageously, the non-compressible porous material is chosen from the sintered materials, notably the sintered plastics, for example polyethylene, ceramics, for example tile and/or brick, thermo-compressed foams, for example polyethylene or polyurethane foams; pumice stone, wood.

Such materials, in particular the sintered materials and the plastics, are relatively easy to shape and are economical. Their porosity is also easy to control.

Preferably, the porous surface has an average pore size of more than 30 μ m. More preferably, the porous surface has an average pore size of less than 100 μ m. Such a pore size permits good retention of the product while permitting its release upon contact.

Advantageously the volume of pores of the non-compressible porous material is greater than 35% of the total volume thereof.

The cosmetic composition is preferably oily. In a variant, it is a cosmetic water, a microemulsion, a floral water or a perfume.

The viscosity of the composition can be between 1 mPa.s and 200 mPa.s, better between 1 and 100 mPa.s.

The viscosity is measured at $25^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ and atmospheric pressure using a Haake RS600 imposed stress rheometer from the company Thermo Rhéo equipped with a mobile of cone/flat geometry with a diameter of between 2 cm and 6 cm and an angle of between 1° and 2° , the choice of the mobile being a function of the viscosity to be measured (the more fluid the formula, the greater the diameter of the cone chosen and the smaller the angle).

The measurement is performed by imposing on the oil sample a logarithmic ramp of shear gradient $\dot{\epsilon}'$ ranging from 10^{-3}s^{-1} to 1000s^{-1} , for a duration of 5 minutes.

Then, the rheogram representing the trend of viscosity as a function of the shear gradient $\dot{\epsilon}'$ is plotted.

The value under consideration is that of the viscosity at 500s^{-1} , whether it is measured at this gradient or extrapolated by the plot if no experimental point corresponds to this value.

The composition can be coloured or not.

The cover can be arranged to be fixed by screwing, or otherwise, onto the container, notably be linked by a hinge thereto.

The play between the periphery of the soaked pad and the facing wall of the container can be negative, that is to say that the pad is compressed by the container. That can contribute to holding the pad in the container, without necessitating the provision of other retaining means.

The material of the pad can be chosen to inflate in the presence of the composition, preferably with a dimensional variation of the pad due to the composition which is such that the pad changes from a state in which the play with the container is positive or zero to a state in which the play is negative. That facilitates the fitting of the pad in the container, and it is then automatically held by the friction due to its expansion.

The pad can be of any form, notably of cylindrical form.

The pad can have a moulded form, which simplifies the manufacturing of the device.

The container can be without any compressible porous material in the housing, unlike the device described in the application US 2006/0233594 discussed above.

In effect, the flattened form of the pad and the fact that it is contact with the bottom of the container allows for a sufficient capillary rise of the composition within the pad, without requiring the creation of an overpressure to assist in this rise.

The container can have a flat bottom and the pad can have a flat bottom also.

5 The flattening factor of the pad can be greater than or equal to 3.

“Flattening factor” denotes the ratio between the greatest transverse dimension and the thickness of the pad. For example, in the case of a pad of cylindrical form of diameter D and of height H, the flattening factor is given by D/H.

10 The ratio V_c/V_v , where V_c is the total volume of composition contained in the container, and V_v the total volume of voids in the pad, is preferably between 0.9 and 1.2.

The top surface of the pad can be flat or upwardly concave. A concave form is advantageous in as much as it can facilitate the taking by finger and, since the height of the pad is less at the centre, this zone is more easily fed by capillary rise of the composition from the bottom of the container, notably when the pad soaks in the liquid composition present in excess in the bottom of the container, that is to say the pad dips in the composition. The porous material is then saturated with composition and is unable to retain all by capillarity in its pores. This excess quantity of composition, in freeform, that is to say not captive by the porous material, can act as a reserve making it possible to feed the porous material with composition as and when product is taken, and keep it soaked to saturation.

20 The volume of the pad (in the soaked state) can be less than or equal to 400 cm³, better 100 cm³, even better between 1 and 100 cm³, even 10 and 50 cm³, notably between 10 and 30 cm³.

25 Another subject of the invention, according to another of its aspects, is a cosmetic treatment method, comprising the step consisting in taking the composition from the surface of the pad of a device according to the invention, and in applying it to human keratinous substances, notably the skin.

