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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
13 June 2019 (13.06.2019)

WIPO | PCT

(10) International Publication Number
WO 2019/110474 A1

(51) International Patent Classification:
A45D 33/34 (2006.01)

(21) International Application Number:
PCT/EP2018/083285

(22) International Filing Date:
03 December 2018 (03.12.2018)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
1761839 08 December 2017 (08.12.2017) FR

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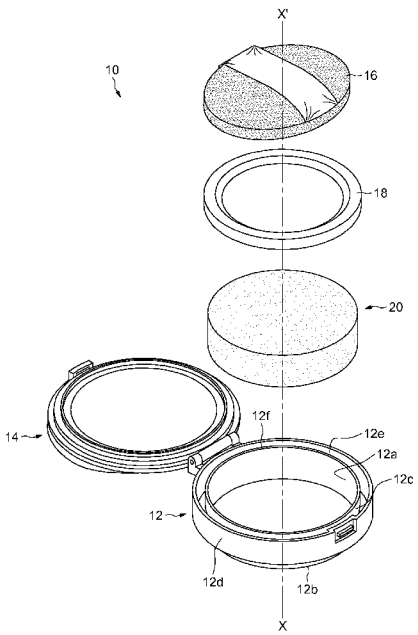
(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BN, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IR, IS, JO, JP, KE, KG, KH, KN, KP, KR, KW, KZ, LA, LC, LK, LR, LS, 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, SA, 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.

(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, ST, 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, KM, ML, MR, NE, SN, TD, TG).

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

(54) Title: MEMBER FOR RETAINING AND DISPENSING A PRODUCT, IN PARTICULAR A COSMETIC PRODUCT, IN THE FORM OF A POWDER, AND PRODUCT PACKAGING AND DISPENSING ASSEMBLY CONTAINING SAID MEMBER

FIG.1



(57) Abstract: Member (20) for retaining and dispensing a product, in particular a cosmetic product, in the form of a powder, comprising an elastically deformable foam made of an open-pore crosslinked polymer material configured to retain the powder within cells and release said powder when the foam is subjected to an external compressive stress.

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Member for retaining and dispensing a product, in particular a cosmetic product, in the form of a powder, and product packaging and dispensing assembly containing said member

The present invention relates to the field of packaging and dispensing a cosmetic product.

The term "cosmetic product" is understood, notably within the meaning of the present invention, to mean a product as defined in Regulation (EC) No 1223/2009 of the European Parliament and of the Council of 30 November 2009 relating to cosmetic products.

More particularly, the packaging and dispensing assembly according to the present invention is intended for dispensing a cosmetic product such as, for example, an anhydrous product, in the form of loose powder, intended to be applied, for example, to the user's epidermis.

Such a device for packaging and dispensing a cosmetic product may, for example, be in the form of a reservoir that contains the product to be dispensed and is provided with a screen disposed at an opening in the reservoir and with a powder puff that is carried by said screen and intended to pick up the cosmetic product in order for it to be applied to the user's epidermis.

In this regard, reference may be made to the document EP 0 580 512-A1 (LIR France), which describes a pot for dispensing makeup powder of the type comprising a body containing said powder, a screen disposed above the powder at an open end of the body, a powder puff carried by said screen, and a closure lid that covers the powder puff.

However, the screen cannot retain the loose powder contained in the body of the dispensing pot, and so, when the lid is opened, and in particular when the powder puff is removed, the loose powder creates a cloud of powder.

Moreover, in the absence of the powder puff and of the lid, when the dispensing pot is turned upside down, the loose powder contained in said pot flows through the screen.

The use of a, polyether-based, urethane foam impregnated with a fluid cosmetic composition is known from the document US 2014/0023689-A1 (Amorepacific).

However, the foam used in that document comprises a number of cells per unit length, referred to as "pores per inch" or "PPI", of between 70 and 120 PPI. Such a foam is not suitable for use with a cosmetic product in the form of loose powder.

