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(54) ACCESSORY FOR A LAMP

(57) Accessory (1) for a lamp (2) that comprises a coupling part (3) to a support of a bulb and a shade (4) that defines an interior volume for receiving light from a bulb, wherein the shade (4) has holes (5) for inserting and supporting feathers (6) open to the outside of the shade (4) and because the shade (4) is coupled to the coupling part (3) and lamp (2) coupled to the coupling part (3) to a holder of a bulb of a fixture (1). In this way, to add the feathers to the shade, it is enough to introduce the axis (quill) of the feathers in the holes from the outside of the shade, so that after the introduction of the axis of the feathers in the holes, the shade is interposed between the lighted interior of the shade and the feather bodies also known as vanes.

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Description

TECHNICAL FIELD

[0001] The present invention relates to the field of lighting. More specifically it refers to an accessory for a lamp.

STATE OF THE ART

[0002] Lamps that integrate decorative feathers are already known, such as the one disclosed in the CN305845261S design. More specifically, lamps are known that imitate the shape of a palm tree by using feathers that imitate the shape of palms or palm leaves, such as the one disclosed in the CN306014141S design. These lamps are made up of a single piece that integrates the stabilizing base of the lamp, the part of the lamp that imitates the trunk of a palm tree and the part of the lamp that imitates the crown of a palm tree. However, there is still a great deal of room for improvement in the durability of these lamps and in the illumination they produce.

DESCRIPTION OF THE INVENTION

[0003] To overcome the drawbacks of the state of the art, a first aspect of the present invention proposes an accessory for a lamp that comprises of a part for coupling to a support of a bulb and a shade that defines an interior volume for receiving light from a bulb, in which the shade has holes for inserting and supporting feathers open to the outside of the shade and in which the shade is coupled to the coupling part.

[0004] In this way, to add the feathers to the shade, it is enough to introduce the axis (quill) of the feathers in the holes from the outside of the shade, so that after the introduction of the axis of the feathers in the holes, the shade is interposed between the lighted interior of the shade and the feather bodies also known as vanes. This facilitates the decoration of lamps with feathers and more specifically, the decoration of lamps in the shape of a palm tree.

[0005] The accessory is made up of two different parts, that is, on the one hand the coupling part to a light bulb holder and on the other hand the lamp shade. The fact that these two parts are different and have a coupling to each other facilitates the optimization of the accessory since each part can be made of an optimal material and have an optimal shape for its function. For example, on the one hand, the shade can be made of a transparent or translucent material optimized to support the feathers and to achieve a desired level of light attenuation. For example, on the other hand, the part for coupling to a lamp holder can be made of an opaque material that is more resistant to, for example, shocks and weight, and / or harder than the material of the lampshade.

[0006] Another function of the shade is that it allows you to hide parts of the lamp to which it is attached. For example, it makes it possible to hide the lamp bulb socket or the light source of the lamp, which can be for example a lamp bulb or LED.

[0007] In some embodiments, the shade is transparent or translucent. In this way, the shade lets through a higher level of light compared to an opaque shade. This feature also allows you to adjust the level of light attenuation caused by the shade so that the user of the lamp does not see the end of the feather quills inserted into the shade. This is achieved because human eyes are not prepared to see excessive brightness, so a shade that causes little dimming can cause a user to receive excessive brightness from the shade and not be able to see the extremes inserted into the shade.

[0008] In some embodiments, the shade is opaque, so that light passes through the shade exclusively through the holes for inserting and supporting feathers.

[0009] In some embodiments the shade is colorful, for example red or blue. In this way, if the shade is translucent as well as colorful, it adjusts the color of the light that passes through it.

[0010] In some embodiments the holes for inserting and supporting the feathers are tubular or conical. These holes are advantageous in that they are easily made. Also, if the holes have a length that they are narrower than the axis of the quill, when inserting the quill into them, the side wall of the holes presses on the axis of the quill. In this way the walls can exert friction on the axis of the quill that makes it difficult for the feather to come out of the hole, increasing the stability of the position of the feather in the hole. In particular, conical holes are advantageous, because they are more versatile, since feathers whose quills have different dimensions, such as different widths and or different lengths, can be coupled to these holes. This is because the progressive narrowing of the conical hole makes it easier to ensure that the side wall of the hole presses on the shaft of the quill, making it difficult by friction for the feather to come out of the hole.

[0011] In some embodiments the shaft of the quill is attached to the side wall of the hole by adhesive. This adhesive allows to increase the stability of the position of the quill of the feather in the hole of the shade.

[0012] In some embodiments the holes for inserting and supporting the feathers are blind. In this way, on the one hand, it is guaranteed that the quill of the feather does not enter the interior volume of the shade, which could excessively attenuate the degree of light attenuation generated by the feather. On the other hand, stabilization is provided to the position of the feathers, blocking their sliding through the hole. By preventing the quill from entering the inner volume of the shade, the shaft of the quill is prevented from coming into contact with the inside of the shade, minimizing the risk of the quill burning or discolouring when the inside of the shade is at a temperature too high.

[0013] In some embodiments some of the holes or all of the holes whose openings to the outside of the shade are further from the coupling part are more inclined to-

wards the coupling part than some or all holes whose openings to the outside of the shade are closer to the coupling part. In other words, for the same depth, measured in the direction of the hole and from the opening of the hole on the outer surface of the shade, a hole with an opening farthest from the coupling part will have achieved a greater distance reduction to the coupling part than in a hole with an opening closer to the coupling part, compared to the distance from the respective hole opening to the coupling part. This difference in inclinations improves the imitation of palm crowns since the upper leaves of the palm crowns emerge from the crown at a smaller angle of inclination with respect to the vertical axis of the palm tree trunk than the lower leaves of the palm crowns.

[0014] In some embodiments some or none of the feather insert and support holes are perpendicular to the shade. This minimizes the amount of shade volume required to achieve holes to a specified depth. The perpendicular to a surface is its normal direction and therefore corresponds to the direction in which it is possible to penetrate the surface more quickly. Therefore, if a hole is extended in this direction it will deepen the volume more quickly and therefore a larger volume of shade will be required to achieve a hole of a given depth.

[0015] In some embodiments, the feather insertion and support holes have a depth of at least three millimeters and at most seven centimeters. Preferably 1 to 3 cm. It should be noted that the side walls of the holes provide rigidity to the portion of the shaft of the quill inserted into the hole when contacting it, thus adjusting the depth allows adjusting the rigidity conferred on the quill, since by increasing this in depth, the portion of the quill shaft that contacts the walls can be increased. The depths described have been identified as advantageous to provide the feathers with adequate rigidity to guarantee the stability of the position of the feathers whose quill is inserted in the holes.

[0016] In some embodiments the holes for inserting and supporting feathers have a circular cross section whose diameter is at least 1 millimeter and as 10 millimeters maximum, preferably 2.5 to 4 millimeters. These ranges have been identified to be particularly advantageous in achieving adequate position stability of the quill inserted in the hole.

[0017] In some embodiments, the shade has a feather insertion and support hole area density of at least one hole / cm2.

[0018] In some embodiments, the shade has a hole for inserting a light source into the interior volume of the shade, the hole connecting the interior volume of the shade with the coupling part. In this way a light source, such as a lamp bulb, can be inserted into the interior volume of the shade after having coupled the coupling part of the lamp to the bulb holder. Thanks to the fact that the bulb is arranged inside the lampshade, the light intensity that reaches the walls of the interior volume of the lampshade is higher than if, for example, the same light source were located outside the interior volume and further away from it.

[0019] In some embodiments the holes for inserting and supporting feathers are separate from the hole for inserting a light source. In this way, a separation between the light source inserted in the corresponding hole and the feathers inserted in their respective holes is ensured, ensuring reduced heat transfer from the light source to the fathers, which minimizes the chances of burning the feathers with the consequent discoloration and reduction of the life cycle of the feathers.

[0020] In some embodiments the shade is a solid of revolution. This makes it easier for the shade to have a symmetrical effect on the light, which improves the uniformity of illumination emitted by the shade.

[0021] In some embodiments the shade is a solid of revolution that defines a cylindrical side surface attached to an upper spherical cap. This design provides an improved imitation of the crown of a palm tree. The cylindrical part is in the shape of a trunk and is also suitable for housing the holes intended to receive the feathers that mimic the lower leaves of the crown of the palm tree, that is, the leaves closest to the trunk of the palm tree. The upper spherical cap, and in particular a spherical cap whose volume is less than that of the hemisphere, is especially advantageous to house the holes for the feathers that mimic the upper blades, that is, those that remain above the lower blades in the crown, since the spherical cap-shaped part can be easily hidden since its volume is less than, for example, that of a cylinder whose diameter is equal to the diameter of the sphere corresponding to the cap and whose height is equal to the radius of the corresponding sphere.

[0022] In some embodiments, the bulb holder engaging portion is a removably engaging bulb holder portion. Because the coupling part can be removably attached to a lamp, the fixture can be used on different lamps. For example, after the lamp to which the accessory is attached is damaged, the accessory can be attached to another lamp. In this way, the same accessory can be used in different lamps, making it easier to give different lamps a palm tree shape.