30 The invention will be able to be better understood on reading the following detailed description of nonlimiting exemplary implementations thereof and on studying the attached drawing, in which:

- Figure 1 is a perspective view of an example of a packaging device according to the invention, cover closed,

- Figure 2 represents the device of Figure 1 after the removal of the cover,
- Figure 3 represents, alone, the container of the device of Figures 1 and 2,
- Figure 4 is a schematic axial cross section of the container and of the pad,
- Figure 5 represents the pad alone,
- 5 - Figures 6 to 8 are views similar to Figure 4 of variant embodiments of the container and of the pad, and
- Figure 9 is a plan view of a variant embodiment of the pad.

The packaging device 10 according to the invention represented in Figures 1 to 5 comprises a container 11, defining a housing 12 in which is received a pad 13 made of a
10 non-compressible porous material.

The device 10 comprises a cover 14 tightly closing the container 11, for example provided at its bottom with a seal that cannot be seen, that is applied to the top end 15 of the tubular wall 19 of the container when it is in place thereon.

In the example considered, the cover 14 is fixed by screwing onto the container
15 11 but there is no departure from the scope of the present invention when the cover 14 is fixed differently to the container, for example by snap-fitting, friction or pivoting using a hinge.

In the example considered, the pad 13 has a cylindrical form of revolution about the axis X, with a diameter D and a height H. The diameter d of the housing 12 is
20 preferably less than or equal to that of the pad 13 soaked with the cosmetic composition. Before soaking, the pad 13 preferably has a diameter which is less than or equal to the diameter d , such that the fitting of the pad 13 is facilitated. Thus, to manufacture the device 10, it is possible to provide the container 11 with the pad 13 in the non-soaked state, then proceed to soak the pad 13 with the cosmetic composition. Once soaked, the pad 13 tends
25 to increase in volume, which can be accompanied by an increase in diameter and a tightening of the pad in the housing 12, which contributes to the holding thereof. The height H of the pad can be less than or equal to the height L of the housing 12, as illustrated in Figure 4.

The top surface 16 of the pad 13 can be flat and at right angles to the axis X, as
30 illustrated in Figure 4. The bottom face 17 of the pad 13 can also be flat and parallel to the top face 16.

The container 11 can have a bottom wall 18 which defines the bottom of the housing 12, and which is flat and at right angles to the axis X.

In the example illustrated in Figure 4, the pad 13 comes into contact with the bottom of the housing 12 by all of its bottom face 17.

5 Figure 6 shows a variant embodiment of the container 11 and of the pad 13. In this variant, the pad 13 has a top face 16 which is upwardly concave, that is to say away from the bottom wall 18 of the container 11.

 The height of the pad 13, at its periphery, can correspond substantially to that of the tubular wall 19 of the container laterally delimiting the housing 12. A concave form
10 can facilitate the taking of the composition with which the pad 13 is soaked. Furthermore, in the presence of an excess of composition in the bottom of the housing 12, the latter can more easily diffuse to the surface of the pad 13 at the centre thereof, given the lesser height of the pad, than at its periphery. That reduces the risk of drying of the pad 13 and favours the presence of composition at the centre of the pad, where it is easier to take with the
15 finger. As and when product is taken, the porous material can remain soaked to saturation until the quantity of composition becomes inadequate to continue to soak to saturation. In this case, the pad ceases to be dipped in the liquid composition, since the latter is entirely captured by capillarity by the porous material.

 Figure 7 shows a variant embodiment in which the container 11 has a neck 20
20 which is narrower than the housing 12 receiving the pad 13. The neck 20 can thus contribute to the retaining of the pad 13, the latter being for example force fitted into the container or being put in place therein in the non-soaked state, with a smaller outer diameter than after soaking with the composition and less than the internal diameter of the neck 20. It is possible to choose the dimensions of the pad 13 and of the container 11 such
25 that the increase in the diameter of the pad 13 after soaking with the composition is sufficient for the outside diameter of the pad to become greater than the internal diameter of the neck 20, which then prevents the pad 13 from escaping.

 Figure 7 also illustrates the possibility of producing the pad 13 with reliefs, for example on its bottom face. It can notably be seen that it is possible to produce, on the pad
30 13, on the bottom side, feet 21 of height h , which form between them cavities 22 in which the composition can be contained in the free state. Preferably, the height h of the feet

remains much less than the total height H of the pad 13. In particular, $h < H/2$ and, preferably, $h < H/3$.

Figure 8 shows a variant embodiment in which the cover 14 is linked to the container 11 by an articulation 25, for example in the form of a film hinge. This figure also illustrates the possibility of providing the container 11 with a seal 26 in the top part, against which the cover 14 is applied once closed.

It is possible to produce the pad 13 with, on its bottom face, striations 27, as illustrated in Figure 8.

