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(54) Title: HEAD OF APPLICATION AND DISTRIBUTION OF COSMETIC PRODUCT, AND ASSOCIATED PACKAGING DEVICE

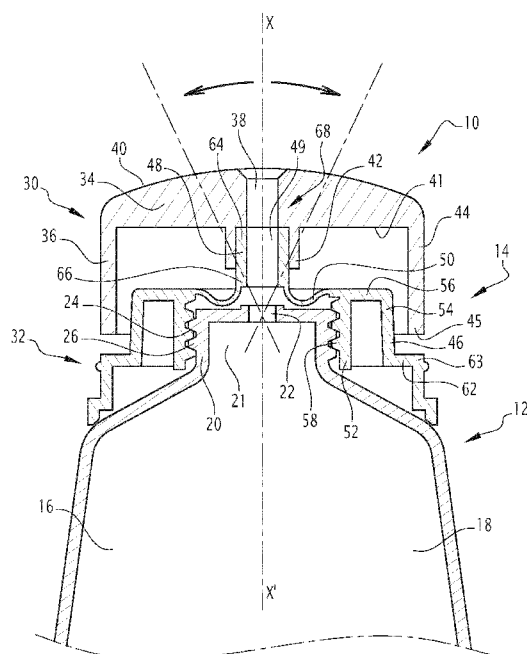


FIG.1

(57) Abstract: Head of application and distribution of cosmetic product, and associated packaging device Head of application and distribution (14) intended to be mounted on a neck (20) of a receptacle (12), the head (14) comprising: - an applicator (30) comprising at least one through channel (38) that will open up on an external application surface (40); an intermediate part (32) designed to be placed between the applicator (30) and the receptacle (12), comprising: - a base (46) that will cooperate with the neck (20); - a hollow rod (48) inserted in a reception housing, the reception housing being connected to the or to each through channel (38); and - a flexible region (50) connecting the base (46) and the rod (48), the rod (48) being free to move with the applicator (30) relative to the base (46) by deformation of the flexible region (50).



Head of application and distribution of cosmetic product, and associated packaging device

This invention relates to a head of application and distribution of cosmetic product that will be mounted on the neck of a receptacle, the head comprising a cosmetic product applicator, the applicator comprising at least one through distribution channel that will open up on an external product application surface.

For example, FR 2 647 034 discloses a head of application and distribution of the type mentioned above. Such a head is generally used to apply a cosmetic product contained in the receptacle on a body surface through a distribution passage from the receptacle.

The cosmetic product is particularly a body surface care and/or makeup product, or a coloring product. In particular, the cosmetic product is a face and/or body care product, or a sun protection product.

A cosmetic product is more generally a product as defined in EC Regulation number 1223/2009 of the European Parliament and the Council of November 30, 2009, relating to cosmetic products.

The device can be used for precise application of cosmetic product on a body surface, adapting to the curvature of the skin.

The application device described in FR 2 647 034 comprises a tube with a bellows at its free end on which a distribution head comprising an applicator is mounted.

The cosmetic product flows through porous passages present in the applicator. Since the bellows is deformable, the applicator can be inclined during application of the product onto the body surface.

However, such a device is complicated to fabricate. The device comprises several parts made of different materials which increases the number of parts to be assembled and referenced.

Furthermore, the bellows at the neck of the receptacle, necessary so that the head can be inclined, comprises many undercuts, making it difficult to fabricate by simple molding.

The bellows also has a very large pivot angle that might be incompatible with some applications, particularly in terms of leak tightness.

Finally, the head is adapted to a single type of receptacle collar with a bellows. Therefore, a non-reusable head specifically adapted to the receptacle has to be fabricated for each receptacle, which increases the cost.

One purpose of the invention is to obtain a head of application and distribution that allows application adapted to the curvature of the body surface but that remains easy to fabricate.