Therefore, there is a need to provide a member for retaining and dispensing a cosmetic product in the form of a loose powder that is capable of containing and releasing said loose powder cleanly without it creating a cloud or unintentionally escaping from said device.

The subject of the invention is a member for retaining and dispensing a product, in particular a cosmetic product, in the form of an anhydrous loose powder, comprising an elastically deformable foam made of an open-pore crosslinked polymer material configured to retain the powder within cells and release said powder when the foam is subjected to an external compressive stress.

A crosslinked structure is also referred to as a three-dimensional, or "3D", network structure. The crosslinked structure has features in which air can circulate and the product can be absorbed, retained and evacuated. Thus, the foam according to the invention forms a three-dimensional screen that traps the loose powder, while allowing the possibility of picking up a certain quantity thereof by compression of the foam. In this case, the foam acts as a reservoir of loose powder. In this way, the formation of a cloud of powder and the loss of powder when the foam is turned are avoided.

The expression "elastically deformable or flexible" means that the foam is capable of deforming in the event of external stress, in particular compressive stress, and of returning to its initial shape in the absence of external stress.

An "open-pore crosslinked polymer foam" means a foam of which the skeleton comprises cells or pores that constitute reserves of product that are mutually delimited only by ridges or contours that have random orientations in space. The cells of the foam are open to the adjacent cells and to the outside.

The shape of the cells may be spherical or polyhedral.

The porosity of such a foam, corresponding to all of the voids created by the cells, exceeds 70% of the total volume of said foam.

A "product" means a cosmetic product such as, for example, a finely ground, anhydrous and non-compacted solid product, in the form of loose powder, that is

intended to be applied, for example, to the user's epidermis. The powder may be of the foundation, face powder or eyeshadow type that is picked up, for example, directly with the finger or with a powder puff or with a brush.

The loose powder has a density of between 0.1 and 3 kg/m^3, in particular in the vicinity of 0.3 kg/m^3, and comprises particles with a size of between 1 μm and 200 μm.

Advantageously, the foam has a number of cells per unit length of between 10 PPI and 50 PPI, for example between 20 PPI and 50 PPI, for example equal to 30 PPI.

The number of cells per unit length, expressed in "pores per inch", or "PPI", is a unit that expresses the number of cells or pores over a linear inch in the section of the foam. An inch is equal to 2.54 cm.

The greater the PPI number, the smaller the size of the cells. Since such a number of cells is determined by visual inspection, the recognition of the cells depends on their state, which is determined in different ways depending on the country. For example, the visual counting methods (PPI check) in Japan, the US and Europe are different. In Asia, in particular in Japan, the whole cells situated between two counting lines are counted, in the US, the whole cells between the two lines and the cells situated at the limits are counted, and in Europe, all the cells are counted, irrespective of their contour. The number of cells counted using the European method is generally equal to twice the number of cells counted in Japan.

For example, the foam has a density of between 15 kg/m^3 and 60 kg/m^3, for example between 20 kg/m^3 and 40 kg/m^3, for example equal to 30 kg/m^3.

According to one embodiment, the foam has a number of cells equal to 20 PPI, the load-bearing capacity (according to standard ISO 3386/1) is equal to 3.7 kPa (+/- 1), the elongation at break (according to standard ISO 1798) is greater than 120% and the tensile strength is greater than 80 kPa.

According to one embodiment, the foam has a number of cells equal to 30 PPI, the load-bearing capacity (according to standard ISO 3386/1) is equal to 3.7 kPa (+/- 1), the elongation at break (according to standard ISO 1798) is greater than 150% and the tensile strength is greater than 95 kPa.

According to one embodiment, the foam has a number of cells equal to 45 PPI, the load-bearing capacity (according to standard ISO 3386/1) is equal to 3.8 kPa

(+/- 1), the elongation at break (according to standard ISO 1798) is greater than 180% and the tensile strength is greater than 100 kPa.