When the pad 13 has a circular outline, as in Figure 2 for example, the diameter of the pad 13 is for example between 20 and 80 mm, and preferably between 30 and 60 mm.

It is possible to produce the pad 13 with, seen from the front, an outline other than circular, for example a polygonal or elliptical outline.

By way of example, a pad having an outline in the form of a square with rounded corners is illustrated in Figure 9. In this case, the length of a side of the pad is for example between 20 and 80 mm and preferably between 30 and 60 mm.

The invention is not limited to the examples which have just been given.

For example, the container can be produced with several housings, each to receive a pad, and soak the latter with different cosmetic compositions, for example intended to treat different areas of the body or of the face, or having different colours.

CLAIMS

1. Packaging device for a liquid cosmetic composition, comprising:

- 5 - A container (11) defining a housing (12) containing the cosmetic composition,
- A cover (14) tightly closing the container,
- A pad (13) made of a non-compressible porous material arranged in the housing, soaked to saturation by the cosmetic composition, the latter being also present in
- 10 free form in the housing, the pad having a generally flattened form and coming to bear at least partially in the bottom of the housing, having a top surface (16) fed solely by capillarity, from which the composition can be taken without any action other than the opening of the container.

2. Device according to Claim 1, the cosmetic composition being oily.

- 15 3. Device according to Claim 2, the viscosity of the composition being between 1 mPa.s and 200 mPa.s, better between 1 and 100 mPa.s.

4. Device according to any one of the preceding claims, the composition being coloured.

5. Device according to any one of the preceding claims, the material of the pad
- 20 (13) being chosen from sintered materials, notably the sintered plastics, preferably sintered polyethylene, ceramics, thermo-compressed foams, pumice stone, wood.

6. Device according to any one of the preceding claims, the average pore size of the porous material being less than or equal to 100 μm .

7. Device according to any one of the preceding claims, the average pore size
- 25 of the porous material being greater than or equal to 30 microns.

8. Device according to any one of the preceding claims, the cover (14) being arranged to be fastened by screwing onto the container or being linked by a hinge to the container.

9. Device according to any one of the preceding claims, the play between the
- 30 periphery of the soaked pad (13) and the facing wall (19) of the container being negative.

10. Device according to any one of the preceding claims, the material of the pad (13) being chosen to inflate in the presence of the composition, preferably with a

dimensional variation of the pad due to the composition which is such that the pad changes from a state in which the play with the container is positive or zero to a state in which the play is negative.

11. Device according to any one of the preceding claims, the pad having a
5 cylindrical form.

12. Device according to any one of the preceding claims, the pad having a moulded form.

13. Device according to any one of the preceding claims, the container having no compressible porous material in the housing (12).

10 14. Device according to any one of the preceding claims, the container (11) having a flat bottom and the pad also having a flat bottom.

15. Device according to any one of the preceding claims, the flattening factor of the pad being greater than or equal to 3.

15 16. Device according to any one of the preceding claims, the ratio V_c/V_v , where V_c is the total volume of composition contained in the container, and V_v the total volume of voids in the pad, being between 0.9 and 1.2.

17. Device according to any one of the preceding claims, the top surface (16) of the pad being flat or upward concave.

20 18. Device according to any one of the preceding claims, the wall (19) of the container defining the housing (12) being rigid, notably made of glass, metal, or of rigid plastic material.

25 19. Device according to any one of the preceding claims, the volume of the pad (13) in the soaked state being less than or equal to 400 cm^3 , better being less than or equal to 100 cm^3 , even better lying between 1 and 100 cm^3 , even between 10 and 50 cm^3 , notably between 10 and 30 cm^3 .

20. Cosmetic treatment method, comprising taking the composition from the surface of the pad (13) of a device according to any one of the preceding claims, and applying it to human keratinous substances, notably the skin.

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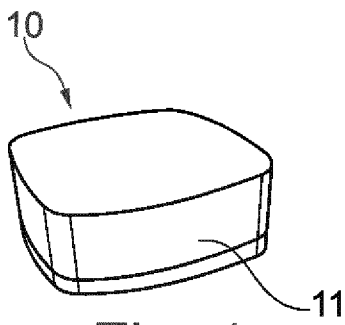