To achieve this, the purpose of the invention is a head of application and distribution of the type mentioned above, wherein the head comprises an intermediate part designed to be placed between the applicator and the receptacle, the intermediate part comprising a base capable of cooperating with the neck of the receptacle to fix the head to the neck, a hollow rod defining a passage for distribution of the cosmetic product, the hollow rod projecting from the base along a rod axis, the rod being inserted in a reception housing formed in the applicator, the reception housing being connected to the or to each through channel; and a flexible region connecting the base and the rod, the rod being free to move with the applicator relative to the base by deformation of the flexible region.

Use of an intermediate part that can easily be assembled with the applicator through the rod, while keeping the possibility of inclining the applicator due to the flexible region, considerably simplifies fabrication while avoiding the need to form a bellows at the end of the receptacle. The receptacle fits simply into the base, the shape of which can be optimized for molding.

The base can also be adapted to different receptacles and makes it possible to reuse the head if required. Since the through channel opens up in the application surface, the cosmetic product arrives very efficiently on the application surface.

According to particular embodiments of the invention, the head of application and distribution also has one or several of the following characteristics taken in isolation or in any technically possible combination:

According to one alternative, the intermediate part is made in a single piece of the same material.

Since the intermediate part that provides a connection to the receptacle and to the applicator and also enables deformation is made in a single piece, complicated assembly steps are avoided and the number of parts to be referenced is smaller.

According to one alternative, the base comprises a skirt defining a neck insertion housing, the skirt having an inside surface oriented towards the passage, the inside face of the skirt having at least one cooperation element for engagement of the head to the neck; and the cooperation element is a thread.

The presence of a skirt in the base provides a preferred site for making contact with the receptacle neck, wherein a cooperation element enables efficient engagement of the receptacle.

According to alternatives:

- the flexible region closes off the neck insertion housing formed in the base towards the outside of the receptacle;

- the flexible region is composed of a film with at least one undulation;

5 - the flexible region extends in a direction approximately perpendicular to the axis of the rod.

The presence of a flexible region, preferably in the form of an undulating sheet, guarantees improved leak tightness, suitable flexibility and easy fabrication.

According to alternatives:

10 - the rod is free to move between a rest position that will be coaxial with an axis of the neck, and a plurality of inclined positions;

- in at least one inclined position of the rod, the rod axis forms an angle of at least 5° from the rod axis in the rest position;

- the base defines at least one applicator stop surface in an inclined position.

15 The allowable inclination interval of the rod made possible by the flexible region and the presence of the stop surface avoids large pivot angles that can be incompatible with some applications, while providing sufficient flexibility to adapt the application head to the curvature of the body surface.

20 Another purpose of the invention is a packaging and distribution device for a cosmetic product comprising a receptacle with a neck, a head of application and distribution as described above, the head of application and distribution being mounted on the neck.

25 According to particular embodiments of the invention, the packaging device also has one or several of the following characteristics taken in isolation or in any technically possible combination:

- the receptacle is a flexible tube, The flexible tube enables easy discharge of the cosmetic product when the user presses the wall of the tube.

- the head is mounted removably and reversibly on the neck.

30 The ease of assembly and disassembly of the head simplifies the design and adaptation to different receptacles. It also make reuse possible on different receptacles.

Furthermore, the purpose of the invention is a method for application and distribution of a cosmetic product by means of a packaging and distribution device as defined above, the method comprising the following steps:

- provide a device such as described hereinabove;

35 - bring the product to the applicator through the rod;

- apply the applicator on a body surface; and

- deform the flexible region to jointly pivot the applicator and the rod relative to the base fixed on the neck, following a curvature of the body surface.

Further features and advantages of the invention will emerge after reading the following description given solely as an example with reference to the appended drawings in which:

- Figure 1 is an axial sectional view of a cosmetic product packaging and application device according to the invention; and

- Figure 2 is a perspective view of an intermediate part mounted on the receptacle

A first application and packaging device 10 is shown in figures 1 and 2. This device 10 is designed for packaging and distribution of a cosmetic product. The cosmetic product is for example, a cosmetic care, make-up or coloring product.

With reference to figure 1, the device 10 comprises a receptacle 12, and a head of application and distribution 14 closing the receptacle 12.

The receptacle 12 may for example be a flexible tube or a flexible bottle.