The foam may, for example, be machined by a punch, by a laser, by milling and/or by a water jet.

The foam is preferably chosen from crosslinked thermoplastic foams, in particular crosslinked polyurethane, crosslinked polyester, crosslinked polyether or crosslinked polyethylene.

According to a second aspect, the invention relates to an assembly for packaging and dispensing a powder, comprising a container and a product retaining and dispensing member as described above, which is fastened to the container.

According to one embodiment, the container delimits at least one internal volume for receiving the product retaining and dispensing member, said member being mounted in said internal volume.

The internal volume is delimited by a bottom, which is for example substantially flat, and an inner annular side wall.

For example, the container also comprises an outer annular wall that delimits with the inner side wall an annular housing into which a retaining ring of the product retaining and dispensing member snap-fastens.

In a variant, provision could be made for the retaining ring to be force-fitted or bonded into the internal volume of the container. Other means for securing the foam in/on the container, for example by bonding, could also be provided.

Advantageously, the assembly comprises a lid for closing the container, which is hinged with respect to said container between a position opening the container and a position closing the container. The container and the lid together form a casing.

A second lid that has a diameter smaller than the diameter of the main lid and covers the product retaining and dispensing member could also be provided.

In a variant, it is also possible to provide a second casing, for example in the form of a refill, comprising a second container in which the product retaining and dispensing member is fitted and a second lid that is hinged with respect to the second container. In this case, the second casing would be fitted in the internal volume of the first container of the first casing.

The product retaining and dispensing member may be in contact with the bottom of the container, or may delimit with the bottom of the container a space that constitutes an additional reserve of product.

In this way, a first loose powder reservoir formed by the foam and a second loose powder reservoir delimited between the bottom of the container and said foam are obtained.

Advantageously, the assembly comprises a product applicator member, for example a powder puff, disposed on the product retaining and dispensing member.

In one embodiment, the applicator member is disposed on the product retaining and dispensing member, for example via the retaining ring. In the variant comprising a second lid, the applicator member would be disposed on said second lid.

According to another embodiment, the container comprises an internal volume that contains said product and is delimited by a bottom, an annular side wall and an end part provided with an orifice for accessing said internal volume, the product retaining and dispensing member being fastened to said end part.

Thus, the container forms a first product retaining reservoir and the foam forms a second retaining reservoir for the loose powder.

Advantageously, the assembly comprises an applicator member that is secured to the container, at the end part, so as to envelop the product retaining and dispensing member, said applicator member comprising an orifice for dispensing the product contained in the container and in the product retaining and dispensing member.

The applicator member is in the form of a soft jacket for applying the loose powder contained in the foam.

The applicator member is made, for example, of a polymer material such as polyurethane, nitrile butadiene rubber, or polyester.

The applicator member is preferably covered with flocking, for example made of nylon, for enhancing the softness of application.

The container is made of an elastically deformable flexible synthetic material. Thus, when the user compresses the container, the loose powder contained in the internal volume of the container and in the foam is ejected through the dispensing orifice provided in the applicator member. The loose powder is then applied for example, by dabbing the applicator member, to a surface of the body to be made up.

Further aims, features and advantages of the invention will become apparent from reading the following description, which is given only by way of non-limiting example and with reference to the appended drawings, in which:

- Figure 1 shows an exploded view of an assembly for packaging and dispensing a product, according to a first embodiment of the invention;

- Figure 2 is a detailed view of a product retaining and dispensing device of the assembly in Figure 1; and

- Figure 3 is a sectional view of an assembly for packaging and dispensing a product, according to another embodiment of the invention.

An assembly 10 for packaging and dispensing a product onto a dispensing surface (not shown) is illustrated in Figure 1.