[0023] In some embodiments, the coupling part has guides for fitting rods, preferably in which each fitting guide has three sections, one of which is perpendicular to the other two. In this way, the removable coupling of the accessory to a lamp is facilitated, since to couple it, it is enough to insert rods of a light bulb holder into the guides.

[0024] In some embodiments the accessory comprises insert plugs for inserting and supporting feathers. These insert plugs, intended to be interposed between the quill of the feather and the internal walls of the hole, allow the internal dimensions of the hole to be adapted to the dimensions of the quill and therefore allow to increase the gripping force of the quill inserted in the hole.

[0025] In some embodiments, the insertion plug has an outer face closer to the walls of the hole and an inner

face designed to be closer to the quill of the feather, and the outer face has projections complementary to recesses in the walls of the hole. These projections, when coupled to the complementary recesses, allow to increase the grip of the insert plug inserted in the hole, minimizing slippage of the insert plug inside the hole that for example could cause the insert plug to come out of the hole.

[0026] In some embodiments, the inside face of the insert plug has projections arranged to contact the quill of a feather. These projections, which in some of these embodiments can be sharp, contact the shaft of the quill, minimizing the chances that the quill will come out of the insert plug.

[0027] In some embodiments the insert plug is removably attachable to the hole.

[0028] A second aspect of the invention refers to an accessory for a lamp comprising a part for coupling to a holder of a bulb and a shade that defines an interior volume for receiving light from a bulb, in which the part for coupling to a light bulb has holes for insertion and feather holder open to the outside of the shade and because the shade is attached to the coupling part.

[0029] In some embodiments the accessory comprises feathers, the quill of each feather being inserted into a separate hole for inserting and supporting feathers.

[0030] A third aspect of the present invention proposes a lamp coupled to the coupling part to a holder of a bulb of a fixture according to the first aspect of the present invention.

[0031] The different aspects and embodiments of the invention defined above can be combined with each other, provided they are mutually compatible.

[0032] Additional advantages and features of the invention will become apparent from the following detailed description and will be pointed out particularly in the appended claims.

BRIEF DESCRIPTION OF THE DRAWINGS

[0033] To complement the description and in order to help a better understanding of the characteristics of the invention, according to some examples of practical realization of the accessory for a lamp of the invention, a set of figures is attached as an integral part of the description. in which, with an illustrative and non-limiting nature, the following has been represented:

Figure 1 shows a perspective view of an accessory according to the present invention.

Figure 2 shows an elevation view of a shade of an accessory according to the present invention.

Figure 3 shows an elevational view of a cross section of a shade of an accessory according to the present invention.

Figure 4 shows an elevation view of a coupling part of an accessory according to the present invention.

Figure 5 shows a plan of a coupling part of an accessory according to the present invention.

Figure 6 shows an elevational view of a cross section of an accessory according to the present invention.

Figure 7 shows a perspective view of an accessory according to the present invention.

Figure 8 shows part of a lamp.

Figure 9 shows a feather.

Figure 10 shows a lamp according to the present invention.

Figures 11 to 29 show embodiments of an accessory according to the present invention.

Figures 30 to 32 show embodiments of an accessory according to the present invention fixed to a wall.

Figure 33 shows an embodiment of an accessory according to the present invention.

Figures 34 to 36 illustrate the insertion of pens into a display of an accessory in accordance with the present invention.

DESCRIPTION OF A WAY OF CARRYING OUT THE INVENTION

[0034] In the description of the possible preferred embodiments of the invention, it is necessary to give numerous details to promote a better understanding of the invention. Even so, it will be apparent to the person skilled in the art that the invention can be implemented without these specific details. On the other hand, well-known features have not been described in detail to avoid unnecessarily complicating the description.

[0035] Figure 1 shows an accessory 1 for a lamp. The accessory 1 comprises a translucent shade 4 made of an acrylic polymer. The shade 4 is coupled to a coupling part 3 to a bulb. The shade 4 shows conical holes 5 for inserting and supporting the feather 6 quills 62. An example of these feathers is shown in figure 9. The shape of the attachment 1 imitates a palm tree crown without leaves.

[0036] As shown in figure 2, shade 4 is a solid of revolution with holes. This solid of revolution about the axis R defines a cylindrical lateral surface 41 joined to an upper surface 42 in the shape of a spherical cap.

[0037] As shown in figure 3, some of the holes 5, such as for example hole 52, are more inclined towards the coupling part 3, that is to say more inclined towards the bottom of the shade 4 shown in figure 3 , than others

such as hole 51. Thus, for the same depth, measured in the direction 511, 521 of the respective hole and from the opening of hole 51, 52 on the outer surface of the shade 4, in a hole 52 of those with an opening farther from the coupling part 3 will have achieved a greater distance reduction to the coupling part 3 than in a hole 51 of those with an opening closer to the coupling part 3, in comparison with the distance from the opening of the respective hole 51, 52 to the coupling part 3.

[0038] As shown in figure 3, the central axis 521 of the conical hole 52 defines an angle γ slightly greater than 90° with a plane T tangent to the spherical cap 42 drawn by a point that would result from the cut between the central axis 521 and the spherical cap without hole 52. Therefore hole 52 is not perpendicular to shade 4.

[0039] To calculate the density of holes 5 in the shade 4, it is enough to divide the number of holes 5 of the shade 4 that are outside the coupling part 3 by the outer surface of the shade 4 that is outside the coupling part 3. For example, it would be sufficient to divide the number of holes 5 of the shade 4 of figure 2 by the outer surface of the shade 4 that is above the dashed line 411. The portion of the shade 4 that is below the line discontinuous 411, remains inside the coupling part 3, supported on the projection 9 of the coupling 3, as explained below with reference to figure 6.

[0040] As shown in Figure 4, the bulb coupling part 3 has an outer frusto-conical shape 31 with a cylindrical lower projection 32. The cylindrical lower projection 32 serves as a lower support for the frusto-conical 31.

[0041] As shown in figure 5, the coupling part has a projection 9 in the shape of a circular section inside the coupling part 3. This projection 9 serves as a support for the shade 4, so that it enables the coupling between the shade 4 and the coupling part 3.

[0042] Figure 6 shows the section AA of figure 5. Inside the coupling part has a projection 9. The shade 4 can be inserted through the upper hole 33 of the coupling part 3 through the part of the shade 4 that remains below the dashed line 411. In this way, during the introduction, a moment will come when the lower end of the part of the shade 4 that is below the dashed line 411 will contact the projection 9, leaving the shade resting on the projection 9, at this time the broken line 411 is at the level of the upper edge of the hole 33 of the coupling part 3. The coupling part 3 has inside a through hole that connects the projection 9 with means for coupling to a support of a light source, more in particular with guides 8 for fitting rods 11 inside the coupling part. An example of rods 11 is shown in figure 8. One of the guides 8 comprises a first section 81, a second section 82 and a third section 83. Figure 6 illustrates the direction in which each of them extends. the sections 81, 82, 83 by means of the respective arrows 811, 821, 831. To insert a rod 11 in one of the guides 8, it is enough to first insert the rod 11 into the section 81 of the guide 8 in the direction in which it is extends the section 81 of the guide 8. Once the rod 11 has been inserted a sufficient depth in the section 81, the relative displacement between the rod 11 and guide 8 is changed to a displacement in a direction perpendicular to that of introduction in the section 82. In this way, the rod is introduced into section 82, where it slides along 82 until it reaches the corner that connects section 82 with section 83, from where it travels, relatively, in an upward direction, to be finally supported. In this way the coupling part 3 is coupled to the rod 11 and thus to the light bulb holder 10 shown in figure 4. Conversely, to uncouple the coupling part 3 from the holder 10 it is enough to raise the guide 8 until the rod returns to the junction corner between 82 and

[0043] 83 and then move the guide 8 in the opposite direction to the direction in which the section 82 of the guide 8 extends, so that the rod is arranged at the junction between the first section 81 and second section 82. The coupling part 3 can then be lifted relative to the rod 11, so that the rod 11 is outside the coupling part 3.

[0044] The interior of the coupling part 3 is also shown in figure 7. This figure shows a part of the shade 4 coupled to the coupling part 3. The shade 4 has a hole 7 that connects the inside of the part of coupling 3 with the interior of the shade 4. Through this hole 7 a light source has been inserted inside the shade 4. An LED bulb as a light source is advantageous to minimize the generation of heat compared to other types of bulbs such as incandescent bulbs because they generate less heat to achieve the same level of illumination.

[0045] Figure 8 shows a part of a lamp, specifically shows a lamp base 10 for stabilizing the lamp. The base 10 is attached to a vertical support 12 of a light bulb. Attached to this vertical support, there is a piece made up of a crown provided in turn with rods 11, which are parallel to the plane of the base 10, this crown being detachable from the lamp, as is known in the state of the art. These rods 11 allow the removable coupling of the accessory 1 with the lamp by fitting and disengaging the rods 11 in the guides 8 as explained above with reference to the guides 8 of figure 6.

[0046] Figure 10 shows a lamp in which an accessory 1 has been implemented that is partially hidden by the pens 6. To do this, feather quills 62 have been inserted into the holes 5 of the shade 4. In this way, as As shown in Figure 10, the banners 61 of the feathers 6 are outside the shade 4, so that the shade 4 is interposed between the feather bodies (vanes) 61 and the light source of the lamp. In this way, a lamp is obtained that emits light in an elegant and pleasant way and that has a distinguished design.