Fig. 1

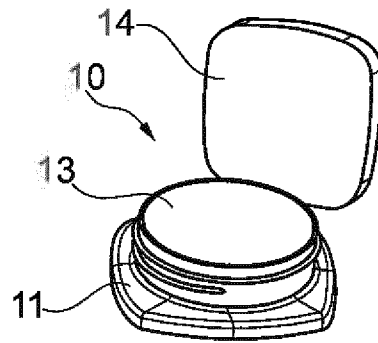


Fig. 2

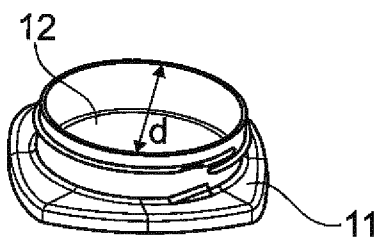


Fig. 3

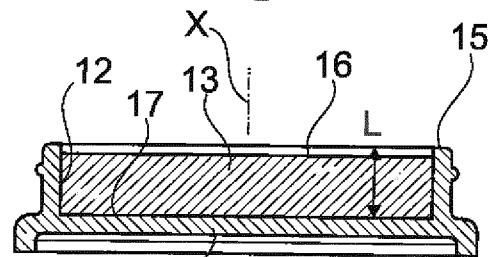


Fig. 4

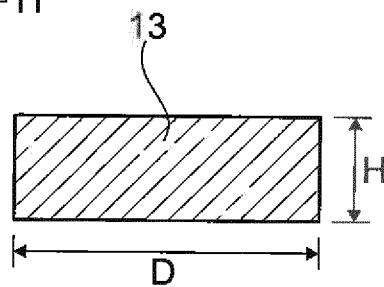


Fig. 5

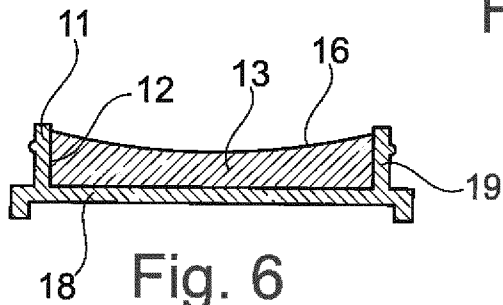


Fig. 6

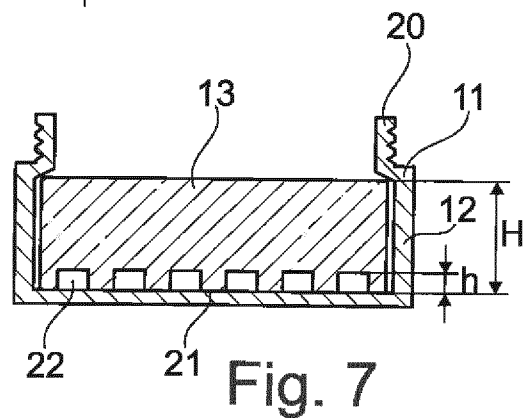


Fig. 7

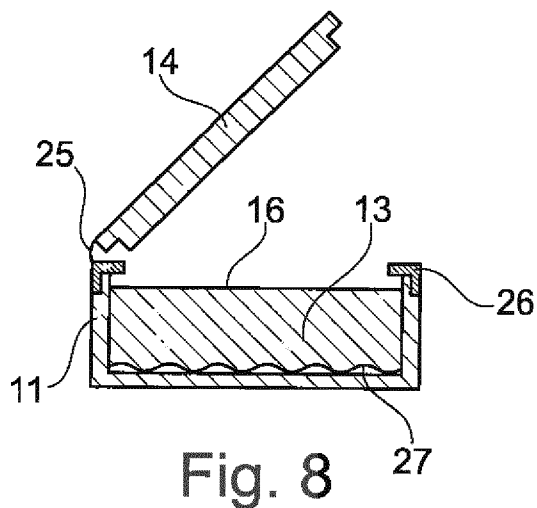


Fig. 8

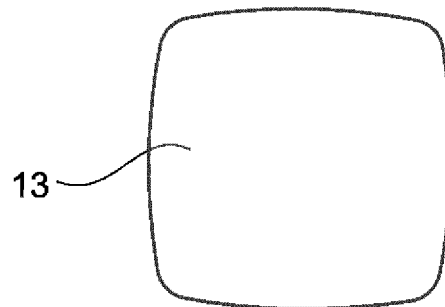


Fig. 9

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/081795

A. CLASSIFICATION OF SUBJECT MATTER
INV. A45D34/00
ADD.

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)
A45D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 1 304 057 A2 (OREAL [FR]) 23 April 2003 (2003-04-23) the whole document	1,20
A	US 2009/180826 A1 (GUAY GORDON GERALD [US]) 16 July 2009 (2009-07-16) the whole document	1,20



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"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

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"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

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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