Said assembly 10 comprises a container 12 and a lid 14 for closing the container 12, which is hinged with respect to said container between a position opening the container and a position closing the container. The assembly 10 also comprises a product retaining and dispensing member 20 and a member 16 for applying the product, for example in the form of a powder puff.

A "product" means a cosmetic product such as, for example, a finely ground, anhydrous and non-compacted solid product, in the form of loose powder, that is intended to be applied, for example, to the user's epidermis. The powder may be of the foundation, face powder or eyeshadow type that is picked up, for example, directly with the finger or with a powder puff or with a brush.

The loose powder has a density of between 0.1 and 3 kg/m^3, in particular in the vicinity of 0.3 kg/m^3, and comprises particles with a size of between 1 μm and 200 μm.

The container 12 comprises a body that has a cylindrical overall shape extending along an axis X-X' that is presumed to be vertical. Any other shape could be provided for the body, for example parallelepipedal. The body of the container 12 comprises an internal volume 12a for receiving the product retaining and dispensing member 20. The internal volume 12a is delimited by a substantially flat bottom 12b and an inner annular side wall 12c.

The container 12 also comprises an outer annular wall 12d that delimits with the inner side wall 12c an annular housing 12e into which a retaining ring 18 of the product retaining and dispensing member 20 snap-fastens.

In a variant, provision could be made for the retaining ring 18 to be force-fitted or bonded into the internal volume 12a of the container 12.

In a variant, any other means for fastening the product retaining and dispensing member 20 in or on the container, for example by bonding, could also be provided.

The container 12 comprises an open end part 12f that allows access to the internal volume 12a and against which the lid 14 is intended to bear once fitted on the container 12.

The container 12 and the lid 14 together form a casing.

A second lid that has a diameter smaller than the diameter of the main lid 14 and covers the product retaining and dispensing member 20 could also be provided.

In a variant, it is also possible to provide a second casing, for example in the form of a refill, comprising a second container in which the product retaining and dispensing member is fitted and a second lid that is hinged with respect to the second container. In this case, the second casing would be fitted in the internal volume of the first container of the first casing.

In the example illustrated, the lower end of the product retaining and dispensing member 20 is in contact with the bottom 12b of the container 12.

A space (not shown) could also be provided between the bottom 12b of the container 12 and the product retaining and dispensing member 20, constituting an additional reserve of product.

The powder puff 16 is disposed on the product retaining and dispensing member 20 via the retaining ring 18. In the variant comprising a second lid, the powder puff 16 would be disposed on said second lid.

The product retaining and dispensing member 20 comprises a flexible foam configured to retain the loose powder and to release said powder when the foam is subjected to an external stress that compresses it. The term “flexible” means that the foam is elastically deformable in the event of external compressive stress, and that the foam returns to its initial shape in the absence of external stress.

As illustrated in detail in Figure 2, the foam 20 is of the open-pore crosslinked polymer foam type, which means that the skeleton of the foam comprises cells or pores 22 that constitute reserves of product and are mutually delimited only by ridges or contours 24 that have random orientations in space.

A crosslinked structure is also referred to as a three-dimensional, or “3D”, network structure. The crosslinked structure has features in which air can circulate and the product can be absorbed, retained and evacuated. Thus, the foam forms a three-dimensional screen that traps the loose powder, while allowing the possibility of picking up a certain quantity thereof by compression of the foam. In this way, the formation of a cloud of powder when the powder puff is withdrawn and when the loose

powder is picked up, for example, by means of this powder puff is avoided, and the loss of powder when the container and the foam are turned upside down is limited.

An "open-pore polymer foam" is understood to mean that the cells of the foam are open to the adjacent cells and to the outside. In this case, it is only the ridges surrounding the cells that form the solid skeleton of the foam. There are thus no solid walls.

The shape of the cells may be spherical or polyhedral.

The porosity of such a foam, corresponding to all of the voids created by the cells, exceeds 70% of the total volume of said foam.