[0047] Figures 11 to 15 show accessories 101, 102, 103, 104, 105 that differ from each other in the geometry of the shade 4 and / or the coupling part 3.

[0048] Figure 16 shows an accessory 106 whose shade 4 has an outer orthohedron shape and whose coupling part 3 has a trapezium-shaped cross section.

[0049] Figure 17 shows an accessory 107 whose shade 4 has the outer shape of a semi-cylinder, that is, a cylinder cut by a plane perpendicular to the bases that

passes through the center of the bases, and whose coupling part 3 has the outer shape of an orthohedron.

[0050] Figures 18 to 29 show accessories 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119 that differ from each other in the geometry of the shade 4 and / or the coupling part 3.

[0051] Figures 30 to 32 show accessories 120, 121, 122 having different geometries attached to a wall P.

[0052] Figure 33 shows an accessory comprising a coupling part 3 provided with blind holes for the introduction of feather quills 6. The coupling part 3 is fixed to a light bulb hanging from a ceiling. This fixture has a shade 4 that defines a lower opening on the side of the shade opposite the side near the bulb. This shade may be made of a material that attenuates the light passing through it, so as to make it easier to see the feather bodies 61 despite a high intensity of the bulb.

[0053] Figure 34 shows an insertion plug 621 inserted into a hole 5 of a shade 4 of an accessory. The insert plug 621 has projections 6211 on its inner face. When inserting the quill 62 of the feather following the direction indicated by the arrow in figure 34, the quill 62 of the feather is pressed between the projections 6211, so that the quill 62 is gripped by the insertion plug 621, as it is illustrated in Figure 35. In this way the insert plug 621 acts as a plug between the quill 62 of the feather and the walls of the hole 5.

[0054] Figure 36 shows an insert plug 622 for a hole 5 of a shade 4 of an accessory. This insertion plug 622 has two configurations: one open in to insert a quill 62 in the insertion plug 622 and a closed one in which the quill is hooked to the insertion plug 622. The insertion plug 622 has an outer face with a few projections 6221 having a shape complementary to that of recesses 5111 of hole 5. Thus, when inserting the insertion plug 622, the complementary shape of the recesses 5111 and the projections 6221 makes it difficult for the insertion plug 6222 to come out of the orifice. The inside face of the insert plug 622 has sharp projections that are embedded in the quill 62 of the feather when the insert plug 622 is closed.

[0055] In view of this description and figures, the person skilled in the art will be able to understand that the invention has been described according to some preferred embodiments thereof, but that multiple variations can be introduced in said preferred embodiments, without departing from the object of the invention such and how it has been claimed.

[0056] In this text, the term "comprises" and its derivations (such as "comprising", etc.) should not be understood in an exclusive sense. That is, these terms should not be construed as excluding the possibility that what is described and defined may include more elements, stages, etc.

Claims

1. An accessory (1) for a lamp (2) that comprises a coupling part (3) to a support of a bulb and a shade (4) that defines an interior volume for receiving light from a bulb, **characterized in that** the shade (4) has holes (5) for inserting and supporting feathers (6) open to the outside of the shade (4) and because the shade (4) is coupled to the coupling part (3).

2. Accessory (1) according to claim 1, wherein the shade (4) is transparent, translucent or opaque.

3. Accessory (1) according to any one of the preceding claims, in which the shade (4) is colored.

4. Accessory (1) according to any one of the preceding claims, wherein the holes (5) for inserting and supporting feathers (6) are tubular or conical.

5. Accessory (1) according to any one of the preceding claims, in which the holes (5) for inserting and supporting feathers (6) are blind.

6. Accessory (1) according to any one of the preceding claims in which some of the holes (5) or all the holes (5) whose openings to the outside of the shade (4) are further away from the part of coupling (3) are more inclined towards the coupling part (3) than some holes (5) or all the holes (5) whose openings to the outside of the shade (4) are closer to the coupling part (3).

7. Accessory (1) according to any one of the preceding claims in which some or none of the holes (5) for inserting and supporting pens (6) is perpendicular to the shade (4).

8. Accessory (1) according to any one of the preceding claims in which the holes (5) for inserting and supporting feathers (6) have a depth of at least three millimeters and a maximum of seven centimeters, preferably 1 to 3 cm, and/or in which the holes (5) for inserting and supporting feathers (6) have a circular cross-section whose diameter is at least 1 millimeter and a maximum of 10 millimeters, preferably 2.5 millimeters to 4 millimeters.

9. Accessory (1) according to any one of the preceding claims, wherein the shade (4) has a surface density of holes (5) for inserting and supporting feathers (6) of at least 1 hole / cm2.

10. Accessory (1) according to any one of the preceding claims in which the shade (4) has a hole (7) for inserting a light source into the interior volume of the shade (4), connecting the hole (7) the inner volume of the shade (4) with the coupling part (3).

11. Accessory (1) according to any one of the preceding claims in which the shade (4) is a solid of revolution

and preferably a solid of revolution that defines a cylindrical lateral surface (41) joined to an upper spherical cap (42).

12. Accessory (1) according to any one of the preceding claims comprising insertion plugs (621, 622) of walls of the hole (5) for inserting and supporting feathers (6), preferably in which:

- the insertion plugs (622) have an outer face closer to the walls of the hole (5) and an inner face destined to be closer to the quill of the feather (6); and/or
- the outer face It has projections (6221) complementary to recesses (5111) on the walls of the hole (5); and/or
- the insertion plug (622) has projections (6222) arranged to contact the quill of a feather (6); and/or
- the insertion plug (622) is removably attachable to the hole (5).

13. An accessory (1) for a lamp (2) that comprises a coupling part (3) to a support of a bulb and a shade (4) that defines an interior volume for receiving light from a bulb, **characterized in that** the coupling part (3) to a bulb has holes (5) for inserting and supporting feathers (6) open to the outside of the shade (4) and because the shade (4) is coupled to the coupling part (3).

14. Accessory (1) according to any one of the preceding claims provided with feathers (6), the quill (62) of each feather (6) being inserted in a different hole (5) for inserting and supporting feathers (6).

15. Lamp (2) coupled to the coupling part (3) to a holder of a bulb of a fixture (1) according to any one of the preceding claims.