The receptacle 12 comprises a reservoir 16 containing a cosmetic product 18, as defined above.

The receptacle 12 also comprises a neck 20 projecting from one end of the reservoir 16 along a central X-X' axis. The inside of the neck 20 defines a product circulation channel 21 opening up through a central opening 22 through which the cosmetic product 18 is discharged. The outside of the neck 20 defines an external surface 24 facing in the direction opposite to the direction of the X-X' axis.

The outside surface 24 comprises a thread 26 projecting at a distance from the X-X' axis.

When a force towards the X-X' axis is applied on the reservoir 16, the cosmetic product 18 can flow from inside the reservoir 16 to the outside of the reservoir 16 through the central opening 22.

The 14 is mounted removably and reversibly on the neck 20 between an engaged position in which the head 14 is engaged around the neck 20, and a disengaged position in which the head 14 is at a distance from the neck 20.

The head 14 comprises an applicator 30, and an intermediate part 32 placed between the applicator 30 and the receptacle 12.

The applicator 30 is advantageously made from a metallic material, for example steel. As an alternative, it can be made of a plastic material. In this example, it is composed of a single piece.

The applicator 30 comprises a transverse part 34 extending approximately perpendicular to the X-X' axis, and a peripheral part 36 extending around the X-X' axis.

The transverse part 34 defines at least one axial through channel 38, an external cosmetic product application surface 40, an internal surface 41, and an assembly skirt 42 on the intermediate part 32.

In this case the through channel 38 extends along the X-X' axis. At its first end, it opens up in the internal surface 41 into the neck 20, and at its second end it opens up in the external application surface 40. The through channel 38 can carry the cosmetic product 18 from the receptacle 12 through the intermediate part 32 towards the external application surface 40.

The cosmetic product 18 can spread on the external application surface 40. In this example, the shape of the external application surface 40 is smooth so that it can slide on a body surface.

The assembly skirt 42 projects towards the neck 20 from the internal surface 41. It extends around the X-X' axis and is arranged inside the peripheral part 36. It defines an internal housing for reception at the bottom of which the through channel 38 opens up.

The peripheral part 36 projects from the external application surface 40 to the neck 20. It extends continuously around the X-X' axis, for example in the form of a cylinder. It surrounds the intermediate part 32 around the entire periphery of the intermediate part 32.

The peripheral part 36 has an upper edge 44 connected to the transverse part 34 and a free lower edge 45.

The intermediate part 32 is made in a single piece of the same material. It is advantageously made of plastic, for example polypropylene (PP), or polyethylene (PE), or polyvinyl chloride (PVC), or polyethylene terephthalate (PET).

The intermediate part 32 comprises a base 46 mounted on the neck 20, and a hollow rod 48 defining a cosmetic product distribution passage 49, the rod 48 being free to move between a rest position and a plurality of inclined positions (along the axes represented by inclined chain dotted lines shown on Figure 1).

The intermediate part 32 also comprises a flexible region 50 connecting the base 46 and the rod 48.

The base 46 cooperates with the neck 20 of the receptacle 12 to engage the head 14 to the neck 20. It comprises a skirt 52 defining a reception housing for the neck 20, a peripheral wall 54, and a cross wall 56 connecting the skirt 52 and the peripheral wall 54 at their top ends.

The skirt 52 extends around the neck 20. It is located inside the peripheral wall 54.

The skirt 52 has an internal surface 58 oriented towards the passage 49. The internal surface 58 comprises at least one cooperation element 60 capable of cooperating with the thread 26 to engage the head 14 to the neck 20.

In the configuration shown on Figures 1 and 2, the cooperation element 60 is a thread complementary to the thread 26.

In the engaged position of the intermediate part 32, the cooperation element 60 cooperates with the thread 26 such that the head 14 is fixed to the neck 20.

5 The peripheral wall 54 advantageously comprises a circumferential shoulder 62 around the X-X' axis. The shoulder 62 defines a stop surface 63 of the applicator 30 substantially perpendicular to the X-X' axis.