The foam 20 is preferably chosen from crosslinked thermoplastic foams, in particular crosslinked polyurethane, crosslinked polyester, crosslinked polyether or crosslinked polyethylene.

In the example illustrated, the foam 20 has a density of 30 kg/m^3 and the number of cells 22 per unit length, referred to as "pores per inch" or "PPI", is 30 PPI. An inch is equal to 2.54 cm.

The number of cells 22 per unit length, expressed in "PPI", is a unit that expresses the number of cells or pores over a linear inch in the section of the foam 20.

The greater the PPI number, the smaller the size of the cells. Since such a number of cells is determined by visual inspection, the recognition of the cells depends on their state, which is determined in different ways depending on the country. For example, the visual counting methods (PPI check) in Japan, the US and Europe are different. In Asia, in particular in Japan, the whole cells situated between two counting lines are counted, in the US, the whole cells between the two lines and the cells situated at the limits are counted, and in Europe, all the cells are counted, irrespective of their contour. The number of cells counted using the European method is generally equal to twice the number of cells counted in Japan.

The foam 20 could have a density of between 15 kg/m^3 and 60 kg/m^3, for example between 20 kg/m^3 and 40 kg/m^3.

Advantageously, the foam is a polyurethane foam with a density equal to 29 kg/m^3 (+/- 3 kg/m^3).

The foam 20 could have a number of cells 22 per unit length of between 10 PPI and 50 PPI, for example between 20 PPI and 50 PPI, for example equal to 30 PPI or to 45 PPI.

In the case of a foam having a number of cells equal to 20 PPI, the load-bearing capacity (according to standard ISO 3386/1) is equal to 3.7 kPa (+/- 1), the elongation at break (according to standard ISO 1798) is greater than 120% and the tensile strength is greater than 80 kPa.

In the case of a foam having a number of cells equal to 30 PPI, the load-bearing capacity (according to standard ISO 3386/1) is equal to 3.7 kPa (+/- 1), the elongation at break (according to standard ISO 1798) is greater than 150% and the tensile strength is greater than 95 kPa.

In the case of a foam having a number of cells equal to 45 PPI, the load-bearing capacity (according to standard ISO 3386/1) is equal to 3.8 kPa (+/- 1), the elongation at break (according to standard ISO 1798) is greater than 180% and the tensile strength is greater than 100 kPa.

The foam 20 may, for example, be machined by a punch, by a laser, by milling and/or by a water jet.

In the example in Figure 1, the foam 20 acts as a loose-powder reservoir.

The embodiment illustrated in Figure 3, in which identical elements bear the same references, differs from the embodiment illustrated in Figure 1 by way of the shape of the product retaining and dispensing assembly.

As illustrated in Figure 3, the product retaining and dispensing assembly 30 comprises a container 32 forming a first product retaining reservoir, a product retaining and dispensing member 20 and a product applicator member 34.

The retaining and dispensing member 20 comprises a foam identical to the one described above.

The container 32 comprises a body that has, in a non-limiting manner, a cylindrical overall shape extending along an axis X-X' that is presumed to be vertical. Any other shape could be provided for the body, for example parallelepipedal or conical. The body of the container 32 comprises an internal product receiving volume 32a delimited by a substantially flat bottom 21b and an annular side wall 32c.

The container 32 also comprises an end part 32d on the opposite side from the bottom 32b. The end part 32d comprises an orifice 32e for accessing the internal volume 32a and to which the product retaining and dispensing member 20 is fastened.

An applicator member 34 is secured to the container 32, at the end part 32d, so as to enclose the foam 20.

The applicator member 34 is in the form of a soft jacket for applying the loose powder contained in the foam 20. The applicator member 34 is made, for example, of a polymer material such as polyurethane, nitrile butadiene rubber, or polyester.

The applicator member 34 is preferably covered with flocking, for example made of nylon, for enhancing the softness of application.

The applicator member 34 comprises an orifice 34a for dispensing the loose powder contained in the foam 20.