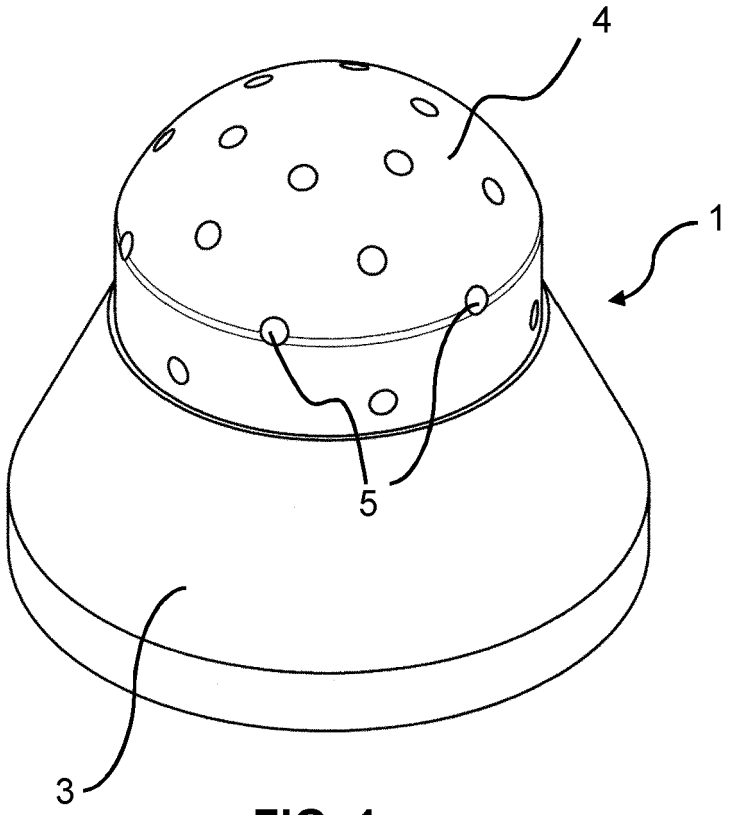

FIG. 1

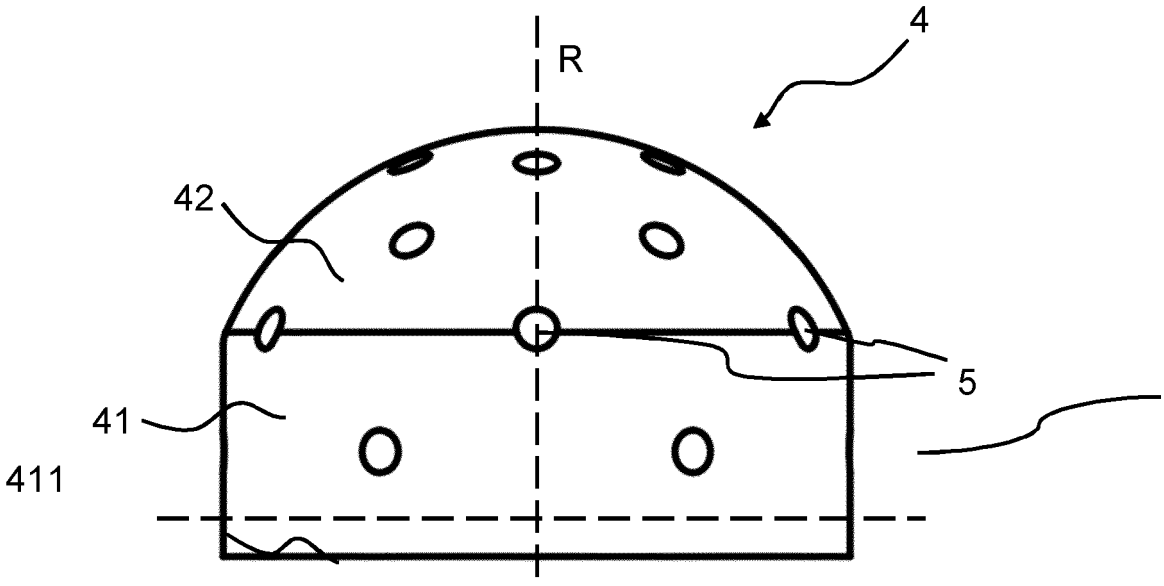

FIG. 2

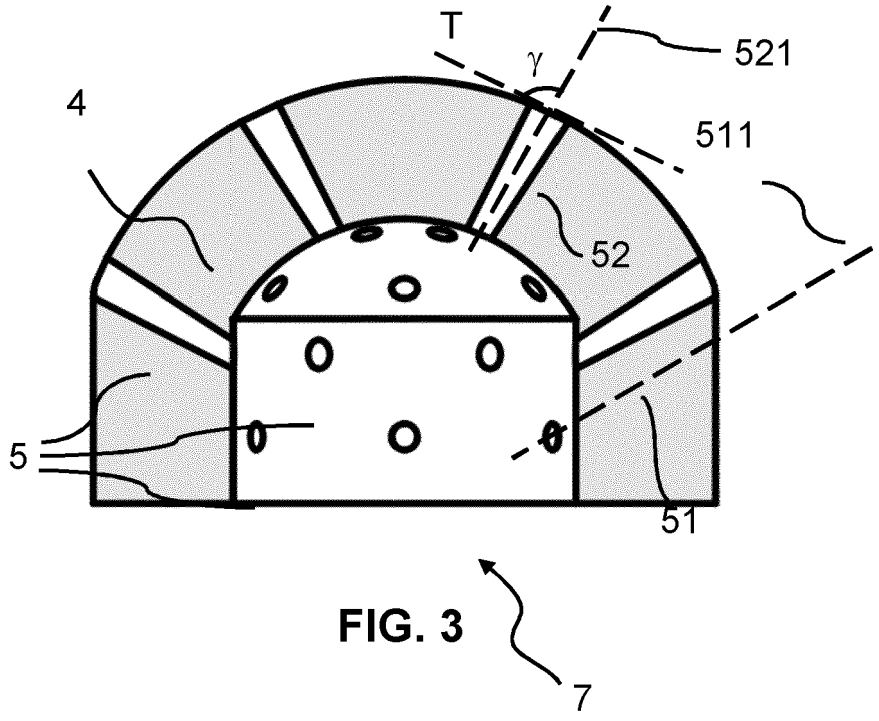

FIG. 3

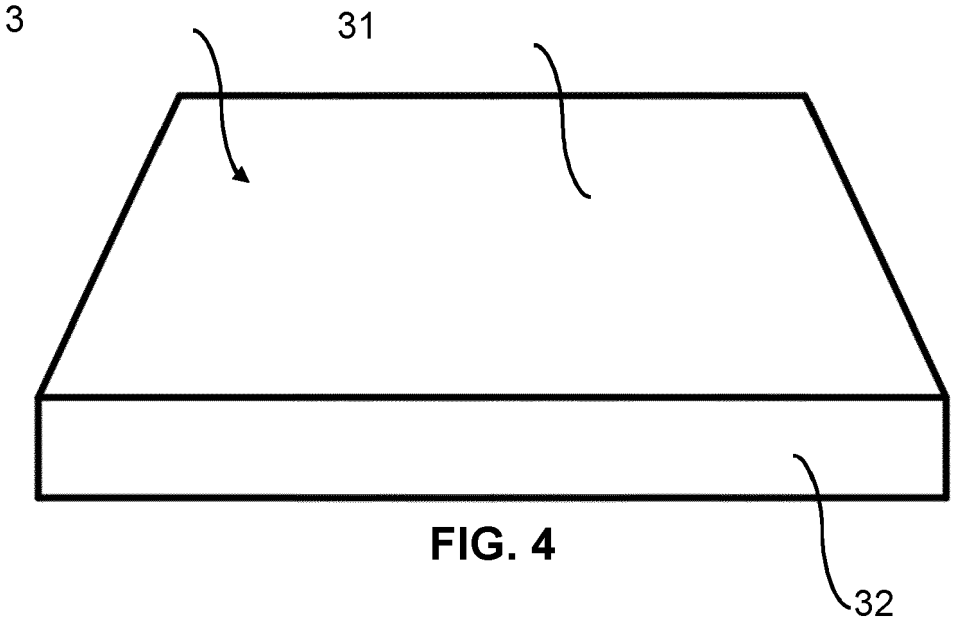

FIG. 4

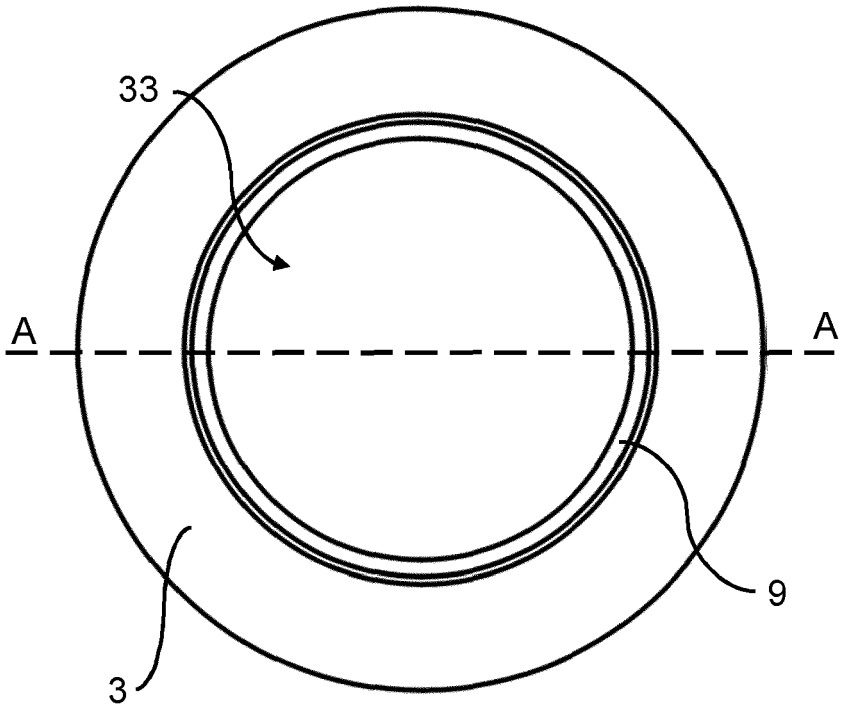

FIG. 5