10 When the rod 48 is inclined by more than a given angle relative to the X-X' axis, cooperation between the stop surface 63 on the shoulder 62 and the lower edge 45 of the applicator prevents further inclination of the rod 48.

The rod 48 protrudes from the base 46 along the X-X' axis. It has a free end 64 engaged in the applicator 30, and an end 66 connected to the flexible region 50. The free end 64 fits into the assembly skirt 42 and bears on the internal surface 41.

15 The rod 48 is inserted in the reception housing defined in the assembly skirt 42 of the applicator 30, in a complementary manner. In this configuration, the product circulation channel 21 through the neck 20, the rod 48 between the free end 64 and the connection end 66, and the through channel 38 form a continuous conduit 68 that can carry the cosmetic product 18 from the receptacle 12 to the external application surface 40.

20 When the rod 48 occupies its rest position, it extends coaxially with the X-X' axis. In each inclined position, the rod 48 extends along an axis forming a non-zero angle from the X-X' axis.

In at least one inclined position of the rod 48, the angle between the axis of the rod 48 and the X-X' axis is more than 5°.

25 When the rod 48 is inserted in the assembly skirt 42, the applicator 30 is fixed to the rod 48. The assembly skirt 42 then extends around the rod 48 in direct contact with the rod 48. The applicator 30 is then free to move jointly with the rod 48 relative to the base 46 between the rest position and the inclined positions.

30 The shape of the flexible region 50 is undulating in a plane passing through the X-X' axis. For example, it is formed from a deformable film. It can be less than 3 mm thick, and advantageously less than 1 mm thick. This thickness is advantageously between 0.2 mm and 0.7 mm, particularly when the flexible region 50 is made of polypropylene.

35 The flexible region 50 extends substantially perpendicular to the X-X' axis. It has an annular shape and extends all around the periphery of the rod 48 and around the entire periphery of the skirt 52. Thus, the flexible region 50 closes the base 46 maintaining leak tightness from the exterior of the receptacle 12.

The diameter of the flexible region 50 is for example between 5 mm and 20 mm, advantageously between 7 mm and 12 mm, particularly equal to 11 mm.

The flexible region 50 is more flexible than the base 46. Deformation of the flexible region 50 requires less force than deformation of the base 46.

5 Operation of the application and packaging device 10 will now be described.

Firstly, the application and packaging device 10 is supplied with the head 14 mounted on the neck 20, the rod 48 occupying its rest position. The applicator 30 is mounted on the rod 48.

10 When a user wants to use the cosmetic product 18 contained in the reservoir 16, he or she presses the reservoir 16. As a result of this action, the cosmetic product 18 contained in the reservoir 16 flows towards the neck 20.

As the user continues to apply pressure on the reservoir 16, the cosmetic product 18 exits from the neck 20 through the central opening 22 and penetrates into the rod 48. The cosmetic product 18 then passes through the rod 48 as far as the free end 64, and
15 then flows through the through channel 38 and reaches the external application surface 40 of the applicator 30.

The user then places the external application surface 40 in contact with a body surface, for example the face or the hand. Thus, the cosmetic product 18 is applied on the body surface.

20 When the external application surface 40 is not parallel to the body surface, a force is applied on the applicator 30. Since the flexible region 50 is more flexible than the base 46, under the effect of the force applied on the applicator 30, the applicator 30 pushes the rod 48 that pivots jointly with the applicator 30 relative to the base 46. The rod 48 thus reaches an inclined position and the external application surface 40 adapts to the curve of
25 the body surface.

However the angular inclination range of the rod 48 and the applicator 30 remains limited due to cooperation between the stop surface 63 and the inner edge 45 of the applicator.

30 Thanks to the invention described hereinabove, fabrication of the head 14 is simplified. Since the intermediate part 32 is a single piece and there is no significant undercut, it is possible to fabricate it using a simple conventional molding process, while being sure that the device is functioning correctly.

Furthermore, the head 14 is adapted for several different receptacles 12. Therefore the head can be standardized for different receptacles 12 without the need to
35 design and fabricate a specific head 14 for each type of receptacle. This decreases the cost of manufacturing.