The container 32 is made of an elastically deformable flexible synthetic material. Thus, when the user compresses the container 32, the loose powder contained in the internal volume 32a of the container 32 and in the foam 20 is ejected through the dispensing orifice 34a provided in the applicator member 34. The loose powder is applied for example, by dabbing the applicator member 34, to a surface of the body to be made up.

Furthermore, the compression of the foam 20 against the surface of the body to be made up together with the pressure on the reservoir 32 can also make the powder contained in the foam 20 come out via the dispensing orifice 34a.

By virtue of the foam according to the present invention, the dispensing of the loose powder is particularly clean, without a cloud of powder being formed.

CLAIMS

1. Member (20) for retaining and dispensing a product, in particular a cosmetic product, in the form of an anhydrous loose powder, comprising an elastically deformable foam made of an open-pore crosslinked polymer material configured to retain the powder within cells and release said powder when the foam is subjected to an external compressive stress, characterized in that the foam has a number of cells per unit length of between 10 PPI and 50 PPI, for example between 20 PPI and 50 PPI, for example equal to 30 PPI.

2. Member (20) according to Claim 1, wherein the foam has a density of between 15 kg/m^3 and 60 kg/m^3, for example between 20 kg/m^3 and 40 kg/m^3, for example equal to 30 kg/m^3.

3. Member (20) according to either one of the preceding claims, wherein the foam is, preferably, chosen from foams made of crosslinked thermoplastic material, notably crosslinked polyurethane, crosslinked polyester, crosslinked polyether or crosslinked polyethylene.

4. Assembly (10, 30) for packaging and dispensing a powder, comprising a container (12, 32) and a product retaining and dispensing member (20) according to any one of the preceding claims, which is fastened to the container (12, 32).

5. Assembly (10) according to Claim 4, wherein the container (12) delimits at least one internal volume (12a) for receiving the product retaining and dispensing member (20), said member (20) being mounted in said internal volume (12a).

6. Assembly (10) according to Claim 4 or 5, wherein the product retaining and dispensing member (20) is in contact with the bottom (12b) of the container (12).

7. Assembly (10) according to any one of Claims 4 to 6, which comprises an applicator member (16), for example a powder puff, for applying the product located on the product retaining and dispensing member (20).

8. Assembly (30) according to Claim 4, wherein the container (32) comprises an internal volume (32a) that contains said product and is delimited by a bottom (32b), an annular side wall (32c) and an end part (32d) provided with an orifice (32e) for accessing said internal volume (32a), the product retaining and dispensing member (20) being fastened to said end part (32b).

9. Assembly (30) according to Claim 8, which comprises an applicator member (34) that is secured to the container (32), at the end part (32d), so as to envelop

the product retaining and dispensing member (20), said applicator member (34) comprising an orifice (34a) for dispensing the product contained in the container (32) and in the product retaining and dispensing member (20).