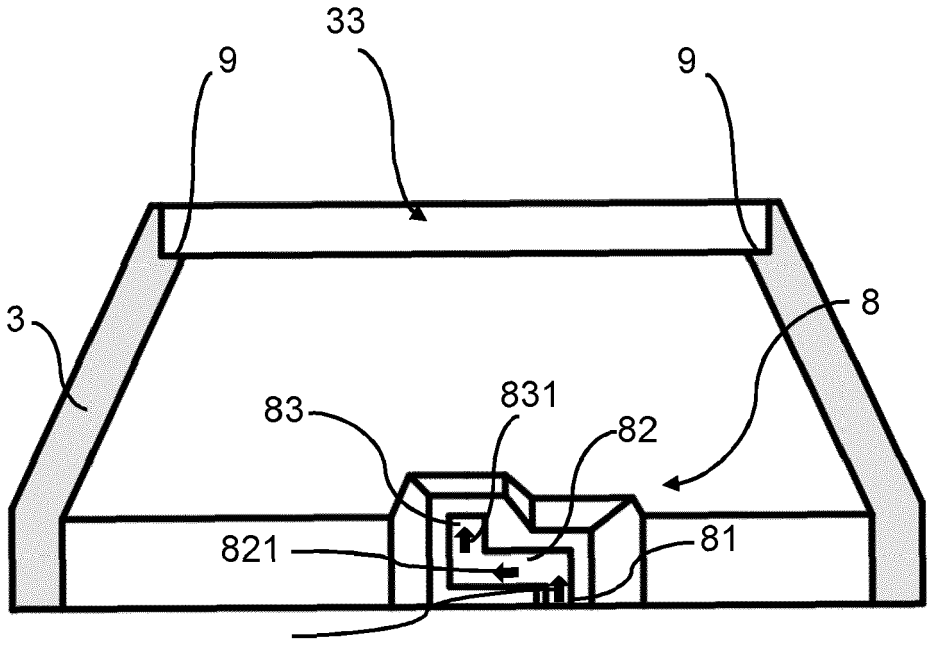

FIG. 6

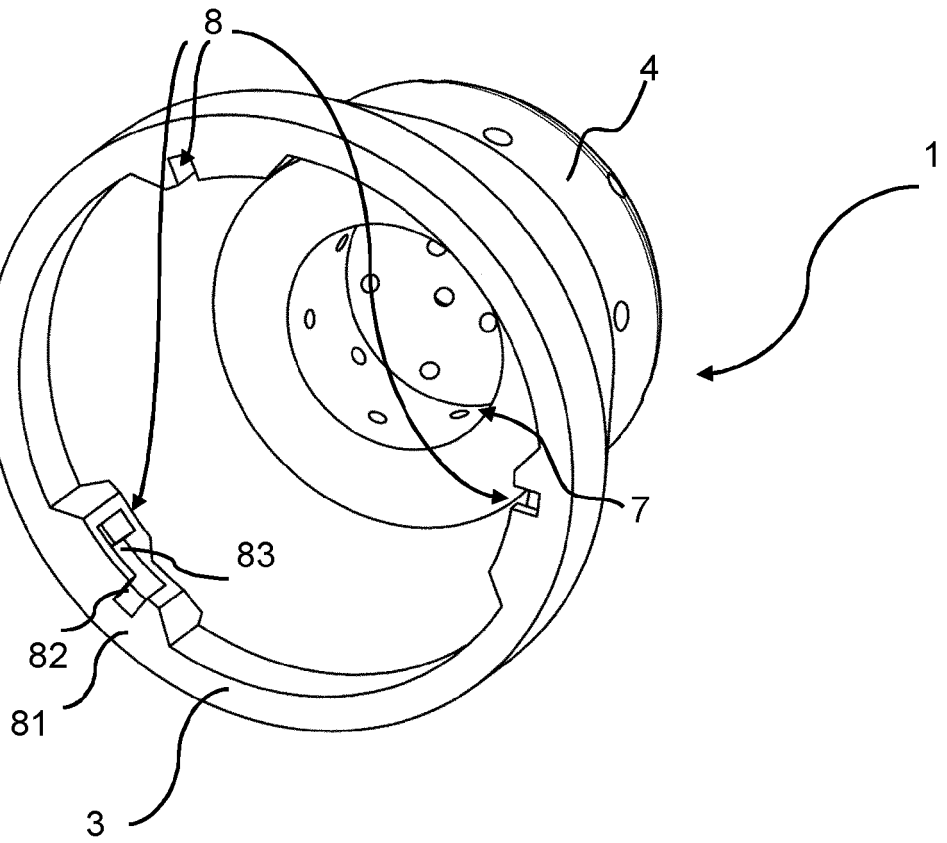

FIG. 7

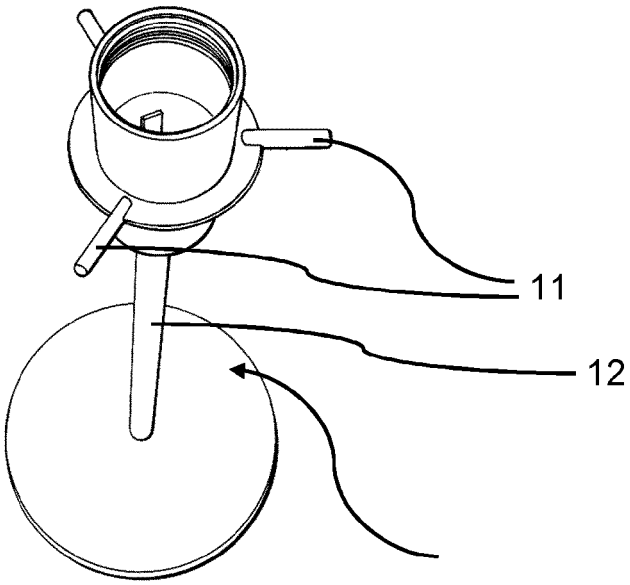

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FIG. 8

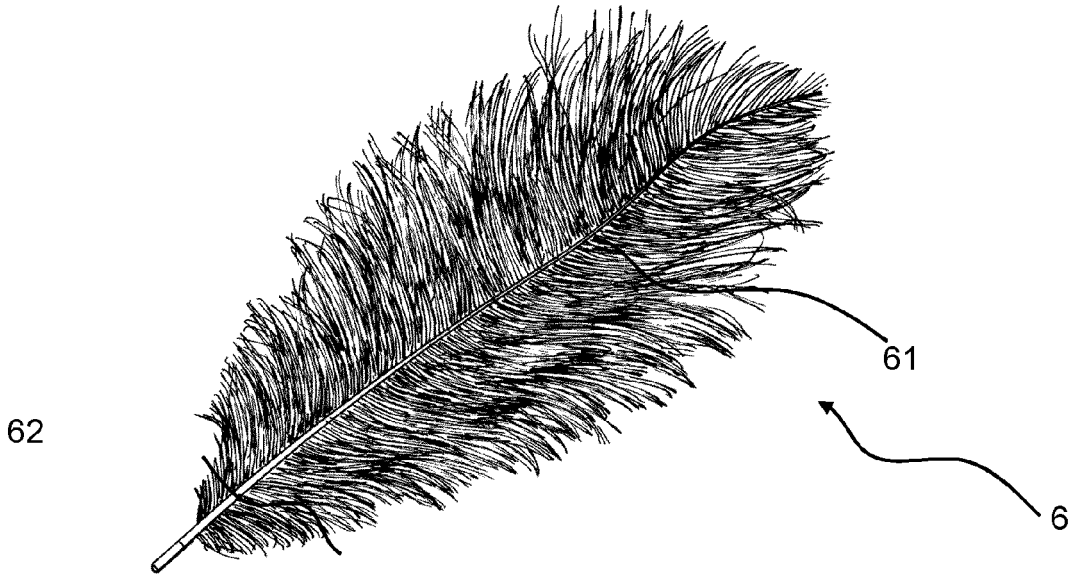
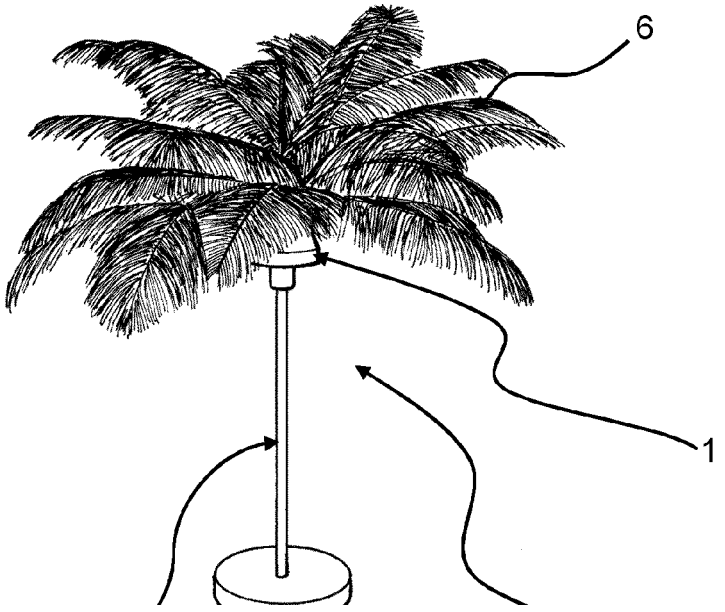