CLAIMS

1.- Head of application and distribution (14) of a cosmetic product (18), intended to be mounted on a neck (20) of a receptacle (12), the head (14) comprising:

5 - an applicator (30) of cosmetic product, the applicator (30) comprising at least one through distribution channel (38) intended to open up on an external product application surface (40);

characterized in that the head (14) comprises an intermediate part (32) intended to be placed between the applicator (30) and the receptacle (12), the intermediate part (32) comprising:

10 - a base (46) capable of cooperating with the neck (20) of the receptacle (12) to fix the head (14) to the neck (20);

 - a hollow rod (48) defining a passage (49) for distribution of the cosmetic product, the hollow rod (48) protruding from the base (46) along a rod axis, the rod (48) being inserted in a reception housing formed in the applicator (30), the reception housing being connected to the or to each through channel (38); and

 - a flexible region (50) connecting the base (46) and the rod (48), the rod (48) being moveable jointly with the applicator (30) relative to the base (46) by deformation of the flexible region (50).

20 2.- Head of application and distribution (14) according to claim 1, wherein the intermediate part (32) is made of a single piece of the same material.

3.- Head of application and distribution (14) according to claim 1 or 2, wherein the base (46) comprises a skirt (52) defining an insertion housing of the neck (20), the skirt (52) having an internal surface (58) oriented towards the passage (49), the internal surface (58) of the skirt (52) having at least one cooperation element (60) for fixation of the head (14) to the neck (20).

4.- Head of application and distribution (14) according to claim 3, wherein the cooperation element (60) is a thread.

5.- Head of application and distribution (14) according to claim 3 or 4, wherein the flexible region (50) obstructs the insertion housing of the neck (20) formed in the base (46) towards the exterior of the receptacle (12).

6.- Head of application and distribution (14) according to any one of claims 1 to 5, wherein the flexible region (50) is formed of a film with at least one undulation.

7.- Head of application and distribution (14) according to any one of claims 1 to 6, wherein the flexible region (50) extends in a direction substantially perpendicular to the rod axis.

8.- Head of application and distribution (14) according to any one of claims 1 to 7, wherein the rod (48) is moveable between a rest position intended to be coaxial with an axis of the neck (X-X'), and a plurality of inclined positions.

5 9.- Head of application and distribution (14) according to claim 8, wherein in at least one inclined position of the rod (48), the rod axis forms an angle of at least 5° from the rod axis in the rest position.

10.- Head of application and distribution (14) according to one of claims 8 or 9, wherein the base (46) defines at least one stop surface (63) of the applicator (30) in an inclined position.

10 11.- Packaging and distribution device for a cosmetic product (10) comprising a receptacle (12) with a neck (20), a head of application and distribution (14) according to any one of the preceding claims, the head of application and distribution (14) being mounted on the neck (20).

15 12.- Packaging and distribution device for a cosmetic product (10) according to claim 11, wherein the receptacle (12) is a flexible tube.

13.- Packaging and distribution device for a cosmetic product (10) according to claim 11 or 12, wherein the head (14) is mounted removably and reversibly on the neck (20).

20 14.- Method for applying and distributing a cosmetic product (10) on a body surface, characterized in that it comprises the following successive steps:

- provide a device (10) according to any one of claims 11 to 13;
 - bring the product (18) to the applicator (30) through the rod (48);
 - apply the applicator (30) on a body surface; and
 - deform the flexible region (50) to jointly pivot the applicator (30) and the rod (48)
- 25 relative to the base (46) fixed on the neck (20), following a curvature of the body surface.