FIG.1

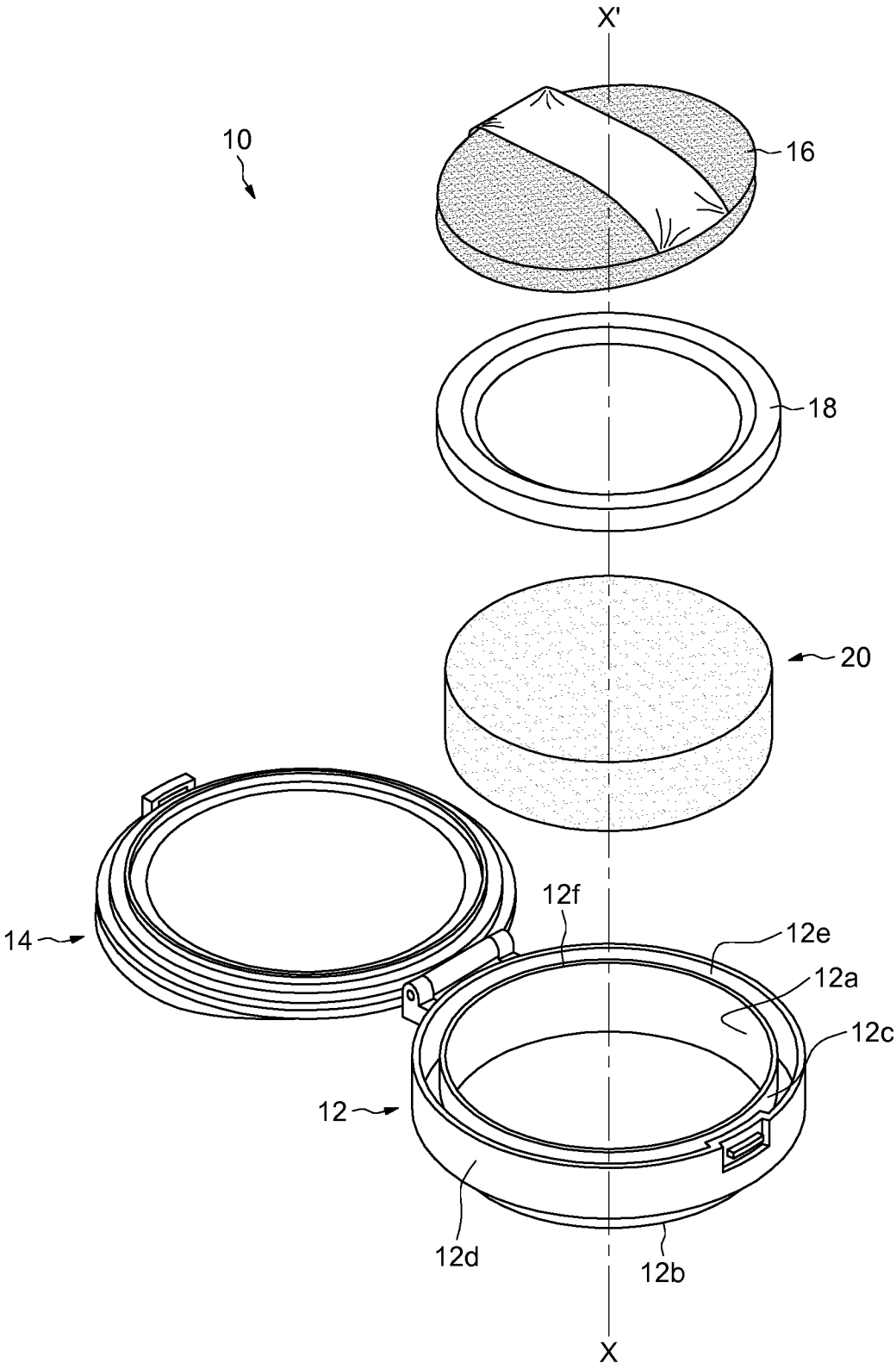


FIG.2

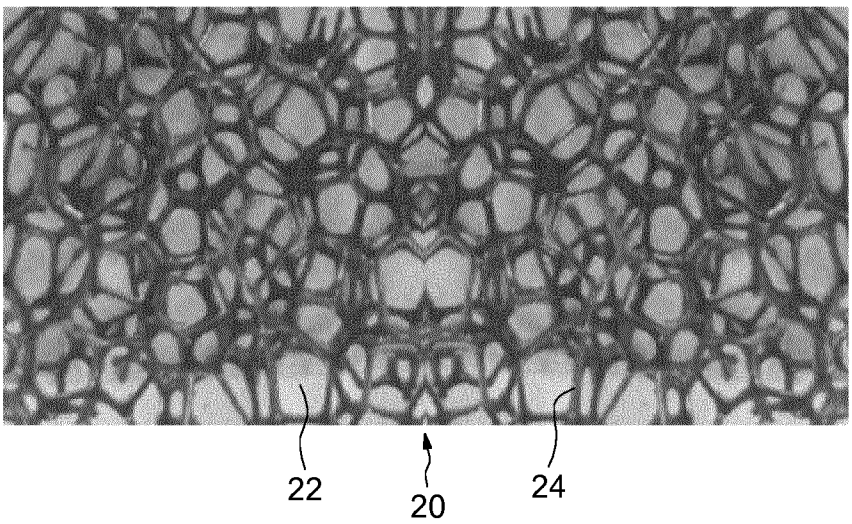
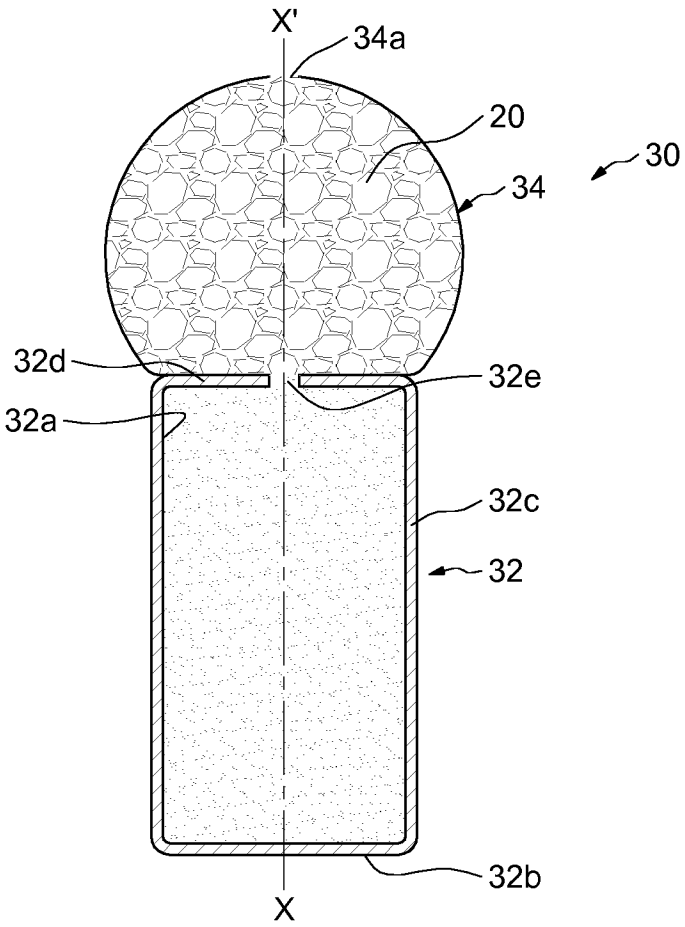


FIG.3



INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2018/083285

A. CLASSIFICATION OF SUBJECT MATTER
INV. A45D33/34
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.
X Y	US 6 006 761 A (MELEDANDRI CATHERINE A [US]) 28 December 1999 (1999-12-28) abstract; claims 1-42; figures 1-6 column 4	1-3 4-9
Y	KR 101 459 017 B1 (CTK CO LTD [KR]) 7 November 2014 (2014-11-07) abstract; claims 1-3; figures 1-7 paragraphs [0001] - [0004], [0015] - [0022], [0039], [0040]	4-9
Y	US 2008/047573 A1 (CHOU JU H C [TW]) 28 February 2008 (2008-02-28) abstract; claims 1-19; figures 1-3	4,8,9
A	EP 2 567 633 A1 (DAEHYUN IND ARTS CO LTD [KR]) 13 March 2013 (2013-03-13) the whole document	1-9

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

☒ See patent family annex.

* Special categories of cited documents :

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Date of the actual completion of the international search	Date of mailing of the international search report
17 December 2018	04/01/2019

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Fax: (+31-70) 340-3016	Oliveras, Mariana

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No
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