FIG. 9



10 **FIG. 10** 2

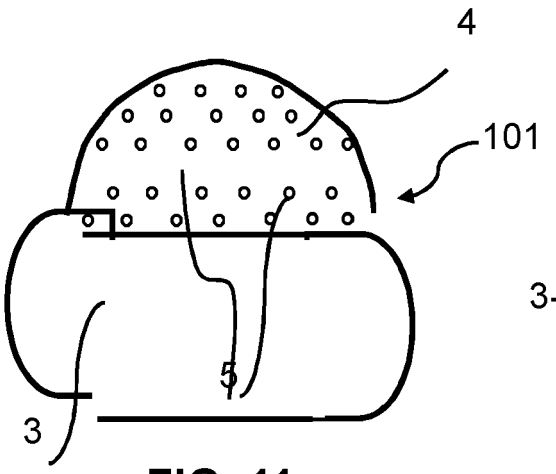


FIG. 11

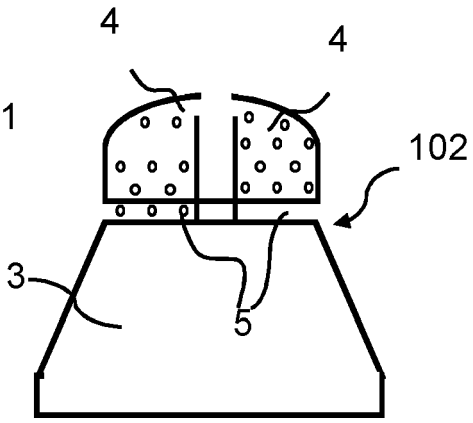


FIG. 12

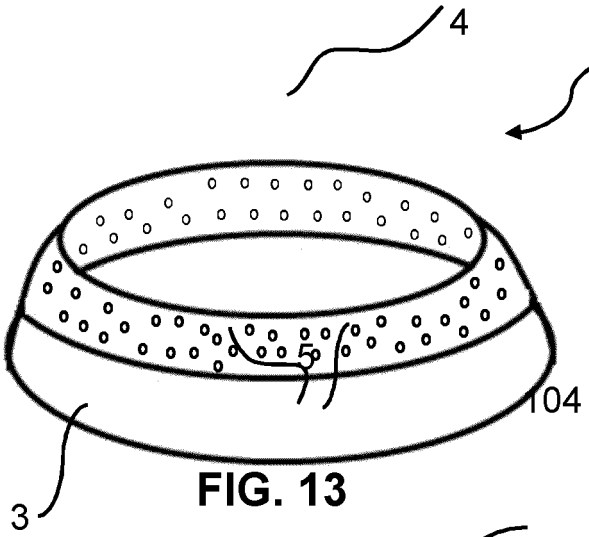
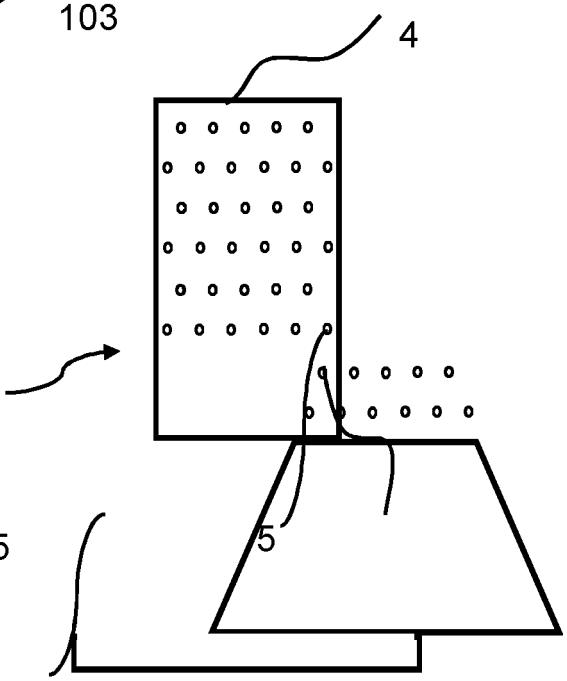


FIG. 13



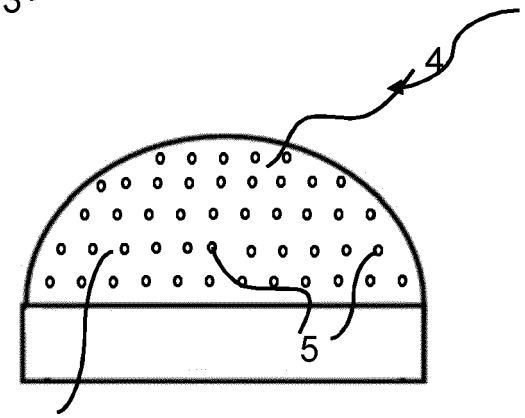


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FIG. 14

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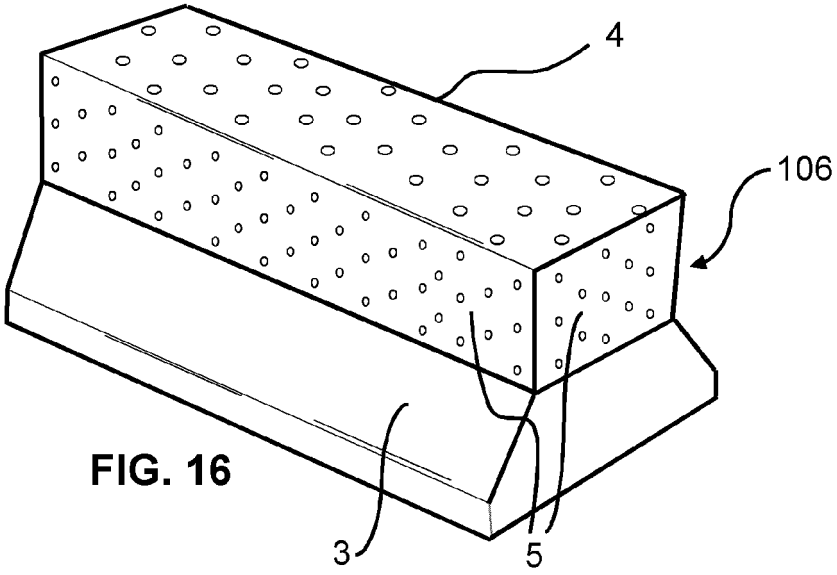


FIG. 16

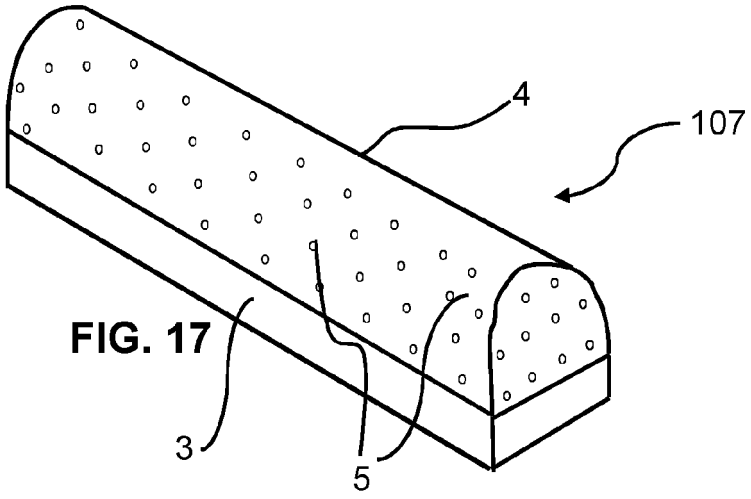


FIG. 17

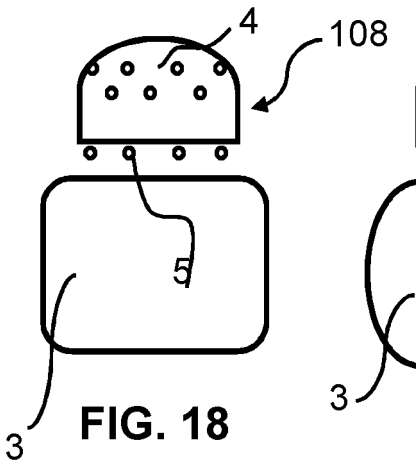


FIG. 18

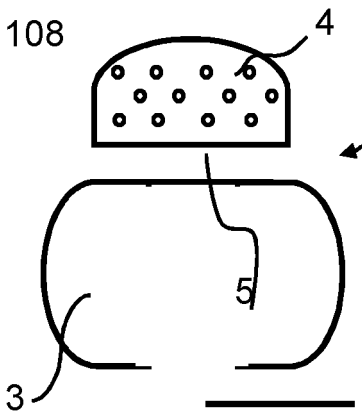


FIG. 19

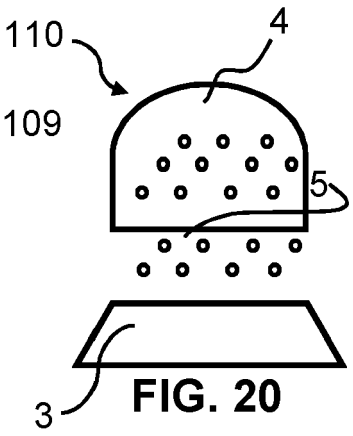


FIG. 20

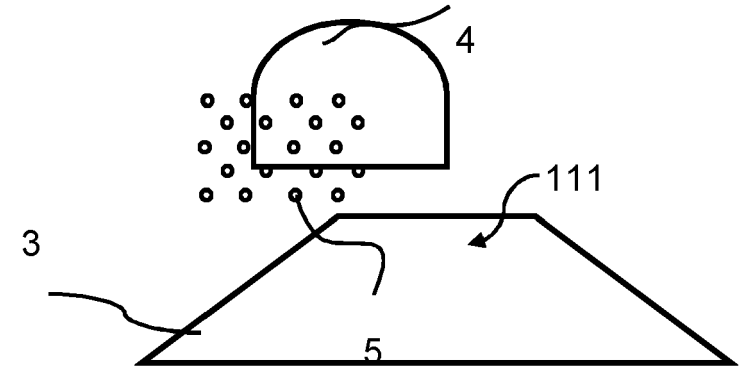
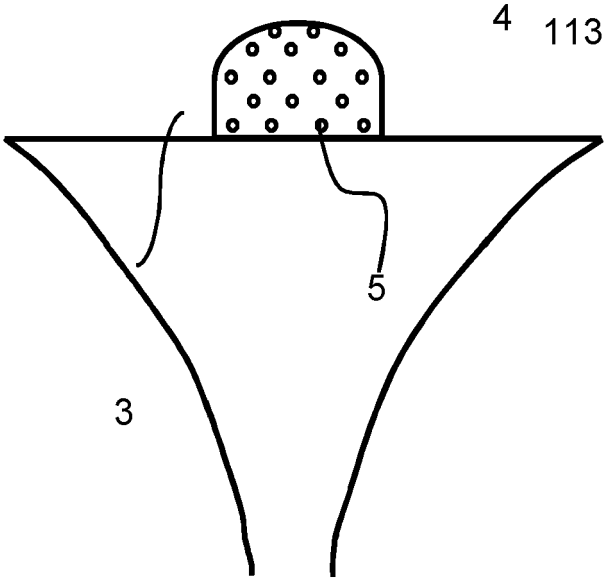