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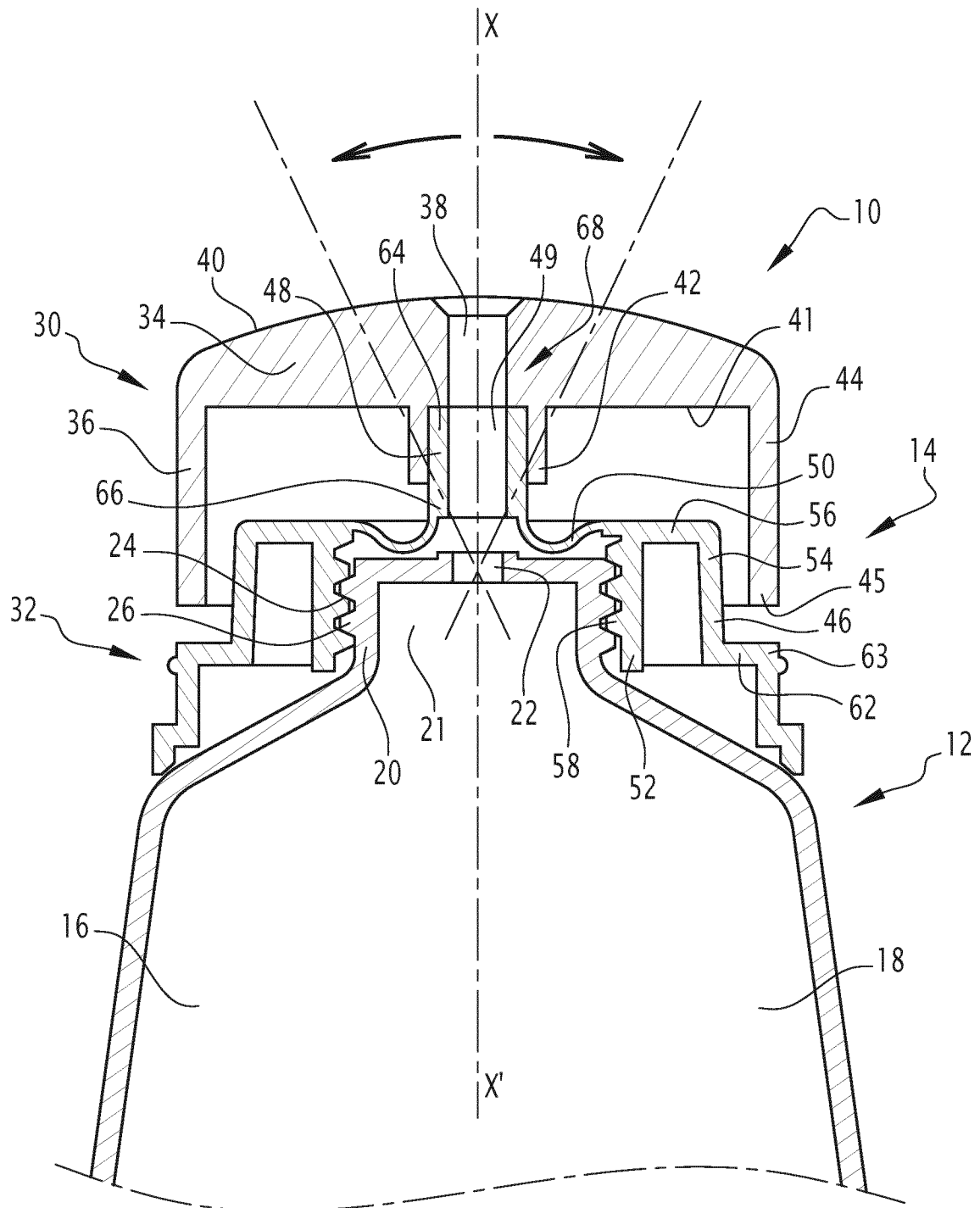