FIG. 21



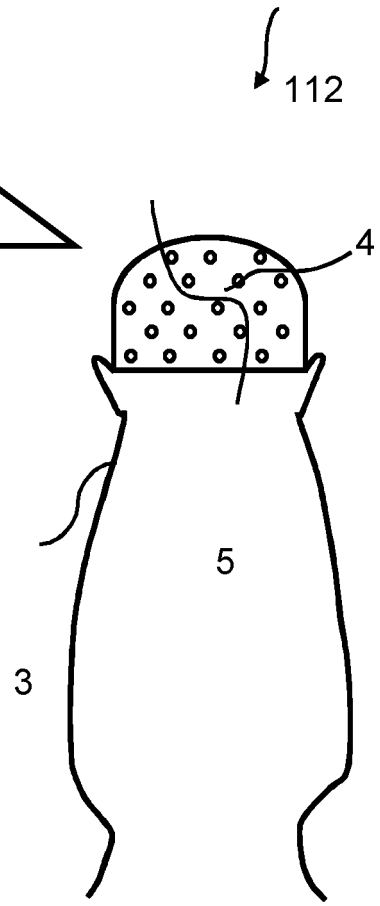


FIG. 22

FIG. 23

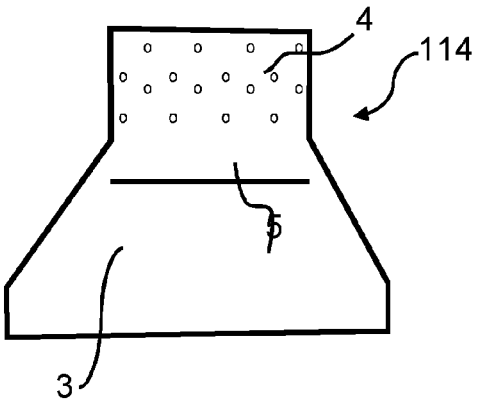


FIG. 24

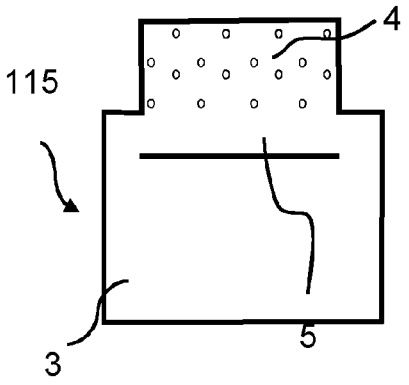


FIG. 25

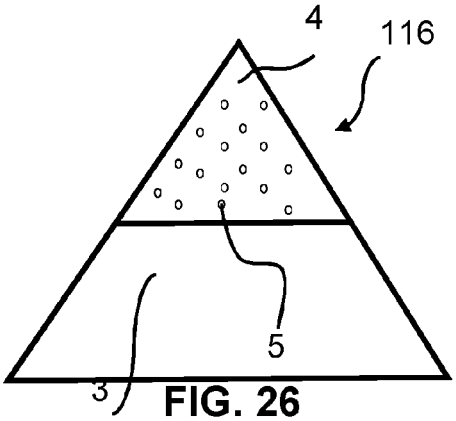


FIG. 26

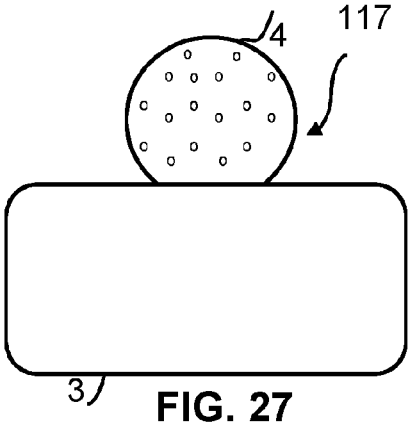
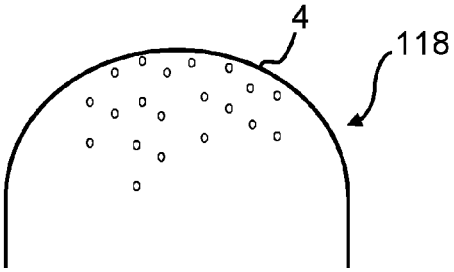
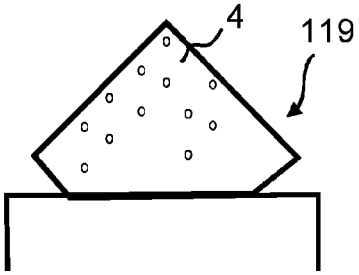


FIG. 27





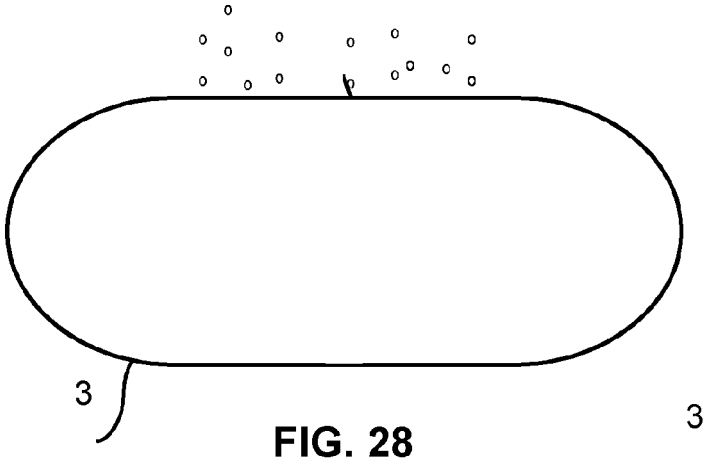
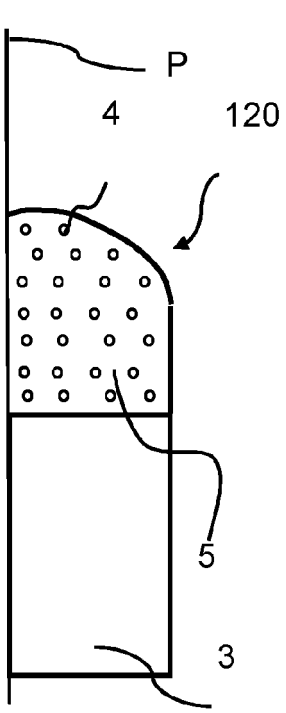


FIG. 28

FIG. 29



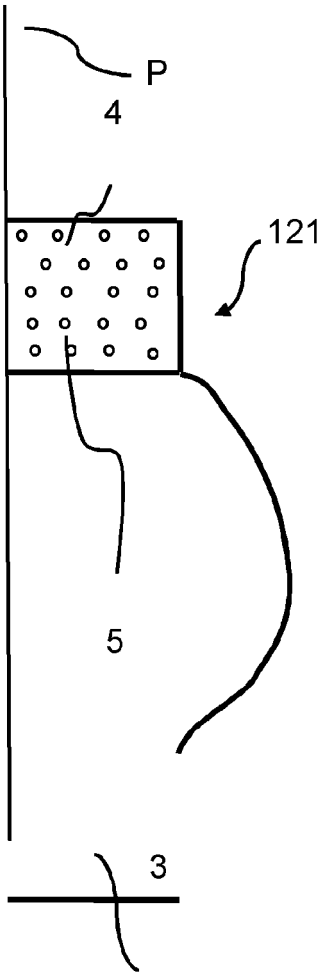


FIG. 30

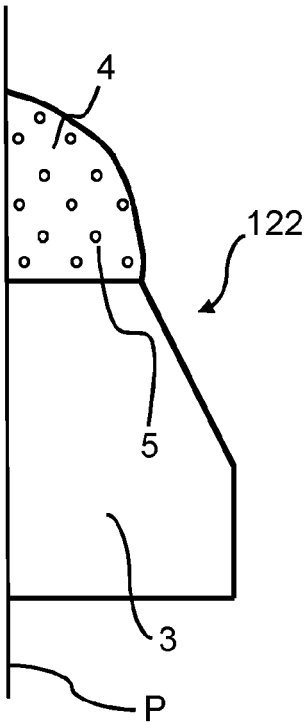


FIG. 31

FIG. 32

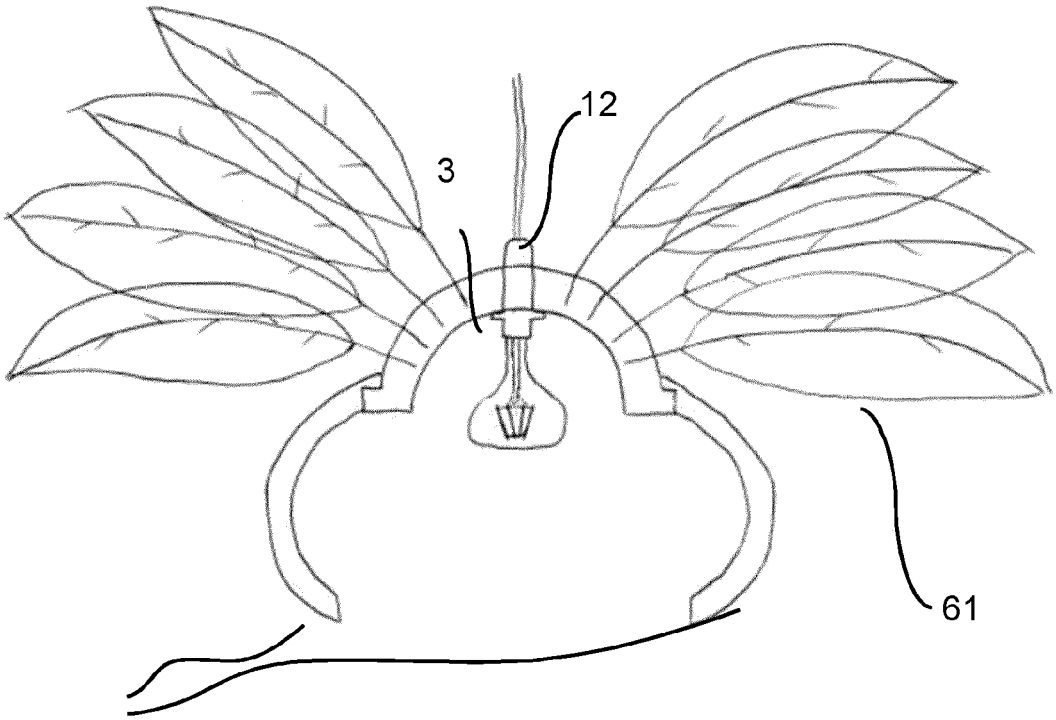


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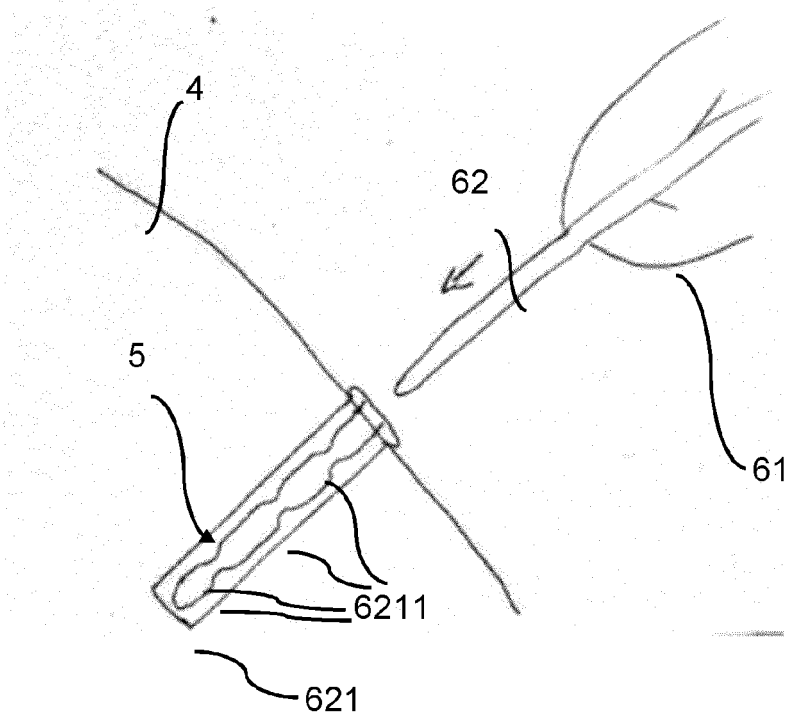
FIG. 33



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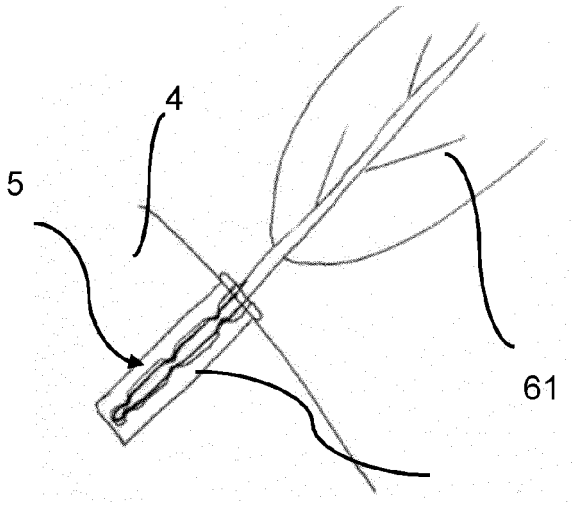

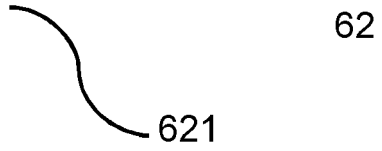

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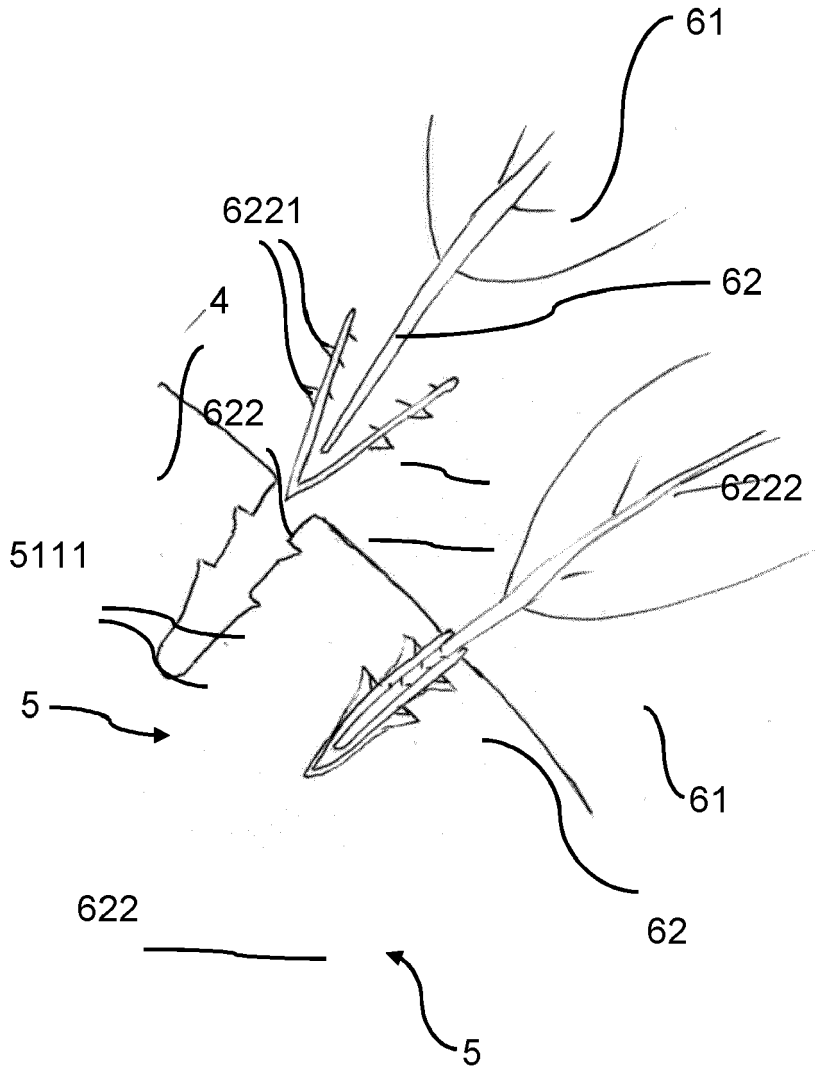

FIG. 36

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EUROPEAN SEARCH REPORT

Application Number
EP 21 21 4116

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2005/231975 A1 (BIXLER KEVIN L [US] ET AL) 20 October 2005 (2005-10-20) * figures 1-5 *	1-10, 12-15	INV. F21V1/00 F21V3/04
X	DE 10 2009 005448 A1 (BRETSCHNEIDER S WEIHNACHTSLAND [DE]) 29 July 2010 (2010-07-29) * figure 1 *	1-3,5, 7-9, 12-15	
X	CN 1 546 904 A (JIEYANG XINGCAI METAL PRODUCTS [CN]) 17 November 2004 (2004-11-17) * figures 1-6 *	1	
X	KR 2018 0002213 A (AUDI CO LTD [KR]) 8 January 2018 (2018-01-08) * figures 1-6 *	1	
X	US 2 248 117 A (JOHN PETRY) 8 July 1941 (1941-07-08) * figures 5,6,10,11 *	1-3,5, 7-9, 11-15	TECHNICAL FIELDS SEARCHED (IPC) F21V F21W

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 March 2022	Kebemou, Augustin

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25-03-2022

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