FIG.1

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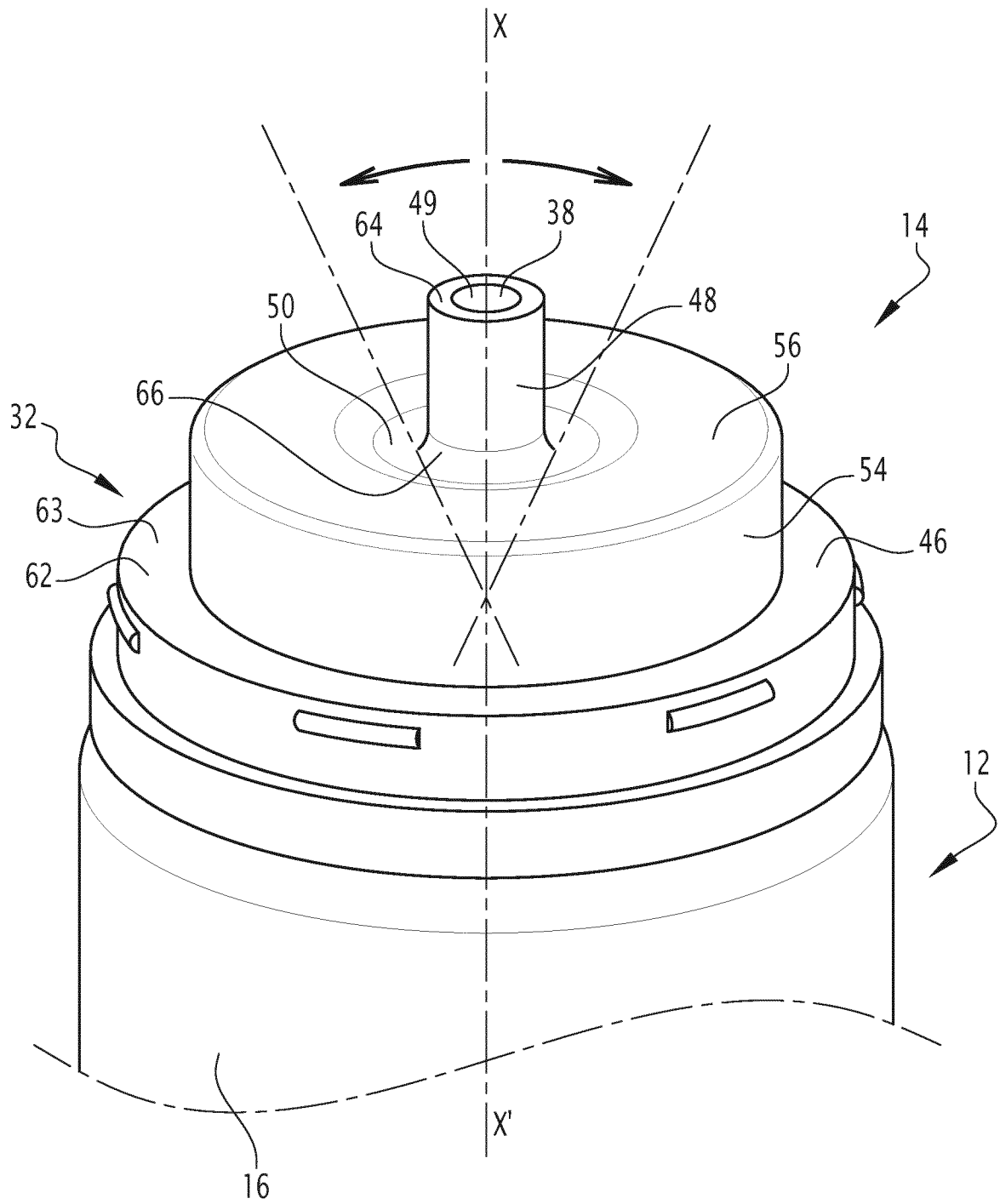


FIG. 2

INTERNATIONAL SEARCH REPORT

International application No

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A. CLASSIFICATION OF SUBJECT MATTER

INV. A45D34/04

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 1 312 280 A1 (OREAL [FR]) 21 May 2003 (2003-05-21) paragraph [0065]; figures 2,3 -----	1-14
A	FR 2 647 034 A1 (OREAL [FR]) 23 November 1990 (1990-11-23) cited in the application abstract -----	1-14
A	EP 0 797 940 A1 (OREAL [FR]) 1 October 1997 (1997-10-01) abstract; figure 1 -----	1-14



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents :

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"&" document member of the same patent family

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INTERNATIONAL SEARCH REPORT

Information on patent family members

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